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BUILDING TYPES STUDY: RESORT HOTELS
FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

NOVEMBER 1972

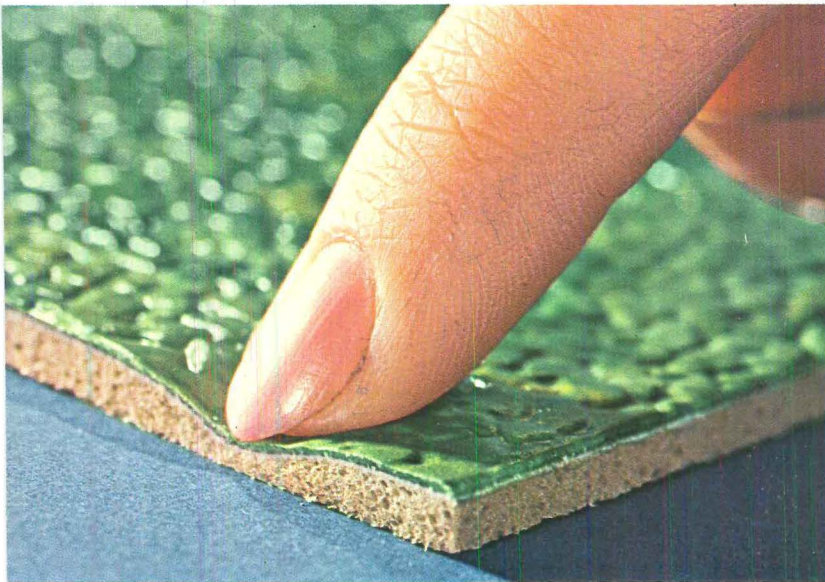
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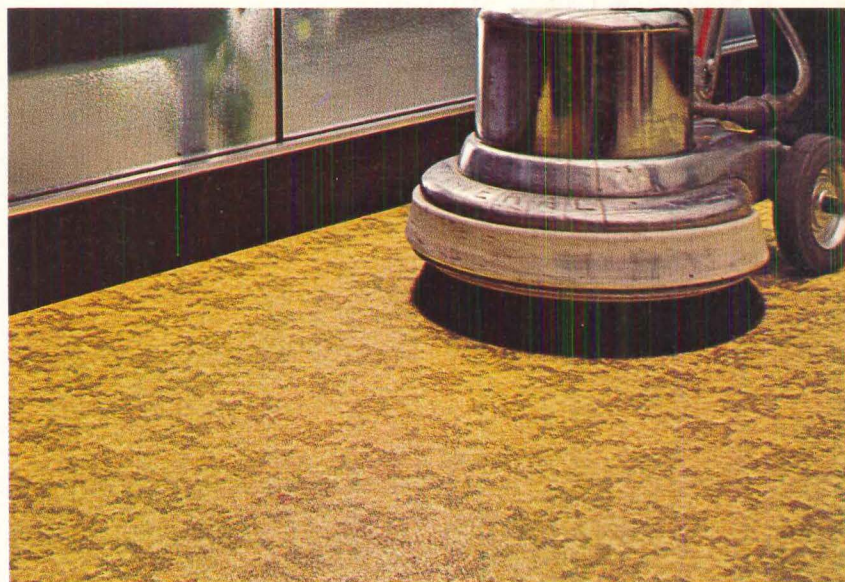
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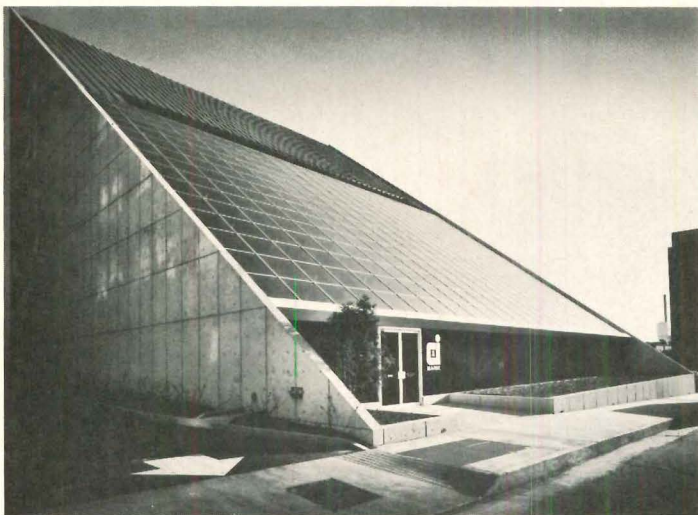
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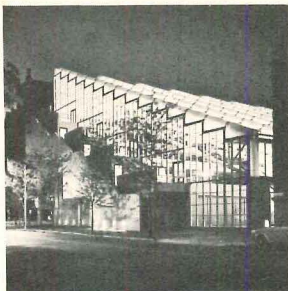
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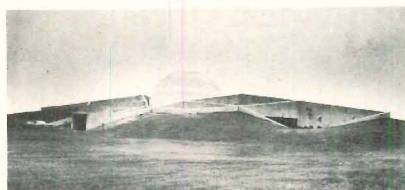
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An analysis of the economic setting
for construction, setting forth
matters of national policy and
business reactions, introduces
this year's annual prognostication
by the Economics Department,
McGraw-Hill Information Systems
Company. In general, the level
of activity will be about the
same, but a change in mix will
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the building construction dollars
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factories and hospitals at the
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Quotations on reprints of articles available. Every possible effort will be made to return material submitted for possible publication. EXECUTIVE, EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: 1221 Avenue of the Americas, New York, N.Y. 10020. Other

Editorial Offices: 425 Battery Street, San Francisco, Cal. 94111; 1249 National Press Building, Washington, D.C. 20004. PUBLICATION OFFICE: 1500 Eckington Place, N.E., Washington, D.C. 20002; second class postage paid at Washington, D.C. and at additional mailing offices. OFFICERS OF McGRAW-HILL PUBLICATIONS COMPANY: John R. Emery, president; J. Elton Tuohig, senior vice-president—services; David J. McGrath, group vice president; vice presidents: Ralph Blackburn, circulation; John R. Callahan, editorial; John B. Hoglund, controller; David G. Jensen, manufacturing; Jerome D. Luntz, planning & development; Joseph C. Page, marketing; Robert M. Wilhelmy, finance.

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Gund Hall brings together the various design faculties within the university for the first time in fifty years. The interdisciplinary approach is given expression in the building's central studio space which extends through for levels under a sloping clear-span roof. It is the symbol of this important building.

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121 Kah-nee-ta Lodge, Warm Springs, Oregon, Wolff Zimmer Gunsul Frasca Ritter, architects; Pietro Belluschi, design consultant.

126 Four hotels for Hyatt International Corporation, Rader Mileto Associates, architects: Regency Hyatt de Panama, Punta Paitilla, Panama (page 126); Hyatt Ocho Rios, Ocho Rios, Jamaica, W.I. (page 128); Hyatt Athens Hotel, Athens, Greece (page 130); Hyatt Regency Caspian Sea, Chalus, Iran (page 131).

132 The Floating Village of Simpson Bay Lagoon, St. Martin, Guadeloupe, F.W.I. Damaz & Weigle, architects; Jacques Couelle, concept designer.

134 Waimea Village Inn, Waimea, Hawaii Thomas Wells & Associates, architects.

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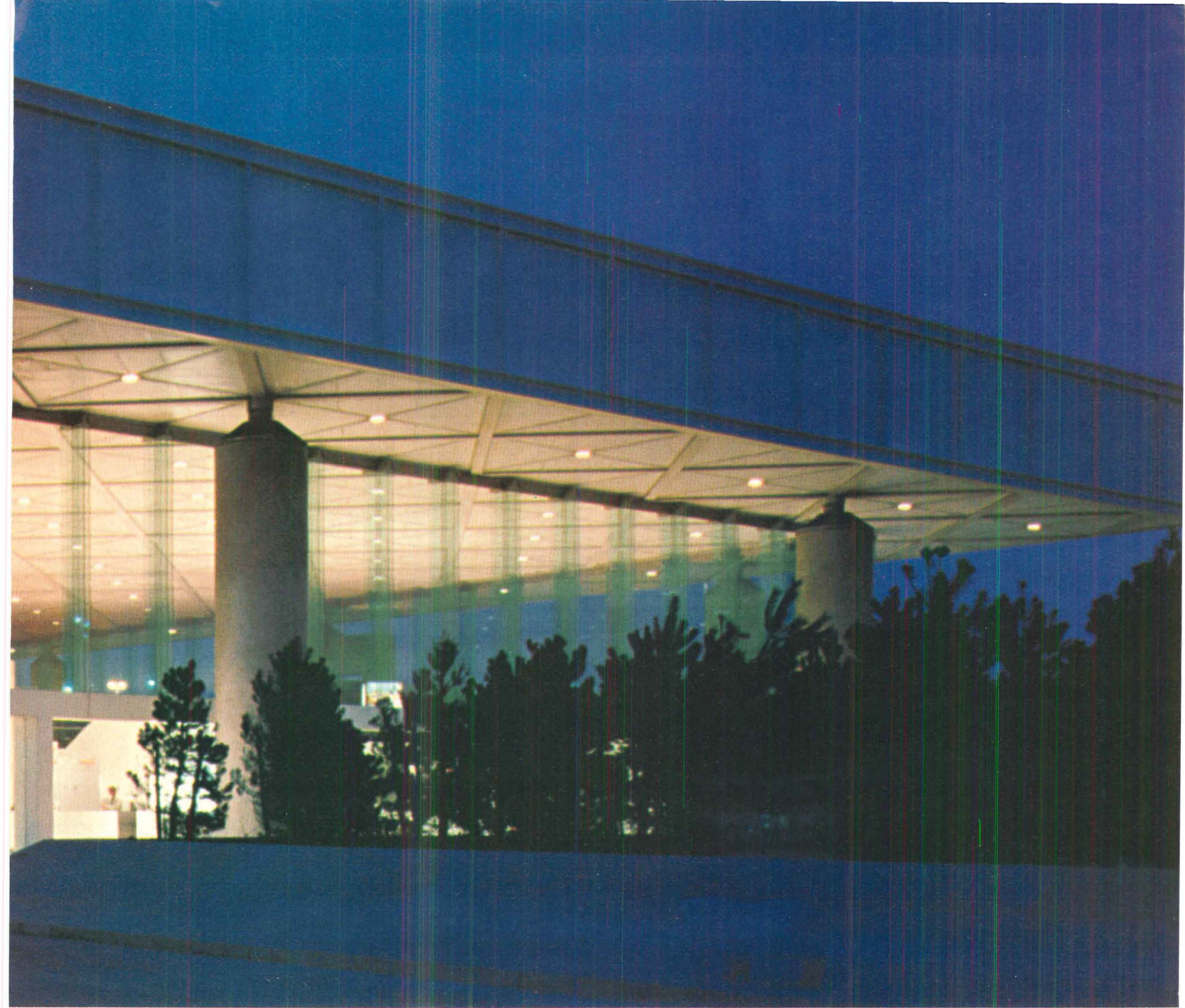
There's a lot to see at Kennedy International. And the architects who designed the National Airlines terminal make sure visitors see it all—through suspended clear plate glass.

To support this hanging glass curtain—more glass. Vertical glass mullions that keep the facade of the building light and transparent. Which is in keeping with architects I. M. Pei & Partners concept of the terminal: one of classic simplicity, an anti-

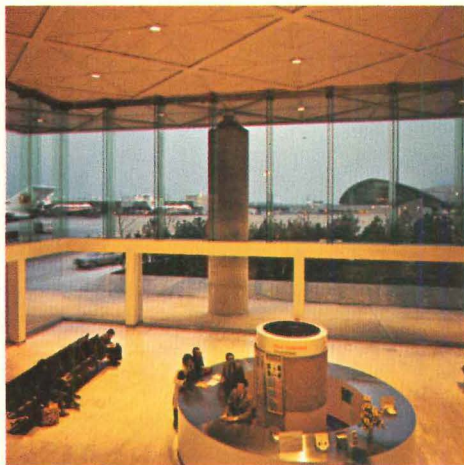
dote to the visual hodge-podge of unrelated structures at the airport.

Suspended glass braced by more glass is a new idea for an airline terminal, where jet blasts and high winds can raise havoc with a design concept.

The architects proved the terminal's "airworthiness" to the New York Port Authority by testing a full-scale mock-up against 140-mph winds. It passed with flying colors.



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Some fresh thinking about the old problems of land use

One of the most encouraging trends around these days (when encouraging trends are few and far between) is the new and thoughtful interest in developing new and revised methods of land use—especially land use related to housing, a subject which requires a lot more thought and interest than it has been getting if our cities are not to go up in smoke and our suburbs and countryside are not to be sprawled into some kind of mindless mess that will spoil what we have without solving any of our real problems.

Just in the past month I've become aware of three proposals that got my head sitting up at attention, and herewith pass along:

- As reported in *News* last month (October, page 36), the National Endowment for the Arts—probably architecture's greatest champion in the Washington bureaucracy (see also *RECORD*, July editorial)—has announced that it is receiving applications for a new \$500,000 grant program on "City Edges," to sponsor "planning and design studies of problems confronting cities in their treatment of freeways, riverfronts, suburban fringes, or other natural and man-made 'edges of cities.' The unifying theme of 'City Edges' was selected to describe these unique urban features around which the Endowment will focus a major portion of its funds for physical design research for the coming year." With that kind of incentive (that is, a half-million dollar incentive) we should see some exciting land-use proposals for one of the least understood and unhappiest land uses around. You can, by the way, still apply for a grant: though the deadline for completed applications is December 11th. For forms, write Director, Architecture and Environmental Arts, City Edges Program, National Endowment for the Arts, Washington, D.C. 20506.

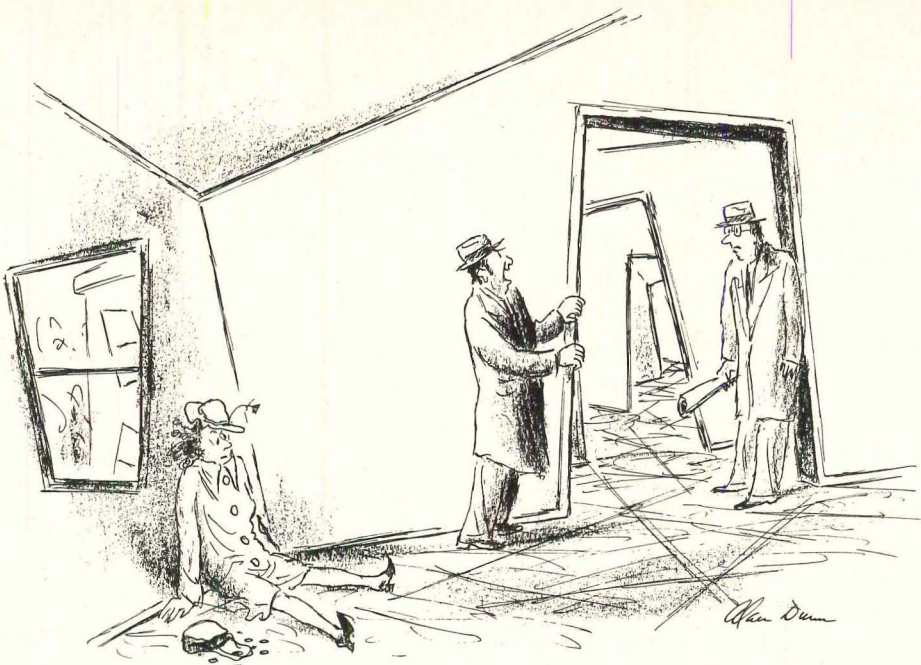
- The newest issue of *Urban Land*, the excellent and thoughtful publication of the Urban Land Institute, is developed entirely to an excellent and thoughtful article on "Satellite Communities: A Proposal for a New Housing Program," written by Bernard Weissbourd, president of Metropolitan Structures, Inc. of Chicago which has built many major developments including Nuns' Island in Montreal (*RECORD*, mid-May 1970, pages 100–102.)

While this article ranges broadly over problems of migration, pollution, transportation, unemployment, and segregation; in the area of land use Mr. Weissbourd proposes that the Federal government, in cooperation with the states, embark on a land acquisition program for new satellite communities. "Why should we build satellite new communities? Why not consider a low- and moderate-income housing program in suburban locations instead?" Mr. Weissbourd's answer—like the AIA task force report—goes right to the heart of not just land use—but of unemployment, transportation, segregation, and political problems: "The fact is that the present level of resistance to construction of such housing in already established suburban areas is so great that it is unlikely that very much low- and moderate income housing will be built there." The land-use portion of Mr. Weissbourd's program, of course, implies close-to-town new towns—and he argues that current policies and legislation do not provide for these communities in sufficient number, in the most critical locations, or in a manner that will assure desegregation. As to financing, he argues that the money now spent to insure or guarantee loans for private land acquisition should be spent—with the states' contribution—to acquire land; and he argues that "Very little land is required for a satellite new community of 8,000 to

10,000 people. Three thousand dwelling units . . . could be built on only 150 acres . . . An additional 20 acres could easily accommodate a school, a shopping center, and other community facilities. In most metropolitan areas, tracts under 200 acres are relatively easy to assemble . . ."

Mr. Weissbourd figures that even at much lower densities (say 20 persons per acre) only one million acres of land would be needed for satellite communities which could accommodate half of the expected growth in selected metropolitan areas during the next 30 years; and that at \$3,000 per acre, only \$3 billion spent once would be required—"as opposed to the Federal government's annual expenditure, both direct and indirect, of \$10 billion for housing." And I call that an exciting proposal. (You can—and I urge you to do so—get copies of the October issue of *Urban Land* by writing The Urban Land Institute, 1200 Eighteenth Street, N.W., Washington, D.C. 20036. The price is \$1 to ULI members, \$3 for non-members.)

- The third important new land-use proposal comes from Emil Hanslin, who—in the mid-1960s—planned and developed New Seabury, on Cape Cod, which is still the best job of recreation-community planning I've ever seen. Emil's got a new project, a 3500-acre community named Eastman (New Hampshire); and a new concept of land use in open-space communities. Open space is, of course, in residential communities from Eastman, New Hampshire to Los Angeles suburbs and back to the spaces between the towers of New York City public housing, a hot commodity. Everyone's for it. But problems have arisen; problems that have caused more than a few planning and zoning boards to be reluctant to approve "open-space" developments. Problem 1: Who pays taxes on it? The idea of a loose-knit "homeowner's association" being responsible for land makes town officials nervous; innovation and the risk of loss of tax revenues makes them very nervous. Question 2: Who administers it? Here, the track record of homeowners' association is not good; everyone's responsibility is nobody's responsibility. Finally: Who

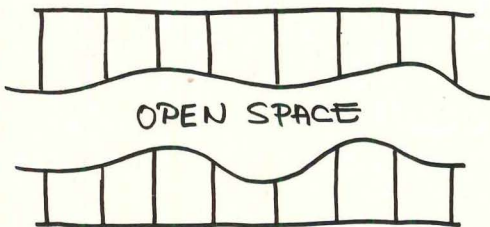


"When we said 'no parallel lines' we didn't mean floors!"

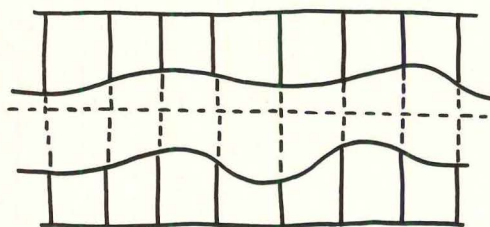
maintains it? Usual answer: no one.

Further, even when a careful planning job is done, there is no guarantee (indeed, little basis for hope) that open space owned by "everyone" will come alive; or will form a real base for community and people-activity.

Emil's scheme—which appears to answer all of the problems and to assure a very high degree of both personal and community interest in use and the maintenance in the open space of the community is called an "open-space grant program." Considerably oversimplified, here's how it works:



Suppose this drawing is a section of an open-space community—where families' lots open onto a linear park or trail area, administered and maintained (to one degree or another) by a homeowners' association.



The alternate being used at Eastman is based on this idea: Suppose each family's lot lines were extended (as shown dotted) to the center of the park or open-space area. And suppose each lot owner understood that the whole linear park was his to enjoy—as in a conventional open-space scheme—but that he retained a special interest in the part of the open space outlined by the dotted lines at the rear of his property.

Specifically, at Eastman, each owner buys

his lot with a unique string attached: He is required to *give back* part of the land he has just bought to the community. The owner gives back the dotted portion of "his lot" for open space; but—and this is important—keeps "the right of husbandry." This means that the owner has the right to insure that his small piece of the total open space is well used, and is not abused. As Emil puts it: "A man can say, 'I know that land out there is for all of the people to enjoy, but I also know that it really is *my* land that I've agreed to deed for the common good. What's more, I can make life miserable for anyone who messes up my piece of that open space.'"

There's another kicker: According to the terms of each lot-owner's open space grant, he can—within some restrictions—use the "dotted" segment of his lot. He can, for instance, with the permission of "the association"—his neighbors—build a stable for his horse (or perhaps a stable for his horse and his neighbor's horses). He can build a greenhouse, or a tennis court. Of course, there are constraints. A man's stable cannot be so domineering—either as a building or an activity—that it defeats the public benefits of the open space program. A man could probably build a tennis court, but probably could not light it for night play.

This open-space grant program appears to be a first—perhaps to some a revolutionary blurring of the traditional concepts of private and public space. So it deserves to be said that it is being implemented by a development corporation—Controlled Environment, Inc.—which is comprised of Dartmouth College, the Society for the Protection of New Hampshire Forests, the Manchester Bank, and a New Hampshire insurance company; which had to be a fairly conservative client for Emil Hanslin Associates.

It also deserves to be said that, in 15 months, about a third of the sites at Eastman were sold at what was really a predevelopment stage.

Eastman is, to be sure, a special case. Large lots are involved. It's a resort area, far

from urban crowding and urban problems. It is not a criticism to say that at Eastman the open-space grant program does not direct itself to truly public open space, much less the kind of open space most needed in this country—open space accessible and available to the urban poor. But . . .

Is there some way this concept could be developed or redeveloped to solve problems of creating truly public open space?

Can this technique be adapted for other development—not just for development of prime resort land around a lovely New Hampshire lake surrounded by ski-able mountains?

Hanslin invited a group of journalists and other concerned professionals to New Hampshire to ask those questions: "If the open-space grant concept is a good concept at Eastman [where it clearly is], can it be broadly applied? . . . What are the portents of it being broadly applied? . . . How could the incentives for sharing [for breaking down the sharp division of private and public land use] be linked to the national environmental concern?"

What Emil Hanslin is thinking about is: Could a lot of private programs be made to work around the country to create public parks or recreation spaces or greenbelts at no public expense? Could it work in reverse? Could pieces of public land be sold to private owners if they granted most of their land to public use? But primarily—cannot this idea be applied to permit more and more use of private land for public enjoyment; within limits acceptable (or better, appealing) to the private owner? I certainly don't know; but it surely is an idea that deserves a lot more study.

So . . . three new concepts for land use. And, to me, all three seem well related to the AIA's thrust through the Task Force on National Policy. I for one am excited at the apparent acceleration in thinking about land use, for if we do not find better ways to plan the best use of land, our land will continue to be "planned" by the process of land speculation—of which we have really had quite enough.

—Walter F. Wagner Jr.



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

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Ceco steel doors, frames and hardware make a beautiful fit in any décor. They meet every functional need. Use them as a "package" to accent your design. Ceco doors and frames are prepared for simple erection in minutes. And both are prepared for quick and solid attachment of hardware. Ceco doors and frames are tough and stable — won't warp, swell, shrink or rot. You gain the advantages of durability and trouble-free performance. Our Colorstyle doors have factory-baked quality finishes, kept fresh in poly bags. So specify Ceco's economical door-frame-hardware "package." It's beautiful. See Sweet's, consult your local Ceco office or write:



CECO steel doors

The Ceco Corporation • 5601 West 26th Street • Chicago, Illinois 60650

For more data, circle 7 on inquiry card

Robertson's Frank Dane knows his territory from Boston to Kuwait.

Kuwait?



You read it right. Frank Dane is the Robertson man in Boston; however, he has just finished four years' work on Shuaiba South, an electrical power and de-salination project in Kuwait. With an American consulting engineer, Chas. T. Main International, Inc.; a Japanese contractor, Taisei Construction Co.; subcontractors from Greece and Lebanon, and laborers from Pakistan, this installation presented Frank with unusual challenges. With the help of Robertson's agent in Kuwait, Abdul Aziz Alghanim, he overcame differences in language, local "standard" building design and opinion. Assisted by Robertson's Alan Tompkins in Beirut,

and on-site supervision by Robertson's Dean Keys of Pittsburgh, Frank coupled the efforts of production, packaging and engineering specialists in several Robertson plants, and contracted for an installation that went into place in a uniquely unproblematic way. The parties involved in this project counted on one man—Frank Dane—to attend to all aspects of Robertson's contract for roof, wall and floor systems.

In your town, there's a Robertson man—like Frank Dane—who's ready to help. With plants and offices in 60 countries, Robertson men have a world-wide network of experienced specialists to call upon for help in

solving problems. Call your local Robertson man. He will demonstrate our ability to take "single responsibility" for the product design, engineering, manufacture, shipment, and installation of our walls, floors, roofs, and ventilation systems. One supplier. One contract. Your Robertson man is the man to see. His territory is world-wide, but he is a local call away.

We have prepared an interesting, in-depth Project Profile on the Kuwait project. For your copy, or for more information on Robertson's international capabilities, write Dept. 7203, H.H. Robertson Company, Two Gateway Center, Pittsburgh, Pennsylvania 15222.

**Robertson**

For more data, circle 8 on inquiry card

RENAISSANCE™

The new, antique look in paneling.

Introducing Renaissance™ hardwood plywood wall paneling from Georgia-Pacific. It comes in six warm shades of real hardwood face veneer, each flecked and shadowed. With a finish that looks handrubbed. Renaissance paneling. A new old-fashioned look, at old-fashioned prices.

For more information, just contact your G-P representative. Or, if you'd like a free 12" x 6" paneling sample of new Renaissance, wire a Night Letter collect: Georgia-Pacific, Instant Sample MA, Portland, Oregon 97204.

Georgia-Pacific

Portland, Oregon 97204

For more data, circle 9 on inquiry card



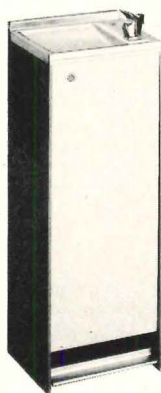
**Westinghouse
has 4,987 Service Technicians
trained to service
water coolers
any place in the nation**



Actually, they don't get many calls for water cooler service, but if a user ever has a problem, it's nice to know that a Westinghouse refrigeration expert is available to keep things flowing. And it's also reassuring to know that Westinghouse Nationwide Sure Service includes both parts and labor at no charge for one full year. A reliable water cooler that's easy to install . . . backed by service you can count on anywhere in the country. That's the kind of water cooler you can specify and forget about . . . because your customers won't be coming back to you with problems.

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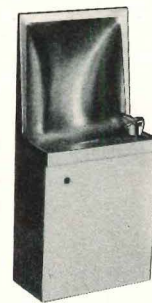
Contact your nearest Westinghouse Distributor for complete information



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You can be sure . . . if it's Westinghouse

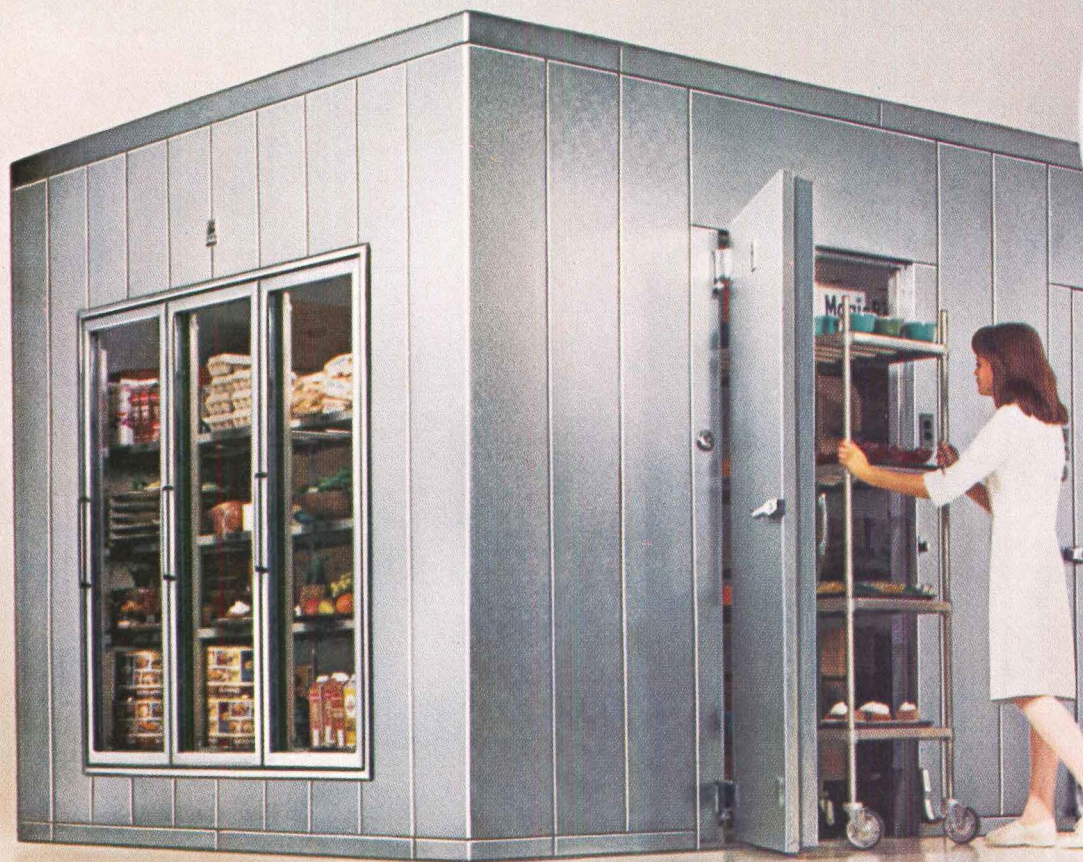


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In mass feeding for patients
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**Bally Prefabs set the standard
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Bally Walk-In Coolers and Freezers belong everywhere mass feeding takes place. They can be assembled in any size for indoor or outdoor use from standard panels insulated with four inches of foamed-in-place urethane, UL 25 low flame spread rated. Choice of stainless steel, aluminum or galvanized. Easy to enlarge . . . easy to relocate. Refrigeration system from 35°F. cooling to minus 40°F. freezing. Subject to fast depreciation and investment tax credit. (Ask your accountant.) Write for 28-page book and urethane sample. **Bally Case and Cooler, Inc., Bally, Pennsylvania 19503.**



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ADDRESS ALL CORRESPONDENCE TO DEPT. AR-11

For more data, circle 11 on inquiry card

If granite is strictly for building exteriors, why didn't someone tell Union Bank, San Francisco?

There are those that hold that *the* place for granite is the outside wall for that big, monumental building that comes along once every century. But the building owner and the management of the Union Bank of San Francisco and their architects had other ideas. They liked the warm, natural colors of granite. They were aware of how polished granite resists weather, stains and all types of traffic as no other building material is capable. They knew it requires virtually no maintenance. Doesn't fade or deteriorate. And that it would fit into their plans on a cost-in-place basis. So it was employed. On the plaza to cradle a fountain and pool. As exterior furniture. Inside it was used as facing for walls on the first floor, in heavy traffic areas. Focal points that at once blend and accent. Warm. Lasting. Beautiful.

Information on the wide variety of rich granite colors and new fabrication techniques is yours for the asking. Also information on flooring, paving and other "points-of-distinction" applications. Talk to our Customer Service Department (612-685-3621). See us in Sweet's Catalog No. 4.1/60.

For more data, circle 12 on inquiry card

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Raymond Granite Company
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Union Bank Building
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San Francisco

Owner:

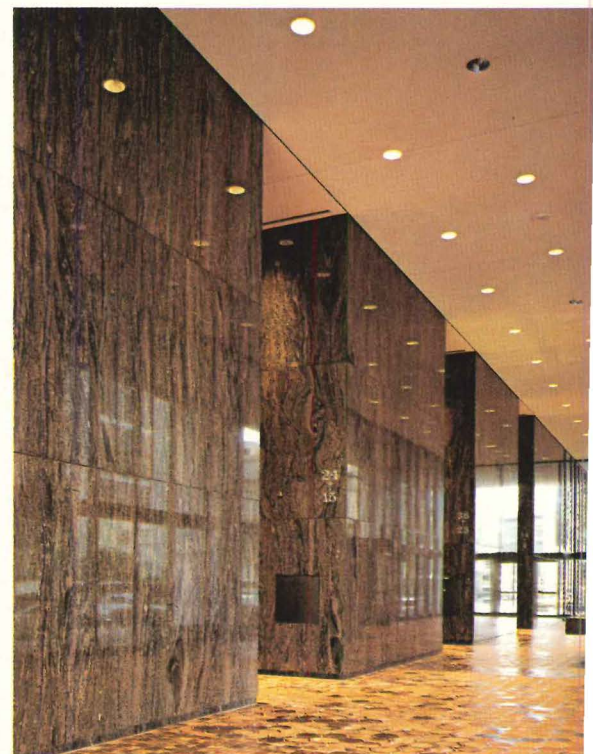
West Coast Life Insurance Co.

Architects:

Exterior and lobby
Welton Becket and Associates

Bank interior
Anthony Heinsbergen and Company

General Contractor:
Haas and Haynie Corporation

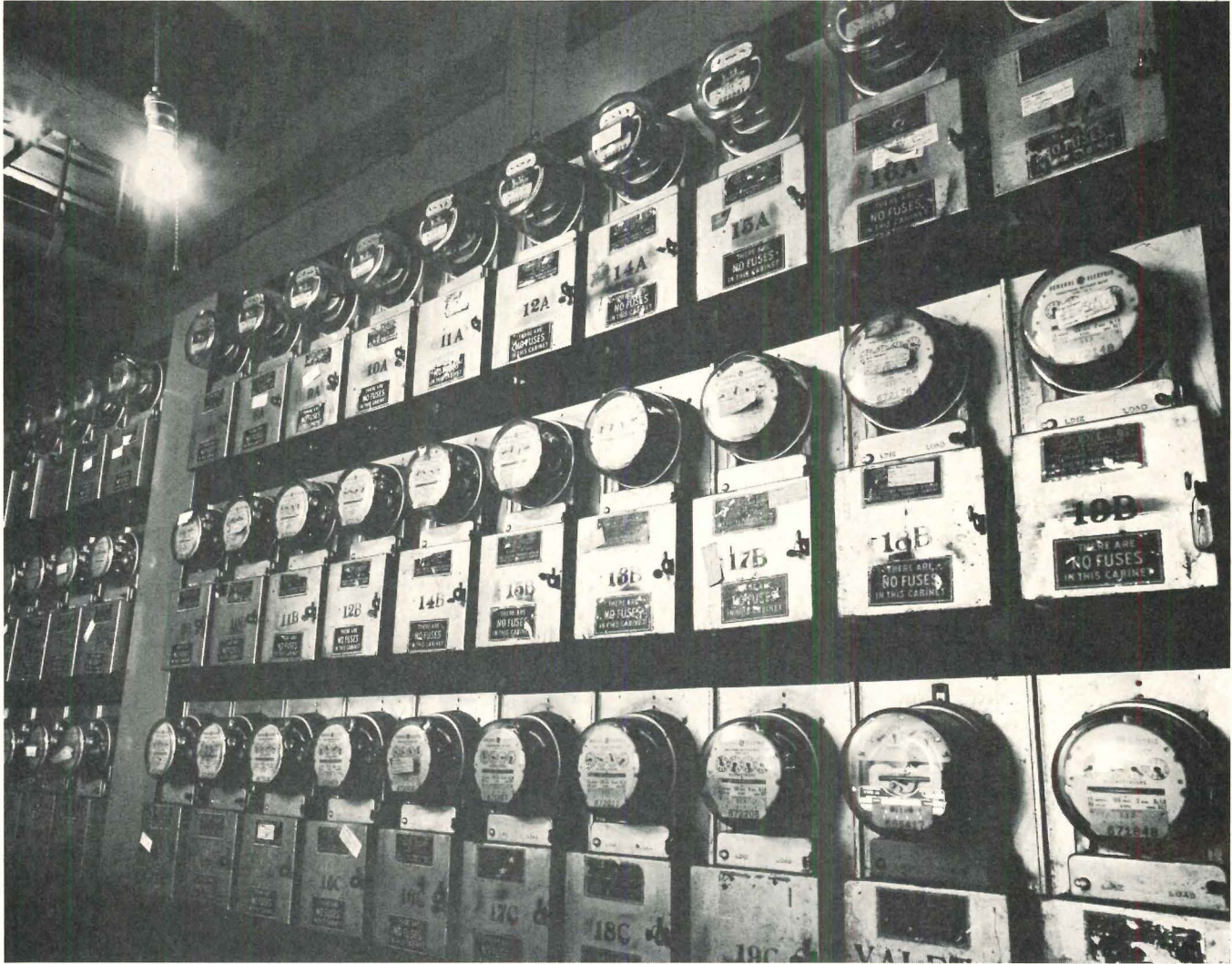




RESTAURANT
10/28

GE's new High Efficiency PTAC Zoneline™ Unit.

It can save your clients up to 21% on cooling bills over the standard Zoneline.



Through the use of over-sized Spine Fin™ heat transfer surfaces and an efficient GE rotary compressor, we have "fine-tuned" all the components of the total refrigeration system for maximum efficiency.

This, of course, helps to save energy and reduce operating costs throughout the full cooling season as well as reducing energy requirements

during the peak cooling periods.

So when you're specifying your next building with packaged terminal air conditioners, take advantage of the new General Electric High Efficiency Zoneline Unit. It's rugged and dependable too.

Just call your local GE Contract Air Conditioning Representative for more information.

GENERAL  ELECTRIC

For more data, circle 13 on inquiry card

Collector's Item



*Ronde. A boldly beautiful mood
for today. A treasure for tomorrow.
Enduring design in the Russwin
tradition. Russwin, Division of Emhart
Corporation, Berlin, Connecticut 06037.
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International Hardware.*



The Collector's Series by Russwin

For more data, circle 14 on inquiry card

The low-down on glue-down!

**"Jute is the key to
successful glue-down,
we have found from
long experience."**

... says Gary Feverston (standing),
sales manager, Don Mendenhall's
CarpeTalk, Dayton

Double Jute-backed carpet glued down in H.E.W. *facility

Don Mendenhall's CarpeTalk met rigid standards with this H.E.W. installation. Double Jute-backed carpet adhered directly to subfloor without attached or separate pad passed all tests with flying colors.

Initial cost was lower than other carpet systems. Easy mobility for wheels and casters was gained, with no pads under secretarial chairs. Overall adhesion ruled out split seams and "bubbling." Carpet's advantages in sound absorption, maintenance savings, aesthetics, insulation, comfort underfoot and improved morale were preserved.

Mr. Feverston stressed that "Jute is the key" for these and other reasons:

- Jute's mesh weave and fibrous composition accept and retain adhesive, for secure bond to subfloor or previously installed hard-surface flooring.
- Jute is over twice as thick as other no-pad back-

ings. Cracks in old flooring aren't felt underfoot or outlined. Area for sealing seam edges is double.

- Unmatched dimension stability, vital with floor cut-outs.
- Carpet comes up cleanly, intact for re-installation.
- Helps carpets otherwise qualified meet fire safety codes.
- When carpet is rolled out, some floor adhesive penetrates the Jute mesh to the primary backing, for additional tuft bind and protection against delamination.
- For "stretch" installation in selected areas, jute hooks permanently taut on tackless gripper pins.

**Write for free architectural guide
specification and editorial report**

*In new Montgomery County Administration Building in Dayton.
Architects: Brown & Head, Dayton; Edward Durell Stone, New York

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For more data, circle 15 on inquiry card

Great ideas in inner space with Westinghouse ASD Group

**Plan to cut
future renovation costs
with flexible new offices
that grow and change
with the company.**



Florida Power Corporation, St. Petersburg, Fla.

Florida Power Corporation wanted a system of efficient work stations that would blend in beautifully with their brand-new corporate headquarters. One major requirement—the system would have to be just as functional tomorrow as it is today. They chose Westinghouse ASD Group. Florida Power Corporation's offices will adapt easily and inexpensively to meet the company's changing needs.

Not only can these new offices be altered to accommodate new personnel and new job functions, they can be easily changed to reflect the newest ideas in office comfort, convenience, and esthetics.

Best of all, all the office renovations that are sure to come can be accomplished without alteration of lighting and air conditioning and without expensive work disruptions.

**Put more space
into less space.**



The College of St. Rose, Albany, N.Y.

The Education Department of the College of St. Rose appeared to be losing the office-space race. Many instructors were faced with the prospect of either sharing space in a common "pool" of desks, or seeking accommodations elsewhere in the college. The cost of new construction was deemed prohibitive, and the only space available for renovation was one 45' x 25' community room.

With Westinghouse ASD Group, planners were able to create 15 offices—with an average of 75 square feet per office—and a feeling of spaciousness that far exceeds the actual space.

Thanks to Westinghouse ASD Group, the Education Department staff is working closely together, but with more privacy than ever before.

**Create a new
work environment
that pleases all of the people
all of the time.**



Westinghouse Design Center, Pittsburgh, Pa.

The Westinghouse Design Center is a team of creative individuals who have definite ideas about how their offices should look and function. They're also quite a challenge for office planners. The answer was Westinghouse ASD Group.

Design Center personnel chose their own work surfaces, files, cabinets, shelves, drawing boards, wardrobes, tackboards, chalkboards, and accessories. They were able to arrange them to suit their personal work habits, because components can be hung at any height for any number of standup or sitdown work options. And they further personalized their offices by selecting from a wide variety of color combinations and patterns.

Today, the Westinghouse Design Center is working proof that an open office system can be totally functional, highly efficient, and esthetically beautiful. All at the same time.

Whether you're considering new construction or a renovation, look into Westinghouse ASD Group. Your new office system could be the next great idea in inner space.

Complete information is available by contacting Westinghouse, Architectural Systems Department, 4300 36th Street, S.E., Grand Rapids, Michigan 49508. Or by calling 616 949-1050. You can be sure if it's Westinghouse.

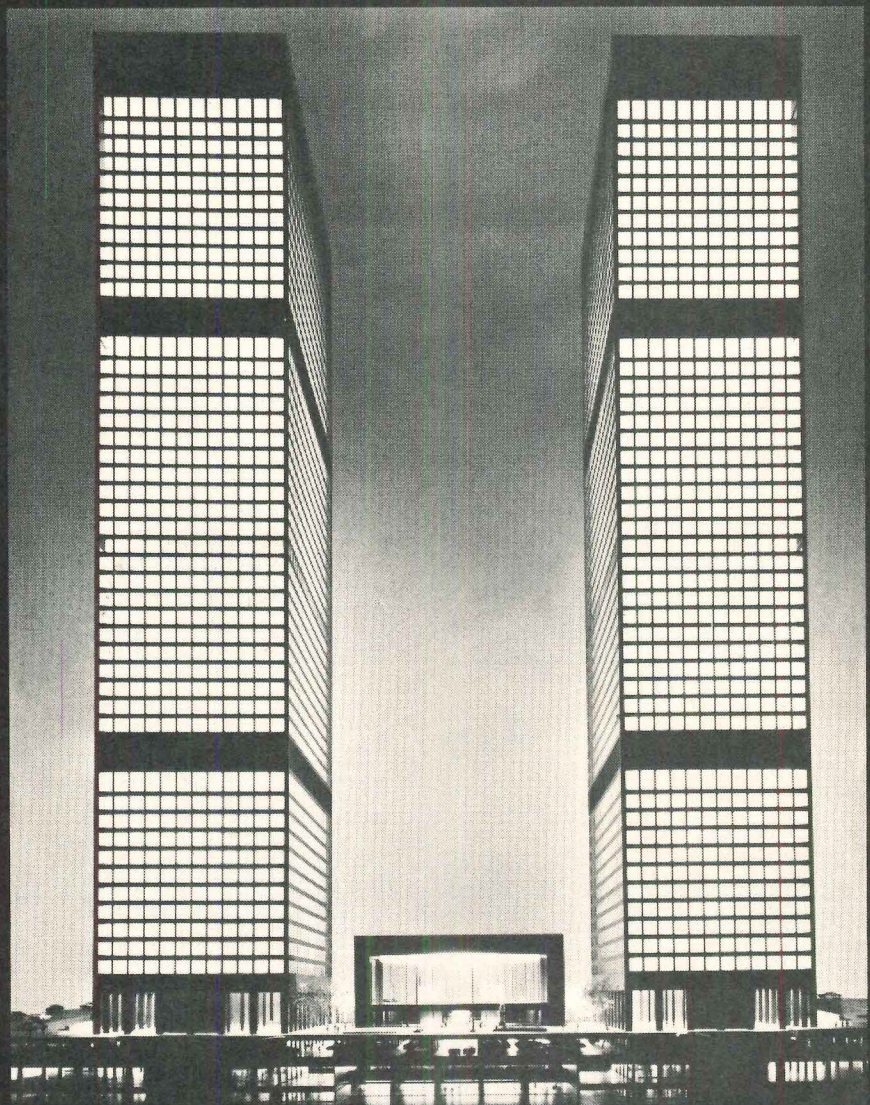


For more data, circle 16 on inquiry card

In 1958 they sealed the old Atlantic Richfield headquarters with LP[®] polysulfide polymer.



In 1971 they demanded that the new Atlantic Richfield headquarters be sealed with LP[®] polysulfide polymer.



It always makes sense to ride a winner.

Case in point: the spanking new Atlantic Richfield Plaza whose designers and builders specified that it be waterproofed with a sealant based on Thiokol's LP[®] polysulfide polymer.

The reason for their decision? A polysulfide-based sealant has proven to be a winner. In fact, it has been doing just that for the past 14 years at Atlantic Richfield's former headquarters building nearby in downtown Los Angeles.

The choice, then, was both obvious and logical. Why not go with a sealant that had successfully withstood years of punishment in an environment that often contains more than its share of corrosive pollutants?

But, at Thiokol we don't rest on past accomplishments alone. Granted, sealants based



on our polymer have performed flawlessly for more than 20 years. Yet that doesn't stop us from continuing a Seal of Security Program which aims to see that they'll last even longer in the future.

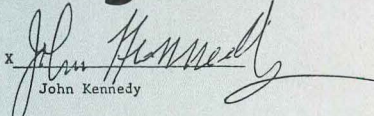
So ride with a winner. Specify a sealant based on Thiokol's polysulfide polymer. It won't let you down over the long haul.

For more information, including detailed comparisons between sealants based on Thiokol's LP[®] polysulfide and eight other kinds of sealants, write: Dan Petrino, Thiokol Chemical Corporation, P.O. Box 1296, Trenton, N.J. 08607.

Thiokol

For more data, circle 17 on inquiry card

"Leisure World[®] wanted a quality faucet that needed a minimum of maintenance. So I got them 50,000 Delta faucets!"

x 
John Kennedy

Kennedy Mechanical Contractors

Leisure World is just that. A beautiful retirement community in California that's become a new living concept in America. And for the maintenance crew and the plumbing contractor, it's even more of a leisure world. Because during the 7-year history of Leisure World, they've hardly had to repair or replace any of the community's 50,000 Delta faucets.

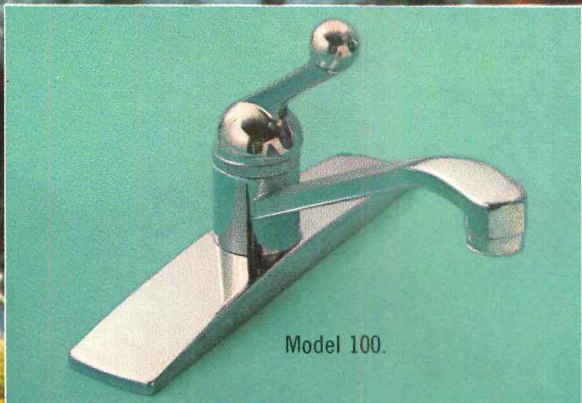
But beside its great maintenance record, Delta single handle faucets were chosen because of their ease of operation. And because they look as good as they work.

As John Kennedy said, "Seven years ago when Ross Cortese, the developer of Leisure World, awarded me the project, he said he wanted a Class A job. And with Delta faucets that's just what he got."

We can tell you even more about the full line of trouble-free Delta faucets. Just write Delta Faucet Co., a Division of Masco Corporation, Greensburg, Indiana 47240.

Delta Faucets. They're washerless.

"Leisure World is a registered trademark of the Rossmoor Corporation."



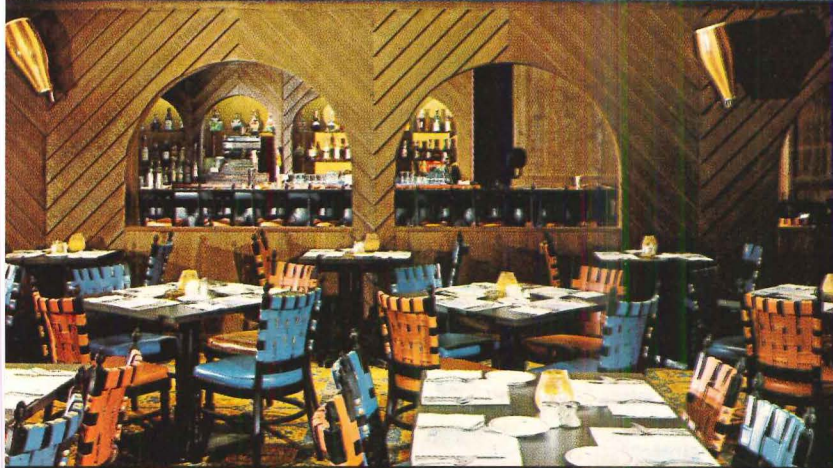
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The adaptable acousticals.

Celotex acoustical ceiling products and systems. Adaptable enough to meet design requirements of imaginative architects. Choose from an almost endless variety of tile and panel textures and patterns...from bold to subtle design effects. Select from a wide range of performance





requirements . . . NRC's to .90 . . . UL time-rated design assemblies of 1, 2 and 3 hours . . . plus Vari-Tec* luminaire lighting units with optional air-handling systems as well as acoustical control benefits. Celotex ceiling systems are created with you in mind.

Isn't it time you adopted our adaptables?

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BUILDING PRODUCTS

Celotex understands the man who builds.

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*TRADEMARK

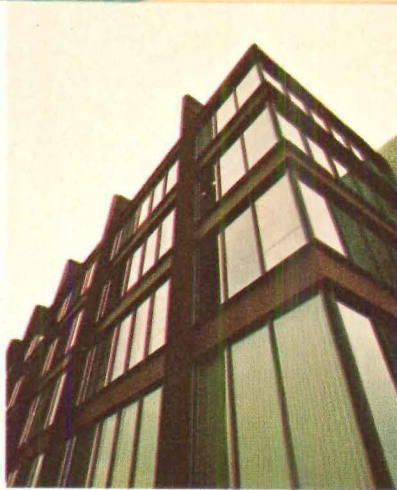


USS **Cor-Ten+fluid-filled**



In California, two separate architectural firms decided on boldly exposed USS COR-TEN Steel exteriors for two neighboring rental complexes in Newport Beach.

In order to retain the visual honesty of bare steel, conventional fire protection techniques were rejected, and both firms arrived at a solution that is gaining increased application across the country. The solution was hollow, fluid-filled columns of bare USS COR-TEN steel. Briefly, here is how the system works.



Michelson Plaza: A bold exterior and column-free first floor were two of the prime objectives for this four-story office building. Both were achieved by the use of bare fluid-filled USS COR-TEN Steel box columns and roof girders, and by suspension of the upper three floors. The girders are also filled with fluid and represent the first use of the internal fire-protection technique in a horizontal plane.

Owner: Michelson Associates, Newport Beach, Calif. **Architect:** Riley & Bissel, Newport Beach. **Structural Engineer:** Robert Lawson, Newport Beach. **Contractor:** B. H. Miller Construction Co., Newport Beach.

columns=fire protection.



Should the columns be exposed to flame, the fluid inside the columns absorbs the heat, and convection currents circulate the water solution within the closed-loop system. Heated fluid rises and cooler solution replaces it, literally giving heat the run-around.

For information on fluid-filled columns or USS COR-TEN Steel, contact a USS Construction Representative through your nearest USS Sales Office or write United States Steel, Dept. 7566, Box 86, Pittsburgh, Pa. 15230.

USS and COR-TEN are registered trademarks



Airport Business Center: This handsome, four-building complex comprises two four-story office buildings and two one-story branch banks. All exterior steel is bare USS COR-TEN Steel, complemented by bronzed-tinted glazing. Perimeter columns of all four structures are 6-inch x 4-inch hollow structural tubes. Columns in the two larger buildings are fluid-filled.

Owner: The Irvine Co., Irvine, Calif. **Architects:** Craig Ellwood Associates/James Tyler and Robert Bacon, Los Angeles. **Structural Engineer:** Norman-Epstein, Los Angeles. **Mechanical Engineer:** (Liquid-filled column system design) Paul S. Bennett, Los Angeles. **General Contractor:** J. B. Allen & Co., Anaheim. **Fabricator/Erector:** Lee & Daniel, Azusa.

 **Cor-Ten Steel**

For more data, circle 20 on inquiry card

What impact will the computer have on the management environment?

Plenty. It is now possible to produce full-color charts instantly from the computer for group viewing by management or the Board of Directors. Typical are the computer-generated charts shown below, produced by IMI for regular use by a major bank for asset and liability management. Such charts eliminate complex and bulky paperwork, shorten meeting times, and significantly improve management's understanding of critical relationships and trends.

The digital control station, TouchTronic™, an advanced IMI systems product, permits any manager to select and display charts in any desired sequence rapidly and accurately. The result: a new kind of management environment geared to the dynamic information needs of tomorrow.

IMI Management Communications Centers are produced through the teamwork of the architect and our

management communications specialists. We provide a turn-key service for architects and interior planners:

- Requirements development
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The benefit to the architect is one-source professional coordination through all phases of planning and implementation.

The benefit to the client is the most effective mating of these advanced systems to his unique communications needs, with full consideration for all architectural and aesthetic values.

Call us for a visual presentation of the projects we've completed, or write for our Photo Reference Book on *Management Communications Centers and Display and Multi-Media Systems*.

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For more data, circle 21 on inquiry card

News in brief

The Architect/Engineer Selection Bill, sponsored by Rep. Jack Brooks (D., Tex.) has been signed into law, granting legislative status to the traditional means of procuring architectural and engineering services for the Federal government. The bill instructs government agencies to select architects and engineers on the basis of their competence at a negotiated fee, eliminating the requirement of competitive bidding.

The F. W. Dodge Construction Outlook for 1973 predicts same volume of construction as last year, but a different mix. According to George A. Christie, vice president and chief economist of McGraw-Hill Information Systems Company, who prepares the forecast, the seasonally-adjusted Dodge Index (1967 = 100) will be holding steady at 160 next year; residential building will decrease about 10 per cent to \$38.7 billion, but this loss will be offset by a non-residential building increase of eight per cent, led by big increases in industrial construction, stores, shopping centers, and utility construction. Nonbuilding construction will be up 12 per cent. For details, see BPEC story on page 36; and the complete Forecast on page 69.

Omnibus housing bill was killed in the House Rules Committee. By a vote of 9-5, the Committee deferred action on the 322-page housing and urban development bill of 1972. Congress then passed simple temporary extensions for essential programs. More details on page 37.

HUD will spend about \$7.1 million on research and development in current fiscal year, on 45 new and continuing contracts. Some of the most intriguing: a contract for identifying ways to transfer space, defense, and atomic energy technology to housing; a look at packaged home sewage-treatment systems; continuing optimum-value-engineered systems and components; the development of early-warning fire-alarm devices; use of polymer concrete in single-family housing.

GSA changes HVAC specs on some large projects. The Public Building Service has developed new guides for open-plan interior spaces involving acoustics, lighting, and air conditioning. Goal is more successful acoustical environment in open office space. See page 37 for more details.

The Commission on Chicago Historical and Architectural Landmarks voted September 11 to proceed toward designation of the Marquette Building at 140 S. Dearborn as a Chicago Landmark. A full study of the building, built in 1895 by William Holabird and Martin Roche, was called for now that the structure has become a "threatened building" due to redevelopment. The 17-story Marquette is considered an excellent example of the Chicago School.

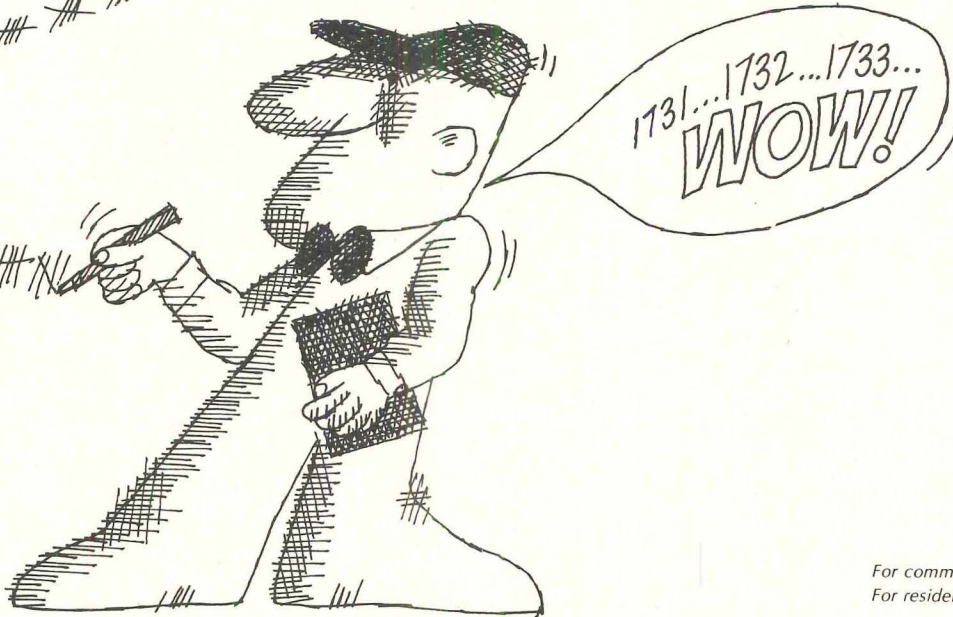
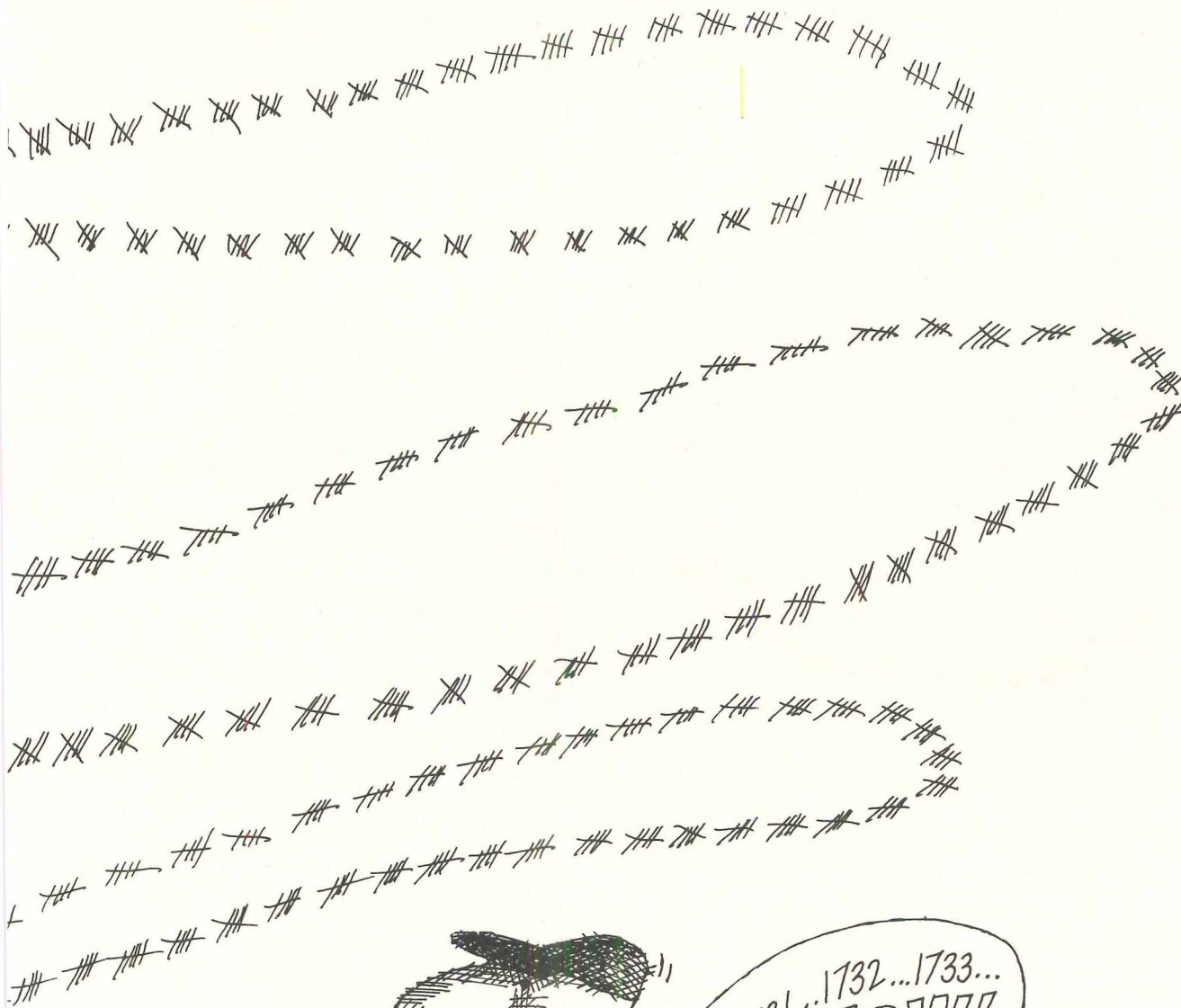
The American Institute of Planners has named John R. Joyner as its new Executive Director. Mr. Joyner comes to the Institute from the National League of Cities/U.S. Conference of Mayors where he was Deputy Director of Urban Services. The 7,000-member Institute of Planners is the national professional society of urban and regional planners.

Rex Whitaker Allen, San Francisco architect, and past president of the AIA, was the American Institute of Architects representative at the Second International Conference on Architectural Registration in Dubrovnik, Yugoslavia in October.

A competition to select the design and architect for a \$3 million senior citizen housing complex is open to more than 3,200 members of the New York State Association of Architects. Believed to be the first competition of this kind sponsored by an association of the American Institute of Architects, the project is slated for construction in downtown Utica, New York. Results of the competition will be announced in March 1973. Cash awards will be given to the second and third place winners, with a cash award and the contract going to the first prize winner. An information manual is available from the New York State Association of Architects, 441 Lexington Ave., New York, N.Y. 10017. Phone (212) 697-8866.

Following closely an American Institute of Architects Award presented to Rochester Institute of Technology in May, New York's highest award for architecture was presented to RIT by the New York State Association of Architects at its October convention in Rochester. It will be the first year for the award to be presented annually for excellence in design of related buildings. Coordinating architect for the project was Lawrence B. Anderson of Anderson, Beckwith and Haible of Boston, who with Dan Kiley, landscape architect, recruited the following architects: Edward Larrabee Barnes, Kevin Roche and John Dinkeloo, Hugh Stubbins, and Harry M. Weese for respective buildings on the campus.

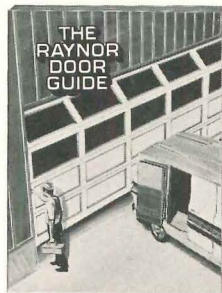
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For commercial/industrial data, circle 26 on inquiry card
 For residential data, circle 27 on inquiry card

**Raynor offers you over 1,733 choices in garage doors.
 Residential, Commercial and Industrial.**

In every popular garage door style, size and material... and in a price range to match your budget. Ribbed steel... Flush steel... Insulated steel... Aluminum... Fiberglass... Paneled wood... Hollow-core flush wood... Rolling steel doors... Fire curtain doors... Aircraft hangar doors... Service station doors... whew! *The point is*, we can offer the doors you need to attractively and securely close *any opening*. And we back up every Raynor overhead-type door with a *registration number permanently recorded on data film* for positive identification and quick replacement of any damaged parts... today, tomorrow or twenty years from now. Send for one of our handy garage door reference guides to get all the specifications. Raynor... we build better doors.



Check the handy garage door reference guide you'd like to receive, and mail to:

**RAYNOR MANUFACTURING COMPANY
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- Residential garage door guide
- Commercial/Industrial garage door guide

Name _____
 Title _____
 Firm _____
 Address _____
 City _____ State _____ Zip _____





1



2



3



4

5



Arthur Lavigne

BPEC MEETING DRAWS INDUSTRY EXECUTIVES TO WASHINGTON

The 33rd Building Products Executive Conference, sponsored by McGraw-Hill Information Systems Company, drew a top-level audience of construction-industry executives to Washington. Featured speakers included Deputy Treasury Secretary Charles Walker, Russell Train, chairman of the Council on Environmental Quality (1), Price Commissioner J. Wilson Newman, HUD Deputy Secretary Clifford Graves, Robert Georgine of AFL-CIO's Building and Construction Trades Department, Roger Blough of the Construction Users Anti-Inflation Roundtable, John R. Baldwin, president of Producers' Council, and (2) AIA's Archibald Rogers. Program chairman was Wallace F. Traendly (3), group president of McGraw-Hill Publications Company and McGraw-Hill Information Systems Company. George Christie (4), vice president and chief economist of McGraw-Hill Information Systems Company delivered his 1973 F. W. Dodge Construction Outlook in the final presentation of the day. Detailed article on the forecast begins on page 69. In brief:

Contracting for new construction work in 1973 will total \$88.5 billion, the same as the record level expected this year, but will have a significantly different makeup. Christie says that residential building will come off its two-year boom, setting back about 10 per cent, to a contract value of \$38.7 billion. The offsetting stimulus will come from the much-improved business climate, which will have a major impact on industrial construction, stores, shopping centers, and electric power facilities.

ARCHITECTS AND ENGINEERS: SOME NEW LEGAL DEFINITIONS

The Alabama State Supreme Court has written further legal history concerning the old question of professional boundaries in architecture and engineering. A registered engineer, Edward A. Jones, Jr., was accused by the Alabama State Board for Registration of

Architects of representing himself as an architect. He claimed he had not done that, although he had prepared architectural plans.

The lengthy court opinion said the difference in practice between architects and engineers is "... to a large degree esoteric. Cross examination, we think, showed that the function of the two professions so overlap that neither can be satisfactorily defined in a way to draw a clear line of demarcation between the two. Certainly our statutes do not do so." The Supreme Court found that statements by expert witnesses clearly expressed their personal opinions and were not related to statutory provisions. The question was confused by present Alabama statute definitions, which state that "architects may practice engineering and professional engineers may practice architecture if the practice of the allied profession is incidental to the practice of the profession for which the practitioner has been registered." The architectural registration board had argued that since the law recognized architecture and engineering as distinct professions by separate statutory reference, "this recognition cannot be destroyed because each may practice the other if incidental to the practice of one."

But the courts did not see it this way and ruled against the state board. The acts of Jones were held to be within the "allowable scope" of his practice of engineering.

MASS TRANSIT VS. NEW ROADS: BETWEEN ROUNDS ON CAPITOL HILL

Whether to pave more of the country or divert some of that money to mass transit: that is still the question in Washington as the ninety-second Congress adjourned without deciding the battle for either side.

The fight erupted last March when Transportation Secretary John A. Volpe proposed that urban areas be allowed to use their shares of the Highway Trust Fund to buy buses and build commuter rail systems.

Now with the Interstate System nearly complete, the idea to tap the fund for mass transit has gained in popularity with many Administration officials, but not with powerful highway proponents in the House Public Works Committee and contractor groups.

Unable to get a transit provision added to this year's trust fund bill, Administration forces managed to have the entire bill killed by requesting Republicans to not answer the call for a quorum on the House floor.

Forced to adjourn without a vote, Congress must again take up a highway bill next year. At that time mass transit advocates believe the highway groups—in order to get some money for roads—will be willing to accept a bill that will let the trust fund be tapped for mass transit.

Incidentally, the Department of Transportation has funded a \$4 million research program to involve the nation's universities in solution of transportation problems. DOT estimates the recent TRANSPRO '72 show at Dulles Airport will eventually generate \$200 million in sales of equipment shown.

ARCHITECTS UNDER FIRE FROM FIRE PREVENTION COMMISSION

Richard E. Bland, chairman of the National Commission on Fire Prevention and Control has said that architects, with rare exception, are unconcerned about designing for fire protection. He described them as being "largely indifferent to providing a satisfactory level of protection for life safety in buildings either through ignorance or for economic considerations."

His testimony came before a special committee session convened by Chairman Warren G. Magnuson (D-Wash.), to hear of the group's progress and to begin planning a comprehensive prevention and control program for the 93rd Congress which convenes in January. Bland said to the committee: "Most architects find it easier and more acceptable to clients

to design to the minimal life safety standards of the building codes. Existing codes need concentrated review for applicable engineering principles and to assure allowance for cost trade-offs that recognize a safe total building design.

In turn, building owners and occupants see fire either as something which will never happen to them or as a risk which they can tolerate because fire prevention measures are costly. Physiological researchers and product engineers are largely unaware of the toxicological effects of products when consumed in a fire."

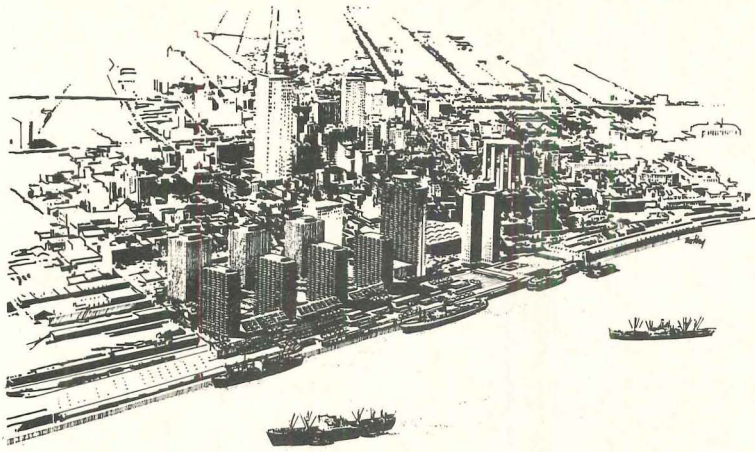
Bland said his Commission's study so far has convinced the members that capabilities exist to bring about a significant reduction in life and property losses. The Commission may recommend that a high Federal office be established to provide a national fire-safety clearing house.

DUBUFFET SCULPTURE UNVEILED ON CHASE MANHATTAN PLAZA

A monumental, 42-foot high sculpture, "Group of Four Trees," by Jean Dubuffet was recently installed at 1 Chase Manhattan Plaza in New York, provided by David Rockefeller to mark his 25th anniversary on Wall Street.

It is M. Dubuffet's largest outdoor work and weighs 25 tons. The construction is layers of fiberglass and aluminium and plastic, over a substructure of heavy steel.

The sculpture's installation climaxes more than a decade's search for the large public sculpture on the plaza, called for in Skidmore, Owings and Merrill's original design of the Chase Manhattan headquarters



6



7

6
**RIVERFRONT DEVELOPMENT
 PROPOSED FOR NEW ORLEANS**

A 23-acre development on the Mississippi River near downtown New Orleans—adjacent to the International Trade Mart—is in the initial phase with the architectural firms of Neuhaus and Taylor and Hellmuth, Obata & Kassabaum in charge of development of a master plan. Henry C. Beck Company has been named construction manager.

The first phase is expected to include a 1,200-room hotel, condominiums and a major retail complex. Cost of the total project is estimated at \$150 million.

**GSA SETS NEW PERFORMANCE
 SPECS FOR INTERIOR,
 OPEN-PLAN SPACES**

A new biddable non-proprietary performance specification—covering acoustical, lighting and air handling elements of ceiling systems—has been developed by the Public Buildings Service and is being immediately applied to three large projects under construction in Wash., D.C. It will be used in bidding the scores of purchase-contract projects to be marketed in coming months. It already is in the bid packages of the first 11 of these which are already out.

The move fits in with PBS' determination to innovate in public building design and construction. Written largely from the performance standpoint with "a minimum of necessary prescriptive clauses," the document leaves considerable flexibility for proposers and PBS hopes for lively subsystem response.

The decision to develop and apply a new approach stemmed from agency's conviction that proper speech privacy in open spaces could not be achieved with traditional specs. PBS stated two design elements it says are necessary to furnish successful acoustical environment in open office space: an acoustical ceiling system which absorbs high percentage of sound directed toward it and masking sound system (NC background distri-

bution system) with sound source hidden, which provide just enough ambient noise level in office to mask distracting speech, but not enough to be noticeable to listeners. It feels the new spec achieves this.

Three large projects underway in Washington on which the agency is switching to new specification: The FBI building, The Department of Labor building, and the South Portal structure for HEW occupancy. Also applying immediately to these 11 purchase-contract projects currently on market: Court House and Federal Office buildings for New York, Syracuse, San Juan, Akron, Lincoln, Neb., New Orleans, and San Diego; and Federal Office Buildings for Honolulu, Portland, Ore., and Indianapolis.

Details can be obtained from PBS, Wash. D.C. or GSA field offices. 1-PBS Tentative Guide Specification.

**EXISTING HOUSING FUNDS
 EXTENDED TO JUNE, 1973**

"The housing bill nobody liked"—an enormous omnibus measure that funded all of HUD and all of FHA, among other things—was killed by a House Rules Committee vote just before adjournment. Two years of planning went out the window, and the massive Federal housing pipeline was suddenly without any money at all, temporarily. Congress quickly passed a simple resolution continuing intact all previous Federal programs under the bill until June of 1973, and President Nixon signed it. A new bill must be enacted by the 93rd Congress before that date, and legislators will presumably have to deal with the HUD 236 program scandals that helped kill the first legislation. The 236 program had been left intact. FHA is now free to write new mortgage insurance and insure property improvement loans on conventional properties and mobile homes.

7
**HOUSING STUDY SHOWS
 HIGH-RISE EQUALS HIGH CRIME**

A three-year study by the New York University Institute of Planning and Housing has produced evidence that there is a direct relationship between building height and crime rates in public housing.

The high-rise elevator buildings with numerous floors of double-loaded corridors serving many apartments make it difficult for residents to tell neighbors from strangers, according to the study. The crime rate is more than twice that in walk-ups.

In three-floor walk-up buildings, the study found there were 30 serious crimes for every thousand families. In buildings of six or seven floors, there were 41 serious crimes and in 13- to 30-floor buildings, 68 crimes.

However, the study concluded that even in high-rise buildings, crime can be curtailed through design, by organizing a setting to maximize what is called "defensible space."

For instance, in the high-rise apartment tower, the only defensible space is the apartment itself; everything else is "a no-man's land," neither private nor public. Unlike well-peopled and continually-surveyed streets, these interior areas are sparsely used and impossible to survey.

By contrast, in walk-up buildings, where few families share the entry, the interior public space becomes an extension of the home, as does the street. Mothers looking out the window to watch their children at play can also keep watch over the street life. The "defensible space" is extended.

The project, funded by Federal and New York City agencies, was under the direction of architect Oscar Newman. The results have been published in a book, "Defensible Space," published by Macmillan.

As evidence of the study's conclusions, the crime rate in a test area of the Bronx is nearly six times lower than the year before, after modifications (before is shown top, after shown below) to give the residents a proprietary sense over the grounds.

**SUBMISSIONS INVITED FOR
 ARCHITECTURAL FILM FESTIVAL**

Columbia University School of Architecture is sponsoring an Architecture/Planning/Technology Film Festival to be held at the University during April 1973, and professional and amateur 16 mm films are being sought pertaining to any aspect of, naturally, Architecture, Planning or Architectural Technology.

Films may deal with historic or contemporary architecture; landscape or environmental issues; the human condition as affected by the built environment; cities, in whole or part, their evolution and dissolution; the importance of building technology. There are no constraints on technique, but preferably, the films should be between five and thirty minutes long, with or without sound (sound may be magnetic or optical).

First prize is \$2,000.00, with \$1,000.00 going to the second place winner and \$500.00 each to the third and fourth place winners. Films selected by the jury of professionals and film makers will be retained by the School of Architecture to be copied (with the permission of the entrant) for a film lending library.

Anyone wishing to enter films for consideration should provide the following information by December 1, 1972:

1. Film title
2. Film subject matter briefly described
3. Name of individual or group who made the film
4. Length of film
5. Sound (type) or no sound
6. Color or black and white

The films themselves must be received no later than January 1, 1973. All correspondence should be directed to the Dean, School of Architecture, Avery Hall, Columbia University, New York, New York 10027.



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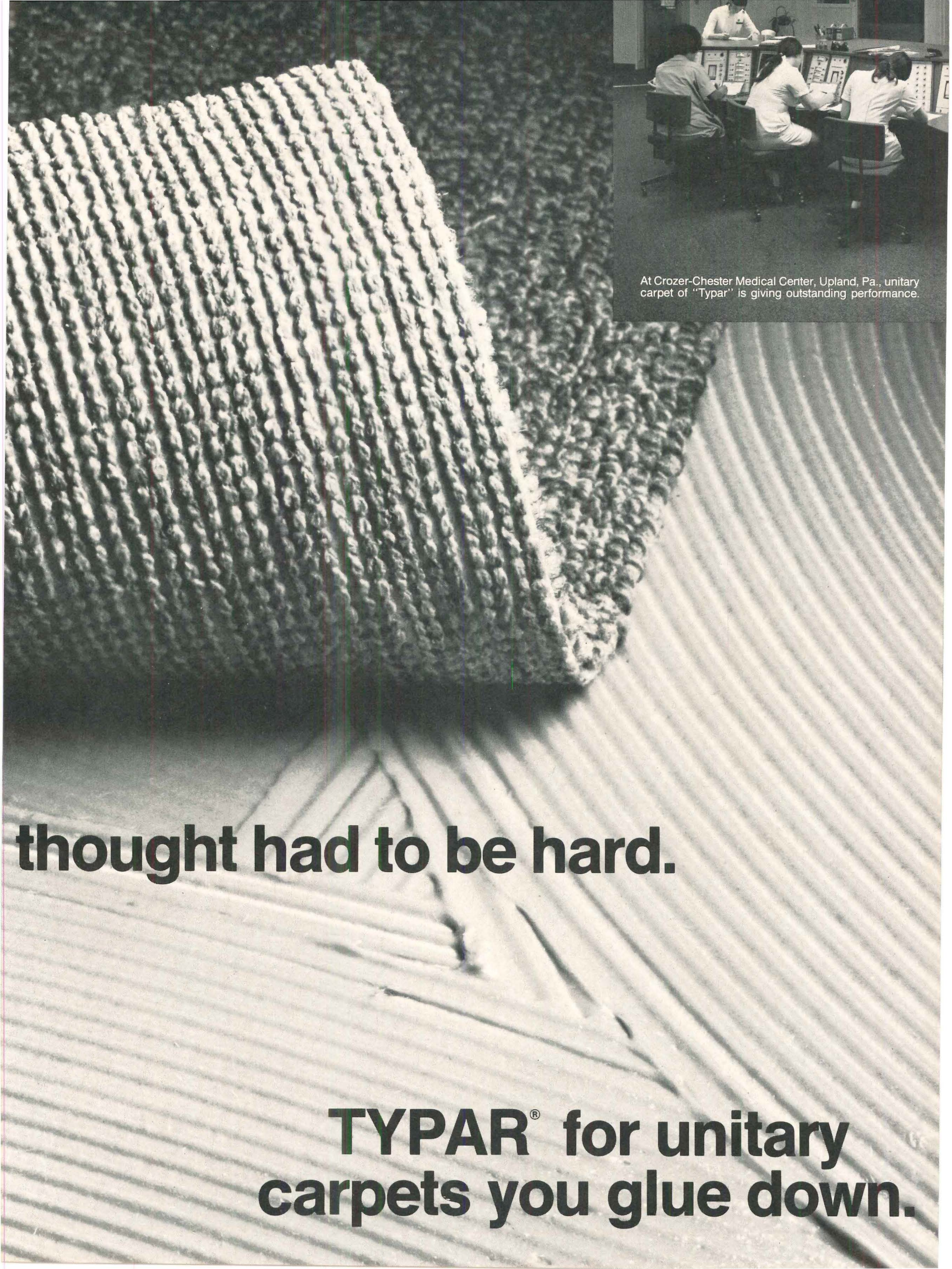
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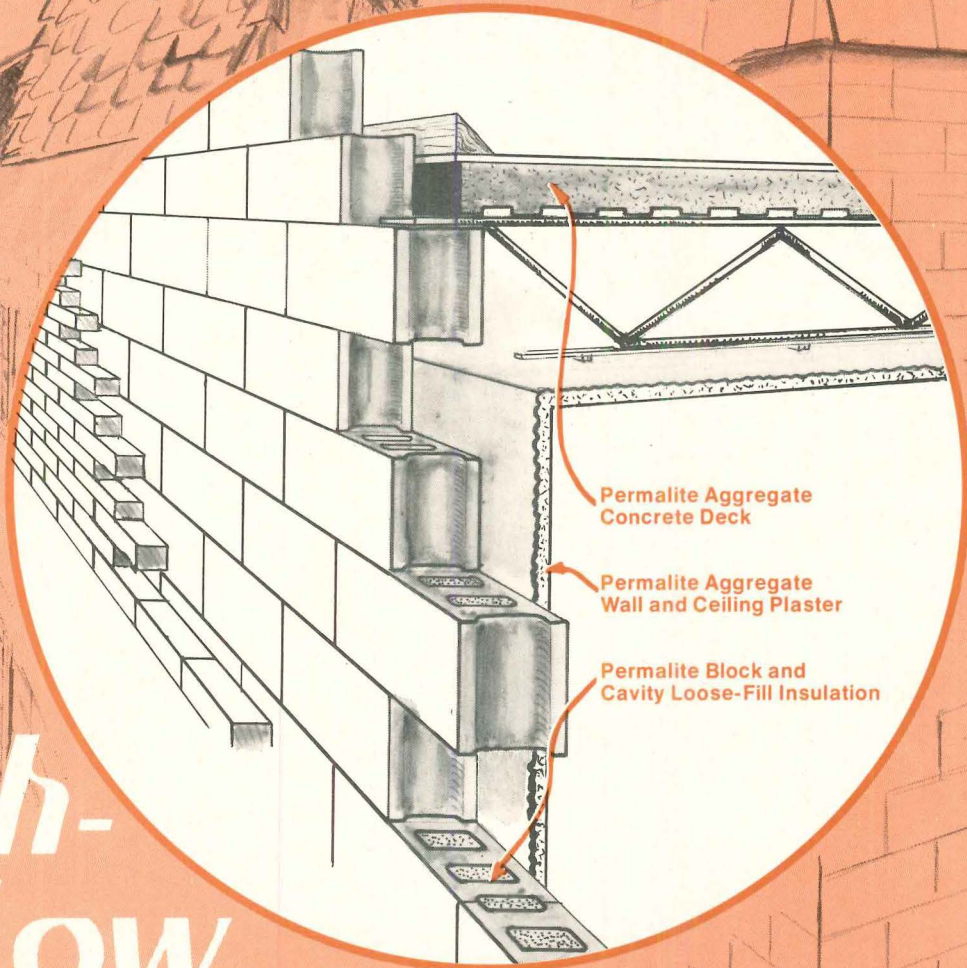


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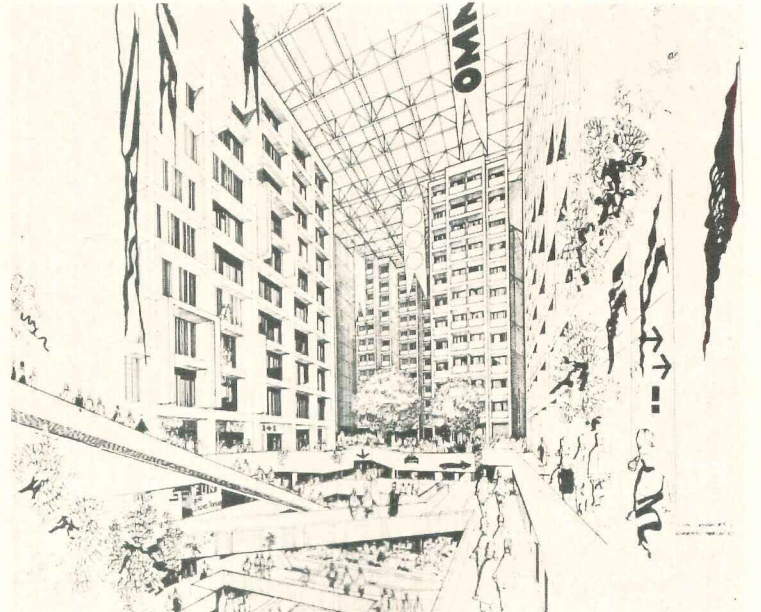
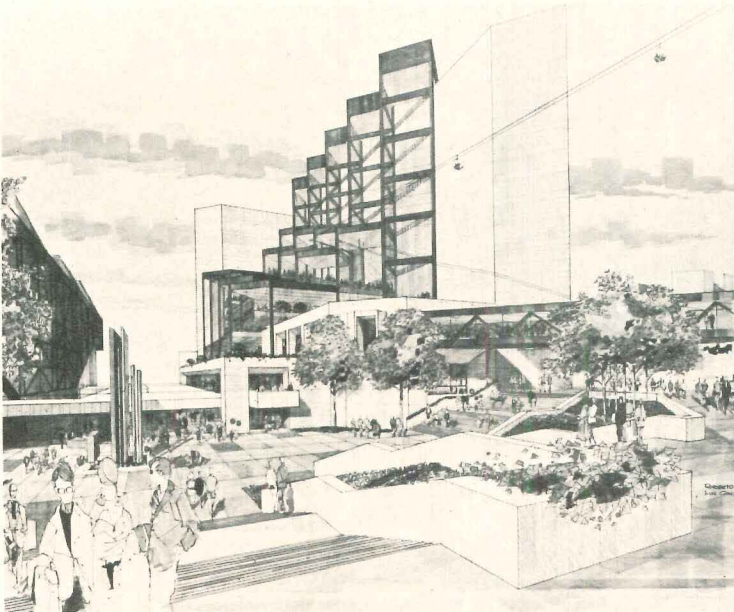
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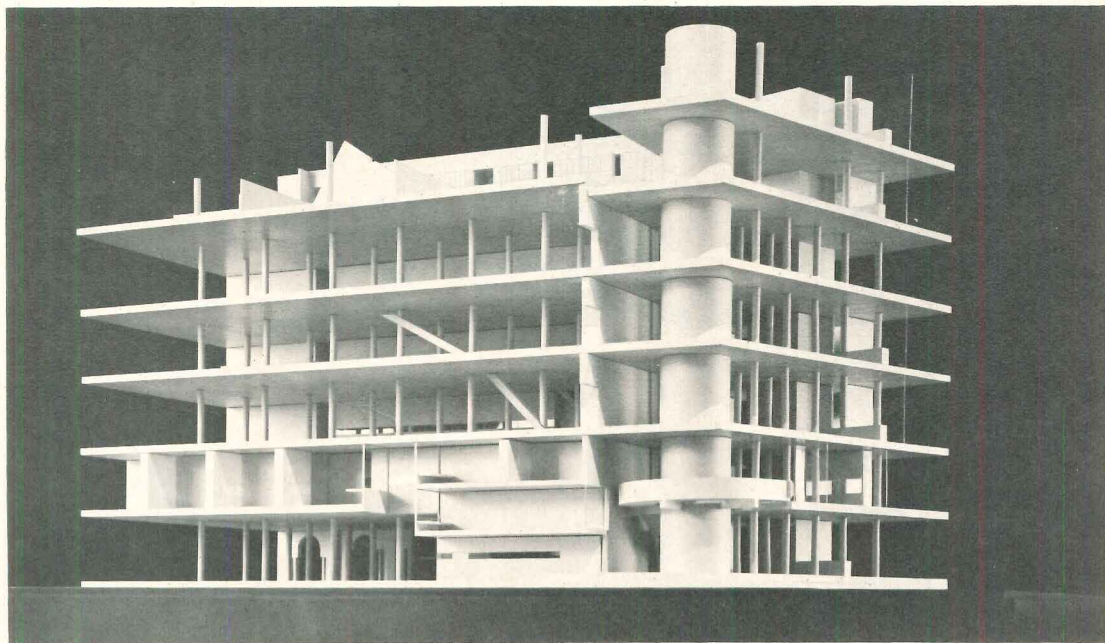


Omni International, a fourteen-story structure (left, drawn into place) to be built on six acres of land in downtown Atlanta, is said to be the first multi-use structure of its kind built in the United States and the forerunner of similar structures in other key cities in the Southeast. The \$65 million structure will adjoin The Omni, Atlanta's new indoor sports and entertainment center and include a 500-room hotel, 600,000 square feet of office space, a trade pavilion, 10 movie theaters, shops, recreation facilities and restaurants. The project will encompass 34 million

cubic feet of space. Shown lower left is the outside terrace and covered walkway connecting The Omni on the left and the megastructure's trade pavilion on the right. In the photo directly below is the great inner court of the hotel. Fourteen stories high, the space comprises terraces, plazas and walkways located a short distance from the principal office buildings and shops of downtown Atlanta. Architects for the project are Thompson, Ventulett and Stainback, Inc. International City Corporation is the developer of Omni International.



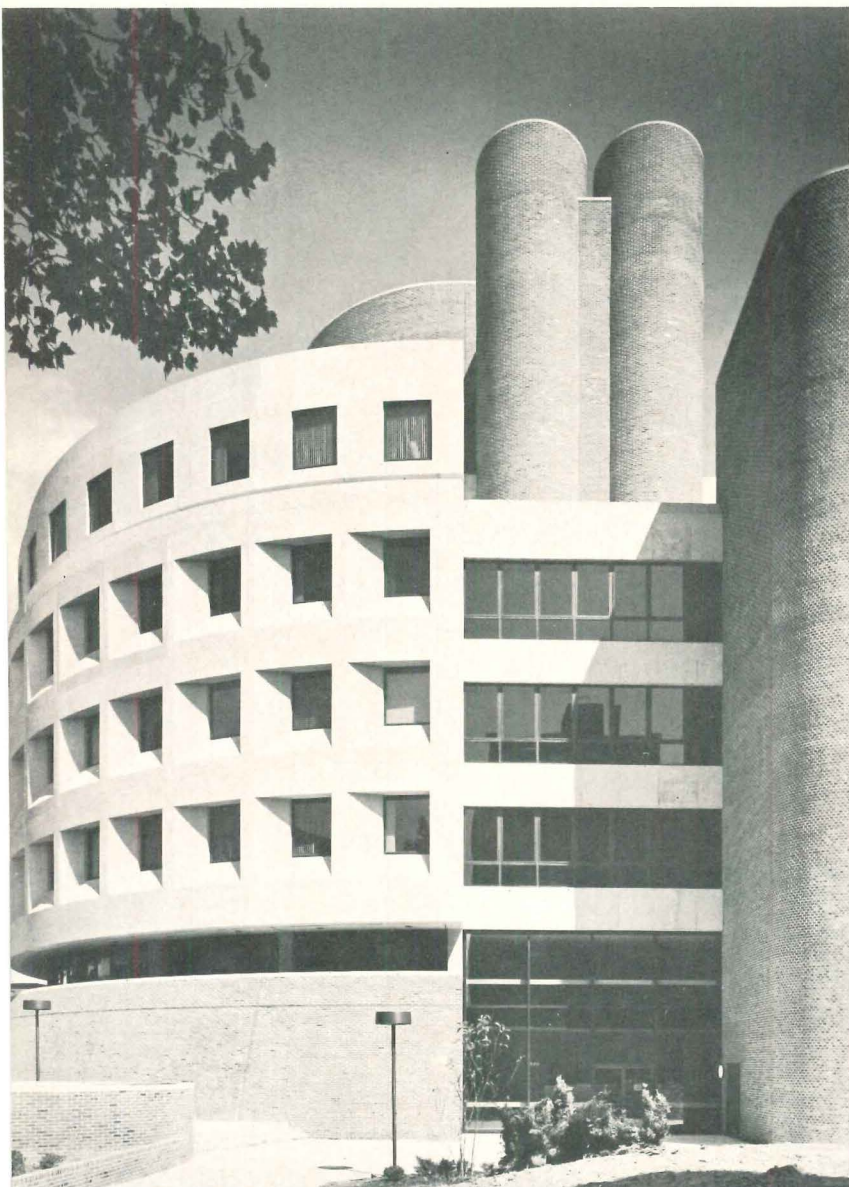
The Foundation Building (below) at Cooper Union in New York is undergoing interior renovation to suit the present needs of the School of Art and Architecture, while meeting present building codes. The new interior (right) will include restoration of the round elevator shown on the right of the model. Architect on the project is John Hejduk.





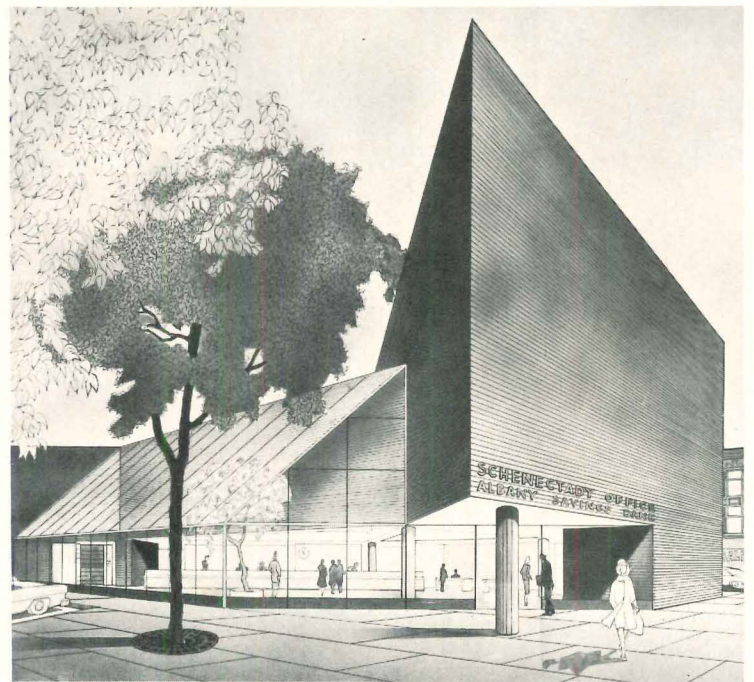
Wayne Thom

Denver Technological Center, a planned working-living complex in suburban Denver, was officially dedicated in October with completion of the five buildings shown grouped on top of a common plaza. When completed in 1990, the Center's 850 acres will contain a "town center" complex providing office and research space for approximately 40,000 persons, housing for 30,000, recreational facilities, cultural centers, and religious and academic facilities necessary to support a self-contained city. To date, \$43 million have been invested in 23 office structures housing 2,600 people. The Center is being designed by the architectural and planning firm of Carl A. Worthington and Associates.



The Scheie Eye Institute recently dedicated in Philadelphia and designed by Vincent G. Kling is a six-story circular structure providing space for research in blindness, teaching of future eye doctors, and treatment of up to 50,000 persons per year. On the treatment floors, areas that serve the needs of the patients are situated in the center of the circle, while patients occupy the perimeter. At the center of the ground floor, in a two-story-high

court, is the patients' waiting room. Encircling the court at the second-floor level are the operating rooms, recovery area and preoperative facilities. The structural system is reinforced concrete poured-in-place, with a coffered pan floor system. Precast panels containing the windows form the exterior of the upper floors, with brick used on mechanical and elevator towers in addition to the exterior on the lower two floors.

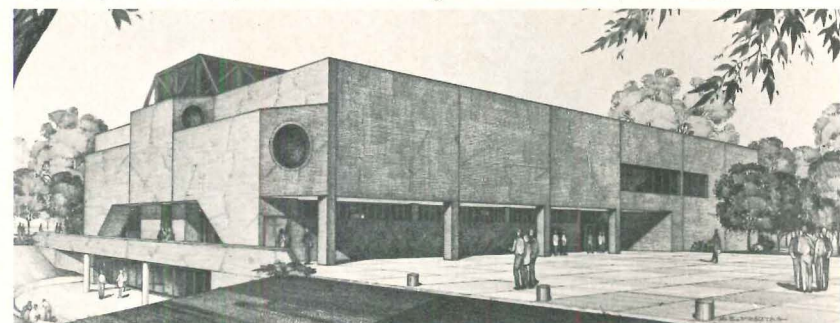


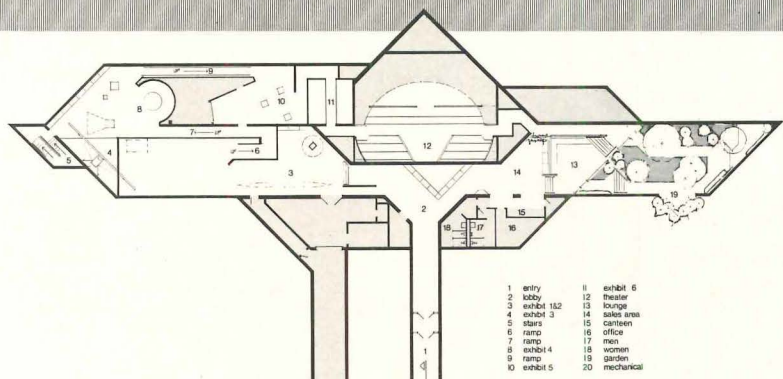
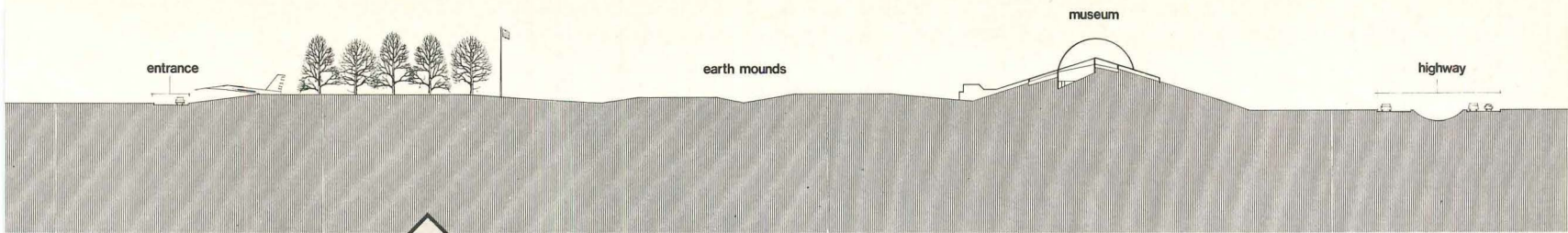
The Schenectady Office/Albany Savings Bank in Schenectady, New York is now under construction, with an anticipated completion date of fall 1973. The main design features, including a 30-foot-high glass lean-to, are meant to bring the public and the

main banking areas close together. The idea is further stated in the air curtain entrance. Offices and community rooms on the upper floors are arranged around a three-story balconied light well. Architects are Feibes & Schmitt.

The Olmsted Center at Drake University in Des Moines, Iowa is now under construction. When completed in early 1974, the building will provide 66,000 square feet of space for edu-

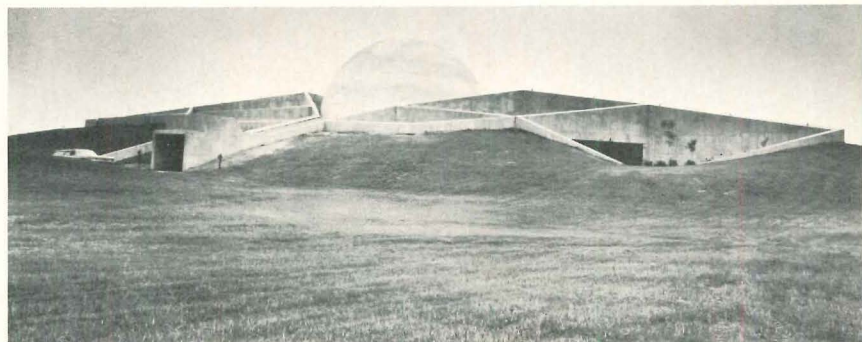
cational, cultural, social and recreational programs. Harry Weese & Associates of Chicago designed the building which is a fast-track project being built at a cost of \$4.1 million.





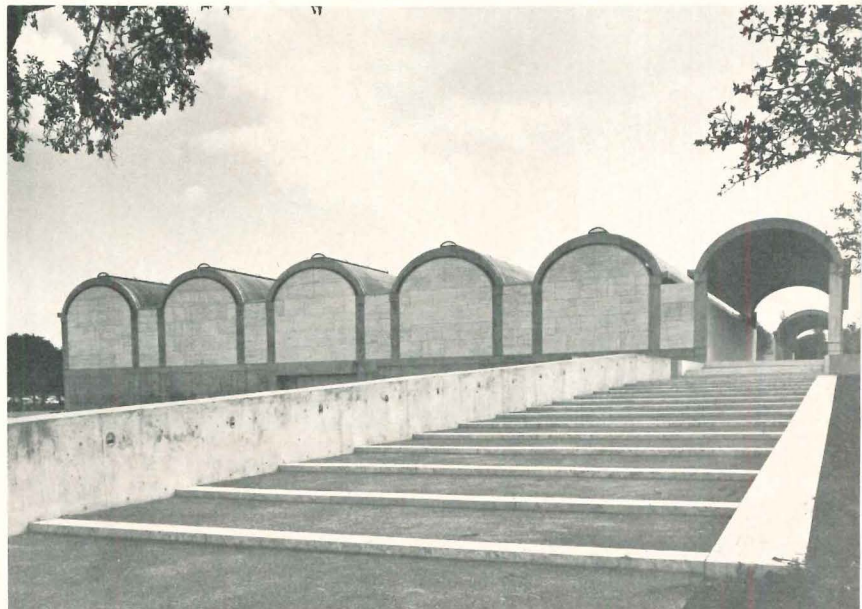
The Neil Armstrong Air and Space Museum in Wapakoneta, Ohio is a poured, board-formed concrete structure with earth mounded around its exterior to the roof line. The building is crowned by a dome made of reinforced latex-modified concrete

molded on a styrofoam form. Inside the building, which has 14,000 square feet, unusual shapes and vistas on many different floor levels relieve the interior monotony of a single floor. Visitors may peer into pits, walk beneath suspended aircraft and space



hardware, and wind their way through tunnels and across catwalks, viewing projected displays. The climax of the tour is the theater where images are projected on a 180-degree surface. The building was designed by Unihab, Inc., of Cambridge, Massachusetts.

Bob Wharton

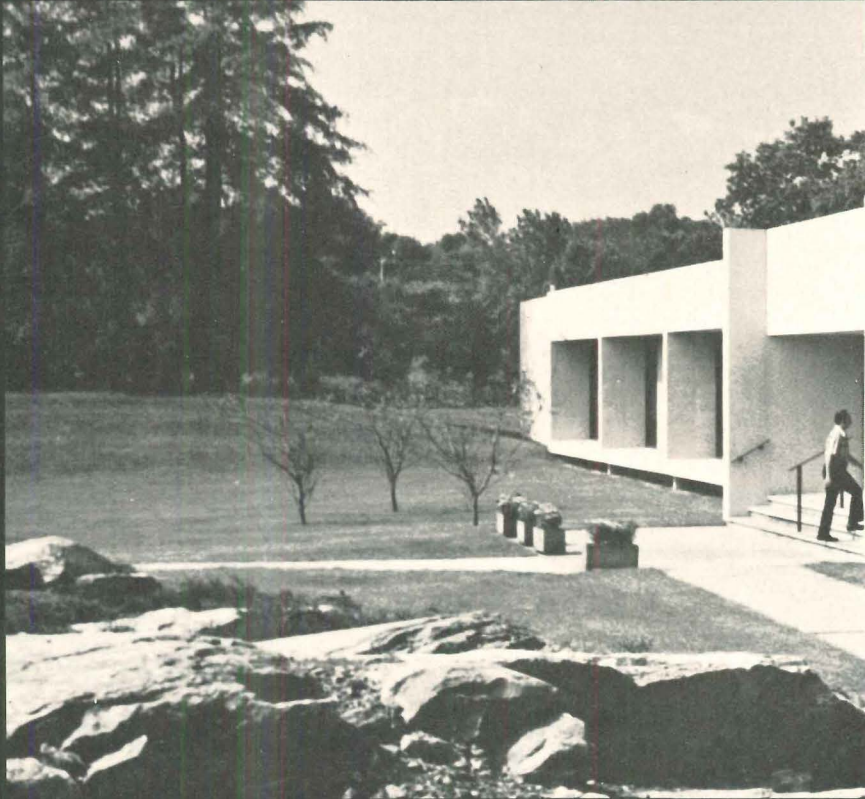
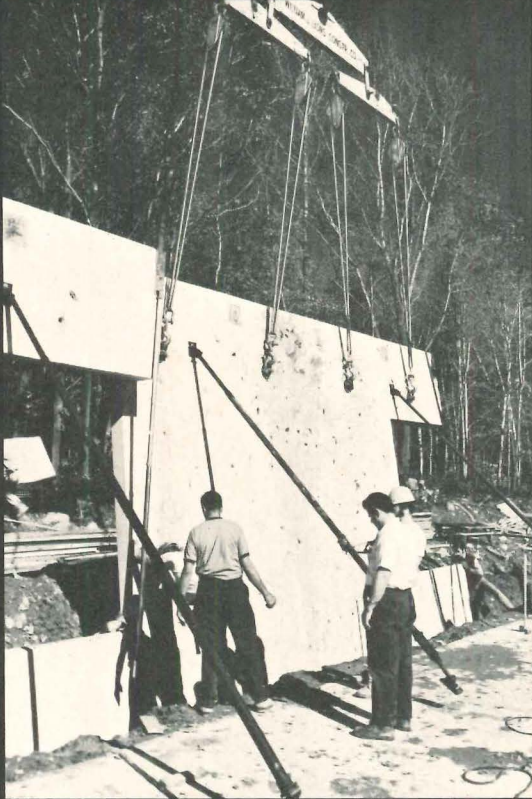


The Kimbell Art Museum by Louis I. Kahn, associated with Preston M. Geren, opened last month in Fort Worth, Texas. Situated in a 9½-acre park, the \$6.5 million building is primarily concrete construction with post-tensioned vaults that are less than a semi-circle. The cycloid vaults permit uninterrupted floor space. Three-foot wide slits that run the length of each cycloid admit natural light, diffused through special filters to protect the art (lower left). The main entrance, a large plaza with trees (upper left) is flanked by two open cycloids (right) which face reflecting pools. The plaza opens into the museum's upper level, where 30,000 square feet of galleries are located, along with the reception area, auditorium, research library and bookstore. Patios and sculpture courts are spaced throughout the building. Other materials used in construction are travertine marble, stainless steel, wood and lead.



Bob Wharton

REINFORCED CONCRETE TILT-UP SPEED.



Dow Corning Lubricants Plant, Trumbull, Connecticut.
Architects/Engineers: Fletcher-Thompson, Inc., Bridgeport, Connecticut.
Contractor: W. J. Megin, Inc., Naugatuck, Connecticut.

Why the upswing in tilt-up?

More and more architects and builders are choosing tilt-up construction for a wide range of commercial, industrial, and institutional projects. Tilt-up construction delivers the advantages of speed, economy, and low maintenance. And now, the universal availability of economical Grade 60 rebar and lightweight aggregate concrete increase that inherent economy even more. Just one example proves our point in dramatic fashion: the Dow Corning Lubricants Plant in Trumbull, Connecticut.

Exit the column.

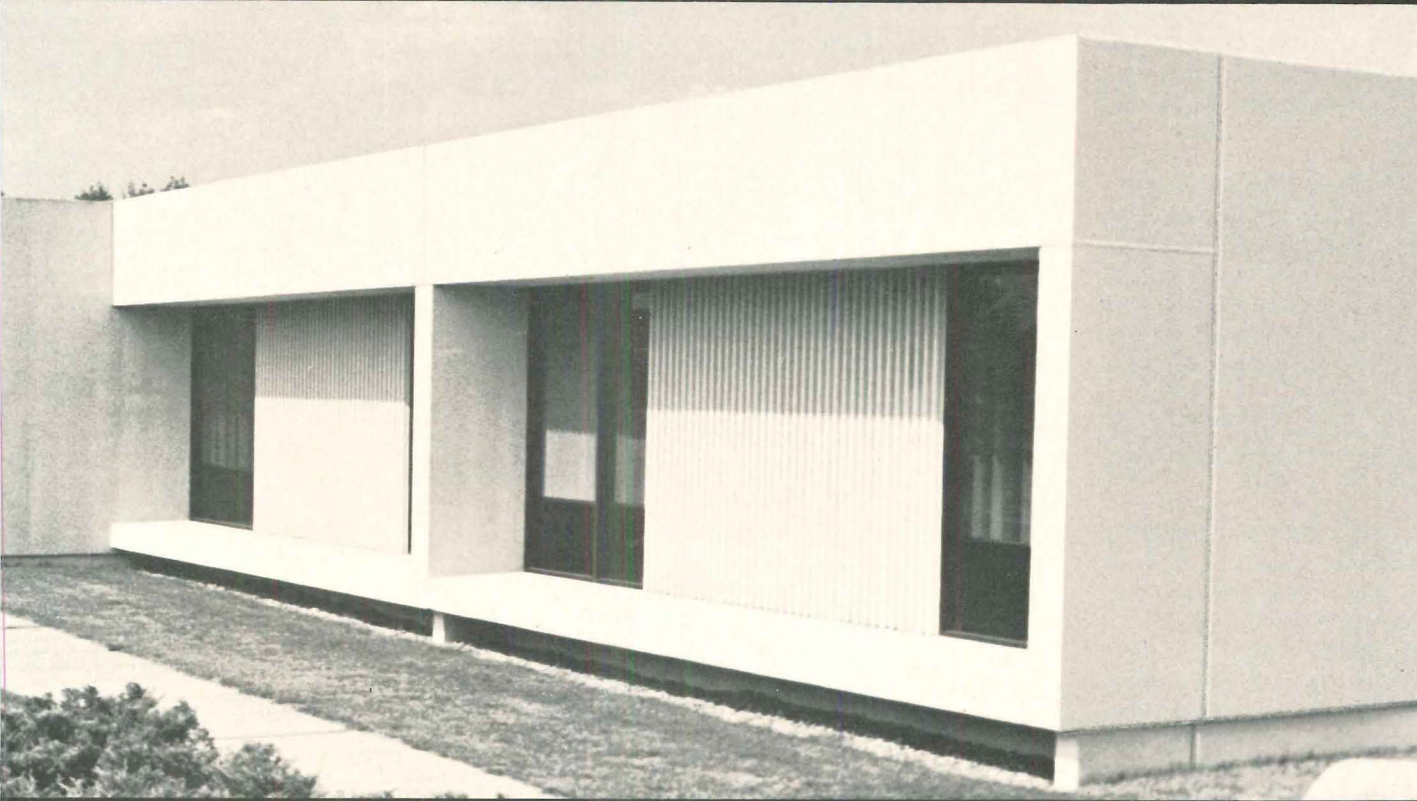
One impressive design feature of this structure is the complete absence of exterior columns as such. The reinforced concrete wall panels were cast atop the floor slab. These load-bearing walls were then tilted

into place, with the edges of adjacent walls butted together. Each panel has a cast-in angle for joining the wall sections. A connection angle is attached, locking them together. This also provides a connection for the roof girders.

The savings add up with tilt-up.

There's more than one way to look at the economy of reinforced concrete tilt-up. With Grade 60 rebar, less steel is required. And Grade 60 is available everywhere, so costly delays are avoided. Then too, the tilt-up method permits casting and erection of many low cost panels in a single working day. For a structure the size of the Dow Corning plant (54,000 square feet), the basic wall cost was approximately \$1.30 per square foot—a figure as much as 25%-30% lower than that of any other comparable

TILT-UP SAVINGS.



method or material of construction. And the speed of tilt-up versus traditional unit masonry also means measurable savings for any owner in early completion, early occupancy, and lowered financing charges. And tilt-up is virtually maintenance-free.

New insights on insulation and insurance.

The use of lightweight aggregate reinforced concrete in this structure minimized heat losses — in or out — due to its superior insulation values. And resulted in a reduction in heating/cooling costs. The superior fire resistance of lightweight concrete means reduced fire insurance premiums—a saving that will pyramid over the life of the building.

Surfaces to order.

A special decorative effect was incorporated in the outside walls of the Dow Corn-

ing plant. Corrugated metal was used as a bottom form on the floor slab when the wall panels were poured. The resulting ribbed effect is in pleasant relief to a stark, plane surface. Many other decorative surface treatments are, of course, possible without loss of economy: textures applied in finishing, exposed aggregate, colors in both aggregate and matrix, almost any combination the designer chooses to give a building individual character.

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BOOKS RECEIVED

PEOPLE AND BUILDINGS, edited by Robert Gutman. Biologists, anthropologists, sociologists, psychologists, and architects analyze the effect of working and living spaces on human behavior. Trying to understand people and architecture using only the discipline of scientific rationality is proving less successful than we expected ten or even twenty years ago. All the best thinkers in the field are represented here in short readable papers, however, and happily they are beginning to understand the limits of their own techniques.

Basic Books, 404 Park Avenue South, New York, N.Y. 462 pages illust. \$12.50.

MILITARY CONSIDERATIONS IN CITY PLANNING: FORTIFICATIONS, by Horst De La Croix. A survey of the history of fortifications since ancient times, relating the science of siege warfare to the state of engineering at that time. As DeLa Croix points out, the offense has finally overwhelmed the defense and today there is no place to hide.

George Braziller, Inc. One Park Ave., New York, N.Y. (new title in the continuing series *Planning and Cities*) 128 pages illust., \$5.95.

ARTS OF THE ENVIRONMENT, edited by Gyorgy Kepes. Professor Kepes is a theoretician of the visual arts—architecture, painting, sculpture—and has worked all his life to illuminate the esthetic criteria common to them all. This book is concerned with the environment as well as art, and not just with its visual manifestations. Our ecological conscience and consciousness; environmental experiences, values, ideals, and technological perspectives; the artist and the environment—these constitute the general subjects of the contributed works.

George Braziller, Inc. One Park Avenue, New York, N.Y. 244 pages illust., \$12.50.

AMERICAN ARCHITECTURE COMES OF AGE; European Reaction to H. H. Richardson and Louis Sullivan, by Leonard K. Eaton. Professor Eaton is attempting to break the assumption that no American influenced European architecture until Frank Lloyd Wright made his massive presence felt around 1910. He argues that both H. H. Richardson and Louis Sullivan substantially affected architectural practice in the last decade of the nineteenth century and the first decade of the twentieth throughout Europe—except in the romance countries.

The M.I.T. Press, Cambridge, Mass. 255 pp. illus., \$14.95.

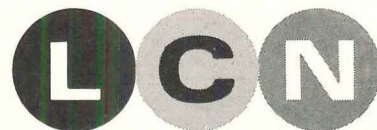
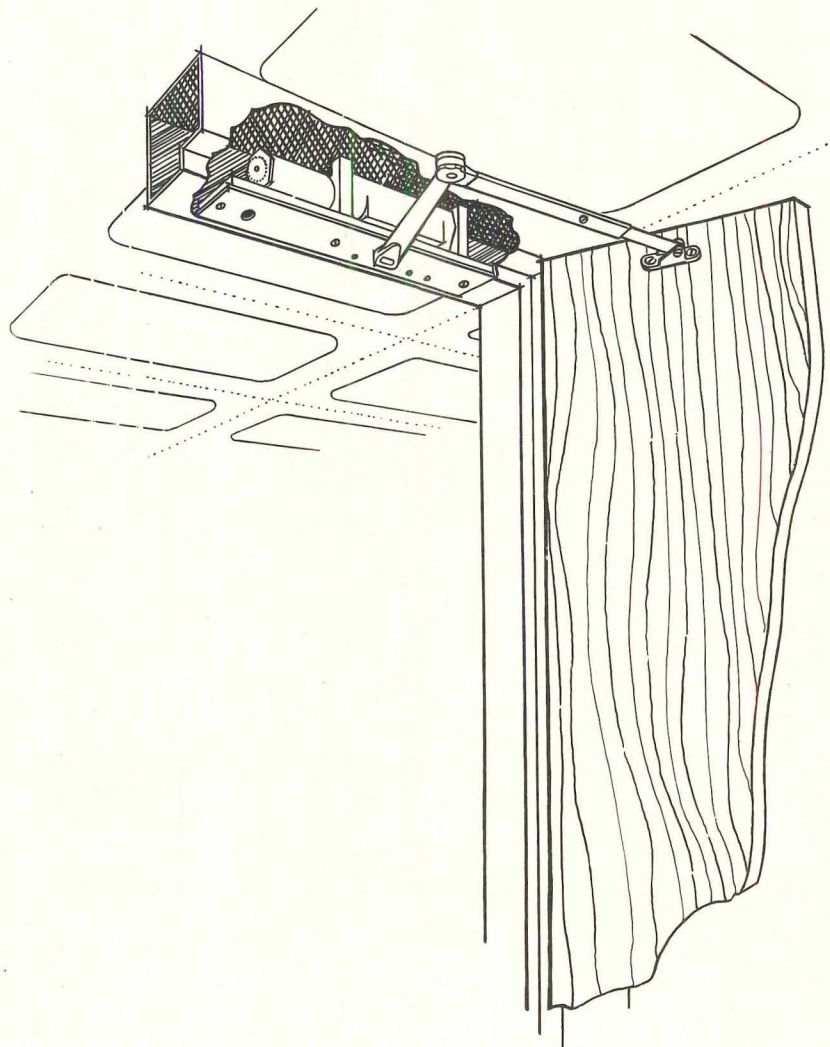
THE VICTORIAN HOME IN AMERICA, by John Maass. The Victorian Era (about 1840 to 1900 in this book) was filled with styles; romantic castles, Italianate villas, brownstone town houses, mansard-roofed mansions, octagons, Oriental fantasies, Queen Anne cottages Richardsonian Romanesque dwellings, and cozy Colonial Revival homes. But these widely different formal styles were unified by a kind of "lifestyle," the thread that holds John Maass' book together. He has attempted a

continued on page 54

William Walsh Junior High School,
Framingham, Mass.
Edward J. Tedesco Associates, Inc., Architects

DOORWAY NOTES...

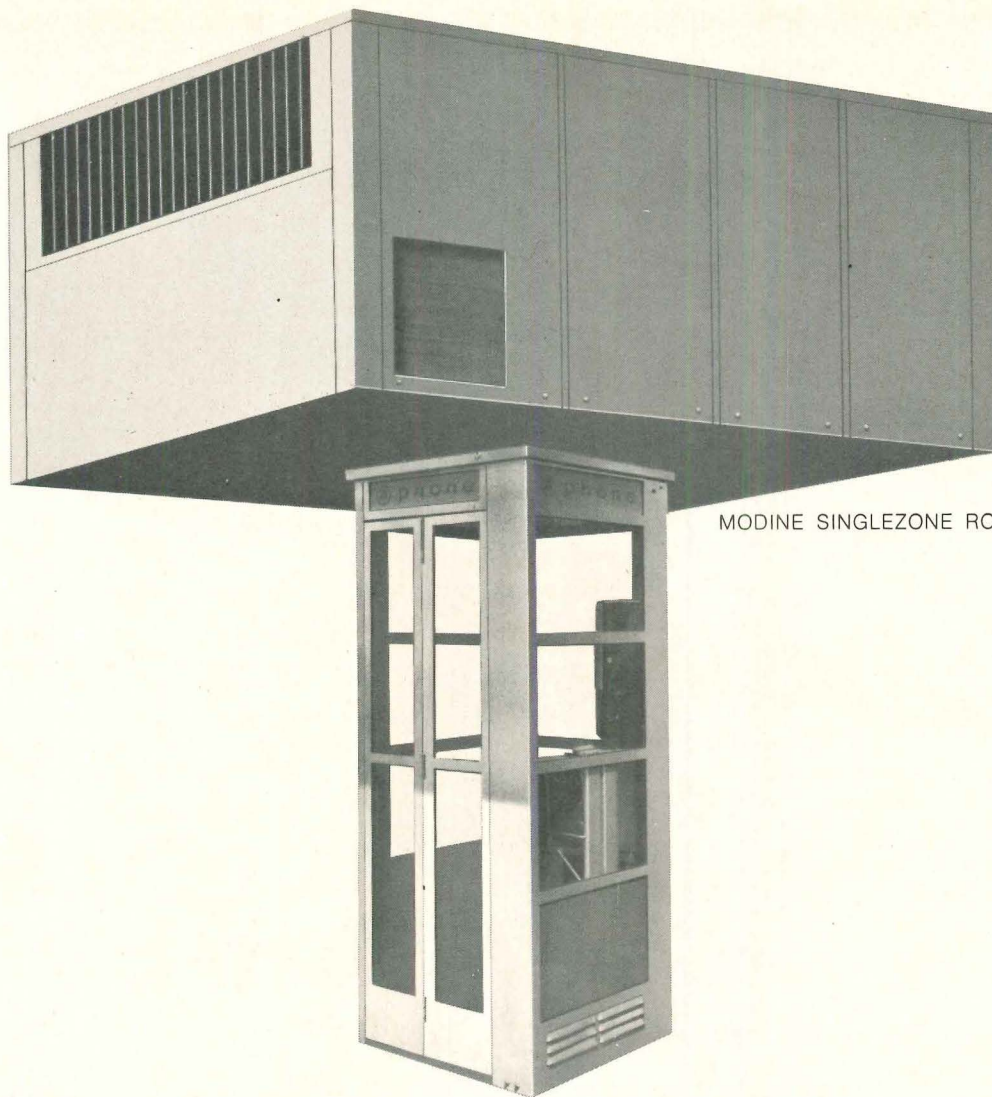
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| <input type="checkbox"/> gas heating | <input type="checkbox"/> electric heating/cooling |
| <input type="checkbox"/> hot water heating | <input type="checkbox"/> hot water heating/electric cooling |
| <input type="checkbox"/> steam heating | <input type="checkbox"/> steam heating/electric cooling |
| <input type="checkbox"/> electric cooling | |

Have your Modine representative arrange an appointment.

Name _____

Title _____ Firm _____

Street _____

City _____ State _____ Zip _____

Mail to: Modine, 1510 DeKoven Avenue, Racine, Wis. 53401

For more data, circle 32 on inquiry card

MOD-SZ-11467

The better way: Emergency lighting that can't be seen.



Theirs



Ours

Reception area - First National Bank of Atlanta

The Lithonia Emergency Lighting System is the better way because it's hidden in the fluorescent fixtures you select for general lighting. It doesn't detract from the beauty of your room. It's better because in any type power failure it instantly switches to a self-contained power source, providing over 90 minutes of soft, general lighting. And the Lithonia way is the better way because we use sealed, rechargeable nicad batteries which require no maintenance, and which are unconditionally guaranteed for five years. See us in Sweets or call us collect (404-483-8731). We'll show you our ten minute film and give you a copy of the Lithonia Emergency Lighting Applications Manual. There's no better way than the Lithonia way.

**Specify Lithonia. Now, More Than Ever,
Your Best Value in Lighting.**



A DIVISION OF NATIONAL SERVICE INDUSTRIES, INC.
BOX A □ CONYERS, GEORGIA 30207 □ 404/483-8731

**A broad choice
in drafting media:
paper, film, and cloth.**

Bruning has the products and the service to keep things running smoothly. It comes from long experience in helping engineers with all their needs.

First, you can count on a broad choice of quality papers, cloth, and film for drafting. Then you can rest assured we'll do everything possible to see that you never run out of what you need.

It starts with a careful study of your drafting operations by your local Bruning man. When he's through, he'll be ready to recommend the best media for each type of work you do.

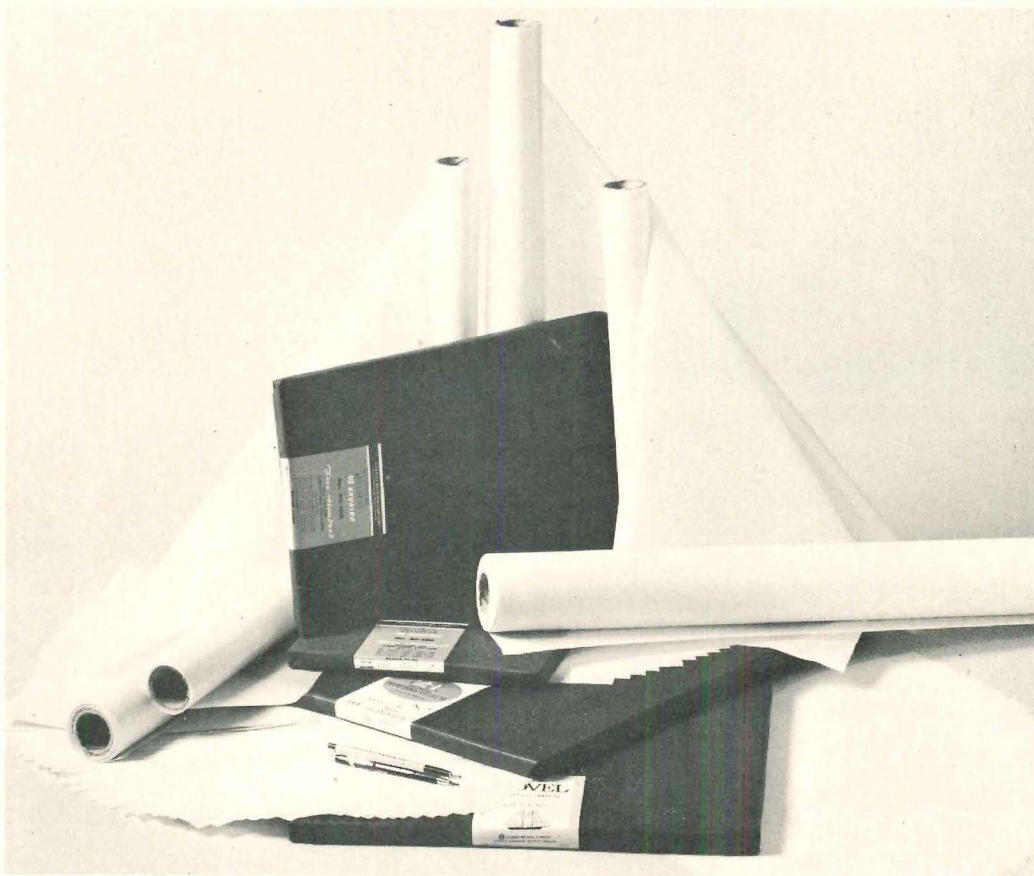
Then he'll set up a special plan just for you — to anticipate your media needs. Result: the right media on hand ready to use when you need it.

Choice. Quality. Availability.
Bruning's strengths of leadership

in engineering graphics. Strengths you should be drawing on. Just call your local Bruning man. Or contact Bruning, 1834 Walden Office Square, Schaumburg, Ill. 60172.

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Best place to draw on.



BRUNING

DIVISION OF ADDRESSOGRAPH MULTIGRAPH CORPORATION

For more data, circle 34 on inquiry card



Erected 1964.



Erected 1970.

Specify Dow Corning silicone-based coil coatings; the colors match, though they're years apart.

The paneling on the left was erected in early 1964; that on the right in 1970. As these March 1972 pictures show, both sides are practically identical, with the same bright even color. Color that stays so true these Dow Corning® silicone-based coatings can be offered with long-term guarantees.

Yet, the cost of silicone-based coatings (almost identical with that of organic coatings) is 50-70% lower than other kinds of high-performance finishes that have no demonstrably better weatherability.

An almost equally important advantage—surface scratches and mars, which can occur almost any time, quickly disappear with easily applied, air-drying, high-adhesion, nonfading silicone touch up enamel. This, too, helps preserve the smart, clean, bright appearance of the panels and building for extra years of life.

For more information on silicone-based coil coatings and the names of paint and building manufacturers who supply them, write Dow Corning

Corporation, Department A-2326, Midland, Michigan 48640.

We'll help your true colors shine through no matter what the weather.

Silicones for coatings from

DOW CORNING

DOW CORNING

Photos courtesy Elliott Company, Division of Carrier Corporation, Jeannette, Pa.

“The clean look of our

Convenient Food Mart, South Norwood, Mass.



carpet of Antron® helps sales.”



A clean look is important to a retailer. It attracts shoppers. Invites browsing. And encourages buying.

Dirt shows up fast on resilient floors. They require washing and waxing, particularly after bad weather. And stripping when wax builds up. All cut into profits.

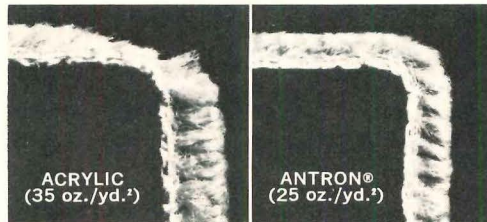
This led Convenient Food Mart to install carpet with pile of Antron* nylon in five locations, including South Norwood, Mass.

The resulting savings in maintenance costs over resilient flooring have been significant. In addition, the store manager reports noticeable increases in traffic and purchases per customer which he attributes to improved appearance—the ability of the carpet to retain its clean look.

“Antron” has a unique structure that optically screens out most of the appearance of soil. It tends to even out concentrated spots which blend into the overall color and texture of the carpet.

Maintenance costs are minimized by the need for fewer wet cleanings than with carpet of other fibers.

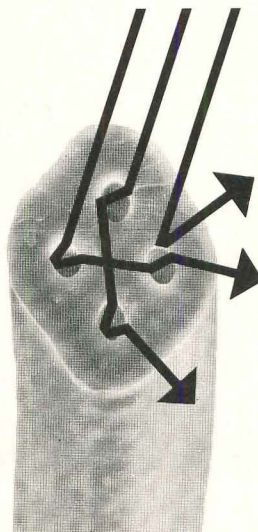
And “Antron” has exceptional durability (see stair-edge test results) and resiliency. Combined with its soil-hiding, this gives carpet a prolonged look of freshness.



Abrasion test on simulated stair edges shows pile wear in level-loop carpets after equal exposure.

Specify “Antron” for high-traffic commercial carpet. It has no equal in long-term appearance retention.

For further information and a list of mill resources, write: Du Pont, Contract Specialist, Room 106AR, Centre Road Building, Wilmington, Delaware 19898.

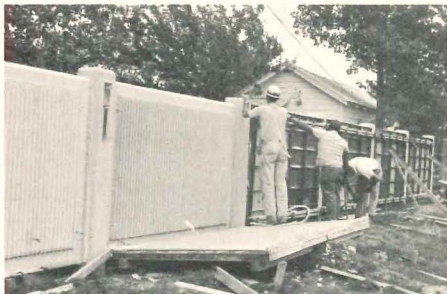


How “Antron” hides soil. This cross-section magnified 1000× shows the four precisely-placed hollow cores that run through each filament. They scatter light like the facets of a diamond to minimize the dulling effect of soil, while helping to retain color clarity and luster.

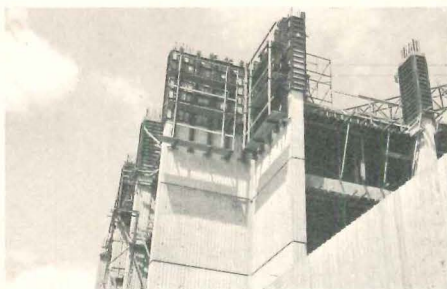
*Du Pont registered trademark. Du Pont makes fibers, not carpets.

For more data, circle 36 on inquiry card

This Decorative Wall



and this 11 Story Library



Used Standard And Custom Form Liners

Cast a prefinished wall with Symons Form Liners. Standard liners available are . . . striated, bold striated, 1½"–¾"–½" trapezoidal rib, rough sawn cedar, rustic brick, aged board, and 1½" bush hammered deep rib. For that special effect, we will work with you to produce a custom liner. Form liners offer a pleasing departure from the monotony of flat surfaces.

Our form liner brochures will be sent to you immediately upon request.

*Labor Saving Equipment & Services
For Concrete Construction*



For more data, circle 37 on inquiry card

continued from page 46

pictorial investigation of the Victorian living environment, revealing the social oppressiveness, slums and rigidity of that time along with its magnificent architecture that is beginning to move us again, after long neglect.

Hawthorn Books, Inc., New York. 235 pp. illus., \$19.95.

OFFICE NOTES

NEW FIRMS, FIRM CHANGES

Norman E. Bartholomew, AIA and William Robert Wakeham, AIA announce the formation of a partnership to practice architecture under the firm name of **Bartholomew and Wakeham, Architects** at 3700 Computer Drive, Suite 230, Raleigh, North Carolina 27609.

Robert G. Larsen, AIA, Robert J. Reilly and Jim K. Maeda are pleased to announce the formation of a new architectural and planning firm to be known as **Larsen Reilly Maeda Architects**, located at 1 West 72 Street, New York, New York 01023.

A group of young design oriented architects announce the establishment of **Arch Associates/Stephen Guerrant, Architects, Planners** at 874 Greenbay Road, Winnetka, Illinois 60093.

The firm **Argie McElmurry Architect Planner Interior Design**, has just opened a new office at 810 Drew Street, Clearwater, Florida 33515.

Ecodesign, Inc. of Cambridge, Massachusetts announces that it has opened an office in Charlotte Amalie, St. Thomas, U.S. Virgin Islands, 00801.

R. Edward Marrs, AIA and J. Perrin Lawson, Jr., AIA, CSI announce the formation of a corporation for the practice of architecture. The firm name is **Marrs and Lawson Architects, Inc.** They are located at 1700 Oak Street, Myrtle Beach, South Carolina 29577.

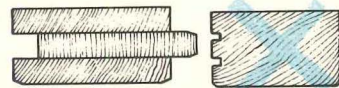
William K. Quinter, AIA, formerly chief architect for Quality Inns, announces the opening of his office for the general practice of architecture with offices located at 156 Congressional Lane, Rockville, Maryland 20852.

Architecture Planning Research/Associates announce the formation of a new firm to provide professional services in architecture and urban design as well as selected aspects of urban planning and environmental research. They are located at 3034 M Street N.W., Washington, D.C. 20007.

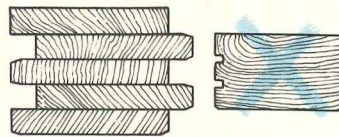
A new structural consulting engineering firm, **Fraioli-Blum-Yesselman of New England**, a P.C., has been formed to continue the former practice of Fraioli-Blum-Yesselman of Connecticut. **Philip Wesler, P.E.**, is president, and **Jose M. Goico, P.E.**, is vice-president of the new corporation. The office address remains at 999 Asylum Avenue, Hartford, Connecticut 06105.

Malcolm T. Tengler, Paul A. Kennon, Jr., and **Jack DeBartolo, Jr.**, have been named new senior vice presidents of **Caudill Rowlett Scott**, Houston, Los Angeles, New York, Chicago and Beirut.

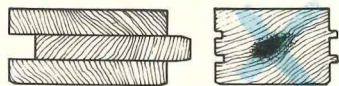
ADVANTAGES OF LOCK-DECK® LAMINATED DECKING



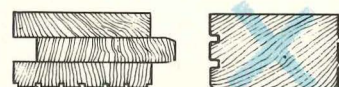
EXCLUSIVE: Lock-Deck consists of 3 or more kiln-dried boards, offset to form tongue on one side and end, groove on the other, laminated with weatherproof glue. We invented it.



STRENGTH: Lock-Deck offers a range of E factors giving superior load-carrying values in spans to 20' or more in 5" thicknesses.



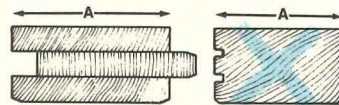
STABILITY: Each board in Lock-Deck is kiln-dried to 10-12% m.c. before lamination. This assures greater stability under all conditions.



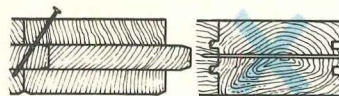
BEAUTY: One or both faces of Lock-Deck can be any desired grade, in a wide choice of species. Solid decking is limited in both grades and species.



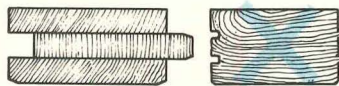
ECONOMY: In-place, finished cost of Lock-Deck is often less than solid decking due to speed of erection, factory-finishing, absence of waste, better coverage.



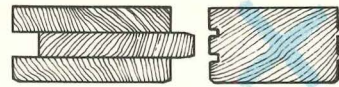
MORE COVERAGE: Offset tongue and groove on Lock-Deck gives more coverage per bd. ft. than machined solid decking.



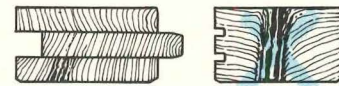
LESS LABOR: Lock-Deck installs quicker, using ordinary nails. Solid decking requires spikes, special fasteners or splines.



LESS WASTE: Offset end match, absence of twisting and few unusable shorts keeps waste well below that of solid decking.

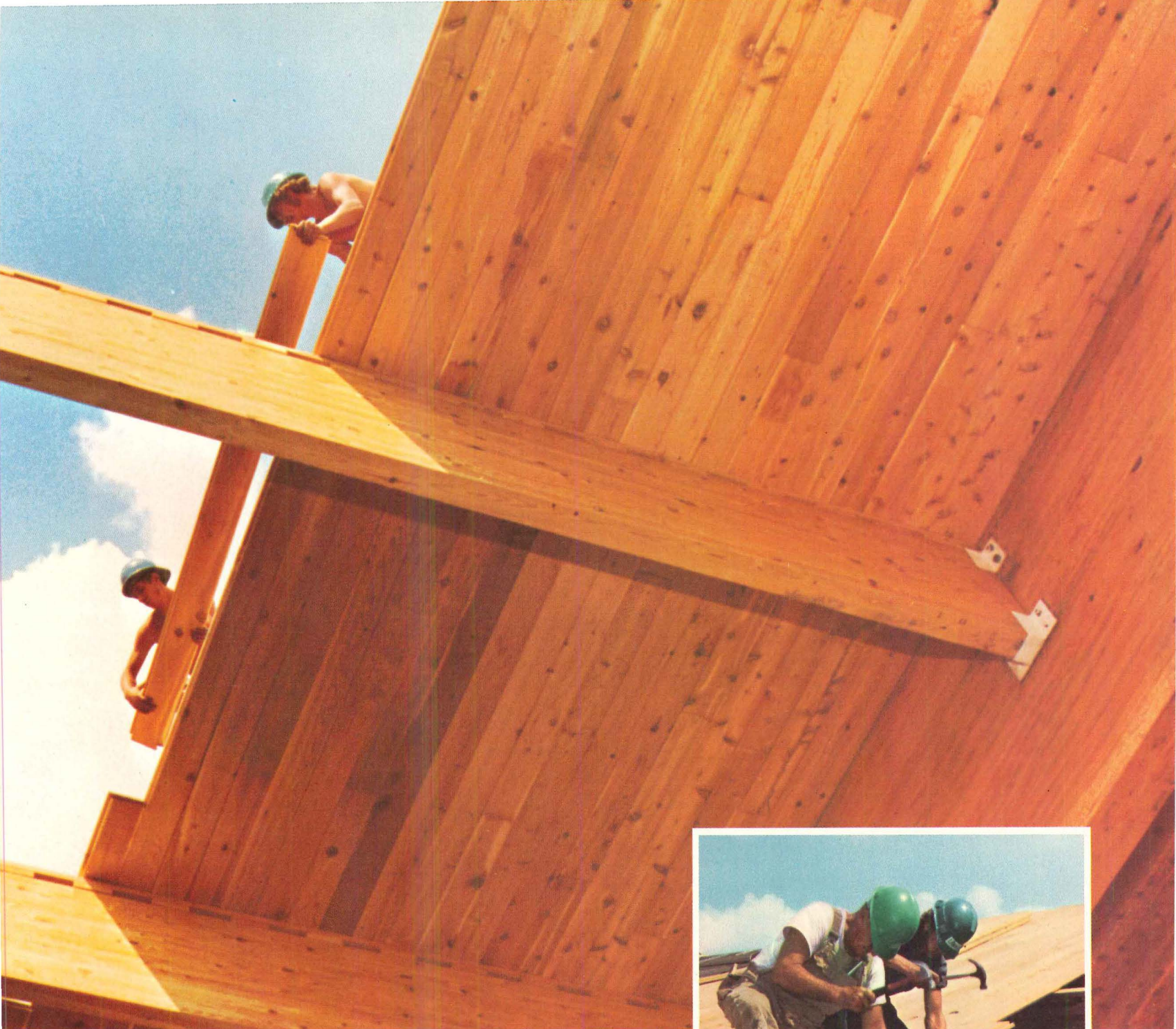


VERSATILITY: Lock-Deck forms excellent load bearing or curtain walls as well as floors and roofs.



DURABILITY: Unlike solid decking, knots or checks can go through only one ply in Lock-Deck. Weather-proof glue and exclusive process make bond stronger than the wood itself.

Potlatch
WOOD PRODUCTS GROUP
P. O. Box 3591 • San Francisco Calif. 94119



Richmond High Natatorium, Richmond, Indiana. Architects: R. W. Clinton & Assoc.

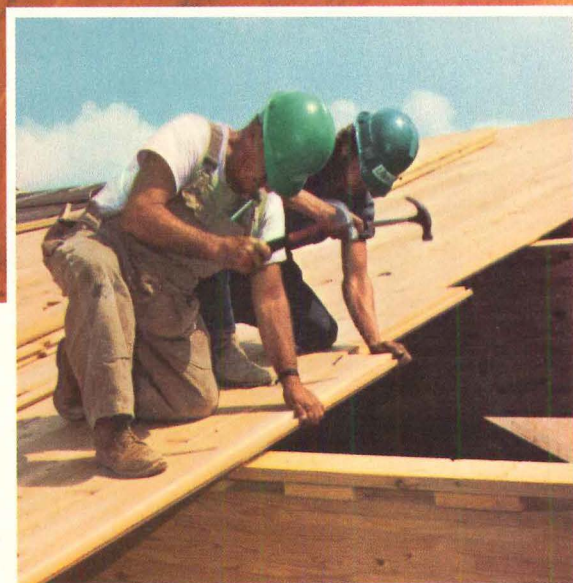
We invented Lock-Deck® the unique laminated building material

Lock-Deck is wood made better than nature could. Laminated of three or more kiln-dried boards under great heat and pressure, Potlatch Lock-Deck is available in four thicknesses from 3" to 5", nominal 6" and 8" width (10" and 12" in some species on inquiry) and lengths from 6' to 16', with 40' and longer available on special inquiry. Faces, in a choice of grades and species, can be

smooth-surfaced, saw-textured or wire-brushed and factory-finished in Colorific acrylic penetrating stains.

This opens a whole new world of architecture and construction. Lock-Deck forms both structural and finished wall and roof surfaces in one imaginative application. It forms superior wood walls, finished on both sides. It forms both structural roof or floor and finished ceiling.

ing. It combines the unique warmth and beauty of wood with the superior strength and span capabilities of modern laminated members, and makes possible structural and aesthetic concepts not previously possible. Write for more information. Potlatch Forests, Inc., P.O. Box 3591, San Francisco 94119.



Potlatch

Opus II This is a chair of unusual rhythm and balance. The continuous polished chrome frame supports precisely tailored upholstery. With attached seat cushion and button tufted back. Shown in suede vinyl; also available in a wide selection of other fabrics. Opus II, a work of artful design...and like all Thonet furniture, built to endure. See it at the Thonet Center of Design. New York. Chicago. Los Angeles. San Francisco. Dallas. Miami. Or write Thonet Industries, Inc., One Park Avenue, New York, New York 10016.



THONET 
CENTER OF DESIGN

For more data, circle 39 on inquiry card



33 stories of long-life white: a dramatic first for DURACRON® coatings

ORIENT OVERSEAS ASSOCIATES
BUILDING, New York
Architect: I. M. Pei & Partners
Curtainwall and window fabricator: Lupton
Manufacturing Co., Aluminum Group,
Olin Corporation
DURACRON Coating applicator:
Aluminum Company of America

"88 Pine Street" offers more of special interest to architects and builders than distinctive beauty alone. This striking new addition to Manhattan's skyline is the first building constructed of aluminum curtain wall in a column-and-beam style. And to accentuate its face dramatically, it is also the first high-rise finished exclusively in a white organic coating. The result is a gleaming study in light and shadows—a clean, carefree appearance that will endure for years to come.

All spandrel panels and column covers were fabricated from aluminum extrusions, then factory finished with baked-on DURACRON Super 800 coating. This silicone-fortified acrylic finish from PPG offers outstanding durability and color integrity. In addition to excellent performance characteristics, this DURACRON coating provides the savings of a



moderately priced extrusion finish. For data on PPG color coatings, check Sweet's Architectural or Industrial Construction Files 9.10/PPG. Complete product information is available from Product Manager, Extrusion Coatings, PPG INDUSTRIES, Inc., Dept. 16W, One Gateway Center, Pittsburgh, Pa. 15222.

PPG: a Concern for the Future

Extrusion
Coatings 
INDUSTRIES

VON DUPRIN 55. Slim Silhouette in Stainless Steel. Or bronze. Or aluminum. All slim and sleek . . . just $1\frac{3}{16}$ " wide . . . to enhance doors with stiles as narrow as $1\frac{3}{4}$ ". Both rim and concealed vertical rod applications. For full catalog information, write for Bulletin 675-55.

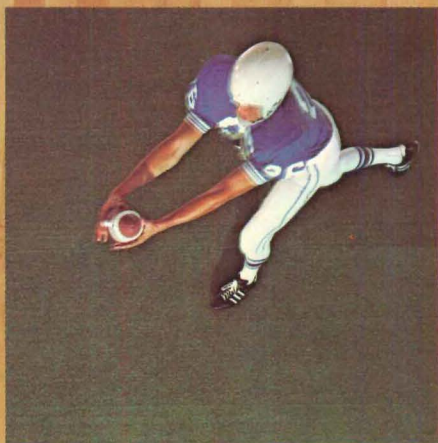
Von Duprin, Inc. • 400 West Maryland Street • Indianapolis, Indiana 46225
In Canada: Von Duprin, Ltd.



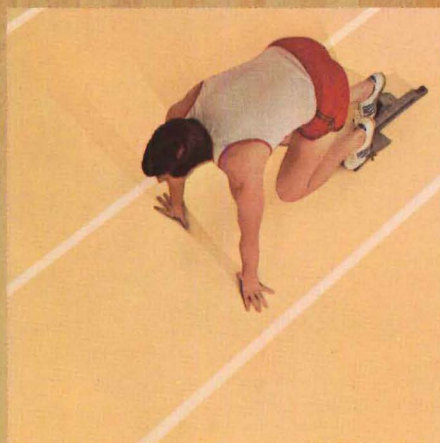
Von Duprin®

For more data, circle 41 on inquiry card

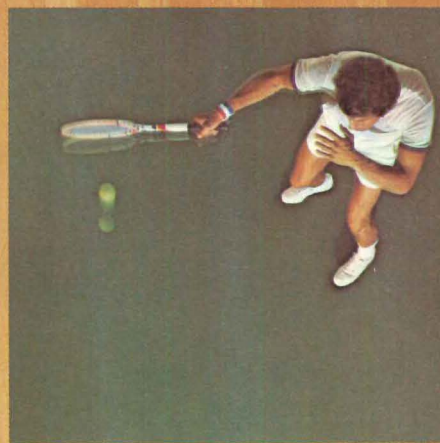
Whatever the sport, Robbins has the surface.



SPORT-TURF



PROTURF



SPORT-TRED

Got a question about athletic surfaces? Get the answer from the world's leader: Robbins.

- The world's finest hardwood flooring . . . Lock-Tite is the only floor endorsed by the U. S. Handball Association.
- Laminated decks and hard maple walls for squash
- Sport-Tred for tennis, track, and basketball in any color
- Proturf, polyurethane elastomer for field houses and tracks

Find out about synthetic and wood athletic surfaces today from Robbins. Our staff of specialists is always ready to assist you in planning new or replacement facilities.

If it's athletic surfaces. Robbins has it! Just send us the coupon. We'll show you what we mean—with Robbins, there's a choice.

SEND COUPON FOR FULL INFORMATION

Please send me full information on Robbins
 SPORT-TRED MAPLE PROTURF
 I would like to consult with one of your specialists.

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TITLE _____

COMPANY/SCHOOL _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE _____



Box 16902-AR, Memphis, Tn. 38116

Now that all 6 window types are available in Andersen Perma-Shield® a little restraint may be called for.

Please don't get carried away and insist on including all 6 types (and shutters, yet) in your very next project.

The Andersen Perma-Shield® line is very compatible, but not, we think, that compatible. (Prove us wrong, if you like.)

But don't let sensible restraint curb your enthusiasm for Perma-Shield, and the benefits which flow from its happy combination of the qualities of wood (superior insulation, greater appeal) with a protective sheath of tough vinyl (no painting and low, low maintenance). Perma-Shield's list price is understandably often a little higher than alternatives. On-site savings close the gap.

We appreciate your enthusiasm. Go ahead and use Perma-Shield whenever you please—but just two or three types in any one project will be just fine. See your Sweet's File (Sections 8.16/An and 8.6/An), your Andersen dealer or distributor, or write us direct.

Double-hung. The Perma-Shield Narroline®, a great favorite. 44 stock sizes, up to 6' 5 $\frac{1}{8}$ " in height. Exterior surfaces of sash have a patented 4-step factory finished process; they won't need re-painting for at least 10 years.

Fixed. All Perma-Shield window types have fixed and operating versions.

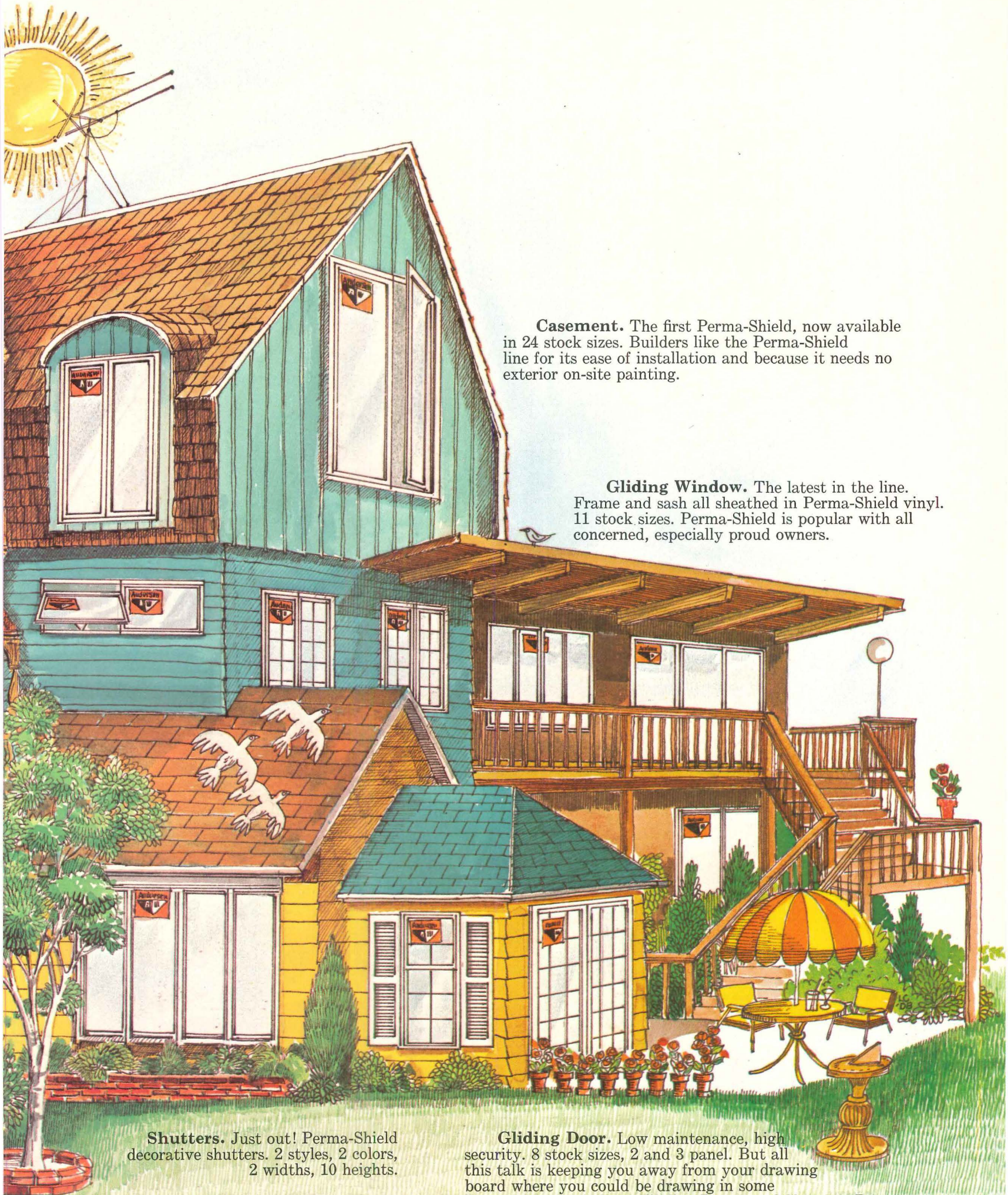
Awning. Introduced with Perma-Shield Casement in 1966. A great mixer, especially with fixed windows. 12 stock sizes. Much copied, never equalled, let alone surpassed.

Andersen Windowalls®
ANDERSEN CORPORATION BAYPORT, MINNESOTA 55003



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Casement. The first Perma-Shield, now available in 24 stock sizes. Builders like the Perma-Shield line for its ease of installation and because it needs no exterior on-site painting.

Gliding Window. The latest in the line. Frame and sash all sheathed in Perma-Shield vinyl. 11 stock sizes. Perma-Shield is popular with all concerned, especially proud owners.

Shutters. Just out! Perma-Shield decorative shutters. 2 styles, 2 colors, 2 widths, 10 heights.

Gliding Door. Low maintenance, high security. 8 stock sizes, 2 and 3 panel. But all this talk is keeping you away from your drawing board where you could be drawing in some Perma-Shield Windows, Gliding Doors, and Shutters. But not all 6 types together, you understand?

for design, flexibility, service in door automation



NORTON® AUTOMATIC DOOR OPERATOR SYSTEMS

TRANSOM MOUNTED OPERATORS (SERIES 2000)

Here's an unobtrusive, self-contained package; designed to be attractive in any location, styled to compliment any decor. Single units are contained in a smart, clean, aluminum housing. Double doors can be accommodated with two units mounted individually, or two units in a single housing. All installations are a pleasing addition to your overall design.

Here's reliable electro-hydraulic door automation that's easily installed on both new or existing construction. Ideal as a replacement for faulty in-floor operators. Or, they can be applied with surprising simplicity to any existing door. And, of course, all control schemes are available; for single or multiple door, one-way, or dual traffic.

Service is simple and always available. A replacement operator can be mounted in place in minutes to get your door back in action. And, the Norton Service Organization is nationwide, only a phone call away. Installation and service personnel are under direct factory supervision to assure you prompt, satisfactory work.

OVERHEAD CONCEALED OPERATORS (SERIES 4000)

For complete concealment in the smallest transom header; only 5" of height and 4" of depth. Fits easily into most manufacturer's headers; can be supplied already assembled into the header tube.

SLIDEAWAY SLIDING OPERATORS (SERIES 5000 & 9000)

For the safety and space saving of side sliding doors. Available in separate or simultaneous operating, single or double doors; all types of controls systems. Also, available as complete entrance packages.

EATON
Security Products
& Systems

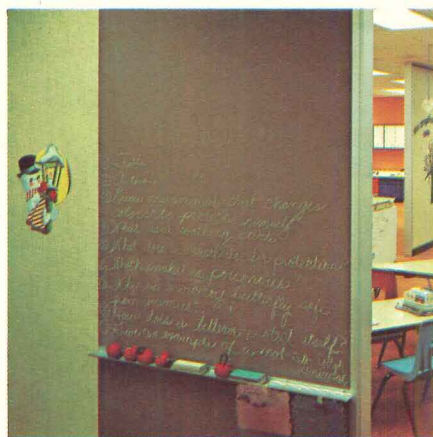
For complete details, contact your Norton Representative or Eaton Corporation, Lock and Hardware Division, Norton Marketing Department, Box 25288, Charlotte, North Carolina 28212.

1193 C

For more data, circle 44 on inquiry card



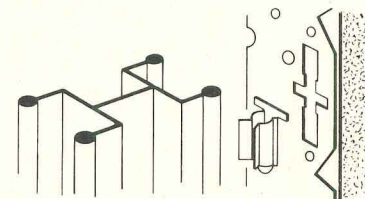
introducing the new Kaiser KW-700 Demountable Partition System ... it's a snap!



An entirely new and proven demountable partition with improved installation speed, flexibility and economy. Affords unlimited design freedom for versatile approaches to modular interior construction in virtually all building types. Excellent sound control ratings, one-hour fire rating, ceiling, cornice and bankrail heights and wall panels in widths of 24, 30 and 48 inches are but a few of KW-700's outstanding features. Quality system components include aluminum ceiling channel, door frames, window frame extrusions, handsome trims for corners, glazing and base—all available in several designs for variety in architectural detailing.

Installation, literally, is a snap! Spring steel clips are inserted quickly into slots in the steel strips on each panel. Panels are then simply "snapped" onto special aluminum studs. When interior space requirements change or

alterations are needed, you'll be ready to accommodate change quickly, quietly and efficiently with the KW-700.



And here's a system that becomes a working wall from the day it's installed. Durable, maintenance-free, vinyl surfaced wall panels together with magnetic chalkboard and tackboard panels provide lasting utility and unlimited creative design possibilities with their contrasting colors, patterns, textures and finishes.

We'd like to show you how much of a "snap" the KW-700 really is!

Kaiser Gypsum Company, Inc.,
Kaiser Center, 300 Lakeside Drive,
Oakland, California 94604.

KAISER GYPSUM

For more data, circle 45 on inquiry card

Efficient building idea: Recent report tells how to solve the acoustical problems of open offices.



Good news for architects who like the design freedom of open offices—but don't like the acoustics.

Tests by Geiger & Hamme, an independent acoustical testing agency, show you can get excellent open office acoustics by using these three things (with the help of an acoustical consultant):

1) An acoustically non-reflective ceiling—so the sound won't bounce off to other areas. (Of all the ceilings

tested—including expensive coffered and baffled systems—the best, they say, is Owens-Corning's Nubby II Fiberglas* Ceiling Board in a standard grid suspension system.)

2) Sound-controlling screens—to stop the sound from going directly from one work area to another. (Either directly or by reflection.)

3) A masking sound system—technically designed to fill the

sound voids without increasing the overall ambient noise level. This makes it possible to hold personal conversations in a normal voice—without being overheard.

If you'd like the whole story, send for our free design guide, "Achieving Acoustical Privacy in the Open Office." Write to Mr. A. A. Meeks, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.

*T.M. Reg. O.-C.F.

Owens-Corning is Fiberglas

OWENS/CORNING
FIBERGLAS
TRADEMARK®

For more data, circle 46 on inquiry card

San Antonio Convention Center
Architects: Noonan, Krockner and Dockery,
San Antonio, Texas

When you specify clay tile floors, specify Hillyard Onex-Seal II[®] to keep them like new.

Clay tile floors have a striking beauty all their own. But without a protective seal, severe disintegration from within and unsightly staining from without can dramatically reduce the life of the floor.

Onex-Seal II is a penetrating finish that effectively seals the grouting against moisture, to prevent both efflorescence and discoloring stains. It's your best assurance that the clay tile floors you specify will provide long-lasting beauty and ease of maintenance for your client.

And your client's clay tile floors will look better longer when you specify regular maintenance with products like Hillyard Super Shine-All[®]. Abrasives, alkalis, soaps, acids, oils, and solvents commonly used in floor maintenance programs have harmful effects on clay tile. But, Super

Shine-All is a powerful, yet gentle, neutral cleaner for all clay tile surfaces. It's just one of the quality Hillyard products that will keep tile new-looking and keep maintenance costs low.

A Hillyard Architectural Consultant will be happy to recommend the best products and procedures to include in your specifications. Just say the word and we'll have him get in touch with you. Or look us up in Sweet's or ask for our Uniformed Numbered File with complete information on clay tile.

HILLYARD FLOOR TREATMENTS

ST. JOSEPH, MISSOURI USA
TOTOWA, N.J. SAN JOSE, CALIF.
BOSTON, MASS. DALLAS, TEX.
MINNEAPOLIS, MINN.
IN CANADA: Calgary, Alberta
London, Ontario

*The most widely recommended
and approved treatments for every surface*

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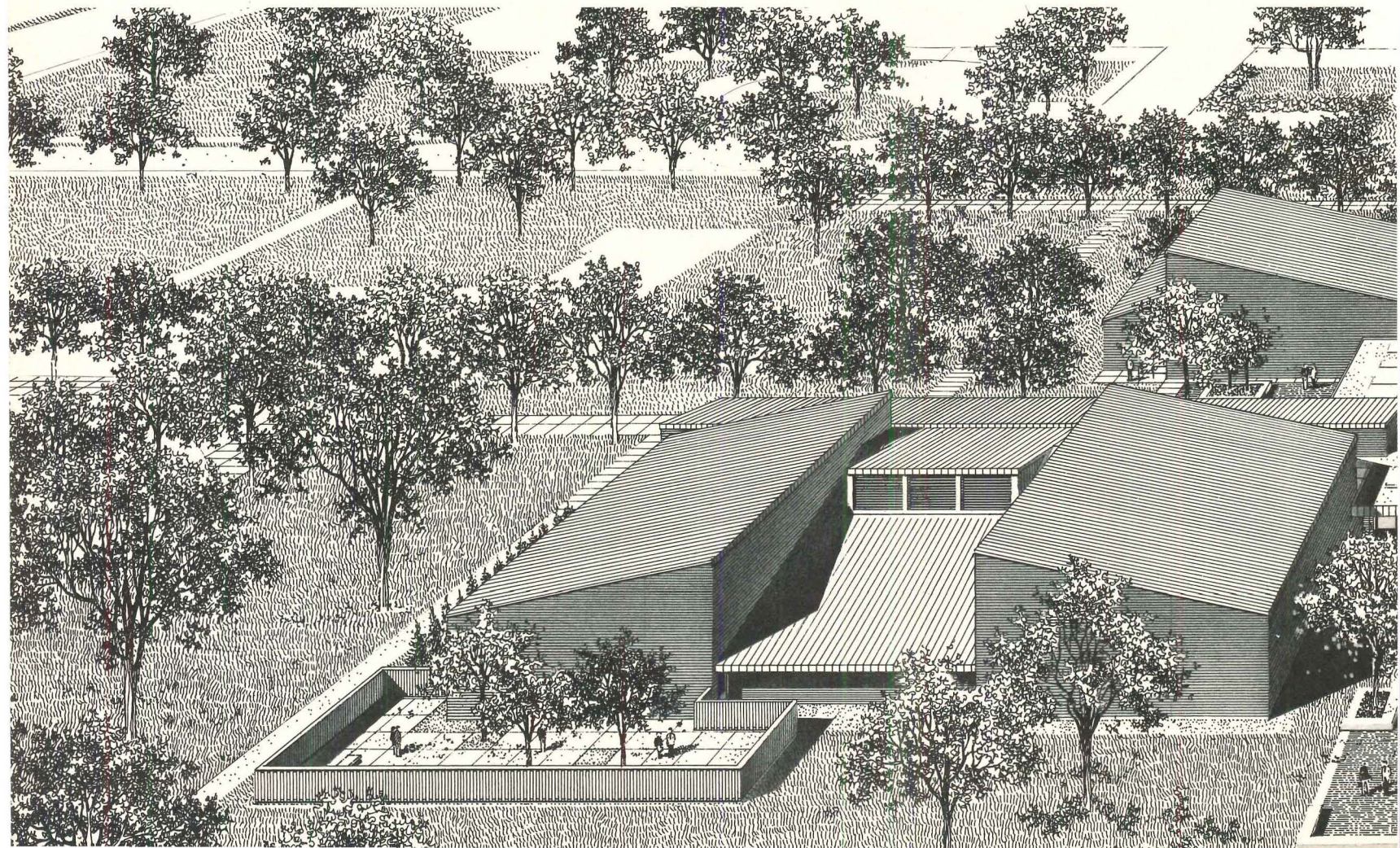
TCS:

Rehabilitation Center
Buffalo State Hospital
Buffalo, New York

Rendering by Brian Burr

Architects: Milstein, Wittek, Davis & Hamilton
Buffalo, New York

A project of the New York State Health and Mental Hygiene
Facilities Improvement Corporation for the New York State
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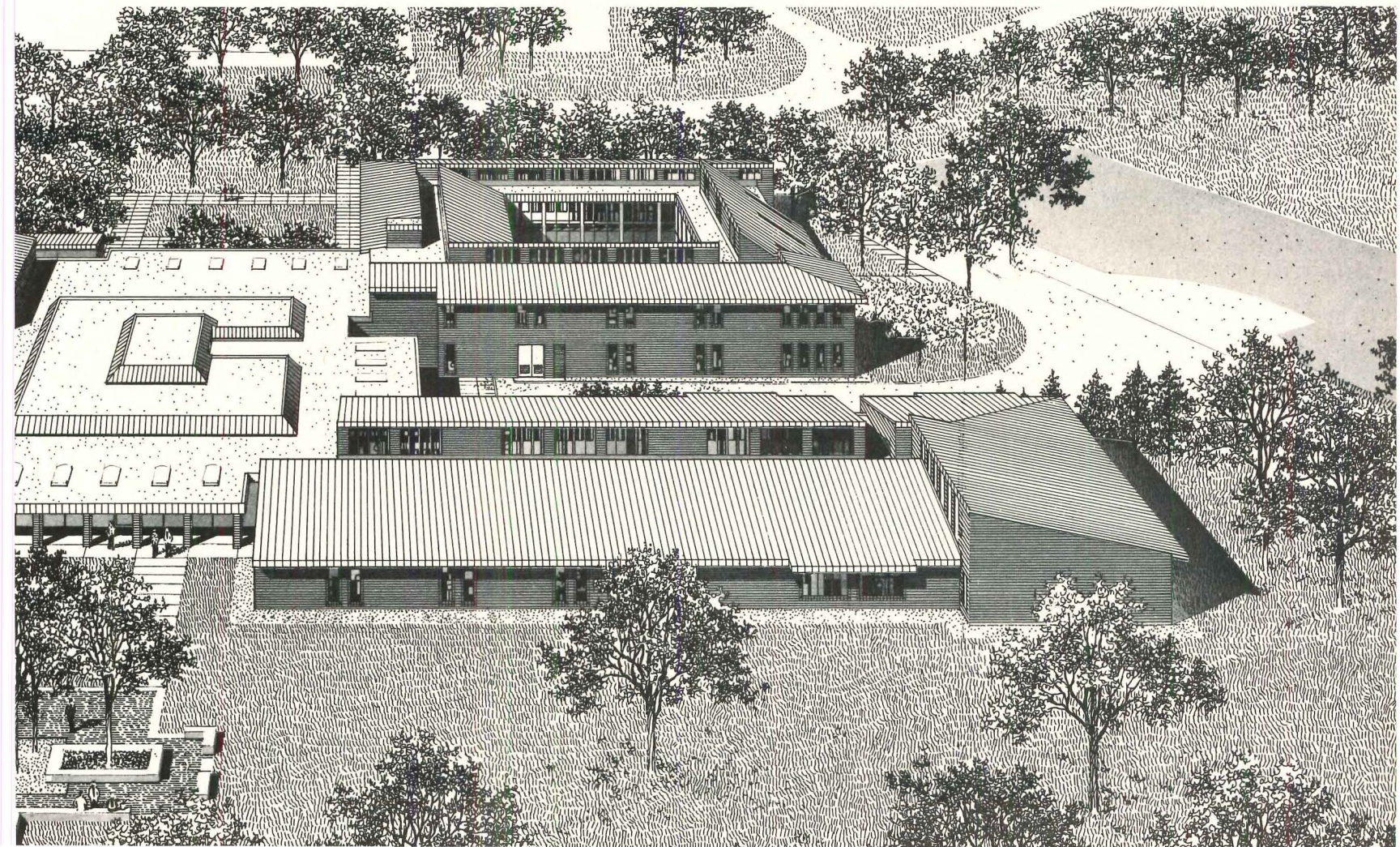
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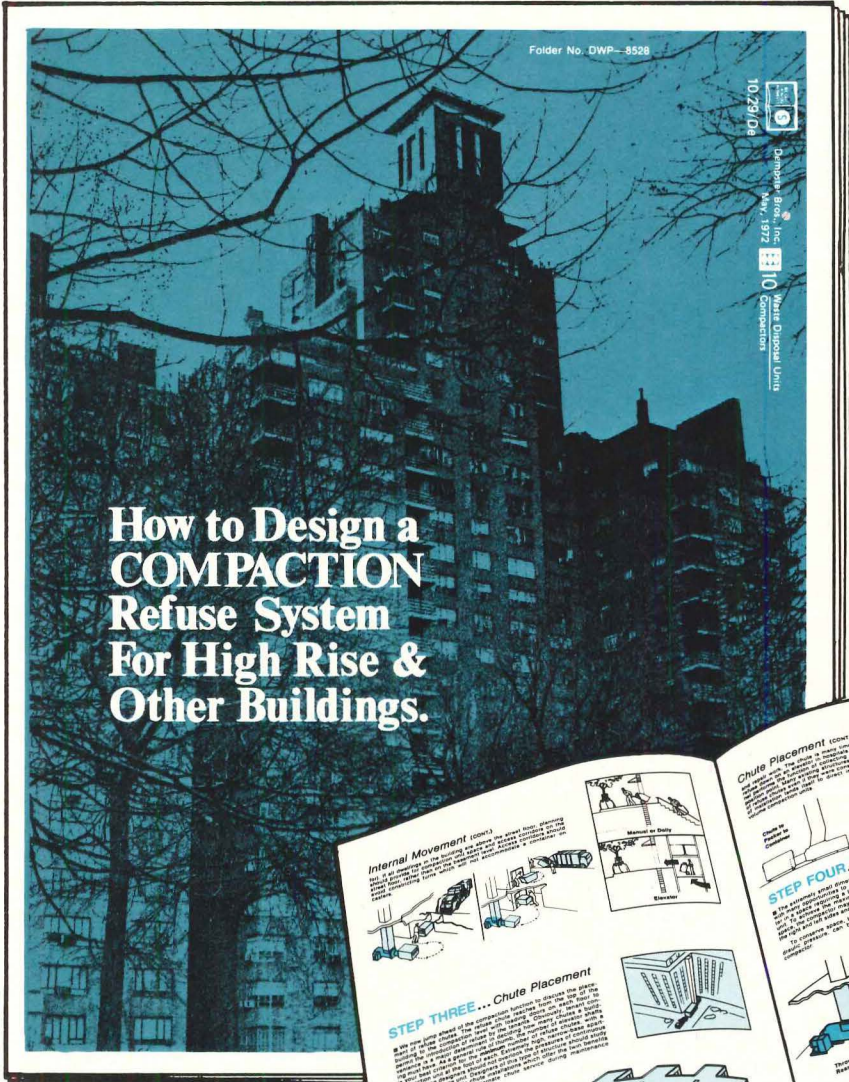
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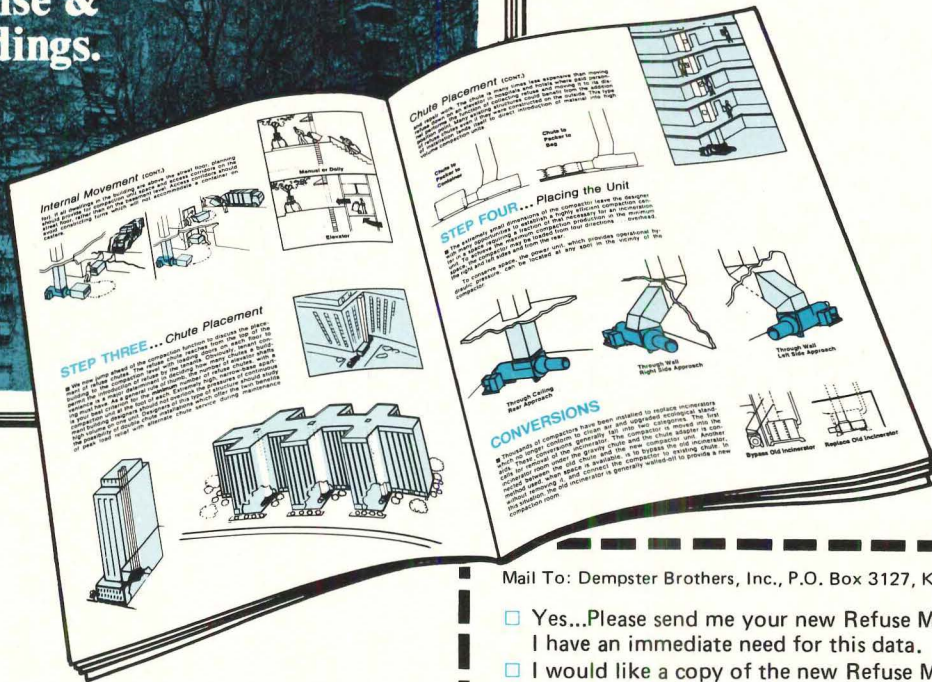


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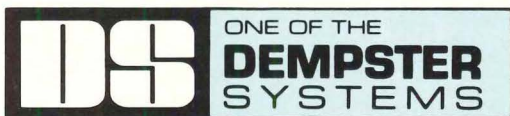


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*Some gains: stores, factories, hospitals;
some losses: educational, residential;
for a change of mix
in about the same construction value*

F. W. Dodge construction outlook: 1973

*Prepared October 1972 by the Economics Department
McGraw-Hill Information Systems Company
George A. Christie, vice president and chief economist*

The economic setting

For a little more than a year now, the New Economic Program (NEP) has been doing a creditable job of getting the economy back on the road to recovery. In the short time since that dramatic turnabout of national economic policy, we've seen a sharp rise in total output, a slowing of inflation, and the beginning of a reduction in the unemployment rate.

This surge of instant prosperity stands in sharp contrast to 1970's recession and 1971's stagnation. But welcome as the past year's widely publicized change has been, it's important to distinguish between true growth and makeup of lost ground. So far we've been running fast for one year to catch up on what didn't happen in the previous two. And the nation's economy is still understaffed by a million and a half jobs, and its plant and equipment are still ten per cent underutilized. If these idle resources were being used, total output (GNP) would be at least \$50 billion higher than its current rate.

This gap that still remains at the end of 1972 between actual and potential GNP means that although we've come a long way in the past year, there's still plenty of room for further improvement. That's as good an argument as any in favor of continued strong economic expansion through 1973.

There's one condition. To keep the business recovery boiling along at its 1972 price-deflated rate of six per cent would require sticking with pretty much the same package of monetary and fiscal stimulants that got things where they are. And on that score, some doubts are gathering.

Clearly, the goals of economic policy for the past year have been to generate maximum expansion, to contain inflation, and to reduce unemployment—in about that order. And it has been achieved by a highly un-Republican blend of easy money, huge deficits, and wage/price controls.

Is it safe to conclude that next year's economic priorities will be the same as 1972's? One thing past performance tells us is that the Nixon Administration has not been reluctant to make sudden and sweeping reversals of economic policy. So, in preparation for the next change, we must consider some of the options for 1973—each of which puts different emphasis on growth, price stability, and wage price controls.

Option 1. Give top priority to the removal of controls and second priority to price stability, keeping inflation in check by means of restrictive monetary and fiscal measures. (This would be a complete reversal of current economic policy, taking us back to 1969 and 1970). The risk: recession.

Option 2. Give top priority to reaching full employment as soon as possible, and second priority to eliminating wage/price controls. (This would be an extension of current policy, but with controls taken off.) The risk: severe inflation.

Option 3. Give top priority to the restraint of inflation, and second priority to the relaxation (not necessarily the removal) of controls. The risk: a slower rate of economic growth.

Of these alternatives and their many variations, the third one seems the most likely economic guideline for 1973. Except for number one, which has been tried and abandoned, it is more consistent with Republican economic philosophy than any of the others, including the NEP. More to the point, you can read between the lines of what top Administration officials are now (in October) saying, that the decision to begin shifting economic policy from expansion to austerity has already been reached. It needs only to be implemented.

The two issues that now appear to be of greatest concern to Administration officials are (1) Federal spending and (2) inflation. In the

first matter, the President is uncomfortable about the size of the Federal deficit, but remains opposed to a tax increase that would help reduce it. The other source of continuing discomfort to the Administration is the need for wage and price controls. Yet, with the amount of stimulation the economy is getting from the government's budgetary imbalance, we would face a new round of inflation if controls were lifted.

Federal spending restraint is what ties these two issues together. By keeping a tight lid on government expenditures, President Nixon makes progress toward both these concerns at the same time. With tax revenues rising, a ceiling on spending would automatically narrow the deficit. That, in turn, would help to inhibit inflation and allow further relaxation of controls. The hidden cost of this choice is the sacrifice of some of next year's potential growth and a delay in reaching full employment of the nation's resources.

While this sequence is the next likely change on the economic front, its effects won't be felt right away. As of now, all economic indicators are pointing firmly upward; and with the kind of strength that is building in the consumer and business sectors, any tightening of public spending that takes place toward this year-end isn't apt to be felt until well into 1973. This pretty well insures that the first half of next year will continue to be much like 1972. But it also means that by mid-year some of the zip will be missing.

For the year as a whole, total 1973 output (GNP) will increase by about \$110 billion, roughly the same gain as in 1972. Prices will go up another three and a half per cent, leaving real growth of about six per cent—enough to absorb next year's labor force growth, but not enough to bring unemployment much below five per cent.

In contrast to the recent past, 1973 will mark

another step away from recession and toward full recovery. Compared with the potential of full employment, however, it will still leave a bit to be desired. And some of that shortfall will involve the construction market.

National construction outlook

If there's a message for the construction industry in the general economic outlook for 1973, it's this: whatever growth in construction demand is to take place will be found mainly in the private rather than in the public sector. And in view of the fact that the housing boom of the past two years has recently topped out, the sources of growth in private markets for 1973 appear limited chiefly to nonresidential construction.

There are a few exceptions to this generalization, but it nevertheless describes quite adequately the broad patterns of construction demand for the year ahead. After two years of large back-to-back gains (which raised 1972 contract value 30 per cent above the 1970 level), the industry now faces a period when the most important changes will be in the composition of construction demand rather than in its total size. This is best shown by a comparison of the "mix" of the construction market as it is in 1972 and as it will be in 1973.

The residential portion of total construction will be shrinking from the extraordinary 49 per cent it now holds to a more normal 43 per cent next year. As this happens, both categories of nonresidential construction will be expanding. Nonresidential buildings, at 30 per cent in 1972, will increase to 33 per cent; nonbuilding construction, now at only 21 per cent of the total, will grow to 24 per cent in 1973. All of these movements represent change from a distorted construction market to a more familiar one.

To illustrate this process of change in 1972-73 construction contracting, our analysis this year concentrates on five key "contrasts" which help show where the important action will be.

Contrast No. 1: commercial building

The commercial building market has been one of the best growth areas in the nonresidential group in recent years. Now approaching an annual contract value of \$11 billion, this category—which includes stores, offices, and warehouses—has nearly doubled in annual value during only the past half-dozen years.

For most of this time, it was offices that kept the commercial building market expanding. And when the office boom of the second half of the 60's finally ran out of steam in 1969, there was a period of hesitation in commercial building—but not for long. A surge of store/shopping center construction soon took up where the office boom left things.

The fact that store construction came suddenly alive in the 70's is no more a mystery than was its long period of inactivity in the 60's. In each case, the key to store construction is housing. Of all the reasons to build new retailing facilities, population relocation heads the list. During the second half of the 60's when housing starts were averaging a steady

1.5 million per year, store and warehouse construction was also steady, running between \$3 billion and \$4 billion per year. Then, as homebuilding burst through the two million unit barrier, store construction followed closely behind, topping \$4 billion for the first time in 1971. This year store construction will be close to \$6 billion and still climbing.

Even though the 1971-72 housing boom has crested, there's reason to expect the demand for retailing facilities to hold up through most of 1973. For one thing, there's always a lag between homebuilding and the development of shopping centers. This simply means that many of 1972's record number of new dwellings have yet to beget their supermarkets and variety stores. For another, the need for retailing facilities is more closely tied to the expansion of one-family homes than to apartments. And since next year's decline of housing starts is expected to happen mainly on the multi-family side of the market, its depressing effect on store building will be less than it otherwise would be.

■ **1973 Forecast:** Contracts for stores, warehouses, and other commercial buildings will increase another 12 per cent to a total of \$6.7 billion.

There's little new to be said about the office building market. It remains overbuilt in several major cities (particularly in the Northeast where many of the starts of a few years ago are still looking for tenants) and won't be off on another binge for quite some time.

■ **1973 Forecast:** a total close to the \$4.8 billion plateau on which the office construction market now seems to have settled.

Contrast No. 2: industrial construction

In this case, the contrast is not between two different types of construction (as in commercial building), but rather between the construction and non-construction uses of business investment funds.

With an uncomfortable amount of excess capacity late in 1971, business leaders indicated their intent to boost 1972 outlays for plant and equipment by a nominal seven per cent. The following spring, as the recovery began to pick up momentum and confidence was restored, those investment intentions were raised to 14 per cent. But in making good their intentions, they spent their 1972 funds in quite a one-sided manner. A very large part of this year's increase in capital spending has gone into machinery and equipment, while contracting for new industrial buildings has advanced only slightly.

There are explanations for this unusual twist to capital spending in 1972. Price controls have been a strong incentive to raise productivity, and it is machinery—not buildings—that increases output per man hour. In addition, industry has come under heavy pressure to show progress toward pollution abatement, and again, this means investment in equipment rather than in structures. Finally, and not the least of the reasons, the investment tax credit (which applies to machinery but not to buildings) was revived last August.

At the start of 1972 only 75 per cent of productive capacity was in use. By mid-year

industrial production had increased enough to bring 80 per cent into use and 1973 will be starting out with between 80 and 85 per cent of capacity in operation. One result is that the business community is now aiming toward a further 10 to 15 per cent expansion of capital spending next year.

■ **1973 Forecast:** With more of those funds being channeled into structures, there is potential for a gain of 30 per cent in industrial construction contract value during 1973.

Contrast No. 3: institutional building

During 1972, the two major institutional building markets—educational and health facilities—did just what they've been doing for the past several years: school construction slipped back, and hospitals and other health facilities gained.

Over the last five years the change in this direction has been considerable. In 1968, for each \$100 spent on school construction, about \$40 went into new hospitals; by 1972, that ratio had become \$70 of hospitals for each \$100 of schools.

This development simply attests to the fact that for quite some time now the nation's need for health facilities has been gaining on its need for schools. Just recently that condition has been brought into sharper focus by the first actual decline in the total of elementary school enrollments. One consequence: the long-standing teacher shortage suddenly became a teacher surplus. Another: construction of classrooms and other educational buildings has begun to drop sharply. In 1972 the value of contracts for educational buildings has slipped below the \$5 billion level for the first time since 1967 (when it passed that mark on the way up). And that's where it will stay.

But no decline is in prospect for the firmly-established trend of hospital and health facility construction. With the number of people needing medical care and the quality of that care both rising steadily, next year's contracting for health facilities will show one more advance in a progression of annual gains that barely keep pace with needs.

■ **1973 Forecast:** More of the same—hospital and health facilities up another 12 per cent, and educational building down another notch.

Contrast No. 4: housing

In the entire construction industry, no greater contrast can be found than between the boom in residential building that began late in 1970, and the stagnant condition of the housing market during the entire decade that preceded it. Yet, before 1972 was over, this boom had already reached its peak.

Was this a sign that housing, like so many other suddenly popular causes, has enjoyed its brief moments of glory? Has housing had its Earth Day and is it now headed for the fate of benign neglect? Not so! The prospect of a decade of homebuilding totaling something like 25 million shelter units (a term which embraces mobiles and modulars as well as conventional stick-builts) remains as good as it ever was.

Has the supply of mortgage money begun

to evaporate, as it has been known to do during periods of business recovery? Hardly. At mid-1972, deposits and mortgage commitments of Savings and Loans were at record highs, while new funds were still rolling in at a good clip. And even though the credit outlook indicates a moderate tightening of mortgage money in 1973, this future prospect is neither an explanation of the present downturn of housing starts, nor is it likely to be an important limitation of next year's potential.

By the opening quarter of 1973, housing output (including mobile homes) will have receded to a rate of 2,500,000 units, and will level off at about 2,300,000 during the second half, bringing the year's total shelter production to 2,400,000 units. Of these, conventional dwellings will total 1,900,000—825,000 apartments and 1,075,000 one- and two-family units.

■ **1973 Forecast:** Contract value of residential buildings in 1973 (including the value of new hotels, motels, dormitories, and other non-housekeeping residential structures) is estimated at \$38.7 billion, down 10 per cent from 1972's \$43.1 billion peak, which is likely to stand as the record for several years to come.

Contrast No. 5: utilities

Two of the nation's urgent requirements for the 70's are electric power and clean water. Thus it is only as expected to find that sewer and water facilities are being developed at a fast clip in 1972. But the year's sharp drop in contracting for electric generating plants is inconsistent with projected power needs. This final contrast in 1972 construction markets brings out both sides of the environmental issue.

In the case of water, the matter is a straightforward one. A continuing supply of clean water requires massive investment in treatment plants and transmission facilities. Public programs have been created to stimulate this investment, and they have the green light.

An indication of just how rapidly sewer and water construction is expanding at present is given by 1972's contract value of \$4.2 billion—double the annual total of only five years ago. The demand for this kind of work is so great that—federal funding provided—it could double again in the next five years. In 1973, however, public money may be a bit harder to come by, putting a temporary crimp in that 20-per cent-a-year pace.

■ **1973 Forecast:** Contracts for sewer and water facilities up 10 per cent to \$4.6 billion.

Coping with the nation's energy gap is more complicated. Unlike the area of water resources, where Federal policy is all-encouraging, here the government must act in the dual role of developer and protector of the nation's resources. Since every addition to power capacity inevitably adds something undesirable to the environment, Federal policy simultaneously encourages and inhibits the construction of electric generating facilities.

This love-hate affair reached a high point with the passage of the National Environment Policy Act and, in late 1970 the birth of the Environmental Protection Agency. By greatly strengthening conservationists' legal power to

contest the construction of power plants on the basis of their "environmental impact," the Federal legislation inevitably led to a sharp cutback in the start of new facilities and delays in the progress of projects under construction.

Following the initial over-reaction on both sides, there are signs that a better balance is evolving in the emotion-charged conflict between the power and ecology interests.

National estimates, 1973

construction contract value (millions of dollars)	1972 pre-liminary*	1973 forecast	change
nonresidential buildings			
office buildings	\$ 4,800	\$ 4,800	0%
stores and other			
commercial	6,000	6,700	+12
manufacturing	2,700	3,500	+30
educational	4,900	4,800	- 2
hospital and health	3,300	3,700	+12
other nonresidential buildings	4,600	5,000	+ 9
TOTAL	\$26,300	\$28,500	+ 8%
residential buildings			
one- and two-family homes	\$26,900	\$24,500	- 9%
apartments	14,200	12,300	-13
nonhousekeeping	2,000	1,900	- 5
TOTAL	\$43,100	\$38,700	-10%
TOTAL BUILDINGS	\$69,400	\$67,200	- 3%
nonbuilding construction			
highways, bridges	\$ 8,200	\$ 8,400	+ 2%
utilities	3,400	4,800	+41
sewer & water supply	4,200	4,600	+10
other nonbuilding construction	3,300	3,500	+ 6
TOTAL	\$19,100	\$21,300	+12%
TOTAL CONSTRUCTION	\$88,500	\$88,500	0%
Dodge index (1967=100)	160	160	
physical volume of floor area (millions of square feet)			
nonresidential buildings			
office buildings	170	165	- 3%
stores & other			
commercial	450	480	+ 7
manufacturing	195	240	+23
educational	160	150	- 6
hospital & health	80	85	+ 6
other nonresidential buildings	170	180	+ 6
TOTAL	1,225	1,300	+ 6%
residential buildings			
one- and two-family homes	1,690	1,475	-13%
apartments	915	760	-17
nonhousekeeping	85	80	- 6
TOTAL	2,690	2,315	-14%
TOTAL BUILDINGS	3,915	3,615	- 8%

* Eight months actual; four months estimated

■ **1973 Forecast:** At \$4.8 billion, next year's contract value of electric, gas, and communications construction will be rebounding sharply from the current depressed level, but will still be short of 1971's record high.

Regional outlook, 1973

In 1972 the center of gravity of the nation's construction market shifted further southward. The value of contracts for new work was up in all four regions this year, but it was the South that scored the biggest gain, thereby increasing its share of the national total. The West also improved its standing (but only slightly), and slower-than-average construction growth in the Midwest and Northeast meant that those two regions had to yield a few points of percentage share of the U.S. total during 1972.

For the past two years, housing has dominated geographical construction patterns. In 1973, however, residential building will be less of a dynamic force, suggesting that the regional trends of the recent past may be due for change. Next year four key issues—one per region—will be critical in determining where the major strengths and weaknesses in construction are going to be.

In the Northeast: What's going to happen to the rental market for office space in 1973?

In the Midwest: How fast will excess industrial capacity be absorbed now that recovery is solidly under way?

In the South: Can this region absorb the exceptionally heavy volume of new housing started there in 1972 without a drastic cutback next year?

In the West: Will the recent turnaround in this area's critical aerospace industry trigger a new wave of western migration?

For openers, the office building outlook in the *Northeast* is anything but promising. Even though improving economic conditions will help generate some new demand for office space, the supply of facilities currently available, plus the heavy volume that will be coming on line over the next year, will more than satisfy projected needs over the near-term. Since offices are a big ticket item in the *Northeast*, accounting for 20 per cent of the area's non-residential building over the past five years, this overbuilt market will once again be coming on line over the next year, will once again be a drag on the region's 1973 potential.

The *Midwest's* question has a happier answer. Excess manufacturing capacity is being mopped up at a good rate as the expansion of industrial production hastens the shift back toward the "plant" component of plant and equipment spending. What's more, the *Midwest* will be getting some extra benefit from next year's expected recovery in electric generating plant construction. In total, this region will be gaining back a percentage or two of national construction market share that it lost during the recession years.

Although the bulk of 1972's housing surge has been centered in the *South*, the region's vacancy rates have been remarkably steady. The southern housing market has been buoyed by a steady stream of migration that shows no signs of letting up. Look for this region to maintain its current share of housing in next year's declining market. The *South* should also

hold its own in the non-residential area next year as better than average growth in commercial/industrial building compensates for losses expected in institutional building.

Some additional firming of the aerospace market appears in prospect for 1973, and this should raise the current low level of migration to the West a bit. But the impact will not be strong enough next year to keep the region from slipping a percent or two in its construction market share. Gains in nonresidential building will be more than offset by a sharp drop in housing. Of all the regions, the West is expected to record the biggest losses in next year's housing decline.

1973 regional trends, nonresidential building

Northeast	-3%	Midwest	+17%
South	+12%	West	+ 9%

Beyond 1973

There's a popular notion in the construction industry that its long-term growth trend is somehow closely tied to the nation's total economic output. Is it? The experience of the past decade shows just how reliable this relationship really is.

The first half of the 60's—a period of vigorous growth for construction—may have been when this idea gained favor. Between 1960 and 1965 the annual value of construction put in place, measured in constant prices, increased by 20 per cent during the same five years. So far, so good.

During the second half of the 60's the relationship between construction and GNP came apart at the seams. Between 1965 and 1970 real GNP increased by 17 per cent, but in 1970 the annual volume of construction was no greater than it was five years earlier. In those years, as growth of the economy slowed a bit, construction stopped growing altogether. In fact, the only thing that "grew" in construction during the second half of the 60's was its cost, and that went up by more than 30 per cent.

After 1970 construction demand shifted again—this time approaching the old, pre-1965 relationship with GNP. The first two years of the 70's brought above-average growth of construction relative to GNP, but in 1972 this surge has now lost its momentum.

Where, then, do we go from here? Back to the stagnation of 1965-70? Back to the strong growth pattern of the 50's and early 60's? Or will the 70's produce a new and different relationship between construction and GNP?

One argument for a return to the pre-1965 relationship is that the only two important departures from a straight relationship of GNP to construction (1951-53 and 1965-70) were periods of war. A wartime economy, and the inflation and credit crunches that go with it, make a very inhospitable environment for construction—especially for housing. So, once the Vietnam War is over, why not expect a return (as after the Korean War) to the old pattern? Here's why: it's been a long time since 1965, and a lot of things have changed—things that affect both the amount and type of construction on which the nation will be spending its GNP in the 70's. Over

the past 10 or so years two important changes have crept up that will make the 70's a new experience in construction marketing.

One of these changes—the one everyone has long been anticipating—has finally arrived. The transition of some 30 million people from teenhood to twenties is now in its early stage, and will increase in intensity over the years ahead.

The implications for construction are all too apparent. Take just the most obvious cause-effect situation. In the late 50's and early 60's, this group was responsible for a boom in educational building, but did little for housing demand. In the 70's they'll be the principal source of a 50 per cent increase in the level of homebuilding. But school construction has already peaked out. It's not a trade-off, however, since the gain in housing (plus related commercial and community support construction) will far more than offset the loss in educational building.

The second major change affecting construction in the 70's is less obvious than the physical maturing of a segment of the population. But it is even more significant since it affects a much broader slice of society. Largely obscured by the dominance of the Asian war there has been a pronounced shift in national priorities since the mid-60's. For one thing, Federal spending has increased more rapidly than GNP over the past decade. To put it another way, the Federal government now guides the use of a larger share (20 per cent) of the nation's trillion dollar output.

More important, even, than the sheer size of government spending is the fact that over the past 10 years there has been a decided change—for the better—in what these funds are being used for. A decade ago more than half of the Federal budget went for non-civilian uses (military, space, interest debt, etc.); today two-thirds of government spending is directed toward civilian purposes. And since most Federal programs involving construction are found within the civilian share it's even more interesting to see what has happened to the makeup of this part of the budget over the past decade. And to see this most clearly, it's handy to separate the civilian share of the Federal budget into two broad areas: one involving payments to people, the other involving payments in physical assets.

Since the mid-60's Federal spending for the nation's asset development has grown roughly in proportion to the rest of the economy. Already-existing Federal programs for the construction of highway systems and for the development of dams, rivers, harbors, and electric power were expanded while new programs involving construction—the ones added during the late 60's—began to pour public funds into low-income housing, mass transit, and sewage treatment facilities.

At this time, however, even faster expansion of Federal spending was taking place in the people-related programs—social security, public assistance, medicare and medicaid, educational assistance, unemployment benefits, and more. During those final years of the 60's, a whole host of new "Great Society" legislation added considerably to the government's basic framework of income maintenance pro-

grams that dates back to the "New Deal" era.

In retrospect, the past decade of unprecedented expansion of Federal spending (from \$125 billion a year in 1963 to the current \$250 billion) shows a highly significant trend: Federal programs which provide money and services directly to people have grown half again as fast as programs that channel public funds into construction and resource development. And this trend is here to stay.

So here's how things now stand. For several basic reasons—war, inflation, social upheaval—the years 1965 to 1970 were lean ones for the construction industry. Following this nongrowth period, the construction business emerged into a new situation in the 70's. It's one that in some superficial ways resembles the "good old days," but actually is quite different. Where does construction fit into this new environment? Here are two guidelines to the remaining 70's.

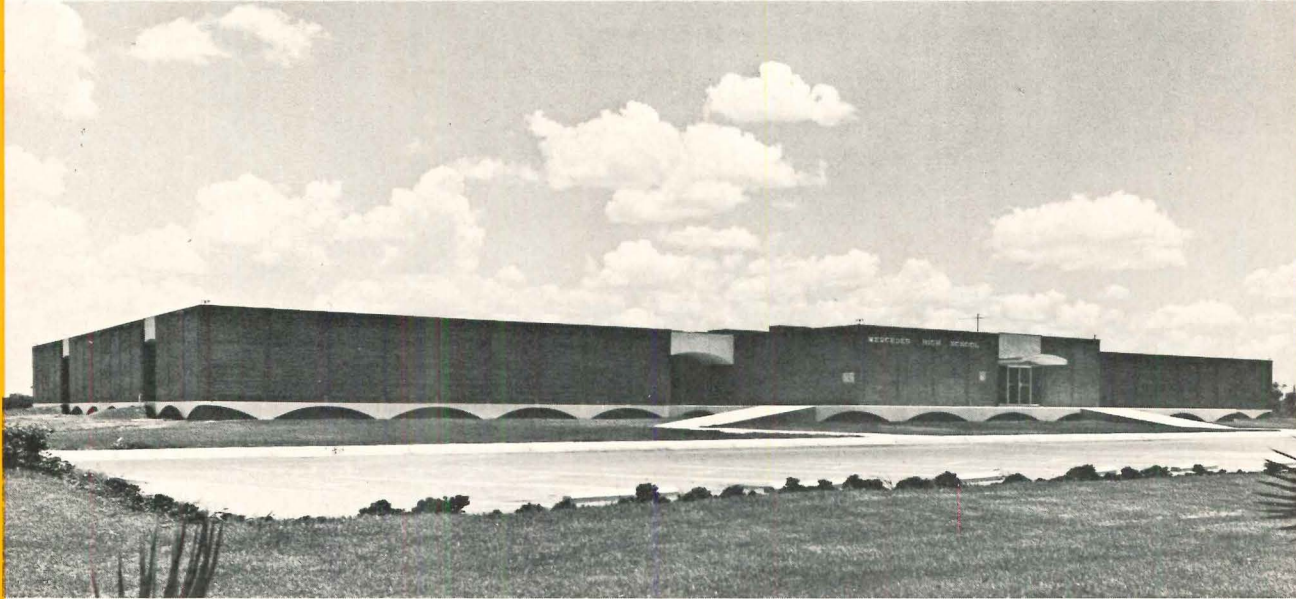
The new direction that public spending has taken through the legislation of the 60's means that a larger share of the nation's future GNP will be devoted to social services and that proportionately less will be invested in the development of physical assets. Health care and welfare have moved up in the scale of public priorities, displacing things like highways and dams.

To this must be added a couple of recent changes in construction markets that lie outside the direct influence of the Federal budget. One is educational building, a five billion dollar market that will be declining for the next decade or so purely for demographic reasons. Another is housing—the long-awaited growth market of the 70's. While housing will be very big all throughout the years ahead, it won't be growing for the simple reason that between 1970 and 1972, in one mighty surge, residential building has already attained a level of output that is adequate for the foreseeable future. Hence, high output but no growth are the prospects here.

With these constraints you begin to get a feel for where construction fits into the economy of the 70's. It will be a much more vital part of the nation's growth in the years ahead than it was at any time during the bleak 1965-70 period, but it won't resume quite the dominant position that it had back in the 50's and early 60's.

With growth restored to construction markets after half a decade of stagnation, the circumstances of the 70's will require not just more building, but a different blend of construction altogether. As the industry responds to the special needs of the future, some construction markets will be growing more slowly than the average for all construction. Among them: educational buildings, religious buildings, one-family housing, highways, and industrial buildings. The building and heavy construction markets that will be expanding most rapidly are commercial buildings, health facilities, recreational buildings, public administration buildings, multi-family housing, power generating plants, and sewer and water facilities. These are the structures that will express the social, demographic, and economic environment that we'll be living and working in for the foreseeable future.

Electric Heating/Cooling System Leads to Cost and Space Savings In Year-round High School



Mercedes High School, Mercedes, Texas, has six self-contained units built around an air conditioned mall.

PROJECT: Mercedes High School, Mercedes, Texas.
ARCHITECTS: SHWC Inc., Harlingen, Texas. **CONSULTING ENGINEER:** Joe C. Hammitt, Harlingen.

DESIGN CHARGE: To design, on a 30-acre tract, a high school for approximately 1200 students, to be built in two stages; Stage I to provide 37 teaching stations, administrative offices, and a library and Stage II to provide additional classrooms, a student center, a cafeteria, and music rooms.

DESIGN RESPONSE: Architectural firm SHWC, Inc.'s design for Stage I (completed in 1967) is a handsome structure of bronze-colored brick that has six self-contained units built around an enclosed air conditioned mall. A feature of the design is a raised platform of concrete arches and ramps that follows the outline of the complex. The school's 60,194 sq ft of floor space is divided as follows: Unit A contains the administrative offices; Unit B, the mall; Unit C, the library; Unit D, homemaking and science rooms; Unit E, commercial and foreign language classrooms; Unit F, vocational facilities; and Unit G, language arts. Stage II, now under construction and scheduled for completion

in late 1972, will add four new self-contained units to provide a combination cafeteria and student center, additional classrooms, and a music building.

The school's all-electric climate control system was designed to make it possible to use the facilities all year round. The Stage I facilities are divided into ten independent zones, each with its own air handling unit and system of ducts. Heating is accomplished by multistage electric duct heaters. Cooling is provided by chilled-water equipment in eight of the zones and by direct-expansion units in the others. The zoning is designed so that the chilled-water equipment can be shut down during those summer months when most of the building is unoccupied. The direct-expansion systems handle the cooling needs of those facilities that remain open.

Stage II facilities will also be heated and cooled electrically, the architects report, and add that the choice of electric space conditioning equipment is making expansion of the school much more economical in addition to providing greater freedom of design for the architects and increased comfort for the occupants.

SEE REVERSE SIDE FOR DETAIL INFORMATION 

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 Case Histories as they become available
 to me at the following address:

Name and Profession:

Firm, University or other affiliation:

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1 CATEGORY OF STRUCTURE:

Educational—High School

2 GENERAL DESCRIPTION:

Area: 60,194 sq ft
 Volume: 600,000 cu ft
 Number of floors: one
 Number of occupants: 1200 students
 Number of rooms: 37 teaching stations, plus offices, etc.
 Types of rooms: general, business, language arts, foreign language, homemaking, science and vocational classrooms, administrative offices, library

3 CONSTRUCTION DETAILS:

Glass, single
 Exterior walls: 10" brick and block cavity wall; U-factor: 0.26
 Roof and ceilings: built-up roof on lightweight concrete fill over steel deck, suspended acoustical tile ceiling; U-factor: 0.17
 Floors: concrete slab
 Gross exposed wall area: 13,500 sq ft
 Glass area: 1200 sq ft

4 ENVIRONMENTAL DESIGN CONDITIONS:

Heating:
 Heat loss Btuh: 1,180,000
 Normal degree days: 844
 Ventilation requirements: none
 Design conditions: 25F outdoors; 75F indoors
Cooling:
 Heat gain Btuh: 2,460,000
 Ventilation requirements: none
 Design conditions: 100F dbt, 78F wbt outdoors; 75F, 50% rh indoors

5 LIGHTING:

Levels in footcandles: 20-100
 Levels in watts/sq ft: 1-4
 Type: fluorescent and incandescent

6 HEATING AND COOLING SYSTEM:

The school is conditioned year around by ten independent ducted systems, each equipped with electric duct heaters and served by its own air handling unit. Eight of the air handlers are of the water-coil type and are supplied by one 36-ton and one 110-ton packaged chiller. The remaining air handlers have direct-expansion coils supplied by one 10-ton and one 25-ton rooftop air-cooled condensing unit.

7 ELECTRICAL SERVICE:

Type: underground
 Voltage: 277/480v, 3-phase, 4-wire, wye
 Metering: primary

8 CONNECTED LOADS:

Heating & Cooling (181 tons)	348 kw
Lighting	125 kw
Cooking	24 kw
Other	34 kw
TOTAL	531 kw

9 INSTALLED COST:*

General Work	\$434,082	\$ 7.21/sq ft
Elec., Mech., Etc.	224,662	3.73/sq ft
TOTALS	\$658,744	\$10.94/sq ft

*Building was completed 11/67

10 HOURS AND METHODS OF OPERATION:

Regular school hours, ten months a year; summer school classrooms and administrative offices only during June and July.

11 OPERATING COST:

Period: 1/69 through 12/69
 Actual degree days: 709
 Actual kwh: 610,674*
 Actual cost: \$11,601.05*
 Avg. cost per kwh: 1.9 cents
 *For total electrical usage excluding non-electric water heating.

Month	Degree Days	Demand	kwh	Amount
1/69	195	154	57,654	\$ 957.69
2/69	98	156	57,162	955.28
3/69	157	154	54,510	923.11
4/69		387	73,980	1,349.80
5/69		371	39,192	976.32
6/69		151	15,906	397.64
7/69		198	16,398	466.88
8/69		405	61,296	1,249.96
9/69	6	406	69,312	1,311.62
10/69	18	387	56,142	1,171.42
11/69	127	152	63,918	1,023.59
12/69	108	152	45,204	817.74
TOTALS	709		610,674	\$11,601.05

12 FEATURES:

Each zone features independent regulation of temperature by means of wall-mounted heating/cooling staging thermostats. On heating, the thermostats control the operation of the multi-stage duct heaters. On cooling, the thermostats control three-way modulating valves in the chilled-water systems and the condensing units in the direct-expansion systems.

13 REASONS FOR INSTALLING ELECTRIC HEAT:

Preconstruction estimates indicated that the operating costs for both electric and gas systems would be about the same. The electric system, however, would cost less to buy and install, would occupy less space, and would not require either flues or provision for combustion air supply.

14 PERSONNEL:

Owner: Mercedes Independent School District
 Architects: SHWC, Inc.
 Consulting Engineer: Joe C. Hammitt
 General Contractor: Donald Ferguson
 Electrical Contractor: H & H Electric Co.
 Mechanical Contractor: Coastal Engineering Inc.
 Utility: Central Power & Light Company

15 PREPARED BY:

Milam Gerick, Industrial Sales Engineer, Central Power & Light Company

16 VERIFIED BY:


 Norris Fletcher, AIA


 Joe C. Hammitt, P.E.

NOTICE: This is one of a series of case histories of buildings in all structural categories. If you are an architect or consulting engineer; an architectural or engineering student; an educator; a government employee in the structural field; a builder or owner, you may receive the complete series free by filling out the strip coupon at the left and mailing it to EEA. If you are not in one of the above categories, you may receive the series at nominal cost.

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psi yield strength

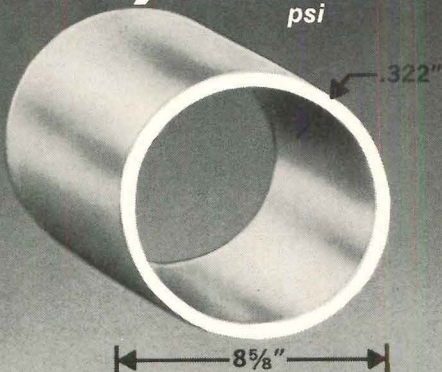
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psi

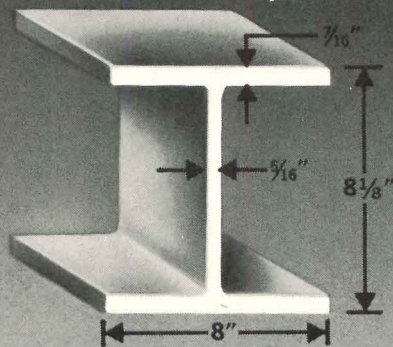


\$3.52 per foot / **29** lb/ft

WIDE FLANGE BEAM

36,000

psi

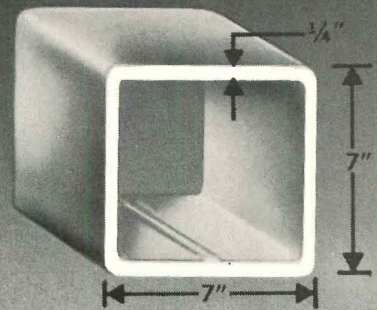


\$3.03 per foot / **35** lb/ft

WELDED SQUARE TUBE

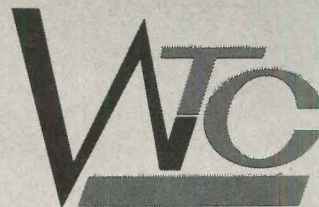
46,000

psi minimum



\$2.57 per foot / **22** lb/ft

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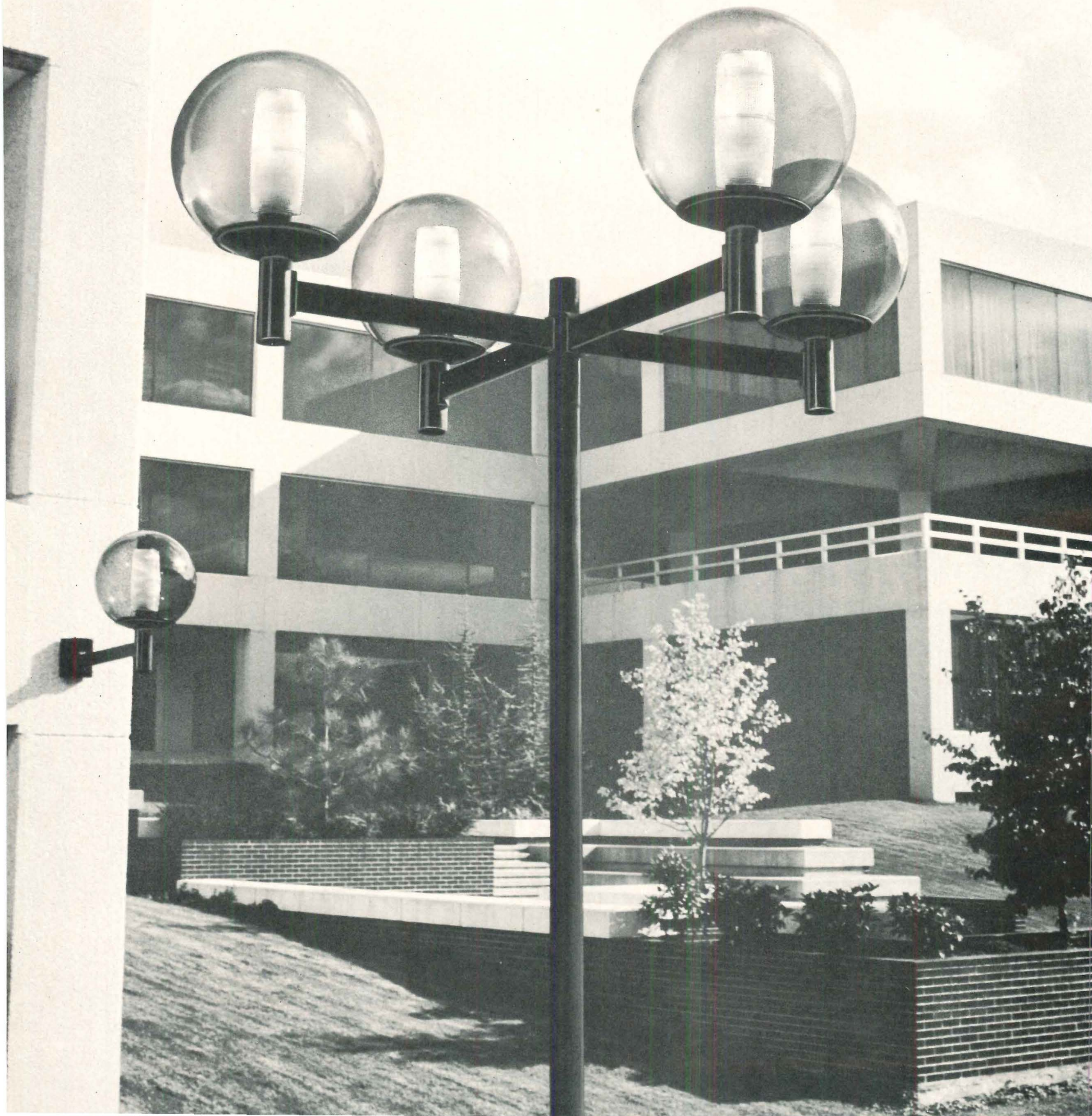
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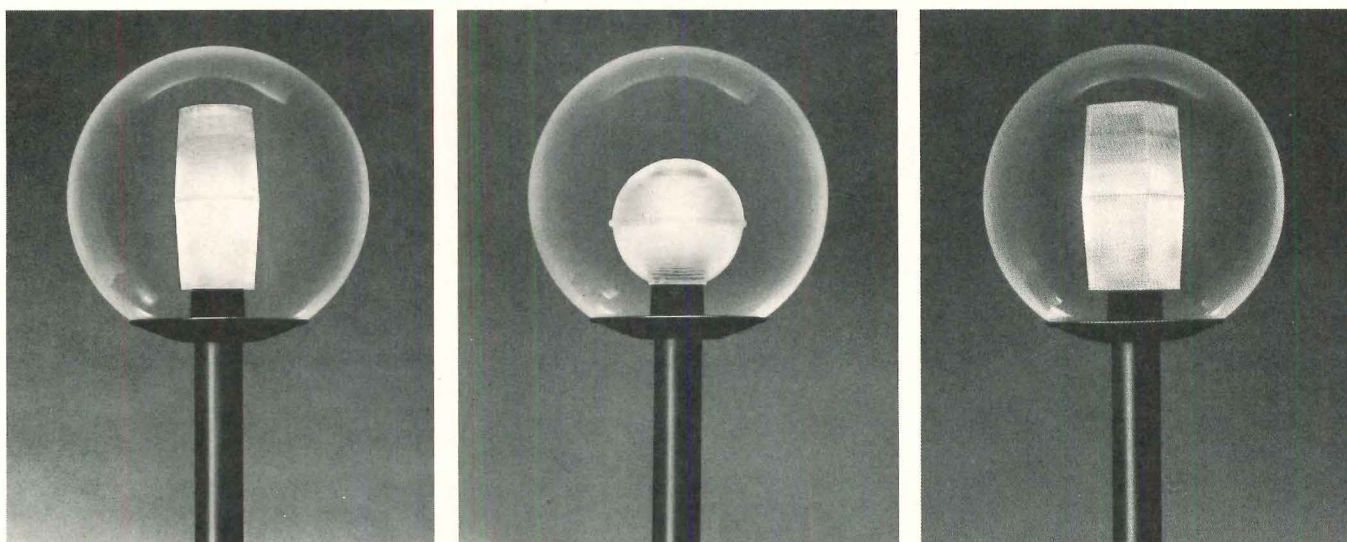
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Vista/Sphere.

Now the sphere has a new shape. Inside.

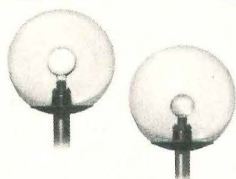


For added beauty. And control of light.



The sphere will always be a favorite architectural element. Especially now that we've given it so many exciting new variations.

First, we designed VISTA/SPHERE with distinctive internal refractors to help direct light where it's needed ...and to hide the lamp for remarkable visual comfort. You can choose from three different shapes. Cylindrical, spherical, or angular.



Additional effects can be achieved with coated or clear lamps in bronze or dusk spheres.

Second, we styled the spheres in tints to complement any environment. You can select from crystal clear, bronze, dusk, and translucent white. And all keep their beauty because they're made of durable acrylic.

Third, we engineered the mounting elements so you can use VISTA/SPHERE in a multitude of ways.

Singly. In clusters. On poles or brackets.

And fourth, we designed the luminaire so you can

select the lamp to suit your lighting needs. 100 or 175W mercury. Or up to 200W incandescent.

A vast number of dramatic combinations can be developed from these many elements. In effect, you create your own custom luminaire from standard Holophane components.

Use VISTA/SPHERE for walkways, parks, malls, shopping plazas, campuses, town houses, and other areas where appearance is important. It's a beautiful luminaire... day or night.

By putting a refractor within a sphere, we're opening some interesting new vistas. Which is appropriate, considering we call it VISTA/SPHERE.

Your local Holophane sales engineer has all the details on VISTA/SPHERE and our outdoor, commercial, industrial and emergency lighting products. Call him. Or write Dept. AR-11, Holophane Co., Inc., Montvale, N.J. 07645.



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A computerized cost estimating system

A program for pre-bid estimating and design development checking takes a giant step toward a useable data bank

The notion of computerized cost estimating has been an engaging one for many years. Almost three years ago, Bradford Perkins, president of Omnidata, Inc., pointed out (*Computerized cost estimating is ready now—almost*; RECORD, February 1970), that the greatest stumbling blocks have been the gigantic proportions of any useful data bank and the horrendous problem of keeping such a bank updated in the shifting sands of today's construction market. Recent commissions by public agencies to Amis Construction & Consulting Services, Inc. have gone far toward removing those stumbling blocks and providing effective computerized cost data for several building types. Further, advances in economical means of tapping central stores of these data by relatively simple telephone-adapted equipment have made the data accessible to an increasing number of small- to medium-sized firms.

So far, the data bank is set up to provide cost estimates for six building types in eight cities in Eastern states. The building types are: libraries, firehouses, police stations, combination police and firehouses, office buildings and intermediate schools. Floor areas for which programs are set up range from five thousand to five hundred thousand square feet layered in all practical numbers of floors. The cities are: New York, Boston, Harrisburg, Philadelphia, Pittsburgh, Reading, Erie and Washington, D.C.; and provision is made for adaptation to any other location in the nation by introduction of key local factors of material and labor costs as input by the user.

In describing his firm's approach to organization of the basic data, Alex Wineberg, president of Amis, points out that the take-off

method of cost estimating practiced by contractors in the bidding process, is neither accurate nor available as a practical, hand-operated method in earlier phases of the estimating process. And of course, such a method is not possible at all during the budgeting phase, when specifics of both design and materials are unavailable.

There is, however, a growing need for a rapid and rational method of establishing realistic budgets for construction of new facilities and a related need for a system for monitoring the cost consequences of design options during development so that facilities can be kept at highest feasible quality within the appropriation. The demand for cost control during design development introduces a requirement for significant systems detail in the cost data bank and for easy access to data for comparable alternates.

Estimating methods, based on extrapolated square-foot or other unit cost data from existing comparable buildings multiplied by the rough number of units required by the new project are not very precise. Yet budgets established in this way become binding on all parties. Further, such budgets do not contain sufficient actual or assumed component detail to establish the explicit intent at the very beginning; so important in further communications between owner and designer.

How the system works

The system developed by Amis is based on a computer program able to simulate cost elements of a complete facility based on input of minimum design criteria known at the early pre-design stages; i.e.,

All-Steel's new 200 Series Chairs



building type, functional space allocations, geographical location and time of construction.

The heart of the system's computer program is a mathematical model capable of extending those minimum basic design criteria, through tested assumptions governing the remainder of the elements incorporated in such a project, to application of a cost data bank containing pertinent information as to cost of every material, equipment, labor production levels and rates necessary to perform every construction activity in the area and at the proposed time of construction start.

Criteria not defined by the user are realistically assumed by the computer program based on sound design data derived from a typical design cross section of a representative number of buildings in the given category analyzed for that purpose. The computer printout will identify all elements (either actual design or model-based assumptions) necessary to realize the project. The program computes their respective areas, volumes and material quantities and then retrieves from the cost data bank the pertinent materials and labor costs. It prepares a complete cost estimate sorted by individual activities within a trade, subcontract or system and modified by appropriate geographic and cost escalation indexes.

In the budget preparation stages, when limited criteria are available, the system of detailed assumptions will enable the user to obtain information for an advanced itemized scrutiny of cost and quality of each component. The cost of different types of space usage and construction components of a facility can be converted to a square- or cubic-foot cost figure that will accurately reflect the cost impact of each component.

Labor costs are stored in man-hours, so a total man-hour requirement by trade and activity can be obtained. This will provide a base for progress scheduling and labor availability analysis.

Since the cost data bank is created to service a broad spectrum of governmental, municipal and private sectors, actual cost informa-

tion obtained from ongoing construction is fed into the computer continuously to update and refine the cost data bank.

As more actual criteria become available during the design development stages, the information is fed into the computer, and progressively refined cost estimates are obtained enabling the user to identify in great detail the cost of the project vs. design complexity and specific site or other abnormal conditions. If the actual design results in higher cost than anticipated in the budget, a review of given and assumed criteria can be made, alternate solutions explored and respective cost results obtained in a matter of minutes. Thus, the system provides a correct scale of cost consequences for various design approaches and enables emphasis to be placed on deeper conceptual and functional aspects of design.

The system will be sufficiently flexible to provide accurate cost figures to preliminary planners on the basis of square-foot costs for each of the many types of functional areas and at the same time provide accurate cost targets in terms of building systems such as hvac, foundations, structural, decorating, fixed equipment, etc. so that the type of project designed will be commensurate with the type of project desired by the user.

Communication with the computer is based on a conversational mode via remote computer terminal. After coded log-in procedure, the pertinent input questions and instructions as to the formulation of answers appear at the terminal. The user answers the question, thus providing the necessary pertinent data for operation of the model simulation and cost estimating. The results in the desired report format are printed at the terminal, in a matter of minutes, thus providing the user with a printed copy of the entire conversation for his records. Available formats include: complete cost estimates with quantity surveys, cost estimates grouped by sub-contracts, major system costs, costs per square or cubic foot for the entire facility. Computations determining the foundations, structure or other systems can be retrieved for more detailed scrutiny.

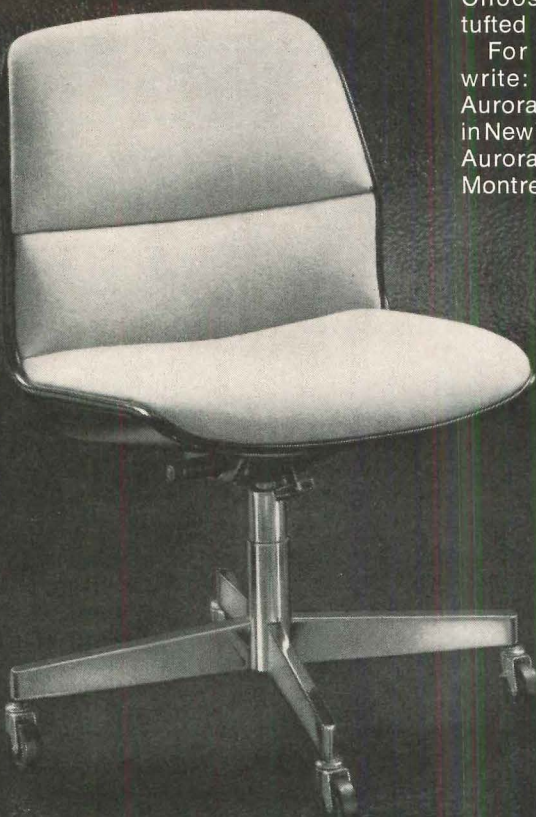
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COSTS UP 5.9 PER CENT FOR YEAR; INCREASE SMALLER THAN 1971 RATE

Construction costs across the nation rose an average of 5.9 per cent for the year ending September 30, compared to 7.8 per cent a year ago, according to the Dodge Building Cost Services Department's semiannual survey of 183 cities in the contiguous United States. In the six months since completion of the March 1972 survey, costs rose 3.3 per cent.

Contributing to the 5.9 per cent increase for the past year was an average 4.9 per cent rise in the cost of building materials, and a 6.9 per cent gain in wage rates for building trades craftsmen. A year earlier, during the 12-month period ending September 1971, craftsmen's wages had jumped 10.7 per cent.

Cost gains over the present 12-month period revealed an interesting shift in regional trends. For the past seven years, since October 1965, highest cost gains had been posted in the Northeast, led by the Metropolitan New York-New Jersey area. The current survey showed greatest increase in costs in New England, 6.7 per cent, followed by a 6.6 per cent cost hike in the Southeastern and South Central States. All other regions were under 6 per cent for the 12-month period, with the lowest rise, 5.3 per cent, in the Mississippi and West Central States area.

The Dodge Building Cost Services survey is based on cost data supplied by building trades unions, contractors and materials suppliers in 183 cities.

Metropolitan area	Cost differential	Current Indexes				% change last 12 months
		non-res.	residential	masonry	steel	
		1941 average for each city = 100.00 (except as noted)				
U.S. Average	8.3	390.6	366.8	382.5	372.6	+ 6.31
Atlanta	7.9	503.0	474.3	489.0	478.3	+ 8.26
Baltimore	8.2	426.8	401.3	416.5	403.2	+ 9.99
Birmingham	7.4	362.2	336.9	349.8	344.9	+ 7.88
Boston	9.1	398.8	376.8	395.8	383.1	+ 8.83
Buffalo	9.0	430.4	404.1	425.2	411.4	+ 3.54
Chicago	8.4	449.8	427.7	436.1	427.5	+ 5.98
Cincinnati	8.6	415.3	390.8	403.7	393.7	+ 6.22
Cleveland	9.3	434.6	409.0	423.7	413.7	+ 3.23
Columbus, Oh.	8.3	411.3	386.2	399.0	391.5	+ 4.16
Dallas	7.7	389.4	377.0	381.8	373.7	+ 7.86
Denver	8.2	419.3	394.4	414.4	400.1	+ 5.58
Detroit	9.5	437.2	416.5	438.8	421.5	+ 5.60
Houston	7.5	368.9	346.4	360.4	352.7	+ 4.57
Indianapolis	7.9	363.1	340.9	354.0	346.5	+ 6.02
Kansas City	8.2	371.0	350.6	361.6	352.0	+ 6.30
Los Angeles	8.2	433.1	395.9	420.2	411.7	+ 5.80
Louisville	7.7	389.3	365.6	379.9	371.1	+ 7.48
Memphis	7.6	369.2	346.7	356.4	350.6	+ 7.98
Miami	8.0	410.6	391.1	399.5	390.7	+ 5.49
Milwaukee	8.4	439.3	412.6	433.1	419.6	+ 3.94
Minneapolis	8.8	416.7	392.1	410.4	398.6	+ 3.94
Newark	8.7	380.3	357.1	374.9	365.6	+ 3.88
New Orleans	7.4	373.7	352.8	367.2	358.7	+ 8.00
New York	10.0	432.1	401.8	419.6	408.7	+ 6.84
Philadelphia	8.9	423.4	403.4	419.4	407.7	+ 11.75
Phoenix (1947=100)	7.8	222.4	208.8	214.8	210.9	+ 7.35
Pittsburgh	8.8	383.7	361.0	377.8	366.2	+ 4.87
St. Louis	8.7	407.0	384.2	400.3	389.0	+ 7.04
San Antonio (1960=100)	7.5	150.0	140.9	146.3	142.6	+ 4.30
San Diego (1960=100)	7.9	152.6	143.3	149.2	145.9	+ 5.18
San Francisco	9.4	572.8	523.5	571.1	549.5	+ 9.38
Seattle	8.5	380.4	340.4	376.8	362.1	+ 3.46
Washington, D.C.	7.9	372.8	350.1	361.0	353.5	+ 7.55

Cost differentials compare current local costs, not indexes.

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

1941 average for each city = 100.00

Metropolitan area	1971 (Quarterly)										1972 (Quarterly)					
	1962	1963	1964	1965	1966	1967	1968	1969	1970	1st	2nd	3rd	4th			
											1st	2nd	3rd	4th		
Atlanta	298.2	305.7	313.7	321.5	329.8	335.7	353.1	384.0	422.4	424.0	445.1	447.2	459.2	472.5	473.7	496.1
Baltimore	271.8	275.5	280.6	285.7	280.9	295.8	308.7	322.8	348.8	350.3	360.5	362.5	381.7	388.1	389.3	418.8
Birmingham	250.0	256.3	260.9	265.6	270.7	274.7	284.3	303.4	309.3	310.6	314.6	316.4	331.6	340.4	341.6	356.7
Boston	239.8	244.1	252.1	257.8	262.0	265.7	277.1	295.0	328.6	330.0	338.9	341.0	362.0	377.3	378.5	392.8
Chicago	292.0	301.0	306.6	311.7	320.4	328.4	339.5	356.1	386.1	387.7	391.0	393.2	418.8	422.8	424.0	442.7
Cincinnati	258.8	263.9	269.5	274.0	278.3	288.2	302.6	325.8	348.5	350.0	372.3	374.3	386.1	399.9	401.1	400.1
Cleveland	268.5	275.8	283.0	292.3	300.7	303.7	331.5	358.3	380.1	381.6	391.1	393.5	415.6	415.2	416.4	427.7
Dallas	246.9	253.0	256.4	260.8	266.9	270.4	281.7	308.6	327.1	328.6	341.4	343.4	357.9	364.9	366.1	385.0
Denver	274.9	282.5	287.3	294.0	297.5	305.1	312.5	339.0	368.1	369.7	377.1	379.1	392.9	398.3	399.5	413.8
Detroit	265.9	272.2	277.7	284.7	296.9	301.2	316.4	352.9	377.4	379.0	384.6	386.8	409.7	416.9	418.1	431.5
Kansas City	240.1	247.8	250.5	256.4	261.0	264.3	278.0	295.5	315.3	316.6	329.5	331.5	344.7	348.7	349.9	365.4
Los Angeles	276.3	282.5	288.2	297.1	302.7	310.1	320.1	344.1	361.9	363.4	374.2	376.4	400.9	407.8	409.0	422.9
Miami	260.3	269.3	274.4	277.5	284.0	286.1	305.3	392.3	353.2	354.7	366.8	368.9	384.7	391.5	392.7	404.8
Minneapolis	269.0	275.3	282.4	285.0	289.4	300.2	309.4	331.2	361.1	362.7	366.0	368.0	417.1	401.7	402.9	411.3
New Orleans	245.1	284.3	240.9	256.3	259.8	267.6	274.2	297.5	318.9	320.4	327.9	329.8	341.8	350.9	352.1	368.1
New York	276.0	282.3	289.4	297.1	304.0	313.6	321.4	344.5	366.0	367.7	378.9	381.0	395.6	406.5	407.7	421.5
Philadelphia	265.2	271.2	275.2	280.8	286.6	293.7	301.7	321.0	346.5	348.0	356.4	358.4	374.9	394.2	395.4	417.9
Pittsburgh	251.8	258.2	263.8	267.0	271.1	275.0	293.8	311.0	327.2	328.7	338.1	340.1	362.1	364.5	365.7	378.7
St. Louis	255.4	263.4	272.1	280.9	288.3	293.2	304.4	324.7	344.4	345.9	360.0	361.9	375.5	385.5	386.7	400.9
San Francisco	343.3	352.4	365.4	368.6	386.0	390.8	402.9	441.1	465.1	466.8	480.7	402.6	512.3	535.3	536.5	559.4
Seattle	252.5	260.6	266.6	268.9	275.0	283.5	292.2	317.8	341.8	343.3	347.1	349.0	358.4	363.0	364.5	369.9

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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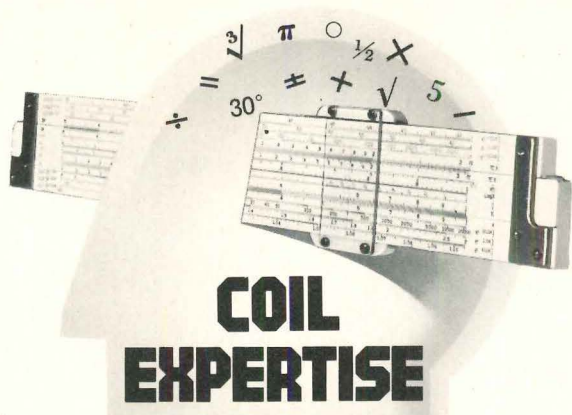
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Mickey shows friends the way to Disneyland's monorail station—on a Goodyear Speedramp system.

© WALT DISNEY PRODUCTIONS

This Speedramp has carried over 40 million people, plus an occasional mouse

It was installed in 1969. Since then, this Goodyear Speedramp passenger conveyor system has carried thousands of Disneyland visitors a day to and from the monorail. Like the other eight Goodyear "moving ramp" units at Disneyland, it has done its job smoothly, safely and efficiently.

Which is why the Disneyland organization installed additional Goodyear systems at its new Walt Disney World in Florida.

In fact, over 150 Speedwalk and Speedramp systems are in service today. In airports. Shopping centers. Department stores. Stadiums. Industrial plants. Many

have been on the job for almost 20 years, carrying people, shopping carts, pets and baby carriages. And keeping downtime, maintenance costs and insurance expense to a minimum.

If your problem is moving people up and down between levels, the Speedramp system is your answer. It handles crowds easily, cuts down congestion and confusion. It has no disappearing steps to worry the elderly and the very young. It even lets wheelchairs roll on and off safely and smoothly.

And if you want to move people

horizontally—through long corridors or between buildings and adjacent parking areas—the name to remember is Speedwalk. For full information on both these proven passenger conveyor systems, write: The Goodyear Tire & Rubber Company, Transport Systems, Box 52, Akron, Ohio 44309.

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sion of solid glass walls, with uniform reflectivity of the naturalized surroundings.

This total glass approach helps settle the development into its site, and also preserves the natural feeling of spaciousness.

A great deal of practicality enters the picture, too, since the high thermal performance of the *Solarban* 575 units contributes significantly to occupant comfort. And the matching, reflective *Solarban* spandrel units outperform conventional single-glazed spandrel products in both U-value and shading coefficient. *Solarban* spandrel units are opaque and need no backup

material for visual purposes. And because of the low U-values, field installation of backup insulation material is not required.

See PPG about *Solarban Twindow* units—and the new matching spandrel units—for your next building. Early in the design stages. Write PPG Industries, Inc., One Gateway Center, Pittsburgh, Pa. 15222.

Developer: The John Madden Company,
Denver, Colorado
Architect: Kirkham-Michael & Associates,
Omaha, Nebraska

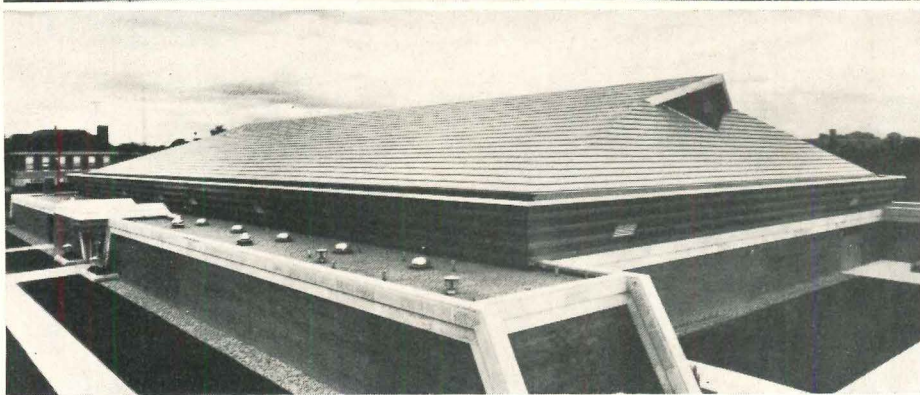
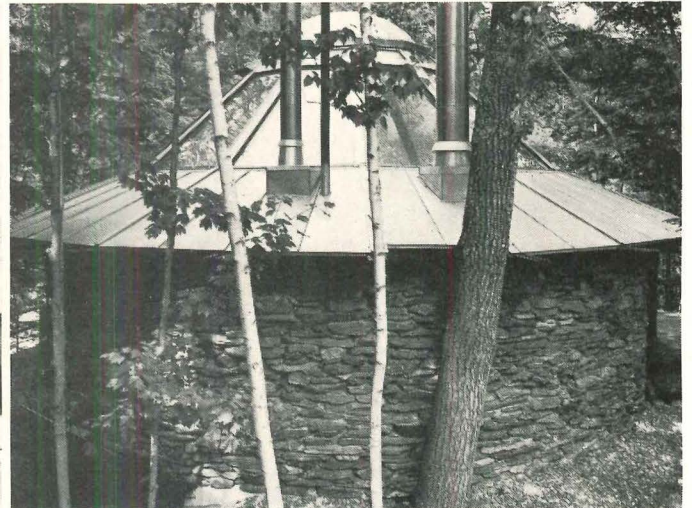
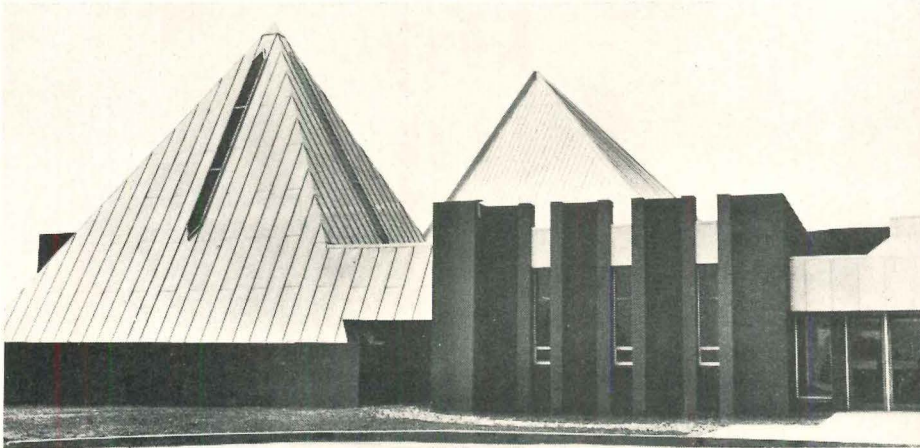


PPG: a Concern for the Future

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These ideas could change your mind about roofs.



(Upper left) Roof and walls in one piece . . . and of stainless steel! This is the new Temple Adath Yeshurun, Syracuse, New York. 24,000 square feet of DUROFLASH stainless* was used.

(Above) The unusual dodecahedron roof of this space-age ski lodge in Vermont features DUROFLASH stainless in 24 planes, joined to 12 trapezoidal Plexiglas* windows.

(Lower left) America's largest bermuda roof. The Benjamin F. Yack Recreation Center, Wyandotte, Michigan. Thirty tons of DUROFLASH roofing sheets. Forty-one thousand square feet. Installed with spectacular ease.

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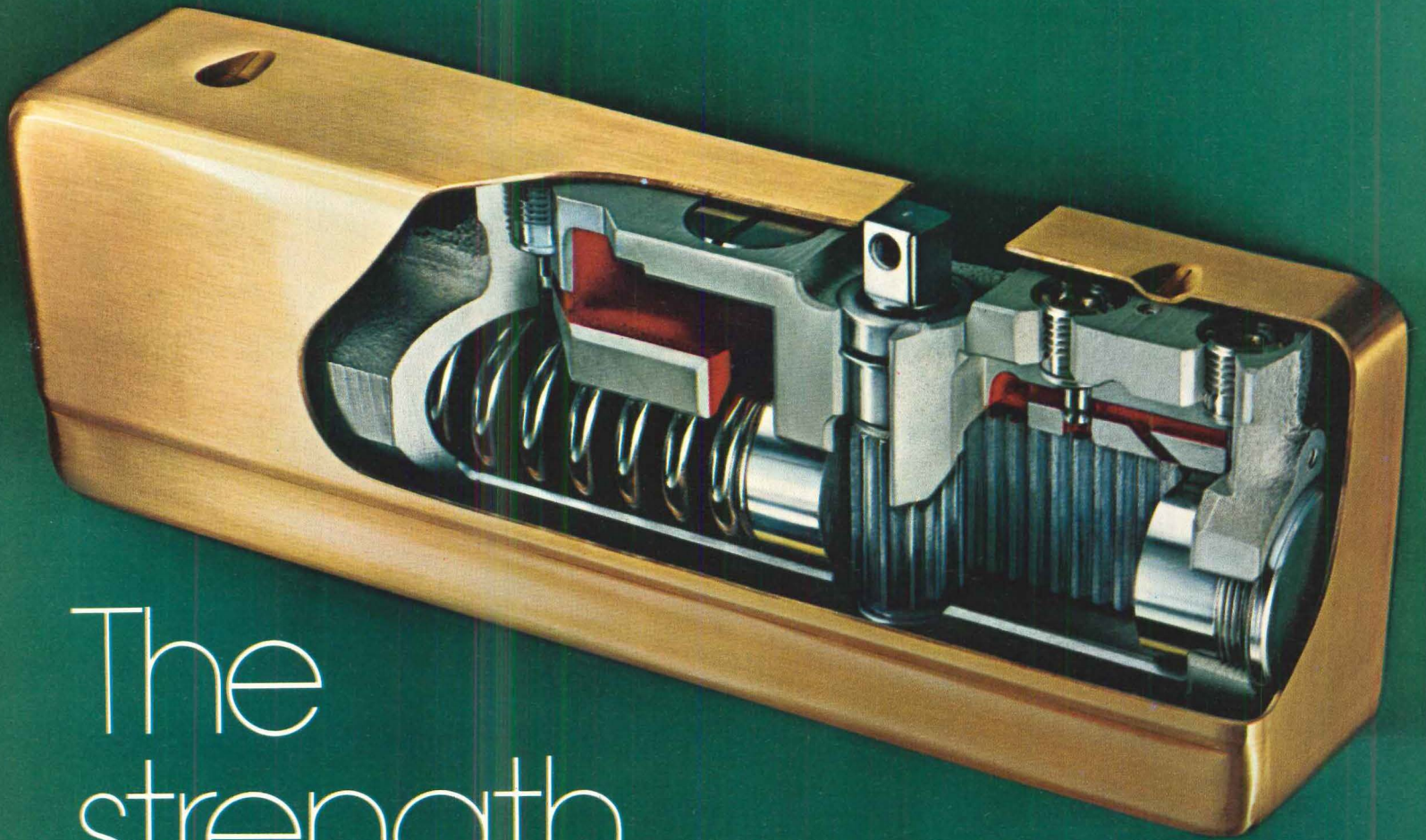
We'll be glad to send useful reference literature describing these applications and perhaps suggesting some for you. Write for new brochures Adv. 2218 and Adv. 2271. Republic Steel Corporation, Cleveland OH 44101.

*Plexiglas is a trademark of Rohm and Haas Company.

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Loktuft[®] survives on three meals a day.

Three times a day, seven days a week, 2,500 students of Bob Jones University, Greenville, South Carolina, torture a carpet backed with Loktuft[®] Duon secondary backing.

The carpet is a 42 oz. level loop by Wunda Weve Carpets, Division of Dan River Inc. The 85' x 300' tackless installation, over dense rubber padding, is the largest carpeted university dining room in America.



Loktuft Duon secondary backing was used because it lays flat without bubbling or rippling. It also saves time and labor since it does not require extensive power stretching to achieve a good, flat installation. Loktuft cuts cleanly without fraying. And seams join almost invisibly.

Now they've discovered how well it performs.

After two years, Jim McAbee of Certified Carpet Service, Greenville, reports not a single call-back on the installation. No stretching. No delamination problems.

Loktuft Duon secondary backing withstands the rigors of intense traffic, movement of thousands of chairs and repeated cleanings.

Even massive water spills common to large dining hall facilities create no puckering problems and that's because Loktuft is made with Marvess[®] olefin, a Phillips 66 fiber which resists damage from rot, mildew and insects.

Loktuft Duon. If it can handle three meals a day at Bob Jones University, it can handle anything you might serve up.

Loktuft[®]
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FOUR MO-SAI TEXTURES & COLORS IN PET PLAZA

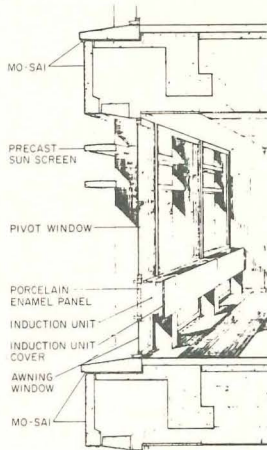
ST. LOUIS, MISSOURI

Mo-Sai color and texture versatility is demonstrated well in this distinctive St. Louis office tower. Four different Mo-Sai colors and textures, in exposed black and pink granite and crushed white limestone, were used to coordinate building and plaza areas. Mo-Sai panels on the main building, paving for the plaza, Mo-Sai railings on observation balcony and surrounding the plaza all complement the architectural design. White concrete sunscreens, also supplied by the Mo-Sai manufacturer, provide a contrasting texture-color.

Clip angles cast in the Mo-Sai units were used to bolt them to poured-in-place concrete structural members.

PET PLAZA / St. Louis, Missouri
Architects: A. L. Aydelott & Associates
Structural Engineers: Severud-Perrons-Sturm-Conlin-Bandel
General Contractor: G. L. Tarlton Contracting Co.

Stouffer's Riverfront Inn, a circular tower motor hotel, also built by a Mo-Sai manufacturer, is in the background. Architect: William B. Tabler, N.Y.C.



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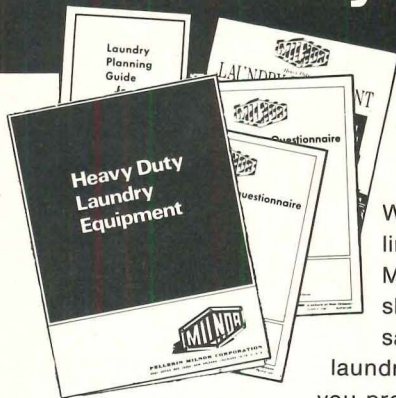
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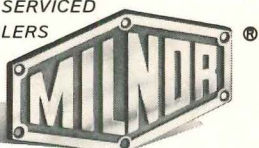
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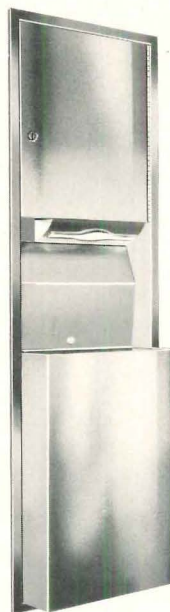
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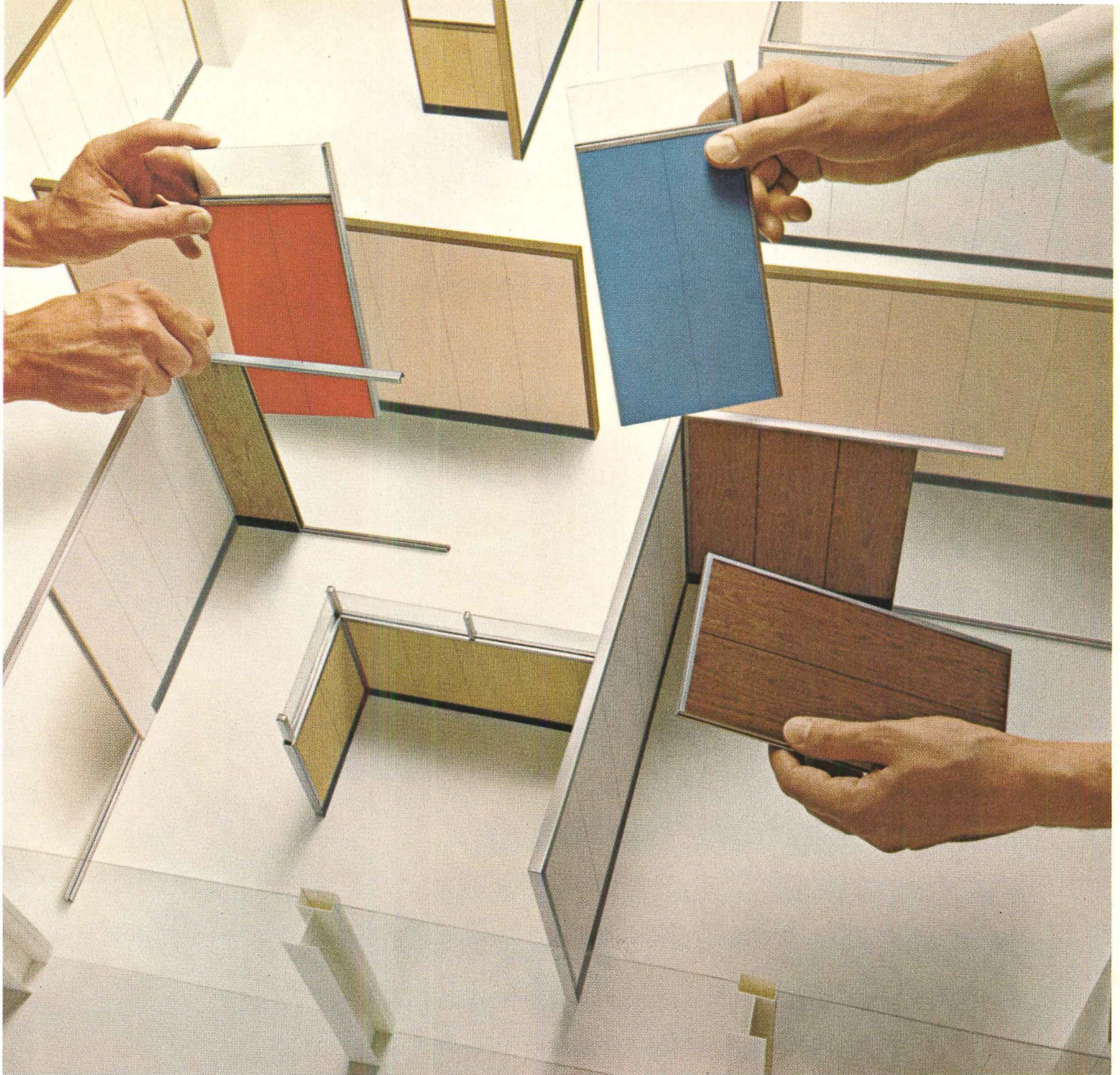
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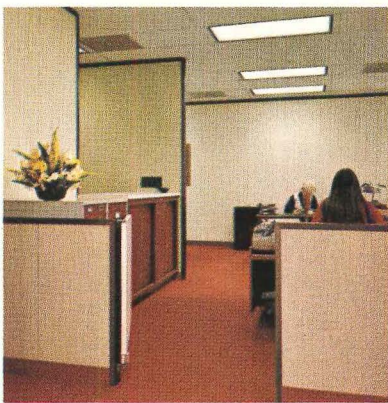
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Kawneer introduces

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**A versatile new entrance program
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Design options featuring exclusive 4½" frame depth

Kawneer's Manual Balanced Aluminum Entrances provide design versatility for those jobs which require maximum door control without sacrificing ease of operation. Narrow, medium and wide door styles can be installed in a narrow 4½" as well as a standard 5½" depth framing system. Now you can specify a manual balanced door and still maintain consistent mullion depth throughout your design . . . whether the desired look is an extremely slim or monumental profile.

Engineered performance

Each entrance is engineered for maximum strength and durability. Doors feature rugged dual-moment corner construction, self-aligning pivots with spring-cushion backstop, and adjustable pile weathering on all four sides. Frame joinery is specially engineered to withstand abusive traffic and heavy winds. Pivot nearer door center nearly equalizes wind and stack pressures on either side—so the door requires less force to be opened, less pressure to stay closed.

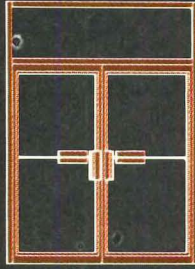
Economical installation

Factory fabrication and assembly of the total entrance unit insures precise alignment of moving parts and quality workmanship throughout. Elimination of time-consuming and costly jobsite fabrication and assembly holds installation costs to a minimum.

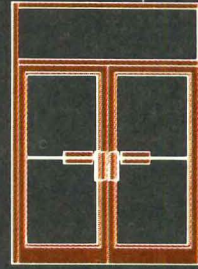


Design flexibility

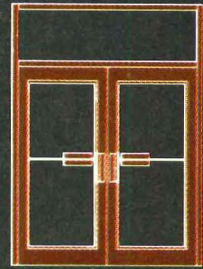
The Manual Balanced Entrance Program allows choice of any of these three basic door types. Each can be combined with 1 3/4" x 4 1/2" standard framing for the slimmest appearance in the architectural aluminum industry. Or with 2 3/4" x 5 1/2" framing to achieve maximum structural qualities.



'190' Narrow Stile Door



'350' Medium Stile Door



'500' Wide Stile Door

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The combination of four sigma deep penetration welds plus mechanical fastening at all corners provides exceptional door strength.

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A perfect fit can be obtained on all four sides of the door to assure maximum resistance to air and water infiltration under the most severe conditions.

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Available in Permanodic® Hard Colors and Clear Finish

Entrances are available in hardcoat PERMANODIC® finishes of medium bronze, dark bronze, and black or in Alumilite clear finish. Extruded aluminum balance arms and pivots can be anodized to match the entrance finish. Stainless steel pivots and arms are optional.

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tential fire hazard. Copper will not burn and decompose to toxic gases or conduct fire through floors, walls and ceilings.

So, keep taking copper plumbing for granted. Copper is a quality product, backed by years of proven service and code acceptance everywhere. It may cost a little more to begin with, but first cost is the least cost when it's the last cost.

For a booklet listing 44 solid reasons why copper is your best buy, write: Copper Development Association Inc. 405 Lexington Avenue, New York, N.Y. 10017.

Copper plumbing. The dependable one.



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GUND HALL— HARVARD'S GRADUATE SCHOOL OF DESIGN UNDER ONE ROOF

Some threatened but still powerful ideas can be seen in Harvard's new Graduate School of Design by John Andrews, Architects: the idea (on which the multi-disciplined GSD itself is based) that design programs should be applicable in scale from buildings to cities; the idea that complex design must be approached as an interdisciplinary problem; the very idea that architectural space can give form to such conceptions. The program written for Gund Hall by the GSD was followed closely and it was completed quickly for a large building, though some might deny these statements. But the strong protests over the building in 1969 (see discussion, page 104) slowed it down very little really, and changed almost nothing. The meaning of Gund Hall lies in these impassioned protests that occurred when the building became a symbol of discredited values, as well as in its crystallization of architectural ideas.

Len Gittleman

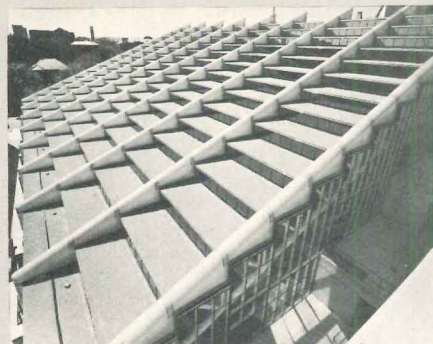
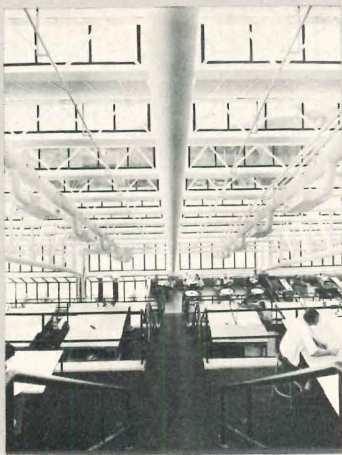




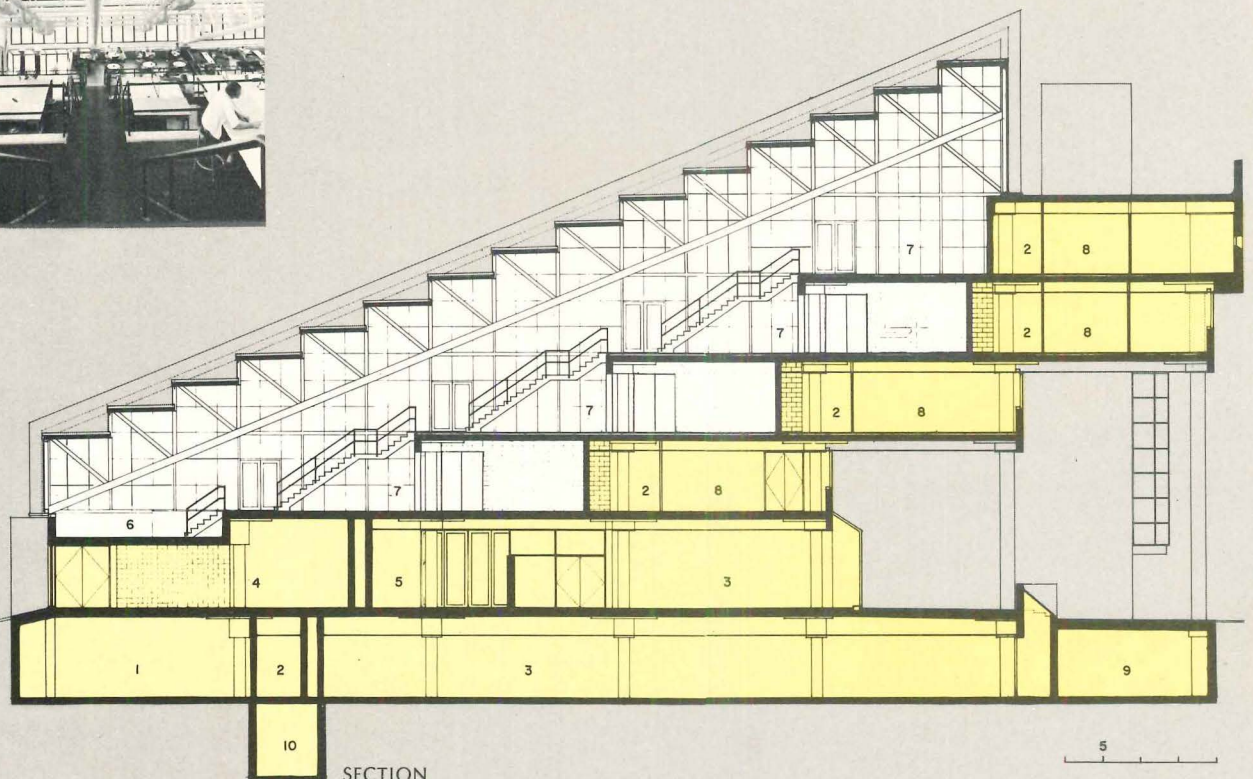
The central studio space is covered by a canopy of glass and steel—it is the principal symbol of the design

The central studio at Gund Hall brings together for the first time in fifty years all programs within the Graduate School of Design at Harvard. It brings them together physically and as a symbol of the GSD, but it will take time to learn whether these separate entities—Department of Architecture, City and Regional Planning, Landscape Architecture, The Urban Design Program, The Program for Advanced Environmental Studies, and the Laboratory for Computer Graphics and Spatial Analysis—can work together as an interdisciplinary unit, without hierarchy, as intended. As the section shows, there are areas at the back of each level where individuals or groups may have securely private spaces if they choose.

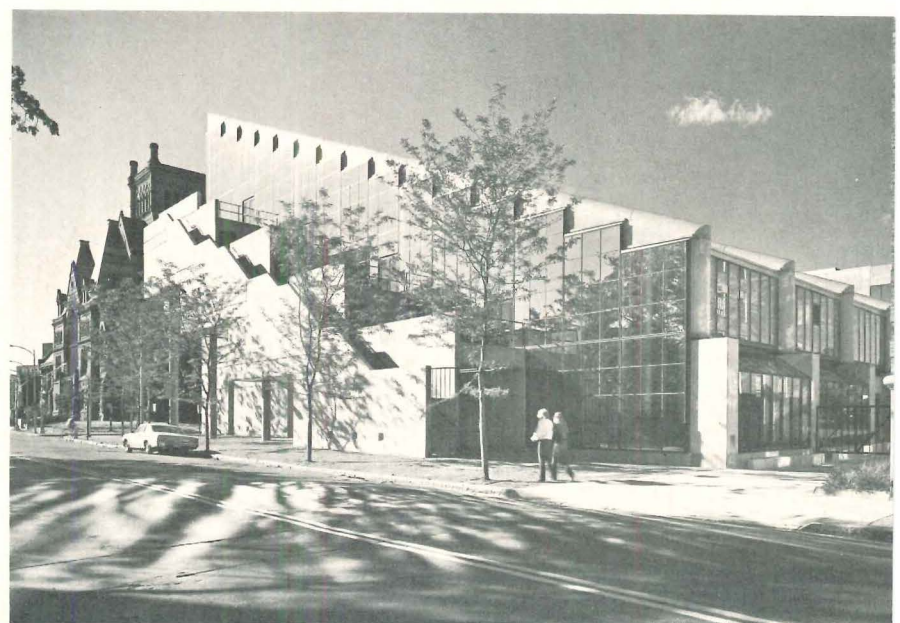
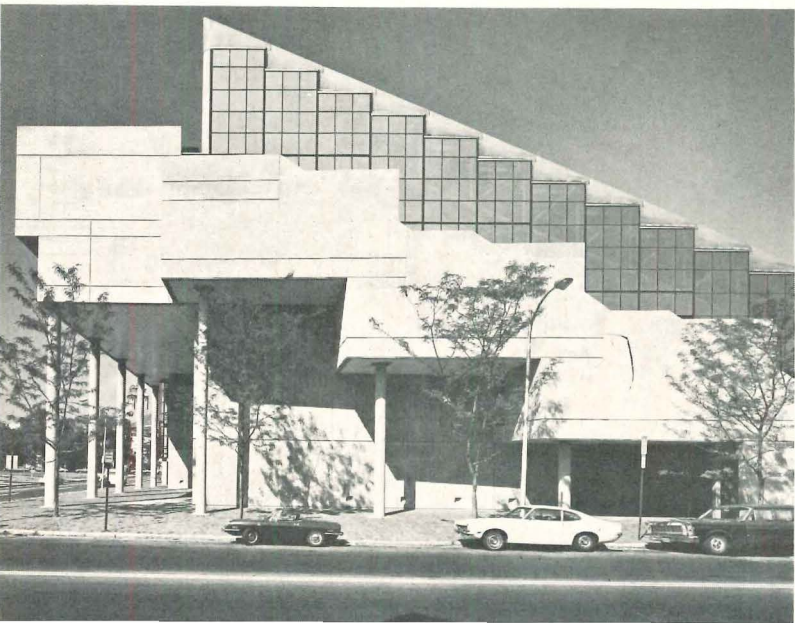
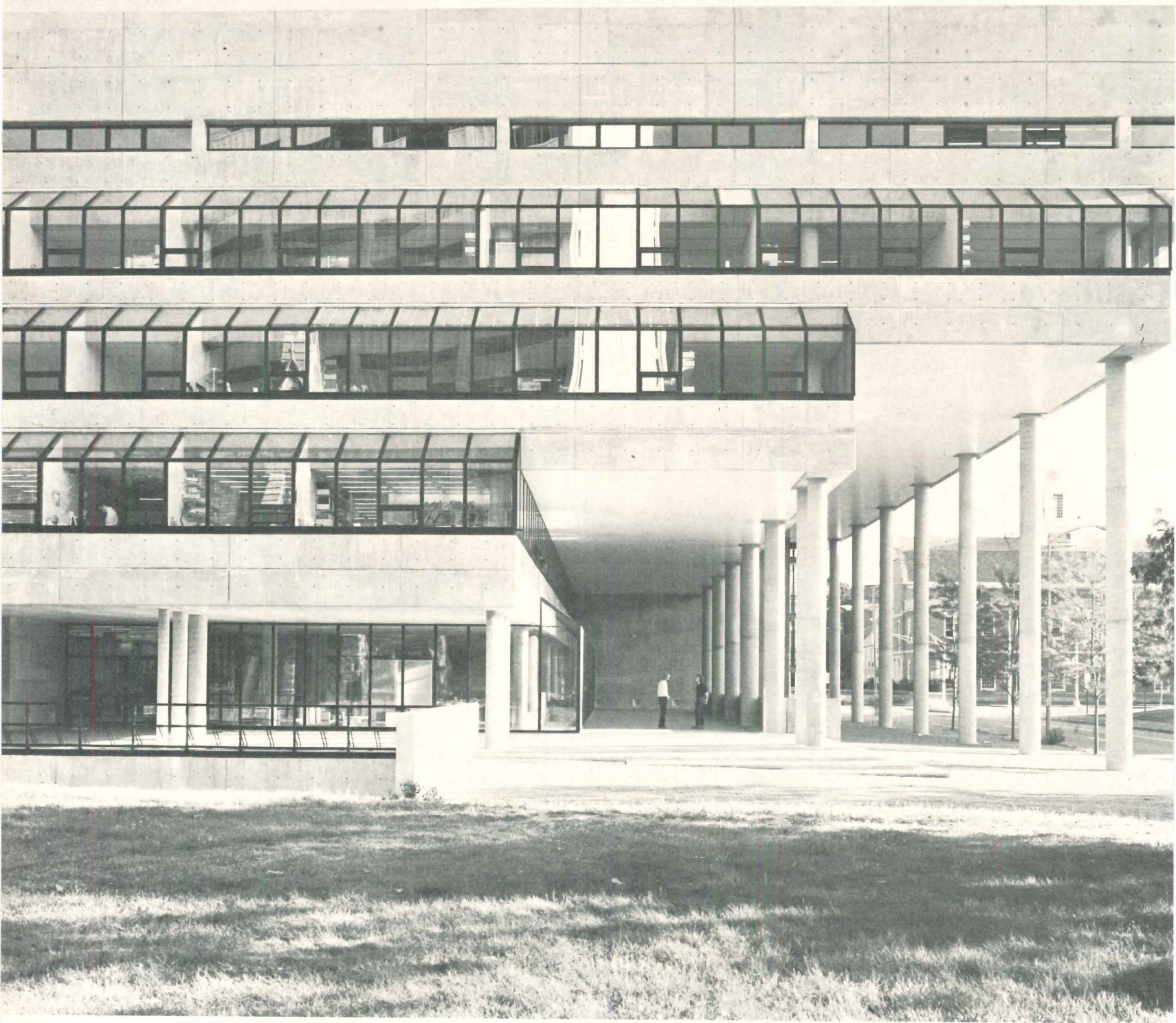
Steve Rosenthal photos



- 1 Audio visual
- 2 Circulation
- 3 Library
- 4 Technology workshop
- 5 Exhibition
- 6 Design workshop
- 7 Studios
- 8 Faculty offices
- 9 Microforms and maps
- 10 Mechanical tunnel

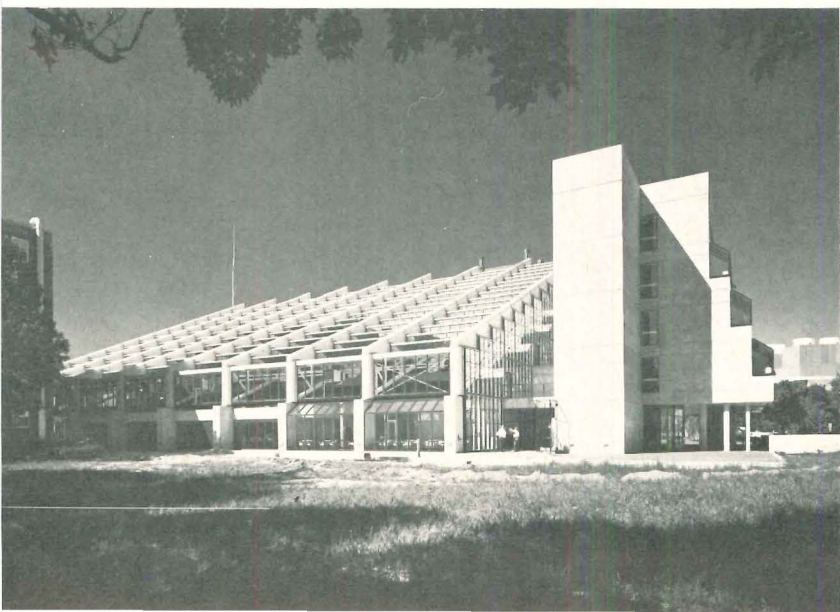
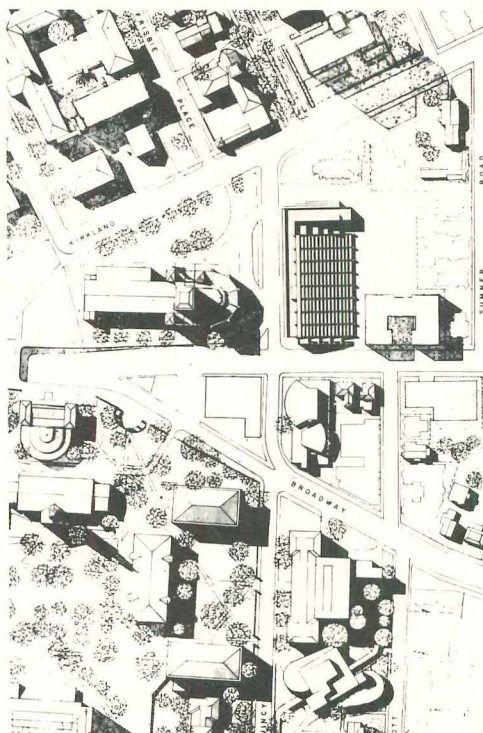






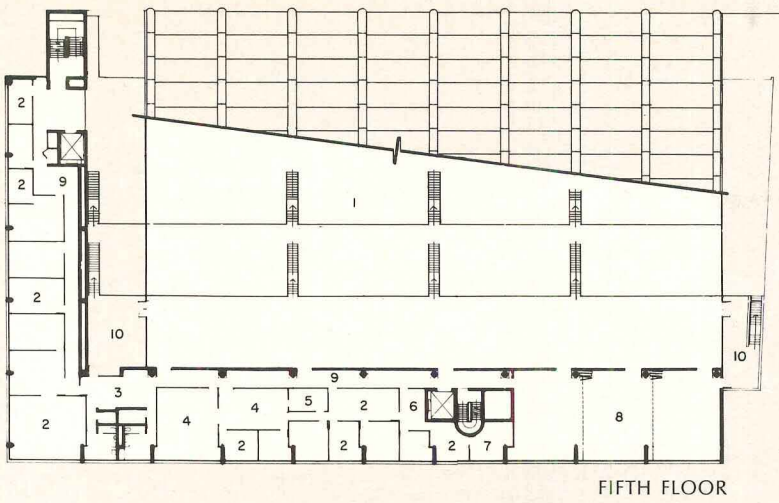
A walk around Gund Hall shows the changes in appearance that make it many different buildings, day and night

Leaving the buildings around it unacknowledged, Gund Hall manipulates its own expressions of circulation, material, symbol and historical context. In that way and many others it is like its neighbor down the street, Carpenter Center. Slight changes in position as a viewer bring sudden changes in proportion and a look at new details. The iridescent green of the fiberglass roof is unfamiliar as an architectural material; it has feelings of science fiction, or the opposite quality of camp fires at night. The other exterior surfaces are exposed reinforced concrete and a gray tinted glass. The concrete columns along the front facade are a clear announcement of the entrance; the high overhangs create generous shade, but little protection from wind or hard rains.



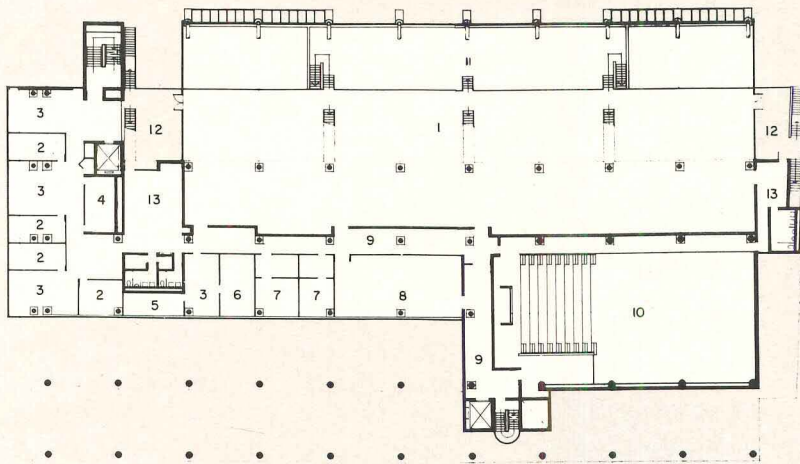


Inside, the Francis Loeb Library, Piper Auditorium, and faculty offices are arranged as supporting spaces to the studios



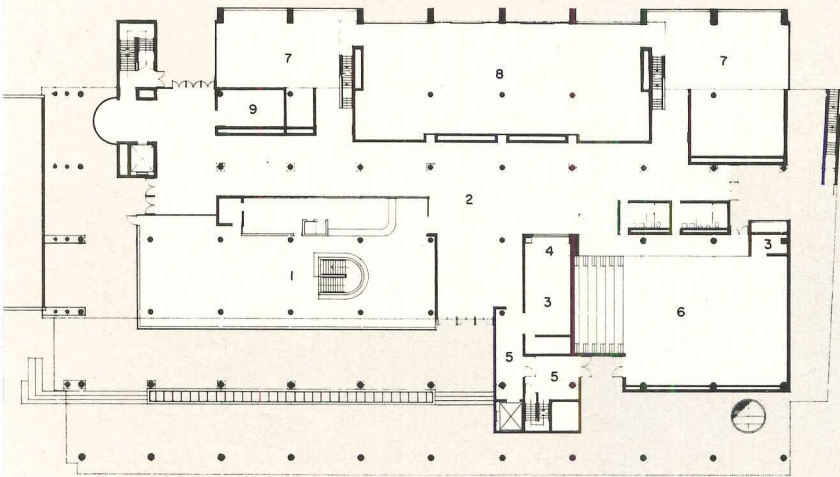
- 1 Studio
- 2 Faculty offices
- 3 Lounge
- 4 Computer
- 5 Storage
- 6 Secretarial
- 7 Director
- 8 Seminar
- 9 Circulation
- 10 Terrace

FIFTH FLOOR



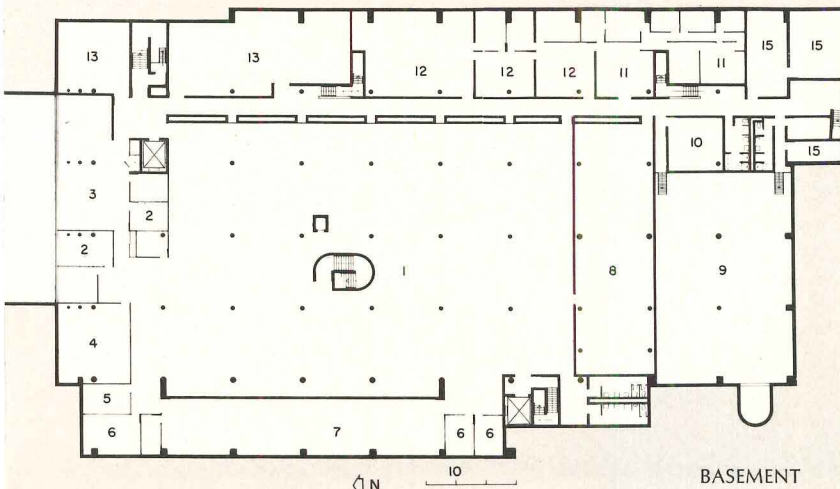
- 1 Studio
- 2 Chairman
- 3 Secretarial
- 4 Conference
- 5 Assistant dean
- 6 Dean
- 7 Administration office
- 8 Seminar
- 9 Circulation
- 10 Lecture hall—upper level
- 11 Design workshop
- 12 Terrace
- 13 Lounge

SECOND FLOOR



- 1 Library
- 2 Exhibition
- 3 Storage
- 4 Bar
- 5 Circulation
- 6 Lecture hall
- 7 Studio
- 8 Technology workshop
- 9 Janitor

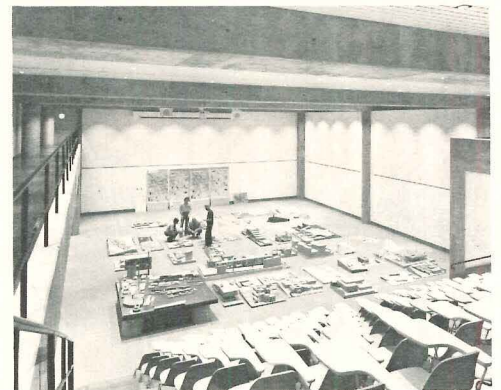
GROUND FLOOR

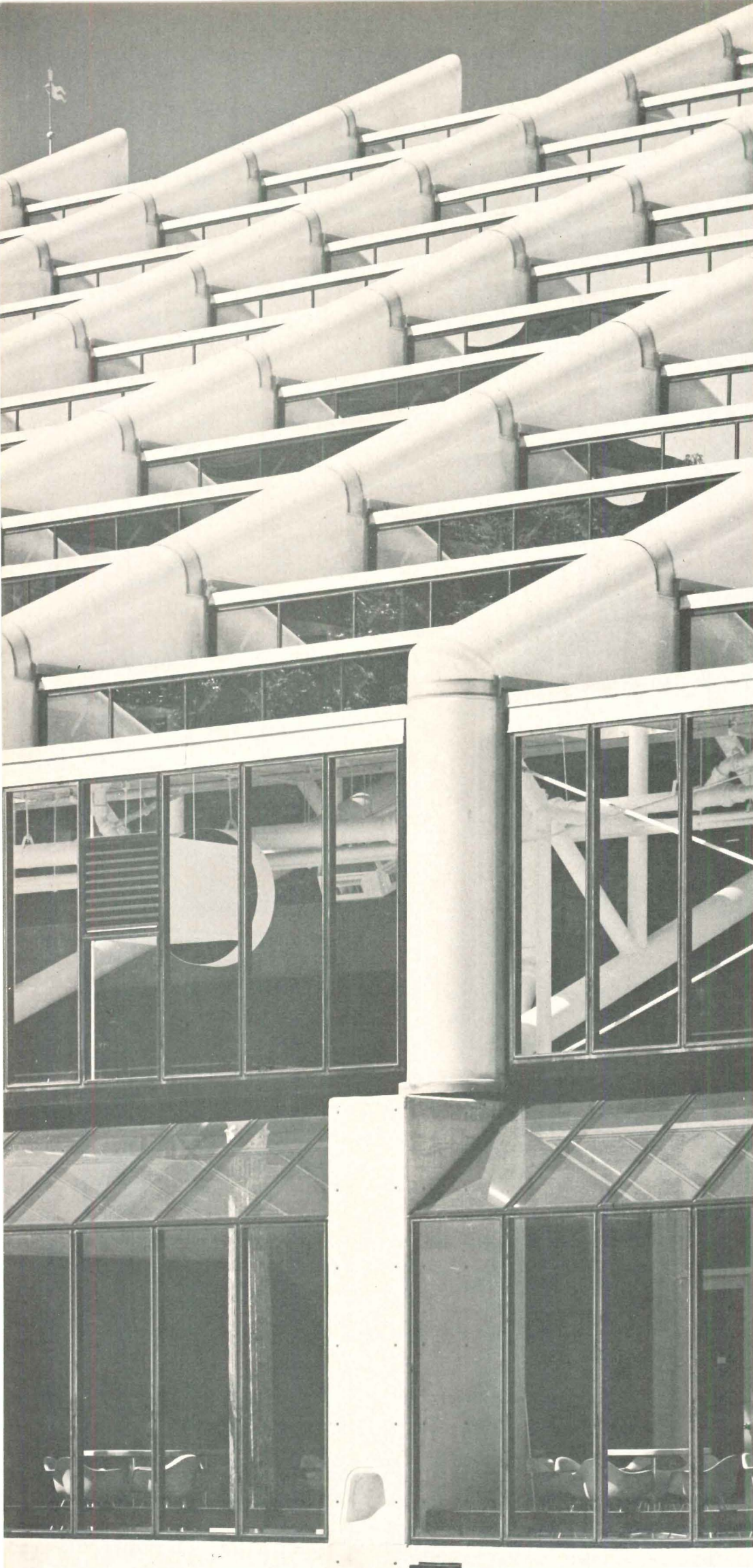


- 1 Library
- 2 Library administration
- 3 Technical services
- 4 Rare books
- 5 Staff lounge
- 6 Group study
- 7 Microforms and maps
- 8 Vertical files
- 9 Mechanical
- 10 Reproductions
- 11 Photography
- 12 Audio visual
- 13 Storage
- 14 Circulation
- 15 Electrical

BASEMENT

Loeb Library and the auditorium occupy most of the ground floor, with the largest portion of the library space in the basement. Loeb Library houses 155,000 volumes and has become a major architectural collection. The building may be expanded if necessary from the point of the stair tower at the end of the shorter office wing, shown in the photo at left. Gund Hall now contains over 150,000 square feet of floor space, with space for 500 students, about 80 faculty, and 50 administration including library and workshop staffs. The building is air-conditioned using chilled water from the Harvard central utility plant, and it is heated through high-pressure steam from the same source.





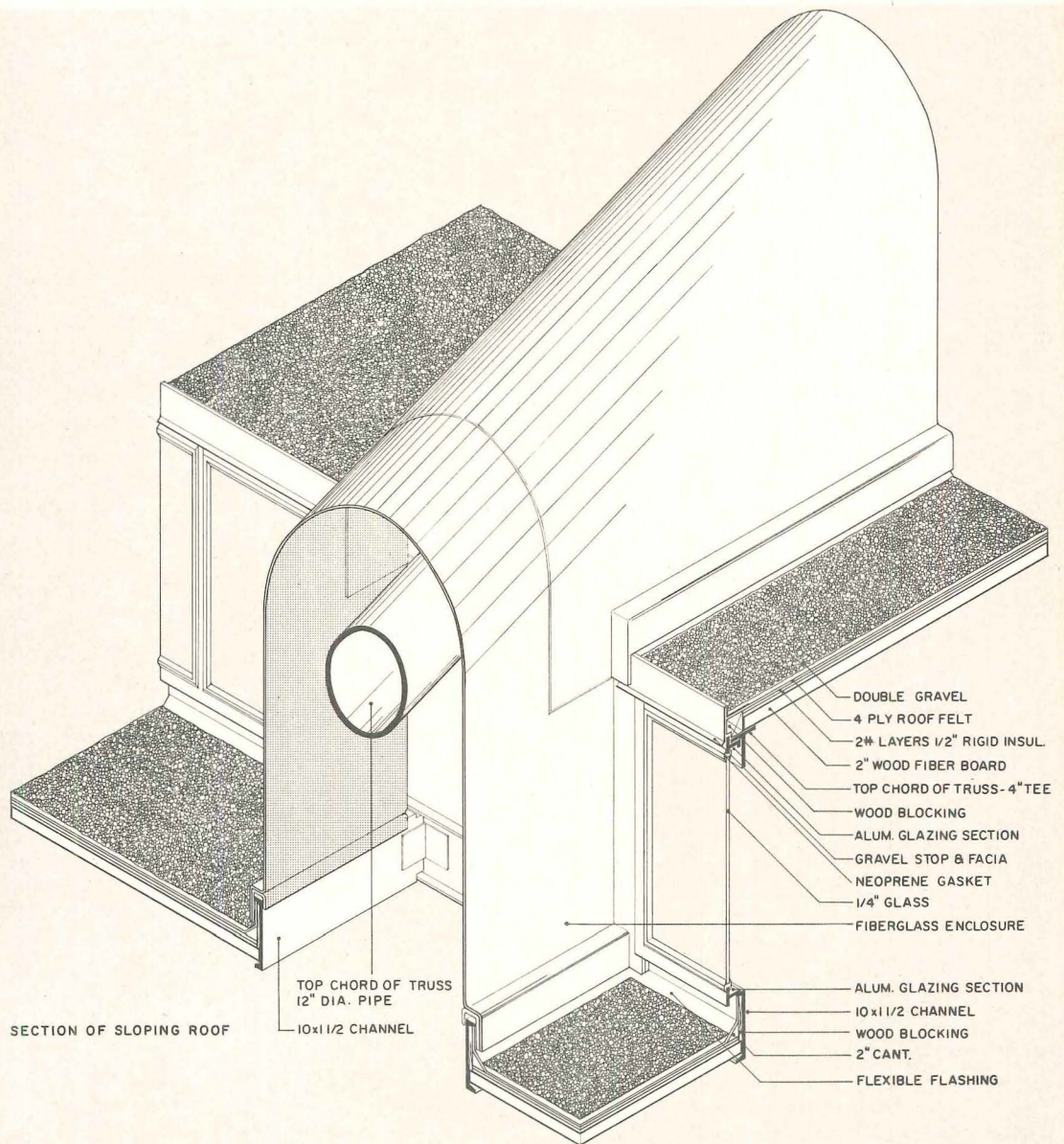
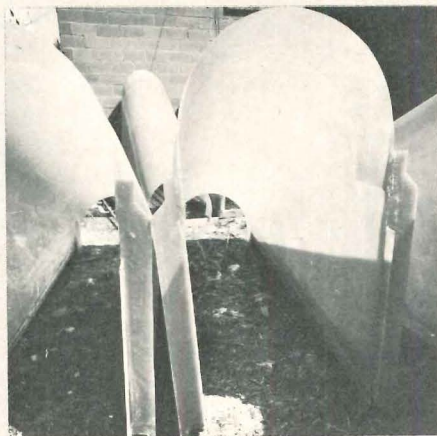
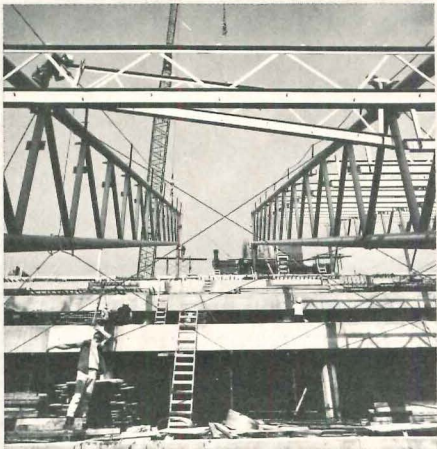
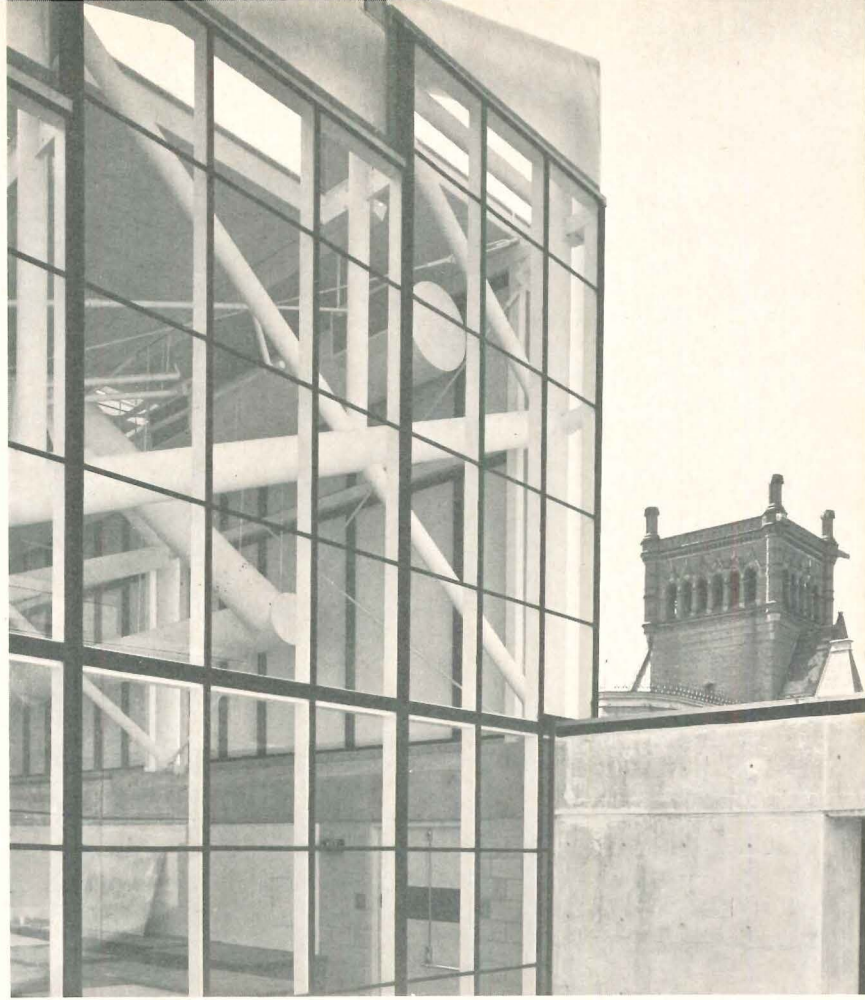
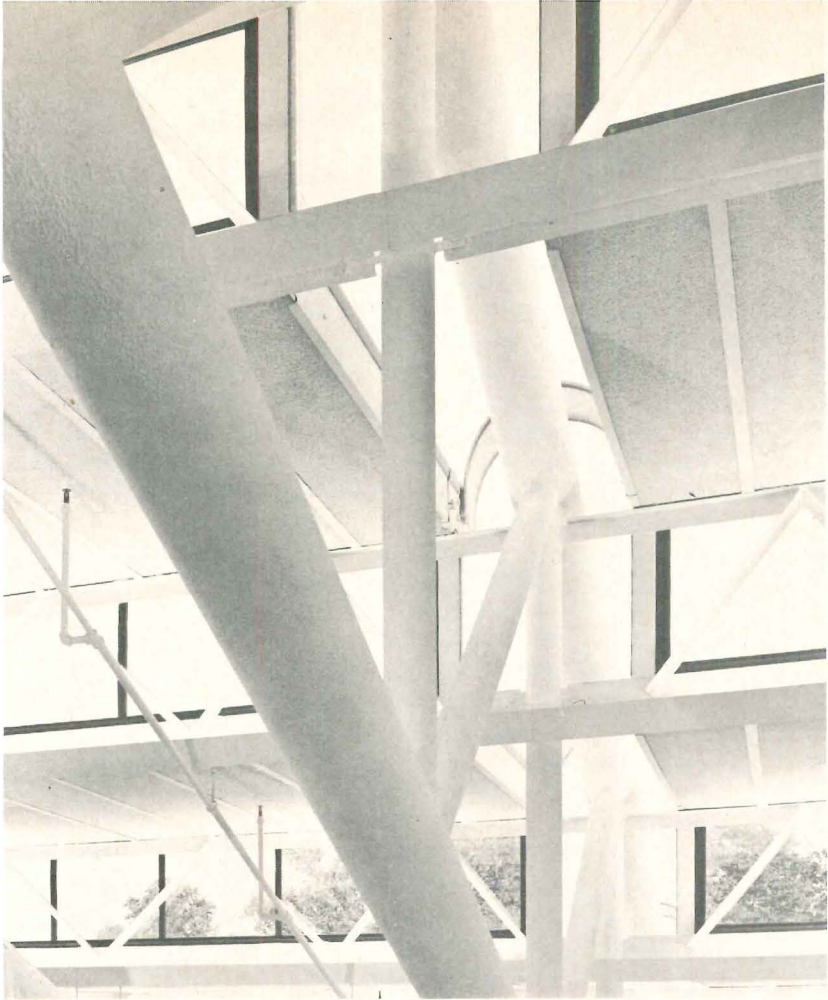
The roof was the major technical problem, solved with 134-foot clear-span tubular trusses, fiberglass, and fire-retardant paint

Translating the clear conceptual idea of the studio space into reality was the main problem of Gund Hall's engineering and construction. The visual qualities of the details, as well as the engineering, were an issue because the Andrews office wanted the structure and mechanical systems of the roof exposed, partly as a teaching tool. The 134-foot-long, 11-foot-deep main trusses were built from round steel tubing partly for this reason; tubing allows cleaner connections in welding than "I" beams or angles, and there are not so many edges to reveal the fireproofing that is indeed in place on the trusses. The round tubing is also an efficient shape in compression, one portion of the resisting force in any truss. Lateral bracing of the studio frame has been accomplished through x-member tension cables at both end bays, at the high and low elevations of those bays. Lower ends of each main truss are supported on a sliding bearing plate to accommodate movement.

The fireproofing is about one-eighth-inch thick coating of intumescent paint on all surfaces of the trusses, which gives a three-fourths-hour fire rating. (Intumescent paint expands, or foams up, if heat hits the trusses, becoming after that a thick layer of incombustible insulation.)

The translucent roof truss enclosures were prefabricated in sections, each section hand laid-up in moulds out of glass-fiber-reinforced resin. The resin is self-extinguishing in case of fire, and very precise mixing controls must be maintained to keep such self-extinguishing resins translucent; usually they become opaque. Thus, the covers allow some light into the studio space and the glazing brings in the rest. The internal solar effect of the large areas of glass in Gund Hall required careful study; reflective glazing is used on most of the east, south and west facades (including studios) while north-facing windows are mostly clear glass. Hot water convectors of various configurations are located to "wash" against most glazed areas, and in the studio high-velocity reheating and air-conditioning units are organized with the larger visual pattern.

Natural light is an important part of the illumination within studios during the day, but not all of it. There is support lighting of standard fluorescent fixtures in the low-ceiling areas, and indirect lighting within the saw-tooth configuration of the roof. The main library, the ground floor gallery, and the office areas are covered with an unusual and effective metal batten ceiling in which fluorescent lighting has been integrated using single lamp fixtures.



From the beginning, Gund Hall stood for broad social and architectural issues it could not reconcile

An architect designing for other architects knows he's in trouble from the start, though John Andrews fared better at Harvard than some others have in the recent past. The design process for Gund Hall was threatened in the spring of 1969 by students who thought the building should never be built at all, by several Harvard design professors who agreed with them, and by the general ambivalence within the administration over whose side to take, or rather how low their profile should be until the trouble stopped.

But José Luis Sert, who was dean from 1953 to 1969, believes the building has remained true to the early program which the School submitted to Andrews. Tom Stifter (he helped write the program) who is now assistant chairman of the department of architecture and a consistent critic of the Andrews design says "... Yes, the program was followed, logistically at least." So the student protests caused almost no changes in the original ideas, and the architect held his decisions intact; the smaller but constant day-to-day problems he did have may be attributed to vague, shifting lines of communication. "The identity of the client was always unclear," says Graham Gund, a Cambridge architect whose family was the principal donor. "Was it the school? The faculty? The dean, nominally the working decision-maker, changed three times in the course of construction."

Yet the questions, once raised, have not gone away. The serious disruptions at Harvard in the spring of 1969 triggered by the invasion of Cambodia and the Kent State shootings are part of it. Earlier, there were local but still university-wide street actions questioning Harvard's role in the community around it. More specifically, there were arguments in the GSD over the Urban Field Service, an advocacy architectural program run by GSD professor Chester Hartman. Some students, and some students within the GSD particularly, believed the university was insensitive to the housing, financial and job conditions of neighboring people. Hartman's Urban Field Service, one small attempt to reach the community, was given little funding, and students did not receive academic credit for participating. "Some students and some faculty thought the building should not be built at all, that it was socially irresponsible and that money should be spent in another way," says Maurice Kilbridge, the present dean. Specific architec-

tural dissatisfactions were harder to articulate, but they nevertheless existed. Ray Frieden, then a student at the GSD says this: "There was a feeling that Gund Hall was too specialized; that there was no room for flexibility or significant change; that Gund Hall was a place for turning people out mechanically. The building was, and is, clearly in the mainstream of the profession, and people believed they wanted no part of the mainstream, or the main line that was discredited."

These arguments are important and they give us clues about the dual meaning assigned to Gund Hall by the people involved with its building. They will be further clarified by looking at the building itself.

The main studio is described this way by Ned Baldwin, partner-in-charge for the Andrews office: "It is a simple loft space organized so that the various disciplines it houses all will rub elbows. Students and faculty will constantly be exposed to one another rather than isolating themselves. Re-allocation of space among the disciplines can occur with ease, and most importantly, it is not so easy for hierarchies to develop between them. All subjective and visual potential in detail and choice of materials have been utilized to further express these concepts." The ideas that designers from many disciplines should work together as a design team—and the assignment of importance to facilities and programs that teach this way—is a powerful attitude in modern architecture, and Harvard has a clear line to some of the first people to create it. Sert recently told the RECORD: "I have stood all my life for the integration of the arts, or at least the integration of architectural disciplines. This is what Harvard has to offer." Gropius stood for the same thing, and Gund Hall is a magnificent expression of that idea.

Dean Kilbridge, who is not an architect and not trained in the Gropius-Sert-Andrews tradition, points out that the non-existence of physical barriers might cause the creation of tighter psychological or personal and group barriers as a substitute. The assumption is a need for privacy and individual control; if it can't be achieved physically it will be achieved in other ways. But he says this to indicate another intellectual position, rather than attack the studio space; there is time now to wait and see whether the original ideas were correct.

The studio is clearly a success as the symbol it wanted to be. Once committed to undifferentiated space, it would have been wrong to put in columns or walls to save money, and the architects were able to resist these pressures from sources within Harvard. One has difficulty relating the studio to known spaces; there are feelings of a stadium about it, or an indoor track or some qualities of a cathedral. The ambient noise from the air conditioning is high,

which helps eliminate sharp noises from the general clatter of a drafting room. The space is surprisingly quiet; you can hold a conversation at normal levels and your words are not overheard across the room. From the way the students have arranged themselves in the first four weeks, the drafting boards out in the open are apparently more desirable than those under the low ceilings, and the boards right at the edge of the "cliffs" seem the hottest property of all.

Outside, there are quick, powerful changes in the configuration of the building as you walk around it. That and the rational, technological, almost science-fiction ambience of the roof (particularly the greenish fiberglass) are its most striking features. One of the major monuments of Harvard, Memorial Hall, is across the street but Gund Hall makes only one concession to its presence; the curved stairway along Quincy Street is placed on axis with Memorial Hall's curved wall, so that from the second and third landings inside the stairs, a powerful straight-on view of the Victorian pile is framed through the glass. Otherwise, Gund Hall like Carpenter Center down the street continues modern architecture's firm tradition of going its own way.

The protestors could have found meaning in Gund Hall's dialogue with itself at the expense of the buildings around it, but they were concerned with less obvious broader generalities: power relationships, styles of thinking, basic assumptions and their results. Gund Hall became "the main line," "Cambodia," a symbol for the corporate state. The central question then becomes, would any building have been challenged (an anti-shelter attitude that should be re-thought if you hold it) or was it the *kind* of building that people questioned? Architectural forms sometimes become associated with social forces we don't mean to strengthen, and the original meanings of forms get lost or mean something else; that is a central problem in modern architecture today. Architects might not believe that new formal metaphors for broad shifts in values are needed but some students and professors at Harvard went through a groping, inarticulate time of trying to establish the existence of the problem through Gund Hall. Moral arguments against important buildings become more common, and they are warning signs of trouble within the style itself. —Robert Jensen

GUND HALL GRADUATE SCHOOL OF DESIGN, Harvard University, Cambridge, Massachusetts. Architect: John Andrews, Architects—John Andrews, Edward R. Baldwin and John Simpson, designers; Edward R. Baldwin, partner-in-charge. Engineers: LeMessurier Associates (structural); G. Granek & Associates (mechanical); Jack Chisvin & Assoc. (electrical). Cost consultants: Helyar, Vermeulen, Rae & Mauchan. Landscape architects: Richard Strong Associates. Specifications: Wood, Angus & Owen Inc. Acoustical: Harold R. Mull & Assoc. Contractor: J. Slotnik Co.



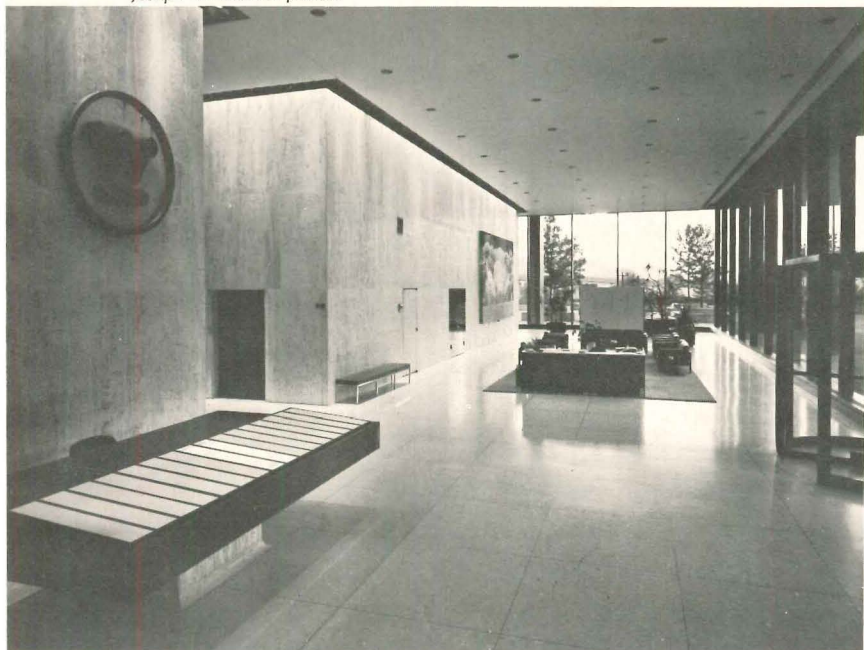
Westinghouse corporate offices

The Westinghouse Corporation, through its Design Center and with the active interest of its chairman, Donald C. Burnham, has vigorously sponsored good design in both products and new facilities. The corporate offices in Pittsburgh, by the Knoll Planning Unit, thus represent a standard rather than an exception, a concern for employee amenity that is common everywhere in the firm. In addition to this spirit of generosity and spaciousness, whimsy and surprise, as in this small executive conference room (above), are sprinkled throughout the building.



On the executive floor, the corner offices (acrosspage) are occupied by the presidents of the four companies that comprise the Westinghouse Corporation. Mr. Burnham's office (above) is between two of them and looks directly down the Ohio River. Each of the offices on this floor is designed to the taste of its occupant. Furnishings range from traditional mahogany pieces to the specially-designed pedestal desk at which the chairman works.

Joseph W. Molitor photos





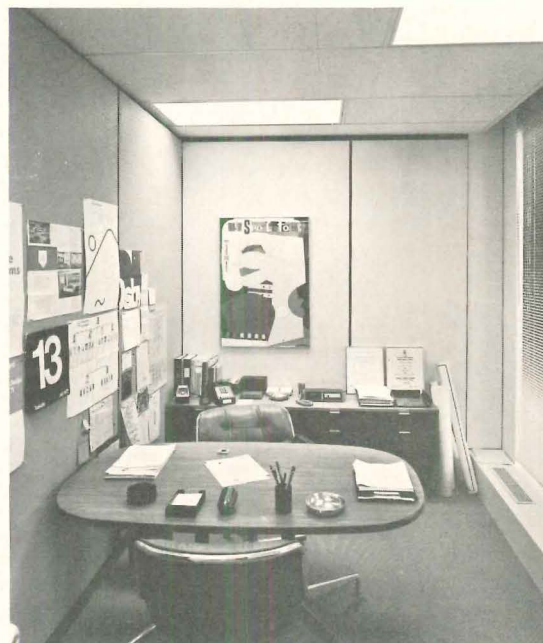
The public spaces best illustrate the pleasant spaciousness of the building. A small grouping of comfortable furniture greets visitors (farthest left) as they enter the otherwise forbidding lobby. The elevator lobbies (left) and the wide corridors on each floor (below) are also filled with planting and carefully-chosen graphics. The reception area (right) is shared by two executive offices.





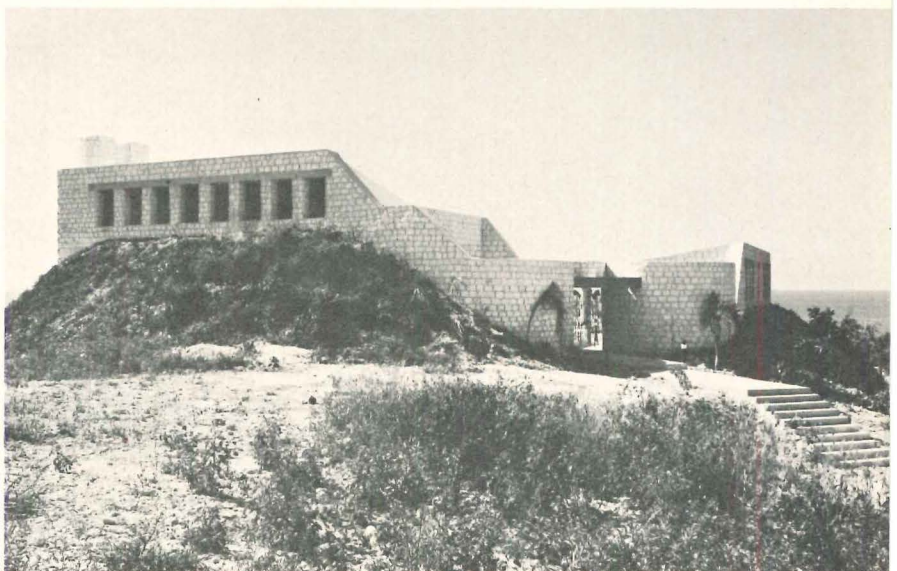
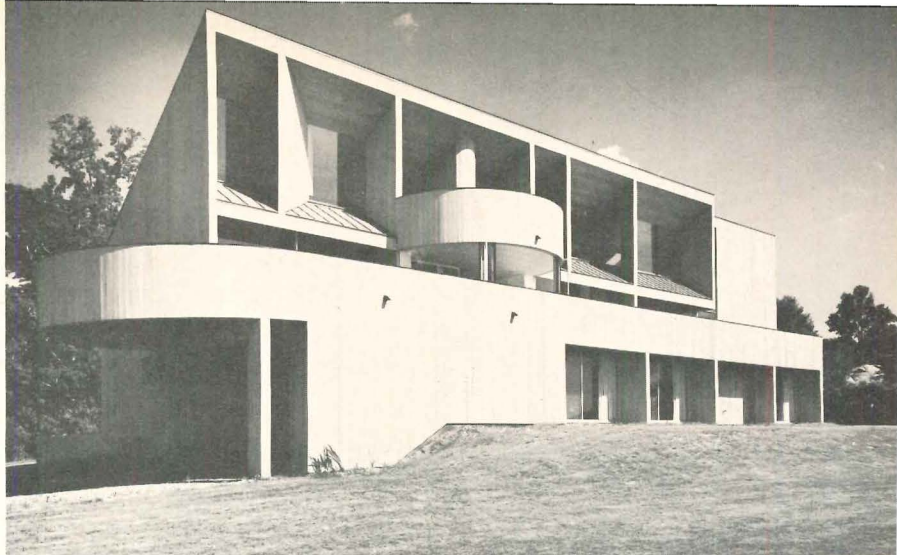
The Corporate Design Center, which has been so effective in upgrading the visual image of Westinghouse, has several open plan work spaces (below) that adapt easily to the changing projects of the center. The offices of its director, E. W. Seay (above) and assistant director, Philip Andrews (below), are exceptional examples of the personalization found in many workspaces throughout the building.

WESTINGHOUSE CORPORATE OFFICES, Pittsburgh, Pennsylvania. Interior designers: Knoll Planning Unit—Lou Butler, project designer. Client representatives: Corporate Design Center and Headquarters Works Engineering. Art program: Eliot Noyes and Ivan Chermayeff. Consulting engineers (water-cooled light fixtures): Meyer, Strong and Jones.

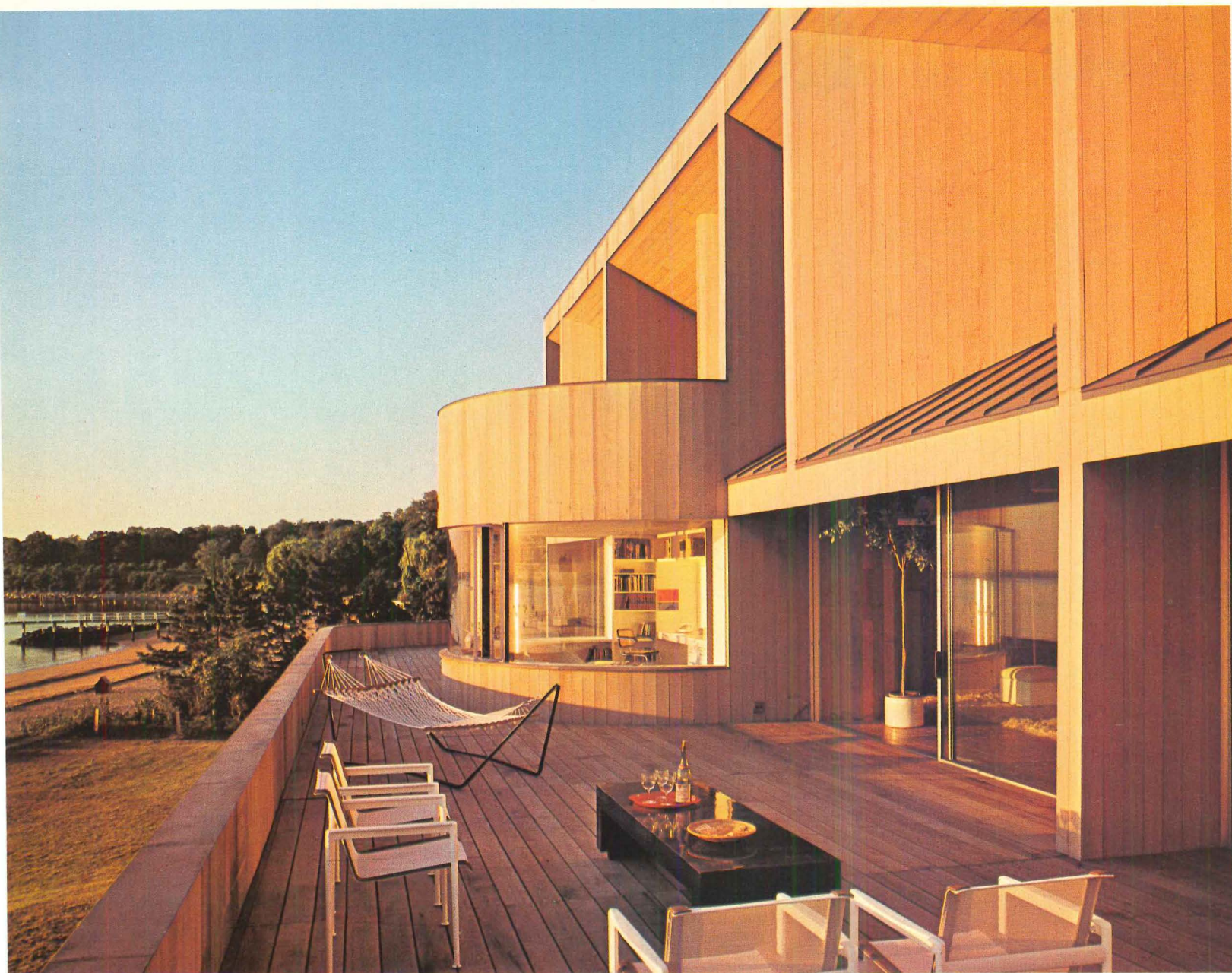


These houses go beyond good design toward poetic expression of place

Sometimes, even when a house is technically perfect in its relationship to the site, it doesn't "feel" right. Usually that's because the architect has been more interested in making a personal statement than he has been interested in expressing the spirit of that particular place. But the best buildings evoke the essence of their environment; that's the true poetry of architecture. These four houses, in widely disparate places—Long Island Sound, Hawaii, the Bahamas, the Berkshires—go beyond sound planning and orientation toward an intangible sense of "appropriateness." They say something about the history and culture of their region at the same time that they solve, with style, the easy but impossibly difficult problems of domestic architecture.—*Jim Morgan.*



Yacht-like luxury beside Long Island Sound



Maris/Semel photos

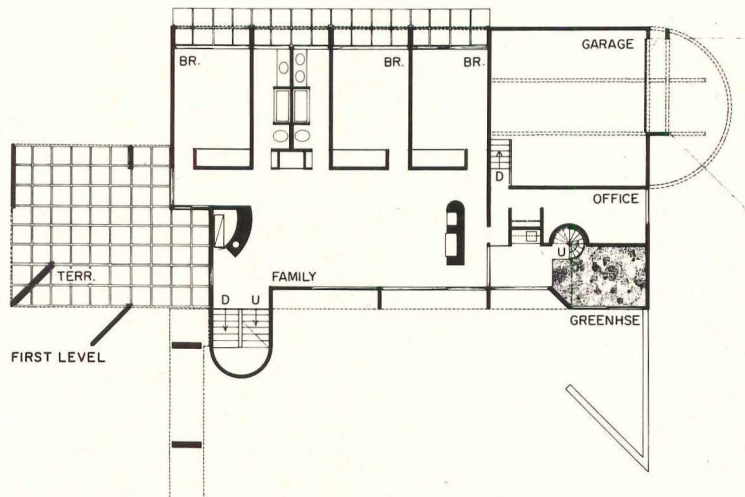
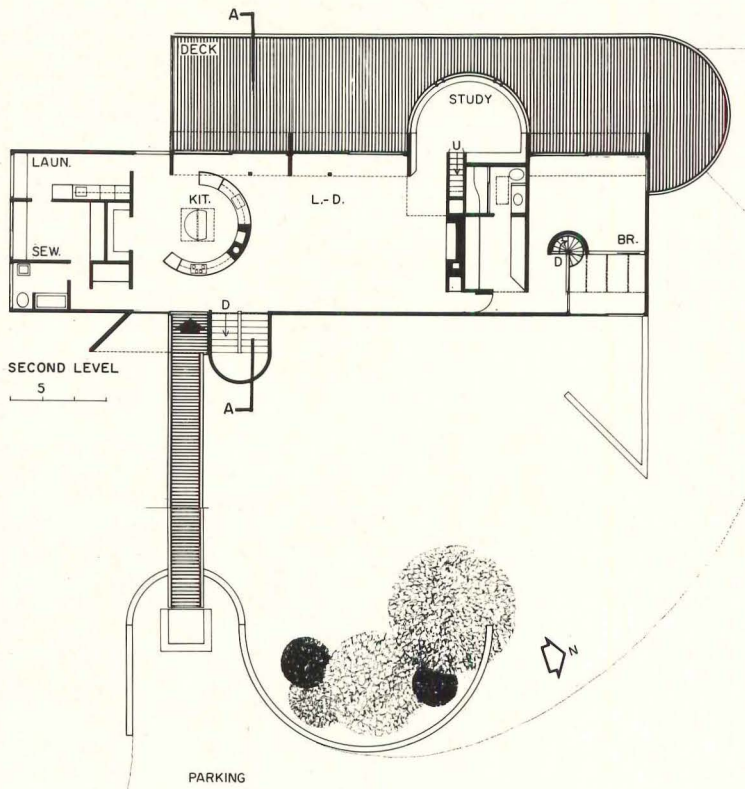
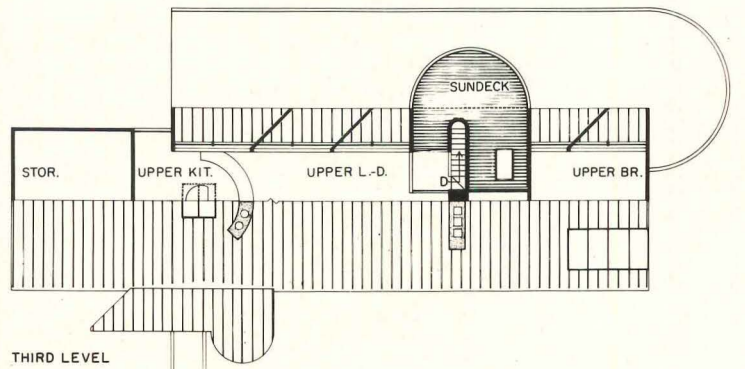
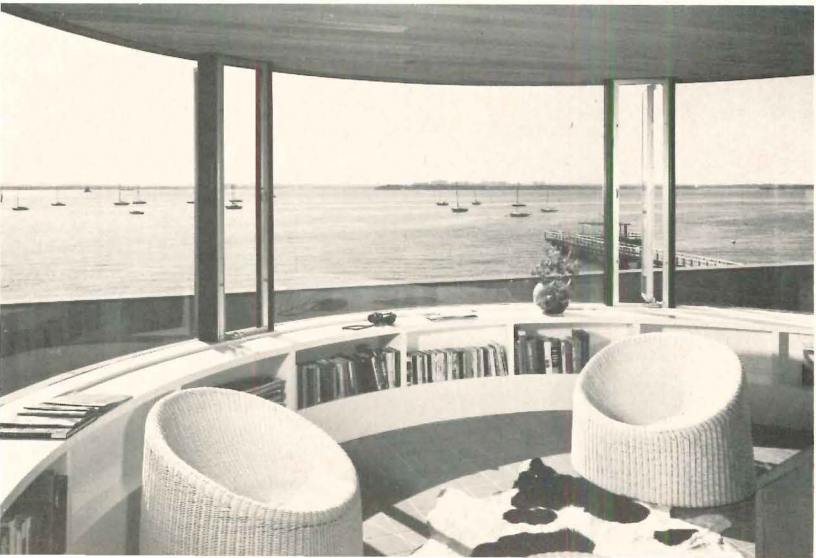
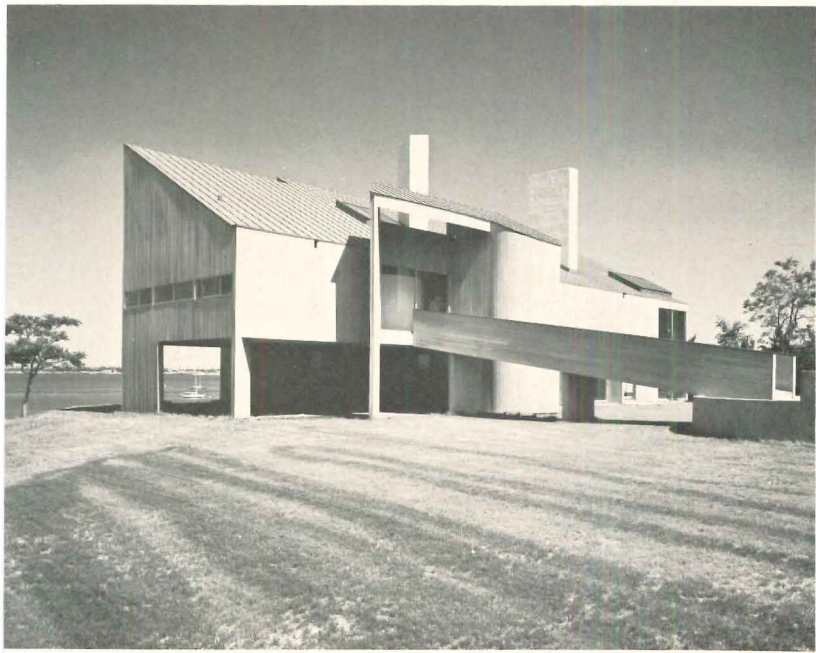
In strictly technical terms, there is no more difficult house site than one which faces due west across a body of open water. The effects of glare, heat buildup, untrammelled winds, humidity, saltspray and other corrosive agents all must be considered. If the site is also marshy, as was the one on which Richard Henderson's clients proposed to build, the restrictions on the designer are indeed severe.

But it was also one of the very last pieces of waterfront property in the Great

Neck area of Long Island's North Shore. Henderson's design stands proudly among generations of elegant mansions there. From the water, it brings back memories of the great steam yachts that once plied those waters. From the nearby houses, however, its pitched roofs make it seem very much a "good neighbor." Actually, there was little choice: the deed read that all roofs must be pitched. Porches could be flat, of course, so toward the water, the architect has tucked the lower level children's rooms

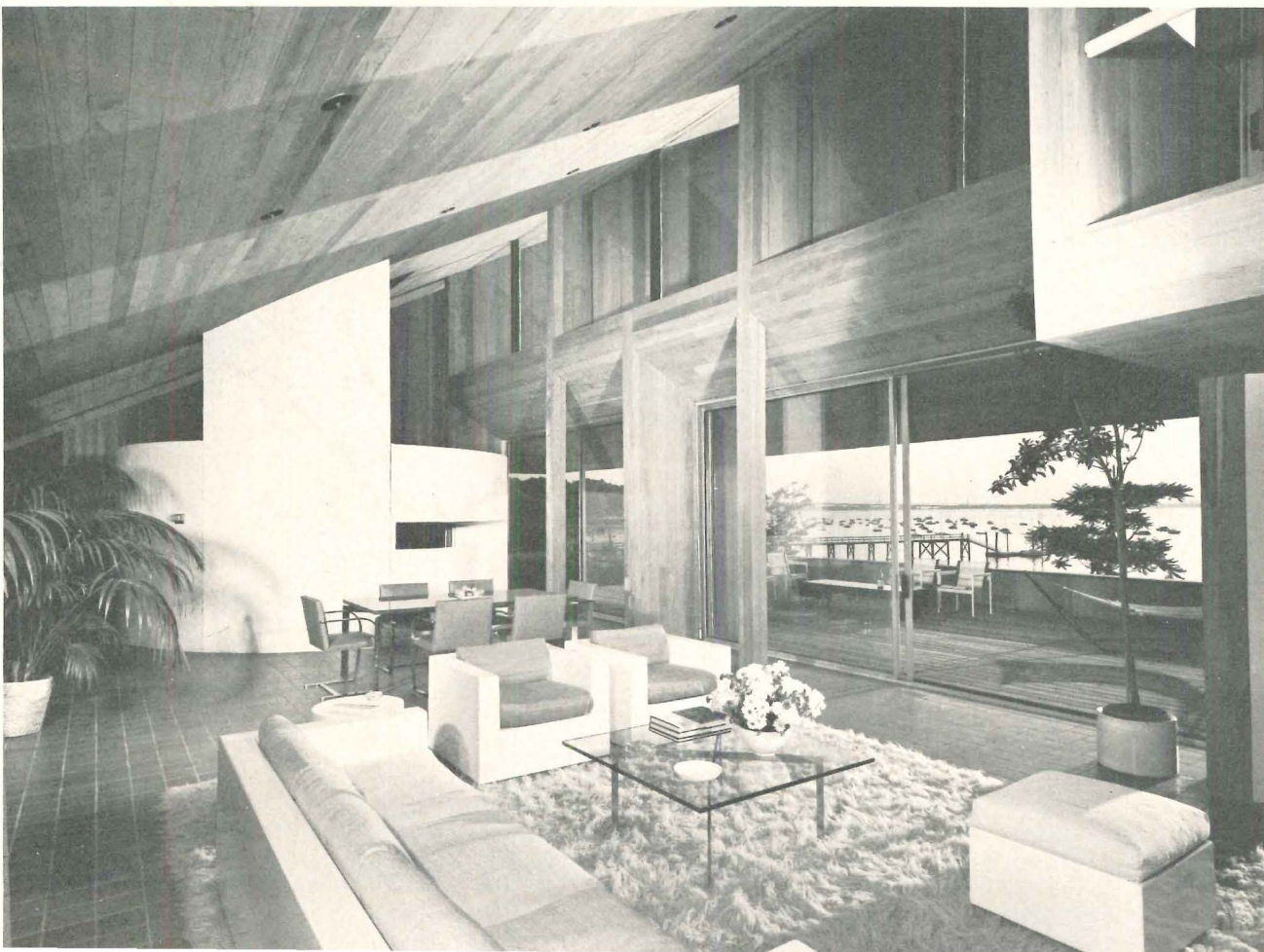
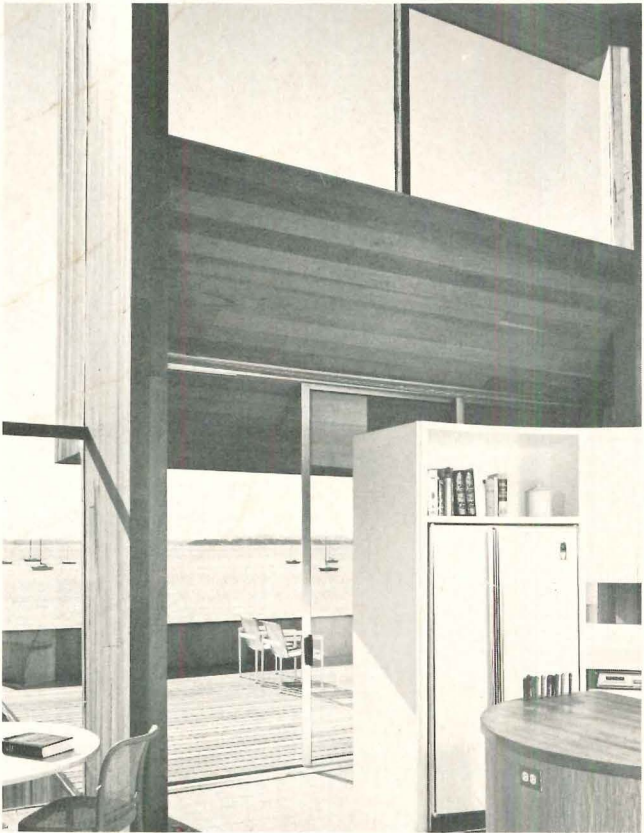
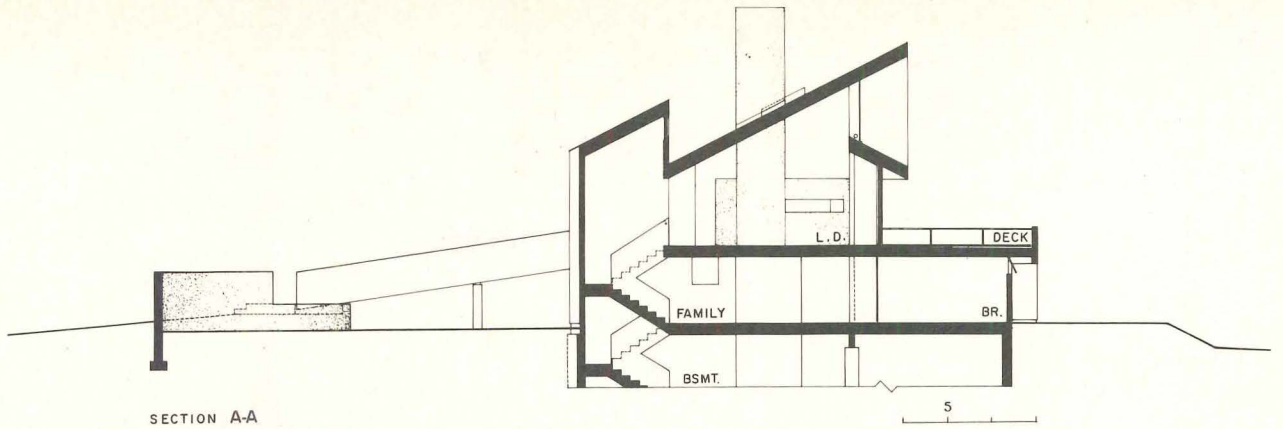
under a broad deck off the living room and the semi-circular study under a small sun-deck. Besides being a spectacular place for viewing the Sound, it turns a potentially dull facade, with its necessary but overpowering sunscreen, into a balanced and pleasant composition. The glazed walls of the study are, incidentally, of special order rolled glass sheets.

Architect: Richard Henderson. Location: Near Great Neck, Long Island, N.Y. General contractor: Richard Brickman.

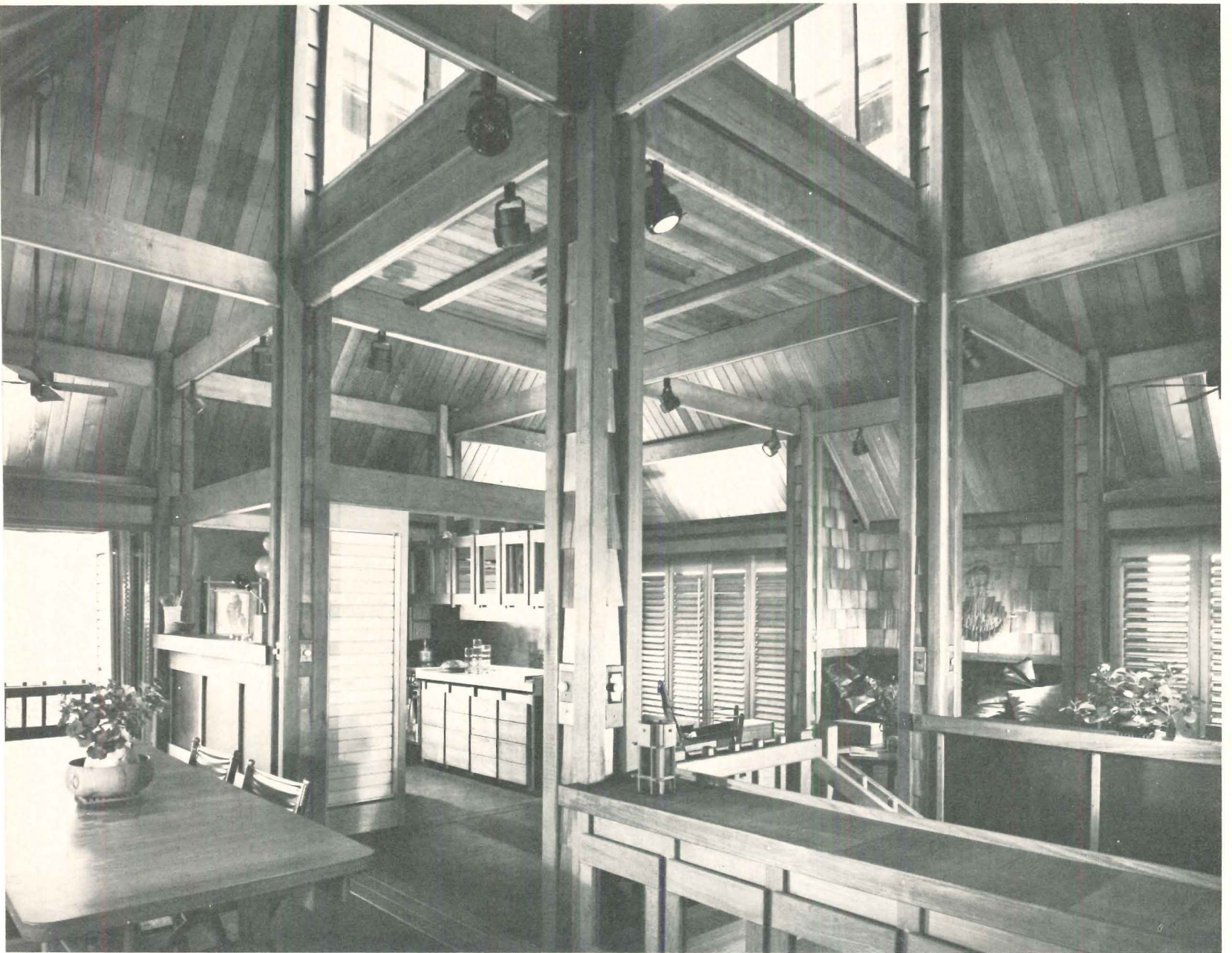




Complete separation of adult living rooms on the upper level, approached by a ramp from the parking area, and those for the teen-aged children below, was specified in the program. With the exception of a two-story greenhouse behind the master bedroom that division is complete. The central portion of the upper floor is devoted to the living-dining room (above) and the kitchen (right), whose semi-circular white stucco enclosure serves as a foil to the otherwise cedar-clad space.



Umbrella-like roofs shed Hawaii's frequent rains



Julius Shulman photos

When architect Harrell McCarty decided to build himself a house near Hilo, on the island of Hawaii, he had some very clear criteria upon which to base the design. In addition to highly specific environmental circumstances, he planned to construct everything, except for the roof structures and covering, plumbing and wiring, himself.

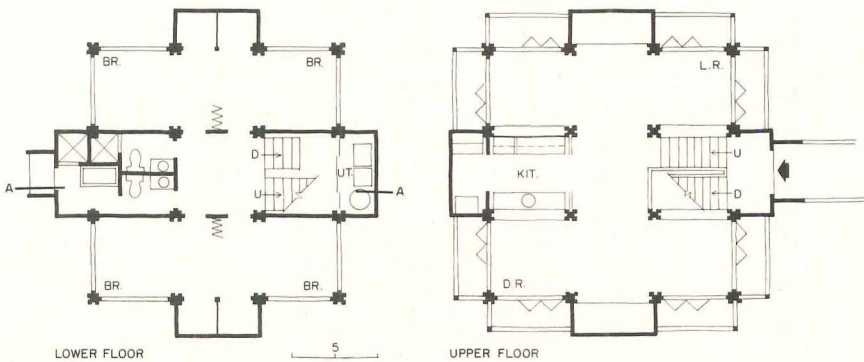
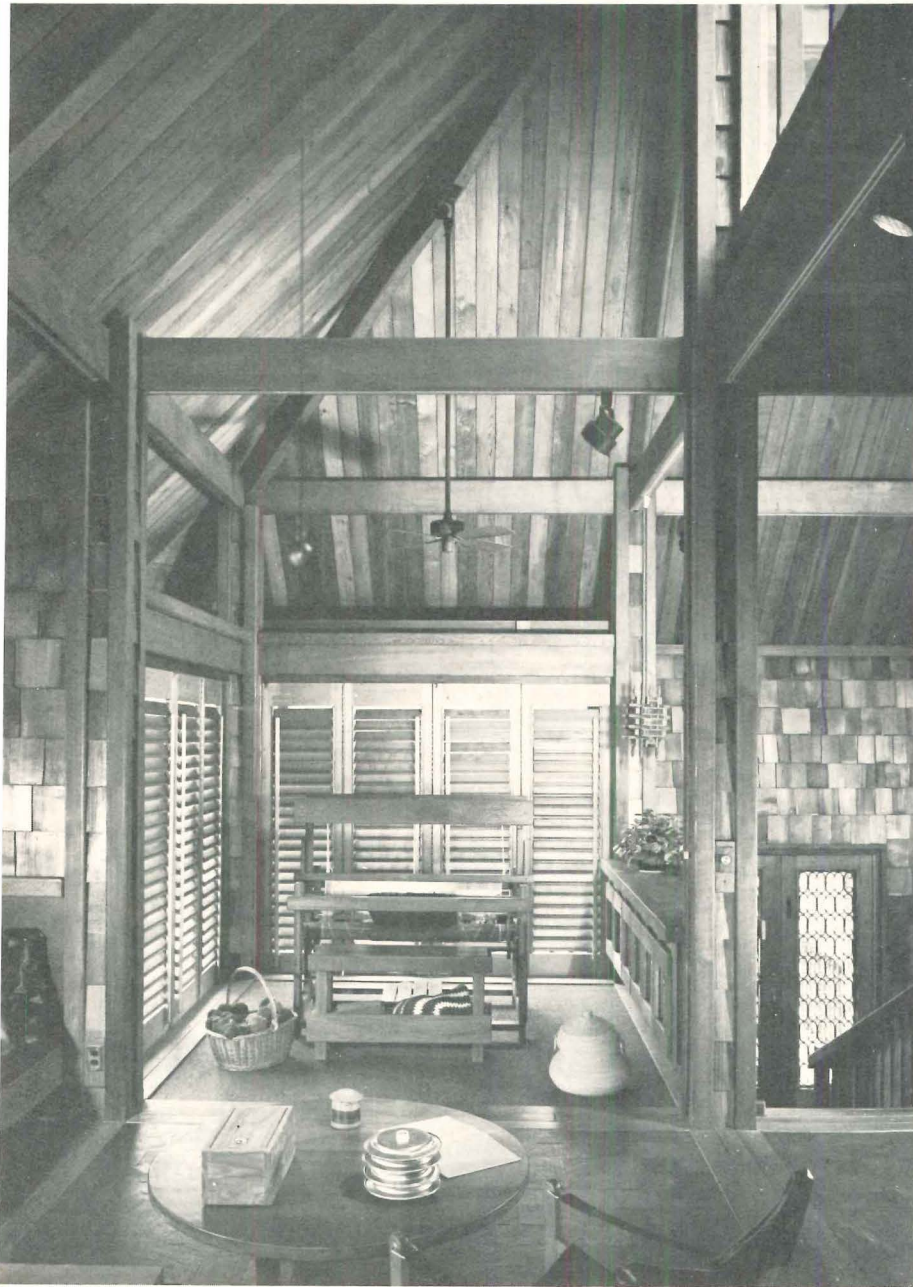
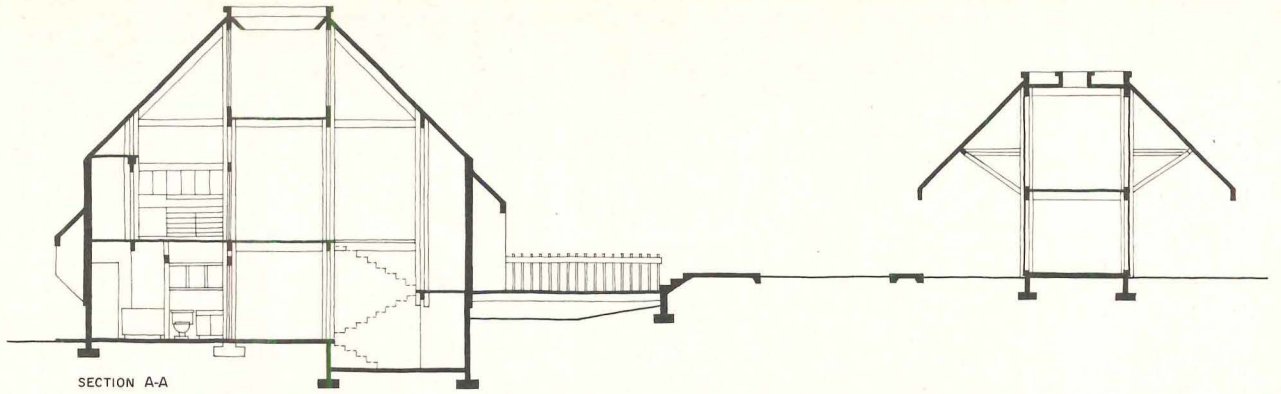
The rich detailing (above) thus is the loving craftsmanship of the owner and enhances the inherently tropical quality of the roof forms. McCarty points out that climatic conditions near Hilo are rather different

from those in Honolulu, where the trade winds are so important. On his site, in addition to almost daily rainfall (nearly eight times the annual precipitation at Honolulu), a consistent daily pattern of on-shore/off-shore winds and high humidity dictated a house transparent to any breeze. Although air conditioning might have solved these problems for a more conventional design, McCarty notes that Hilo has the highest electrical power rates in the United States. Furthermore, the sound of the surf nearby was an important reason for building there;

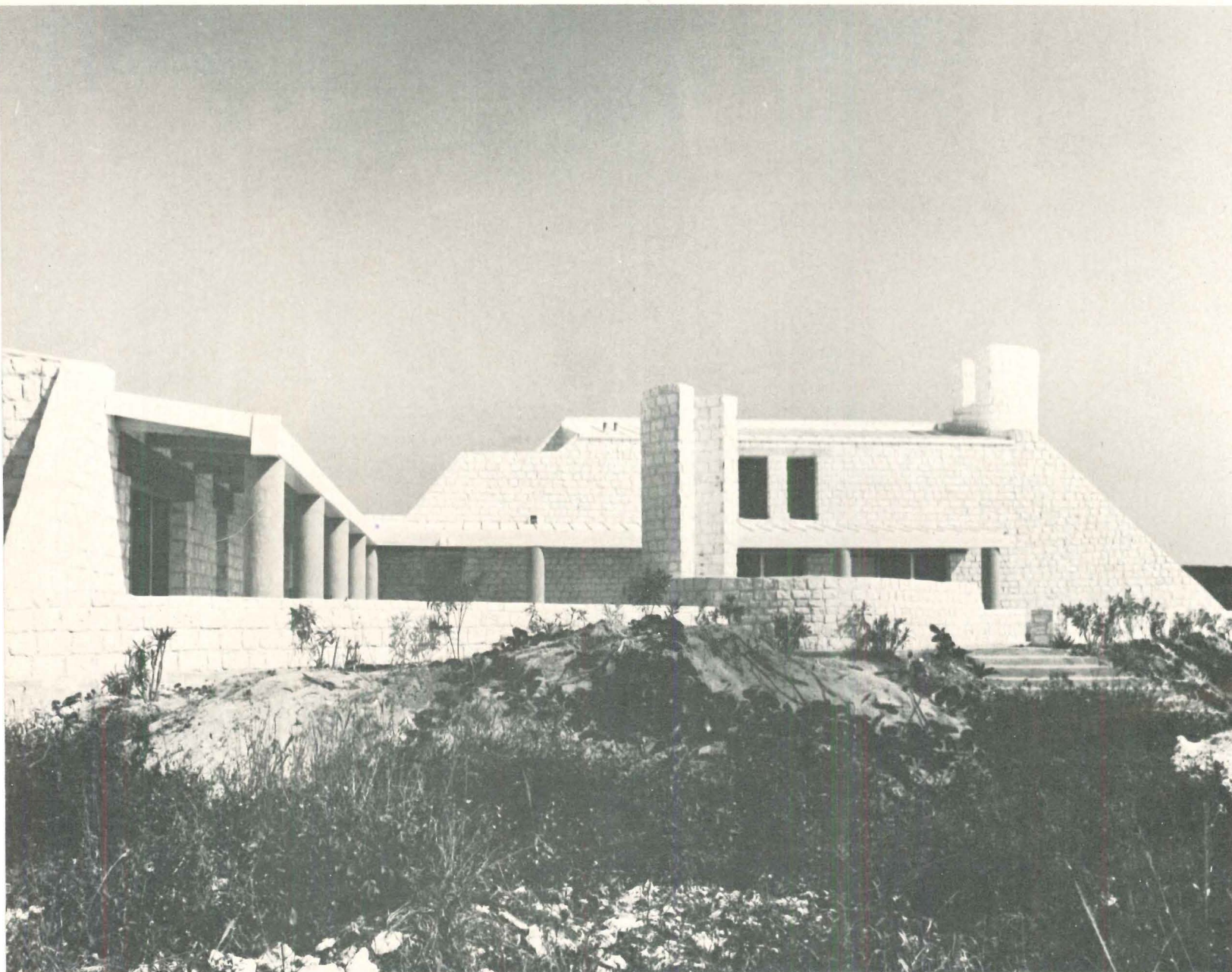
windows would have dampened that pleasure considerably.

So the upper floor of the house, already a flexible and open plan as an expression of the McCartys' lifestyle, is surrounded by louvered doors. They can be thrown open in good weather to make the entire space a "lanai", that uniquely Hawaiian concept of outdoor living space.

Architect and owner: Harrell McCarty of Oda/McCarty. Location: Hilo, Hawaii. Contractor for the structure: John Lavery.



Silo-like towers built of Eleuthera's native coral



Robert Cassway photos

The only indigenous architecture on Eleuthera Island in the Bahamas, say Philadelphia architects Cassway and McGee, is a group of abandoned silos of native coral stone (far right). Both the form and the material are used in the house they designed there for Harold and Caroline Berger.

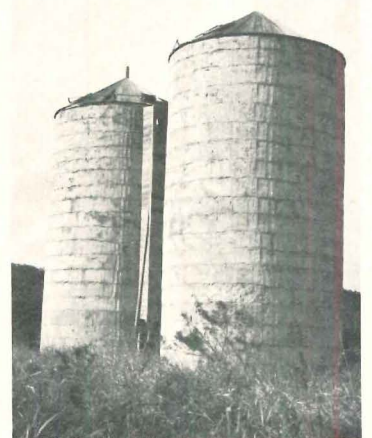
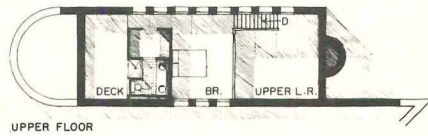
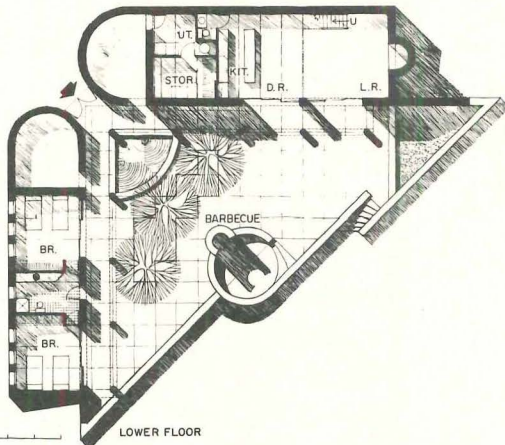
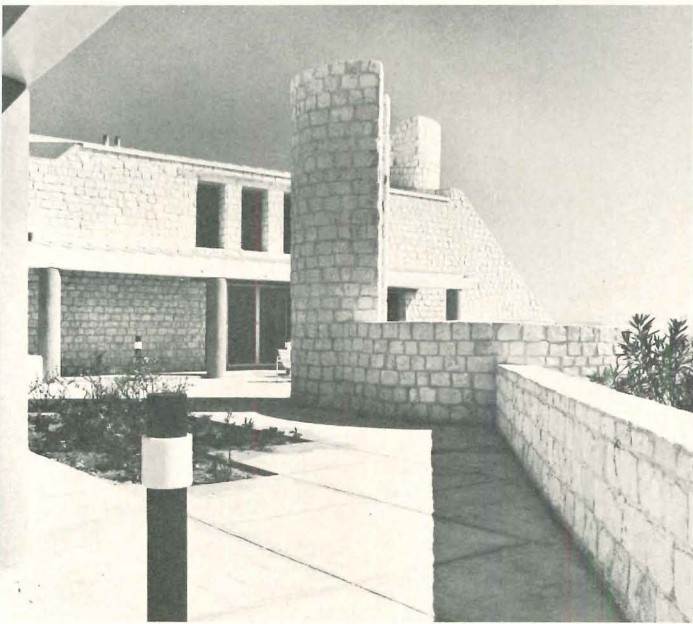
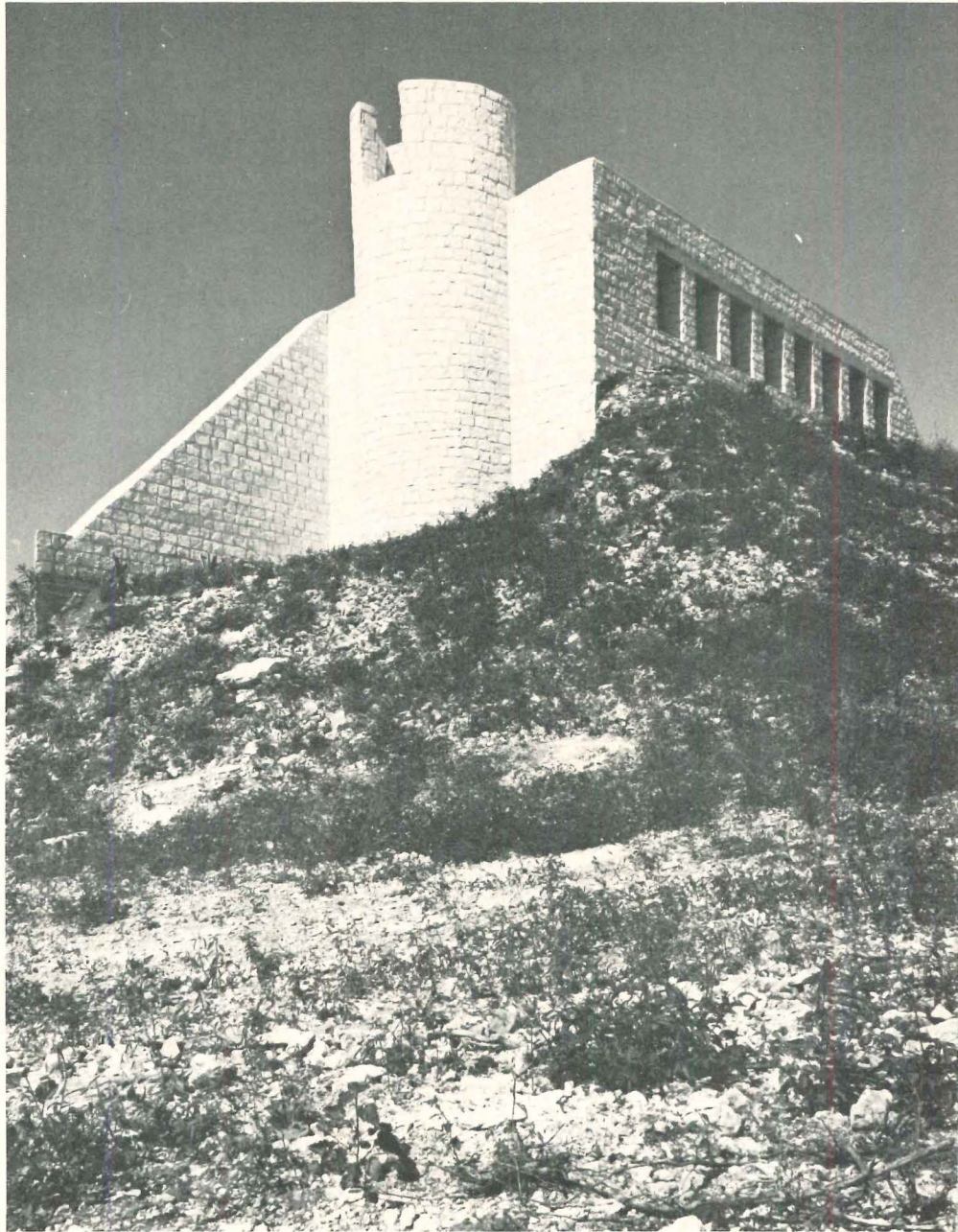
A relatively dry semi-tropical climate means that outdoor living can actually be outdoors; therefore the two wings of the house frame a terrace (above) which is the real "living room" of the place. Thus, in ad-

dition to enclosing the few rooms of the house, they serve as walls that shield the terrace from the wide-open country at this end of the island and focus the view of Exuma Sound to the west. Large berms (photo right) were constructed to tie the masonry walls into the flat landscape.

Given the white coral stone as the most natural masonry for their site (it can be easily shaped when freshly quarried), the architects have developed a scheme which maximizes the sculptural possibilities. The

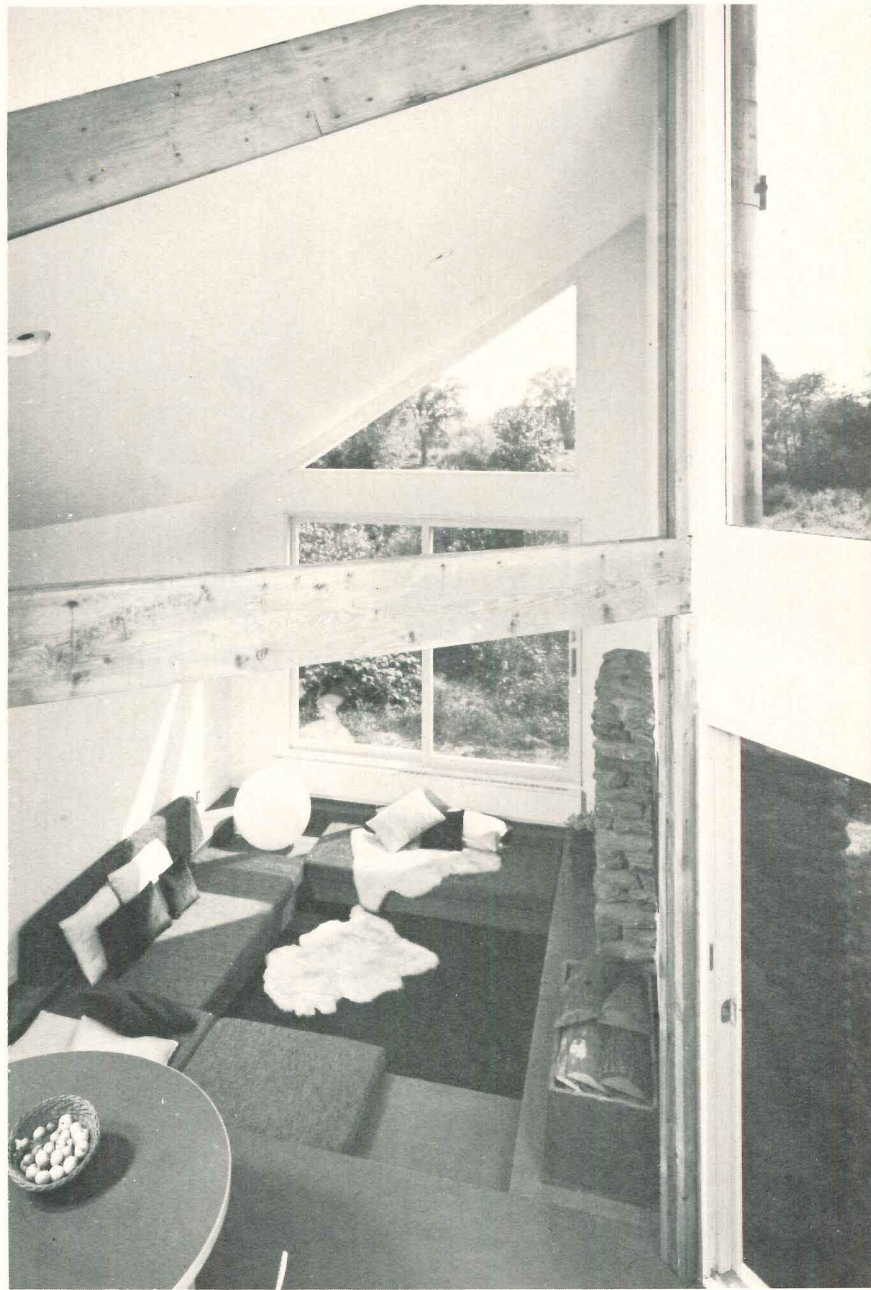
paired courtyards which flank the entrance and the two chimneys all echo the silos and give an essentially tiny house an imposing quality. White mortar and a white neoprene roof also help reflect heat while the white surfaces inside give an impression of coolness. A loggia around the terrace helps reduce glare within the rooms.

Architects: Cassway and McGee. Owners: Mr. and Mrs. Harold Berger. Location: Eleuthera, Bahamas, British West Indies. Sculptor (entry gates): Christopher Ray. Contractor: James Scavella.

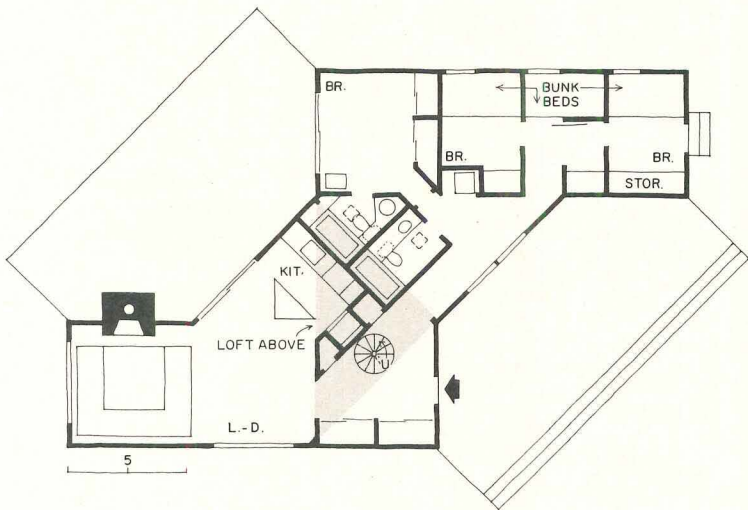


Block-like forms nestle into Berkshire woods





John T. Hill photos



Robert Funking's house in the Berkshires, a playful composition of interesting forms, nestles gently into the piney woods site. "It is all as simple as a pile of children's blocks," says Judith Chafee, now practicing in Tucson, Arizona.

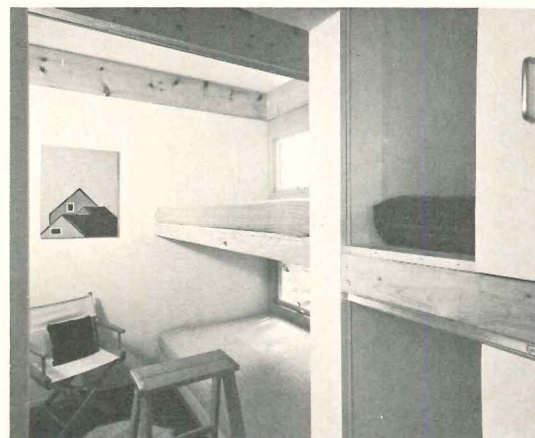
Needless to say, it's not really simple. Thrusting toward the view (left) is a shed-roofed element containing the living room and fireplace (above). It intersects the pyramid-crowned portion to form a taller space with a small loft, sleeping space for two or

three during ski weekends. To the rear is the bedroom wing, whose vaulted roof is reminiscent of old-fashioned Pullman cars. Thus the client's name for his house: "The Midnight Train to Funking Hill." It has sleeping accommodations for eight; note the compact provision for bunks and storage in the plan. Altogether, the 1200 square foot house can sleep more than twelve people when necessary.

The modesty of the house, with its gray-stained plywood panels, is entirely ap-

propriate to a site that in four acres contains an amazing variety of natural features. Immediately below the knoll on which the house is placed is a marsh-like field where deer feed. Behind it are long-abandoned orchards and stone foundations as well as a water-filled iron quarry large enough for swimming and fishing.

Architect: Judith Chafee. Owner: Robert Funking. Location: Richmond, Massachusetts. Contractor: Carleton Anderson.



By grouping the sleeping spaces compactly (left) in one wing of the house, the architect could devote most of the area to one large room (above) which includes built-in seating at the fireplace (of local stone), dining space and kitchen. Above the kitchen is a small sleeping loft. Two interesting design features of the kitchen are the triangular food preparation counter, which rolls to any spot in the room, and the corbelled wall cabinets.



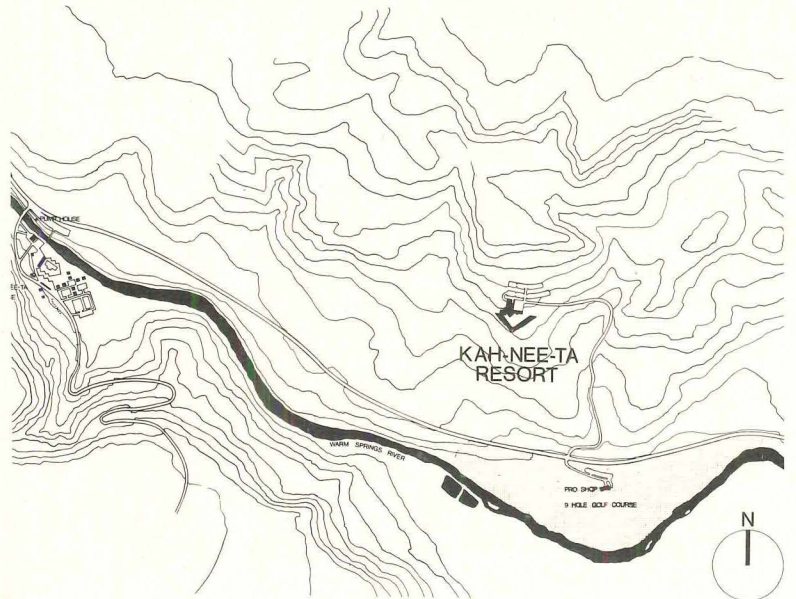
RESORT HOTELS

First the site, then the scale, then the character: in this order the architect's primary decisions on a resort have to be made. The site is usually a place of unusual beauty and exceptional assets for recreation. How they are used and preserved becomes the architect's responsibility as well as the developer's. "Site use" and "land use" become more than academic terms when so much is at stake. Creative and respectful site use can be the keys to a successful resort operation. Here are shown seven resorts designed on these principles: bold forms in an almost dimensionless open desert landscape; four overseas hotels on beach sites in exotic locations, from the Caribbean to the Caspian Seas; floating hotels on man-made sites which permit the needed density while preserving the limited land and its fragile ecology; and a resort which accepts the challenge of growth in a village and finds a solution which, in scale, character and design of spaces between buildings, changes only density, not the town.

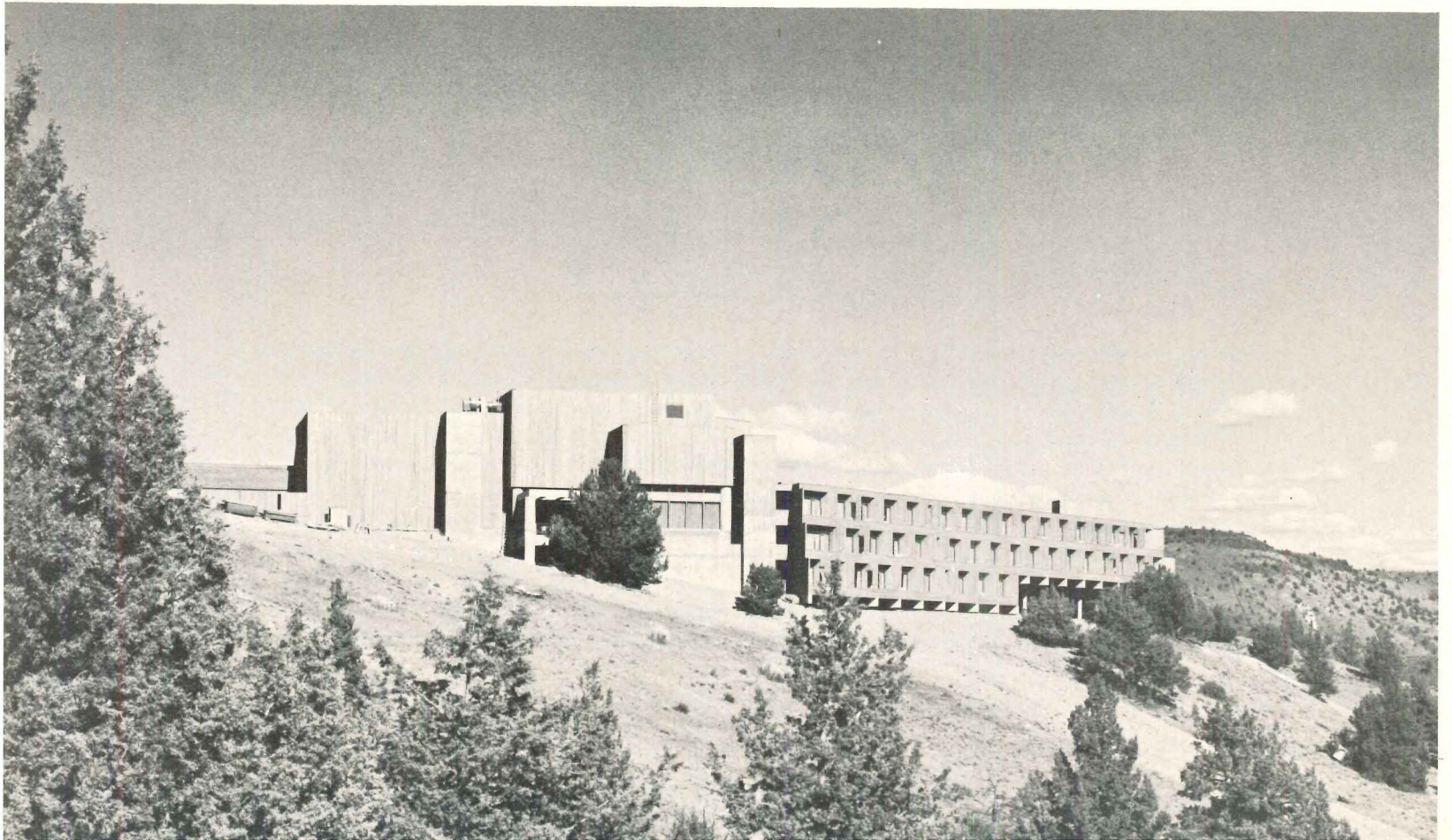
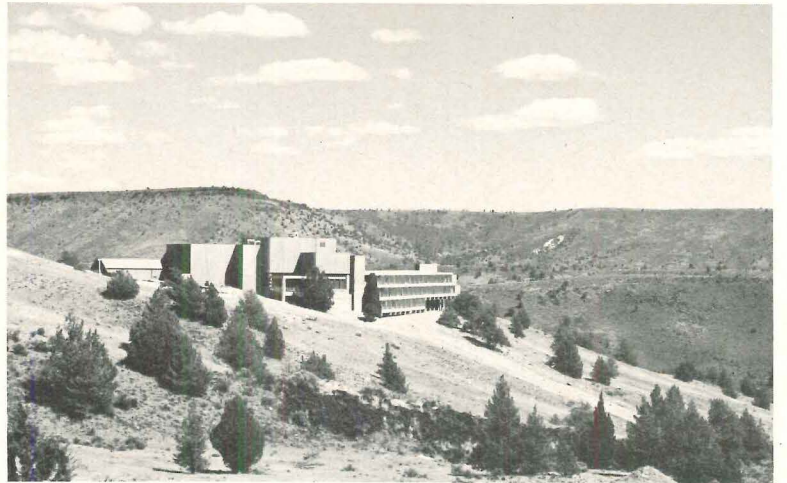
STRONG FORMS, BOLD SCALE FOR RESORT ON OREGON INDIAN RESERVATION

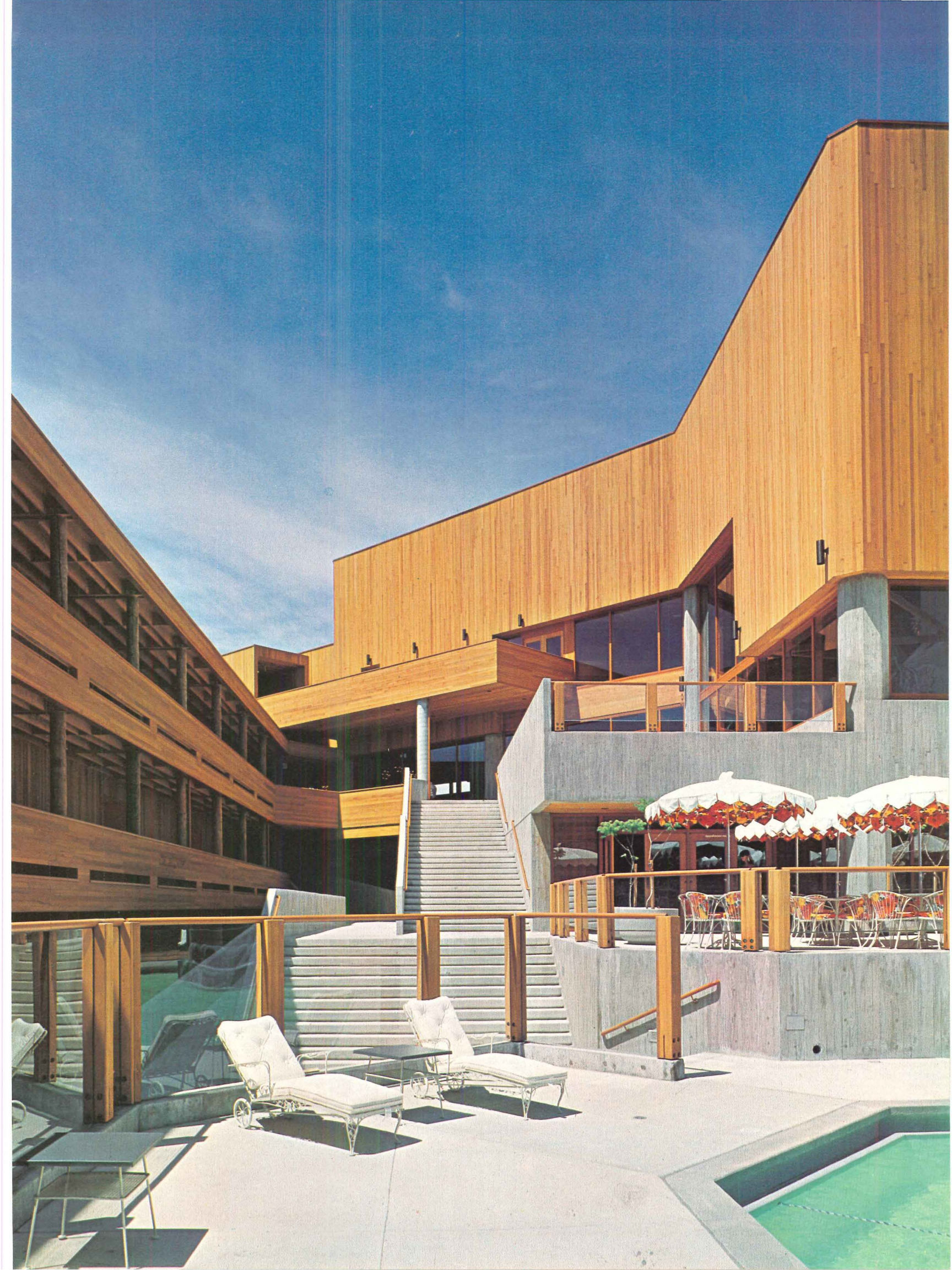
Kah-Nee-Ta is the latest and largest development of the Confederated Tribes of Warm Springs Indians on their reservation in central Oregon. Funded in part by low-interest loans based on creation of new job opportunities in an underdeveloped area, the lodge is a major investment of the tribes. The clear air and brilliant year-round sunshine of the desert location make it an unflinching attraction to coastal residents used to much fog and rain. The handsome and sophisticated lodge with its 90 rooms, two restaurants and meeting rooms is important both for vacations and for small conferences and conventions. In the vast openness of this region, scale is difficult to determine, and a building needs to be both assertive and at the same time visually and ecologically unobtrusive. The architects for the lodge managed to achieve both objectives. The bold forms are, at a distance, part of the landscape; only on arrival in the court is their strength and boldness to be experienced. The rough wood exterior is painted earthy brown yellow so that the building fits into the landscape with complete composure. The triangular building protects the court from prevailing winds.

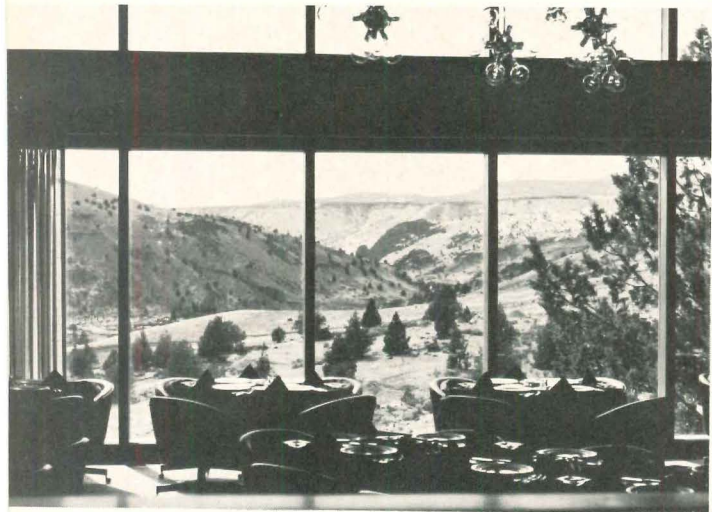
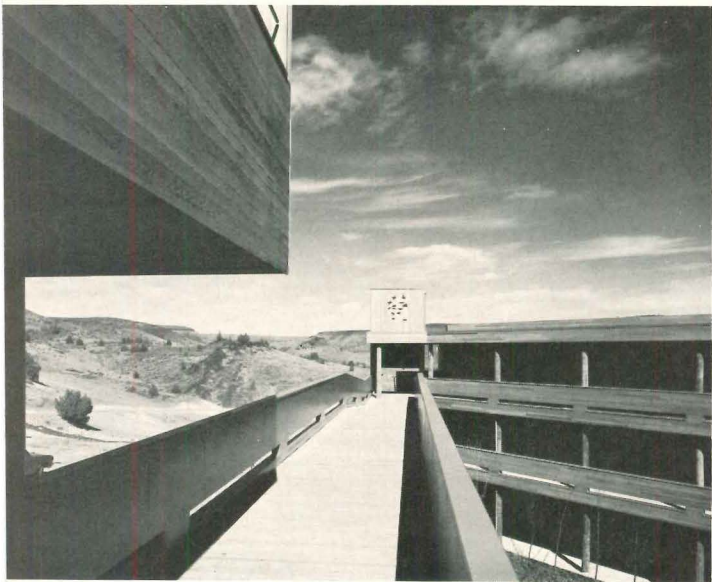
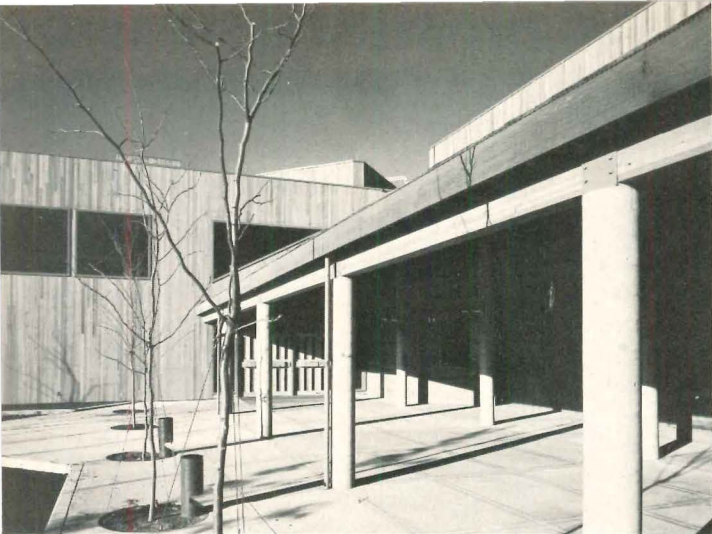
KAH-NEE-TA LODGE, Warm Springs, Oregon. Owners: Confederated Tribes of the Warm Springs Reservation. Architects: Wolff Zimmer Gunsul Frasca Ritter—Brooks Gunsul, partner-in-charge; Robert Frasca, partner-in-charge of design; J. B. Garnett, associate-in-charge; Gary Larson, associate in design. Pietro Belluschi, design consultant. Engineers: Nortec, Inc., structural, mechanical and electrical; Shannon & Wilson, Inc., foundation. Consultants: Heinz Janders, interior design; Arvid Orbeck, graphics. Landscape architect: Robert Perron. Contractor: Lawson Construction, Inc.



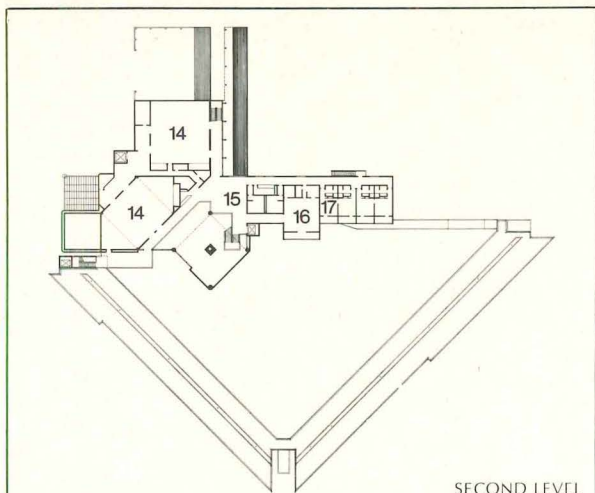
Ed and Carol Hershberger photos



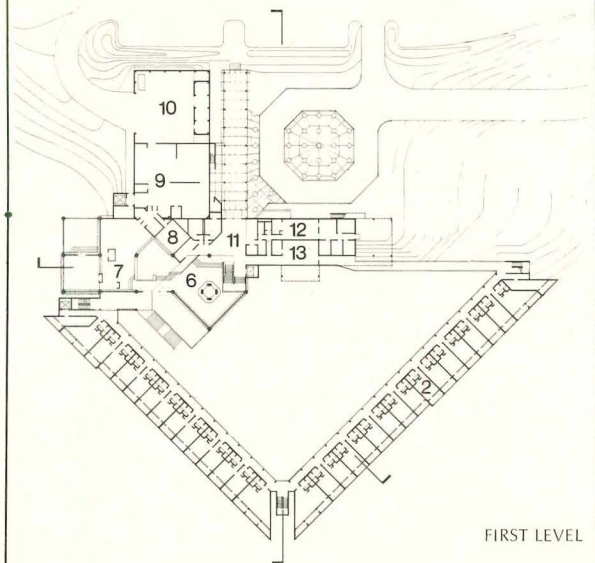




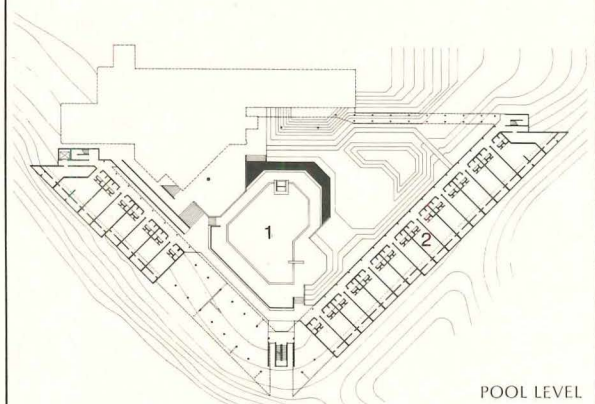
Arrival point at the lodge is a landscaped parking court beside a covered walk that leads to the entrance (top, left). A few steps below and opening off the desk lobby is the lounge (below, right) with its massive fireplace and flying truss. From the lounge a corridor leads to the shop and the long open trestle (center, left) which is one access route to guest rooms; another route is through the pool terrace (top right). The Juniper Room (bottom, left) with an extensive view to the west is for dining. Round concrete columns support the platform on which rests the wood frame and heavy timber structure. Exterior walls are stained resawn cedar, columns along guest wing balconies are treated peeler logs, and trim is painted orange and yellow. Throughout the lodge are Indian motifs designed by non-Indian artists, since the Warm Springs tribes did not develop an art of their own. The sculptured panels over the fireplace are by Spokane sculptor Harold Balasz.



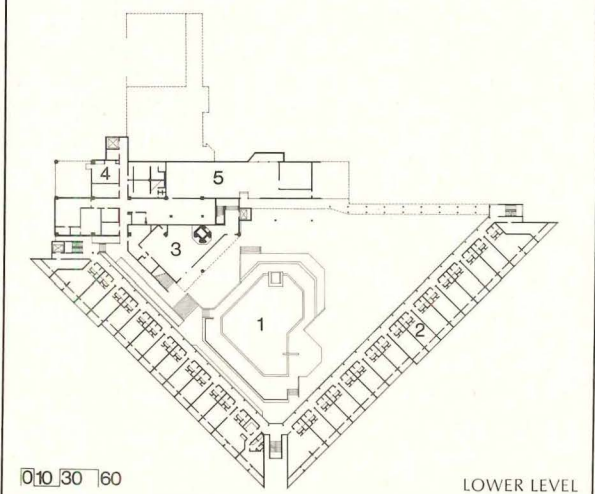
SECOND LEVEL



FIRST LEVEL

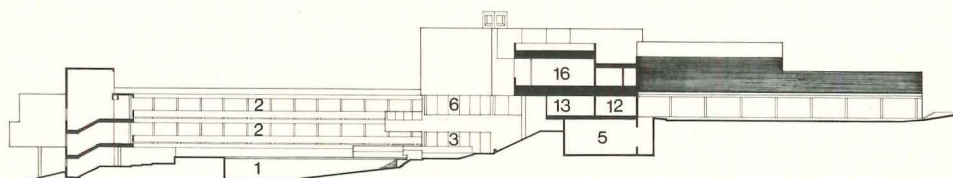
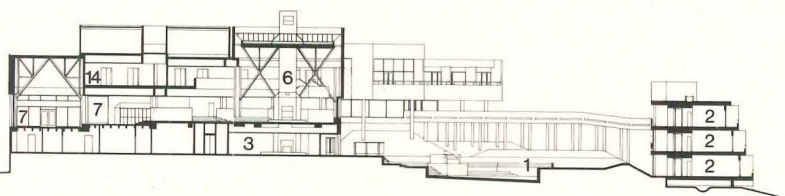


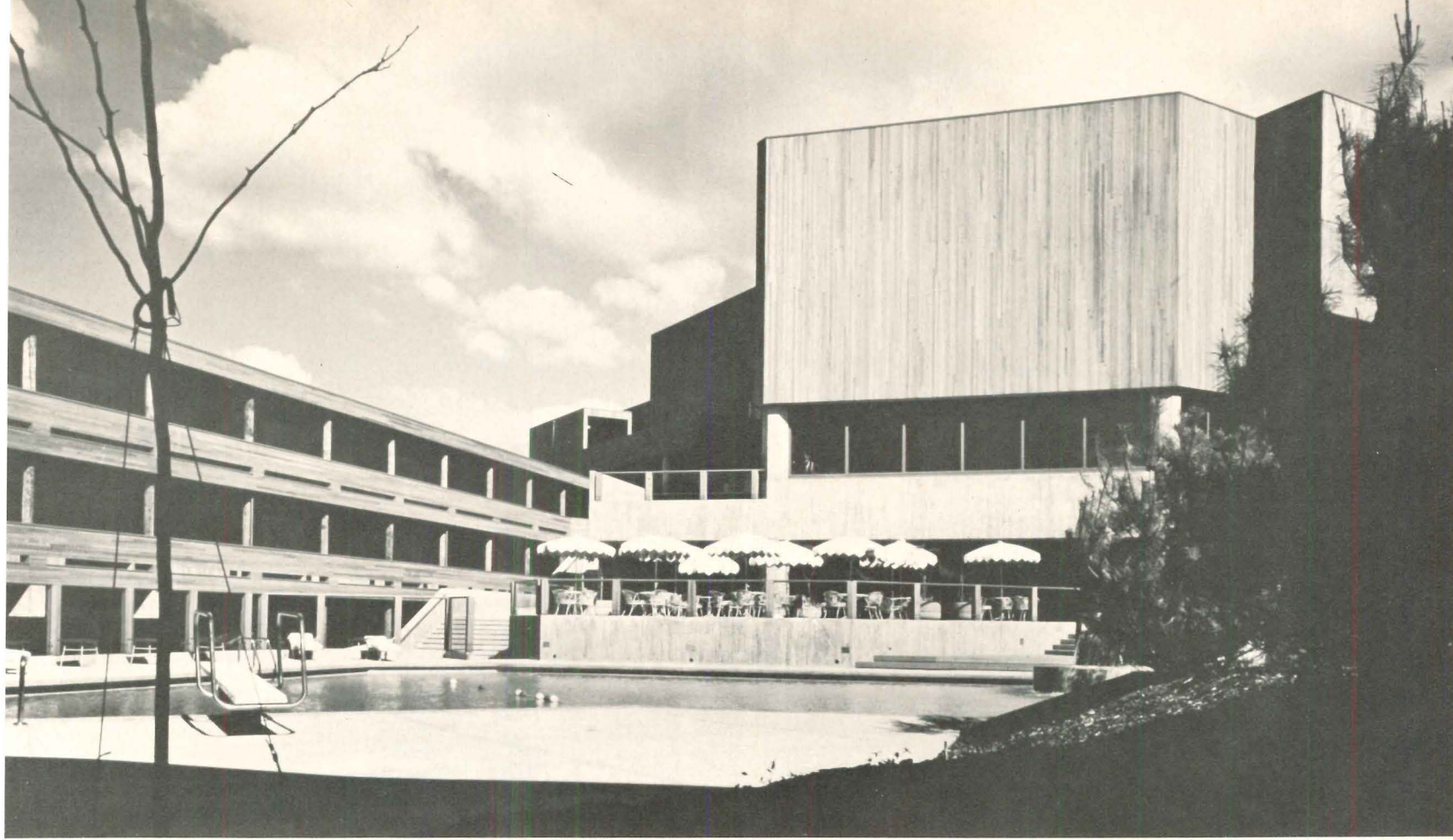
POOL LEVEL



LOWER LEVEL

- 1 Pool
- 2 Guest rooms
- 3 Lower dining
- 4 Employee dining
- 5 Mechanical
- 6 Fireplace lounge
- 7 Dining
- 8 Bar
- 9 Kitchen
- 10 Deliveries
- 11 First floor lobby
- 12 Administrative
- 13 Gift shop
- 14 Conference/banquet
- 15 Second floor lobby
- 16 Council room
- 17 Meeting

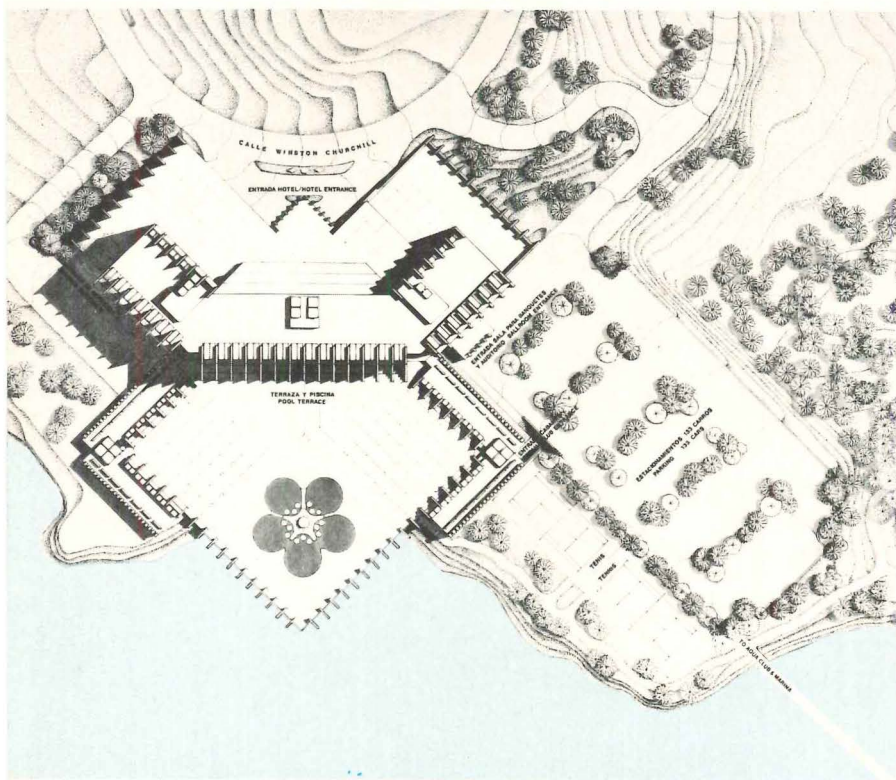
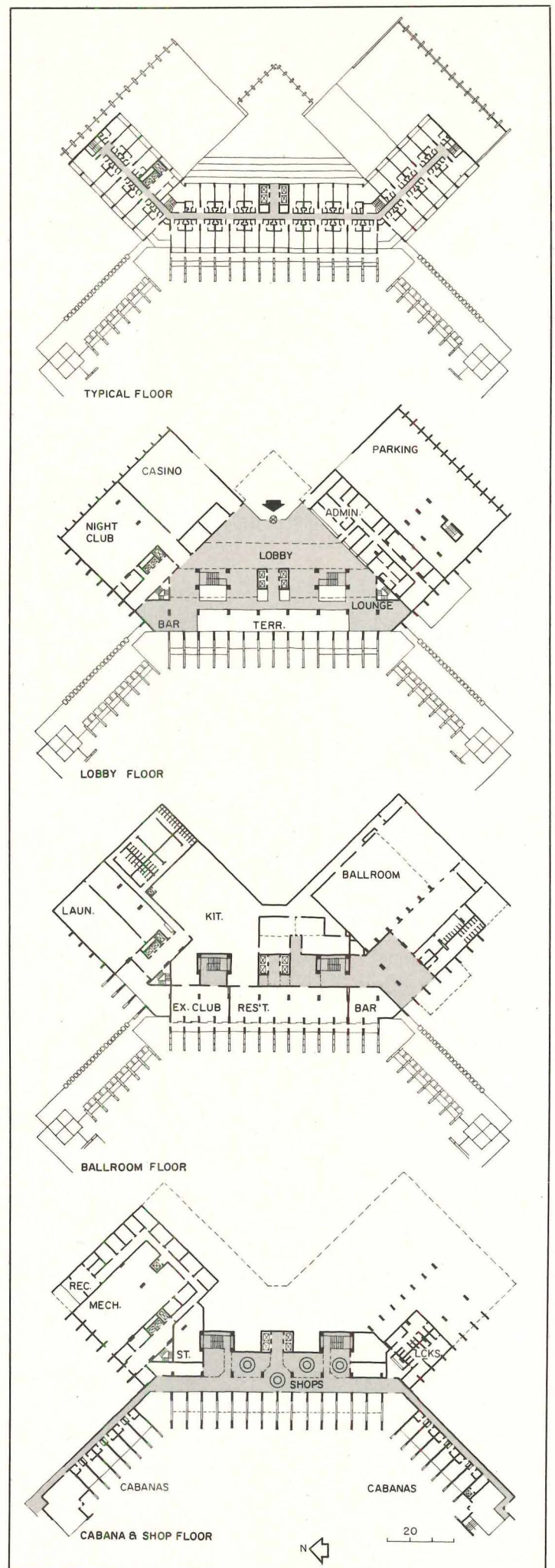


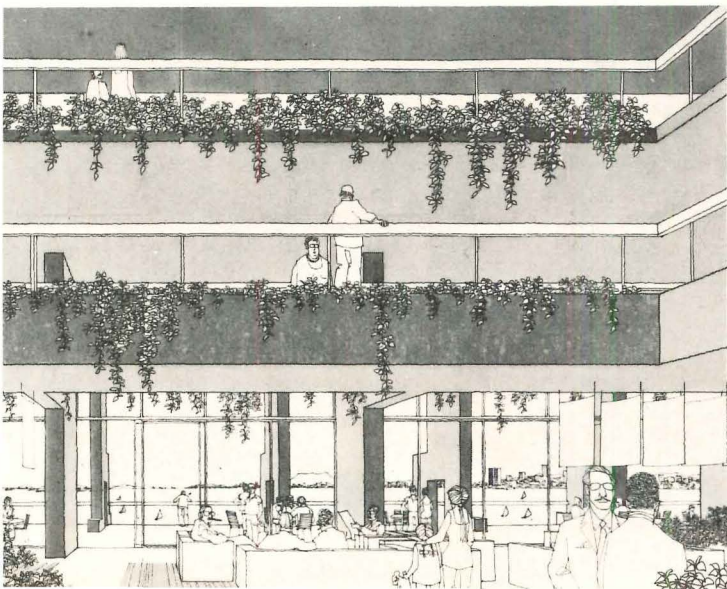
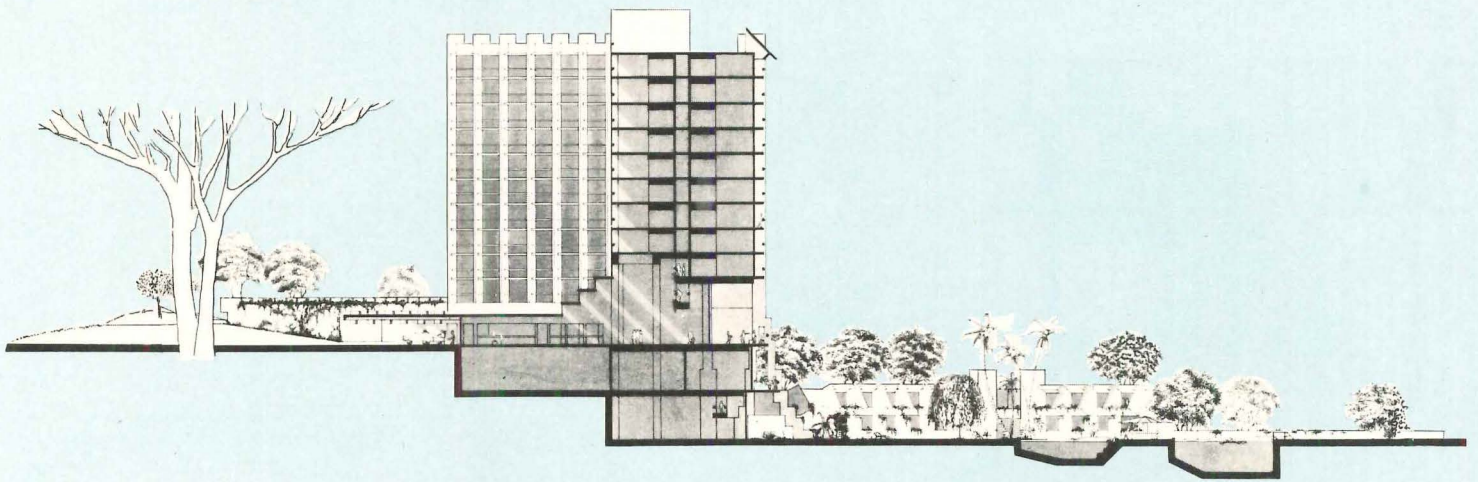
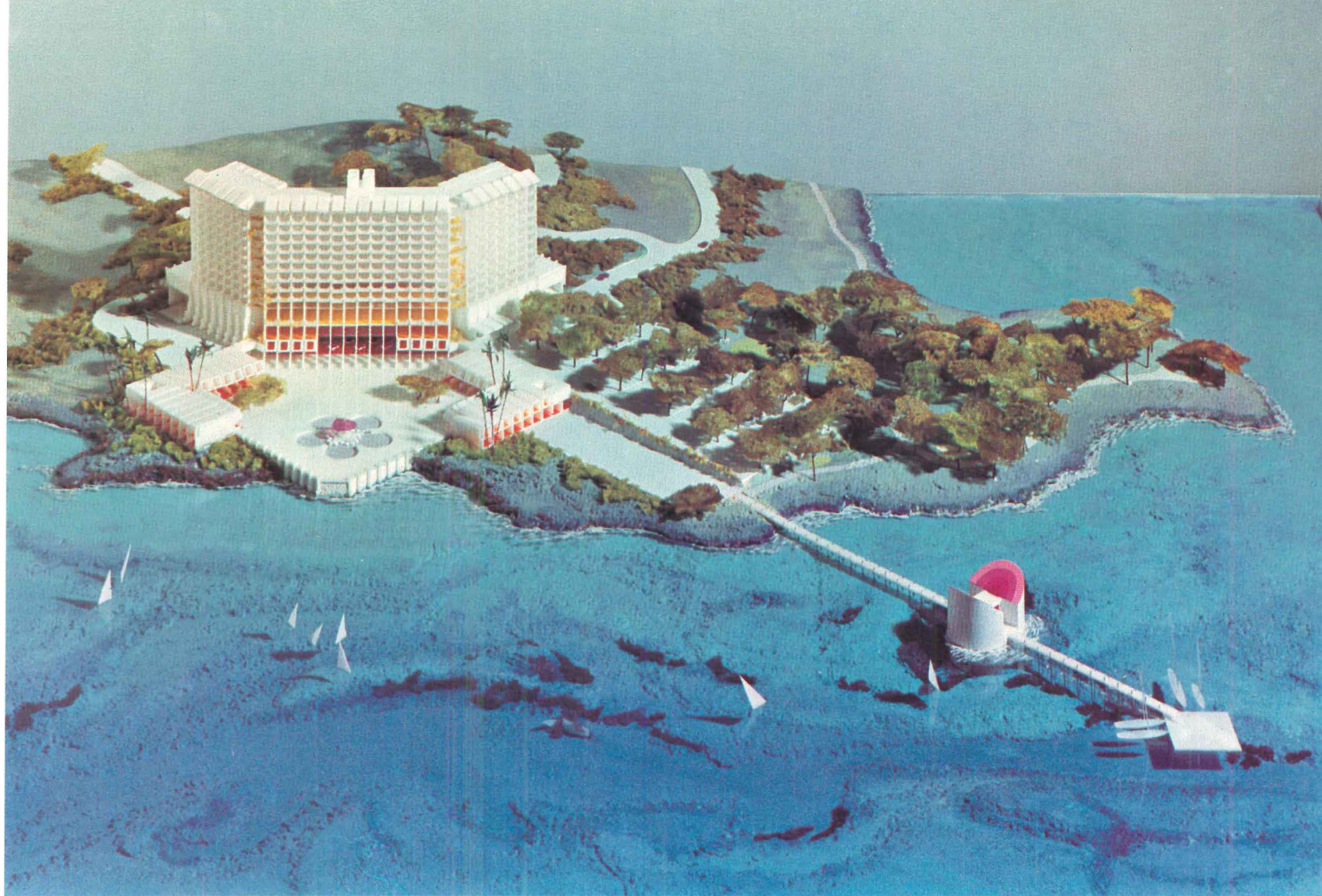


UNUSUAL DESIGNS ON DRAMATIC SITES DISTINGUISH OVERSEAS HOTEL CHAIN

The Regency Hyatt de Panama, shown on these pages, is one of four hotels designed by the same architects—Rader Mileto Associates of Rome, Italy—for a new overseas hotel chain, Hyatt International Corporation. Like the domestic hotels of the same name, these overseas Hyatts strive for a particular quality beyond that expected in the usual tourist or commercial hotel. While the new U.S. Hyatts have found exceptional urban locations, the overseas hotels of Hyatt International (a different company from that which develops the domestic hotels) are being located in resort areas. The four hotels included in this group all have superb waterfront sites, which the architects have handled with great respect for their special attributes while giving each hotel a distinctive character. In general, the programs for the hotels have much in common with those of other overseas chain hotels, but the architects have emphasized the individuality of each project and its location. The Regency Hyatt de Panama is located outside the city of Panama at Punta Paitilla. As many of its guest rooms as possible have a view of the harbor, where ships wait to enter the canal, and the Pacific Ocean beyond. The "Regency" lobby is a handsome three-story-high space visually connected by open well with public facilities below.

REGENCY HYATT DE PANAMA HOTEL, Punta Paitilla, Panama. Owner: *Inversiones Turisticas Panamenas, S.A.* Architects: *Rader Mileto Associates—Herbert Rader, William Mileto, principals; George Batori, Kevin Miller, associates; Wagih Hanna, vice president, projects, Hyatt International Corporation.* Structural engineer: *Pasquale Fazio.* Consultants: *Henry End Associates, Interior design; Howard Branston Associates, lighting.*



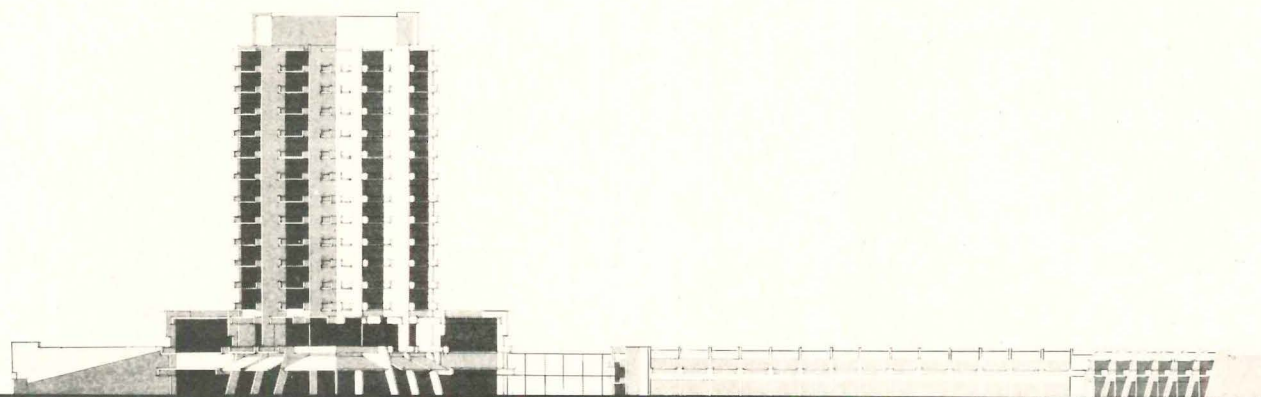
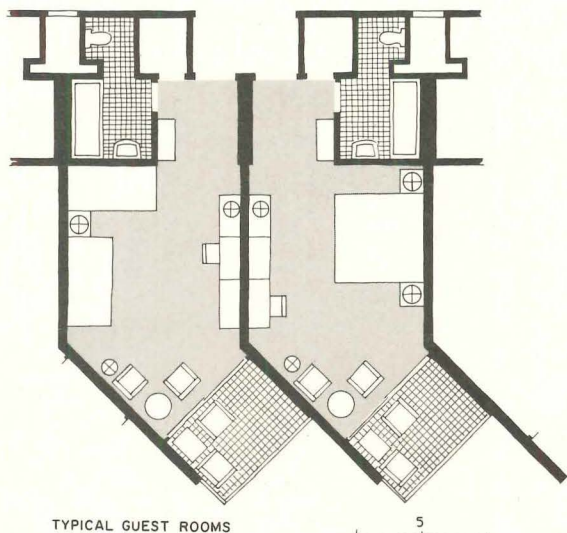
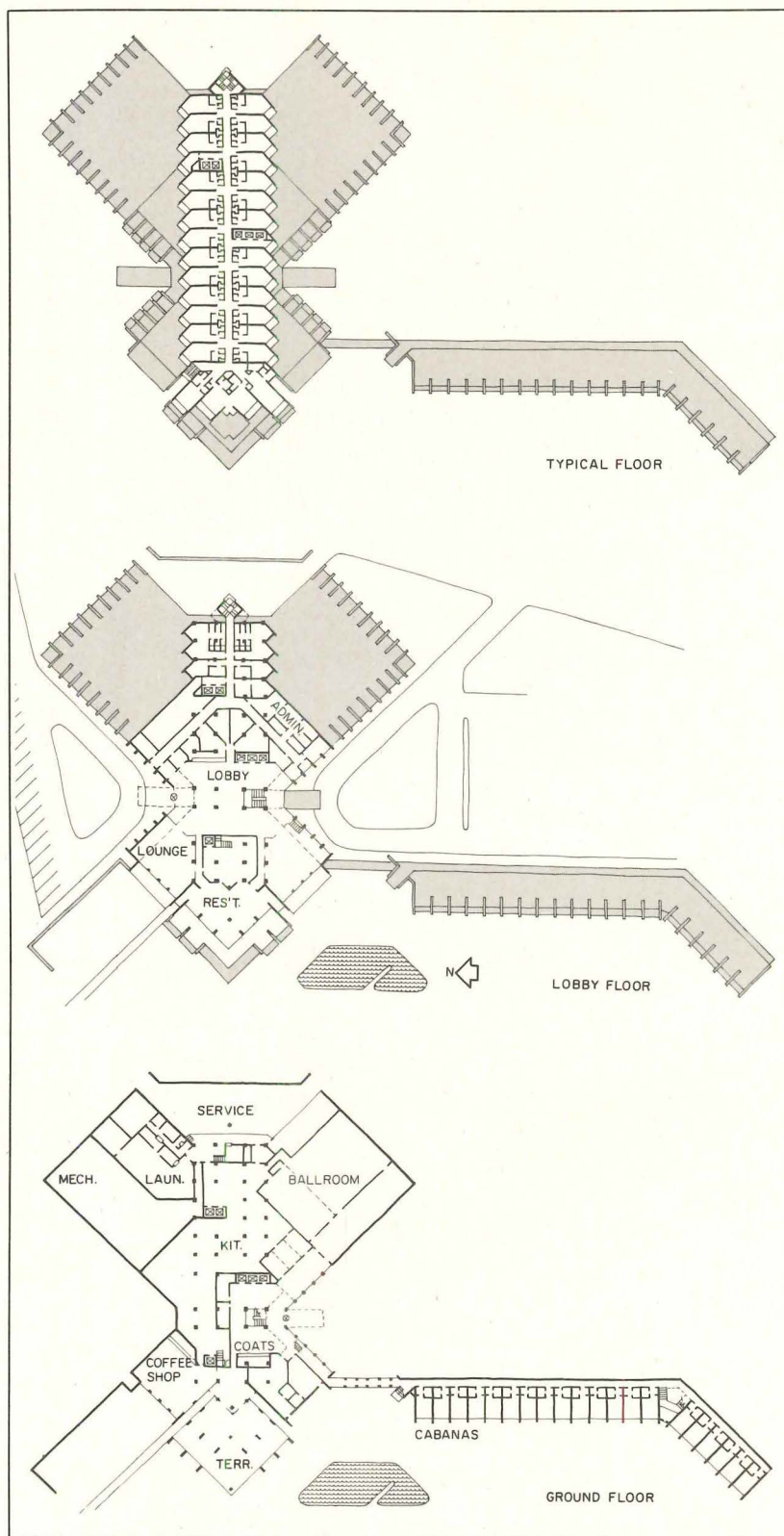


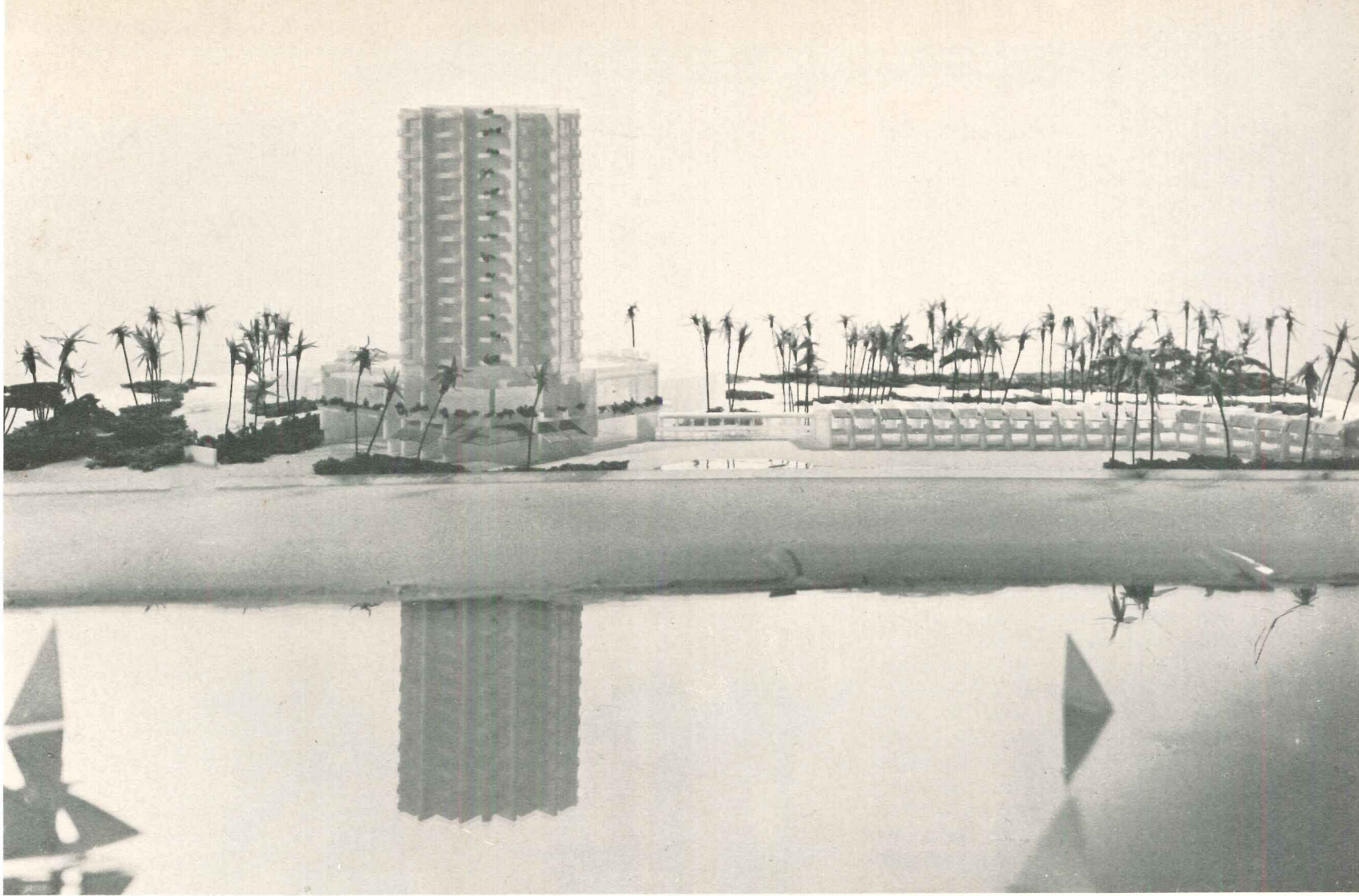
SITING AND PLAN WORK TOGETHER TO GIVE ALL GUEST ROOMS A SEA VIEW

The high-rise Hyatt Ochos Rios Hotel is to be located on the beach at Ocho Rios on the north shore of the island of Jamaica, in a resort area currently being developed as a tourist district.

The slender 12-story guest room tower rises from the "swept-wing delta" base in which are located administration offices and services, cabana club, restaurants and ballroom on the lower levels, and on the lobby floor lounge, cocktail lounge and restaurant, each with a terrace overlooking the pool terrace and the beach. From the lobby, a stairway looks down to the ballroom, coffee shop and pool terrace at the ground level. A separate carriage entrance to the ballroom is also provided. All guest rooms are angled 45 degrees at their outer walls toward the sea view; each has a balcony, also angled, which catches the view. In all, there are 400 guest rooms, 30 to a floor. Extending from the main building is a two-story wing containing 40 cabanas which open onto the pool terrace. Like the other overseas Hyatt Hotels designed by this firm, Ocho Rios will use rough sprayed concrete, dark anodized aluminum sash, tinted glass and, on the exterior, unglazed mosaic tile.

HYATT OCHO RIOS HOTEL, Ocho Rios, Jamaica, W.I. Owner: *Mallards Reef Hotels, Ltd.* Architects: *Rader Mileto Associates, George Batori, Kevin Miller, associates; Wagih Hanna* (Hyatt International Corporation). Structural engineer: *Pasquale Fazio*. Lighting consultants: *Howard Brandston Associates*. Contractor: *Coutinho, Caro & Company, Ltd.*

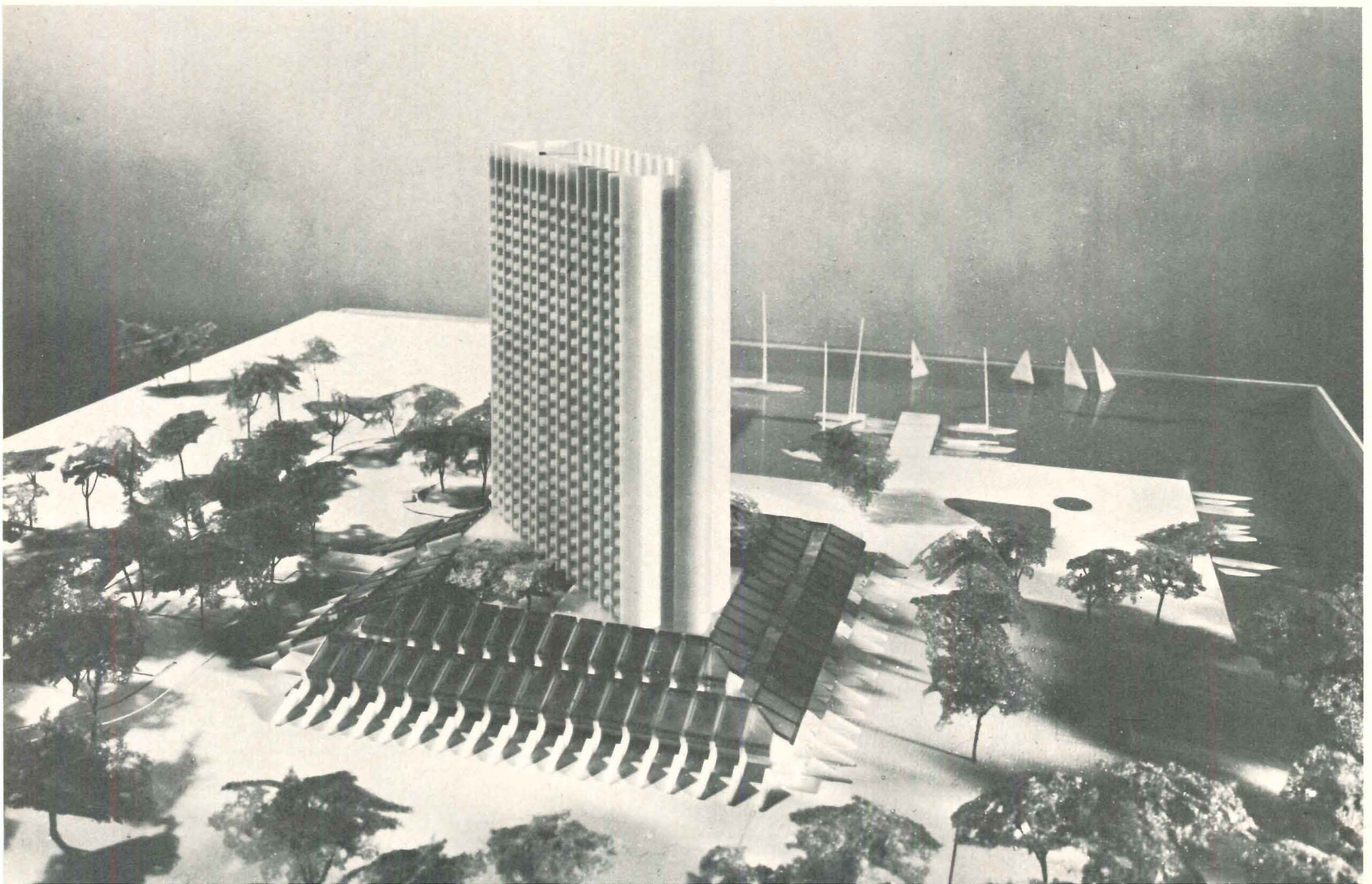
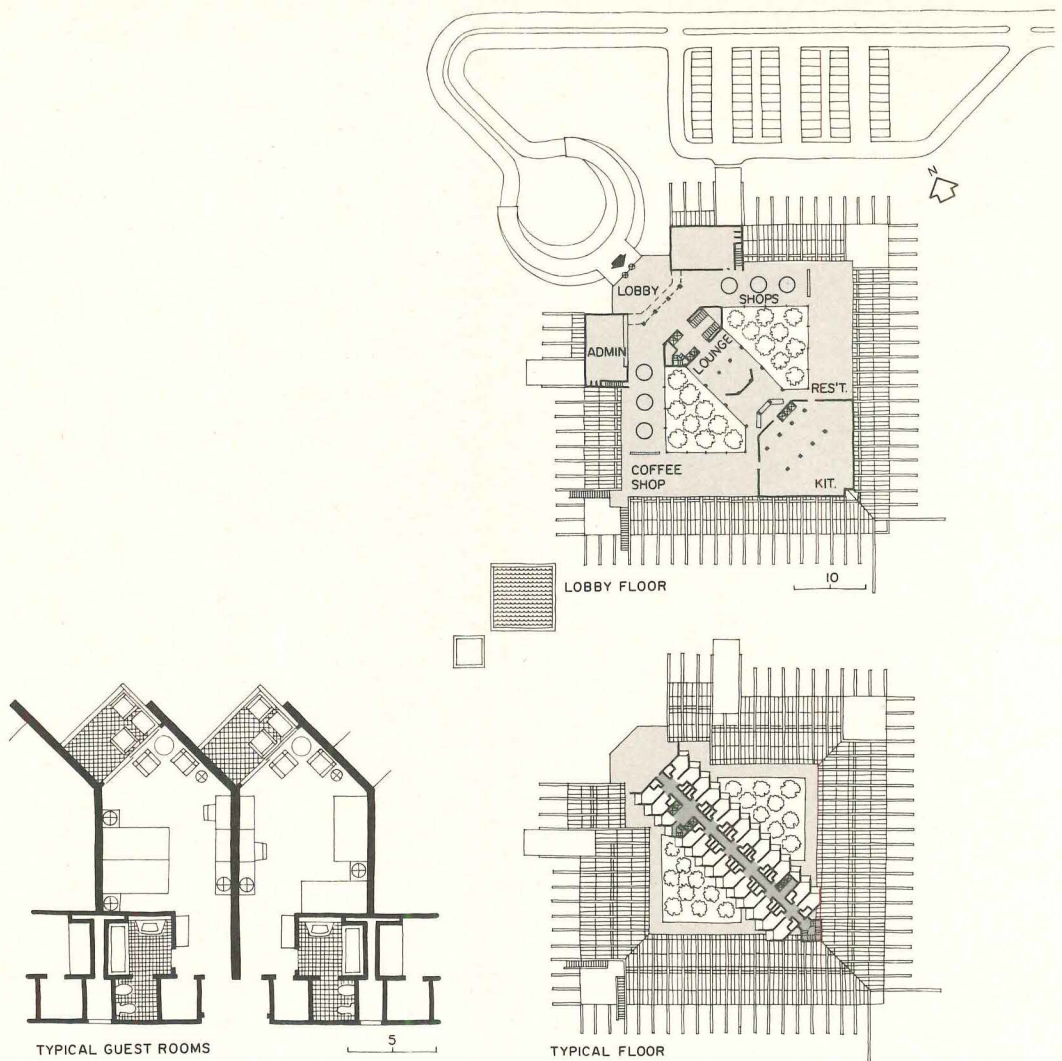


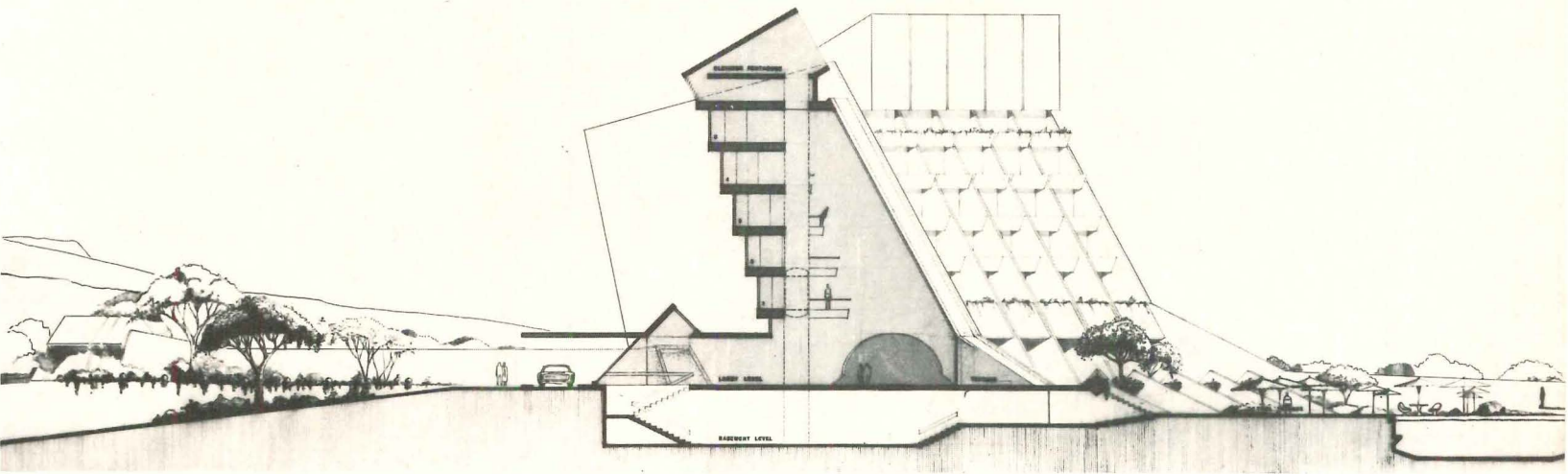
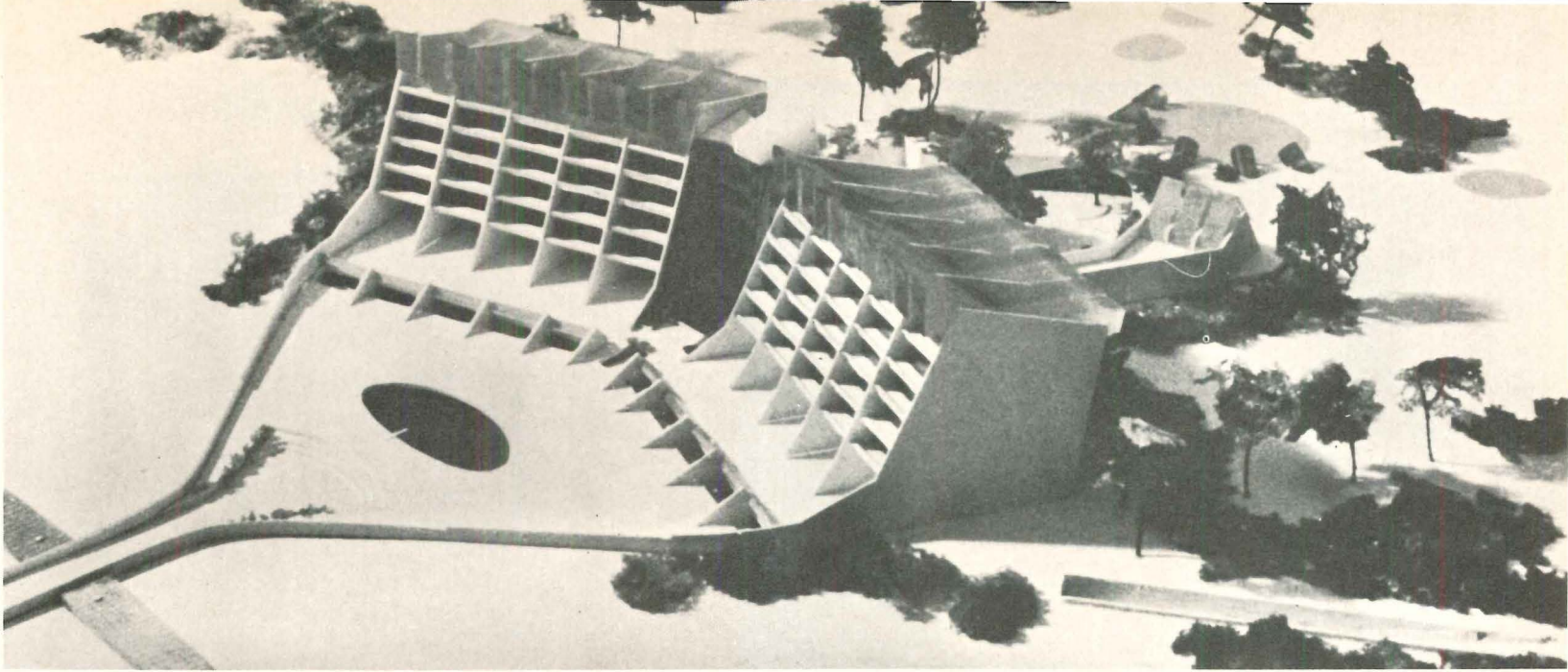


A HOTEL WITH RESORT FACILITIES CLOSE TO CITY AND AIRPORT

The Hyatt Athens, like the Ocho Rios Hotel in Jamaica, solves its waterfront location with a high-rise building. But the Athens hotel is twice as tall as the 12-story Ocho Rios, and the guest room tower rises from a square, not a delta-shaped, base. The 600 guest rooms all have fine views, thanks to the diagonal placement of the tower on the base, permitting half the rooms to look out over the Phaleron Delta area of the city (now being developed for tourism by the national tourist organization of Greece) to the harbor of Piraeus, and the other half to enjoy an excellent view of the Acropolis. The Hyatt Athens, as befits its proximity to the capital city of Greece, is a suave and sophisticated design which takes full advantage of its location and at the same time respects it by careful site use. Cabanas hug the base on all sides except where a circular ramp winds up to the main entrance; the site provides parking as well as tennis courts and a swimming pool, but all these facilities are contained in a small and well-ordered area. The marina, where the hotel will maintain various types of boats, is only a few steps from the cabanas. On the lobby floor, two triangular landscaped courts provide sheltered outdoor space to supplement the indoor space of the restaurant, coffee shop and cocktail lounge and add to the holiday air of the hotel.

HYATT ATHENS HOTEL, Athens, Greece. Architects: Rader Mileto Associates; Wagih Hanna (Hyatt International Corporation).

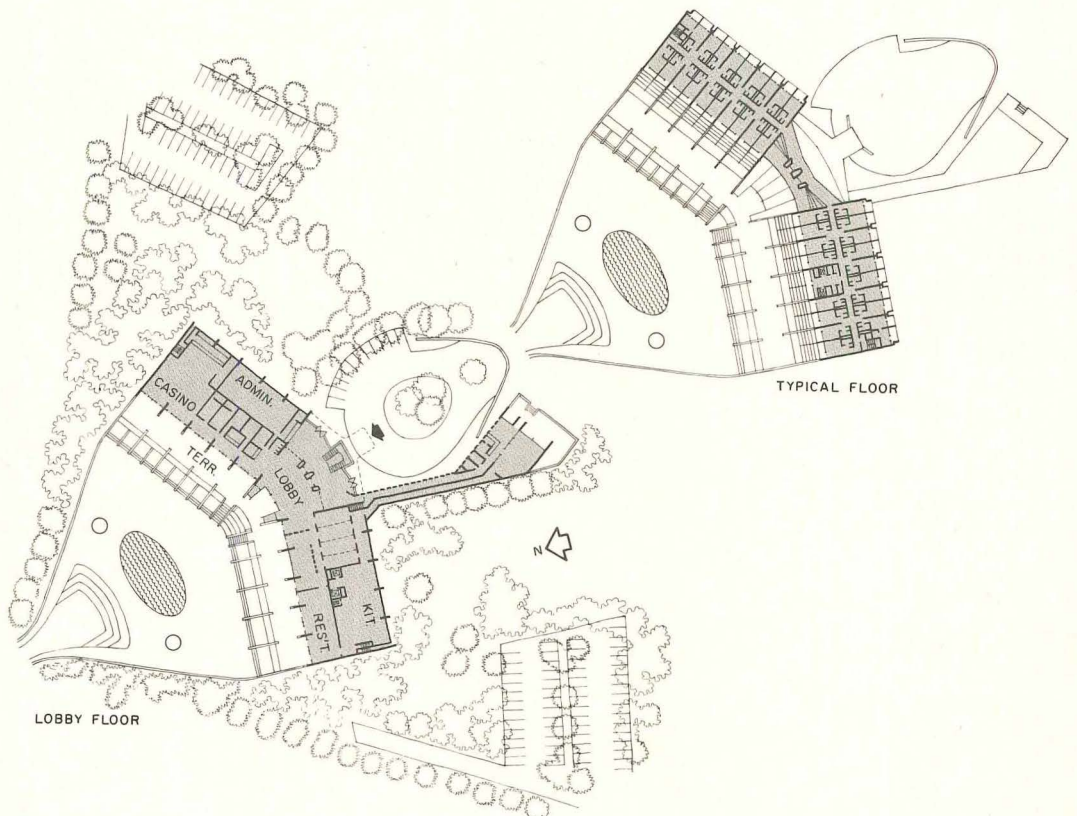


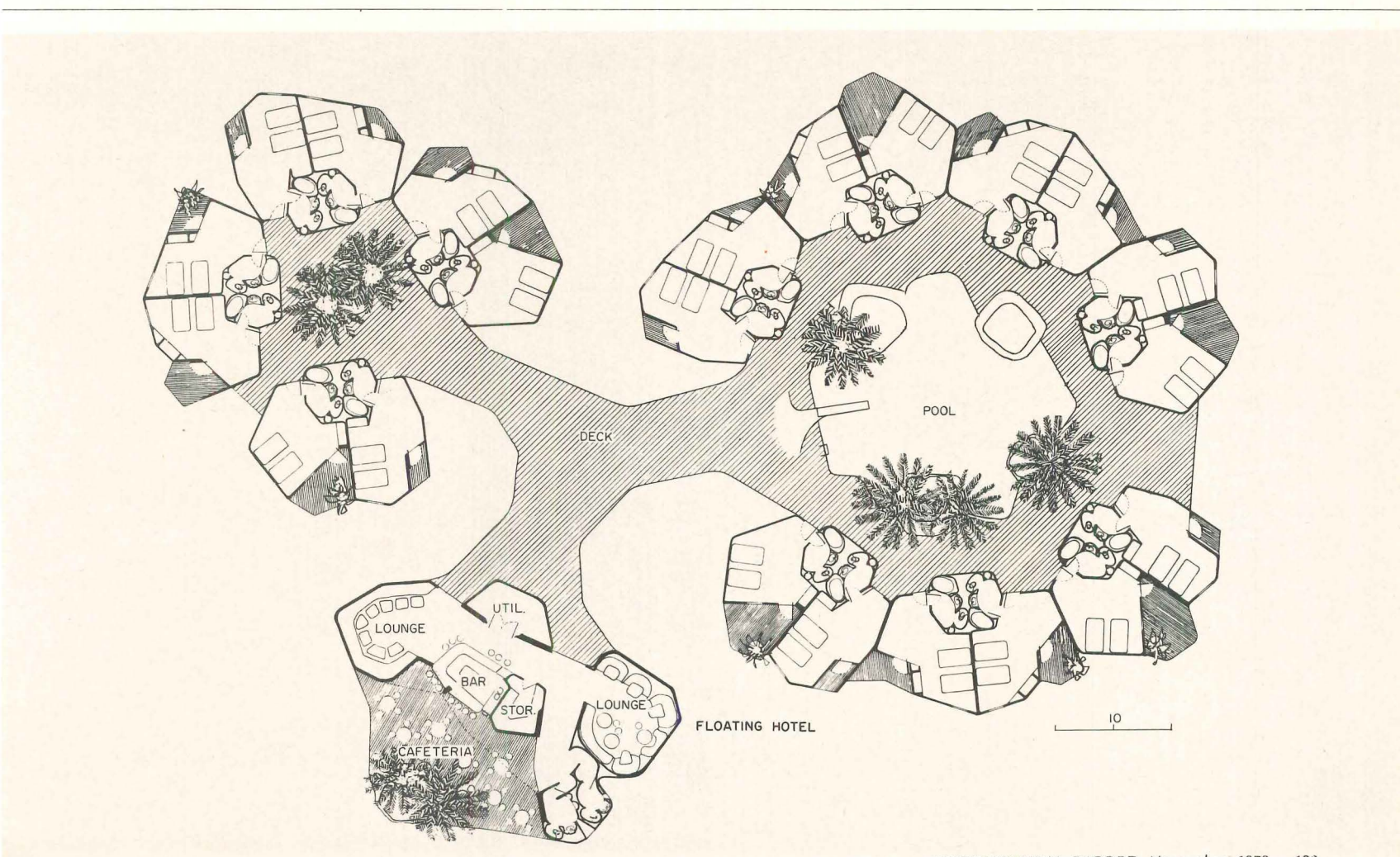
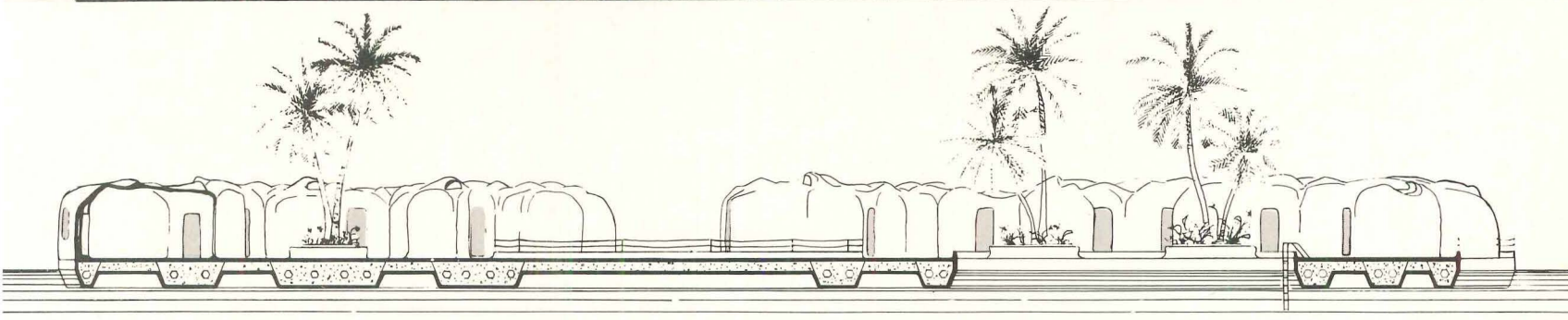
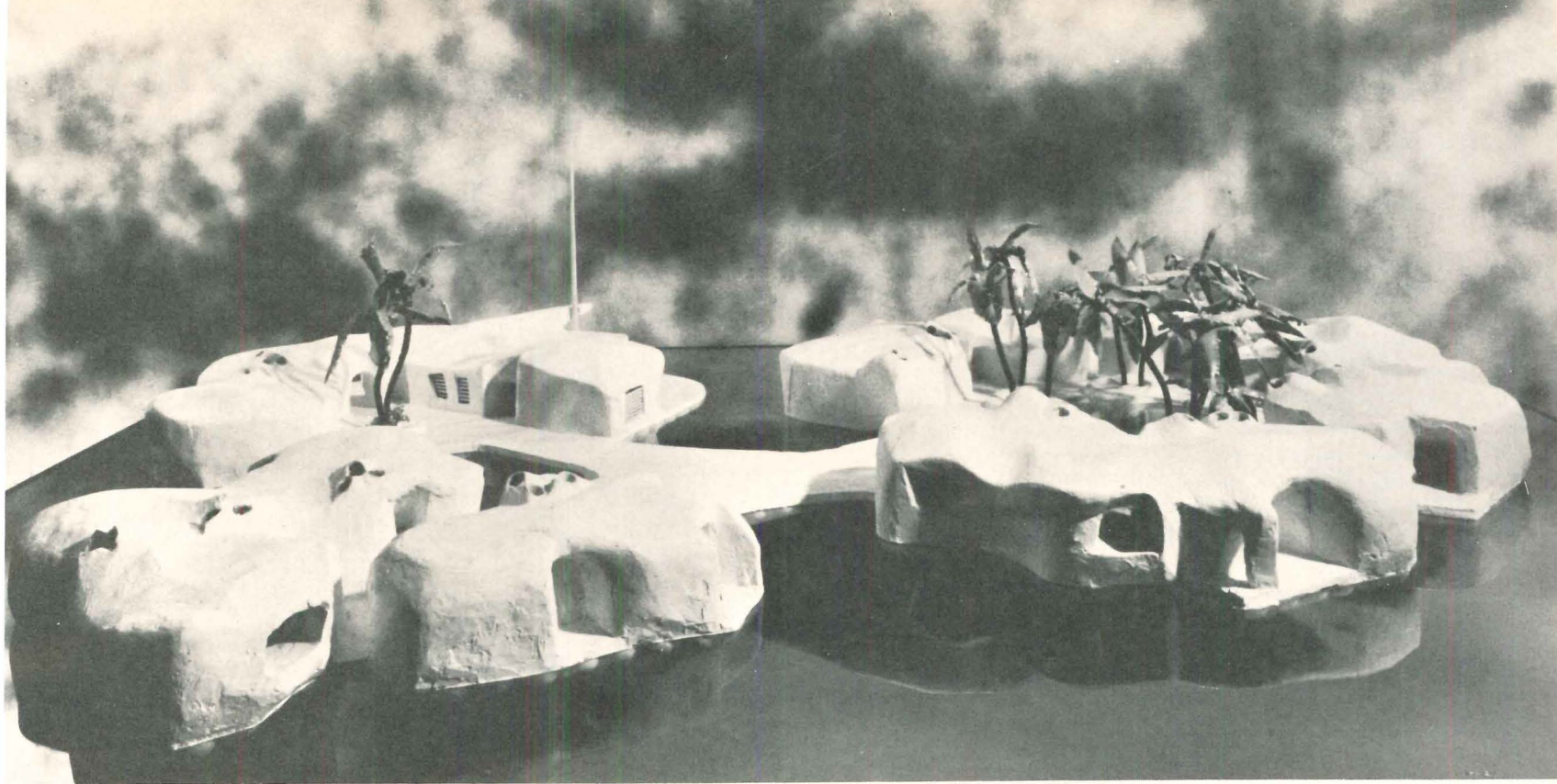


DISTINCTIVE FORMS FOR RESORT HOTEL ON BEACH OF AN INLAND SEA

The site for the Hyatt Regency Caspian Sea is part of a 500-acre resort complex being developed along a mile and a half stretch of coast on the Caspian Sea at Chalus, Iran. In addition to the hotel, the resort will include 400 residential units (villas and condominiums), golf course, shops, and a marina. The 200-room hotel is distinctive in design: the rhomboidal forms of its two guest room wings, result from projecting one floor above the other on one side and terracing toward the top floor on the other, a subtle response to the tropical climate and the towering Elburz Mountains behind. The end walls of the wings extend, at the lower floors, to form enclosing walls for the pool terrace and continue beyond to become part of a boat moorage. Between the guest wings is an atrium lobby, a feature of "Regency" hotels, here adapted as a six-story space, with glass-walled elevators connecting the lobby to flying bridges that lead to guest room corridors.

HYATT REGENCY CASPIAN HOTEL, Chalus, Iran. Architects: Rader Mileto Associates, Kevin Miller, associate; Wagih Hanna (Hyatt International Corporation); preliminary design, Interplan, Herbert Rader, William Mileto, senior partners. Structural engineer: Pasquale Fazio. Interiors: Henry End Associates. Lighting: Howard Brandston Associates.

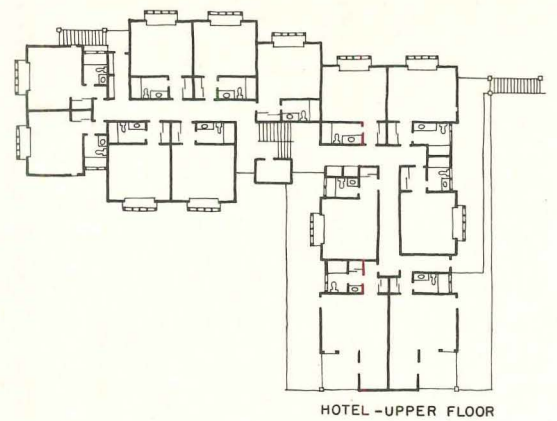




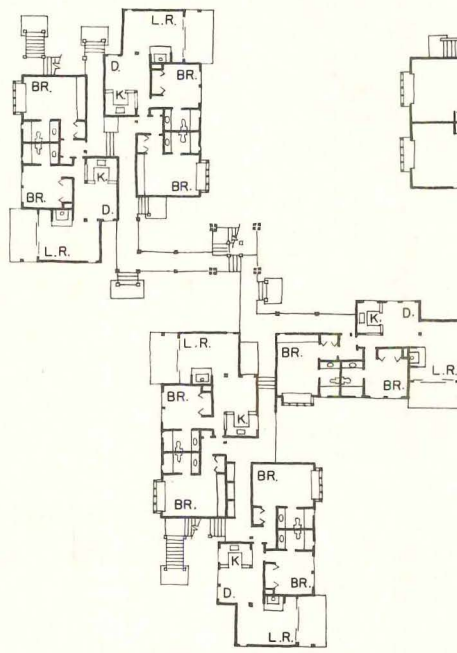
A COUNTRY INN IN THE BEST WESTERN MANNER FOR A HAWAII RANCH TOWN

Waimea Village Inn has none of the usual tropical resort trappings, but it is a resort nevertheless. By being what it really is, a country inn, it is more of a tourist attraction than it could possibly be otherwise. The inn is located in the village of Waimea, a small ranch town on the slopes of Mauna Kea on the island of Hawaii, whose scale is small and low-keyed in character, and the problem of inserting a major building into this quiet environment was real. Two things were fortunate: the architect was very familiar with the town, having helped the people there in formulating guidelines for architectural and sign control and for maintaining the picturesque character and scale of the place; and the owner wanted the inn to be a place in which cowboys from the nearby Parker Ranch would feel at home as much as visitors from the mainland. Design became a matter of "nestling a dense development into the midst of small Hawaiian ranch houses and the village vegetable stand," according to the architect. In the damp, cool climate the same simple materials common to the town's smaller buildings made sense: wood treated with preservative against rot, clear waterproofing on cedar shingles, corrugated iron roofs. Breaking up the masses into shaller shapes, interspersing the buildings with small landscaped open spaces, smallpaned windows, simple railings, give the buildings the desired residential scale. The bar has become a local gathering place; the commercial building houses a country store. The Inn successfully fits into the character and the life of the town.

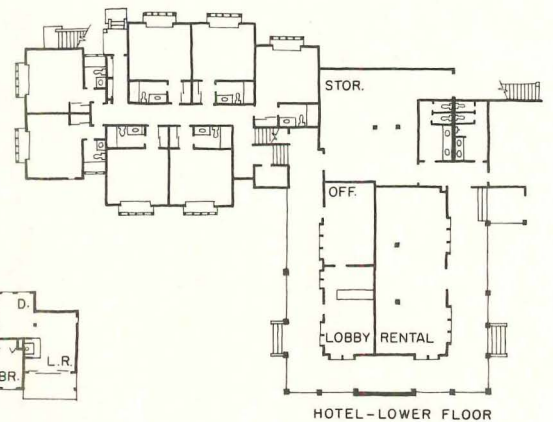
WAIMEA VILLAGE INN, Waimea, Hawaii. Architect: Thomas O. Wells & Associates. Engineers: John A. Martin & Associates, structural; Ferris & Hamit, Inc., mechanical; Bennett & Drane, Inc., electrical. Landscape architect: George Walters. Graphics: Bruce Hopper. Contractor: Hawaiian Dredging & Construction Company, Honolulu.



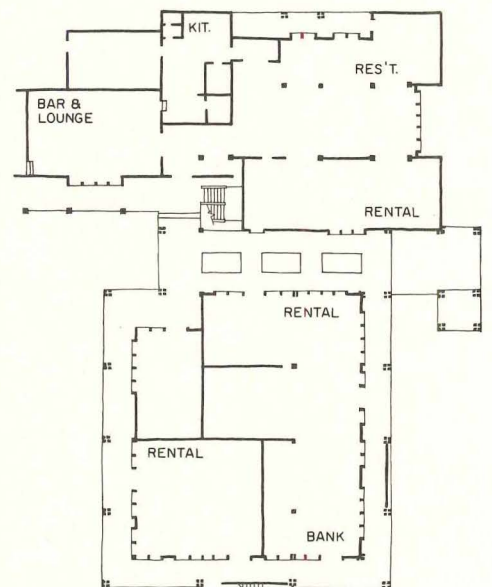
HOTEL - UPPER FLOOR



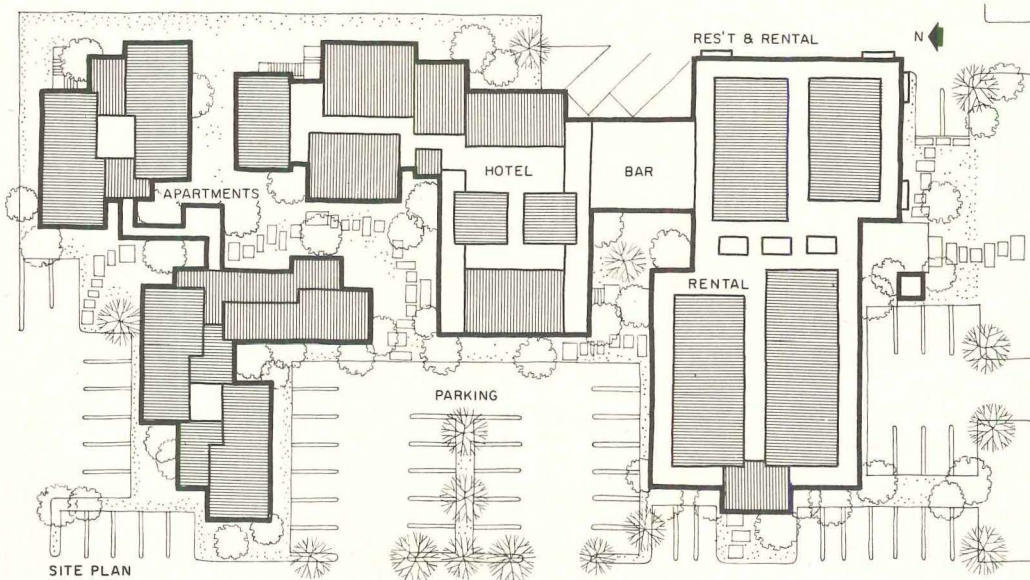
APARTMENT - TYPICAL FLOOR



HOTEL - LOWER FLOOR



COMMERCIAL - LOWER FLOOR



SITE PLAN



A. Salbosa photos



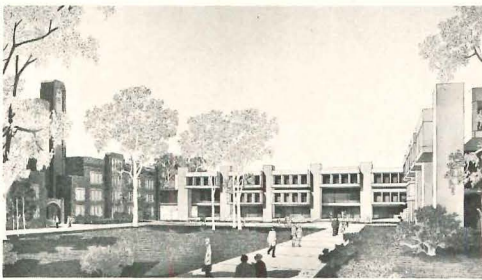


To make the Waimea Village Inn a contemporary version of the simple and very real buildings of the early ranch days of Hawaii, materials and details are simple. Rough cut redwood trim, railings, stairs and columns, and cedar shakes are treated with clear waterproofing; iron roofs are painted soft green; interiors are painted wallboard and rough redwood ceilings and trim.



A straightforward concrete structure eases installation of complex laboratory utilities

The poured-in-place frame for a Butler University science building by Hellmuth, Obata & Kassabaum eliminates structural impediments in the corridors, freeing the space for pipes and ducts in corridors and into the labs.



By now, vertical distribution of mechanical and electrical services for laboratory buildings via external towers is more or less familiar. What happens to the horizontal distribution of these same utilities varies, however, depending upon the layout of laboratories, and upon the way these utilities relate to the floor-supporting structure.

Floor plans of the Edward Gallahue Science Building at Butler University have laboratories back to back in the core, wrapped with a perimeter corridor, which in turn, is followed on the periphery by a ring of offices and conference rooms. Thus, the longitudinal corridors serve laboratories on one side, and offices and conference rooms on the other.

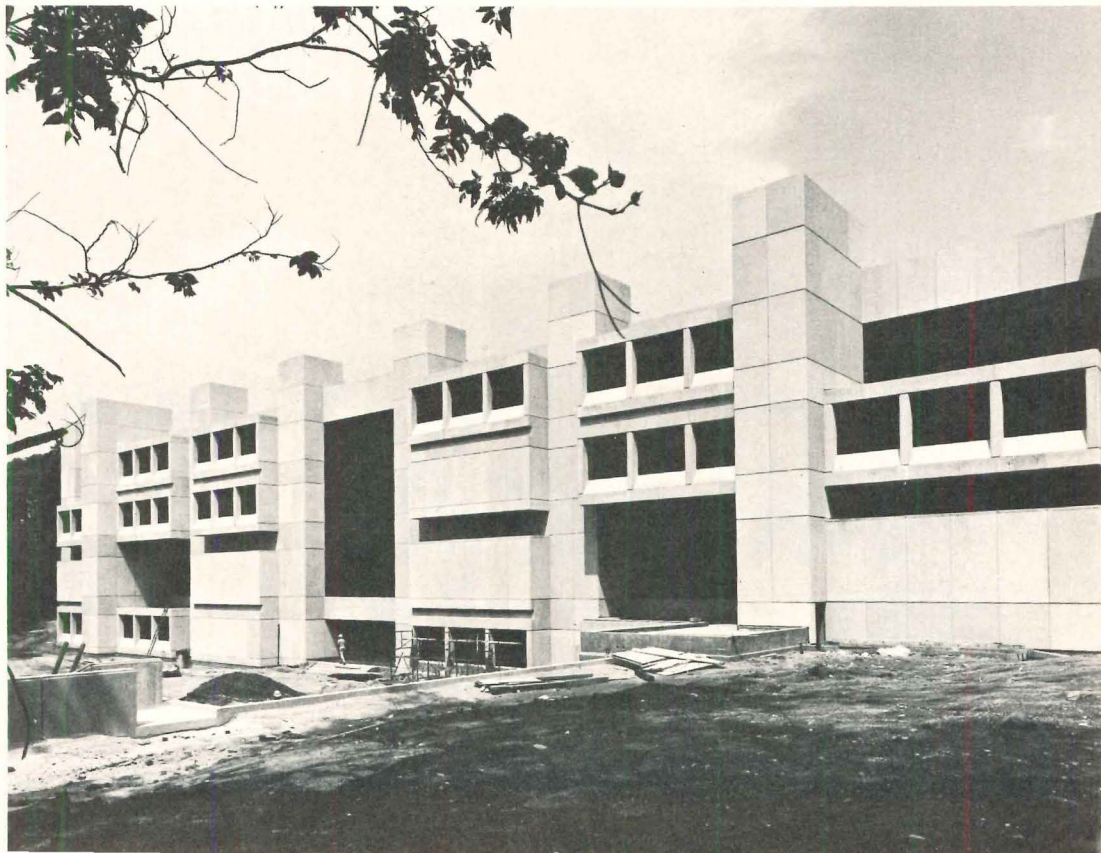
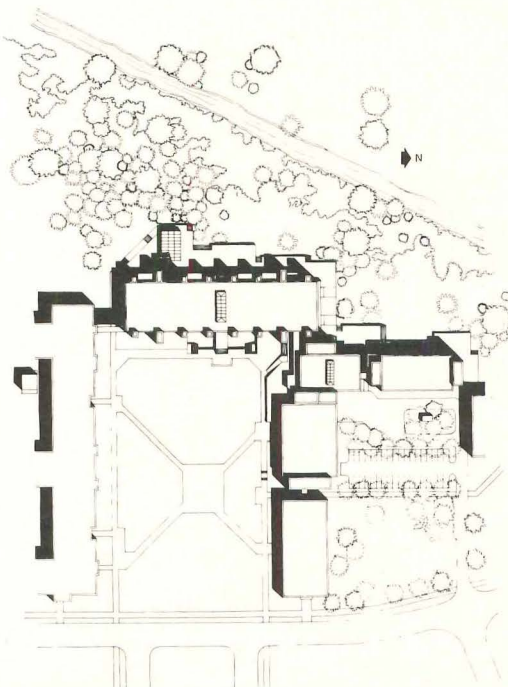
Eleven external shafts bring utilities to branch mains that run above the corridor ceilings. (A twelfth shaft houses an elevator.) The lateral runs of ductwork and piping are then stubbed into the laboratory modules which are

10 ft. on center. The stubs can run directly from the mains to the above-ceiling space of the laboratories because there are no beams in the way to interfere.

The poured-in-place concrete structure is coordinated with the lab modules

Laboratory floors are supported by three rows of columns—two along the inner walls of the corridors, and one down the center of the building. The column spacing coincides with the 10-ft-dimension of laboratory modules. Corridor floors span from the outer rows of columns to beams along the corridor wall opposite. And, finally, perimeter-room floors are supported by these beams and another row at the exterior walls.

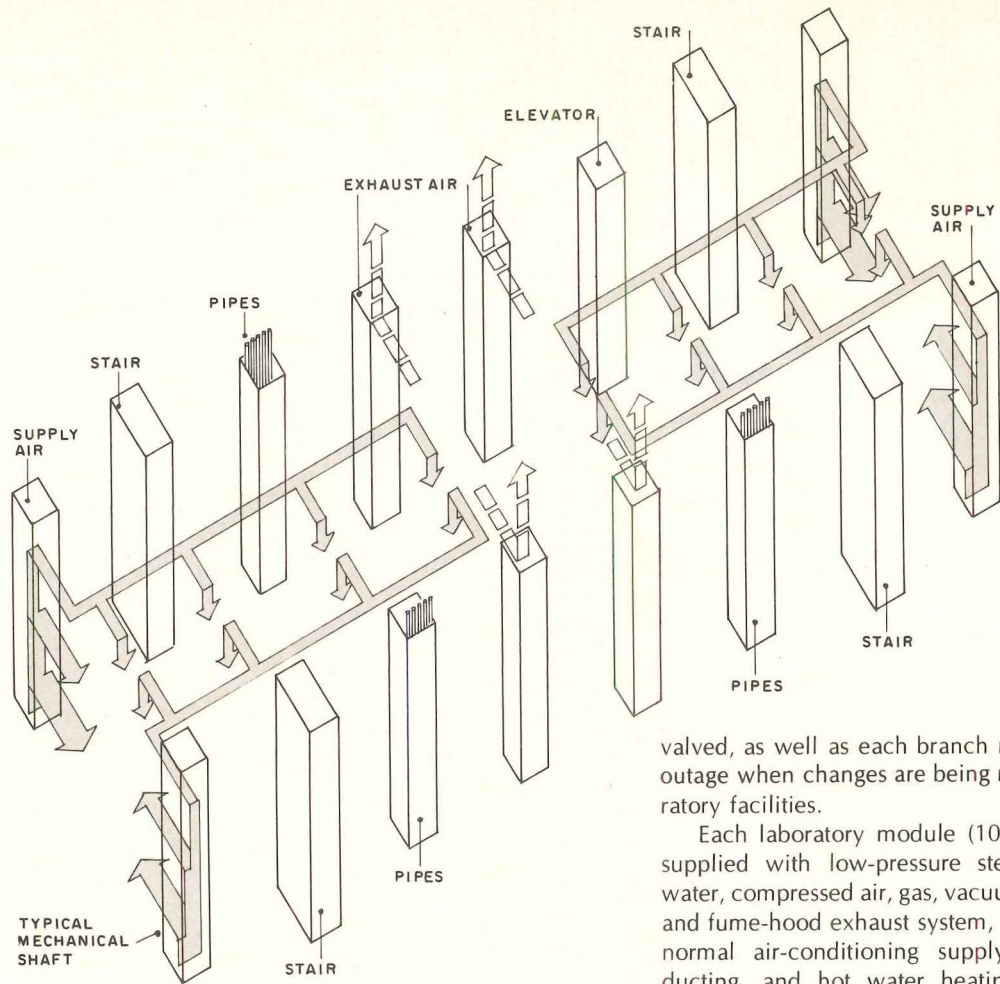
Piping and ductwork stubs can enter the laboratory modules at any level of the 5-ft.-2-in. space from the hung lay-in ceiling to the underside of the floor slab. Each module is



Horizontal mains at the ceiling of the lower level corridors feed the exterior mechanical towers as shown in the diagram, right. The four corner towers house the supply air ducts, and the center four towers, exhaust ducts. Return air from non-lab spaces is pulled back through ceiling plenums to the four corner towers. The four deeper towers are for stairs. Three of the remaining four towers are used for piping, and the last tower, for a freight elevator.

Because there are no dropped beams between columns at the corridor, utilities have easy access to the laboratory modules. Further, there are no beams across the corridors to hamper branch mains of ducts and pipes.

The building has four levels: lower level, and first through third. First and third levels are shown bottom, right. Bridges connect the structure to an existing building and to the new Holcomb Research Institute for Environmental Biology.

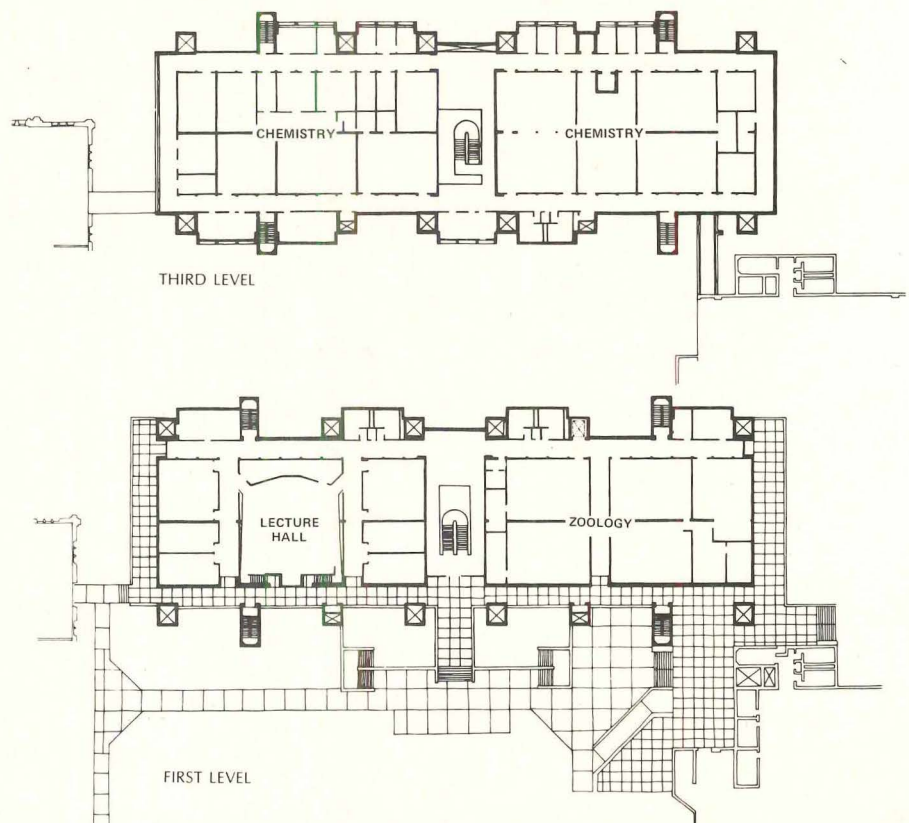
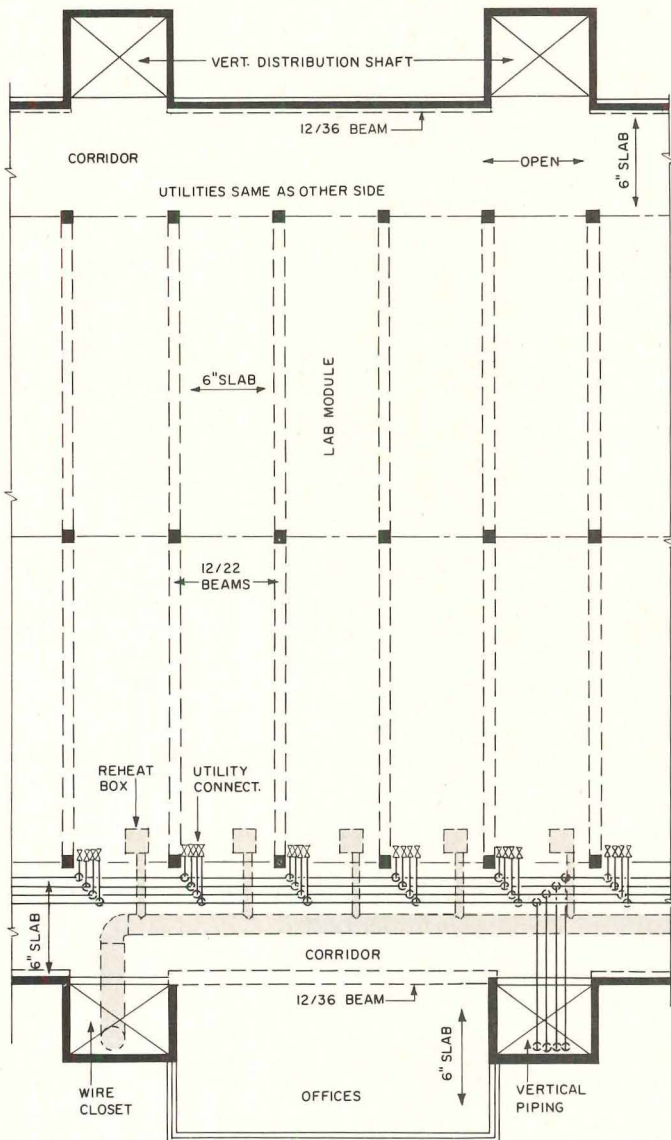


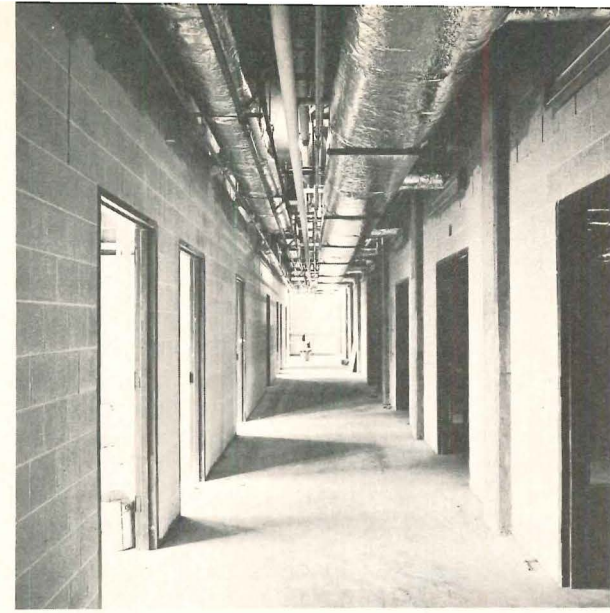
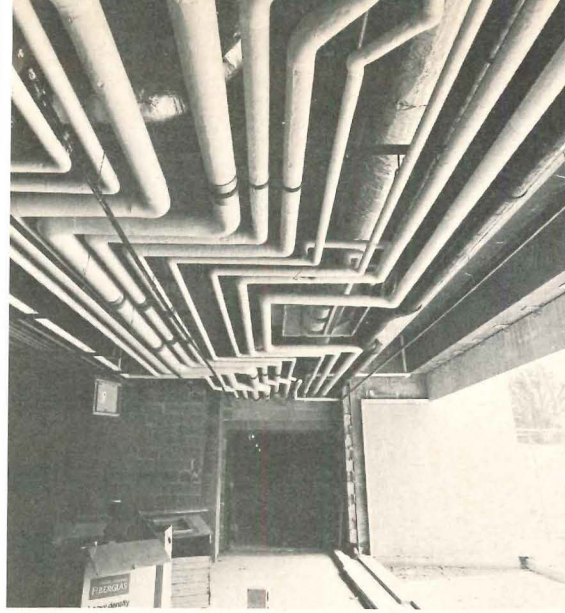
valved, as well as each branch main, to limit outage when changes are being made in laboratory facilities.

Each laboratory module (10 by 30 ft.) is supplied with low-pressure steam, distilled water, compressed air, gas, vacuum, and waste and fume-hood exhaust system, in addition to normal air-conditioning supply and return ducting, and hot water heating piping for baseboard convector heating next to corridor glass.

The building has complete mechanical flexibility on a 10-ft module

Not only is the piping laid out on a 10-ft module, but also is the air-conditioning control. The system is high-velocity, single-duct with hot-water reheat—one reheat, pressure-reducing box per module. All laboratory spaces are provided with 100 per cent fresh-air supply; air is exhausted through fume hoods





The complete sequence of utility distribution is shown in the photos. From left, clockwise: 1) horizontal mains at the lower level; 2) supply ducts and pipes emerging from one of the mechanical service towers, and turning down the corridor; 3) branch mains in a corridor, with stub ducts penetrating corridor masonry wall; 4) above ceiling space in one of the laboratory modules, showing reheat boxes, branch ductwork, piping, and conduit; 5) exhaust ducts at the roof; 6) fan-coil ducts at perimeter.

and drying cabinets throughout the labs.

Return air is taken, however, from classrooms, lecture hall, and perimeter office and conference room spaces, through the above-ceiling space as a plenum, to the four vertical shafts at the ends of the building, and back to equipment rooms. Perimeter offices and conference rooms are air-conditioned with ducted fan-coil units with the ducts running under corridor edge-beams and above the hung ceilings.

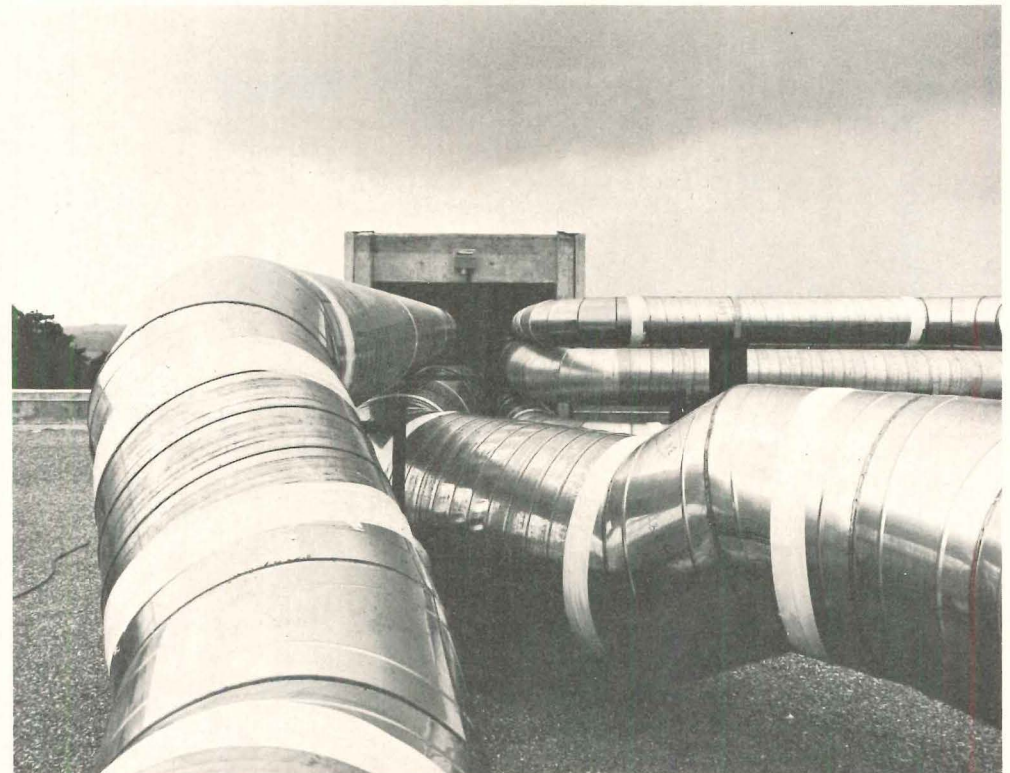
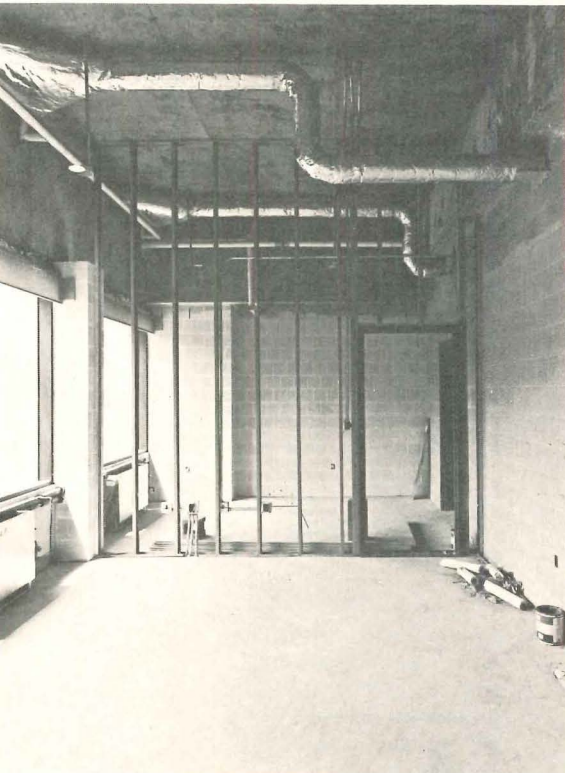
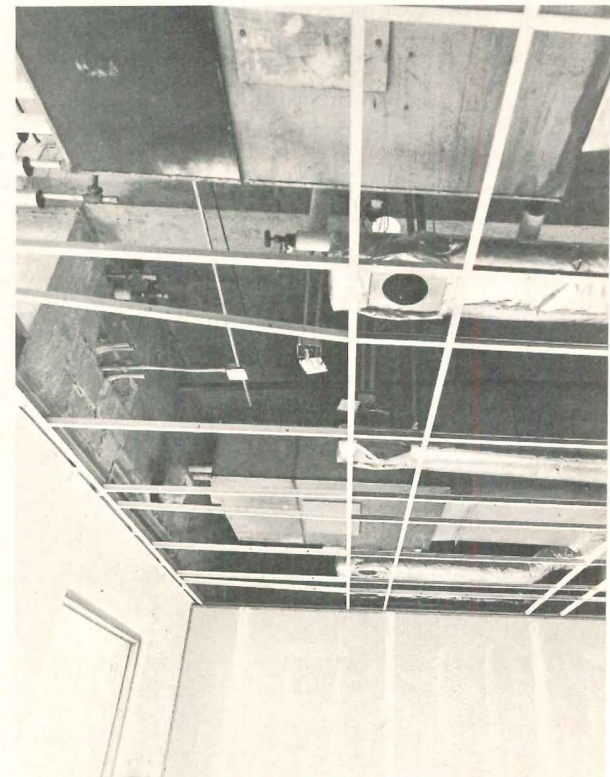
The program called for flexibility for change, but not multi-use laboratories

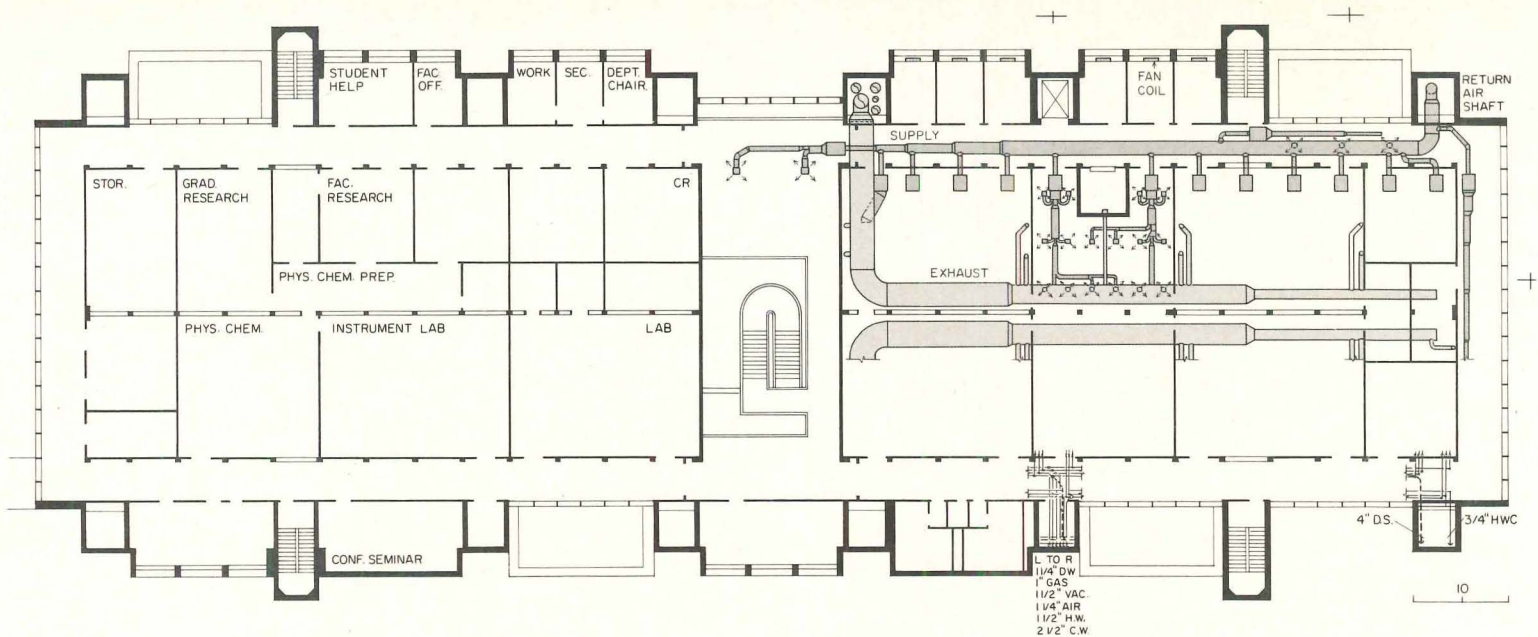
The design problem was to provide an undergraduate science facility of approximately 120,000 sq ft to accommodate four existing science departments, together with a 150-seat lecture hall and classroom facilities for general use. Because the facility is being built in connection with a new Institute for Environmental

Research, maximum flexibility was desired to facilitate changes in science curricula and staffing that may occur as a result of Institute programs. Program elements include teaching and research laboratories, offices, seminar rooms, lecture hall and classrooms, and greenhouse facilities.

Laboratories and departmental offices and seminar rooms are located on either side of a skylit central circulation space. Offices and conference/seminar rooms are expressed as cantilever elements between service towers. All interior partitions other than corridor walls, which are block, are metal studs and gypsum board. Thus, within the 30-ft.-deep interior laboratory areas, there is virtually complete flexibility for rearrangement as equipment technology and teaching programs or techniques change.

The ideal approach in design of laboratories for teaching would be to have them used





each day for different courses, generally within a department, or, occasionally, interdepartmentally. This presumes, however, that departments are staffed for the required assembly and disassembly of demonstration apparatus in the non-scheduled hours. But, because the University does not foresee having teaching assistants available for this work, the laboratories have been designed for fixed-course teaching. This approach calls for 544 laboratory student stations in instructional laboratories and 438 classroom student stations, in contrast to 350 laboratory stations and 300 classroom stations with the interdisciplinary approach.

Total cost of the building is \$5.5 million, including science furniture, or \$46.21 per sq. ft. Net to gross ratio of laboratory floors is about 59 per cent. A cost breakdown is given below; also given are net areas for the four departments and the student stations.

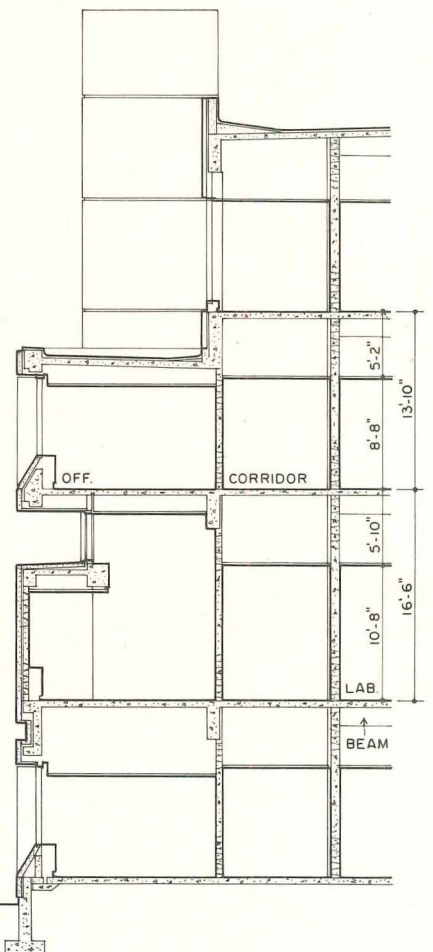
Square foot costs

General construction	\$21.03
HVAC, plumbing	14.88
Electrical	3.35
Science furniture	6.95
Total	\$46.21

Summary of net areas

Department	Area	Lab or CR sta.
Botany	15,100	136
Chemistry	15,020	152
Physics	7,320	56
Zoology	16,990	200
Lecture & classrooms	7,050	438
Total	61,480	982

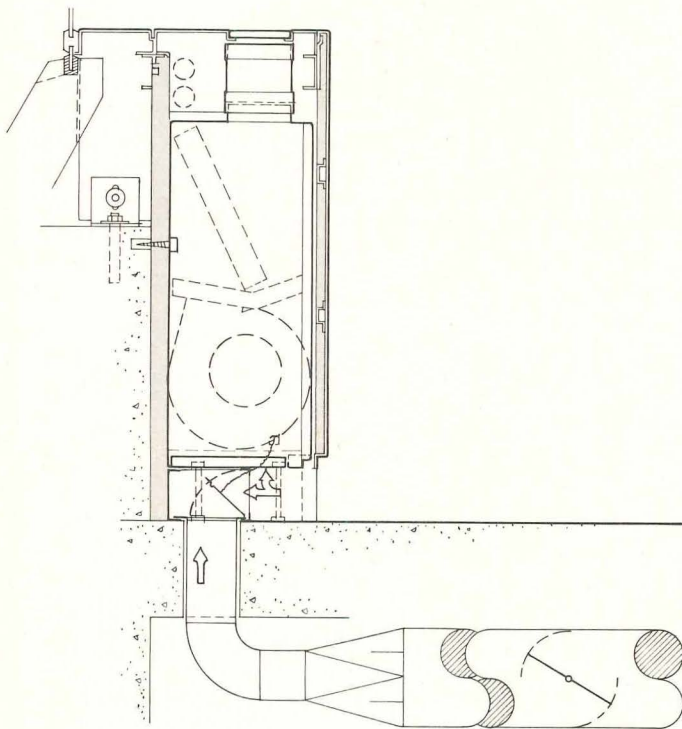
EDWARD GALLAHUE UNDERGRADUATE SCIENCE BUILDING, Butler University, Indianapolis, Indiana. Architects: *Hellmuth, Obata & Kassabaum, Inc.*—*Gyo Obata*, principal-in-charge of design, *Gerard G. Gilmore*, associate principal-in-charge of project; *Chih-Chen Jen*, project designer. Engineers: *LeMessurier Associates, Inc.* (structural). *HOK Associates, Inc.* (mechanical). Laboratory consultants: *Earl L. Walls Associates*. General contractors: *George Bahre Company*.



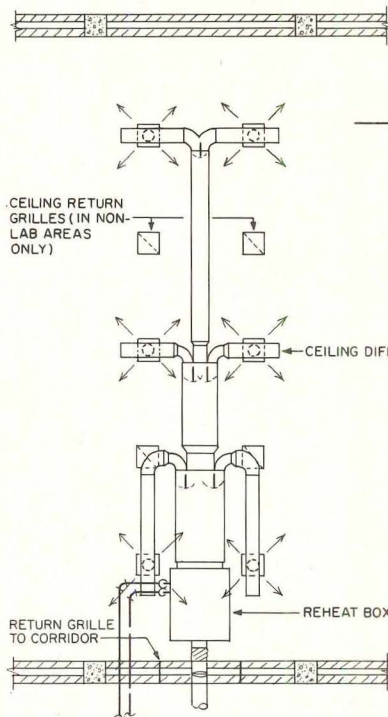
Plan shows duct and pipe distribution at the third (chemistry) level. Air distribution is shown in the upper, right-hand quadrant; piping in the lower, right-hand quadrant. Laboratory spaces uses 100 per cent fresh air; but air is returned from perimeter spaces through the ceiling to the corner towers.

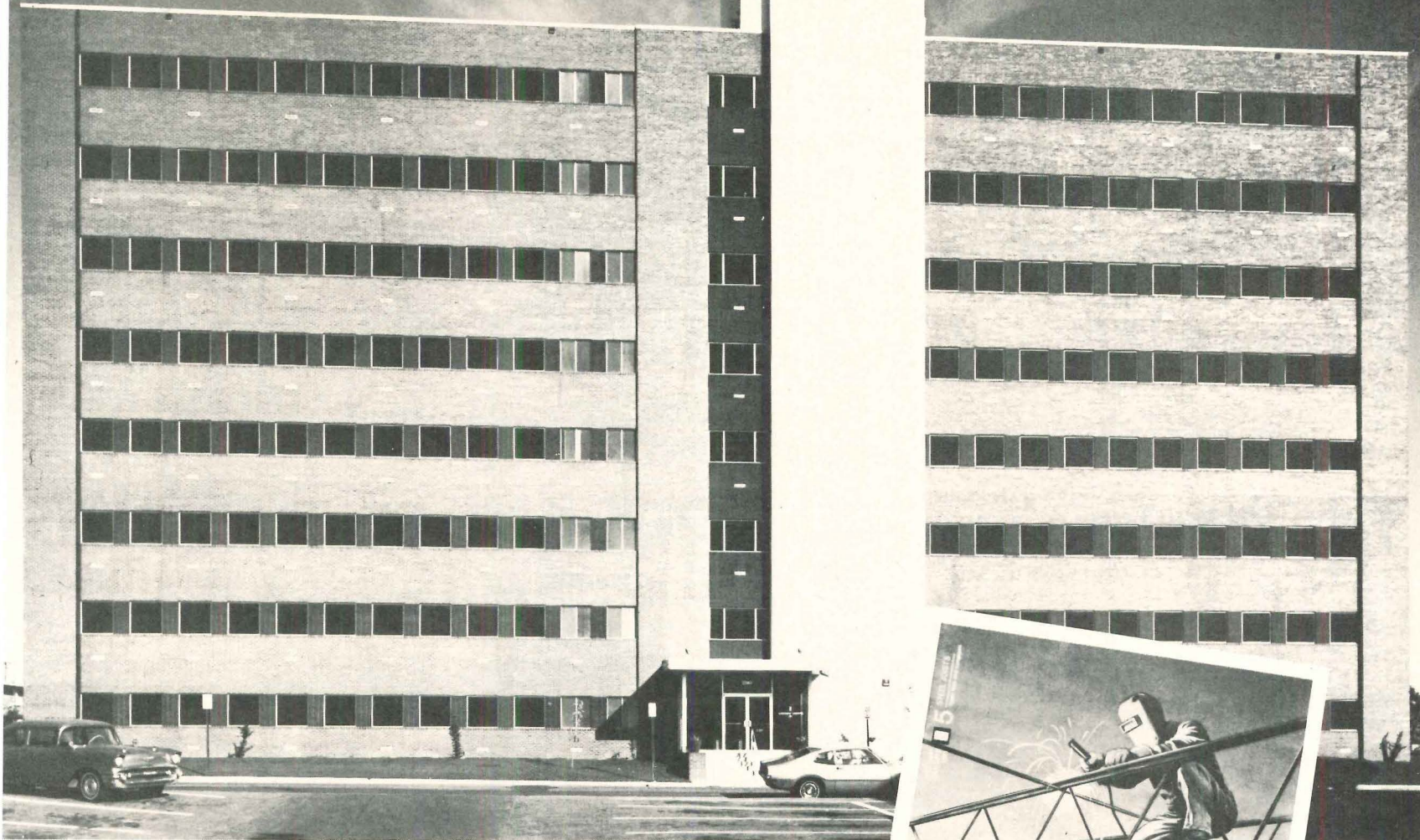
Above-ceiling space for duct and pipe distribution is a generous 5 ft.-2 in. (above).

Each laboratory module has a reheat box for space-temperature control (near left), to which is connected low velocity ductwork. Fan-coil units (far left) are used to air condition the perimeter spaces.



TYPICAL FAN COIL





Why steel joists were the right answer to this building need

**“DESIGN FLEXIBILITY PLUS
FASTER CONSTRUCTION,”
SAYS ARCHITECT STRONG**

In Denver's Writer's Center III, open web steel joists were used for floor support in the second through eighth floors, plus roof support over the eighth floor.

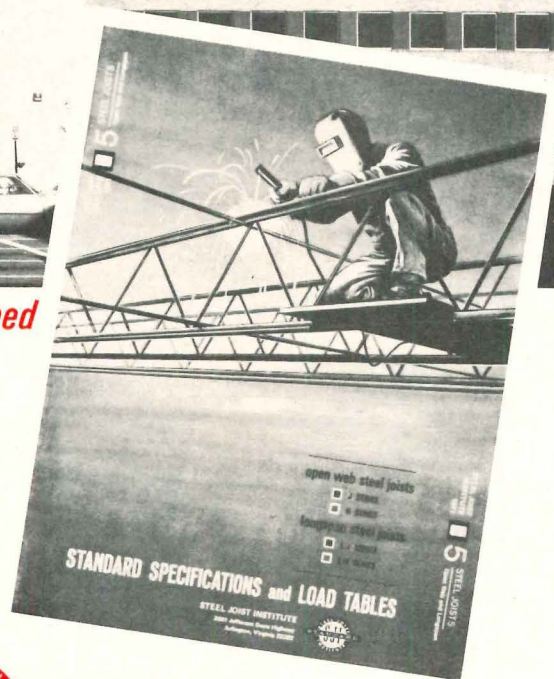
Why did Denver architect Charles D. Strong select this type of construction?

“Primarily for flexibility, but for fast construction, too”, was his answer. “We were able to run the power and telephone lines and the exhaust system through the open webs. And suspending the acoustical ceiling from the bottom chords gave us ready access to the lines for future changes. For special areas like computer rooms, we merely adjusted the joist spacing. We've designed four other buildings in the Denver area with bar joist construction. We like the flexibility these structural members give us.”

You'll like the flexibility of open web steel joists, too, and the other design/construction advantages they offer.

For complete information, send today for our latest edition of Specifications and Load Tables for Open Web Steel Joists and Longspan Steel Joists. Mail coupon for your free copy.

For more data, circle 70 on inquiry card



STEEL JOIST INSTITUTE

2001 Jefferson Davis Highway
Arlington, Virginia 22202

Mail to: STEEL JOIST INSTITUTE
7th Floor, 2001 Jefferson Davis Hwy.
Arlington, Va. 22202

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International Headquarters
Standard Oil Company (Indiana), Chicago

PRODUCT PERFORMANCE —they're getting it with ZONOLITE MONO-KOTE Fire Protection.

ZONOLITE® MONO-KOTE® is being used to fire-protect the interior portions of the new 82-story international headquarters for Standard Oil Company (Indiana) in Chicago.

Sprayed directly to the building's structural steel members, it's meeting the critical needs of the owner, architects, contractor and subcontractor—thanks to its outstanding performance.

The owner is getting a product that meets his most critical requirement: protecting the structure in the event of fire.

The architects needed a material that could meet building code require-

ments—and state and city standards prohibiting asbestos in the formula. (W. R. Grace & Co. helped them both ways with ZONOLITE MONO-KOTE.)

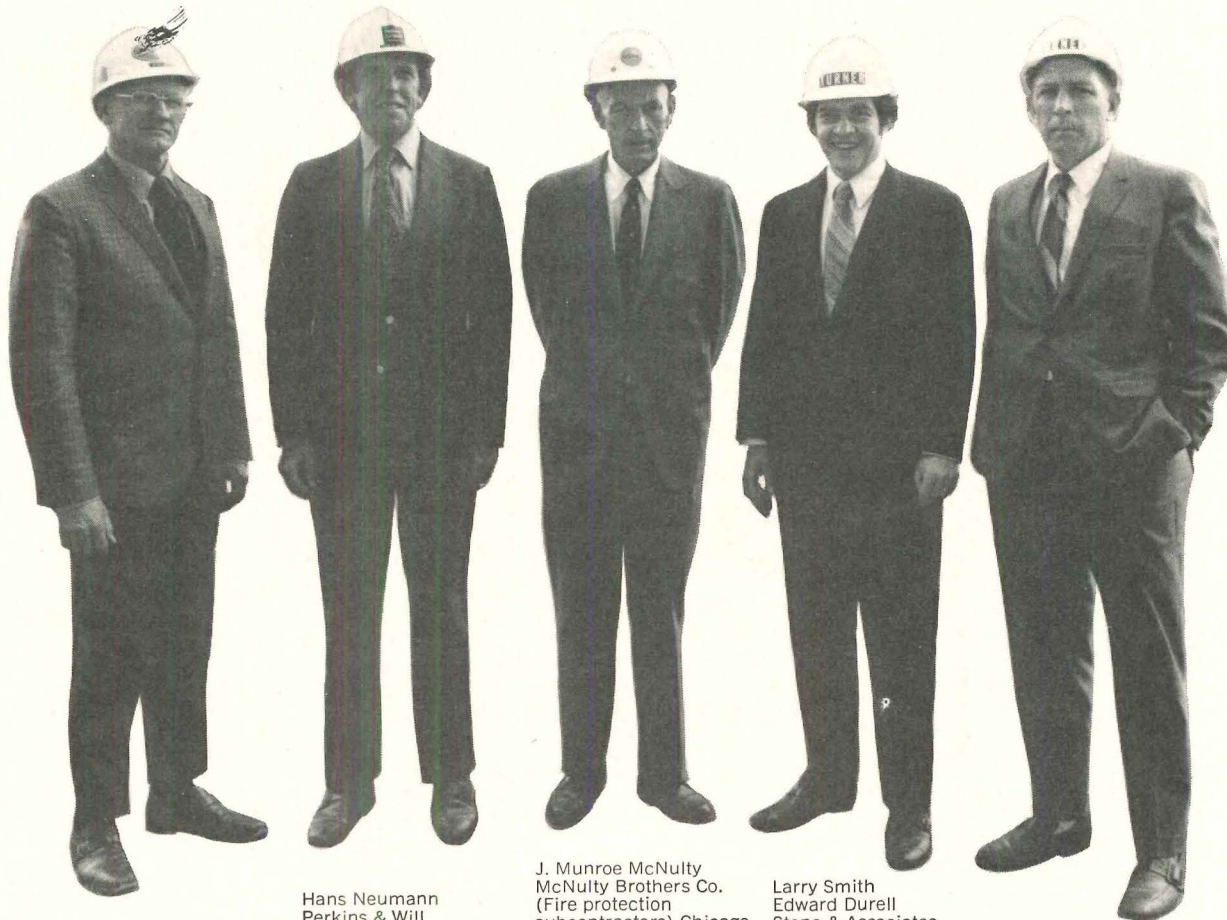
The general contractor required the assurance that the fire protection application would not slow down his construction schedule.

The subcontractor needed to keep ahead of schedule—and did by pumping MONO-KOTE at the rate of 1,000 bags a day. Pumping to heights of more than 700 feet (without having to move equipment), he often completed two floors every three days.

So—for this “showcase” job—every-

one is getting what he needs most in a fire protection material. Plus the service and reputation of W. R. Grace & Co.

ZONOLITE MONO-KOTE delivers a full range of fire ratings. It is available from plants throughout the United States and Canada, to meet tough schedules. For complete information, contact your ZONOLITE sales office or ZONOLITE, W. R. Grace & Co., Construction Products Division, 62 Whittemore Ave., Cambridge, Mass. 02140.



Stan Carlson
Standard Oil Company
(Indiana) Chicago

Hans Neumann
Perkins & Will
(Architects) Chicago

J. Munroe McNulty
McNulty Brothers Co.
(Fire protection
subcontractors) Chicago

Larry Smith
Edward Durell
Stone & Associates
(Architects) New York
and Chicago

Bernie Newton
Turner Construction Company
(General contractors)
Chicago

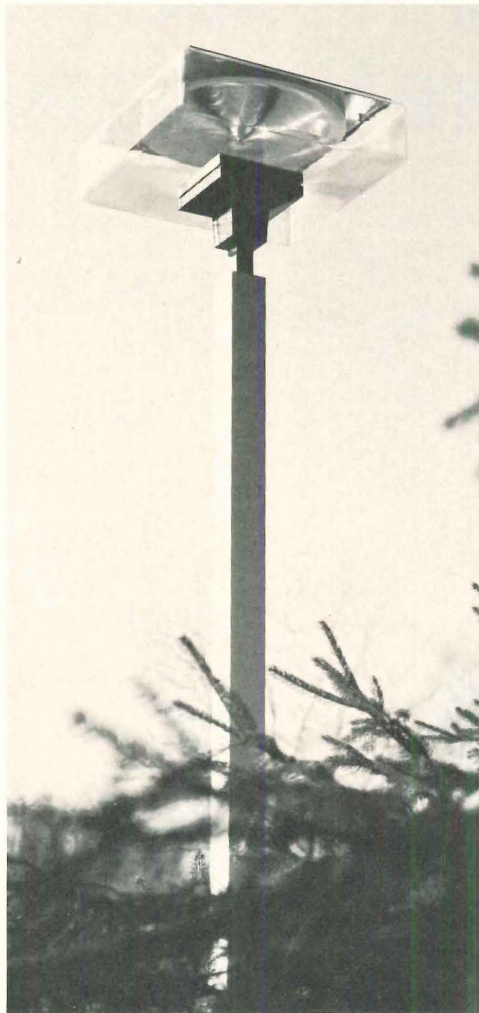
For more data, circle 71 on inquiry card

PRODUCT REPORTS

For more information circle item numbers on Reader Service Inquiry Card, pages 221-222

ROOM PAGE-MESSAGE CENTER / This system notifies hotel guests that messages await them. It may be installed in any hotel or motel with a dial telephone system, and can be placed in full operation in less than a day. The operator enters the guest's extension number into the system and begins an automatic signalling that rings the room phone at given intervals. When the receiver is lifted, a recording advises of the message. ■ Varian/Talix, Sunnyvale, Calif.

Circle 300 on inquiry card



LOW GLARE SITE LIGHTING / This distinctive contemporary product produces broad, even illumination yet has a night-time appearance so low in glare, it resembles gas light according to the manufacturer. Single and multiple luminaires are available in two sizes for various wattages, with poles 10 ft to 28 ft tall. ■ Moldcast Mfg. Co., Newark, N.J.

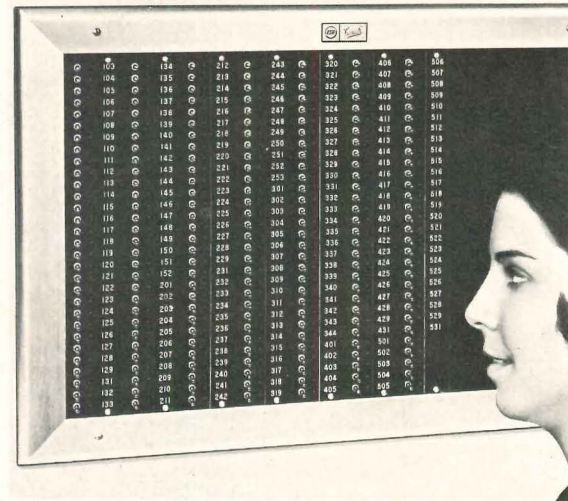
Circle 301 on inquiry card

EXTERIOR-INTERIOR PANELS / Shown is *Splitwood*, one of several facings featuring a deeply embossed design and made of cement reinforced with asbestos fibers. Panels are noncombustible, durable and require a minimum of care. The panels measure 4 ft by 8 ft, 4 ft by 10 ft and 4 ft by 12 ft and are available in four colors: white, brown, bronze and gray. Recommended for walls, fascias, spandrels, soffits, etc. The producer claims they are highly economical. ■ Johns-Manville, New York City.

Circle 302 on inquiry card

ROOM STATUS INDICATOR / An annunciator system that keeps desk clerks, housekeepers and maids constantly aware of the readiness state of all rooms is designed to improve housekeeping in hotels and motels. The system is completely solid-state for long life. ■ S. H. Couch Div., ESB Inc., N. Quincy, Mass.

Circle 303 on inquiry card



CONCRETE LIGHT STANDARDS / Prestressed hollow light standards are offered in lengths ranging from 16 ft to 33 ft, in round or octagonal tapered units. Smooth or polished terrazzo finishes. ■ Centrecon, Inc., Everett, Wash.

Circle 304 on inquiry card

more products on page 158



People-proof panelboards.

Protect lighting panels with tamper-proof Mono-Flat® trims—standard on all Square D lighting panelboards. When the Mono-Flat front is properly installed and locked, it's practically impossible to get at the inside without the key. The lock is flush with the surface of the door so there is very little room for someone to insert a screwdriver under the lock and pry the door open. And the trim screws are inaccessible behind the locked front. Mono-Flat fronts come with one of either of two key changes so standard and emergency

lighting can be keyed differently.

On a more aesthetic note, the Mono-Flat front has a smooth appearance that can easily be papered, painted, or otherwise covered to blend in with the surrounding decor.

Mono-Flat enclosures are easy to install. They hold themselves in place while the trim screws are locked. And the front of the panel can be adjusted in or out if the box is set improperly in the wall.

Mono-Flat trims are now standard on all Square D lighting panelboards

as well as on several smaller power panelboards. Anytime you have a panelboard application, select a people-proof Square D panel with a Mono-Flat front to make it look its best.

For specific engineering data on Mono-Flat panelboard fronts, contact your Square D distributor. Or write, Square D Company, Dept. SA, Lexington, Kentucky 40505.

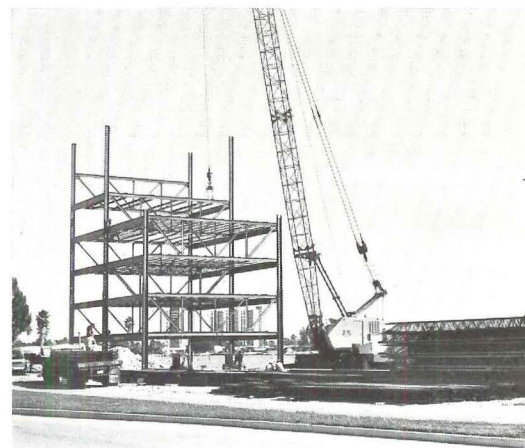


For more data, circle 72 on inquiry card

Treasure Island, Florida: another builder cuts costs in today's competitive market with Staggered Steel Truss.

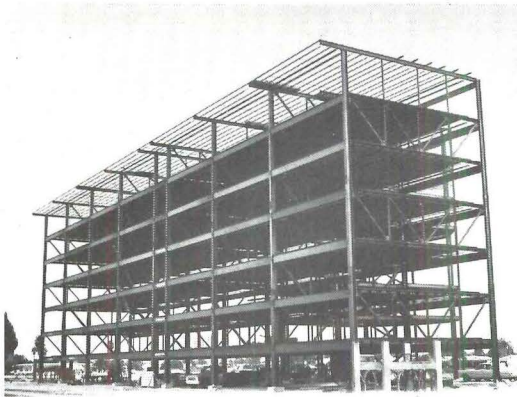
Staggered Steel Truss is a new structural design concept for multi-story structures. It's been proven across the country to compete with and often beat other framing systems. And it can compete on a number of counts.

For instance, Green Feathers, Inc., owner and builder of St. James Apartments, Treasure Island, Florida, chose Staggered Truss for construction speed. They wanted faster occupancy for a quicker return on their investment. The main body of the building, which utilizes the Staggered Truss design is a rectangle, 207 ft. x 40 ft. and 7 stories high. It was erected in just 5 working days. (a 68 ft. x 46 ft. wing in the rear of the structure was erected with the conventional braced steel frame method.)

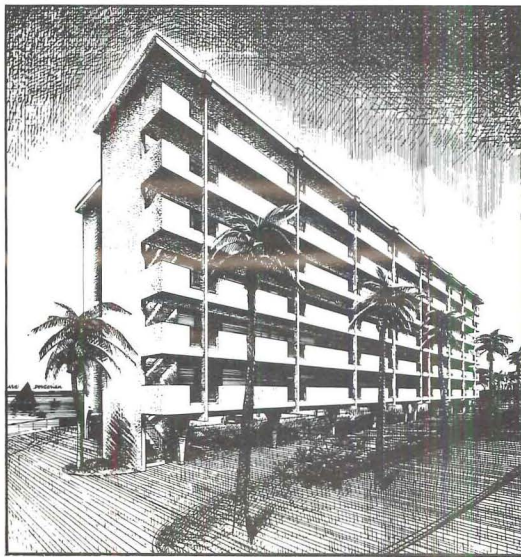


The Staggered Truss design also provided an ideal solution to off-street parking requirements by making possible a column-free 207 ft. x 40 ft. ground level parking area under the building. Additional benefits were realized in a relatively light weight steel frame and less costly foundations.

Essentially, the Staggered Steel Truss system is made up of one-story high trusses that span transversely between exterior steel columns and occur in a staggered pattern from floor to floor. Trusses at a given floor are placed midway between those of the floors below and above. Each floor rests on the top chord of the trusses below and is supported, alternately, from the bottom chord of the adjacent trusses.



Staggered Truss concept was developed for U. S. Steel by the Massachusetts Institute of Technology. The St. James Apartments is just the latest of many buildings around the country to use it effectively—and profitably.



We'll gladly send you a complete structural report (ADUSS 27-5588-01), which describes how Staggered Truss was used on this building. Also a free 26-page booklet on Staggered Truss, that shows a design for a typical 20-story apartment building in full detail. Write U. S. Steel, P. O. Box 86, Pittsburgh, Pa. 15230.

Construction Details

Description: A 7-story apartment building with penthouse atop. The main unit is a rectangle 207 ft. x 40 ft., to which a short wing 68 ft. x 46 ft. is appended. The latter is conventionally steel framed and cross-braced. 53 apartments, of which 8 are one-bedroom, 40 two-bedroom, and 5 three-bedroom. The entire main unit is set on pedestals, providing a 207 ft. x 40 ft. column-free parking space on the ground floor.
Design live loads: 40# psf in apartments/100# psf in corridors/20# psf on roof/Wind loading as per code.

Applicable Code: Southern Standard Building Code, Coastal Region.

Structural Steel: Total steel frame weight, 206 tons. Weight of other structural steel, 121 tons. Field connections are high-strength bolts.

Floor System: 16" joists on 2'6" centers. $\frac{1}{16}$ " formed metal deck with 2 $\frac{1}{2}$ " poured concrete.

Roof Construction: 28 gage galvanized steel formed decking; 3" lightweight concrete slab; built-up roofing with tar and gravel.

Foundations: augered caissons.

Interior Walls and Partitions: Partitions $\frac{1}{2}$ " drywall on 3 $\frac{1}{8}$ " metal studs. Party walls without truss: $\frac{5}{8}$ " Fireguard X Gypsum wallboard on each side of 8" lightweight concrete blocks. Party walls with truss: $\frac{5}{8}$ " Fireguard X Gypsum wallboard plus 1" soundboard on 3 $\frac{1}{8}$ " steel studs.

Exterior Wall: 8" concrete block, sprayed with stucco.

Elevators: 1 bank, 2 elevators.

Fire Resistance: 1 hour for floor/ceiling. 2 hours for columns, spandrels & trusses (dry-wall).

Steel Erection Time: For the main unit of the building, 5 working days. Total steel erection time: 12 working days.

Gross Area: 90,098

Floor-to-Floor Height: 9'8"

Floor-to-Ceiling Height: 8' (7' in bathrooms and corridors).

Owner: Green Feathers, Inc., Treasure Island, Florida

Architects: Edward W. Hanson, Architect, Inc., Clearwater, Florida

Structural Engineers: O. E. Olsen & Associates, St. Petersburg, Florida

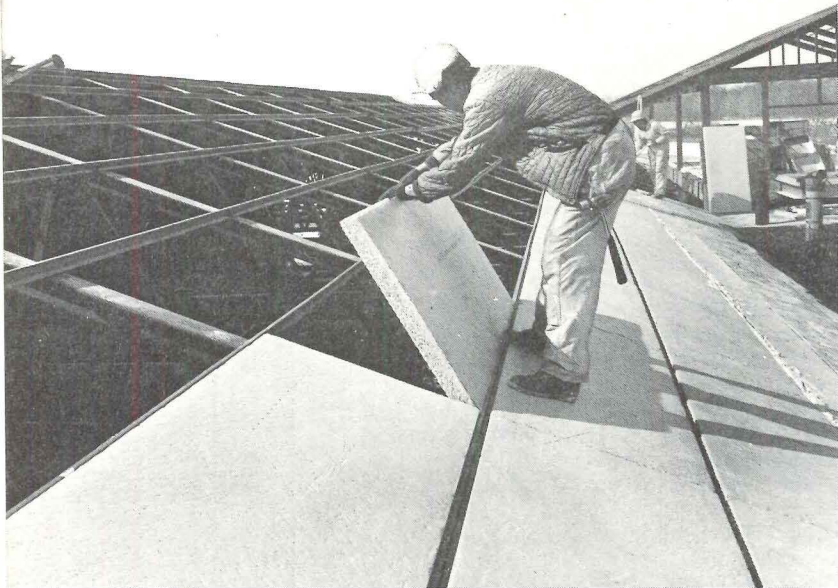
General Contractor: Green Feathers, Inc., Treasure Island, Florida

Structural Fabricator: Musselman Steel Fabricators, Inc., Tampa, Florida

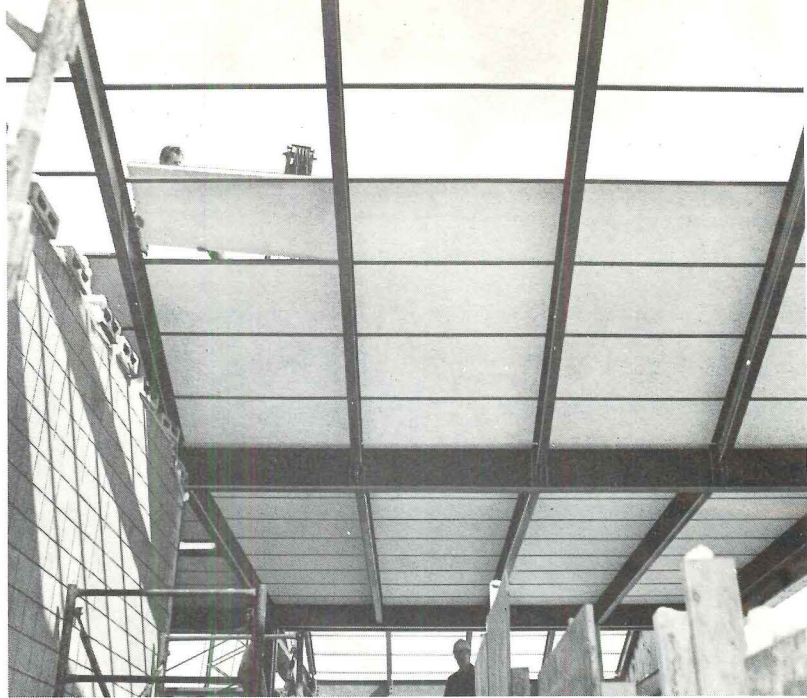
Structural Erector: West Coast Steel Erectors, Inc., Tampa, Florida

United States Steel





1 Prefabricated, lightweight Tectum panels simply drop into place, require no special tools.



2 Textured underside serves as a handsome, ready-made acoustical ceiling.



3 Precut polyurethane joint strips provide uniform insulation factor for entire deck.



4 Tough, rigid polyurethane surface takes hot asphalt adhesives in stride, supports normal roof loads.

Get under cover fast with Tectum II overhead.

Immediately after Gold Bond Tectum II structural roof deck is up, it's ready for conventional built-up roofing systems. That's because Tectum II comes fully insulated and prefinished.

The $\frac{3}{4}$ " of polyurethane on 2" of Tectum® produces a low "U" value of .10. And because the insulation is scientifically

factory-bonded, condensation doesn't get trapped between layers. Single-unit construction provides dimensional stability, too.

Available in plank, tile or long-span designs, Tectum II is low-cost and ideal for educational, industrial, commercial and institutional buildings. Tectum II

with foam having a Class 25 rating is available where required.

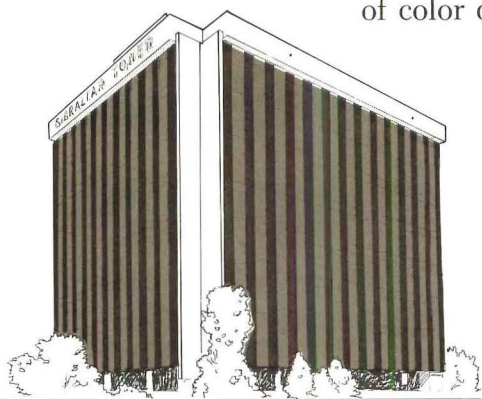
A lot of constructive thinking went into Tectum II. Take advantage of it. Call your local Gold Bond man. Or write Gold Bond Building Products, Division of National Gypsum Company, Dept. AR-112T, Buffalo, N.Y. 14225.



porcelain-on-steel panels in

FOUR NEW BRONZE-TONE COLORS

NO COLOR VARIATION. AllianceWall bronze-tone colors remain constant. There is absolutely no variation of color due to light reflections.



40% TO 60% SAVINGS. AllianceWall porcelain-on-steel bronze tone panels cost 40% to 60% less than hard coat finishes.

NO MAINTENANCE

REQUIRED. Panels never require painting or other expensive maintenance. Colors remain fresh and new looking even when exposed to the ravages of sun, sea, salt and smog.

FREE COLOR SAMPLES.

Write today on your company letterhead.

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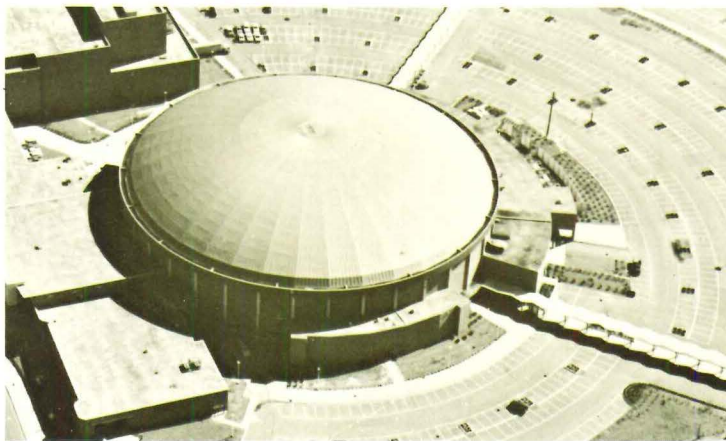
Pentagon A/S
Odense,
Denmark



Anything can happen

In Merrie Olde England, Johnny Leydon of Sligo was captain of the six-man Irish team that demolished an upright piano and passed the entire wreckage through a nine-inch hole in the record-setting time of two minutes, 26 seconds, on September 7, 1968.

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



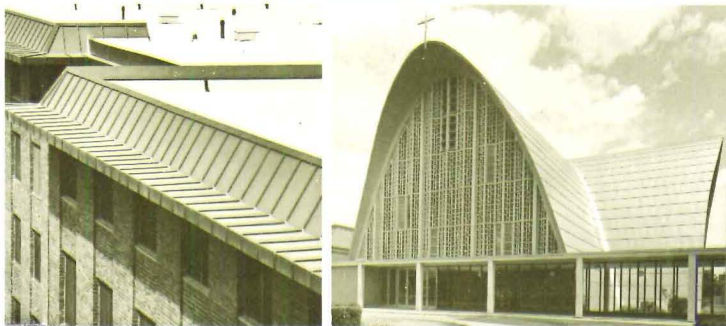
And anything can happen at Overly

Like leakproof roofs for any and all seasons.

Some of America's most beautiful buildings are topped with Overly metal roofs. We fabricate them from aluminum, weathering steel, copper or stainless steel, and warrant them against leakage for 20 years if we supervise the erection. The tougher the design problem, the better we like it, because we've solved some beauties over the years.

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Overly has plants in Greensburg, Pa. and Los Angeles, Calif. For more information, contact Overly Manufacturing Co., Architectural Metal Division, Department 19, West Otterman St., Greensburg, Pa. 15601.

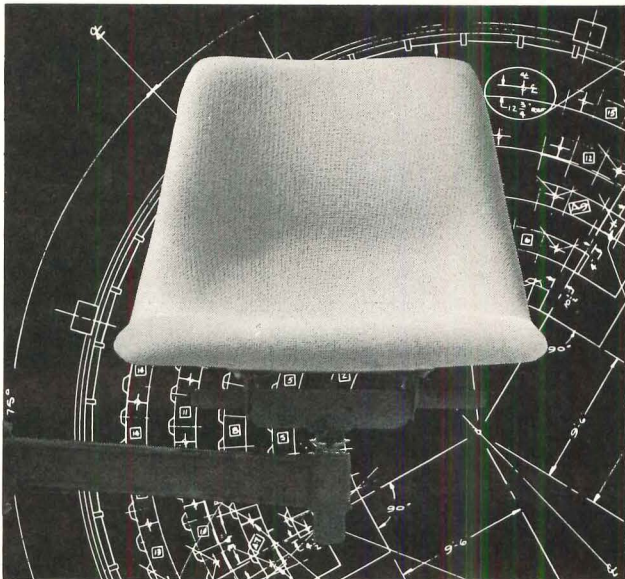


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same care you
gave the total
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Our engineering staff is available to give you free planning, product and arch. services and estimating. By working in the planning stage you're assured optimum utilization through exact dimensions.

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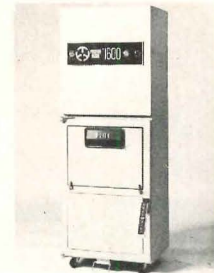
AE/UPDATE A classified advertising section devoted to helping architects and engineers keep up to date on building product manufacturers.

MAYTAG'S UP-FRONT SECURITY COIN BOX provides significant protection against looting of washers and dryers in self-service laundry facilities. First, the coin box itself is made of heavy-duty metal and has a rugged lock that discourages tampering. Second, the location of the coin box—up front under the money slot—makes it difficult for pilferers to get at. Maytag's Up-Front Security Coin Box offers another advantage, too. While hard for thieves to break into, it's easy for the collector to empty. For complete information, write to The Maytag Company, Commercial Laundry Division, Dept. AR-11-72, Newton, Iowa 50208.

For more data, circle 78 on inquiry card

PORTABLE SOLID WASTE AND REUSE COMPACTORS and systems from The Tony Team, Inc. includes four sizes and great versatility. Pollution Packer™ compactors bale, bag and box all types of wastes and refuse, wet or dry. Machine capacities range from .8 C. Y. to 4½ C. Y. of loose wastes at 10 to 1 compaction ratio . . . operate on low amperage, 110-V60 cycle service. For hospitals, hotels, schools, colleges, restaurants, office and apartment bldgs. Simple adaptation to chute-type disposal systems. Spec sheets and literature available from: The Tony Team, Inc., 7399 Bush Lake Road, Mpls., Minn. 55435.

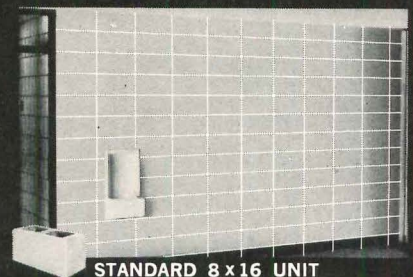
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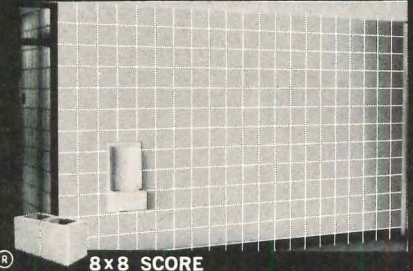
**change
scale
with the
economy
of 8 x 16
block!**

**...with these
SPECTRA-GLAZE®
SCORED BLOCK
(or create your own)**

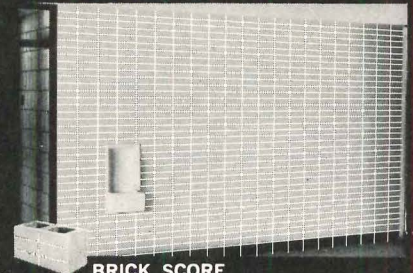
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STANDARD 8 x 16 UNIT



8 x 8 SCORE



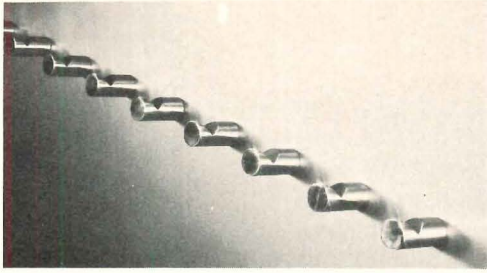
BRICK SCORE

Spectra-Glaze®

glazed
concrete
block

For more data, circle 80 on inquiry card

continued from page 144

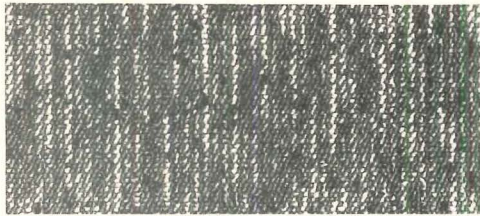


WALL-MOUNTED COSTUMERS / Sculptural in appearance, the costumers are cylindrical and notched to accept coats, etc. Available in polished chrome, satin chrome or bronze, in single- or double-units in several depths, 1½ in. in diameter. All units are supplied with internal tamper-proof hardware for mounting. ■ Habitat, Inc., New York City.

Circle 305 on inquiry card

CONTRACT CARPETING / Designed specifically for commercial use, *Denseweve* is made of 50 per cent *Polypropylene Olefin*, solution dyed, with 50 per cent space dyed continuous filament nylon. This renders the product virtually shock-free. A moisture barrier non-woven primary backing blocks spills and stains. The product is mildew-proof and non-allergenic. Available in six colors. ■ Porter Carpet Mills, Cartersville, Ga.

Circle 306 on inquiry card



CARPET UNDERLAY / Resistance to heavy traffic, firmness and economy are featured in this product which is capable of passing the Steiner Tunnel Test (ASTM E-84). Offered in three grades for all contract carpeting requirements, the *Omalon Systems* line is available in 40-sq yd rolls, measuring 6 ft wide and 60 ft long. Product is guaranteed. ■ Olin Corp., Stamford, Conn.

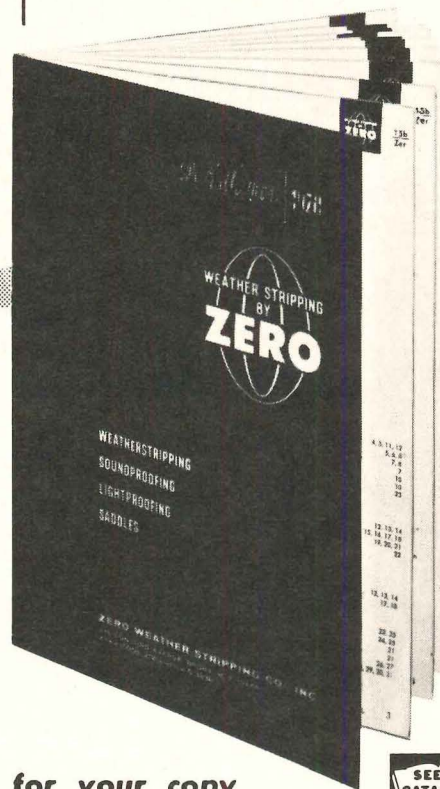
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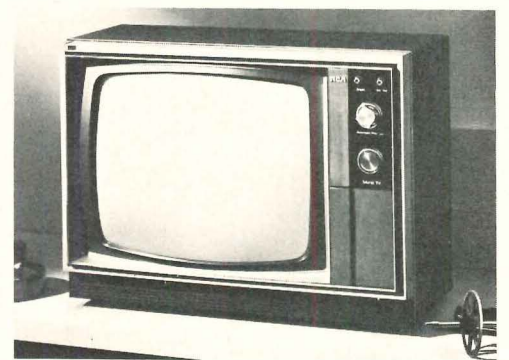
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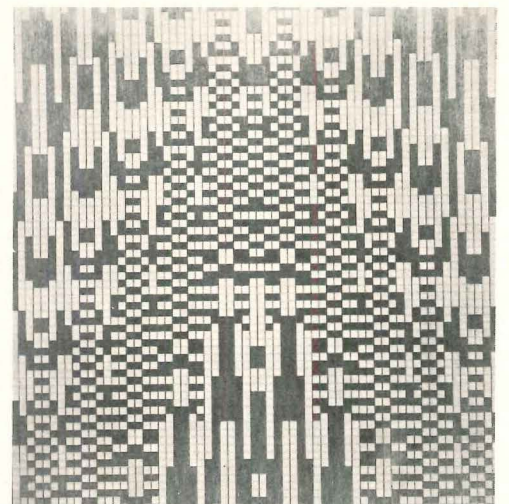


For more data, circle 81 on inquiry card



HOTEL TELEVISION / With an alcohol-resistant finish and an 18-in. screen, this model eliminates guest tampering. A complete hotel-motel, single-source package is available. ■ RCA Service Co., Cherry Hill, N.J.

Circle 308 on inquiry card



VINYL-ON-PAPER WALL COVERING / This gravure-printed wall covering is washable and dirt- and grease-resistant. Shown is "Manhattan," part of the *London Style 3* collection. Available in just one colorway, "Manhattan" is small grey squares, alternating in shiny and brushed-look lines. ■ ICI America Inc., Wilmington, Del.

Circle 309 on inquiry card

more products on page 166

Now you can specify KALCOLOR® aluminum in gray. Or gray. Or gray.

New #50 KALCOLOR aluminum sheet and extrusions are now available in light gray, medium gray and dark gray.

A perfect addition to our other KALCOLOR aluminum colors of gold, light amber, amber, statuary bronze, champagne and black.

Soft, subtle shades of gray that are unmistakably KALCOLOR aluminum. Finishes that are gem-hard, corrosion-resistant and unsurpassed in sun-fastness and color uniformity.

Pick one. Or any of the other colors. But specify KALCOLOR aluminum. It's made only by a unique, integral-color hardcoat anodizing process developed by Kaiser Aluminum. No dyes are used. And no other integral-color system can match its quality.

Your projects will look better for it. And so will you.

(KALCOLOR aluminum in gray is already being used on a number of impressive buildings around the country: Los Angeles' CNA building, New York's 919 Columbus Circle building, the Academic Sciences building at West Point, the Seattle-Tacoma Airport (remodeling) and the Jefferson Plaza building, Columbia, S.C.—to name a few.)

For color samples of new gray KALCOLOR—and list of approved KALCOLOR aluminum anodizers—write to Architectural Marketing Manager, Room 2142 KB1, Kaiser Center, Oakland, CA 94604.

See our Aluminum in Architecture catalog in Sweet's Architectural File. Index No. 5.1/Ka.

KAISER ALUMINUM

For more data, circle 82 on inquiry card



The 30-minute fire door. It saves money and it saves lives.

Such a door.

A year ago you couldn't buy a 30-minute UL rated fire door. Anywhere.

But we've known for some time lives could be saved if someone in the door industry could offer a low-cost fire door as a safe alternative to the hollow core door. (Hol-

low core doors are a bummer in a fire. They last only 7-9 minutes.) So this is our low-cost answer. A Particle Core Fire Door for about 22% less than the 3/4-hour fire door.

We subjected this door to the UL fire test, where it stood up to 1,500° F. and held firm under 30 lbs. of hose

stream pressure. Of course, you still get maximum stability, freedom from core telegraphing and a lifetime interior guarantee.

For more details about the 30-minute Fire Door that saves money and lives, write Weyerhaeuser, Box B-9444, Tacoma, Washington 98401.



Weyerhaeuser

Stratton's carpet of Herculon[®] met a hot tomato from Campbell's...



and kissed it goodbye.

Stratton's rugged "Polycord" carpet made with pile of HERCULON* olefin fiber got together with some crispy croutons and Campbell's Tomato Soup. But it didn't last long. With just a bit of easy cleaning, it was all off between them.

The stain resistance of HERCULON, coupled with uncommon resistance to abrasion and fading, gives you the ideal carpet for any commercial installation. Even Campbell's didn't stick it

out with Stratton's new quarter gauge carpet of HERCULON for very long. But your customers will.

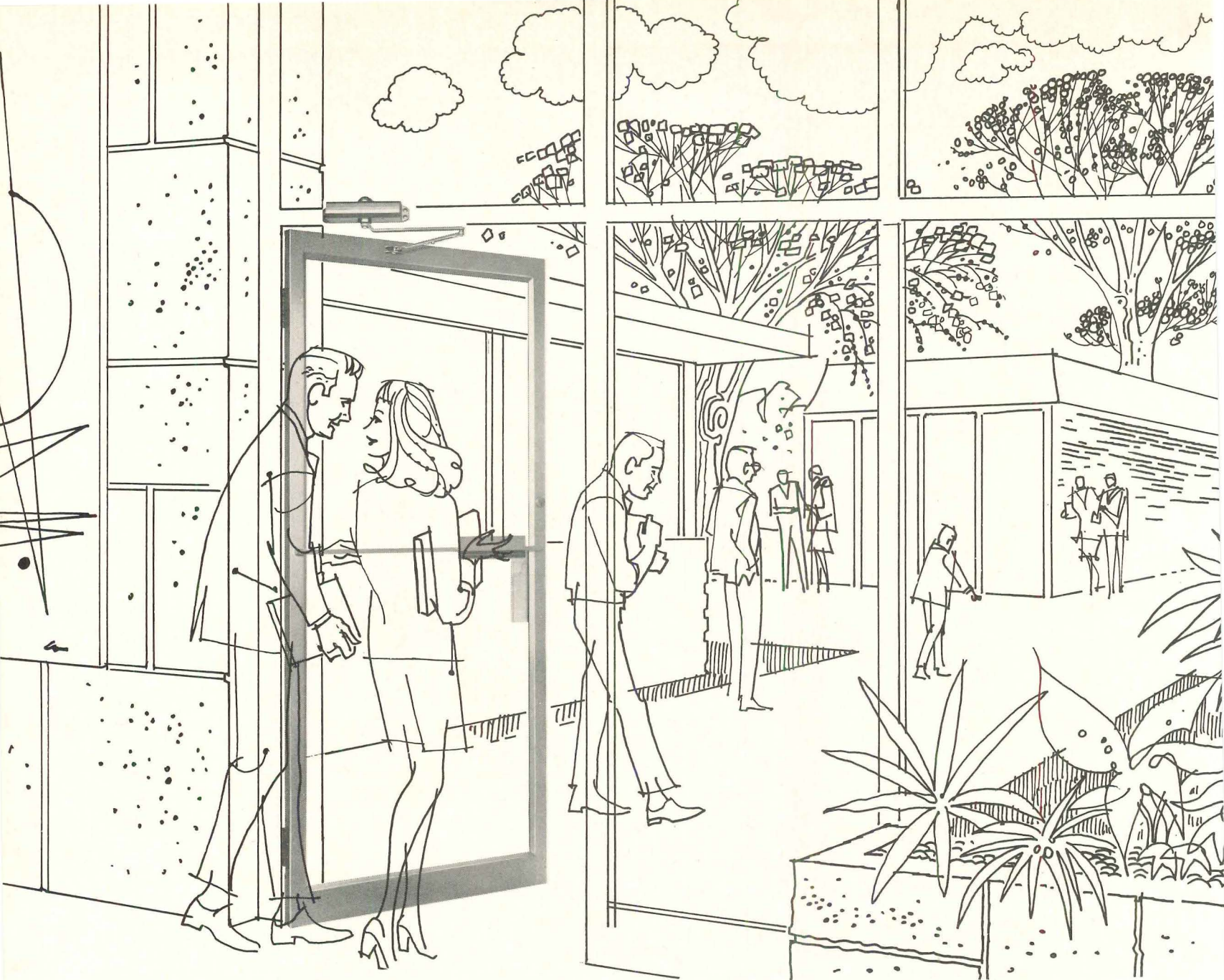
For detailed information on HERCULON olefin fiber see Sweet's **S** Light Construction, Architectural and Interior Design files. Or, write Fibers Merchandising Dept. 226, Hercules, Incorporated, Wilmington, Delaware 19899 for free 24 page booklet.

Specify Carpet of Herculon[®] by Stratton Industries, Inc.



*Hercules registered trademark.

For more data, circle 83 on inquiry card



It has clean, classic lines.

It can be installed non-handed either top-jamb, parallel arm or regular arm...in a choice of three mounting methods.

How's that for all-purpose flexibility?

the **Norton**[®] 1600 Closer

For complete details, contact your Norton Representative or Eaton Corporation, Lock and Hardware Division, Norton Marketing Department, Box 25288, Charlotte, North Carolina 28212.

EATON Security Products & Systems

1198 C

For more data, circle 84 on inquiry card



**This is
Snug Rib roofing.
The almost-flat,
weathertight
system from Alcoa.**

The Alcoa® Snug Rib roofing system gives you all the advantages of a low-pitch roof, plus excellent leak resistance, long-term maintenance savings and attractive appearance. Slopes as low as ¼ in. in 12 ft are possible, so there's less dead space to heat or air-condition. Snug Rib roofing is a floating, weathertight system. Because it floats, it is free to move under thermal cycling, so locked-up thermal stresses are eliminated. The patented Snug Seam®

joint holds panel edges securely in place to create a weathertight seal. No through-fasteners penetrate the weathering membrane. On most buildings, end laps can be eliminated because lengths are limited only by shipping conditions.

Snug Rib roofing saves you money several ways compared to conventional metal roofs. Less roofing material is required in relation to floor space. Steel trusses can be lighter. Fast erection cuts construction

costs and completion time. And long-term maintenance costs are reduced because aluminum takes care of itself. For manufacturing plants, port warehouses, airport facilities, recreational buildings, grandstands and sports complexes, Alcoa Snug Rib roofing is handsome, weathertight and economical. For more information, write Aluminum Company of America, 1055-L Alcoa Building, Pittsburgh, Pa. 15219.



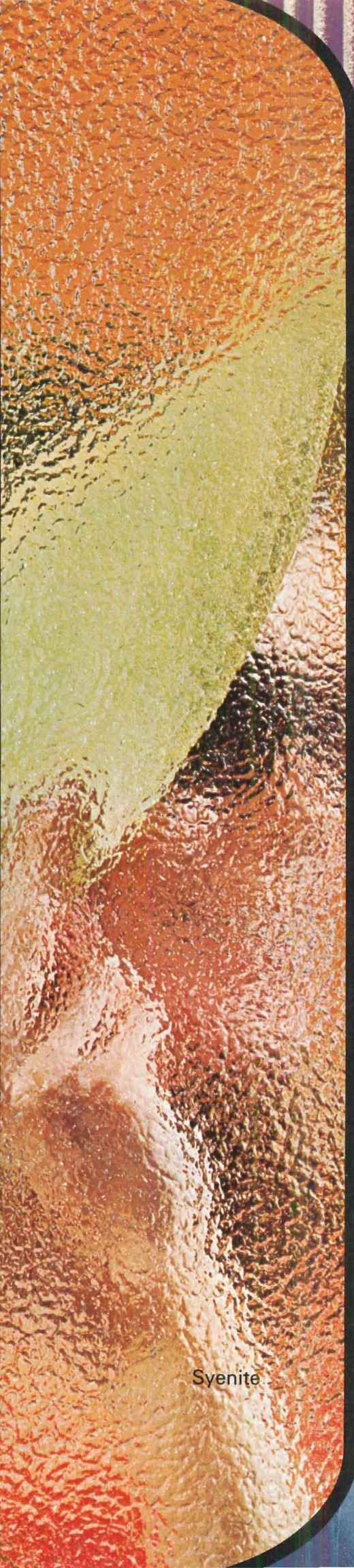
**Change for the better with
Alcoa Aluminum**

ALCOA

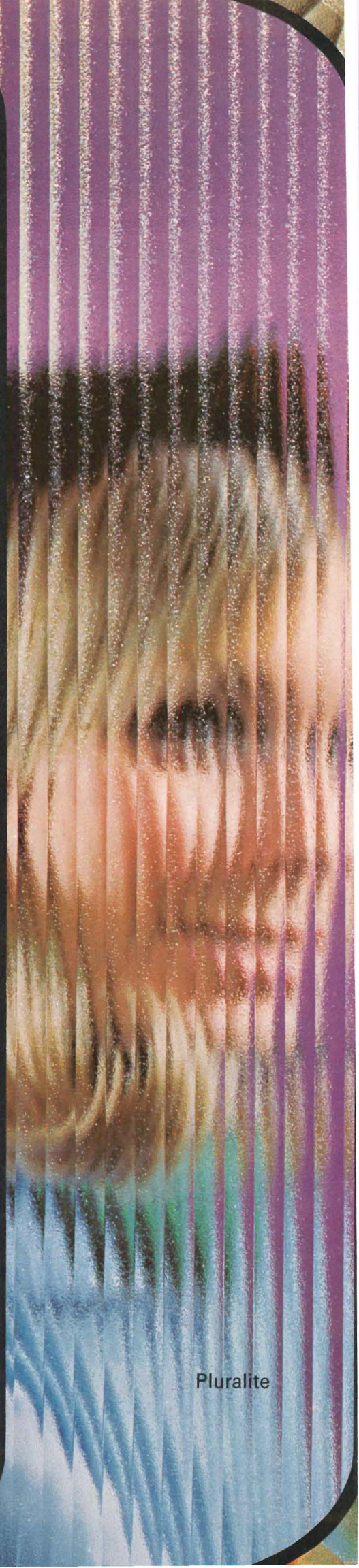
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Hylite



Syenite

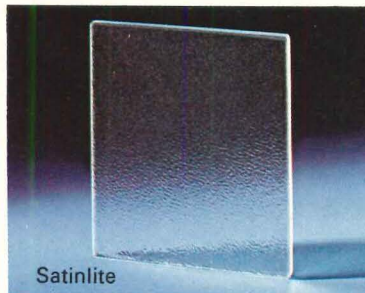


Pluralite

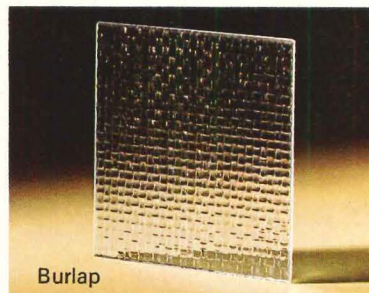
Selections
that give
imagination
full sway

MISSISSIPPI
PATTERNED GLASS

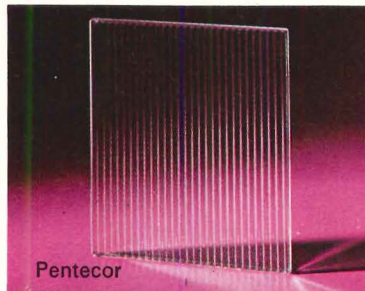
Let light work for you through patterns that give every object exciting new angles of interest. Panels and partitions reveal the passing view. But textures blend with lights and colors to soften the image and give design emphasis. Mississippi patterns by CE GLASS give refreshingly new concepts to windows and walls. Obscure patterns are available to give privacy to any desired degree. CE GLASS has the wide range selections so there's never a limit. Imagination can have full sway whether for contemporary or traditional, or for strictly functional or highly decorative purpose.



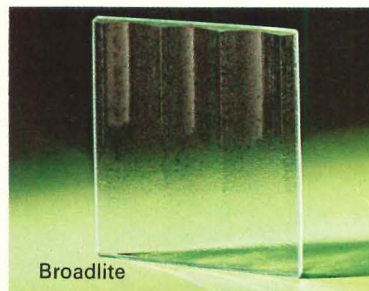
Satinlite



Burlap




Pentecor



Broadlite

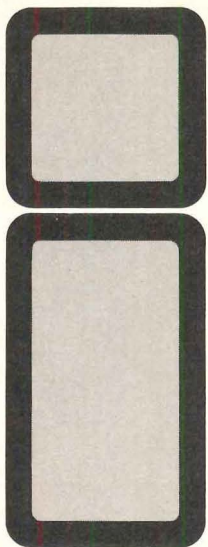
Mississippi patterned glass by CE GLASS is available from leading distributors of quality glass in the principal cities of the United States and in Canada from Canadian Pittsburgh Industries, Ltd., Glass Division. For further information or samples, contact our office nearest you or write CE GLASS, 825 Hylton Road, Pennsauken, N. J. 08110 or call 609-662-0400.

See our catalog in Sweet's 

CE GLASS

For more data, circle 86 on inquiry card

Smooth Rough

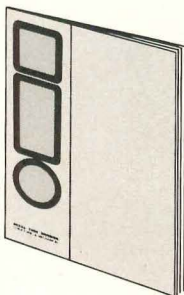


Specify
Structural
Steel
Tubing

for
STRENGTH
plus
BEAUTY!

Regal rectangular and square structural steel tubing offers many advantages for use as load bearing and curtain wall columns, railings, mullions and stair stringers. Provides great strength, attractiveness and safety. Requires little maintenance. As there are only four sides, other materials fasten to it easily. Often used as supports and downspouts as well. Available in many sizes up to 12" x 8" or 10" x 10" and wall thicknesses up to 1/2".

Write for brochure
giving complete
data.



**REGAL TUBE
COMPANY**

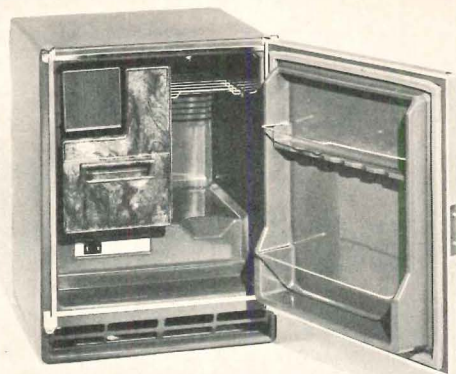
A Subsidiary of
Copperweld Steel Company



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312/458-4820

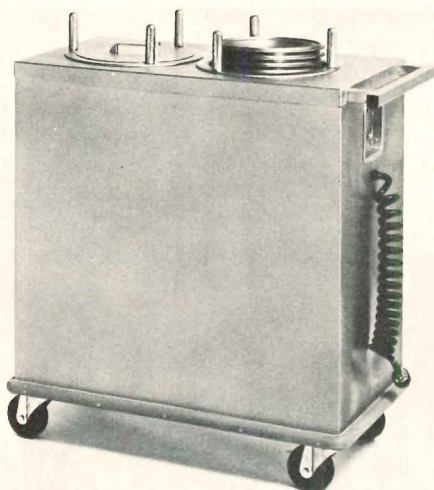
Rely On Regal

For more data, circle 87 on inquiry card



REFRIGERATOR / The *Mini-Bar* is 18-15/16 in. wide by 17 7/8 in. deep. It has a 2.65-cu ft capacity and produces up to 12 lbs of ice daily, automatically. The unit is offered with copper-toned metal sides and walnut vinyl-clad metal door. ■ Acme-National Refrigeration Co., Inc., Astoria, N.Y.

Circle 310 on inquiry card



FOOD WARMER / Offered is a line of mobile dispensers that heat, store and dispense one-piece pellet bases to keep plates hot and food at serving temperatures while being transported. The stainless steel cabinet includes a push handle. ■ AMF, Inc., Essex, Conn.

Circle 311 on inquiry card



HOT WATER DISPENSER / This unit will provide water up to 190 degrees F from a reservoir tank mounted in the cabinet below the sink. Water temperature is thermostat-controlled. ■ The Hobart Mfg. Co., Troy, O.

Circle 312 on inquiry card
more products on page 170

**DO
SOMETHING
MEMORABLE**

Brighten up large areas. Create an outdoor feel with indoor comfort.

Design roof areas that are intriguing and interesting to look at, either from the inside looking up or from the outside looking down.

Wasco Skydomes can be readily butted in both directions. Self-supported spans up to 8 feet across and as long as you like.

Nobody else builds domes so strongly, lets you think so big. You can specify circular domes also, up to 8-foot diameter in one piece, or segmented circles to 14 feet.

Wasco Skydomes come in clear acrylic, translucent white, dense white and solar bronze for different effects.

Write us about flat glazed skylights too. Wasco can provide both acrylic and glass skylights in many configurations.

Let Wasco help you do something extra exciting! Call or write, today.



P.O. BOX 351 SANFORD, MAINE 04073
Tel: 207-324-8060

For more data, circle 93 on inquiry card

The only acoustical fire door 9 feet tall and 30 minutes thick.



A 30-minute fire door is something you need. A 9-foot acoustical door is something you'd like. Only U.S. Plywood puts them both together, in our tall, tough, beautiful, acoustical fire door. 9 feet tall. 30 minutes thick. STC rated 28. UL tested and rated for fire resistance, heat transmission and structural integrity.

The Weldwood acoustical fire door is considerably less expensive than a comparable metal door. It also performs considerably better when tested for heat transmission. After 30 minutes in UL's test furnace, where it gets well over 1500°F, the Weldwood door's unexposed side was less than 175°F, cool enough not to harm a person forced against it during a fire. Its STC 28 rating provides good speech privacy and protection in hotels, motels and other commercial installations.

The core of this door is Novoply.[®] The face is your choice: striking hardwood veneers, Duraply[®] for job-site painting, Permaply[®] for solid color prefinishing, or colorful plastic laminates.

No matter what kinds of doors you're specifying, the one name to remember is Weldwood.[®] We have the biggest, and best, line of architectural doors in the business: interior, exterior, static- and radiation-shielding as well as acoustical and fire. For more information on any of them, call your local U.S. Plywood Branch Office.



U.S. Plywood

A Division of Champion International
777 Third Avenue, New York, N.Y. 10017

For more data, circle 89 on inquiry card

FOR YOU WHO HAVE FAITHFULLY SPECIFIED I-BEAM ROOF STRUCTURES, THE TIME HAS COME TO BE FICKLE.

And switch your allegiance.

To a more economical roof framing system called joist girders.

Joist what?

Joist girders. Simple supported joists with a modified Warren truss configuration that can save you a great deal of time, money, weight, space and grief on anything over 10,000 square feet.

For example.

Joist girders make load calculations quite simple.

They make columns and foundations quite scarce.

And they save an incredible amount of erection time. For themselves. And for the bar joists that go on top of them.

They're also extremely accommodating.

They'll accommodate ducts, wires, pipes, and almost anything else you couldn't possibly ram through an I-beam.

Now, we'd love to tell you more.

But you don't have the time and we don't have the space.

So, instead, let us do this. Let

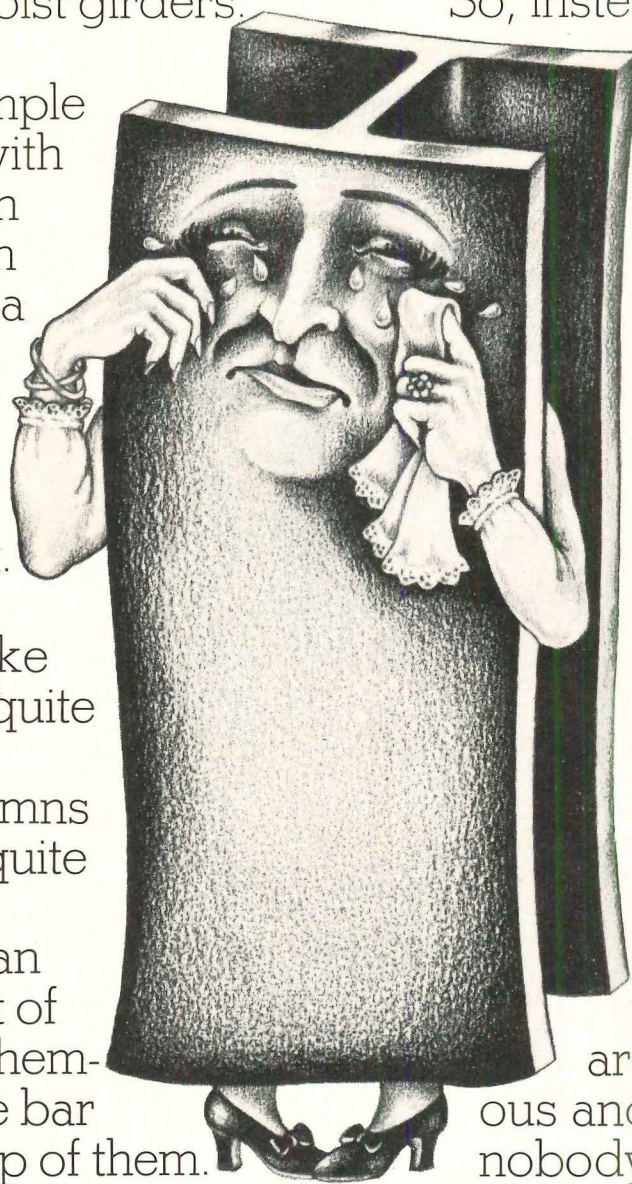
us send you our Joist Girder Specification Guide.

It explains what joist girders are, shows you how to specify them, and really simplifies this whole thing.

You can get one from your nearest Vulcraft sales office or plant. Or by writing P.O. Box 17656, Charlotte, N.C. 28211. Or from the young lady who answers this number: (704)366-7000. Call her

now. Because I-beams are expensive, cantankerous and hard to support. And nobody should have to stay married to something like that.

Vulcraft. Division of Nucor Corporation: Florence, S.C.: Fort Payne, Ala.: Grapeland, Tex.: Norfolk, Neb.: Saint Joe, Ind. Members of the Steel Joist Institute. **VULCRAFT.**

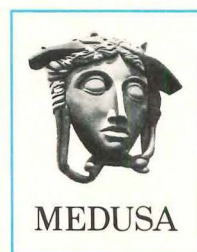


For more data, circle 90 on inquiry card



TOWER FOR LIVING..... **COLOR CONTROLLED** WITH MEDUSA CUSTOM COLOR MASONRY CEMENT.

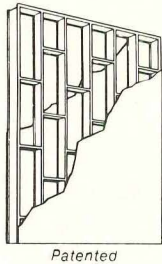
From top to bottom and start to finish the mortar color in this unique apartment tower was controlled by Medusa in strict adherence to the architect's choice. Medusa Custom Color Masonry Cement is mill-mixed under scientific process control. It arrives at the job site ready for mixing with just sand and water. No job site color formulation necessary. The architect and owner get what they specify — with controlled color from start to finish. Write for new color brochure. Medusa, P. O. Box 5668, Cleveland, Ohio 44101.



DIVINE TOWERS,
Madison, Wisconsin.
Architect: John J. Flad
& Associates, Madison.
Masonry Contractor: Wild
Masonry Inc., Madison.
Masonry Supplier:
Wisconsin Brick &
Block Co., Madison.
Medusa Custom Color
Masonry Cement
Color No. 79E.

MEDUSA CEMENT COMPANY Division of Medusa Corporation

KALWALL®



Versatile Kalwall® sandwich panel with fiberglass reinforced face sheets permanently bonded to aluminum grid core is practically indestructible.

Patented

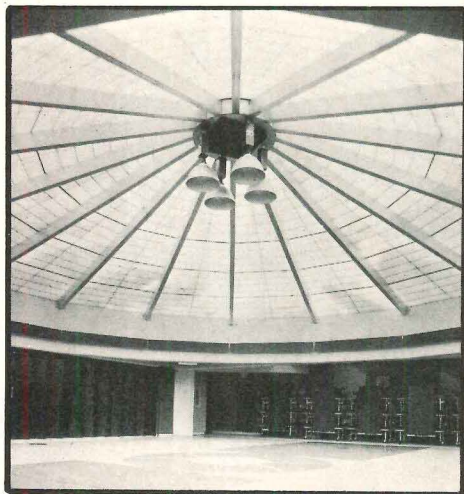
THE MIRACLE SANDWICH

Kalwall Translucent Roof Systems enable you to work wonders with light. Their miracle, modular panels distribute natural daylight evenly. No more interior glare. No dark corners. Now you control light by specifying transmission from 60% to as little as 5%.

You can arrange Kalwall components in any combination. Vary the grid patterns. Add color panels and inserts for dramatic effect. As you design!

Precision-built Kalwall Roof Systems weigh little. Yet they are astonishingly strong and keep out heat and cold. (Optional insulation equals 40" of concrete!) They're maintenance-free, weatherproof, vandal-proof. And so easily handled, a few men with hand tools can enclose any size roof — quickly! No big cranes needed!

Kalwall Systems have cut costs for 40,000 plants, offices, shopping malls, motels, schools, residences. Write or phone for details.

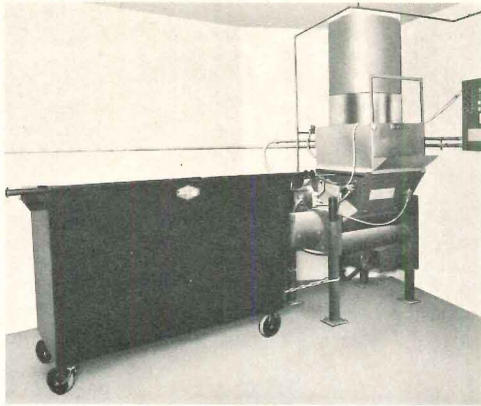


2 3/4" translucent Kalwall Roof System at Summit School in South Dakota.

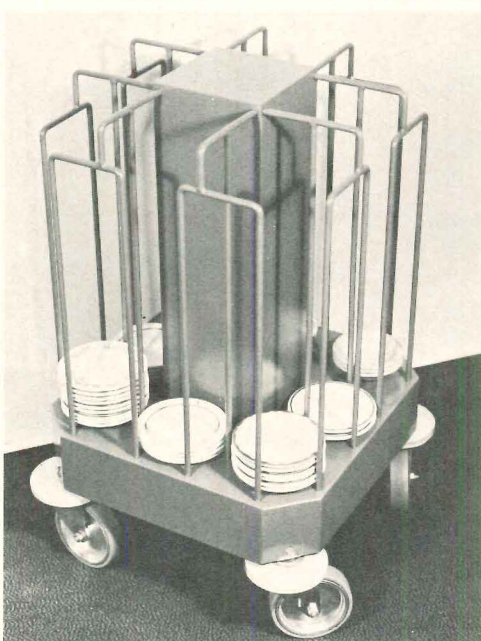
KALWALL

CORPORATION
88 Pine Street
Manchester, N. H. 03103
Tel: 603-627-3861

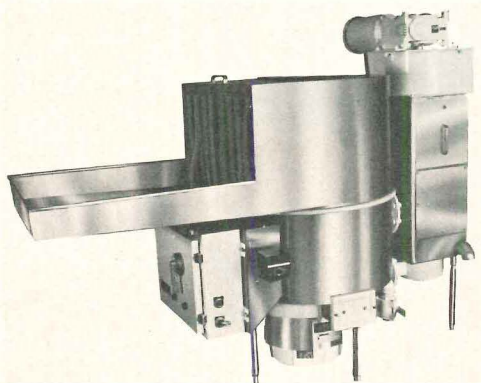
For more data, circle 92 on inquiry card



SHREDDER-COMPACTOR / Model 915 is 28 in. wide by 60 in. long and is low priced, according to the manufacturer. An electric eye sees material entering the hopper and starts the machine, activating a deodorizer. After shredding, the material is compacted and discharged. Disposal methods include can or bag packing. Indoor-outdoor use and safety features are included. ■ Mil-Pac Systems, Inc., Plainfield, N.J. *Circle 313 on inquiry card*



DISH CART / Built of welded stainless steel, the cart is mounted on 5-in. diameter swivel casters with rotary bumpers. This unit can accommodate 680, 4 1/2- to 5 1/2-in. diameter dishes. ■ Precision Metal Products, Inc., Miami, Fla. *Circle 314 on inquiry card*



WET PULPER / The *Econo-Line* pulper for processing food and general wastes, pumps waste in a slurry, to the loading dock. A waterpress removes the water, leaving a moist, biodegradable pulp. Unit reduces waste volume up to 90 per cent. ■ Wascon Systems, Inc., Hatboro, Pa. *Circle 315 on inquiry card*

more products on page 177

FOR THE RECORD

CHARLES A. LINDBERG comments on customized casework

Interior building space, particularly in health care institutions, is so costly today that its value should be measured by the inch.

One way an architect can utilize every inch of expensive hospital and nursing home space is to specify casework that is custom built to precise requirements. Space wasting "fillers" between cabinets to close up gaps in an installation are therefore eliminated.

Aside from the obvious economies of customized casework, there is another very important consideration for architects: design freedom. For example, numbers and placement of doors and drawers . . . cabinet depths . . . heights and dimensions . . . all are flexible and only contingent upon individualized specifications. Sophisticated items such as pass-through wall cabinets and special duty casework can be specified to conform to the overall decor of your entire installation.

Paradoxically, all these advantages cost no more. Custom metal casework of a superior quality is available at less cost than for inflexible stock items of comparable quality. Furthermore, such features as complete rabbeted frame construction . . . ball bearing drawer suspension . . . brass hinges with nylon bushing . . . and welded corners with no overlap or joints . . . are standard in this customized line, and not premiums which command a higher price.

The manufacturer to contact for complete information on these outstanding custom products for health care institutions is Jamestown Products Division, AVM Corporation, 178 Blackstone Avenue, Jamestown, N.Y. 14701.

Charles A. Lindberg

Vice President — Institutional Sales
AVM Corporation

For more data, circle 88 on inquiry card

KEYDECK I/D[®] FLOOR AND ROOF SYSTEM

Architects, contractors, and owners approve of this new 2 hr. fire rated floor and roof system for low rise apartments, one and two family residences, light commercial and industrial buildings. Practical features are the inclusion of heating, plumbing, and electrical utilities into a 12" unit.

The new concept includes four basic components: (1) KEYDECK Truss T's that act as steel reinforcing for the structural system and as supports for the leave in place

forms; (2) Keydeck forms, light in weight and easy to snap into place; (3) Keydeck temperature reinforcing to minimize surface cracks; (4) Cast in place concrete providing desirable structural, acoustical, and fire resistant properties.

Most importantly, this system has low material and placement costs . . . is quick and easy to install. Consider it for your next job. For detailed information write or call Construction Products Division (309) 697-0200.

KEYSTONE STEEL AND WIRE FOR CONSTRUCTION

KEYSTONE STEEL AND WIRE, PEORIA, ILLINOIS 61607 • DIVISION OF KEYSTONE CONSOLIDATED INDUSTRIES, INC.

® TM & SM registered by Portland Cement Association

For more data, circle 94 on inquiry card

KEYDECK Truss T
steel support

KEYDECK leave in
place fiber forms

KEYDECK temperature
reinforcing

Cast in place
concrete

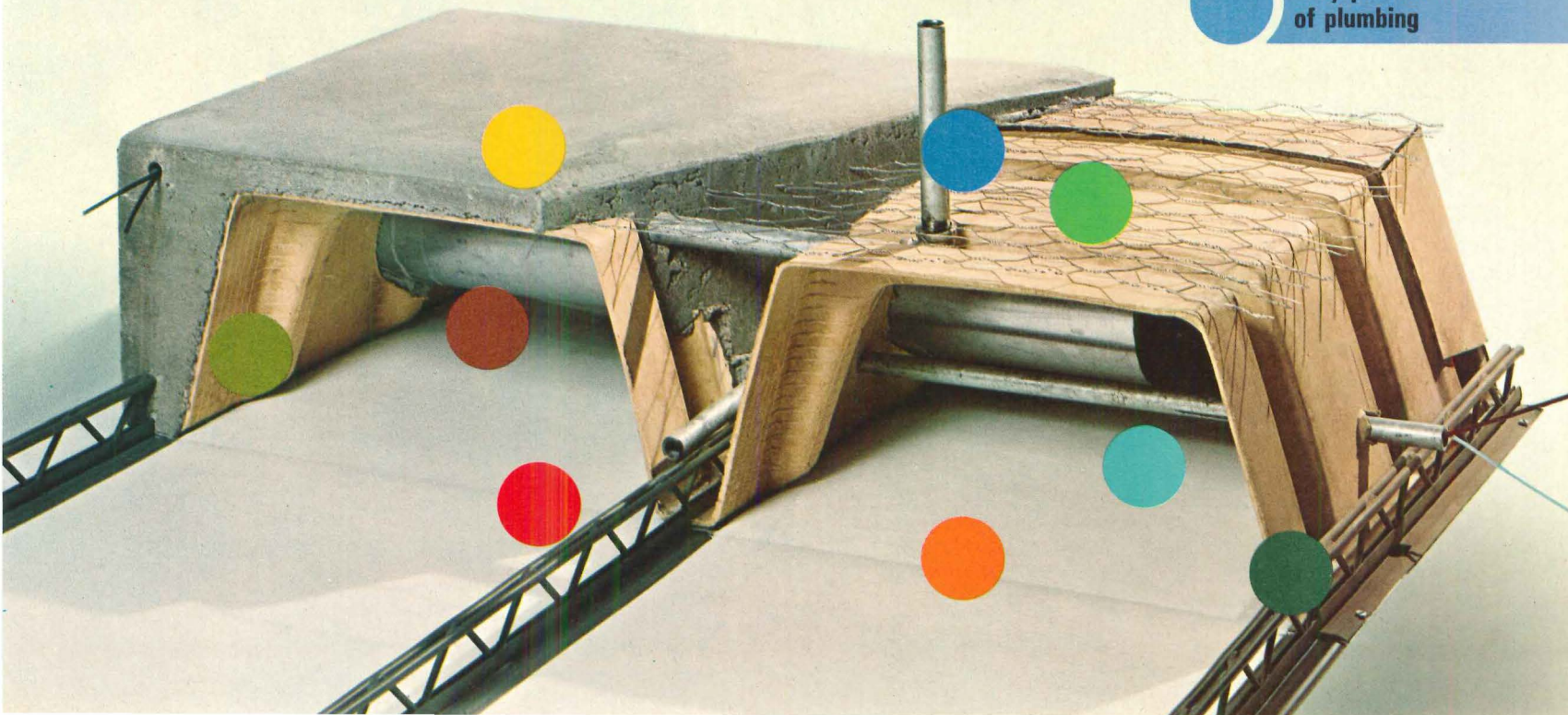
Ceiling material
of your choice

KEYDECK Truss T
structural reinforcing

Air ducts: in or
across voids

Electrical: in or
across beams/voids

Easy placement
of plumbing



5.5 acres of lofty cover for jumbo jets

Long-lasting PPG coating on prefinished aluminum roof system assures minimum maintenance

Designing a gigantic, column-free service hangar capable of accommodating four 747 jumbo jets required careful consideration of building maintainability as well as structural engineering. Aluminum roofing panels prefinished with DURACRON® Super 800 coating were selected. This silicone-copolymer acrylic finish offers color stability with outstanding resistance to extreme weather conditions, yet its cost per square foot is only in the medium range. Whatever type metal building you plan, there's a PPG coil coating

designed to deliver the performance, beauty and protection you require. See Sweet's Architectural or Industrial Construction Files 9.10/PPG for more information. The panel manufacturer of your choice can help, too. Or contact PPG INDUSTRIES, Inc., Dept. 16W, One Gateway Center, Pittsburgh, Pa. 15222.

PPG: a Concern for the Future

Coil
Coatings 
INDUSTRIES

For more data, circle 95 on inquiry card

AMERICAN AIRLINES hangar,
San Francisco International Airport
Structural engineers:
Lev Zetlin Associates, New York
Architects:
Conklin & Rossant, New York
Roof panel supplier:
Kaiser Aluminum &
Chemical Corporation





Hager Introduces

ECO

(Electronic Control of Openings)



EXIT

ENTRANC

STAIRWAY





ECO

The new simplistic system for security and traffic control

With today's growing concern for greater security, building designers find that openings must be increasingly involved with the closing.

A new system for controlling traffic and monitoring access areas brings the entire program within bounds for both effectiveness and budgetary considerations.

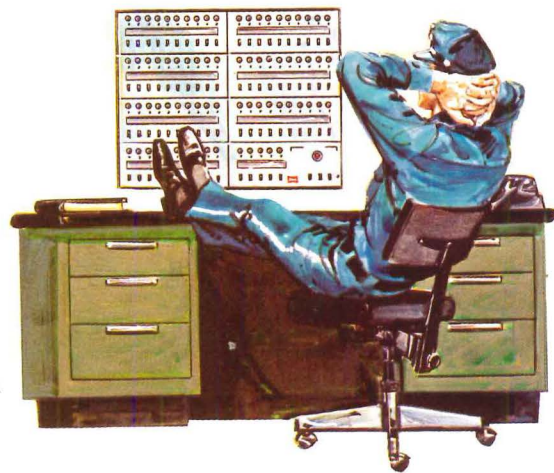
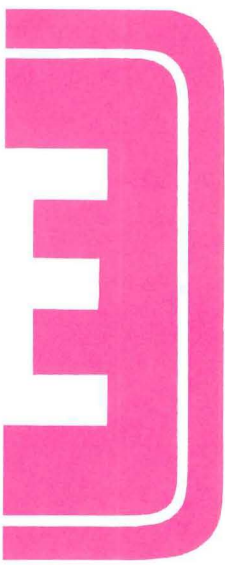
Hager introduces ECO, the electronic control of openings. Basically it is rather a simple package. Yet it can monitor an entire building, with silent signal or audible alarms to alert the central station that a door or area is being violated.

The ECO system is compact. A complete unit is little larger than an attache case. Yet it is highly sophisticated in operation; provides all and more of the essential functions of much more complex installations.

The comparatively low cost is further benefitted because the system is designed to become an inherent part of the building specifications. Wiring for ECO is part of the regular electrical installation. The control module merely plugs in at any designated location. Hager electric hinge components make it possible to completely monitor and control any number of individual openings remotely.

Five openings or 100 or more are monitored and/or controlled at a single station. The number of openings controlled can be increased merely by adding plug-in modules, so the system fits in a practical way to exact building needs without overages.

ECO can be set to signal when a door is violated; can be lock-integrated to show whether a door is secured; and can activate the door lock from the central station.



It all started with the Hager ELECTRIC HINGE

Three years ago Hager introduced the electric hinge, a unique hinge (now patented) incorporating electric contacts.

This hinge made remote openings control possible for the first time . . . using standard hardware products.

The potential for this new development was quickly recognized by architects and building owners. Hager engineers then set about to create a central control system that could make best use of this hinge signaling innovation. The result is here in ECO, electronic control of openings.

ECO is unlike the various methods you may have worked with in the past. The compact size, the ease of installation, and the adaptability of ECO to most any degree of security and traffic control wanted, should warrant consideration by architects and builders now contemplating new construction.

HAGER CONSULTANT SERVICE

Detailed information on ECO is available from architectural hardware consultants. Hager engineers provide schematic and specifications that incorporate ECO into the general wiring plans.

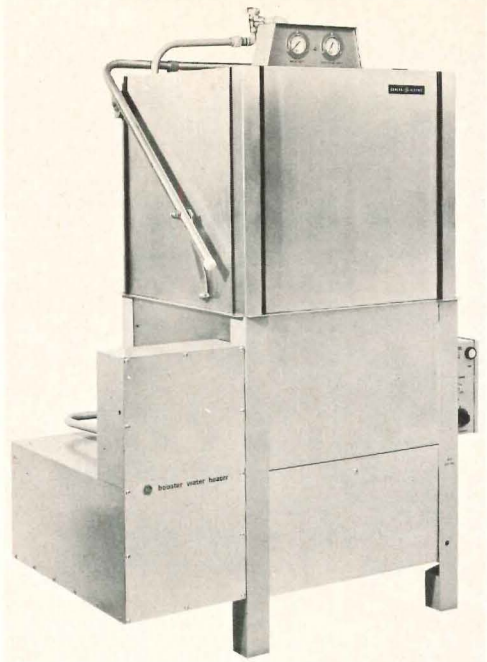


Patent No. 3,659,063



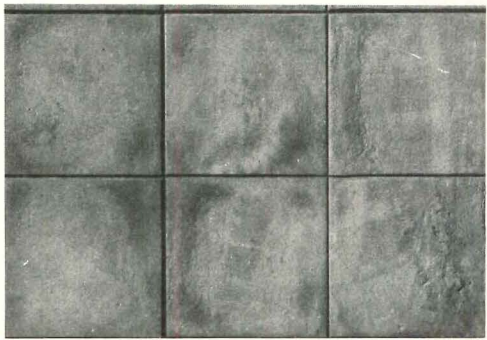
HAGER HINGE COMPANY
139 Victor St., St. Louis, Mo. 63104

"Everything Hinges on Hager!"



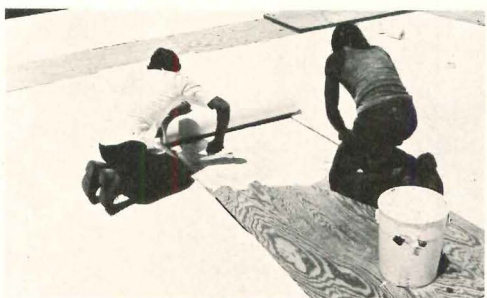
DISHWASHER / A door-type dishwasher has been introduced with an integral electric water heater which frees under-table space and reduces installation costs. Factory-plumbed and pre-wired, the unit eliminates five of the eight electrical and water connections necessary on other dishwashers having separate booster heaters. ■ General Electric Co., Chicago Heights, Ill.

Circle 316 on inquiry card



PRECAST CONCRETE SURFACING / This polymer concrete is precast in 2-ft squares and surfaced with hand-molded stoneware or porcelain clay units, precisely sized and mitered with tight joints to produce all-weather paving. ■ Hastings Pavement Co., Inc., Great Neck, N.Y.

Circle 317 on inquiry card



ELASTOMERIC ROOFING SYSTEM / A cut-to-size, single-ply roof system for manufactured and on-site housing chemically welds to form a tough, watertight membrane. *Sim-ply* includes roofing sheet, flashing, tapes, molded shapes, adhesives and primers. Molded shapes for corners, vent stacks, drains and fascia corners ensure watertight bonding at these points and speed installation. ■ Celotex Corp., Tampa, Fla.

Circle 318 on inquiry card
more products on page 184

For more data, circle 97 on inquiry card

◆ For more data, circle 96 on inquiry card



NEW RC-12-A High-capacity cooler for heavy traffic areas

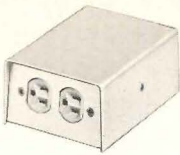
- Chills 12 gallons of water per hour for high-demand conditions.
- Fully-recessed design does not intrude into corridor space.
- Deep basin prevents splashing.
- Slightly rounded, non-welded corners are easy to clean.

Ask about our complete line of fully-recessed and semi-recessed water coolers and drinking fountains. HALSEY TAYLOR DIVISION, 1554 Thomas Rd., Warren, Oh. 44481.

Halsey Taylor®

KING-SEELEY *KST* THERMOS CO.

This Single Fitting Delivers Phone, Power and Signal Service



THE GRANCO CEL-WAY®/COFAR® SYSTEM

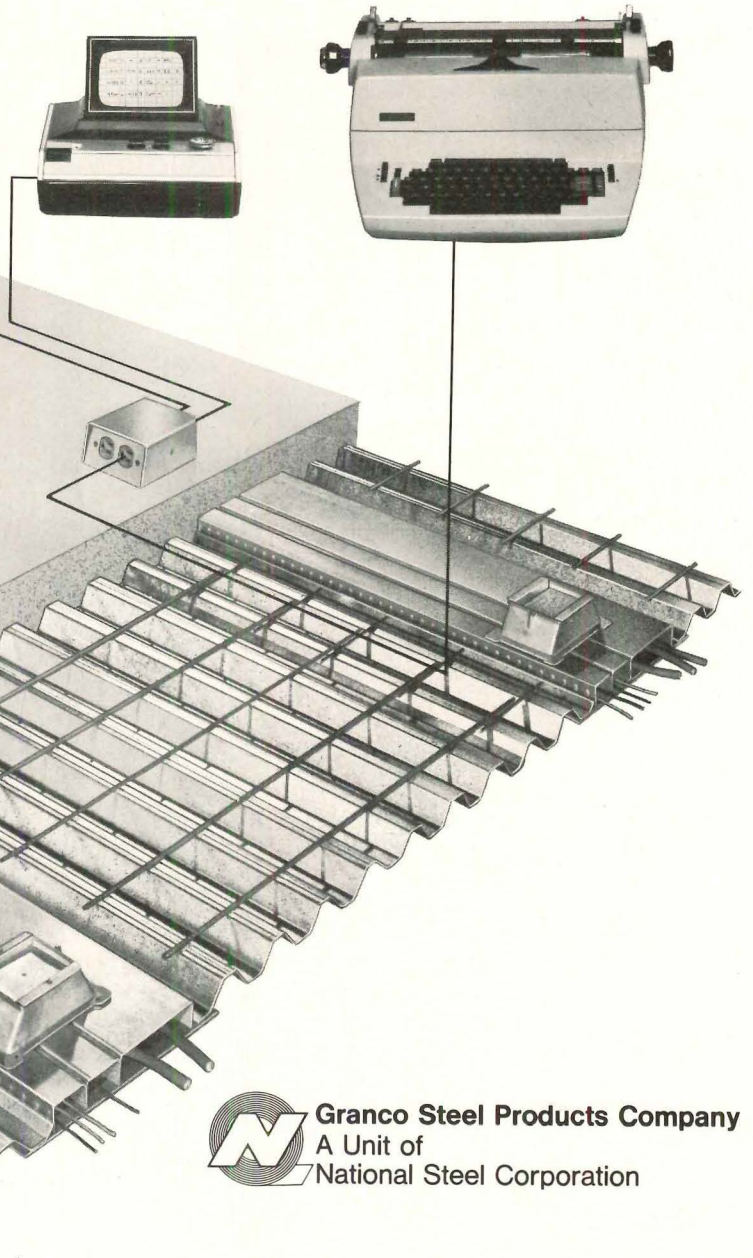



Only visible evidence of the system is the handsome floor fittings, each furnishing telephone, power and signal services wherever needed throughout the floor.

Concealed within the 5 1/4" floor slab is a network of electrical cells, factory-installed pre-set inserts and Granco's new Feed-Way high capacity header. Granco's Cofar floor deck (combined form and reinforcement) completes the system.

Pre-set inserts permit future installations of additional floor fittings without core drilling. Desks and partitions can be changed whenever desired.

Get the complete story on CEL-WAY/COFAR in-floor electrification. See Sweet's 5.5/Gr and 16.2/Gr, or write for new product design manuals. Granco Steel Products Company, 6506 N. Broadway, St. Louis, Mo. 63147.



 **Granco Steel Products Company**
A Unit of
National Steel Corporation

For more data, circle 98 on inquiry card



AT ORONOQUE VILLAGE, 1200 FAMILIES ARE GOING TO LIVE UNDER THE SAME ROOF.

In Oronoque Village, a condominium community in Stratford, Connecticut that will stretch for over 300 acres, GAF Timberline® Asphalt Roof Shingles is the only roofing being used.

It's not hard to see why. Timberline combines the rugged good looks of wood shake shingles with the safety and maintenance-free convenience of modern asphalt shingles. That's a tall order for one roofing.

Moreover it won't rot, crack, warp or split. It's fire resistant. And it has a special self-sealing adhesive to keep it down in high winds.

Timberline's woodlike texture comes in 6 authentic shades. All with that rich, varied shadowing that

really makes a home appealing to a potential buyer.

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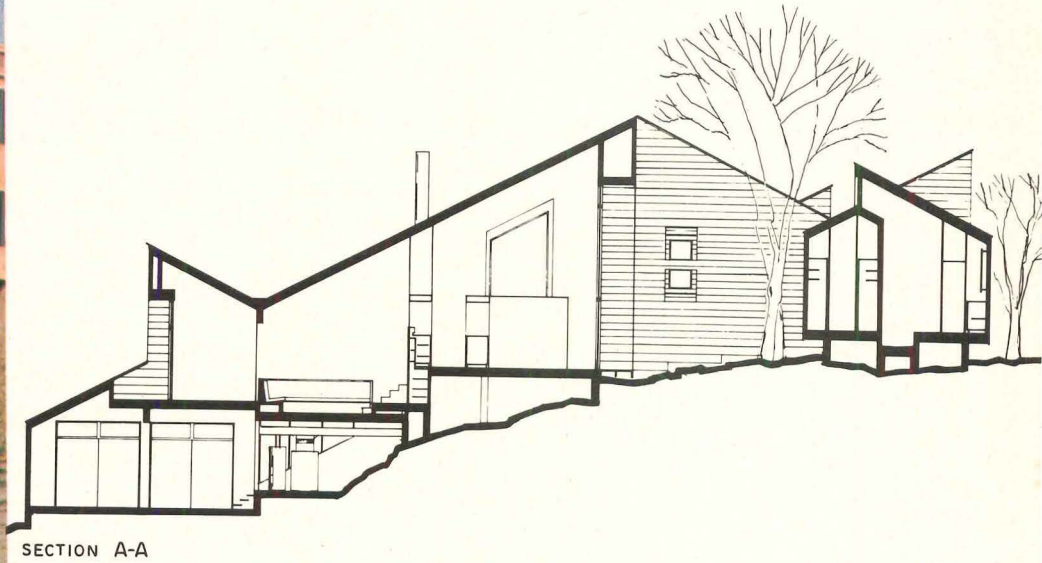


Top: Ocean House Apartments. Architects: Donald Sandy, Jr. and James A. Babcock. Photographer: Thomas A. Abels.

Above: House in Lincoln, Mass. Architects: Joseph Maybank and Arthur Cohen. Photographer: Nick Wheeler.

Left: Meadgate Condominiums. Architects: Allen Moore, Jr., John B. Rogers and James M. McConnell. Photographer: Carol Rankin.

Right: House in Huntington Bay, N.Y. Architect: Richard Henderson. Photographer: William Maris.



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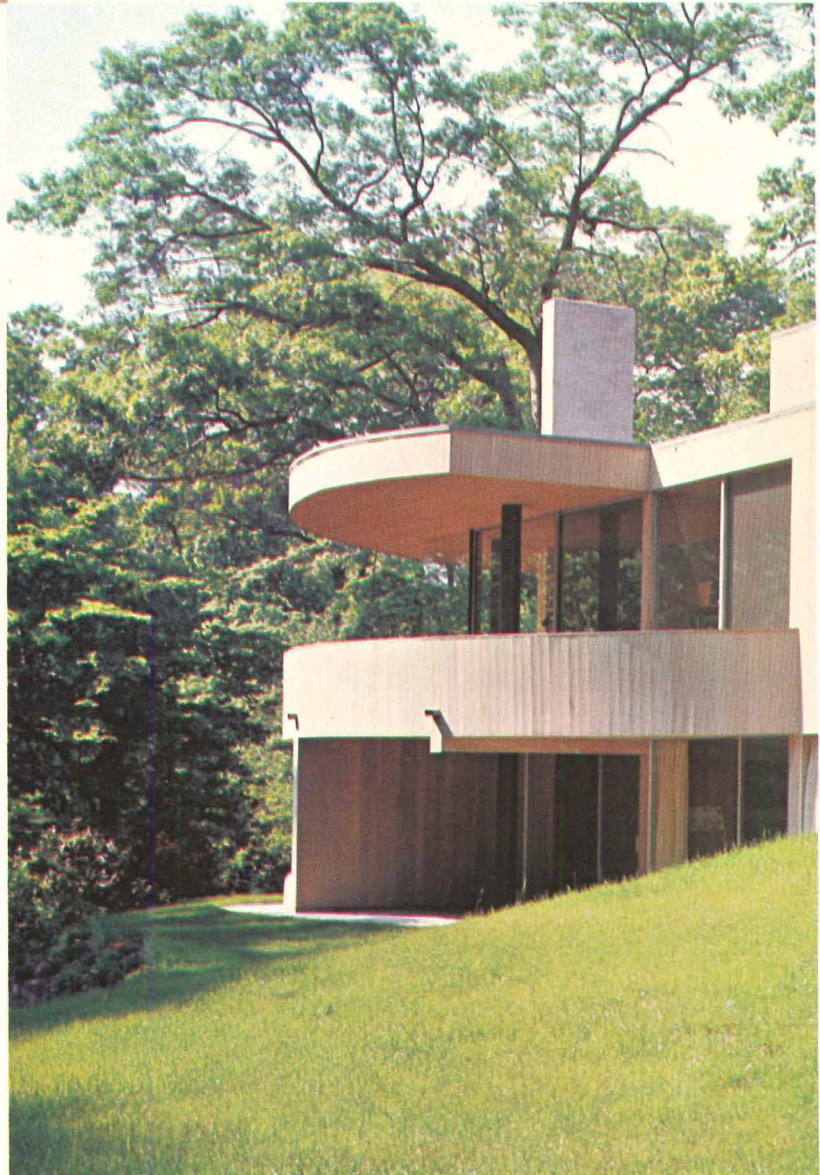
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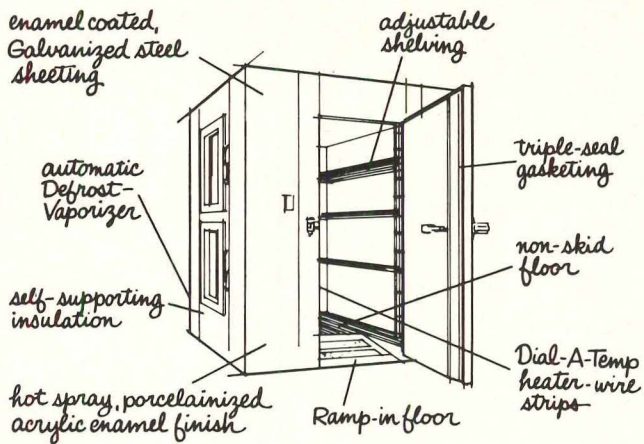
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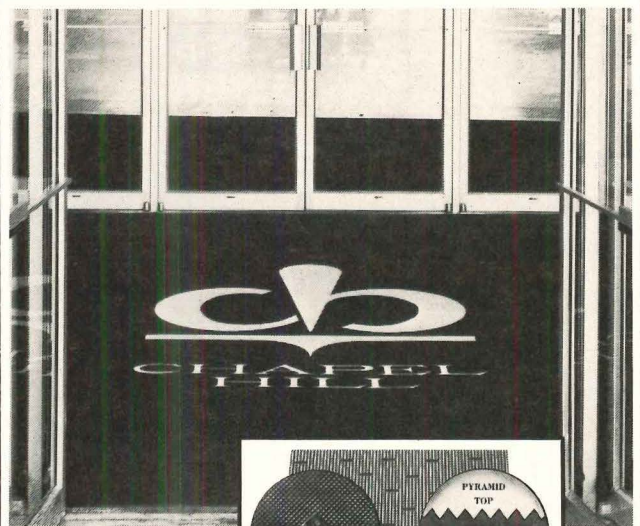
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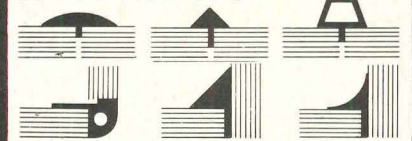


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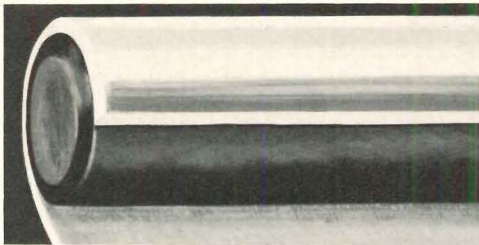
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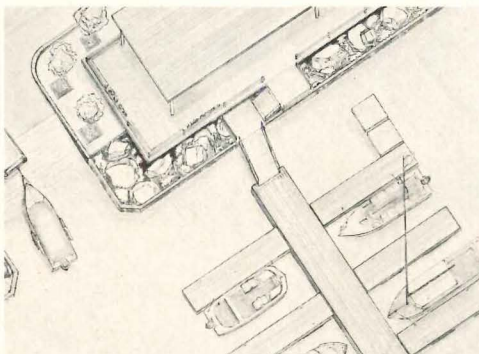
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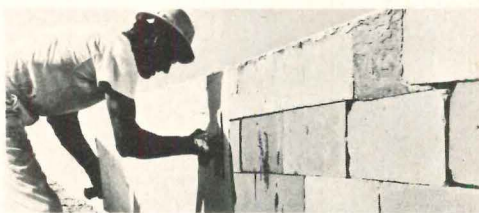
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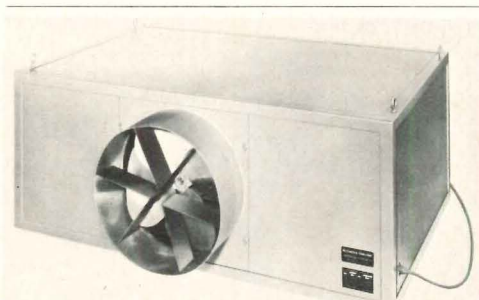
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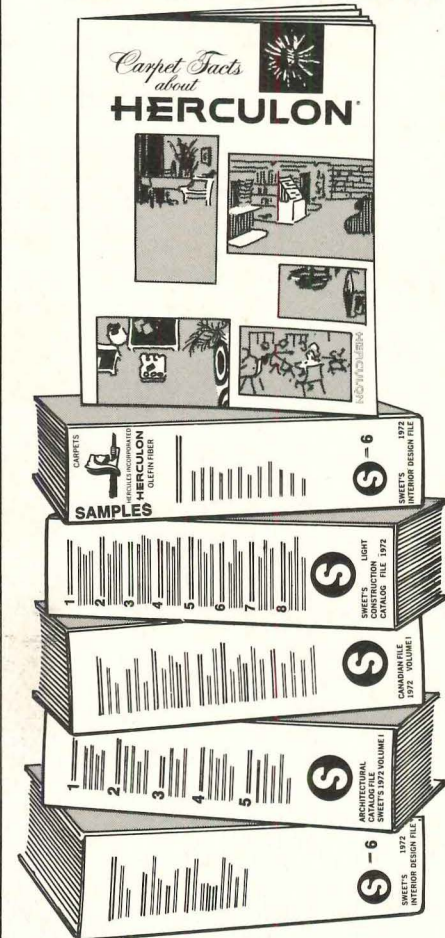


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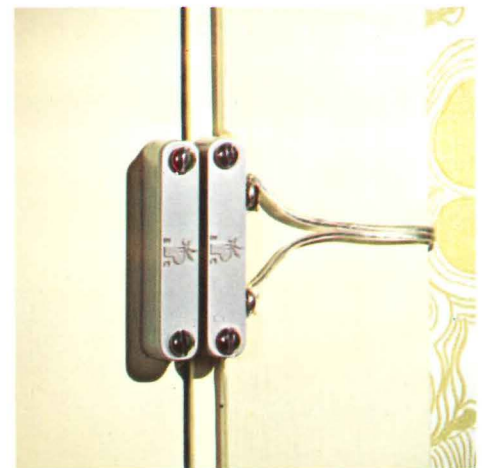
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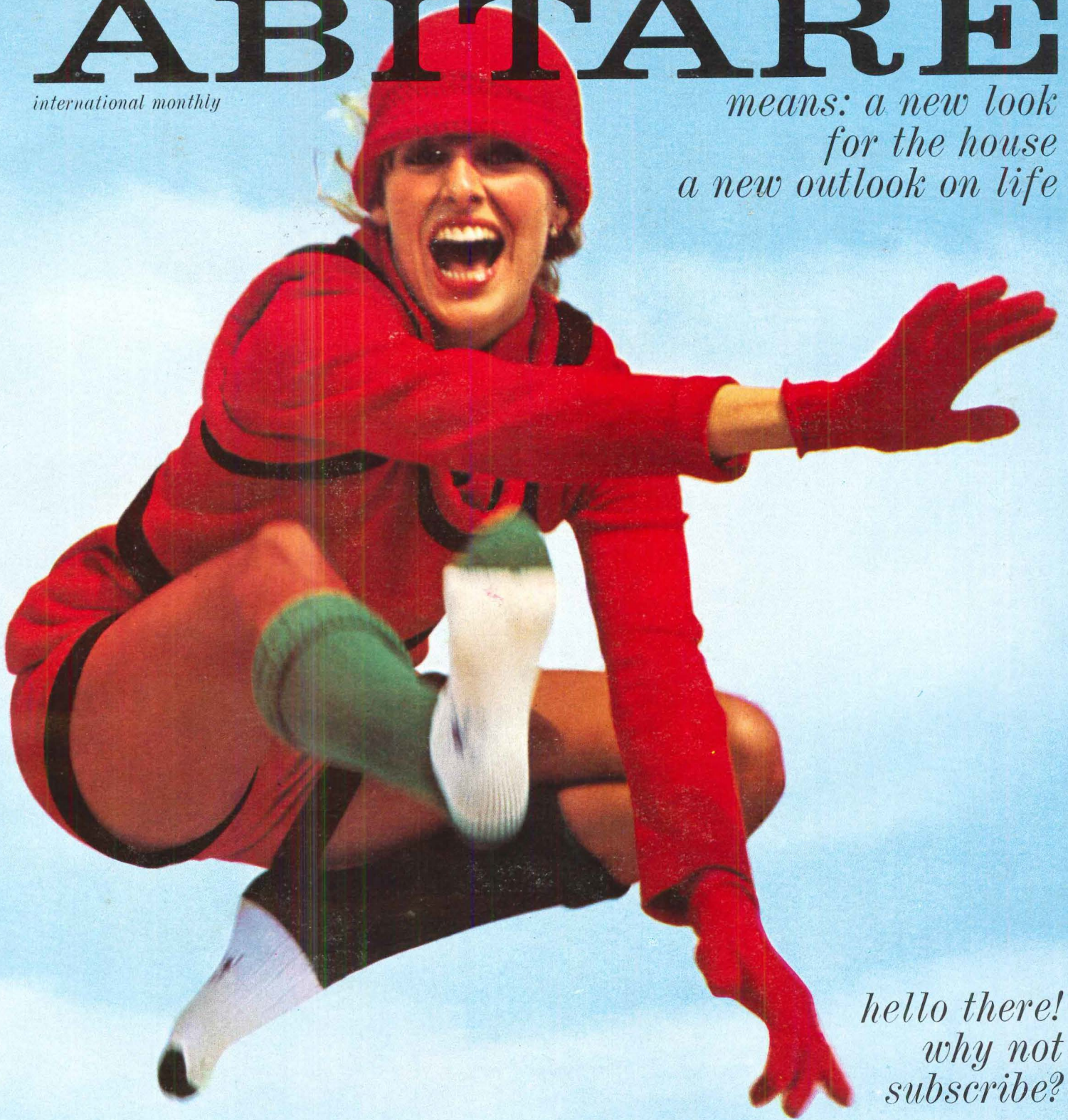
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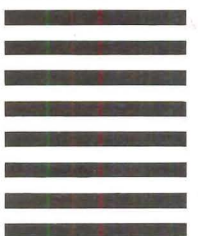


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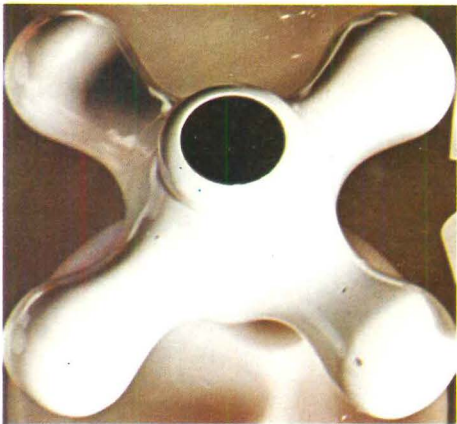
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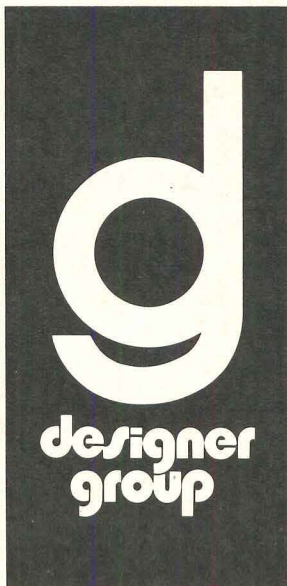
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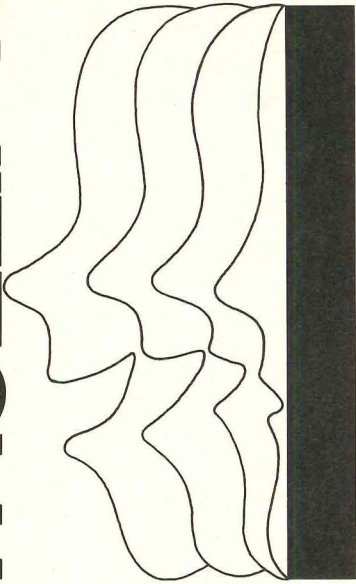
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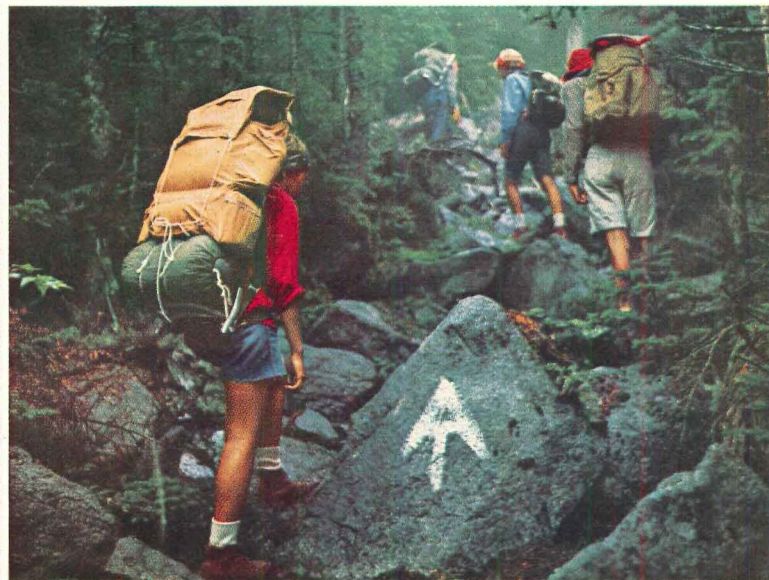


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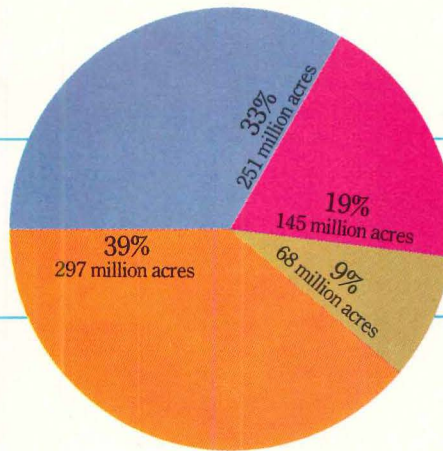
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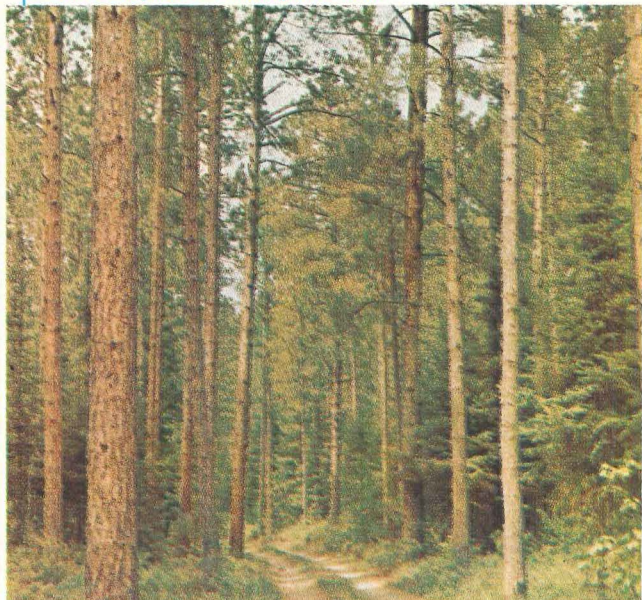
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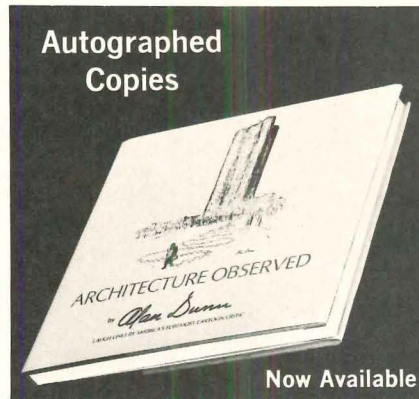
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2. Date of filing—Oct. 1, 1972.
3. Frequency of Issue.—Monthly, except May and October, when semi-monthly.
4. Location of Known Office of Publication.—1500 Eckington Place, N.E. Washington, D.C. 20002.
5. Location of Headquarters or General Business Offices of the Publishers. 1221 Avenue of the Americas, City, County and State of New York 10020.
6. Names and Addresses of Publisher, Editor and Managing Editor.—Publisher: Blake Hughes, 1221 Avenue of the Americas, New York, N.Y. 10020; Editor: Walter F. Wagner, Jr., 1221 Avenue of the Americas, New York, N.Y. 10020; Managing Editor: Herbert L. Smith, Jr., 1221 Avenue of the Americas, New York, N.Y. 10020.
7. The owner is McGraw-Hill, Inc., 1221 Avenue of the Americas, New York, New York 10020; Stockholders holding 1% or more of stock are: Donald C. McGraw, Elizabeth McGraw Webster, Donald C. McGraw, Jr. & Harold W. McGraw, Jr., Trustees under Indenture of Trust m/b James H. McGraw, dated 1/14/21 as modified; Donald C. McGraw, Trustee under an Indenture of Trust m/b James H. McGraw, dated 7/1/37 as amended; Donald C. McGraw, individually; Donald C. McGraw & Catharine McGraw Rock, as Trustees of the Estate of Mildred W. McGraw, all of 1221 Avenue of the Americas, New York, New York 10020; Firjer & Co. c/o First National Bank of Jersey City, 1 Exchange Place, Jersey City, New Jersey 07302; Harwood & Co. c/o State Street Bank and Trust Company, P.O. Box 5006, Boston, Mass. 02101; Perc & Company c/o Northwestern National Bank of Minneapolis, Minneapolis, Minnesota 55480; Pratt & Co. c/o Boston Safe Deposit and Trust Company, 1 Boston Place, Boston, Mass. 02106; Way & Co. c/o The Bank of New York, 110 Washington Street, New York, New York.

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B. Paid circulation—1. Sales through dealers and carriers, street vendors and counter sales—average number of copies of single issue published nearest to filing date—none. 2. Mail subscriptions—average number copies each issue during preceding 12 months, 56,457; actual number of copies of single issue published nearest to filing date, 55,950.

C. Total paid circulation—average number copies each issue during preceding 12 months, 56,457; actual number of copies of single issue published nearest to filing date, 55,950.

D. Free distribution by mail, carrier or other means—average number copies each issue during preceding 12 months, 4,280; actual number of copies of single issue published nearest to filing date, 3,939.

E. Total distribution—average number copies each issue during preceding 12 months, 60,737; actual number of copies of single issue published nearest to filing date, 59,889.

F. Office use, left-over, unaccounted, spoiled after printing—average number copies each issue during preceding 12 months, 3,652; actual number of copies of single issue published nearest to filing date, 1,080.

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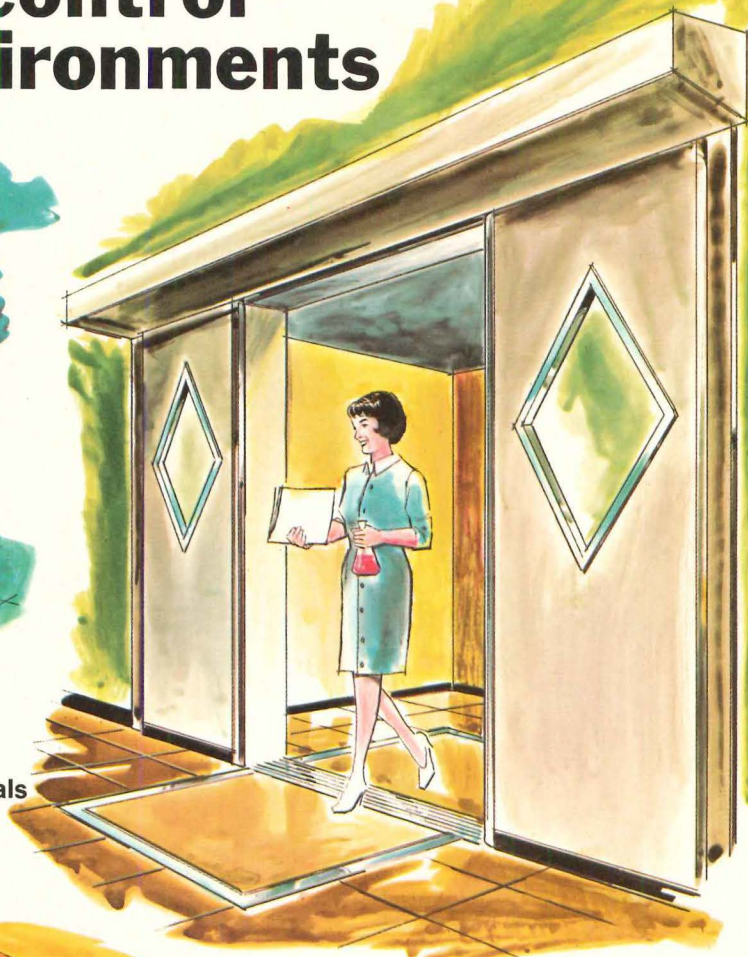
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There are all kinds of featherbeds in this rich and benignly negligent country.

The most visible, and the most publicized, carry a union label. They are the result of quite open and perfectly legal agreements to pay some specially favored people for doing nothing—or as next-to-nothing as human ingenuity can devise.

But there are others. Some of the plushest of all featherbeds are to be found, cleverly camouflaged, in executive suites. Some of the snuggest are built into the very structure of federal, state and local bureaucracies. Some of the coziest are discreetly tucked away in the private recesses of the various professional establishments. And some of the most sumptuous are those precious family heirlooms that are generously handed down from generation to generation.

No one knows how many featherbeds there are in the U.S. No one knows how much the total bill for featherbedding actually comes to. But there are some things we do know, and others we can surmise.

In the construction industry, for example, we know that featherbedding is open, unabashed and rampant. According to a survey by *Engineering News-Record*, anywhere from 15% to 40% of the construction payroll dollar goes to pay for work not done. For time wasted in adherence to restrictive work rules, or for time spent in meaningless, un-

productive activities.

The cost of this sanctioned, legalized waste in the construction industry is an estimated \$16-billion a year. Which is \$16-billion added, unnecessarily, to the cost of everything built in this country—homes, apartments, stores, factories, roads, highways, bridges, schools, churches and hospitals.

Executive and white-collar featherbedding is less visible and hopefully, less prevalent. But it is painfully apparent that, judging by the results, somebody, somewhere, has too often been paid too much for doing too little. At a cost reckoned in inefficient and ailing companies, lagging and troubled industries, and spectacular failures and bankruptcies.

With regard to the ancient and apparently ordained institution of bureaucratic featherbedding, we know that the combined federal, state and local government payroll has increased 88% in the last ten years, to a total of \$110-billion. Today there are more government employees (14.4-million of them), making more money (average salaries up 64%). But if there has been a corresponding increase in bureaucratic efficiency, or the quality of government services, it has escaped the attention of most taxpayers.

Featherbedding in the professions is, in the nature of things, a moot question. Mere laymen can only guess at what goes on behind the impenetrable screen of fraternal solidarity and lofty mystique. But even mere laymen, when they pay their bills, are painfully aware that, of all the costs of living in a fantastically expensive world, the cost of professional services has increased the most, with the most devastating impact.

Finally, we know that the American economy as a whole has become markedly less productive, at a cost in terms of lost output of about \$60-billion in the last two years. Part of the decline in productivity, and part of the

featherbed?

\$60-billion loss, surely must be charged against the featherbed account.

Any attempt to define the nature and suggest the extent of featherbedding in our society runs the risk of misinterpretation. In spite of the very obvious fact that the overwhelming majority of union members, of business men and white-collar workers, of government employees, and of doctors, lawyers, engineers and educators, belong to and make up the working majority.

Any attempt to quantify the total cost of featherbedding in the U.S. runs an even greater risk. It is almost certain to be wrong.

But at whatever risk, it must be said. The real extent of featherbedding, and the real cost, can be summed up in two words—too much!

Because featherbedding, whatever else it is, is clearly waste. Deliberate, purposeless, wanton waste of time, money, energy, effort, talent and spirit.

And no economic system, whatever its strengths and capacities, can tolerate endless and unlimited waste. At some point, the system becomes not just markedly less productive, but fatally less productive. Costs mount, prices and taxes rise—and keep on rising, ever faster, until the system breaks down.

The American economic system is not at, or near, the breakdown point. But it is at the point where most of us are finding that, in every area of our lives, we are paying progressively more and more for less and less.

Part of what we are paying is the cost of deliberate, needless waste, with its cancerous effect on productivity. So that the real problem with featherbedding becomes clear.

The problem is not that some people, by

hook or by crook, are getting something for nothing. It is that a lot of people—most Americans—are increasingly getting nothing for something.

The problem is not that featherbedding is a cynical con game, played by a favored few at the expense of the tolerant and permissive many. The problem is that it is a *losing* game, played or permitted at the common and disastrous expense of us all.

So that the question for the working majority is not, how much featherbedding will we accept? But, quite simply, how much featherbedding can we *afford*?

And the issue for the working majority—and for featherbedders and would-be featherbedders as well—is, even more plainly and directly, how much farther can we go with a losing game?

The answer in both cases is clear and compelling.

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This is the fifth of a series of editorial messages on a variety of significant subjects that we hope will contribute to a broader understanding.

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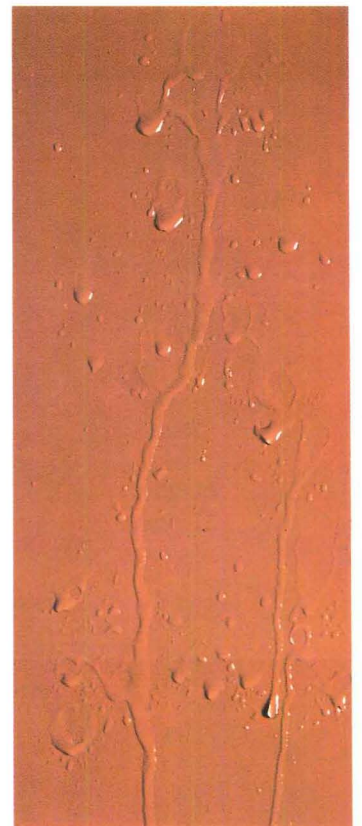
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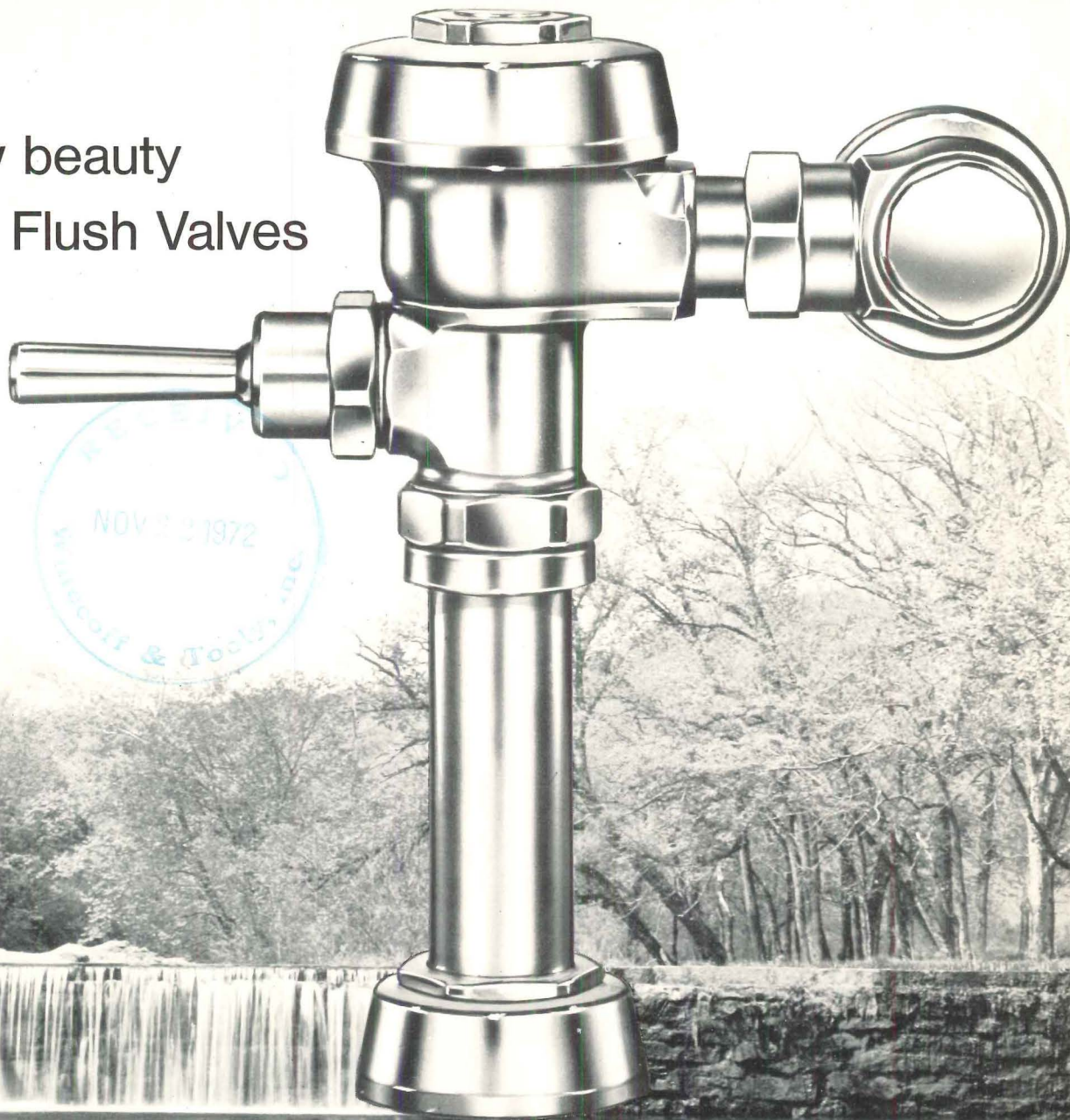


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