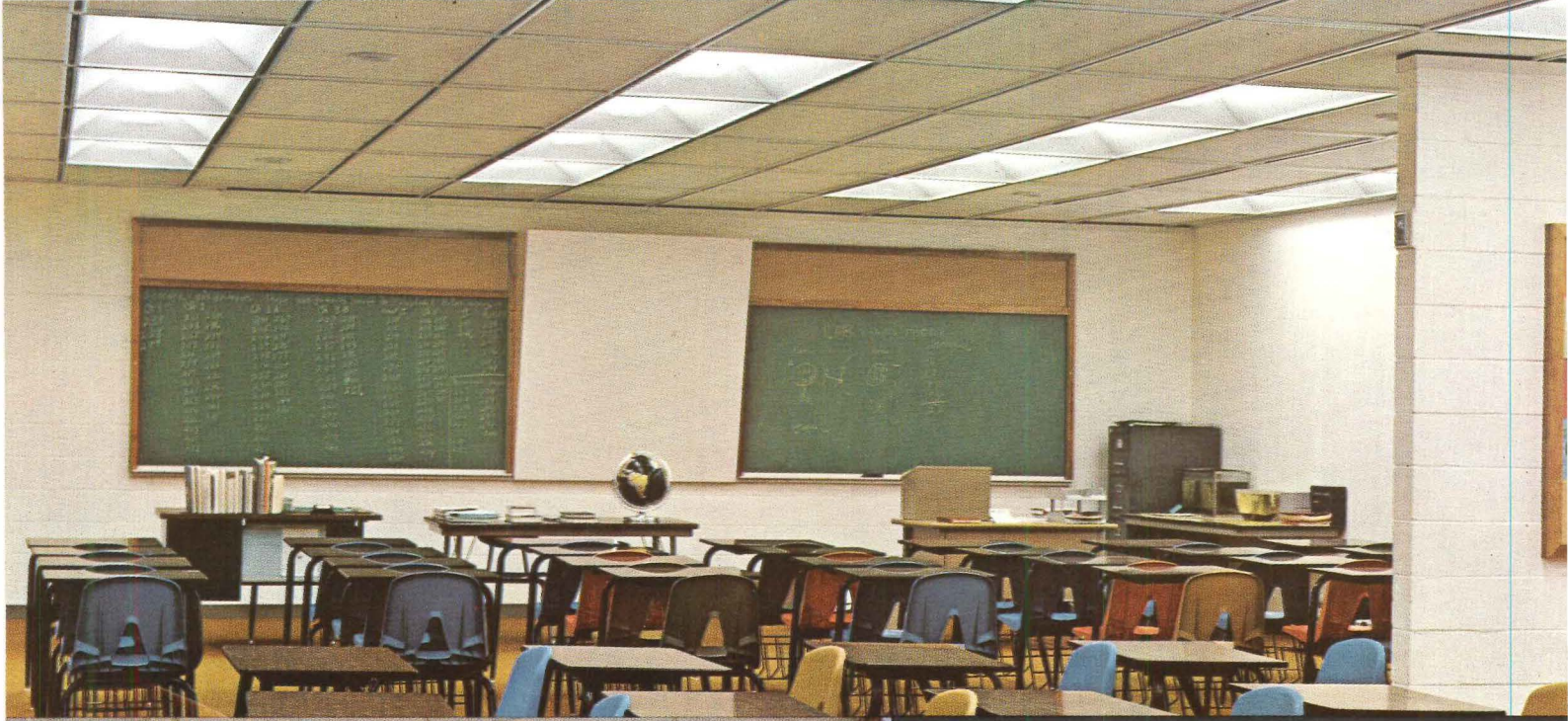




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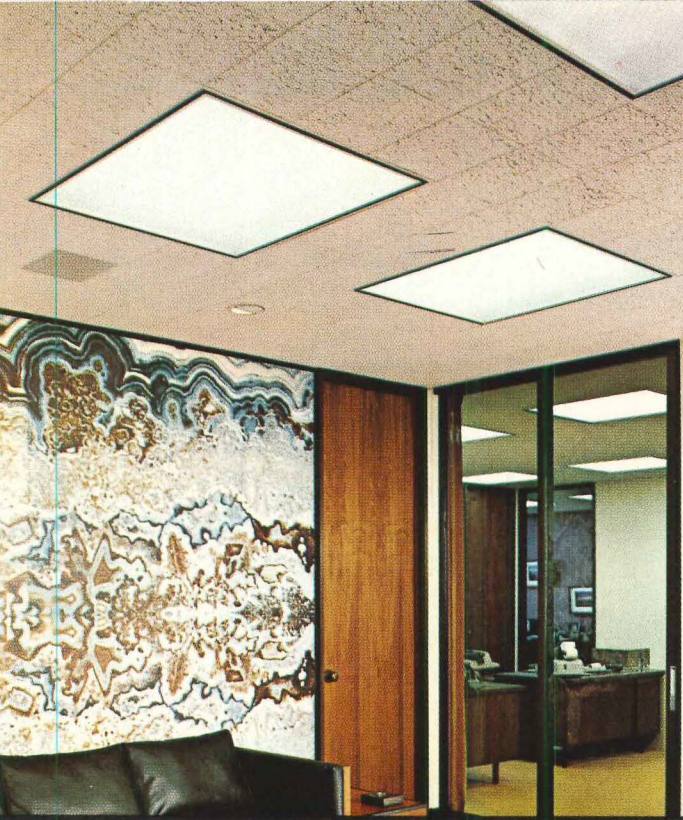
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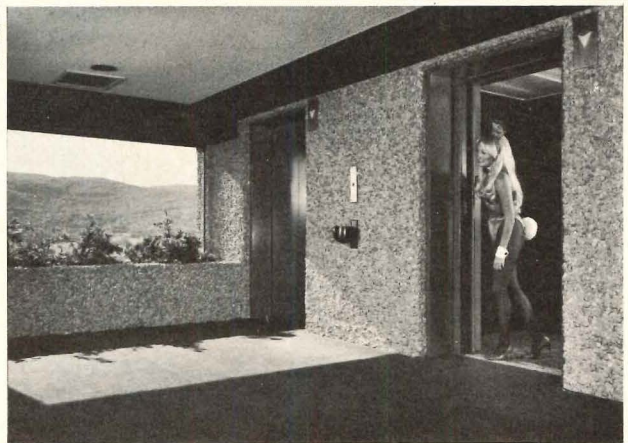
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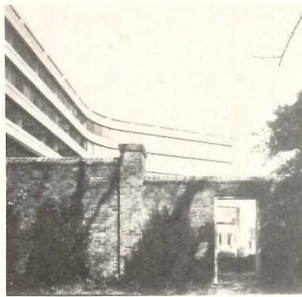


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Quotations on reprints of articles available. Every possible effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or damage.

EXECUTIVE, EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: 1221 Avenue of the Americas, New York, N.Y. 10020. Editorial Offices: 425 Battery Street, San Francisco, Cal. 94111; National Press Building, Washington, D.C. 20004. PUBLICATION OFFICE: 1221 Avenue of the Americas, New York, New York 10001. Second class postage paid at New York, New York 10001 and additional mailing offices.

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FEATURES

Dramatic design for a non-traditional new university

Arthur Erickson of Erickson-Massey Architects, Vancouver, British Columbia, is the architect for a remarkable and exceptionally handsome new university based on non-traditional educational concepts. Project One of The University of Lethbridge, in Alberta, Canada integrates academic and residential facilities in one nine-story, 912-foot long building.

New life for two old buildings

Architect James Lamantia has restored to pleasant use an old Hudson River house of balloon frame construction, updating it but retaining its simple character.

An old stable in Boston, renovated and remodeled to give it modern convenience, has been turned into a dwelling of charm and interest. Childs Bertman Tseckares Associates, Inc. are the architects. (Page 128.)

The new headquarters building of the American Institute of Architects

After an 11-year struggle to get it designed and built in a manner which would meet the highest standards of the profession, the AIA will dedicate its headquarters in June.

School site selection study

The Cambridge, Massachusetts Planning Department and an architect consultant have teamed up to show how multiple use development can provide schools which replace the recreational land they sit on and which bring income to the city instead of taking more land off the tax rolls.

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Good architectural concrete is not synonymous with good structural concrete. The architect has to pay a lot more attention to the construction process to ensure the architectural concrete will turn out the way he envisions it. To help him recognize the factors that are critical, consultant James M. Shilstone has developed a chart and explanation to go with it that indicates the relative significance of concrete construction details.



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THIS ISSUE is published in national and separate editions. Additional
pages of separate edition numbered or allowed for as follows: Western
Section 32-1 through 32-4. POSTMASTER: Please send form 3579 to
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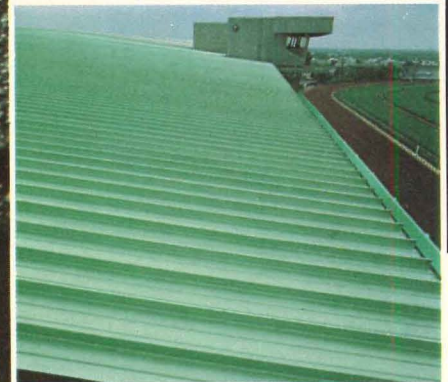


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The First Federal Design Assembly: "Beginnings are difficult, but exciting"

... could, in the hallways during the meeting, during the post-mortems afterward, get either the two reactions—or any shade of opinion between. Myself (being a perennial optimist and positive thinker) I think it was a good and important effort. I would have done some things differently, and applied some different emphases—and—most especially (if you'll forgive the expression)—have sold harder; and these comments will be detailed below. I sat for most of the meeting with Mildred Schmertz, a senior editor of the RECORD, who is much more critical, and her comments will also be detailed below. But in any event, as Bill Lacy, director of the Architecture + Environmental Arts Program of the National Endowment, and one of the Assembly's organizers put it, "Never has there been so much public discussion." And that in itself is good and important.

First, let's go back to the purpose of the Assembly.

"The First Federal Design Assembly," to quote its official publicity, "marks the initial thrust and focal point of the Federal government's long-range design improvement program. The Assembly's program will feature presentations by eleven of the nation's top designers before an audience of over 400 Federal administrators [about 250 actually came]."

"The Design Assembly . . . will attempt to solicit the support and the advice of Federal administrators to achieve these initiatives: 1) a review and expansion of the "Guiding Principles for Federal Architecture," 2) a program to improve the effectiveness of Federal graphics and publications; 3) a study of Civil Service procedures for recruiting, hiring and training design professionals to Federal service. . . ."

"The objective of the Federal Design program [of which the Assembly was the first pub-

lic step] is to develop standards for the government in the design of its buildings' working spaces, and landscapes; as well as in its publications and graphics." And with the Federal agencies spending at the rate (last year) of \$5.4 billion for construction and an estimated \$400 million for printing services, that is, of course, an admirable goal.

Questions: Did the persuaders persuade? Were the decision-makers listening?

Perhaps 1000 crowded in to hear the keynote, Rawleigh Warner, Jr. (chairman of the board and chief executive officer of Mobil Oil) argue that good design does not have to cost more than poor work (a reasonable premise with which to begin). He urged all Federal administrators—the ultimate decision-makers for that \$5.4 billion of Federal work—to become involved personally in this new effort to upgrade Federal design quality; to understand that persistent, tough-minded monitoring by the boss is absolutely essential to success in the endeavor. Best quote: "Design that improves government performance surely is useful. Design that improves communication between government and citizen is important. Design that presents America to the rest of the world as a nation that is strong, innovative, and free is valuable." What he might have added: "Design that responds to human need and raises the human spirit is desperately needed."

Eleven speakers made the major presentations on the main day of the conference, which was directed by co-chairmen Ivan Chermayeff and Richard Saul Wurman. Advocates for better graphic design were Louis Dorfsman of CBS and Saul Bass; for interior and industrial design: Niels Diffrient of Henry Dreyfuss Associates and Robert Probst of Herman Miller; for archi-

itecture: Gerald McCue, Robert Marquis, and Bill Lacy; and for landscaped environment: Philip Lewis, John Hirten, and M. Paul Friedberg. The presentations of these men—all, of course, designers of the first rank—added up to considerable visual support for the principles of the Assembly's theme: "The Design Necessity." In total, I think, they did support the principles that the Assembly was intended to impress upon the agency heads:

"1. That there are sound, proven criteria for judging design effectiveness.

"2. That design is an urgent requirement, not a cosmetic addition.

"3. That design can save money.

"4. That design can save time.

"5. That design aids communication.

"6. That design simplifies use, simplifies manufacture, simplifies maintenance.

"7. That the design necessity is recognizably present in projects ranging in scale and complexity from a postage stamp to a highway.

"8. That the absence of design is a hazardous kind of design. *Not* to design is to suffer the costly consequences of design by default.

"9. That, on any given project, designers and Government officials have the same basic goal: performance. And . . .

"10. That effective design of public services is itself an effective public service."

The case examples shown and described (you or I might have chosen some others) I think made those points. They are further supported in a "Casebook of Federally Initiated Projects prepared for the Assembly by Ivan Chermayeff, Richard Wurman, Ralph Caplan, Peter Bradford and Jane Clark (MIT Press, Cambridge, Massachusetts. 80 pages. \$6.) which seeks by example (and for example, St. Francis Square housing by Marquis & Stoller; the restoration of the Renwick Gallery by John Carl Warnecke and Hugh Newell Jacobsen; and Saarinen's Dulles International) to provide a definition of design for Federal administrators.

Criticisms? There are useful ones on all levels of concern

Mildred Schmertz' main criticism was of the emphasis: "By timing [that is, first on the pro-



"For pure realism the price includes cost overruns and schedule slippages"

gram] and positioning, the arts of visual communication were given first importance . . . Now good graphics are nice. We all know that. And good graphics are important visual tools. We all know that.

"But in the world of design there is a hierarchy of value, and questions of architecture and the environment are larger and more important questions than the look of a government booklet or letter or memo pad. Getting good graphics is easy—all it takes is a strong corporate or government official who wants it, and someone like Saul Bass or Ivan Chermayeff to produce it.

"Other needs are more pressing. Getting well-planned housing and schools and hospitals and neighborhoods and towns and cities and regions is hard. The need is urgent. The client is complex. The intellectual demands are profound.

"Getting good design at this level should have been the major concern of the Federal government at the level at which this conference was sponsored—and I think that these areas were short-changed at the conference just as they have been short-changed by the government for years.

"This could have been a splendid platform for the architects and planners—but it wasn't." Ms. Schmetz has, of course, an impelling argument—and while I understand the wishes of the Assembly sponsors—the National Endowment for the Arts and the Federal Council on the Arts and Humanities—to present a broad view of design capabilities to the government people, there is indeed a hierarchy of values, and questions of architecture and the environment are indeed larger and more important questions. But I see an advantage in the relative simplicity of questions relating to graphics: I see the strong possibility that in the course of developing, with a skilled designer, a new program of "visual communications" for his agency, Federal officials who have not often been urged to consider design excellence will gain an understanding that may broaden into those more compelling questions of architecture and environmental concern. Encouragingly, seven Federal agencies are already

participating in programs to improve the appearance and effectiveness of their graphics and publications. It's a beginning.

My chief criticism was the lack of a closer, a wrap-up, a strong enough plea for action. If you will forgive my earlier reference to this Assembly as an attempt by skilled designers, architects, and landscape architects to "sell good design," I will now suggest that, in the end, nobody really asked for the order. Nobody really said: "If we made an impression on you, if you want to talk about improving the design quality of the construction your agency is responsible for, here's who to talk to, here's where to turn."

Maybe that is premature for this first step in raising the standards of design by and for the government, but I'd have tried.

This is, of course, only the first step. Also in motion, as I've mentioned here before, is an attempt to review and enlarge the "Guiding Principles for Federal Architecture." That task force will be meeting this month with many of the same Federal agency heads that attended the Assembly, and there the opportunity for more detailed questioning and conversation will be better. In that less formal context, serious questions can be raised about architectural review and evaluation, architect selection, improved procedures for purchasing services, historic preservation and adaptive use of older buildings, and so on. The agency people will be asked what they thought, what constraints they feel, what priorities press in on them. And that is critical—for "the Federal government" doesn't commission design, individual civil servants commission design—and there is little precedent in their work for striking out into new territory. But at any rate. . . .

I'm encouraged. If the First Federal Design Assembly wasn't perfect, at least *it happened*. A dialogue was begun. There was interest by at least some of the men who spend \$5.4 billion of our money. There is clearly a lot of new interest stirring in Washington.

As the Casebook pointed out: "Beginnings are at once difficult and exciting." We have, I think, a beginning.

—Walter F. Wagner Jr.

NEOCON 5: coming June 20-22, and well worth a trip to Chicago

The program for NEOCON 5, to be held at the Merchandise Mart in Chicago on June 20, 21, and 22, sounds like a rare opportunity for architects to broaden their contacts with interior designers and the contract furnishings market. The keynote will be set on Wednesday the 20th by a three-part presentation by Stewart Udall, Paul Dickson, author of "Think Tanks," and architect William Marshall, on "Man and the Environment." Wednesday afternoon, there will be concurrent sessions on the energy crisis, "The Renaissance of the Grand Hotel," and case studies on modernization—the increasingly important effort to effectively reuse old buildings.

On Thursday there will be concurrent sessions on "The Design-Build Controversy," the effect of design on patient response in hospitals, on "Planning the Merchandising Environment"—some new looks at retailing, a look at vocational-technical space planning, and the planning of student services—or why dorms are empty and students are not eating on campus.

Perhaps the hottest subject is "People and Space Psychology," presentations on space planning based on new research (which is, the way, unfavorable to open planning).

The Friday program will include case studies of office landscaping, the "recycling" of old buildings—particularly unneeded railroad stations, planning facilities for the handicapped, and an in-depth study of O'Hare's facilities; and presentations on "How to Sell Design and Architectural Services to State, County and Municipal Governments" being given appropriately—by the National Institute of Governmental Purchasers. The Friday finale is a confrontation between proponents and opponents of open planning which should be fruitful.

RECORD will present its annual RECORD INTERIORS awards at an evening session.

In all, the program clearly seems to deserve growing attention by architects. Look for your pre-registration form from NEOCON and send it off. If you don't get one, I'd write Ed Gilliam at the Merchandise Mart, Chicago 60654.

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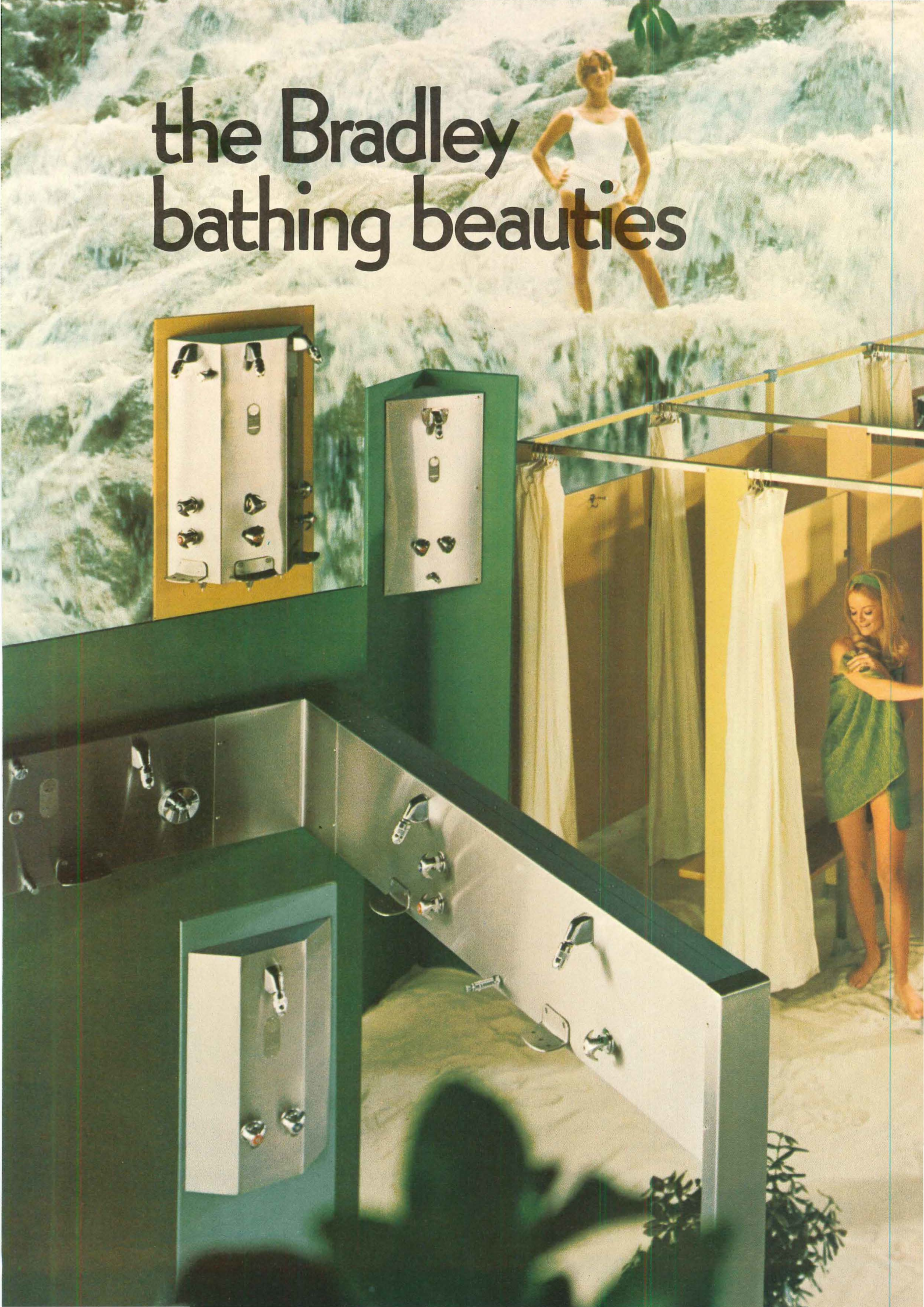
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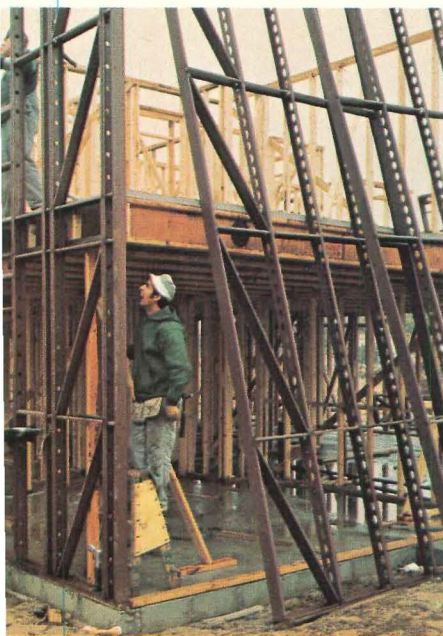
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tion is fast and easy, and savings continue over the life of the building because aluminum requires so little maintenance. On most buildings end laps can be eliminated because lengths are limited only by shipping conditions. Handsome Alcoa Snug Rib roofing is ideal for swim clubs, industrial and port buildings, warehouses, grandstands and aircraft hangars. For more information on economical Snug Rib roofing, write Aluminum Company of America, 1130-E Alcoa Building, Pittsburgh, Pa. 15219.



Change for the better with Alcoa Aluminum



For more data, circle 8 on inquiry card

John Boggs just solved the communications problems of this 1,250,000-square-foot enclosed shopping mall.

John Boggs works as a Building Industry Consultant with Indiana Bell Telephone Company.

The Edward J. DeBartolo Corporation, one of the nation's leading shopping center developers, is owner of two large shopping malls in Indianapolis. The corporation recently decided to invest in a third one there, of more than 100 stores, complete with every modern facility any merchant could want.

High on their priority list is up-to-date communications service, both now and for the future.

That's why they involved John Boggs in their plans while the surveyors were still at work on the site.

His state-of-the-art knowledge of communications enabled the builders to preplan for their needs.

Since John knew they set a high value on aesthetics, he suggested invisible cable access to the site, and proposed neat, efficient ways to run wires to individual sales-counter phones.

John talked about dozens of problems that could be avoided by planning ahead. And he explained in detail the advantages of one centralized communications terminal room, with satellite terminal locations each feeding eight to twelve stores—a concept the developer has incorporated into the plan.

The Bell System has a Building Industry Consultant in your territory who can give you this same sort of help. Whatever you are building, whatever your communications needs...

We hear you.



Building Industry
Consulting Service
American Telephone and
Telegraph Company
Room 2238D, 195 Broadway
New York, New York 10007

I am interested in the Building Industry Consulting Service.

Please send me additional information.

Please have a representative contact me.

Name _____

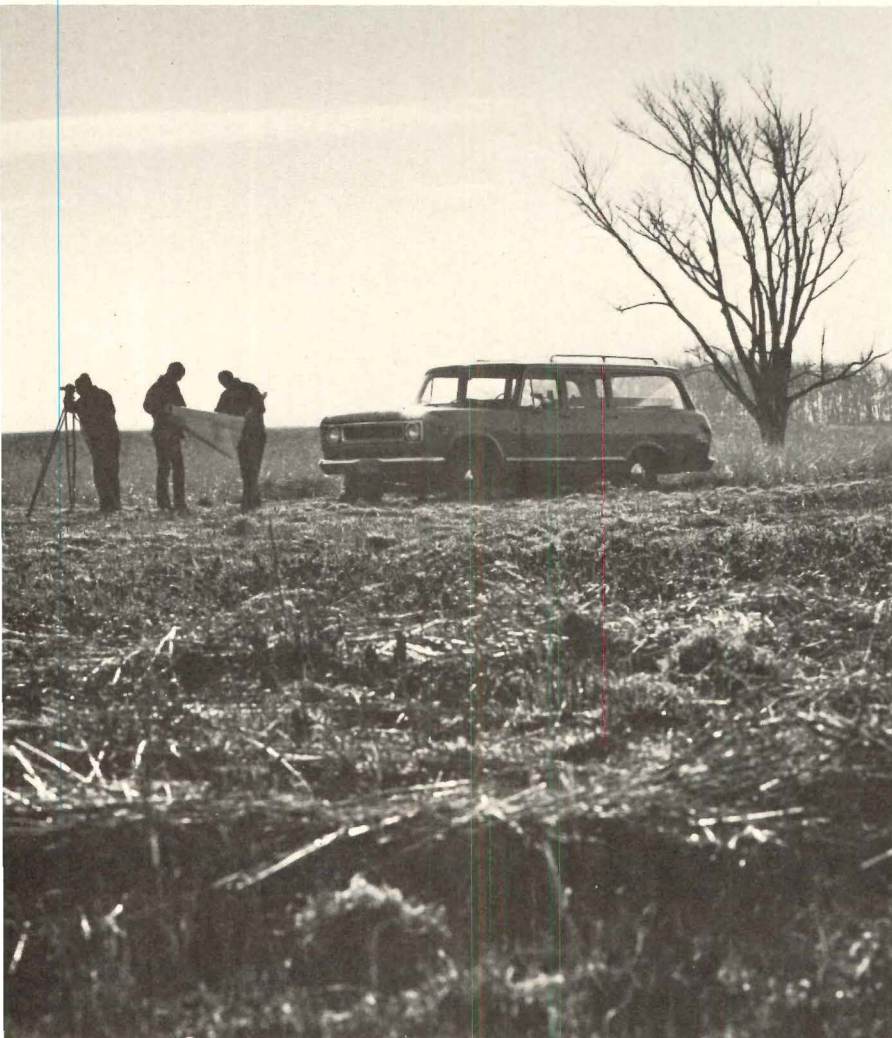
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Company _____

Street _____

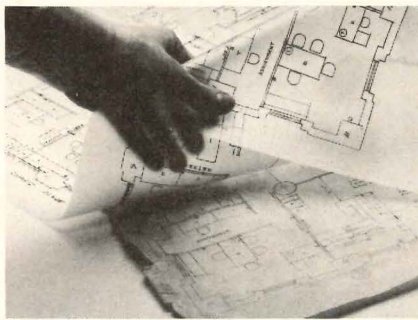
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A



Don't overdraw. Use these Kodak shortcuts:

The snappy restoration shortcut.

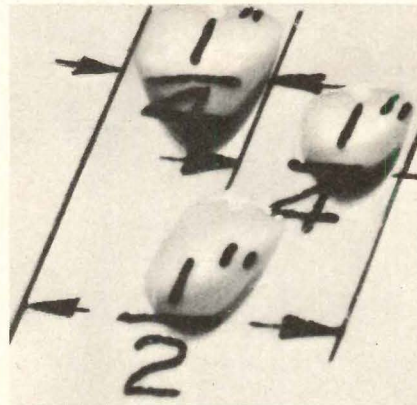


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order a second original on Kodagraph wash-off film. Then use a drop of water and erase unwanted details.

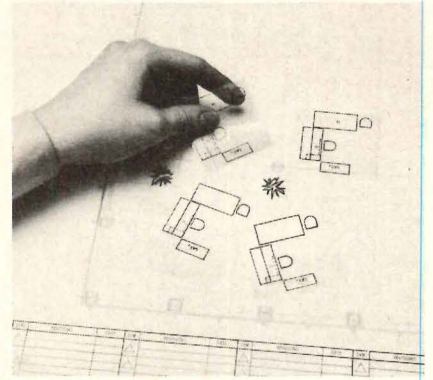


Draw your design revisions on the film and you're done.

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Why draw the same detail over and over? Kodagraph film will do the job for you. That way you draw the detail just once. Make as many photoreproductions as you need. Cut them out, paste them down, and make a

Kodagraph film print of the paste-up.



Now you have a superb second original for subsequent printmaking.

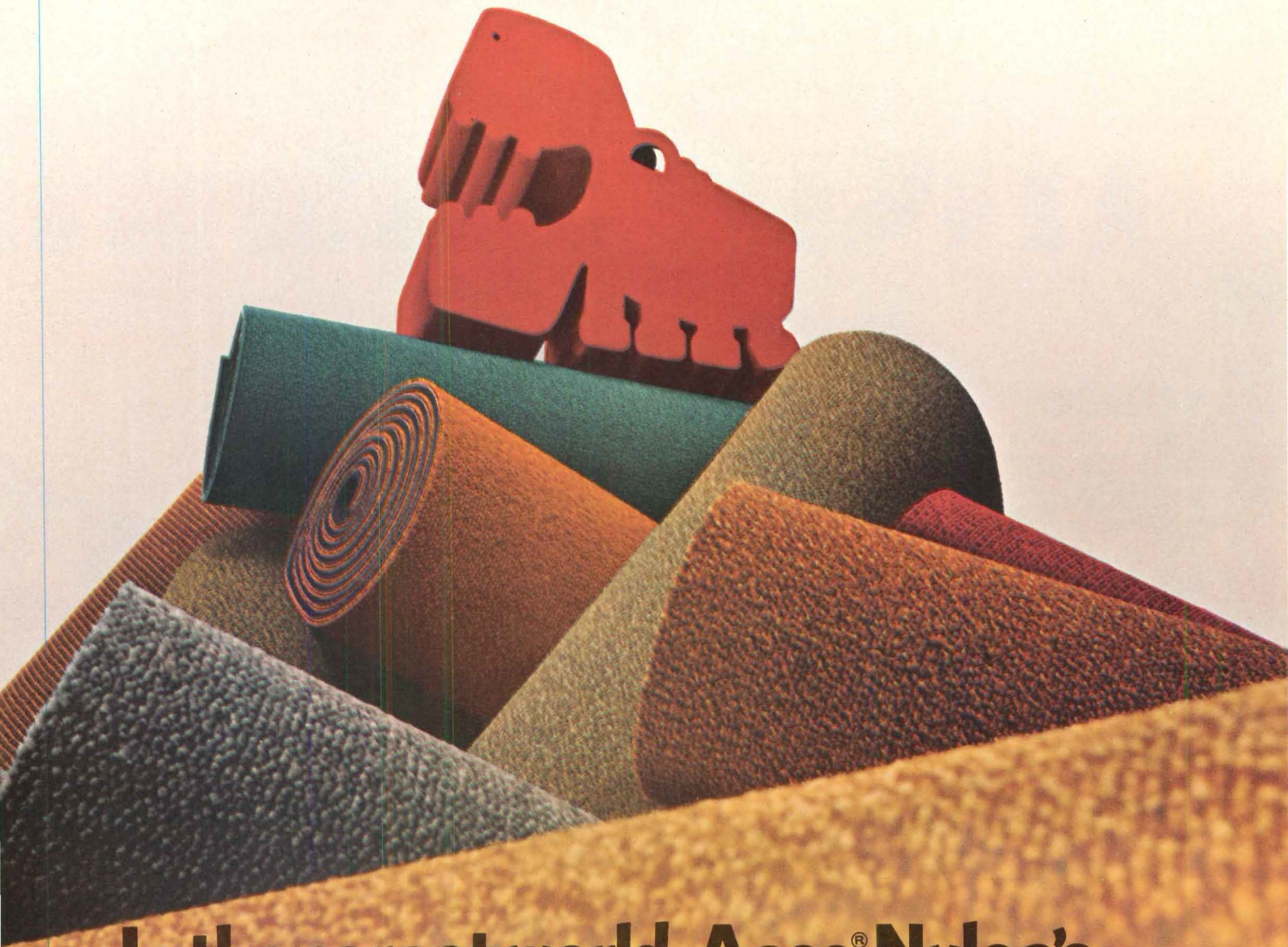
Get the facts from Kodak.

Drop us a line for more facts on how you can reduce drafting time and save money too, with Kodagraph films and papers. Eastman Kodak Company, Business Systems Markets Division, Dept. DP-851, Rochester, N.Y. 14650.

Kodak products for drawing reproduction.



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In the carpet world, Anso[®] Nylon's five year guarantee is on top of the pile.

Two Shell Plaza is Houston's new pride.

So in the public areas and hallways, this building has "TXR-10" carpeting from Commercial Carpet Corporation.

It comes with Guarantesth—the guarantee with teeth. Allied Chemical's assurance that the carpet is guaranteed not to wear more than 10% in five years, or Allied Chemical will replace it, installation included. Promise.

Allied makes this promise because we make ANSO nylon—the second-generation soil-hiding

nylon. And, we test every carpet made of ANSO nylon 10 different ways to be sure it can take it.

So look for the label with the fierce little animal who symbolizes our Guarantesth. And get the carpet with the five year wear guarantee.

For your free copy of our Contract Carpet Manual, write to: Allied Chemical Corporation, Fibers Division, Contract Department AR, One Times Square, N.Y.®

N.Y. 10036. Phone: (212) 736-7000.



Guarantesth. The guarantee with teeth.

Two Shell Plaza, Houston, Texas/35,000 yds. "TXR-10"/Commercial Carpet Corp.



There'll never be another hue...like this

MEDITERRANEA

Ⓐ SPANISH

A classic conformation of authentic design, in a total Mediterranean mood. This enduringly popular tile takes on a new character in the two-tone blue glaze. As versatile as it is timeless.

© Classic

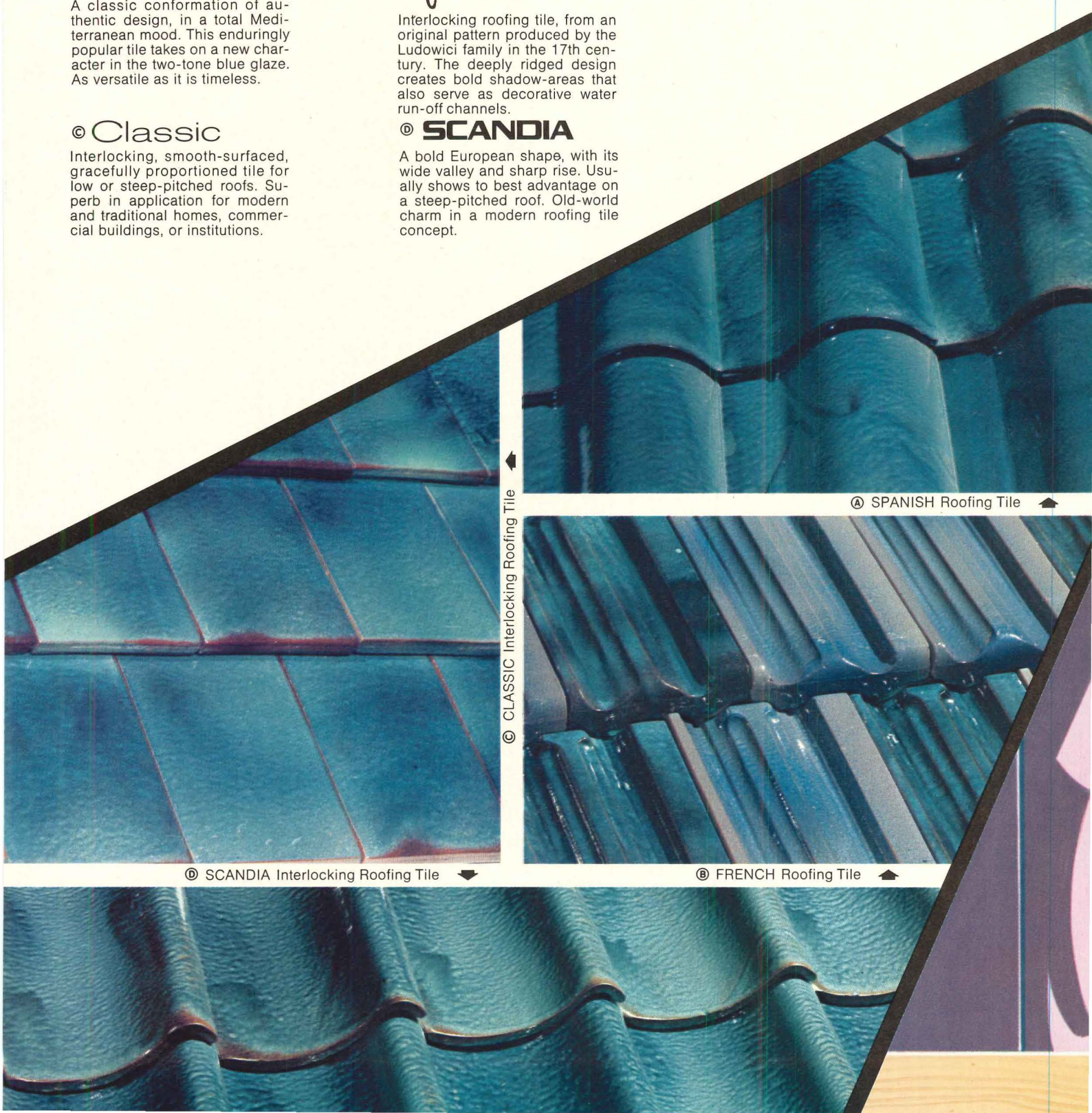
Interlocking, smooth-surfaced, gracefully proportioned tile for low or steep-pitched roofs. Superb in application for modern and traditional homes, commercial buildings, or institutions.

Ⓑ french

Interlocking roofing tile, from an original pattern produced by the Ludowici family in the 17th century. The deeply ridged design creates bold shadow-areas that also serve as decorative water run-off channels.

Ⓓ SCANDIA

A bold European shape, with its wide valley and sharp rise. Usually shows to best advantage on a steep-pitched roof. Old-world charm in a modern roofing tile concept.



© CLASSIC Interlocking Roofing Tile

Ⓐ SPANISH Roofing Tile

Ⓓ SCANDIA Interlocking Roofing Tile

Ⓑ FRENCH Roofing Tile

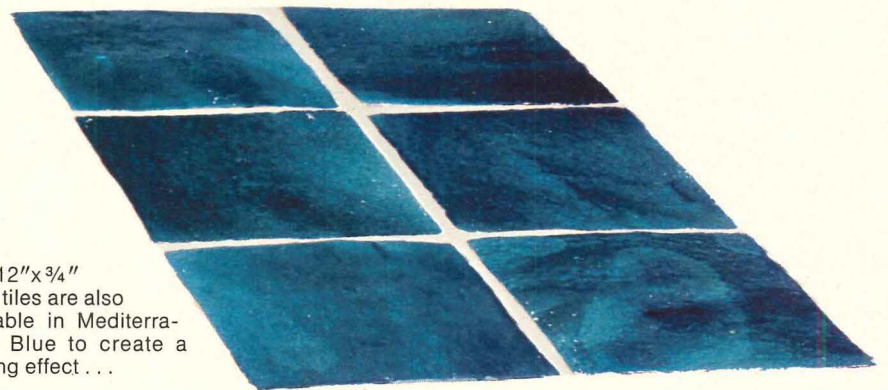
AN BLUE, by Ludowici

A sparkling color, an unusual mood in roofing tile and floor tile . . . the intense, yet lambent blue of the Mediterranean Sea. This beautiful blue glaze obviously comes from Ludowici.

Because of its alluring appearance, this distinctive two-tone blue has won growing acceptance over the past few years. The color is applied by hand to each tile, resulting in a different look for every roof. And the shape of each roofing tile pattern also subtly alters the appearance of the blue tones, lending each installation an additional dimension of unique beauty.

Pictured here is just a representative sampling of the many Ludowici tile designs that can be provided in Mediterranean Blue. Because special care must be taken to produce this delicate color, most patterns will require ten to twelve weeks from receipt of order to shipping date. Your inquiry about any smooth-surface tile design in this enticing blue glaze is invited, and will get prompt attention.

Ludowici Mediterranean Blue tile is fire-proof, decay-proof, virtually timeless in its resistance to weather and wear. No cleaning, painting or maintenance is required—it is absolutely fungus-free. And, Ludowici tile almost always outlasts the buildings it beautifies.



12"x12"x $\frac{3}{4}$ "
Floor tiles are also available in Mediterranean Blue to create a striking effect . . .

For information about the many roofing tile patterns and colors available, contact your Ludowici Distributor, or mail the convenient coupon today.



LUDOWICI-CELADON COMPANY
111 E. WACKER DRIVE, CHICAGO, ILL. 60601 • (312) 329-0630

I would be interested in seeing and hearing more about:

Mediterranean Blue Tile other Ludowici Tile

NAME _____

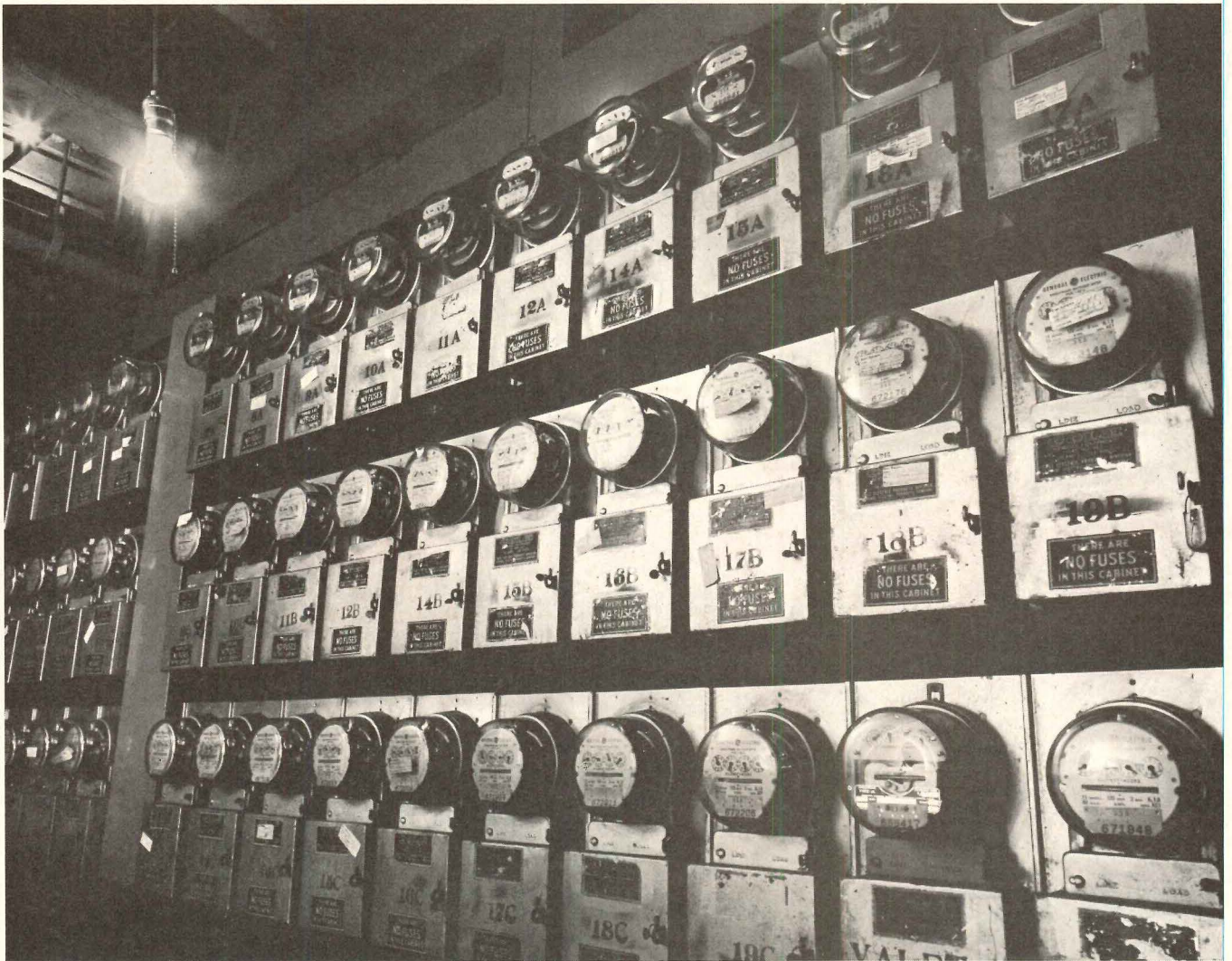
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GE's new High Efficiency PTAC Zoneline™ Unit.

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 12 on inquiry card

Goodyear's Speedramp System can help you get self-service shopping off the ground floor.



The future of self-service shopping is looking up.

And down.

To other levels of your store or shopping center.

Speedramp® passenger conveyor systems from Goodyear are changing a lot of concepts about self-service.

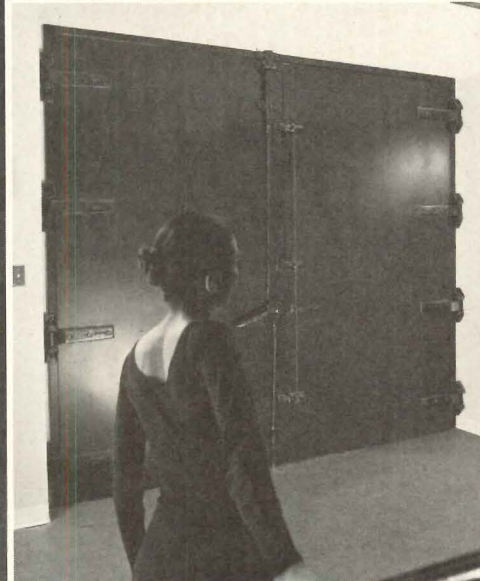
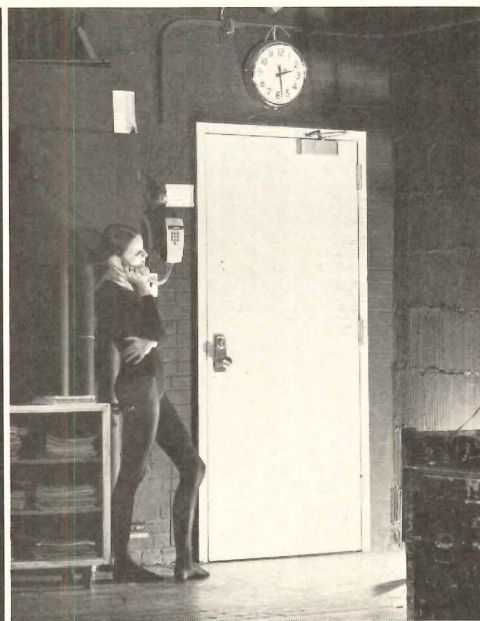
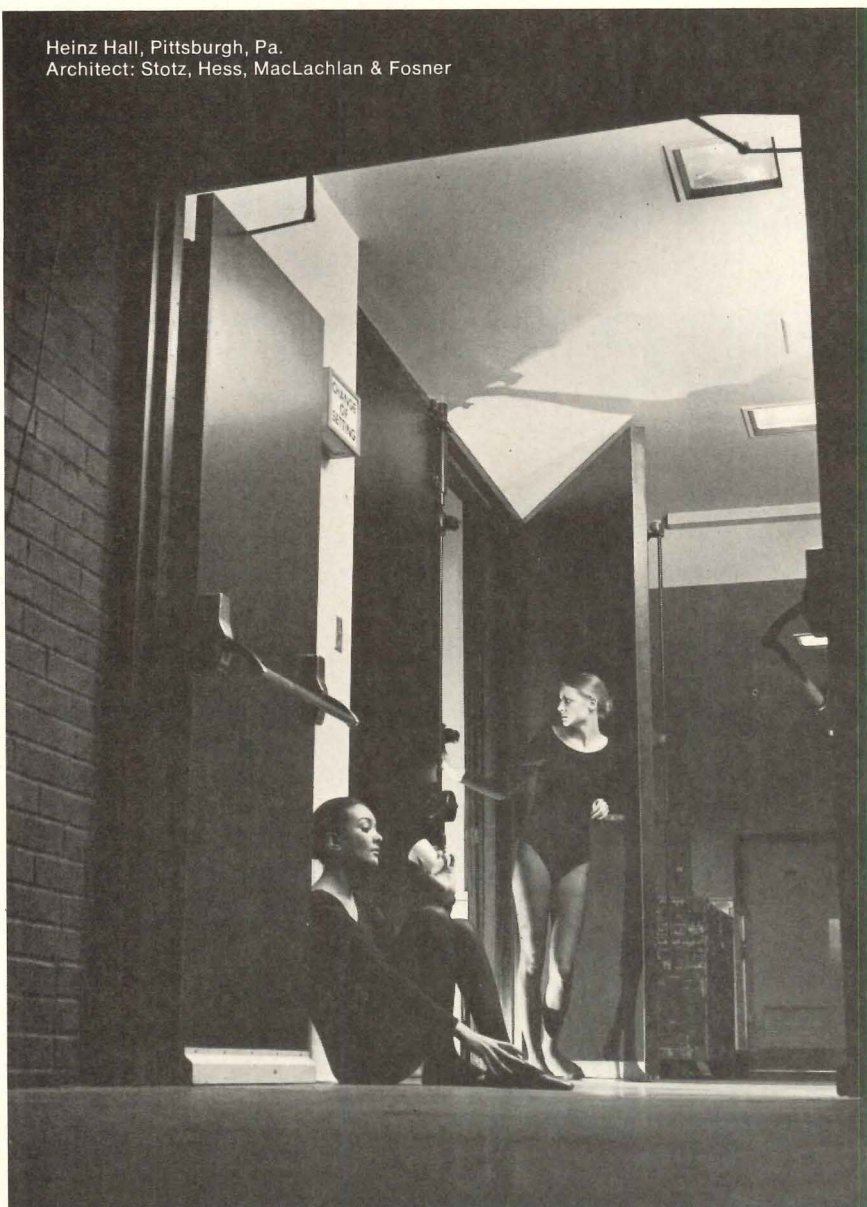
The Speedramp unit offers a continuous surface that easily accepts shopping carts as well as shoppers. Carts with grooved wheels (our special Cart-Lock feature) are secured to the ramp in transit, then released automatically.

And there you have it. Self-service shopping off the ground floor and up and down to other levels in your store or center.

Find out more today about economical, versatile Speedramp systems and the exclusive Cart-Lock feature. Just write to Goodyear, Transport Systems, Box 52, Akron, Ohio 44309.

GOODYEAR
TRANSPORT SYSTEMS

Heinz Hall, Pittsburgh, Pa.
Architect: Stotz, Hess, MacLachlan & Fosner



Overly makes the acoustical doors that others don't

When a temperamental diva is rehearsing on stage and the corps de ballet is loosening up backstage, nobody wants noisy distractions. Overly makes acoustical doors that keep unwanted noise down to a minimum. Overly acoustical doors are made with sound-transmission loss ratings up to 62 decibels. That's why they're used in so many leading concert halls, schools of the performing arts, music schools and broadcast studios. Some, like our 1¾ in. doors, look like conventional hollow metal doors and are designed for use

with conventional hardware. Other larger doors come with frames and hardware furnished by Overly.

Overly makes acoustical doors for industry, too. We can make them to protect chambers where sensitive electronic equipment is tested, and they can muffle a stripped-down jet engine's scream. If you need reliable sound protection, you need an Overly acoustical door. For more information, write Overly Manufacturing Company, 574 West Otterman Street, Greensburg, Pa. 15601.

overly
MANUFACTURING CO.
DOES WHAT OTHERS DON'T

For more data, circle 14 on inquiry card



ABOVE ALL CONWED[®] CEILINGS FOR ENDURING BEAUTY



Rock Face^{T.M.} Ceilings...handsome, but tough.

Rock Face panels are one of the interesting recent ceiling developments from Conwed. These panels are handsome enough for an executive suite, yet tough enough to go into a school and take the impact of a thrown basketball or improperly handled projection screen. Against the hazards that typically confront ceilings — rough handling in installation, frequent and sometimes careless maintenance, heavy traffic — Rock Face panels are practically indestructible.

It may be that Rock Face panels and tile are relevant to something you're working on now. Or maybe you need something quite different. It doesn't matter. The Conwed line is large and versatile and we're a company that doesn't stand still. If you haven't looked through our line lately take a look at the Conwed pages in Sweet's.

For more data, circle 15 on inquiry card



Conwed
CORPORATION

332 Minnesota Street
Saint Paul, Minnesota 55101

J-M announces a roof that's total-value guaranteed from the deck up ...truly a Blue Chip investment!

Here's a roof you can specify with confidence.

We call it the J-M Blue Chip Built-Up Roofing System. Blue Chip because it's the finest long term investment in a roof ever offered. It's brand new and it's unique. Unique because with the Blue Chip system, a building owner can enjoy the security of a built-up roof that's guaranteed from the deck up. Not just the membrane. The entire system—from vapor barrier all the way through the surfacing.

And get this. J-M will bond the roof for the entire cost of repairs to the system for the first 10 years—and to more than reasonable limits the next 10 years.

First, Blue Chip is a premium, balanced roof system, using top-quality J-M materials, performance matched and applied by qualified specialists.

Second, the J-M District Engineer and a J-M roofing specialist work with you to ensure proper specification and to make sure that there is compatibility between structure and substrate.

Then, during application by an approved roofing contractor, the J-M roofing specialist inspects the application to make sure specifications are being followed. Two years after completion—and later if necessary—other inspections are made for proper roof performance.

We recommend the new system as the best built-up roofing investment available.

What better reason for calling it "Blue Chip?"

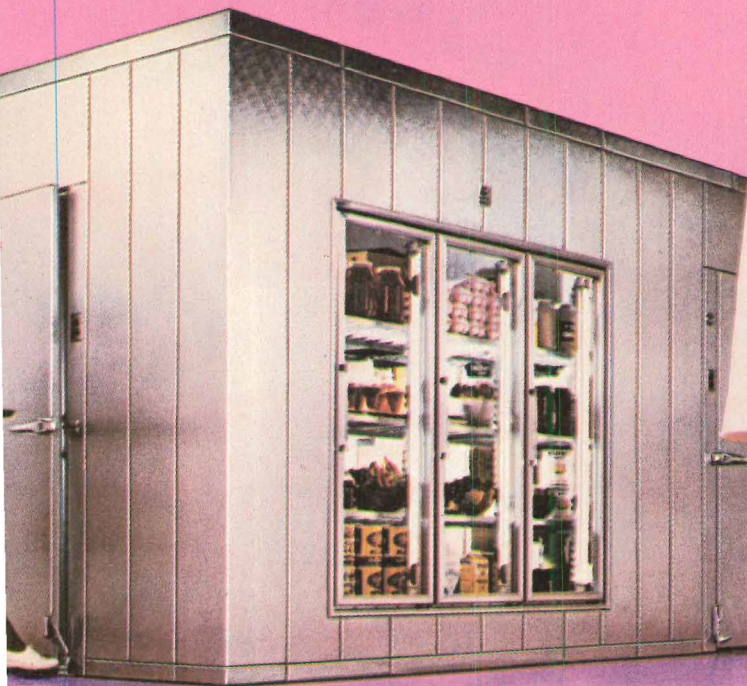
Details are yours, free, from your J-M district sales office. Or send for Blue Chip brochure. Write: Johns-Manville, Post Office Box 5108, Denver, Colorado 80217.



Johns-Manville

For more data, circle 16 on inquiry card

**Bally Walk-Ins
belong where
special food fare
means better
health care
for young
and old**



Walk-In Coolers and Freezers belong everywhere mass
ing takes place. They can be assembled in any size for
or outdoor use from standard panels insulated with
inches of foamed-in-place urethane, UL 25 low flame
d rated and Factory Mutual research approved. Choice
ainless steel, aluminum or galvanized. Easy to enlarge
easy to relocate. Refrigeration systems from 35°F. cooling
nus 40°F. freezing. Subject to fast depreciation
vestment tax credit. (Ask your accountant.)
for 28-page book and urethane wall sample.
Case & Cooler, Inc., Bally, Pennsylvania 19503.



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The Brick* that has everything

- Rustic antique beauty
- Wide choice of permanent colors
- Strength that exceeds all requirements, by actual test
- Variety of sizes: oversize standard, modular standard, large utility and 8" thru-the-wall
- Competitively priced with ordinary clay brick
- Available NOW in many areas

Rus-tique Brik* is truly antique and rustic... and it's available for immediate delivery in many areas of the country.

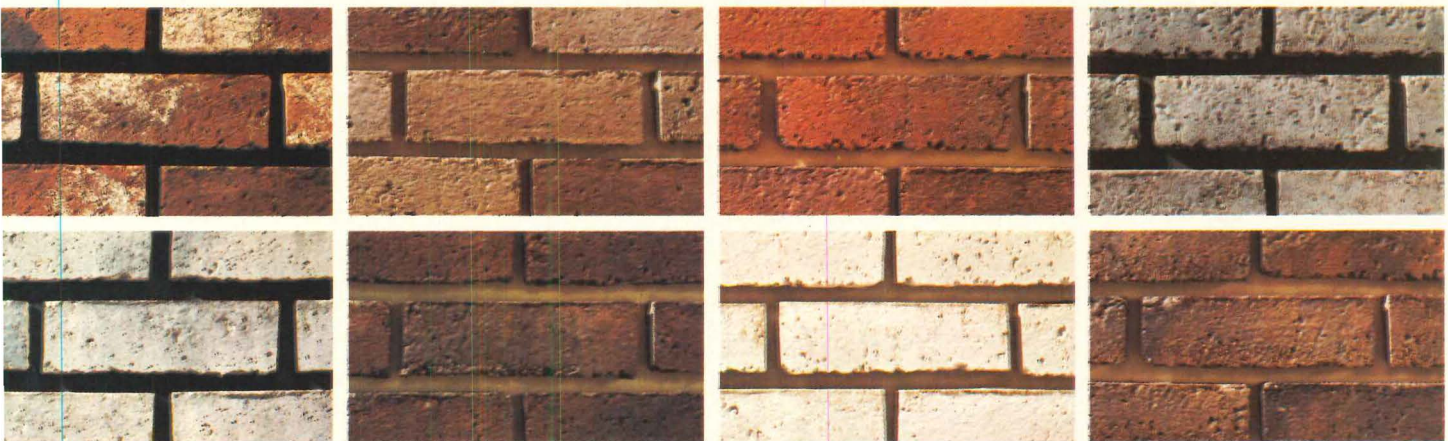
Rus-tique Brik* is a dense aggregate concrete... practically impossible to distinguish from a clay brick... and has all the strength and lasting qualities you expect from a concrete product.

And it's colorful! The coded formulas for color batching are perpetually consistent and permanent.

Like more information and our architectural file folder? Write or call:

TOLL FREE (800) 331-3288

Rus-tique Brik Speedy Info Line



Shown here are only a few of the wide range of permanent colors available from your nearest Rus-tique Brik plant. Final color selection should be made from actual samples.*

Rus-tique Brik[®]

INTERNATIONAL

Post Office Box 7603, 2202 East 49th Street, Tulsa, Oklahoma 74105, (918) 742-7321

que Brik is a dense aggregate concrete—no clay used.

For more data, circle 18 on inquiry card



Norton® Series 1600 Door Closers...

Almost a Legend of Reliability

We have no way of knowing the many different types of doors where the Norton Series 1600 closer has been installed. We do know the number, though, and it runs into the hundreds of thousands.

Even with all those closers in service, the problem installations have been so few that we can say the reliability of the Norton 1600 is almost legendary.

But that's only part of the Series 1600 story. It's probably the

most versatile closer available. It's non-handed; and it installs top-jamb, parallel arm or regular arm just as it comes from its box. There's a choice of regular mounting, back mounting or invisible mounting. It's attractive in a slim, functional way. And, it's unobtrusive.

If you're familiar with the Norton Series 1600, include it in your next job where you need a reliable, attractive, versatile closer. If you're not familiar with it, ask your

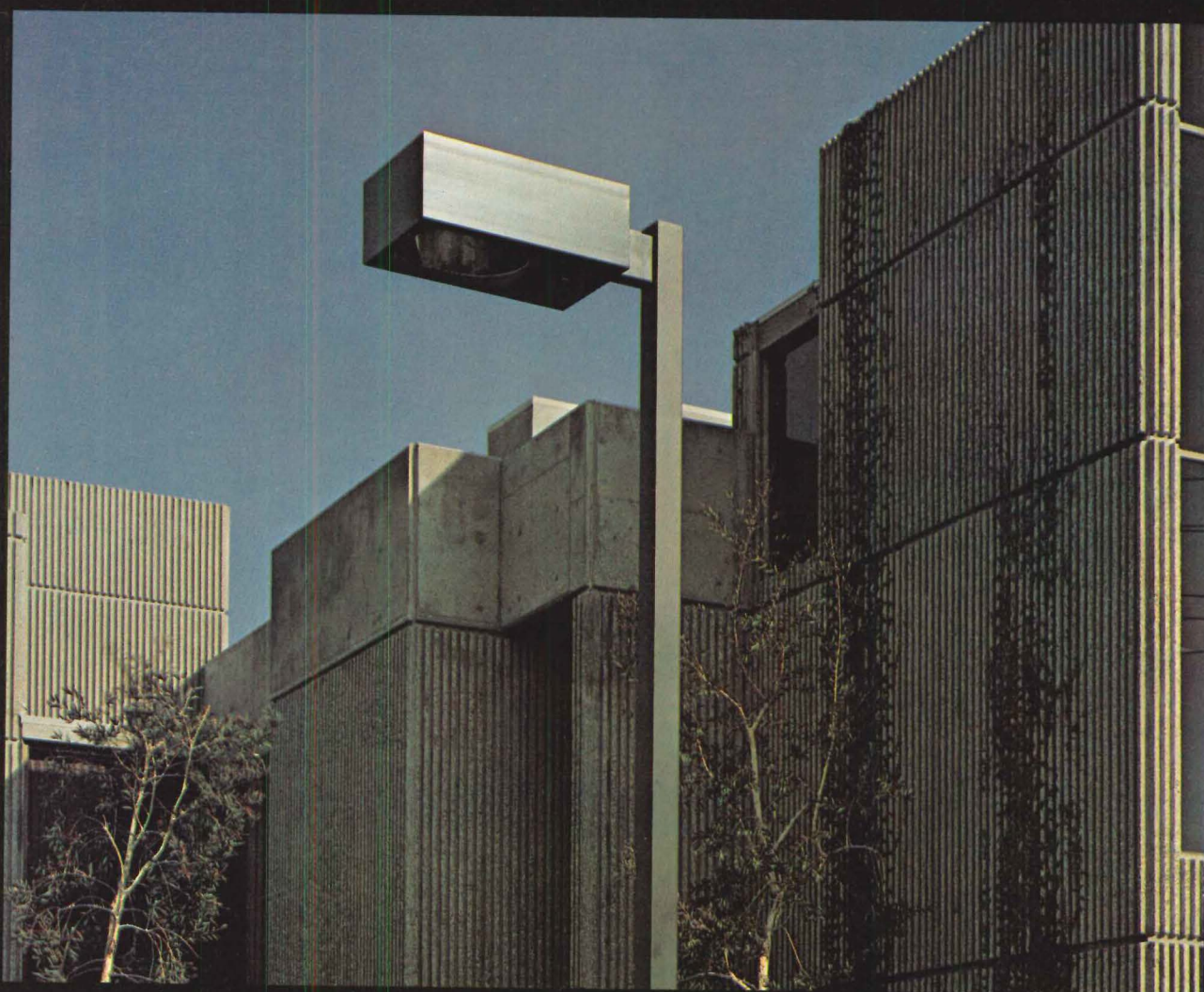
Norton Representative or contact Eaton Corporation, Lock and Hardware Division, Norton Marketing Department, Box 25288, Charlotte, North Carolina 28212.

**Norton Door Closers . . .
25 years of Aluminum Reliability**

EAT•N Security Products
& Systems

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Married light and architecture

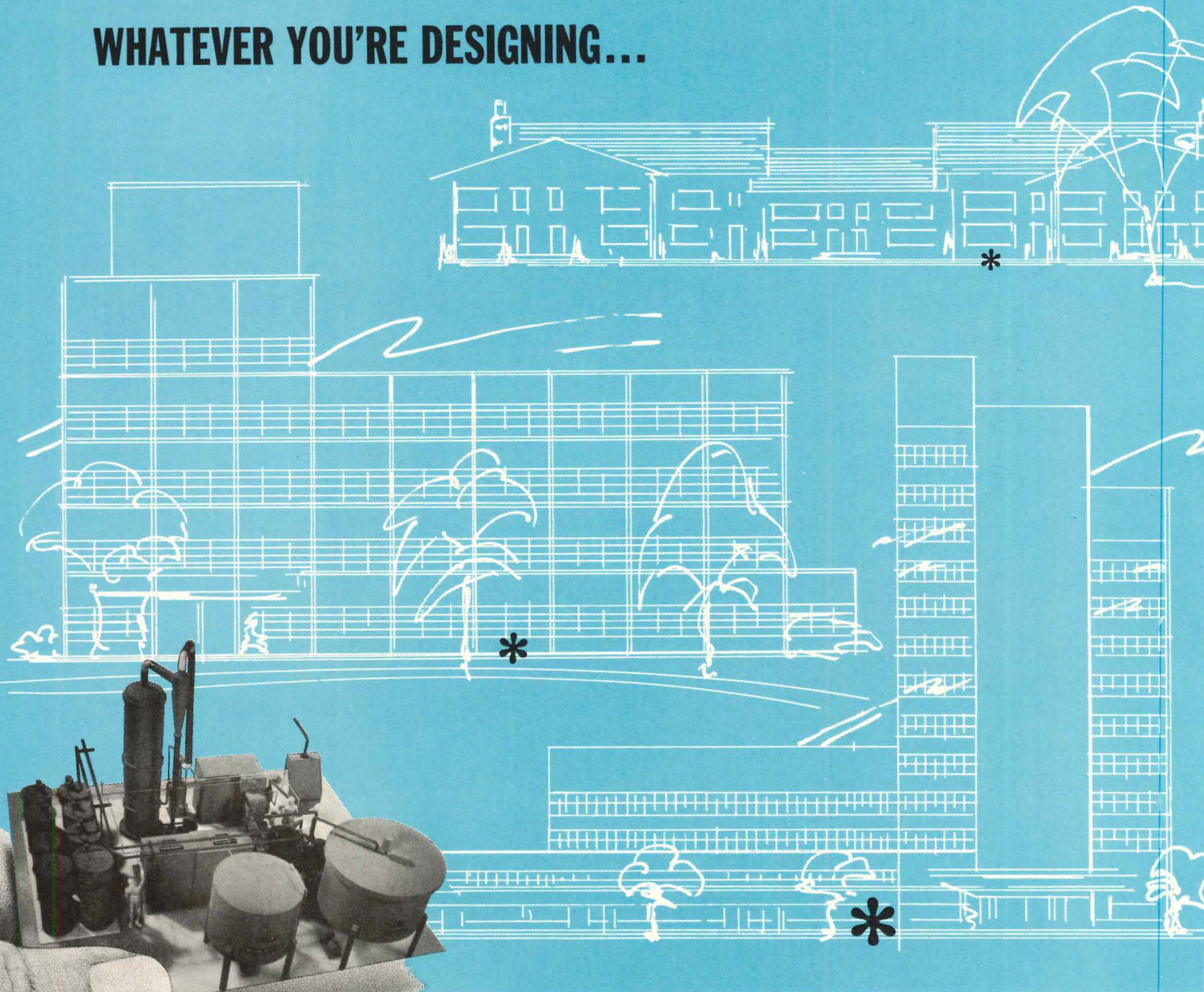


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WHATEVER YOU'RE DESIGNING...



...the engineering for a sewage disposal plant
— compatible with your total utility package —
may already be on our shelf.

It's a physical-chemical plant. Why? Because P-chem waste treatment is compact, complete, quiet, odorless. Yet the tertiary-treatment levels are capable of meeting the toughest environmental requirements, thanks to modern, proven, cost-competitive technology. And, without the size, sights, sounds and smells of biological plants

Consider the camouflage possibilities for developments, apartment buildings and institutions. Airports. Executive parks

It's a great way to master land area economics, the costs of long sewerage intercepts and of sewage moratoriums. Marry *your* setting — exotic or functional — with our guarantee of clean, quiet, odorless, dependable performance you can't get from biological plants

AWT SYSTEMS, INC.

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AWT73-2

News in brief

The Administration has sent to Congress the Better Communities Act which would authorize funding of special payments to states, urban counties and cities up to \$2.3 billion. This is the long-expected Administration program for switching housing assistance from Federal categorical aid programs to broad special revenue sharing. In making the announcement HUD Secretary James T. Lynn said local bodies will begin deciding for themselves how to spend the money a year from June 30, when the program—if enacted by Congress—takes effect.

Owens-Corning Fiberglas Corporation announces the Second Annual Energy Conservation Awards Program, open to architects, engineers and owners of buildings specifically designed to conserve energy. A letter indicating intent to enter must be received by Owens-Corning not later than June 30, 1973. Details on page 36.

A \$2 billion new town for the Jersey City, New Jersey waterfront has been proposed, to provide housing for 60,000 persons and jobs for 12,000. The master plan by architects Marquis and Stoller is shown on page 45.

A Congressional study group has recommended a \$1 billion annual increase in research to meet the energy crisis, including an attempt to replace petroleum with synthetic coal gas. For the long term the study group recommended stepped-up research to bring solar, geothermal and cheap nuclear energy into practical use by the 1980's. The \$1 billion increase would bring annual energy research spending to between \$2.5 and \$3 billion.

If you have a summer job for an engineering student, McGraw-Hill would like to know. The publishers of the RECORD are compiling a listing of summer jobs for engineering students to be sent to placement directors at major engineering colleges. If you are interested in hiring a student, see the coupon ad in this issue, page 262.

The work of Moshe Safdie, architect of Montreal's Habitat, will be presented in his first major exhibition, San Francisco Museum of Art, through June 17, coinciding with the AIA convention. Organized by the Baltimore Museum of Art and financed with a grant from the National Endowment for the Arts, the exhibit was designed by the architectural firm of O'Malley & Associates, Inc. Details on page 36.

The Senate Interior Committee has completed hearings and is marking up Chairman Henry Jackson's (D-Wash.) bill for grants to states to develop comprehensive plans for public and private land use. Critics claim the bill encourages statewide zoning of all land. A controversial addition to the bill is an administration-backed provision calling for the withholding of Federal funds from any state that fails to adopt and implement Federal guidelines on the use of all land.

"Crime prevention through environmental design" is the title of a \$2 million information distribution program to be sponsored by the Justice Department, which sees a correlation between the physical environment and street crime and burglary. Bidding for preparation of the program will be open to both profit and non-profit groups. Details on page 36.

Air structures in education will be discussed at Antioch College, Columbia, Md., May 22-24, sponsored by the National Academy of Sciences in cooperation with Educational Facilities Laboratories. Case study presentations will be made on recently complete structures. Further information can be obtained from Ben H. Evans, Building Research Institute, 2101 Constitution Ave., N. W., Washington, D. C. 20418.

The Association of Student Chapters, AIA, needs your help in establishing a National Student Job Bank. Anyone who has information concerning existing local or regional job banks for architectural students is asked to contact the ASC/AIA, 1735 New York Avenue, N.W., Washington, D. C. 20006, attention: Ellen Meyerson. All information will be used to compile a national job prospects by area of the country.

An AIA conference on "The Architect and Ecology" is scheduled June 7 and 8, at the Mayflower Hotel, Washington, D.C. The conference will focus on ways architects can act constructively to ease tensions created by the conflicting demands and ideas of environmentalists and developers. Contact Carter McFarland, AIA, 1735 New York Avenue, N.W., Washington, D.C. 20006

Noise control of mechanical and electrical equipment in buildings will be discussed June 18-20 in a seminar at Pennsylvania State University. Contact: Howard F. Kingsbury, Pennsylvania State University, 101 Engineering "A" Building, University Park, Pennsylvania 16802.

A conference for architects and engineers on the Occupational Safety and Health Act of 1970 will be held June 25-26, 1973, at the Statler Hilton Hotel, Washington, D.C. Contact Steven Rosenfeld, AIA, 1735 New York Avenue, N.W., Washington, D.C. 20006.

THE CHOICE: REINFORCED CONCRETE



1820 Rittenhouse Square Condominiums, Philadelphia.
Architects: Richard E. Martin Associates, Philadelphia.
Consulting Engineers: David R. Wittes, Philadelphia.
Concrete Contractor: R. E. Carrick Co., Philadelphia.

FRAME SAVINGS:

\$125,000.

The minimum cost condominium.

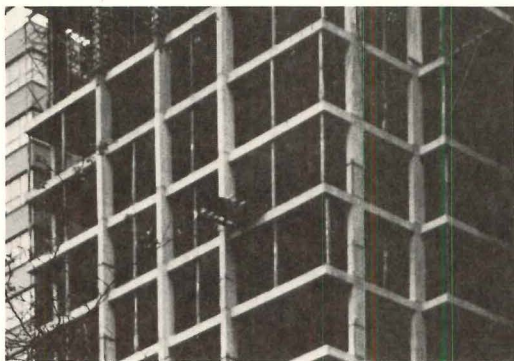
Philadelphia's first high-rise condominium overlooks historic Rittenhouse Square. This 20-story, nearly \$3 million dollar structure was inventively designed in reinforced concrete using Grade 60 rebars. Surprisingly, the developer of the building is the owner of a steel fabricating company. So the structural engineer (naturally enough) costed out the structure on the basis of steel framing. Realizing that the most economical design might lie in an alternate solution, he also carefully cost-analyzed other framing methods. The results were convincing—and so were the possible savings: over 14% in favor of the concrete frame.

Flat-plate reinforced concrete frame won the economy run.

Among the structural systems analyzed were two basic frame designs.

1. Steel frame—plastic design with braced frames and composite beams or joist floors.
2. Concrete—flat plate with high-strength Grade 60 rebar reinforcement, using concrete walls for lateral stability.

The structural engineer's recommendation was for the most economical frame design of the two—flat-plate reinforced concrete, at a cost of approximately \$850,000. And when the developer's own engineers made an independent design analysis of the structural steel frame, the frame costs came out \$125,000 higher than the reinforced concrete design.



Flat plate design using Grade 60 rebar made the thin 6½-inch floor slab possible, resulting in substantial savings in overall building height.

Budget floors mean room with a view.

The key to this \$125,000 saving was the flat-plate design that permitted least floor-to-floor height, as well as offsets in the front exterior wall to give the most favorable views of Rittenhouse Square. The short spans with the Grade 60 reinforced flat-plate design made 6½-inch floor slabs possible. Contrast this with steel framing, which would have required 20-inch floors plus bracing and moment connections.

Fireproofing was part of the bargain.

The building's central core automatically resulted in a fireproofed service area as required by the Philadelphia Building Code. Added to this, was the inherent high fire resistance of the balance of the reinforced concrete structure. Eliminating the cost of fireproofing was an important part of the \$125,000 savings of concrete over steel.

But the savings don't stop there. Reinforced concrete also has superior insulation values, helps save on heating and cooling costs. And its sound transmission values are low, helping keep high-rise residences quiet and peaceful.

Grade 60 rebar gives strength to save with.

The strength to win out over other design choices is the Grade 60 rebar story. Its 50% greater yield strength makes for truly economical building, as well as slimmer columns, more floor space, lower construction costs. And Grade 60 is available locally to help keep construction schedules on target. In this area approximately 70% of all reinforcing bars used are now Grade 60.

Reinforced concrete: first choice for saving big.

When you consider all the alternatives, one building system has everything going for it: proved economy, design freedom, early starts, fast construction, and less maintenance. Cast-in-place reinforced concrete plus Grade 60 rebar. Those who choose it, save with it.

For further technical data,
write for Report P-C.



CONCRETE REINFORCING STEEL INSTITUTE

228 North LaSalle Street, Room 1204 • Chicago, Illinois 60601

For more data, circle 25 on inquiry card



1 FURNITURE BY CHARLES EAMES AT THE MUSEUM OF MODERN ART

"Charles Eames, Furniture From The Design Collection," an exhibition that traces his technological and design innovations from 1940 to the present will be on view at The Museum of Modern Art, New York City, through July 1.

Drawn entirely from the Museum's collection, the exhibition includes more than 50 objects—39 chairs as well as examples of multiple seating, tables, and storage units.

Seating and other living room furniture by the team of Eero Saarinen and Charles Eames made use of plywood shells, not bent in one direction, as had already been done by Alvar Aalto, but molded in two directions.

The molded plywood side chair (shown) with which Eames achieved worldwide renown entered production in 1946 and has since been continually manufactured by Herman Miller Inc., along with his later designs. Charles and Ray Eames' own experiments in molding plywood continued from 1941 to 1948.

Eames and his associates seldom work from drawings; preliminary sketches, according to Eames have consisted mostly of rough notes meant to indicate a general configuration. Designs are worked out at full scale, the compound curves of seat and back elements being developed over closely spaced templates. This method allows frequent tests for comfort, and construction drawings for the metal molds that will later be required for mass production are made from the templates.

SOLAR ENERGY FOR BUILDINGS TO GET MAJOR RESEARCH

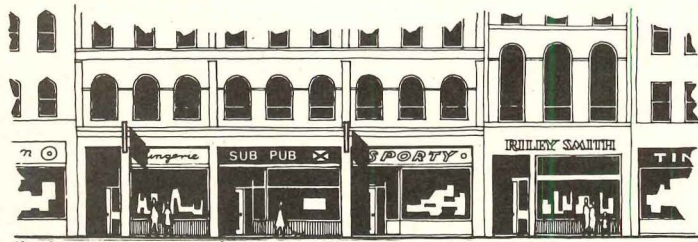
Solar energy for heating and cooling of buildings will get a big research boost in fiscal 1974 (beginning July 1) if plans of the National Science Foundation are carried through to their conclusion.

Details of this and other NSF proposals were laid before a House subcommittee on science, research and development in March by Dr. Alfred J. Eggers, Jr., the Foundation's assistant director for research applications.

The solar energy program and many others structured into the NSF plans come under the broad umbrella of RANN (Research Applied to National Needs).



the framework obscured



the framework expressed

2 BOSTON'S NEW SIGN CODE TO UPGRADE ENVIRONMENT

The Boston Redevelopment Authority succeeded in amending the city's zoning code so that for the first time Boston has regulations covering on-premise signs for business throughout the city.

Work on the amendment began well over a year ago when the city's Law Department, members of the Urban Design staff of the BRA, and representatives of the sign industry held initial meetings to draw up the new regulations.

General direction for formulating the new code came from "City Signs and Lights," a study done for the BRA by the Cambridge architectural firm, Ashely/Myer/Smith. As work proceeded it became clear that Boston, because of its singular character, would need a code that eliminated visual pollution, but was flexible enough so that the city did not lose the flavor and life sometimes provided by well-designed signs. At the same time, the BRA did not want to impose a code that had an adverse effect on the sign business in particular, and the business climate in general.

Under the new regulations, the size of signs is based on a sliding scale determined by the width of the street, the building faces and the building frontage.

QUALITY OF LIFE DISCUSSED BY ARCHITECTS AND PLANNERS

Imaginative concepts for improving the quality of life in our major cities were presented recently by four distinguished architects and planners at the "Man is The Measure" seminar conducted by The American Iron and Steel Institute.

Louis I. Kahn, who has been awarded the highest honors in his profession by The American Institute of Architects and The Royal Institute of British Architects, was one of the featured speakers. The other participants were Lawrence Halprin, George Nelson and Niels Diffrient. Richard E. Paret, assistant vice president of The American Iron and Steel Institute, also addressed the audience.

The salient principle Kahn has applied to his buildings throughout the world he said is "the room is the beginning of architecture." Broadening

his thesis, Kahn described the streets of cities as "community rooms." He advocated the diverting of automobile traffic from residential streets to preserve their character and give them a feeling of intimacy.

Lawrence Halprin, an environmental designer known for the malls and plazas created by his San Francisco firm, pointed out that cities have given major impetus to all important culture. "It seems to me that all of the cities I have been in that still are full of vitality are populated 24 hours a day," he said. To stimulate the participation of all people in the use and future planning of cities, Halprin revealed that his firm has introduced "Take Part" workshops, described as "modern versions of the New England town meeting and the old Indian pow-wow."

George Nelson revealed he is working on putting business buildings under synthetic hills to "serve visually as a new element in the cityscape—soft rather than hard, green instead of gray, relaxed rather than tense."

Niels Diffrient, an industrial designer with Henry Dreyfus Associates in New York, presented a challenging proposal for measuring man's emotional responses to technological changes. Observing that only a fraction of the testing of new products, machines and buildings is performed with the people who will be affected by them, he suggested the formation of "interdisciplinary teams" that embrace the physical and social sciences to create better designs.

FEDERAL FIRE COMMISSION STUDYING USE OF SPRINKLERS

The National Commission on Fire Prevention and Control is carefully considering its position on sprinkler systems versus other fire retardant means as it approaches July 1, the deadline for submission of its report to Congress.

In recent testimony to a Senate subcommittee on housing for the elderly, Dr. Richard E. Bland, Commission chairman, made the flat statement that "the requirement of complete automatic sprinkler systems is the available technical solution toward control of fire in housing for the elderly." He said he makes no distinction between the types of care or housing units which are involved.



3 WORLD TRADE CENTER DEDICATED IN NEW YORK CITY

With Governor Rockefeller of New York, Governor Cahill of New Jersey, Secretary of Labor Peter J. Brennan, diplomats from 45 countries, hundreds of Federal, state and municipal officials in attendance, the World Trade Center was officially dedicated in New York City on April 4.

The \$800 million twin 110-story towered complex in lower Manhattan was designed by Minoru Yamasaki Associates and Emery Roth and Sons with Tishman Realty and Construction Company as general contractor.

At present 304 firms employing 7,000 people are doing business in the complex which is jointly operated by the Port Authority of New York and New Jersey. Upon completion in 1975, 50,000 persons will work in the Trade Center and 80,000 visitors a day are expected. Work was begun in 1966.

AIA ENCOURAGES FEDERAL ROLE IN LAND-USE POLICY

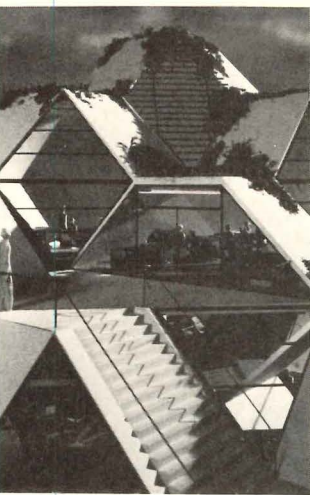
The American Institute of Architects has recommended that the Federal government take a strong leadership role—including the use of sanctions where necessary—in the development of a sound national land-use policy.

Archibald C. Rogers, first president of the Institute, told a Congressional hearing on state land-use legislation that there is a need to create a national growth policy board in the Executive Office of the President to develop policy and coordinate Federal programs affecting urban growth.

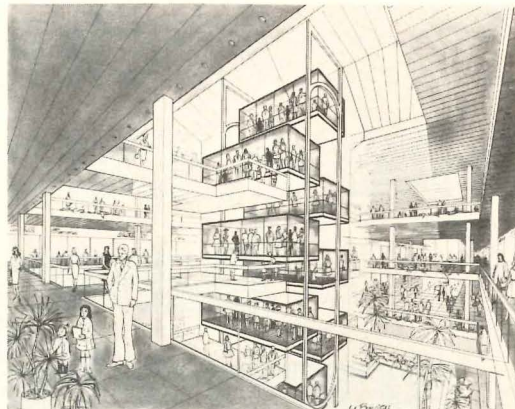
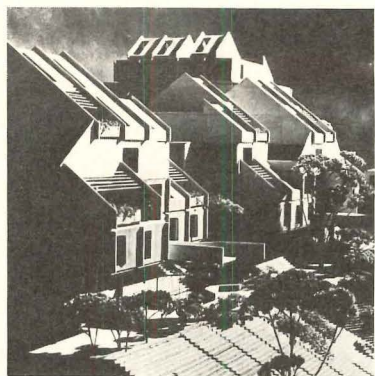
The sanctions which, he said, could be applied, are to make it "mandatory for all states to prepare sound land-use patterns."

In his testimony before the House subcommittee on environment, Rogers encouraged Congress to examine various eastern and western European nations have done.

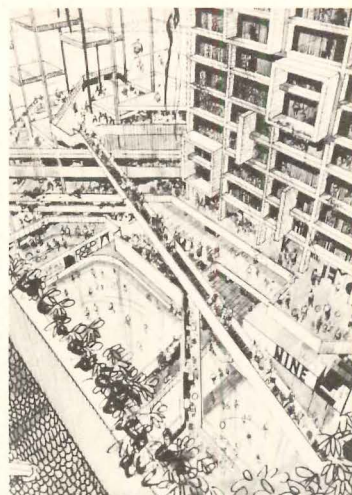
Underscoring the need for strong Federal guidance in land-use issues, Rogers said that many American architects, planners, developers and members of Congress have been impressed by the orderly and planned town development and natural resource management in several European countries.



4



5



OSHE SAFDIE EXHIBIT INCIDES WITH CONVENTION

Oshe Safdie: For Everyone a Garden" an exhibition of the work by the architect and urban planner who first received recognition for his design of Habitat at Montreal's Expo '67 is being presented at the San Francisco Museum of Art through June 17. This, the major exhibition highlighting Safdie's achievement, was organized by the Baltimore Museum of Art and made possible by a grant from the National Endowment for the Arts. It is initially being presented in San Francisco to coincide with the annual meeting of the American Institute of Architects.

Safdie's large-scale housing and planning projects and the socio-philosophical theories which inspired them have brought him into the forefront of modern architectural design and urban planning during the last five years. The exhibition reflects the belief that Safdie and other architects like him are major players in the battle to reverse present urban trends.

A unique format has been developed for this presentation by the Baltimore architectural firm of O'Malley & Associates, Inc., in cooperation with Oshe Safdie and the staff of the Baltimore Museum of Art. Current architectural projects for Jerusalem and Espring in Baltimore, Md. (right) are included.

Safdie's design for the San Francisco State College Student Union building (left) was selected by 15,000 students who were prepared to pay for their own building. The Board of Trustees, which runs all state colleges in California, rejected the design though it was approved by the College President, faculty senate and advisory committee. Never built, it would have been a classical example of a highly complex institutional facility.

DO CLARIFIES POLICY ON MAKING COMMITMENTS

extent to which the Department of Housing and Urban Development will honor its loan and grant commitments was spelled out by HUD Secretary James T. Lynn during testimony before the House Subcommittee on Housing. Lynn said that commitments which have been made under subsidized

housing programs prior to their suspension would be honored along with bona fide commitments affecting designers, builders or developers, who have expended substantial amounts of money in the assumption their projects would be approved, so long as they satisfy HUD requirements. As to the transition resulting from the move from urban renewal and model cities-type programs over to revenue sharing under the Better Communities Act, the Secretary noted that enough funds are available to permit existing programs to continue at a level at least equal to that of recent years and that communities should be able to commence their program activities under the proposed Better Community Act by July 1, 1974.

JUSTICE DEPARTMENT STUDIES CRIME PREVENTION AND DESIGN

The Justice Department appears to be convinced, on the basis of earlier studies involving analysis by enforcement experts, that street crimes and burglary can be markedly reduced or even eliminated through new environmental designs. With the title "Crime Prevention Through Environmental Design" the Justice agency Law Enforcement Assistance Administration will go into the open market for bids on a program to be structured for it at an estimated cost of \$2 million.

The successful bidder, either a profit or non-profit group, must set up an organization to disseminate knowledge gathered by LEAA's research efforts and will be given 18 to 24 months to establish the required activities. The winner, possibly a university, will systematically perform applied and demonstration research, offering technical assistance and develop curriculums for academic and professional schools to reduce crime. Aimed at housing, schools, transportation systems, commercial areas, etc., this would be achieved through the application of environmental and architectural design concepts. The techniques developed would be applied to design of alleyways, recessed entrances, lighting, window placement, building height and size, access and egress, public areas and more prosaic elements such as window- and door-frames, and other security devices.

OWENS-CORNING ANNOUNCES ENERGY CONSERVATION AWARDS PROGRAM

Owens-Corning Fiberglas Corporation has announced its Second Annual Awards Program (in U.S. only) to recognize architects, engineers and owners of buildings specifically designed or equipped to conserve energy.

Charles E. Peck, Owens-Corning construction group vice president stated, "It may be possible to save more than a billion dollars worth of fuel and power each year if all our industrial, commercial and institutional facilities are conceived and built with energy conservation in mind. We hope to stimulate new designs and new concepts directed at that goal."

The Owens-Corning competition is open to all registered architects and licensed engineers practicing in the United States. Any industrial, commercial, governmental or institutional building completed, under construction or commissioned and being designed on the date of entry is eligible. Speculative designs are not eligible, nor is work performed for Owens-Corning or by members of the awards jury or their firms.

A letter indicating intent to enter the 1973 competition must be received by Owens-Corning not later than June 30, 1973.

Entries themselves must be submitted by August 31, 1973. Awards will be presented in the fall of 1973.

For additional information on the awards program and entry requirements interested parties should write Energy Conservation Award Program, Architectural Products Division, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.

EXTENSION OF CAPITOL WEST FRONT PROPOSED AGAIN

Despite votes last year in both the Senate and House of Representatives against the proposed extension of the West Front of the U. S. Capitol Building, efforts are being renewed this year to gain Congressional approval.

The West Front extension is proposed to create more facilities for tourists and needed office space and meeting rooms for members of Congress. The present plan, submitted

by the late Architect of the Capitol, J. George Stewart, in 1967, will result in a facility with 269,528 gross square feet, with only 162,486 square feet of usable space. The American Institute of Architects has urged that other alternatives to the proposed extension be carefully considered—as one example, an underground expansion. If an underground alternative were chosen, it would have the advantage of lowering the construction cost and could be designed asymmetrically to meet the greater demands for space expressed by the House of Representatives. The AIA has stated that a prerequisite to any new construction on Capitol Hill should be the creation of a comprehensive plan for the entire area.

5 HIGH-RISE SHOPPING CENTERS SPAWN NEW ELEVATOR DESIGNS

A new system for speeding vertical movement of shoppers, called the *Revolorator* (shown left), is planned for the multi-level Colonial Mall shopping center now under construction in Morristown, New Jersey.

Conceived by the office of Lathrop Douglas, architects, the *Revolorator* is being built by Hitachi, Ltd., a company which claims to have also produced the world's fastest elevator which can travel 1800 fpm.

The *Revolorator* is a revolving elevator with cabs moving up and down in unison on a continuous belt, something like a Ferris wheel. Each cab holds 150 people and is glass-enclosed to give riders (40,000 per hour) a broad view of stores as they pass each level. Cabs move in unison every 60 seconds.

Mr. Douglas feels that today's sprawling one-level shopping malls will be replaced with high-rise "omni-centers" with multiple-level shopping, offices, restaurants, entertainment, apartments and impressive public areas. From a business and social standpoint, these centers will be a key factor in urban renewal.

One such center is the Omni International (shown right), under construction in Atlanta, 14 stories high and featuring, again, an unusual vertical conveyance—the world's longest escalator, rising eight stories.

more news on page 39

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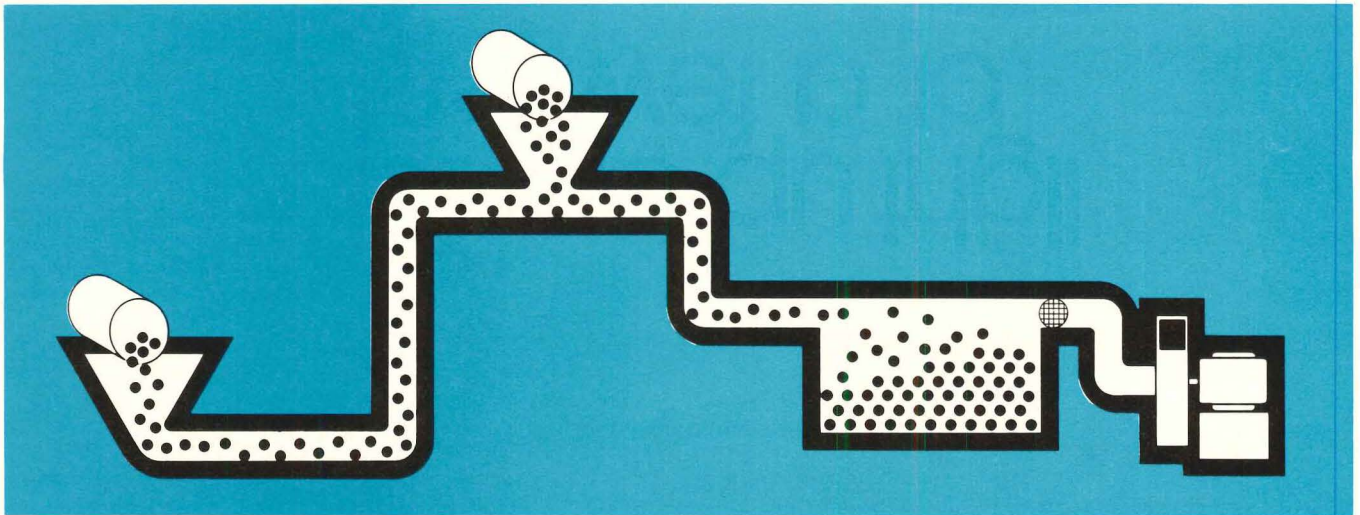
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REPORT CLAIMS BETTER BUILDING PRACTICES REDUCE DEATHS, DAMAGE

With property losses from disasters averaging about \$1 billion annually, the National Bureau of Standards and the National Science Foundation have just published a 465-page volume aimed at closing the gap between building research and practice.

There is growing concern with a need to construct safer buildings, these agencies say, and they have responded with a series of documents dealing with studies of structural failures under actual disaster conditions.

The latest report, titled "Building Practices for Disaster Mitigation," covers a workshop held at Boulder, Colorado last fall and presents recommendations for reducing death and destruction through better building practices.

The question of how readily the findings and proposals will result in building code changes throughout the nation arises immediately. NBS spokesmen said confidently they expected the recommendations would be implemented through code bodies and building officials with the help of professional society activity and noted that the National Conference of Building Codes and Standards was operating to make the improved technology available to states and cities, model code agencies and other concerned.

The volume can be ordered from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402 at \$30 per copy. Order Catalog No. 29/2:46.

CHICAGO PLAN: PRESERVATION OF HISTORIC ARCHITECTURE

Secretary of the Interior Rogers C. B. Morton has released a proposal titled *The Chicago School Architecture*, a National Park Service concept of how landmark buildings could be saved from economic pressures of urban growth.

Central to the plan is the development of its transfer concept originated by Professor John J. Costonis of the University of Illinois School of Law in a study for the National Trust for Historic Preservation under a HUD grant.

According to the Chicago plan, a "development rights bank" would buy unused development rights of designated historic buildings and sell them to developers for use elsewhere in a specified planning district. The developers would then use these rights to build beyond the height, space, or other zoning limitations that would normally apply.

Sale of the rights would provide cash compensation to historic building owners for loss of development values and would help preserve historic preservation and restoration. Removal of development potential from the landmarks would also relieve development pressures and help lower taxes. Preservation restrictions would then be placed on the buildings as historic landmarks.

The Interior study, authored by architect John C. Miller, of the Department's National Park Service, suggests a concerted effort combining Federal, municipal, and private resources with the Costonis development rights concept and the prospect of a National Park Service facility to give public information on the

history and significance of Chicago's architectural landmarks.

EMPLOYEES VOTE AGAINST OAAE UNION

Employees of the San Francisco office of the architectural and engineering firm of Welton Becket and Associates voted 11 to 8 against certification of the Organization of Architectural & Engineering Employees (OAAE) to represent them in negotiating with management of the firm.

The election followed a hearing by the National Labor Relations Board on the definition of professional employees, with the union

being successful in having draftsmen included in that category.

"We are naturally heartened by the outcome of the election, which indicates that a majority of our San Francisco employees do not believe it necessary for an outside organization to speak for them," MacDonald Becket, president of the firm, stated.

"However, we are conscious that a proportion of our employees apparently do feel that management has not been fully responsive to their desires, and we certainly intend to improve our relationship with them," the architect said.

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S For technical information see Sweet's Architectural or Industrial Construction Files (9.1/Pr.) or phone us collect at the number below.

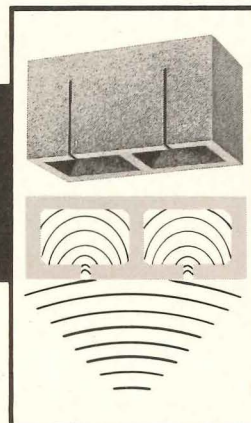
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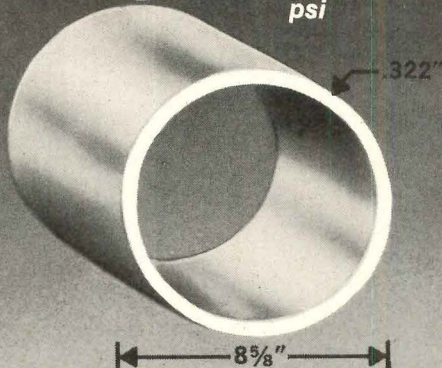
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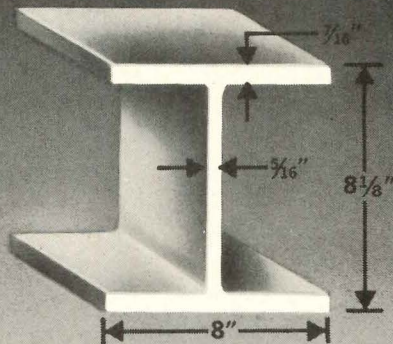


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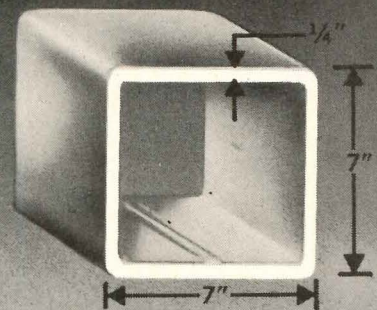


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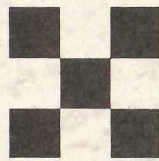
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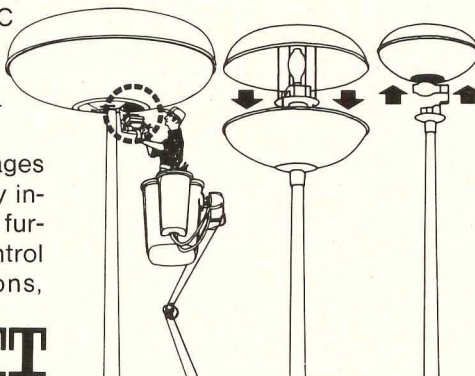
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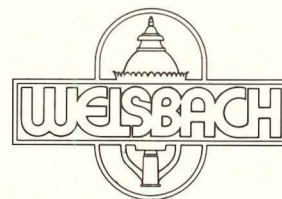
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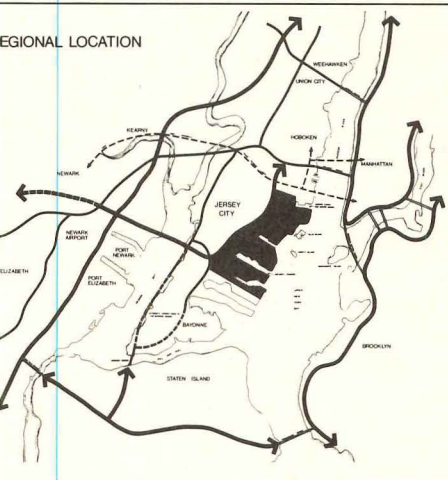
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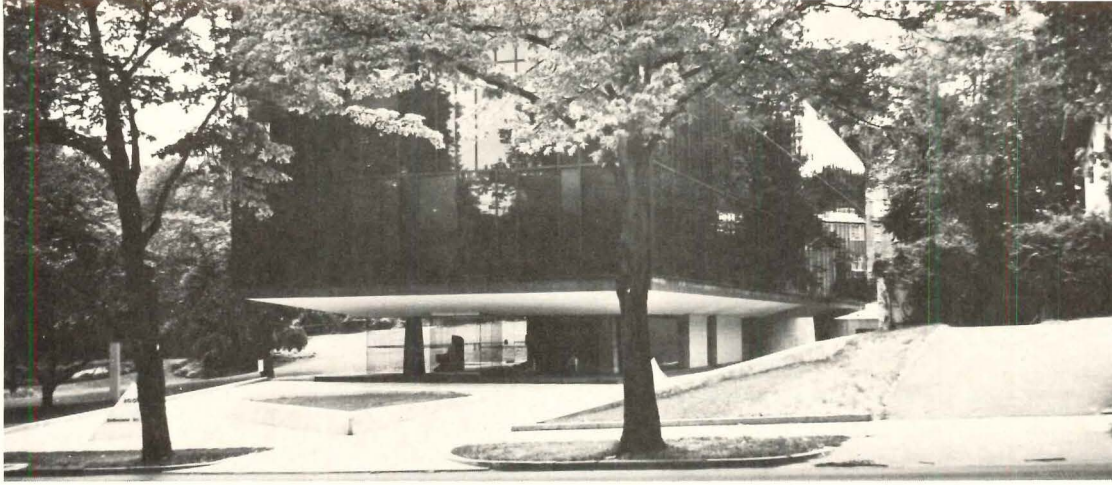
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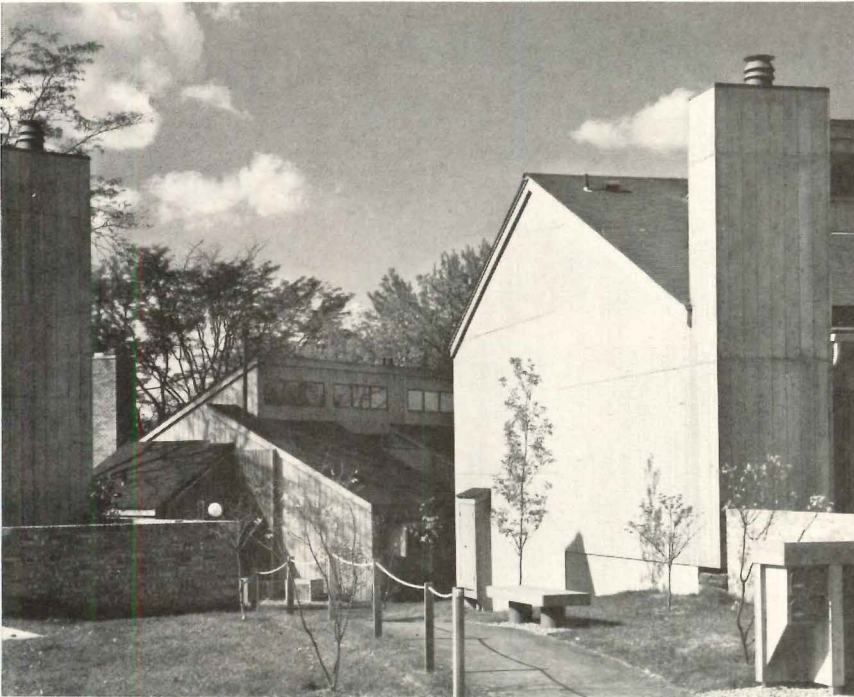


The master plan for a \$2 billion new town on the Hudson River was unveiled recently by Jersey City, N.J. and the United Housing Foundation, a non-profit federation of trade unions and housing cooperatives responsible for New York City's Co-op City. The site for the proposed 2500-acre new town is Jersey City's decaying waterfront (top left), facing the Statue of Liberty and downtown Manhattan. Liberty Harbor, as it is tentatively called, would provide housing for 60,000 people and an industrial complex creating 12,000 jobs. The major portion of 540-acre residential area (lower right and bottom) would be devoted to low-rise moderate- and middle-income apartments (top right), oriented to the harbor and to the Manhattan skyline. A pedestrian greenway system would offer traffic-free access from residences to recreation facilities, schools, shops, etc. A monorail or people-mover would be a key element in the transportation system. The largest portion of the project, 1500 acres, would be devoted to job-producing industrial and shipping development. Approximately 12 million square feet of new industrial floor space will be built. Initiated six months ago, the master plan was prepared by: Marquis and Stoller, architects; Zion & Breen Associates, site planners; Raymond, Parish & Pine, urban planners; and Farkas, Barron & Partners, engineers. The bulk of the funding for the \$750,000 study was provided by the National Kinney Corporation, which has a first option to purchase and develop the site in accordance with the plan.



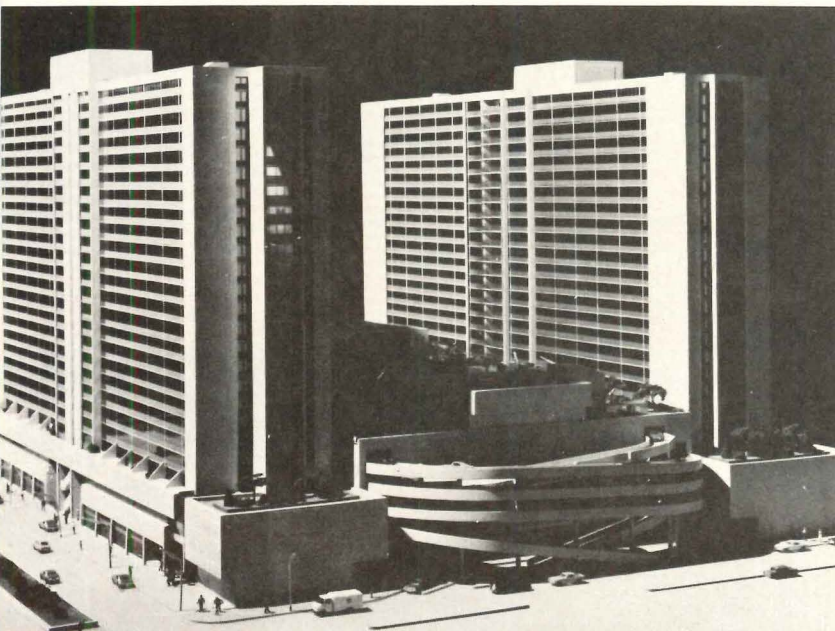


The Brazilian Embassy Chancery, Embassy Row (Massachusetts Avenue) in Washington, D.C., has just been completed as Phase One of a program for developing the acre-and-a-half site, presently including an eclectic palazzo-type ambassador's residence. The new chancery, designed by Olaf Redig de Campos of Brazil, in association with Hans-Ullrich Scharnberg of Washington, is a daringly-cantilevered glass box, "floating" above a transparent lobby. The three stories of office space are suspended from roof truss supported by a row of interior columns. Phase Two of the program includes a plaza, and an auditorium.

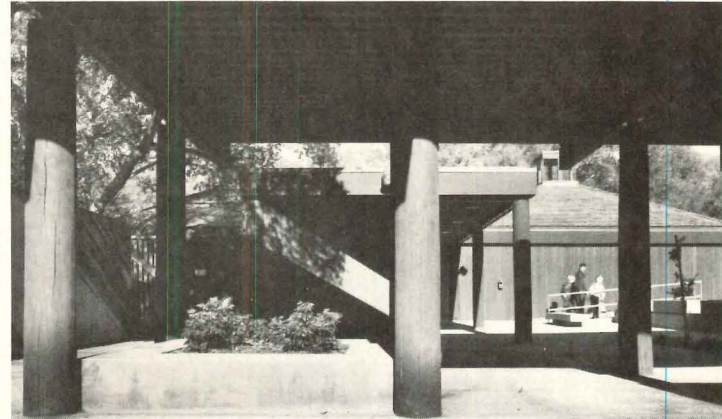


Park Central is believed to be the first example of combined living, shopping and recreation facilities in Cleveland. Designed by Dalton, Dalton, Little and Newport, the complex includes 1000 living units and a 300,000-sq-ft. shopping mall. Shopping will be at street

level, with office space one level above and below this. The apartments will begin on the third level. A parking garage will link the two apartment towers, roofed for terrace and recreation space amounting to nearly two acres.



Dalton, Dalton, Little, Newport



The 1973 Plywood Design Awards, presented in national competition by the American Plywood Association, have been recently awarded to four architects. First Award in the Residential/Multi-family division went to H. Ronald Walker, John D. Bloodgood Architects, Des Moines, Iowa, for *The Park at Southern Hills*, a planned community (shown left). Richard L. Dorman, of Los Angeles was presented with a First Award for his Commercial/Institutional entry, the Placerita Canyon Nature Study Center (shown

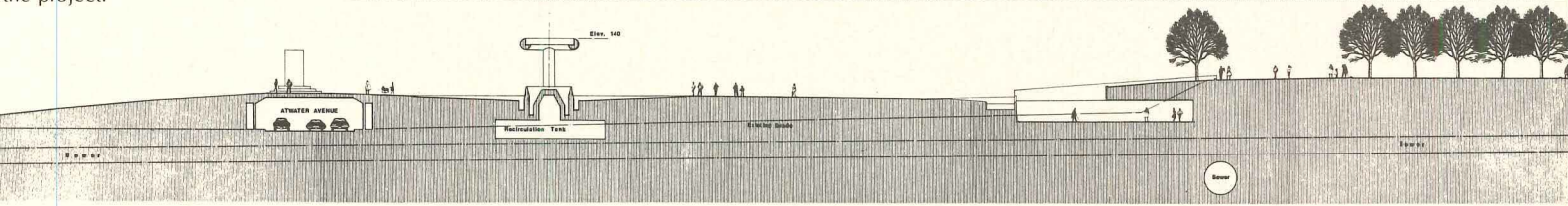
above). The First Award in the Residential/Single-family category went to Huygens and Tappe, Inc., Boston for a two-story home located on Rhode Island's Narragansett Bay. With *The Little Red Barn* Indian artifacts shop, J. McCormack of Locatell-Deckbar-McCormack, Inc., Atlanta, earned a First Award in the Special Awards category. Seven Citations of Merit were given in all. In its second year, the national Plywood Design Awards program honors those projects reflecting outstanding uses of softwood plywood.



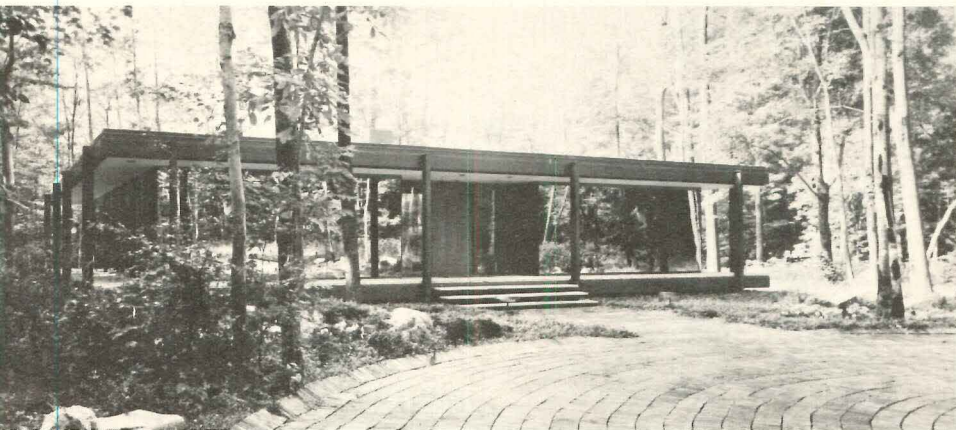
Mitchel Park, Nassau County, New York, is a 67-acre recreation facility to be contiguous with commercial developments in the 550-acre former airfield, Mitchel Field. Plazas, tennis

courts, swimming pools, ice skating rinks, gardens, etc., are included, designed around a man-made lake with extensions to smaller lakes. The planning is by Liu Urban Design Associates.

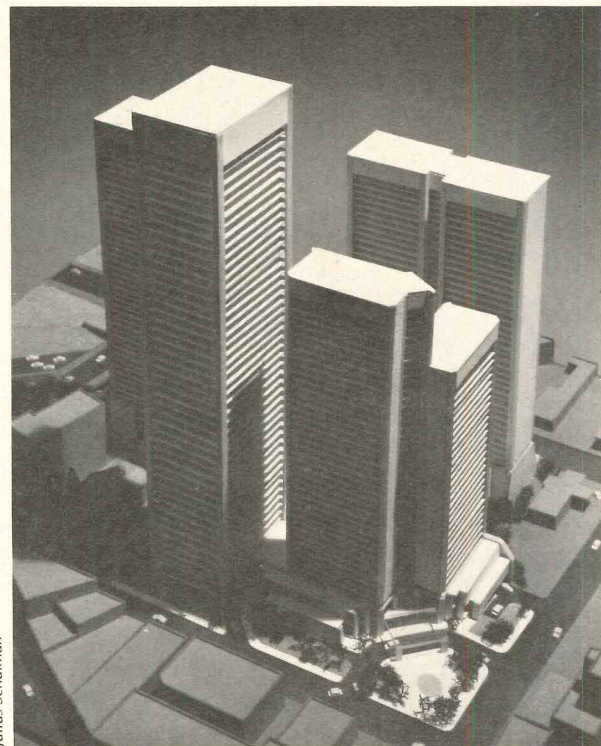
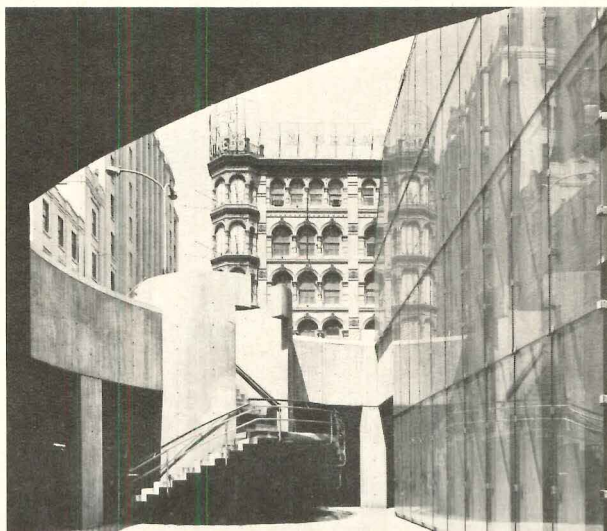
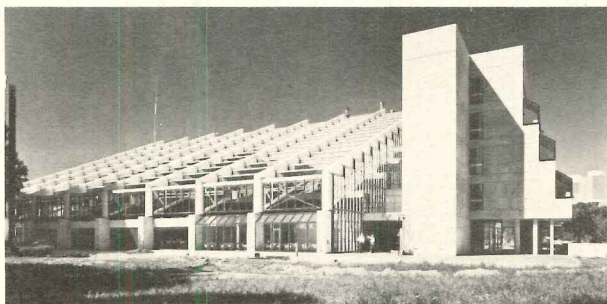
Dodge Memorial Fountain, a \$2 million bequest of Anna Thomson Dodge, and the Detroit Civic Center Plaza surrounding it, have been submitted to the Detroit Common Council for their designer, sculptor Isamu Noguchi. The fountain itself (center) is a 100-ft. high ring floating above a circular pool. Since a wide cross-section of Detroit citizens and organizations will be using the 8-acre plaza, Noguchi incorporated a number of public activities such as a circular amphitheater for music, dance, theater or ice skating; a community center; shopping; a riverfront restaurant and promenade; underground restrooms; and service areas. A north-south east-west thoroughfare that has to be retained will tunnel under the plaza (lower left). Smith, Hinchman & Grylls Associates will be the local architect for the project.



CROSS SECTION at W. 206 LOOKING WEST



1972-73 Design in Steel Awards have been recently announced, with designs being cited for awards in imaginative use of steel by designers, architects, engineers and artists. In all, the program attracted 1000 entries in 12 categories. Besides the 24 award-winners, 84 entries received citations of excellence. Among those honored was the home (above) of J. Robert Hillier, Princeton, N.J., whose home (above) won the Housing Design Award. It is framed in steel, and finished with bronze-tinted reflective panels. A subway concourse entrance (lower right) in Philadelphia, by James Wright of Mitchell/Giurgola, features painted structural steel, with poured-in-place concrete, and won for the architect the low-rise construction citation of Excellence in this series. Harvard's Gund Hall (RECORD, November 1972), by the architectural firm of John Andrews/Anderson/Baldwin and the engineering firm of LeMessurier Associates, received the high-rise construction citation of excellence in this multi-level cascading studio space spanned by nine 13-ton structural steel roof trusses.



Julius Schulman

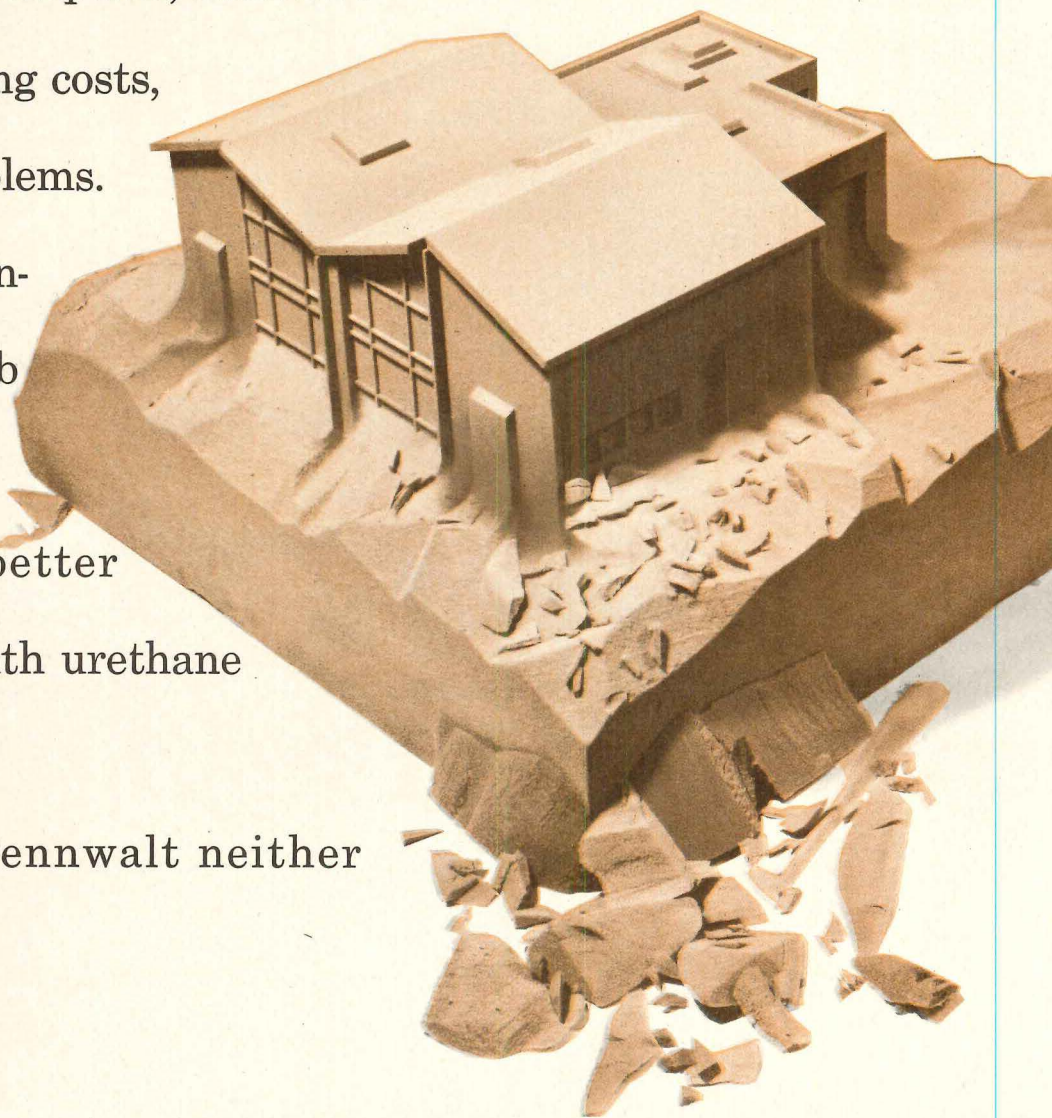
A \$200 million development in Atlanta is shown in preliminary design stage, completed by Vosbeck, Vosbeck, Kendrick, Redinger, architects and engineers. The complex, to occupy a 6-acre site, will include a 1100-room hotel, 686,000 sq ft of office space and 1036 condominium apartments. The high-rise structures will rise from a base containing 150,000 sq ft of commercial and convention facilities around a central two-level plaza. Pedestrian circulation within the development will be on the upper plaza level, while the enclosed lower level will contain landscaped and fountain areas. Construction on the first phase—the hotel and office building—will begin early next year.

The building industry used 10 for insulation last year--

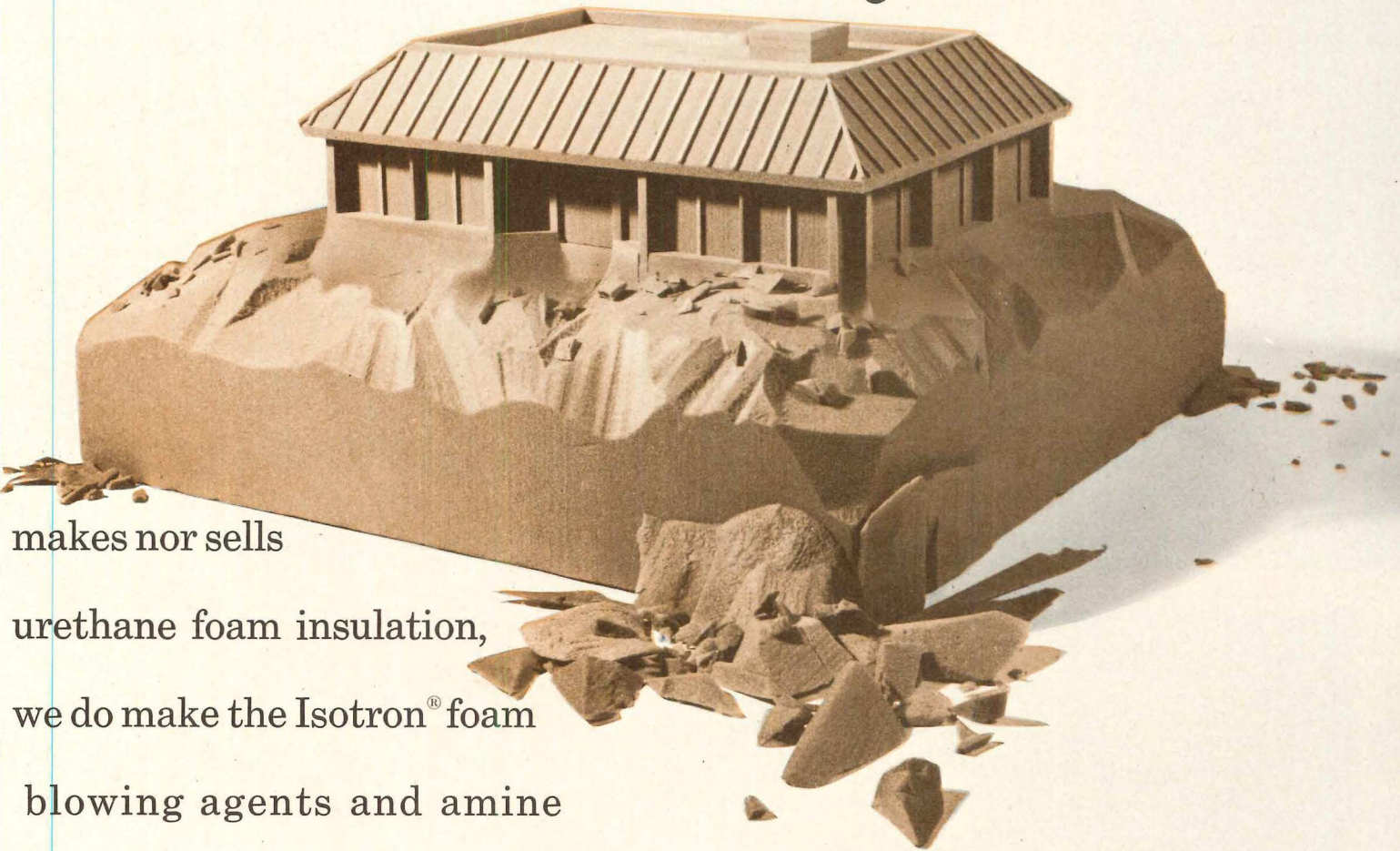
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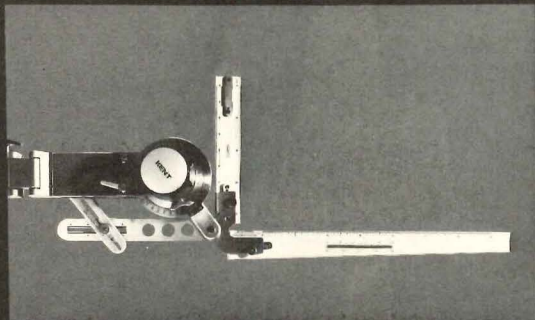
catalysts that are used in producing this modern and highly efficient insulation.

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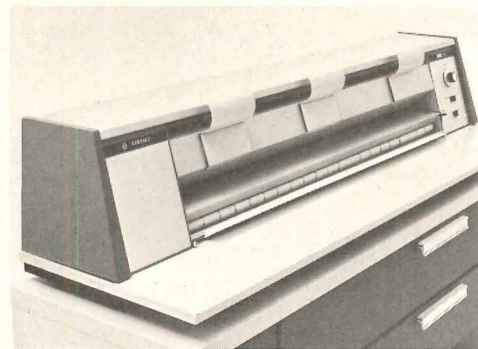
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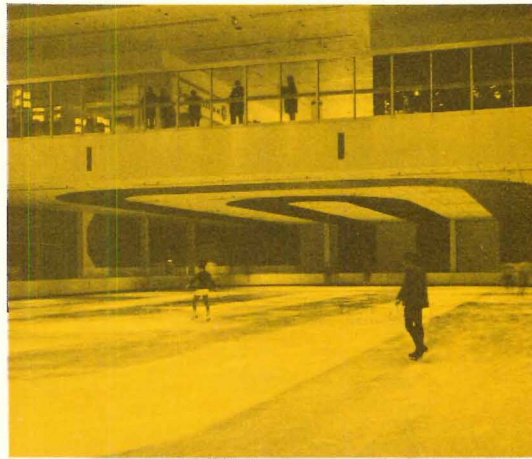
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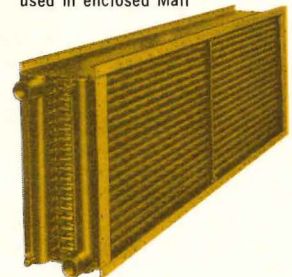
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★ *Mall Designer:* Dan Morganelli, Hewmann & Associates, Los Angeles • *Mall Architect:* Loeffler, Johnson and Associates, Pittsburgh • *Mall General Contractor:* Magnum Construction Corp., Pittsburgh • *Mall Mechanical Contractor:* Limbach Co., Pittsburgh • *Mall Developer:* Oxford Development Co., Pittsburgh
★ *Gimbel's Store Architects & Engineers:* Abbot, Merkt & Company, New York • *Mechanical Contractor:* Sauer Inc., Pittsburgh • *Gimbel Corp. Director of Construction:* Tom DeAngelo
★ *Joseph Horne Co.: Mechanical Contractor:* Sauer Inc., • *General Contractor:* Mellon Stewart Co., Pittsburgh

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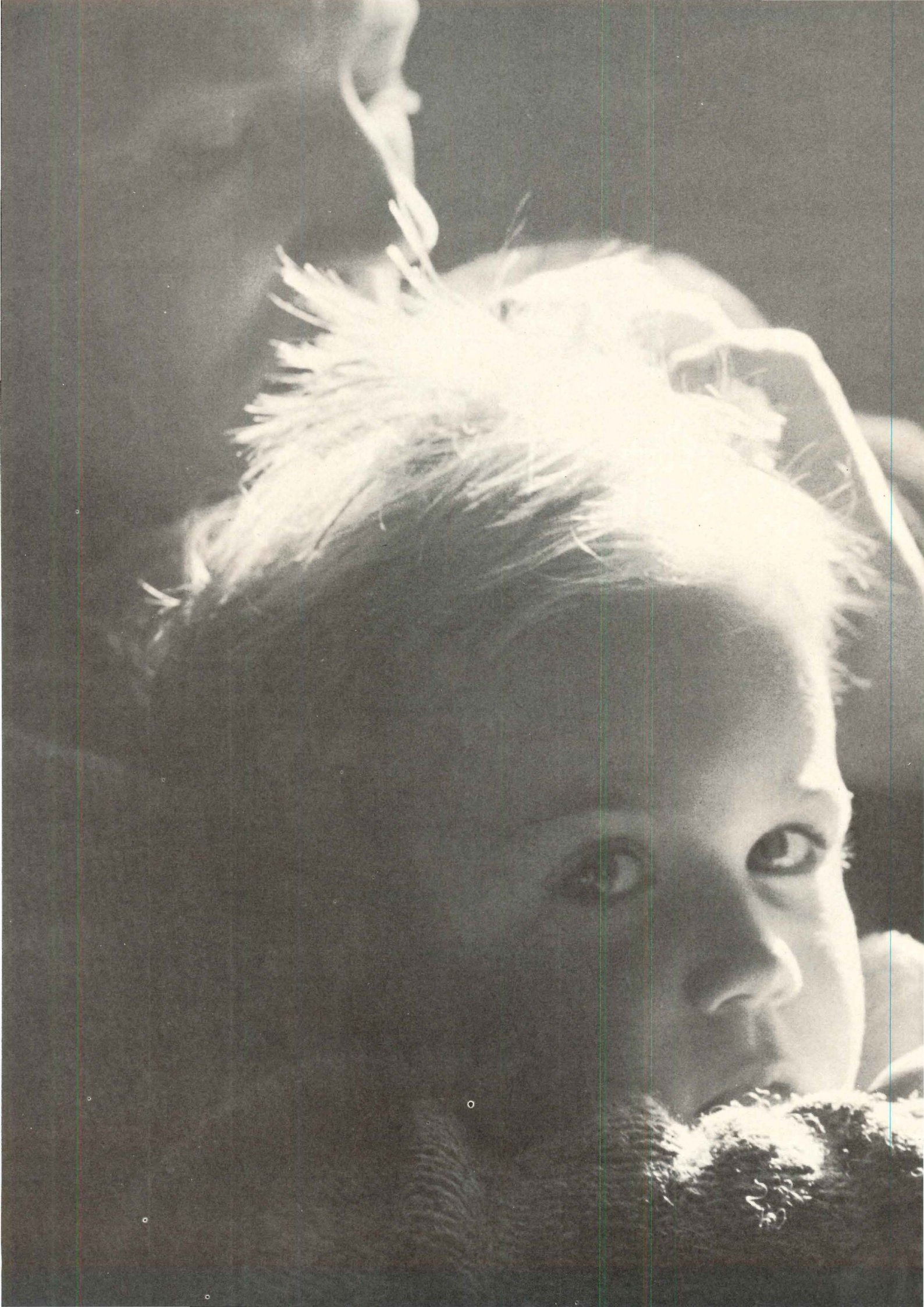
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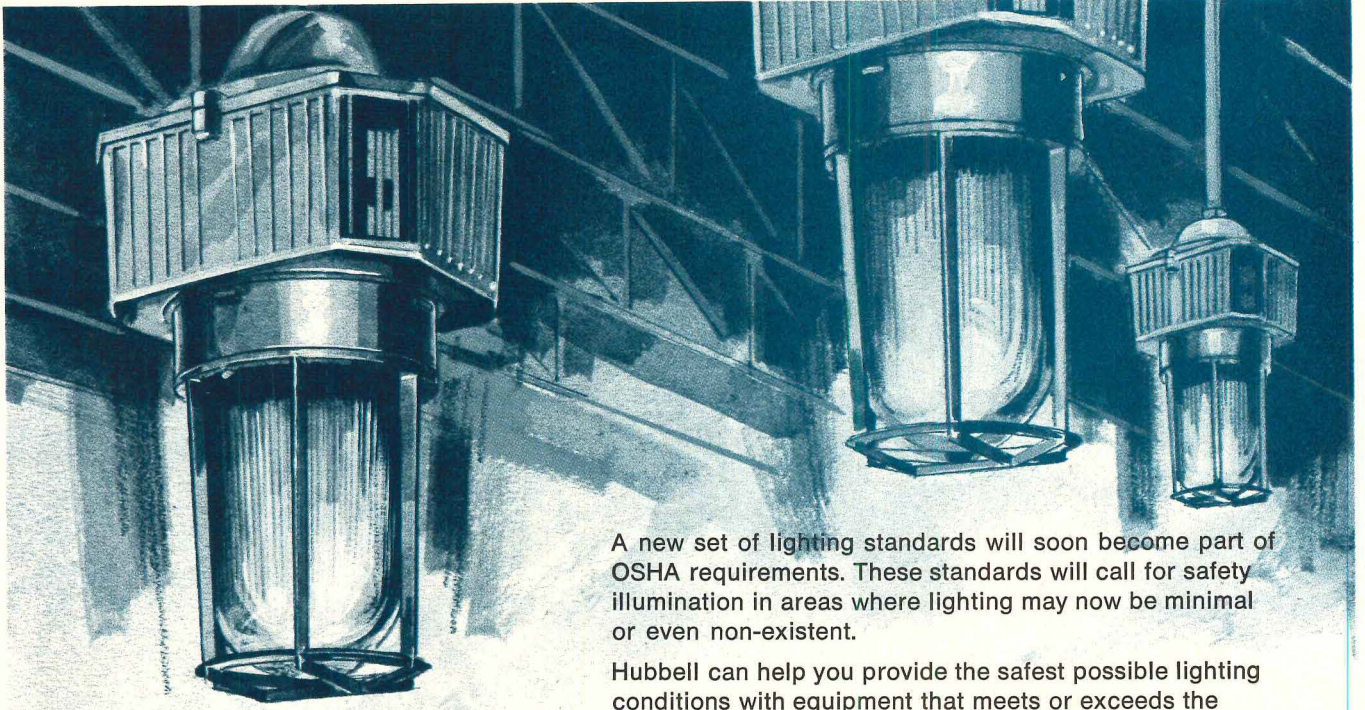
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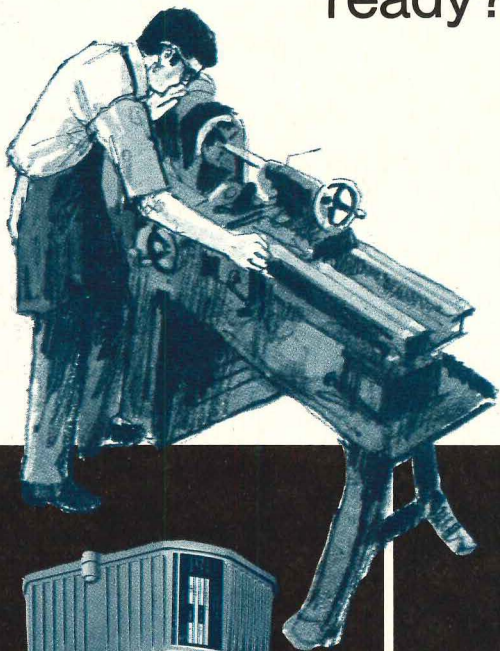


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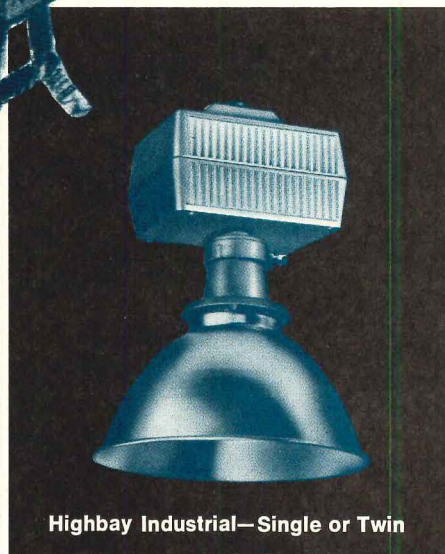
lighting division

TM

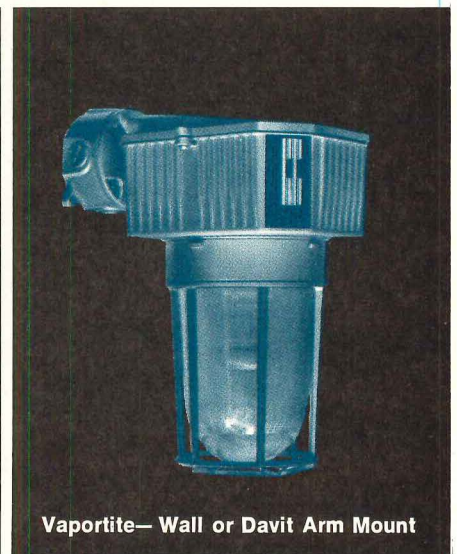
Lighting Division HARVEY HUBBELL INCORPORATED
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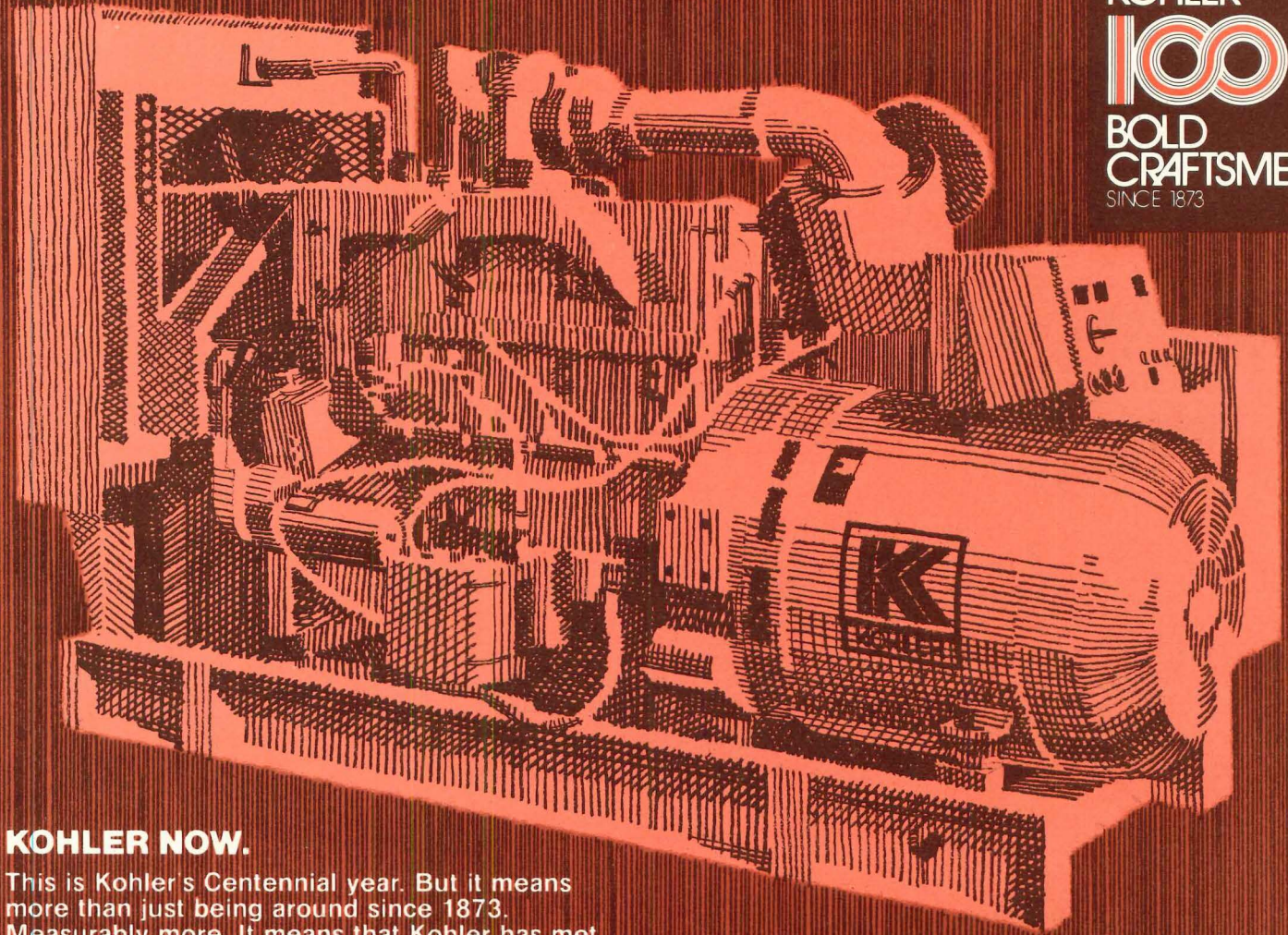
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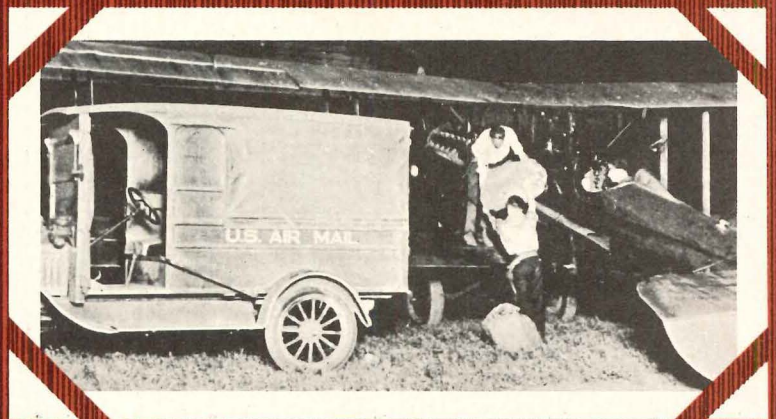
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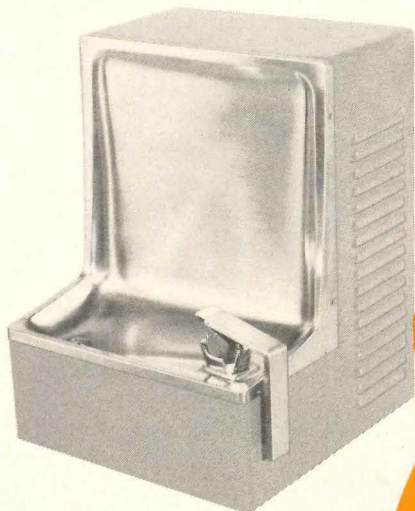
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Model HWC-6

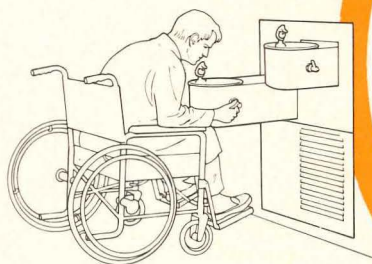
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Model HWC-6GF—Same as above, except glassfiller faucet in place of bubbler.



Model 1118

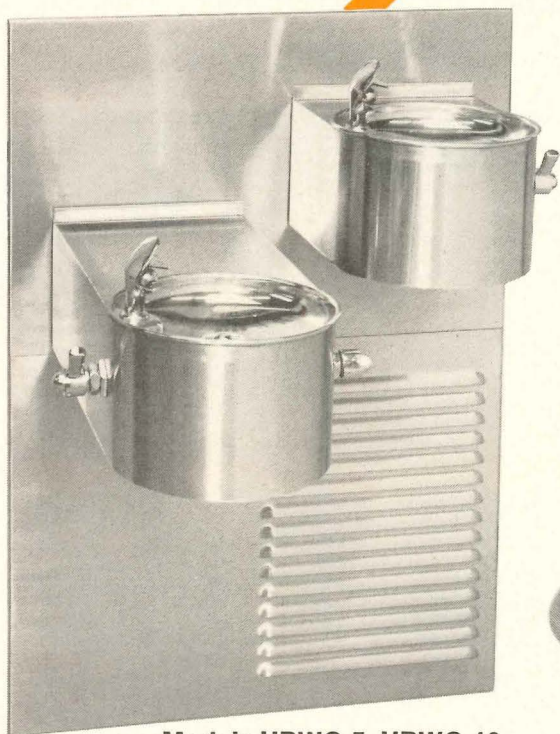
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MP compiles the most informative wall

and then, a simple idea applied for a special purpose takes on dimensions that give broad applicability. George Agron tells about pin-up resources wall at his firm.

walls of a conference room next to the library in the San Francisco offices of Stone, Braccini and Patterson have been converted to active use as a resource center of information pertinent to the firm's major concern—hospital design. This is more than the ultimate extension of bulletin board function. It is an organized display of current information summarizing the state of the art. Organization of the information reflects a logical sequence reminiscent of computer programming with which is combined a system of classification derived from library techniques.

The display consists of reprints, papers and graphics, affixed to the wall with demountable fasteners so that perusal and photocopy reproduction can be accomplished readily. Location of the display in the conference room serves the double purpose of stimulating discussion among those members who frequently use the room for informal gatherings (and even

lunches); it also serves the more formal purpose of an organized guide to client presentations.

In addition to its informal and presentation uses, the display serves as a center for new employee orientation; as the format for a series of structured in-house continuing education workshops; as a basis for in-depth evaluation of innovative hospital designs; as a professional resource for relevant University of California courses; and as a resource for staff members contemplating publication of papers or books on the subject of hospital design. An important side-effect has been the ability of the display to help identify major open questions in hospital design as a basis for possible research.

Organization of the material is under three major categories:

Input, representing hospital design aids, design strategies, work methods and construction processes;

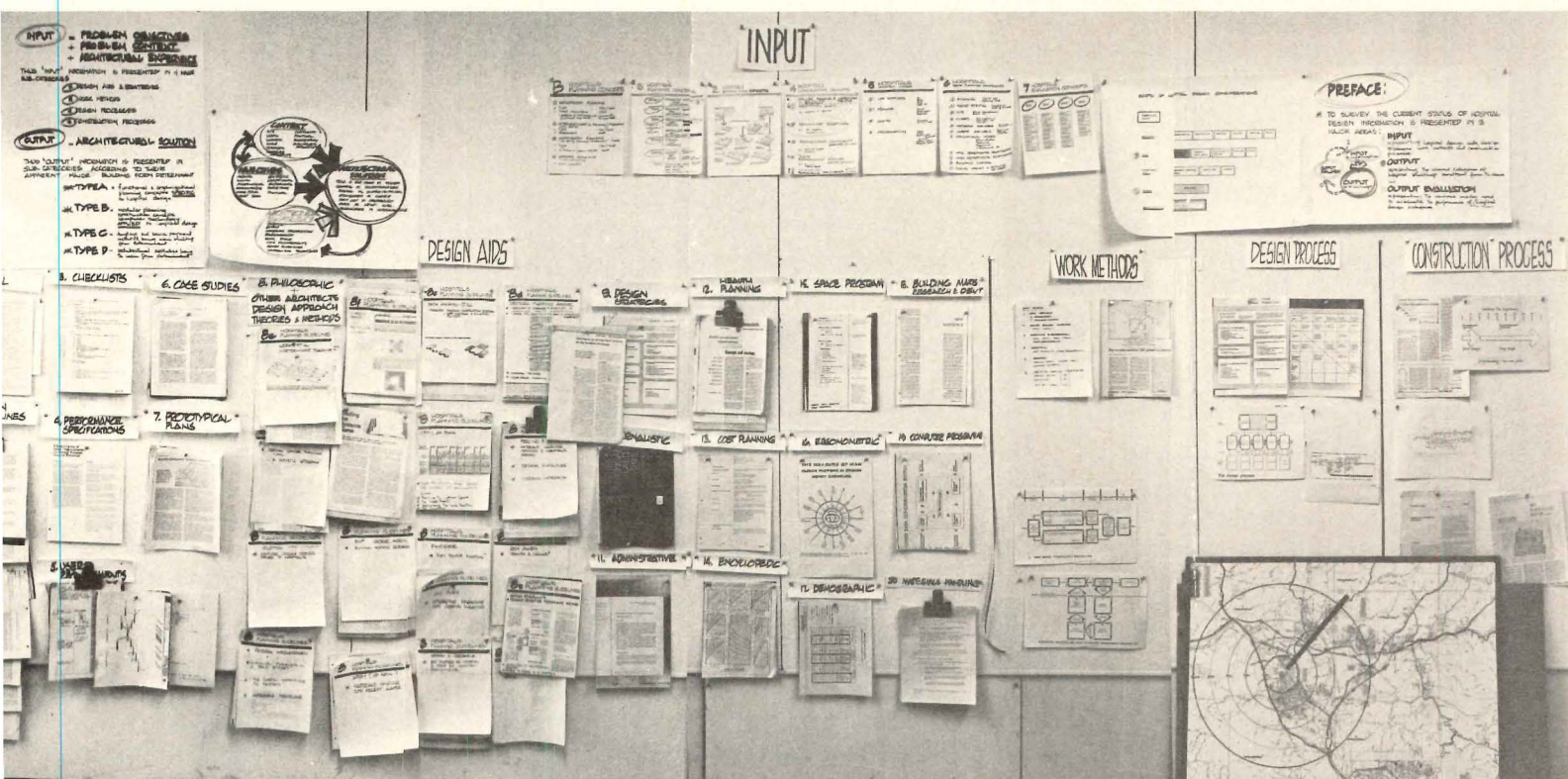
Output, representing the various categories of hospital buildings resulting from the input;

Output evaluation, representing the various modes used to evaluate the performance of the various hospital design categories.

Effective implementation of the display is provided by a 26-page manual entitled "Hospital Overview" which not only summarizes content and organization of the display but also selects key items for extract, providing an overall sense of the material. The manual concludes with proposals for development of information as a permanent in-house resource and extension of the library, with the librarian assigned to updating the display on a regular basis.

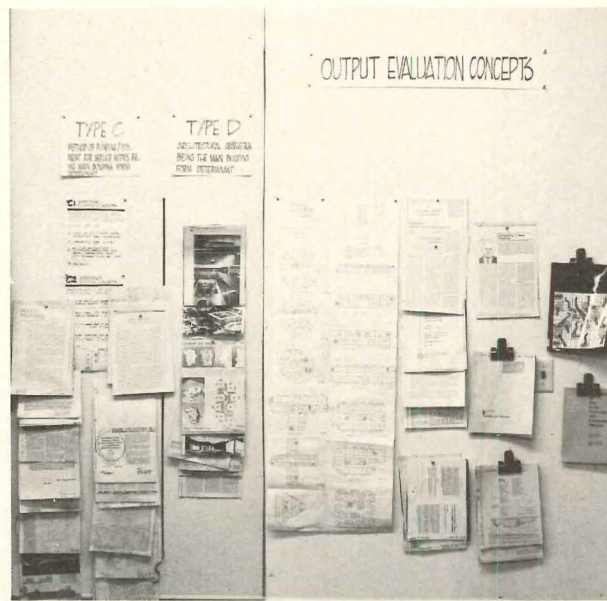
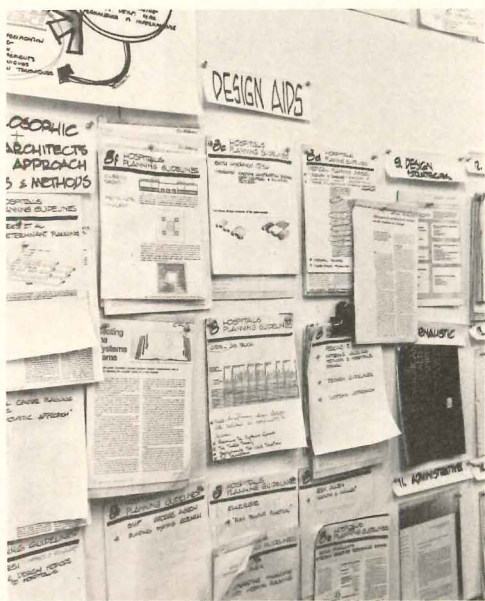
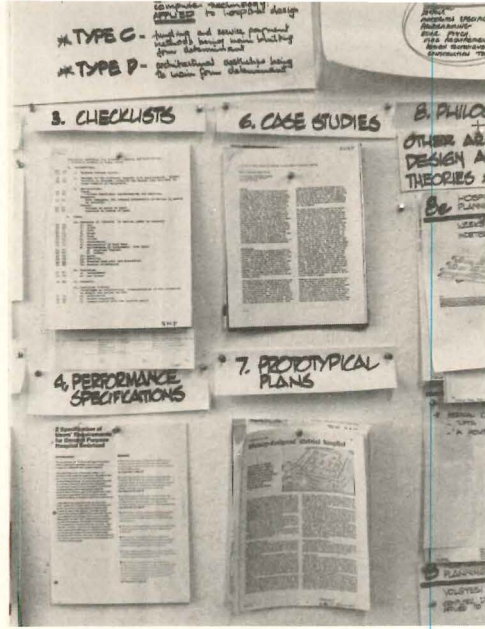
Details of the organization and content of the display are, of course, related to the special disciplines of hospital design. The system, however, has applications in other fields of practice, and its detailed description here may serve broad general purposes.

Information throughout the display—that is, under all three major categories, input, output and evaluation—is carried under three consistent sub-categories: Type A includes concepts specific to hospitals as a building type; Type B is information appropriate for a broad range of building types; and Type C is information about relevant trends in outside categories, such as health legislation or perhaps



This is the information wall, input section, showing general organization under various categories. Details of categories are not legible in this photo, but users

of the idea will have to reinvent their own system in any case. Other details are shown on the next page.



Interior designers are not invited to participate in the placement of materials on the conference room walls at St. Elizabeth's, but a certain flair and order are apparent nevertheless. On the subject of hospitals, sharp-eyed readers will be able to pick out certain key articles from past issues of the RECORD. Basic Studies of Clibbon and Sachs (2/71 and 6/72), Unit Theory Design by John Sheoris (12/70), Nursing Unit Layout by Medical Planning Associates (9/71), The RTKL/Westinghouse Planning Mode (6/72), The VA Systems Approach by SMP (6/72), Northwick Park by John Weeks (12/70), Triangulum Nursing Units by Kaplan and McLaughlin (3/70), Desert Samaritan Hospital by CRS (12/70), Dominion Santa Cruz Hospital by Rex Whitcomb (10/68), and Etobicoke General Hospital by John B. Parkin (3/69).

therapeutic techniques.

The manual summary identifies: a) major trends in hospital planning concepts, b) specific entries under Type A and Type B categories, c) various architects' responses to problems of hospital design and d) hospital buildings resultant from the foregoing. There is also a description of the relevance of trends in health legislation displayed as Type C information.

The following direct quotation is an example of the summaries offered in the manual:

Current hospital designs illustrate developments in conceptual planning strategies. These various planning approaches can be traced to the work of:

- 1) Herman Field, *Holistic Planning*
- 2) John Weeks, *Indeterminate Planning, Three-Dimensional Lattice, "Street" Concept*
- 3) Clibbon and Sachs, *Like-Space Versus Bailiwick Planning*
- 4) Stone, Marraccini and Patterson and Building Systems Development, *Integrated Systems Approach*
- 5) The body of work in modular planning, systems analysis and computer programming: *Unit Theory for Hospital Design, VA System, Bethesda Medical Center, etc.*
- 6) The body of work in prefabricated building systems and performance specifications: *The*

Coupled Pan Space Frame Construction System, Calgary System, Harness Hospital System, etc.

7) The body of work of the Ministry of Health, Britain: *"Perimeter" Hospitals, "Best-Buy" Hospitals, etc.*

These planning concepts claim to perceive the hospital as a "total dynamic system". They attempt to integrate developments in systems analysis, patient care and medical treatment modes, construction technology, materials handling concepts, administrative policies and funding constraints into the design process.

This trend is a response to a previous planning approach which largely reflected only the departmental sub-systems and relationships within the hospital complex. ("Bailiwick Planning"—Clibbon). The main criticism of this time-honored approach has been in its inability to allow for growth and change without great cost implications. The advantage of the traditional planning approach, however, is that it allowed for sophisticated evolution of departmental planning to occur. (See "The Evolution of the Nursing Unit"—Medical Planning Associates; also "Evaluations of the Nursing Unit"—Garfield; and Dellon and Smalley, "Automation and Patient Care", the Friesen Concept.) While this traditional model of the

hospital was being continually refined (e.g., Ellerbe hospitals), certain areas of design concern were being relatively neglected.

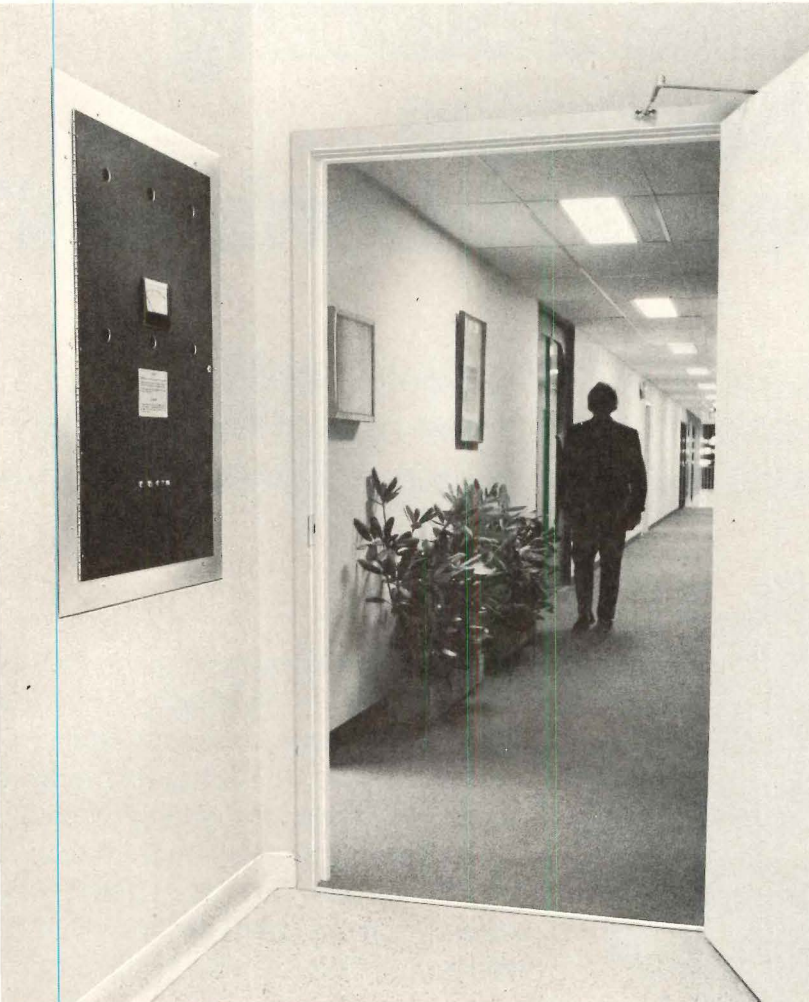
Resultantly, the focus of planning attention is now moving towards an integrated systems approach (Stone, Marraccini and Patterson) where ability for the hospital complex to expand, and for spaces to be flexible is a major determinant. "Hard" areas are being designed with different criteria to "soft" areas (Caudill, Rowlett, Scott); the hospital is being looked upon as a whole system rather than an administrative set of departmental functions.

It is being conceived of as a three-dimensional lattice (Weeks) which provides for flexible energy and circulation systems and technologically sophisticated materials handling systems, utilizing modular planning, prefabricated components and performance specifications techniques and fast-track design and construction techniques.

It can be foreseen that the next area of concern will be in the sphere of environmental psychology, specifically in relation to design and detailing spaces which "do not get in the way" and in fact aid the healing process. Mental health facility designers are currently grappling with this recent science. (Prosharoff, Land, Ittelson, McLaughlin et al.) End quotation.

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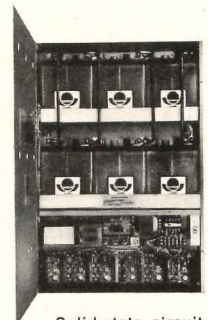
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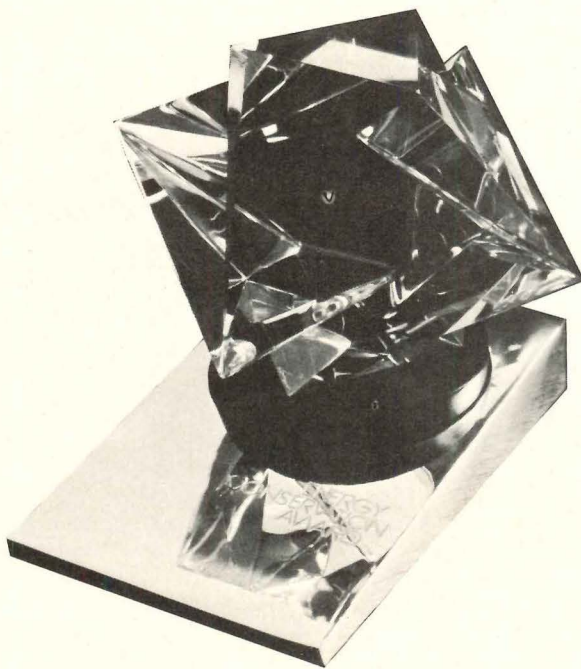


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*T.M. Reg. O.-C. F.

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Commercial—office buildings, shopping centers, retail stores, and similar structures.

Industrial—including manufacturing plants, research centers, warehouses.

Governmental—post offices, administrative buildings, and military structures to name a few.

The Awards.

Winning architects and/or engineers will receive the Steuben Crystal sculpture "Triangles." Owners or clients associated with winning entries will receive other Steuben Crystal awards.

Send for entry details now.

Completed entries must be submitted by August 31, 1973. Winners will be selected in September and notified in early October.

For a brochure giving complete details, contact your local Owens-Corning representative. Or write H. N. Meeks, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.

The distinguished Awards Jury.

Winners will be selected by:



Walter A. Meisen, Assistant Commissioner Public Buildings Service, General Service Administration, Washington, D.C.

James E. Wheeler, President, Wheeler and Stefoniak, Inc., Dallas.



Ronald E. Aspgren, Chief Corporate Architect, Montgomery Ward, Chicago.

Robert B. Hollister, Vice President, Turner Construction Co., Cincinnati.



Professor Gifford Albright, Dept. of Architectural Engineering, Pennsylvania State University.

John A. Vincent, Project Engineer, Energy and Process Systems Division, VTN Consolidated Inc., Irvine, Calif.



Frank M. Lebman, President, Synergo Co., Philadelphia.

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Our national housing goals: where do they stand now?

One assumption of the now-famous 26 million housing unit goal established by the 1968 Housing and Urban Development Act was that, given the availability of credit, most of the job of providing new homes in areas where the need was greatest could be done by the private market system. "Most of the job" is a key modifier here, because six million units of that 26 million unit goal were expected to be subsidized units—an acknowledgment that the free market had to be supplemented by public aid. Public assistance would be needed in those areas where poor profit prospects acted to limit the workings of the private market.

Now that public subsidies are frozen for what amounts to, at this writing, an indefinite period, it seems like a good time to ask some questions about this goal, and just how good the prospects now are for attaining it in the manner in which it was originally envisioned by the policy setters at HUD.

In terms of *total* units (that's counting mobile homes too) the tremendous volume of starts over the past few years has really put us *above* the trend needed to achieve the 26 million goal by 1978. Counting from 1969, the first full year after the Act, and adding in what appears to be a reasonable number for this year (2.7 million plus, counting mobiles), we'll put over 12 million units into various stages of construction in the first five years of the ten year goal period. That's less than half the 26 million, but, considering that we're starting from the low end of the trend line and working uphill, it's a fine accomplishment. There's obviously reason for pride, and maybe a little complacency. Too much can be a dangerous thing, though.

It's a pretty sure bet that the Administration wouldn't have so abruptly suspended the public subsidy program if it didn't have this edge on the trend line to point to. The ease by which we raised our shelter unit production by a full one million units in just four short years (1969's 1.9 million unit year vs. 1972's 2.9 million unit year) has certainly served to muzzle a lot of skeptics on the housing issue. All of the old arguments about the industry's inability to attain levels of output in this range have been rudely laid to rest.

Attaining is one thing, though, and *sustaining* quite another. Also, there's some question as to just how much of this new housing can really be counted toward helping to achieve the 26 million unit goal on a one-for-one basis. Let's look at some of the issues that are involved here.

First, there exists a basic question as to whether or not the 26 million unit goal is really high enough to solve the "housing problem" as the 1968 Act envisioned it. For one thing, a high proportion of the units being produced to meet the goal are mobile homes—a higher proportion than was originally anticipated. The replacement rate for mobiles is significantly higher than that for conventional units. Also, the extent to which conventional units are becoming dilapidated over the current decade appears to be higher than originally anticipated. Acknowledging these two factors, the Administration, in its fourth annual report to Congress on the status of the housing goals (a report mandated by the 1968 Act), (1) added a figure to account for mobile homes scrapped during the decade and (2) raised the figure for units becoming dilapidated over the decade. To keep the total goal at 26 million, however, it made questionable subtractions from other areas of estimated needs, and seemingly brushed aside the entire issue with the statement: "Until detailed data from the 1970 Census become available there is little point in taking sides in the debate over the validity of the original goal."

Well, the simple point here is that there are things that have taken place in the two and a half years since the 1970 Census was made that will make even *those* figures subject to modification. *All* the data are never in, for one thing. And, for another, policy decisions can't wait for it anyway.

Is the private housing industry really putting up new housing in an "efficient" manner with respect to total needs? In this vein, it is interesting to note that fully half the gain in multi-family dwelling unit starts last year was concentrated in one state—Florida. Now, admittedly, the state rates high in terms of multi-family needs when we look at the quality measures that are available—things like the ratio of persons per room, and the proportion of units without plumbing facilities. But, this is not particularly true in the Miami-Fort Lauderdale market where the bulk of the increase was concentrated. Nor would the middle-income condominium unit, which most of these units appear to have been, essentially serve the needs of Florida's poor anyway. These are units designed for the retirement/relocation market almost exclusively. They only serve the needs of that portion of the nation that is poorly housed through the circuitous, inefficient "trickle down" route, if at all.

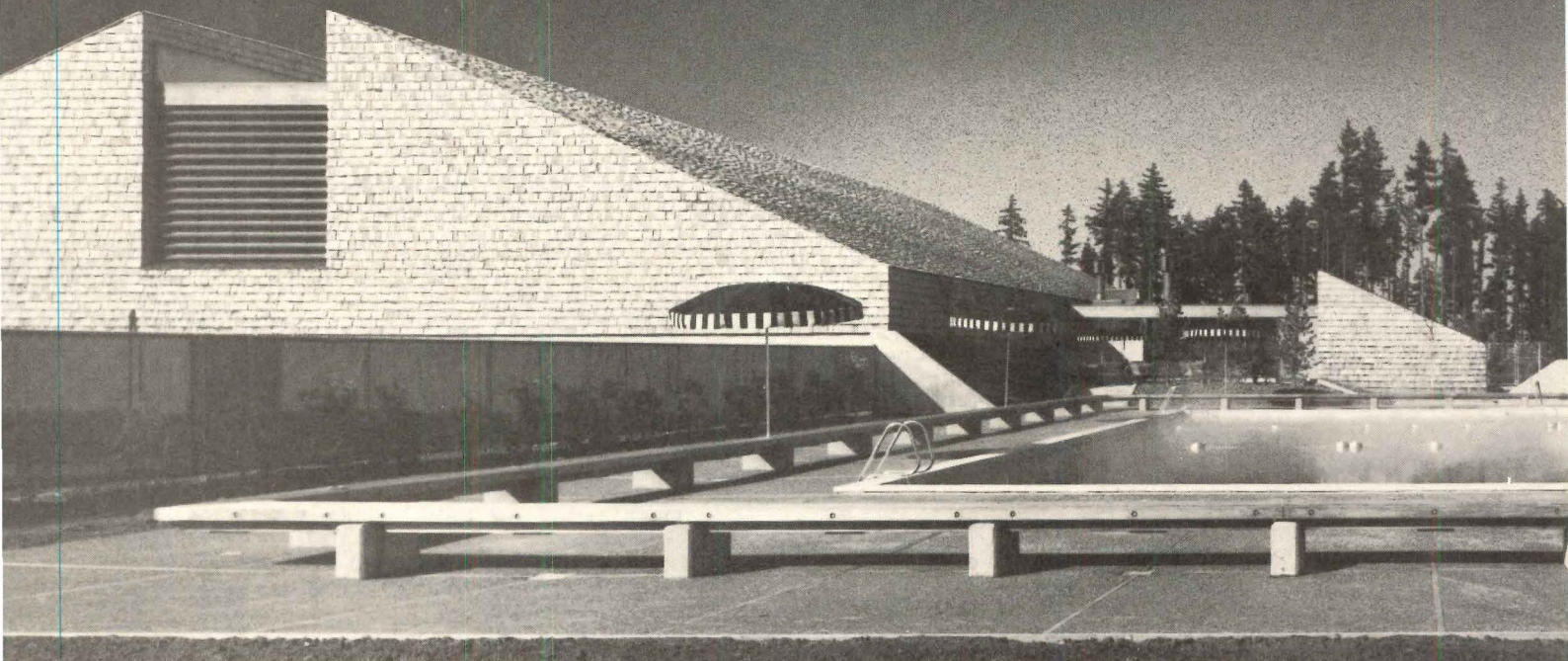
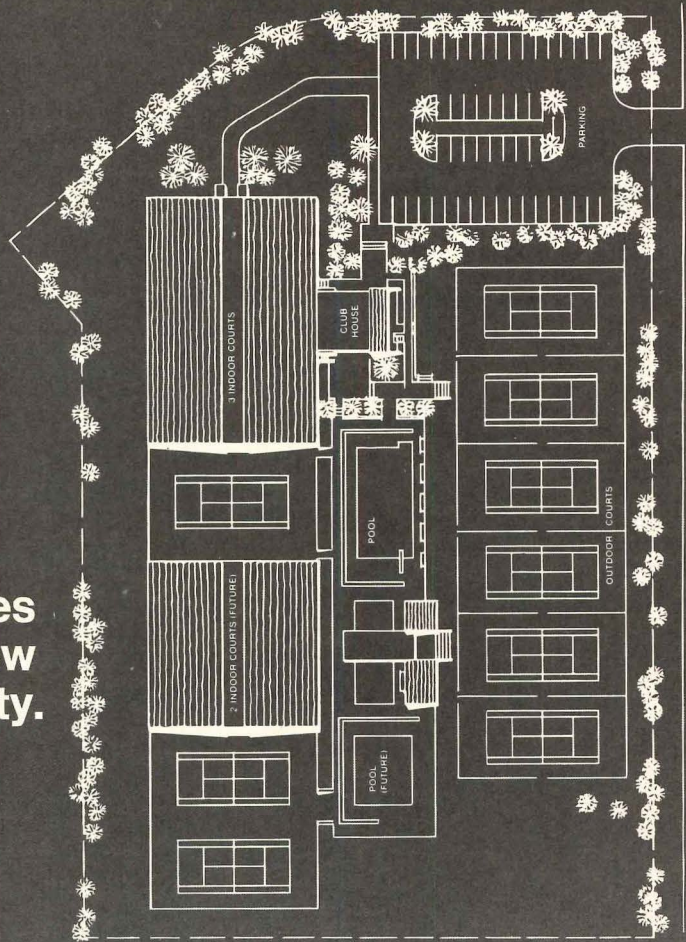
Relocation and migration themselves, other factors that must be considered in the housing equation. The recent surge to re-employment areas and the relocation of industrial and commercial businesses in the South was fully anticipated in the late sixties when the original goals were formulated. The effect of this new demographic dimension, while not fully explored, may be to hasten the removal from the inventory of sound existing housing in the Northeast and Midwest, or accelerate the rate at which it decays.

Finally, the phenomenal housing success of the past two years has led many to believe that the housing cycle is dead. Well, as for severe credit squeezes or credit crunches, I'm concerned, maybe it is. At least, the framework for allocating credit to the housing industry has been greatly strengthened, and just might be able to weather any future period of credit stringency. One factor that hasn't been mentioned against, though, is overbuilding. The mented nature of the housing industry makes it extremely difficult for any individual builder to adequately assess his market situation. This is particularly true with the multi-family market where the time between start of a project and its completion can be a year or better. In respect, 25 per cent, or nearly 500,000 of the 1.9 million multi-family units started in the two years are still in the construction pipeline. This is why multi-family vacancy rate rather than providing a warning of impending market softness, more often than not, may serve as an indicator of the extent of the damage resulting from poor market data.

The prospect of declining levels of multi-family output may sound paradoxical in light of what I've been saying about the 26 million unit goal being, perhaps, too low. But, what it really means is that, given the imperfections of the private market, there is always a tendency to commit too much housing to the "hot" market—that is, to overbuild. It is positive action on the Federal level to point to the need for housing that still exists in markets where the rate of return is not quite as high as the so-called "hot" markets. It is a Federal initiative to help the private builder explore the possibilities that exist in these markets with the freeze, and the down-grading of programs generally, this positive action on the Federal initiative simply isn't there anymore.

Will the spirit of the 1968 Housing Act really be achieved by 1978? At this point there's room for doubt.

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**BUILDING MATERIALS MANUFACTURERS
ANTICIPATE 14 PER CENT PROFIT RISE**

Pre-tax profits of companies predominantly in building construction are expected to increase by 14 per cent in 1973, according to the results of the annual Survey of Corporate Profit Trends conducted by the McGraw-Hill Department of Economics. The survey was conducted in the last two weeks of January and the first three weeks of February, and thus represents some initial reaction to Phase III of the Federal Government's Economic Stabilization Program.

The 14 per cent profits increase anticipated by firms predominantly in building construction is somewhat better than the 12 per cent average gain expected by all manufacturing firms and by all business.

The largest increase in profits among this group is the 17 per cent gain expected by mechanical and electrical equipment manufacturers. Other big increases are anticipated by producers of doors, windows and partitions (16 per cent) and general companies (14 per cent). More modest profit gains are expected by manufacturers of flooring and wall covering (10 per cent) and furniture (4 per cent).

U.S. corporations in all fields, now expect their 1973 profits before taxes to rise 12 per cent over last year. This would put pre-tax profits at a new record level of \$96.4 billion compared with \$86.2 billion last year. Nearly 90 per cent of all companies cooperating in this survey expect profits will be higher this year than last. Only 7 per cent expect pre-tax profits to be lower. Over 60 per cent of the corporations answering expect to better their profit margins this year while only 16 per cent expect them to decline.

Metropolitan area	Cost differential	Current Indexes				% change last 12 months
		non-res.	residential	masonry	steel	
U.S. Average	8.2	411.7	386.5	402.8	392.8	+ 9.2
Atlanta	7.6	523.6	493.7	509.0	497.4	+ 9.3
Baltimore	8.0	450.3	423.3	439.4	425.8	+13.8
Birmingham	7.2	377.4	351.0	364.8	360.4	+ 9.1
Boston	8.9	420.3	397.1	415.6	403.8	+ 9.7
Buffalo	9.0	460.0	431.9	452.8	438.9	+ 9.5
Chicago	8.2	472.8	449.5	456.8	449.7	+10.0
Cincinnati	8.4	436.9	411.1	426.3	415.3	+ 7.6
Cleveland	8.8	443.8	417.5	433.9	423.2	+ 5.1
Columbus, Ohio	8.0	431.0	404.7	418.1	410.3	+ 7.4
Dallas	7.5	411.9	398.8	410.4	394.6	+11.6
Denver	7.8	435.2	409.4	428.9	414.9	+ 7.8
Detroit	9.4	469.5	447.2	471.7	453.1	+11.1
Houston	7.2	381.8	358.5	371.9	364.3	+ 6.3
Indianapolis	7.6	375.0	352.2	366.0	357.9	+ 5.6
Kansas City	8.1	393.6	371.9	384.3	374.5	+11.2
Los Angeles	8.1	464.2	424.3	448.7	440.5	+11.1
Louisville	7.4	407.2	382.4	396.6	387.4	+ 8.6
Memphis	7.3	382.9	359.5	369.6	363.9	+ 6.7
Miami	7.7	424.9	404.8	412.3	404.0	+ 7.0
Milwaukee	8.1	456.0	428.2	447.8	433.8	+ 6.1
Minneapolis	8.6	436.3	410.4	429.3	418.5	+ 7.2
Newark	8.6	404.3	379.6	397.7	389.3	+ 7.8
New Orleans	7.1	387.9	366.2	380.8	372.3	+ 8.9
New York	10.0	464.9	432.1	453.1	441.4	+11.5
Philadelphia	9.1	465.3	443.3	460.9	448.0	+16.5
Phoenix (1947 = 100)	7.8	237.2	222.7	228.9	225.2	+10.5
Pittsburgh	8.8	411.7	387.3	406.1	394.0	+11.4
St. Louis	8.6	434.3	409.9	426.7	416.6	+10.9
San Antonio (1960 = 100)	7.0	150.4	141.3	145.9	142.6	+ 3.6
San Diego (1960 = 100)	8.0	165.1	155.1	161.4	157.8	+10.1
San Francisco	9.4	620.8	567.5	614.1	595.6	+13.2
Seattle	8.2	399.4	357.4	394.9	379.5	+ 6.5
Washington, D.C.	7.7	388.8	365.1	377.2	368.3	+ 9.4

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

Metropolitan area	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972 (Quarterly)				1973 (Quarterly)				
										1st	2nd	3rd	4th	1st	2nd	3rd	4th	
Atlanta	306.7	313.7	321.5	329.8	335.7	353.1	384.0	422.4	459.2	472.5	473.7	496.1	497.7	516.4				
Baltimore	275.5	280.6	285.7	280.9	295.8	308.7	322.8	348.8	381.7	388.1	389.3	418.8	420.4	441.8				
Birmingham	256.3	260.9	265.9	270.7	274.7	284.3	303.4	309.3	331.6	340.4	341.6	356.7	358.3	371.7				
Boston	244.1	252.1	257.8	262.0	265.7	277.1	295.0	328.6	362.0	377.3	378.5	392.8	394.4	414.0				
Chicago	301.0	306.6	311.7	320.4	328.4	339.5	356.1	386.1	418.8	422.8	424.0	442.7	444.3	465.3				
Cincinnati	263.9	269.5	274.0	278.3	288.2	302.6	325.8	348.5	386.1	399.9	401.1	400.1	410.7	430.4				
Cleveland	275.8	283.0	292.3	300.7	303.7	331.5	358.3	380.1	415.6	415.2	416.4	427.7	429.3	436.7				
Dallas	253.0	256.4	260.8	266.9	270.4	281.7	308.6	327.1	357.9	364.9	366.1	385.0	386.6	407.3				
Denver	282.5	287.3	294.0	297.5	305.1	312.5	339.0	368.1	392.9	398.3	399.5	413.8	415.4	429.5				
Detroit	272.2	277.7	284.7	296.9	301.2	316.4	352.9	377.4	409.7	416.9	418.1	431.5	433.1	463.4				
Kansas City	247.8	250.5	256.4	261.0	264.3	278.0	295.5	315.3	344.7	348.7	349.9	365.4	367.0	387.7				
Los Angeles	282.5	288.2	297.1	302.7	310.1	320.1	344.1	361.9	400.9	407.8	409.0	422.9	424.5	453.3				
Miami	269.3	274.4	277.5	284.0	286.1	305.3	392.3	353.2	384.7	391.5	392.7	404.8	406.4	419.0				
Minneapolis	275.3	282.4	285.0	289.4	300.2	309.4	331.2	361.1	417.1	401.7	402.9	411.3	412.9	430.6				
New Orleans	284.3	240.9	256.3	259.8	267.6	274.2	297.5	318.9	341.8	350.9	352.1	368.1	369.7	382.1				
New York	282.3	289.4	297.1	304.0	313.6	321.4	344.5	366.0	395.6	406.5	407.7	421.5	423.1	453.5				
Philadelphia	271.2	275.2	280.8	286.6	293.7	301.7	321.0	346.5	374.9	394.2	395.4	417.9	419.5	459.3				
Pittsburgh	258.2	263.8	267.0	271.1	275.0	293.8	311.0	327.2	362.1	364.5	365.7	378.7	380.3	406.3				
St. Louis	263.4	272.1	280.9	288.3	293.2	304.4	324.7	344.4	375.5	385.5	386.7	400.9	402.5	427.8				
San Francisco	352.4	365.4	368.6	386.0	390.8	402.9	441.1	465.1	512.3	535.3	536.5	559.4	561.0	606.4				
Seattle	260.6	266.6	268.9	275.0	283.5	292.2	317.8	341.8	358.4	363.0	364.5	369.9	371.5	388.4				

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 the first period (150.0 ÷ 200.0 = 75%) or they are 25% lower in the second period.



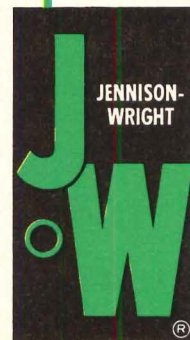
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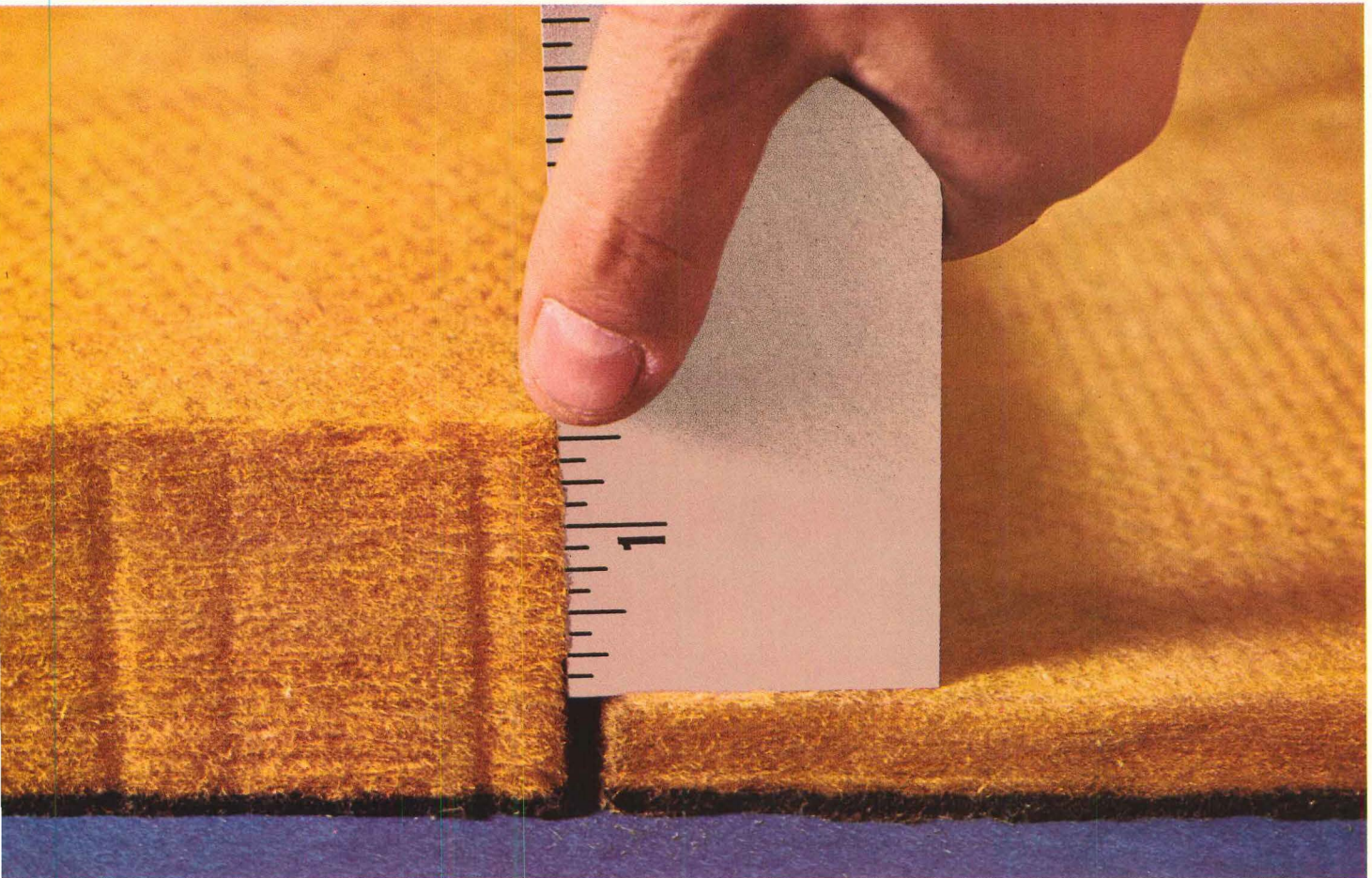
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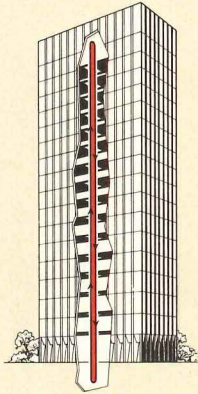
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Any kind or type of structure in the United States or Canada using precast and/or prestressed concrete may be entered. Past Award winners have ranged from large multi-story structures to small single-story buildings, from giant long-span bridges to simple pedestrian overpasses. Awards have also been made on the basis of engineering ingenuity alone. Structures completed within the last three years, or those that are substantially completed now, are eligible for this year's program.

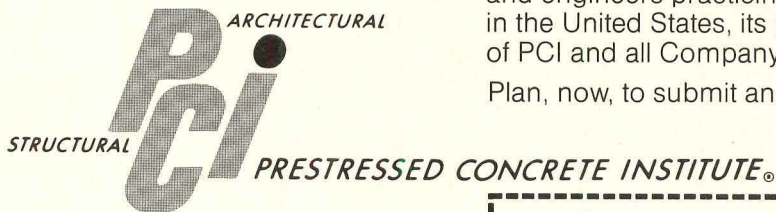
Attention in judging will be given to the use of precast and/or prestressed concrete to achieve aesthetic expression, function and economy. Importance is placed on the use of the structural system as an expression of design intent and to enhance the function of the project.

Interesting methods of systems integration will also be recognized, as will ingenuity in the use of materials, methods and equipment to reach an outstanding solution.

Because of broad diversity in the nature of problems offered to architects and engineers, no first place Award will be made, but all Awards will express equivalent recognition of a high level of excellence.

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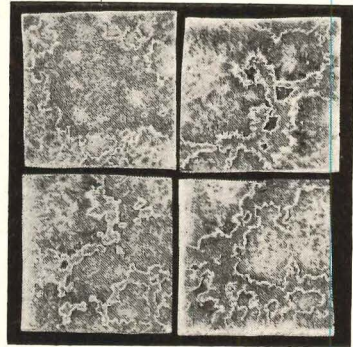
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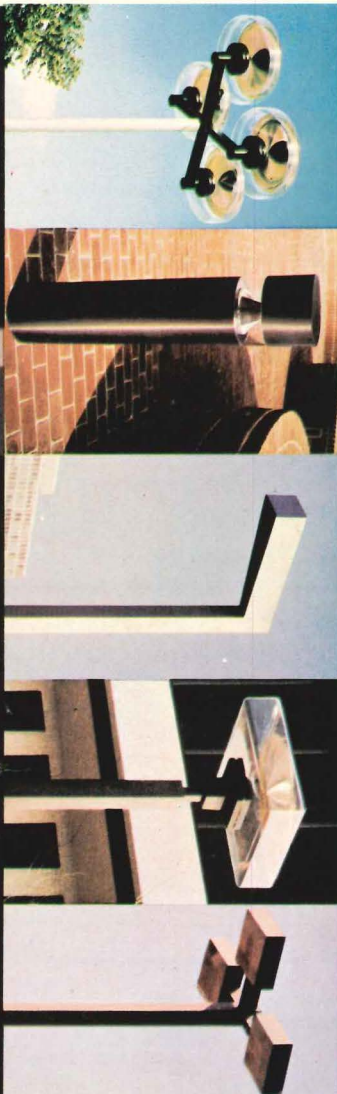
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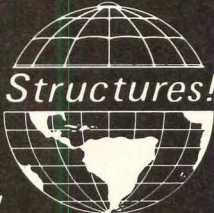
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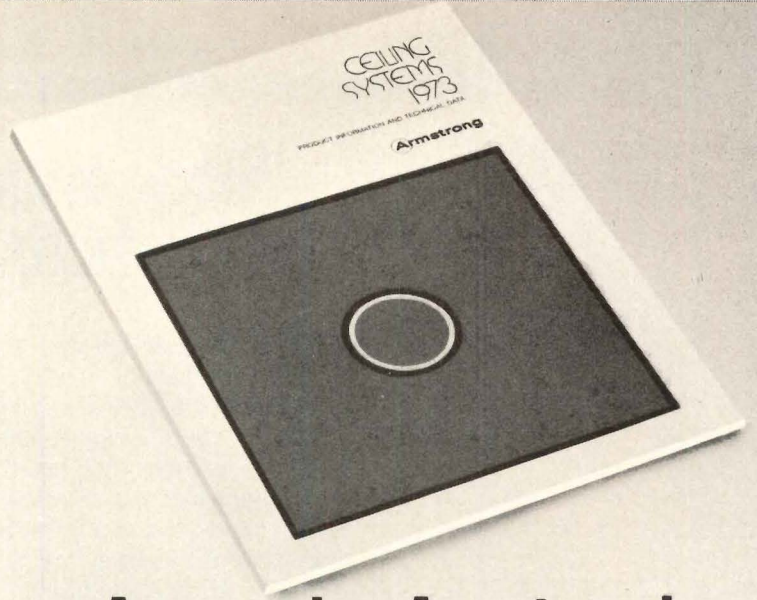


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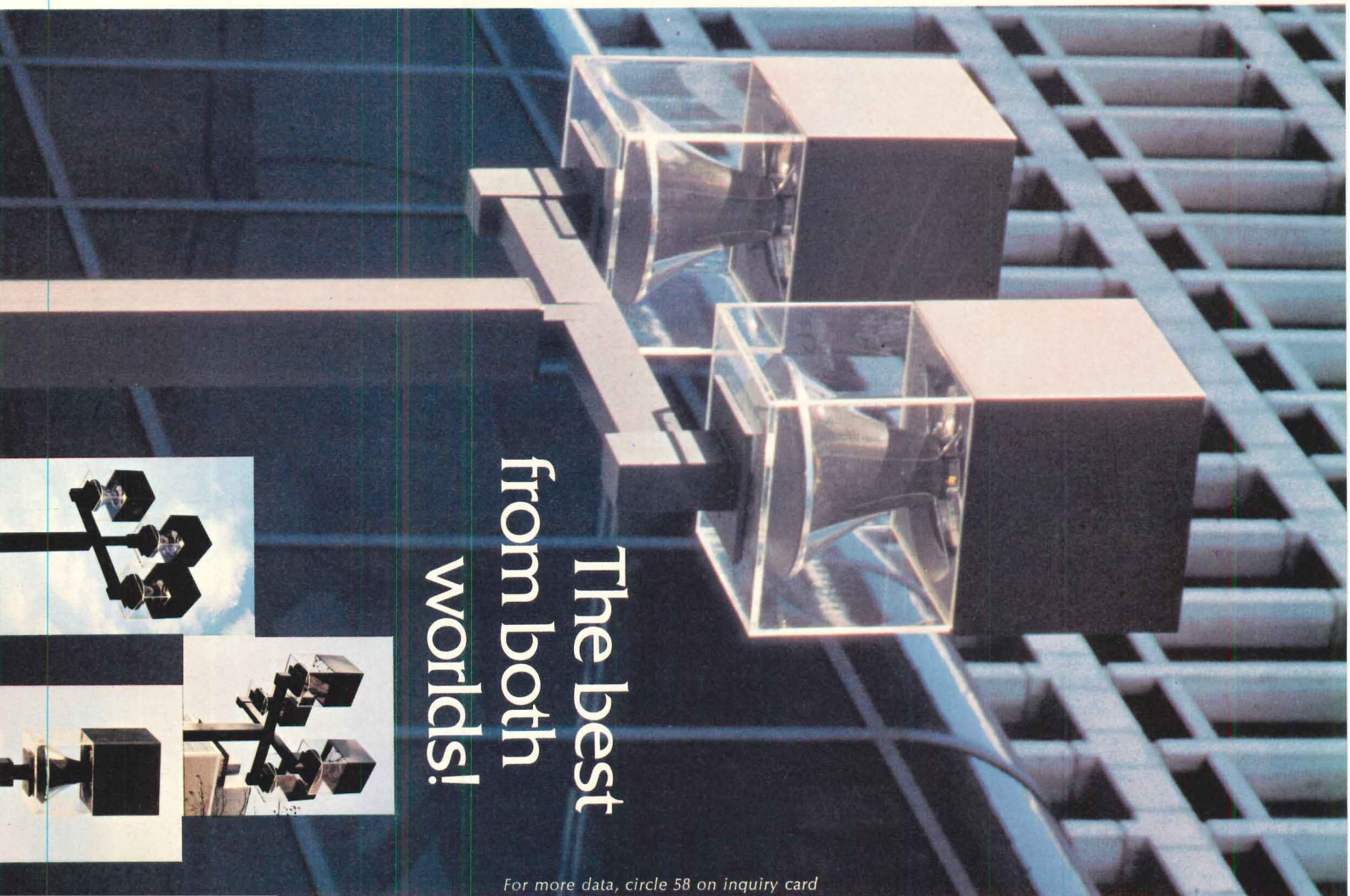


Announcing Armstrong's Complete Ceilings Catalog for 1973.

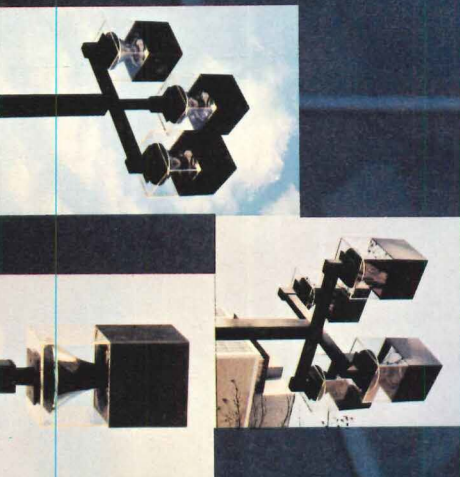
Look for the complete listing of all Armstrong Ceilings in Section 9.1/Ar of Sweet's Architectural Catalog. Or write Armstrong, Lancaster, Pa. 17604, for your free copy.

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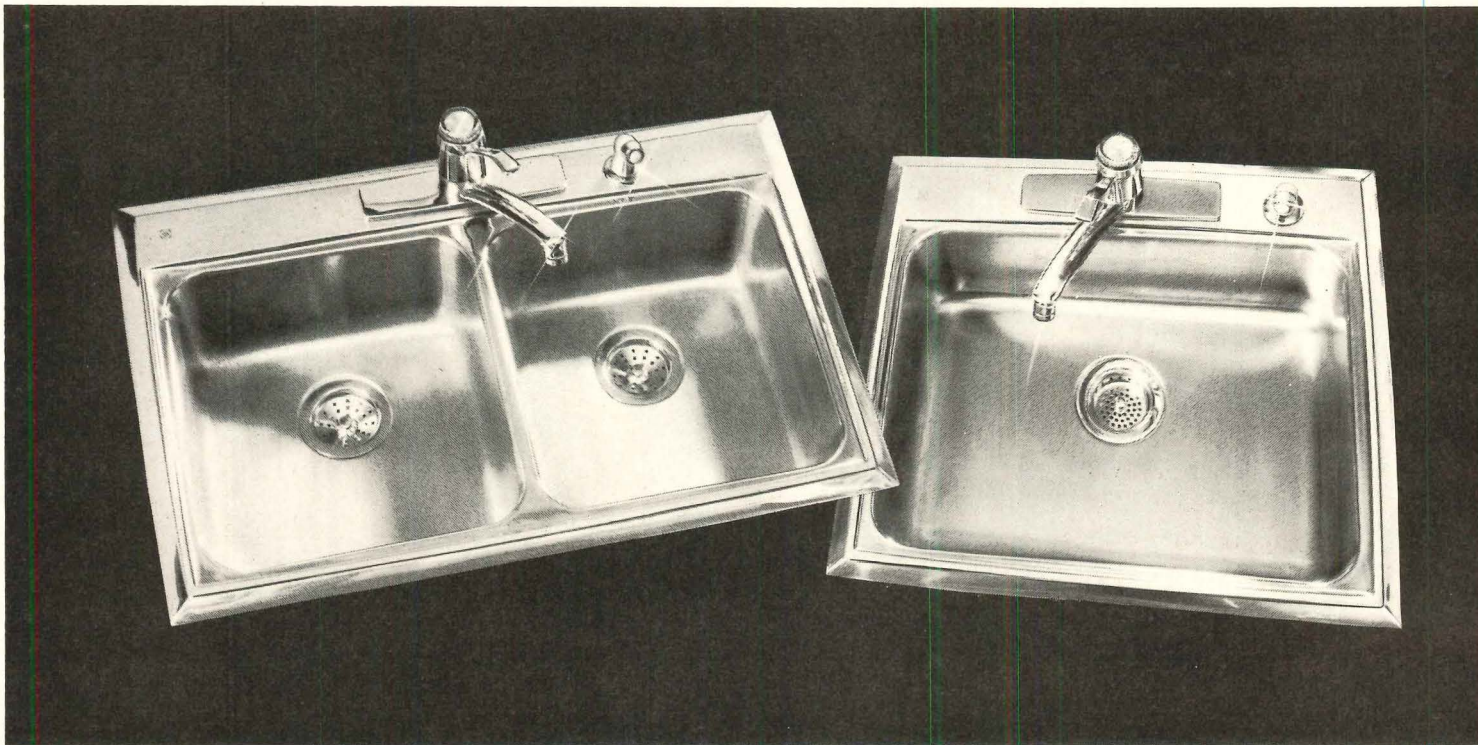
Once you've seen our new stainless steel sinks, all the others seem dull as dishwater.

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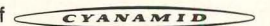


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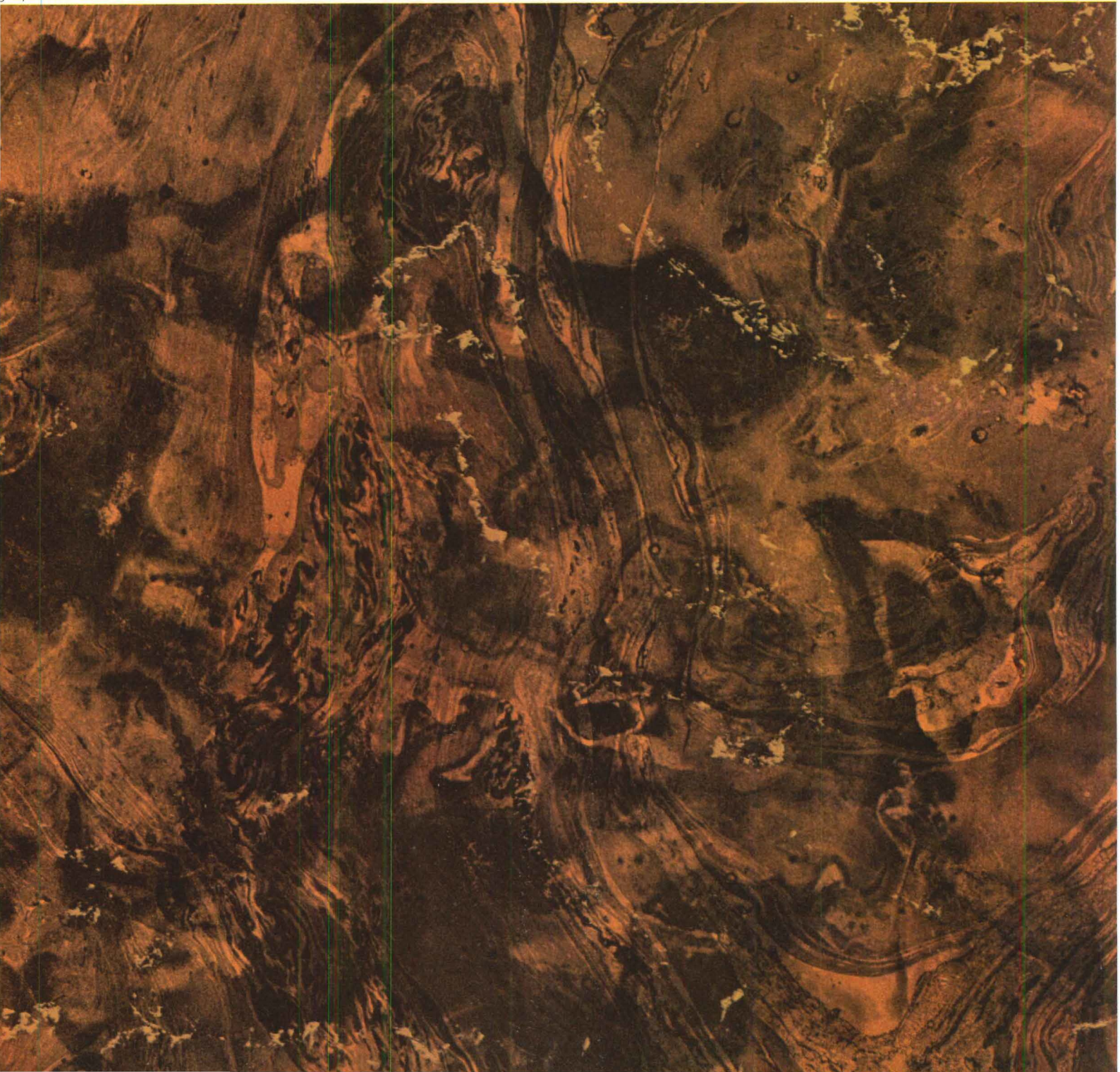


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DESIGN CONCEPT. This chapel in the woods employs large expanses of glass to extend the feeling of interior space. Stone and wood are the basic materials used in the informal, yet disciplined chapel shape. Siting perpendicular to the forested surroundings to form an inspiring background for worship and study.

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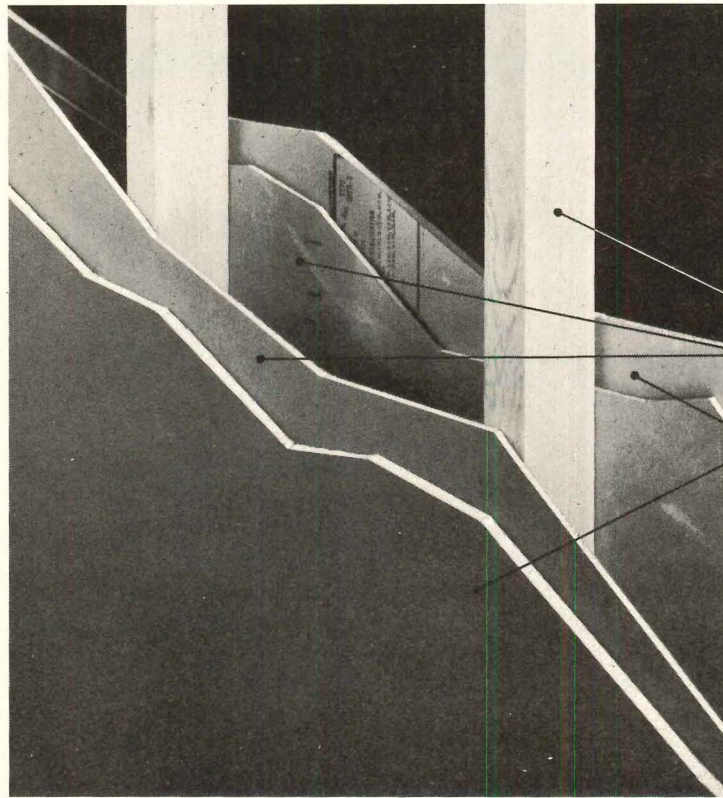
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A jewel of a library in porcelain-enameled steel

The Tuckahoe Branch is one of five in the Henrico County, Virginia, Public Library system serving the suburban county neighbor of Richmond, Virginia.

The architects created a refreshing expression in clean, crisp planes of matte-finish white porcelain-enameled panels. Any tinge of sterility was forestalled by the skillful introduction of highly reflective glass over large areas of the structure.

Architects are making increasing use of porcelain-enameled steel for aesthetic as well as for practical reasons. The development of Nature-tone finishes adds a new dimension to the use of porcelain-on-steel panels, and designers can choose from a palette of twenty-four low-chroma hues. Porcelain-enameled panels, regard-



less of color or finish, are sturdy, light, corrosion-resistant, colorfast, and clean.

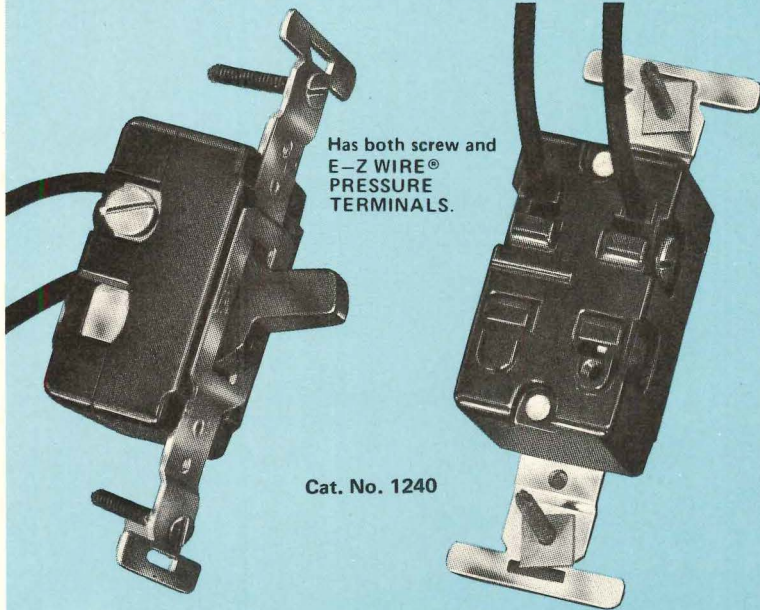
Bethlehem supplies enameling sheets to fabricators who form and coat architectural panels. Write us for information on Nature-tone finishes. Bethlehem Steel Corporation, Bethlehem, PA 18016.

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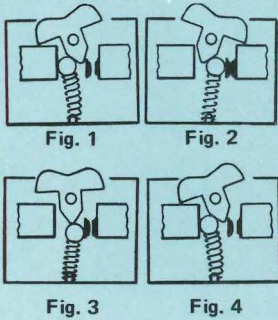


Fig. 1, switch in "off" position (contacts open). As switch lever is rotated, actuating ball compresses the coil spring, but ball must pass pivot point of lever before it can close the contact. As it passes the pivot point it has maximum momentum and closes the contact points positively and rapidly. All independent of hand action (Fig. 2.). As the switch lever is rotated in the opposite direction, Fig. 3, the ball is depressed and slowly releases some spring tension on the contact arm, permitting the contact points to open enough to break the arc slowly. Then as the ball passes the pivot point it completes the cycle (Fig.4.).

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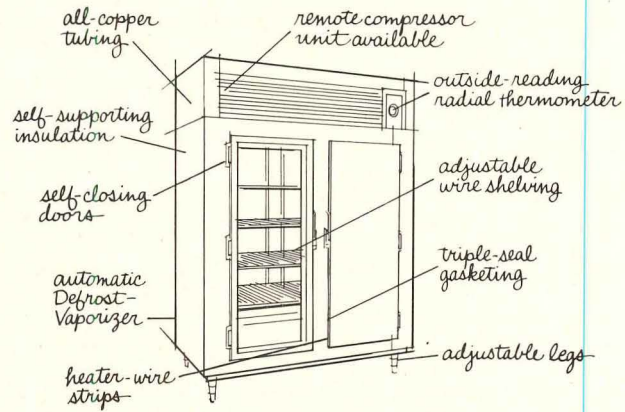
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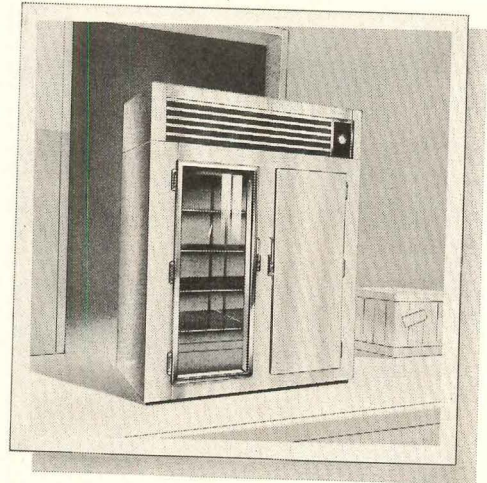


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5 public and private forestland not suitable for commercial trees, or set aside for parks and wilderness areas.



19% state and federal forestland.



And to a *lot* of people.

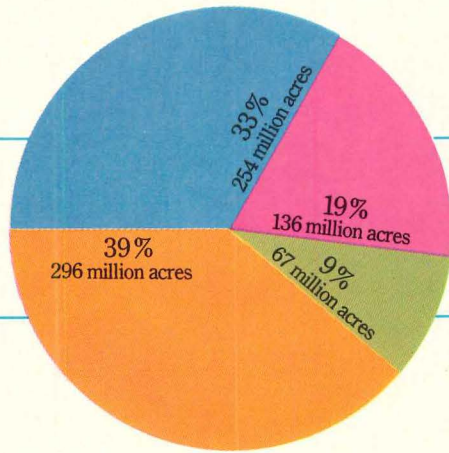
To begin with, four million individual Americans own 39% of the entire forest—a forest that's still nearly three-fourths as large as it was when Columbus landed.

Then, too, *everybody* shares ownership in that 19% of the forest owned by federal and state governments which supplies so much of the raw material for building our houses and cities and making our paper products.

And when you add the 17 million acres of forestland that's been set aside for parks and wilderness areas, and the government land not suitable for growing commercial trees, the American people—individually or collectively—own 91% of America's 63 million acres of forest.

So if the forest industries seem

5 individually-owned forestland.



to own more than their 9%, it's probably because with responsible, scientific management they've been able to make this 9% produce 26% of all the raw material we need for today's wood and paper products, and still keep America green and growing.

Source: Department of Agriculture, U.S. Forest Service.

For the whole story on America's forest today, get "Forests USA." For your copy of this full-color, 16-page booklet, send 25¢ to AFI, P.O. Box 963, Arlington, Virginia 22216.

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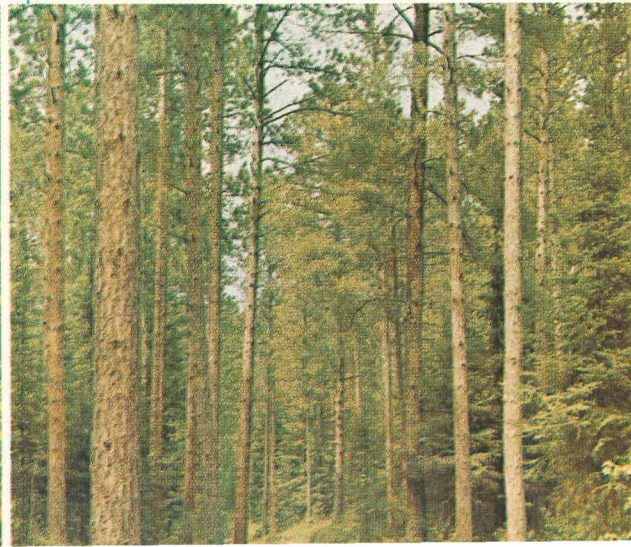
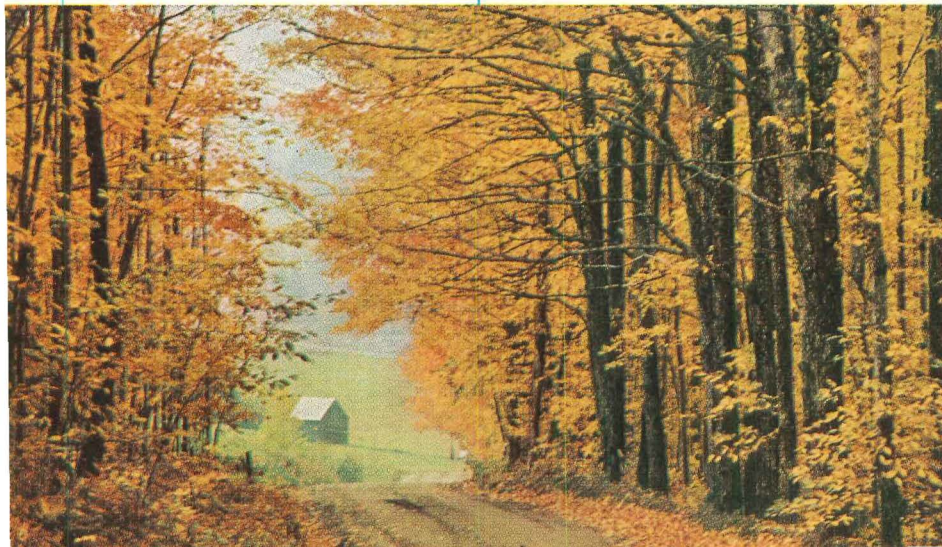
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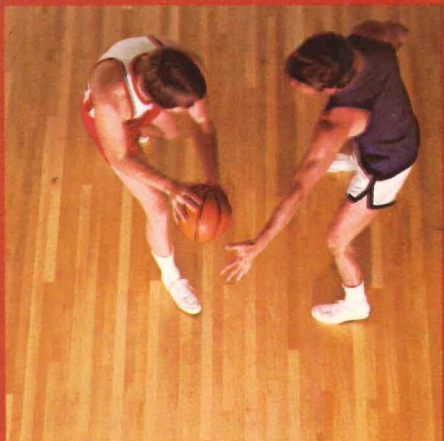
American Forest Institute 29F

9% forest products industry forestland.

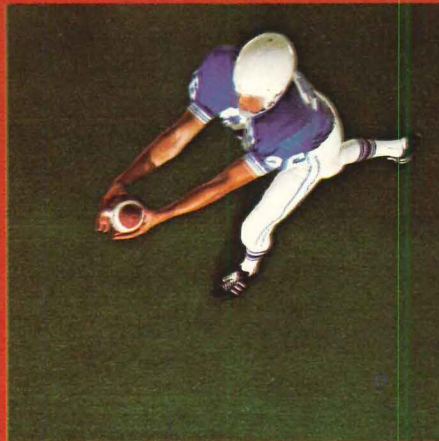




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TEAM APPROACH DISCUSSED, APPLAUDED AT PRODUCERS' COUNCIL MEETING

Some of the conclusions reached at the Third National Conference for the Building Team, sponsored April 11-13 at the Drake Hotel, Chicago, by the Producers' Council, Inc.: The team concept is a valid, evolving approach to the construction of buildings and the architect is a vital co-member of the team as it operates today. The owner, as ultimate bill payer, has to be the team coach; he ends up with the building, good or bad. Some team combinations have produced catastrophic overruns, due to member selection rather than concept, but on the whole the team approach has been working successfully.

Approximately 50 speakers covered a program of wide-ranging topics from negotiated contracts to ideas for cost reduction without sacrifice of quality.

In a cost control session, Calvin B. Dalton, president of Dalton-Dalton-Little-Newport, large multi-disciplined Cleveland firm, described exterior facing as the biggest architectural variable in any project. The time to control costs is when the design starts, he said, adding that the reason the architect is "on board" for the building team approach is to see that you [owners] "get what you pay for and that you don't pay for what you don't get." Computers are used extensively in DDLN work, and value engineering is a part of every one of its projects.

Application of the team concept on a massive scale was outlined by spokesmen for the Federal government's Public Buildings Service: Frank J. Matzke, associate commissioner for project management, and Clifford A. Thomas, project manager for the big Social Security payment centers PBS is building for HEW. A case histories panel heard them detail agency experience with performance specifications, systems construction and construction management on this three-building project. Earlier, Larry F. Roush, acting PBS Commissioner, had told a management techniques workshop that these government innovations had been aimed at improving unacceptable cost, time and quality in construction.

"Our efforts in bringing these innovations into being followed only when it became abundantly clear that the majority of manufacturers, architects, contractors and other major action groups in the industry would not provide the leadership themselves," Roush said.

A labor/management forum highlighted employment issues as they impact on the building team operation. Members naturally divided on the question of the permanency of the current trend toward more open shop work but agreed increased productivity was the strongly-sought element needed to improve current conditions.

There were sessions on legal liability, quantity surveying, and project analysis, project financing and the Occupational Safety and Health Administration's impact on construction. Others dealt with fire safety in tall buildings and the automation contractor, pictured as the newest member of the team.

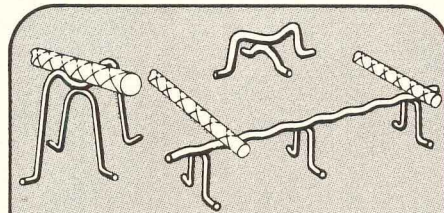
About 250 were registered.

—Ernest P. Mickel

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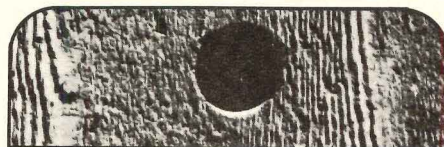
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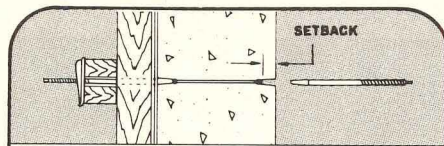
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"The carpet requirements were rich look, easy maintenance and durability to withstand the crowds," says Bob Kieschnick, owner of Superior Carpet Co., who supplied the carpet. "We got them all with MILSTAR, plus the efficiency of free-lay tiles." The imaginative renovation of the Music Hall was the combined effort of Jarvis, Putty & Jarvis, architects, Avery Mays Corporation, contractor, and Superior Carpet Co., Dallas, Texas.

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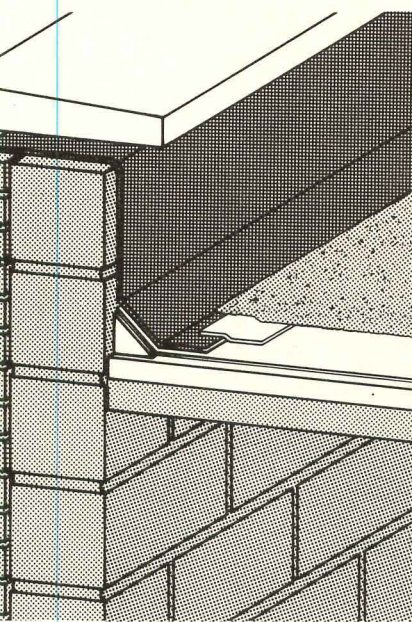


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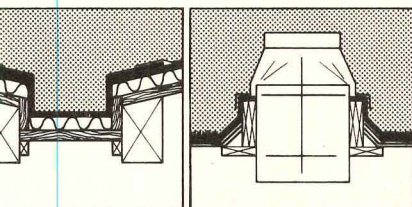
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REQUIRED READING

PLANTS / PEOPLE / AND ENVIRONMENTAL QUALITY: A Study of Plants and Their Environmental Functions, by Gary O. Robinette.

The title promises that this will be a valuable addition to any architect's library. Unfortunately the book doesn't live up to the promise. It is designed to be both hortatory and informative, and in the former mode it is particularly unsuccessful and occasionally mindless, as for instance when it comes out against espalier plants as unnatural and therefore almost immoral, or in the Preface, which simply doesn't make sense. The sales pitch, dismal though perhaps reasonable, seems to be that since most people are not tuned in to the natural beauty of plants and trees, they might be won over by being told how "useful" these amenities are.

The descriptions of architectural uses of plants and trees are probably familiar to most experienced architects, and many of the hard facts are admirably covered in the new edition of *Architectural Graphic Standards*. But there are sections on acoustical, pollution, wind, and temperature control which are informative and perhaps unfamiliar. There is also a bibliography to lead the curious farther down particular paths.

The fairly modest price might offset some of the book's faults and makes it worth having in a professional office for small jobs where a landscape architect cannot be called in. It could also prove occasionally useful as a supplementary reference book and, because of the bibliography, as a guide to further research.

Full marks, then, to the author and to the American Society of Landscape Architects Foundation and the National Park Service, who sponsored the book, for their splendid intentions. Bad marks for their execution. Bad marks, also, to the Service Center of the National Park Service for a second-rate job of graphic design, which provides yet another piece of justification for the First Federal Design Assembly held in Washington last month.

U. S. Department of the Interior, National Park Service, Washington, in collaboration with the American Society of Landscape Architects Foundation, paperback, 139 pages, illus., \$4.00.

MR. JEFFERSON, ARCHITECT, by Desmond Guinness and Julius Trousdale Sadler, Jr. The authors of this book do not blaze many new trails in the study and interpretation of Thomas Jefferson's architecture, though, for the punctilious, they do correct several misconceptions in the standard work, Fiske Kimball's *Thomas Jefferson, Architect*, first published in 1916 (but still available in several reprint editions).

In any case, it is good to have the usual facts, quotations, and drawings in a modern format, accompanied by photographs that are on the whole clear and handsome, with the embarrassing exception of those of Monticello.

Still remaining to be answered convincingly is the question of whether Jefferson's architecture is very original or influential in itself,

continued on page 91

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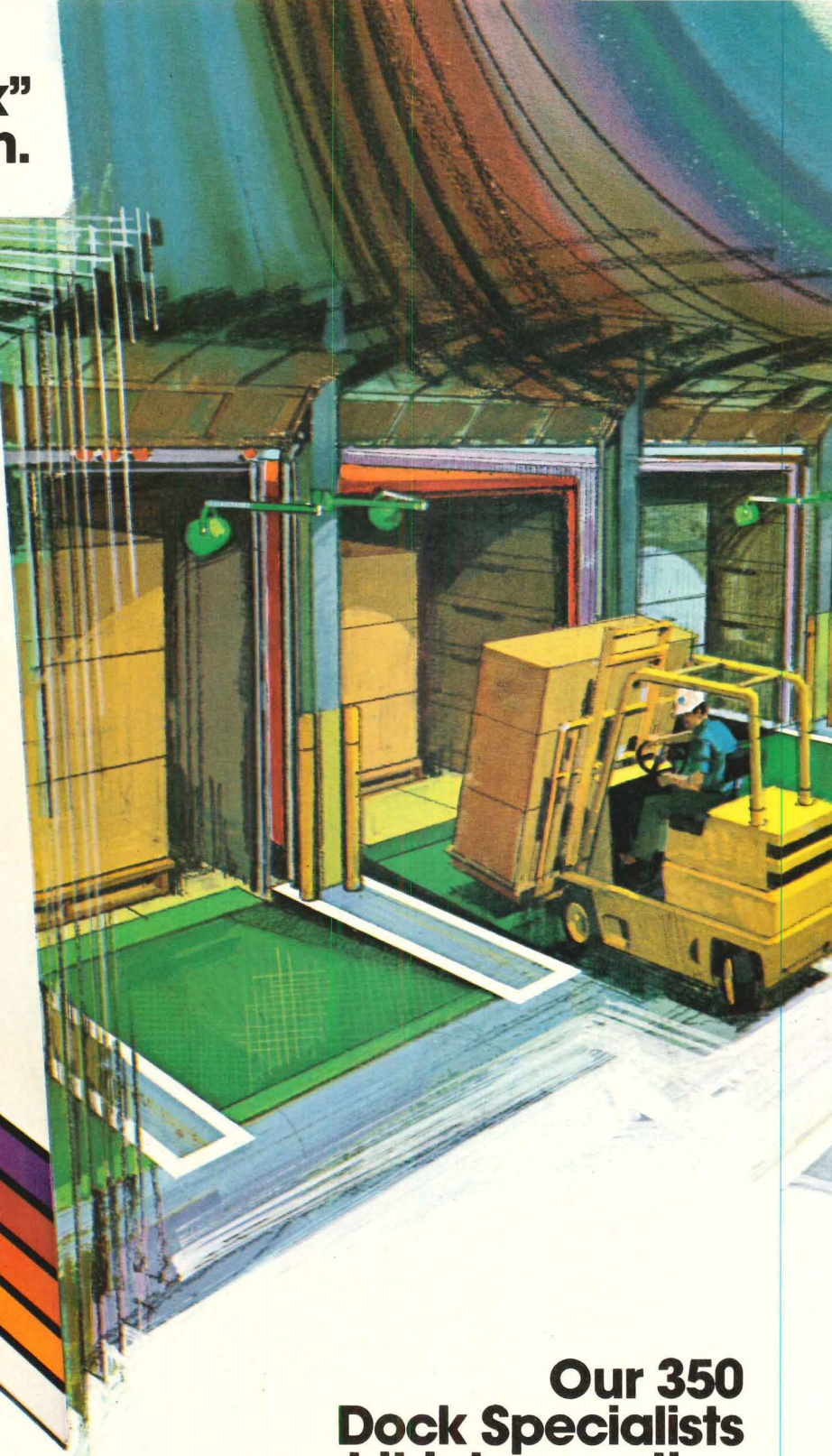


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continued from page 87

Whether its fascination lies mainly in the fact he managed to be an architect at all (would you ask a current politician to help design your house?). The question is fraught with jingoistic overtones, and the appellation of "first truly American architect" falls out with great facility. It is surprising that Mr. Guinness, a foreigner, doesn't look into the matter more seriously.

...g Press, New York, 1973, 177 pages, illus., \$14.95.

PAINTS & COATINGS HANDBOOK, by Abel ...ov. A former World War II intelligence officer has turned his investigative powers to paints and coatings, and three million written words (not all of them in this book) plus extensive consulting activities would qualify Mr. ...ov as an expert. Listed paint specs, by detailed performance for various applications, are given the author's GPC numbers, which he hopes will become standard in the field. Included are 60 Federal paint specs. Costs are emphasized and broken down by various uses including surface preparation and long-term maintenance. The maintenance projects could produce surprising results to the price, and would again indicate that lowest costs are not always an economy. Encouragement of paint type selection prior to proprietary brand selection enables more flexible specification writing. Sections on the theory of behavior, application methods, etc. are good for everyone, but in general this book will not make easy casual reading. It could make an invaluable reference book.

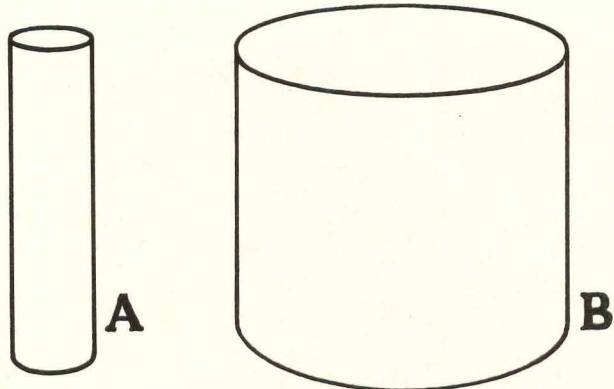
...ctures Publishing Company, Farmington, Michigan, hardcover, 399 pages, illus., \$20.00.

ANALYTICAL MODELS FOR URBAN AND REGIONAL PLANNING, by Ian Masser. Methods of obtaining practical input for the establishment of planning conclusions are given. With the stated aim of recognizing the firm direction that the art will take in recognition of increasing social change, the book shows a level of sophistication that attempts at precision are taking. Subjects covered include population change, economic activity and spatial organization. An introduction to matrix algebra is furnished for the uninitiated and might well be needed by many. Repeated warnings against the dangers of naive extrapolation may lead many readers to the conclusion that this is heavy reading and only for the dedicated urban planner.

...ted Press, New York, New York, hardcover, 164 pages, \$5.00.

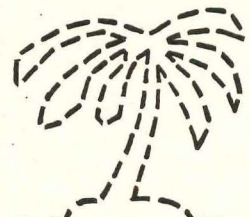
THE CABINET-MAKER AND UPHOLSTERER'S DRAWING BOOK, by Thomas Sheraton, with a new introduction by Joseph Aronson. This is the latest in Dover Publications' growing and admirable series of reprints of old books on architecture and related matters.

...er Publications, New York, paperback, 240 pages, illus., \$5.00.



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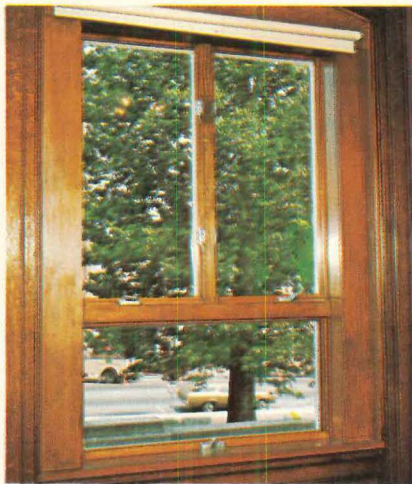
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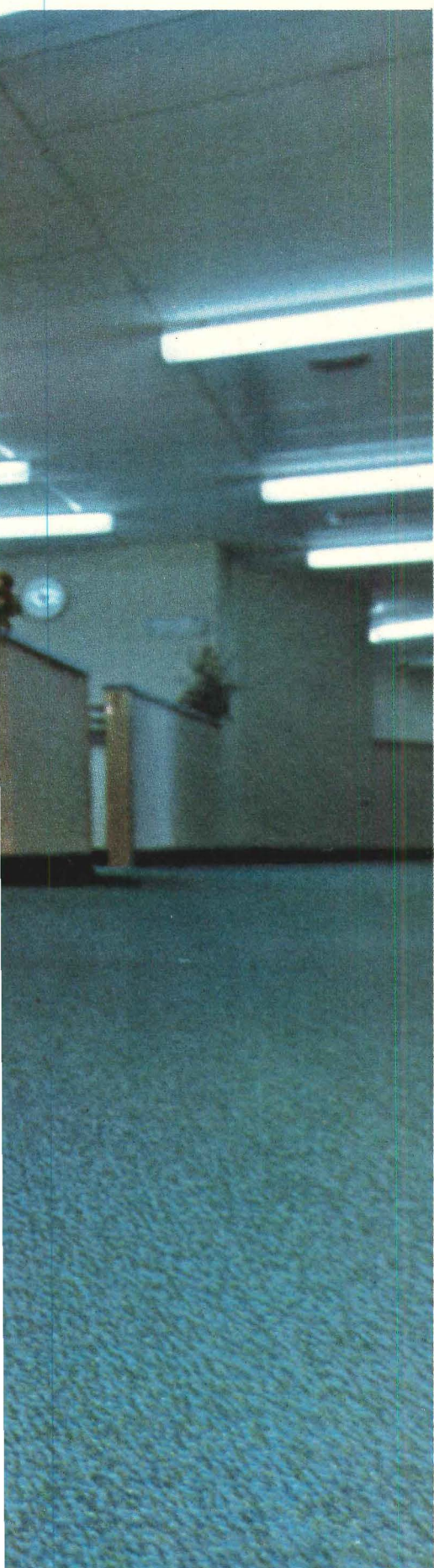
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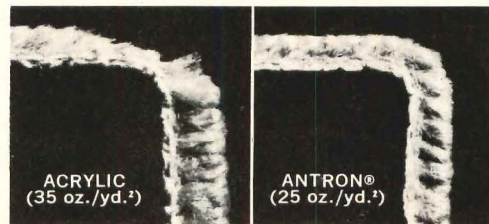
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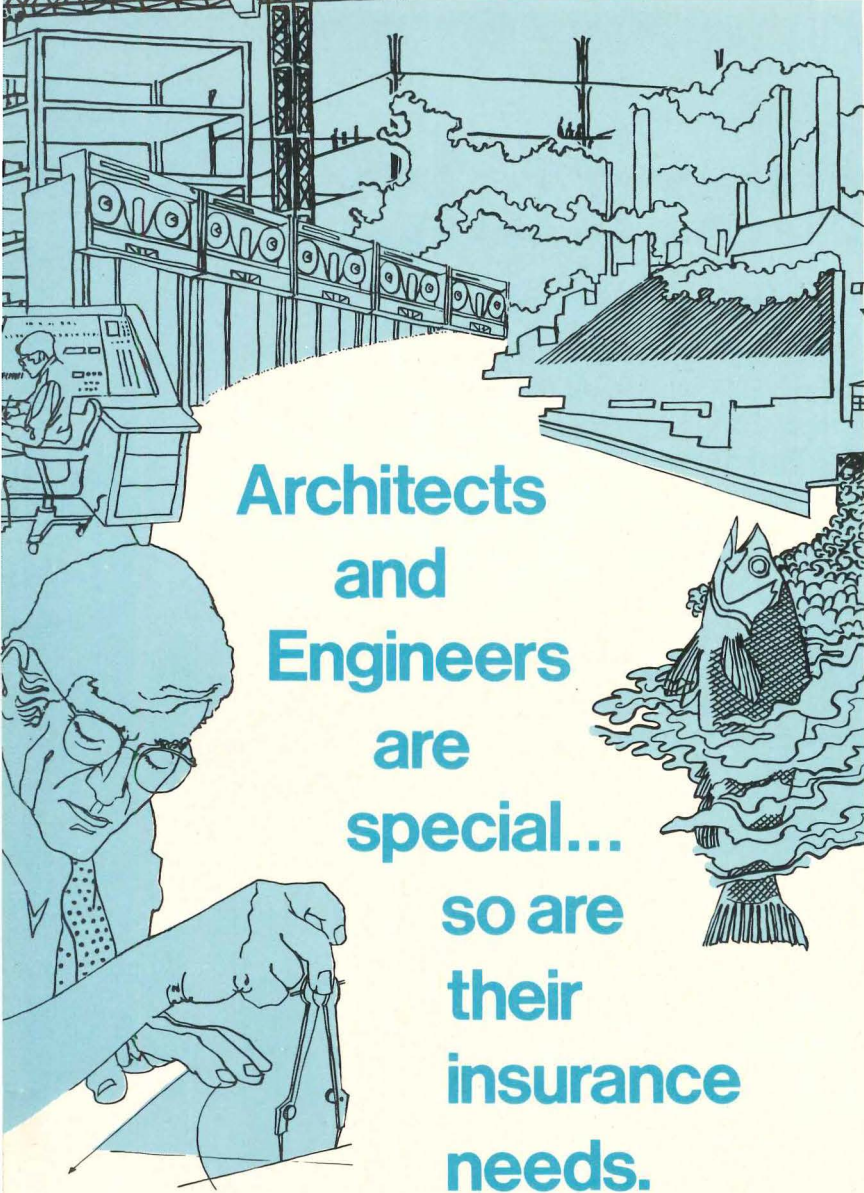
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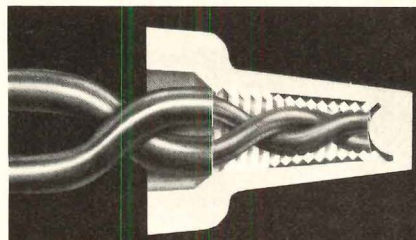


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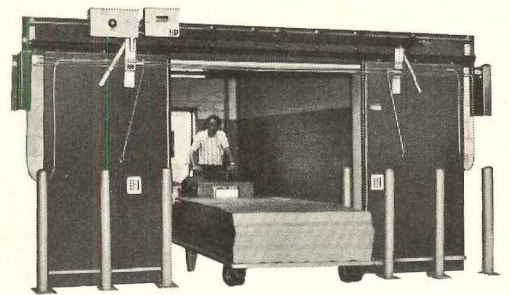
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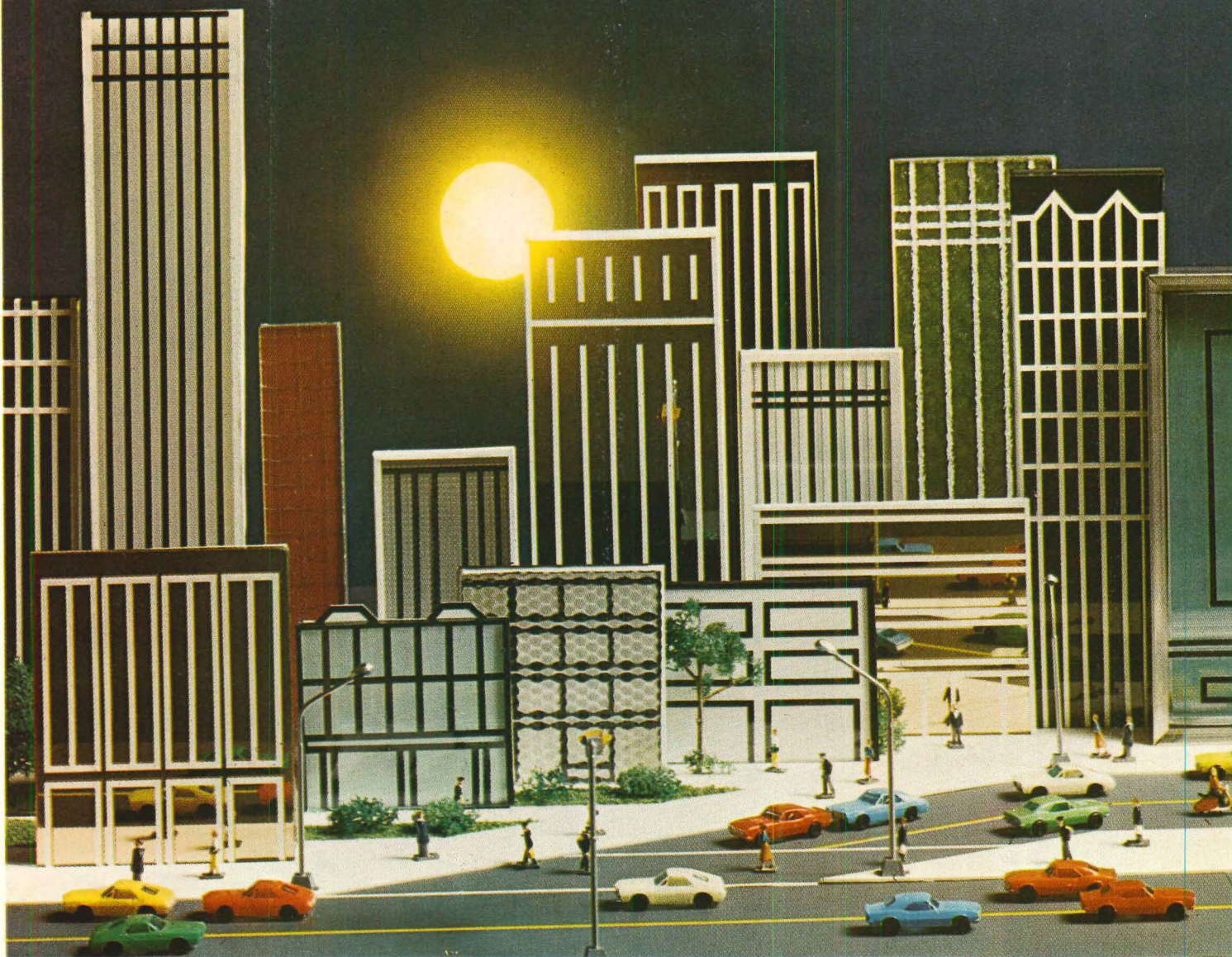
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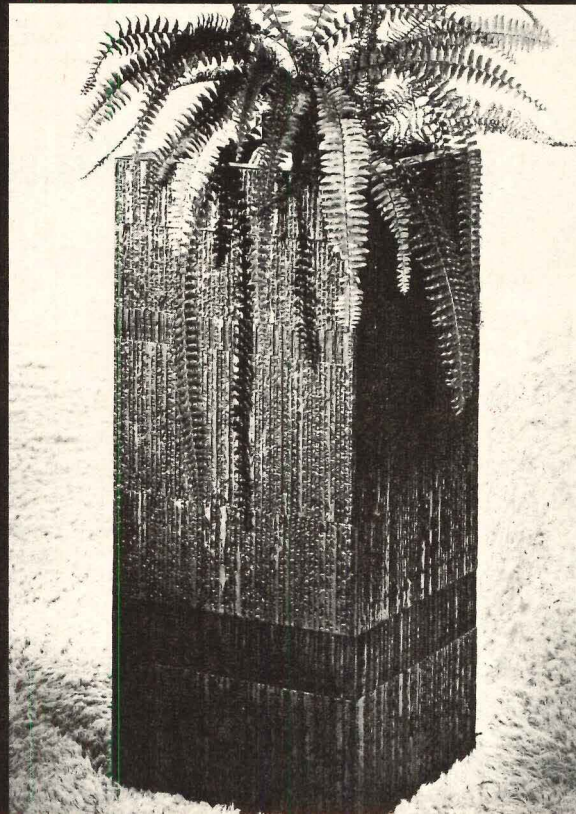
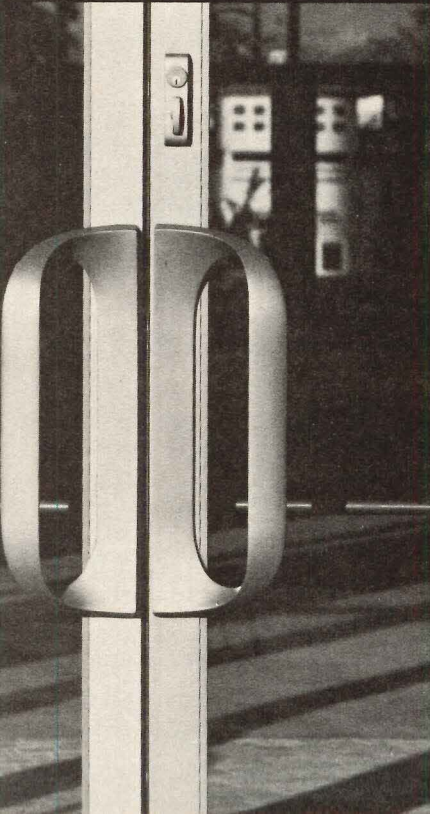
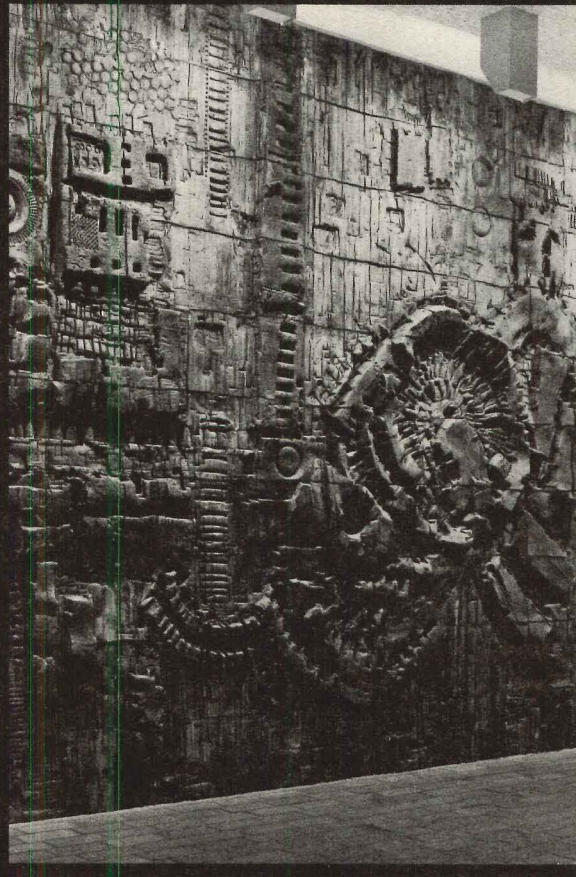
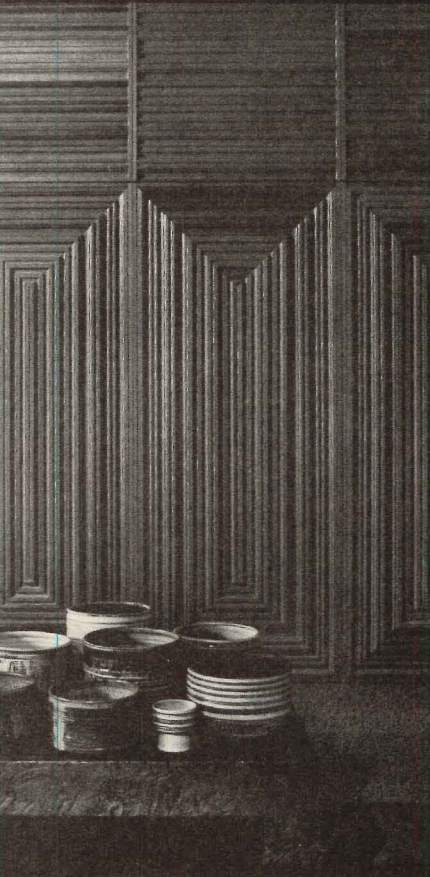
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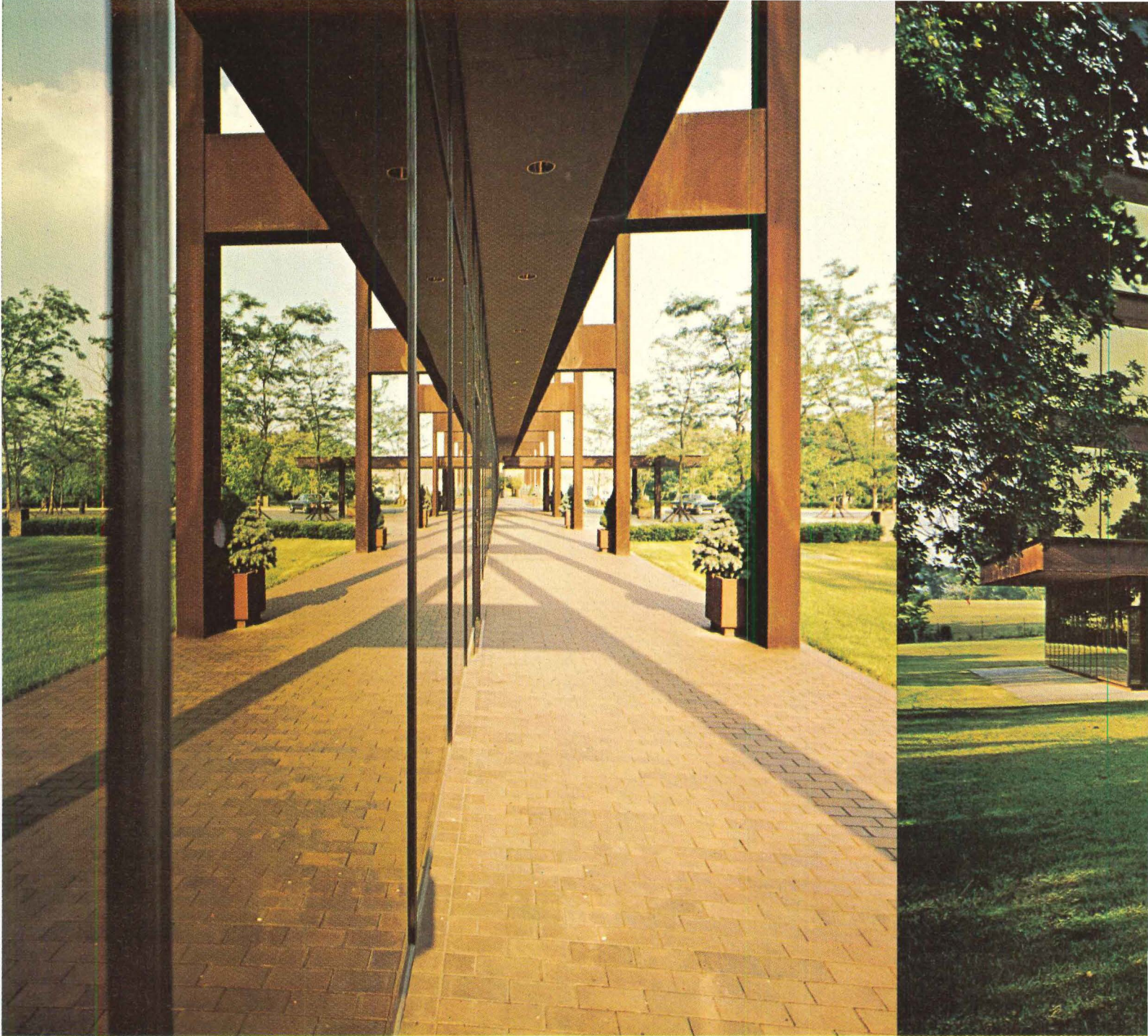
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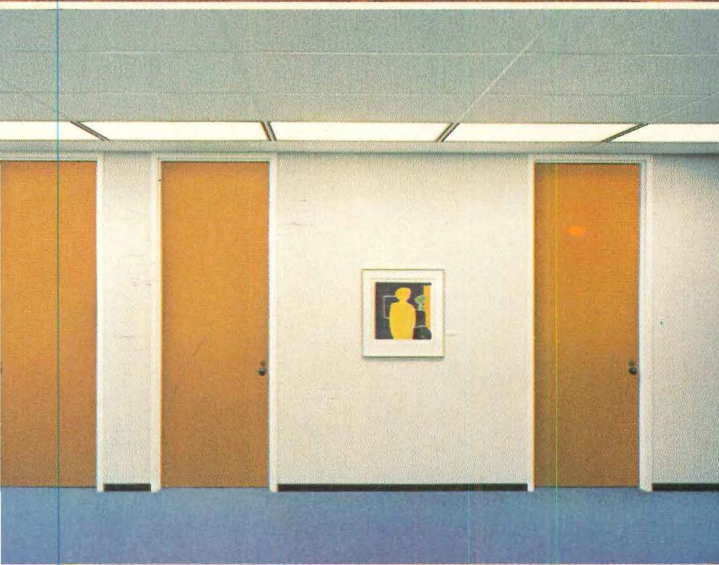
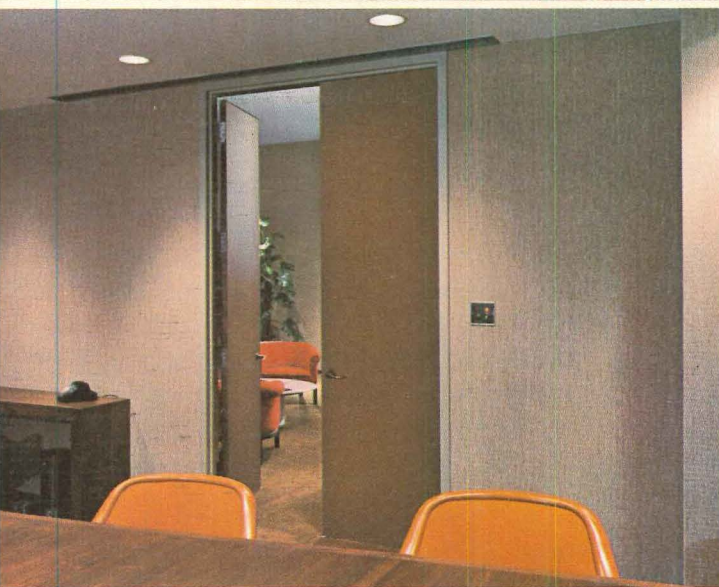


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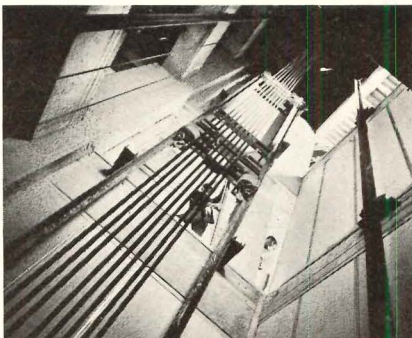
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(Above: left to right) • **The Penn Mutual Building**, Philadelphia. Developer: Richard B. Herman & Co., Division of Binswanger/Herman Co. Architects: Mitchell/Giurgola Associates
• **One Shell Square**, New Orleans. Developer: Gerald D. Hines Interests. Architects: Skidmore, Owings & Merrill, August Perez & Associates, Wilson, Morris, Crain & Anderson • **Sears Tower**, Chicago. Developers: Sears, Roebuck and Co. Architects: Skidmore, Owings & Merrill
• **Broadway Plaza**, Los Angeles. Developer: Ogden Development Corp. Architects: Charles Luckman Associates • **Standard Oil Building**, Chicago. Developer: Standard Oil Company (Indiana). Architects: Edward Durell Stone & Associates, Perkins & Will.

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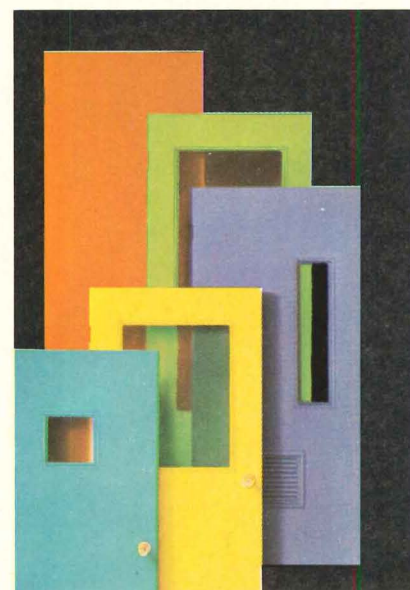
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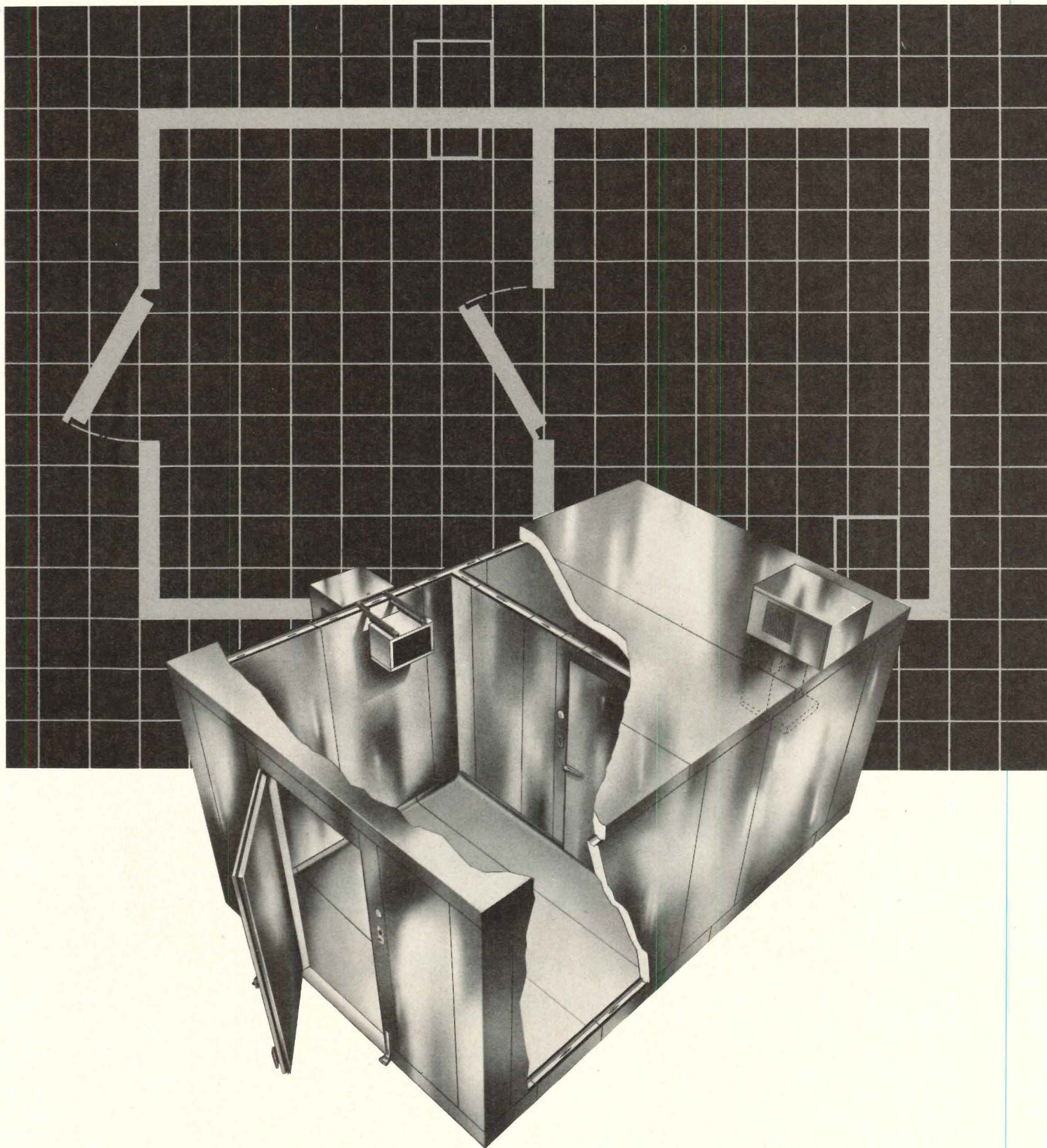
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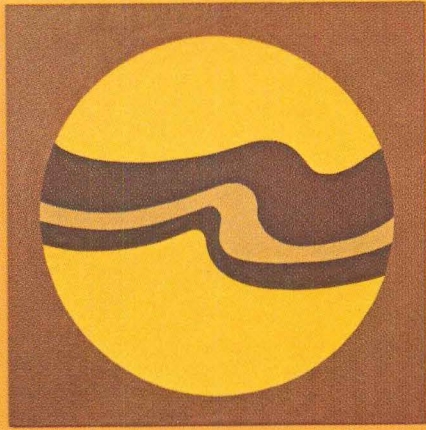
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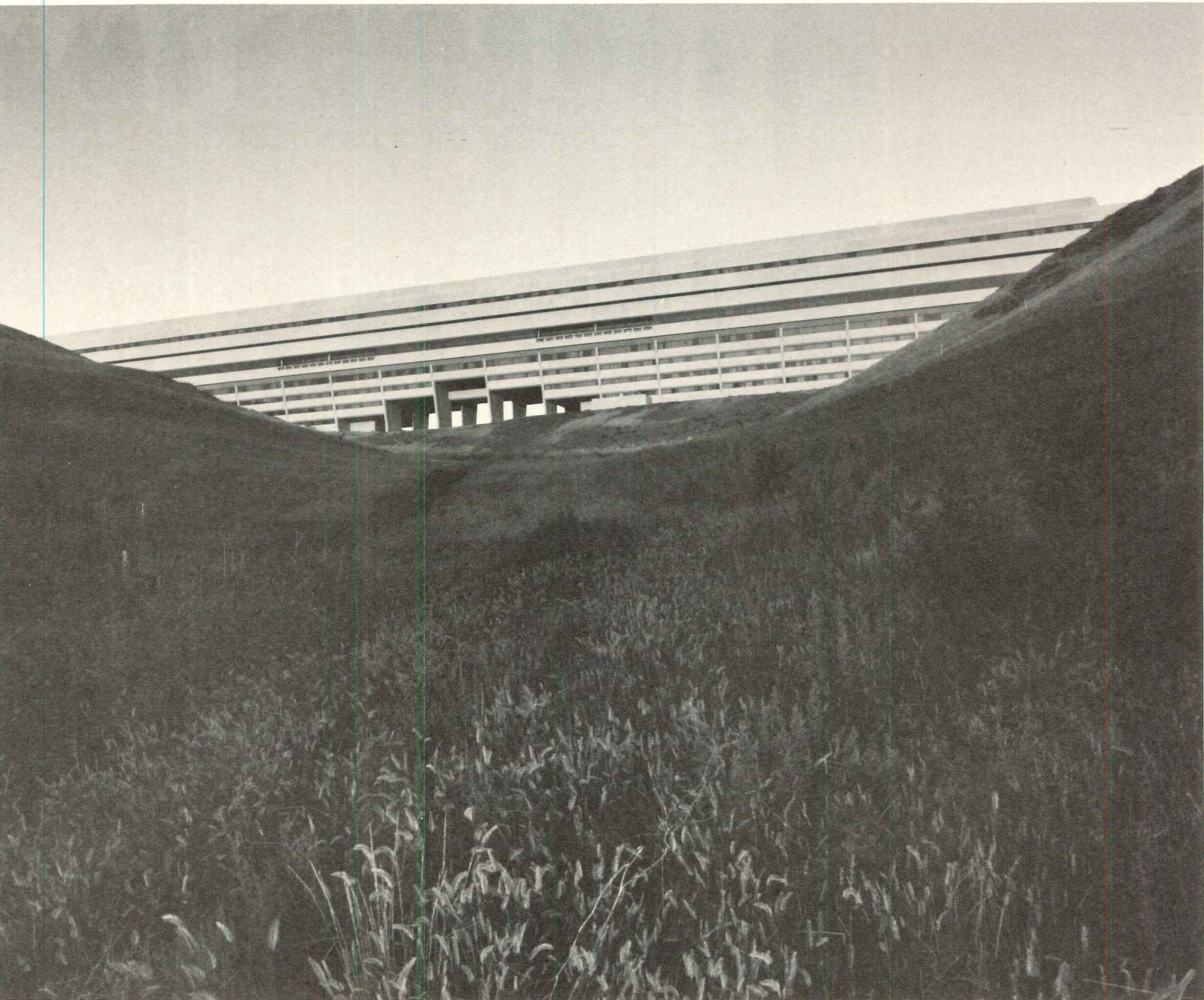
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ARCHITECTURAL RECORD MAY 1973

THE UNIVERSITY OF LETHBRIDGE

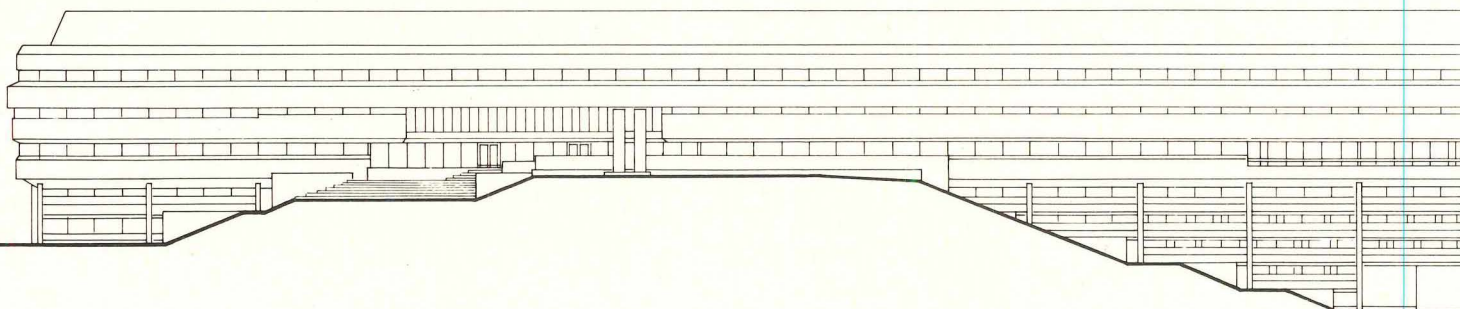
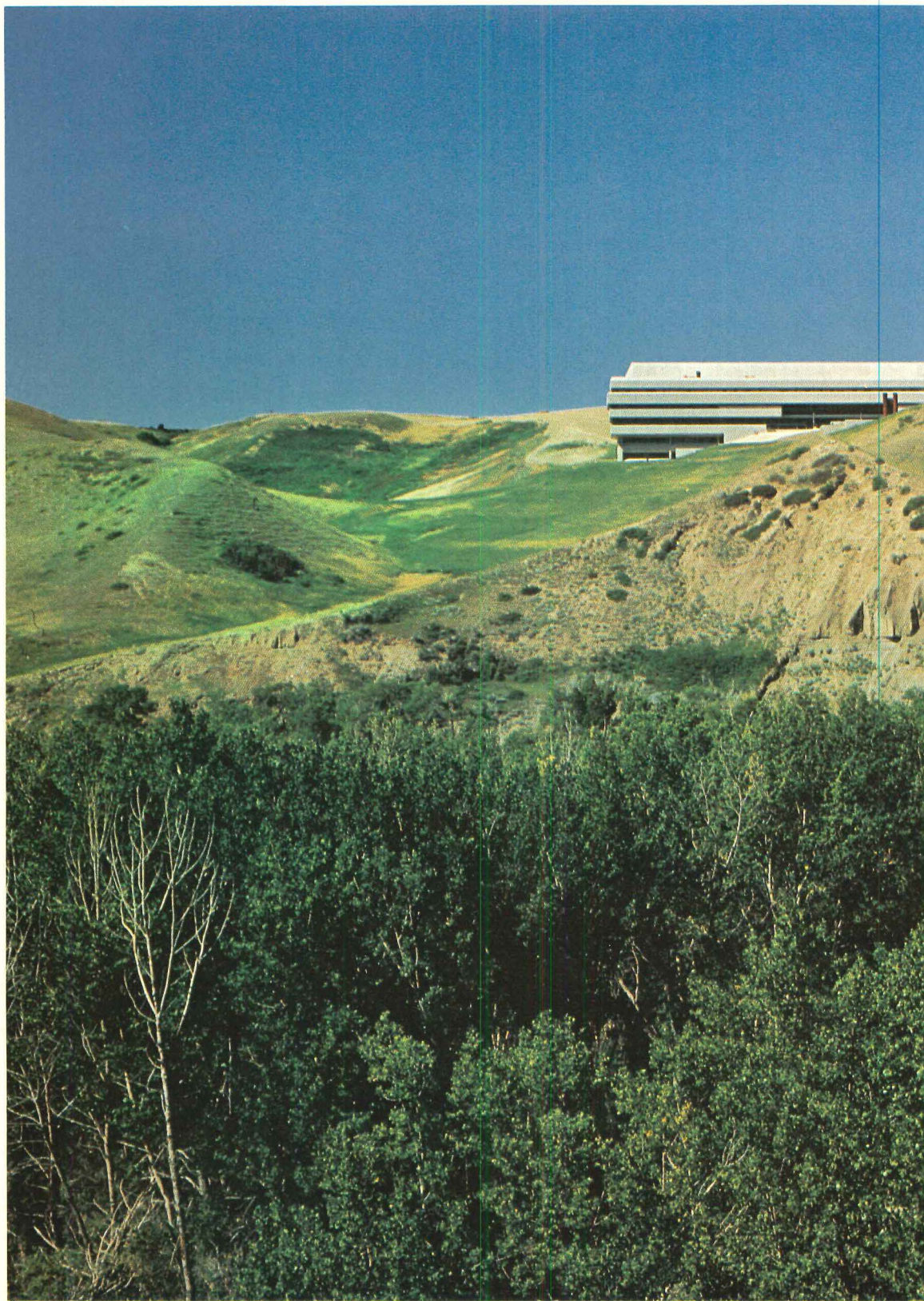
PROJECT ONE

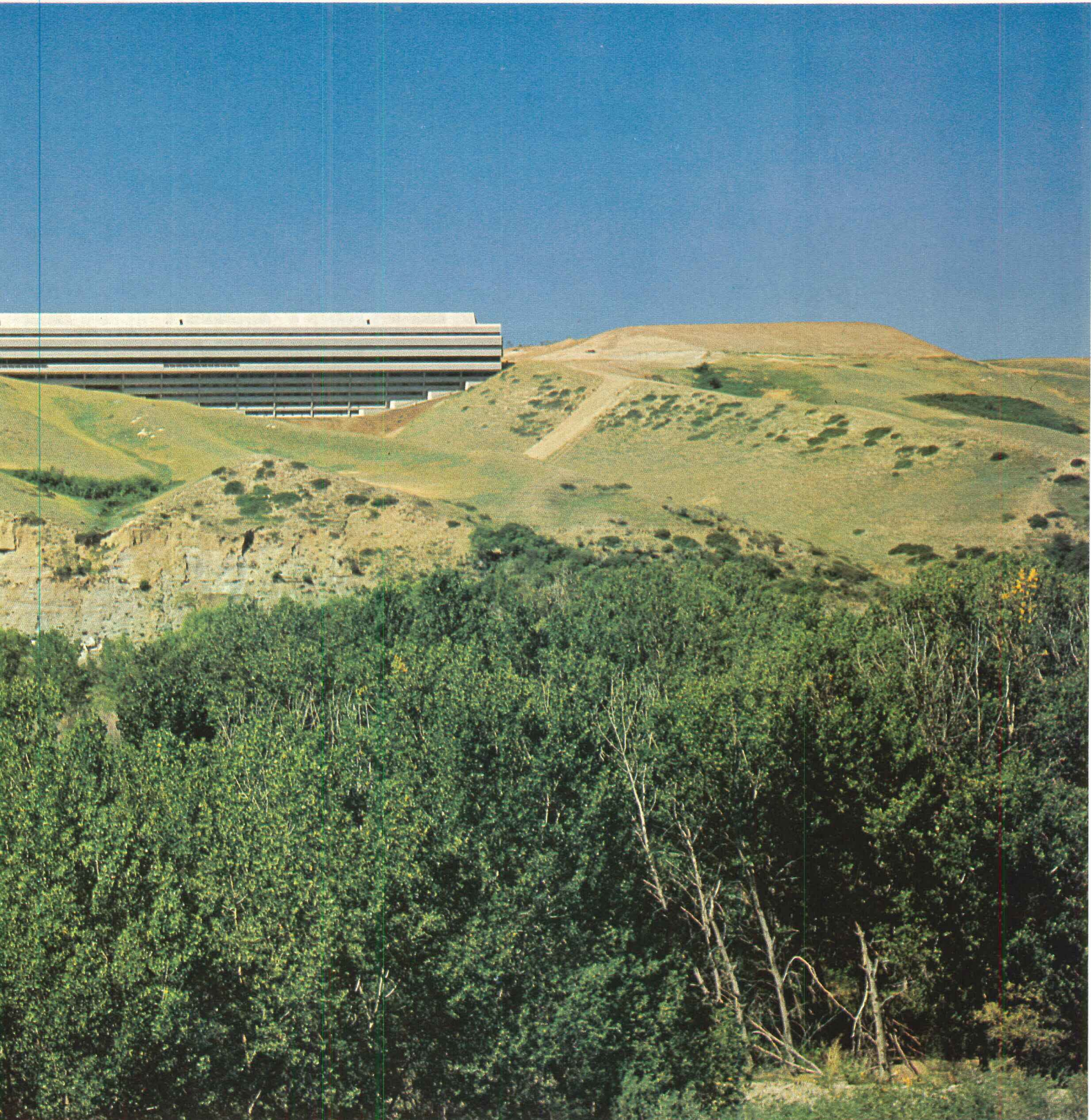


This distinguished building by Canada's eminent architect, Arthur Erickson of Erickson-Massey Architects, is the first to be constructed for the new University of Lethbridge at Lethbridge, Alberta. It is the architectural statement of an often expressed but seldom implemented educational idea—that learning and living are integral parts of the process of learning. Within this building are all the essentials of a university: residence and learning take place under the same roof; students and faculty meet with unexpected ease, and ideas can be exchanged freely. Learning is extended beyond the classroom. It is a bold experiment.

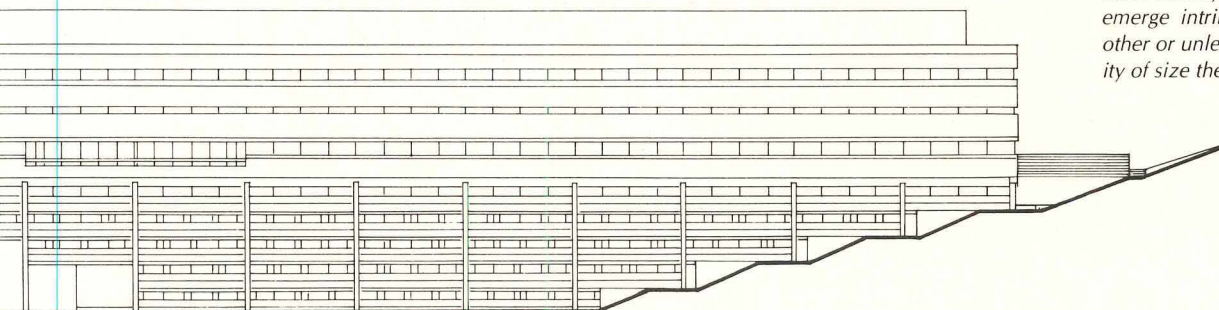
This first building for the University of Lethbridge has a superb location overlooking the valley of the Oldman River and the city of Lethbridge. It fits into the undulations of its site, using the contours to its advantage and for its own purposes, so that its height varies while its roof line remains constant, a flat plane that hardly rises above the line of the horizon. The best over-all view of the building is from the east, from Lethbridge, and it is the only view of it that can be had on the nine-mile drive from city to campus. The road climbs from the river valley to the high prairie and then turns down toward the coulees (a western word for gully) for a sudden and dramatic change in scale which the siting of the building reflects. Gradually the roof comes into view as you reach the campus, but not until you stand on the brink of the coulee is the whole immensity of the complex visible and comprehensible for the first time. It is a breathtaking moment, for this is a very large building—912 feet long, nine stories high—and it stands, for the moment at least, in the midst of an almost barren landscape. In such a setting, the building had to be bold and, because of its program, it could not be other than large. Even when development takes place around it—the university itself will grow, and the city expects to grow to the west of the campus—its “generosity of size,” to borrow an Erickson phrase, will be right for its site.

Within this one building are contained all the parts that make up a university: student residences, classrooms, laboratories, offices for administration, faculty and student activities, library, bookstore, dining room, snack bar—everything except Fine Arts and Physical Education which have their own building (Project 1A, Robins Mitchell Watson, architects). So complete an integration of residential and learning



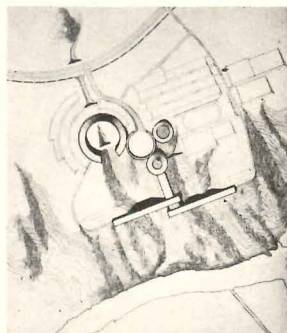
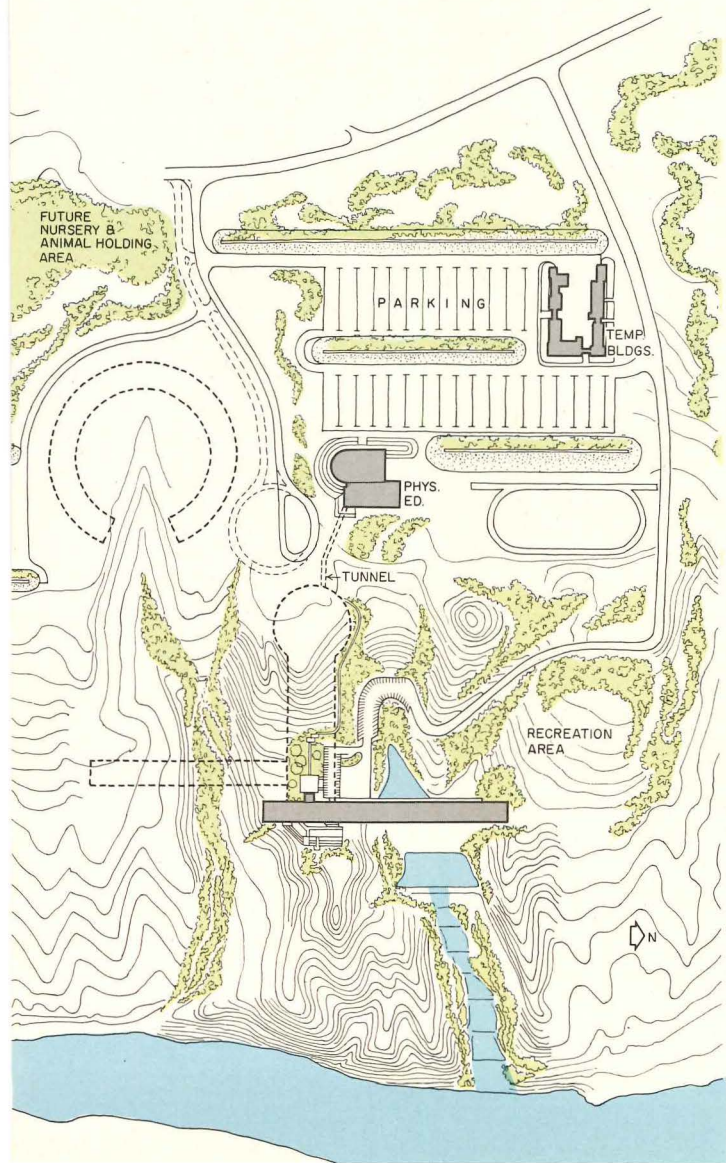
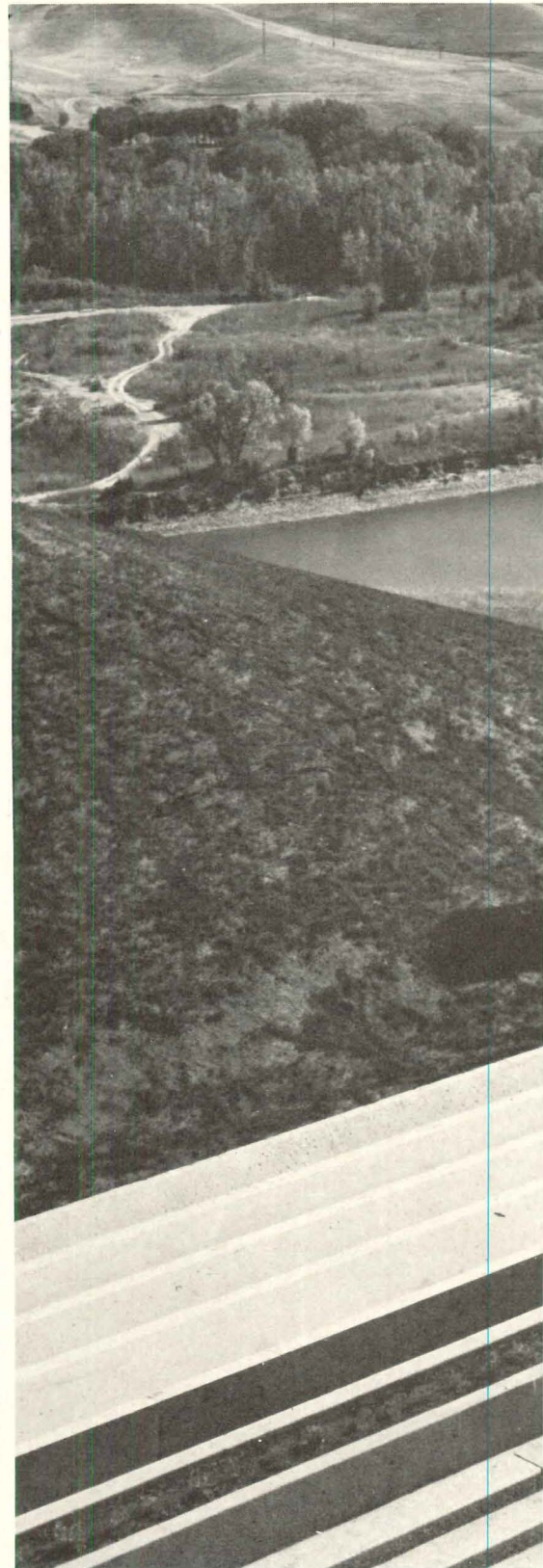


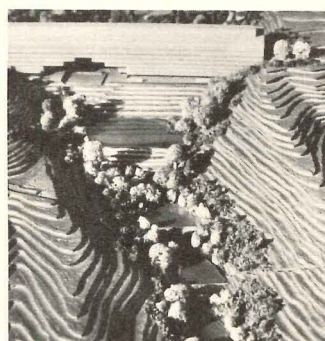
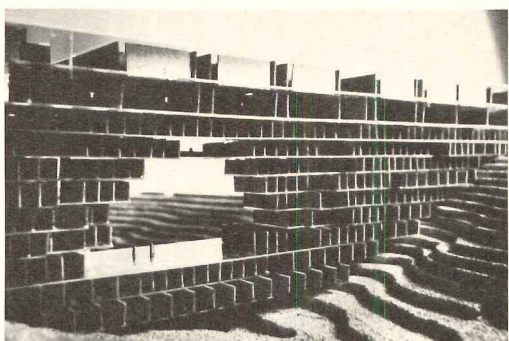
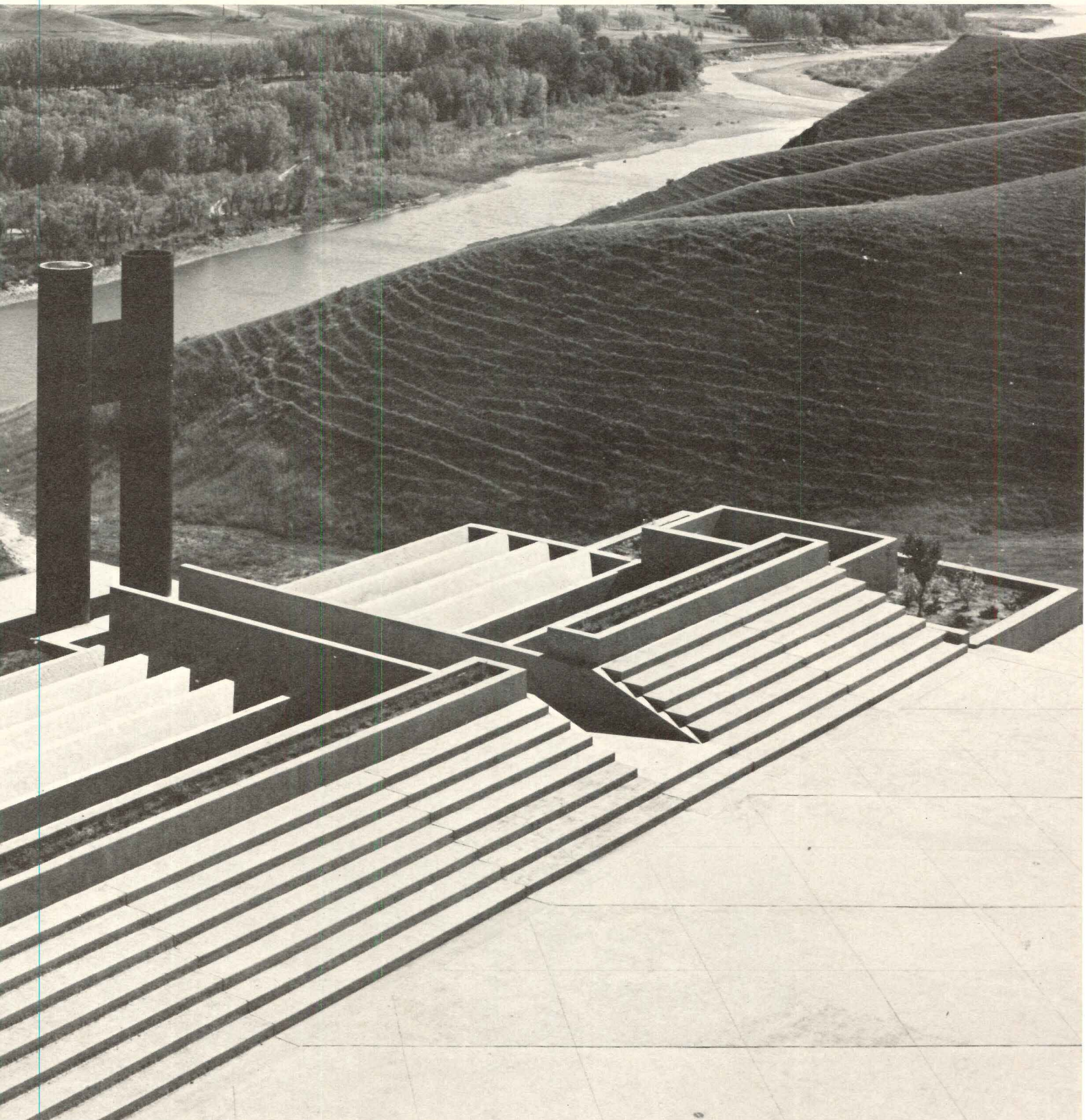
"A distillation of all the elements into earth and sky," is Arthur Erickson's description of the prairie landscape at the edge of which the new University is situated. "Objects caught between earth and sky appear trivial unless they emerge intrinsically from one or the other or unless they reflect in generosity of size the prairie scale."





spaces in one structure is rare if not unique, but here it represents an architectural response to the academic goals set up in 1967 by the University Planning Committee which include "flexibility and openness to innovation; encouragement to the highest degree of interaction between students and faculty; fostering the spirit of free inquiry and the critical interpretation of ideas." The essential character of the University was that it was to be a place where, as its first president, Sam Smith, said, "everything can happen at once" and where there would be "a chance to make the whole person," and much of this intent has been realized. But not all of it, and not exactly in the way it was first envisioned. The ideal toward which everyone—Planning Committee and architects — worked was splendid but, in the end and in very human terms, unrealistic. It was an ideal embodied in accounts of El Azhar, the 9th century center of Islamic teaching, a sort of "educational marketplace" where students, merchants, scholars and beggars gathered to hear and take part in discussions of law, medicine, philosophy, and through which they moved freely. Lethbridge was to be as open, as interchangeable and flexible as El Azhar, with neither walls nor partitions to impede interchange and interaction. The faculty's offices and the student residences were to be intermingled and interchangeable; everything that could be done physically to promote and facilitate interaction was to be done. But the sublimation of individual privacy—a professorial right manifest in the classroom and private office—to the ideal of openness was too much to expect, and the building as built provides a whole floor (the eighth) for faculty offices, and for the most part classes take place in classrooms with walls. Nevertheless, in what it does do, Lethbridge is a milestone.



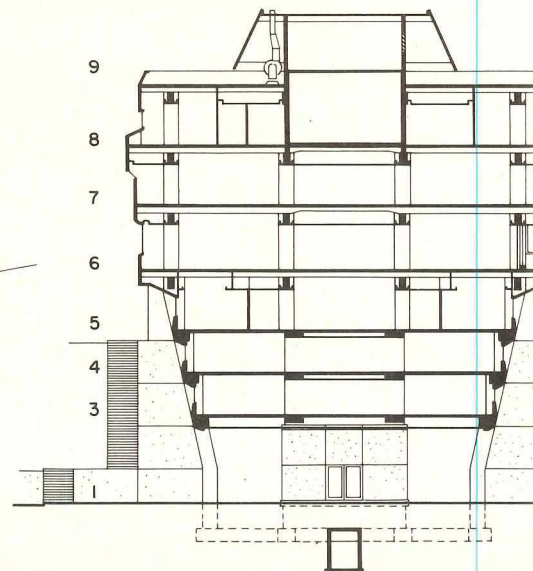
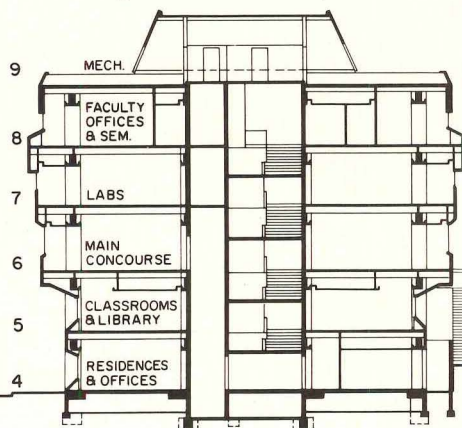
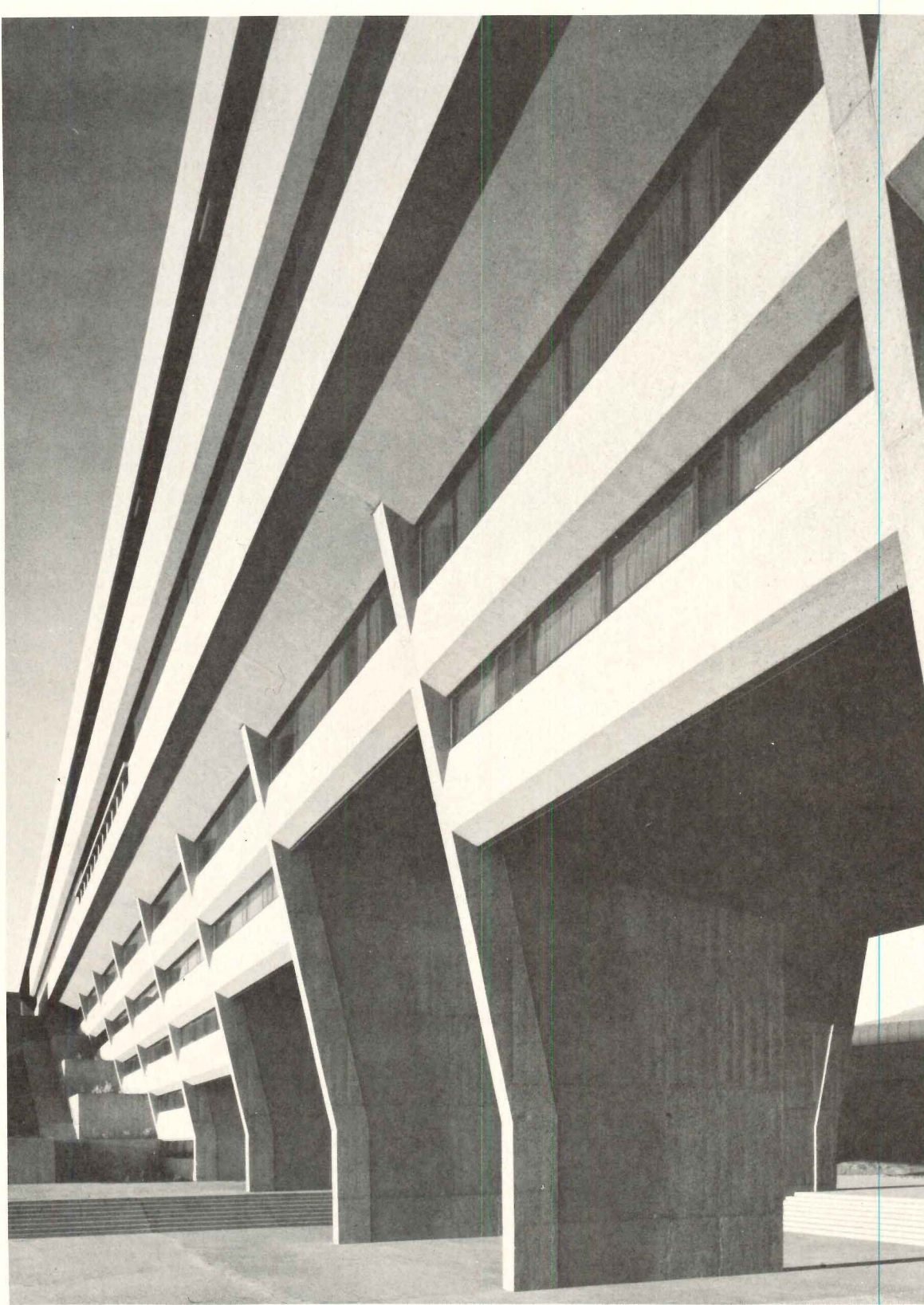


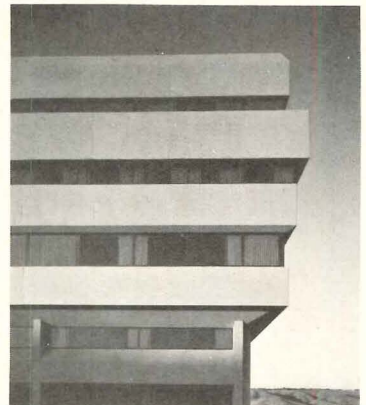
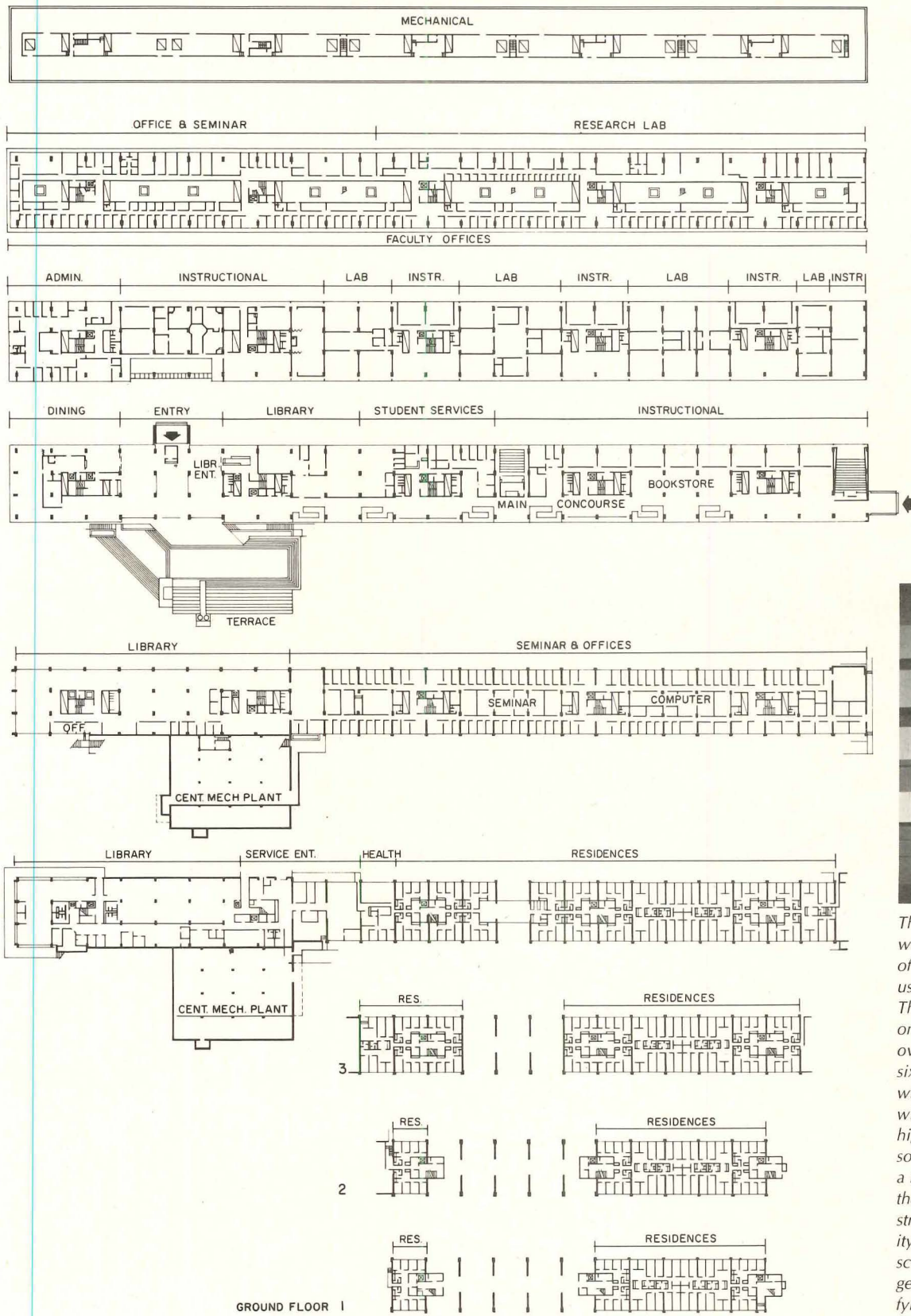
The final master plan (far left) follows closely the early studies (model photos), with overlapped academic buildings on the coulees, and other buildings on the slope up to the prairies. Initially, Project One was to be a brick-faced building with curved walls and small windows (center photos) for the lower floors. Eventual landscaping of coulees will be lush—its micro-climate is different—with a cascade flowing under the building.

How do the Lethbridge students like living, sleeping, and eating, playing, studying and learning in the same building? Do they find the interaction, so much sought today, a real ingredient of university life as a result of having it all happen in the same place? Do they like the building?

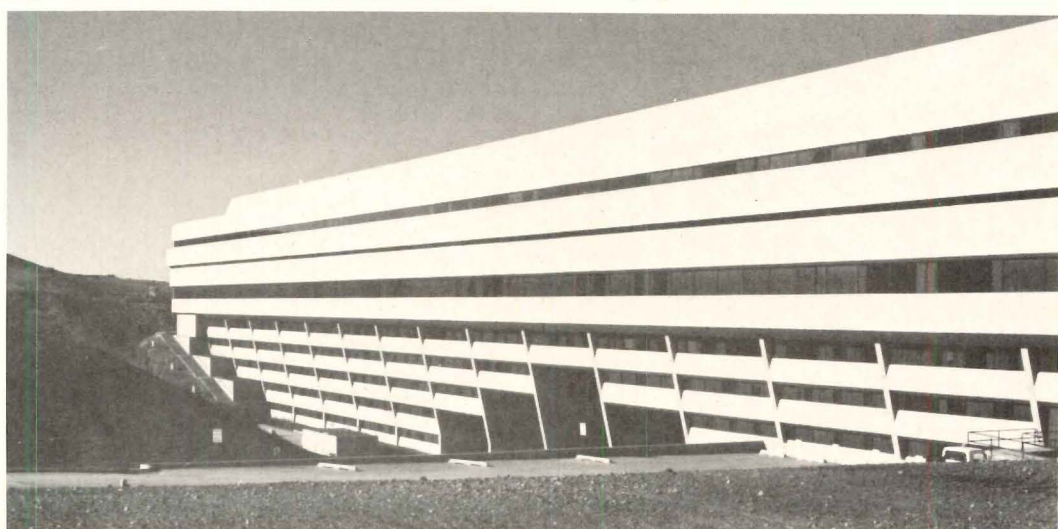
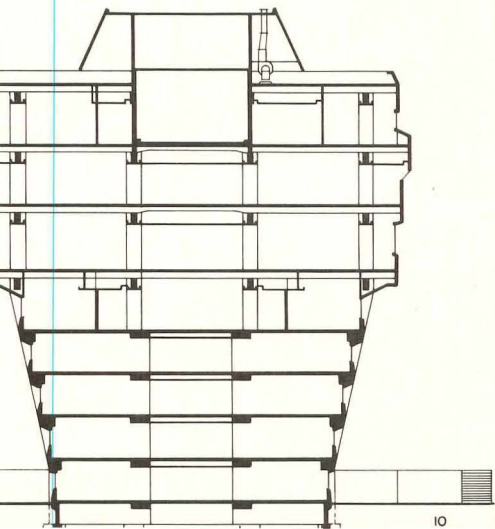
The answer to all these questions is a strong Yes. For one thing, they are not entirely confined to one building. There is now a Physical Education-Fine Arts building which attracts most students at one time or another, for athletics, art shows or classes, or drama. Also, a temporary building, moved from the community college site where the University began its existence, has been made into a pub. To reach these other buildings and the parking areas, a fiberglass tunnel from the Academic building winds up the hill to the Phys Ed building. Thus, students have reason and opportunity to leave the building. But there is academic, social and climatic convenience in "having it all happen" in one place: faculty members are easy to see and to meet; there is always someone to talk to and be with on the Concourse; and in Lethbridge's fairly rigorous climate—windy, snowy winters moderated by occasional warm Chinook winds, and quite hot summers—not to have to leave a weatherproof building is a real pleasure.

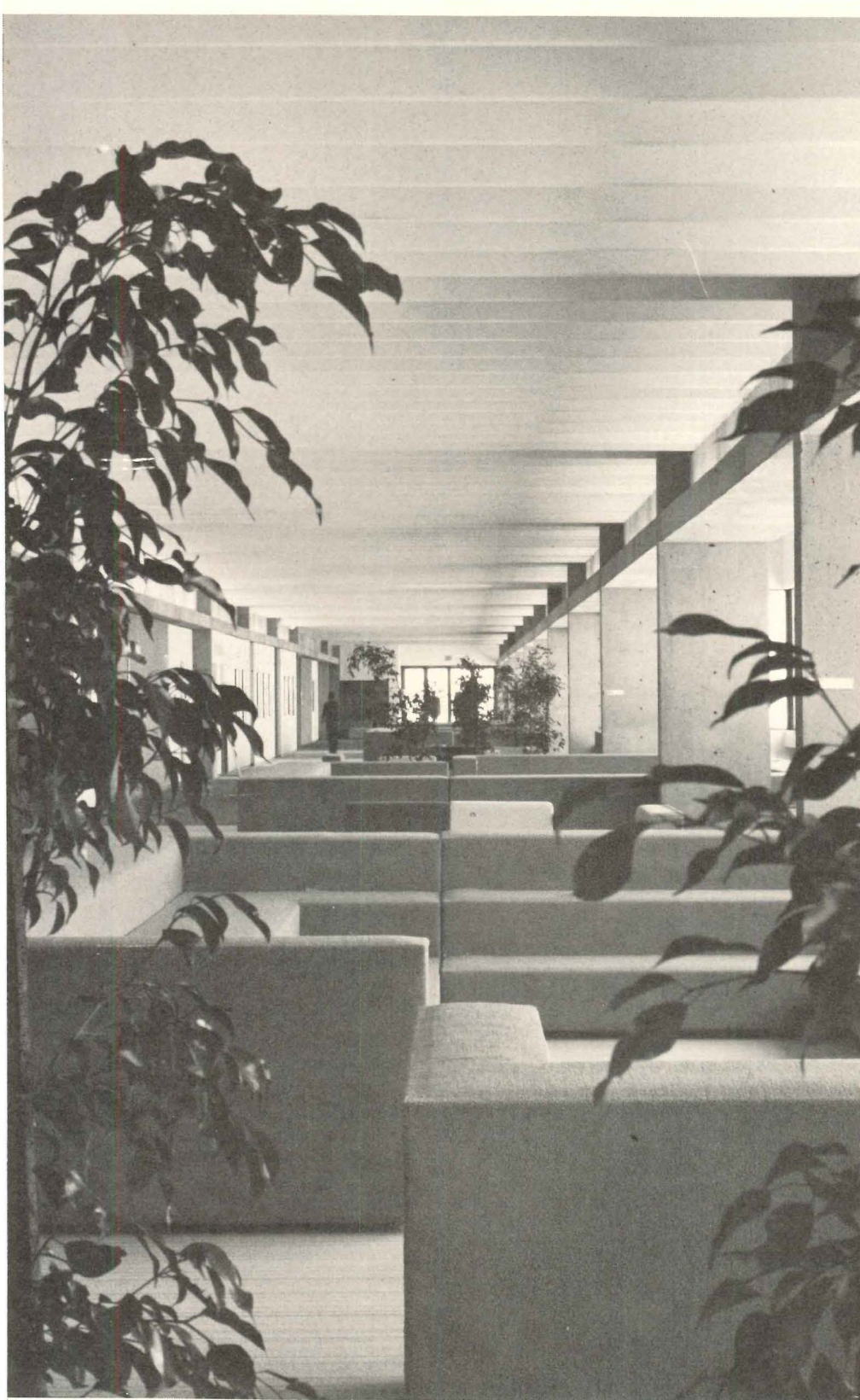
There are problems, of course, in the present isolation of the campus from the city, but these are not architectural, and the university will not always be so isolated. For the present, students without cars use the city bus service for transportation, and gradually are finding varieties of entertainment and stimulus on campus. As for the building, the students like it and are proud of it, whether or not they understand or are sensitive to the subtleties of its design and the grandeur of its concept.





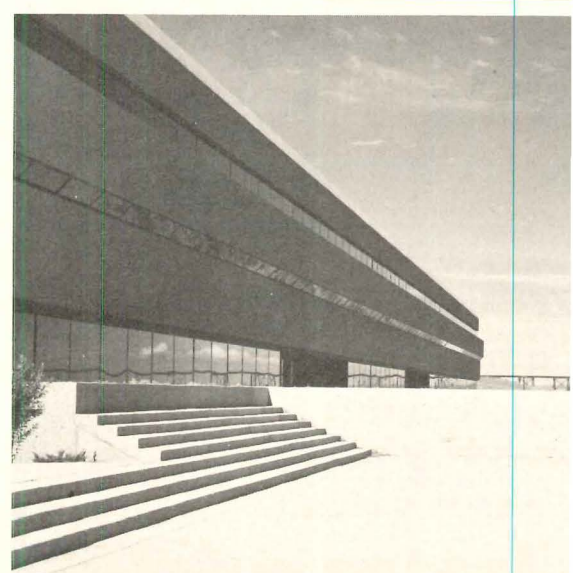
The exterior of the building clearly and with great subtlety expresses the variety of functions that take place inside, using broad terms, not details, to do so. The long bands of concrete and glass on the upper levels vary in depth as the over-all function of each floor varies: sixth floor, Main Concourse, with large windows; seventh floor, laboratories with only a narrow band of glass set high on the wall and slanting outward so that it counts as slightly more than a line; eighth floor, faculty offices. On the lower floors, the vertical line of the structural supports breaks the continuity of the glass bands to effect a smaller scale. Architect Erickson's "concise geometry" achieves drama and a satisfying esthetic solution.





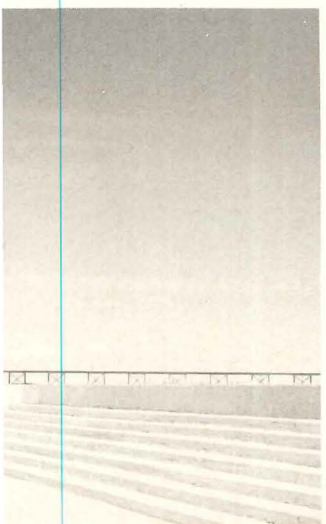
The main Concourse on the sixth floor is a main street for the whole university. It is the architectural statement of the "free exchange of ideas," the implementation of the goal of learning in places other than classrooms. There are always people on the Concourse, even in quiet periods. At class changes, and in the evening, it is even more like a street, full of students and faculty. Casual talk and informal meetings also happen on the Concourse, using the "platonic couches" (left and right: upholstered forms left from precasting of concrete for the building) which occur midway along the 912-foot long "street." Lighting throughout the building is indirect from recesses in the double-Tee beams. Nowhere is this more welcome than in the unbroken length of the concourse where fixtures would have been an interruption to the clear view from end to end. The floor is alternately concrete and carpet in gold with lines of yellow, tan and brown. Couches are yellow, chairs are upholstered in five colors coded to direct circulation, needed on so long a mall.

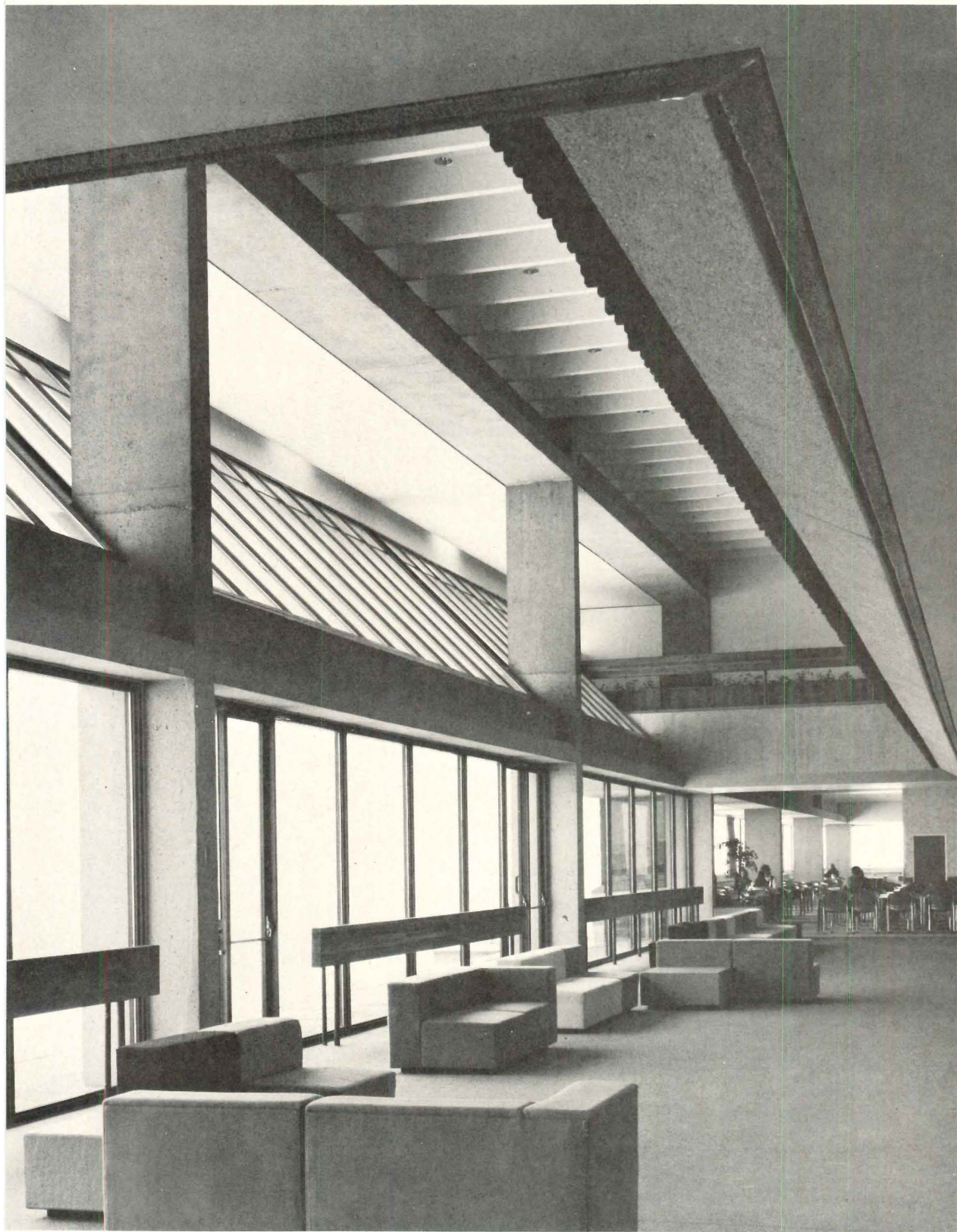
THE UNIVERSITY OF LETHBRIDGE PROJECT ONE. Architects: Erickson-Massey Architects—Arthur Erickson, designer; Ron Bain, associate-in-charge; Gary Hanson, project architect; Robins Mitchell Watson, associated architects. Engineers: Bogue Babicki & Associates (structural); Ripley Klohn & Leonoff International Ltd. (foundation); Reid, Crowther & Partners Ltd. (mechanical/electrical). Consultants: Barron & Strachan (acoustical), William M.C. Lam & Associates (lighting), Erickson-Massey Architects (interiors), F.S. Dubin (mechanical), Poole Construction Ltd. (cost). Landscape architects: Erickson-Massey Architects. General contractor & construction manager: Poole Construction Ltd.



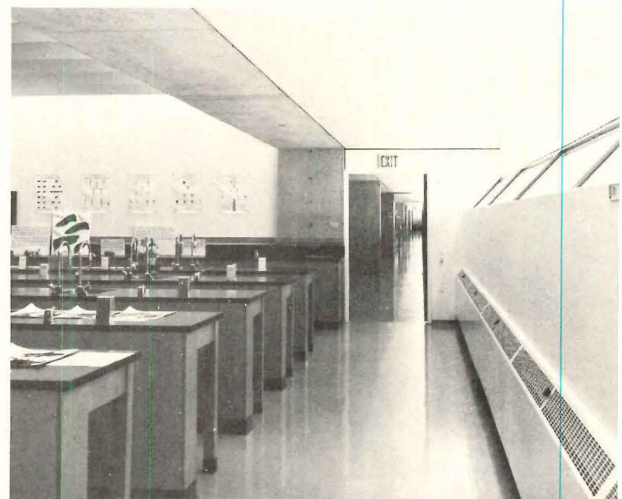


From every window on the east side of the building, and especially from the terrace, there is a view of the old Lethbridge Railway Bridge, a unique structure whose gossamer tracery makes a delicate web across the river valley. It stretches its flat length across the Oldman River like a horizon line and fits its supports into the banks and bed of the river. Visiting the site for the University for the first time, Arthur Erickson was struck by the way in which the bridge used the terrain it had to cross and was deeply influenced in his design for the first building.

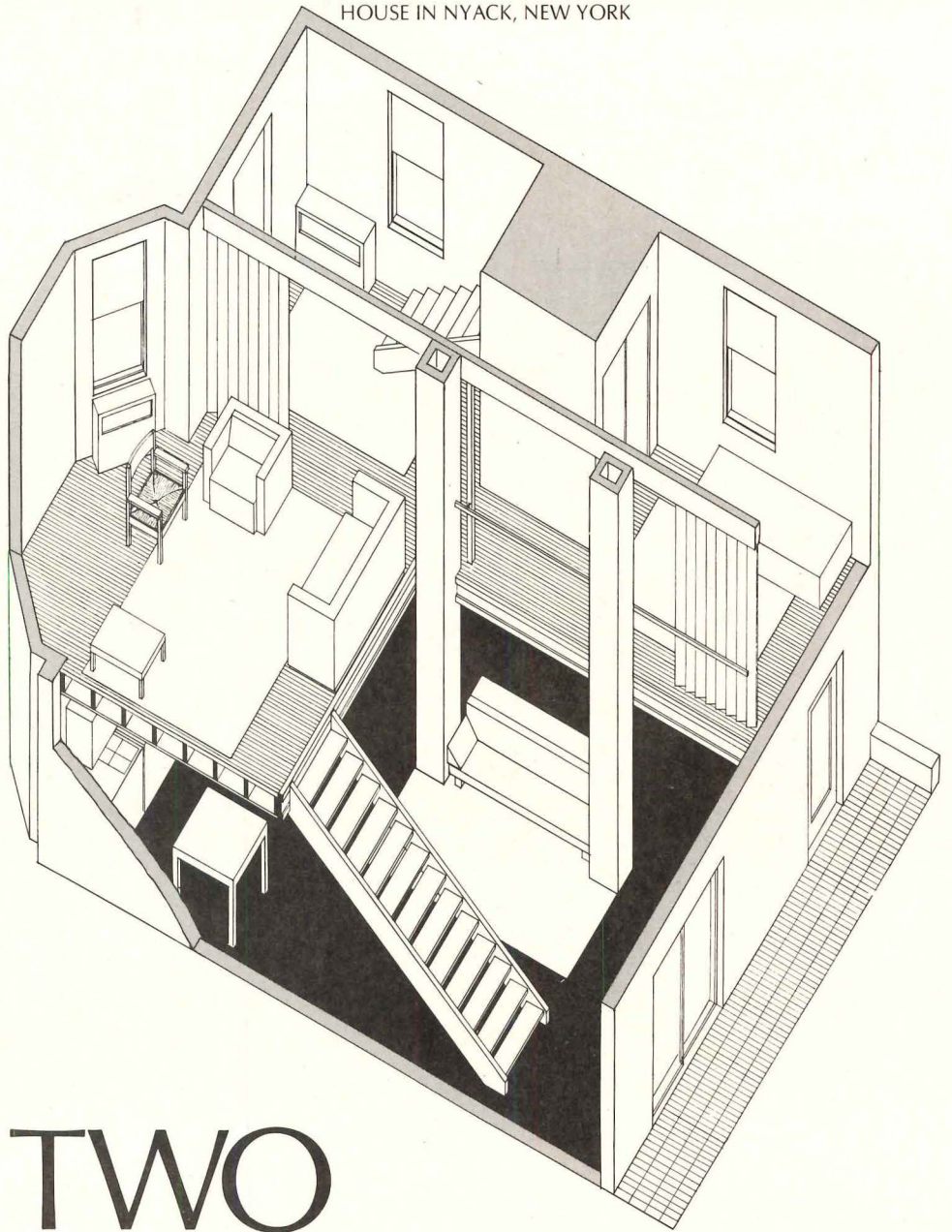




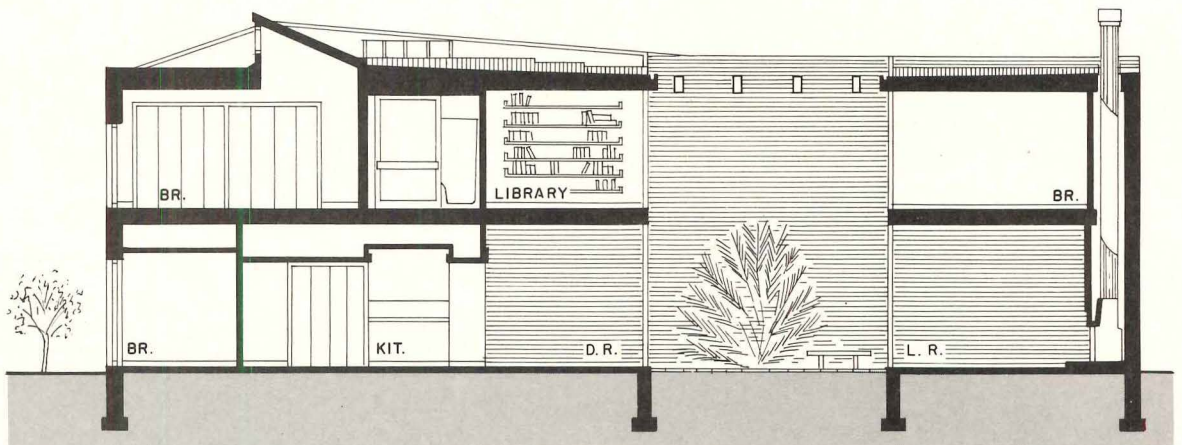
Opposite the main entrance is a two-story lounge (above) which opens up to the large terrace with its sculptural boiler stacks and spectacular view of the river valley (page 118). At one end of the lounge is the cafeteria (page 117); at the other, the lounge opens into the Concourse. The laboratory plan (below) is based on the one worked out for Scarborough College by Dr. W. E. Beckel, then dean of the College and now president of the University of Toronto. These labs are more open than other instructional space: the corridor which is the seventh floor circular concourse runs along one side, a sometimes surprising but space-adding solution.



Happily, renovation of worthy old buildings is on the increase. The two examples of this trend shown on the following pages are not only worthy buildings—architectural artifacts, not monuments but relics of the everyday life of everyday people—but have been given a new life in a commendably imaginative way, with just the right touch of sophistication and a great deal of sympathetic and knowledgeable skill. One is a seldom sought out balloon frame structure; the other a converted stable in an historic district where restrictions are imposed to preserve the scale of the neighborhood.



TWO RENOVATED HOUSES



SECTION A-A

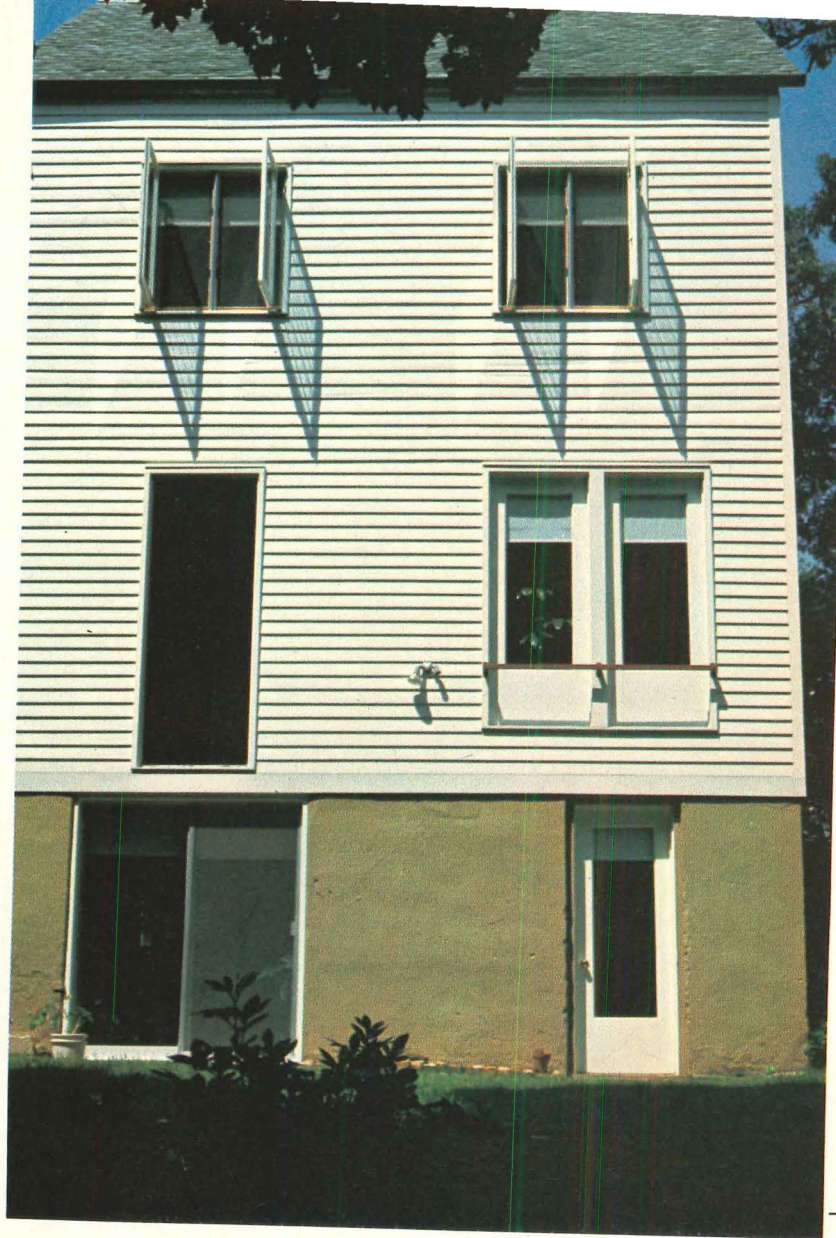
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SE DEVELOPED FROM STABLE, MILTON, MASSACHUSETTS

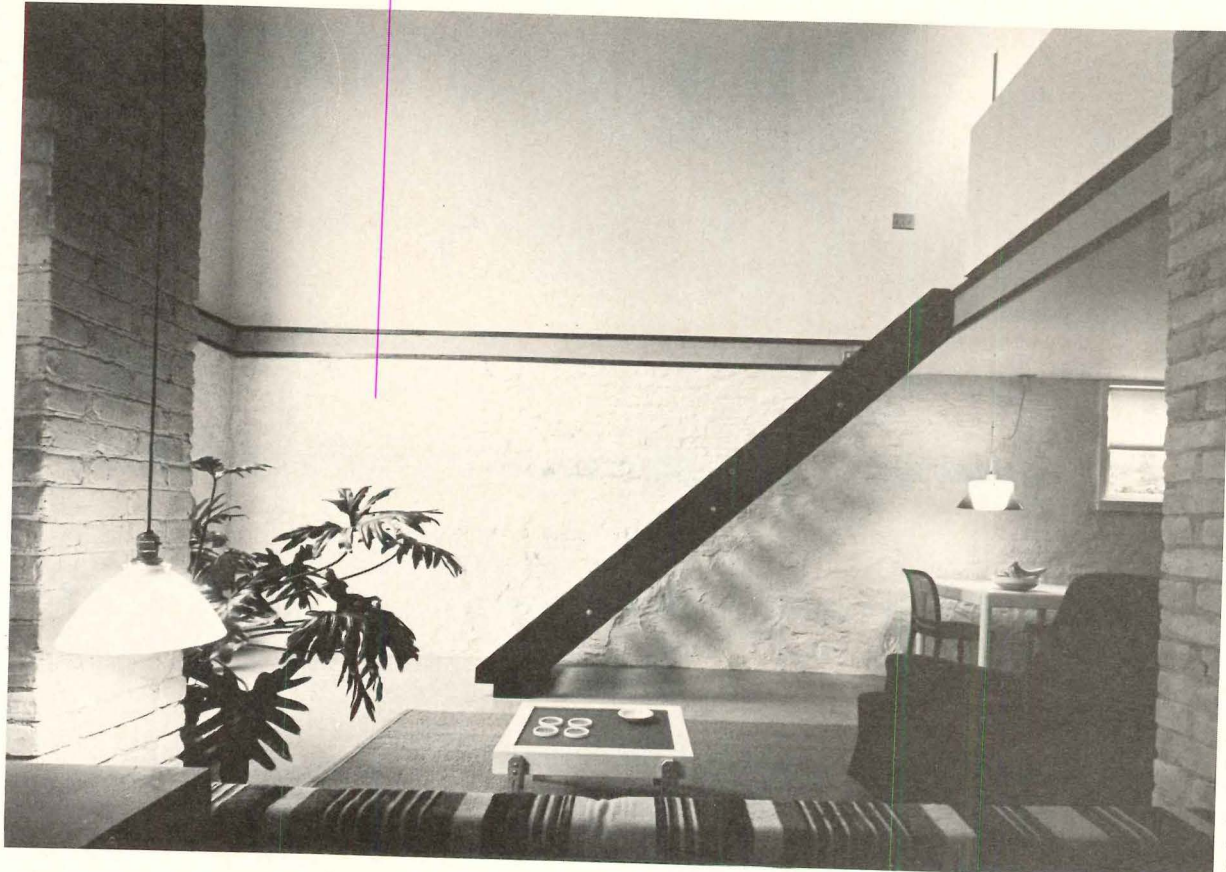
1 FRAME HOUSE IN NYACK, NEW YORK

Balloon framing, an anonymous American invention of the early 19th century, has long been used for utilitarian buildings. Many older frame houses in small, older communities, are suitable for continuing usefulness. This house in the Hudson River community of Nyack is such a typical example. Built in the 1880s, it has now been remodeled to provide a residence and studio for a painter. All interior partitions were removed, and a new beam (two 2 by 12s bolted together) was put in on each level. Small columns were added at or near the two existing chimneys. Other changes included a new basement slab, new wiring, plumbing, and heating system. The exterior was largely unchanged. The basement level became studio, eating and cooking area. The front entrance, at the middle level, is adjacent to the unusual low-walled living room (opposite page, lower left) which overlooks the sitting area of the basement (below).

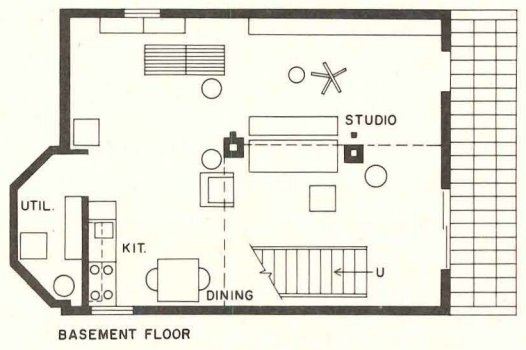
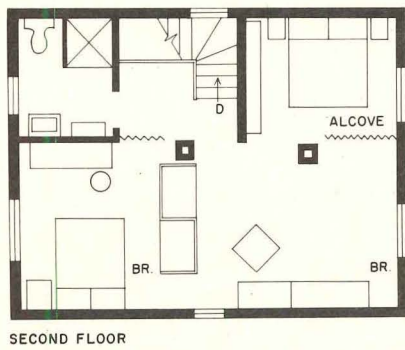
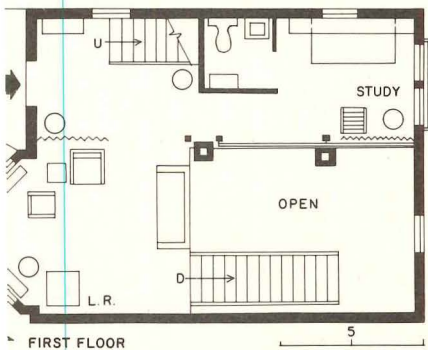
HOUSE AND STUDIO, Nyack, New York. Architect: James R. Lamantia. General contractor: Kaplan Contracting Service.



Gil Amiaga photos



The old house was very converted at a cost of \$ into a comfortable, con and contemporary interi spacious living area and genious opening of the room to the rest of the ho notable features, as is th ity of each specific spac



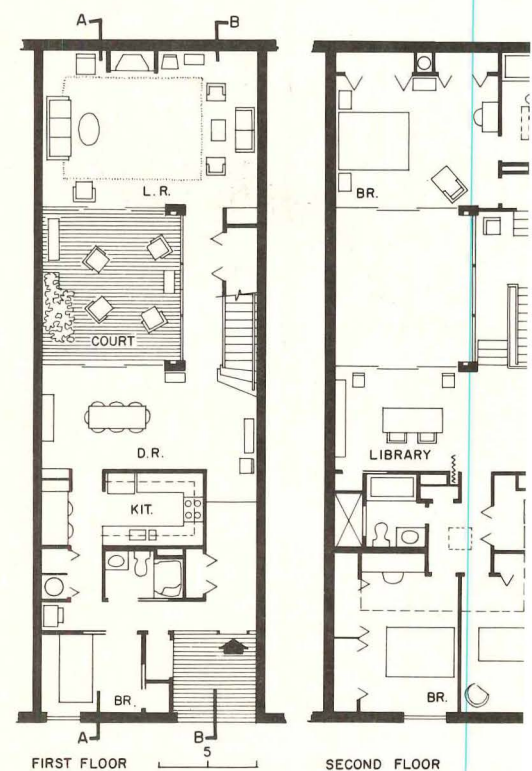
2 TOWN HOUSE ON BEACON HILL, BOSTON

This 19th century stable on Boston's Beacon Hill, remodeled as a house, preserves a scale and character which is important in that historic district. But it also provides a place to live in town within walking distance of the owner's place of business, a relief from commuting, as he had been doing. In remodeling the old stable, some restrictions were imposed which determined the end result in unusually pleasant ways. The facade could not be changed because the building is in a designated historic district, and the side and rear walls precluded any new windows. The handsome courtyard was a natural and delightful solution to light and air for otherwise inside rooms. The rooms which surround the court are glass-walled, floor to ceiling, and the height of the principal rooms on the first floor was increased for added spaciousness and light.

TOWNHOUSE ON BEACON HILL, Boston, Massachusetts. Architects: *Childs Bertman Tseckares Associates, Inc.* Engineers: *Thomas Rona Associates* (structural); *Allan R. Morris* (mechanical/electrical). General contractor: *Scott McNeilly & Son.*



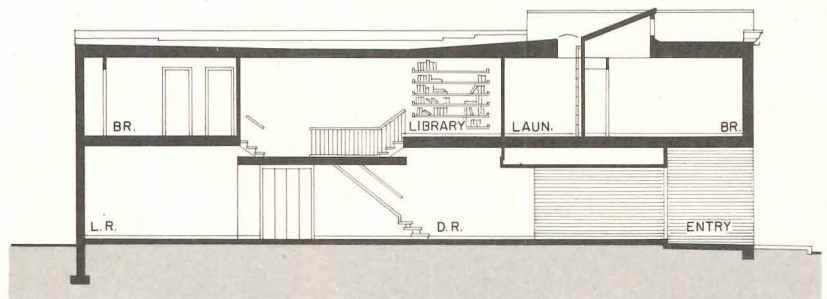
Hutchins Photography, Inc.





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 part of Boston where this
 use is located, and its use
 proved compatible with
 owners' wishes. Its enclosed
 space acts as an additional
 room and is enlivened by a

fountain and many plants. The
 court is the source of daylight
 for the principal rooms on both
 floors. In other parts of
 the house, colored clerestory win-
 dows, skylights and light shafts
 bring in natural light.



SECTION B-B

5



The old building is long and narrow—22 by 70 feet—but its width seems greater than the courtyard and the full-height glass walls around it. Electric radiant heat in the ceiling is used throughout. The remodeling cost was \$95,000.



© ESTOphotos

AIA|HQ

The new AIA headquarters, eleven years in the making, is now complete

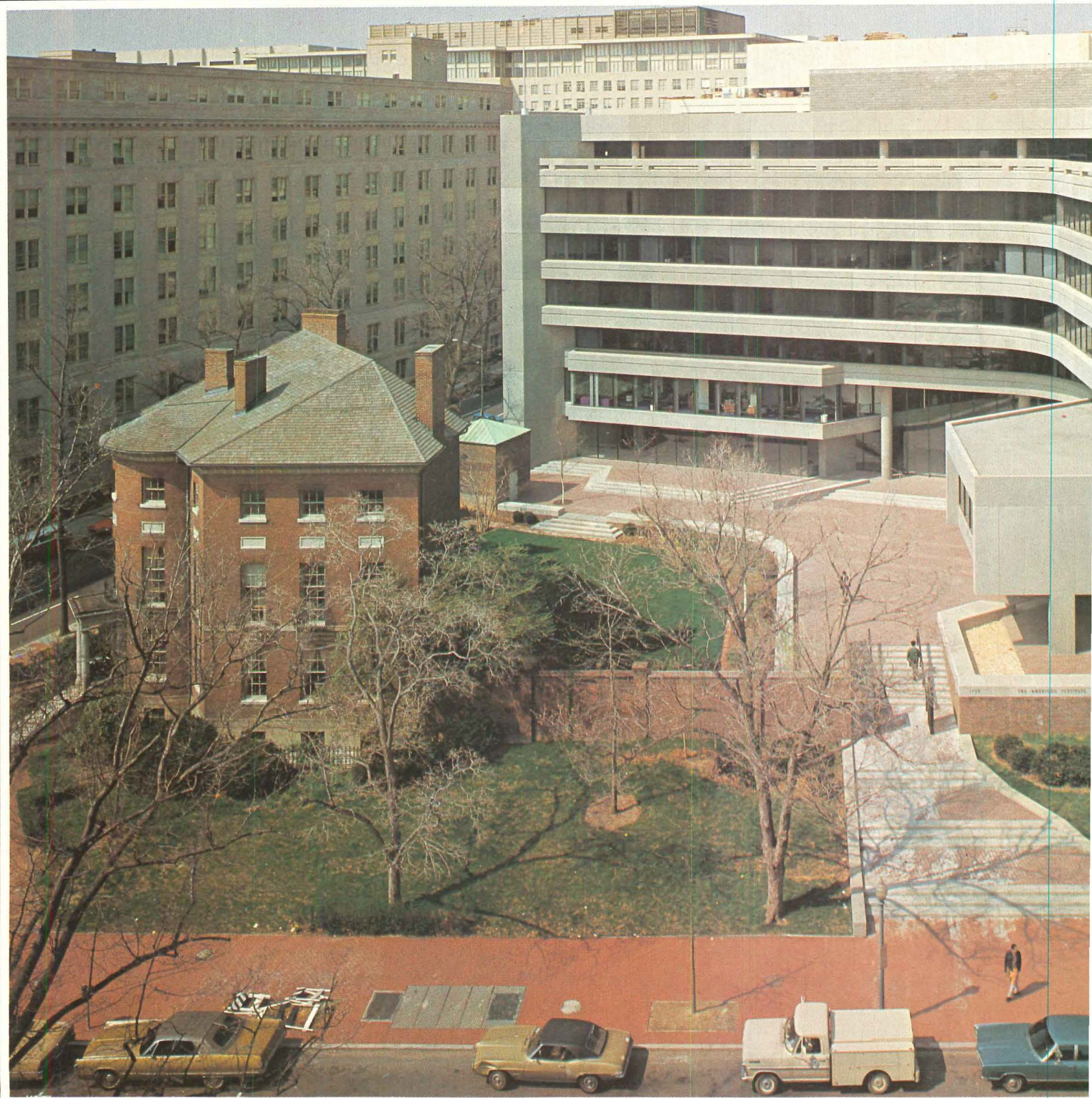
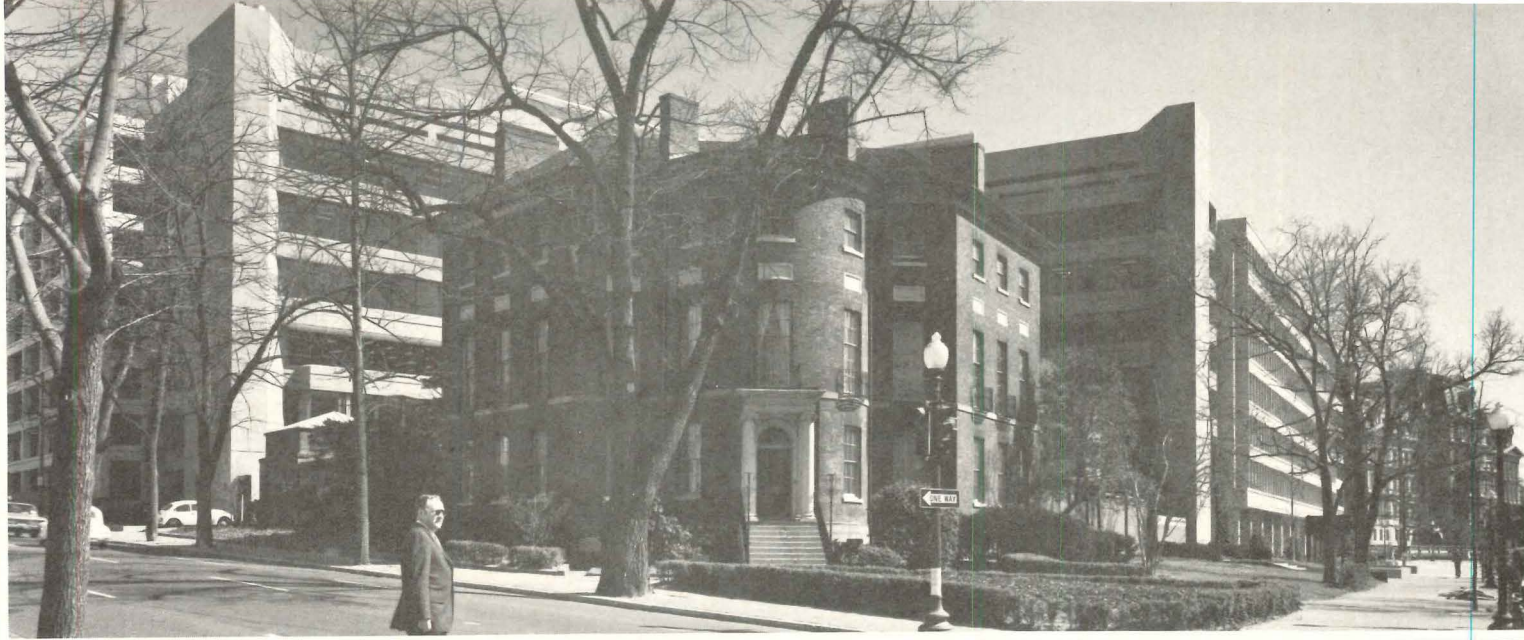
an architect if a given handsome, historic, landmark building and its garden should be preserved and he would say: "If at all possible, yes." To the question as to whether one can design a temporary structure which would effectively blend with a noble building of bygone style, he would reply: "Certainly." If asked to recommend how this could best be done, he might very well say: "Hold a competition!" Finally, if asked how best to make sure that the competition winning scheme would respect the landmark and its neighborhood, he would add: "There should be a disinterested board of review with power to accept or reject."

In the problems inherent in expanding their Washington headquarters, the American Institute of Architects made three fundamental decisions—each of which reflect the foregoing beliefs and aspirations of the typical architect, and a final decision reflecting the necessary pragmatism of the profession. First, they decided

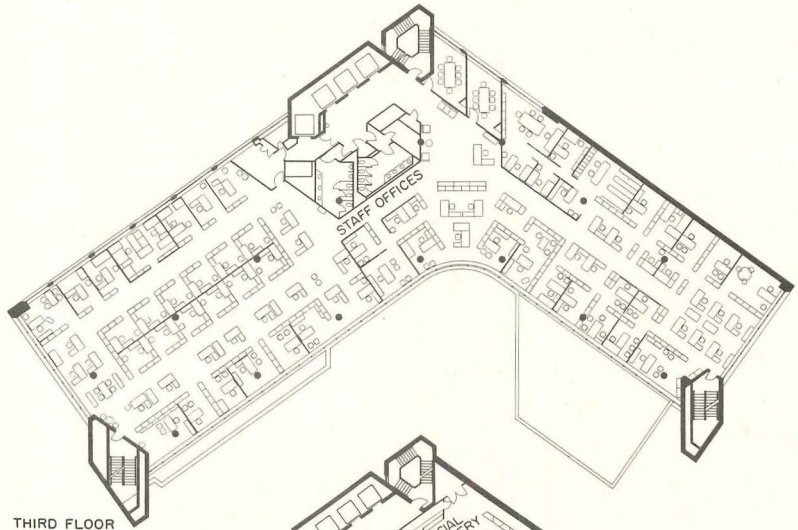
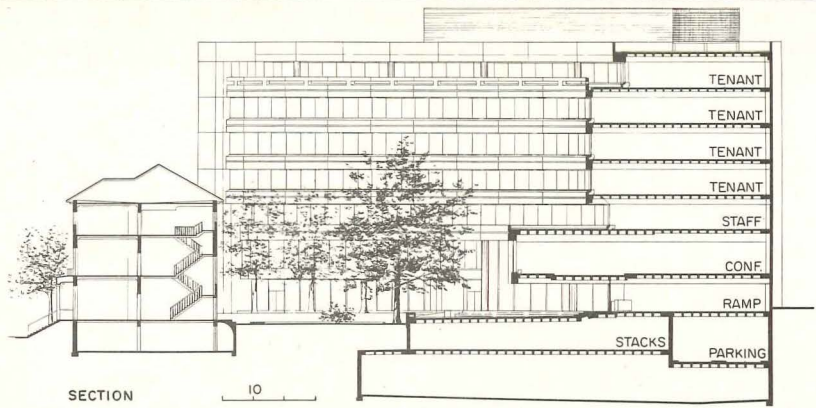
to preserve the historic and beautiful Octagon and its garden; second, they held a competition for the design of a new headquarters building to share the site and be in harmony with the landmark; third, with some chagrin they deferred to a series of rejections by Washington, D.C.'s Fine Arts Commission (which the AIA helped create) of the winning design and modifications thereof; fourth, they faced the necessity of accepting the resignation of the competition winning firm and selected another architectural firm by a method other than holding a formal competition.

The results would appear to be the very best that architects designing for themselves can do. By living up to their own highest standards and practicing what they preach, the architectural profession has not only enhanced the Washington landscape, but it has created the physical framework for projecting a continuously effective image for itself.

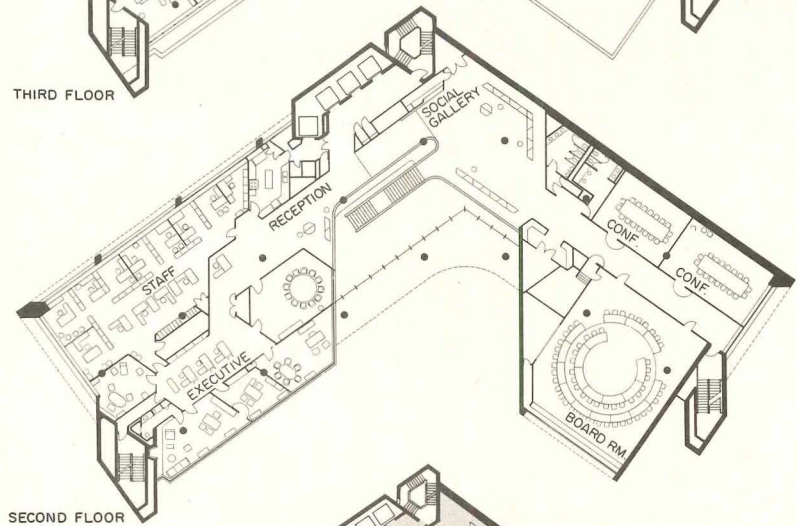
—Mildred F. Schmertz



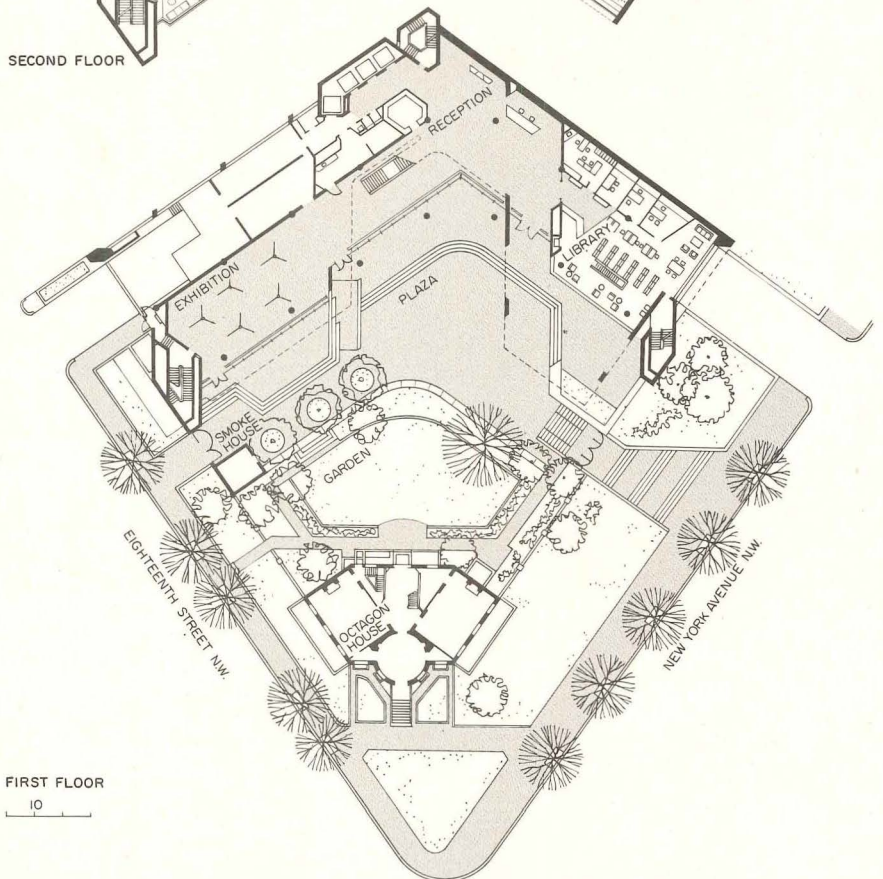
The 175 year-old Octagon occupies the corner of a triangular site at the juncture of New York Avenue and 18th Street in Washington, D.C. The garden at its rear has been rebuilt and is slightly larger than it was before the new headquarters building was wrapped around it. As the section and ground floor plan (right) and the bird's-eye photo (below) indicate, a broad curving plaza forms a pedestrian path, open to the public, which connects the intersecting streets. The architects—Norman Fletcher and Howard Elkus of The Architects Collaborative—conceived the plaza as an extension of the garden, paved it in red brick to match the old brick in the reconstructed garden paths, and extended this brick into the ground floor exhibition space of the new structure. Conceived as a “background building,” the new headquarters permits the Octagon House to dominate (left).



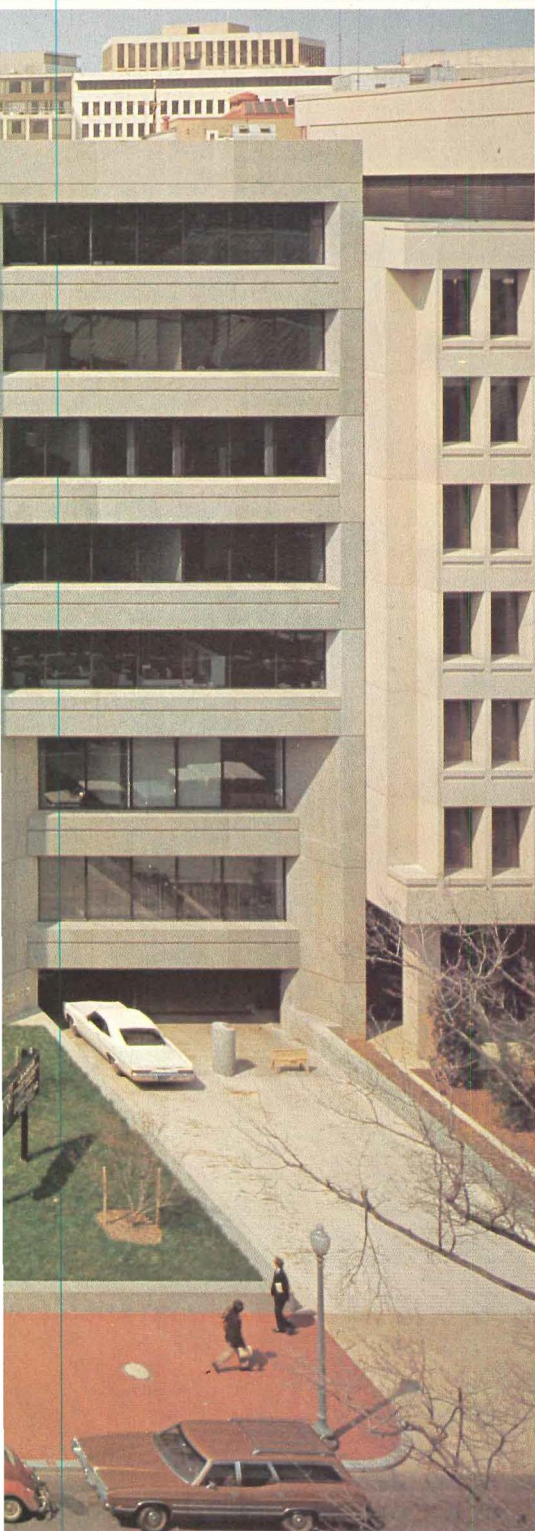
THIRD FLOOR



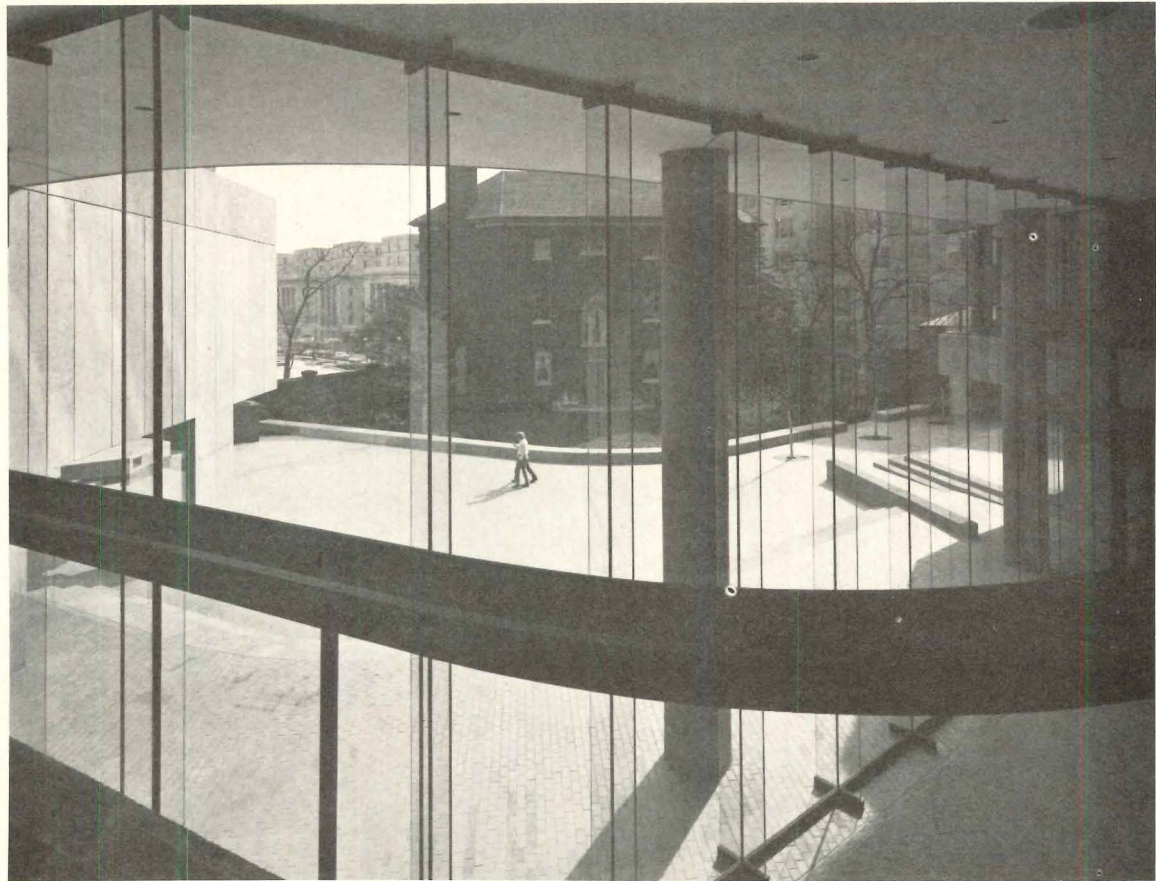
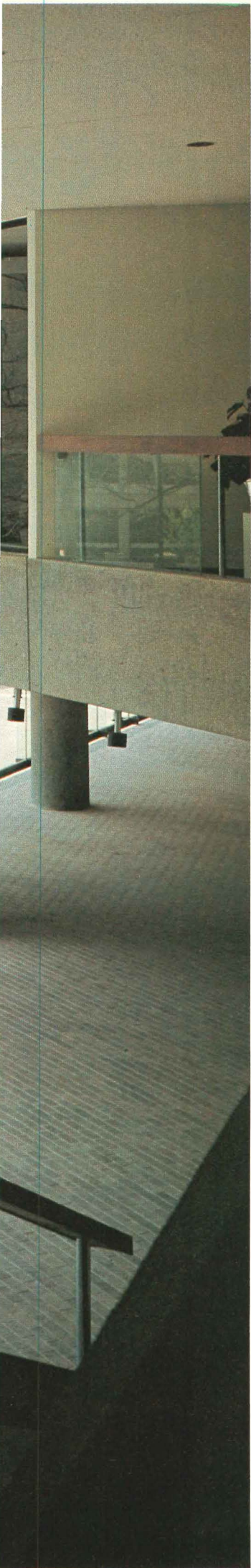
SECOND FLOOR



FIRST FLOOR



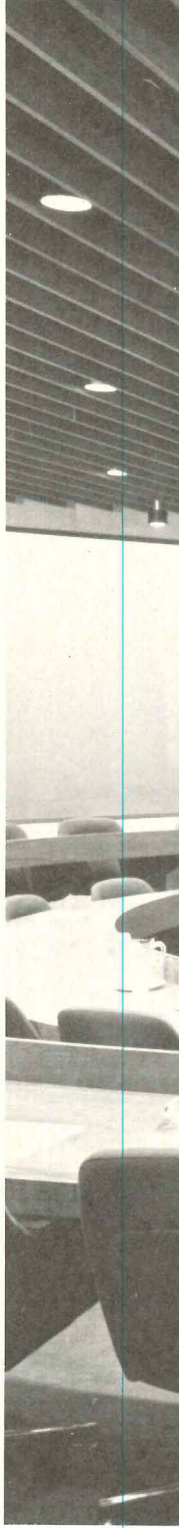


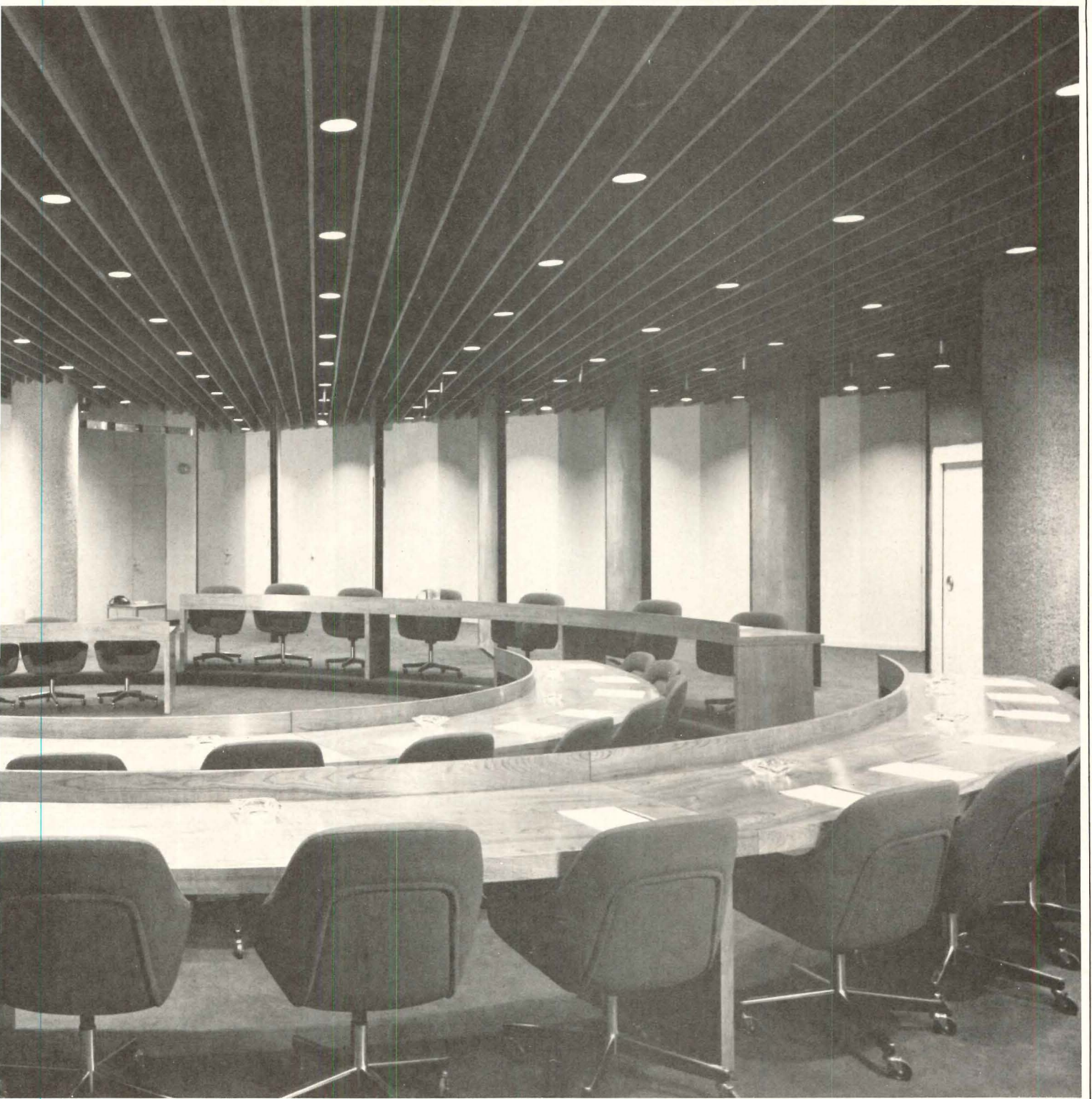


To walk about the AIA's new headquarters is to sense that the building is correct, right, and designed as it should be. From the lobby mezzanine (left and above) one looks down into the ground floor exhibition space and across the plaza to the Octagon and its garden. Together the latter have become the focus of the composition, playing the same role in space that a fountain, or gazebo or pavilion does in the context of other scales. Because of skillful massing, the new building, in spite of its size, does not appear to crowd the landmark. At present the transition be-

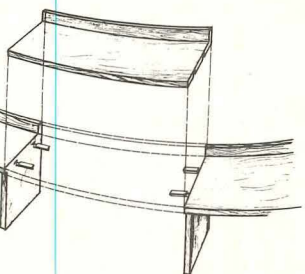
tween the plaza and garden is gentle. As the new trees grow larger the integration of the two spaces will continue to improve. The generous exhibition gallery (below), in conjunction with the broad plaza affords the AIA the opportunity to mount combined indoor and outdoor displays to further the public interest in architecture and the environment. The prominent location of their headquarters, within a short walk from the White House, should bring many visitors to the AIA's exhibits, provided they are frequent, well done and well publicized.







The offices of the president of the AIA (top left) and the executive vice president (bottom left) overlook the plaza and the Octagon and its garden. Scott Ferebee has the corner, but William Slayton has more space including a fireplace which he uses. The spatial arrangement of the latter's office is particularly efficient and attractive because of the skillful way in which the room is divided into deskwork, conference and reading areas. The conference center (above) projects out over the plaza. It has been designed to accommodate a full range of audio-visual aids. The circular desks can be disassembled and rearranged or stored as shown in the detail (left). Open planning is used throughout the general offices and the system of partitioning consists of commercially available storage units surfaced in white laminated plastic (right).



The radial axes of Major Pierre L'Enfant's plan for Washington, D.C. shaped the non-rectangular corner which the Octagon House, designed in 1798 by William Thornton, turns so elegantly. One hundred and seventy five years later, architects Norman Fletcher and Howard Elkus of TAC have completed the composition.

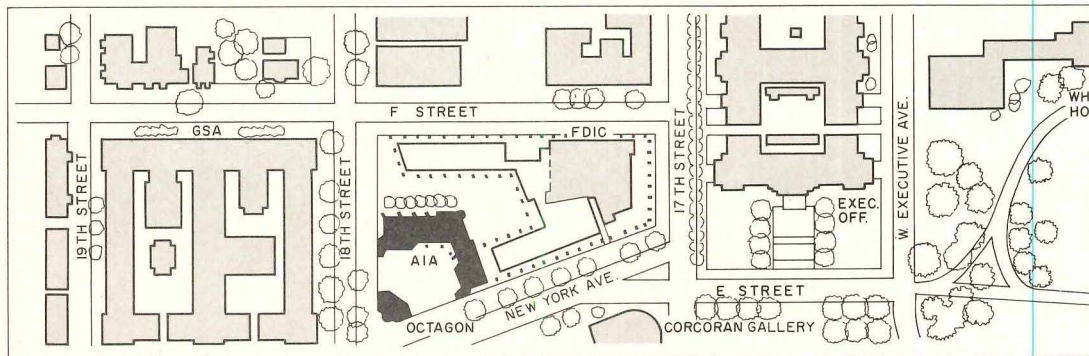
The events which led to their commission to design the new AIA National Headquarters Building, and the considerations which influenced their final design were complex and difficult, but the results are distinguished.

The history of the project

In 1960, the AIA Committee on the Profession cited "the pressures of a growing membership and the increasing numbers of jobs to be done for the profession" as reasons for building a new national headquarters. The existing headquarters then included the Octagon House and an administration building beyond the garden which had been constructed in 1941 and incorporated the old stables on the site. A "New Headquarters Building Committee" was formed whose members were: Hugh A. Stubbins, Jr. FAIA, William L. Pereira, FAIA, and Arthur G. Odell, Jr., FAIA. Its chairman was Leon Chatelain, Jr. FAIA.

This committee decided that further vertical expansion of the administration wing was unfeasible from both a structural and architectural standpoint and that horizontal expansion would encroach upon the garden and call for extensive and costly additional land acquisition. After examining the possibility of moving the AIA headquarters out of Washington, the committee concluded that to be effective, politically and symbolically, the AIA headquarters should remain in the capital.

The committee, aided by the architectural firm of Satterlee and Smith, and with the help of a real estate consultant, examined the Octagon House site in terms of the prestige inherent in its proximity to the White House, the presence of a cherished landmark, and the economics of preserving and maintaining the latter. Research confirmed that the landmark would be hard to sell, but on the



other hand, the land itself had an equity value of almost \$1 million for building on the site. Other sites in Washington were studied from many standpoints. The advantages, however, continued to lay with the present site, even though preserving the Octagon House would make the design of the new headquarters more complicated and difficult. Not the least of the difficulties which could be foreseen was the fact that additions adjacent to the Octagon House, as a registered National Historic Landmark in an area of the District of Columbia over which the Fine Arts Commission has review authority, would be subject to approval by this body.

In 1963 the "New Headquarters Building Committee" was disbanded and a new group with a slightly different title was formed. The new members of the "New Headquarters Committee" were: Robert F. Hastings, FAIA, Henry L. Wright, FAIA, and chairman Charles M. Nes, Jr., FAIA. Stubbins and Chatelain continued to serve. Because the AIA membership had

voted the architect for the new building should be selected by competition, late in 1963 a jury was selected. Stubbins agreed to serve along with Edward L. Barnes, AIA, J. Roy Carroll, FAIA, O'Neil Ford, FAIA and John Carl Warnecke, FAIA.

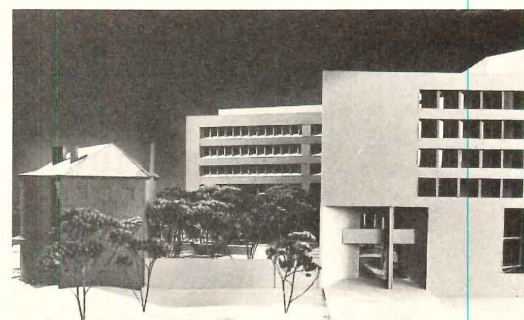
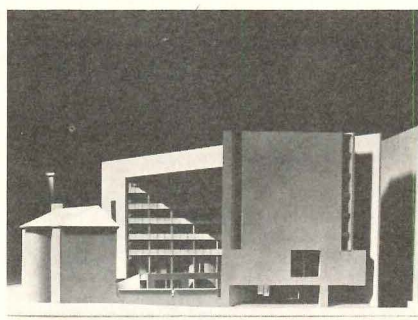
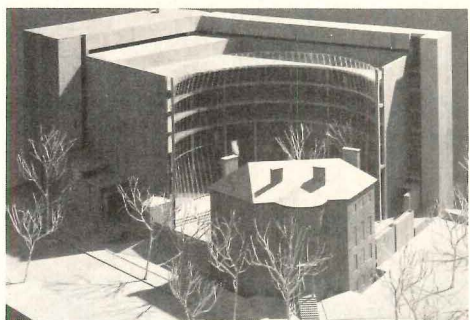
The competition program charged the prospective competitors with "... the creation of a design for a new National Headquarters Building that will satisfy both physical and spiritual functions—a building of special architectural significance, establishing a symbol of the creative genius of our time yet complementing, protecting and preserving a cherished symbol of another time, the historic Octagon House."

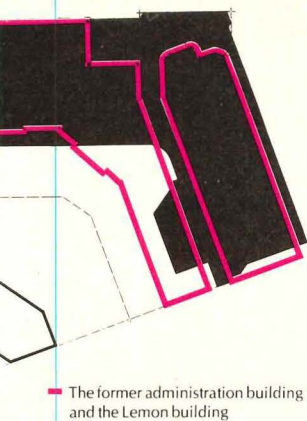
Winners of the two-stage competition were Mitchell/Giurgola Associates. Their winning design (fig. 1), announced in November 1964, featured a semi-circular, concave glass wall as the background for the Octagon House. Within the next two years, however, the AIA voted to renovate the Octagon House, purchase

the adjacent Lemon Building and redesign the proposed headquarters structure for 130,000 of floor space in contrast to 80,000 called for in the competition.

Mitchell/Giurgola Associates prepared a new design (fig. 2) embodying the change in size. It differed in other ways from the competition winning design. The concave glass facade was gone and in its place were two locally-walled floors at the base and five additional floors projected forward over the garden in a series of reverse steps. At the rear of the building these five floors were closed by a slanted skylight.

A number of architects who reviewed the design feared that the cost would exceed the \$300,000 square foot that had been budgeted for the building. They received support from an unexpected quarter, on different grounds, when the Fine Arts Commission declared the design "not of keeping with the feeling of the Octagon" and rejected it. William Walton, Gordon Bunshaft and





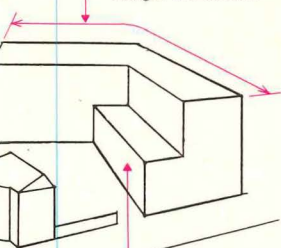
other Commission members stated that the proposed design overwhelmed its elegant neighbor and reiterated their belief that the new building should be a quiet backdrop for the Octagon House.

Robert L. Durham, FAIA, then president of the AIA, stated for the record that the Institute's "belief in the need for the Fine Arts Commission and comparable design review boards throughout the country" led it to defer to the Commission's rejection and try again. Mitchell/Giurgola Associates produced still another design (fig. 3). In this design the height of the building was reduced, the set back from the Octagon House was increased and the floors were stacked vertically in the conventional way. A controversial design feature was the "notch" at the intersection of the two wings.

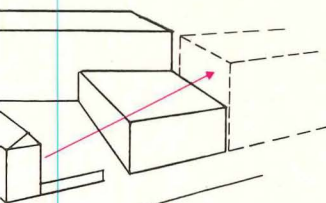
Once more the design was formally submitted to the Fine Arts Commission and this time, still under the influence of Bunshaft, the Commission balked at the notch and again rejected the building. Mitchell/Giurgola Associates refused to further compromise their design by restudying the notch and in September 1968, they resigned. By then George Kassa- baum, FAIA, was president of the Institute, and he reiterated the principle that design review boards were "the best known means of maintaining order in the face of all of the pressures leading to chaos."

The AIA then proceeded to reorder the chaos into which its headquarters program had now fallen by appointing then-board member Max O. Urbahn, FAIA, to chair a committee to figure out what to do next. In December 1968 Urbahn recommended that a committee of architects be organized to select an architect. The board appointed Rex W. Allen, FAIA, Edward Charles Bassett, AIA, Romaldo Giurgola, AIA, G. Harold W. Haag, FAIA, Morris Ketchum, Jr. FAIA, Willis N. Mills, FAIA, I. M. Pei, FAIA and Philip Will Jr., FAIA. Urbahn agreed to be chairman. This committee proceeded to interview architects and finally selected Norman C. Fletcher of The Architects Collaborative to design the building. The latter chose TAC senior associate Howard F. Elkus to work with him on the project. Under Urbahn's leadership a series of informal meetings were held between TAC and the Fine Arts Commission during the design process. The formal approval went without a hitch, the funds were voted and the mortgage arranged.

By building to the maximum allowable building height of 90 feet (and thus blocking out adjoining buildings) a continuous backdrop for the Octagon was created.

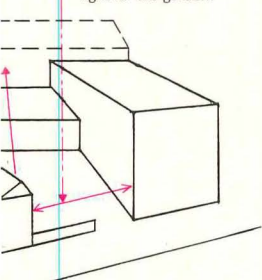


The low intermediate element provides a transition in scale from the headquarters building to the Octagon.



A low wing on New York Avenue would have left part of the backdrop for the Octagon and its garden exposed to future unknown and uncontrolled development on the east flank.

To create a successful scale relationship between the Octagon and the new headquarters building, it was necessary to maximize the distance between them. Further, this maximum distance increases the availability of southern light for the garden.

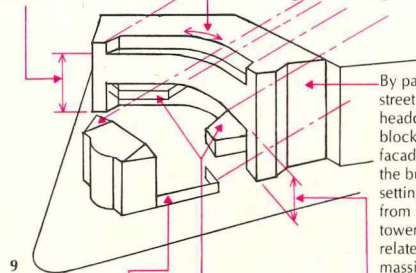


A low wing on 18th Street would have left part of the backdrop for the Octagon and its garden exposed to future unknown and uncontrolled development on the north flank.

The curved facade eliminates the appearance of separate wings or a central corner, and stresses the continuity and flow of the building around the garden from one street to the other.

The terrace cutback on the seventh floor of the headquarters building reduces the apparent height from the garden facade to six stories.

The diagonal masses, elements and lines of force visually link the headquarters building to the Octagon.

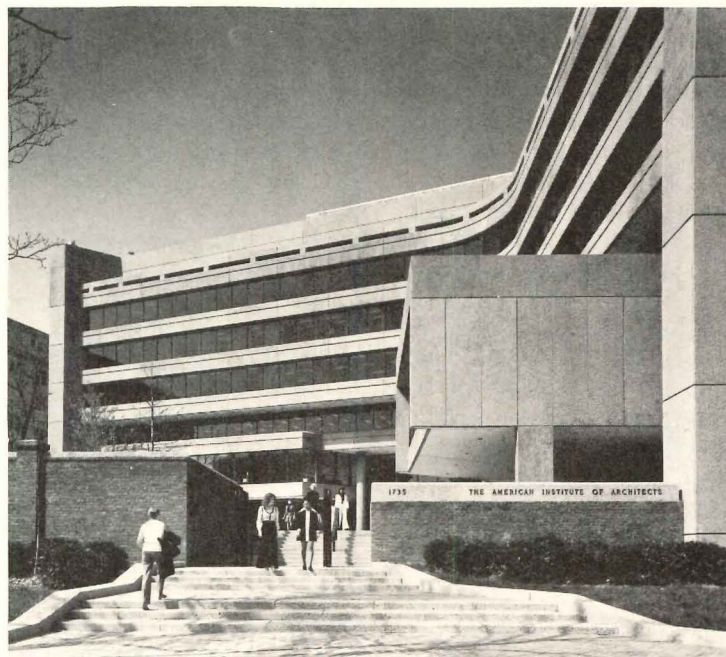


By partially recessing the street facade of the headquarters building, the block long mass of adjoining facades is interrupted and the building in its special setting is thus distinguished from its neighbors. The stair towers have been designed to relate to the geometry and massing of the Octagon while at the same time turning the corner.

The old garden walls of the Octagon were rebuilt to link the Octagon with the new headquarters building and enclose the garden. The return of the wall at the New York Avenue entrance, and the old smokehouse at the 18th street entrance form zones of transition from these streets to the garden.

The projecting elements of the board room and executive suite recall the Octagon mass but are subordinate in height and size.

The recess at the third story lightens the apparent mass of the office floors thus ameliorating and rendering more sympathetic the scale relationships between the headquarters building and the Octagon.



TAC's approach to the design of the building

Architects Fletcher and Elkus first made a feasibility study and plan for the redevelopment of the entire block (fig. 4). At the time a new Federal Deposit Insurance Company Building had been constructed at the end of the block opposite the Octagon House, but the area in between was occupied by a parking lot, an old hospital, townhouses and an office building. This TAC preliminary plan provided a central plaza between the proposed AIA building and the FDIC. The plaza would have had open arcades and several entrances from the adjoining streets. It was hoped that this provision of open space would have led to a

rezoning of building heights and densities to make the plaza economically feasible to prospective developers. The new headquarters building was to have opened directly on to the plaza, although the main entrance was, as now, on the garden side facing the Octagon.

As it turned out, the AIA was unable to achieve joint block planning. The developer of the hospital site replaced that building with one that extended to the AIA property line and deep into the center of the block, and the owners of the property on 18th street also maximized the use of their site. TAC, accordingly, eliminated the plans for an entrance and plaza at the rear of the building toward the center of the block.

The design as built

The form of the new headquarters building (figs. 5, 6, 7, 8, 9) derived mainly from the requirement that as much space as possible be given to the Octagon House and its garden, while minimizing the scale of the new building. To this end the building utilizes considerably less square footage than the amount permitted by the local zoning. The principal access to the headquarters is through the plaza which is open to the sun and quite pleasant to walk through.

By extending continuous glass walls up to the third floor TAC has given the building the appearance of having been hollowed out, and thus it seems to draw back from the Octagon House. Elements which are smaller in scale than the Octagon House have been emphasized for contrast and balance. The conference room projects forward and its concrete walls contrast effectively with the glass facade (fig. 10). This element helps define the main entrance and shelters arriving visitors. The executive wing has been separately articulated as a scale transition.

The building is 90 feet high which is the maximum permitted in Washington, D.C. It was essential that the building be designed to this height in order to screen the neighboring buildings constructed on the AIA property line, especially as it became certain that these would be built to the maximum height. The top floor of the headquarters building is set back so that from all vantage points close to the building there appear to be six, rather than seven floors—another effective scale reducing device.

TAC's efforts to create as simple a backdrop for the Octagon House as possible prompted them to unite the north and east wings in a strong continuous curve that frames the garden. The interior organization of the building derives from this curve and the distinctive geometry of the site (fig. 11). The sweep of the building and the vectors of the site are combined in angled spaces, closer to the angles of a hexagon than those of a rectangle. These echo the angles of the Octagon House which is actually six-sided. Norman Fletcher likes to cite Frank Lloyd Wright's Hanna House in California as proof that such spaces flow more easily than 90 degree spaces. A triangulated ceiling system designed within this geometry which was an integrated structural, mechanical, electrical and com-

munications sandwich (August 1970, page 46) was abandoned because of cost and replaced by a conventional acoustical grid ceiling which is suspended from a single coffered slab.

The two ends of the building have been designed as simple shafts which incorporate the necessary stair towers. Their uninterrupted surfaces terminate the long sweep of the windows within the curve of the headquarters building (fig. 12). These towers also terminate the vistas down New York Avenue (fig. 13) and 18th Street, forming a two-sided frame for the Octagon House.

The original brick walls of the Octagon House and garden have been extended and refurbished. The old smokehouse, moved for a time during the construction, has been replaced in its original location. The original wooden gates of the property have also been restored. The brick sidewalks around the site have been relaid and repaired and the brick garden walks have been extended onto the larger terrace. This brick paving extends from the terrace into the ground floor exhibition area, thus integrating the old spaces and materials with the new.

TAC believes the other materials in the new building to be in sympathy with the Octagon House. The grey precast concrete relates well to the dark brick of the historic structure. Most importantly, the clear glass of the first two floors enables people outside to see the activity and the displays within.

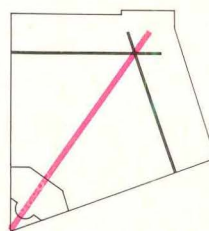
The spatial organization within the building is as follows: two large underground floors house the garage, such services as printing and accounting, and mechanical equipment; the first three floors above ground are for AIA use, including the public exhibition space; and the top four floors are for tenants.

A new environment for the AIA

Of most concern to TAC was the concept of the new AIA headquarters as a place where architects from all parts of the country will feel at home and like to return to. So far, members who have visited the new building are reacting positively. Norman Fletcher has noted with some pride that "the people of Washington cross the plaza on their walks. Already they enjoy the Octagon House and the garden. Soon they will see lively exhibits related to the arts, architecture and urban planning dis-

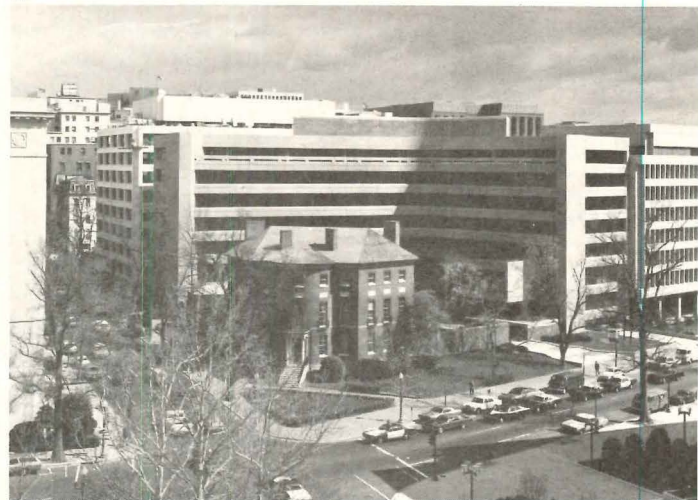
played in the exhibition hall and the adjoining plaza. We hope to have been successful in our attempt to design a building which provides for the daily needs of the profession and gives something back to the city."

AIA NATIONAL HEADQUARTERS BUILDING, Washington, D.C. Architects: *The Architects Collaborative*—principal-in-charge: Norman C. Fletcher; senior-associate-in-charge: Howard F. Elkus; job captains: James F. Armstrong, John E. Wyman; landscape designers: Knox C. Johnson, Hugh T. Kirkley; interiors: Ann G. Ellwell; architects' representative: Richard T. Malesardi. Engineers: *LeMessurier Associates, Inc.* (structural); *Cosentini Associates, Inc.* (mechanical); *Bolt, Beranek & Newman, Inc.* (acoustical); *Golder, Gass Associates* (soil). General contractor: *The Volpe Construction Company, Inc.*

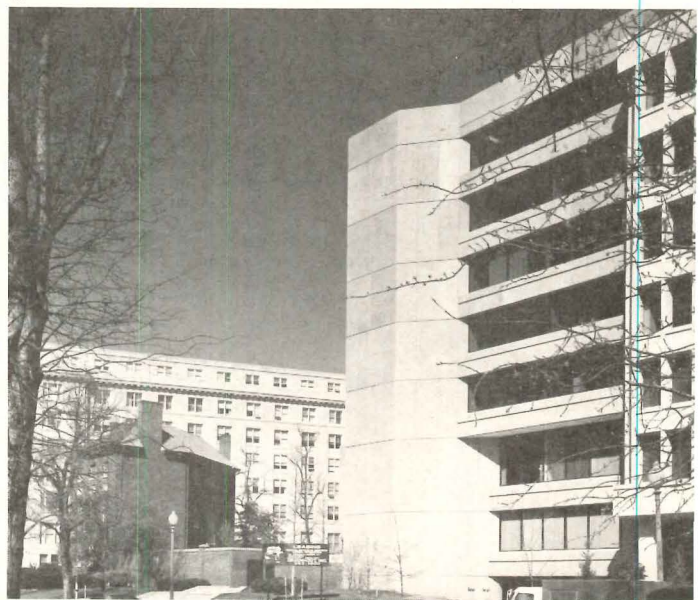


The bisector of the intersecting perpendiculars to the angled streets shapes the basic geometry of the design solution

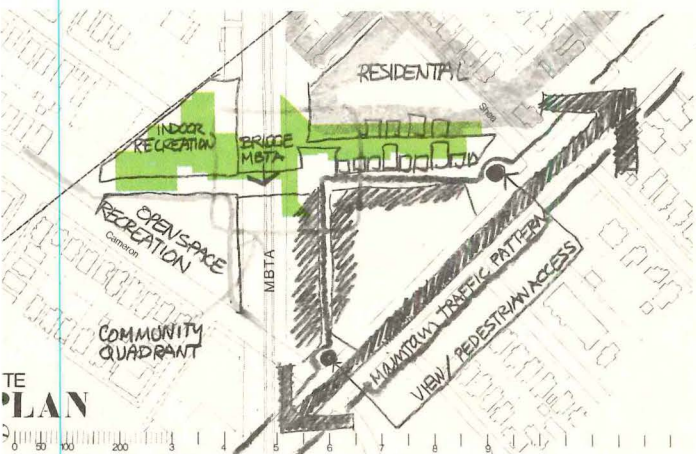
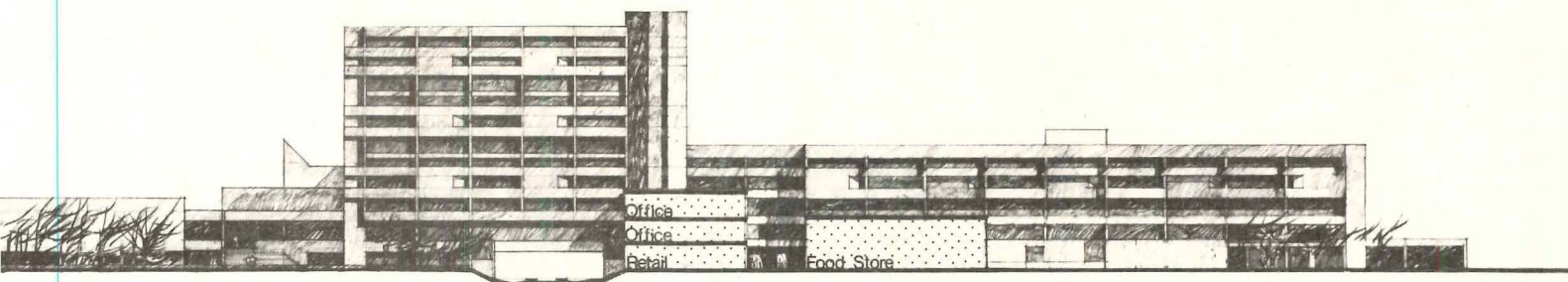
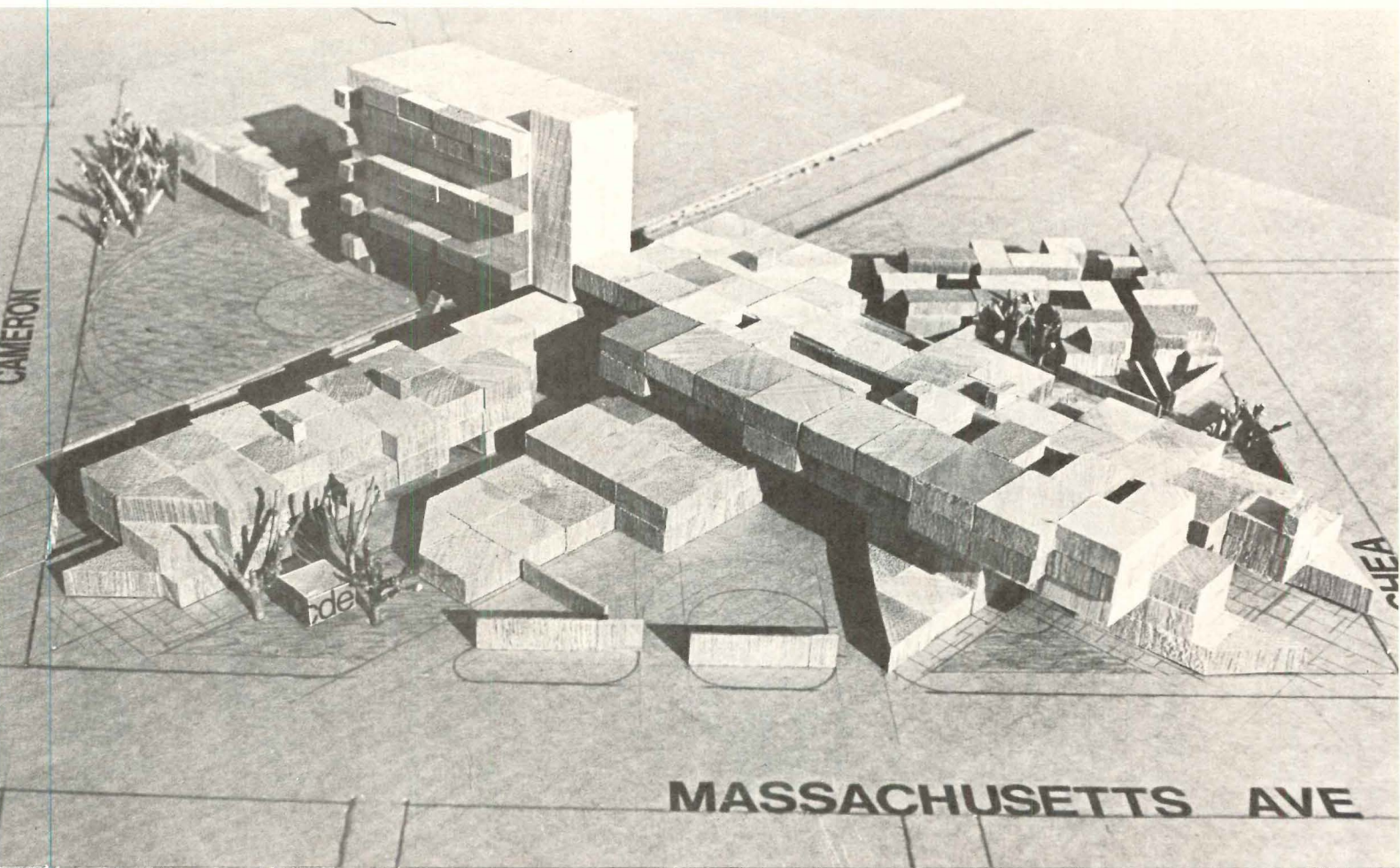
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Finding school sites where there is no land to spare

Cambridge, Massachusetts, like many cities, is faced with a need for new schools without any obvious sites on which to build them. A careful survey and analysis of every possible parcel in those areas of the city most in need of increased school capacity led the Cambridge Planning Department team to the conclusion that the potential sites must be assigned multiple uses if precious recreation space and houses that must be taken are to be replaced. Addition of income-producing commercial space as well as housing can also offset the high initial cost of land, they argued. With the assistance of their consultant, architect Theodore Monacelli, they prepared schematic designs for four of the eleven feasible sites they located. On the site of an MBTA trolley-bus garage (above and page 144) which is to be vacated in the near future, they have placed a school as well as commercial, office, parking, housing and community recreation facilities. All work together to form a hub for the entire neighborhood.



DPW: a new parking garage and play field adjacent to the school.



Prospect Street: the school fits around other uses.

When most people think of Cambridge, Massachusetts, they think of Harvard University and Massachusetts Institute of Technology and imagine that the whole town is a campuslike place—spacious and verdant. But most of Cambridge is, in fact, a crowded industrial city with factories and warehouses on any piece of land not occupied by wood frame “three-decker” apartments and houses. In short, except for the two universities, it is just like most other cities along the Eastern Seaboard. There is never enough low- and moderate-income housing. Recreation and other park space is constantly in jeopardy as other public uses, such as housing, firehouses and schools are built there. Especially schools. As the old buildings are phased out, larger sites must be found for their replacements since present-day requirements for outdoor play space around schools are much higher than when the original sites, now tightly ringed by houses, were acquired by the School Committee.

Since World War II, seven elementary schools have been built in Cambridge. Their sites total 22.8 acres of which 14.7 acres had been recreation space, mostly located in residential neighborhoods. If 14.7 acres seems nothing to worry about to people in the sprawling suburbs, to the City of Cambridge it is 15 per cent of the total recreation space (except for two large public parks which serve other communities as well). The last school built, in fact, took almost five acres of recreation space. Yet

Cambridge must continue to update its school system, somehow finding land where there seems to be none on which to build schools.

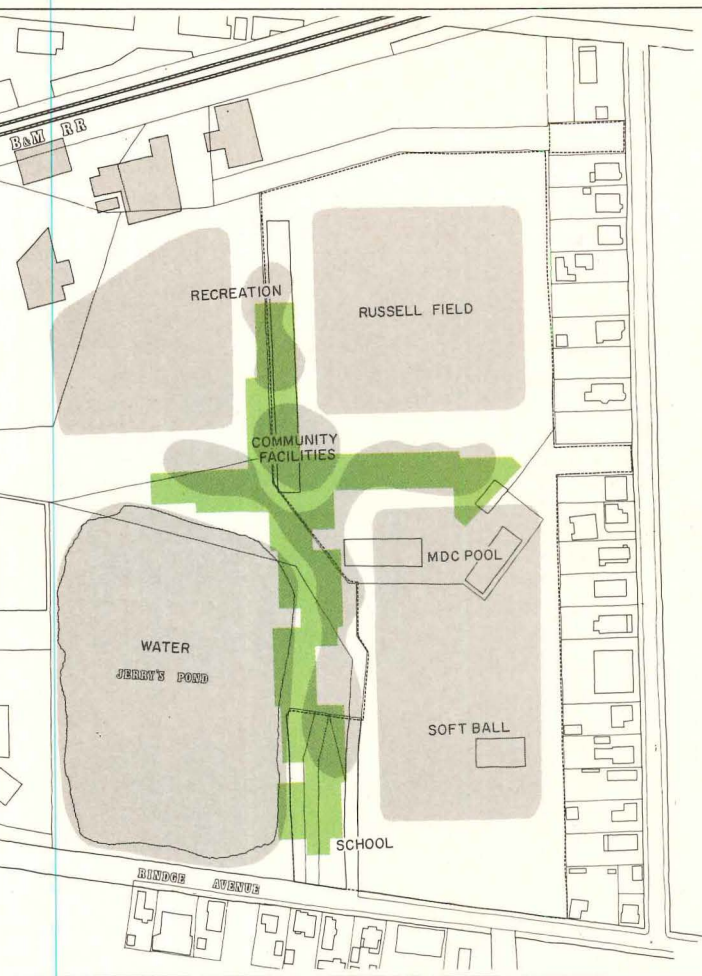
The Cambridge School Committee faced that dilemma in 1970 by asking the Cambridge Planning Department to make a study of where future elementary school buildings might be built, taking no recreation space and no housing in the process. The first four volumes examine in terms of educational services the requirements for the city of Cambridge as a whole and its several districts. Volume Five of the Study concerns itself specifically with site selection and with the potential for multiple use development of that land. In order that the readers of Volume Five (citizens of Cambridge, many of whom had substantial emotional and economic biases) have as objective an attitude as possible, the authors of the report devoted a dozen pages to a look at Cambridge’s historical approach to selection of sites for schools. It is there that the problems of site acquisition are discussed: the high cost of land, the time it takes to assemble large parcels and the hardships for those whose homes are taken.

The two traditional sources of school sites—old school property and recreation space—are the ones most thoroughly condemned. “The practice of viewing recreation and open space as convenient and inexpensive vacant land available for a variety of other public uses is a long American tradition for which the country is now paying the price. In

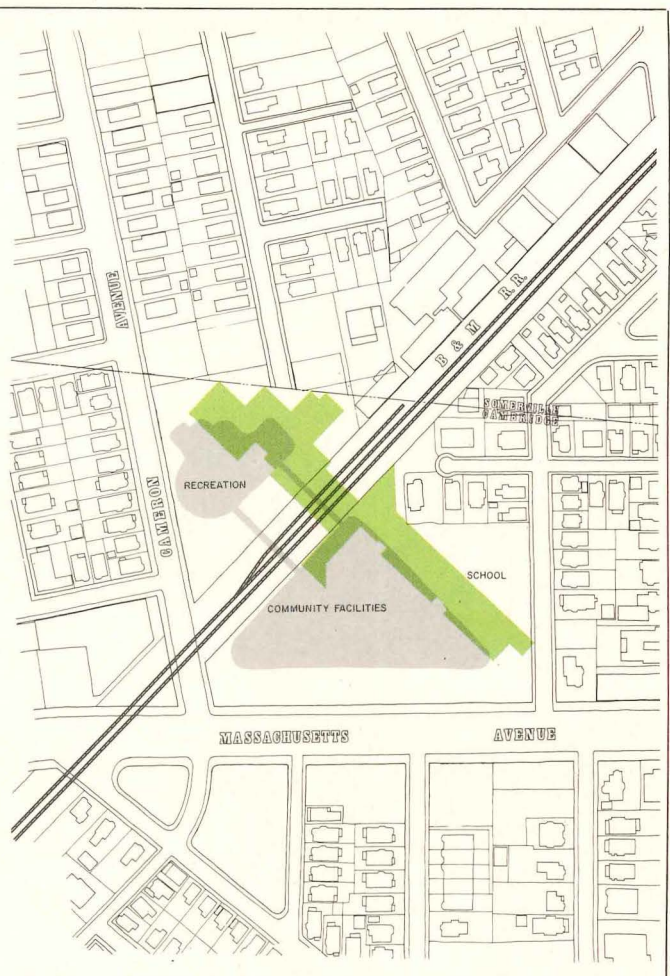
Cambridge the consequences have been no catastrophic; the provision of adequate recreation and open space is rapidly becoming one of the city’s most pressing problems.”

Site Selection Analysis

Twenty-nine parcels of land in the areas of the city most in need of new schools were analyzed by the Cambridge Planning Department. Three criteria were applied to each. First, location: the sites had to be in areas needing increased school capacity. Second, size: two acres of play space in addition to the area required for a 900-student school, parking and buffer zones, or 3.5 acres were taken as the minimum feasible site size. Third, availability: underdeveloped or marginally-used land was assumed to be both the most available and the least costly. Many of the sites proved too small but the planners determined not to ignore anything on the ground. Many also had difficult access problems—children had to cross railroad tracks or too many busy streets. Eleven of the sites passed the test of the basic criteria and were grouped by sectors of the city. Three of the sites were in North Cambridge, a dense neighborhood bisected by busy streets and railroads; many small parcels difficult to assemble into large enough sites. Two sites were in West Cambridge, in the Model Cities neighborhood where land was developed similarly to North Cambridge, but more expensive. West



Russell Field: tucking the school in between recreational areas.



MBTA: an urban hub includes the school and income producing uses.

...had three sites, all of which were needed for recreation space as much as for school use. The Agassiz District, near Harvard, had two sites on one of which the university intended to build high-density faculty housing, increasing need for a new school in that part of the city.

The eleven sites were further analyzed, with considerable attention given to financial factors: assessed valuation, tax revenue and estimated market value. The planners made recommendations, however that given the speculative nature of the Cambridge real estate market, the market values given were no more than informed estimates. Subsoil conditions, environmental considerations and accessibility were also detailed in detail for each site. It was the intent of the planners that the public decide which of the sites in any given sector was the "best" one. "Technical analysis," they said, "such as that presented here cannot prejudice the myriad of complex and subtle social and political issues which are an integral part of any public site selection process."

Multiple Use Development

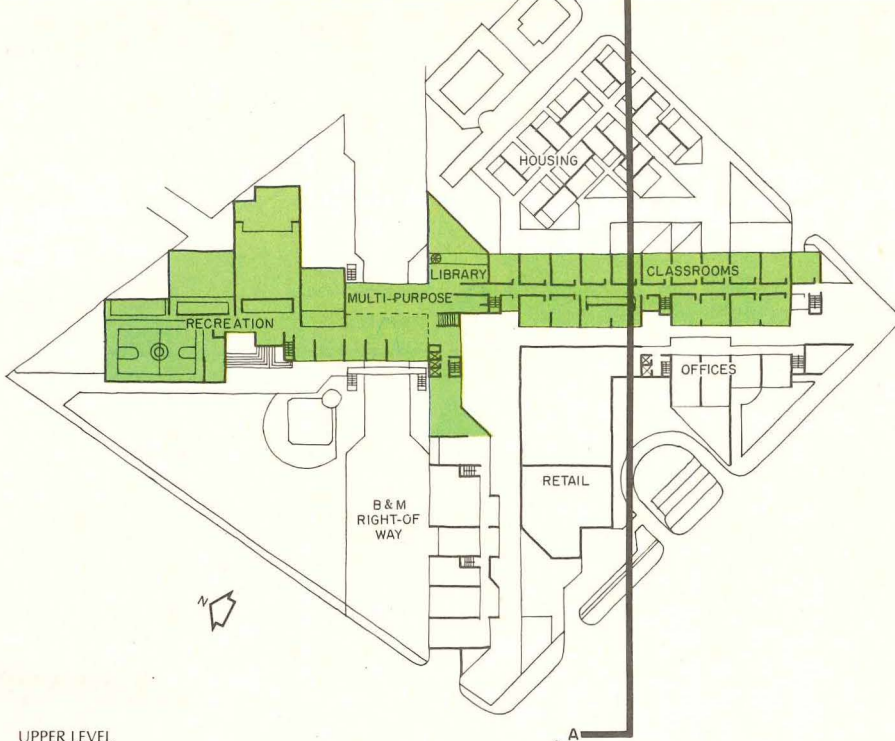
In the Planning Department team had isolated and objectively examined a number of sites in each of the neighborhoods, it chose four sites for further study to illustrate the concept of "multiple-use development"—two in mid-Cambridge (above, across page) and two in North Cambridge (above). Multiple or "mixed"

uses, as Jane Jacobs called them in the *Death and Life of Great American Cities* (1961), are very common in the dense old European cities but we are just now coming to appreciate the natural advantages of mingling residential, commercial and institutional uses in building complexes and neighborhoods. Cambridge, as dense as any American city, seems the perfect place to develop such combinations, especially if it means that schools can be built which replace any housing or recreational space they displace with new construction.

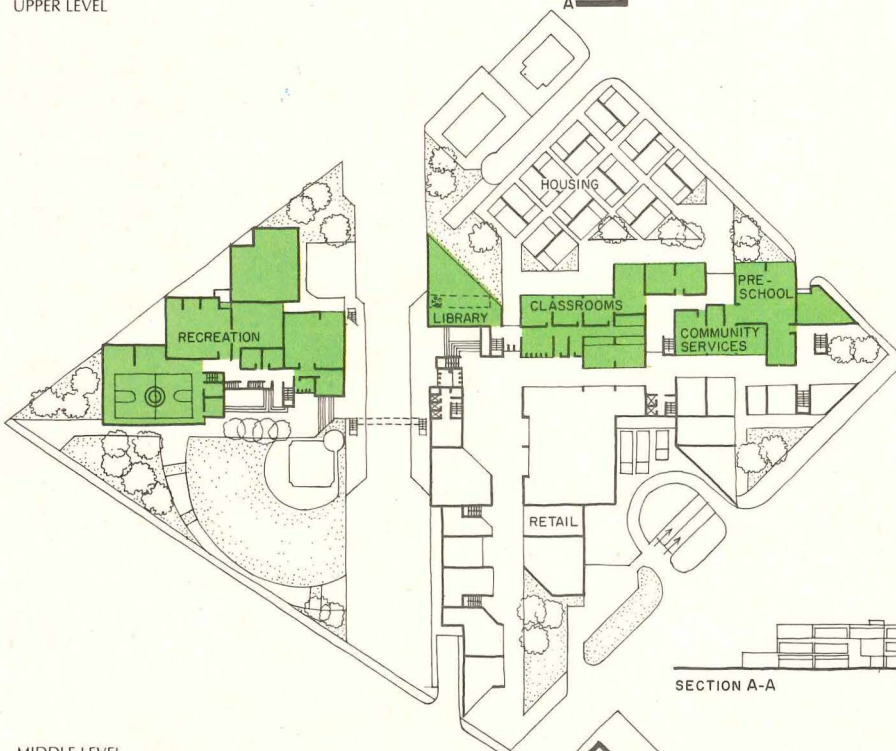
Each of the four sites are shown above with the recreation space and community facilities in conceptual form indicated in grey. The color overlay illustrates the possible form of the school building which responds to those needs. Both of the mid-Cambridge sites, Prospect Street—2.06 acres—and DPW (Department of Public Works)—6.30 acres—illustrate how difficult it was to find sufficiently large sites there without tearing down houses. The Prospect Street proposal makes use of a second-floor walkway network to separate the children from the heavy truck traffic and to connect the several small plots available for a school with Sennott Park (which becomes the primary recreation space for the school) and elderly housing nearby. The entire scheme forms a link to Central Square, the commercial heart of non-academic Cambridge. The DPW scheme proposes to replace the inadequate street repair machinery garage and yards with a grade-level

parking facility topped by a play-field adjacent to the new school. The planners point out that construction of the new school can include facilities like the play-field, the garage and a day-care center that would probably not get built by themselves. Thus, the school is the generator of several neighborhood facilities. The Russell Field site, in North Cambridge, has four recreational uses presently. Rather than take one of them as the location for the school, the planners have proposed a design which fits between them. On the second floor, single family walk-up housing would be built with separate access—certainly a unique combination. Adjacent to Russell Field itself the building becomes locker rooms and grandstand. The MBTA (Massachusetts Bay Transit Authority) trolley-bus garage site, also in North Cambridge, has the most complicated set of multiple uses of any of the sites. It is also the one which illustrates how income-producing elements can be combined with institutional and residential uses (see drawings next page).—*Jim Morgan*

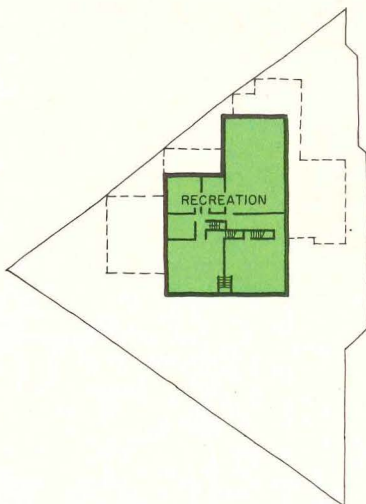
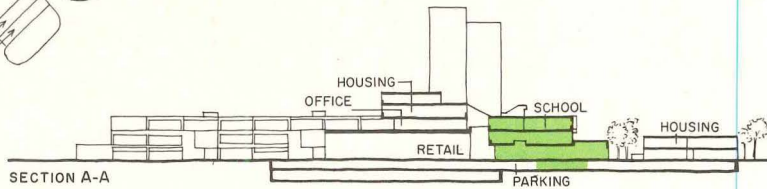
SCHOOL SITE SELECTION STUDY. Client: Cambridge, Massachusetts School Committee. Planners: Cambridge Planning and Development Department—Robert A. Bowyer, planning director; Malcolm FitzPatrick, associate planner; Peter Helwig, associate planner (in charge of preparing the report); J. Michael Kirkland and Christopher Benninger, urban designers (in charge of the multiple use development section). Architectural consultant: Theodore A. Monacelli of Gund/Monacelli Associates.



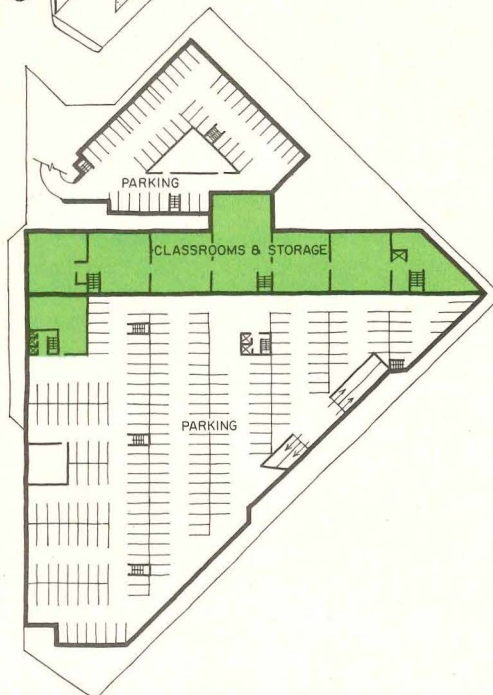
UPPER LEVEL



MIDDLE LEVEL



LOWER LEVEL



The MBTA site in North Cambridge has been developed by the planners and Monacelli to illustrate how several diverse functions can be grouped. Over the active Boston and Maine tracks (a future rapid transit line) which divide the site, a multi-story apartment block (above) serves as a connector between the classrooms of the school on the south side with the recreation facilities, also open for community use, on the north. Adjacent to the school, along an enclosed mall (above), are stores and office space as well as community service facilities. Single family housing, to more than replace the 14 dwellings the new building would destroy, is located to the east of the school above its own parking. This project emphasizes the planners' feeling that not only are there economic benefits derived from integrating schools more closely into the community fabric than is normally done, but there is immense educational value for the children.

Architecture for industry

Why modern is American industry?

business' requirement for modernization of technologically outdated facilities is a supporting force behind the great strength of the present capital investment boom. To determine how well U.S. business is progressing in its fight against obsolescence, the McGraw-Hill Publications Company's Department of Economics, in its Fall 1972 survey of primary plans for capital spending, asked companies what portion of their plant and equipment they considered technologically outmoded, how long it would cost to replace it and the percentage of their capital spending being earmarked for automation.

Here are some highlights of results:

Business now considers 10 per cent of its facilities technologically outmoded compared with 12 per cent at the end of 1970.

To replace its outmoded facilities with the best new plants and equipment, the total cost for business comes to \$149.1 billion at the end of 1972.

Business expects to devote 21 per cent of its 1972 capital investment in automated machinery. By 1974, automated machinery is expected to account for 20 per cent of a bigger capital spending pie.

In terms of new industrial building, not itemized as a component of planned expenditure in the above survey, some light is shed by the latest F.W. Dodge Construction Outlook for 1973, which foresees \$4 billion worth of industrial building construction in 1973—up 33 per cent from 1972.

Architecture for industry— Laying ground for professional services

Architecture for industry has been the spawning place and proving ground for many of the professional disciplines that have found their way into general practice. The urgencies of time and economy, since the introduction of the assembly line and mass marketing, have required that buildings for industry be delivered in the shortest possible time and at the lowest possible cost within stringent quality criteria. Phased construction, systems building and construction management, tested responses to the urgencies in industrial practice, are examples of techniques now being defined and applied in other building types.

It has long been the fashion to decry the architectural quality of the buildings designed for industry under these austere conditions. Indeed, the industrial clientele of the recent past placed both esthetic and environmental qualities low in the order of priorities. The raising of priorities and different levels of emphasis for both environmental and esthetic considerations has been impelled by a succession of strong influences.

First, with the rising power of organized labor and the increasing stringency of employee compensation laws (with consequent upward pressure on insurance costs and carriers' stipulations) the internal industrial environment improved in those aspects affecting health and safety. Also, demands for increasing precision brought about more precise control of interior atmospheres and lighting. Investment in both manufacturing

and research buildings increased proportionally in terms of both employees and products.

A second, more recent major influence has been the increasing sophistication of large industrial clients in the positive effects, on both productivity and public image, of those aspects of structure and building appearance which are more conventionally considered to be architectural. Those clients who had been through the experience of attempting in-house architecture and engineering had found that not only was the load factor on in-house staff uneconomical, but an essential input from outside professional services was lacking. That input, over and above conventional, critical, analytical and design services, includes the spin-off of new ideas and techniques normally acquired by professionals in private practice serving diverse clients.

The disciplines of the industrial milieu, nevertheless, continue to have their effect. And it has been in this milieu that the emerging practices of phased construction, systems building and construction management have had their most searching trials.

Detroit architectural firms gain essential experience

Architectural services for automobile manufacturers in Detroit are by no means the exclusive proving grounds for these techniques, but they form a localized demonstration of their effects upon large and demanding clients. Alfred M. Entenman, Jr., now president of Giffels Associates, can demonstrate the genesis within his firm of every aspect of that segment of practice now acquiring the generic designation *construction management*. He is articulate in pointing out that most of these services have had a long history of application by his firm without being isolated or categorized or separately charged. They are the logical and necessary consequence of professional services to industry.

Robert F. Hastings, executive chairman of Smith, Hinchman & Grylls, also recognized the emergence of these services as pertinent to an increasing diversity of clientele. He saw that those services, in commissions other than industrial, were even more crucial to successful buildings, but were gaining in complexity and demand for professional management to a degree that was not readily absorbed in conventional fee structures.

Philip J. Meathe, Jr., now president of Smith, Hinchman & Grylls, observes five trends that may be considered shifts in the climate of architectural practice for industry. First, is the increasing concern of large industrial clients about the impact on the community of decisions affecting their plants. These decisions are not simply matters of placement, ecology, or esthetics, but penetrate more deeply into the social responsibilities of ownership. Decisions to remove a large manufacturing operation to another city, for example, are no longer simply decisions to sell or abandon one plant and construct another one elsewhere. Many corporations are beginning to participate with the original community in planning for disposal or conversion of the old plant as well as joining the new community in broad studies of economic and environmental impact of the new plant.

Another trend Mr. Meathe sees is the increasing role of color and graphics for industrial interiors. This is a use more extensive than the simple color coding of piping or the efficient use of signage. It does have to do with safety, but further than that, it takes notice of the working environment as one in which people live for substantial portions of their working day.

A trend that seems to combine the influences of the first two is the increasing frequency with which landscaping is as primary a concern as plant design. For example, there was considerable and costly concern for shielding the community surrounding a new test track by mounding the earth in such a way as to break the noise emanating from the track. The shielding was not only from noise but also from the unsightly commotion that can occur in such locations.

The fourth observation by Mr. Meathe is that plants today in the U.S. tend to be capital-intensified rather than labor-intensified. That is to say, the investment in machines for automation is heavier in a given process than would be the case where manpower is abundant and lower in cost. The effect on the architecture of the plant for capital-intensification is not a general one, but must be worked out for each individual case. For example, the machines to move an engine block may call for more or less space than a manual operation. The architect's problem is to find out what the effects may be and design for precise machine room rather than elbow room.

Finally, Mr. Meathe observes an increasing requirement for architects to know the implications of provisions of the Occupational Safety and Health Act. The design of plant interiors and atmospheres for ready compliance has been held to be a direct responsibility of the architect.

Sol King comments on the lay-invasion

Sol King, FAIA, is president and director of architecture of Albert Kahn Associates, Inc., a Detroit firm of architects and engineers with a long history of service in the demanding fields of industrial and health facilities as well as more general fields of commercial and laboratory commissions. In addition to extensive activity in the national AIA and the Michigan Society of Architects, Mr. King has also been honored by the Newcomen Society and the Wisdom Hall of Fame. He has written and spoken about the problems of the profession on many levels, and for the special concerns of this study, he has set down some of his current ideas about change, challenge and the profession in general. The following is substantially based on his comments, with some deletions and editorial interjections forced by the limits of space and the specialized subject of this industrial study.

Architects today, says Mr. King, are being challenged on many fronts, but those challenges which seem to pose the greatest threat to the profession—and indeed to society itself—are twofold, especially prevalent in the industrial and development fields of practice. First, is the growing encroachment of self-appointed lay experts into the realms of decision about form and material quality. These are areas, Mr. King points out, where decisions can have validity only through the training and professional responsibility that are exclusively the architect's. A second and to some degree related challenge to the profession is an encroaching acquiescence on the part of architects themselves to compromise in their primary role in the design and construction process. These compromises range all the way from the facade-embellishment and stamping of designs that are in fact produced by non-architects, to the more subtle compromises of position on commissions where project size and/or client policy regarding project management have produced a climate of operation in which the architect's acceptance of a secondary role on the so-called "design and construction team" seems to him, the architect, either professionally harmless or unavoidable.

Although both of these threats to professionalism are serious, Mr. King suggests that the architect's team role in matters of management is perhaps less critical to his professional identity than is the possibility of domination by lay opinion or fiat in those areas affecting the architectural product itself.

In an economy that projects a possible doubling of the construction

in place by the year 2000, Mr. King reminds us, professionalism in design of that construction is even more crucial than it has been in the past—although the paramount importance of architectural performance in the past is written into almost every code of law.

The lay-invasion, says architect King, is particularly notable in the fields of industrial parks, dwellings (either single or multiple), shopping centers and office parks, which some developers and other entrepreneurs regard as short-term investment. They enforce tasteless considerations of simple economy on the designers without regard to the long consequences either for occupants or for the environment as a whole.

Mr. King is quick to point out that all developers are not tarred with this same brush. He cites the Rouse Company, developers of Columbia, Maryland, whose respect for professional input became apparent in the Kahn organization during design of General Electric's Appliance Center East, adjacent to Columbia (pages 154-155).

The professional role needs client identity

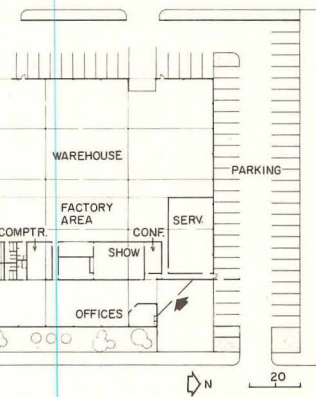
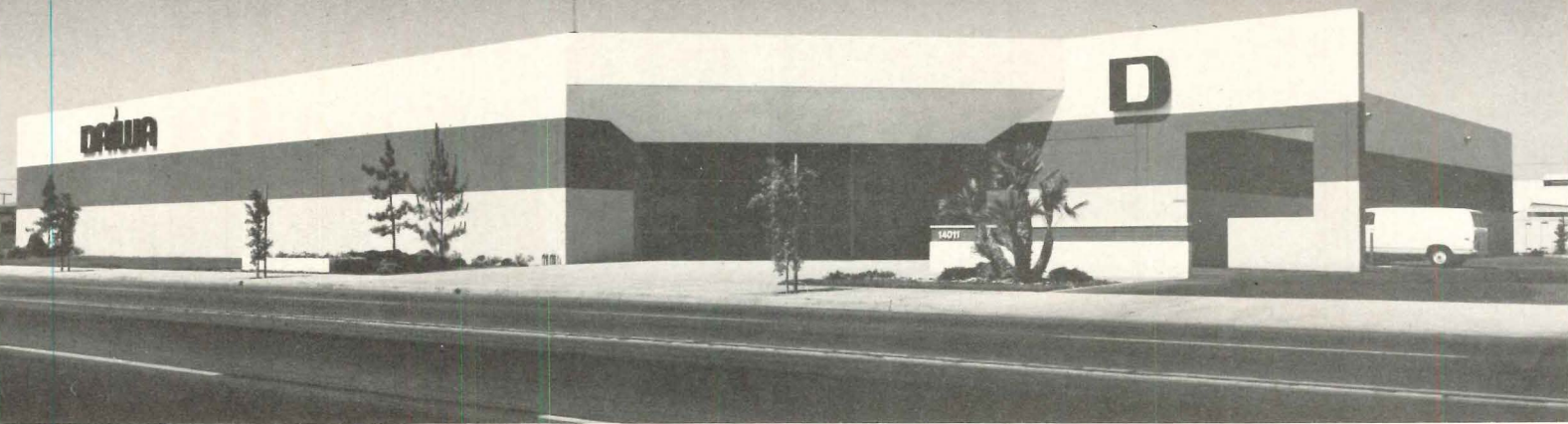
Perhaps the key point here, is the fact that the "lay-invasion" develops where "hire" architects are not in an essential client relationship with the project. That is, they merely wish to implement a process whereby they can make some money rather than fulfill the true client role of commissioning a needed structure for a permanent owner. Those developers who take the user and society itself into account are more clearly in a mature client role.

Another front of lay-invasion occurs, according to Mr. King, where certain abdicated responsibilities in engineering, which he attributes to "overly ambitious representatives of equipment manufacturers and material suppliers." Well, we are confident of general agreement (including that of Mr. King) in the observation that many architects have given useful services in the design of certain systems through consultation with systems manufacturers. The hazard lies, of course, in the easy availability of the system decision to the adroit purveyor. Decisions regarding the appropriateness of one system or another are properly professional decisions, and the enlistment of the technical expertise that abounds in the manufacturing universe is a vital supplement to those professional decisions. An engineer who works for a manufacturer may indeed be competent in his profession as an engineer in private practice, but his competence is directed toward applications of his employer's product rather than to the absolutes of the building project involved. The problems of channeling the resources of proprietary expertise into the mature service of the building client are gaining attention at high professional levels as the performance specification and its principles find broader usage in the design and construction process. The seven-year performance specification project sponsored by GSA for three Security centers is a case in point, although it is early yet to determine it as a trend.

The role of the architect as coordinator of the many disciplines involved in today's construction process is keyed to the preservation of the environment in which all men must live and work. This is not because the architect is either omniscient or inordinately arrogant. It is the simple fact that only architects preserve the breadth of discipline and coordination inherent in their role of agency toward clients. This is a role that may not be subverted by conflict of interest without peril to the construction process. It is the only profession in which the central thrust of training and endeavor is toward the unencumbered goals of all concerned.

Therefore, the consequences of compromise with the lay-invasion are far-reaching and almost inevitably dire. One cannot hope that the architect is a super-being, but one must insist that his profession penetrate deeper into the fabric of environment than the cosmetics of facade.

Architecture for industry has indeed been a proving ground for many of these premises. The relationships of demanding clients to simple enclosures have fostered many experiments in "off-the-shelf" architecture. Most of these have served only to demonstrate the performance of the compromise, and the industrial client now is universally converted to professional input, with all its disciplinary services.—William B. Foxhall



Daiwa Corporation of California Headquarters

Gardena, California. Owner: Daiwa Corporation of California. Architects: Kajima Associates—Hayahiko Takase, project architect. Engineers: Tom T. Kamei Associates (structural); United Air Conditioning (mechanical); Kirkwood Electrical, Inc. (electrical). Landscape architect: Nobuya K. Hira. General contractor: Olman Construction Company.



Glen Allison photos

ALL PLANTS TEST SKILLS OF AUSTERE ARCHITECTURE

of the five buildings on this and following pages demonstrates a point in the application of architectural skills in the development of all simple buildings that must work well at the same time be good neighbors.

These import firm is precision style and color at low cost

Daiwa Corporation of California imports products of fishing, golf and other sports items from Japan. They required an assembly plant and office space in the suburban area of Gardena, California. The new building is a corporate headquarters and distribution

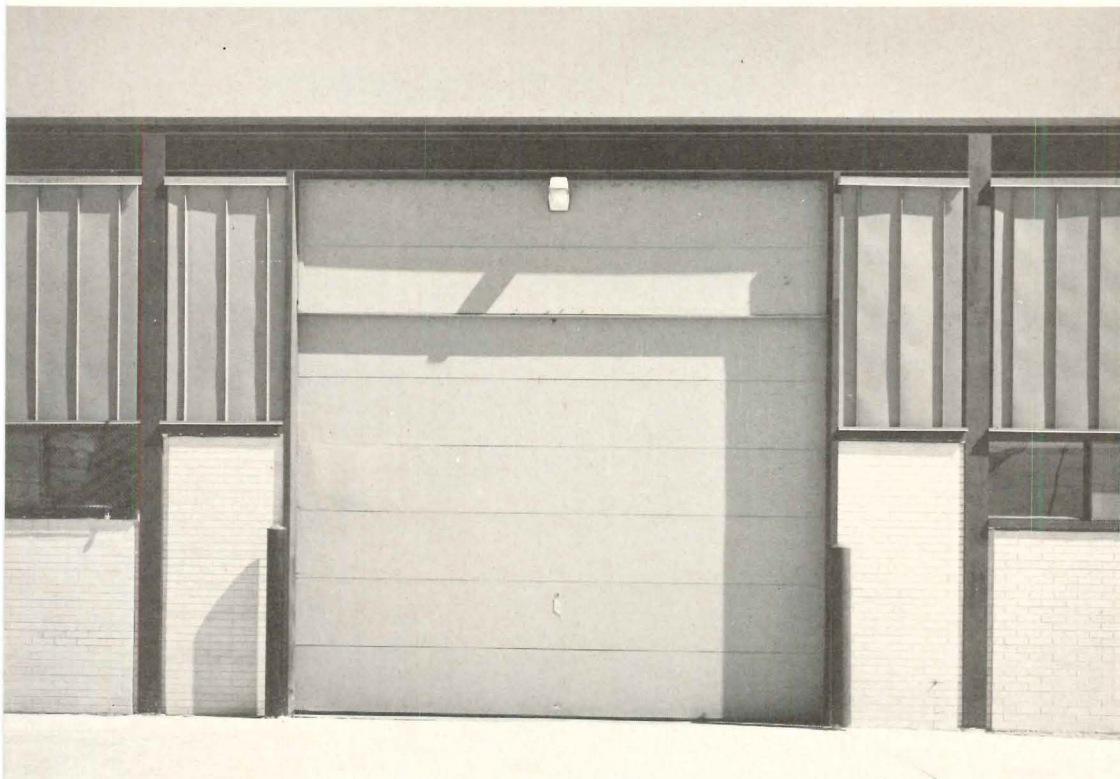
point from which golf clubs and other equipment are exported back to Japan or sold through U.S. merchandising channels.

The building is on a 72,000-square-foot lot about 15 miles south of downtown Los Angeles. It is a single-story building containing 37,000 square feet of office, showroom, factory and warehouse areas and is staffed by about 75 employees.

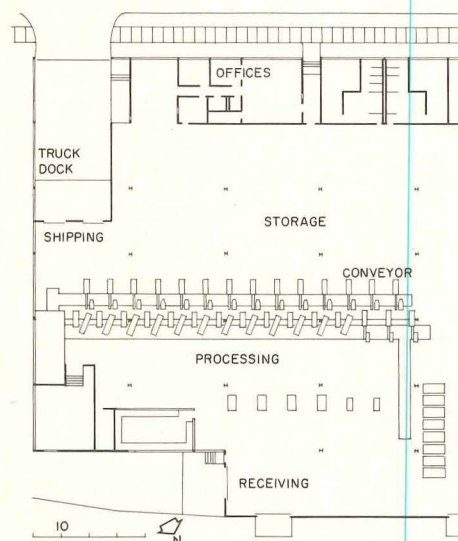
Architect Hayahiko Takase of Kajima Associates designed the building as a symbol of the corporate image using the simplest of materials: tilt-up precast concrete walls, cast-in-place slab floor, anodized aluminum at doors

and windows. Designed with the deceptively simple Japanese sense of line and scale, the building is painted with three horizontal stripes in white, light blue, and dark blue, representing, says the architect, snow, sky and water, all related to Daiwa's sporting goods products. Windowless office space is shielded from heavy street traffic but opens onto a walled patio containing a Japanese garden which also gives access to an employee lounge. The Japanese garden motif is also echoed in plantings along the street side of the building.

The total cost of the plant and office was eight dollars per square foot exclusive of land cost.



Bob Porth, Hedrich-Blessing photos



Chicago Dowel Building

Chicago, Illinois. Owner: Chicago Dowel Company, Inc. Architects: Clarence Krusinski and Associates Limited. Engineer: Schousbue & Seidensticker (structural); Wallace & Mitchell (mechanical). General contractor: Heller Construction Co.

Urban Chicago site calls for efficient dexterity

The adroit use of economic materials and architectural scale and detailing are not exclusive to the Japanese. The small plant for Chicago Dowel Corporation, shown in the panel above, gave the young architects, Clarence Krusinski and Associates, a double problem. First, the site is a restricted urban location in Chicago. Second, the building has to provide shipping and receiving accommodations at three locations to take advantage of existing rail and truck facilities. The materials again were simple and were handled with as much architectural sensitivity

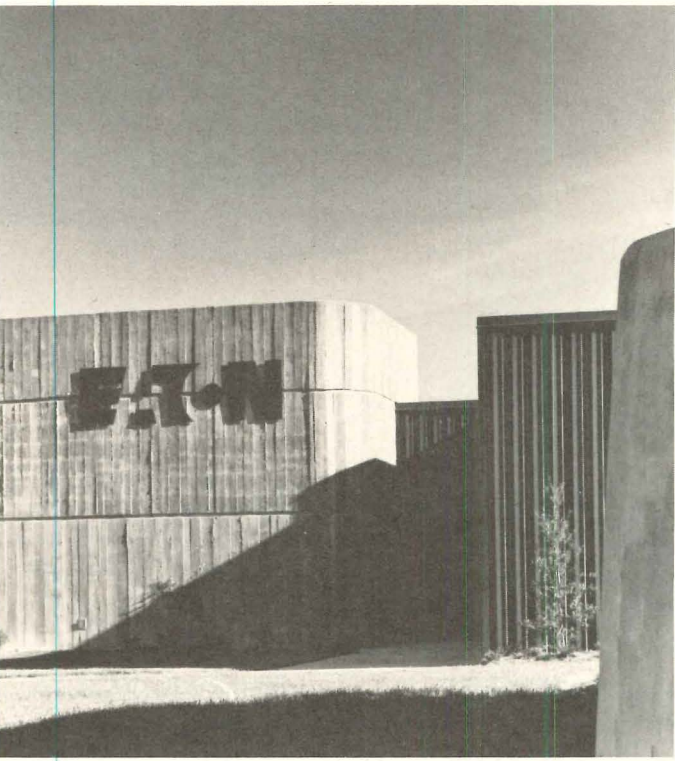
and attention to detail as could be expected under difficult conditions of site and program.

The building provides about 30,000 square feet of flexible space, 3000 square feet of which is office space. The balance houses a light woodworking manufacturing operation. The structural frame is light exposed steel designed to a 24- by 86-ft structural bay to accommodate the required flexibility and to fit within the irregular site. Exterior bays were enclosed by infill panels with a masonry base topped by steel windows and insulated metal panels.

The building came in at ten dollars per

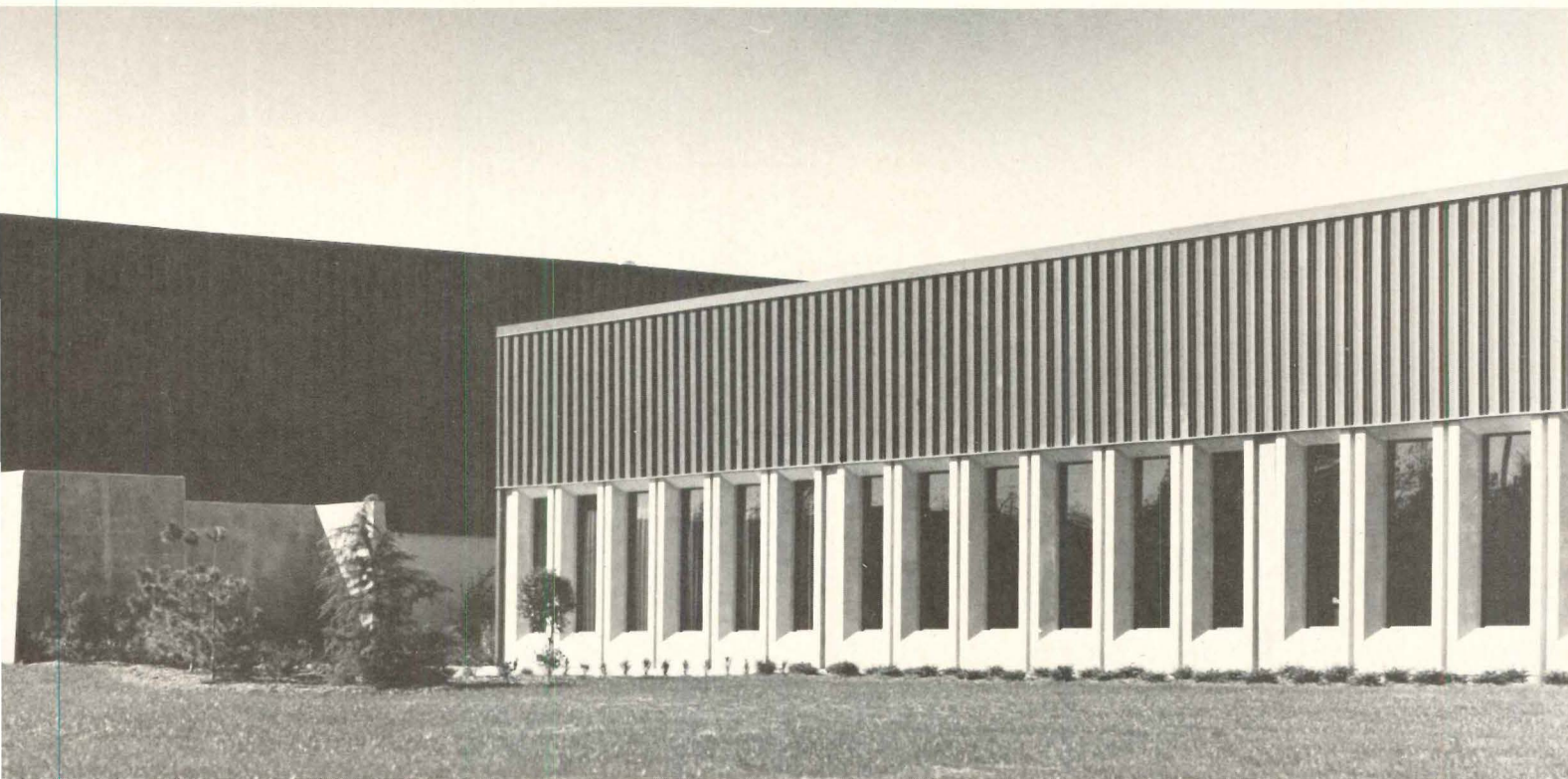
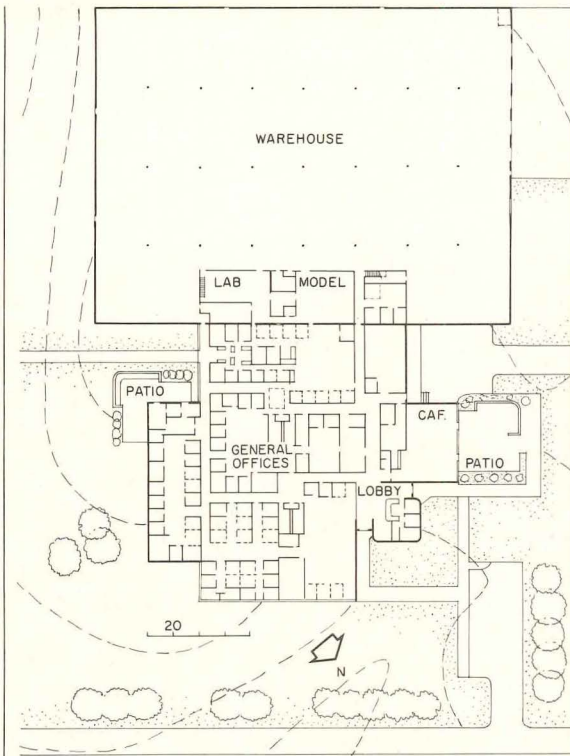
square foot in spite of the requirement for a sophisticated heating system designed to handle the sawdust of the plant's woodworking operations, with standby capability of burn-in fuel.

In his response to the "young architect questionnaire" which formed part of the special issue of last December, Clarence Krusinski, head of an office of 15 people, voiced his faith in the future of architecture and echoed some of the determinations stated in the introduction of this study, to the dangers of architectural compromise and second rate professionalism.



Eaton Corporation Lock and Hardware Administrative and Distribution Center

Monroe, North Carolina.
Owner: Eaton Corporation. Architects and engineers: Heery & Heery—Rayford L. Newman, project architect. Consulting engineers: Law Engineering Testing Company (soils); Hartampf, Powell & Associates (mechanical). General contractor: N. C. Monroe Construction Company.



Heery & Heery photos

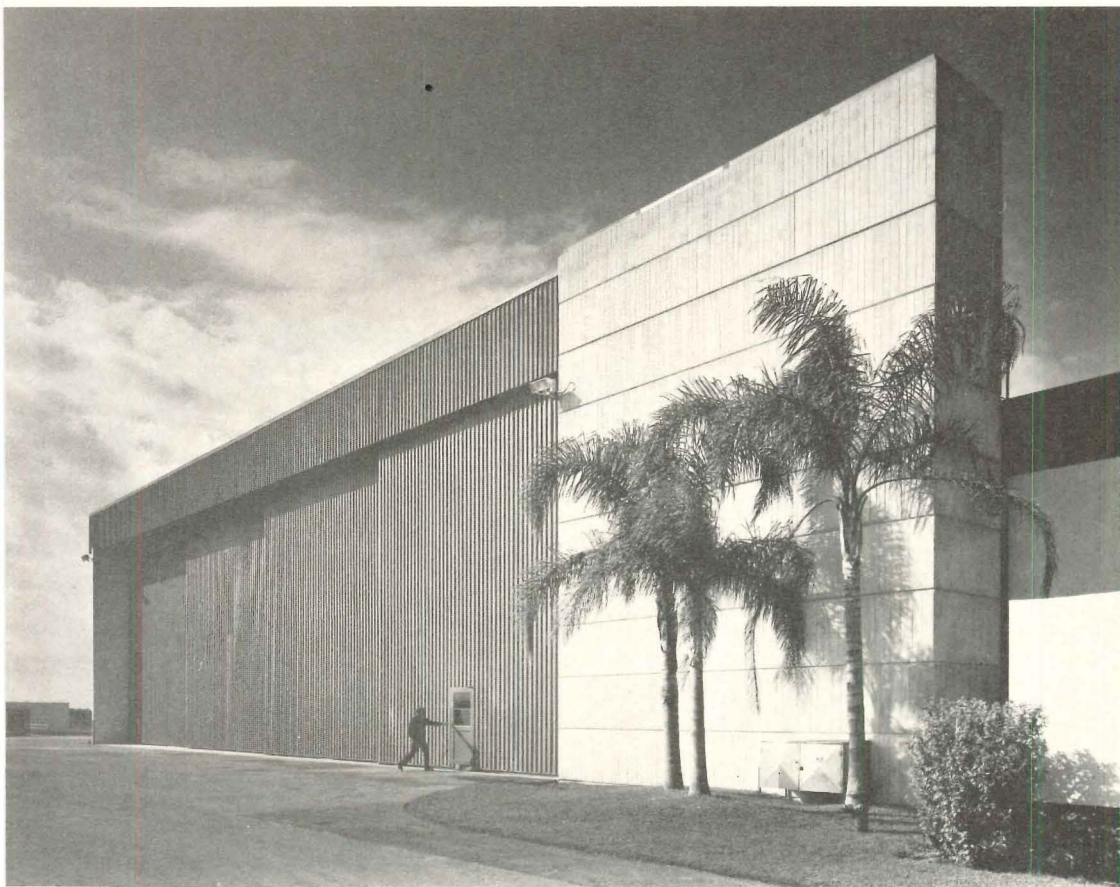
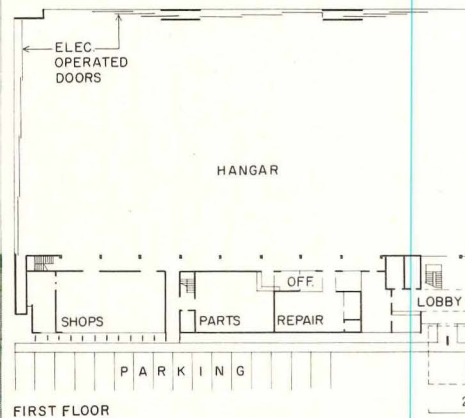
Cost control at headquarters/warehouse

A combination of design, engineering and construction management services enabled Heery & Heery to deliver the new national headquarters and distribution center for Eaton Corporation's Yale Lock and Hardware Division (panel above) below budget in a year and a half from commission to occupancy. While the objectives of speed and economy are highly motivated in the Heery organization, sacrifice of design skill is not acceptable in the firm's cost quality control programs that have been the implementing forces behind the success of this firm.

The Eaton facility has both the "image" qualities of the headquarters objective (including the strong concrete fore-structure bearing the company logo in the top photo above) and the extensive warehouse and distribution centers characteristic of such centers. Outdoor garden centers and eating places contribute to an ambience compatible with its purpose and its North Carolina setting. Heery and Heery was retained on July 22, 1971. The schematic and design development phases were completed ahead of schedule through management solutions of potential restraints related to site selection and sub-surface conditions. A general

contract was awarded January 13, 1972. Occupancy of warehouse and computer areas occurred July 11, and occupancy of the entire facility on August 1, 1972.

The building is steel-framed with metal and concrete siding. It is 77,361 feet of warehouse space and 46,633 square feet of office space (perhaps forcing the upper limit of our "small plant" category, but taking account of the simplicity warehouse space requires). Total cost, exclusive of land, was \$1,637,641 (\$13.35 per square foot). This was almost 12 per cent less than the approved preliminary estimate when the budget was fixed.



Joseph W. Molitor photos

Rockwell Standard Aero Commander Assembly Plant

Homestead, Florida. Owner: Aero Commander Division, Rockwell Standard Corp. Architects and engineers: Ferdinando, Grafton, Candela, Spillis.

Assembly plant is sales showroom

An assembly plant for the Aero Commander Division of Rockwell Standard Corporation gave the architects a few unusual problems. It had to provide about 30,000 square feet of high-bay hangar space for the assembly of private corporation jet planes, and was, therefore, situated in the unadorned terrain near Homestead General Aviation Airport in Florida. The budget was not lavish, so the materials and structure were about standard for such facilities with two notable exceptions. The first was the architectural treatment of a two-layer front of-

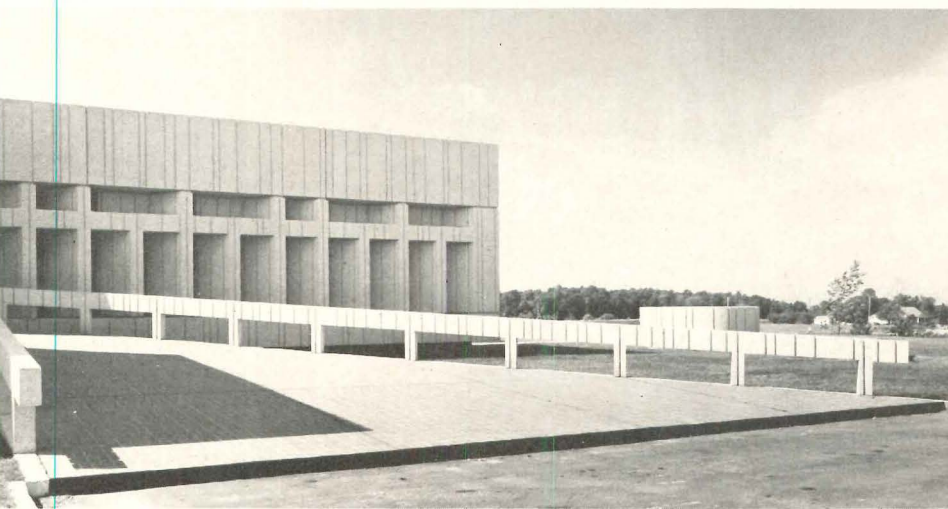
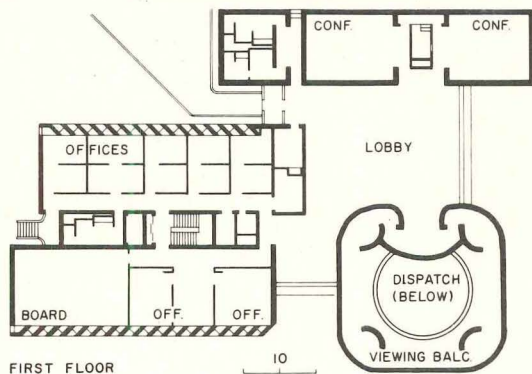
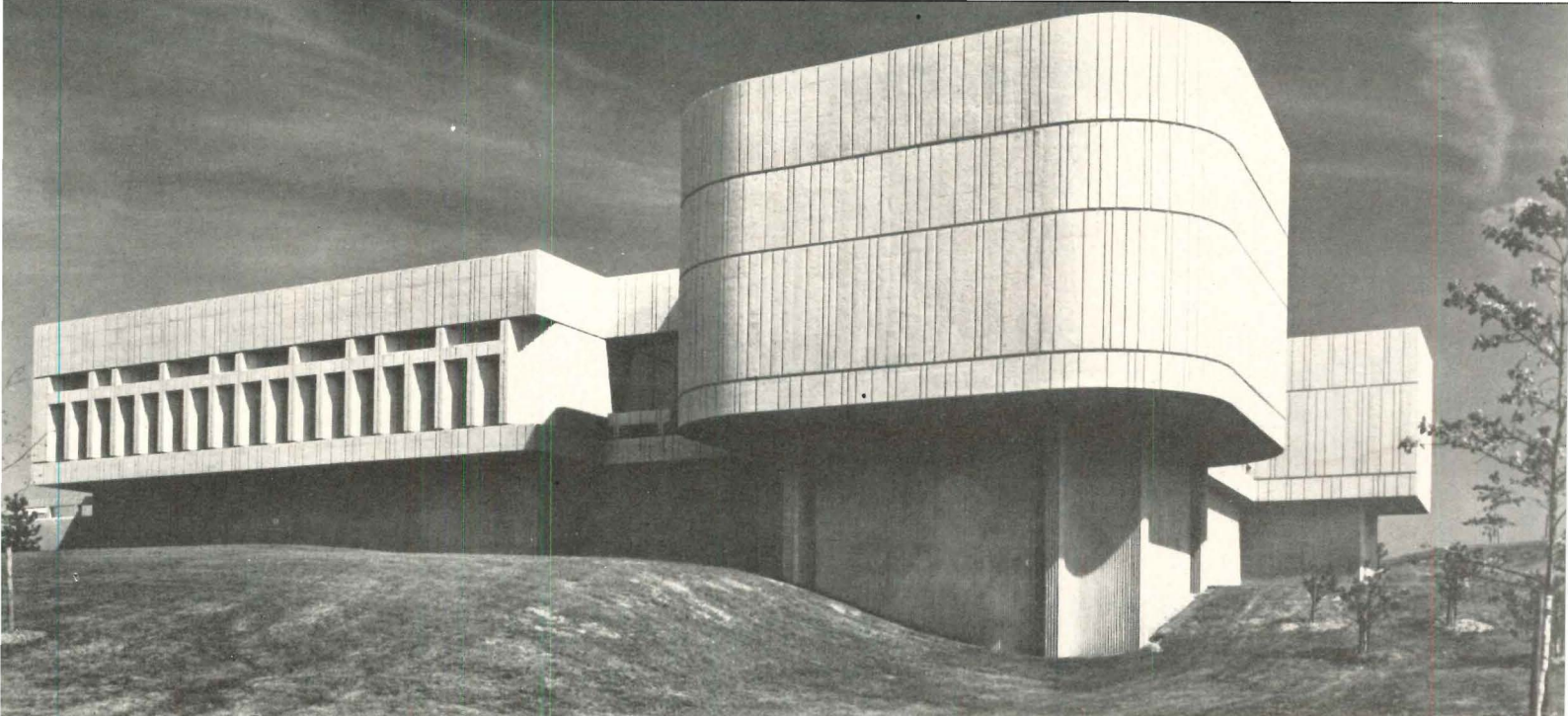
fice and shop area—which was treated in the regional vocabulary of stucco. Second, was the requirement for huge roll-back hangar doors that were designed to withstand 200-mph hurricane winds. Housing for the roll-back doors was provided in pre-cast concrete panel structures, shown in photo above.

The client required both exterior and interior design to present an adequate, if not luxurious image to that level of corporate executive customers who come to the plant to see and test the Aero-Commander planes.

The combination of showroom and assembly plant is, to say the least, unusual, and

the effect on both the architectural solution and the housekeeping of the operation is a positive one. While the massive doors are not usually dealt with as an esthetic problem, the combination of vertically textured dark metal panels, scaled to the huge white concrete closures, has an impressive monumentality. One would accuse the front office of this as being monumental, but its human scale and regional vocabulary are well calculated to the purpose of the design.

Total cost of the building was \$671,140, approximately 30,000 square feet. That includes apron paving and doors.



Azhar Korab photos

Electric Power Pool Control Center

Ann Arbor, Michigan. Owners: Detroit Edison Co./Consumers Power Co. Architects and engineers: Smith, Hinchman & Grylls—Charles T. Harris, project designer. Landscape architects: Johnson, Johnson & Roy, Inc. General contractor: Darin & Armstrong, Inc.

Power control center is ultimate in standby

Economic energy is not a universal law in architecture for industry. The electric power center, shown in the panel above, acts as a distribution relay station for energy exchanges among utilities in Michigan, Ohio and Indiana. It is a joint facility owned and operated by Detroit Edison Co. and Consumer Power Co. Its location in Ann Arbor, Michigan places it at a transfer point within a network handling more than ten million kilowatts of electric power.

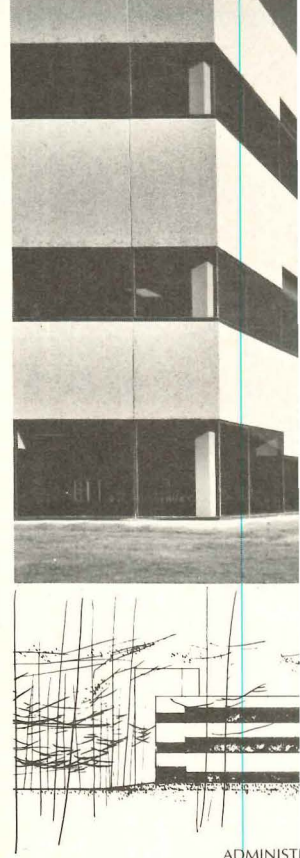
The concrete building houses sophisti-

cated computer equipment and standby generator equipment both Diesel and battery powered, to assure uninterrupted current to the computerized surveillance system. The massive sculptural quality of the concrete structure, including a substantial fallout shelter, serves the dual purpose of protecting equipment (which actually exceeds the cost of the building itself) and providing an image of sturdy reliability and respect for its rural landscape. Utilities find that image increasingly desirable in these ecology-conscious times.

Controlled internal environment is also vital to the protection of the equipment inside

the building. The availability of virtually unlimited electric energy encouraged the design of a more than usually sophisticated heating and ventilating system. This is by no means either a wasteful or luxurious expenditure. The ability to recycle energy from all heat producing units in the building provides not only exceptional operating economy but a year-round advantage in using ordinarily wasted energy.

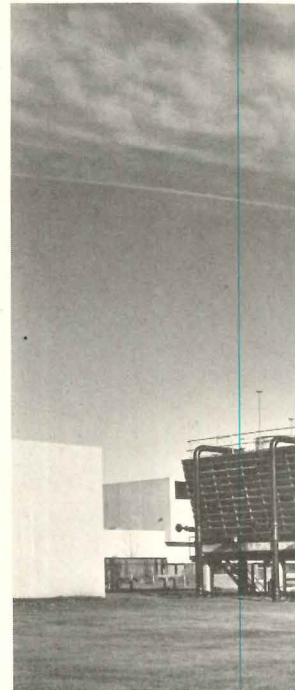
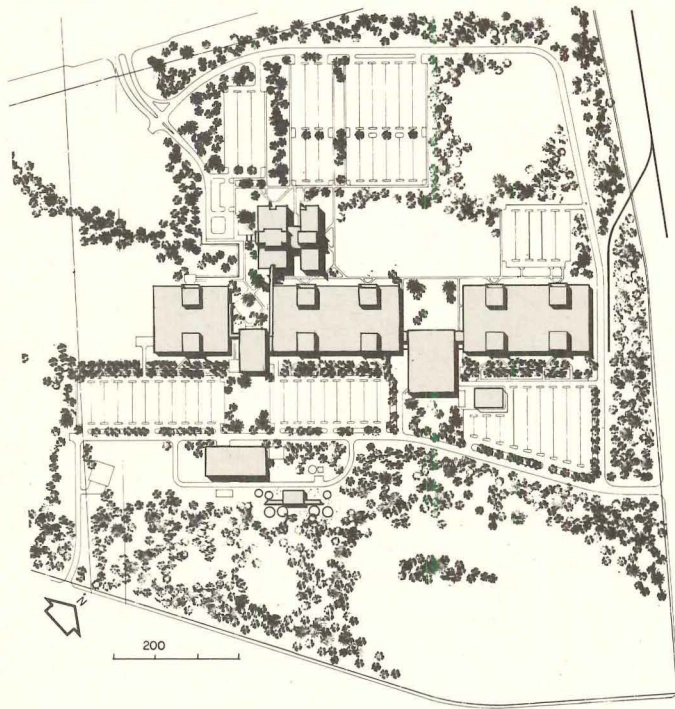
In keeping with the utilities' desire to improve public image, a visitors' gallery surrounds a central control area where the public can view the instruments of the operating control center and supplementary exhibits.



ADMINISTRATIVE

IBM System Development Division Facility

Manassas, Virginia. Owner: *International Business Machines Corporation*. Architects: *RTKL, Inc.*—Ted A. Niederman, principal-in-charge; Joseph L. Scalabrin, project architect. Landscape architects: *Collins, DuTot & Associates*. Engineers: *Kallen & Lemelson* (mechanical/electrical); *Van Rensselaer P. Saxe* (structural); *Whitman Requardt and Associates* (site).



IN THE MIDDLE RANGE: LARGER AND BIGGER STAKES

Probably no other field demands such a high level of flexibility in all areas as does the rapidly developing field of computer technology. One new development in electronics can create changes in the whole industry literally overnight, and of course, changes, either internal or external, in the buildings that serve that industry. And, of course, the buildings themselves, serving one of the largest and most actively growing segments of industry, frequently start out in the mid-range of project size (a quarter-million square feet) and prepare for further growth.

Therefore, the manufacturing complex

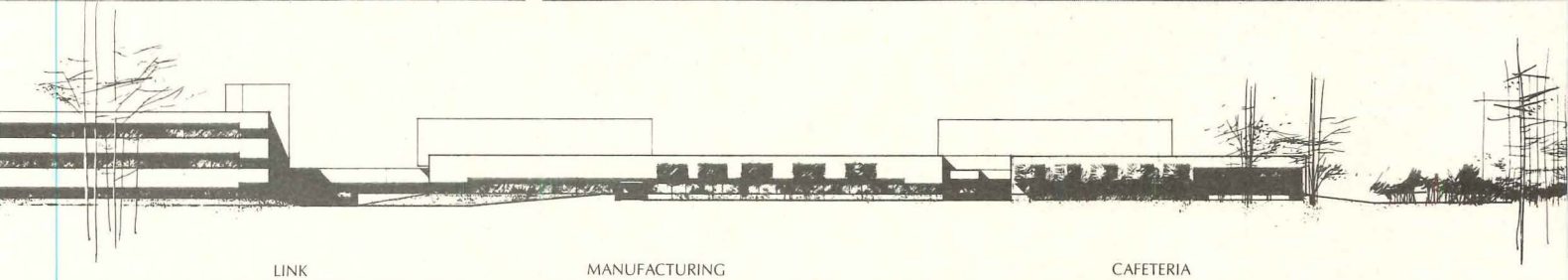
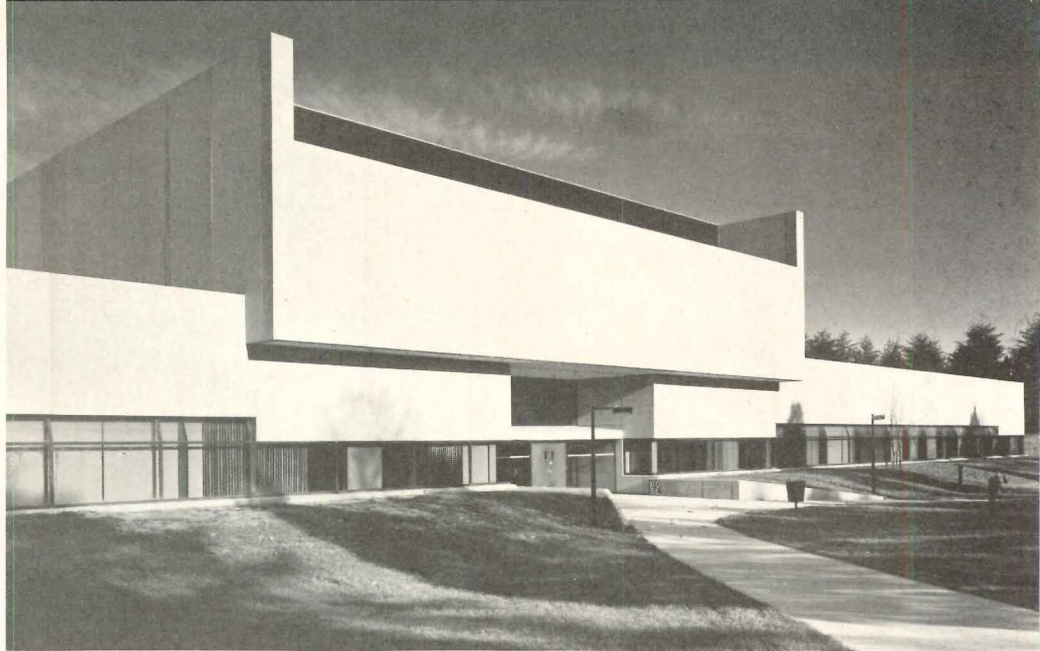
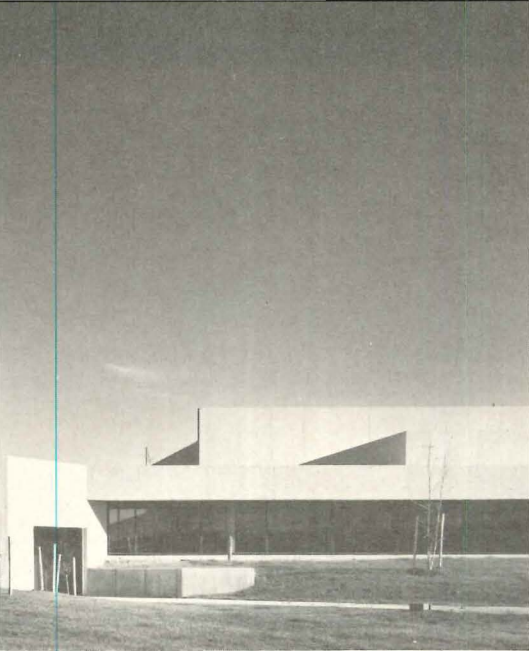
RTKL planned and designed for IBM's System Development Division is architecturally, mechanically, and electrically capable of accommodating a variety of possible changes in manufacturing requirements.

The interior spaces of the buildings have open-floor systems designed on a four-foot module so that internal arrangements can be changed to accommodate future manufacturing, laboratory and administrative needs. A flexible and extensive mechanical system has been provided so that specialized types of environments, including clean room facilities, can be created within the interior spaces. A deep

ceiling plenum contains loops of mechanical, electrical, and plumbing services for changing development and manufacturing needs.

The only permanent spaces within the buildings are main corridors and "common areas"—the locations of stairs, employee lounges, rest rooms and cafeterias. These common areas are strong sculptural elements treated visually to serve as orientation points in the complex.

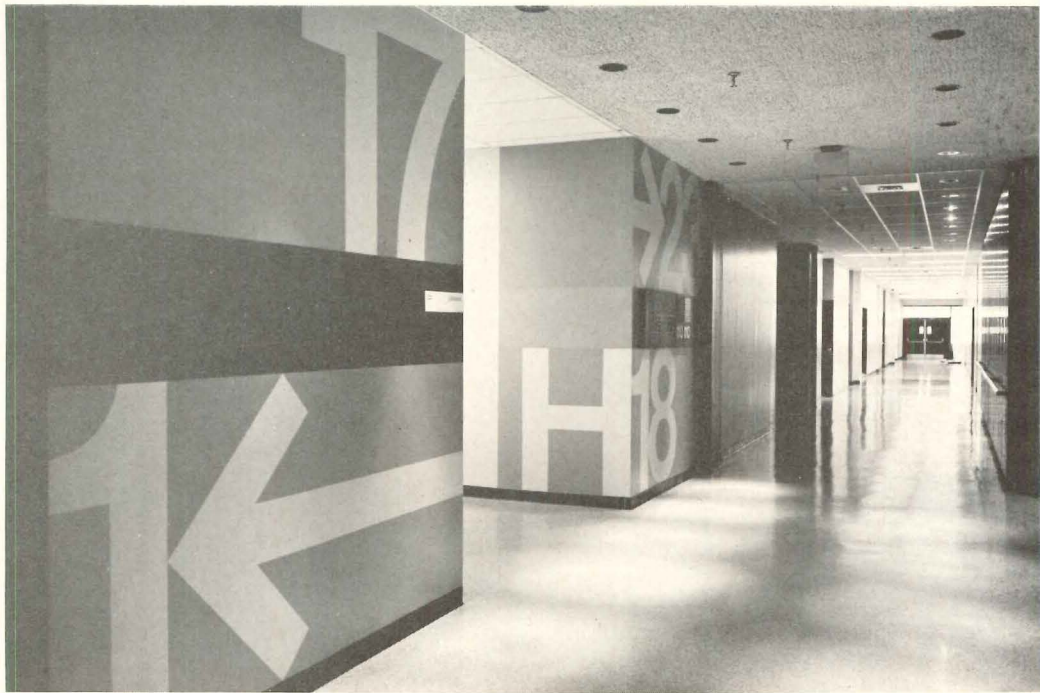
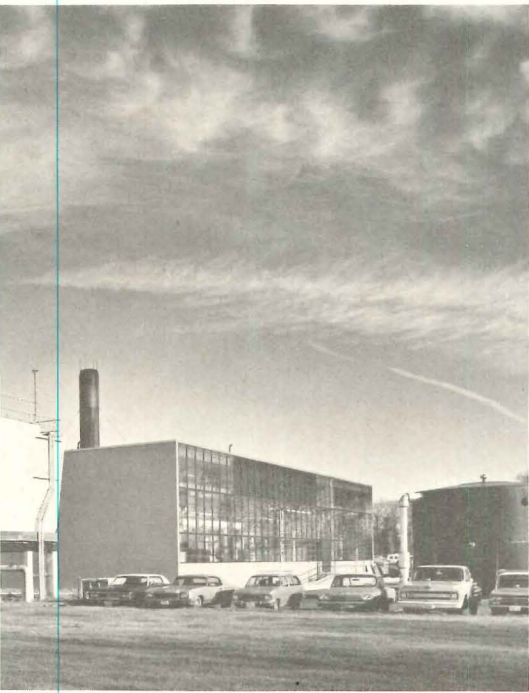
Color is used in a big, bold way, not only for large graphics but also for textured materials related to the functions performed in the various buildings.



LINK

MANUFACTURING

CAFETERIA



Joseph W. Molitor photos

For those interior spaces that could undergo many changes, a set of standards was prepared for use by the plant management staff. Whenever interior alterations are made in the future, it will serve as a guide as to how color, materials, furniture, and equipment should be selected to be consistent with the design philosophy of the facility.

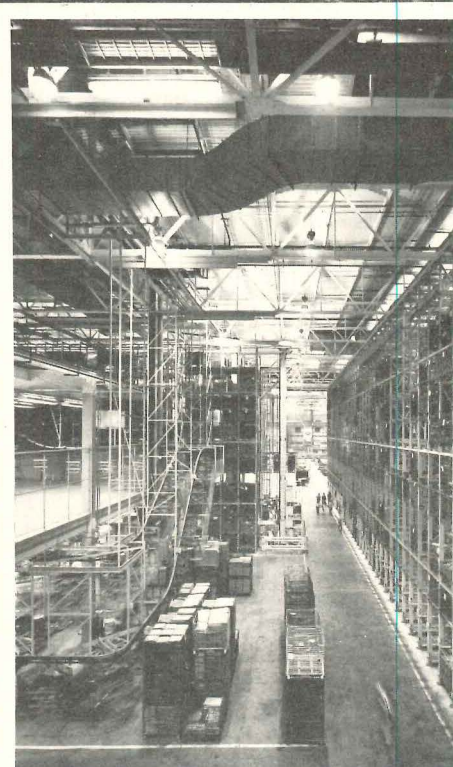
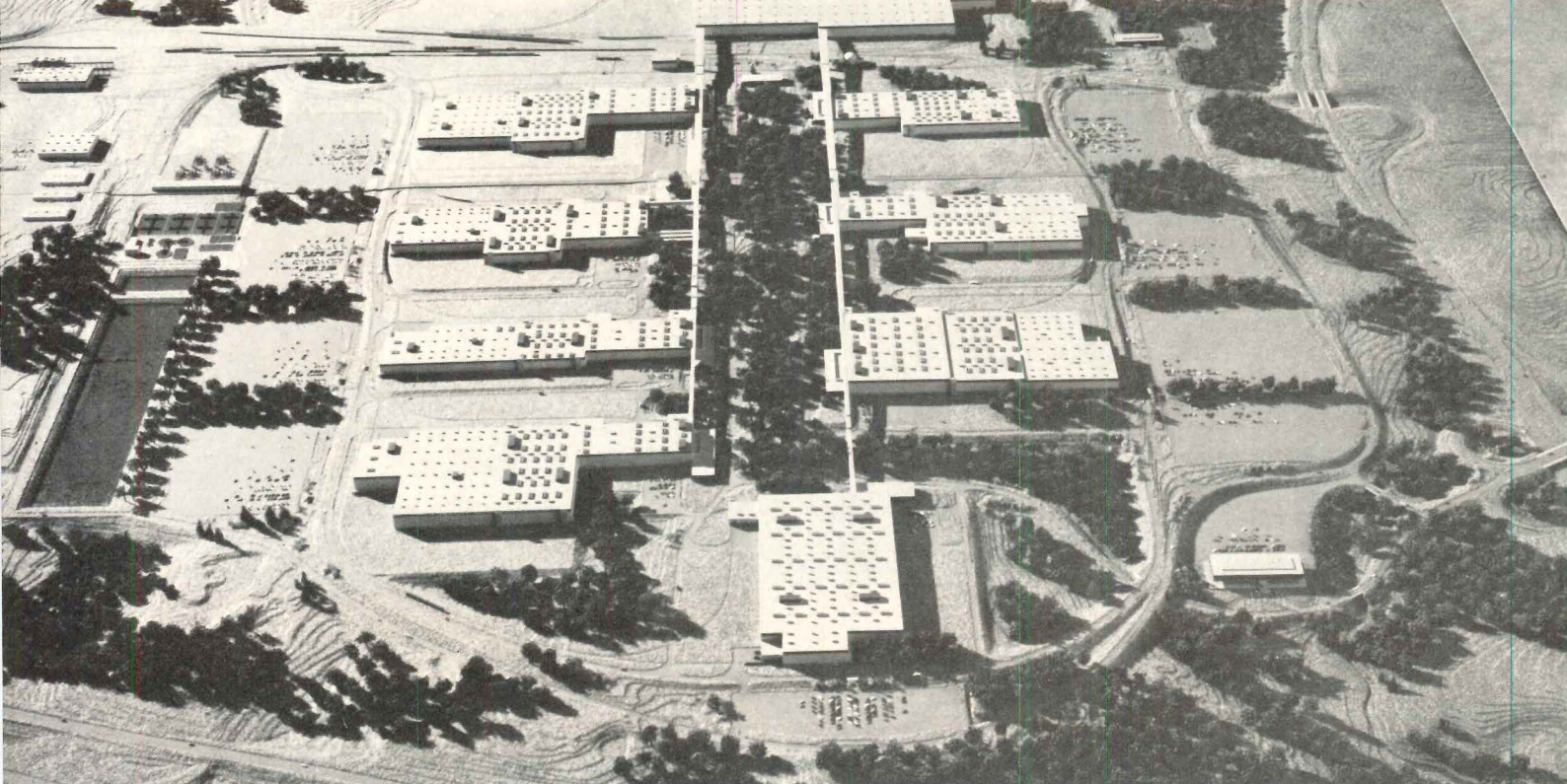
The entire manufacturing facility is now operational. The engineering facility and smaller administration block shown on the plan will be future expansion additions. A central cogeneration plant and a sophisticated industrial effluent treatment plant have been built.

The industrial waste treatment plant has been designed for complete de-nitrification of dilute and concentrated waste which is discharged after processing into the existing stream system on site. The quality of the effluent meets the watershed environmental requirements; the size of the treatment plant makes it quite unique in this country.

The 485-acre site in Prince William County, Virginia is within a half hour of Washington, D.C. via Interstate-66. Anticipating area growth, the planners felt it would be desirable to retain the best of the site's natural features to make it an attractive addition to the area, as

well as to provide the facility with privacy.

It is seldom that a large manufacturing operation can adopt the special concerns for landscaping and effluent control that are ordinarily attributed to research and development facilities. Those matters of social concern, referred to by Philip Meathe in the introduction, are everywhere apparent in this facility, and the vocabulary of assembly buildings reflects the same architectural concern as that of the three-level administration building. Even the cooling towers and high-bay buildings are provided with a setting and detail that respect both social and esthetic objectives.



GIANT MANUFACTURING FACILITIES POSE GIANT PROBLEMS

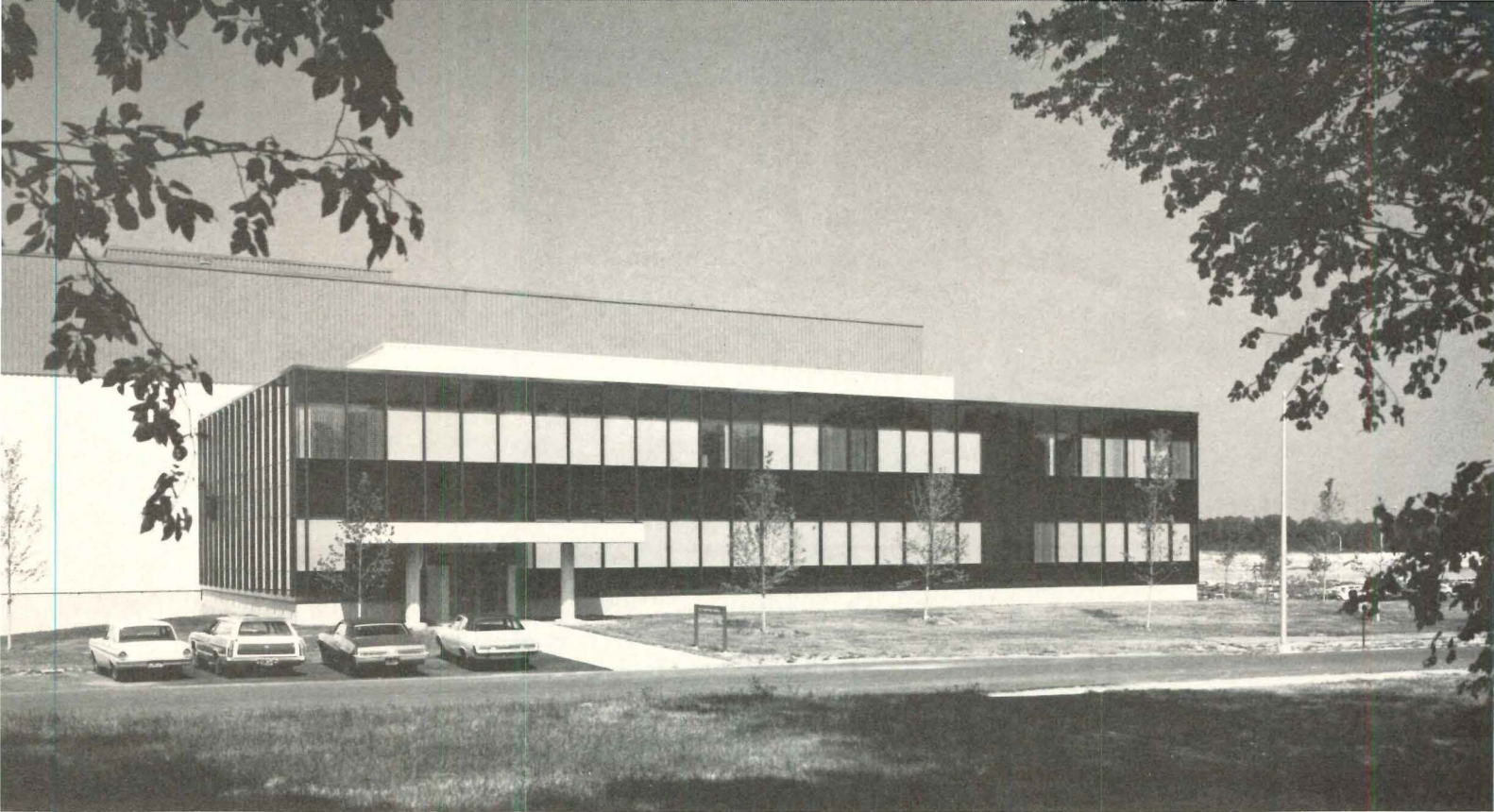
Respect for landscape and the community takes on a whole new dimension when a manufacturing and assembly facility is: a) planned to employ some 10,000 people and b) located near a developing new town which has its own growth problems.

Appliance Park-East is one of the largest projects ever undertaken by Sol King and Albert Kahn Associates, Inc., a firm that is no stranger to large industrial projects and had designed General Electric's now famous Appliance Park in Louisville some 20 years ago. The new G.E. complex is situated midway between Washington D.C. and Baltimore near the new town

of Columbia, Maryland. While a ten-year period is expected to be required for full implementation of the master plan, shown in the model view above, two of the manufacturing facilities have already been completed and another will begin soon. The warehouse (at top of the model photo) is also in operation as are various support facilities, including personnel, communications and utility buildings and an industrial waste treatment plant. The two completed factories produce ranges and air-conditioners, which are sent through enclosed conveyors to the warehouse for transshipment by rail or truck.

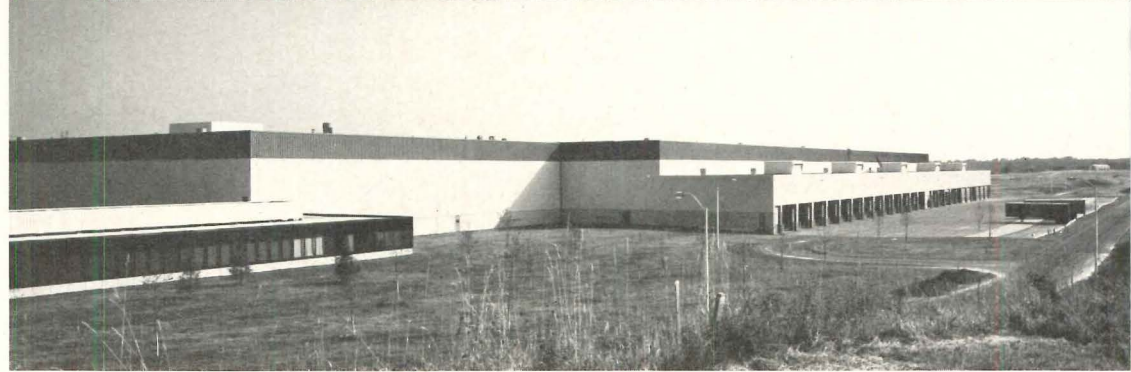
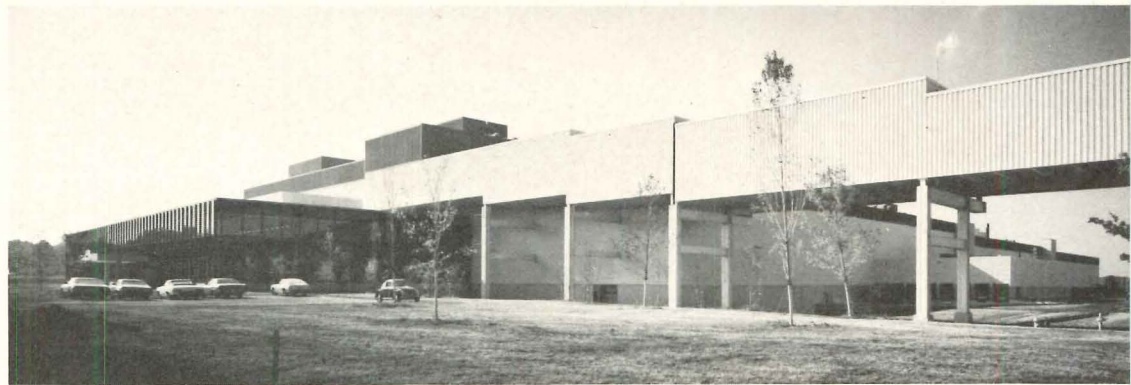
Despite the intensified industrial mission of the complex and the giant scale of high manufacturing and storage spaces, both the architects and the client have insisted on careful detailing and massing, together with continuous involvement of landscaping so that the buildings, although of exceptionally high (some 70-ft, floor-to-ceiling) construction can be seen in the interior photo above, to serve the aspect of low profile, accommodate a gently rolling site of about 1100 acres.

Impact of this huge project on both the economy of surrounding communities and the ecology of the site has been carefully



General Electric's Appliance Park-East

Columbia, Maryland. Owner: General Electric Company; Architects and engineers: Soling, architect, and Albert Kahn Associates, Inc.



Daniel Bartush photos

arched and documented. The effects of new highway and railroad sidings on natural drainage have been taken into account. Provision for treatment and control of both solid and liquid waste is designed at highest standards. Many ponds and water basins serve not only the purpose of landscaping but also serve the purpose of air-conditioning drainage, and waste treatment systems.

Four-lane divided highways are planned on three sides of the site. They are laid out to minimize earth movement and to preserve existing trees.

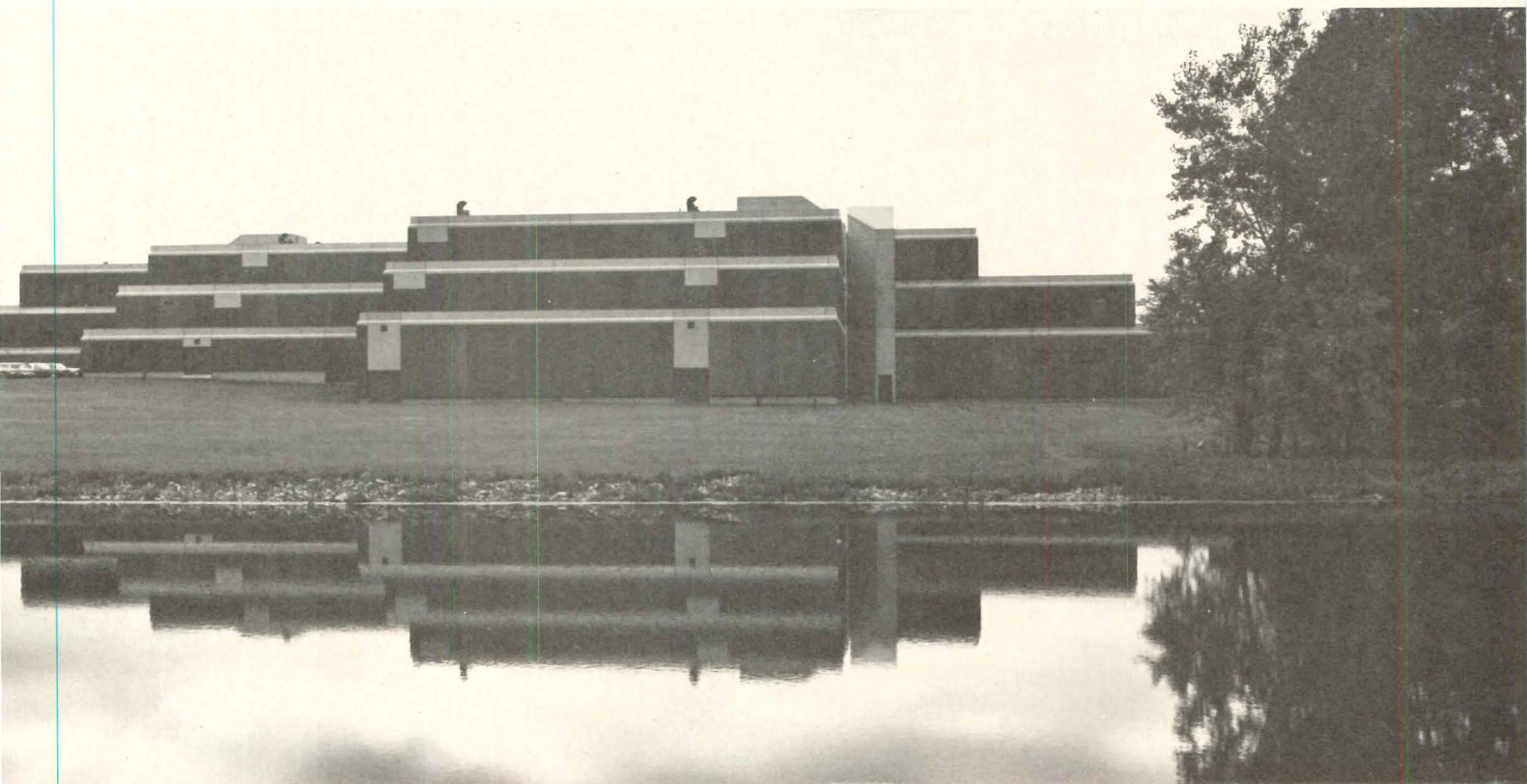
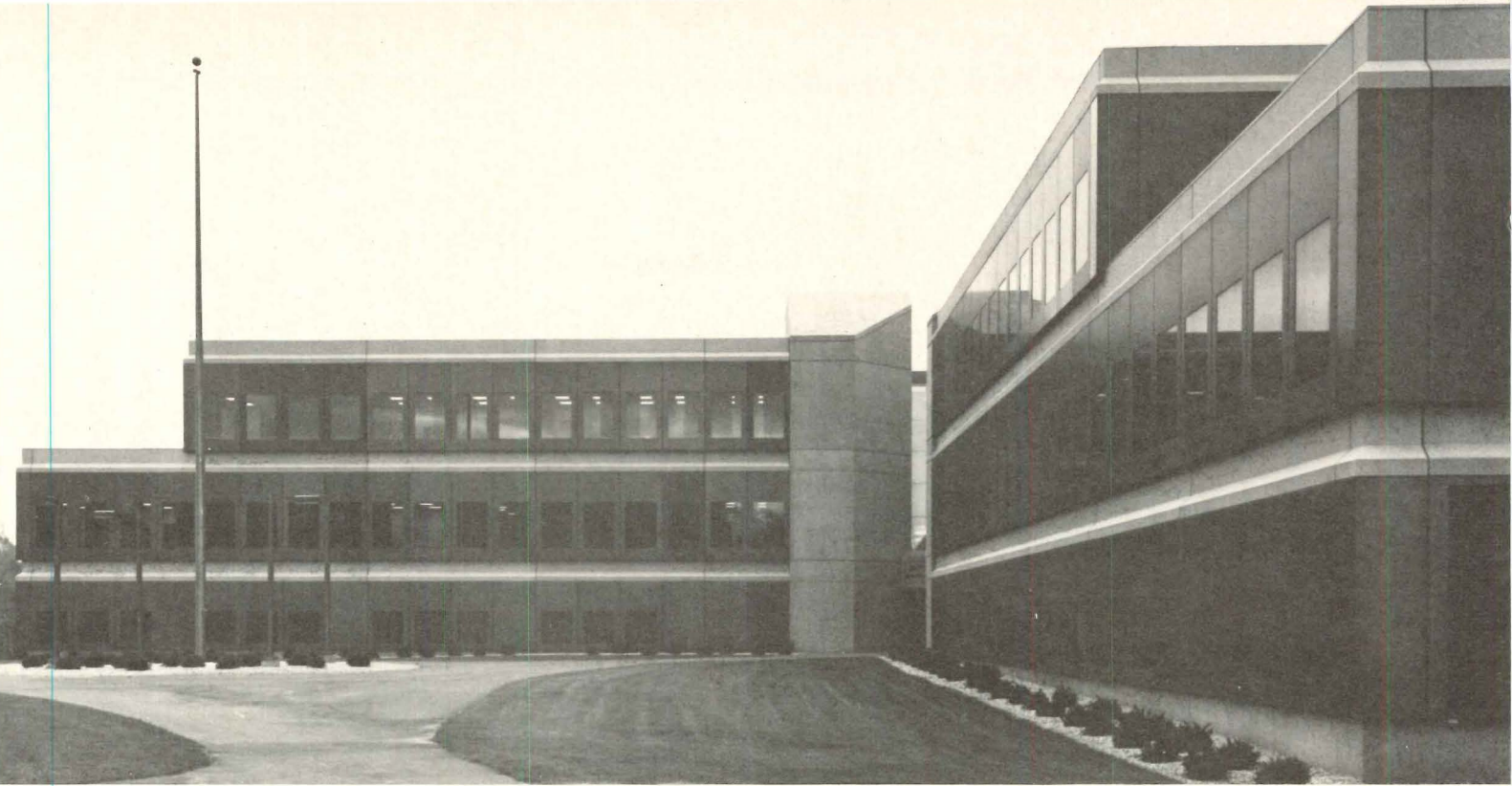
A railroad system, which will ultimately

have 20 miles of track, will penetrate the warehouse structure for undercover loading. On-site operation will be handled by the owner's own switch engines and personnel.

The warehouse now contains approximately one million square feet and is located at the end of the double conveyor system on a site that will allow expansion to as much as two million square feet. The building for range manufacture already provides almost a million square feet of production space, and the building for air-conditioning manufacture another half million. A third manufacturing building for automatic dryers is under construction.

Over 17,000 tons of rolled section have been used in the steel framing system so far. Foundations are a combination of concrete caissons and reinforced spread footings. Roof framing is of long-span trusses metal deck. Floors of manufacturing areas are of extra heavy design (3000 lbs per square foot) to support huge presses. Mezzanines for various lighter weight operations occur at three levels throughout the 70-foot-high structure.

Key to the economy of the complex is the repetitious use of standard materials in available modules applied in an over-all optimum such as bay sizes and structural systems.



Alexandre Georges photos

s to be convertible to other scientific uses. The structural system also is designed to facilitate expansion. Columns, beams and floor slabs are pre-cast concrete. The exterior walls are a system of modular sand-blasted panels and insulated aluminum panels designed to be removable and interchangeable in the event of future changes. A centralized reception area in the atrium between the first and second levels of the building serves as a security check-point through which all traffic must pass to enter the building. Organization of the facility as a tight group around this central garden focus is to some

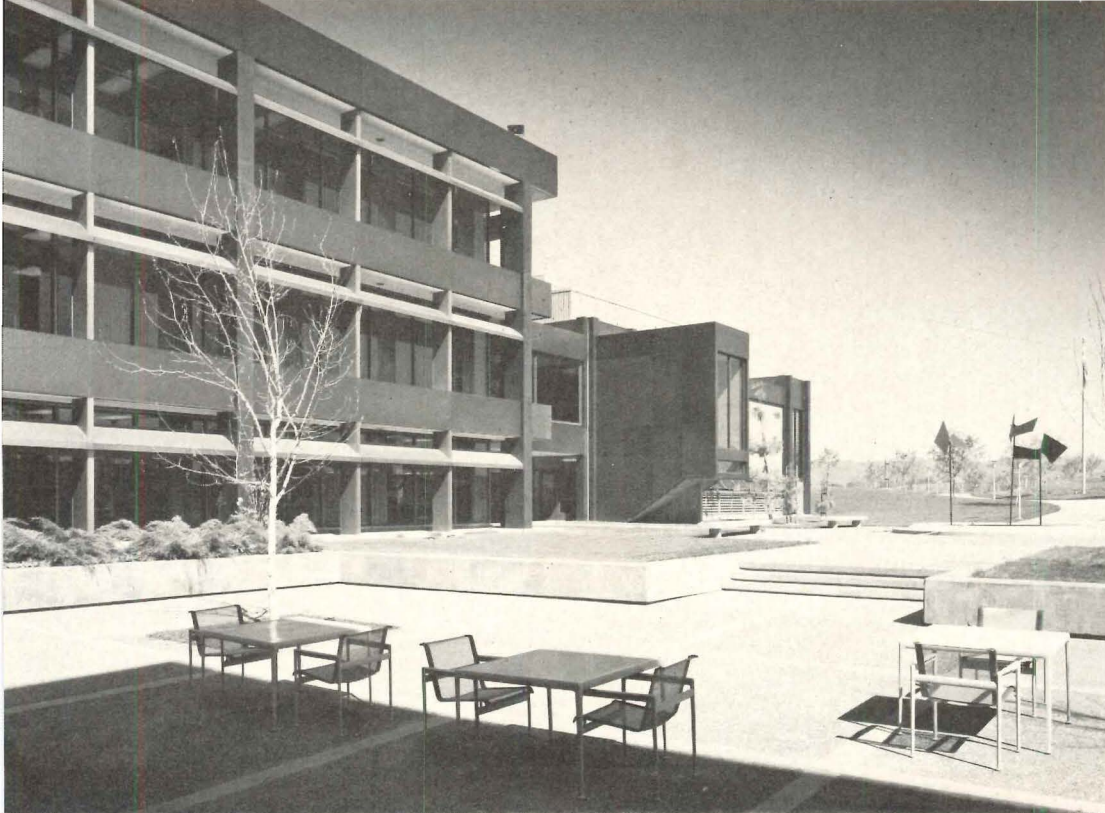
degree a response to the extreme winter climate in northern Wisconsin as well as to the security measures likely to be typical of many research and development facilities.

In determining the placement of the building, three outstanding features were considered, including the watershed which cut the site diagonally through the middle, the existing bank of trees on the north and west and the gently rolling contours of the land.

To preserve the front part of the site for possible future development and to retain the rural quality of the area, the building was situated on the northern half of the land. Drainage

control was achieved by creating two new lakes, which provide not only an important drainage control function, but an esthetic value as well. The 600-car parking area, which is sheltered by a thick row of trees, is broken up by additional landscaping between each double row of cars. The illusion created is that of a small grouping rather than a mass of automobiles. The strips of land also provide space to pile snow for quick clearance during the severe Wisconsin winters.

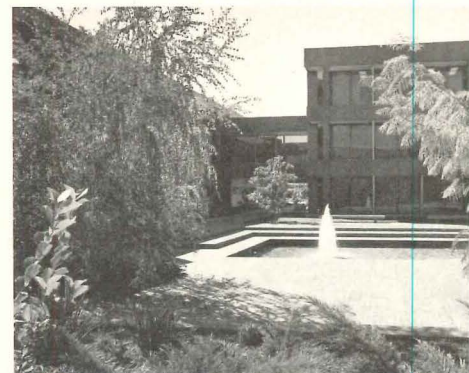
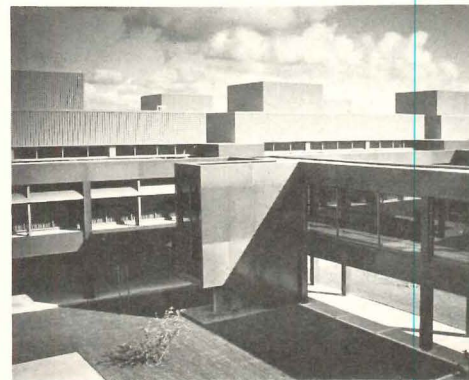
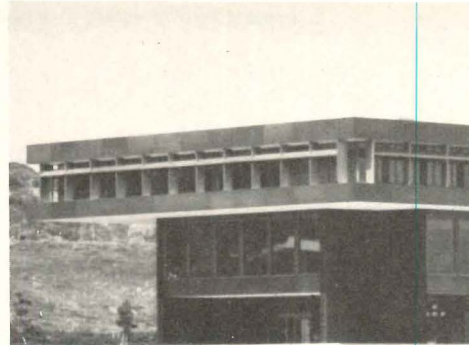
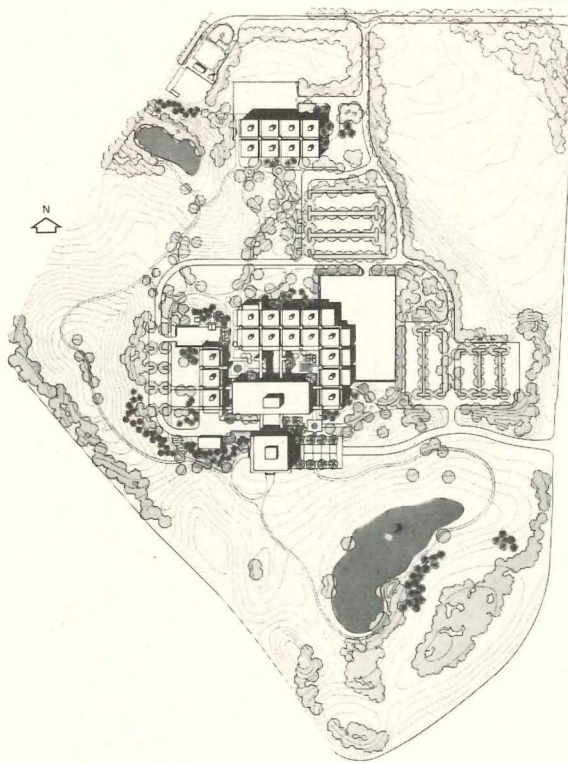
This solution, then, takes into account the typically broad scope of industrial problems: landscapes, security, growth and urgency.



Robert Brandeis

Kaiser Center for Technology

Pleasanton, California. Owner: Kaiser Aluminum and Chemical Corporation. Architects: John Carl Warnecke and Associates; Carl Russel, partner-in-charge; Don Schaefer, project manager. Landscape architect: Michael Painter (then with Warnecke). Interiors: Morganelli, Heumann and Associates. Engineers: Chin & Hensolt (structural); Keller & Gannon (mechanical/electrical); Kirker, Chapman & Associates (civil); acoustical consultant: Bolt, Beranek & Newman. General contractor: Haas & Haynie.



Joshua Freiwald



Joshua Freiwald

Landscape as architecture at Kaiser Research Center

The wedding of building architecture and landscape architecture is seldom more felicitous than it is at the Kaiser Research Center, situated on an 85-acre tract in the rolling hills of the Amador Valley in Pleasanton, California. Alternately called the Kaiser Center for Technology, this complex of six buildings, designed around the expanding demands of interdisciplinary communication, takes notice also of the special character of the research situation. That is, the demands for quiet energy and optional privacy or interplay on the part of research

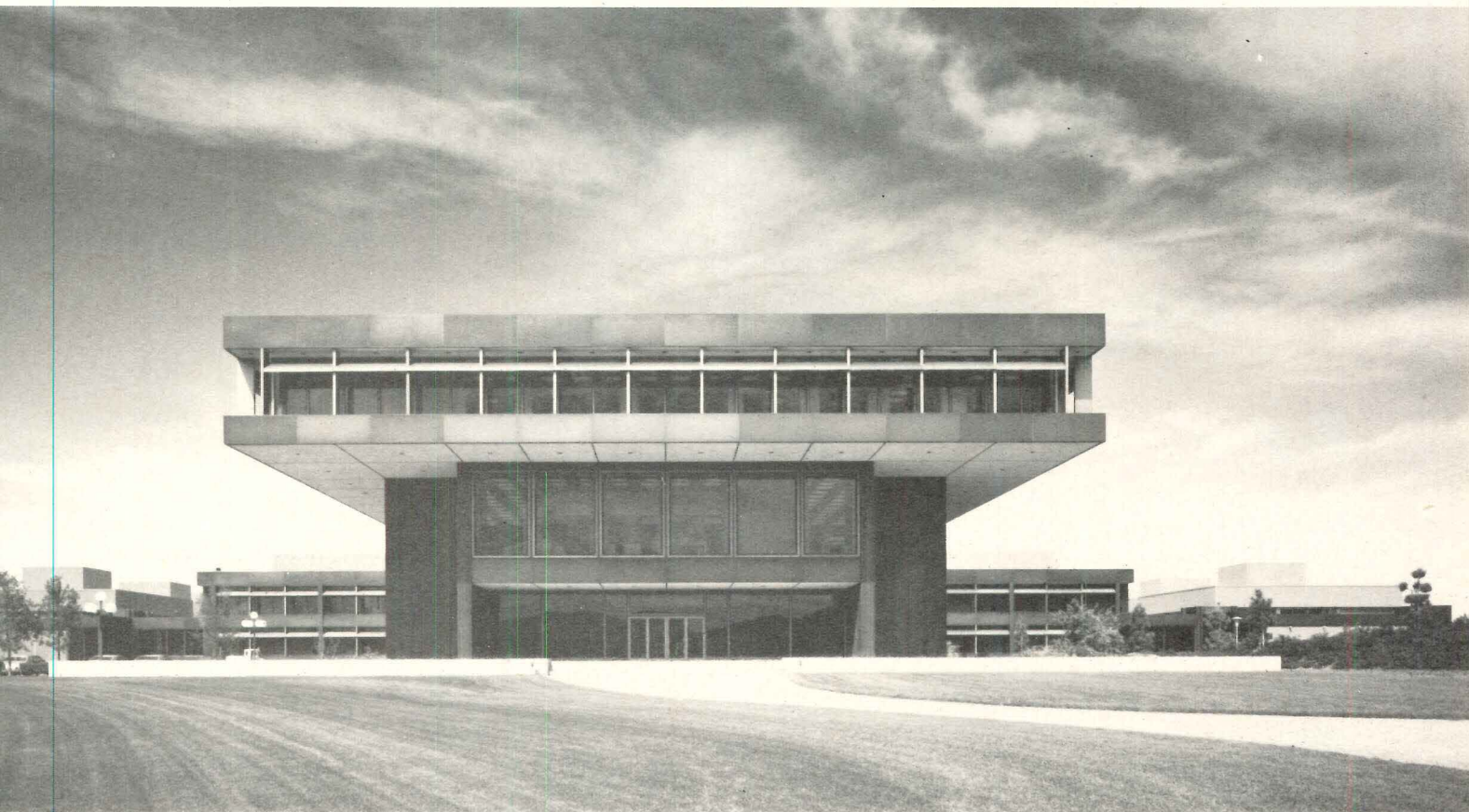
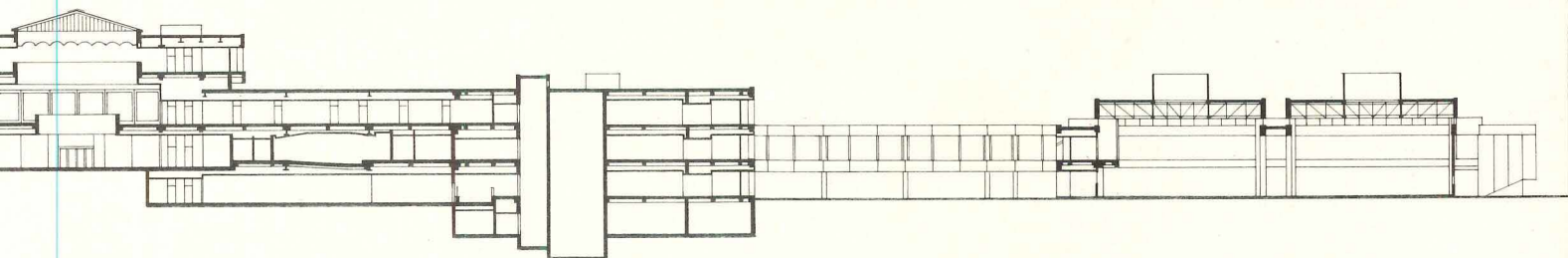
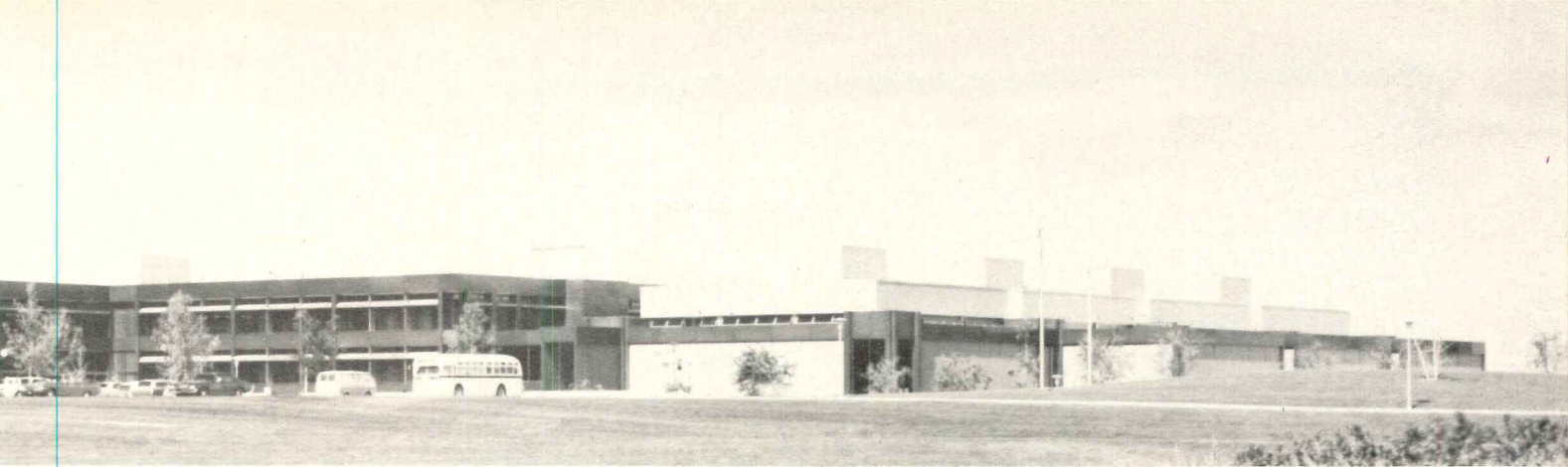
personnel impose a dual architectural problem. First, is the essential grouping and massing of buildings for study, experimentation, and pilot plant operation in such a way as to be separate but mutually supportive. Second, is the imperative of countryside quietude.

The problem, then, for John Carl Warnecke and Associates was not so much the geometry of juxtaposition of the enclaves of discipline for optimum interplay as it was the enplacement of the research universe in compatible union with the world.

The vocabulary of the buildings themselves sustains the Warnecke reputation for

quality and detail. Six major structures enclose a total of more than 300,000 square feet, each a basic 60-foot square module per floor with a uniform division in five-foot increments. The structural system combines reinforced concrete and structural steel. Exterior surfaces feature various finishes of aluminum siding or plate and aluminum sun control devices. As with the industrial buildings of all sizes shown on the pages of this report, it is skill in detail and scale rather than the monumental uses of exotic materials that reinforces the architectural presence here.

The administration building with its ca



ered top over a main floor reception area
ounds a skylighted well through all floors,
niscient of some other Warnecke solutions.
three-level main laboratory, the largest
cture at the center, houses perimeter offices
a central core of more than 100 bench-
e laboratory modules. Three research divi-
s and a central analytical department work
his building. It fulfills the purpose of the
er organization in consolidating personnel
king in specialties of the corporation in
minum, chemicals and refractories.
Separate process laboratories were estab-
d for each of the three research divisions.

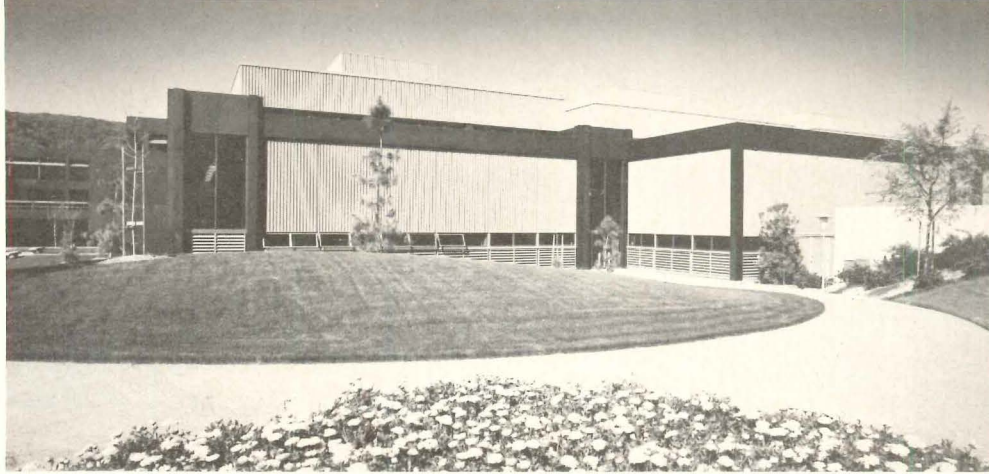
Each has the internal capability of pilot plant
operation and introduces truly industrial spaces
within the complex. A product development
test facility, located quite separately north of the
main complex, is equipped to fabricate photo-
types of new products and develop specialized
tooling for their manufacture.

The role of landscape architecture in this
virtually universal mix of industrial and re-
search spaces has been more than the simple
embellishment or preservation of existing natu-
ral features. Landscape architecture, of course,
always participates in the unity of any plan and
makes its own contribution to the fulfillment of

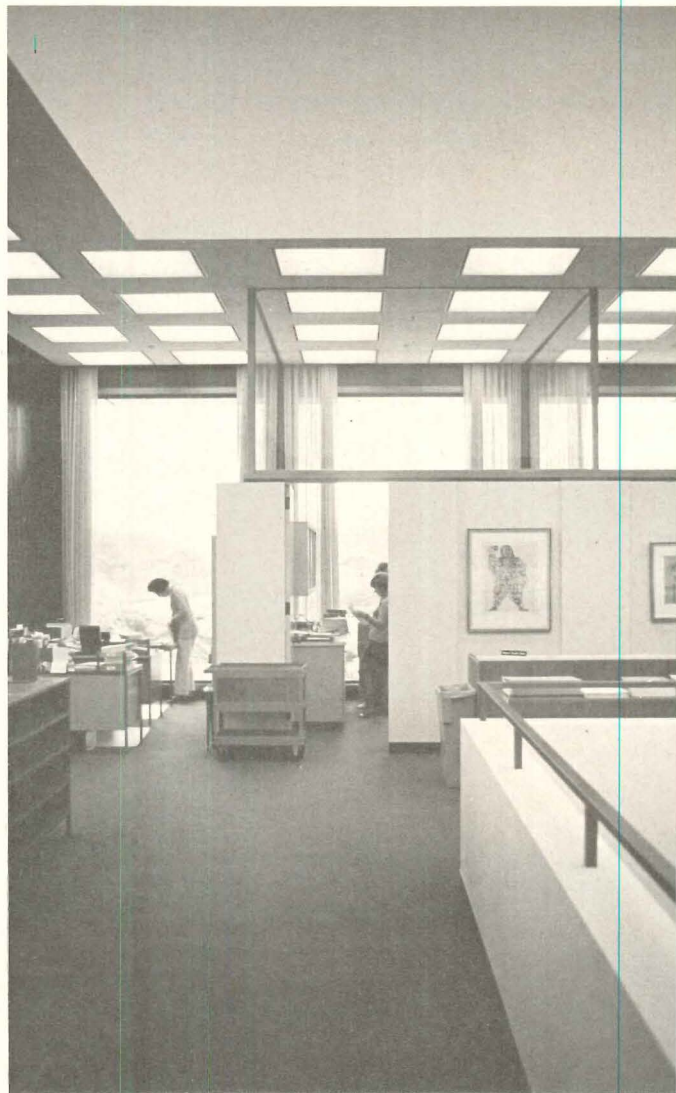
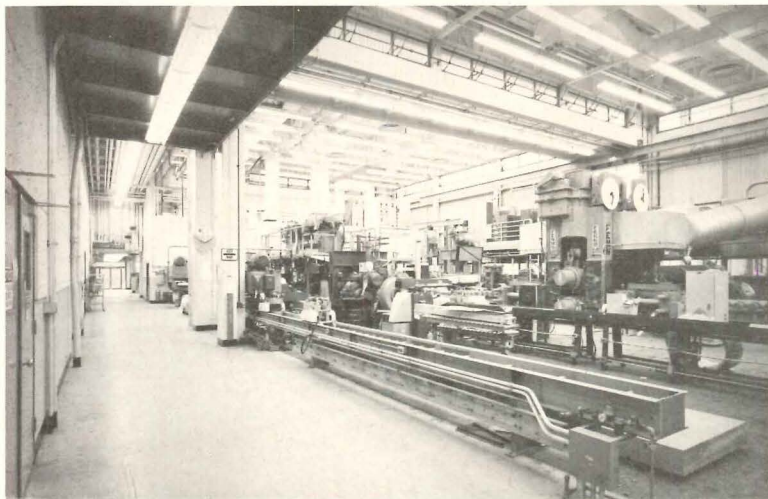
program. In this case, however, that contribu-
tion carries with it fulfillment of the building
architect's own objectives, defined by the
client's needs, of an ongoing, expandible
campus of facilities respecting its community
and purpose.

Architecture touches the lives of everyone around

Success of the total design has received testi-
mony in a letter from the mother of a family who
were accustomed to enjoying the countryside
on which this technical center was emplaced.
The letter is in part as follows:



The Kaiser Center for Technology, like many industrial R&D facilities, engages a full roster of architectural approaches and services. The landscape architect and the building designer unite in a design vocabulary in which the paramount ingredient is talent. The uses of ordinary materials in controlling ambience and scale is evident here. The interiors offer the range from typical high-bay industrial space to the two-level atrium and surrounding offices. Warnecke's interior design was Jean Coblentz.



Robert Brandeis photos

"To the Planners of the Kaiser building:

"When we first heard you were to put a huge "factory" near Pleasanton, we were sick at heart. We watched sadly as your buildings progressed.

"When the grounds were landscaped my young son said, "Look, mother, it's not ugly! It's pretty!" When the fountain was completed, he reminded me each time we passed how wrong I had been until it became a thing with us to say "Bucky's Water" each time we went to town—from the oldest to the 18-month-old. A week before Christmas we lost our Bucky, he was ten years old.

"Life goes on and we still go to town. The youngest, now close to three, chants "Bucky's Water" and so it will always be. Bucky is in Pleasanton Memorial Garden on the hill overlooking your buildings and lovely grounds. For I was wrong. The countryside is truly more beautiful than it was." Marjorie L. Santos.

D. J. McPherson, vice president and director of technology at the center, replied, with grateful compassion, saying in part: "Since moving into our new research center our employees and residents of surrounding communities have enjoyed our lake and fountain. In the rush of getting settled, however, we never

have given the lake a name. With your permission, Mrs. Santos, we would be honored to name it "Bucky's Water."



Achieving high-quality architectural concrete by understanding details of the construction process

James M. Shilstone, president Architectural Concrete Consultants*

...ance and color expression possibilities with architectural concrete are almost infinite— with over 3000 aggregates, more than 500 pigments of different colors and shades, and over 200 different finishes being available. Many architects have been frustrated by the unpredictability of results. Some have gone so far as to deny the use of the material by their clients. Many architects have attributed poor results to inexperienced contractors. On the other hand, contractors have pointed to the drawings and specifications, and claimed that what the architect wanted was not that indicated in the contract documents.

Good architectural concrete is not synonymous with good structural concrete. The architect has to pay a lot more attention to the construction process to ensure the results will be what he had in mind. To help simplify the architect's task in remembering all of the important factors that affect quality, and to help understand their relative criticality, a table has been developed that lists all these factors and gives numerical ratings as they pertain to different types of architectural concrete surfaces—smooth to highly textured; as-cast to mechanically and chemically "distressed."

Numerical ratings indicate the importance of detail in getting quality results

This table (see the following page) reflects the degree of influence which various components and procedures in the construction process have on architectural concrete finishes. With a rating of "4," the degree of influence is low, and construction methods normally required for a standard structural concrete project are sufficient. A rating of "1," the degree of influence is high and careful control is critical to achieving good results. Ratings "2" and "3" are relative intermediate levels of influence. This table is intended as a general guide only.

Levels of criticality are not absolute, but they vary slightly depending upon the needs of a project. A "1" might change to a "2," but it would never change from a "1" to a "4." If a change were tolerated, the architect would probably lose control over the results.

There is no attempt in this chart to relate the relative importance of one element to another. For example, the form rigidity for a

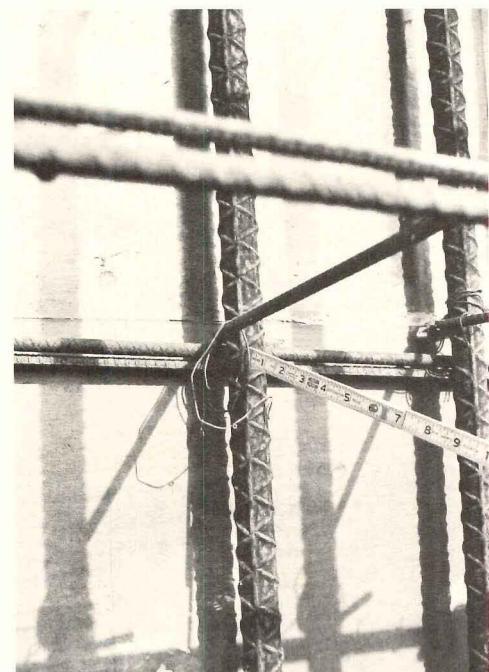
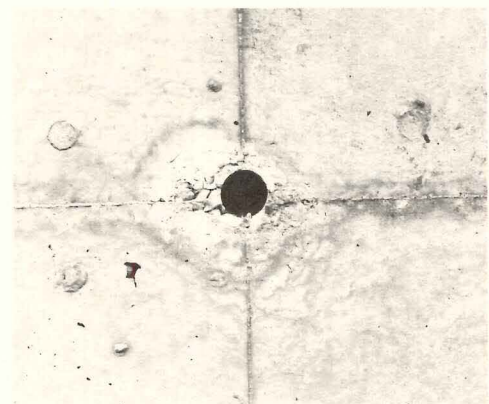
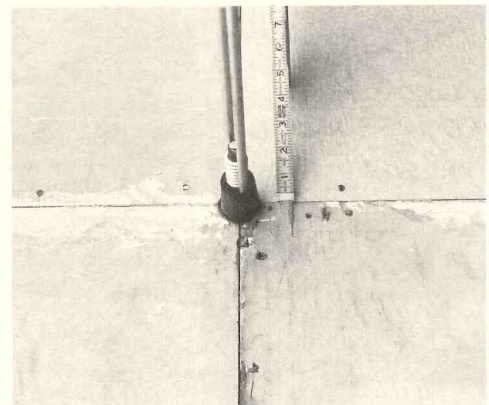
smooth, as-cast non-absorptive-formed surface is not nearly as important to the total effect of that surface as is the cement color, though both of these details are classified as of "1" importance in the chart.

The numbers do not necessarily reflect the relative financial impact or difficulty of getting even a "1" quality product or treatment. Local practices or materials may automatically provide that which is wanted even in routine structural concrete. The "1" classification for fine aggregate color for a light abrasive blast finish can serve as an example. If the finish objective is to achieve a warm value with a light abrasive blast, there would be no financial impact caused by this requirement in St. Louis, Memphis, Houston or Baltimore because the local standard concrete sands will produce such results. On the other hand, if the same warm finish objective were set for Seattle, Pittsburgh, Boston or Atlanta, extra costs would be encountered because most local standard sands tend toward cool values.

It should be apparent from this table that it is not possible to write a "standard" specification for architectural concrete, considering the multitude of finishes possible. While specifications could be prepared that gave level "1" control for each item, the cost of architectural concrete would be prohibitive. To achieve results within reasonable economics, the architect must recognize when to be very strict on certain points, and when to be lenient on others.

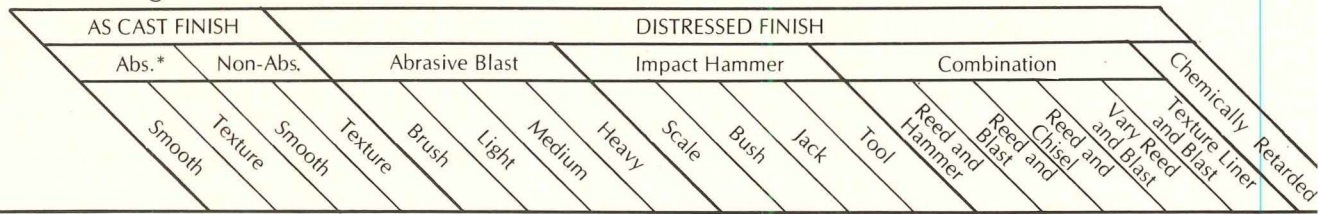
Some architects feel that they should not be concerned with the details identified in the table because they assume that contractors have this knowledge and should take this re-

High quality architectural concrete demands careful attention to form construction and placement of reinforcement. Poor practices and results are shown in the photos. For example, spackling of form joints will not prevent leakage; also leakage can occur at cone-form junction (right, top). The types of defects (right, center) that can result from poor formwork include dark concrete surrounding leakage at butt joints and tie; telegraphed nail holes. Uneven consolidation of concrete results in mottling and "bug" holes. If reinforcement is too close to form face, rust can come through, and spalling may also result.



ARCHITECTURAL CONCRETE QUALITY

Relative significance of construction details on the results



	AS CAST FINISH				DISTRESSED FINISH													
	Abs.*	Non-Abs.	Abrasive Blast		Impact Hammer			Combination					Chemically Retarded					
	Smooth	Texture	Smooth	Texture	Brush	Light	Medium	Heavy	Scale	Bush	Jack	Tool	Reed and Hammer	Reed and Blast	Reed and Chisel	Vary Reed and Blast	Texture Liner and Blast	Chemically Retarded
CONCRETE MIX																		
Cement Color	1	1	1	1	1	1	2	3	2	2	3	3	1	1	2	1	2	2
Fine Aggr.-Gradation	4	4	4	4	4	2	1	1	3	3	3	3	3	3	2	3	3	3
-Color	3	3	3	3	2	2	3	3	2	2	2	2	3	2	2	2	2	2
Coarse Aggr.-Gradation	4	4	4	4	4	4	2	1	4	4	4	4	3	3	3	3	3	3
-Color	4	4	4	4	3	2	1	1	2	2	2	2	2	3	2	3	3	3
Design Technique	2	3	2	3	3	3	2	1	3	2	2	2	3	2	2	2	2	3
Admixture	2	3	2	3	2	2	2	1	3	3	3	3	3	3	3	3	3	2
Consistency (slump)	2	3	2	3	2	2	2	1	3	3	2	2	3	2	2	2	2	2
Mixer Capabilities	4	4	4	4	4	3	2	1	4	4	3	3	3	3	3	3	3	3
FORMS																		
Selection of Materials	1	2	2	2	1	1	2	3	2	2	3	3	2	2	3	2	2	2
Reuse Limitation	1	2	3	3	1	2	3	3	2	3	4	4	3	3	3	3	3	2
Butt Joints-Location	1	3	1	3	1	2	4	4	4	4	4	4	2	2	2	2	2	2
-Tape	—	—	—	—	—	—	2	2	2	3	3	3	2	2	3	2	—	—
-Rusticate	2	3	2	3	1	1	2	3	3	3	3	3	2	2	3	2	1	1
Tightness	1	1	1	1	1	1	2	2	2	2	3	2	2	2	2	2	2	1
Rigidity	2	3	1	4	2	2	3	3	2	3	4	3	2	2	2	2	3	3
Design Strength	2	3	2	3	2	2	2	2	2	3	4	3	2	2	3	3	4	4
Stripping Control	1	1	1	2	2	2	3	3	3	4	4	4	1	1	1	1	3	3
RELEASE AGENT																		
Product Selection	1	2	1	2	2	2	4	4	4	4	4	3	2	3	3	3	3	2
Application Technique	1	3	1	3	3	3	4	4	4	4	4	3	2	3	3	3	3	3
Surface Preparation	1	2	1	2	2	2	3	4	3	3	3	3	3	2	3	2	3	3
FORM TIES																		
System Selection	2	3	2	3	2	2	3	3	3	3	4	3	3	2	3	2	2	2
Installation Control	1	2	1	2	1	1	2	3	2	2	3	2	2	2	2	2	2	1
CONCRETE PLACEMENT																		
Technique	3	3	3	3	2	2	2	1	2	2	3	2	2	2	2	2	2	2
Equipment	3	3	3	3	3	3	2	1	3	3	4	3	3	2	2	3	3	3
Lift Height	2	3	2	3	2	2	2	1	2	3	3	3	3	2	2	2	3	3
Time of Lifts	2	3	2	3	2	2	2	1	2	3	3	3	3	3	3	3	3	3
CONSOLIDATION																		
Equipment Selection	2	3	2	3	2	2	1	1	2	2	2	2	3	2	2	3	2	2
Operator Training	1	2	1	2	2	2	2	1	3	3	3	3	3	2	3	3	3	2
Technique	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	3	2	2
Degree of Effort	2	3	2	2	2	2	2	1	2	3	3	2	2	2	2	3	2	2
REINFORCING STEEL																		
Detail Planning	2	2	2	2	2	2	1	1	3	3	3	3	3	2	2	2	2	2
Clear Space	2	3	2	3	2	2	1	1	3	3	2	3	3	2	2	3	2	2
Accurate Install	3	3	3	3	3	2	2	1	3	2	2	2	3	3	3	3	3	2
Support Methods	2	2	2	2	1	1	2	2	3	2	2	2	3	2	3	3	3	1
Splice Techniques	2	2	2	2	2	2	2	1	3	3	3	3	3	2	3	3	3	2
FINISHING																		
Timing	3	3	3	3	4	3	2	1	3	3	3	3	3	3	3	3	3	3
Equipment	—	—	—	—	3	3	2	1	2	2	2	2	3	2	3	2	2	2
Expendable Select	2	2	2	2	3	3	2	2	—	—	—	—	—	2	—	3	2	2
Tool Condition	—	—	—	—	3	3	3	2	2	2	2	1	4	3	2	3	3	3

This table shows the degree of influence which various steps in the construction process have on architectural concrete finishes. With a rating of 4, the degree of influence is low and construction methods not required for structural concrete are sufficient. With a rating of 1, the degree of influence is high, and careful control of the construction process or detail is critical to achieving a good architectural concrete finish. Ratings of 2 and 3 are relative intermediate levels of influence.

This table is intended as a general guide only. Each type of architectural concrete finish must be carefully planned, specified, detailed and executed to achieve results worthy of the design.

* Absorptive

visibility. A specialty contractor who is a highly skilled concrete constructor would have a background in the "4" category work, where would his knowledge of levels "1" and "2" have been gained? Considering all the details in the table, if only level "4" control is exercised, less than 10 per cent of these details would turn out acceptable. In addition, it should be recognized that the conditions under which the contractor will work are set on the designers' board. For example, a wall designed to be 8-in. thick, including a double curtain of reinforcing steel, will not allow proper concrete placement and consolidation because the tolerance is simply too tight.

Criticality of a construction detail depends upon the type of finish

The analysis of the classifications for "Form Rigidity" for as-cast surfaces can serve as a basis for further explaining the significance of the rating. The absorbent form is assumed to be a conventional wood form—not specially prepared wood, but conventional plywood or individual boards. The non-absorbent forms would be of steel, fiberglass-reinforced plastic, composites, elastomerics and polyvinyl chlorides. Following are the reasons why the four levels are important for Form Rigidity:

The rating of "1" is given for smooth, non-absorbent form surface because the concrete against such a surface will tend to be uniform in color and, for most forms, somewhat dimpled. A dimpling or bellying of forms would become accentuated under various shadow conditions. These discontinuities would be detrimental to visual continuity of the surface.

A rating of "2" is given to the smooth absorbent form because the variations in absorption will cause some variations in color of the finished concrete surface. These variations could be more architecturally interpretable than bulges and variations caused by variations in form rigidity. Still the bulges and other variations could be objectionable. They are not so critical, though, as with the smooth non-absorbent form surface.

The rating of "3" is given to the textured non-absorbent form because the texture minimizes bulging and dimpling effects. The textured surface frequently is produced by board joints. If the forms are not rigid, there is a tendency for pressure of concrete to spring the joint between two pieces of adjacent forms, resulting in increased leakage at these intersections. The resulting honeycomb at the leakage points, combined with the surrounding darker lines around the entire leakage areas, may be objectionable. Honeycomb opens the concrete to moisture penetration, causing later spalling and delamination of reinforcing steel.

Finally, the rating of "4" is applied to the textured non-absorbent form because such a form would be fairly large and not subject to potential leakage that would be found between the individual boards.

Obviously, from these comparisons, the textured non-absorbent formed textured surface would be the easiest for the contractor to accomplish, therefore, the architectural designs incorporating this feature would be produced with a higher degree of predictability than the others and in a lesser level of control.

The concrete mix has to be tailored to: 1) finish; 2) construction procedure

With regard to the color of ingredients of the concrete mix, it can be seen in the table that as aggregate exposure becomes more pronounced, there are major changes in relative importance of each of the three major ingredients—cement, coarse and fine aggregate. Also, as the amount of aggregate exposure increases under the abrasive blast classification, there must be greater attention to the aggregate gradations. The radical change in fine aggregate gradation, over the span of the four abrasive blast finishes relates to the necessity for a probable eventual change to a gradation which is outside of the fineness modulus lower limit set up by ASTM C33. This would occur in gap-graded mixes. The impact-hammered finishes have neither major nor minor effects caused by the concrete mix. The texture generally is more expressive than the concrete, except for color.

Architectural mix design techniques frequently need to be in variance with some procedures established by the American Concrete Institute. Standard 211, used as a basis for a mix design, lends itself to structural concrete ranging from thin shells to footings. Nowhere are architectural results considered.

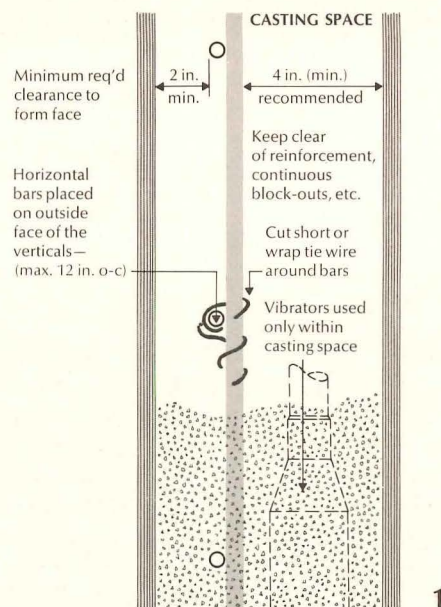
Admixtures are important for both workability and assistance in minimizing the possible occurrence of lift lines due to earlier concrete set in warm weather.

Consistency control is obviously important to architectural concrete. Some mixer trucks cannot discharge low-slump concrete even in its "new" condition. It is important, therefore, that proper mixers are used rather than changing a good design to meet the needs of a limited capability mixer.

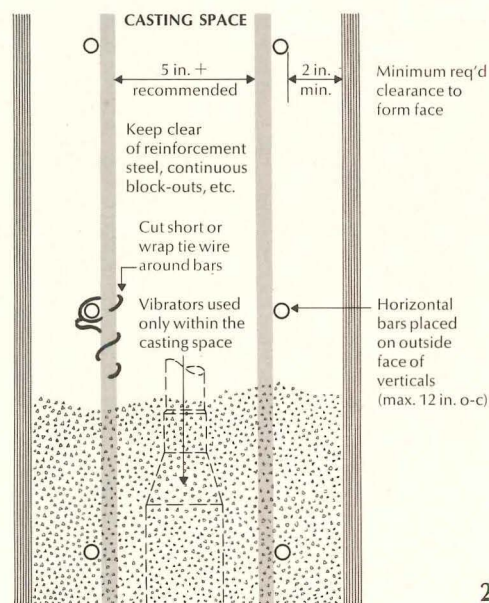
Construction joints and tie-rod holes must be sealed to prevent leakage

The quality of the forms must be better when the concrete is to remain in the as-cast condition than when it is to have a heavily distressed texture. As the quality of the formwork increases, the architect is wise to design in such a manner as to facilitate reuse. In the table, the category under "Reuse Limitation" envisions the probable use of wood forms of one quality or another except for as-cast surfaces. The finer the finish, the greater the control needed for the forming material to achieve that result. Any imperfection in the form used for a brush-blasted surface will appear in the concrete surface. On the other hand, scars (properly reconditioned) in a form for concrete to be heavily blasted or jack-hammered will not be visible following the finishing process.

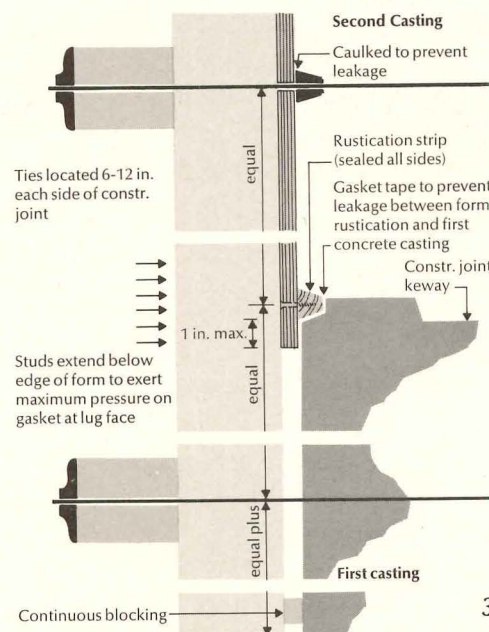
Under the heading of "Butt Joints," three primary classifications are considered. "Butt Joint Location" relates to the relative desirability of butt joints occurring in the form work at points other than behind rustications. Every butt joint is a potential leakage point, if for nothing more than water. Leakage will cause discoloration of the concrete and this discoloration cannot be removed by distressing. If it is not possible to use tape because the tape deformation would be visible on the finished surface, then butt joints must be located with great care. An alternative to the use of tape, and one that is a great deal more practical, is the



1



2



3

Many details related to form construction and to the location of reinforcement can have a significant effect on the quality of appearance of architectural concrete. ■ Details 1 and 2 show what clearances are needed when either a single or a double "curtain" of steel reinforcement is used. ■ Detail 3 shows recommended details for providing a horizontal construction joint. Note techniques to prevent leakage.

hiding of butt joints by a grooved rustication.

Tightness of forms is a key to high quality of results. Concrete cast in forms that leak can be expected to contain a considerable amount of honeycomb at the leakage point plus a greater incidence of "bug holes" in the finished concrete surface near the top of the section cast. In some cases, these are minimized (not completely lost) by the finishing technique and therefore there is more tolerance to control of tightness. While bellying forms are practically always objectionable to some degree in architectural concrete, the need for design strength of the form increases in importance for other reasons. If concrete-mix retarders are used to minimize the potential recurrence of lift lines, there can be difficulty if forms are not strong enough to take a full hydrostatic head. Many structural concrete forms are designed for 6 to 7 ft of hydrostatic head and, if the concrete is fluid to a greater height, the forms will fail under the load. Stripping control is more important for as-cast surfaces than for surfaces that are to be distressed. Even if distressing is to be used, projections from the concrete can be broken off very easily if the concrete is too green or the stripping is handled roughly.

Release agents, when improperly applied, cause as much variation in the color of the as-cast architectural concrete finishes as any other element. As the texture becomes more pronounced, the ultimate influence of this product is minimized. It is always desirable to make certain that there is not a build-up of release agent on the form surface, and that any concrete laitance from a previous casting is removed from the form before the release agent is applied for form reuse.

Form ties have a significant impact upon the visual effect of architectural concrete. Even though they are placed in the forms on a pattern, a particular pattern may not be consistent with some types of form design. Tie-hole patching effectiveness is questionable. And the smaller the tie, the less the holding capacity of that tie. While cone-type ties have been accepted and expressed by many architects, there are other systems that should be considered. Each will have a definite influence upon the architectural results. Probably more important than the tie system itself is the assurance that the tie is properly placed in the forms to prevent leakage. Fewer ties means less leakage potential. Leakage around form ties can cause "bull's-eyes."

The finish can be spoiled if consolidation by vibrator is not properly handled

Architectural concrete must be "placed," not "poured." In only the one case of the jack-hammered finish is a "4" classification given for "placement," and this classification envisions the use of a pump. Frequently, pumps require certain characteristics of the concrete mix. On most occasions, these characteristics are different from the characteristics desired for architectural concrete. We do not recommend the use of pumping devices that make demands on the mix to provide for roughly 50 per cent coarse aggregate and 50 per cent fine aggregate. When a pump can handle a mix design for architectural purposes with a low water-cement ratio, there should be no objections to

the pump. If pumps are used, however, there should be alternative placing techniques available in the event of placement-equipment failure. In no case should the concrete be moved horizontally by vibrators. The concrete must be placed as close as possible to its final position.

Consolidation of architectural concrete is one of the most important, though frequently passed-over elements of the construction. All too frequently, the vibrator operator is one of the most unskilled men on the construction project. Yet, if his work is not done properly, all of the fine architectural planning will have little effect. A vibrator is not only a device for consolidating concrete, but also for internally mixing two lifts of concrete. When this is not done, lift lines will be visible.

Reinforcing steel details are generally thought of as a problem for the concrete constructor. But with architectural concrete, we feel that the architect needs to make sure that the sizes of bars and the reinforcing steel placement details will allow the work to be accomplished. If this is not done, there can be such a mass of metal as to make effective workmanship in the field impossible. If the reinforcement is too close to the surface, and rusting and eventual spalling will occur.

Timing of the finishing process is governed by the type of finish wanted

The timing, type and condition of the finishing equipment or techniques can have major influence on the finish results. When heavy work is to be performed, the equipment must be rugged to meet the resistance encountered. Care must be given in some cases to the timing because the finishing ease is related to the strength of the concrete surface. If a great deal of mortar is to be removed, the work should be done as soon as practical after the casting. With impact hammer work, the only limitation is that the concrete should be strong enough to hold the coarse aggregate from being knocked from its sockets, thereby creating a series of "bugeyes." Different types and different gradations of abrasives have a major influence on results.

Naturally, tool condition is important to any work requiring tools. A bush-hammer operator will use two to three tools a day (approximately one tool per 30 to 40 sq ft of surface hammered). Use of dull tools makes hammering very expensive because there is little work accomplished and the finish has little character. "Finishing" of as-cast surfaces means treating the surface with masonry cleaner. Construction dirt and the natural efflorescence of portland cement concrete may have to be removed. This is a good area for a bid-deductive alternate if the cleaning is not necessary.

The table will help in assisting the designer to determine the optimum finish for the construction conditions of a particular project. Before making a decision about finish, the architect should study the locale where the work is to be performed. Included should be evaluation of forming know-how, contractor techniques, ready-mix and precast-concrete facilities, and the over-all quality of work completed in the past. Should it be found that there are great limitations to the facilities of the ready-mix concrete producer to deliver special mixes, the design should not require a heavy abrasive

blast finish, as this would place heavy demands upon a special concrete mix. A finish objectionable more related to the textured non-absorbent form would take best advantage of the concrete-producer capabilities in this instance.

If there is a shortage of carpenters, and the quality of workmanship is poor, and there is a great deal of repetition on the project, then a finish that is forgiving of form deficiencies makes the most sense. A jack-hammered texture, though a very expensive operation, provides a more forgiving surface for forming variations than any other architectural finish. If money should be saved in concrete mix controls, placement techniques and forming so funds will be available for finishing.

In sum, architectural concrete is a refined material, and details should recognize this

The following seven key points sum up the most important aspects affecting components and procedures in the table:

1. Section sizes and reinforcing steel details should be designed to facilitate construction. There must be placing and work space for the project may not effectively executed. Details 1 and 2 shown on the previous page are recommended for walls.
2. Construction joints should be articulated because their concealment is practically impossible. Detail 3 is recommended.
3. Try to use locally available aggregates to achieve some flexibility in results by selection of the cement. The ready-mix producer can, in most conditions, supply concrete with greater ease and at less cost with special cement than with special aggregates, unless the premium aggregates are locally available through truck delivery.
4. Smooth, as-cast walls without variation are most difficult, if not impossible, to achieve. Abrasive blasting is commonly used but is becoming expensive, as well as a major dust control problem. Walls to be left in the as-cast condition are best cast in forms that are non-absorbent, and have sufficient texture to ensure a planned variation over the surface that will be more readily noted than the variations normally expected in the concrete construction process.
5. Reinforcing steel details should be checked to make sure that casting space is available. This can mean the difference between a reasonable project and an impossible one.
6. The specifications should clearly state what is wanted. If form butt joints should occur behind rustications, the specifications must so. Forms tight under the hydrostatic head of concrete, plus the movement of the vibrator, are critical. For this reason, the specifications must call for the gasketing of corner joints. The specification should be prepared as a separate section of the concrete division, rather than be incorporated within the structural concrete details.
7. It must be remembered that architectural concrete is a very refined concrete, and must receive as much additional attention as would millwork compared to rough carpentry. Though the structural requirements will always be the governing requirement, the construction planning and details are more critical when architectural results are wanted.

Maybe we ought to have Mike write our ads....



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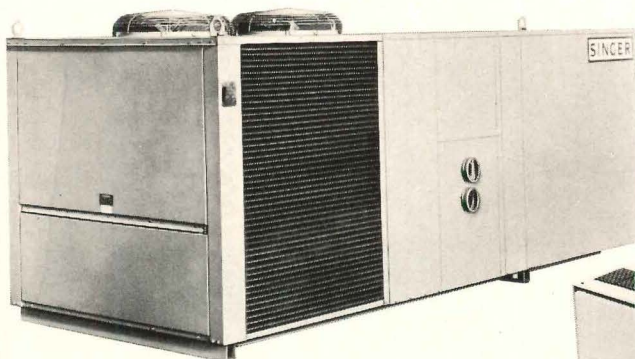
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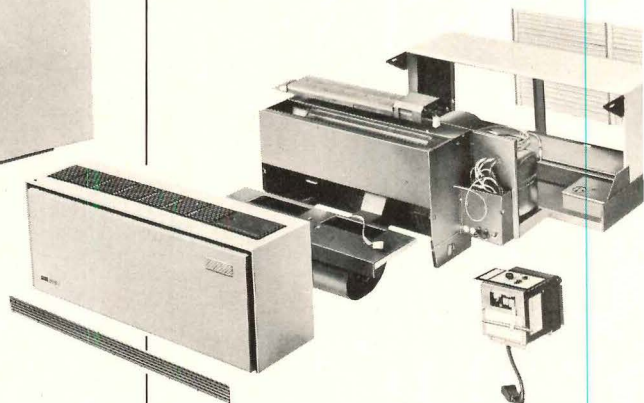
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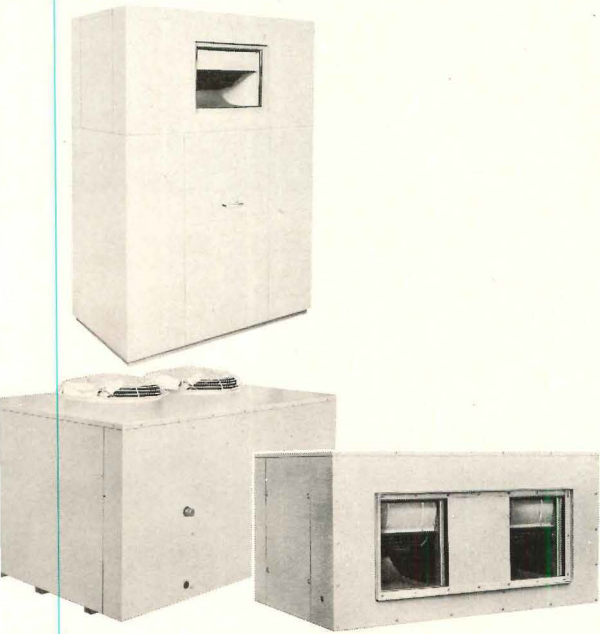


Buildings of comfort

Packaged or split systems

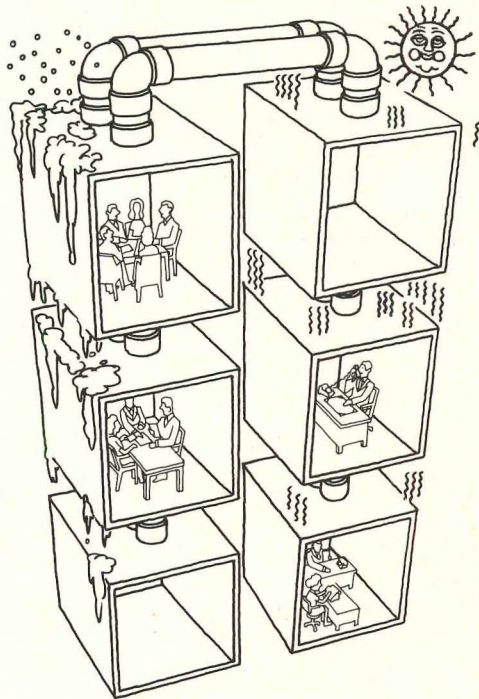
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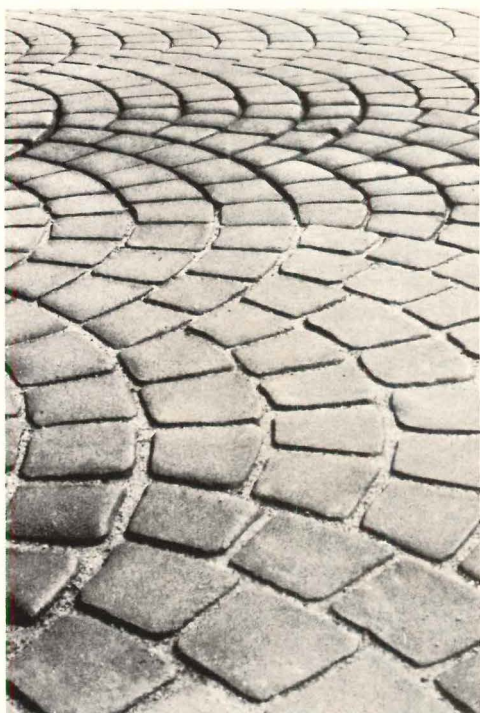
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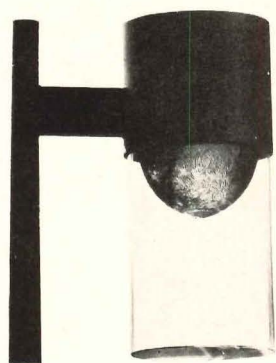
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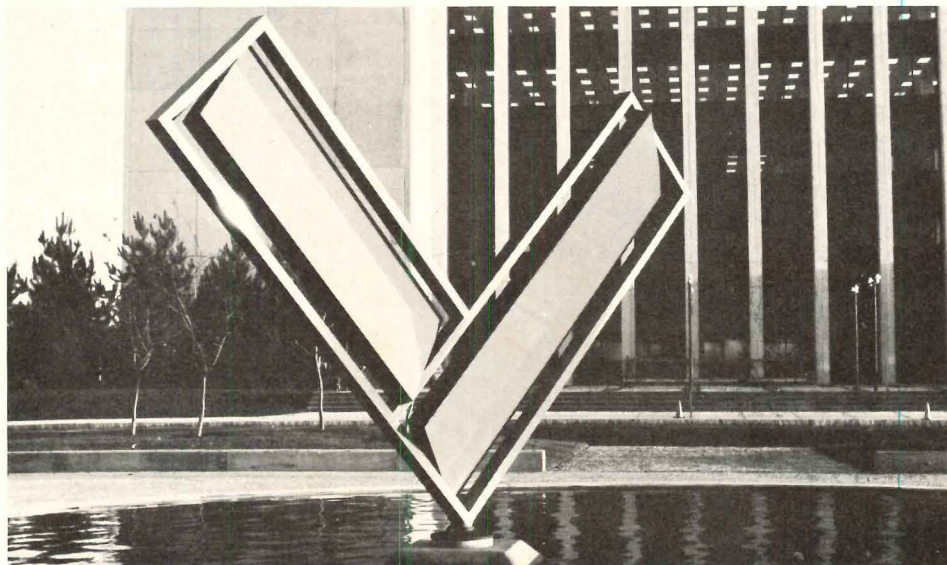
PATTERNED CONCRETE / In a variety of colors, patterns and textures, *Bomanite* is concrete especially treated to create durable surfaces that resemble brick, tile or cobblestone. The company claims little or no maintenance is required for this attractive paving, recommended for median strips, crosswalks, sidewalks, malls and streets. Low cost is also claimed. ■ Bomanite Corp., Palo Alto, Calif.

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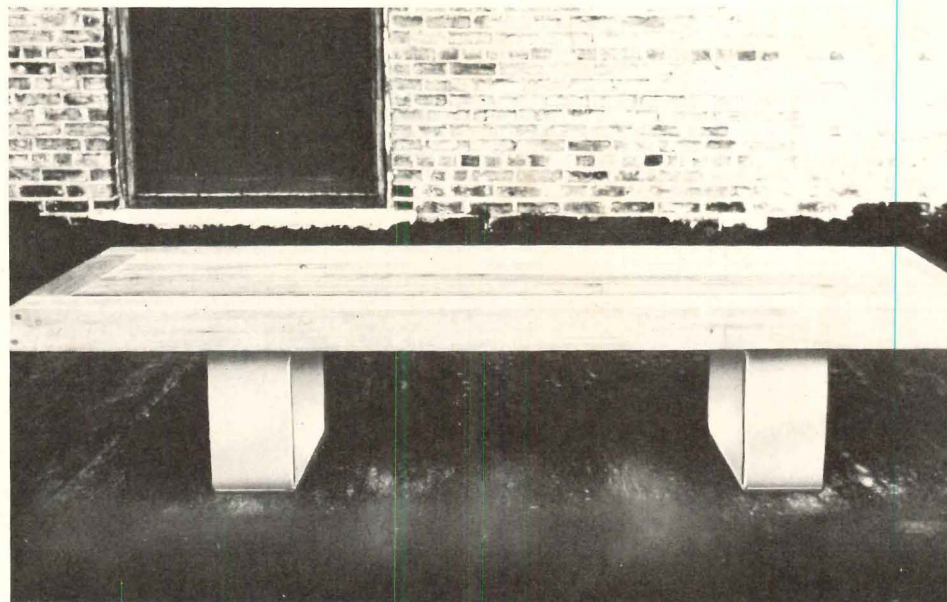
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ALUMINUM SCULPTURE / *Windhover* is the name of this sculpture measuring 18 ft across by 12 ft high. The finish is brilliant red polyurethane enamel. Design, engineering and fabrication cost \$17,000. The sculpture is located in front of the Middlesex Bank, Burling-

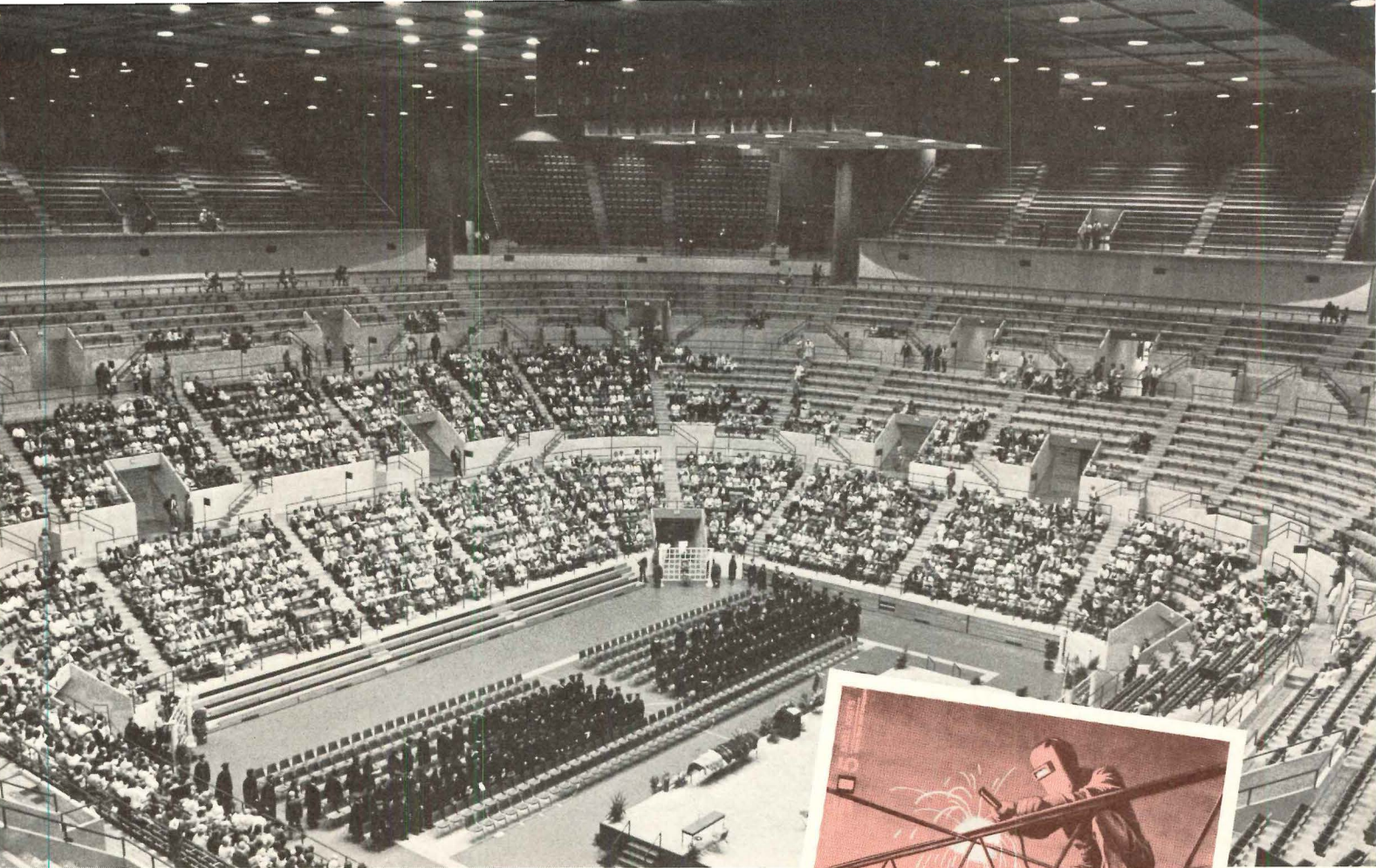
ton, Massachusetts, designed by Welton Beckett & Associates. The sculptor specializes in "environmentally-scaled" works. ■ Robert Amory, Boston, Mass.

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LANDSCAPE FURNISHINGS / Shown is a bench of natural-finished redwood, with steel supports in chrome finish. On the right, the *Contourline* bench features naturally finished redwood slats on tubular steel columns for permanent embedment. ■ Landscape Forms, Inc., Kalamazoo, Mich.

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more products on page 268



Why steel joists were the right answer to this building need

OVERALL ECONOMY: WHY STEEL JOISTS WERE USED TO SPAN 4.4-ACRE AUDITORIUM-FIELD HOUSE

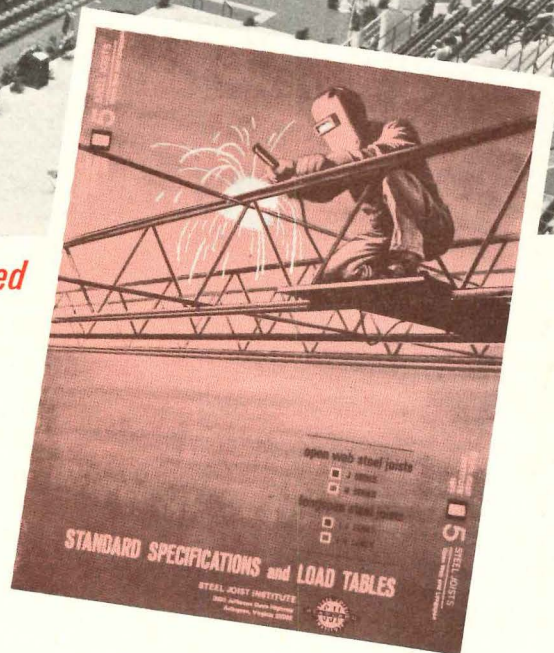
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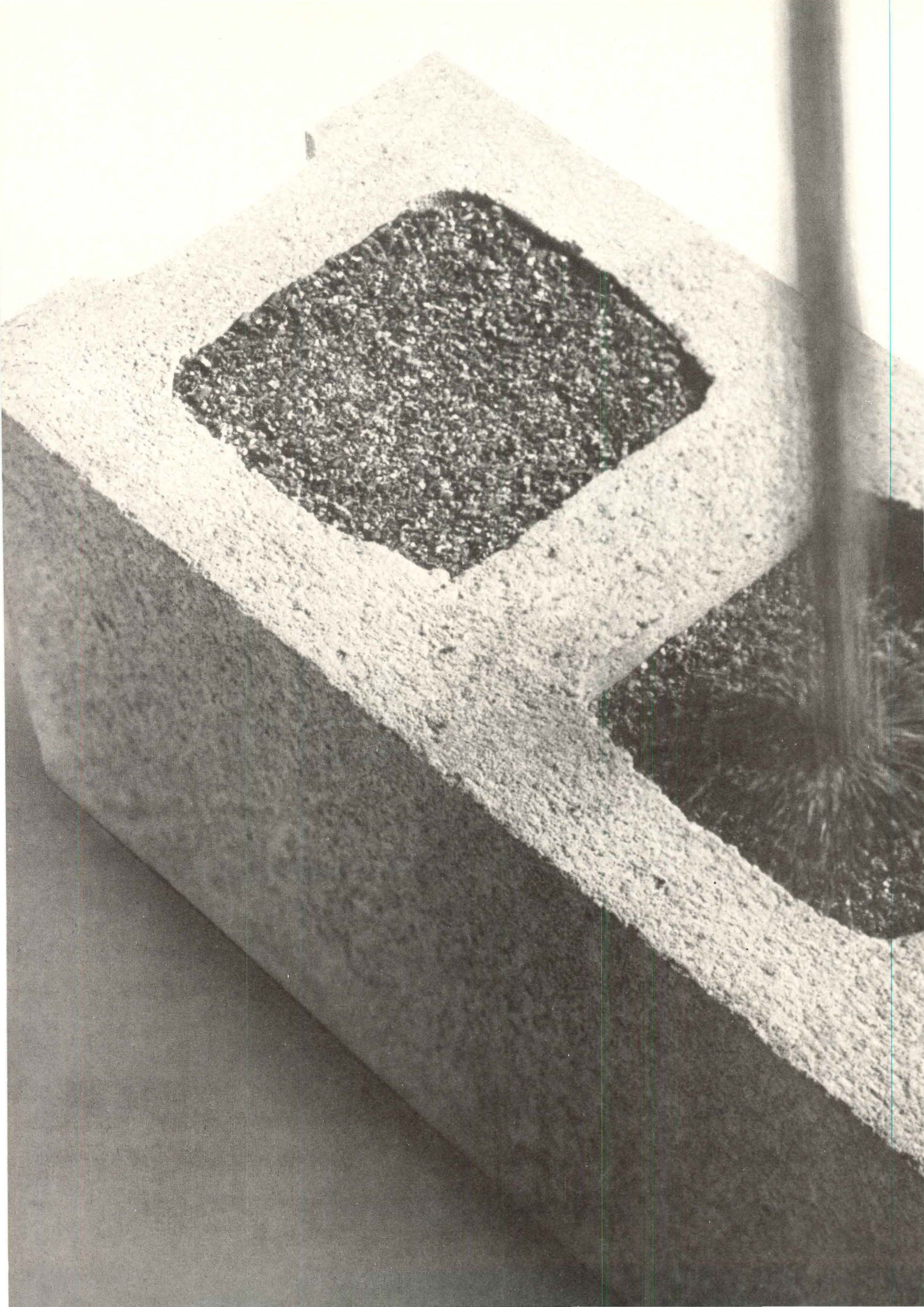
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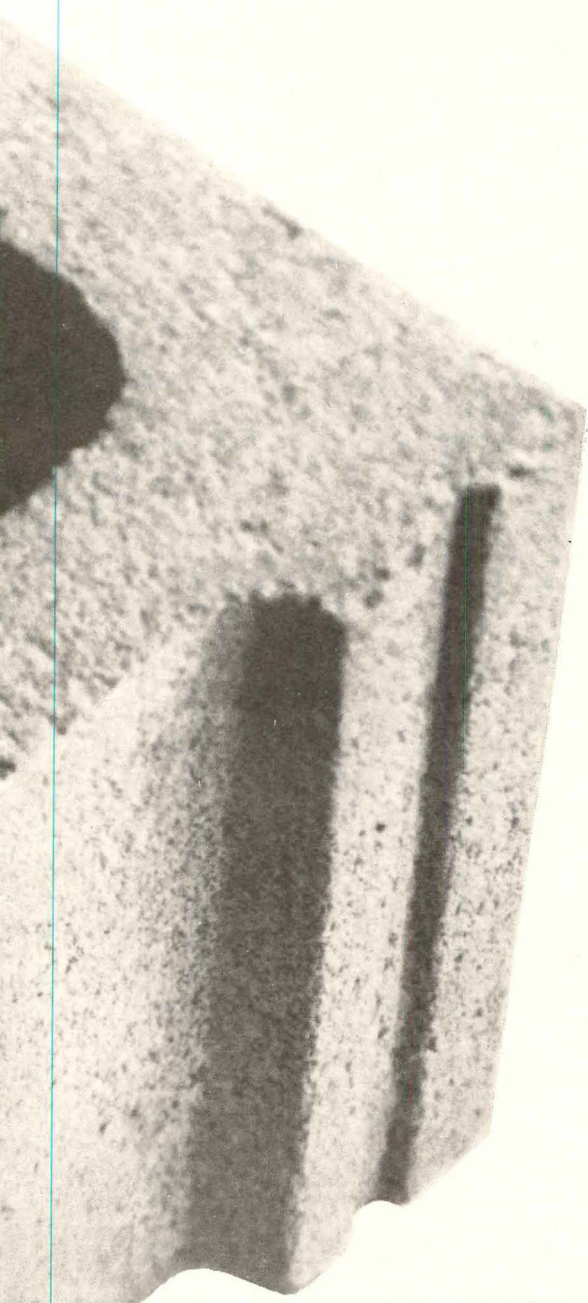
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Combined Heating/Cooling Savings*	\$6400	\$3500	\$8150	\$6450	\$5400
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*10-year savings from insulating walls; 8" lightweight block; 2-story office building, net exterior wall area 10,000 sq. ft.

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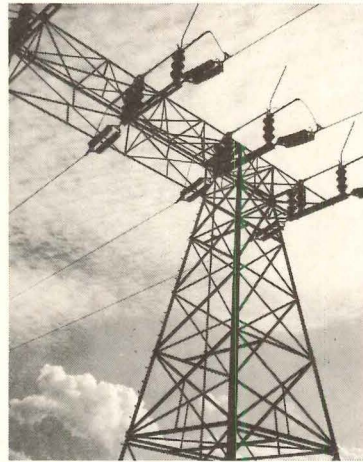
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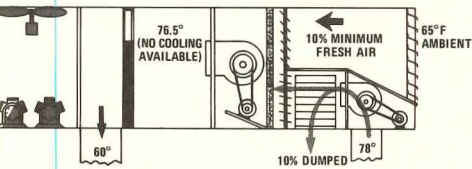
How Mammoth SST controls use outside air for free energy cooling.

The conventional system closes fresh air dampers at minimum position during summer operation and mechanically cools a warmer blend of return air and minimum fresh air, wasting valuable energy.

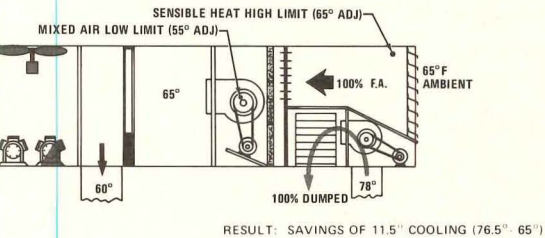
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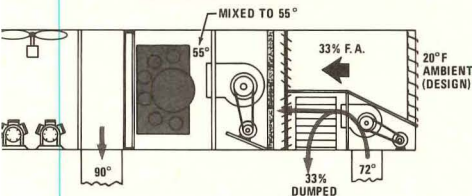
How Mammoth SST controls use return air for free energy heating.

The conventional method of mixing fresh air and return air to 55°, then heating it to required temperature negligently wastes more precious energy.

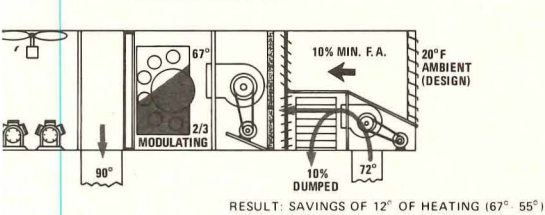
On the other hand, Mammoth SST controls save 12° of heat by taking full advantage of return air for heating, as in the example. Note that fresh air dampers are at minimum position during heating mode. This allows the Mammoth SST system to operate the heat exchanger modulated at only 2/3. Or, in this case, the heat exchanger could have been selected at 2/3 the size of the conventional system shown. In either event, the energy savings would be 33 1/3%.

90° REQUIRED SUPPLY AIR TEMPERATURE (DESIGN)

CONVENTIONAL



MAMMOTH SST



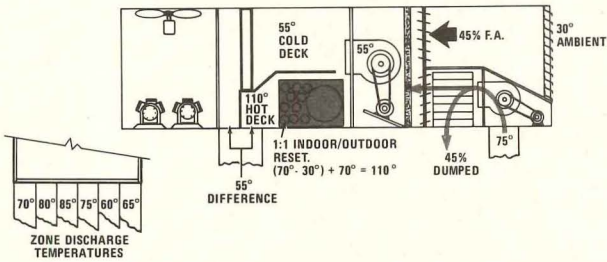
How Mammoth SST controls conserve energy in multi-zone systems.

Conventional multi-zone systems use a cold deck control to maintain cold deck and a 1 to 1, indoor/outdoor proportional reset to control the hot deck.

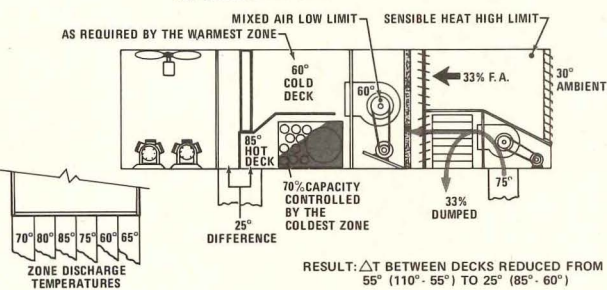
Now take the Mammoth SST controls. In this example, the warmest and coldest zones directly control the cold and hot deck temperatures reducing the operating differential from 55° to 25°, a phenomenal 30° reduction.

This allows the Mammoth SST system to operate the heat exchanger modulated at only 70%, resulting in a 30% energy savings.

CONVENTIONAL



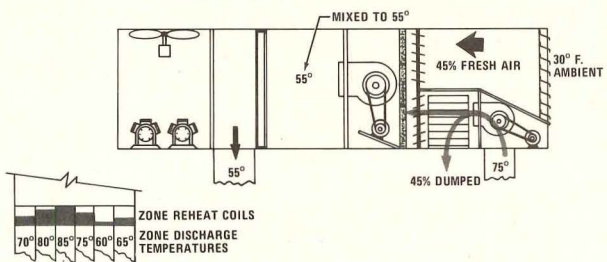
MAMMOTH SST



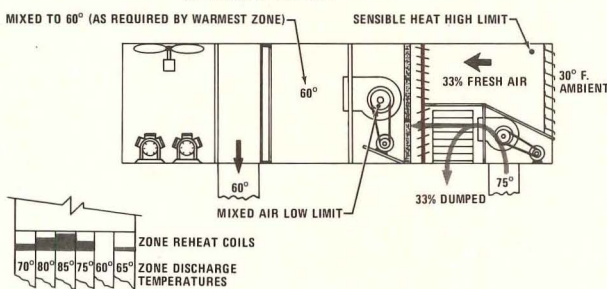
How Mammoth SST controls make economical use of zoned reheat.

Conventional systems cool to 55° then reheat. Mammoth SST controls make considerable economical use of reheat by heating supply air from the temperature required by the warmest zone, saving 5° of reheat in the example shown. Note the energy added to airstream for zoned reheat is identical to the SST multi-zone system.

CONVENTIONAL



MAMMOTH SST



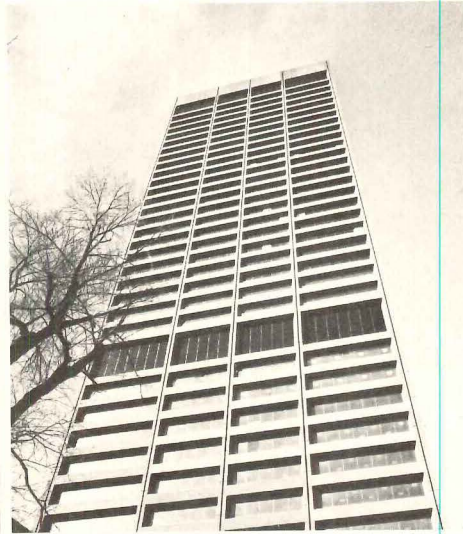
Three blind concepts See how they work.



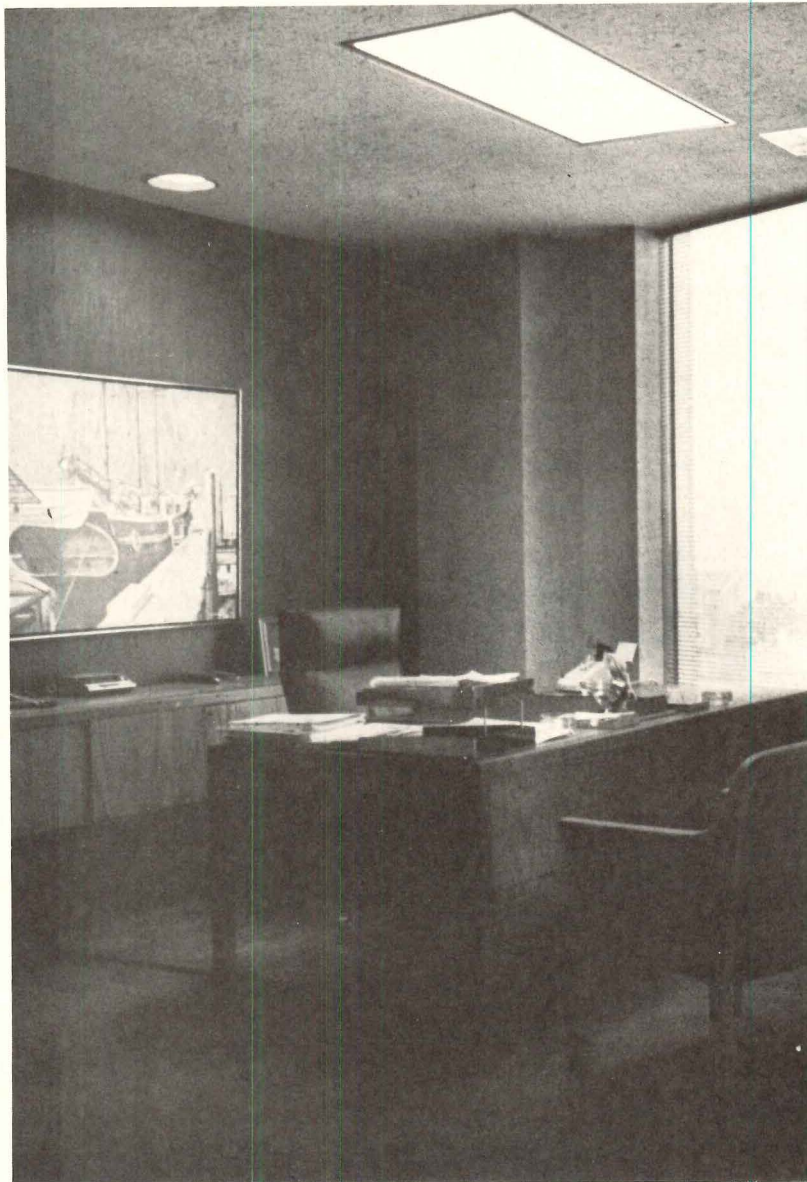
AHMANSON CENTER, LOS ANGELES.
ARCHITECT: EDWARD DURRELL STONE.

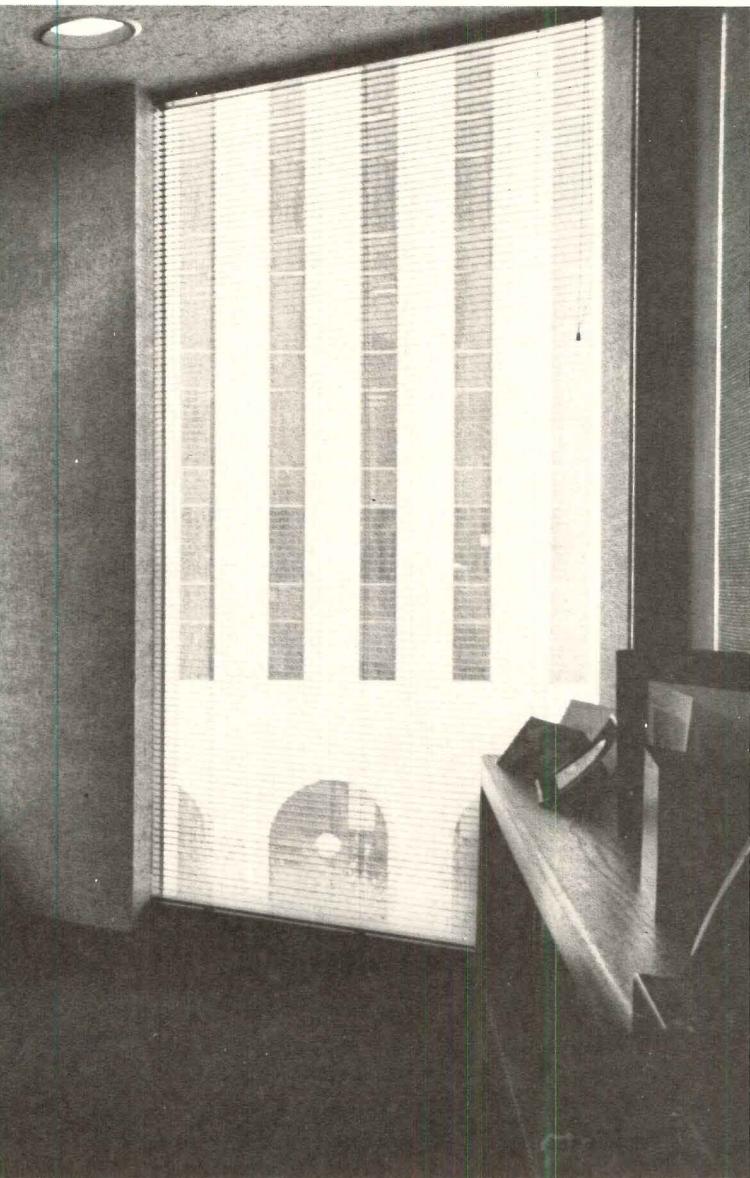


111 EAST WACKER DRIVE, CHICAGO.
ARCHITECT: MIES VAN DER ROHE.



ONE BEACON STREET, BOSTON.
ARCHITECT: SKIDMORE OWINGS & MERRILL.





Boston. Chicago. Los Angeles. All across the country architects are discovering the hardest-working window covering (and the most beautiful): blinds. Levolor Riviera blinds.

Rivieras are the narrow-slatted, tapeless blinds that come in 76 great colors. Including the popular metallics, among other colors, that take a big load off an air-conditioning system, even when tinted glass is used.

Levolor Riviera blinds control light better than any other window covering (only a blind is continuously variable from complete privacy to an open view).

And Rivieras have a feature called, "Top-Lok," that preserves the integrity of your facade by fixing blinds at a specific level.

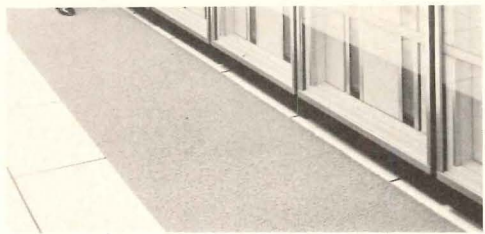
When you add all these features to the fact that Levolor operating hardware is guaranteed for life, you see that these three blind concepts work very well, indeed.

Levolor Riviera Blinds

Unsuccessfully imitated the world over.™

© 1973 Levolor Lorentzen, Inc., 720 Monroe Street, Hoboken, New Jersey 07030

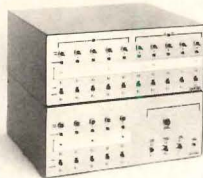
For more data, circle 106 on inquiry card



NON-WOVEN VINYL FLOOR MAT / For commercial use, this lightweight, durable surfacing material features porous construction that enables it to trap dirt and let it filter through, keeping the surface clean. The material is anti-slip, for both indoor and outdoor use. It is flame-resistant and easily cleaned by shaking, vacuuming or washing. Suggested for entryways, halls, elevators, behind counters and in other high-traffic areas. ■ 3M Co., St. Paul, Minn.

Circle 304 on inquiry card

ELECTRONIC SECURITY SYSTEM / Known as the ECO system, this product offers total building monitoring and control by sensitizing openings. The system combines a master control panel (shown) with a series of electric switch and contact hinges and individual electric locks; all designed for standard ANSI door and frame preparation. The electric contact switch hinge is the opening alert for this system. The contacts are wired directly to the central control panel and to the lock, while the electric switch is wired to the panel alarm system. A monitored door that is not properly closed or otherwise improperly acted upon, will set off visual and audio alarms. ■ Hager Hinge Co., St. Louis, Mo.



Circle 305 on inquiry card

TWIN ROLL TOILET TISSUE DISPENSER / Two models are offered in satin-finished stainless steel: recessed, partition-mounted, and surface mounted. The reserved roll automatically moves down into position when the first roll is exhausted. Doors have a full-length stainless steel piano hinge and tumbler lock. ■ American Dispenser Inc., Carlstadt, N.J.

Circle 306 on inquiry card

MATERIALS HANDLING / Loads of 1000 lbs. greater can be transported up a slope at speeds up to 400 fpm with the Car... a multi-functional materials handling system... stepless, variable speed... Product provides... response time and ca... accurately interfaced with existing equipment. Recommended for handling chemical-sensitive materials because of product's gentle acceleration characteristics. ■ SI Handling Systems Inc., Easton, Pa.



Circle 307 on inquiry card

INTEGRAL EMERGENCY POWER PACK / A source of power will automatically keep the company's line of EXIT lighting fixtures illuminated in power failure periods. The miniaturized power unit is a completely self-contained section which fits across the top of a fixture housing without interfering with the universal mounting feature. The normal life of the unit's replaceable batteries is six years. The unit meets present code requirements for emergency lighting with a minimum of 1½ hrs. output. ■ Sechrist Lighting Div., Keene Corp., Denver, Colo.

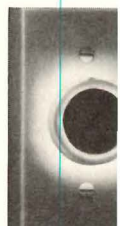
Circle 308 on inquiry card

ATTENDANCE RECORDER / This fully-automatic recorder can operate independently or be keyed into any existing master clock impulse system. Horizontal or vertical recording can be specified. A large clock face and tamper-proof lock are featured. Cards and card racks are also part of the system. ■ Stromberg Products, New Haven, Conn.



Circle 309 on inquiry card

LIGHT DIMMER / This features a lighted knob that glows in the dark. Unit is fully rated at 600 watts, incandescent service, and is available with either a rotary on-off or push-on/push-off switch. UL listed. ■ Lutron Electronics Co., Inc., Coopersburg, Pa.



Circle 310 on inquiry card

more products on page 169



VOGEL-PETERSON
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The beauty of Vogel-Peterson PlanScope® screens belies their practical nature. Under the richly-colored, stain-resistant nylon velvet lies a thick foam cushion that literally swallows sound. The brilliant chrome accents mask a light but very strong tubular steel frame that defies bending and twisting. Thoughtful design extends even to the base... made flush to the floor to keep clear of passing feet. PlanScope screens are available in a wide variety of sizes, either straight or curved in five dramatic colors. Write for catalog 515.



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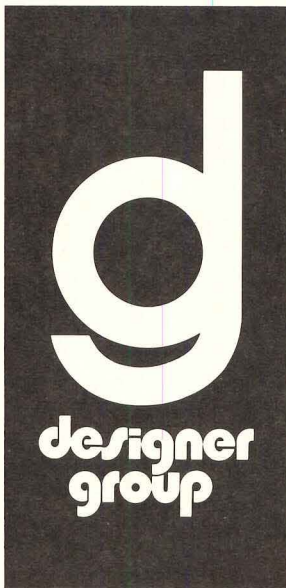
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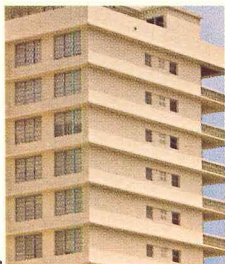
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When Agnes came for an unwanted visit, paint based on Pliolite kept her out.

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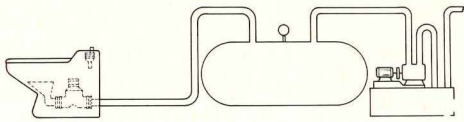
The reason: texture paint based on Pliolite resin forms a tough, impervious shield that prevents the passage of water either into or out of the concrete.

In addition, texture coatings based on Pliolite resin can be applied to all

types of masonry surfaces—pre-cast, poured or concrete block—wet or dry, interior or exterior, above or below-grade, in almost any kind of weather. In fact, when applied to green concrete, it acts as a curing medium.

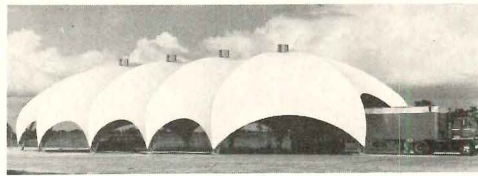
If your job is to waterproof and protect masonry surfaces against weather, texture coatings based on Pliolite resin can help you do it better. For more information, and a list of manufacturers of texture coatings based on Pliolite resin, just write to Bill Smith at Goodyear Chemicals, Dept. 7104, Box 9115, Akron, Ohio 44305.

GOODYEAR
CHEMICALS



VACUUM SEWAGE SYSTEM / This water-saving system uses air instead of water for transporting sewage. Units are recommended for marine, office and residential buildings, schools, factories, etc. In flushing, the vacuum toilet uses only about 3 pints of water compared to 4 to 6 gallons in conventional installations. A mobile restroom is available in various sizes and can be placed in service quickly. ■ Colt Industries, Beloit, Wis.

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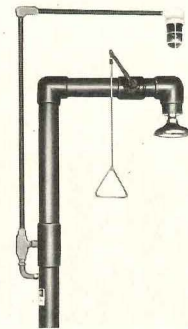
FABRIC MEMBRANE STRUCTURE / Portomod utilizes heliarc welded steel trusses to support flame-retardant synthetic fabric. Designed to meet building code requirements for 30-lb snow loads and 25-lb per sq ft wind loads, the product complies with most building codes in the United States. Sub-assemblies can be delivered to structure any desired length in multiples of 20-ft bays. Portomod can be erected on simple foundations on any level hard surface. ■ Seaman Building Systems, Sarasota, Fla.

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ACOUSTICAL WALL PANELS / Shown in a computer room application Vicracoustic panels consist of an outer decorative surface of perforated vinyl over high-density glass fiber sheet. The core is thicker glass fiber. Panels come in two sizes: 4 by 8 ft, or 4 by 10 ft, but can be custom cut to fit. Surface covering is available in 1500 different styles, colors and can be supplied on both sides or one side completely wrapped around the panel. ■ I. L. Carpenter, New York City.

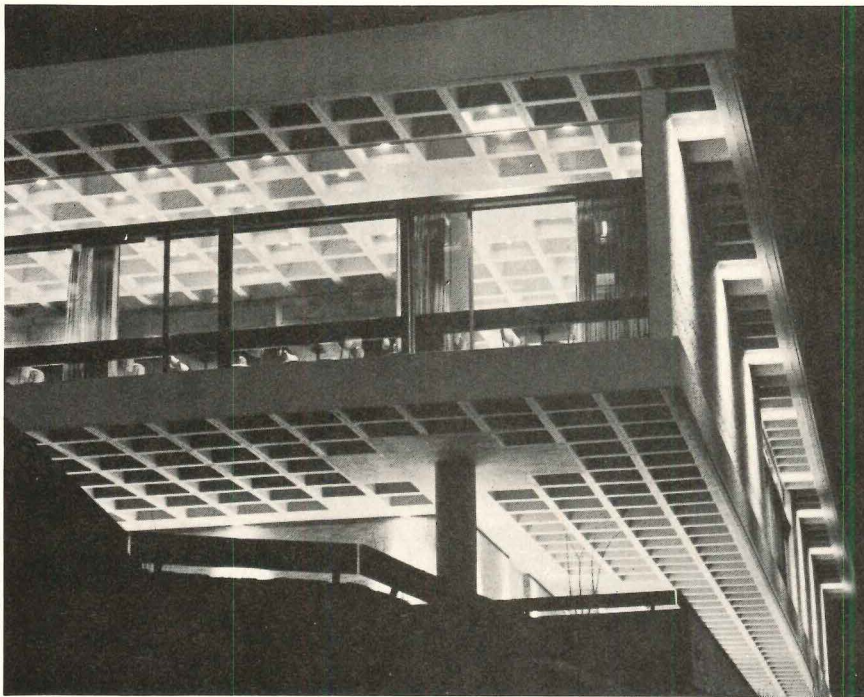
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OUTDOOR SAFETY SHOWER / Unit features induction heating in a mechanically-sturdy, thermally-efficient pre-engineered unit, simple thermostat control, and easy installation. Water and electrical power lines are simply connected. Recommended for chemical plants, metallurgical facilities, etc. Optional include eye wash, overhead lights and auxiliary water supply for multiple head shower. Speakman Co., Wilmington, Del.



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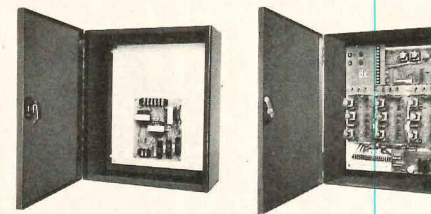
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MOBILE CAFETERIA / Individual modules may be locked together in any order to look like a permanent line-up. Features include sturdy upright design, adjustable tray slides, accessible shelves, and semi-hidden casters. Hot and cold food stations have an open back, permitting a loaded dolly to be rolled underneath. Other units are cashier station, tray and silver cart. All are pre-assembled, ready for use. ■ The Vollrath Co., Sheboygan, Wis.

Circle 315 on inquiry card



PEAK LOAD LIMIT CONTROL / Electric heating and air conditioning operating costs can be reduced significantly, according to the company, with an electronic device that automatically eliminates demand peaks, enabling large electric users to use their energy at lower rates. The unit works by automatically turning off and on deferrable loads in a predetermined priority sequence. Typical deferrable loads are space heating, hot water heating, cooling and similar low-priority loads. ■ Demand Limit Control, Inc., Rosemont, Pa.

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more products on page 192

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This means they won't rot or char.

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Results: not one known failure due to Fiberglas Perma Ply-R.

These Fiberglas felts are now available in all states east of the Rockies.

For more information, write to Mr. R. K. Meeks, Architectural Products Division, Owens-Corning

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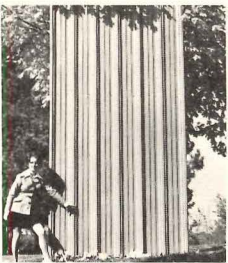
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ROOF AND WALL PANEL / A roof and wall covering system for use with the company's building system offers economy, strength, durability and appearance. A trapezoidal-rib sheet, the product is coated steel and has a net covering width of 36 in. Panels can be supplied in lengths up to 42 ft. Main ribs are 1½ in. deep and 12 in. on center. On both roof and siding applications, overlapping panels are stitch-fastened at prescribed intervals at the center of the flat plane of the rib. ■ Armco Steel Corp., Middletown, Ohio.



Circle 317 on inquiry card

SPRINKLER SYSTEM CONTROL PANEL / An electrical control panel permits grouping of heat detectors for zoning; any number of zones (12 or less) can be furnished. Firecycle systems are designed for continued on-off cycling while controlling a fire, and shut off water when the fire is extinguished. When a detector point, a relay for that detector zone is de-energized and opens contacts which operate the system and alarms. ■ The Viking Corp., Hastings, Mich.



Circle 318 on inquiry card

COST ESTIMATING COMPUTER / A computer system that estimates construction costs for many types of commercial, institutional and private building projects is offered for office use by architects and developers. Designed to bring precision and speed to costing-out projects during pre-design design stages. The system operates from a computer that presents the required information on typewriter-like terminals that can be leased or purchased from the company. ■ Amis Construction Consulting Services, Inc., New York City.

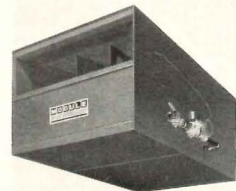


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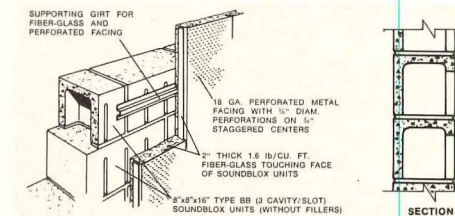
ELASTOMERIC WALL COATING / A dense interior coating, this product provides for minor substrate movements and is impervious to stains, moisture, chemicals, alkali and bacteria. Seamless and dimensionally stable, the product is recommended for applications where a sanitary finish is needed. Available in a variety of colors, in gloss and semi-gloss finishes. May be applied to concrete, masonry, cement or hardwall plaster, gypsum drywall, metal or plywood. ■ Desco International Assocs., Buffalo, N.Y.

Circle 320 on inquiry card

DIRECT FIRED GAS HEATER / Designed for efficient 100 per cent utilization, the Series 4700 Module Air unit is an economical make-up and space heater for any sized job. Compact models can be mounted through the walls or roof to save floor and ceiling space. Low operating and initial costs are claimed. ■ Cambridge Engineering, Inc., St. Louis, Mo.



Circle 321 on inquiry card

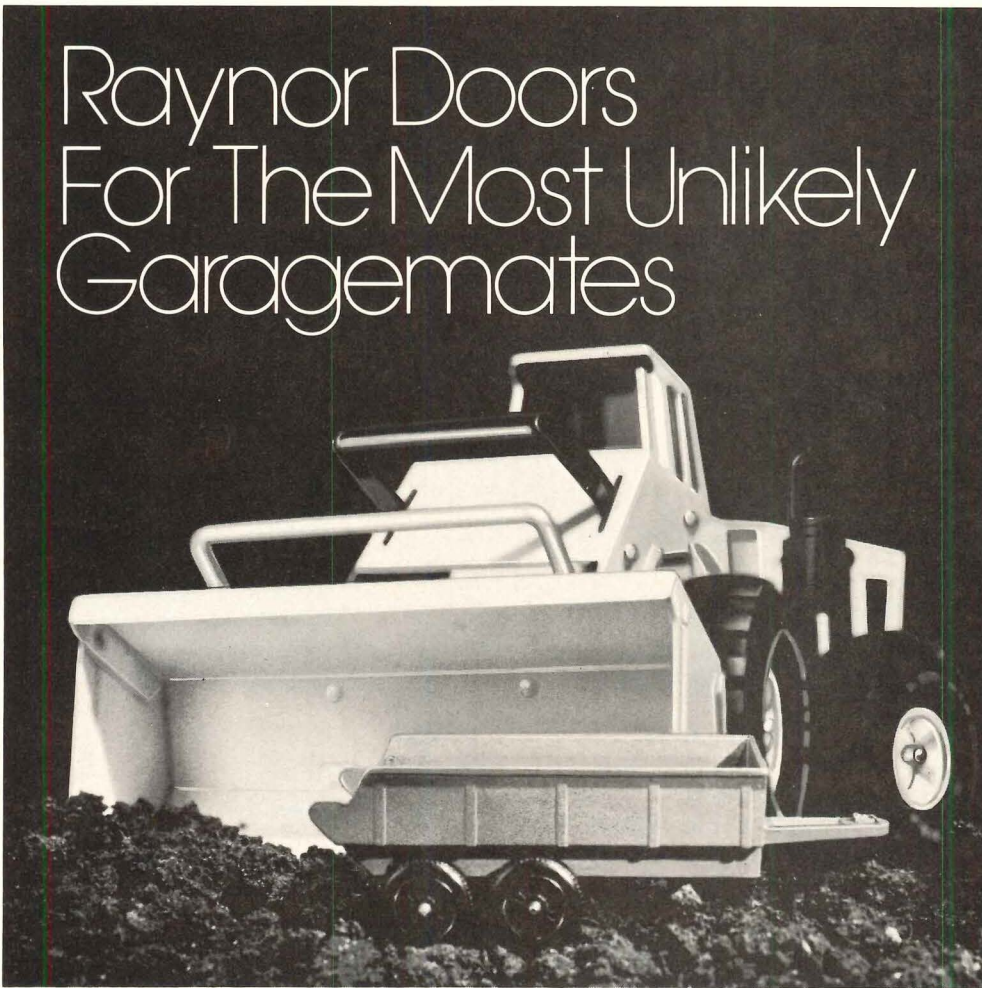


SOUND-ABSORBING STRUCTURAL MASONRY / Recommended for indoor-outdoor industrial construction, Soundblox units are made near the job by selected block producers using special molds that fit standard automatic block machines. They depend on their sound absorption from a cavity-slot construction. The cavities are closed at the top and bottom slots allow the closed cavities to act as damped resonators. Units are load-bearing and can be installed with conventional labor and techniques. ■ Proudfoot Co., Inc., Greenwich, Conn.

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more products on page

Raynor Doors For The Most Unlikely Garagemates

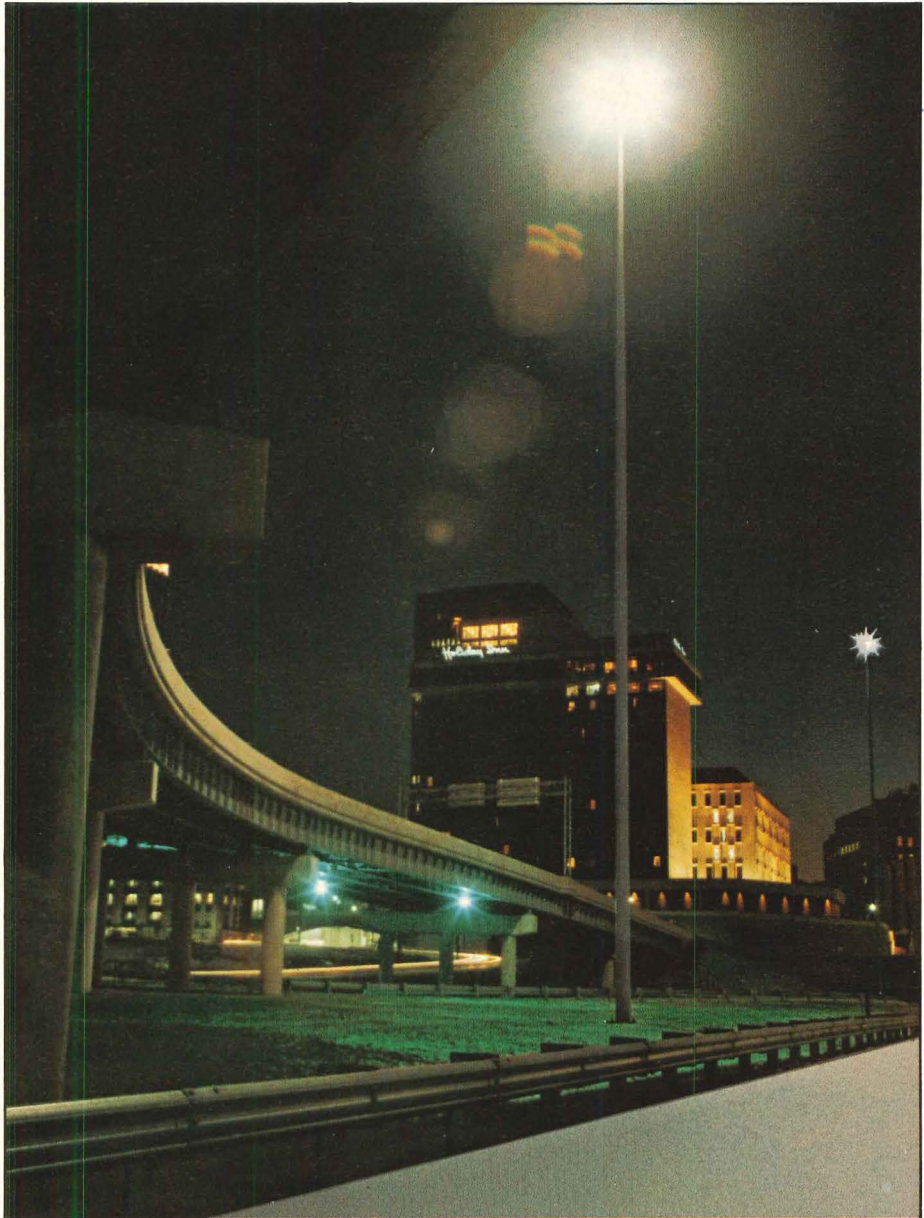
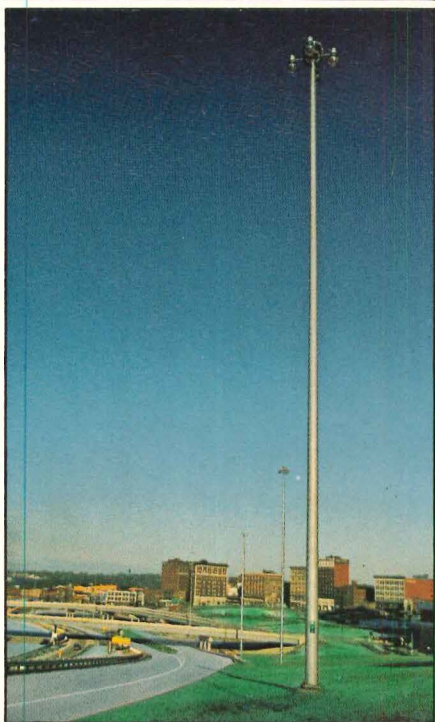
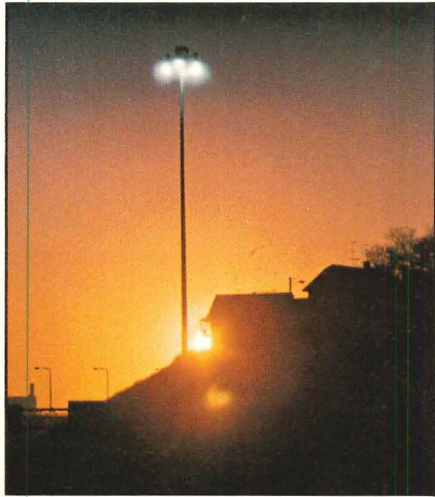


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For example, Monotube High-Mast Light Poles can be designed for applications requiring heights of 200 feet or more. If desired, we will factory assemble and ship in one piece.

Different steels and finishes are other Monotube pluses—weathering, carbon, galvanized, epoxy, finished or prime painted are yours for the asking.

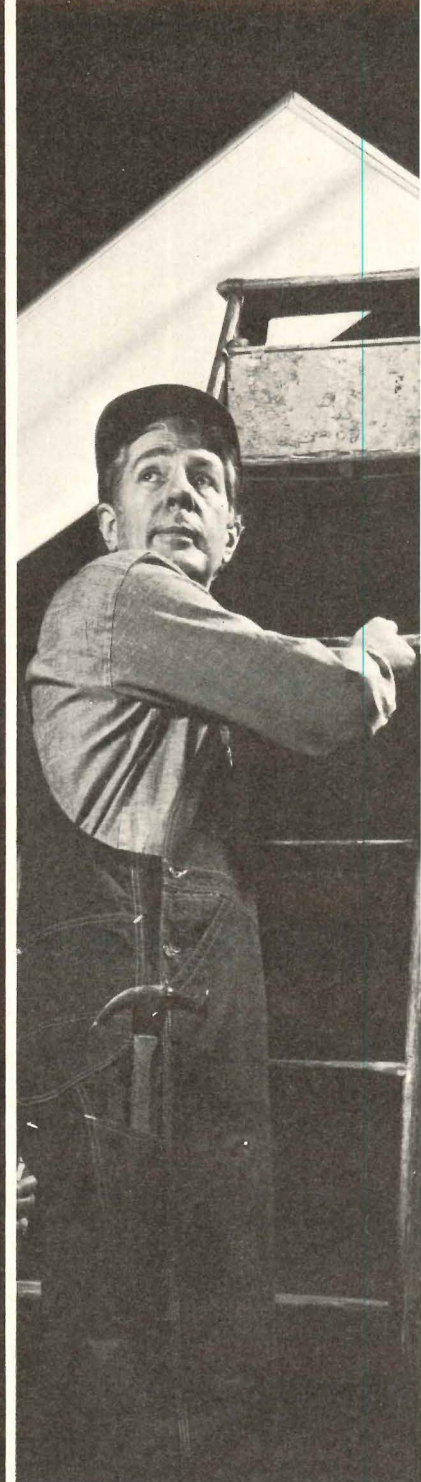
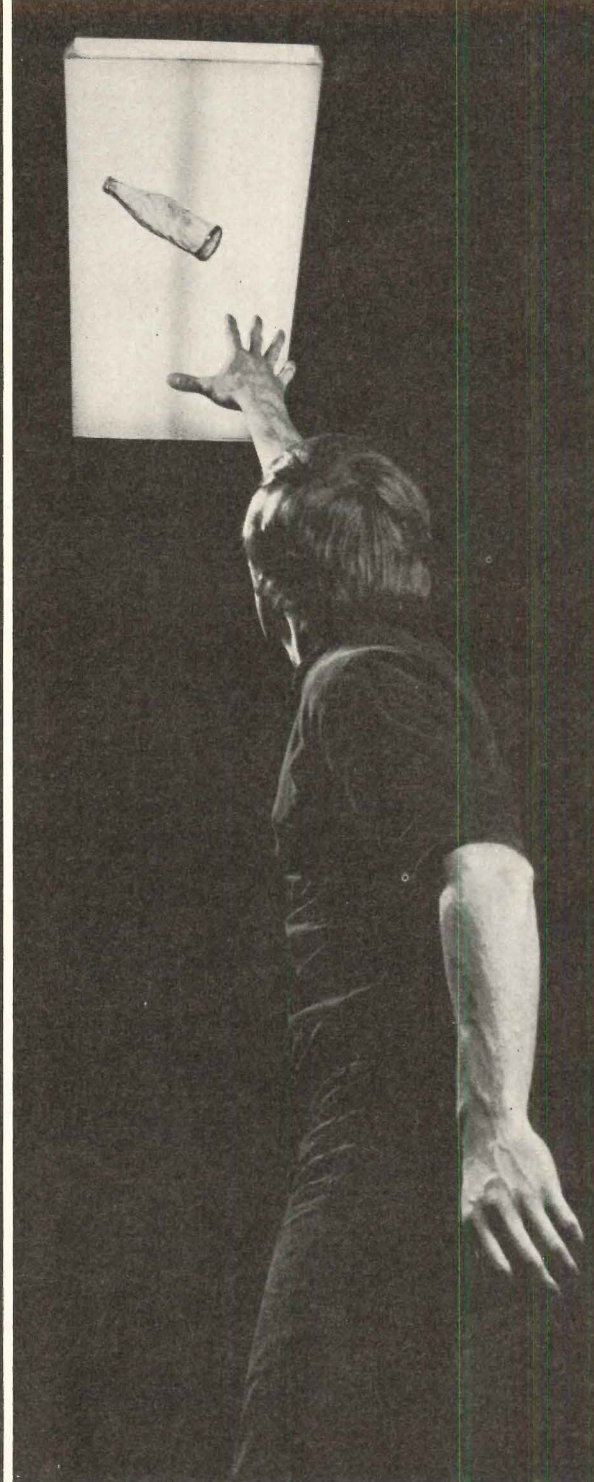
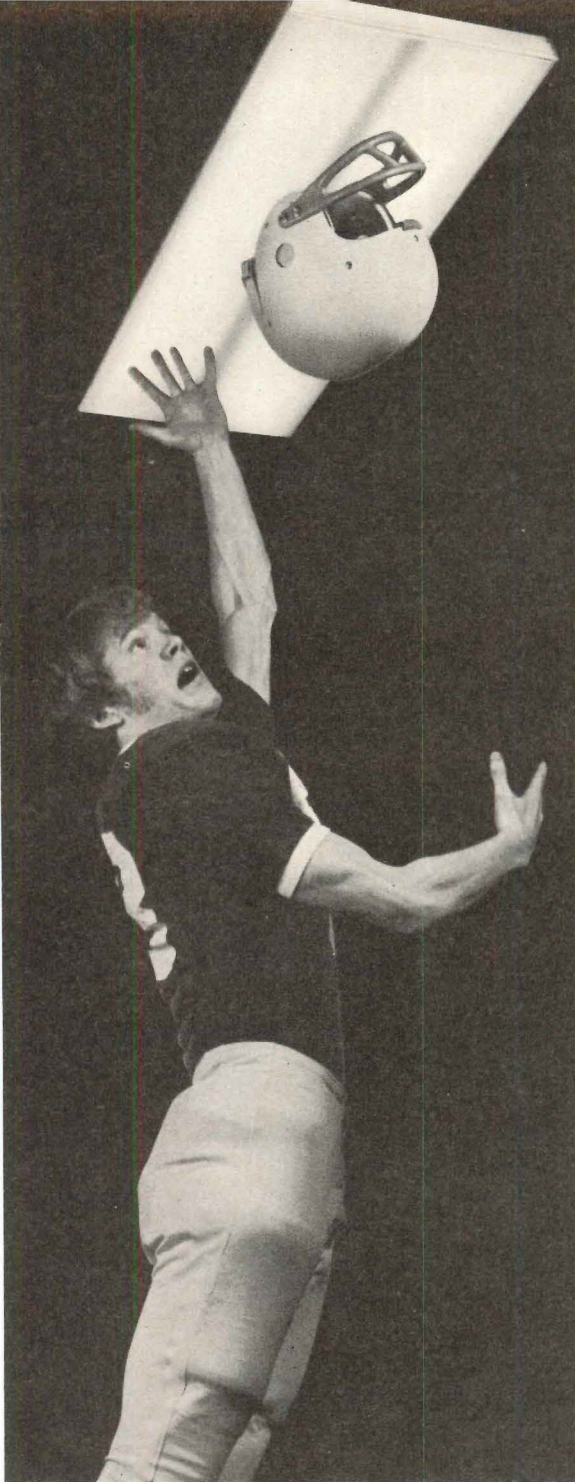
This versatility and the know-how of the industry's most experienced pole manufacturer are the benefits you get from specifying and using Monotube High-Mast Light Poles.

We've got what it takes!

Union METAL
MANUFACTURING COMPANY

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Put PLEXIGLAS® DR between your lighting and UFO's.

Lighting that's under daily attack by unidentified flying objects — indoors or out—does its job best when protected by lighting shields made of Plexiglas DR acrylic. That's because Plexiglas DR produces extremely tough, weatherable lenses which retain color and clarity better than any other high-impact thermoplastic on the market.

Vandal-resistant Plexiglas DR lenses are molded or extruded from Plexiglas DR high-impact all-acrylic molding pellets, the toughest acrylic lens material made. They are optically superior to polycarbonate lenses, for better light control, less glare.

Protect your fluorescent lighting. Select Plexiglas DR lenses — for toughness that virtually ends break-

age worries, and for color and clarity you can count on for years.

Write for technical data and physical properties, and for names of extruders and molders using Plexiglas DR.

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Plexiglas acrylic plastic is combustible thermoplastic. Observe fire precautions appropriate for comparable wood. For building use, code approvals. Impact is a factor of thickness, exposure to heat or abrasives. Clean with solvents. Clean with and water. Avoid abrasives.

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DON'T PLAY WITH FIRE.

CCC's New Naturalweave spongebonded carpet has a Class "A" Flamespread rating.

If you're looking at carpet for an office building and it doesn't have a Class "A" flamespread rating—25 or less in the Steiner Tunnel Test—you may be playing with fire. The danger of fire always exists, that's why fire safety standards are becoming more and more stringent. At CCC, we know all about fire safety. We've become experts, because we've installed millions of yards of carpet in offices, hospitals, schools and stores.

Since fire safety is a major concern to us, we've just introduced a fire-retardant, spongebonded carpet with a Class "A" flamespread rating. We call it NATURALWEAVE FLAMEGARD and it meets *all* governmental flamespread standards.

NATURALWEAVE FLAMEGARD is an addition to our heavy duty Densylon Carpet series. It has a five-year wear guarantee and is made of tightly-twisted, densely-packed ANSO nylon bonded to B. F. GOODRICH fire-retardant sponge rubber cushioning. This built-in cushion extends the carpet's wear-life by one-third compared to carpet without padding. It's

guaranteed not to lose resiliency, enhances the carpet's appearance retention, reduces leg fatigue and increases floor safety. Among its other benefits, NATURALWEAVE contains a static control system, is easy to clean and keep clean, and helps cut maintenance costs.

But you get more than just superior carpet from CCC. We're the largest manufacturer of commercial and institutional carpet systems in the country. With CCC, you get SINGLE SOURCE RESPONSIBILITY for every aspect of your carpet projects anywhere in the country, starting with product selection and guaranteed installation through a comprehensive maintenance program that gives you maximum carpet wear-life at minimum life cycle cost. We even know how to effectively integrate carpet with subfloor access systems and can show you how it's done with trench headerducts and handhole covers.

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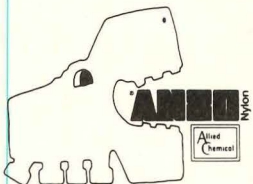
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 10 W. 33 St., N.Y., N.Y. 10001 Dept. AR-5-73
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 Please have a representative call.
 Please send brochure.

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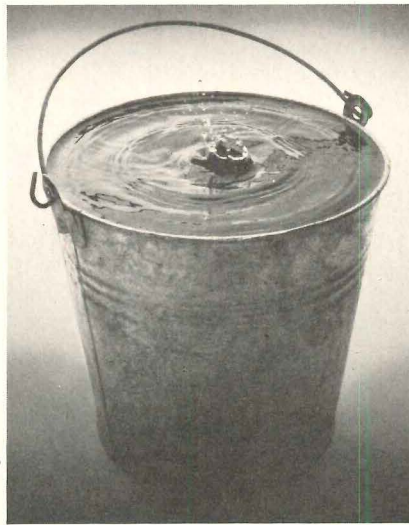


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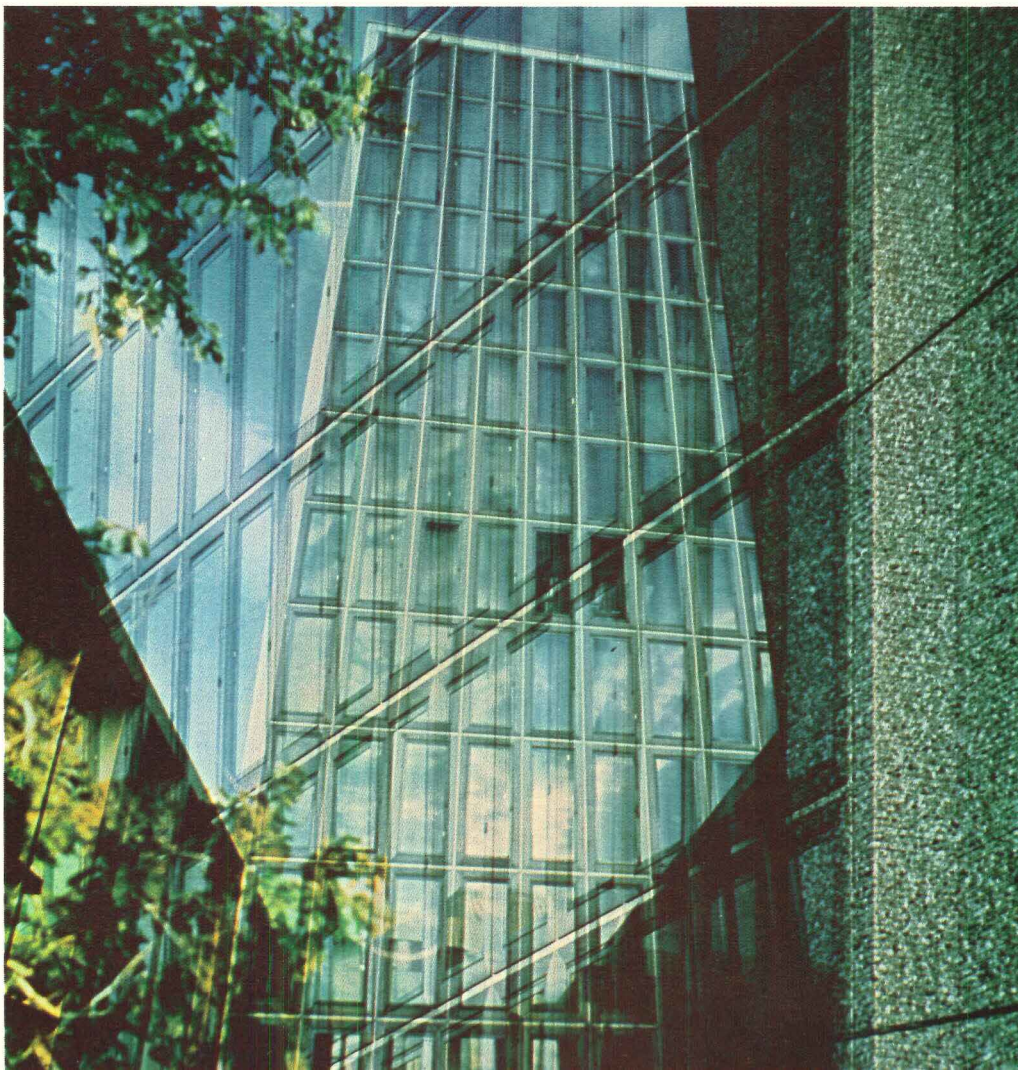
... Manufactured in three configurations—Insulating, Laminated and Monolithic—for complete versatility.

Depending on the type specified, it can also provide thermal control, sound control, security and safety benefits. Available in subdued tones of bronze, gold, gray and chrome ... in the largest quality sizes in the industry.

To learn more, write for our Reflective Brochure, Shatterproof Glass Corporation, Dept. 101A, 4815 Cabot Avenue, Detroit, Michigan 48210. Phone: 313/582-6200.

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Shatterproof
GLASS CORPORATION *Architectural Division*



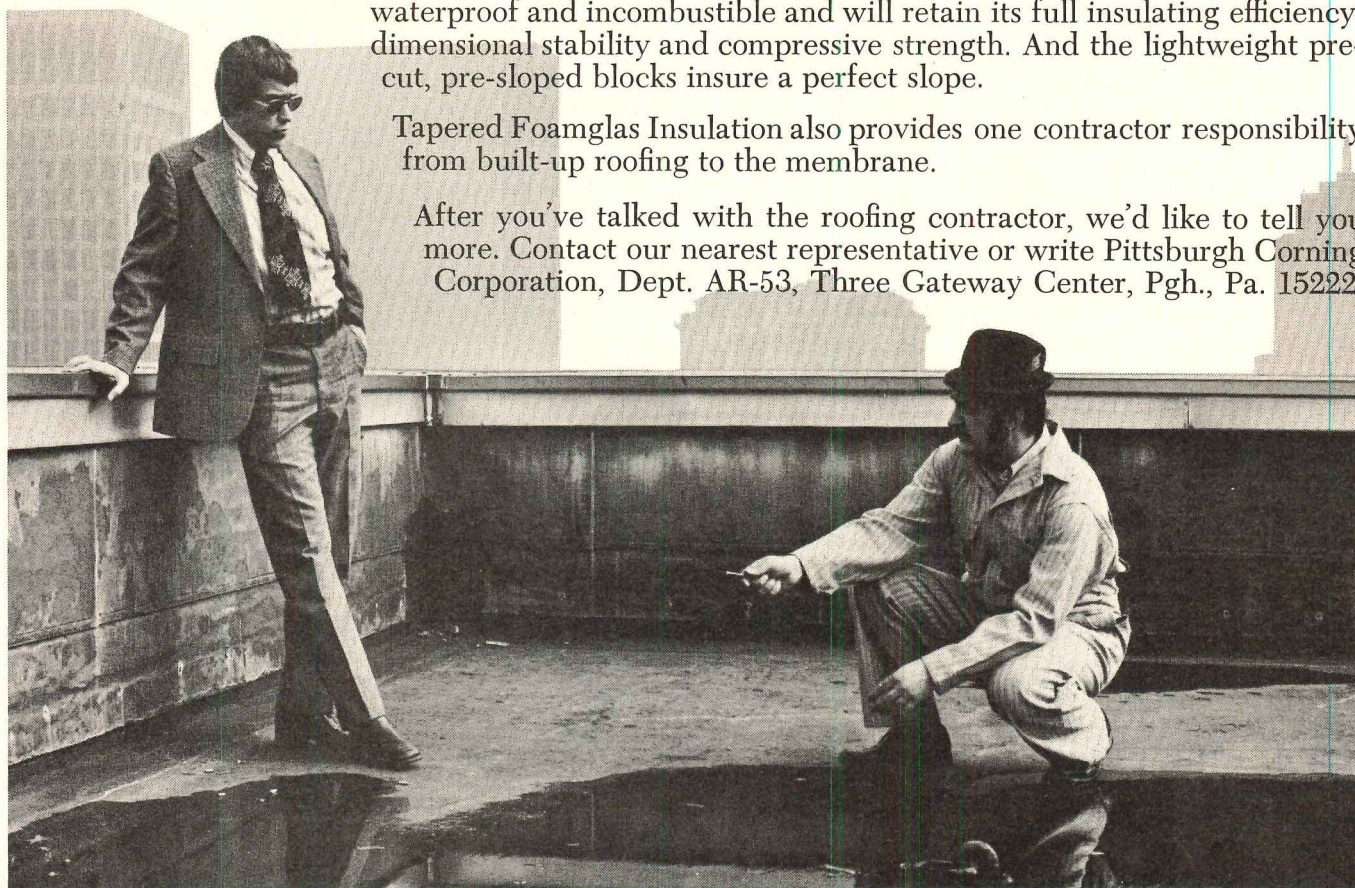
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The next time you seek a roofing contractor's experience, ask him about Tapered Foamglas Insulation as a base for the built-up roofing membrane.

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Tapered Foamglas Insulation also provides one contractor responsibility from built-up roofing to the membrane.

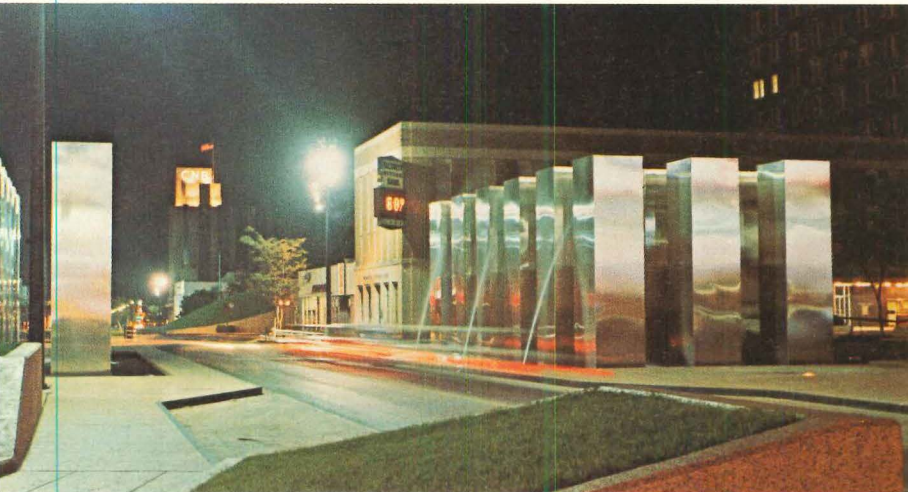
After you've talked with the roofing contractor, we'd like to tell you more. Contact our nearest representative or write Pittsburgh Corning Corporation, Dept. AR-53, Three Gateway Center, Pgh., Pa. 15222.



For more data, circle 120 on inquiry card

TECHNICAL KNOCKOUTS.

For a more beautiful environment...
Designed in timeless stainless steel.



Urban renewal...

By respecting the topography and development of the State of Kansas, environmentalist-designer Elpidio Rocha's Center City Mall has added new aesthetic appeal to downtown Kansas City, Kansas.

The highlight of the project is the thirty stainless steel pylons representing the build- and grain elevators of eastern Kansas. Measuring five feet square by twenty feet high, these pylons presented manufacturing problems as unique as their design. Republic's continuous rolled 60" wide sheets helped minimize these problems for Milgo Fabricating Co., Kansas City, Mo. Frames made of carbon steel were coated with epoxy before Type 304 stainless in a #4 finish was applied. Care had to be taken to insure that each sheet was properly aligned before welding. To maintain uniformity of finish and avoid weld marks, the welding was done on the inside.

Enduring art...

Adding beauty to the environment all over the country are the expressionistic sculptures of Kosso Eloul.

Excellent workmanship and the exciting beauty of stainless steel combine to create the geometric shapes which are interestingly poised to reflect the tensions of urban society.

Designed in ENDURO® stainless steel by Milgo Industrial Inc., New York, Eloul's intricate sculptures are examples of fine art's rightful place in the total environment. This beauty will endure. As Milgo president Bruce Gitlin says, "Stainless is a beautiful material. It will look as good twenty years from now as it does today, wherever the sculpture is placed."



For attractive protection...

New York City has a sophisticated new police and fire "Emergency Reporting System" which will greatly improve response to over 300,000 calls for help each year. To contain the system, the city sought maintenance-free alarm boxes to replace the existing painted carbon steel ones.

The answer... the handsome new box shown here, using ENDURO Type 304L stainless steel. This vandal and corrosion-proof box was especially designed for this application by Republic Steel research.



Meeting the challenge isn't new to us at Republic Steel. We're the original Technical Knockout specialists. When you specify ENDURO stainless steels... sheet, strip, bar, billet, special sections, tubing, pipe, wire, plate... from our mill or from your local Steel Service Center, you can count on our involvement.

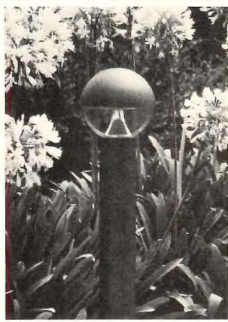
A fact-packed, completely detailed collection of information on the full range of "300 Series" stainless steels is now available. Write Republic Steel Corporation, Cleveland OH 44101. Ask for Adv. 2274.

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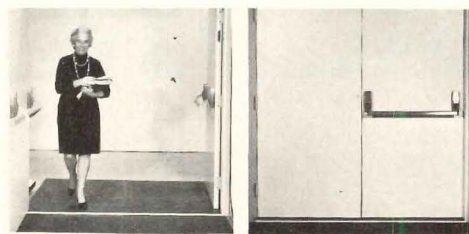


Member Steel Service Center Institute

BOLLARD / This unit, equipped with a 10-in. clear acrylic sphere diffuser with a spun aluminum reflector top and an internal spread reflector, results in efficient, low-brightness lighting. The spherical shape combines with a 5-in. post of heavy-duty aluminum 47 in. high. Base mounting is completely concealed. The bollard is finished in textured black and uses a 100-watt incandescent or mercury vapor lamp. ■ Prescolite, San Leandro, Calif.



Circle 323 on inquiry card



AUTOMATIC FIRE DOOR / UL-labeled, the product consists of two door panels independently controlled by two automatic door operators. This makes it possible to install the doors in interior corridors with the panels swinging in opposite directions. In case of fire, heat and smoke detectors automatically close the doors. ■ Stanley Works, New Britain, Conn.

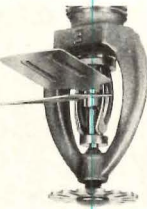
Circle 324 on inquiry card

FIRE HOSE STORAGE / For industrial and warehouse areas, this product has two advantages: it permits the hose to be stored inside the column and out of reach of trucks; and it makes use of floor space otherwise required for access to the usual fire hose station.

The hose rack is designed to hold 100 ft of 1 1/2-in. hose in five folds. Unit is adjustable for installation on 10-, 12-, or 14-in. columns. ■ Seco Mfg. Co., Wauseon, Ohio.

Circle 325 on inquiry card

FAST-ACTING SPRINKLER / An automatic sprinkler designed to go into action almost twice as fast as any similar device, the *Quick-Eee* model features reduced activation time of 51.9 per cent at 135 degrees F. Two heat collector fins assembled on the strut of the sprinkler head account for its performance. ■ Star Sprinkler Corp., Philadelphia, Pa.



Circle 326 on inquiry card

CIRCULAR WASHFOUNTAIN / Contemporary design is combined with high-strength, light-weight bowl in this 36-in. diameter unit. Reinforced polyester molded construction is featured. Production units weigh 80 per cent less than precast stone, yet have a strength-to-weight ratio approaching that of steel, according to the company. Unit serves up to five users with single set of plumbing connections. All units are equipped with integral foot control. ■ Brainerd Corp., Menomonee Falls, Wis.



Circle 327 on inquiry card

Detex security equipment gives you peace of mind,

piece by piece.

Right now, one Detex Exit Control Lock may be all the security you need. As new security problems arise, you can combine Detex equipment, unit by unit, into a complete security network.

Or if you've already started to build a sophisticated system, we can interface with existing equipment to back up weak spots.

Detex Exit Control Locks and Exit Alarms protect unlocked exit doors, bringing pilferage to a howling halt. DENTCO coded-card entry systems keep restricted doors locked to unauthorized individuals. Detex Remote Indicating Panels keep an eye on every security point from a central location.

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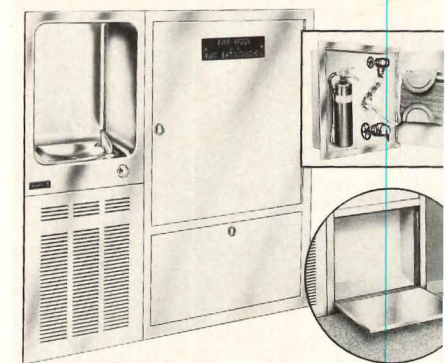
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WATER COOLER-FIRE EQUIPMENT CABINET / A fully-recessed unit is one of a wide variety of stainless steel models offered, featuring a fire extinguisher, fire hose, plus a spacious utility compartment for storage. Removable stainless steel louvered grill conceals and vents refrigeration unit and plumbing. ■ Elkay Mfg. Co., Broadview, Ill.

Circle 328 on inquiry card

more products on page 197

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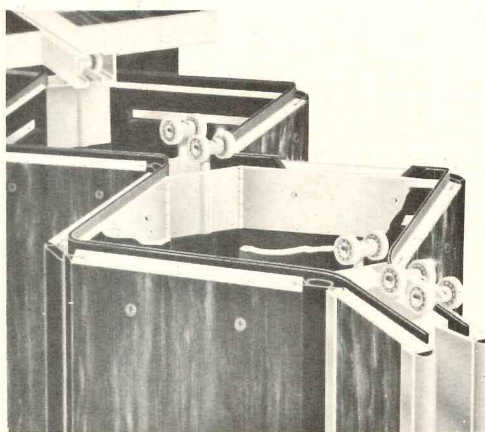
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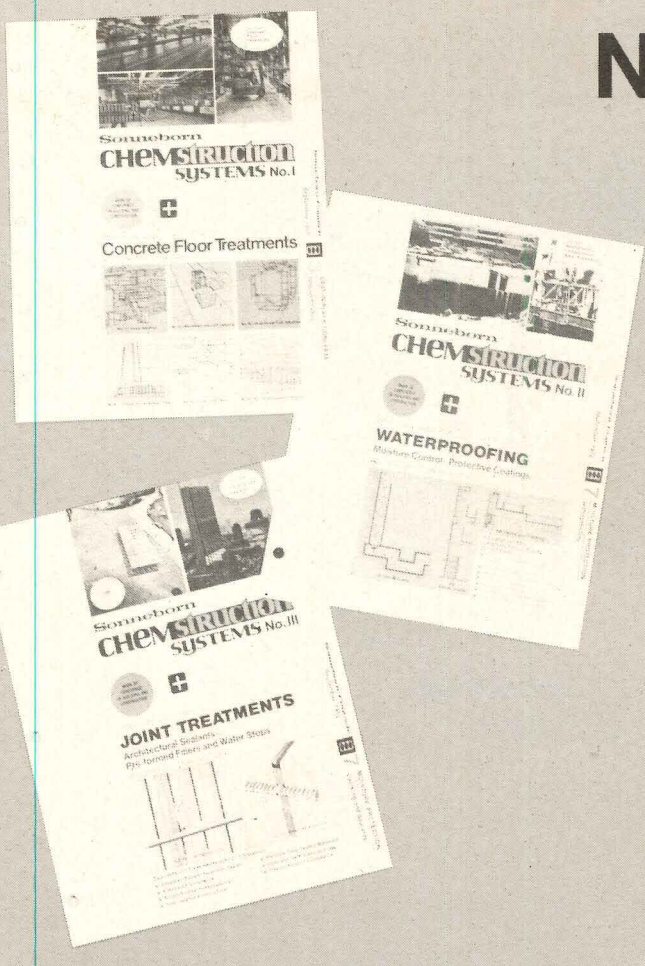
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There's a new way to incorporate sculpture and textural relief in building design. It can be done with Facad®.


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

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

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

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

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

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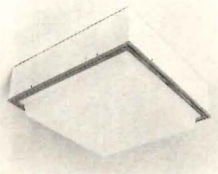
continued from page 204

PARKING GUARD / A simple mechanical device is designed to prevent auto theft and assure reserved parking space. Consists of a galvanized steel stanchion inserted into concrete between two parking places. The tenant unlocks a moveable arm across his parking space with a padlock. Each *Parking Guard* locks two spaces. ■ Clark & Wilkins Co., New City.



Circle 329 on inquiry card

DOOR HID LUMINAIRE / The *Fairfield* commercial luminaire is designed for outdoor covered applications using high intensity discharge lamps. A diffuse acrylic lens reduces brightness contrast with uplight to minimize ceiling contrast. Integrally ballasted, the 2- by 4-ft. unit is 8 3/4 in. in depth. A range of colors is offered. General Electric Co., Hendersonville, N.C.



Circle 330 on inquiry card

INDUSTRIAL LUMINAIRE / An indoor luminaire for HID lamps offers a reflector and optional high-strength *Teflon* film lens for extremely high photometric efficiency. An optional plug-in connector permits the entire integral ballast and luminaire to be quickly connected to or disconnected from the power line by non-skilled labor, if desired. ■ General Electric Co., Houston, Tex.



Circle 331 on inquiry card

COMMUNICATION SURFACE / A line of communication and writing surfaces, called the *Apple* line, features vinyl surfaces bonded to 22-gauge steel or 1/2-in. composite board; in 30- or 250-lb. roll form, 54 in. wide; in eight standard sizes of communication panels, from 18 by 24 in. to 4 by 10 ft. The surface has a lenticular, pebbly surface that is easily cleaned, and non-yellowing. With steel back, it also provides a magnetic surface. ■ Lytel, Inc., Indianapolis, Ind.



Circle 332 on inquiry card

FLUORESCENT EMERGENCY LIGHTING / This multi-function system, driven by electronic circuitry, features maintenance freedom (sealed batteries have a minimum life expectancy of 10 years), high light output with low power drain, and safe low voltage wiring. It is capable of operating in a continuous normally-on mode, making it useful for supplemental lighting. ■ Udec Corp., Waltham, Mass.



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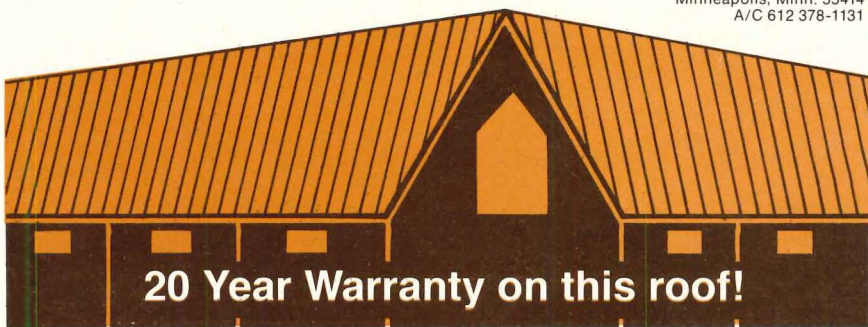
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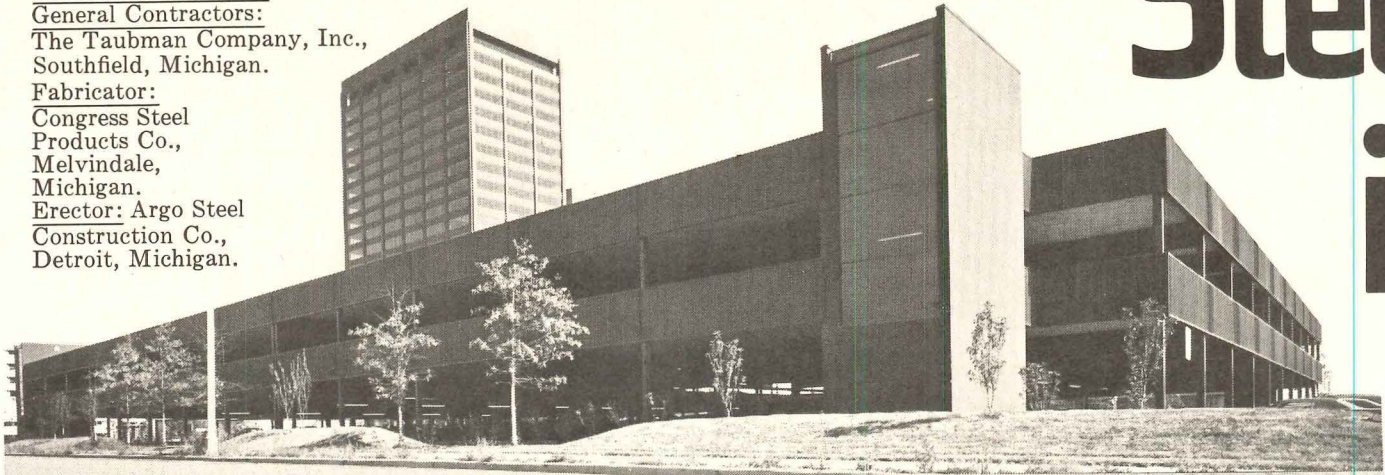
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Owner: T. C. & M. Co., Southfield, Michigan.
Architects: Jickling & Lyman, Architects Inc., Birmingham, Michigan.
Structural Engineers: McWilliam & Keckonen, Inc., Birmingham, Michigan.

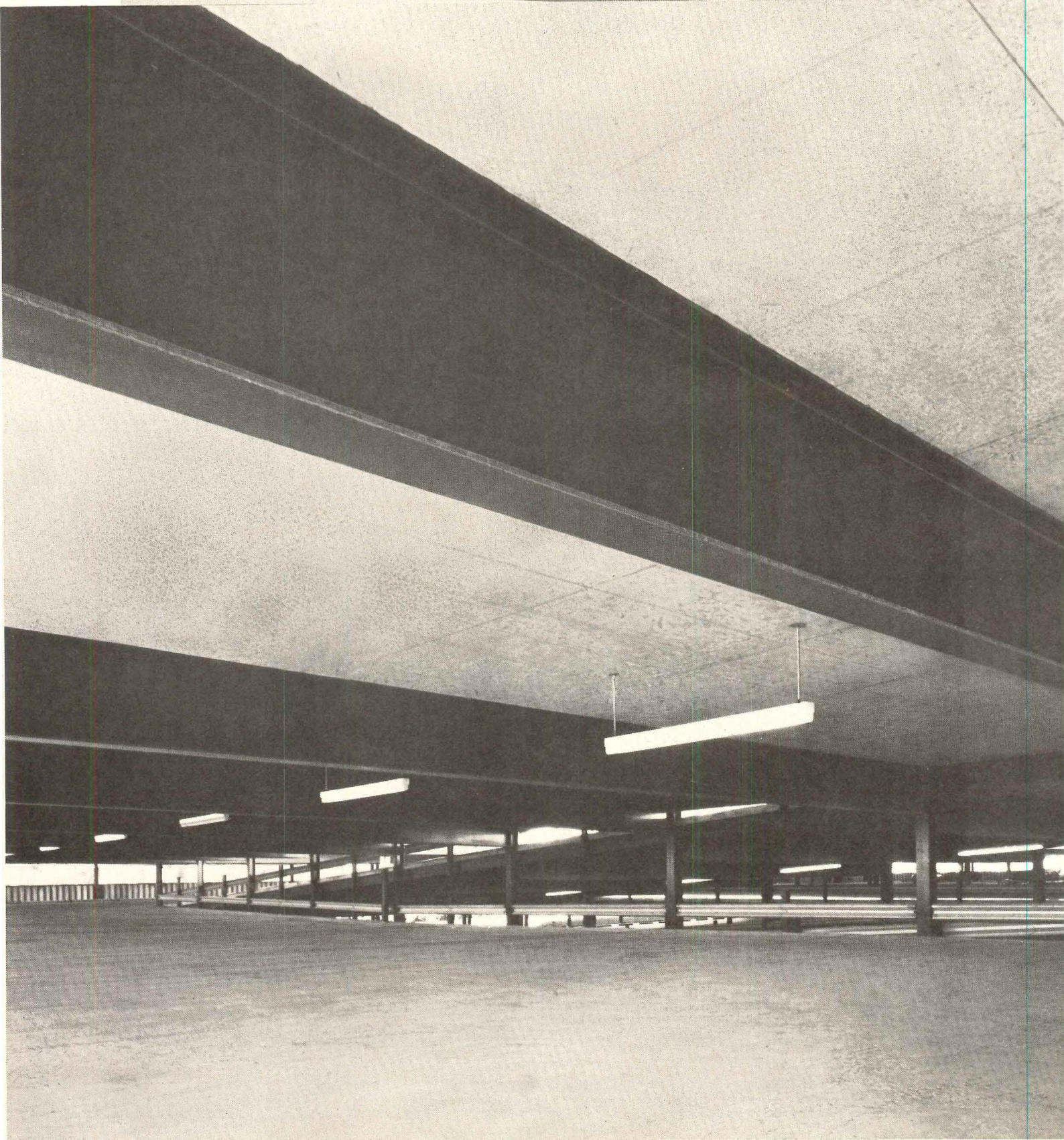
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Steel in



goes to great lengths his parking deck.

(More space for less cost)

More and more open-deck parking structures are being conceived and constructed in steel. The Executive Plaza Parking Deck in Detroit is a case in point.

Steel frame won out over competition—pre-cast concrete and poured-in-place concrete. Mainly because the long-span concept, which is most economical in steel, results in a minimum of interior columns. This allows much more open space, making self-parking easier and attendant-parking more efficient.

The three-tier building has 128,750 sq. ft. of supported parking area. While meeting the City of Detroit's requirements of a 75 psf live load, the building's structural weight is low. For the most part, the structural steel is USS EX-TEN 50 (ASTM A572 Grade 50) high-strength low-alloy steel. Certain lighter members are A 36. Naturally, the lighter the structure, the lighter the foundations. More savings!

The entire structure was finished in five and a half months at a total cost of \$910,000.

Not only did steel frame construction lower the total cost by lessening the time it took to build, but it also permitted the owner to begin realizing a rental income much sooner.

With all these factors considered, steel frame turned out to be the most economical system.

Here is another example of how an income-producing facility like an open-deck parking structure can be erected fast in steel and meet with great satisfaction—from a functional, economic and aesthetic point of view.

Minimal fire danger! Results of a recent extensive survey indicate that losses resulting from fires in this kind of structure are minimal. Realizing this, the City of Detroit permitted a deviation from their existing Building Code. With no fire protection necessary, costs were cut considerably. It is interesting to know that elimination of fire protection can mean a saving of as much as \$1 per square foot in steel parking decks.

Let us help you program your next garage in steel. For a more complete story

STRUCTURAL REPORT (ADUSS 27-5779-01). Also, you might be interested in our Technical Report on Steel Frame Parking Structures (ADUSS 27-5227-02). For copies of these reports or to find out the many ways in which we can help you program your next garage, call our nearest sales office and ask for a USS Construction Marketing Representative. Or write to U.S. Steel, Box 86, Pittsburgh, Pa. 15230.

Construction Details

Description: A rectangular, three-level structure with interior, two-way straight ramps—open on all four sides. A parking capacity of 745 cars. All floor decks designed with a drainage slope. The slope is downward from the outer edge of the deck toward the building center—a total drop of 18 inches.

Building Description:

Dimensions: 311' -2½" x 252' -0"
Height: 2 tiers (above the on-grade parking level)
Floor to Floor Heights: 10' -6"
Capacity: 745 cars.

Gross Areas:

Ground level (including unenclosed space):	98,300 sq. ft.
Second level:	78,400 sq. ft.
Roof level:	78,400 sq. ft.
TOTAL	255,100 sq. ft.

Occupancy Type: Open-deck parking garage.

Applicable Code: City of Detroit Building Code

Design Loads: 75 psf live loads
82 psf dead loads
20 psf wind load

Structural Steel:

Total weight: 530 tons.
6.75 pounds of steel per square foot of supported structure.

All A572 Grade 50 except details.

All beams and girders are composite designed non-shored construction.

All bolts ASTM A325 High Strength.

Bracing: Semi-rigid moment connections in selected bays.

Floor Slab: 6" thick two-way post tensioned 4,000 psi stone concrete with supplemental reinforcing over 62 ft. girders.

Exterior Walls: Extruded anodized aluminum. Painted concrete block.

Foundations: Spread footings.

Elevators: 1 Hydraulic type 1,500 lb. passenger elevator.

USS and EX-TEN are registered trademarks.

USS United States Steel

New Trane Two-Stage Absorption Water Chiller

Reduces energy consumption 30-40%

Against a background of rising energy costs and the prospect of energy shortages, The TRANE Company announces an absorption water chiller that consumes up to 40% less energy than previous absorption machines.

Operating economy

Typical fuel costs for a single-stage absorption machine over a 3 to 5 year period equal the cost of the machine itself. TRANE's new Two-Stage Absorption Water Chiller uses up to 40% less energy per ton of refrigeration. This is made possible by the two-stage concentrator design, in which the heat of refrigerant generated in the first stage concentrator generates additional refrigerant in the second stage.

The two-stage design provides another economy. It reduces the amount of heat per ton of refrigera-

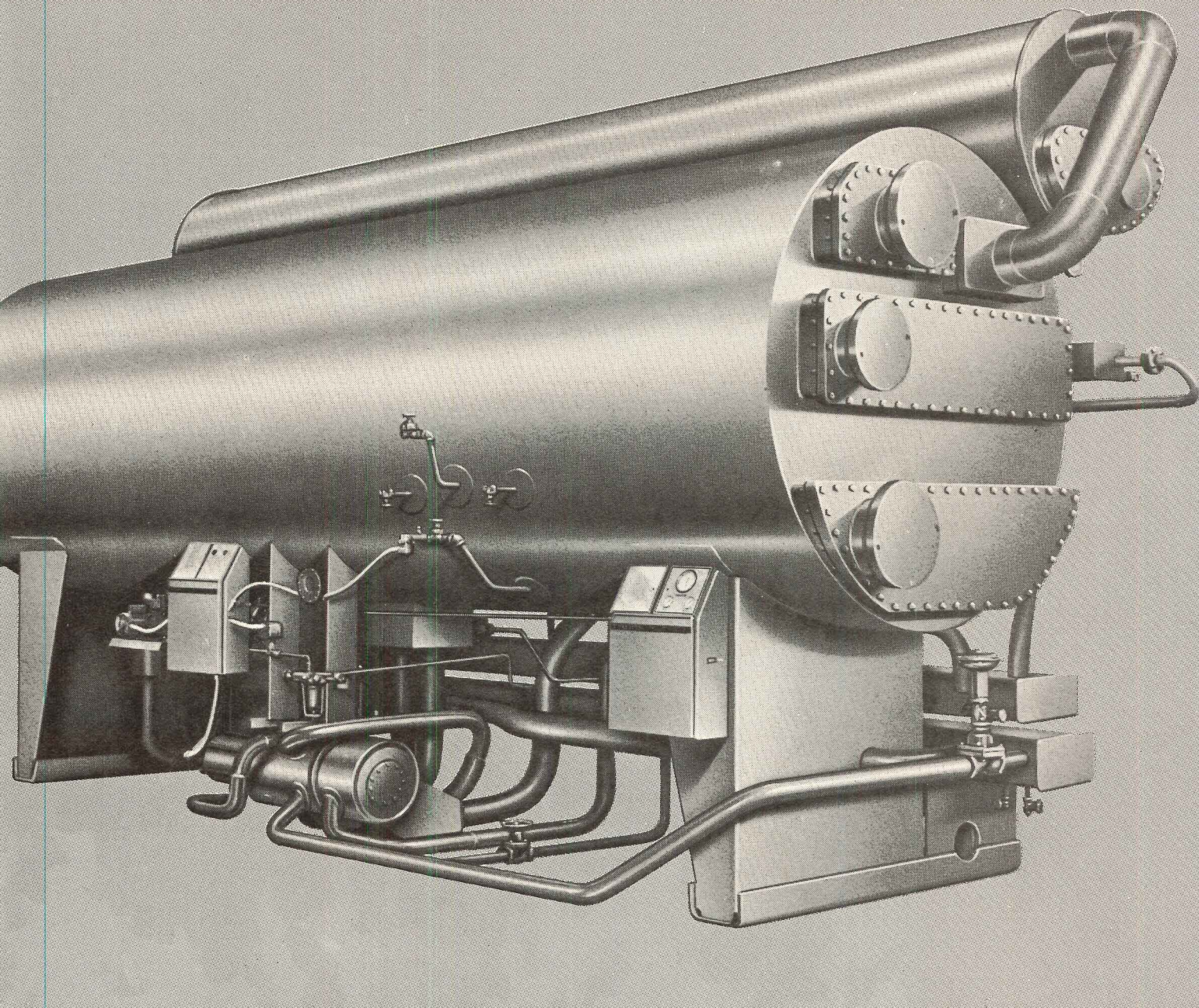
tion rejected to the cooling tower by 15-20% compared to a single-stage design. This allows selection of a smaller tower for a given capacity chiller.

Energy conservation

The prospect of energy shortages in the near future has made it important that the air conditioning industry respond to the need for systems and equipment that conserve energy. The TRANE Two-Stage Absorption Water Chiller, with its substantial increase in efficiency over single-stage designs, is responsive to this need.

Reliability and ease of maintenance

The new Two-Stage Absorption Water Chiller is built to the standards established by TRANE's s-



Two-stage concentrator design for new TRANE Two-Stage Absorption Water Chiller reduces energy input (compared to single-stage absorption water chillers) by a minimum of 30%, and often as much as 40%. And rejects 20% less heat to the cooling tower.

ge machines. For example, use of a unitized pump design and the feature allowing complete pump service without draining solution from the machine have been retained. Also, the two-stage design continues the use of corrosion resistant cupro-nickel tubes in the absorber section.

Unit sizes

TRANE Two-Stage Absorption Water Chillers operate on 125 or 150 psig steam, and are available in six sizes from 590 through 1,060 tons.

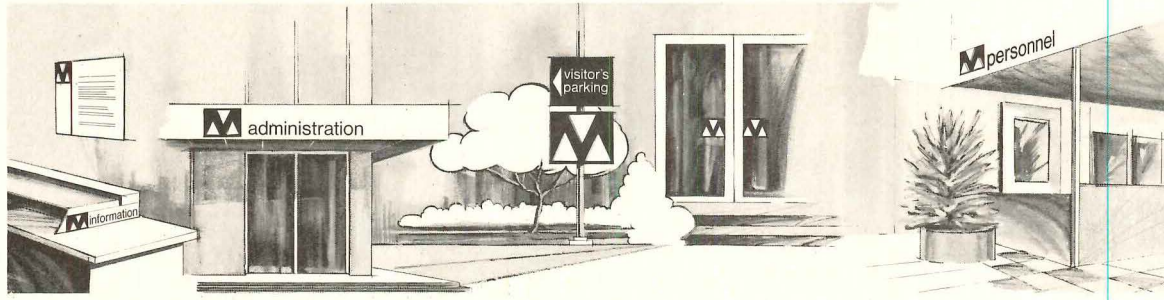
Start up and service

The startup of each machine is supervised by a service engineer from one of the over 80 TRANE Service Centers throughout the nation.

The TRANE Company can supply all major prod-

ucts for your building air conditioning needs—including fire-tube and water-tube packaged boilers. Sales engineers in over 120 sales offices in major U.S. cities can provide selection and application assistance on all these products. For further information, contact your nearby TRANE sales office or write The TRANE Company, Commercial Air Conditioning Division, La Crosse, Wisconsin 54601.

TRANE[®]
AIR CONDITIONING



more than just identification.



IDENTIFICATION SYSTEMS

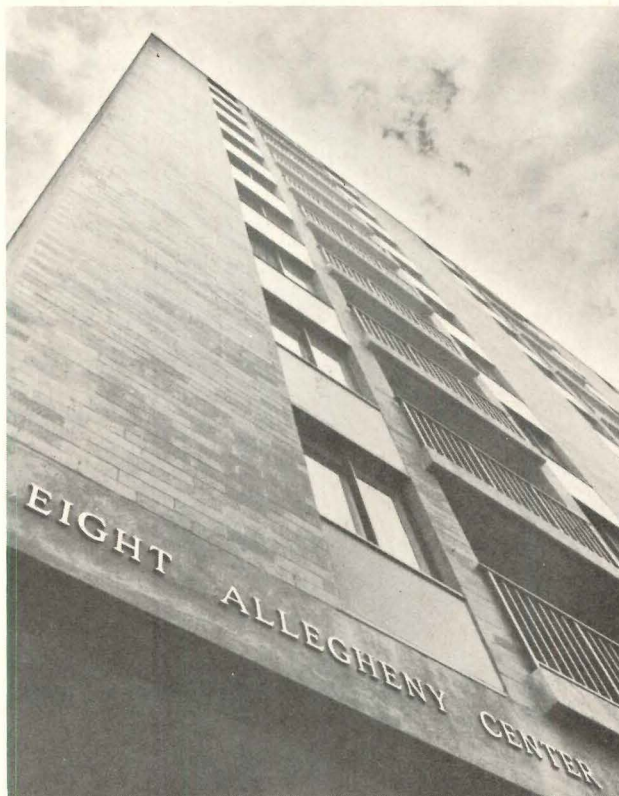
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Any job you undertake should include unified identification. Inside and outside. Throughout the entire building or the entire project.

Make Matthews your single source for identification. With systems responsible for design, manufacture and coordination. To help you achieve identification that blends the aesthetic with the functional. And reflects favorably on your reputation.

Beyond metal lettering alone, Matthews offers 25 different styles. In bronze or aluminum. Sizes, finishes and baked enamel colors for creative unity in exterior and interior applications. Custom-cast trademarks, symbols, emblems . . . handsome tablets and plaques . . . metal signs and nameplates. Even superb, limited-edition bronze sculpture for courtyards, foyers, waiting rooms.

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For more data, circle 132 on inquiry card

**Atlanta's C & S Bank
protects money.
All-weather Crete
insulates the bank
and the money.**

When it comes to roof deck protection, Atlanta's C & S Bank has it! All-weather Crete insulation. The insulating dry fill that's compacted in place. No seams. Just one monolithic blanket that's sloped to the drains providing thermal protection as well as positive water drainage. All-weather Crete, applied by licensed applicators, is one of those unique building materials that provides the architect with an outstanding, trouble-free roof deck insulation, the contractor with a fast job (no curing with All-weather Crete), and the owner with a maintenance-free roof deck that protects and saves fuel costs year after year after year. Get the facts — see why most of this nation's outstanding architectural achievements utilize All-weather Crete for roof deck and plaza insulation. Contact Silbrico Corporation, 6300 River Road, Hodgkins, Illinois 60525, (312) 735-3322, or see Sweets for the address of your local applicator.

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C & S Bank, Atlanta • Aeck Associates, Inc., Architects • Alexandre Georges, Photographer





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Come fly with us.**

Ask architects and specifiers. When the job calls for carpeting, the specs call for BRUNSLON® static-control yarn in the carpet construction.

BRUNSLON rates high for lots of down-to-earth reasons. It's America's #1 static-control system, and the best choice you can make for your clients. Over 50 million square yards of carpeting with BRUNSLON have been specified and installed. And only BRUNSLON comes in such a wide choice of carpet lines—over 300 lines of contract and residential carpeting, in all colors, patterns, fibers. So, let your fancies take flight.

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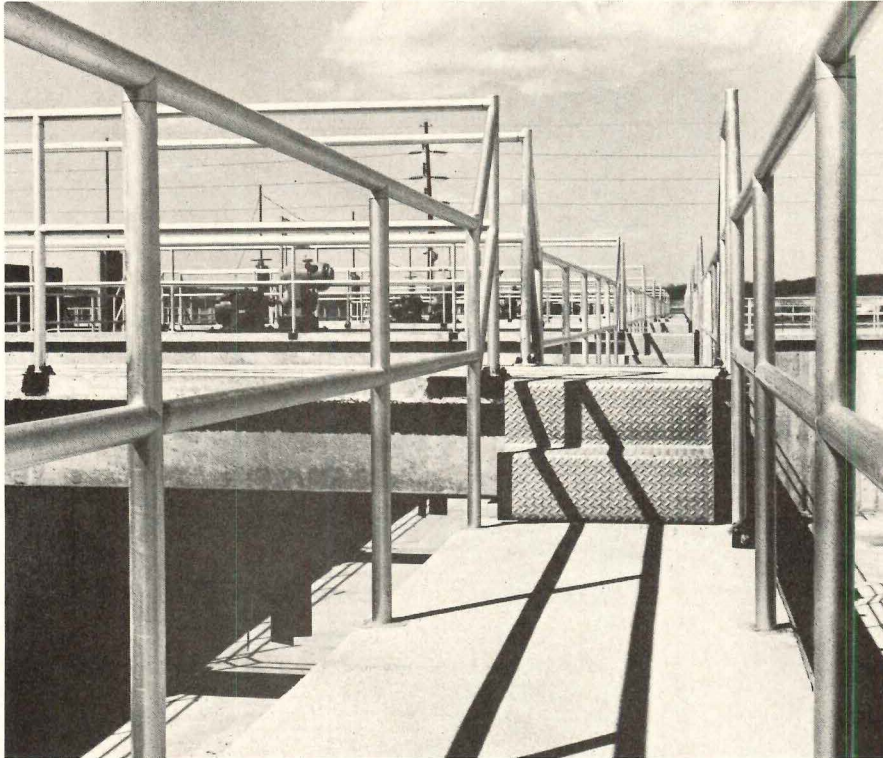
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Saving Money the no-red rust way. With Reynolds Aluminum ReynoRail.



Corrosion-resistant railing at a competitive price? Most cities demand it for their sewage treatment plants. And that's exactly what light, strong Reynolds Aluminum ReynoRail provides. It's a new concept in railing that eliminates welds while using only a few standard parts. Installation is quick, simple—and economical. And so is maintenance. There is no red rust: the special anodizing coating will fight off corrosion for years.

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Catalogs in Sweets 1973 Architectural, Industrial Construction and Plant Engineering Files.



For more data, circle 135 on inquiry card

For more information circle selected item numbers on Reader Service card, pages 267-268.

GLUE-DOWN CARPET SPEC GUIDE / An architectural guide specifications for glue-down installation of jute-backed carpets, issued by the Jute Carpet Backing Council, lists the reasons why jute's porosity and affinity to standard adhesives are essential to successful and economically feasible no-pad glue-down installations. ■ Jute Carpet Backing Council, New York City.

Circle 400 on inquiry

TENNIS COURT SURFACING / The playing qualities of *Elastaturf* synthetic tennis court surfacing material are described in a six-page brochure, illustrated in photos and text; wearability, resiliency, and controlled surface texture are discussed. ■ Borden Chemical, Div. of Borden, Inc., Columbus, Ohio.

Circle 401 on inquiry

TRAFFIC DOORS / The use of the long-lasting shock-absorbing doors in various food operations including bakeries, beverage plants, candy companies and cheese and dairy facilities is detailed in the four-page brochure. This illustrated brochure contains information on design and construction features and applications. Also supplied is data on three styles of 28 styles available. ■ Rubbar Door, Cambridge, Mass.*

Circle 402 on inquiry

SHOCK ABSORBER DOOR / A four-page bulletin describes a double acting door designed to withstand many years of daily punishment by fork lift trucks. The bulletin provides detailed data on the door's use, construction sizes, limitations, installation, guarantee and maintenance. ■ Clark Door Co., Inc., Cranford, N.J.

Circle 403 on inquiry

REDWOOD DIVIDERS / Redwood dividers for townhouse units provide a natural, private garden effect for indoor-outdoor living. Knot and sapwood grades of redwood are highly weatherable and easily maintained. More information is in a 12-page color booklet. ■ California Redwood Assoc., San Francisco, Calif.*

Circle 404 on inquiry

RESILIENT FLOORING / The company has developed a comprehensive flooring program geared to resilient replacement needs of the building modernization market. The "Contract Flooring Service Program," compiled in an indexed 3-ring vinyl binder, may be updated throughout the year with the latest *Vinylflex* and *Vinylglo* flooring line catalogues. Installation, maintenance and specification sheets supplement the guide. ■ GAF Corp., New York City.

Circle 405 on inquiry

TEMPLATES / A 1973 catalog of templates and lettering guides is now being distributed free upon request. It fully illustrates more than 200 professional templates, including many new 1973 additions. Templates are grouped for easy reference: general lettering, ellipses, electrical, mechanical, architectural, processing, programming, metric and others. ■ RapiDesign, Inc., Burbank, Calif.

Circle 406 on inquiry

*Additional product information in Sweet's Architectural File

more literature on page

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.



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ANNOUNCING

A TEST GUIDE FOR PROFESSIONAL EXAM CANDIDATES

THE 1973 ARCHITECTURAL REGISTRATION HANDBOOK

INDISPENSABLE INFORMATION
for candidates taking the new Professional Exam

REQUIRED READING for all practitioners

The first "test guide" ever sponsored by the National Council of Architectural Registration Boards will shortly be available to assist candidates taking the December 1973 Professional Examination for architectural registration. The NCARB is the organization that prepares the examination which is administered by registration boards who grant individual state registration to those candidates who pass.

Although the primary purpose of this "test guide" is to provide specific guidance for those taking the examination, it also sheds light on the whole institution of registration and licensing as a professional prerequisite. Architects already in practice, both in the U.S. and abroad, could benefit professionally from having their own copy.

The Architectural Registration Handbook features:

- INSTRUCTIONS AND QUALIFICATIONS for applying for the new Professional Examination—as well as the equivalency examination.
- THE MODEL EXAM—includes questions similar to those on the actual Professional Examination which tests candidates' knowledge and judgement in the areas of environmental analysis, architectural programming, design and technology, and construction.

- A GLOSSARY OF TERMS AND IDEAS with which candidates must be familiar to deal effectively with each problem area.
- A BIBLIOGRAPHY OF RECOMMENDED READING AND REFERENCES encompassing the periodicals and books which define the general body of knowledge upon which the Professional Examination is based.
- ANSWERS TO SUCH QUESTIONS AS: How will the Professional Examination compare with the Model Exam? . . . How will the new examination be structured? . . . graded? . . . scored? . . . Is guessing a good idea? . . . Is there a pre-determined pass/fail point? . . . What scores will be reported and to whom? . . . Will credit be given for passing individual parts?

In addition, the Handbook describes the philosophy of the new Professional Examination, views the changing role of the architect in today's society, and how the NCARB intends to help the professional after he is registered.

Never before have candidates for professional registration had an opportunity to purchase a test guide specifically prepared by NCARB. This 144-page, hardcover handbook is of the utmost importance to anyone taking the Professional Examination and will be of intense interest to all educators and practitioners.

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Who likes to think about...talk about or do anything about refuse disposal systems. But if we don't, the result is likely to be an ecologically unsound building, which, at its best, is a bad neighbor, spewing smoke, soot and ashes from an incinerator...or pouring loose refuse into an alley to blow, scatter or attract rodents and pests. There are better ways and less expensive ways if we start at the planning stage. Whose responsibility? We'd like to share it by providing information and counsel on designing an ecologically sound refuse system. We have a library of "how-to" manuals and a Dempster Consultant near you ready to lend a helping hand.

CALL TODAY
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craftsmen respect your new ideas. They appreciate your different approach. And more important, Watson can produce these ideas to your specifications

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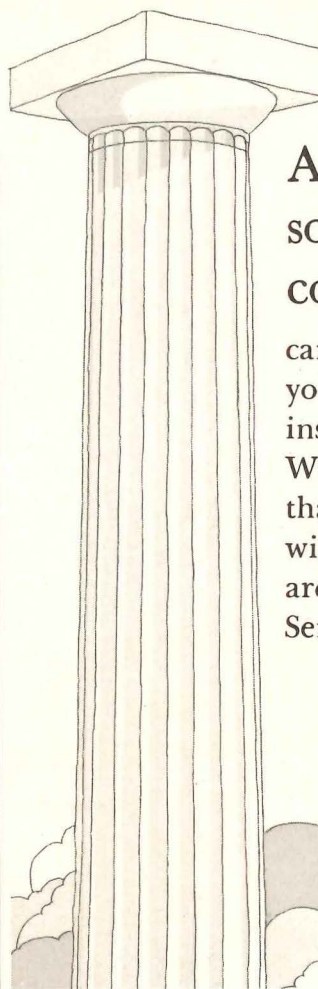
Furniture Systems Division



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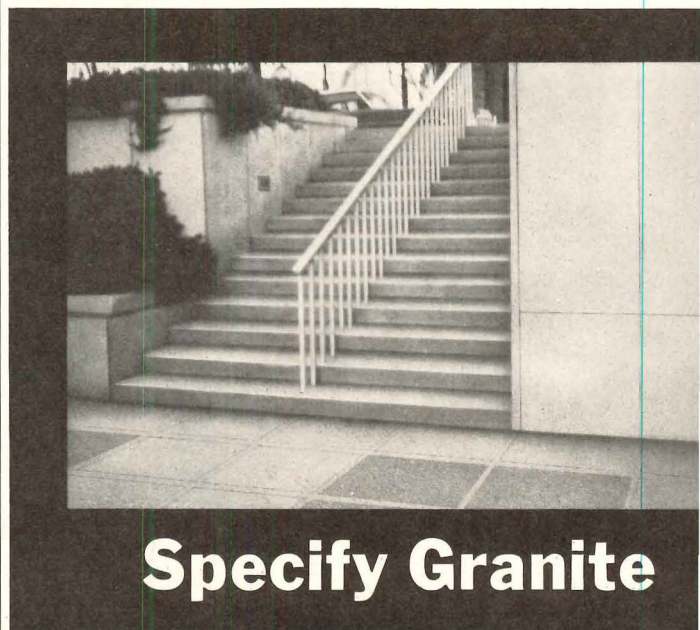


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can solve 90% of your sound system installation problems. We can support that statement with our new architect's data file. Send for it today.

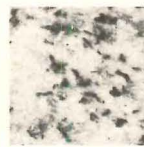
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Specify Granite

The Life of Georgia Building, Atlanta, is a striking example of the limitless design possibilities and enduring dignity of Mount Airy white granite. Granite withstands the rigors of time and weather, and additions made years later match the original granite perfectly. Write for details.



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If you haven't got a Hager, you haven't got a hinge.

Don't get caught with your hinges down just because you didn't specify Hager! If you're looking for someone to give you a "deal" on a second-rate hinge, don't come to us. Hager

manufactures only the finest, most reliable hinges and door hardware products. Over the years Hager has had many "firsts". For the full story, simply turn the page.



Everything hinges on Hager.

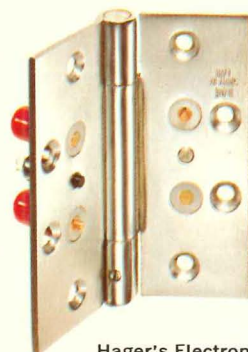
If you insist on quality, insist on Hager hinges.

For many years, Hager has built a reputation as an innovator and manufacturer of fine quality products. Hager engineers have developed an impressive number of industry firsts, such as the handsome and efficient Tri-Con hinge, the first three-knuckle, concealed ball bearing hinge. The Tri-Con stands as a shining example of Hager's leadership.

Striving to meet the design and engineering needs of architects and builders, Hager has always led the way with innovative products known for their strength, stability and style. Hager designed and manufactures the only two pivot hinges that don't require beveling of flush mounted doors — the rack and pinion action Raconteur and the cam action Camtrol.

When building owners required central security systems, Hager created the first Electronic Control of Openings (ECO) to provide architects and builders with a simple, inexpensive traffic control and security system. ECO was a direct result of another Hager first, the Electronic Switch & Contact hinge, which enables one central security station to monitor, lock and unlock every door connected to the ECO System.

For the whole story, write Hager Hinge Company, 139 Victor Street, St. Louis, Mo. 63104. In Canada, Hager Hinge of Canada, Ltd.



Hager's Electronic Switch and Contact hinge.
PAT. NO'S. 3,659,063-3,715,537



Hager's Electronic Control of Openings (ECO) console.



Hager's center hung Camtrol hinge.
PAT. NO. 3,657,766



Everything hinges on Hager.



Hager's self-adjusting Raconteur hinge.
PAT. NO. 3,394,428



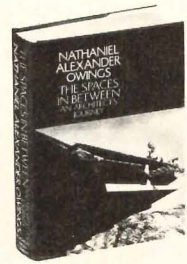
FREE FENCE SPEC KIT saves time, trouble. Invaluable for planning chain link fencing. Kit includes drawings on styles, wire gauges, gates, fittings, framework. Also includes lab reports, work sheets and specifications. Page® aluminized fabric lasts 3-5 times longer than the best of galvanized. Send for your kit today. Page Fence Division of Acco. P.O. Box 430, Bridgeport, Conn. 06602.

For more data, circle 144 on inquiry card

HEALTH CARE FACILITIES," a 16-page report from Rixson-Firemark, Inc., will be released this month (May). This publication reviews the increasing demand for improved patient protection and new building code changes . . . details the application of contemporary early-warning and smoke control technology in hospitals and nursing homes . . . reports the findings of the recent "Project Corridor" tests by the California State Fire Marshal's office . . . and, in a special technical section, presents guidelines for the specification of fire/life safety and door control equipment. The publication is available from Rixson-Firemark, Inc., 9100 W. Belmont, Franklin Park, Illinois.

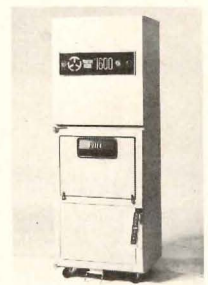
For more data, circle 146 on inquiry card

THE SPACES IN BETWEEN: An Architect's Journey is the autobiography of Nataniel A. Owings, one of the founders of Skidmore, Owings and Merrill, who have designed many innovative skyscrapers and such total communities as Oak Ridge. It's just out, and it is, says *Publishers Weekly*, "an insider's account of that firm's growth and its activities." "It's as much fun, almost, to read Nat Owings as it is to travel with him . . . His ideas about our cities of the future are inspired"—John Otis Brew. Illustrated with photos. At your bookstore. \$8.95. Houghton Mifflin Co.



For more data, circle 145 on inquiry card

PORTABLE SOLID WASTE AND REFUSE 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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More Bounce To The Ounce.

The plushest carpeting isn't as plush as it could be with separate padding. Padding increases plushness. So don't specify carpeting without padding.

carpet cushion council

For more data, circle 148 on inquiry card

At last! A wall system that can match your imagination!

Solid hardwood prefinished wall planks

Random width, random length genuine solid hardwood wall planks, lovingly prefinished, in a choice of 13 woods with the full natural beauty and richness that no imitation can match. Send today for Designer's Sample Kit containing 13 full-size sample species, textures and finishes.



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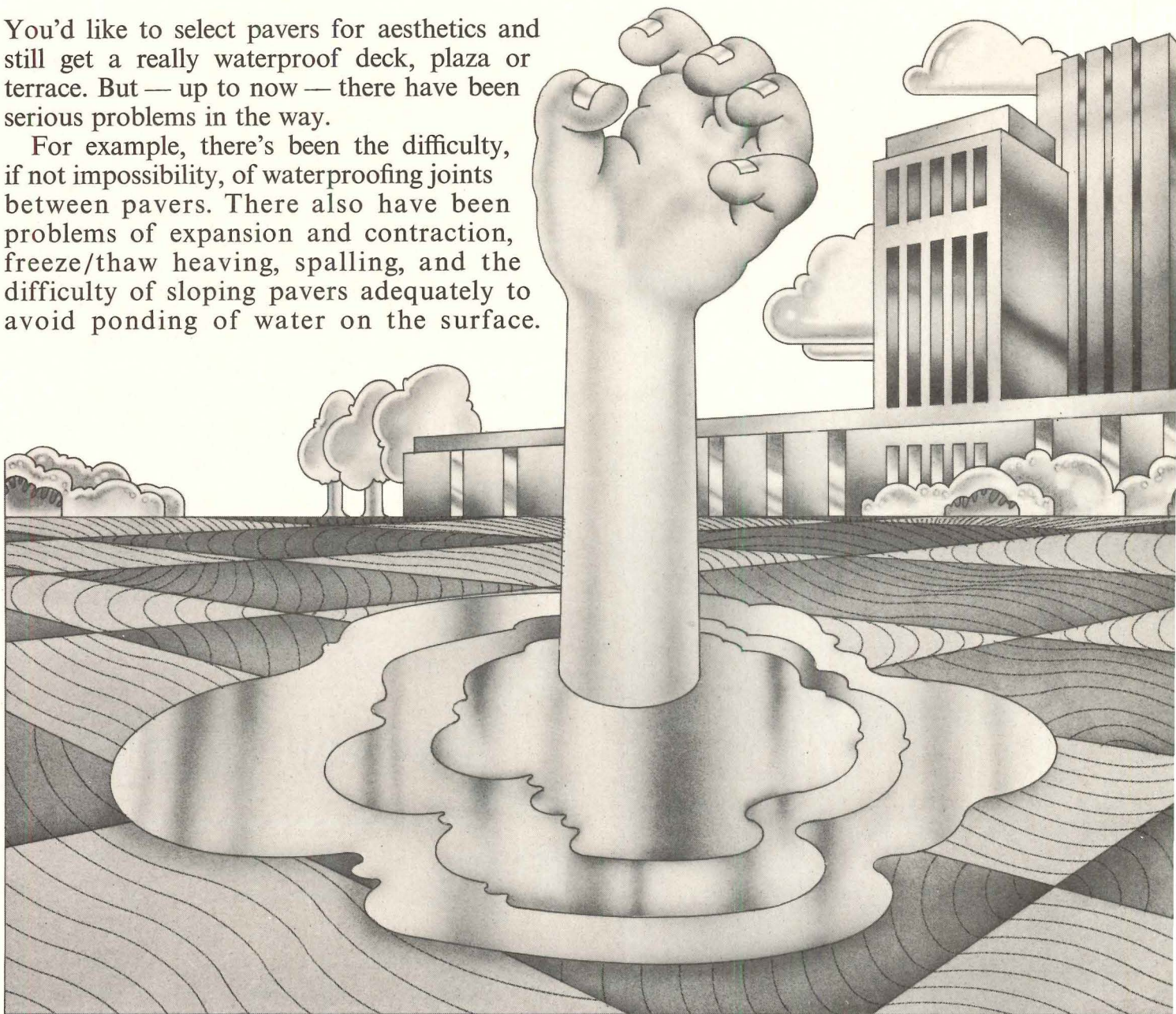
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For more data, circle 149 on inquiry card

How to keep a beautiful plaza from drowning.

You'd like to select pavers for aesthetics and still get a really waterproof deck, plaza or terrace. But — up to now — there have been serious problems in the way.

For example, there's been the difficulty, if not impossibility, of waterproofing joints between pavers. There also have been problems of expansion and contraction, freeze/thaw heaving, spalling, and the difficulty of sloping pavers adequately to avoid ponding of water on the surface.



One solution could be laying your pavers in a leveling bed spread over the waterproofed surfaces. The trouble here is the necessity for surface drains, which don't exactly contribute to an aesthetically pleasing job. A second problem is the settling or wash-out of this setting bed, which causes the pavers to shift.

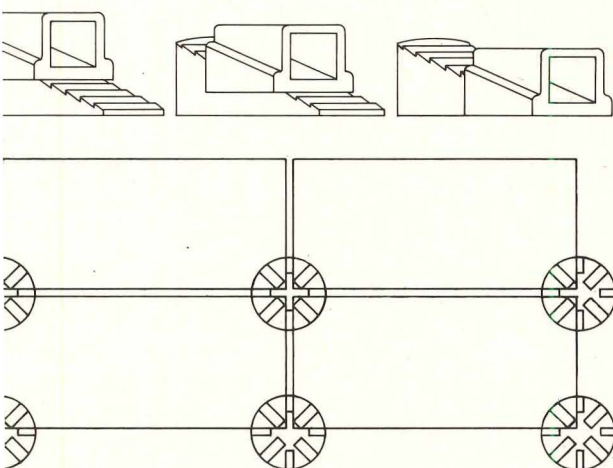
You can eliminate both the aesthetic and technical drawbacks by raising your traffic surface above a suitably waterproofed structural slab so water can run down through the joints between pavers, and be carried off by drains in the structural slab. With this method, waterproofing your structural slab is simple — especially when you use our Tremproof® Liquid Polymer, which is cold-applied and adheres to both vertical and horizontal surfaces to form a flexible, seamless blanket.

But how do you raise the pavers above your waterproofed surface? Till now, the most common way was casting concrete pedestals. But this job is cumbersome, time-consuming and requires individual shimming of the paver corners.

Now we have developed an uncomplicated, economical device called the KingPin™. It's an adjustable pedestal that goes a long way toward simplifying the job of installing pavers.

How KingPins save time.

Once the waterproofing has been applied to the structural slab and covered with a protection board, you simply place KingPins on your protection board. Then you set the KingPin to the approximate height you need, making finger-adjustments as you set the pavers to allow for deck or paver irregularities. Pavers line up instantly using the KingPin controlled-height spacers. KingPins work equally well on rigid insulation.



KingPins are tough.

When you use KingPins, your only load limit is the strength of your pavers. KingPins can take up to 10,000 pounds with zero deformation; And because they are high grade plastic polymer, they won't rot, crack, melt or absorb water in normal use.

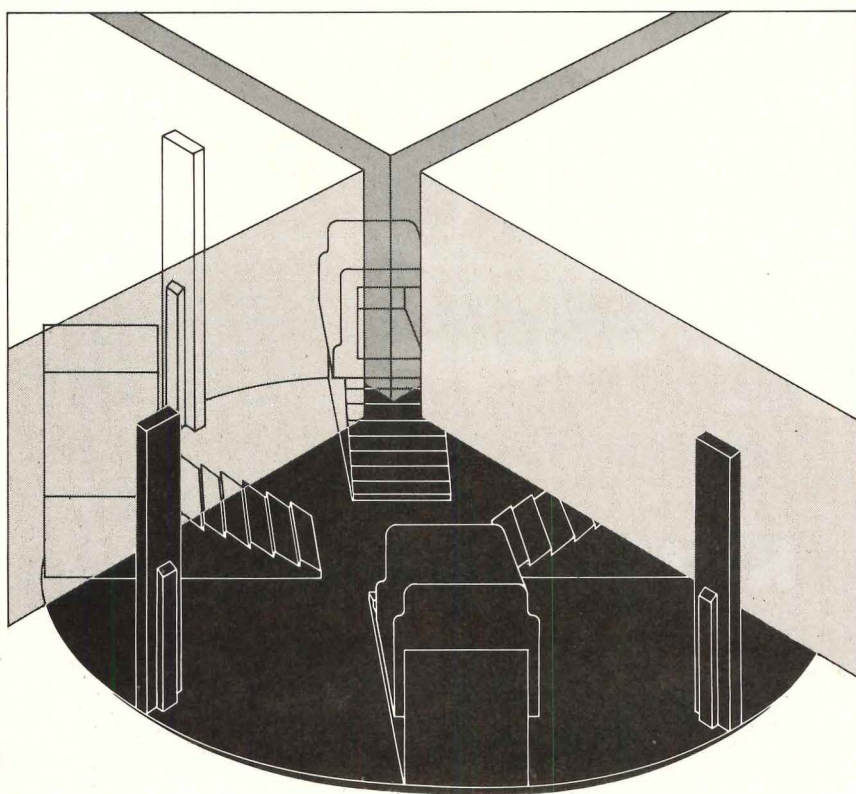
Why jobs look better.

When you use KingPins, design freedom is almost unlimited. You don't need surface drains. You don't need joint sealants. Joint size is controlled, for beauty. Each paver will be drained so there'll be no ponding. When maintenance is needed below the surface, just lift the pavers off the KingPins and out of the way. When the repair is done, your plaza looks as good as new, without patching.

One more thing. If you have any caulking, glazing or waterproofing problems, your Tremco man can help. For more than 45 years, our business has been providing top-quality leakproof systems and products such as our job-proven sealants, MONO®, DYmeric® and Lasto-Meric®; and our roof-edging system, Tremline™.

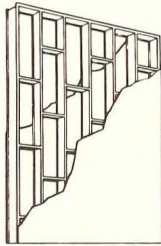
The Tremco Manufacturing Company, Cleveland, Ohio 44104. Toronto 17, Ontario.

TREMCO®
The water stoppers



KALWALL®

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



Patented

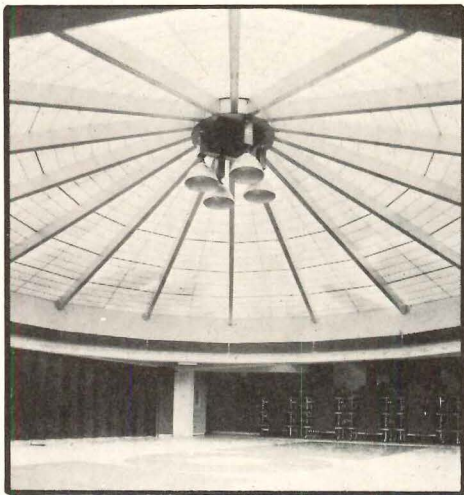
THE MIRACLE SANDWICH

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.



2¾" 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 151 on inquiry card

OUTDOOR LIGHTING CATALOG / A Mini-Mansard 6½ by 16 in. for secondary entrances, apartments, etc., has been added to the mansard line of cast aluminum lanterns crafted by the company. Designed to coordinate with the mansard, elongated mansard and shed roofs, these lanterns range from the mini-scale to an 11 by 42 in. vertical envelope. A 58-page 1973 company catalogue is offered without charge. ■ Sternberg Mfg. Co., Chicago, Ill.

Circle 407 on inquiry card

REFLECTIVE GLASS DESIGN / Architectural reflective glass as a design medium is described in 16-page booklet containing a word-and-picture essay, as well as performance data for the wide range of reflective products. The new architectural glasses have an ultra-thin transparent metallic coating that mirrors a building's surrounding and reflects the sun's brightness and heat for comfortable interiors and more efficient energy consumption. ■ PPG Industries, Pittsburgh, Pa.*

Circle 408 on inquiry card

MODULAR BUILDING SYSTEM / The company has just issued its 1973 condensed architectural catalog describing its latest pre-engineered, pre-fabricated MOPANCO insulated modular panel building system for efficient and economical erection of refrigerated plants, cold storage warehouses, freezers, coolers, environmental control and other low temperature structures; also for curtain walls. ■ Modular Panel Co., New Bedford, Mass.*

Circle 409 on the inquiry card

RACK STORAGE SYSTEMS / Personalized solutions to rack storage systems, narrow aisle storage, and specially-designed material handling equipment are offered in a new brochure, illustrated with installations. ■ Hartman Engineering/Manufacturing, Victor, N.Y.

Circle 410 on inquiry card

STORAGE SYSTEM CONTROLS / A new booklet describing three levels of control sophistication now available for high-rise automated storage systems employs pictures, diagrams and color to explain the basics of these controls—designated *local automatic*, *remote automatic*, and *computer control*. ■ Clark Equipment Co., Battle Creek, Mich.

Circle 411 on inquiry card

DOCKBOARD BULLETIN / A 30,000-lb. mechanical dockboard is presented in a four-page brochure explaining why increased weight of unitized loads, use of heavier, short wheel-based fork lift trucks and multi-shift loading operations have made the 30,000-lb. capacity dockboard a necessity for many dock operations. ■ Kelley Co. Inc., Milwaukee, Wis.*

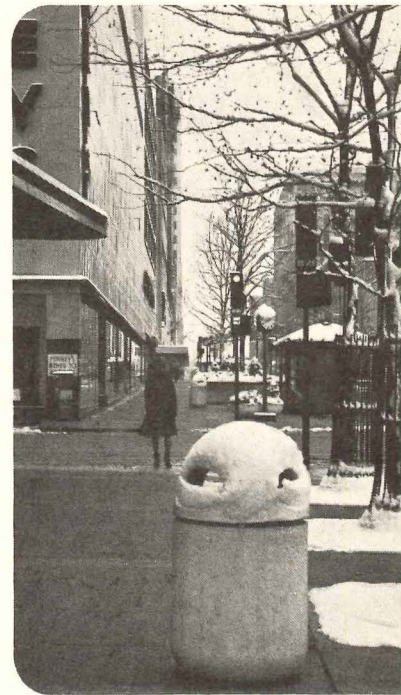
Circle 412 on inquiry card

DIAZO AND MICROFILM / A reproduction equipment brochure describes a line of diazo printers and microfilm reader/printers. Diazo equipment shown ranges from high production, fully-automated print, fold and collate systems to low-volume, high-efficiency print-only machines. All diazo products utilize a pollution-free developing method which eliminates odors, fumes and the need for venting. ■ Oce-Elliott, Chicago, Ill.

Circle 413 on inquiry card

*Additional product information in Sweet's Architectural File

more literature on page 258



easy heat® SNOW MELTING SYSTEM HELPS MINNEAPOLIS MERCHANTS

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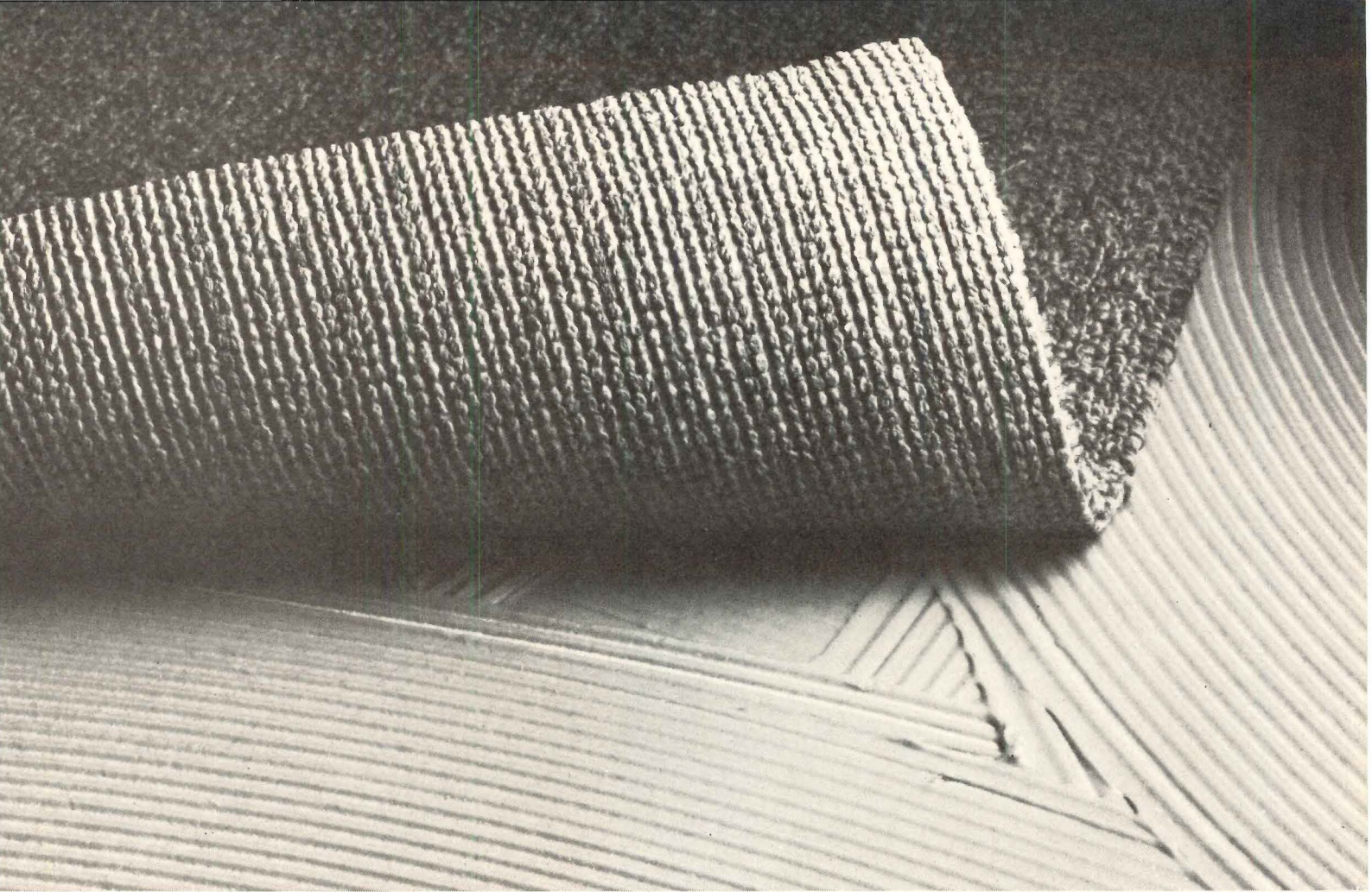


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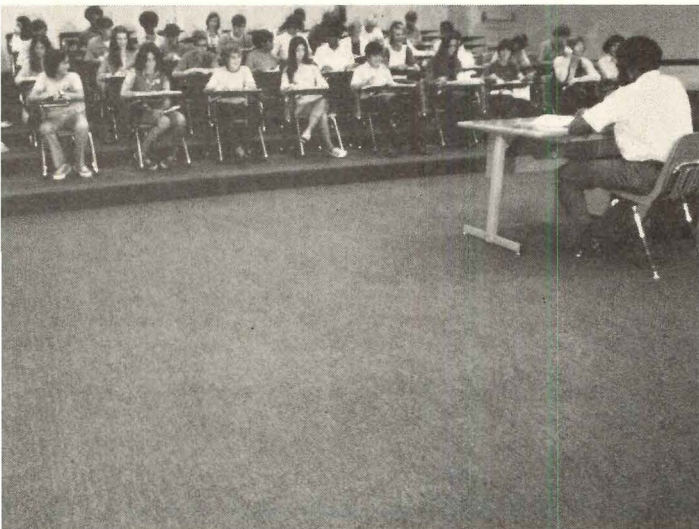
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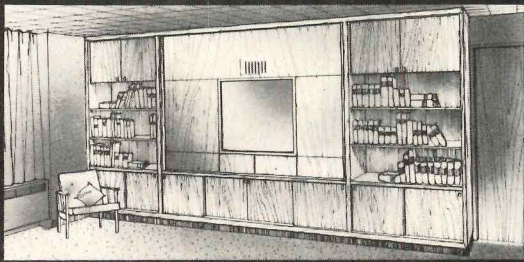
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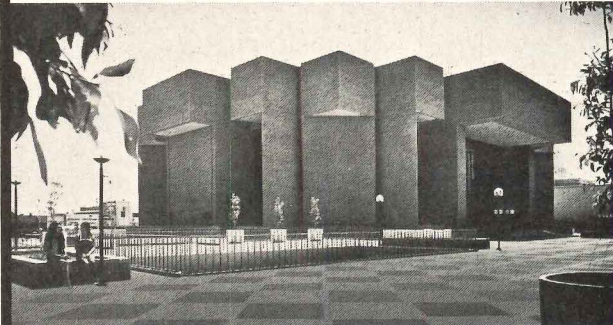
AIA ANNOUNCES:

ARCHITECTURE CRITICS CITATION TO ALAN DUNN FOR "ARCHITECTURE OBSERVED"

In a special news release, The American Institute of Architects announced that "Alan Dunn, whose cartoons in books and magazines have gently but incisively satirized the architectural profession, has been named to receive the 1973 Architecture Critics' Citation of the AIA for his cartoon collection 'Architecture Observed'".

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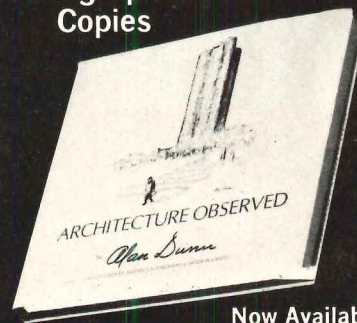
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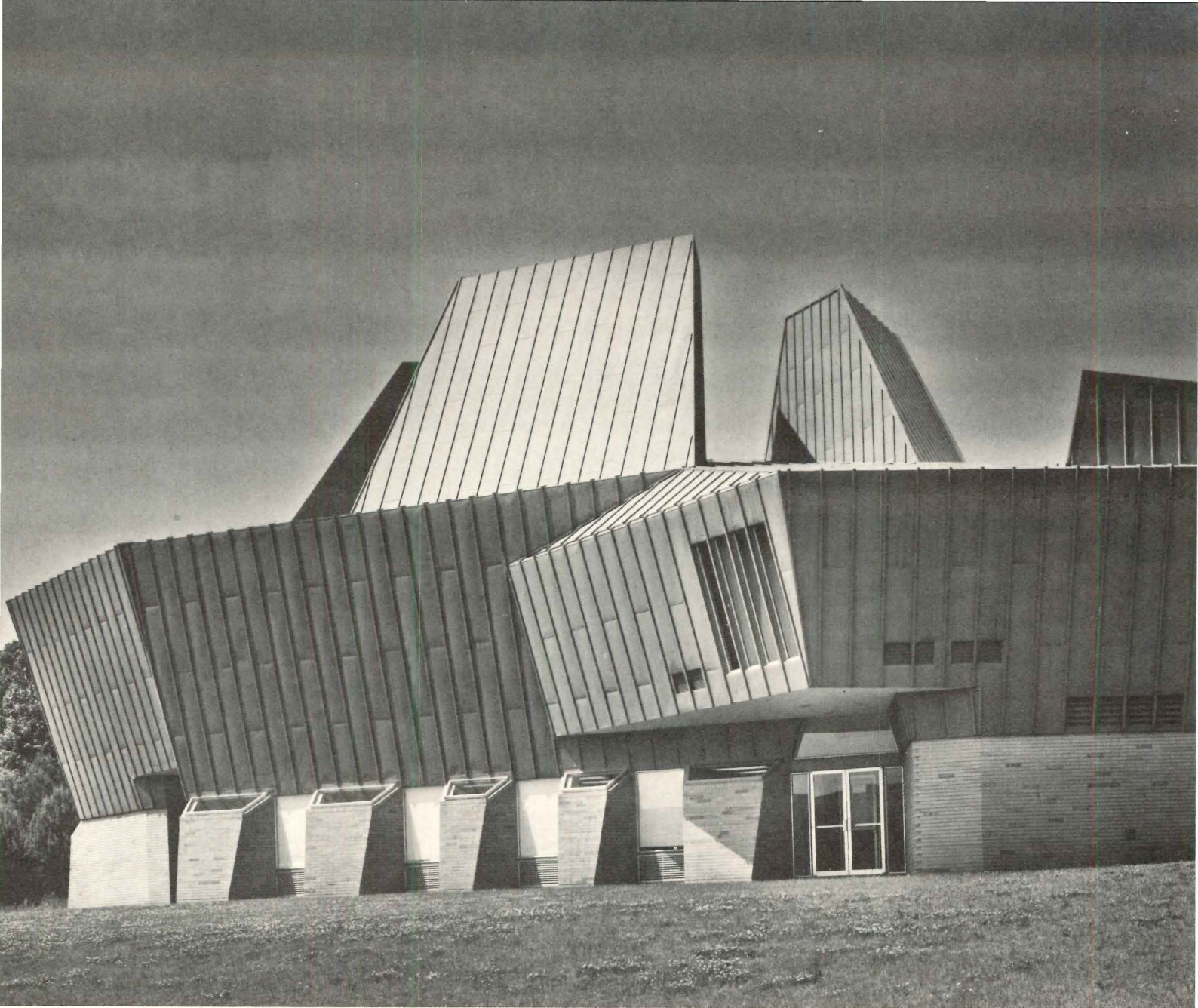
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Congregation Beth El, New London, Conn.; Architect: Paul Rudolph, FAIA, New York, N.Y.; Roofer: H. R. Hillery Company, Groton, Conn.

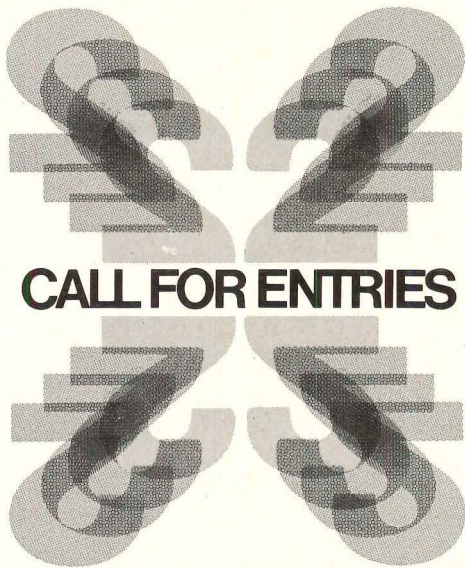
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STEEL LOAD FACTOR / A technical paper entitled "Load Factor Design of Steel Buildings" provides structural engineers with an excellent general background on an important new design concept. Written by T. V. Galambos, chairman of the Department of Civil and Environmental Engineering, Washington University, the six-page paper describes the trend toward probabilistic design of structures, in which uncertainties (loading, design assumptions, etc.) are treated in a statistical instead of an intuitive manner. ■ American Iron and Steel Institute, New York City.

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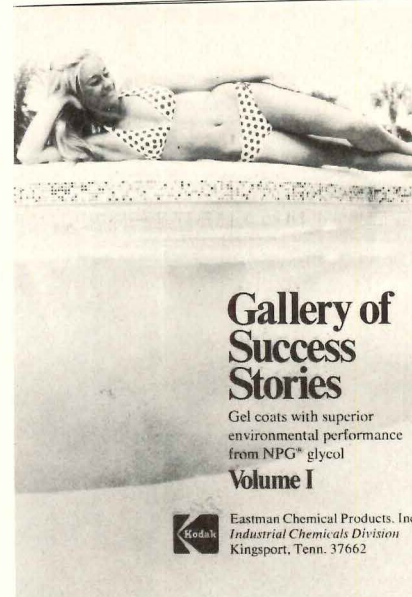
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more literature on page 26.3

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continued from page 258

AIR HANDLING UNITS / A catalog describing ARI certified "AH" air handling units and accessories describes 13 sizes of horizontal and vertical air handlers, plus accessories for chilled and hot water applications. Capacity of the units range from 750 cfm through 38,400 cfm at 1/2 in. TSP to 3 in. TSP low pressure, and 2 1/4 in. TSP to 5 in. TSP medium pressure. Horizontal cabinet models can be supplied in four basic fan and motor arrangements and vertical cabinet models in six arrangements. ■ Dunham-Bush, Inc., West Hartford, Conn.

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ALUMINIZED STEEL / A 24-page catalog describes aluminum-coated steel and its outdoor record of performance for almost two decades. Fabricating data, including welding procedures, are covered in detail. ■ Armco Steel Corp., Middletown, Ohio.

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ELECTRIC HEATING EQUIPMENT / A selection guide for electric baseboard heaters, wall convectors, sill convectors, unit suspension heaters, cabinet unit heaters, radiant ceiling heaters, infra-red ceiling heaters, cove heaters and snow melting mats covers such products as heavy duty baseboard models from 375 to 2500 watts, in 2-, 3-, 4-, 5-, 6-, 8-, and 10-ft lengths. ■ Federal Pacific Electric Co., Newark, N.J.

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HEATING-COOLING PRODUCTS / Contractors, architects, engineers, owners and builders will find this 48-page bulletin helpful in selecting and applying electric comfort heating and cooling products in commercial, industrial, institutional, and residential buildings. ■ Emerson Electric Co., St. Louis, Mo.*

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LIGHTING POLES / A six-page brochure on architectural and area lighting poles describes octagonal and round poles of spun prestressed hollow concrete in lengths from 13 ft to 49 ft. Available in plain or colored concrete or polished terrazzo finishes. ■ Centrecon, Inc., Everett, Wash.

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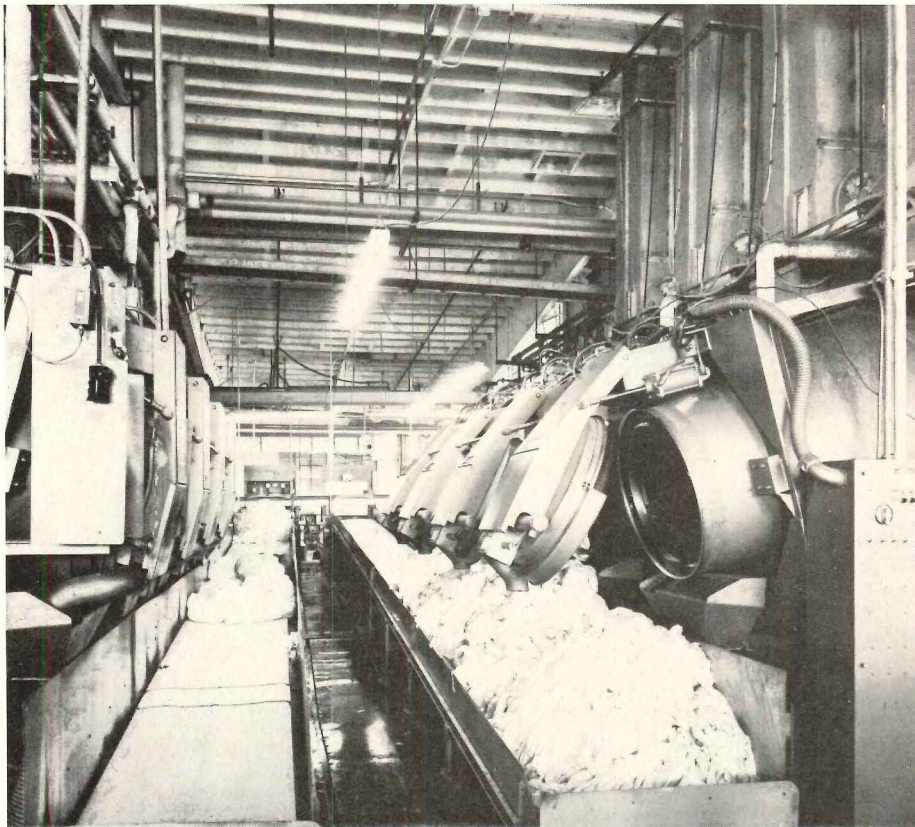
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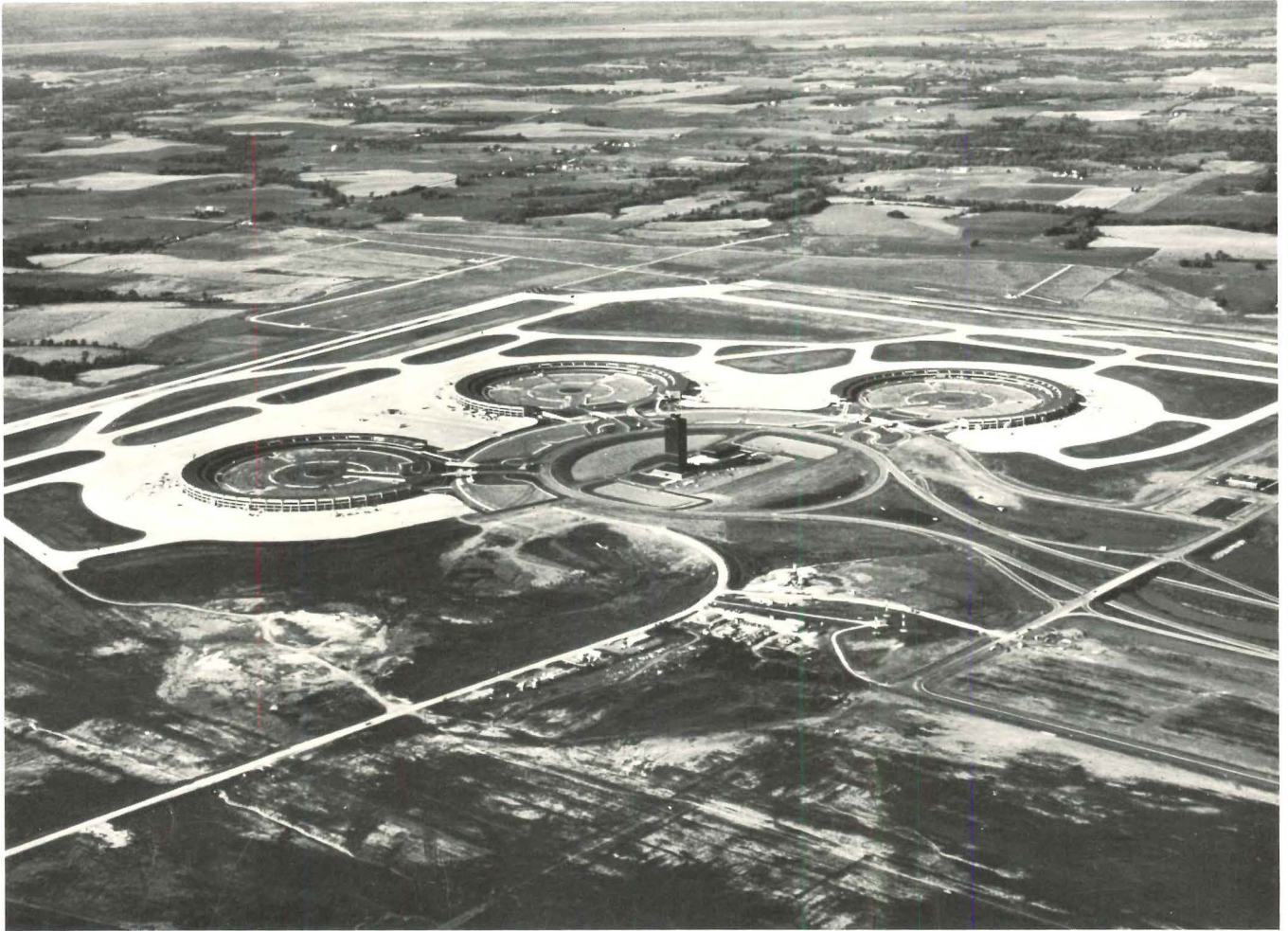
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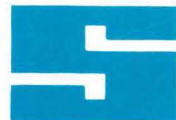
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