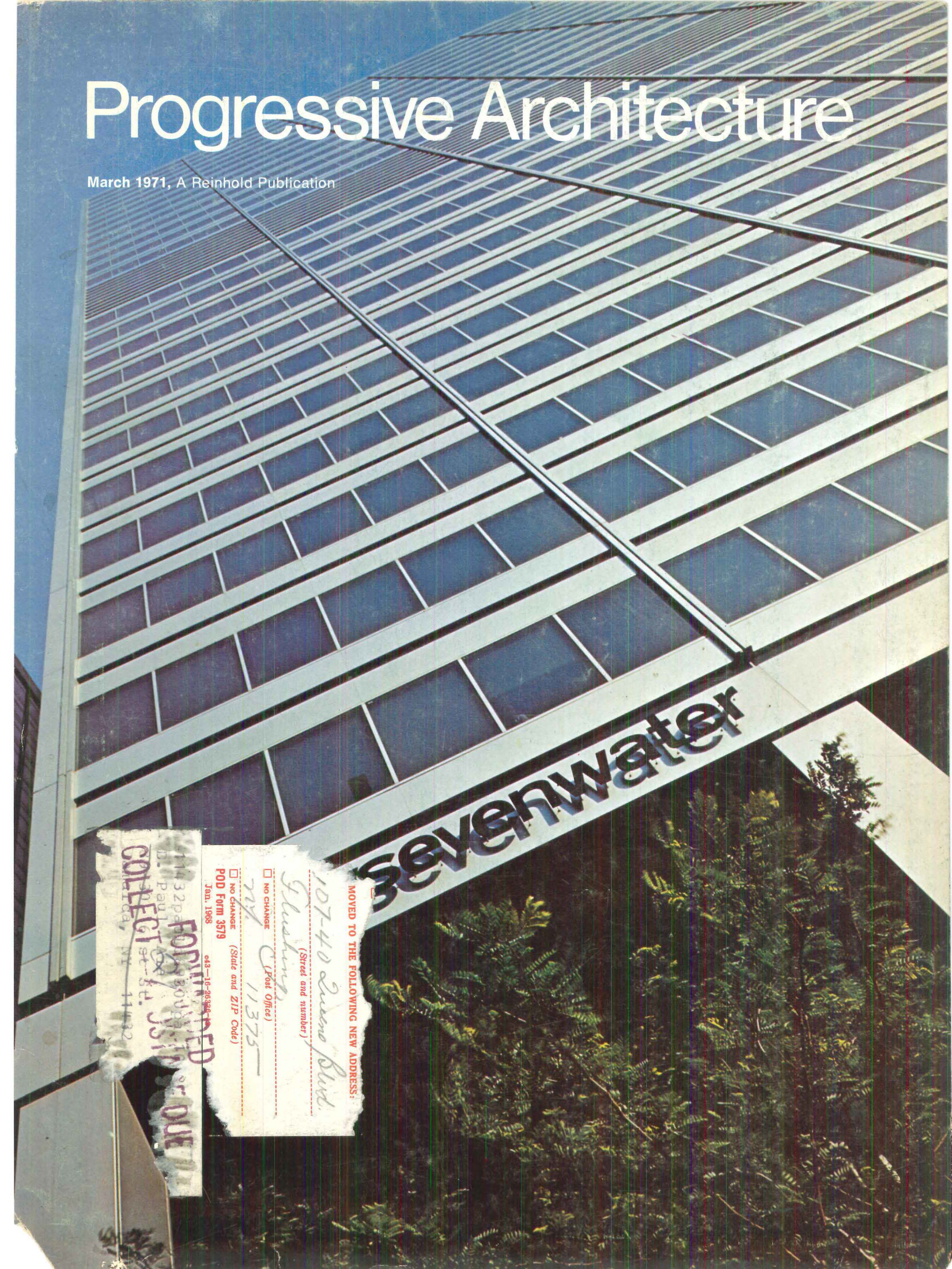
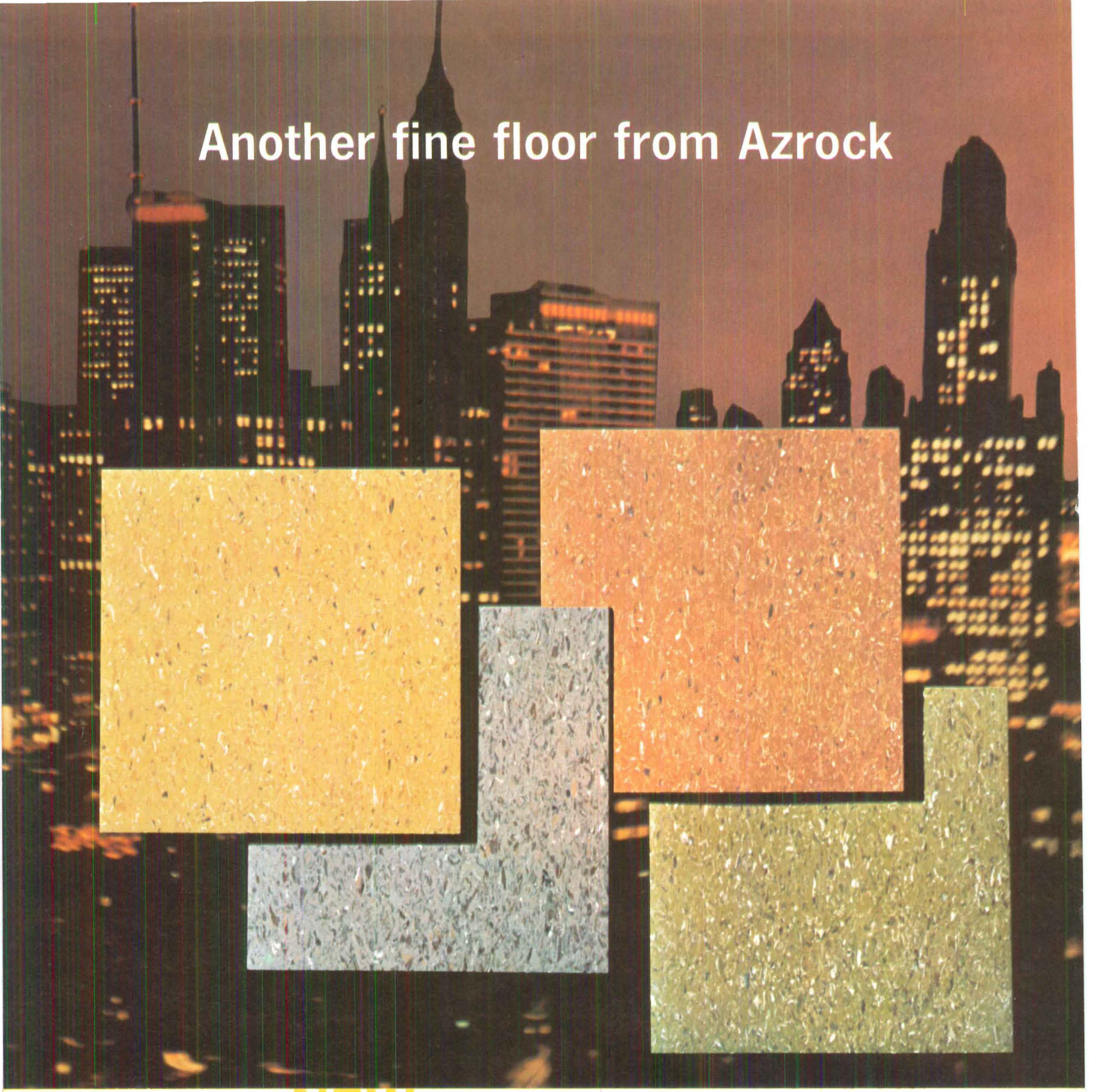
Progressive Architecture

March 1971, A Reinhold Publication





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March 1971

Progressive Architecture

Office buildings

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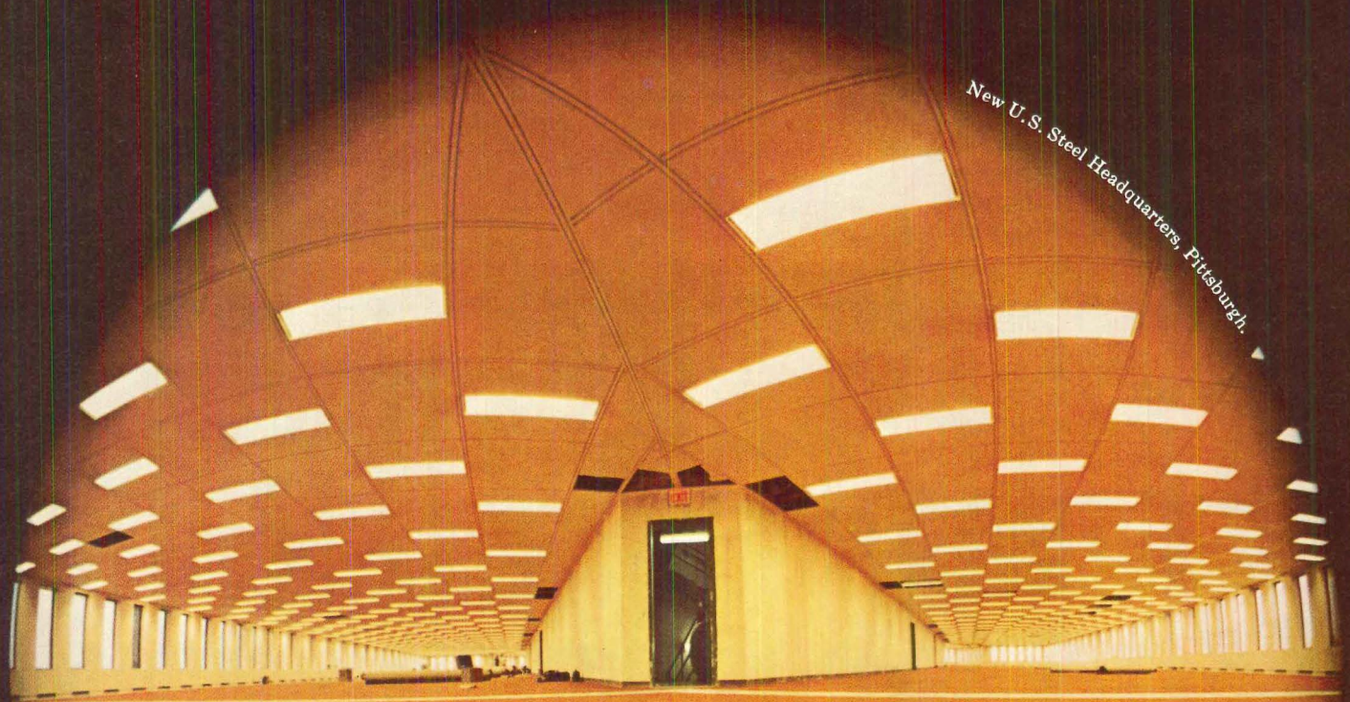

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Views

The following article from the Sunday, January 24th edition of The New York Times, is by Ada Louise Huxtable, architecture editor of the Times, critic, author and Pulitzer Prize winner. The letter which follows by Ulrich Franzen, a member of P/A's 1970 Design Award jury, is in response to the article.

'Social significance' qualms overcome in design award

The First Design Award in this year's awards program of PROGRESSIVE ARCHITECTURE magazine—a competition that for the last 18 years has been a reliable indicator of which way the architectural winds are blowing—is a house.

That hardly sounds like a radical choice or statement. It sounds more like good news for househunters.

In these parlous times, however, the choice of a house is highly controversial and has little immediate application to the country's unhoused or poorly housed millions.

Six years ago the competition virtually swore off houses. The private house was not a "valid architectural problem," the jurors declared; it had no "social significance" on the scale that housing must meet today. The next year, houses were still found by the judges to be "embarrassing."

"Socially," said one juror, "it's difficult to care about them."

This year's top winner is an excellent house, a kind of ecological architecture designed with skill and sophistication by Muchow Associates to blend into a mountain slope at Sun Valley.

This was the jury dialogue:

Ulrich Franzen: "It's a piece of spectacular architecture."

John Kouwenhoven: "The house is awfully good."

Edward L. Barnes: "We all like the house."

Myron Goldsmith: "It bothers me to give it a First Award because of all the earth-shaking problems of modern times, of cities."

Franzen: "What's the point of feeling guilty? By not awarding this the First Award you're not going to help the city. The only way you can help the city is, when you have a city problem, try your darndest."

Kouwenhoven: "Aren't we, by picking the Sun Valley house and throwing out all the urban planning things, saying that architects aren't sociologists?"

Franzen: "I think any architect that thinks he's a sociologist ought to be locked up."

Kouwenhoven: "That is why I don't have any compunctions about having that house as the First Award."

And that about sums up the state of architecture versus the state of society.

In addition to the first prize house, the four top awards went to two schools, a hospital and apartments—all good architecture and acceptable sociology. The schools tap the extremes of large-scale, long-range design and the immediate imaginative uses of "found" spaces.

The Eastwick High School and George Pepper Middle School of Philadelphia, by Caudill, Rowlett, Scott and Bower and Fradley, is a 39-acre project for 5000 students and staff using a "house-plan" scheme and common facilities. At the other end of the spectrum are the East Harlem Pre-School and the Block School in Brooklyn, by Hammel Green and Abrahamson, in which miniaturized, creative community learning environments are set into an abandoned supermarket and a synagogue.

The Madera Community Hospital, Madera, Cal., designed by Rex Whitaker Allen and Associates, drew the jury comment that hospital architecture has vastly improved over previous years.

The Santa Ana Apartments, phase two, by Backen, Arrigoni and Ross, Inc., is a court-housing scheme with particular attention to density, circulation and private open space.

Of the second group of prizes, the citations, one was awarded to a "walk-on" community map. Several others went to what might be called "conservation" design. It was a big year for environment and ecology.

The community map was prepared by a coalition of local groups and professionals called Community Design Associates for the Hill District of Pittsburgh under the Model Cities program.

Its purpose was the involvement of the community with its planning, and the development of a device for visual understanding of the planning process. The result is a lively and useful graphic tool in the exercise of social and environmental change. The neighbors came in and walked all over the map to decide what their neighborhood should be.

"Ecological" projects range from a greenbelt and swimming pool for a housing development, the Trailwood Path System for the Trailwood Subdivision in Houston, Tex., to a nonarchitectural scheme called "Take Me to the Mountain" designed as a program for the use of a 55-acre wooded retreat near Austin, Texas. This one does not have any buildings at all. Both are the work of Charles Tapley and Associate.

The first will give environmental pleasure to suburbanites. The second is for a group with fewer hangups for whom nature and a little servicing from L.L. Bean are enough. What the jurors admired was the attitude toward the enjoyment and inviolability of nature, which "development" almost invariably destroys. Guilt perhaps, since the architectural profession has done a lot to destroy it. But the scheme is sensitive to the basics of land use and the joys of natural beauty.

It did not faze the distinguished jury (those quoted in the dialogue plus Ezra Ehrenkrantz) to consider these things the proper province of architecture. It was indicative of a new consciousness pervading the profession and its attitudes and practice, as well as the jury deliberations.

The emphasis is on process, or what the problem really is and how it can, or should, be solved. Process is an even greater preoccupation today than the end product.

The PROGRESSIVE ARCHITECTURE awards program has always told a great deal about the state of architecture and the profession. It did not become seriously involved with the state of society until six or seven years ago.

It has attracted trendy, as well as trend-setting projects, like flies to sugar. (There was the "megastructure" year, the "dumb and ordinary" year, and this year, the 45-degree angle.)

The program carries an air of prophecy fulfilled, because the awards are usually

[continued on page 12]

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

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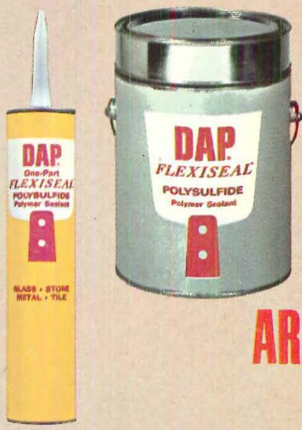

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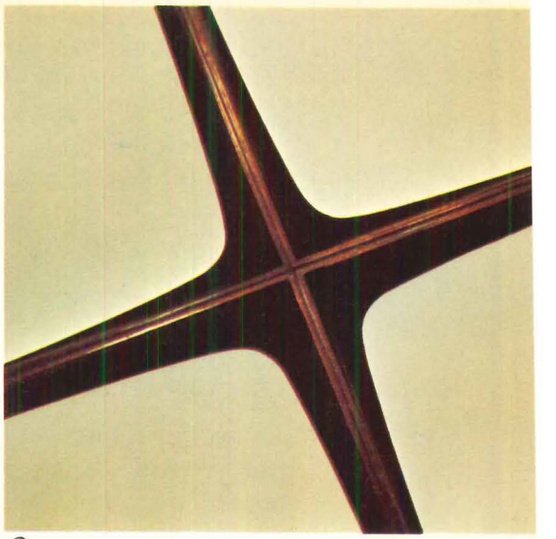

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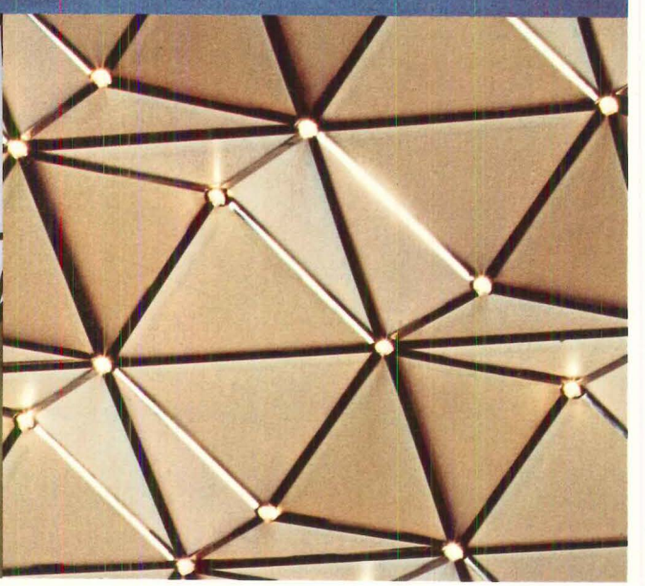

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Integrated Ceilings (Maybe we're your next idea.)

Views continued from page 7

given in the project stage, for real commissions for real clients that are about to be built. There are no drawing-board dreams. A clutch of P/A files is the handiest possible reference to the styles and shibboleths of a decade.

This year, for the first time, a second jury was set up for planning and urban design entries. That is another barometer of the times. These entries were judged by Jerzy Glowczewski, Robert Schofield and A.E. Bye.

An award and a citation were given to two schemes, one urban and one rural.

The award went to a proposal for inner city redevelopment by the Detroit City Plan Commission that emphasizes a pedestrian network tied to familiar and landmark structures. The cited plan, for an unspoiled part of Islip, L.I., by Rafael Villamil, would preserve the land in its natural state while providing residential development. Both are given high marks for environmental sensitivity.

This year's results seem to say not only that environment and ecology are in, but that monuments are still out. They were virtually declared out last year. (No statement has more power to enrage a large part of the architectural profession than this one. Like all groups, it is neither monolithic nor unanimous.)

Among the architectural citations given, large or commercial buildings were noticeably absent. If the king-size commercial products were submitted, they were not chosen.

The one office building, a state office building for Salem, Ore., by William, Endicott, Greene, Bernhard and Associates, was less imperial than usual. An IBM-MIS computer center facility in Sterling Forest, N.Y., by Gunnar Birkerts and Associates, was also selected.

Other citations were given to a modest art center for a small city, Mansfield, Ohio, by Don M. Hisaka and Associates, and tennis and handball courts for the University of Oregon in Eugene, by Unthank, Seder, Poticha.

One more house was cited, by John P. Grady, to be made out of catalogue components in Pleasant Valley, N.Y., and one more hospital, the Sacred Heart General Hospital, Eugene, Ore., by Rex Whitaker Allen and Associates and Balzhiser Rhodes, Smith and Morgan, associated architects. Oregon will soon be the place to see.

Two major fields of expressed disappointment were industrialized housing and churches.

No churches were chosen. There was some confusion about what this meant, spiritually, but no confusion about the fact that the jurors disliked the fact that a lot of them looked like Howard Johnson motor lodges.

One modular housing system, by Wells, Koetter, was given a citation, but the general opinion was that architects were missing the boat with showy "all-purpose" technical displays that were more impressive as engineering feats than as homes. Unless you live at Sun Valley, salvation has not yet arrived.

Editor
Real Estate News
The New York Times

Dear Editor: The article in the Real Estate section of the Times on Sunday, January 24, entitled " 'Social Significance' Qualms Overcome in Design Award," by your esteemed Mrs. Huxtable draws conclusions on the state of architecture versus society which are not warranted in the context of the jurors' full comments as published in the January issue of PROGRESSIVE ARCHITECTURE. The Times article implies that the comments of the jurors such as architects not being sociologists indicate that they have no interest or commitment to the social problems of today. The diametrically opposite view motivated these comments, particularly by this writer.

The planning and building of architecture in the recent past for the poor in this country are mute witnesses to the disastrous consequences of architects, planners and politicians confusing their tasks with those of sociologists, i.e., prescribing design solutions in the name of the people, is precisely the kind of misguided paternalism that resulted in the mistakes of the past when entire communities were devastated by "renewal."

What indeed is required is the input into design programs, especially at the community level, of professional sociologists and better yet, the people themselves. The architect should be a highly competent professional whose prime contribution is to sensitively translate the wishes of the people and their advocates into imaginative reality.

It is for this reason that the PROGRESSIVE ARCHITECTURE jury selected, among a variety of awards, the making of a neighborhood map so large that the people themselves could walk on it, and thereby participate in the definition of its needs. Had the designers of this ingenious communications device thought they were sociologists as well, there would have been no need to invent this instrument for listening to what the people have to say.

It is therefore out of profound respect for the depth of social problems that the comments you quoted do in their full published context show that the architect as represented by the jury is ready to listen to the people rather than posing as a pseudo-expert telling them how to live.

Clearly, the jury sought to reward excellence in the context of the given problem, including the awards given to several projects of social use. The jury avoided fashionable posturing, including the condescending attitude that the poor don't deserve excellence, but only cut-rate architecture as long as it is "socially significant."

Ulrich Franzen
Ulrich Franzen & Associates Architects

Dear Editor: Your Awards Dinner was a great success according to reports from Clark Neuringer. I'll be forever sorry that I couldn't come.

The open-mindedness of this year's jury is staggering. I'm reminded of a remark Dean Hunt made at PROGRESSIVE ARCHITECTURE's 1959 or 1960 Awards functions: "As Adam and Eve were leaving the Garden of Eden, Adam said to Eve, 'I think we're going through a period of transition'."

Ronald W. Haase AIA
New York, N.Y.

Dear Editor: Thank you very much for the most enjoyable party at the Brown Palace Friday evening. I enjoyed the Awards Program and am honored that our firm received recognition from you.

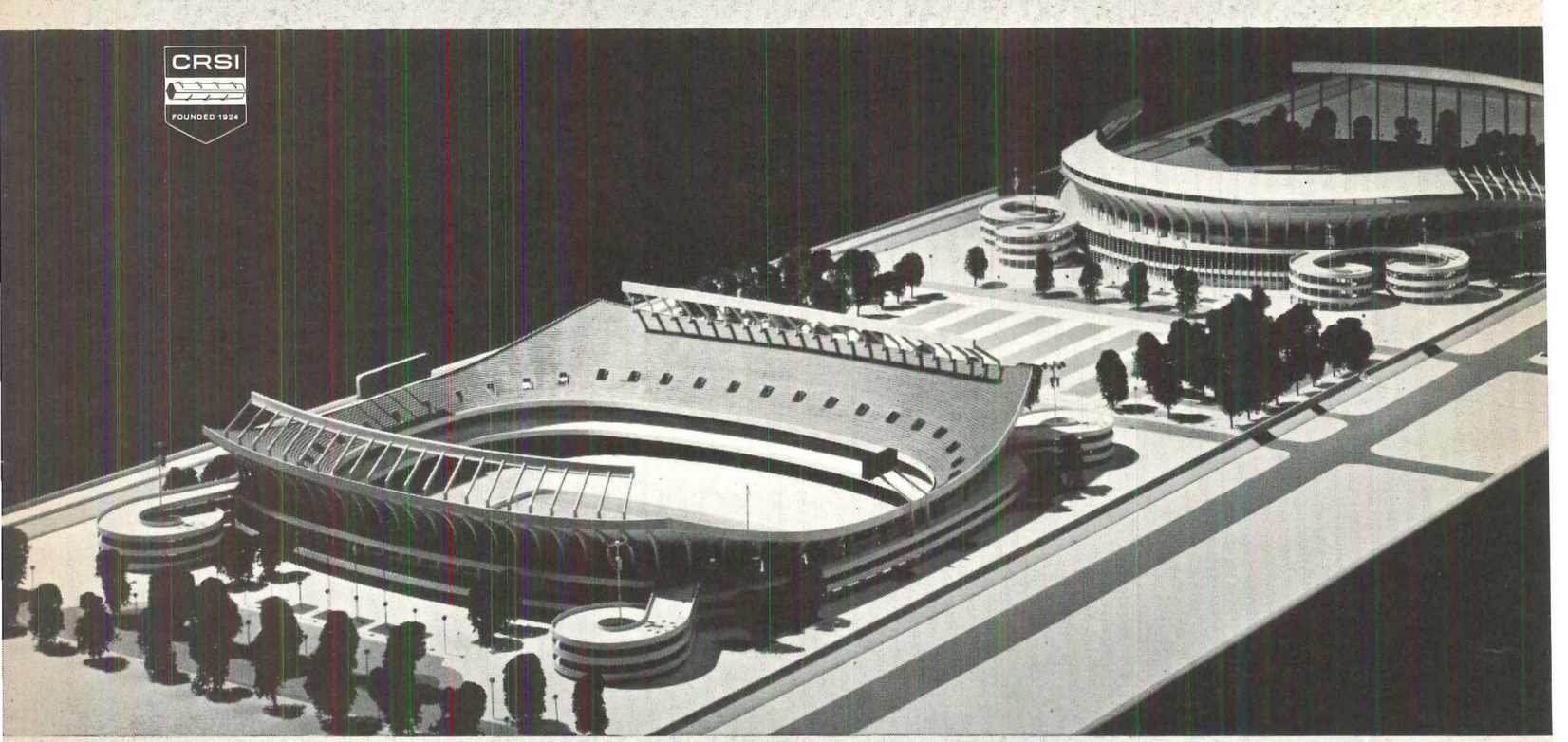
W.C. Muchow
Denver, Colo.

Appreciation

Dear Editor: I would like to express my appreciation for your very fine coverage of the Jacksonville Children's Museum in your November 1970 issue. Your recognition of this project has been most gratifying not only to my office from the architectural standpoint, but also to the many citizens of Jacksonville whose undivided efforts made this new institution possible.

William Morgan, AIA
Jacksonville, Fla.

the beautiful world of reinforced concrete is a climate of excitement



Excitement for all seasons is planned in Kansas City. In reinforced concrete. This new Jackson County sports complex, created by architect Charles Deaton, is a spectacular for spectators inside and out. Both stadiums offer every fan an unencumbered view of the action. Football stadium seats 75,000. The baseball structure holds 45,000. The graceful sight lines and sculptured beauty of the Deaton design demonstrate why the trend to reinforced concrete grows bigger by the day. There's new utility, flexibility and economy in this medium. New design freedom. A greater opportunity to run with bold concepts and score. New high-strength reinforcing steel is one of the reasons why. It offers 50% greater yield strength. Faster, more practical construction. Almost limitless design possibilities. New high-strength reinforcing steel makes everything your mind's eye can imagine build better in reinforced concrete.

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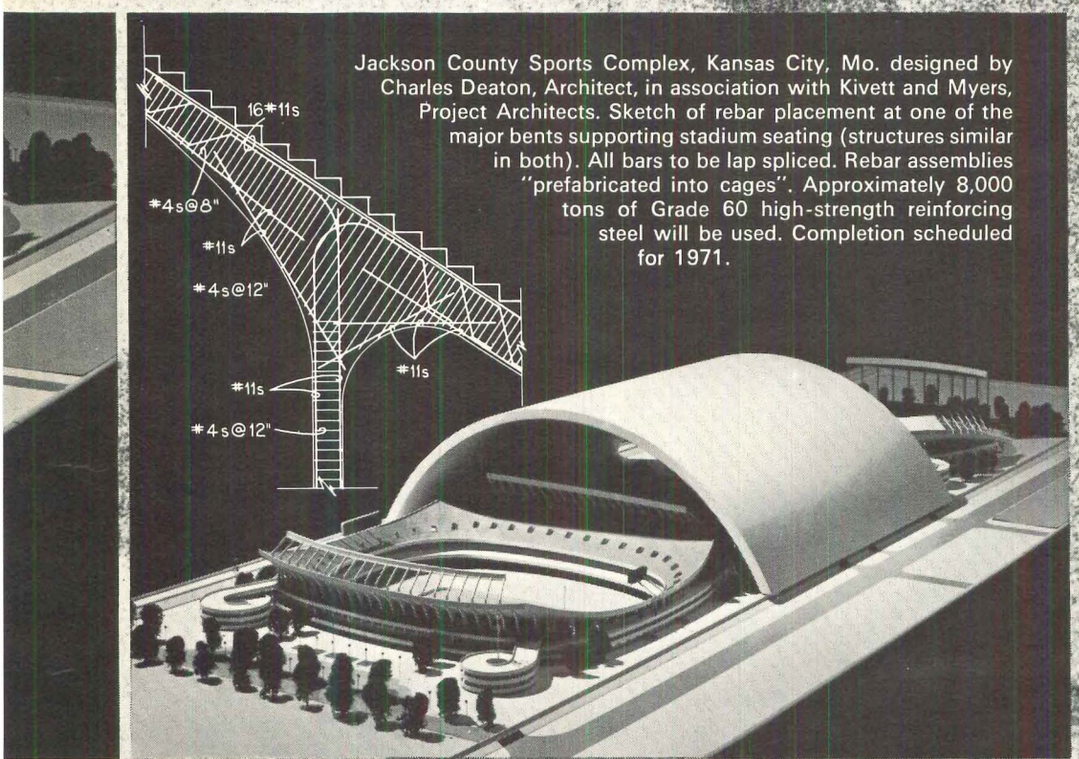

Jackson County Sports Complex, Kansas City, Mo. designed by Charles Deaton, Architect, in association with Kivett and Myers, Project Architects. Sketch of rebar placement at one of the major bents supporting stadium seating (structures similar in both). All bars to be lap spliced. Rebar assemblies "prefabricated into cages". Approximately 8,000 tons of Grade 60 high-strength reinforcing steel will be used. Completion scheduled for 1971.

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Making headlines

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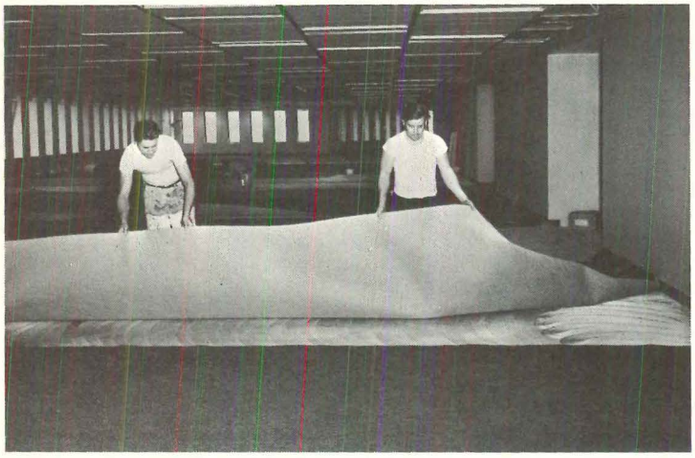
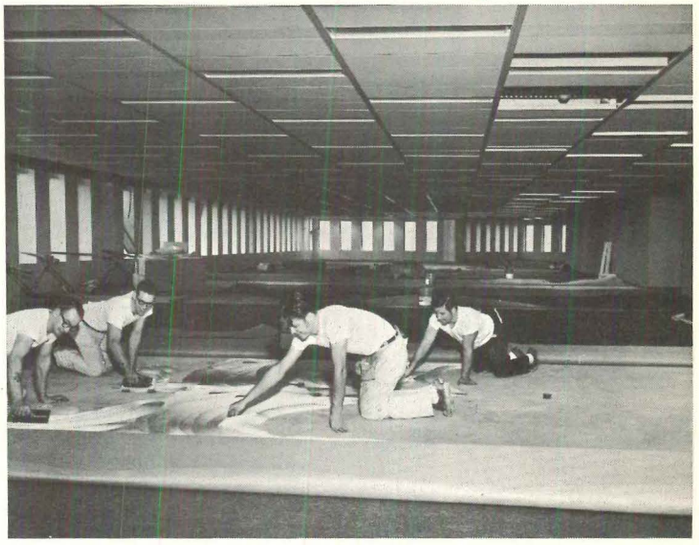


Double jute-backed carpet being installed directly on concrete sub-floor coated with adhesive.



Installers applying adhesive to concrete sub-floor, for direct glue-down installation of double jute-backed carpets in new 64-floor U.S. Steel Building, Pittsburgh.

The fast-growing concept of direct glue-down installation of double jute-backed carpets is being utilized in the new United States Steel Building in Pittsburgh. This is reported to be one of the largest single carpet installations on record, encompassing about 130,000 sq. yds. Occupancy of floors on an individual basis began in September.

The floors to be occupied initially by U.S. Steel in the 64-floor structure are carpeted by the direct glue-down method, including elevator lobbies and 48 passenger elevators.

Maria Bergson Associates, New York, directing the buildings' interior design, and U.S. Steel officials investigated and tested the direct jute glue-down method in great depth before deciding on it for a project of such magnitude. Based on their rigorous pre-testing, they are even utilizing it in high spillage risk locations such as "coffee break" areas, and anticipate no problems.

In addition to lower initial cost than other carpet systems and practically no strain on seams, one important benefit of this method is easy mobility for conventional wheels and casters and great pile resistance to them with carpet construction of the proper contract type. Hence U.S. Steel is able to place directly on the carpet, without underchair pads, thousands of secretarial chairs with standard casters now in service elsewhere.

Gaymar Co., Pittsburgh, is handling the installation, with the crews under the supervision of Don McGinn. He reports: "Pre-cutting for the large floor expanses between trench headers, with separate carpet strips cut to fit the headers, is greatly increasing our productivity. We foresee no problems in pick-up with the jute when and if it becomes necessa to reach underfloor sections. T jute backing is providing a str bond with minimum adhesive cause it holds the compound a absorbs it thoroughly right on th surface. Carpet edges are consistent in height, so we can butt-seam fast, with the result practically invisible."

Architects: Harrison & Abramovitz and Abbe, New York. General contractors: Turner Construction Co., New Y

Write for Architectural Guide Specification by William E. Lunt, Jr., C.S.I. Case Histories of Installations

Reprinted from Floor Covering Weekly

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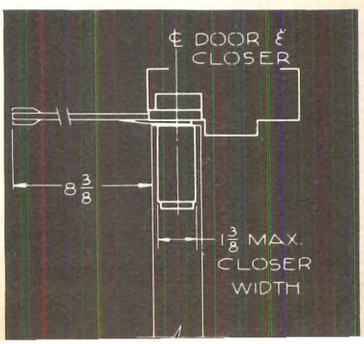
PHOTO: Memorial Art Gallery of the University of Rochester, Rochester, New York. Waasdorp Northrup and Kaelber, Architects, Rochester, New York.

Where should the door closer be placed?

LCN's complete line permits you and your Hardware Consultant to situate door closers where they can do the most for the looks and efficiency of the building as a whole. An excellent closer site (and one often overlooked) is within the top rail of the door itself. These closers offer superb control, simple installation, and a neat and uncluttered look. Consider them on your next specification. LCN Closers, Princeton, Illinois 61356.



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Client: **State of Missouri,** Warren E. Hearnes, Governor • John D. Paulus, AIA, Director of Planning and Construction, Missouri State Board of Public Buildings • Governor, Warren E. Hearnes • Lt. Governor, William S. Morris • Attorney General, John C. Danforth *Architect:* **Richard P. Schneider,** St. Louis, Missouri
General Contractor: **E. G. Linhardt,** Jefferson City, Missouri *Lead Sub-contractor:* **Larry Goad & Company,** St. Louis, Missouri

Lead Plugs the Forty-Year Leak

For the past forty years the graceful oval pool on the grounds of the Missouri State Capitol Building has leaked. All attempts to stop it with tar and paint and other things have failed. An 8-lb. (⅛″ thick) sheet lead lining finally turned the trick.

A prior, highly successful application of lead as the waterproofing membrane for the steps of the Missouri State Capitol Building pointed to its selection for waterproofing the pool as well. Waterproofing of the State Capitol steps (part of an overall Capitol Restoration Program) was done in order to gain use for offices and storage of the vast space underneath the staircases. While the antimonial sheet lead was used to keep water out of the area under the Capitol steps, it was used to keep water in the newly lined pool.

In addition to lead's impermeability, the ease with which it can be worked made it a natural for the complicated design of the pool. Welding was a relatively simple matter and the lead was easily carried up over the drains, overflows and pipe penetrations. The end result: a handsome, exposed waterproofing membrane that works very successfully.

For information on lead as a waterproofing agent and detailed specifications, write Lead Industries Association, Inc., Dept. M-3, 292 Madison Avenue, New York, New York 10017.

Lead Industries Association, Inc.

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1.

2.

Single source responsibility

Typical designs and occupancies: 1. The 62,000 square foot laminating plant of Pioneer Plastics Corporation. 2. Beck/Arnley Corporation of California, distributor of auto parts. Both designed by Field and Silverman, A.I.A., Beverly Hills, California. 3. Under Sea Industries, 35,000 square feet, a manufacturer of sea diving equipment. Designed by Latt, Jackson & Associates, Inc., Austin W. Daly, A.I.A., Los Angeles. Developer Boise Cascade Building Company, Gardena, California. Air Conditioning contractor, Landmark Heating & Air Conditioning, Torrance, California.

3.

One manufacturer, Lennox, is responsible for the HVAC equipment and controls in this 800-acre industrial park. It's the Dominguez Industrial Park, adjoining Los Angeles. A Boise Cascade development, centered in a 2000 acre industrial complex. Buildings like these, for light manufacturing or service companies, are custom designed, and available for purchase or lease.

(continued overleaf . . .)

continued...

single source responsibility: the Lennox concept

Innovative design themes, creative landscaping and wide traffic arteries add to the park feeling. Special zoning plans keep compatible industries adjacent to one another. Sites range from one acre up.

The developers have standardized on Lennox Air Conditioning and Heating, and one contractor, Landmark Heating & Air Conditioning Company of Torrance, and one source for the service contract, also provided by Landmark.

This standardization offers Boise Cascade important benefits. Design and purchasing time is reduced. Because the system is fully packaged, the cost of purchase is predictable. On-site labor is minimal. Service contracts fix the cost of owning. A full range of equipment is offered. Functional capabilities are known. It is easy to integrate Lennox systems into any plans, for any type of occupancy.

Sleek, low-profile silhouettes preserve the esthetics of the development.

Because Lennox systems are modular, principally rooftop, they pose no problems for expansion. New units can be added as a building grows. Walls can be moved or added as the owner adjusts to change. Single and multizone units provide precisely needed environments for different occupancies . . . offices, production or warehousing.

If you are planning a development, consider the esthetics, the comfort, the economies, the performance of Lennox Air Conditioning and Heating. Write Lennox Industries Inc., 983 South 12th Avenue, Marshalltown, Iowa 50158.

LENNOX®
AIR CONDITIONING • HEATING

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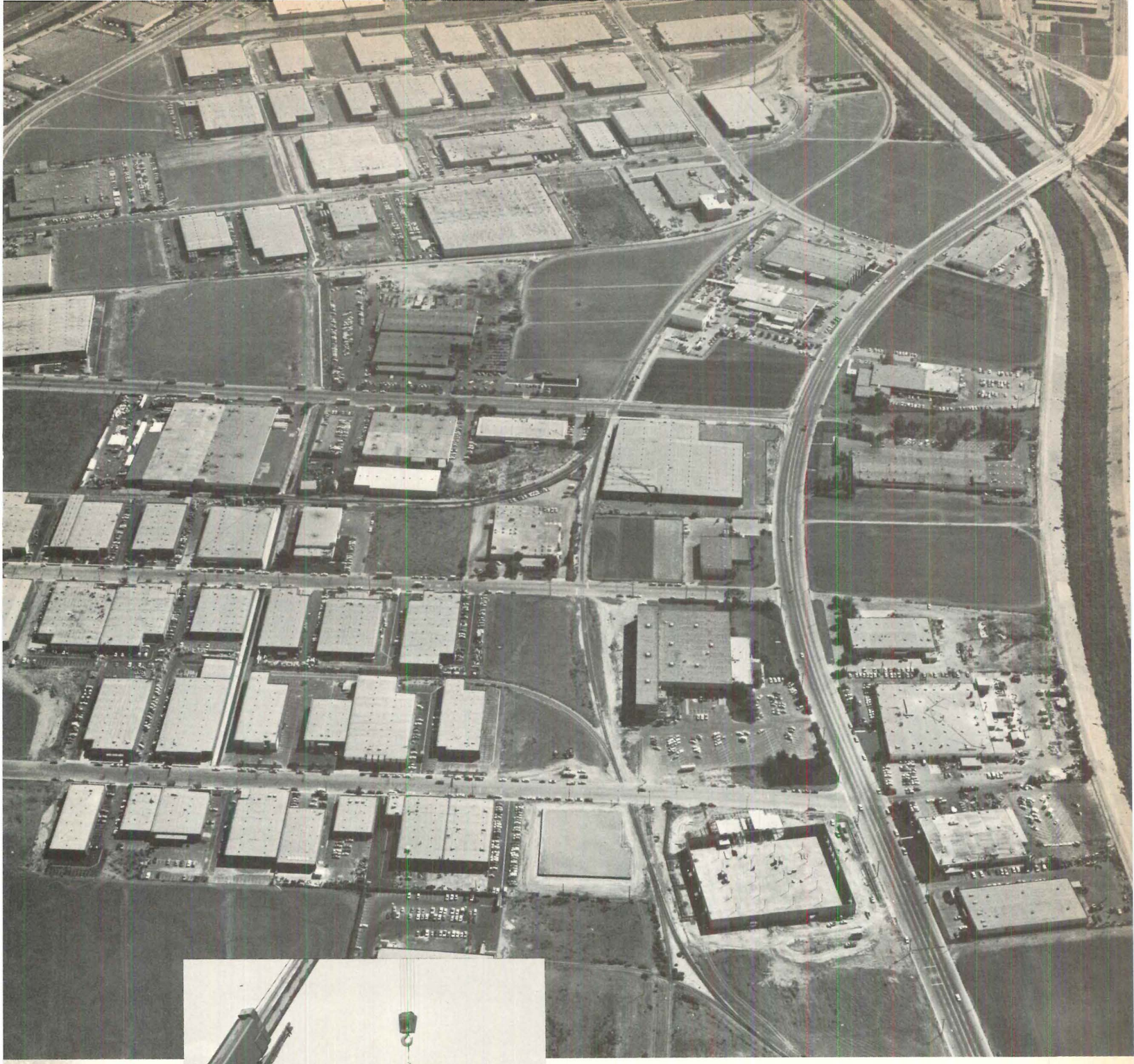
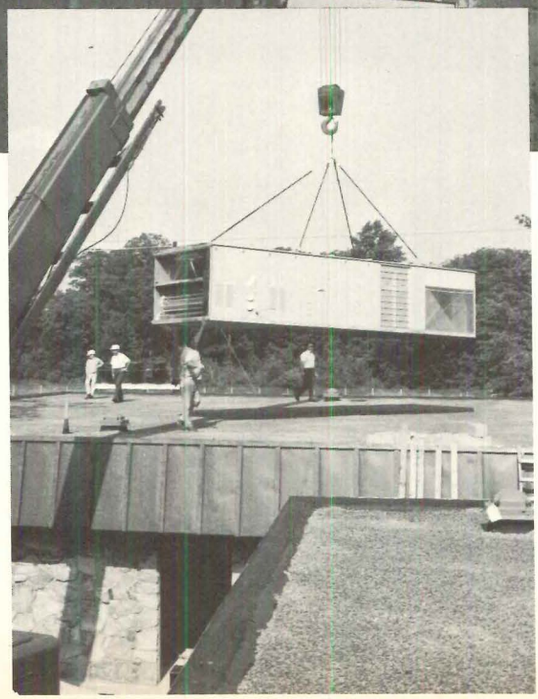
Tri-Lite Manufacturing Company, Inc., manufacturer of light fixtures, occupies this 24,000 square foot building. Architect: Latt, Jackson and Associates, Los Angeles. Located in Broadway-Rosecrans Industrial Park.





Aerial view of 800 acre Domingues Industrial Park, Los Angeles. At present stage of development, there are 225 Lennox gas-electric air conditioning, heating, ventilating units installed on rooftops.

Lennox air conditioning, heating and ventilating units are completely factory-assembled, wired and tested. Choice of: gas, oil, electric or hot water heat with up to 33 tons DX cooling. They are shipped ready to lower onto a Lennox roof mounting frame. Optional Power Saver™ cools with outside air when temperatures are under 70°F.

NEW I.B.E.W. OFFICE BUILDING located in Atlanta adjacent to the city's Sports Stadium.
Building owner: International Brotherhood Electrical Workers.
Architects-Engineers : Stevens & Wilkinson, Atlanta
General Contractor: H. W. Ivey Construction Company, Atlanta
Window-wall Fabricator: Southern GF Company, Atlanta

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Striking color accent was achieved for Atlanta's new I.B.E.W. Building with AllianceWall porcelain-on-steel insulated panels. Specifically selected were AllianceWall earthen tone, matte finish, Terra Cal colors which combined perfectly with the pre-cast concrete to create a structure of unusual beauty and durability.

Today AllianceWall porcelain-on-steel panels are available in virtually any color giving imaginative architects a valuable new dimension in design. These remarkable panels require practically no maintenance. Their smooth, non-porous surface will not retain dirt, grease or stains. Colors stay bright and new looking without fading or appearing to age.

For complete information including specifications check ***Sweet's File or write to:*** ***AllianceWall Corporation***
P. O. Box 247
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Contents

News report

a **Design award winners celebrate in Denver**

Denver during the stockmen's show is a sea of cowboy hats, which made it easy to spot the architects and guests who had gathered at the Brown Palace Hotel for the 18th Annual P/A Design Awards presentation. They were the only folks in town, it seemed, who weren't wearing western gear.

The lack of pretense that marked the award winning projects was echoed in the informal awards ceremonies. After a congenial cocktail hour outside the hotel ballroom, the 150 dinner guests sat down to enjoy a slide show of the winning designs by P/A editor Forrest Wilson and associate editor David Morton. Presentation of certificates followed a hearty roast beef dinner, and the presentation was followed by James Marston Fitch, who explained why photographs don't tell the whole story of a building.

Most of us see architecture through photos, he pointed out; his point was that photos only show a building from one of an infinite number of vantage points and at one of an infinite number of times. They show nothing, he said, of how a building really meets, or doesn't meet, the needs of its users.

The top award, as any who read the January P/A know, went to the Denver architectural firm of Muchow Associates, for a vacation house designed by George Hoover for a snow covered slope in Sun Valley, Idaho. The model of the house was on hand, and so were the clients, who seemed a trifle overwhelmed by the attention their retreat was getting.

Guests for the evening included Denver's Deputy Mayor Richard Shannon and Mrs. Shannon; John Anderson, the president of the Colorado State Society of Architects and other local and state officers. In describing the winning projects, Forrest Wilson noted that he was presenting them without the jury comments. Those, he said, were included in the January issue of P/A, which was to be distributed at the end of the evening "in a plain brown wrapper."

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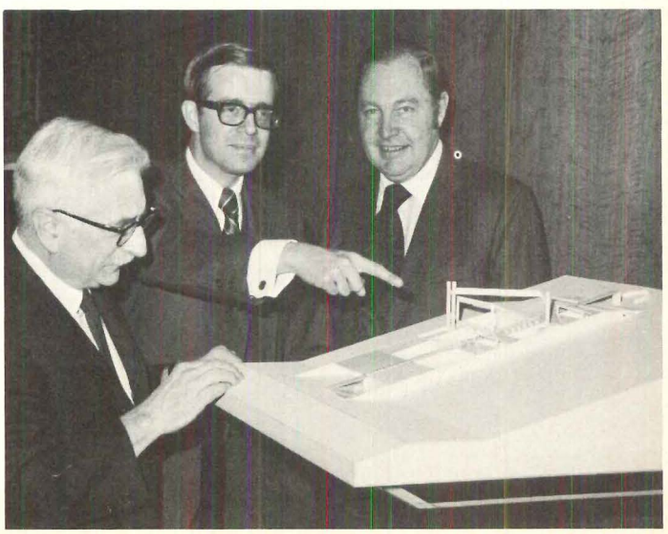

Systems conference will look at actual problem

A systems building conference with a difference is planned for April at the University of Wisconsin. The program, organized by Joseph C. White and Douglas C. Rhyn, will have participants solving an actual design problem. P/A Editor Forrest

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Buildings on the way up

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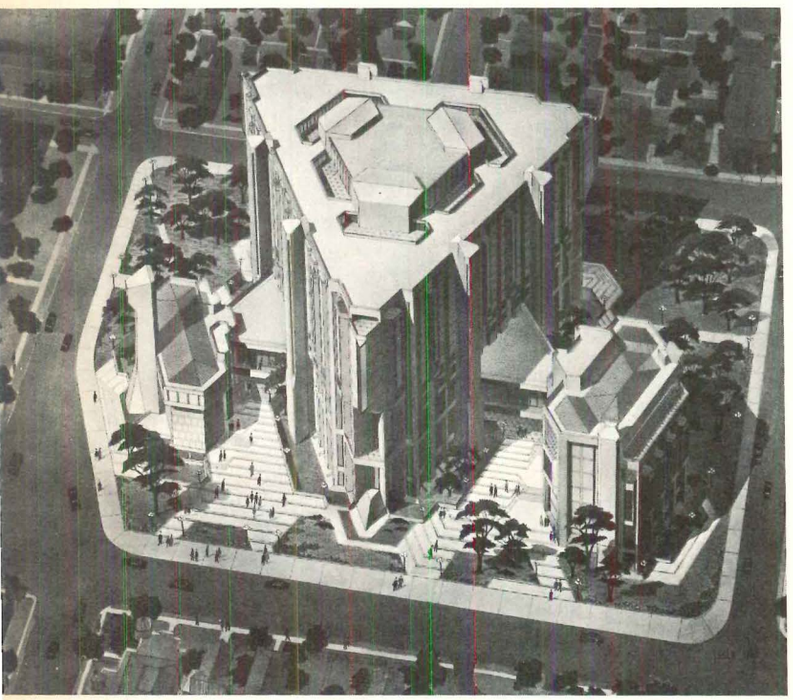

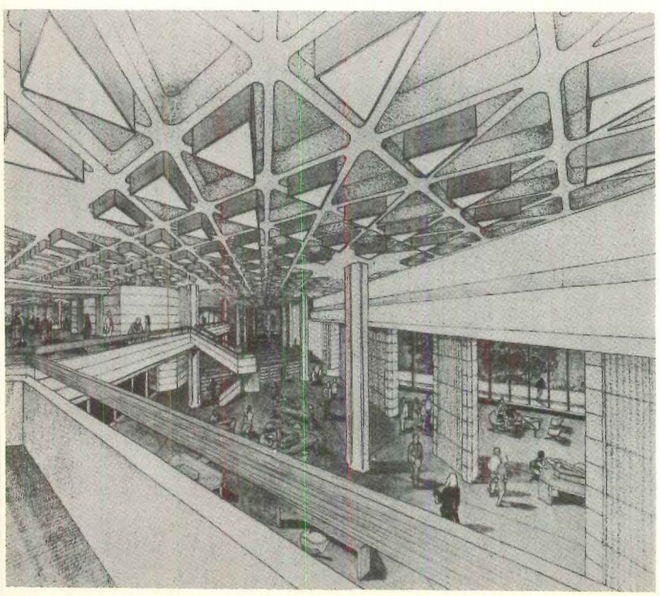

1. Scholar's library and librarian's school are combined in University of Toronto Research Library and School of Library Science. Library will accommodate 6000 researchers in humanities and social sciences. School of Library Science is smaller building to right of main building; building to left is rare book library. Triangular plan was chosen for 14-story building because it gave more perimeter (for offices, carrels) than square of same area, gave equal emphasis to all sides and reduced visible mass of building. Mathers and Haldenby are architects; Warner Burns Toan and Lunde are design consultants. Engineers are: C.D. Carruthers and Wallace Consultants Ltd. (s) and H.H. Angus and Associates Ltd. (m,e).

2. Central lobby and council chamber are surrounded by offices in one story Upper Arlington, Ohio, Municipal Services Center designed by Schooley Cornelius Associates. Lobby is adjacent to all departments and acts as overflow space for 200 seat council chamber. Exterior materials will be limestone, textured concrete and copper. Parking areas holding 143 cars are to be screened by landscaping. (Photo: Dept. of Photography, Ohio State University.)

3. High rise municipal building is proposed for Bloomington, Minn. in civic center master plan by Hammel Green and Abrahamson, Inc. Tower would be partially surrounded by plaza bounded by museum, theater and other civic buildings, including existing junior college and community ice center.

4. Addition to Houston's Museum of Fine Arts will double space and give new main entrance at street level. Designed by Mies van der Rohe shortly before his death in 1969, new wing will provide large new gallery above street level offices, library, members room and shop. Auditorium and storage space will be on lower level.

5. Central spine houses student laboratories, wings house basic and clinical labs, lecture theaters and 450 bed teaching hospital in design by Campbell Aldrich and Nulty for University of Massachusetts Medical School at Worcester. Building is roughly H-shaped, with vertical transportation in cores where spine and wings join. Exterior is granite with gray glass, except for central portion which is dark anodized aluminum and gray glass matching skin of power plant building (P/A Feb. 71, p 29). Ellerbe, Inc. were consultants on project; engineers are: LeMessurier Associates (s), Francis Associates (m, e). (Photo: William Gerold)

6. High rise dorms at University of Delaware are being built with completely precast concrete wall and floor-ceiling unit system. Structures will be erected in 20 weeks, regardless of weather. Charles Luckman Associates is architect, Ogden Development Corp. is developer; housing will be privately run. Towers will offer 255 one-bedroom apartments and 197 two-bedroom units. Adjoining commons building will house lounge, study and recreational facilities.

7. Total community involvement is goal of Mount Hope A.M.E. Zion Church, White Plains, N.Y. Designed by George van Geldern, church includes day center, street level row of shops, second floor professional offices, third floor community rooms and church offices and church on fourth floor. Steel structural frame supports exterior skin and roof of copper alloy.

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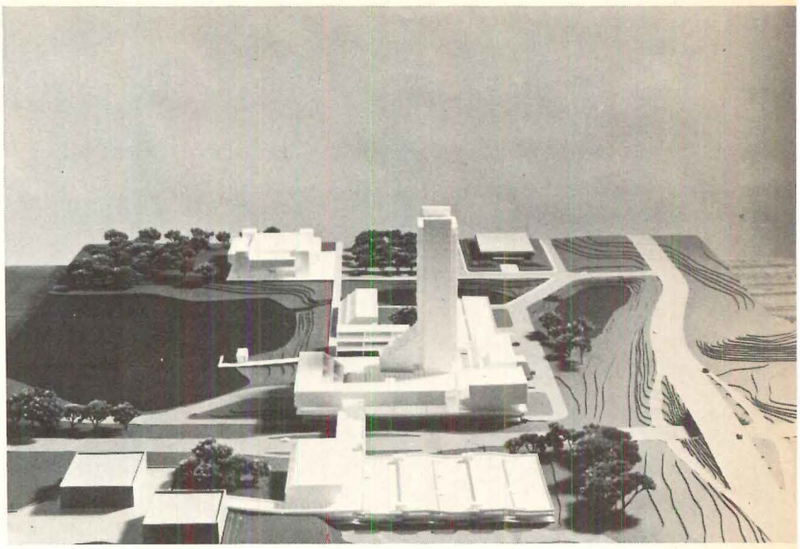

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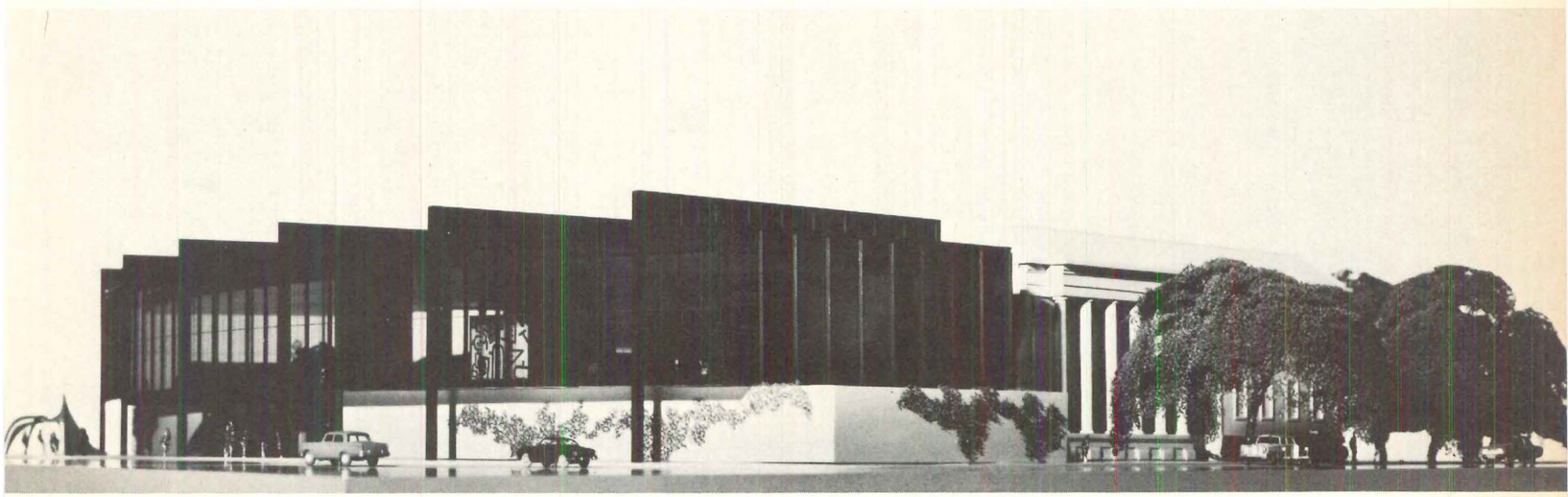

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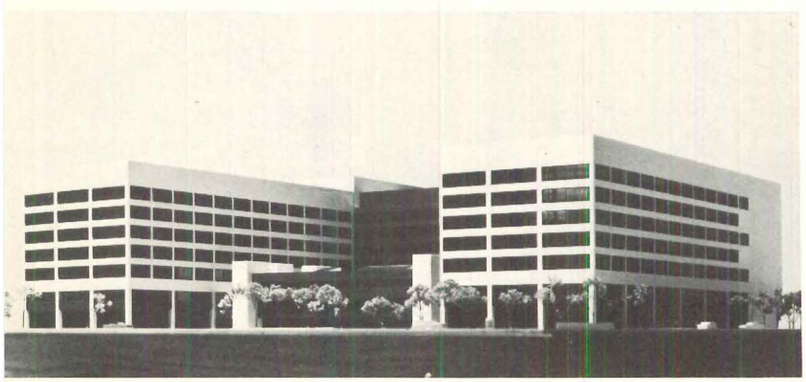

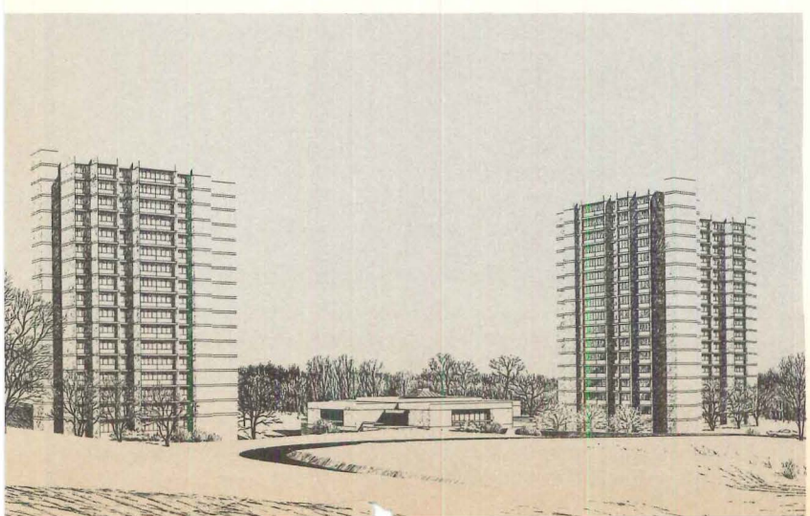

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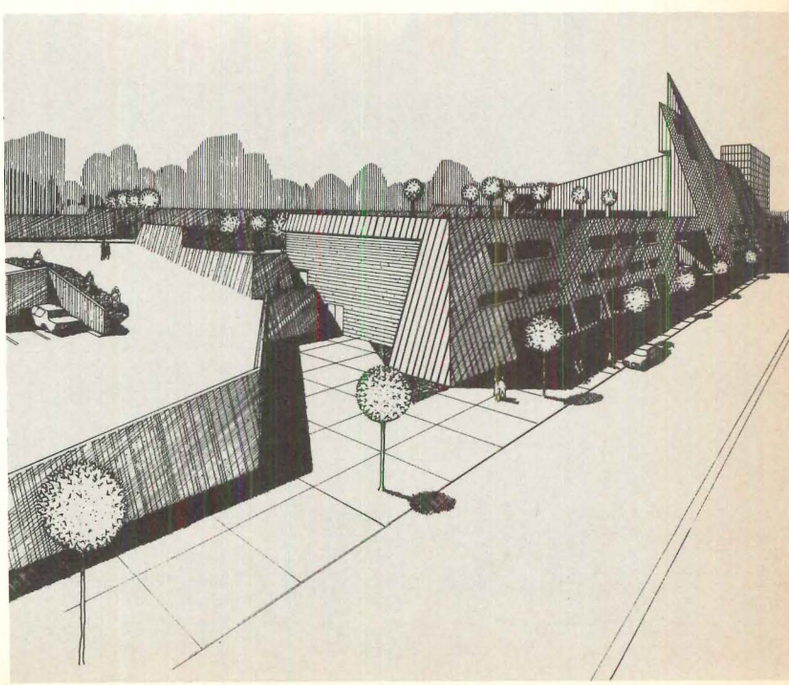

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Solarcool Bronze Glass is coated on the outdoor surface with a permanent, durable, metallic oxide which transmits approximately 39% of daylight incident light and reflects approximately 35%. It helps increase occupant comfort, because solar brightness is reduced.

Solarcool Bronze Glass is moderately priced, yet its performance can reduce mechanical equipment requirements. Operating costs may also be significantly reduced.

Solarcool Bronze Glass is the only single-glazed, annealed, light- and heat-reflective product available today. It can also be heat strengthened and tempered. Only PPG has it.

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PPG: a Concern for the Future

Below: The Southern Yacht Club on Lake Pontchartrain, in New Orleans. Curtis & Davis, Architects, specified *Solarcool Bronze* Glass on a test basis two years ago. The results: an open view of the lake; greater occupant comfort; a beautiful, reflective facade.

On Reader Service Card, circle no. 386

News report continued from page 29

Wilson will be the keynote speaker and problem evaluator.

Participants in the program will be asked to solve a typical space planning problem with the normal program constraints; an abstract "kit of parts" will be provided for them. Cost and time objectives will have to be met, in addition to the basic space requirements.

White and Rhyn are principals of SYNCON, a Milwaukee organization active in the development of building systems. The conference is to be given by the University of Wisconsin Extension; further information on "Systems Generating Systems" is available from Raymond C. Matulionis, Program Director, University Extension, The University of Wisconsin, Department of Engineering, 432 North Lake St., Madison, Wisc.

John Gardner to speak at AIA Convention

Former Secretary of Health, Education and Welfare, John W. Gardner, will address one of the three theme sessions of the 1971 AIA Convention in Detroit. Gardner, now chairman of Common Cause, a citizens' lobby group, will discuss how national resources can be applied to meet basic human needs.

Earthquake damage shows up faults in building codes

Some high-rise buildings in San Francisco, Los Angeles and other western cities could collapse in a great earthquake, warns a San Francisco structural engineer. The problem, according to Karl V. Steinbrugge, is that building code requirements for design of earthquake resistant high-rise structures haven't kept up with changing construction practices. So, he says, it is possible to design an extremely hazardous structure that meets legal requirements.

Steinbrugge's warning was contained in a report to the National Oceanic and Atmospheric Administration based on the study of earthquake damage during quakes in Santa Rosa, Calif. in October 1969. No lives were lost, but property damage was put at $7.25 million, with some 50 buildings damaged beyond repair. Among the damaged buildings was the Sonoma County Social Service Building, built in 1966 and designed as an earthquake-resistive building. Damage to it was greater "than expected in what is considered to be, at worst, a moderate earthquake," according to the study. Practically every reinforced concrete column cracked, the report states, and several exterior beams cracked on the main floor.

The report also pointed up another problem for high-rise structures—the possibility that stairs might shatter, endangering lives and hampering rescue operations. The possibility occurs because stairs are allowed to act as weak diagonal braces between floors, the report says.

What it all boils down to is that changed practices in construction can lead to unsafe buildings if the designer lacks "experienced judgment." A designer could follow the codes to the letter, but without that experienced judgment in extrapolating code values to new types of structures, he could "inadvertantly design a collapse-hazard structure which is legally safe," the report says. It goes on to add that collapse is more probable today than it was years ago, before "changed practices had reduced a structure's uncounted strengths."

A critical re-examination of the judgment factors behind seismic codes is needed, the report concludes, particularly where high-rise construction is concerned. Structural steel as well as reinforced concrete structures should be re-examined, it said, plus shear wall buildings as well as frame-action buildings.

Computer and scale models aid pollution studies

Seven months into a two-year, $80,000 study, three University of Utah professors have developed a computer model for air pollution patterns in the Salt Lake Valley, and an accompanying scale model to duplicate the real thing. The professors, Dr. Harold R. Jacobs, Dr. S.K. Kao and Dr. Po-Cheng Chang (mechanical engineering, meterology and civil engineering respectively) feel that their models will let them project pollution patterns for any part of the country.

Both models incorporate all of the region's topographic and atmospheric characteristics. But where the computer model works mathematically, the scale model works physically. It is equipped with a network of tiny pipes that spew pollutants in proper quantities and at proper places to simulate air pollution in the valley. Wind speed and direction can be simulated in a wind tunnel.

Sponsored by the U.S. Public Health Service, the study is expected to provide tools for spotting areas vulnerable to air pollution. In that way, the professors feel, industrial and population growth could be channeled to do the least damage to the air.

East Orange school to be designed by community

East Orange, N.J. has been looking at new ideas in education for some years now, first with a plan to put all the city schools on one central campus, and now with a program aimed at centering sixth- to eighth-grade teaching on the needs of the students and of the community. To bring school and community together, the school board and its architects, UNIPLAN, have set up a school planning center in a vacant store on the town's main street.

Personnel from UNIPLAN will staff the office, with the help of community residents; included on the staff will be some present or former students of the East Orange schools. The Center hopes to draw the people into the design and make them equal partners in the process and to assure that the community's physical needs will be met. It will be more than just a community liaison office, however; regular office hours will be kept and the actual designs for the new school will be developed right there, with the public watching and helping.

Tulsa architectural firm talks up the environment

With a program of 80 slides and a live commentary, Murray Jones Murray, a Tulsa architecture, engineering and planning firm, has been spreading the environmental gospel to local civic groups. The firm has prepared three different programs during the past few years.

At the end of the discussion, after the slide talk, the firm hands out a small folder titled 'Seventy Possibilities.' The possibilities are really recommendations for action—positive,

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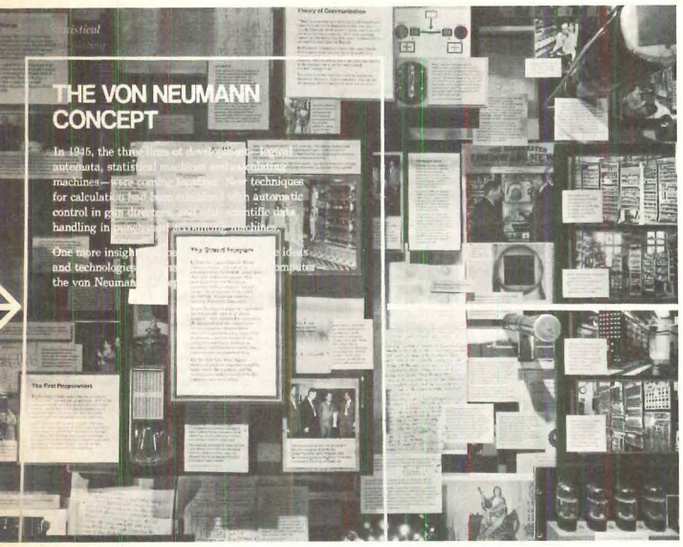
News report continued from page 35



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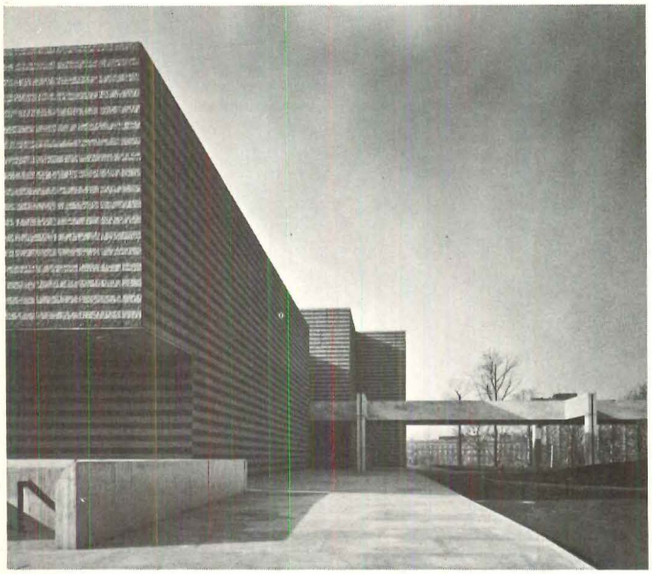

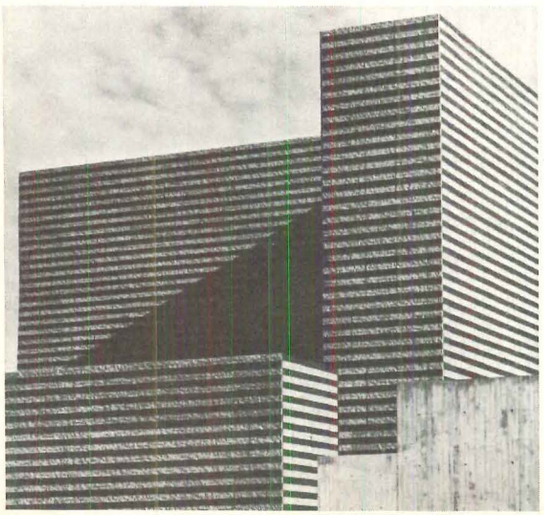

negative, constructive, preservative, large scale and small. Some samples: "Push for the recreational development of rivers and streamways ... replace American elms ... check suburban sprawl ... strengthen community centers so that education and the arts are provided at the neighborhood level ... seek authenticity in all things ... make a park in a vacant lot ... walk more ... be sensitive to the things and people around you."

b **Eames-designed exhibit traces computer history**

A century of computing techniques is on display at the IBM Building in New York City. Designed by Charles Eames, the exhibit is really a large assemblage of original documents and machines dating back to the 1890s. A large part of the material was retrieved from basements and attics of the inventors or their families; the rest had been collected by Eames over the past 20 years.

Historical material is shown as a three-dimensional collage along one wall of the exhibit space, putting material in its proper historical context. The exhibit also includes a 10-minute color film by Eames. Set to rock music, it shows the workings of a computer and its programmers. For those who are satisfied only with the real thing, there are four computer terminals on which visitors can play 20 Questions.

Boston studying moving walks

Three design concepts for moving walk systems are being looked at by the Boston Redevelopment Authority. Developed by Jackson and Moreland Division of United Engineers and Constructors, Inc. after a year of studying existing systems, the three new systems offer a solution to one of the largest drawbacks of moving walkways—speed, or rather, the lack of it. A prototype, using one of the three ideas, is proposed for an enclosed concourse in downtown Boston.

The walks recommended by the engineers consist of a series of consecutive conveyor belts of increasing length. Belt speeds increase from one end toward a long center belt, which moves at the fastest speed; speeds decrease toward the other end. Passengers are able to accelerate and decelerate gradually and safely. A set of two belts, moving in opposite directions, would make up the complete installation.

The other moving walk concepts developed by Jackson and Moreland involve a walk moving at a constant speed combined with oscillating aprons that move passengers on and off the walks. The basic arrangement is an elastic apron made up of ribs that move up and forward, then down and back; it accelerates the passenger from standing still to the speed of the moving walk. One arrangement takes passengers on at the end and moves them to the end of the main belt, the other works from the side.

c **Breuer's addition to Cleveland Museum opens**

Stripes of light and dark gray granite are probably the most immediately noticeable feature of Marcel Breuer and Associates' addition to the Cleveland Museum of Art, which opened its doors last month. The $10 million, 3-story addition gives the museum a new main entrance and provides 11,000 sq ft of gallery space, including a ground floor gallery 90′ x 86′, en-

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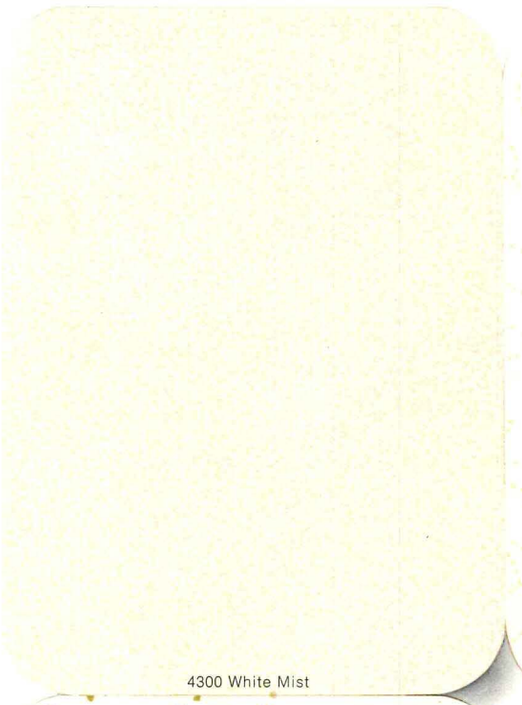
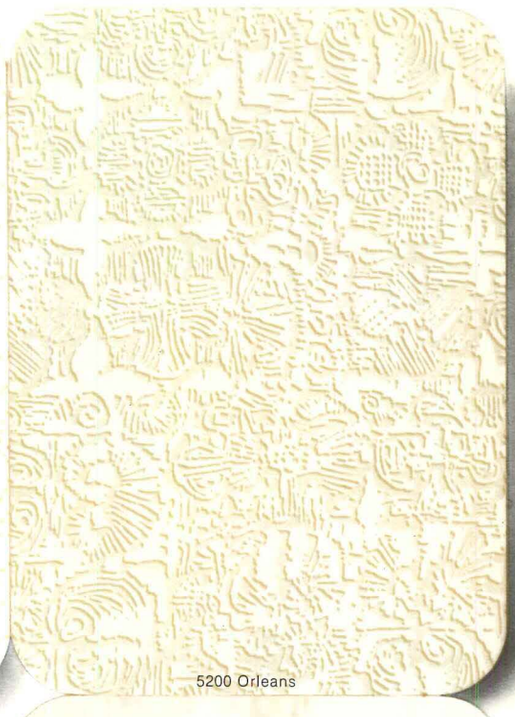
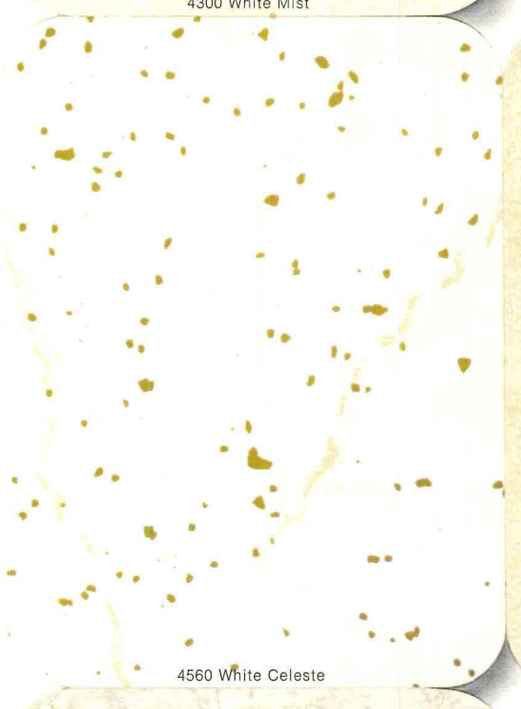


4300 White Mist

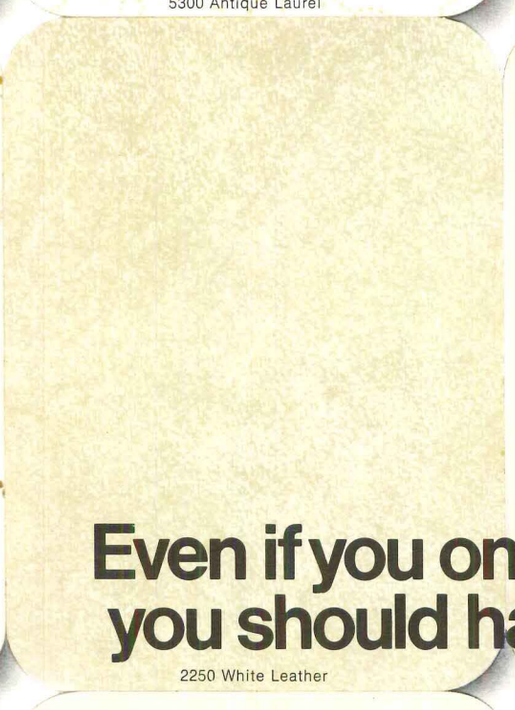
5300 Antique Laurel



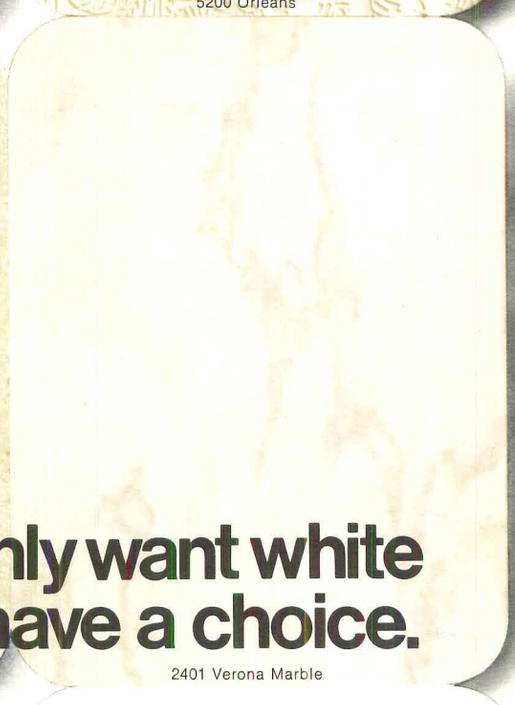
5200 Orleans



4560 White Celeste

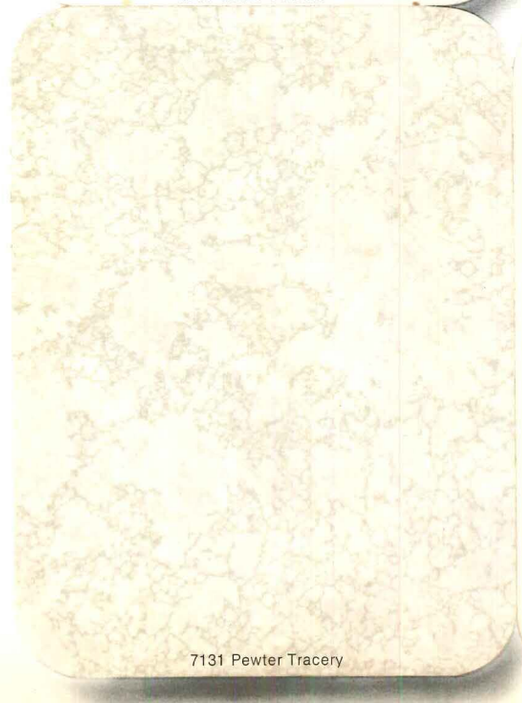


2250 White Leather



2401 Verona Marble

Even if you only want white you should have a choice.



7131 Pewter Tracery

5400 White Paisley

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News report continued from page 36

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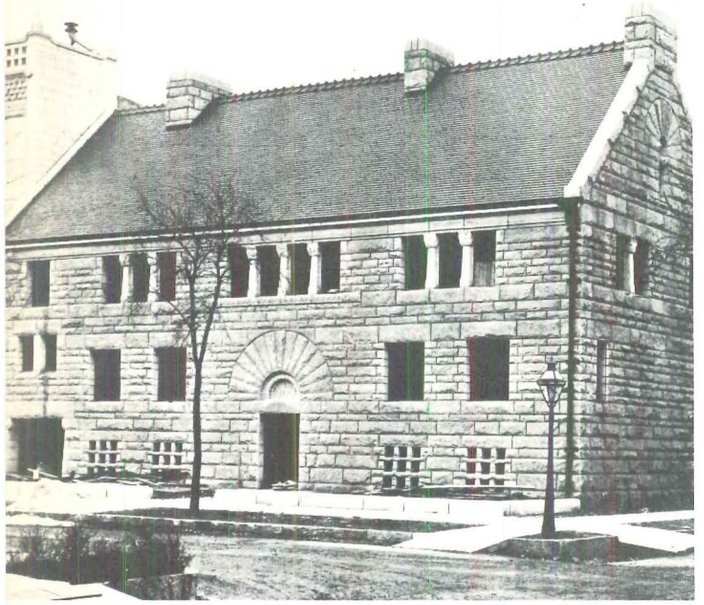

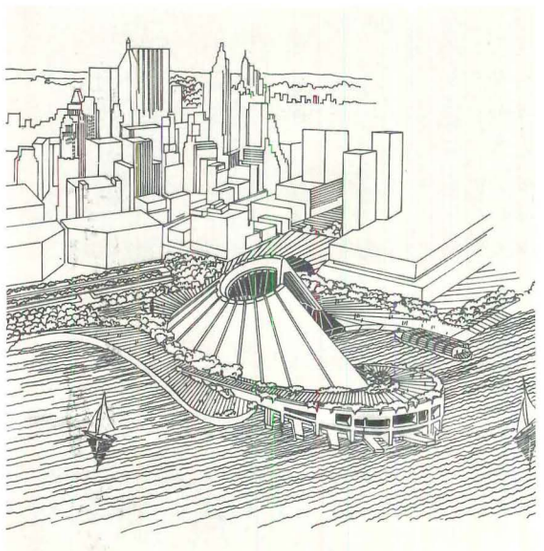

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tirely free of columns; another gallery is on the second floor.

The building houses the museum's Art History and Education Departments, Music Division and the Extension Exhibition Department. Among its facilities are a 750-seat auditorium, lecture and recital halls, classrooms, offices and film and audiovisual facilities. Windowless exterior walls provide continuous walls for exhibitions and allow complete control of lighting. Spaces requiring natural light are grouped around two glass walled interior courts.

d **Louis Kahn to receive AIA Gold Medal**

The AIA's Gold Medal for 1971 will be presented to Louis I. Kahn at the convention in Detroit in June. Besides maintaining his practice in Philadelphia, Kahn is a professor at the University of Pennsylvania.

e **Chicago Chapter AIA moves to historic house**

Chicago's AIA chapter will move to a new home this spring—a new home that is 85 years old. The new chapter offices will be in the Glessner House, designed by Henry Hobson Richardson in 1885 and named a landmark in 1970.

The house is owned by the Chicago School of Architecture Foundation, which hopes to turn the Victorian landmark into an architecture and conference center. Restored rooms will be open to the public, some 5000 sq ft will be used for offices (the AIA Chapter, and the Foundation, as well as others) and conference areas will be developed for use by a variety of groups. The house is the last remaining Richardson building in the city.

Plastics to play larger role in industrialized building

The present use of plastics in industrialized housing and the prospects for the future are outlined in a 152-page study by plastics consultants DeBell & Richardson, Inc. The report looks at wall structures, interior and exterior wall coverings, vinyl veneers and decorative laminates, flooring, insulation and vapor barriers and a host of plastic components. Major mobile and modular housing manufacturers are surveyed, and codes, regulations and costs are reviewed.

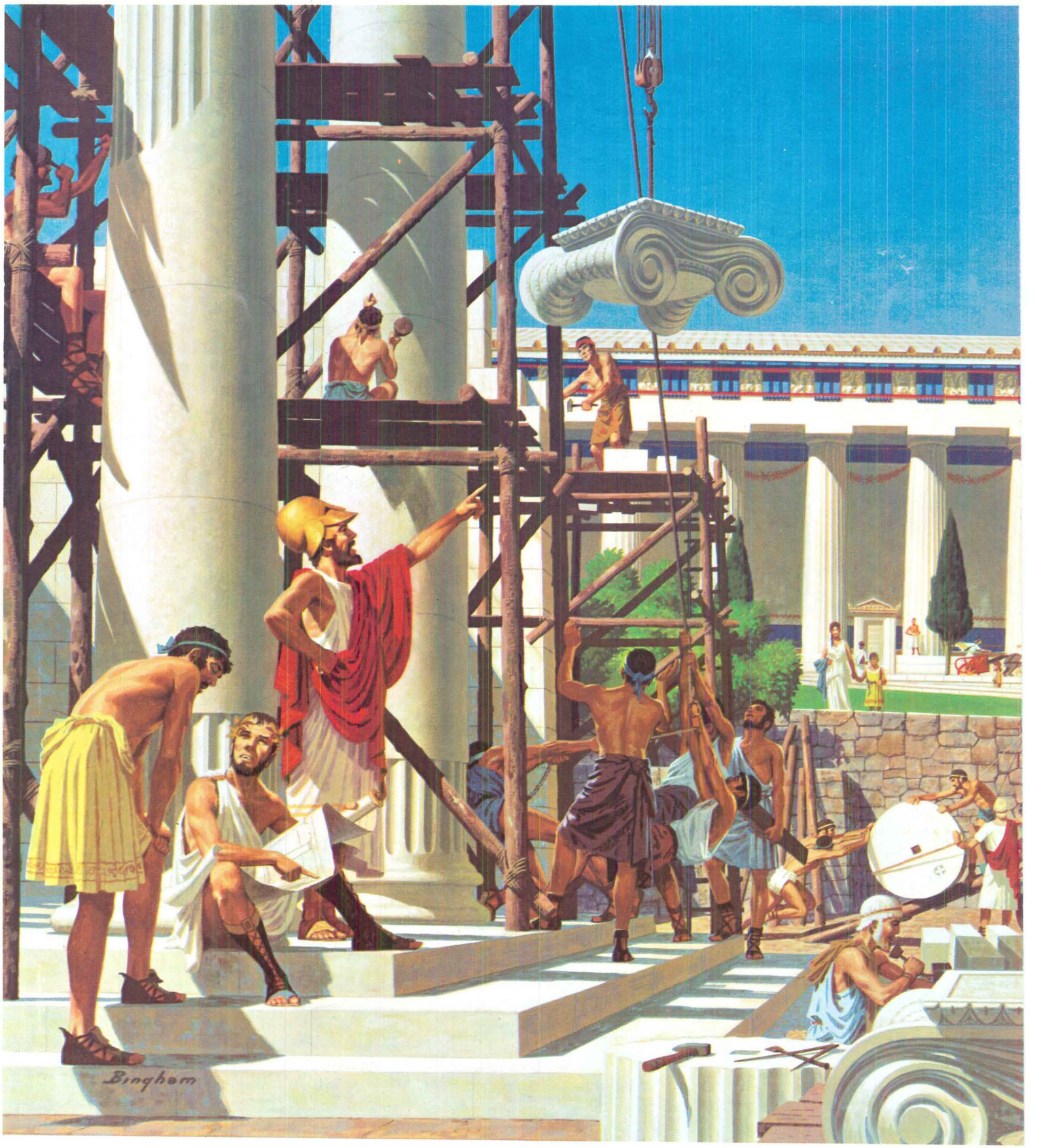
The report carries a $600 price tag, but De Bell & Richardson have released a few sample conclusions: (1) Modular housing is here to stay; present output is around 20,000 units a year, will grow about 40 percent through 1980. (2) Plastics will generally see more use in on-site construction. (3) Plastic components will play a larger part in future modular construction. (4) Of 14 application areas studied, the most significant plastics developments are cropping up in bathrooms, wall structures and pipe.

f **Cultural center will be NYC's largest space**

There is no specific site as yet, but the Lower Manhattan Cultural Center and its architects, Kahn and Jacobs, have some specific ideas about their project. It will be, according to the architects, the "most glorious and largest single space in New York."

The project is seen as the hub of activities aimed at making

[continued on page 43]


Bingham

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The Acropolis, Athens, Greece—409 B.C.

Even today, after the ravages of time, and the cannons of a dozen wars, the ruins of the Erechtheum stand as the finest-known example of Ionic architecture —representing the enduring architectural heritage of ancient Greece.

The painting: Cleophon, elected leader of the Athenians, oversees the construction of the Erechtheum with the architect Philocles. The Parthenon is seen in the background.

This painting is one of three works in Set A of the Celotex Collection of paintings depicting major events in the history of Man the Builder. For full color reproductions 20"x16" suitable for framing, send $1.00 for each set of 3 to: Historical Construction Paintings, Box 368A, Miami, Florida 33145. Important: please specify Set A, Set B, or Set C.

Set A consists of: The Ise Shrine, Japan; The Erechtheum, Athens, Greece; Ollantaytambo, Peru. Set B: City of Uxmal, Mexico; The Bayon, Cambodia; Neolithic Shrine, Turkey. Set C: The Palace of Minos, Crete; The Step Pyramid, Egypt; Pueblo Bonito, Arizona.

News report continued from page 38

lower Manhattan an around-the-clock community. It would provide a large space for exhibitions, shows and special events, plus an assortment of meeting rooms, libraries, galleries, restaurants and other facilities. The structure will be steel and exposed concrete, sheathed in heat resistant reflective glass. Water will play a large part in the design; an ideal site, according to the architects, would be on the edge of one of Lower Manhattan's landfill projects. There will be waterfront esplanades, ramps, lookouts and plazas, along with moorings for boats, including a pier for special exhibition boats. These boats, really barges, would be towed to other parts of metropolitan New York to extend the Center's activities up the Hudson and out the Long Island Sound.

Unions active in San Francisco architectural circles

Two reports from San Francisco point up the slowly but surely growing strength of unions in the drafting room. Architectural employees of the City and County have new titles, the results of negotiation by the Professional and Technical Engineers Association. Junior Architectural Draftsmen and Architectural Draftsmen are now Architectural Assistants I and II; Senior Architectural Draftsmen and Architectural Associates are now Architectural Associates I and II.

Meanwhile, in three of the city's architectural firms, the Organization of Architectural Employees has been busy. OAE feels that it now has enough members in the firms of Wurster, Bernardi & Emmons, Hertzka, & Knowles and Howard Friedman & Associates to hold elections; the group has petitioned the National Labor Relations Board, with the aim of becoming legally recognized as a bargaining agent.

Federal contracts outlined at New Orleans meeting

Some 800 architects and engineers gathered in New Orleans in January to get the latest word on Federal architectural and engineering contract procedures. A variety of government agencies was represented at the conference, which was sponsored by AIA, CEC and NSPE.

In a discussion of Federal contracting procedures, Gilbert Cuneo urged that professionals know the regulations binding every agency contract and warned that they should make sure that everything desired is written into the documents. The Department of Defense, he noted, has adopted a "consequential damages" clause for faulty design, and other agencies will follow suit. Contracting by the book is a way of life, he told the audience (according to a report on the conference prepared by Gaio Associates, Ltd. for its clients); but he also added that architects and engineers have certain rights that may be written into Federal contracts to nullify some governmental regulations. He emphasized that getting the rights written in is important: he warned against accepting the good word of any official because, he said, "there is usually someone who can overrule him."

GSA administrator Robert L. Kunzig started a panel discussion about his agency by announcing two major changes in construction work within the agency. GSA will now provide individual project managers for each major job, and new construction contracts will be phased, he said. He also stated: "I want beautiful federal buildings . . . a high quality of design . . . and recognition that time is money."

Other members of Kunzig's panel elaborated on the general theme. Arthur Sampson, Commissioner of the Public Building Service noted that an A-E selection board would be maintained for all major work and that the design and construction division of GSA-PBS had been renamed Office of Construction Management. Ray Nixon, Assistant Commissioner for Operational Planning, stressed the agencies' desire to protect the environment; all projects will be studied to determine their impact on the environment. In certain cases, he said, PBS would even consider redeveloping adjacent areas if needed. More specifics came from Walter Meisen, Assistant Commissioner for Construction Management: $1 billion to be spent on construction annually; project reviews to be held in A-E offices, rather than PBS offices, to speed things up; only 12 months, at the most, for design and contract documents —time really is money.

Other agencies—Veterans Administration, Post Office, FAA, Commerce—outlined current procedures and programs. HUD's Assistant Secretary for Research and Technology, Harold Finger (he runs Operation Breakthrough) took the building trades to task for overly high wage settlements. If we are to meet our public housing goals, he said, the wage settlements must be rolled back.

Calendar

March 11–April 27. Council of Educational Facility Planners: eight regional workshops to be held across the country.
March 22–25. Electrical and Electronics Engineers Inc. 1971 International Convention and Exposition, New York Hilton and Coliseum, New York City.
March 30–April 1. Second Annual GATE (Group to Advance Total Energy) Southwest Research Institute Engine Use Forum, San Antonio, Tex.
April 5–7. Portland Cement Association, Advanced Seminar on Lightweight Concrete, PCA campus, Skokie, Ill.
April 18–21. Seventh North American Conference on Campus Planning and College Building Design. University of Illinois, Urbana, Ill.
May 10–13. Consulting Engineers Council/U.S. Annual Convention. Diplomat Hotel, Hollywood, Fla.
May 12–15. National Society of Interior Designers' 8th National Conference, Cleveland, Ohio.
June 7–9. Construction Specifications' Institute, 15th Annual Convention and Exhibit, Anaheim, Calif.
June 20–24. American Institute of Architects, 103rd Convention, Detroit, Mich.
June 23–25. Third National Exposition of Contract Interior Furnishings (NEOCON), The Merchandise Mart, Chicago, Ill.
June 28-July 2. MIT Systems Building and Industrialization in the United States, Cambridge, Mass.

Awards

Ten winners, half Honor Awards and half Awards of Merit were named in the second annual Community and Junior College Design Awards program, sponsored by AIA, American Association of Junior Colleges and the Department of Health, Education and Welfare. Honor Awards go to: **Caudill Rowlett**
[continued on page 44]

News report continued from page 43

Scott and **William Blurock & Partners** (Cypress College Phase I, Cypress, Calif.); **Hartman-Cox, Architects** (Mount Vernon College Chapel, Washington, D.C.); **Wolff Zimmer Gunsel Frasca Ritter** (Portland Community College Phase I and II, Portland, Ore.); **Celli-Flynn & Associates** (Community College of Allegheny County, Boyce Campus, Monroeville, Pa.) and **Caudill Rowlett Scott** (Joliet Junior College, Joliet, Ill.).
Awards of Merit: **Schaefer, Schirmer & Eflin** (Allen County Community Junior College, Iola, Kans.); **Jeppsen, Miller & Tobias** and **Daniel, Mann, Johnson & Mendenhall** (Linn-Benton Community College, Albany, Ore.); **Daniel, Mann, Johnson & Mendenhall** and **Phillip J. di Corcia** (Manchester Community College, Manchester, Conn.); **Kirk, Wallace, McKinley & Associates** (Seattle Central Community College, Seattle, Wash.); **Tarapata-MacMahon-Paulsen Assoc.** (Washtenaw Community College, Ann Arbor, Mich.).

Washington report

Budget, revenue sharing go to Congress

The budget message sent to Capitol Hill at the end of January was harder to read than usual (and that's hard enough, considering that the message is largely an 1100-page compendium of fine print listing every department and agency of the government and its proposed expenditures).

The reason was that President Nixon presented his message on two levels: The $229 billion spending he proposes for the coming year, department-by-department and program-by-program; and also allowing for what will happen should Congress go along with his revenue sharing plan, under which states and localities would get some of the money on a "no strings" (about $5 billion) and "few strings" (about $11 billion more) basis. The problem is that $11 billion is already committed to various programs (like urban renewal) tucked away among the detailed departmental and agency budgets.

Nevertheless, a look at the overall budget indicates—as expected—few changes in Federal spending that are of direct concern to architects: An overall total of about $14 billion for all Federal construction work and assistance, with the few gains concentrated in assistance to housing, and work to clean up and maintain the environment.

Mr. Nixon's optimism about revenue sharing, by the way, may not be as misguided as some stories from the Capitol may indicate: Despite obvious congressional balking, there is already a strong groundswell of favor from harried mayors, governors and county officials and a considerable buildup of public acceptance.

Although it has not been noted too strongly, there is a direct tie-in between revenue sharing and the President's proposal for merging seven cabinet departments into four organized along lines of function—"human resources," "natural resources," etc.—and gobbling a swatch of other agencies (like General Services) into these overall departments. The tie-in: If more money is sent back to states and localities, with either minimal or no Federal strings, then the enormous bureaucracy in Washington that spends most of its time telling others what to do and checking for errors or fraud can be reduced as well.

This will be the main sticking point in Congress. Involved are more than a million jobs in the seven departments, and a lot of congressional power and patronage through the numerous committees that oversee these departments. There's another point: Washington can't really believe that anyone else is honest enough, or knows enough, to administer anything.

Architect named Capitol architect

At least part of the long controversy over the office of Architect of the Capitol may be quieted, with the appointment of a practicing architect (and an AIA vice-president) to the post. George M. White, newly named to the $38,000-a-year, lifetime post, operates his own architectural firm in Cleveland (specializing in commercial and industrial work) and lectures on architecture at Case Western Reserve.

The first practitioner of the art to hold the Capitol post since 1865, White actually holds civil engineering (bachelor and master) degrees from MIT, as well as business and law degrees. His appointment ends a 23-year running battle between the late J. George Stewart (who was a construction executive and ex-Congressman) and Congress—largely centered on the fact that Stewart was not an architect.

It should be remembered, however, that very few of the 2400-odd persons who work for the Architect of the Capitol have anything remotely to do with architecture—most of them are concerned with maintaining the buildings on Capitol Hill, operating restaurants and cafeterias, running heating and lighting systems and the like. It has often been suggested—not in fun—that the title might well be changed to "Custodian of the Capitol." Nevertheless, the Architect, in concert with House and Senate leaders, has much to do with selection of architects and engineers who do actual design work on Hill buildings.

President seeks answers on construction wages, prices

The White House openly called the wage-price spiral in the construction industry a "crisis," in asking the Construction Industry Collective Bargaining Commission to reach some sort of an answer by mid-February. Although the Administration was careful to insist it wasn't threatening anything, branding the situation a crisis opens up a lot of powers to the President, if the industry doesn't get into line. Behind the urgency were some solid facts, among them this: official goal for housing starts this year is now 1.7 million units. But HUD Secretary George Romney recently opined that that figure could "easily" top 2 million—if costs and labor conditions were stabilized.

There was other activity as well both on legislative and private levels, among professionals: A bill to increase per-diem allowances for professionals (which died in the last Congress) will be re-introduced; long-dormant efforts to merge three consulting engineering groups (Consulting Engineers Council, American Institute of Consulting Engineers, Professional Engineers in Private Practice) suddenly came to life, with a proposal to be submitted in mid-year; and 15 organizations (including NSPE, AIA and others) formed the "Council for Advancement of Construction Technology"—principally to combat labor boycotts of materials and methods. [E.E. Halmos]

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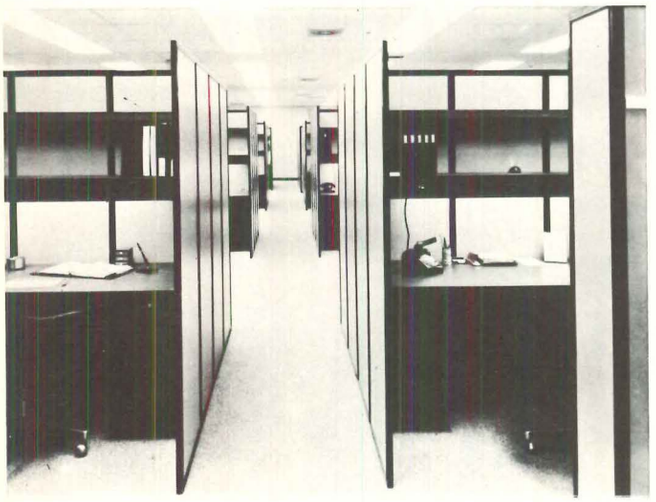

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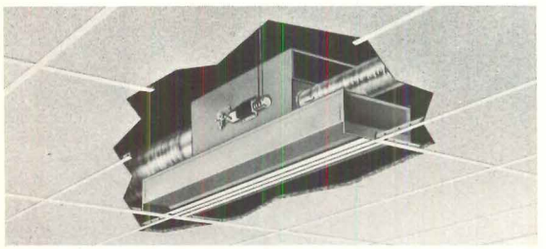

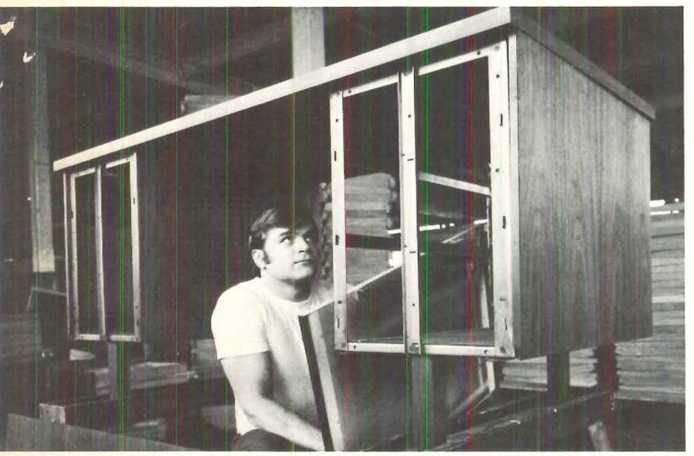

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a **Office planning going up.** Prepainted welded steel tubing joins the walls and built-ins of these free-standing office modules that take height into office planning and offer privacy without isolation. Designed to accommodate varied overhead built-ins, modules of ¾"-thick solid core panels have vinyl laminated faces and a series of built-in components, furnishings and fixtures all said to be easily and inexpensively dismantled and re-erected. Steel tubing: Hofmann Industries. Apton office modules: Dexion.
Circle 101 on reader service card

Popular prices. Desks, credenzas, conference tables and seating for the office come with a wide choice of design alternatives including oak or walnut woods, wood or metal legs and many fabrics and vinyls. Upholstered portions of chairs are easily removed. Hardwood House.
Circle 102 on reader service card

Fabrics. Collection of upholstery, drapery and casement fabrics for the contract and interior design fields includes imported wool designs by Suzanne Huguenin, wool blends by Richard Wagner and verel and velvet prints and earth tones by Yoshiko Kogo. Custom colors available as well as stock colors and patterns. Schumacher.
Circle 103 on reader service card

Data secretary. This editing typewriter consists of an electric typewriter and deskside console which stores, corrects and automatically produces typewritten material with magnetic tape or card storage devices. The manufacturer claims it is priced lower than other such equipment due to a digital systems approach. Redactron Corp.
Circle 104 on reader service card

Solve. Flexible modular office furniture designed to be arranged in an almost unlimited number of different configurations; can be stacked and arranged to fit any existing floor area. Included are storage units and desks with such features as open-top files, desk-top work organizers, built-in phone unit. Flat sliced white oak with simulated oil finish: optional plastic laminate tops. Leigh-Leopold Furniture Co.
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b **Variable air volume.** With VariTrane, a single duct variable volume system, only the quantity of conditioned air necessary to balance heat gain is provided to each space. According to the manufacturer, there are excellent cost advantages since the total capacity of the central fan and refrigeration systems can be substantially reduced. Slot-type high induction ratio diffusers (the Coanda effect) are capable of handling a wide variation in air flow. High and low velocity units available. The Trane Co.
Circle 106 on reader service card

c **Interchange.** A new line of wood office furniture is made to accommodate interchangeable parts. Panels are joined to a structural steel frame with metal brackets and screws. Desks can be converted easily to single or double pedestal or right- or left-hand L-shaped models. Marble/Imperial Furniture Co.
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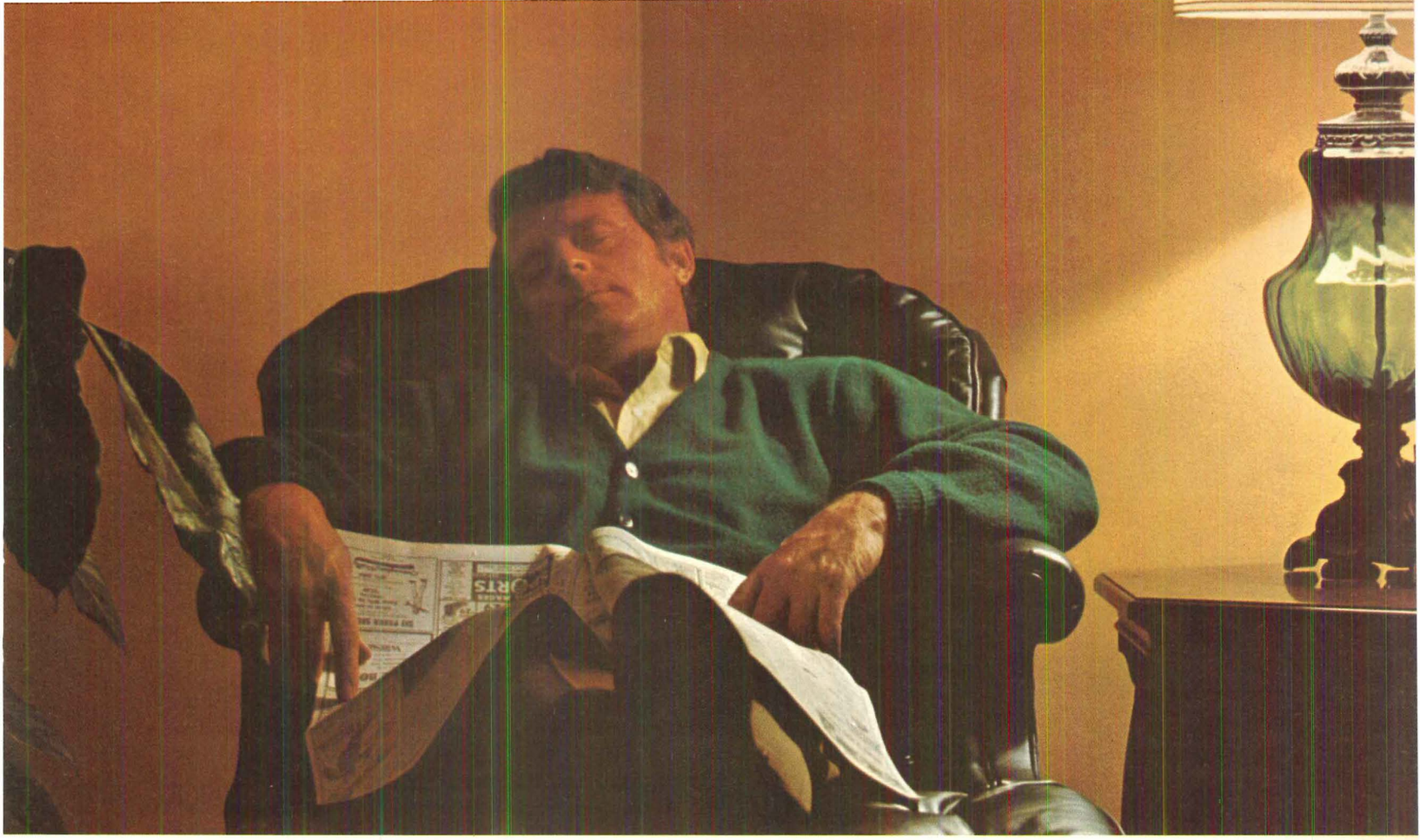

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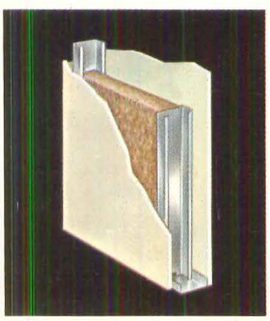

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UNITED STATES GYPSUM //

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BUILDING AMERICA

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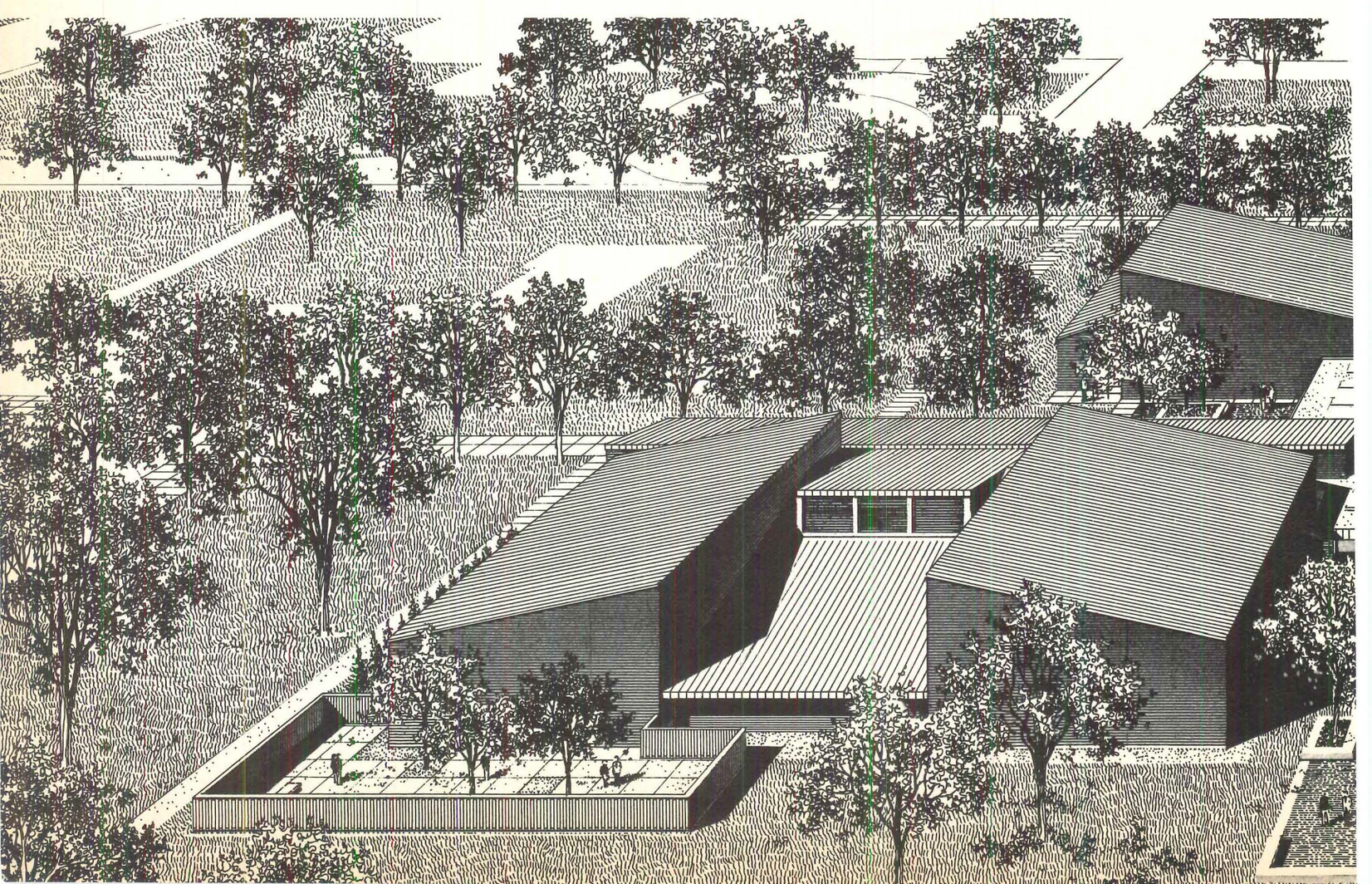
Rendering by Brian Burr

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

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



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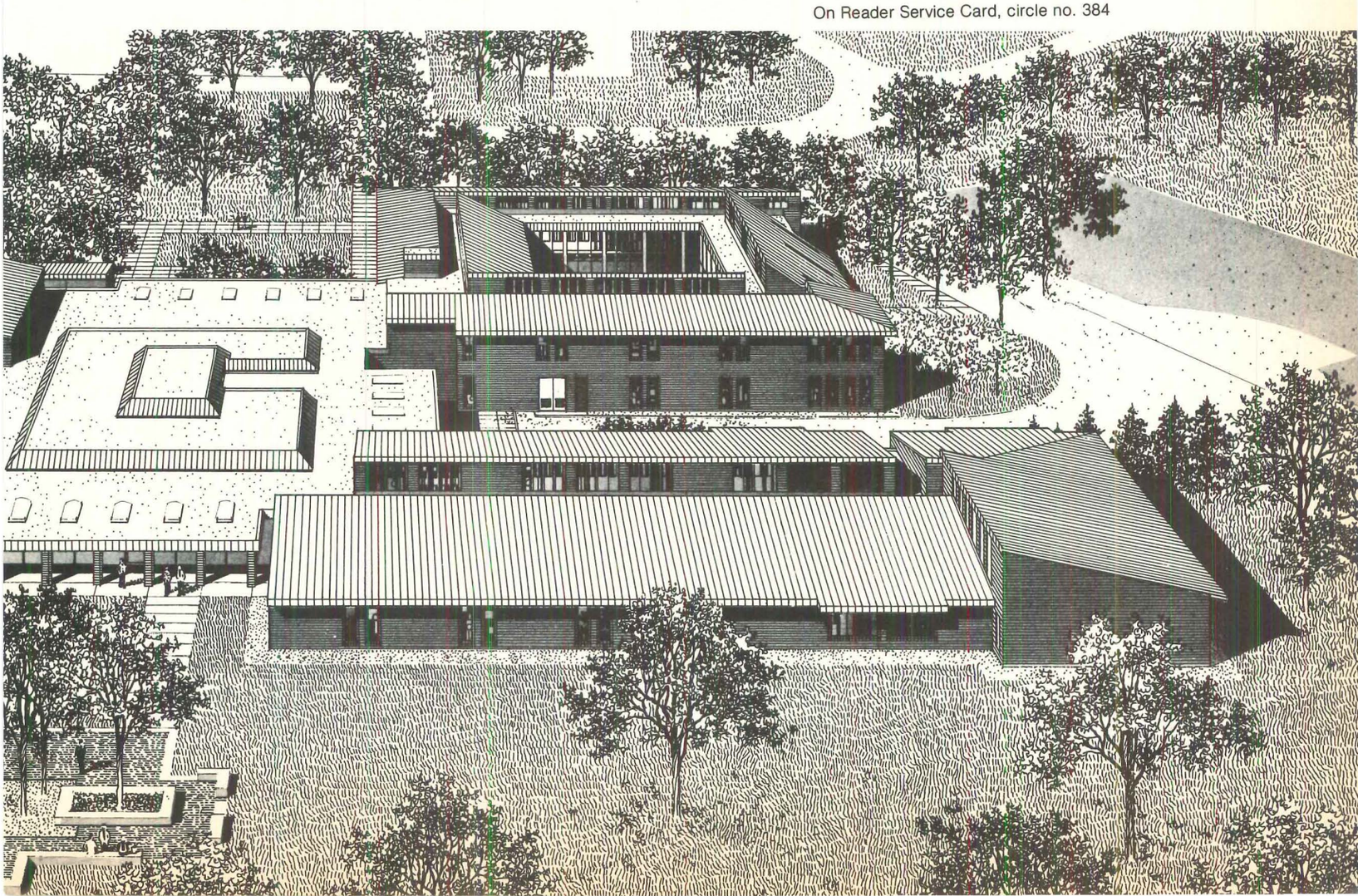
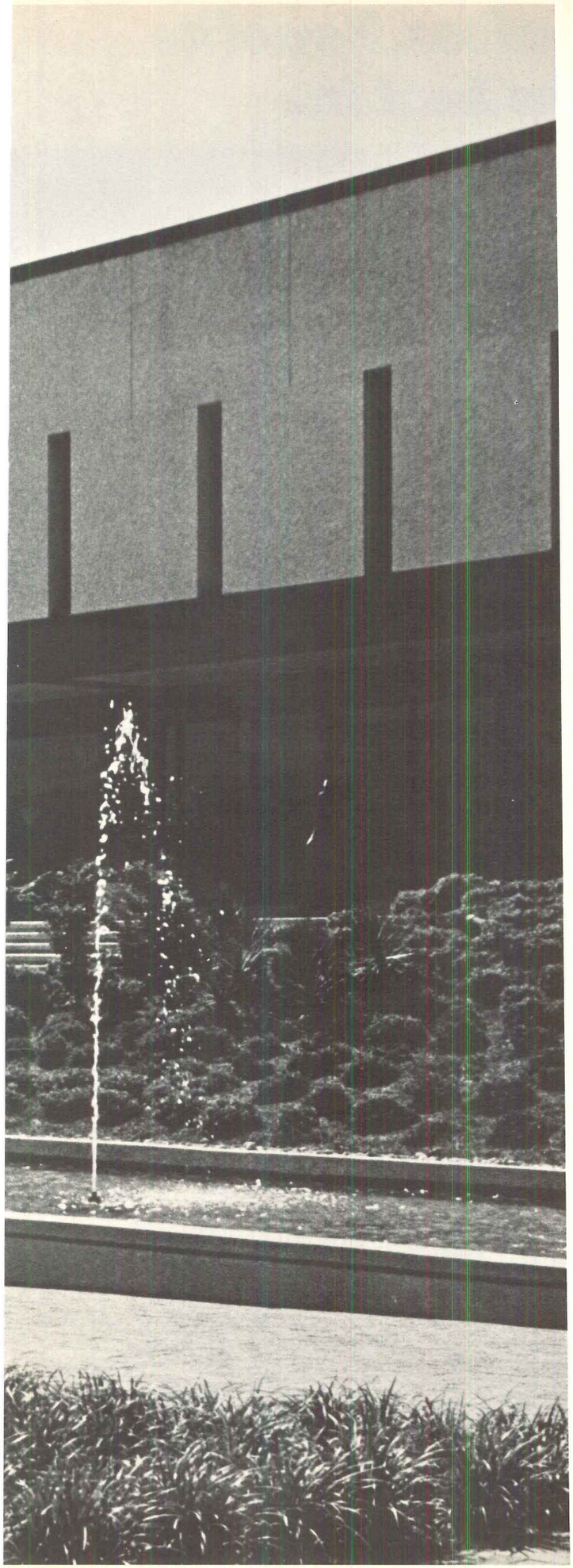


The electric climate is for architects who want unlimited design flexibility.



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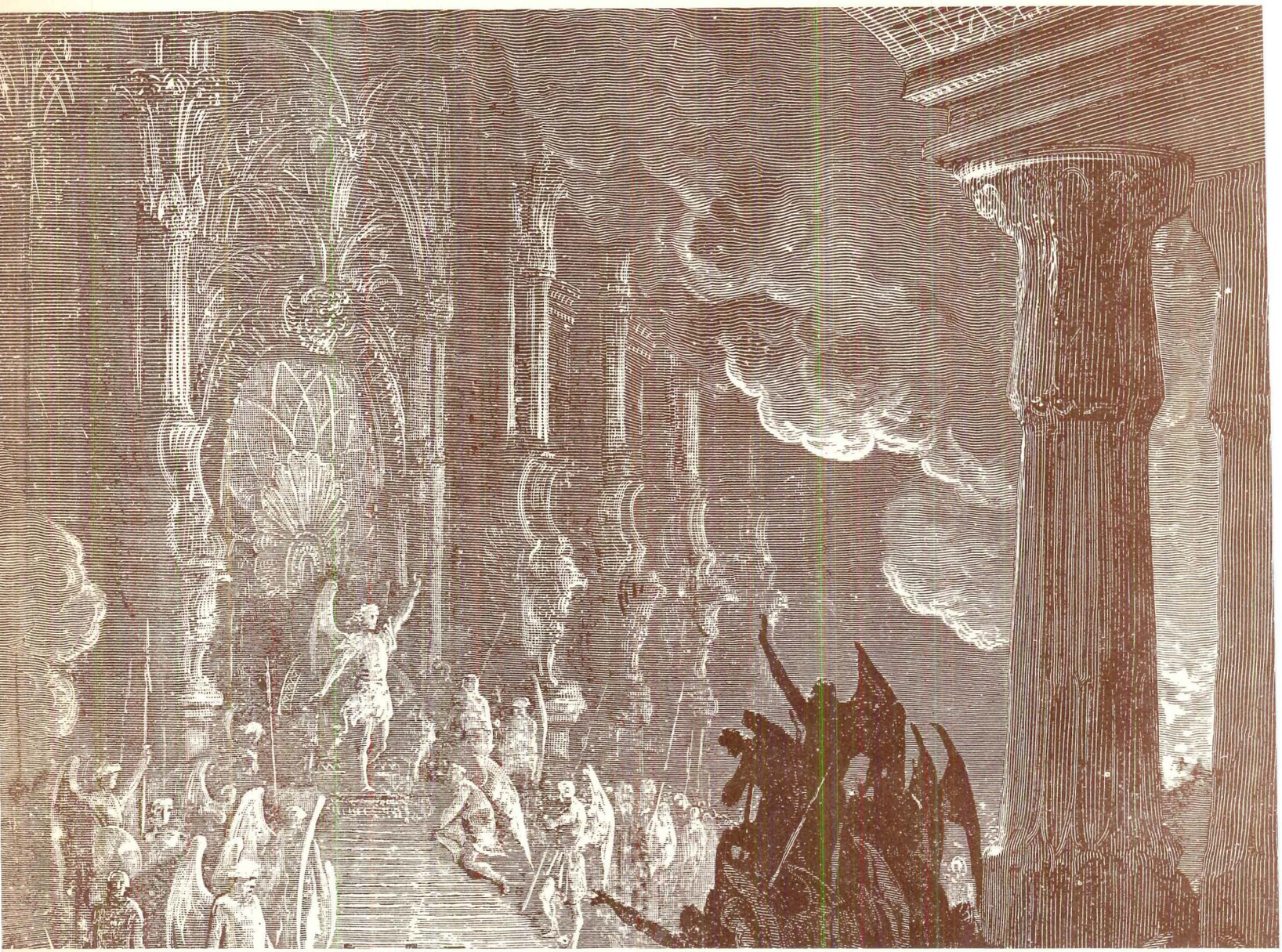

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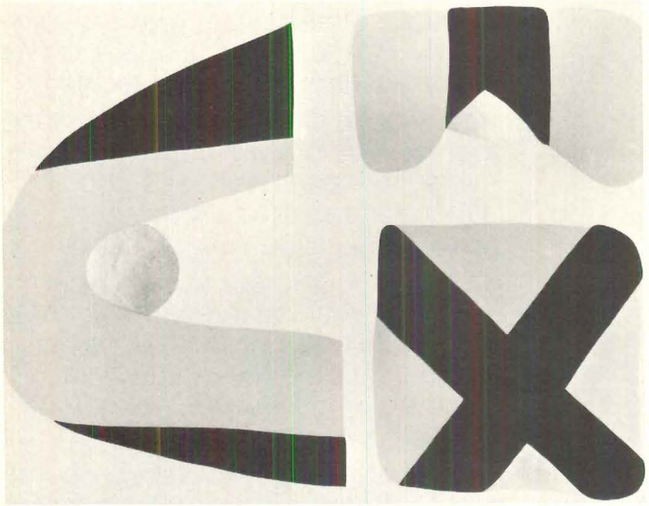

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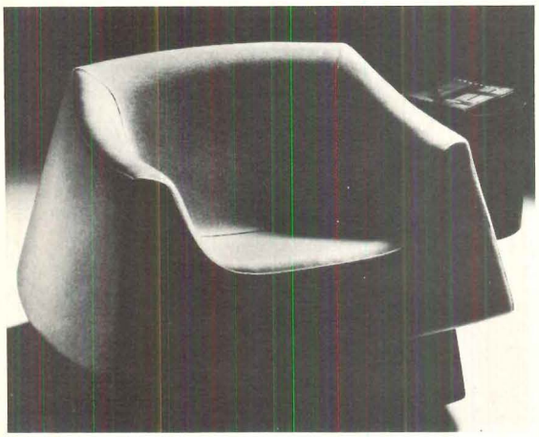

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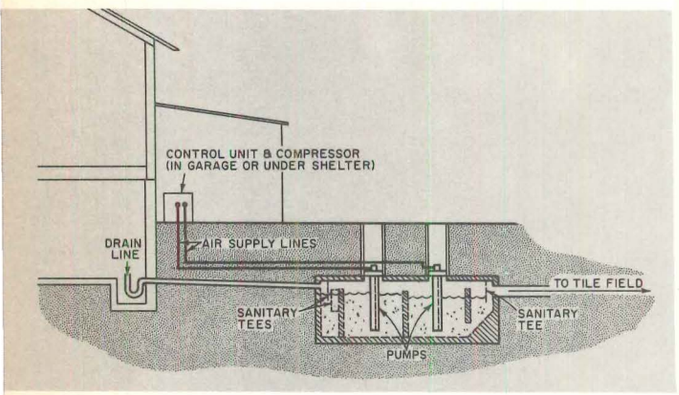

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d **From Finland: pictures for business.** An American-born, Finnish-based artist, Howard Smith, has designed 36 signed, silkscreen graphics prints for business and professional interiors. Available in limited quantities per subject, they range from 24″ × 18″ to 32″ × 44″, are abstract in design and expressed in strong vivid colors, often on white backgrounds. Pictures for Business.
Circle 108 on reader service card

Volumaster. This air-conditioning system for apartment buildings has a variable volume fan-coil unit, solid-state controls and the Volumaster outlet assembly. A variable speed fan in the recessed fan-coil unit supplies warm or cool air through ductwork to each room; a counterbalanced damper automatically maintains a continuous airflow across the ceiling. Carrier Air Conditioning Co.
Circle 109 on reader service card

Single-handed. Lavatory faucets with single handles, now in colors, are said to be priced about 30 percent less than double-handle models. Shell, valve body, tube and aerator body are injection-molded Celcon in blue, sand, avocado, gold and white; one-piece cartridge. Cole Valve Corp.
Circle 110 on reader service card

e **Sculptured.** Boldly-scaled armchair designed by O.J. Holohan is upholstered in varied fabrics, over a filling of ¾″ polyurethane on a basic fiberglass-reinforced polyester shell. Also available without upholstery, or part-upholstered. Occasional tables, one with a 26″ square top, the other with a 33″ diameter round top are also formed of glass-reinforced polyester. White or colors. Vecta Contract Marketing Co.
Circle 111 on reader service card

f **Sewage treatment plant.** Compact unit, designed to replace septic tanks and cesspools, is said to remove up to 95 percent of pollution from home sewage. It produces a clear, odorless fluid suitable for irrigation and other uses. Sized for residences, multi-family and small commercial buildings. Environmental Services, Inc.
Circle 112 on reader service card

g **Pre-finished building system.** A structural, insulated panel system for residential and commercial building is jointless and leakproof; the cavities formed when panels are joined are filled with urethane foam at the site. The makers maintain that there is no through-the-wall conductivity; a polyvinyl chloride spline separates the panels while it connects them. Insulation values are said to be higher than in other sandwich panel systems. Phelps Dodge Building Systems.
Circle 113 on reader service card

Concrete flooring. Identified as the I/D Floor, and designed for low-rise apartments and single-family homes, the manufacturer claims that this flooring combines the permanence, fire safety and acoustical properties of concrete with fast construction and easy integration of mechanical systems. Fiberboard forms rest on steel purlins, which reinforces the concrete. Portland Cement Association.
Circle 114 on reader service card

[continued on page 56]

Knoll International

Charles Pollock designs for Knoll.

His forthright concept is matched by sensitive choices of material and manufacturing ingenuity.

745 Fifth Avenue, New York 10022

Knoll International operates in 31 countries.

Products continued from page 54

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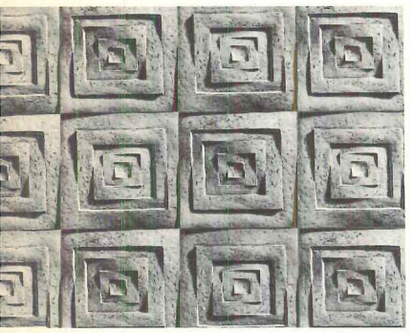

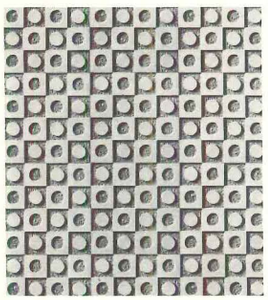

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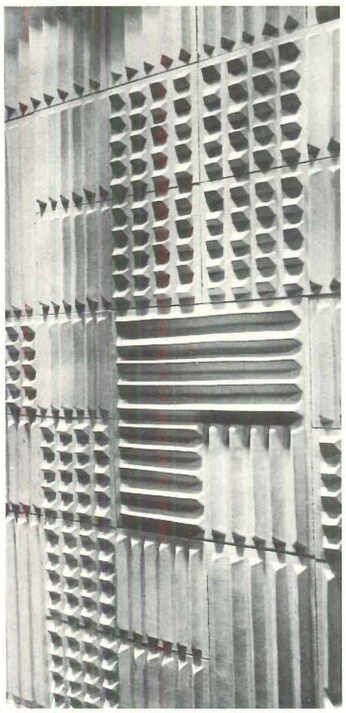


Ceramic mural walls. Seventeen new designs have been added to this line of ceramic walls, which are installed like tiles in modules of from 16 to 18 in. Ranging from textured, earthlike surfaces to abstract and geometric reliefs, the designs are available in natural clay colors and matte and glossy finishes. For use as facings for buildings, in lobbies and on accent walls. Design-Technics Ceramics Inc.
Circle 115 on reader service card

Single-hung windows. Only the bottom sash of this window operates — the top sash is glazed directly to the frame. Its simple construction is said to offer cost savings. Available in 52 sizes with exterior and interior prefinish, making the installed cost even lower. Marvin Windows.
Circle 116 on reader service card

Theater "Luv" seat. Theater- or movie-going couples can be seated together on this "Luv" seat. Forty inches wide with urethane cushioning over serpentine springs, the chair is supported by horizontal bar beam construction to which cast iron floor supports connect: The American Seating Co.
Circle 117 on reader service card

Wall type lavatory. An all stainless steel, surface-mounted lavatory suitable for commercial and institutional applications. Installation costs are said to be lower because expensive framing and rough-in plumbing are not required; units come with plumber's hook-up kit. Columbia Sanitary Products.
Circle 118 on reader service card

Literature

Domes and skylights. "Natural light through design-oriented glazed structures," a 23-page booklet, shows transparent overhead domes, skylights and vaults that use round, square and rectangular flush-type tubular aluminum architectural members. IBG/Ickes-Braun Glasshouses, Inc.
Circle 119 on reader service card

Commercial furniture. This 8-page catalog displays over 200 varied furnishings including the Astro upholstered stack chairs and the stack gang table. Fixtures Mfg. Corp.
Circle 120 on reader service card

Office seating. A 24-page catalog illustrates executive and secretarial seating, sofas, lounge chairs and tables in modern and traditional styles. R-Way Furniture Co.
Circle 121 on reader service card

Wood stains. Illustrated handbook offers a guide to wood stains and staining and answers frequently posed questions about when to stain, when to paint. Letterhead request: Samuel Cabot Inc., Dept. 328R, One Union St., Boston, Mass.

Glass classics. An 8-page brochure, "Classics in Glass," presents patterns and applications of float, drawn sheet and heat-absorbing glass. Also covered are solar glass, colored slabs and nonreflection and diffusing glass. Glaverbel, Inc.
Circle 122 on reader service card

One-man building control. Automation center, operated by one man, offers total building control. It features a rapid scan rate that can report alarms at one of as many as 80,000 points within five seconds, offers monitoring, indication, command, motor status. Powers Regulator Co.
Circle 123 on reader service card

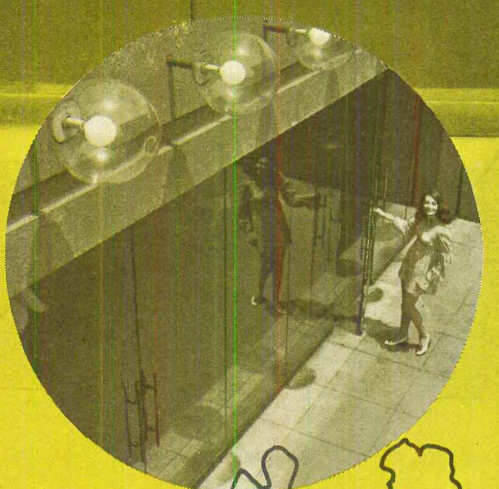
Hardwood flooring. This 12-page catalog illustrates many of the 150 parquet floor patterns available in Thai-Teak and other hardwoods from all over the world. Technical specifications and installation details included. Bangkok Industries.
Circle 124 on reader service card

Double shell chair. 451 series chair line, designed for general office and middle-management budgets, is described as having a chair-within-a-chair construction. Steelcase.
Circle 125 on reader service card

Paneling. A 12-page catalog presents plastic-finished hardboard for walls and ceilings. Illustrated are 4-ft panels, 16-in. square ceiling block, and 5-ft wide mural panels. Paneling Guide from Marlite.
Circle 126 on reader service card

Porcelain-on-steel. A 32-page brochure, "Guide to Designing with Architectural Porcelain Enamel on Steel," presents color ranges, types of insulated panels, design data and other details. Porcelain-Enamel Institute.
Circle 127 on reader service card
[continued on page 60]

Twelve of more than 150 Rixson concealed floor closers: L'Enfant Plaza, Washington, D. C.



Architect: I. M. Pei and Partners, New York City
Hardware: Rudolph and West Co., Washington, D. C.

silhouettes

No visible door closer or hinge mars the contemporary lines of these entrances. Yet, the great glass doors of this exciting underground mall are reliably controlled under any condition. No compromise was made. Concealed beneath the plaza's gleaming terrazzo – fully accessible and adjustable – Rixson's No. 28 Series closers.

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On Reader Service Card, circle no. 368

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Literature continued from page 57

Appliances. Free-standing and built-in electric ranges, ovens, range hoods, room air conditioners, dishwashers, disposers, refrigerator-freezers and washers and dryers are illustrated in this catalog. Detailed feature and installation information. Hotpoint.
Circle 128 on reader service card

Steel doors. "Recommended Standard Details—Steel Doors & Frames," is a five-part technical data document. Recommended are door frame details; details for dutch doors; for standard steel doors; a door, frame and hardware schedule and weatherstripping for standard steel doors and frames. Steel Door Institute.
Circle 129 on reader service card

Secondary school seating. School furniture ranging from fixed to movable desks, chairs, and combinations of same, and lecture room and auditorium seating is described in a series of separate catalogs. Furniture is available in a wide variety of materials, shapes, colors and finishes. Heywood-Wakefield Co.
Circle 130 on reader service card

Marble/epoxy. A catalog sheet features canyon colors and aggregate style for marble/epoxy terrazzo tile. Specification sheet gives installation methods, performance, material composition and maintenance. Tiles are 12" x 12" x $\frac{3}{16}$". For use in industrial plants, offices, institutions and residences. Mar-Bel-Air Division, Commercial Steel Co.
Circle 131 on reader service card

Drawing reproduction. For use in the reproduction or restoration of engineering and architectural drawings, this updated materials selection chart is 25" x 29"; materials are divided into roomlight and darkroom handling, as well as contact and camera speed. Eastman Kodak Co.
Circle 132 on reader service card

Training pool. Described in a small folder is an above-ground pool for swim training and water safety instruction. According to the maker, this pool offers installation speed, burst-proof design, multiple depth control, portability and a superior water filtration system. Used for rehabilitation programs for handicapped children. Modular AquaSystems.
Circle 133 on reader service card

Package burner. Featuring Flexi-pak and PK-74 burners, bulletin #1008 offers descriptions of each unit, as well as available engineering services. Bulletin #5000 summarizes burner conversion needs; bulletin #1009 defines low excess air burners. Peabody Engineering.
Circle 134 on reader service card

Reflooring aid. Ways and means to eliminate roof leaks, cracked felts, tar drippage and water stains are described in this brochure. Included are reflooring procedures and those for replacing faulty gravel stops without reflooring. W.P. Hickman Co.
Circle 135 on reader service card

Paints for renewal. Three textured spray coatings are recommended for interior use in aging urban buildings and in new low-cost housing. The paint can be applied over unprimed surfaces and covers hairline cracks, patches and other surface irregularities. PPG Industries, Inc.
Circle 136 on reader service card

Trackless sliding doors. The hardware that makes it possible for sliding doors to close flush without grooves or tracks. Suitable for fixtures up to 42" high, it is recommended for kitchen and bathroom cabinet use, store fixtures, hospital and office furniture. Bara Industries Corp.
Circle 137 on reader service card

Building sealant. The results of a "Seal of Security" program which tests and evaluates building sealant products based on Thiokol LP Liquid polysulfide polymers are offered in this data brochure. Sealant specification information and a table of typical physical characteristics of cured polysulfide polymer sealant compound given. Thiokol Chemical Corp.
Circle 138 on reader service card

Soil pipe noise reduction. This report gives the results of a two-year study of noise and vibration in cast iron soil pipe systems. Tests were conducted by Polysonics, acoustical consultant engineers, and results show that neoprene gasket seals provide a reduction in noise and vibration at each joint in the piping run. Diagrams of test methods and results in 31-page booklet. Cast Iron Soil Pipe Institute.
Circle 139 on reader service card

City night-lighting. Ways and means to alleviate nighttime problems through lighting are described in a 20-page booklet "See Your City in a New Light." Safety, protection, identification, attraction, beautification and unification are among problems considered. General Electric Co.
Circle 140 on reader service card

Fire-retardant coatings. Applied over existing combustible surfaces, this paint possesses "intumescent" qualities. It bubbles and foams when subjected to heat rather than burns, and thus protects combustible materials underneath from burning. Made from Pliolite resins by Goodyear.
Circle 141 on reader service card

The landscaped office. Loose-laid, interchangeable carpet squares suited for commercial use are described in booklet illustrating many facets of office landscaping. Letterhead requests to Jerry Romaine, Heugatile Corp., 185 Sumner Ave., Kenilworth, New Jersey.

School sound systems. Ways and means to solve public address problems in high schools and colleges are described in a brochure which includes illustrations of Vocal Master Sound System installations. Shure Brothers Inc.
Circle 142 on reader service card

Molded fiber glass concrete. Some of the design possibilities of fiber glass reinforced plastic domes are illustrated in this brochure. Featured are buildings using grid slab construction. The Molded Fiber Glass Concrete Forms Co.
Circle 143 on reader service card

Progressive Architecture

March 1971

Curse you Red Baron

New York has been dubbed "Fun City" officially by its mayor and derisively by those who have become alienated by the sterility and inhumanity of its built environment. This month, P/A's lead article concerns a speculative office building with fun and humanity as a performance specification. The story is told by the owner-builder client and the architect and designers who worked with him.

Melvyn Kaufman is the builder of the triumvirate William Kaufman Organization. The "organization" included Melvyn's brother, Bob, who handles rental and management, and their father, William, who handles the financing. The three men compose one of New York City's seven major building families. Owner-builder families are tightly knit units, virtually an autonomous force in the reshaping of our major cities. They purchase land, finance, rent and build in either order. Having built, they manage, maintain and usually sell.

If the process stopped there at 77 Water Street, there would be little to say. But Melvyn is a man driven by an idea that has become a cliché in architectural circles: buildings are for people. Yet, he claims he cannot find an architect who will design fun and humanity for the people of Fun City. He had to turn to graphic, interior, landscape and lighting designers to inject these elements into the design.

Kaufman is totally serious when he says that fun and humanity is not something that can be laughed off; it should come with the city. This is no impotent idealist or petulant critic. That he is as ready with his money as he is with his mouth is evidenced by 77 Water Street. His money pays for the fun, and his comments in this issue of P/A are as amusing as the Sopwith Camel on the building's roof.

Forrest Wilson

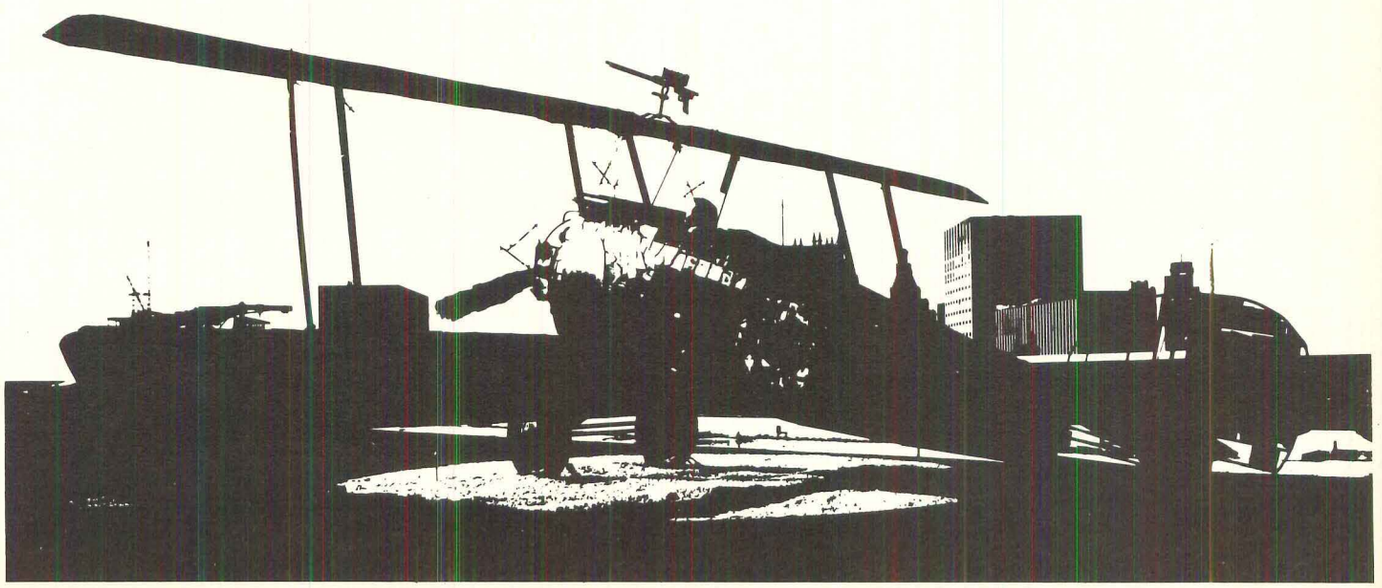


Photo: William F. Oakley

77 Water Street

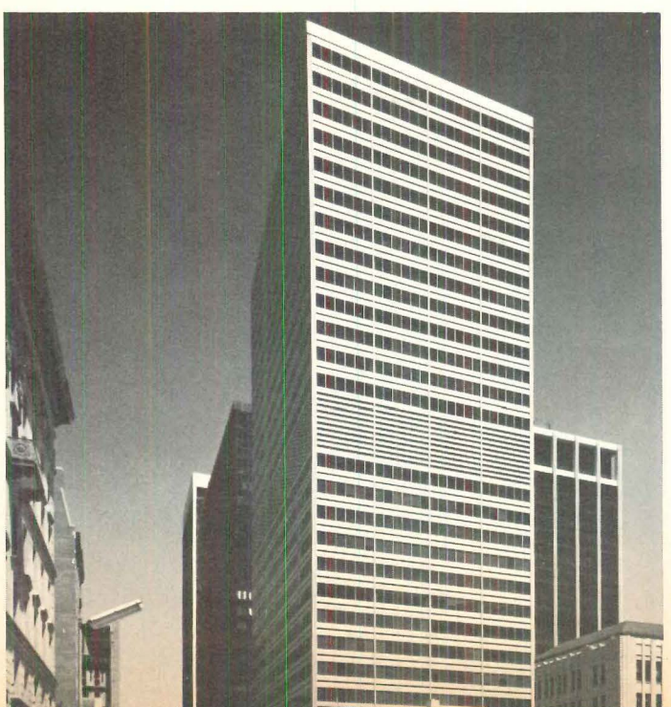
There's a Sopwith Camel on the roof

By adding untypical touches to a typical office building, the owner and his team of architects, landscape architects and designers put some fun into Fun City

The usual lobby-with-bank-on-the-ground-fioor generic to New York office buildings has been cast aside in a solution introducing fun and the human element into the city's most famous building type. Instead of a lobby, there is a spacious plaza with a series of stepped pools, sculpture, cafe seating. Shaded by leafy foliage in the summer, it is heated by "heat trees"—specially designed treelike heating luminaries—in the winter. Instead of the corner bank, an authentic replica of a turn-of-the-century wood framed candy store sits within the ground floor's columnar grid. The only enclosed portions of the ground floor area are the two banks of elevators. Conventional lobby elements, the building directory and the telephone booths, are transformed into graphic and sculptural objects for the outdoor plaza.

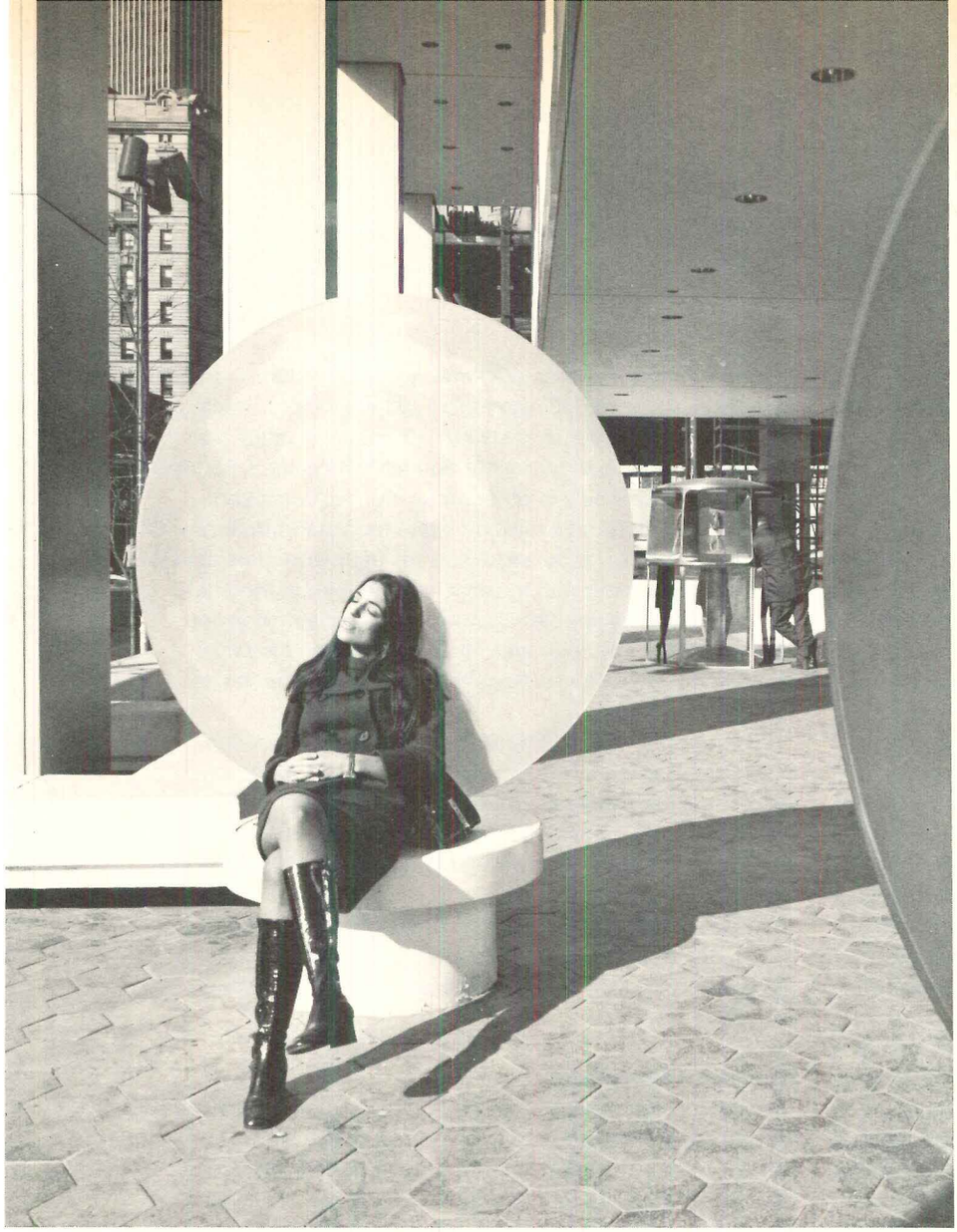
Inside, graphic art enlivens core end walls, and the elevator interiors turn into illuminated light boxes when the doors close. A replica of a World War I Sopwith Camel was installed atop the building on a landing strip of Astro-turf against a brightly painted background of mechanical equipment.

From a distance, a straightforward office structure.



For an owner with definite ideas about his buildings and one who maintains close control over his projects, Melvyn Kaufman is considered an ideal client by the architect, graphic designer, lighting consultant and landscape architect who worked with him on the project. As the architect, Richard Roth, Jr. of Emery Roth and Sons expressed it, "He's completely involved in the project and pushes you to do the best. Although he has definite ideas, he stays open to others. He enjoys the give and take and the bickering." When a decision is made it results from a dialogue between architect and client, although as Roth points out, "He's always one step ahead of the architect." About Kaufman's interest in the building, Roth (who has worked with Kaufman previously on one other building) said, "He wanted to have fun with the building. . . . He's always looking for something new, and is always rethinking the problem of office buildings." In this case, Kaufman was working on a small site squeezed in among several gargantuan projects, and "he had to do something where the building wouldn't fade" yet would connect to other buildings along the street.

Richard Roth's feelings about Kaufman are echoed by the lighting consultant, Howard Brandston. Kaufman is "exciting to work with, tough and demanding but fair, with a lot of daring and an open mind." Brandston planned a parklike atmosphere, increasing the foot-candles in the lights by using deluxe white mercury bulbs in specially designed fixtures. The city, however, claimed these lights were dimmer than the norm. Brandston won, partly, he says, because Kaufman allowed him to pursue it: "If you are willing to tackle a problem, he is willing to let you, something few people will do." Brandston is responsible for the building's total lighting, including the ground level heat trees that provide 600 sq ft of warmth each. Rudolph de Harak, principal in the firm of Corchia, de Harak, Inc. found Mel Kaufman to be a "terrific client. He may have definite ideas about what he wants, but you can contribute to and embellish them. . . . Most of his ideas are very good anyway. Kaufman is not concerned with architecture and design per se, but as it relates to an organic environment." De Harak attributes three overriding interests to Kaufman: people, humor and design.



Up close, a place for people. Plaza offers sculptures for sitting, a replica of a 1902 candy store for lunch and (below) "heat trees" for winter comfort. (Photos: William F. Oakley, above left; Kathryn Graham, top; Gil Amiaga, above.)

Credits

Project: 77 Water Street, New York City.
Architects: Emery Roth and Sons.
Program: commercially viable rental office space in financial business district extension of Wall Street area, formerly low-rise buildings undergoing redevelopment which was neither planned nor government controlled.
Site: client selected.
Structural system: steel frame, 28-ft module, center line spandrels afford stiffening reducing moment connections on interior columns, truss in core for further stiffness.
Mechanical system: primary air induction units.
Major materials: bright aluminum skin, solar gray glass, black horizontal bands becoming louvers at AC floors; interior partitions drywall, hollow metal doors and bucks.
Costs: not available.
Consultants: landscape architect, A.E. Bye Associates; structural engineers, James Ruderman; mechanical engineers, Jaros, Baum & Bolles; graphics, roof sculpture, illuminated elevator interiors, helix sculpture, Corchia, de Harak, Inc.; lighting, Howard Brandston Lighting Design, Inc.; candy store, JFN Associates, Geraldine Sakall designer; communication, Charles W. Schweizer Associates, Inc.
Client: William Kaufman Organization, New York City.
Photography: as credited.

We owe something to the people

Owner Melvyn Kaufman explains his opinions on architecture, architects, designers and nondesigners, what should be fake and what should be real

If you are an architect and a zoo gives you a job to make a monkey house, you would talk to the zookeeper and he would tell you all of his needs, and you would build a place called a monkey house. The function of that place is to house monkeys. The purpose of the place is for the people to live and work with monkeys. The monkeys don't want the place—it's the people who want the place. There's no point in having an architect for any kind of place if it's not for people. I want to make functional buildings that do what they're supposed to, which is relate to the purpose of their existence. That purpose is people.

Unless you give back to the people those elements they need in order to function, you've failed them architecturally, culturally, and as a builder. We are builders, not architects. You make a zillion dollars from a job and you plunk it down in the middle of a block. You owe something to the people for doing that, even if it's just a place to sit.

I'm very conscious of what goes on on the ground floor of an office building. As far as I'm concerned, what goes on upstairs is a sheer waste of time. I wouldn't give it more than a few hours of consideration. Certain things, I know, are important: I want my building light in color; I'm not interested in the joinery or the details—nobody can see these things and nobody gives a damn. But at the level at which people can communicate and relate to it, it becomes important.

I can't make anything work unless I meet a certain set of criteria, and those are all economical. Unless you can get answers in an economical manner, make the thing pay off by being resourceful and ingenious, you're never going to build.

We raised this building off the ground and it's cheaper. There is a limited amount of good shopping that can be put in the Wall Street area. So office space is more valuable than the ground floor space. Part of the FAR (floor area ratio) is lobby space. Another rule also applies: an arcade may be up to 30 ft wide. So I made the widest arcade possible, all around the building, and eliminated the lobby—put it on the mezzanine—and bought rentable space for that lobby. So you build a nonlobby building, so what! It's dead space anyway.

To make the thing pay for itself, I have to spend more money because I have to build an additional amount of space, or nonspace. You sit down and start to talk to architects and they tell you that you must have columns. The minute you do that you say to the people, by the grace of the architects, and the owner, we're permitting you to see daylight on the other side of this building. I turn to a landscape designer and he has no interest in the building. So we put in black columns.

Most designers want to use granite. But the whole thing is a big fake so we put in fake stone. We put in concrete blocks on all the interior columns and painted them black.

At 77 Water as on all of my projects, I'm finding that I'm loaded with money, because I'm way under budget. You put up granite walls for $15 a sq ft, and granite or terrazzo floors at $5, $6, or $7 a sq ft, and all the incredible structure you must have to support the thing! You take the same amount of money and disperse it in other areas. Let's assume your budget is a quarter of a million dollars for a standard lobby. I'll give you an entire lobby and 10 pieces of artwork designed to work in conjunction with the architecture for half the price. It's easy to satisfy people. They are not satisfied when you give them a travertine or marble lobby. It doesn't mean a damn thing. Give them a place to sit, to have some fun, to walk around.

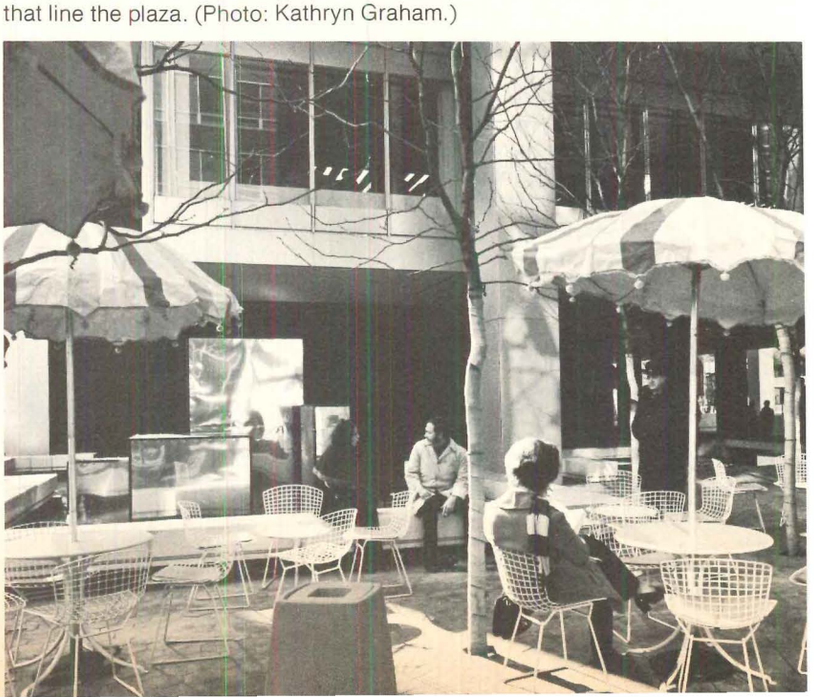
I've done a lot of architectural art and if it gets serious, chances are you'll come a cropper. All the architectural art we do now has a sense of humor. It must have a lightness, a warmth and a friendliness or else I want no part of it. I don't want any serious art, because you never know if it's going to come off.

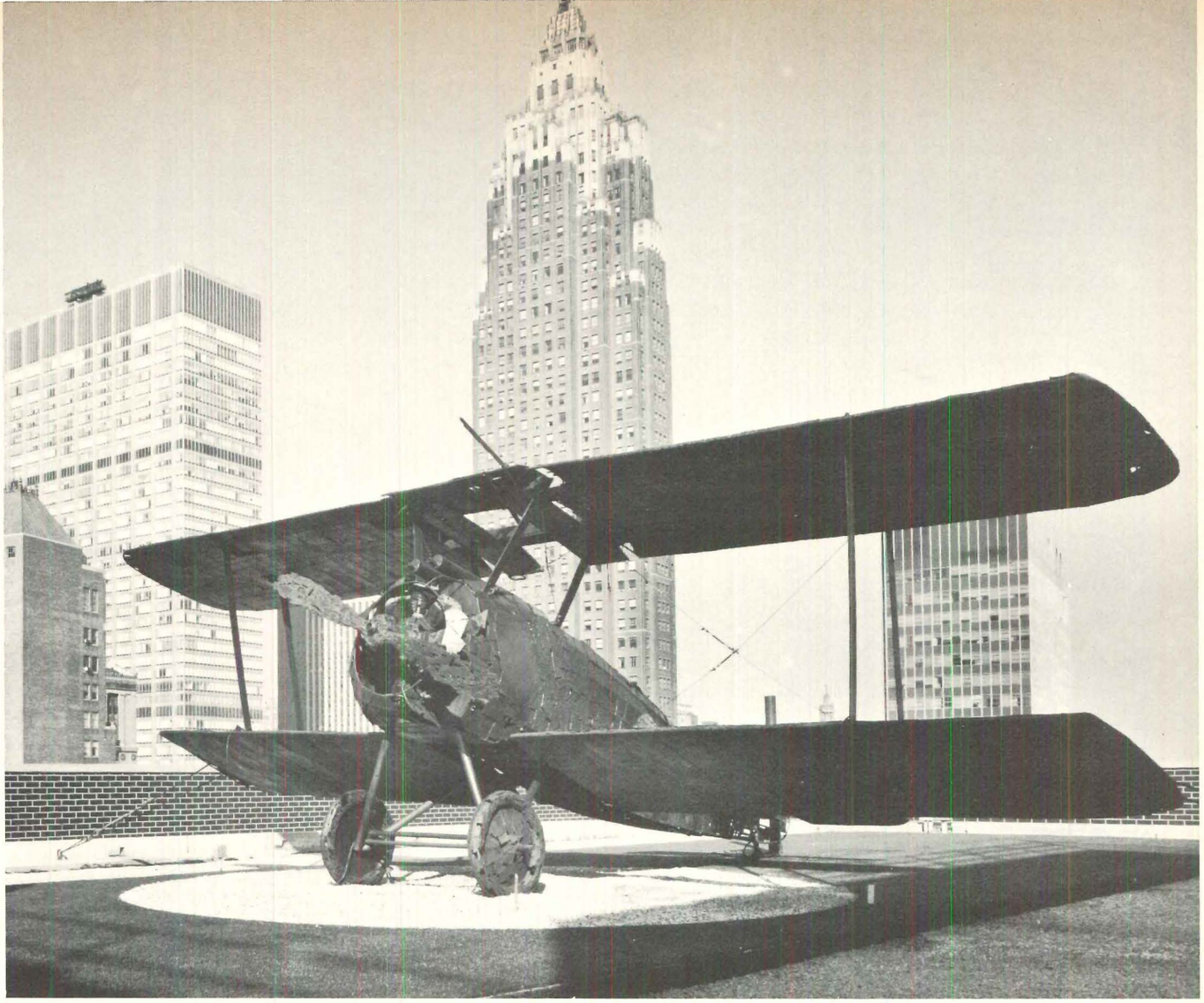
The Month of June sculpture, five plastic discs on round bases, are art and seating. The most important thing is that the people who sit in that area can arrange things to suit themselves.

Where are the designers?

It's impossible to find designers. Every designer is saying the same damn thing that was said to him when he was in school. That's why I had to go to graphic and theatrical designers. Emery Roth has a lot of pluses; he has a design staff. They are all really good people, every one of them. I think Roth is a hell of a good architect but he is stuck with what he knows and it is hard to change, to break away. We have had some terrible fights. Emery Roth makes great plans. His plans are so well drawn you could frame them and hang them on the wall. They're marvelous. You can build from his plans.

Office workers can lunch, read or relax under honey locust trees that line the plaza. (Photo: Kathryn Graham.)





Since actual Sopwith Camels are hard to obtain, sculptor Bil Tarr was commissioned to do one in weathering steel. Landing strip is Astro-turf; exposed mechanical equipment was painted in bright colors. (Photo: William F. Oakley.)

The building at 77 is a good building, mostly because it's a nonbuilding. I can take it down easily as I put it up. It's not as demountable as an erector set, but except for welding the deck on the structural steel, the whole thing unscrews. The structural steel is bolted, all the panels are bolted and clipped. All the walls are screwed to the deck above and the floor below. The wall panels are screwed on, all the ceilings are clipped and the building is completely removable with no trouble.

You can pull it right out of a catalog. What's the matter with that? You're using a pencil. Where did you get it? You went into a store and bought it.

If you stay economical, you automatically become light and soft. The strain occurs when you are against the stream of the society you live in. You do live in a society—let's not knock it. It is a technological society—panels and rails—that is the way we build things. If you cannot make a building with panels and rails, you are not living in your own time.

It isn't just panels and rails, but the system that makes panels and rails economical. The reinforced concrete job is absolutely and unequivocally the wrong way to build in today's society.

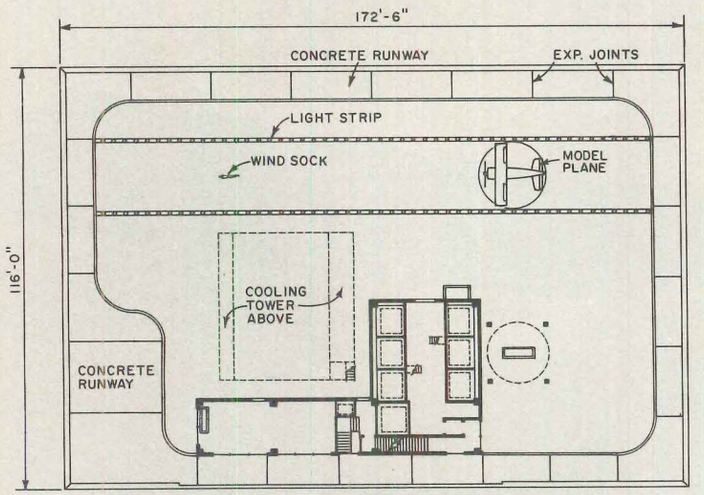
Anyone who uses precast is out of his mind. You should not have to use a crane to lift a piece. The building should be as light as possible. Two men should be able to walk it over and stick it outside. We are now putting up buildings without outside scaffold—it's all done from the inside.

We have plenty of leakage, but all the leakage is kept on the far side of the building structure. The only things that leak are the windows, and they would leak no matter what you put in, no matter what the wall is. But either way, this costs less than a masonry wall. There are a lot of reasons we do what we do. Some of them are insane. The business of breaking tradition's stranglehold on architects and mechanical designers is dreadful.

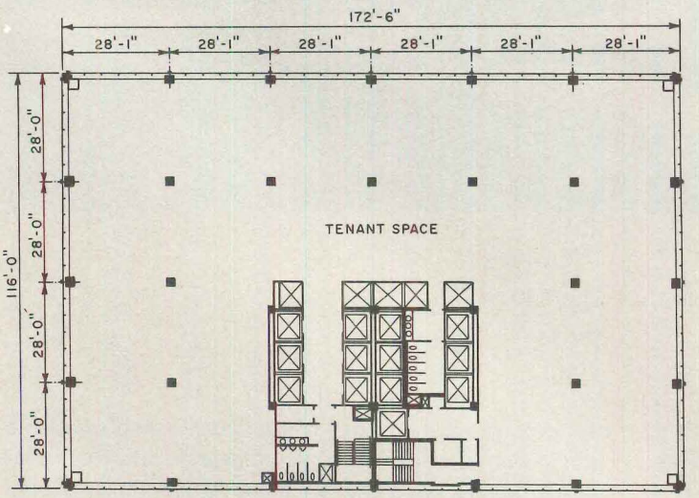
The city is another thing. That's the reason I have no interest in building per se. I give it a certain amount of study and then I'm finished. The city is the architect. The architects are not the architect. The city tells you what to do, says this is the delineation within which you can place a building. They tell you it may be in approximately this or that shape.

Today they are still building the same shape because it was the most economical, viable shape we could build within the line that the city said was the shape. Every one has the same shape, building after building. I could design an office building for New York City in two hours. No trouble.

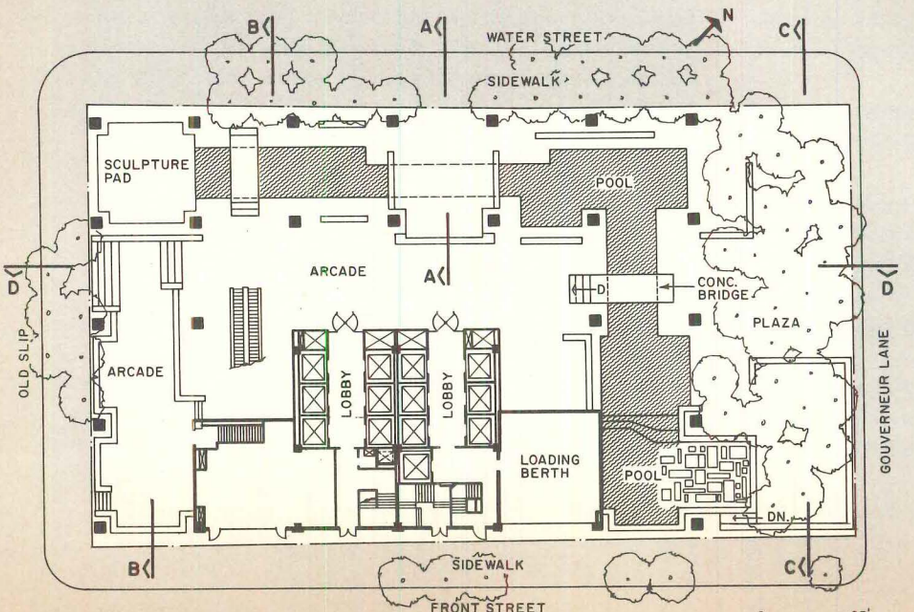
Construction details



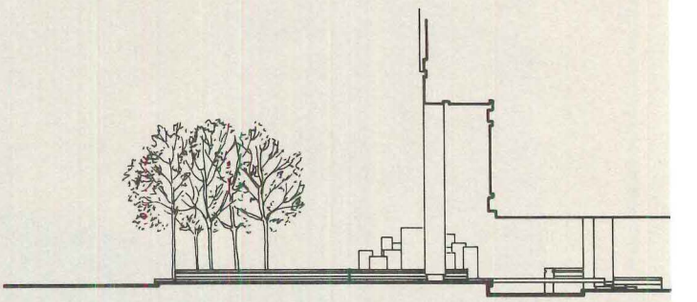
MAIN ROOF PLAN



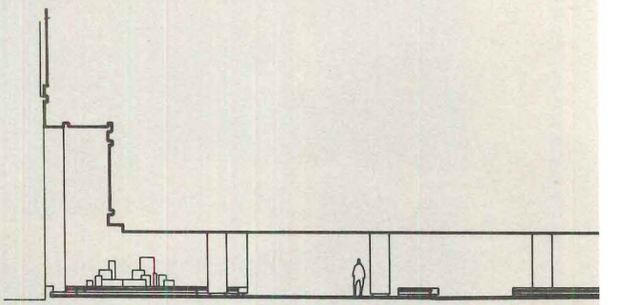
TYPICAL OFFICE FLOOR



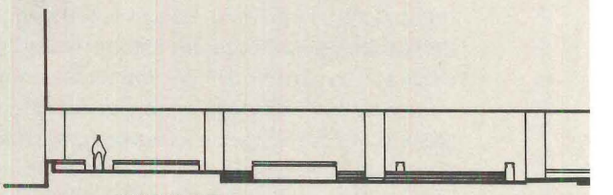
PLAZA LEVEL



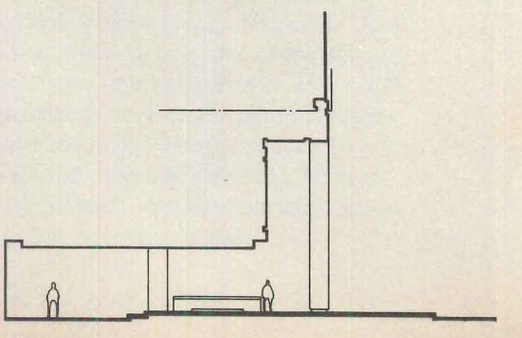
SECTION D-D



SECTION C-C

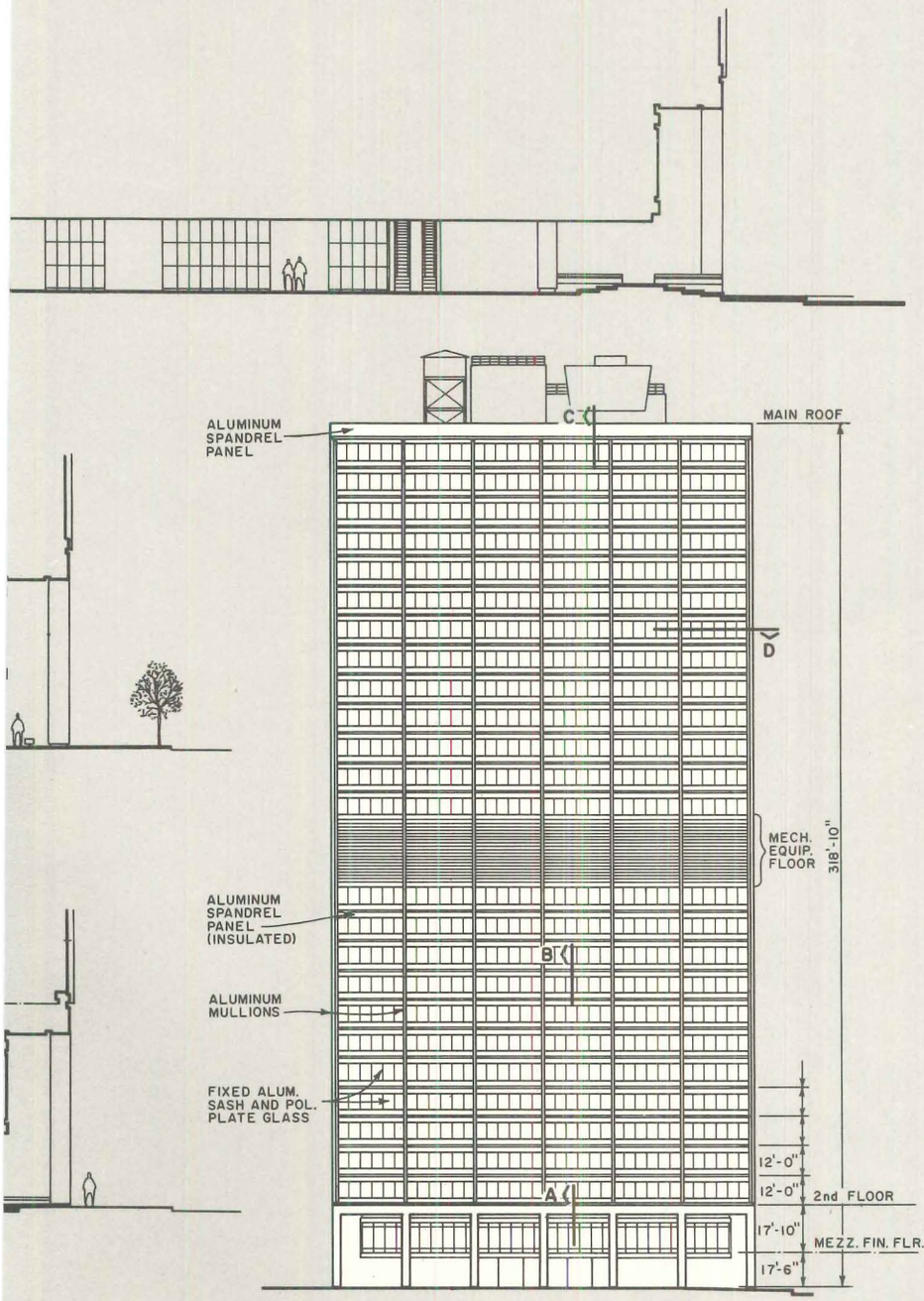


SECTION B-B

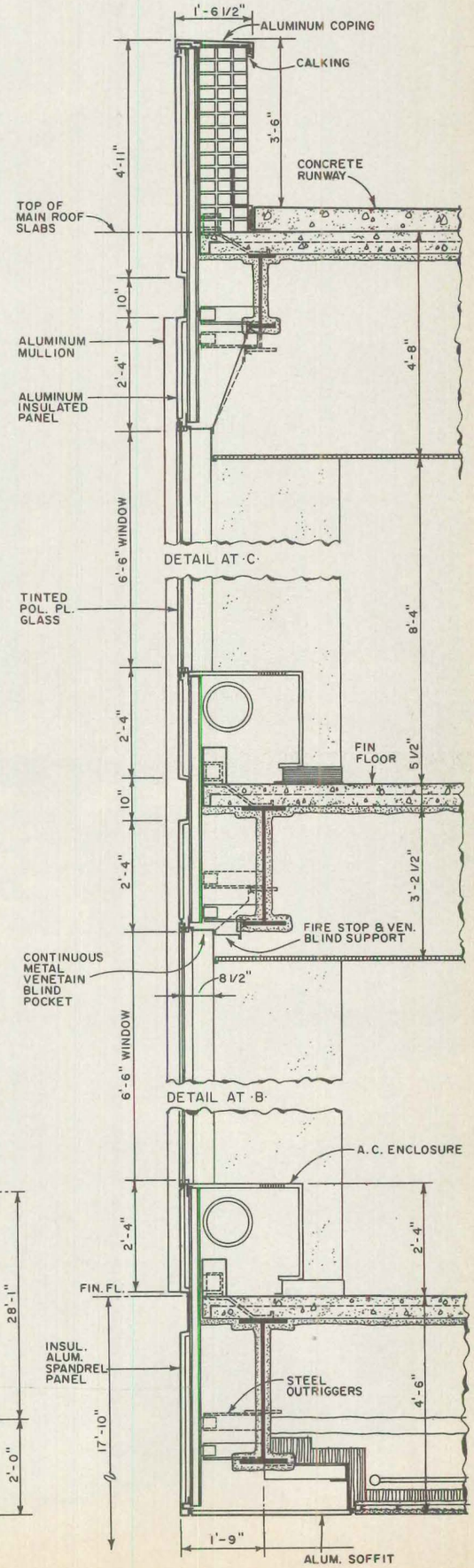


SECTION A-A

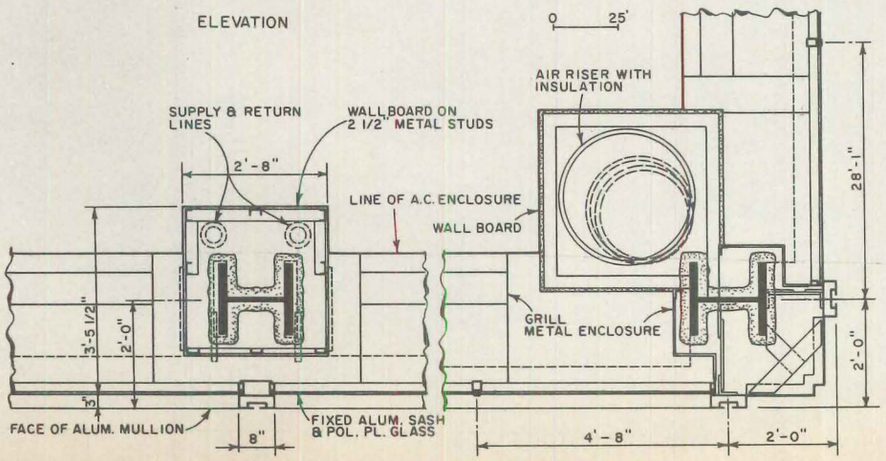
SCHEMATIC SECTIONS THRU PLAZA LEVEL



ELEVATION



DETAIL AT ·A·
VERTICAL SECTIONS



TYPICAL CORNER DETAIL

DETAIL AT ·D·
PLAN SECTION

A place to tarry

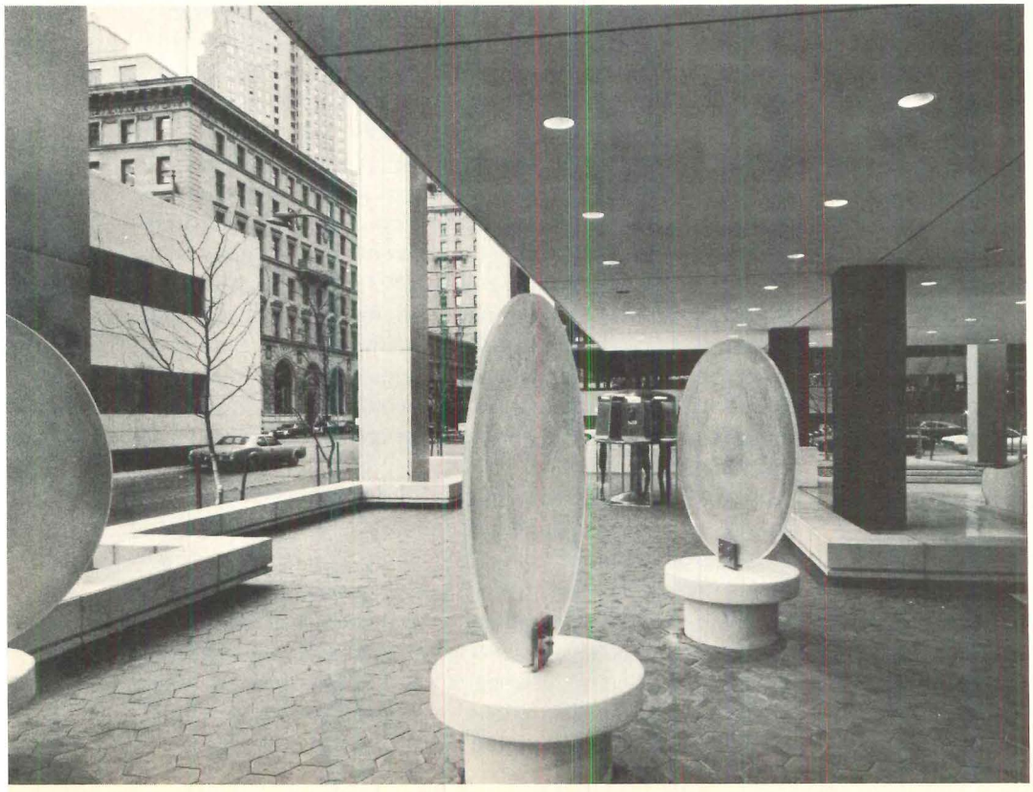
Landscape architect A.E. Bye describes the plaza at 77 Water Street as a place to retreat from the weather and the crowds, to relax, read, sit and even eat

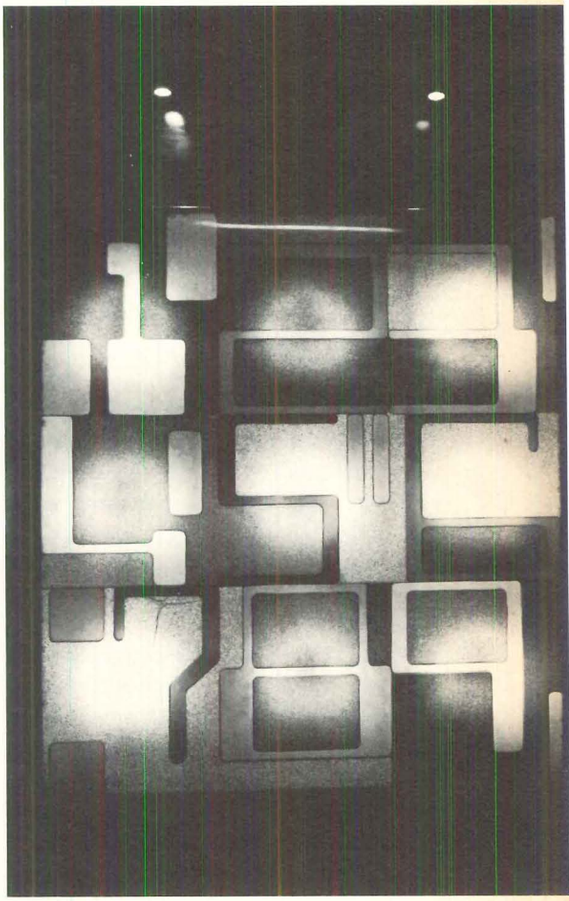
Our central concept for the plaza at 77 Water Street was to bring nature to downtown Manhattan for the many who need to see some *natural* green. We were fortunate that we had space to plant 30 honey locusts rather closely together to form a thick sheltering copse on the north side of the building and 20 more for a double row along Water Street and a few single trees on Old Slip. The city welcomed our idea to abandon the 30-foot spacing rule for street trees so we planted them closely together to create a veil of delicate foliage and a filtering canopy against the summer sun. Luminous foliage is also apparent. It results from viewing the translucent foliage against a bright sun and one will sense that it "glows" with light. Everyone sees this startling effect in the woods in the fall. We therefore made it a major element in our design.

To benefit from this strong characteristic of the honey locust we had Howard Brandston design high lighting to produce luminosity of foliage at night. It causes a soft glow to pervade the trees and the effect is warm, friendly and inviting.

Enticement is another strong aspect of the character of the plaza. A retreat from the rain and snow of winter; an escape from the burning summer sun; a place to relax, watch the hustle of the Wall Street crowd; to sit and observe the passing parade of humanity, or just to read, eat or sleep. Why not? Too many of our plazas are empty spaces—wonderful to look at but not a place to tarry.

Smooth stones line plaza pool. Honey locusts were chosen because foliage is translucent against bright sun or night lights. Plastic disks on round bases that comprise the 'Month of June' sculpture are used for seating. (Photos: Kathryn Graham, left; Gil Amiaga, below and right.)





A final touch that links the fun city plaza to offices above: elevator interiors that become illuminated light boxes when the doors close. Kaufman believes this enhances the experience of the ride, making elevators less like coffins.

The interior designer as tenant

Space planners JFN Associates, Inc., tenants in the building at 77 Water Street, practice what they preach about the principles of open office planning

The space planning firm JFN Associates, Inc., one of the pioneer enthusiasts of office landscape, is a tenant in 77 Water Street. The firm uses its 20,000 sq ft on the 18th floor and 4000 sq ft on the 19th as a laboratory/showcase for the principles of planning the open office. Committed to the theory that the three most important elements in any office are communication, change and people, JFN based its own planning on a 5-ft hexagonal grid that allows circulation without formal corridors. The Herman Miller Action Office II furniture system is the same that was chosen for JFN's Chicago office (P/A, Nov. 1969, p. 108).

About 40 freestanding panels, aligned on the hexagonal grid, define personal working areas. The panels are 62 in. high with 2-in. fiberglass insulation that provides acoustical privacy. The system components, which also fit the grid, include file bins, storage units, shelves, carrels, tables, desks and panels. Nonsystem furniture — tub chairs, round tables and a sculptural seating unit — is by Stendig; box tables came from Juno.

One part of the office was designed as a "park" for conferences, relaxation or simply a change of scene. There are also three totally enclosed rooms: two are for conferences and presentations; the third is a "quiet room" for working on projects in solitude or for brainstorming sessions. A multipurpose room on the 19th floor comes equipped with floor-to-ceiling tack board walls and audio visual equipment. Lighting can be adjusted for any occasion, from bright for meetings, dark for films to discotheque for office parties.

Arrangement of the open plan office is determined by work patterns. Teams collaborating on projects are grouped in hexagonal areas around a small conference space. As the projects change, so do the teams and layout of the panel system. A few departments have set locations, such as a samples area for interior furnishings, the purchasing and drafting departments. Some project teams have a sub-group. For example, a large team is now designing the executive suites, theater and dining room for the Avon office building on 57th St., while a sub-group is projecting an open plan for the general offices throughout the remainder of the building.

The JFN organization does not follow the usual managerial structure. It is headed by a four-man committee: Charles Boyles directs administration; Robert Orlando, production; Peter Beveridge, development; and Douglas Nicholson, marketing. Nicholson, who also serves as president, was one of the founders of JFN (originally Johnson, Fili & Nicholson) in 1959. A second management committee made up of all project managers handles production. Because the open office plan cannot work without new management attitudes toward status, most JFN chiefs occupy standard size hexagons adjoining the "park" where they are readily accessible to the employees.

JFN approaches office planning through the needs of the individual office worker. Charles Kinsey of the Chicago office describes this as a "study of *ergonomics* to analyze physical and psychological requirements of the human performer, *proximics* or man's spatial relationships to others and the physical environment, and *territoriality,* or man's need for personal space and the means to define and defend that space." These studies are routed through a computer-equipped data processing department so that the firm can research its clients' work patterns, workplace requirements, traffic patterns and individual worker needs and preferences. There is also an information center containing material on environmental studies, management theories and related data.

In addition to the usual complement of designers, architects and engineers, JFN employs programmers who analyze the clients' business organizations and needs, plus specialists in computer applications, data gathering, and processing. In fact, the software staff is so substantial that JFN frequently consults on office managerial practice alone rather than office layout and design.

JFN has recently set up a subsidiary company that produces special furniture and components required by unusual office designs. The company, "Symmetry," has turned out a trading desk and swivel chair for use by brokers, and has in the works a prototype component system of office furniture.

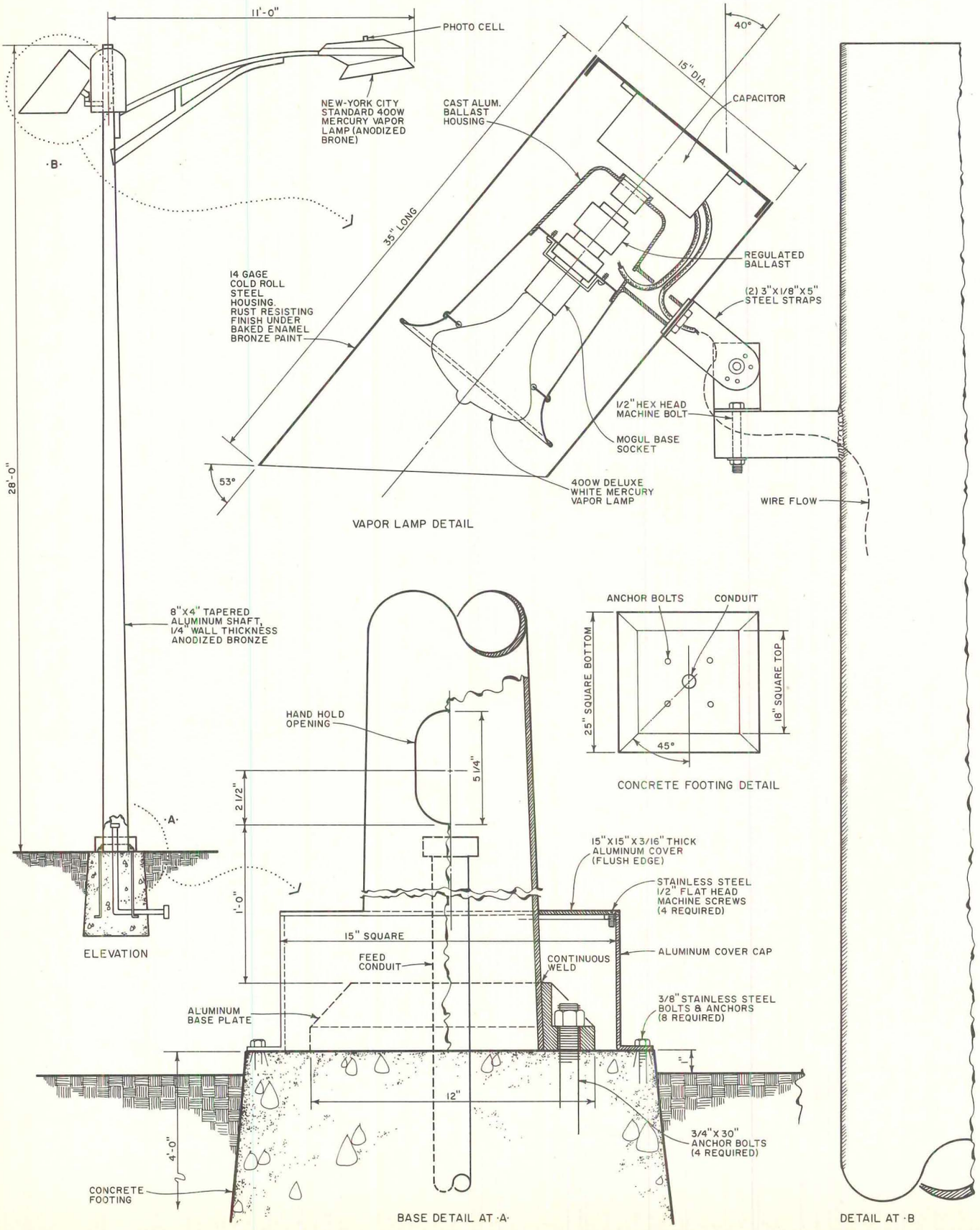
In the next several years JFN hopes to branch out by establishing more offices in other cities and become involved in design for educational institutions, medical services and community organizations as well as offices, and work more directly in the area of management consulting.

Individual work spaces are organized along hexagonal grid.

Swivel chair designed by JFN's development subsidiary, Symmetry, for a broker's special trading desk. (Photo: Guy Kramer.)

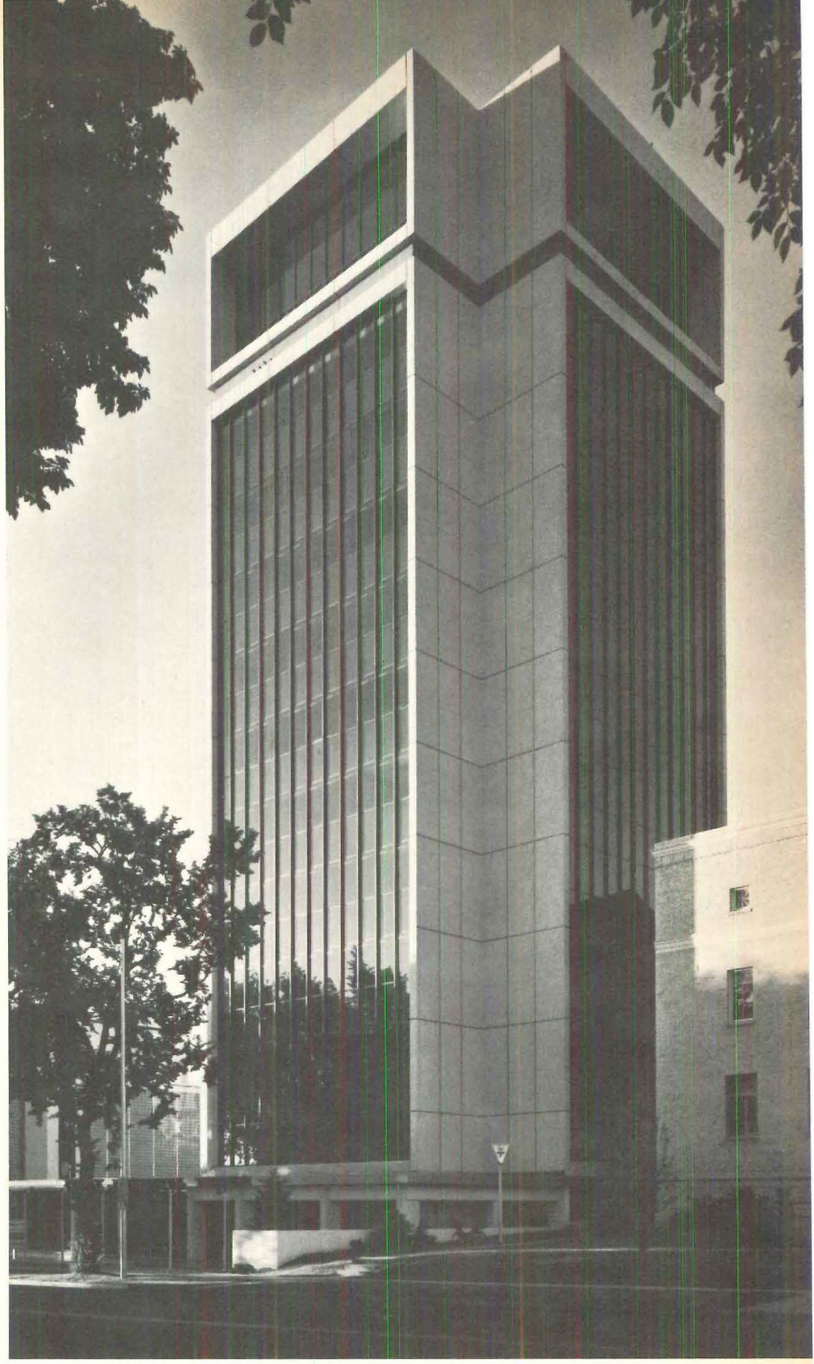
Central area was designed as a park for conferences and relaxation. Boldly designed scheduling board (left) helps visually orient the workers. (Photos: Louis Reens.)

Lighting standard: 77 Water Street



Designer: Howard Brandston Lighting Design, Inc.

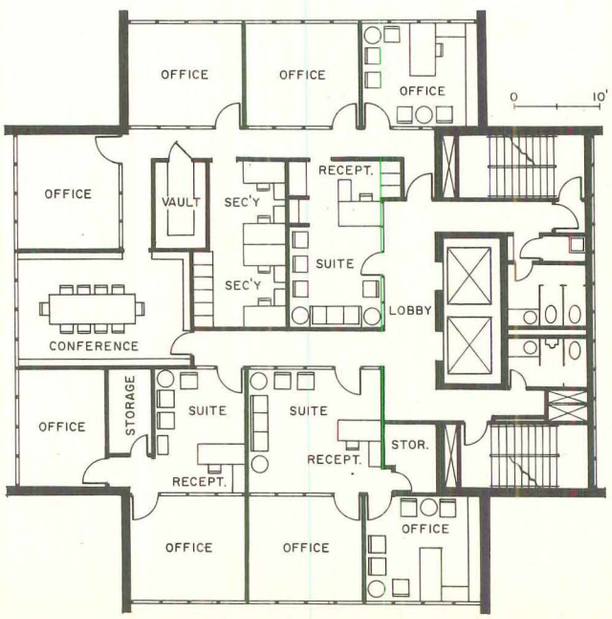
The case of the missing window wall



A 12-story bronze and white office tower has identical reflective glass façades despite the fact that one of them conceals the service core

The First National Tower Building in Ft. Collins, Colorado departs from the typical bank/office structure in several ways. Its structure was slipformed in 17 days, cutting some five months off construction time. All four walls are bronze-tinted glass in bronze aluminum curtain wall frames, but the west one is windowless; solid spandrel glass sheathes the solid concrete service core. The mechanical system uses panel heating and cooling throughout; eliminating baseboard radiators and wall convectors saved valuable square feet in each office suite. Finally, the building is a condominium, with each floor above the bank area owned and financed separately.

Although the architect, Marvin E. Knedler, did not specify slipforming, he informed the bidding contractors that the structure had been designed for that technique, and the low bidder elected to use it. All exposed concrete was finished with a granite-aggregate mortar coating. Inside, the bronze and white color theme was continued not only by bronze hardware and elevator trim but by wall finishes and fabrics.



TYPICAL TOWER FLOOR PLAN

Credits

Project: First National Tower Building
Architect: Marvin E. Knedler
Program: condominium office building connected directly to existing bank building; office areas designed for maximum flexibility to meet requirements of various occupants.
Site: small site between two existing structures in downtown Ft. Collins, Colo. allowed a first floor of only 6000 sq ft.
Structural system: slipformed concrete walls and service core; floors are prestressed twin tees supported on steel brackets welded to imbedded plates of the slipformed structure; foundation is large caissons in strong shale.
Mechanical system: air is injected through ceiling panels in which heated or chilled water circulates; natural gas is used with the 100 h.p. boiler and the absorption chiller unit rated at 125 tons.
Major materials: slipformed concrete finished with a granite aggregate troweled mortar coating; precast concrete tees for floors; bronze tinted glass and spandrel glass.
Costs: $1,138,361 or $21.75 per sq ft.
Consultants: Melvin B. Knoll, mechanical engineer; H.J. Meheen, structural engineer; Walter Steige, Jr., electrical engineer.

Simplicity leads to complexity

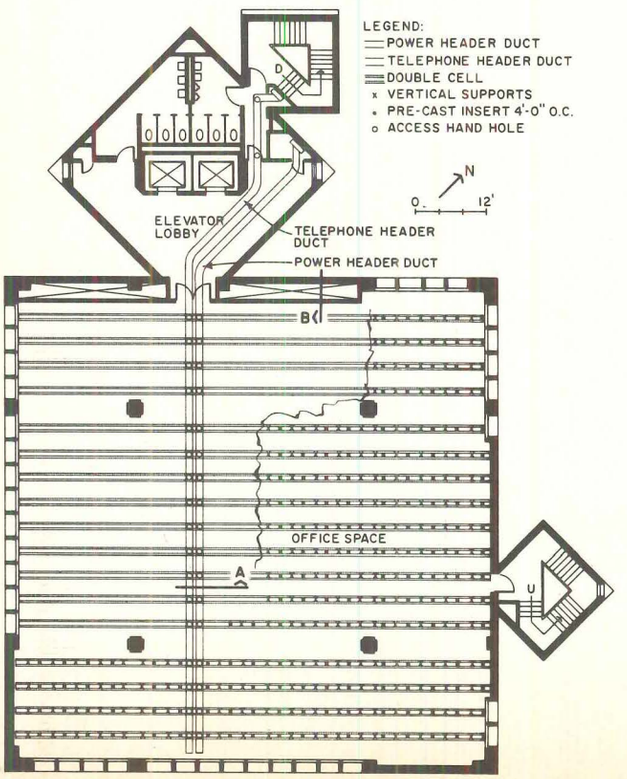
The program called for unobstructed office space, so all services were banished to separate towers in the design of a single-tenant office building

By putting all service spaces into separate towers set diagonally to the main office space, Architect William F. Pedersen created a complex exterior for the eight-story Imperial Chemical Industries building in Stamford, Conn. A semicircular executive dining room and elevator, air conditioning and ventilating penthouses carry this complexity to the roof.

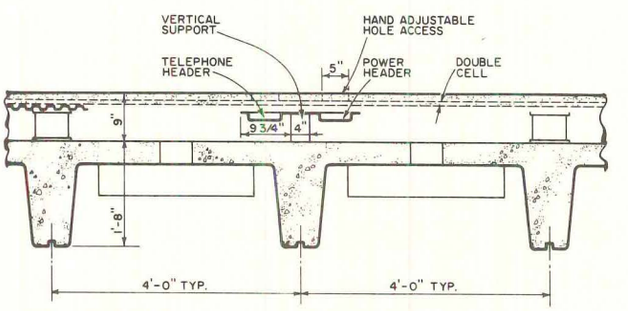
Structural bays of the main tower are arranged so that each floor has a 38′-3″ unobstructed square at its center: the four corner bays are 27′-9″ squares while the central bays are 27′-9″ x 38′-3″ rectangles. The structure is reinforced concrete and an exposed inverted pan ceiling system was used to cut floor-to-floor heights and finishing costs. A lighting-air conditioning-heating supply unit is set into each inverted pan diagonally, recalling the angled massing of the towers. Between the ceiling and a cellular floor which is topped with concrete are air supply and return plenums. Power and telephone trunks run directly from the service and stair towers through the cellular floor to places they are required on the floor or ceiling.

One triangle between the main service tower and the office tower is roofed over at the first floor level to serve as the main entrance. The two sets of fire stairs are contained in smaller separate towers, one at the east side of the office unit, the other attached to the north side of the service tower.

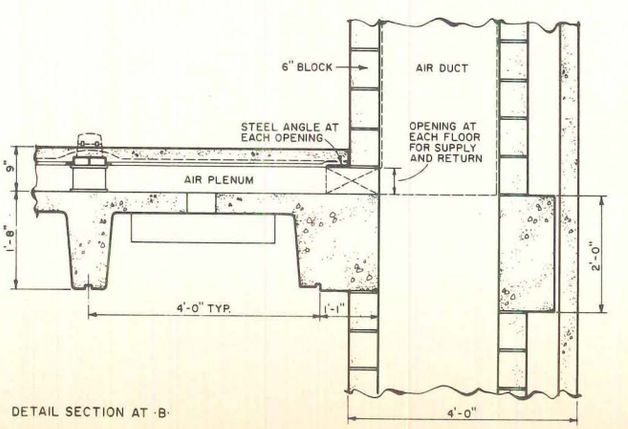
Pedersen cities two unfortunate drawbacks in the finished ICI building: it was cut from the originally planned 12 stories to 8 by the owner/builder (ICI is the only tenant), and he lost control of interior design. He had intended to build in a series of storage walls the thickness of the four 24 in. sq columns. These not only would have enclosed the large open square at the center of each floor, but would have supported uninterrupted glass clerestories. Instead, the plywood partitions require that the glass be alternated with plywood panels.



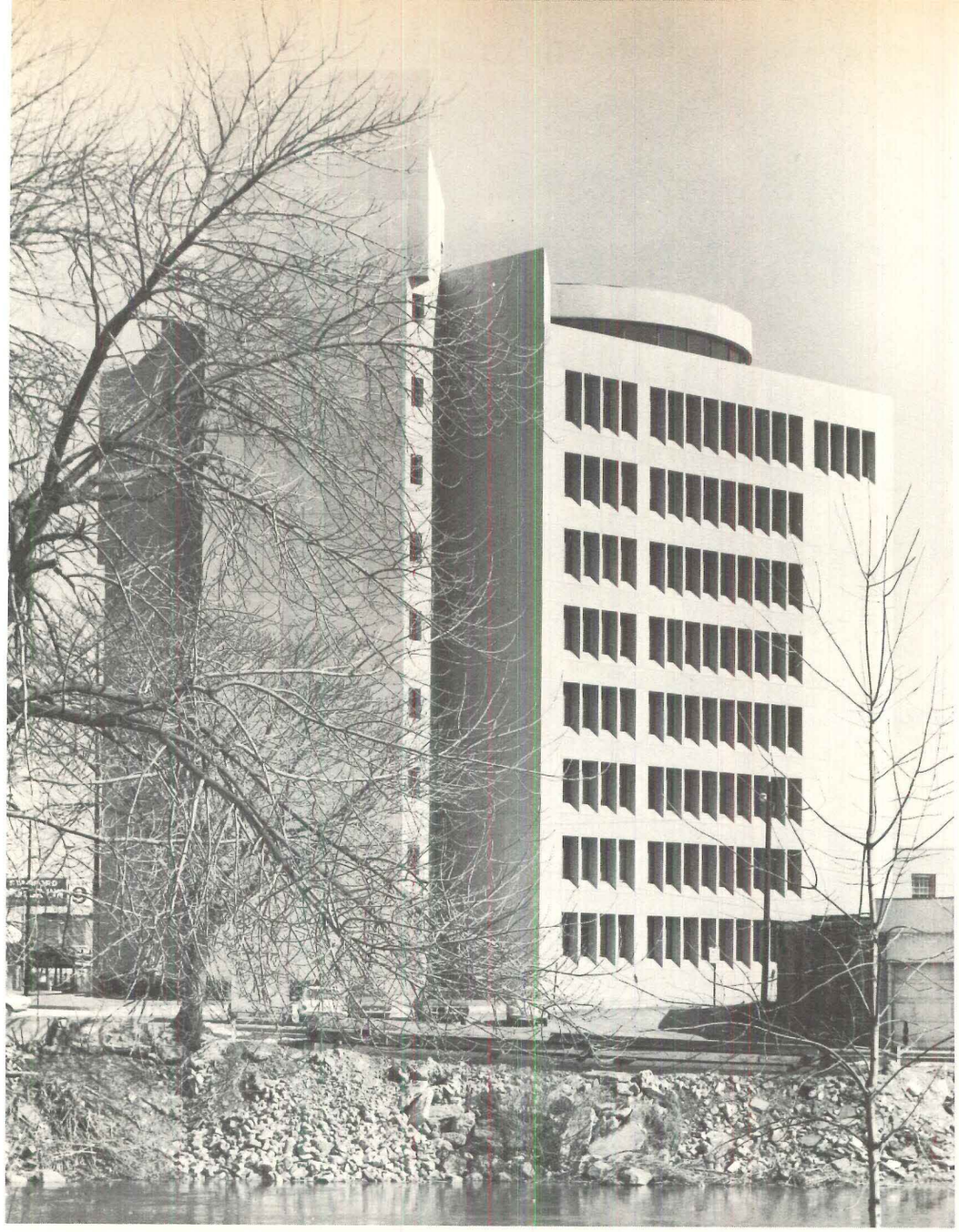
TYPICAL FLOOR PLAN



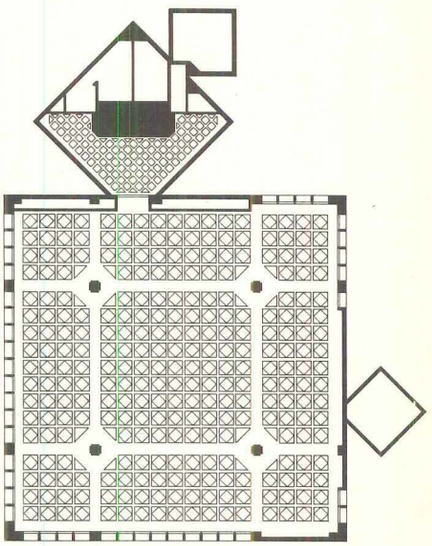
DETAIL SECTION AT ·A·



DETAIL SECTION AT ·B·



Reflected ceiling plan shows how combined lighting and air conditioning fixtures are set into waffle voids.



Credits

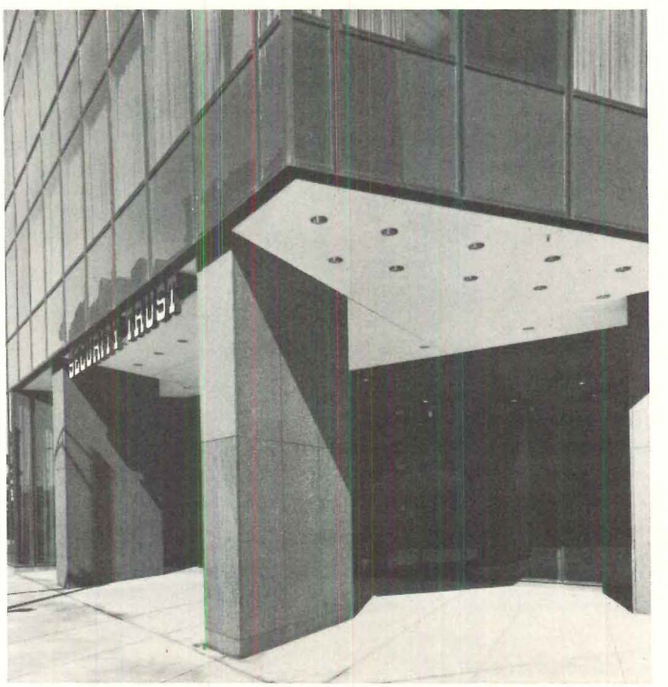
Project: Imperial Chemical Office Building.
Architect: William F. Pedersen & Associates.
Program: rental office building with exterior service cores.
Site: four acres next to river in industrial area, Stamford, Conn.
Structural system: reinforced concrete with inverted pan ceiling system and cellular floors topped by concrete.
Mechanical system: chilled and warm air distributed through plenums to light fixture diffuser elements; fan coil units at perimeter; entire system is gas fired.
Major materials: poured in place concrete, precast concrete, granite, ceramic tile, plaster.
Costs: $2.8 million; $35 per sq ft.
Consultants: Tizian Associates, mechanical; Frederick Fischer & Associates, structural.
Photography: Cunningham-Werdnigg.

Irregular plan on an irregular site

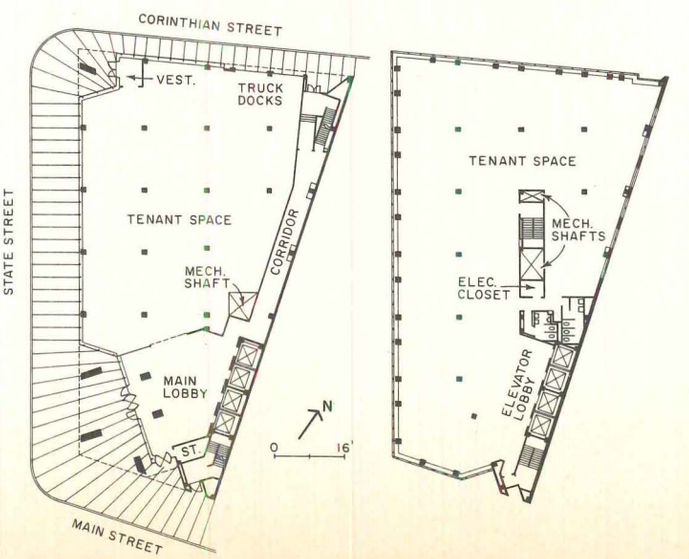
Forced symmetry just wouldn't work for an odd-shaped corner site bounded by commercial buildings of various sizes, shapes, styles and ages

Not only was the site irregular, but all of the buildings around it were of different sizes, shapes and architectural styles. Early in the design phase of the Crossroads Office Building, Kahn and Jacobs realized the importance of considering the physical and aesthetic millieu as an asset, as something that could contribute to the building in a positive way. But this could work two ways. Since the new structure would dominate the old downtown renewal area, they realized that through sensitive design the building could be made to reinforce those qualities that make that part of Rochester unique. The resulting irregularly shaped building makes no condescension to the expected. Where a conventional design might have tried to force symmetry and a regular ordering of volumes, this building delights in its irregular site and its undisciplined surroundings. Its four sides are quite dissimilar, and the three street sides give little idea of what might be on either of the other two sides.

Towering 17 stories and clad in gray-tinted glass, the building contains 200,000 sq ft of rentable office space. Public entrances on three sides are connected by corridors that culminate in a spacious central lobby, and a boldly expressed fire tower is set between twin brick walls that complement the angled walls of the main entrance at ground floor. There is a simple use of materials; carpet, plaster and granite walls with highlights of polished stainless steel accessories add restrained interior detailing, and lighting has been given careful attention throughout to avoid a commercial look.

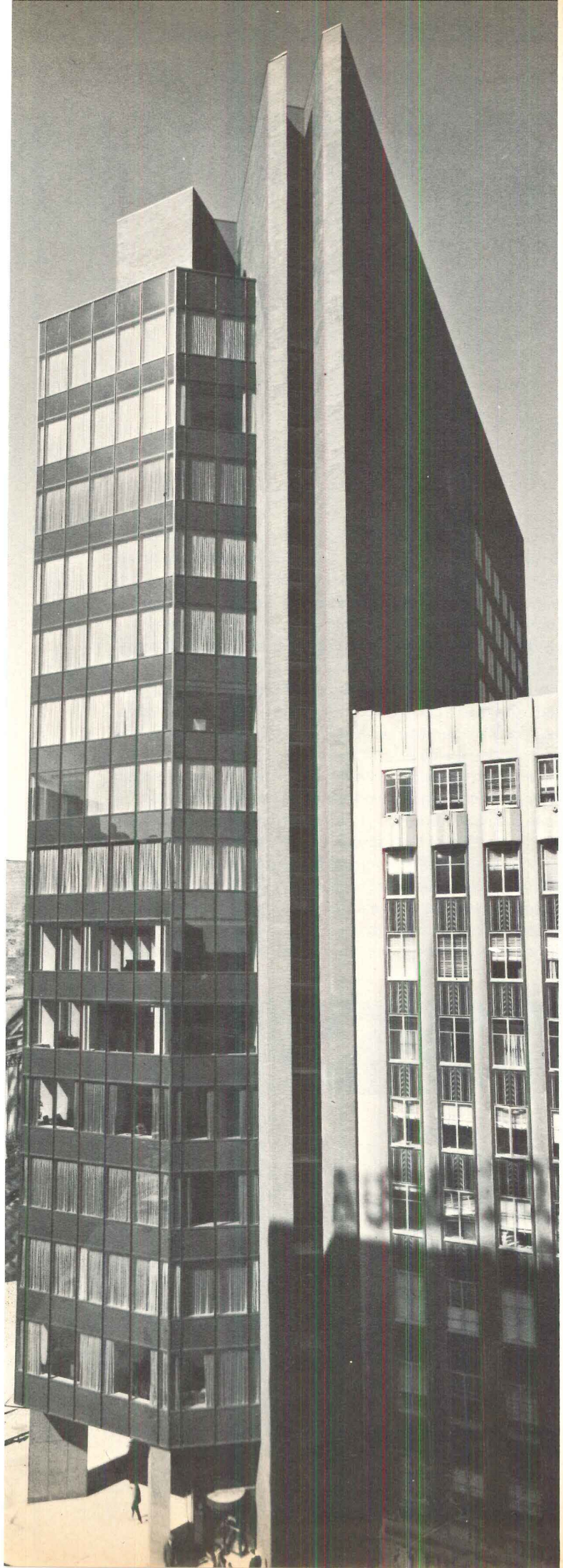


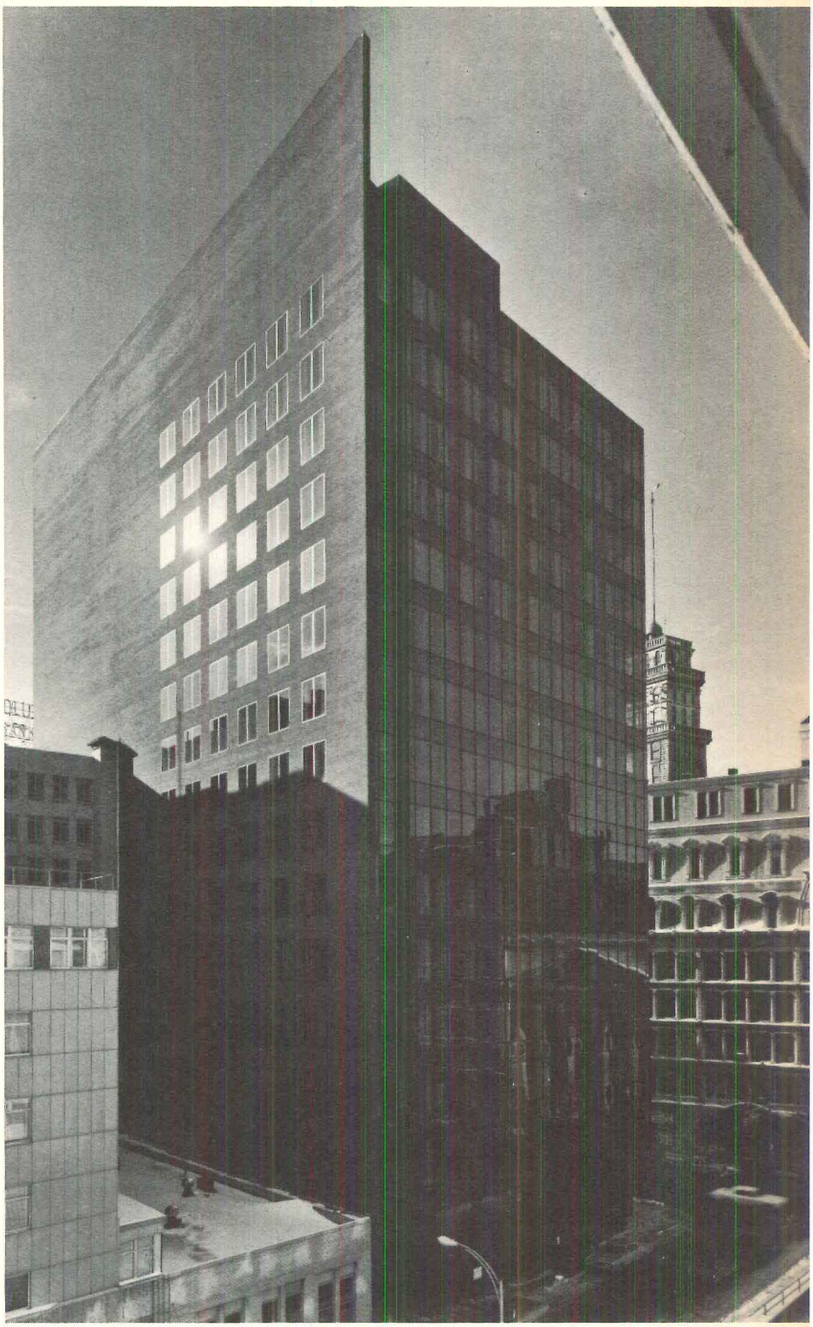
Main lobby entrance of Crossroads Office Building occupies the corner of the site and repeats the overall theme of irregularity and angularity. All four facades are different.



FIRST FLOOR PLAN

TYP. FLOOR PLAN





Credits

Program: for the 200,000 sq ft investment type of building, client wanted maximum floor area within irregular site. Irregularly sized and shaped existing lot-line buildings, low budget, fixed window module and floor height were additional considerations in design.
Site: trapezoidal lot in urban renewal area.
Structural system: steel frame; metal deck with concrete fill.
Mechanical system: hot water heating; central filter and cooling apparatus with air distribution zoned for individual tenant control.
Materials: charcoal gray anodized aluminum curtain wall with gray tinted glass and gray glass spandrels; charcoal gray brick; granite lobby walls, plaster, carpet, stainless steel hardware and trim.
Cost: $5 million.
Consultants: W.A. DiGiacomo Associates, mechanical; Leichtman, Quinn & Lincer, structural.
Client: Wilmorite, Inc., developers and general contractors.
Photography: Norman McGrath.

Stainless steel polishes a corporate image

Designing an office building on the principles of the Vierendeel truss gave the tenant a column-free interior; stainless steel exterior proclaims his identity

American Zinc Co. had two main goals for its office building: internal flexibility and external identity. They got both in the building designed by Hellmuth, Obata & Kassabaum, Inc. The structural system provided clear spans of 50 ft and a column-free interior, and the stainless steel sheathing says "metals."

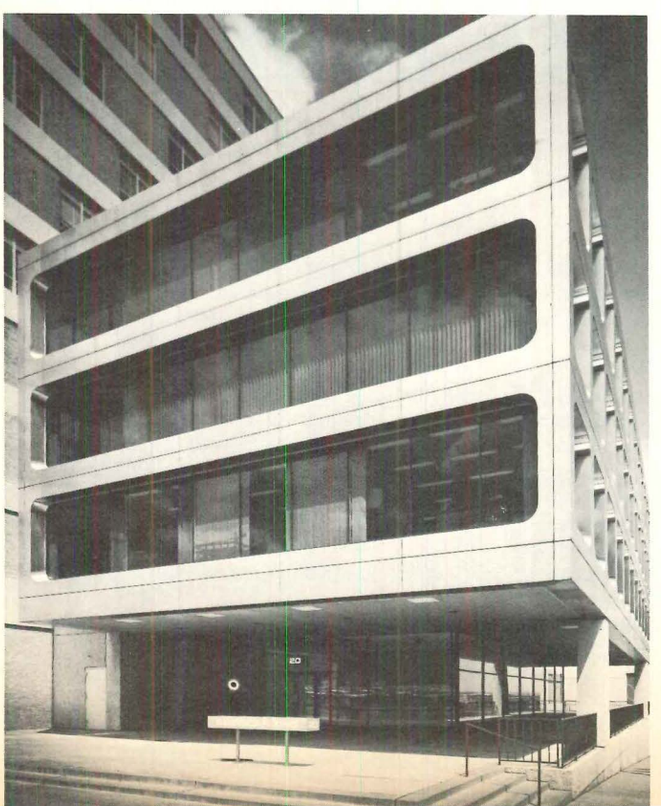
The building is located on a small sloping site near St. Louis' Gateway Arch. Three sides of the site are open but the fourth is closed by a brick and concrete building that is a less than ideal backdrop.

The service core is located to one side, separating the building from the one behind it and leaving the floors open for office space. Office floors start above the ground level, leaving an enclosed lobby and display area and an open arcade. Parking for 21 cars is provided underground.

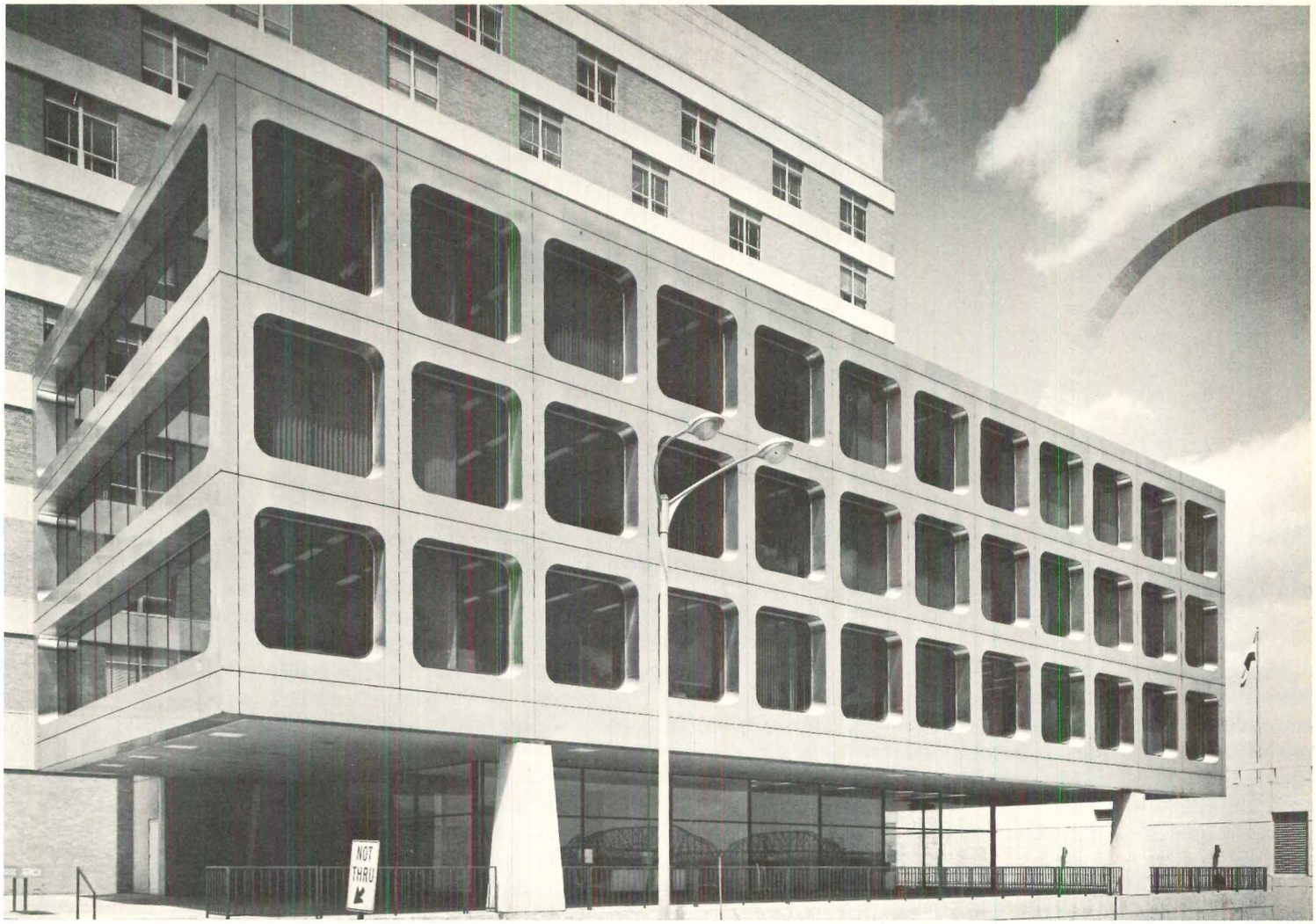
The structural system is based on a steel vierendeel truss carrying 50-ft clear spans. The truss is supported at two points on the street (or south) side of the building and at several places along the opposite wall. Corrugated steel decks support 4 in. concrete floor slabs. The result is a column-free interior that allows great flexibility for office arrangements.

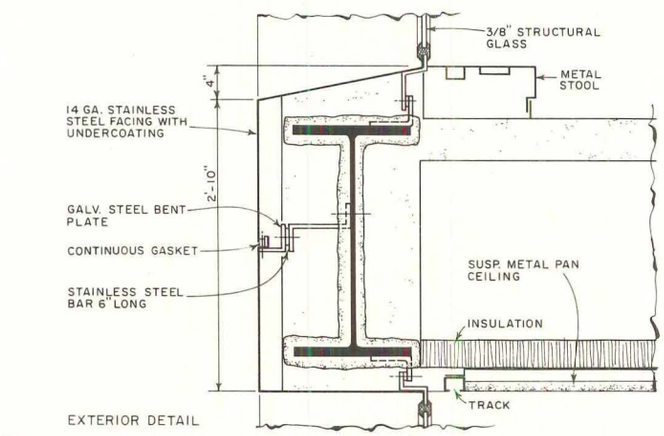
The tenant's position in the metal industry made stainless steel an appropriate exterior material. Three years after completion the stainless steel sheathing looks very good, and the architects give a good bit of the credit to the building management. The building is small enough to be kept clean, and the maintenance people *do* clean it.

In addition to saying something about the tenant, the stainless steel sheathing also expresses the structural system. Along the south face, the rounded corners of the windows cover stiffeners for the vierendeel truss, and along the east and west ends, the long horizontal bands of glazing reflect the clear spans inside. The stainless steel also serves as the window framing. Around each window opening an edge of the stainless steel was turned up to accommodate glass and gasket. There are no supplemental window frames (detail).

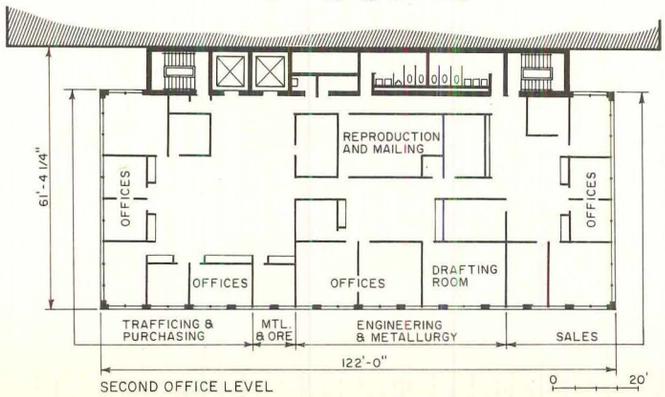


Gaskets for glazing are set directly into stainless steel sheathing. Famous old Eads bridge is reflected in glass of lobby; Gateway Arch rises nearby. (Photo: Morley Baer).





EXTERIOR DETAIL



SECOND OFFICE LEVEL

Sheathed in stainless steel, the American Zinc building was designed with a structural system that allows a 50 ft clear span. (Photos: Morley Baer, left; Julius Shulman, above).

Credits

Project: American Zinc Co. Building.
Architect: Hellmuth, Obata & Kassabaum, Inc.
Program: office building for a single tenant; internal flexibility and a distinct physical identity were prime concerns.
Site: a small sloping site near the Gateway Arch in St. Louis.
Structural system: structural steel columns and beams in service core and vierendeel truss on the south side with 50 ft clear spans running back to core. Truss is supported at two points, 20 ft from ends; other side of building has two main support points, five intermediate ones.
Mechanical system: air system for both interior and exterior zones.
Major materials: steel (structure), stainless steel (exterior).
Cost: over $1 million.
Consultants: William Tao and Associates, mechanical engineer; The Engineers Collaborative, structural engineer.
Photography: Morley Baer, Julius Shulman.

Fiberglass in Toledo

Setting out to use the client's product in all possible ways, the architects and interior designers came up with 41 fiberglass items in a 30-story tower

It will surprise no one that one of the major directives built into a building program for a company headquarters is that the occupant be able to display, to best advantage, the results of its labors. Owens-Corning Fiberglas Corporation has built such a showcase in Toledo, the 30-story Fiberglas Tower, designed by Harrison and Abramovitz. Of its 41 uses of fiberglass, 14 were designed and one developed specially for the building.

Sited in a plaza, clad in bronze and aluminum, the building houses a bank and other offices, with 16 floors occupied by Owens-Corning. Harrison and Abramovitz have used fiberglass products for such items as acoustical domed ceilings, wall coverings, roofing, ducts and modular bathroom units.

The Knoll International Planning Unit, retained to design the Owens-Corning interiors, carried the theme even farther. Since fiberglass was again the featured material, the Knoll Unit collaborated with Architectural Fiberglass, producers of objects such as park seating and planters, to design an entirely new form of office furniture. Made of fiberglass reinforced plastic, it is the result of design input from the Knoll Unit, headed by Conrad Zamka, and Architectural Fiberglass' Douglas Deeds and Barry Rosengrant.

The client was intimately involved in the give-and-take between Knoll and Architectural Fiberglass. Thirty prototype desk units were built, tried and evaluated. Comments were solicited from Owens-Corning personnel and incorporated into the design process. The resulting array of office units is an understated, "soft" expression of the worker's needs. Drawers, with their inefficiency and hardware requirements, were replaced by more usable filing space with top access. Corners and edges of all units were rounded to ease the inevitable conflict with the human anatomy.

The entire process is an example of a design philosophy that Deeds has followed for years. "I am more concerned with coming up with a real and valid solution to a human problem than styling another pretty object for the world to admire," he explains. Human values, both Deeds and Zamka point out, have often been ignored in planning work areas.

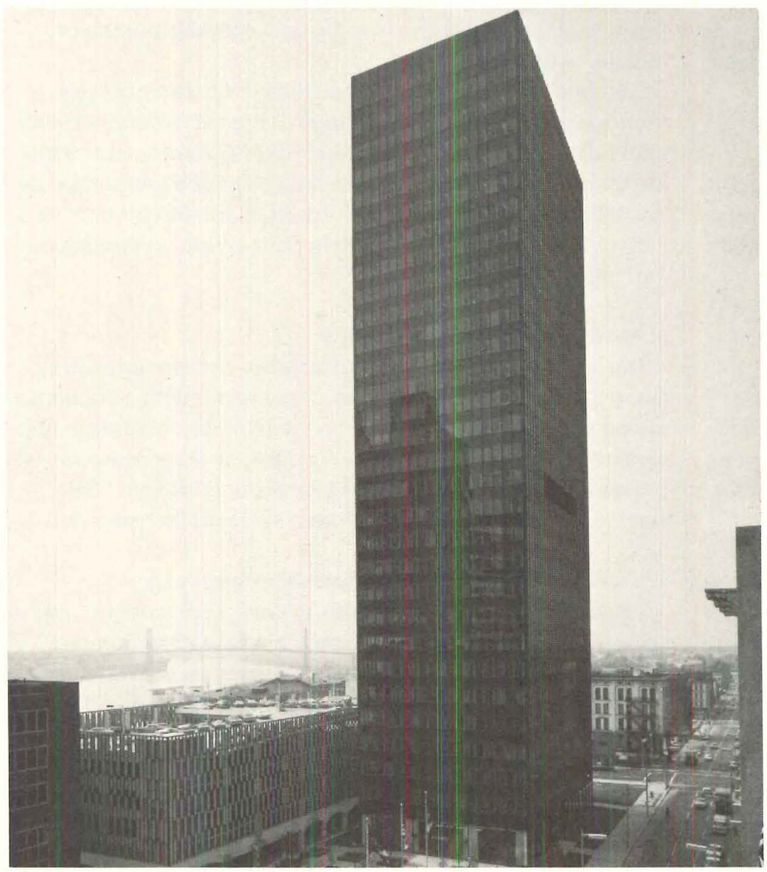
American office workers have not found Bürolandschaft to be quite as suitable in this country as it may be in Germany. Human demands, in an office context, express themselves in ways that may be distracting or unacceptable in an office landscape scheme. Increased pressure to conform can be a very real impediment to productivity, especially for Americans. Long established in the practice of self-expression, U.S. office workers do not respond well to these implied pressures, Zamka feels.

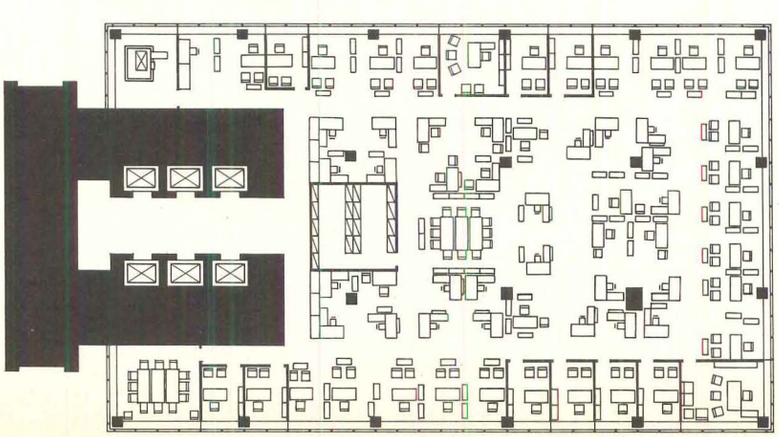
In an effort to capture the pros of the Quickborner approach, and to correct the cons, the Knoll group designed an open plan scheme for Owens-Corning, using the Architectural Fiberglass units. Screens and shelf units define the work areas and give a sense of privacy, although they do not restrict the view from a standing position. In the few instances where privacy is essential, walls occur, topped with glass to allow visual continuity of the space. Planters are also an integral part of the feeling of semi-enclosure. The overall effect of this plan is a quiet, cheerful environment encouraging team effort, when that is desirable, without subordination of the individual.

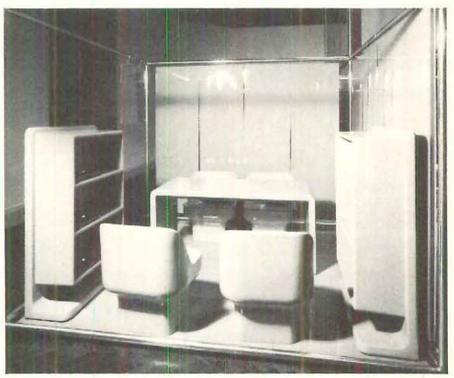
Credits

Project: The Fiberglas Tower.
Architect: Harrison & Abramovitz.
Interiors: The Knoll International Planning Unit; Architectural Fiberglass.
Program: 30-story office building for speculative builder, with major tenant to be Owens-Corning Fiberglas Corporation.
Site: downtown Toledo, Ohio.
Structural system: structural steel.
Mechanical system: central distribution through ceiling fixtures, and induction units at window wall.
Major materials: terrazzo, marble, aluminum, bronze (lobby), duranodic aluminum, glass windows and spandrels, and brick.
Consultants: Edwards & Hjorth, structural; Jaros Baum & Bolles, mechanical; Barber & Hoffman, foundations; Ebner-Schmidt Associates, electrical.
Client: Riverview One Corporation.
Photography: courtesy of Savage Communications.

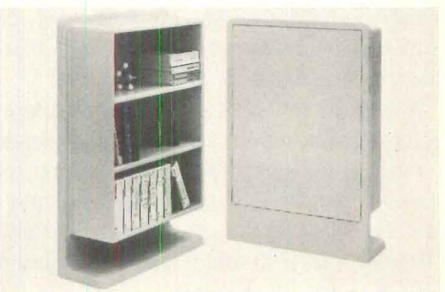
Though rectilinear, Knoll's scheme retains an informal feeling.



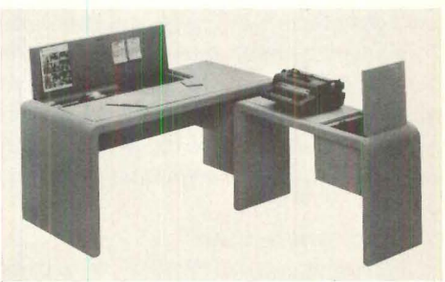




Furnishings of fiberglass take all forms.

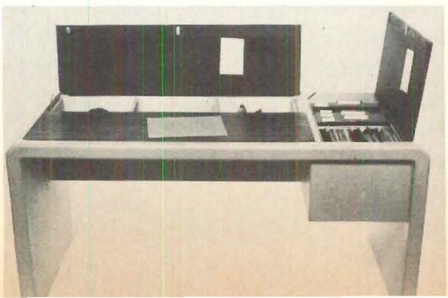


Acoustical inset on bookcase/screen unit.



Drawers are eliminated in desk units.

Storage is reached through hatch openings.



Ten rules for profits in land development

Paul B. Farrell, Jr.

Just because the architect can make more money participating in land development than by designing for fees, such speculation does not guarantee easy profits

Is the architect becoming a real estate entrepreneur? A recent survey indicates that about one-third of the architectural firms have actually been involved as principals in at least one land development project. Another third outlined similar plans for the immediate future. The survey included almost 100 large and small firms responsible for an estimated $4 billion of construction annually. As principals, these architects were not merely consultants but also took a "piece of the action" (an equity ownership position in the project) either in lieu of or in addition to their fee. Moreover, it is also clear that these architects were not passive investor-consultants, but rather active decision-makers and co-developers.

This trend toward a more active leadership role in the real estate/construction/architecture business is a healthy sign for the profession. Architects moving in this direction should keep in mind certain operating rules, and also recognize the fact that the successful developer is likely to know when to ignore the rules and often does not fully understand his reasons for acting decisively.

1. Develop a "killer instinct"

Most architects are passive consultants to developers. They lack the entrepreneurial flair—the killer instinct—that drives the developer to make decisions and take risks, acting on incomplete information in an uncertain environment. The developer stands to lose (as well as make) a lot of money. But he enjoys the adventure inherent in real estate development.

2. Protect your position

Often architects will develop concept drawings and agree to accept their fee *if* the project goes ahead. The client's land, however, is probably appreciating in value whether the project gets built or not.

Architects all too often underestimate the value of their contribution, both as a percentage of the seed money (initial capital) required to get the project off the ground, and as the planner of the development concept. The architect should demand more than his basic fee if his risks are greater than normal, or else tie up the client with a partnership agreement *before* making any studies.

3. Reject marginal projects early

One successful architect regularly but politely turns away many clients after he determines that the project's economics are questionable (the cost will be too high for the rents in that area, the principals are financially weak, or other reasons). He arrives at this conclusion quickly by making his own "ballpark" feasibility study of the project's economics (rule 4).

4. Don't confuse project cost and mortgage value

Value is not a function of cost. A leader does not give a developer $2 million because the project costs $3 million and the lender will lend 67 percent of that amount. If he does get $2 million, it will be because the value of the project is $3 million, not the cost.

Here is one simplified variation of the type of feasibility study commonly used by mortgage bankers in arriving at project value (diagram, p. 87).

a. Multiply the rent per square foot times the number of square feet net leasable area to determine the gross rent.
b. Multiply gross rent by the ratio of vacancies plus expenses to determine the vacancy and expense allowance.
c. Subtract the vacancy and expense allowance from the gross rent to arrive at net income.
d. Now "capitalize" the net income: divide the net income by the "cap rate." (Definitions of the rate of capitalization range from esoteric to arbitrary, so just accept your mortgage banker's rate as a fiat from the lenders.) That is, if the net income is $200,000 and the current cap rate for this type of project is 8 percent, the value of the project is $2.5 million. Look at it this way: the lender is telling the developer that he expects a $2.5 million project to throw off a net income of 8 percent.
e. Multiply the project value by the mortgage ratio to determine the amount of the loan.

Author: Paul B. Farrell, Jr., a mortgage banker with the Detroit office of the Sonneblick-Goldman Corp., is a lawyer, urban planner and graduate architect. He was the consulting editor for "The Architect as Developer," PROGRESSIVE ARCHITECTURE, May 1970.

f. Multiply the loan amount by the debt service constant to determine the amount of debt service which must be repaid annually to the lender.
g. Subtract the debt service from the net income to determine the cash flow (before taxes) remaining for the equity investors.
h. Subtract the loan amount from the actual project costs to arrive at the actual equity which must be invested.
i. Determine your cash return on equity invested. It should be close to 20 percent; if not, the project cost is too high, the rents aren't high enough, or something else is wrong.

There is nothing magical about the basic method of analysis and any competent mortgage banker will explain it. Caveat: the architect should use this type of analysis only to make sure the project is not way out of line (ballpark economics); his mortgage banker must prepare the final appraisal. One final word: remember that if a project's value is $3 million and it justifies a $2 million loan, the fact that it costs you $2.05 million means that your equity must be $50,000. If the actual project cost is $2.5 million, your mortgage will be the same (assuming the value is still $3 million), so you must then invest $500,000 instead of $50,000. And this equity must be invested before any mortgage funds can be drawn during construction. In short, the amount of the mortgage does not depend on the cost of the project.

5. Don't give up equity until necessary

Many neophyte developers think they must tie all the loose ends together before going ahead. Land development doesn't work that way. Equity investors tend to demand a larger percentage of the action the earlier they come into the deal. The risks are greater then. A better practice is to draw in investing partners only when necessary to fund the development, using your own credit prior to that time.

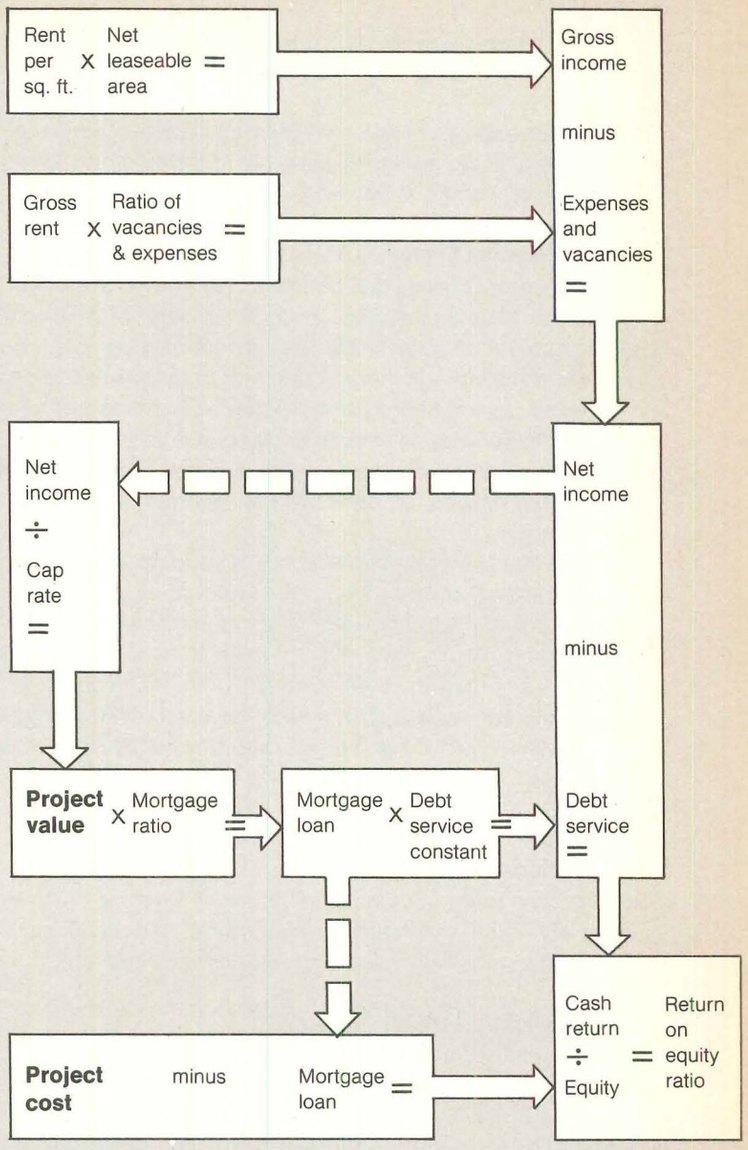
Here's one example: assume you have four investors putting up $100,000 each for the seed money to fund a project. That's 25 percent interest each for the actual cash invested to date. But if another $600,000 is needed, each $100,000 is a 10 percent interest. Or is it? If the original investors take the risk of getting the mortgage commitment, option, surveys, zoning change and other costs, the risk of later admitted partners is reduced, as should be their share of the equity. If they give a 40 percent interest for the last $600,000, the original four investors will each have an interest of about 15 percent rather than 10 percent.

6. Know basic financing techniques

Architects have a responsibility to design a project within various constraints, including available financing. Most architects are familiar with the permanent first mortgage and construction loan. Here are a few other techniques.
a. Standby commitments. A form of short-term temporary financing. Some real estate investment trusts will issue a standby for an amount slightly less than a permanent commitment loan. Two advantages are (1) although neither borrower nor lender expects to actually close the commitment, it is a bankable commitment against which a construction loan will be made, and (2) unlike a permanent loan, the developer is not locked into the loan for a 10-year period, which is common today. The standby lender will usually advance the interim construction funds.

The lender issuing a standby commitment always expects

Appraisal for land development



the developer to get a permanent loan once the project is up and leased. Later, a permanent lender is inclined to more favorably appraise a project actually leased, since rents and income are no longer speculative.
b. Gap financing. Permanent lenders usually condition their loans on the achievement of 80 percent of the projected rents. The borrower must obtain "gap" commitment from a lender who will agree to extend a commitment for the remaining 20 percent. Then the construction lender will lend an amount equal to the full permanent loan.
c. Sale leasebacks. Frequently a developer can pull his equity investment out once the project is completed by selling off all or part of the project to an institutional investor and leasing it back. The land alone, the energy system or the entire project can be sold to any one of many investors looking for sound projects to purchase. (Such a sale can be prearranged conditional upon achieving specific rent levels.) Of course, rental payments will diminish future income to the developer, but the sale and leaseback will usually result in a substantial current profit for him, as well as the return of his capital.

Other techniques the architect should be aware of are in-

stallment sales contracts, wrap-around mortgages, bond financing, secondary mortgages, land development loans and government guarantees.

7. Understand the real costs of borrowing

If you don't believe that the effective interest rate on interim construction money is 12 to 15 percent, and you refuse to pay it, stay out of the land development game. A borrower at the so-called prime rate (and most are not) is not paying 8.5 percent. He's actually paying much more, because he must leave a compensating balance in the bank. Thus, on a million dollar loan with a typical 20 percent compensating balance of $200,000, the *effective* prime rate is 10⅝ percent.

Real estate investment trusts have become a major source of short-term construction funds. Their money, however, is not obtained from small depositors at minimum rates as with commercial banks; their rates of interest must be higher to achieve a reasonable rate of return on their capital.

Permanent lenders also tend to use a variety of techniques to achieve the *effective* interest rate they are seeking. "Discounting" a loan creates the same effect as using a compensating balance. A lender will charge 9.5 percent interest on a million dollars, but discount the loan 3 percent and lend only $970,000. Or the lender will ask for a "kicker" (such as a percent of the gross income) which will provide him with additional return. In either case, the effective interest rate is always much higher than the stated rate.

8. Don't procrastinate ... don't!

No architect in his right mind will advise a client to wait for construction costs to come down. Why wait if the project is a good one? Construction costs will go up ½ percent per month. Every month's delay is a permanent loss of almost 10 percent of a year's income from the project. In addition, property taxes and other carrying charges must be paid regularly on unproductive property. Faced with these hard facts, a developer with confidence in his project cannot afford to wait.

Forecasting future interest rates is a game for metaphysicians and fools with ouija boards. Moreover, any advantage achieved by slightly more favorable interest rates six months from now (assuming you take the gamble and guess correctly, which is unlikely) will be more than offset by inflation. In fact, it can be shown that a one-month delay can be justified only if the developer is absolutely certain that interest rates will drop a *minimum* of 1 percent.

Many developers who are delaying because of high interest rates are actually restrained because higher interest rates result in higher "cap rates." And higher cap rates have meant lower project values for projects (rule 4) and, therefore, smaller loans. As a result, it is now exceedingly more difficult to "mortgage out" (get a loan which will cover all project costs). Today, a developer must put his own cash into a project or raise it from equity investors. Many cannot effectively do this. Those who have the cash, however, are enjoying a field day in the burgeoning market demand for new housing and other construction. Those marginal developers who don't have the cash resources are idle.

9. Recognize lenders as unique personalities

Any developer in the country can walk into any lender and start negotiating for a loan. Out of the hundreds of lenders, however, the odds are high that he'll pick the wrong lenders for his project. Lenders don't like to say no directly, so they'll quote stiff terms and let you make the decision while delaying your move on to the next lender. Or they may simply ask you to wait awhile or make some revisions.

A developer may shop around for bids on his construction, but he's likely to draw a blank if he attempts to send his project simultaneously to several lenders. They won't waste their time once they find out that a developer is shopping his loan, which is a sure way to kill his efforts to get a loan.

The market for mortgage loans is difficult to grasp, due to the large number of lending sources, their many idiosyncracies and the fluctuating nature of mortgage terms. Most professional developers involved in large scale building will work with other professionals in mortgage banking in order to locate the lender and negotiate the best possible terms available for a specific purpose.

10. Select a competent mortgage banker early

The success of any project depends on three main factors: location, market and financing. Today, financing is frequently the deciding factor on whether a project goes ahead. The failure to consult a competent mortgage banker may result, as it often does, in the architect preparing a handsome (and expensive) set of drawings for a client only to later find that the project is not mortgageable for any number of reasons. Usually, a mortgage banker is willing to appraise the project's economics based on a preliminary program and concept, and then work with the developer to produce a project mortgageable in today's market.

A competent mortgage banker should also be able to develop an appraisal quickly (rule 4), and then advise on potential methods of financing. Moreover, he should be able to act quickly once the developer has decided to secure mortgage funds. Within 45 days after he's given the green light, the commitment should have been issued. The mortgage banker who lacks confidence in himself won't insist on a 45-day exclusive because he knows it will probably take him longer to produce (and such delays are costly for the developer).

Smaller mortgage bankers are often no more effective than the developer in placing the loan. They may adequately appraise the project's value, but because of their low volume of business, they will have weak contacts with the major lenders. Moreover, some smaller mortgage bankers are "correspondents" for one or more lenders. They get part of a fee from the lender and, more importantly, usually cannot take a loan to another lender (even though another lender might be the more likely to want it) until the correspondent's lender has refused it. Delays of six months and more are not uncommon when dealing with the wrong mortgage banker.

On the other hand, a competent mortgage banker will normally place a commitment within 45 days. He can intelligently select which lenders are most likely to be looking for this project currently and negotiate favorable terms. In brief, his knowledge of financing techniques, his contacts with lenders and his ability to negotiate quickly will avoid delay.

Hypar gambits

Edward X. Tuttle, Jr., AIA

Although there was a great interest in the design of hyperbolic paraboloids about a decade ago, their application to structures today seems to have waned. In this discussion, the author rekindles an interest in hypars and illustrates combinations that to his knowledge have not been found in the literature or in actual construction

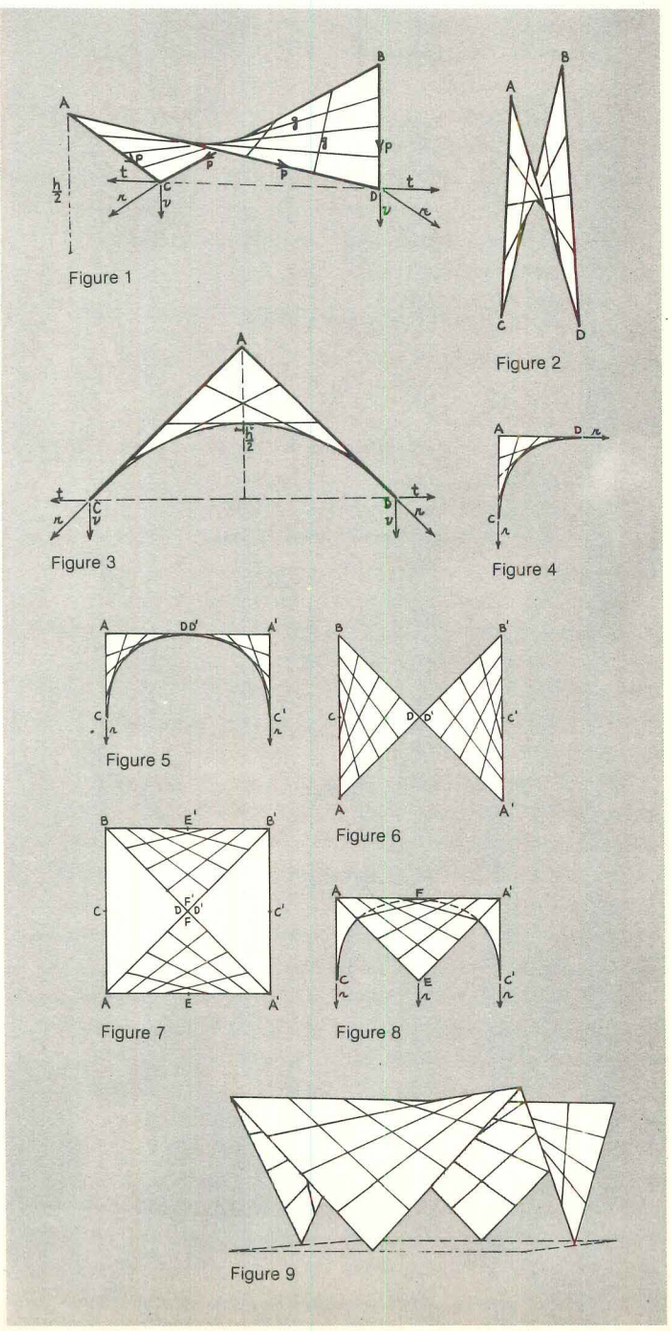
Use of a large hyperbolic paraboloid to roof a hangar for two airliners illustrates a happy congruence of form and function. At the wings, where the aircraft are broad and low, the structure is also broad and low; at the tails, where the aircraft are narrow and high, the structure is narrow and high. Rarely does the rigorous geometry of hypars so neatly coincide with the functional demands of a specific building program. Another advantageous arrangement of hypars occurred to the writer about 12 years ago. Since then, however, no suitable opportunity for application has come along, nor have I found hypars so arranged discussed in published work. The time has come, then, to pass on the ideas should someone wish to use them.

Source of strength

Along with other shell structures, hypars owe their strength to their curved shape rather than to their mass. They are thus economical of material. Along with cylinders (barrel vaults) and conoids, hypars have the additional advantage of generation by straight lines which makes them more economical to form than other curved structures.

The hangar described above uses a single hypar arranged as in (1). Straight-line generators are labeled g. Shell stresses collect along the edges where they accumulate axially to a maximum at each point of support. In (1) the edge stress is compressive and varies uniformly from zero at A and B to a maximum of p at C and D. The resultant of each pair of p's is labeled r; each r resolves into a vertical component, v, equal to half the total dead plus live load of the structure, and a horizontal component, t, or thrust, which must be countered,

Author: Edward X. Tuttle, Jr. is an architect practicing in Southfield, Michigan.



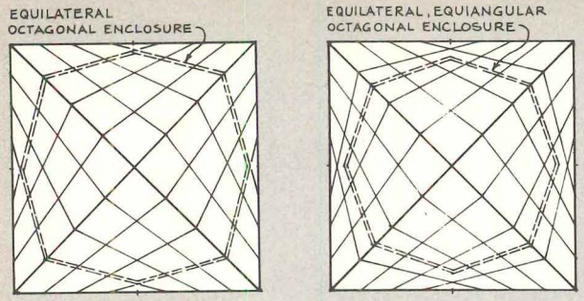


Figure 10

WALL LINES COINCIDE WITH GENERATOR LINES.

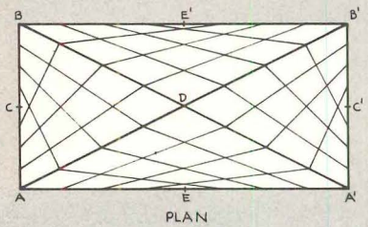
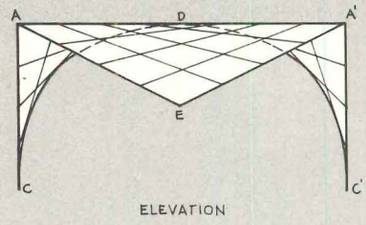
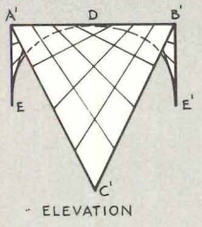


Figure 11

$\overline{AD} = \overline{AC} = \overline{AE}$, ETC.





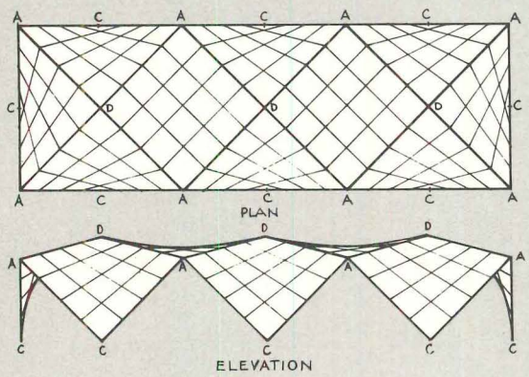


Figure 12

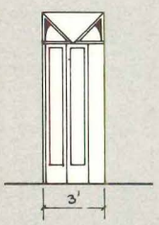


Figure 13

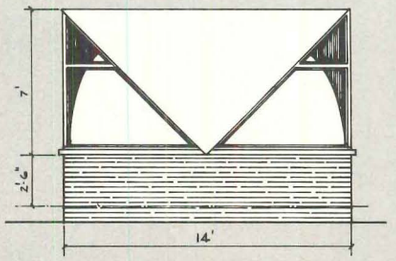


Figure 14

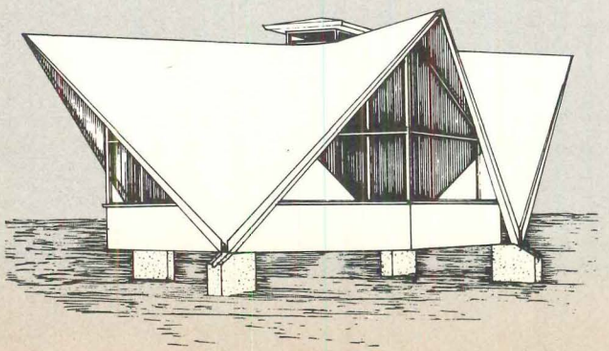


Figure 15

Hypar gambits

ordinarily by a cable or tie rods running under the floor and joining points C and D.

If the edge lengths $\overline{AC}$, $\overline{AD}$, $\overline{BC}$, and $\overline{BD}$ are unequal, bending stresses occur and the structure is statically indeterminate. We will consider only hypars with edges of equal length, statically determinate, and wherein all primary stresses are simple tension and compression.

Understanding hypars

To help get the feel of hypars, note that the shape of the hypar in (1) can be transformed continuously to the shape shown in (2) by bringing points A and B and points C and D closer together, which increases the curvature, decreases the surface area and diminishes the membrane stress. A and B could have been brought closer together without changing the distance from C to D, and vice versa.

The end elevation of the hypar (1) is shown in (3). Dimensions have been chosen that make $\angle CAD$ a right angle. If point D is now raised to the level of points A and B, the result will look like (4). If another hypar is added as in (5), the horizontal r of (4) becomes equilibrated and the structure as a whole exerts only vertical load (barring wind load, of course, and thermal load). If the angles at D and D′ (in plan) are also right angles, then the hypars of (5) will look like (6) in plan. Obviously, another identical pair of hypars can be added as in (7), an arrangement whose elevation is shown in (8), perspective in (9).

Horizontal thrust has been eliminated. The resulting architectural space, furthermore, has more nearly uniform interior height than in (1).

If walls are erected to coincide with hypar edges or generator lines, then the intersections of walls and roof will be straight. Otherwise, the top edges of walls will be curved. Shown in (10) are two octagonal rooms whose walls fall on generators. Note that roof overhang increases with wall height which is useful for sun control.

Rectangular space

To create a rectangular space the arrangement can be altered as shown in (11), but one pair of opposite low points (E,E′) will differ in height from the other pair (C,C′).

Another possibility is shown in (12). The length of the structure can be increased infinitely, and all low points are at the same elevation. Points D are set higher than points A; areas DADA can then be filled with relatively flat hypars supported on the edges of hypars ACAD.

The basic configuration of (7) is perfectly workable for a roof as small as a telephone booth, (13). Used over a larger room, say 14′ x 14′, the hypars call for support at roughly window sill level as in (14). Rooms from 30 ft to 50 ft across could function as restaurants, stores, living rooms and otherwise, with an appearance something like (15) which, in plan, is the same as (10 left).

Monumental spaces, say 100 ft across by 50 ft high or larger, are possible. Subdivision of enclosed space into multiple stories, however, is not suggested. The meeting of floor edges and hypars would be messy, for one thing, and for another, one would lose what seems to be a main attraction of such space: the drama of the curvature, and the alternation of

sense of enclosure (near the hypar low points) with sense of openness at the corners of the room. These attractions require that neither ceiling nor partitions bar one's comprehensive view of the structure.

Thrustless structures

So far only quadrangular arrangements have been considered. Thrustless structures with three hypars as in (16) are workable, as are structures of any higher number of hypars. With any number of hypars over four, generator lines can be selected in such a way that walls thereon form a regular polygonal enclosure with the same number of sides as the number of hypars. Illustrating this for a six-hypar structure is (17).

As the edges of hypars accumulate axial stress, they must be substantially stiffened to become "edge struts." Precipitation runoff collects along the edges in much the same way that stresses do. A gutter face tapering from narrow at the high point to wide at the low point as in (15) serves to express both stress and drainage phenomena, as well as to give an appearance of lightness to the whole. A cupola at the top center of the roof, useful for skylighting and venting, also helps define and stabilize the appearance of the structure. (Edge struts must be continuous through the cupola.)

Stresses are relatively low in the membrane, and highest at points of support. Given a roof 32 ft sq in plan with loading of 45 psf of horizontally projected area (wood construction), each of the four supporting piers will carry $\frac{1}{4}(32)^2 x(45)$, or 11,520 lb. Maximum axial load per edge strut will be $11{,}520/\sqrt{2}$, or about 8150 lb. To get an approximate edge strut size consider its midpoint which is $16\sqrt{2}/2$ or about 11'-3" from either end. Here, the axial load is half what it is at the foot, i.e., 8150/2, or 4075 lb. A pair of 2x6's spiked together as in (18) gives strength to spare.

Membrane stress equals wA/2h, where w is dead plus live load psf, A is horizontally projected area in sq ft, and h is the vertical distance in feet from the low point to the level of the high points. In the arrangement of (7), A equals $\overline{AD} \times \overline{BD}/2$. As $\overline{AD}$ and $\overline{BD}$ are equal, substitute a for each, making A equal to $a^2/2$. Inspection shows that h then equals $a/\sqrt{2}$. Thus wA/2h becomes $(w)(a^2/2)/2(a/\sqrt{2})$ which reduces to $wa/2\sqrt{2}$. As a is about 22.6 ft, membrane stress equals $45 \times 22.6/2\sqrt{2}$, or 360 lb/ft, which is the value of both the tension and the compression stress per foot of membrane, and is also the load transferred by shear to each foot of edge strut. 360 lb/ft accumulated over a length of 22.6 ft becomes a maximum axial stress in each edge strut of 360x22.6, or 8150 lb, which agrees with our previous calculation.

Conservative approach

A more conservative approach is to assume that wind plus snow load on one hypar results in a 30 psf live load acting at 45 degrees from the vertical and normal to the center of the hypar. For simplicity assume dead load acts the same way. A is the area projected onto a plane tangent to the center of the hypar, and equals $a^2\sqrt{2}$. h is equal to a. Membrane stress works out to 720 lb/ft, p to 16,300 lb and r to 23,040 lb; all just twice as great as previously calculated. Each designer may choose the assumptions he thinks appropriate.

Details for wood, concrete or other construction must, of course, reckon with roofing, insulation, ceiling finish and so forth, and are beyond the scope of this article.

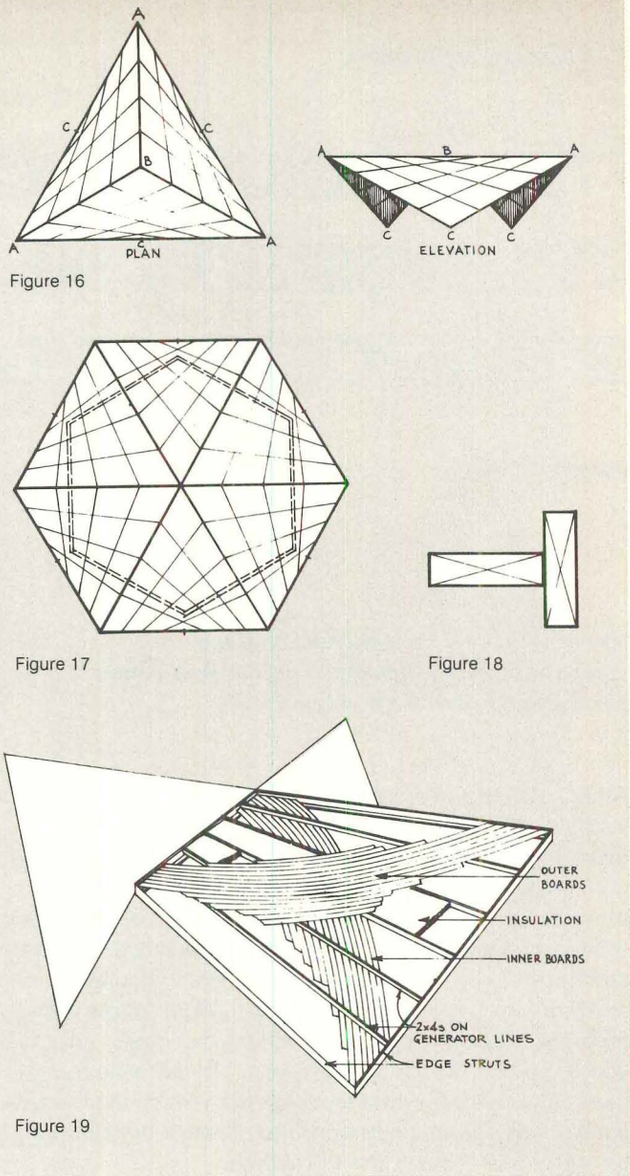


Figure 16

Figure 17

Figure 18

Figure 19

Specific system

One of many possible construction systems, however, seems worth describing. It is shown in (19). Wood edge struts are first erected. Then 2x4's are set on about 16 in. centers to coincide with one set of generator lines. The 2x4's are nailed at their ends to the edge struts. Blanket insulation is installed between the 2x4's. Inner membrane boards, 1x4 or 1x6, are bent and nailed to the 2x4's and edge struts. Outer boards at right angles to the inner boards are similarly applied. The inner boards take the membrane compressive stresses and also serve as the ceiling. The outer boards take the membrane tensile stresses and also serve as the roof deck. Nailing must be adequate to transfer stresses from outer to inner boards via the 2x4's, and from both layers of boards to the edge struts.

Buckling from concentrated roof or ceiling loads is unlikely to be a problem. Considerations of practical carpentry will probably lead to over-design for membrane stresses, and the surplus strength will tend to take care of temperature stresses. Anchorage should, of course, adequately resist wind loading.

The absolutely constant incontestably stable architectural value scale

Malcolm B. Wells

At last, architects can find out if they are part of the ecology problem or part of the solution by scoring projects on this value scale

Architecture is the outward expression of a way of life and, as such, it must begin to express real reverence for life. More than that, it must actually help support life. We're in far too great a mess to hope that the ecological reprieve can be brought about by cleaning up the skies and the waters, and saving some wilderness. We've literally paved the land with architecture. And when we stop to think about it, which we rarely do, we only start to argue again. We disagree about degree, about priorities, about directions and goals. "*This* is relatively good." "*That* is relatively bad." We seem to have no base other than man-centeredness from which to measure our works. Our value criteria are so unstable that nothing can be objectively compared with anything.

But there is a way to evaluate what we do. There's a cold, scientific, stable, constant, absolute and very simple scale on which we can rate one work against another. On it we can measure not only architecture, landscape architecture, engineering and planning, but also zoning laws and everything else that's likely to affect the environment of which we are so visibly a part.

So far as we know, the only fully appropriate structures and the only truly successful communities ever to be established on the North American continent during the current geologic epoch were those myriad miracles that we now lump together under the word "wilderness." Over most of the continent wilderness was forest, but there were also vast areas of grassland, desert, tundra, glacier and marsh. What a difference from the mess we have today!

Where Expo '67 still hollowly proclaims the glories of man and his world (and Montreal's sewage slides untreated into the St. Lawrence) huge trees stood for countless centuries in silence beside a sparkling river. Where Saarinen's great arch reflects dully in a septic Mississippi, breathless skies of unbelievable blueness moved above an endless green land. And in what is now Beautiful Downtown Burbank there was once a living paradise of incredible cleanliness.

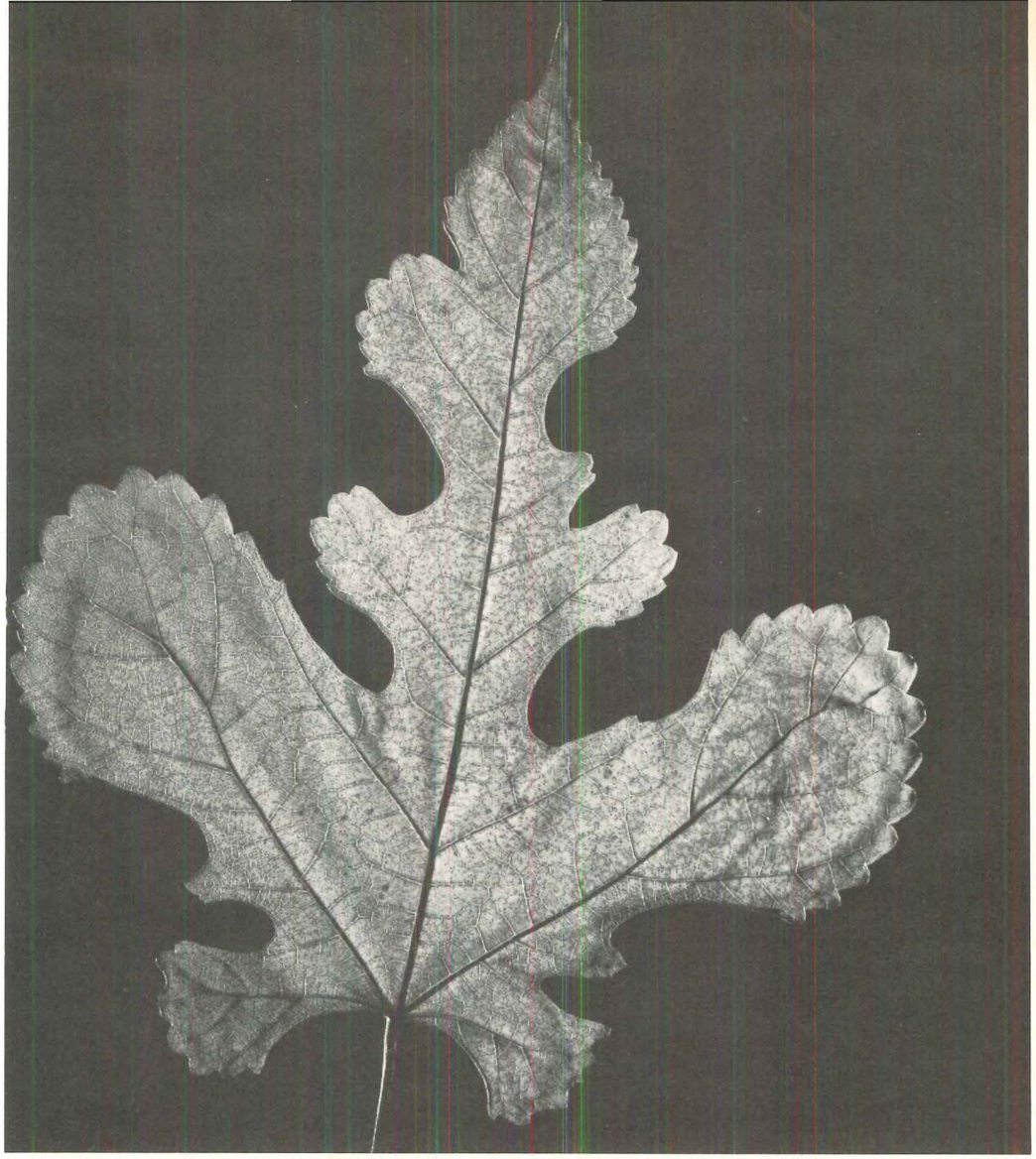
According to all accounts, the wilderness near Philadelphia was a climax forest of mixed birch, hemlock and pine, an endless cathedral of ancient trees graced by meadows of wildflowers, watered by transparent streams, and inhabited by a profusion of wild life. But man wanted a city so he cut down the trees, turned that Arcadian heaven into a desert of brick and killed all the animals. He got his city all right: a thousand square miles of sprawling ugliness, the third most polluted air in the nation, tragic ghettoes, and a cracked liberty bell. Not much of a bargain.

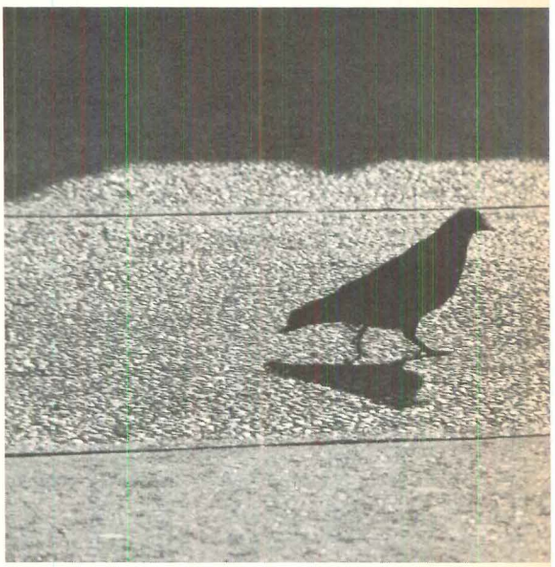
The wilderness as a system

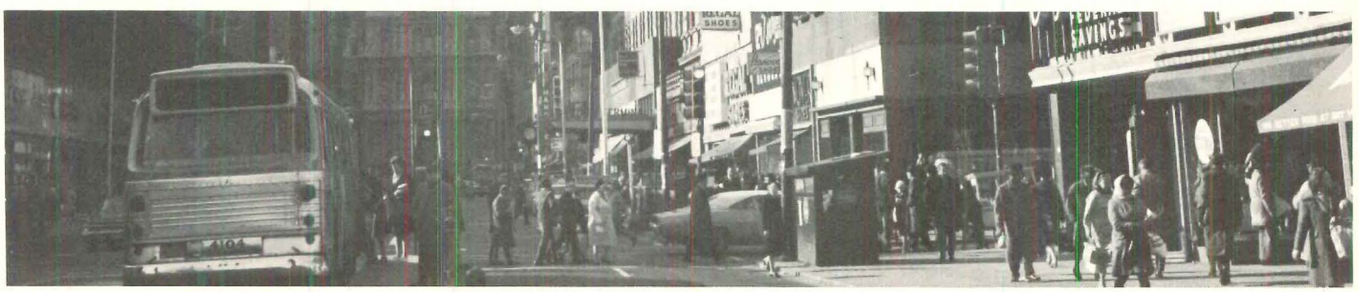
We're beginning to realize now just how precious that wilderness was. Each year more evidence points to the probability that your local wilderness — wherever you live — was not just one of many possible good solutions to the problems of survival there, but that it was very likely the most perfect solution possible. In that light, then, the kind of wilderness that existed here before the palefaces arrived can be used as an unchanging standard against which we can measure our own solutions *to the same problems.* For while it was never exactly the same from one year to the next, the wilderness, as a system is believed to have stayed pretty much the same for huge periods of time once its basic struggles were over. Whatever the region — forest, desert, prairie or tundra — the wilderness was a nearly perfect response to the very factors we now face.

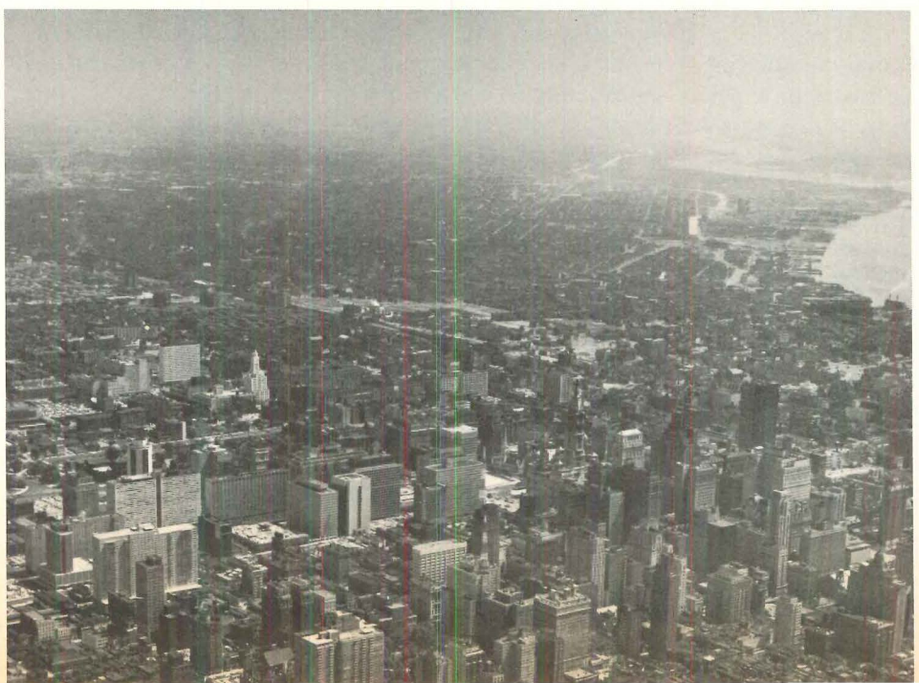
The Philadelphia forest must really have been something to see. It actually created pure air. It created pure water. It stored extra water for use during droughts. It created all the food needed for its inhabitants. It created rich soil. It drew its energy from the sun. It created fossil fuels. It created silence. It consumed all its own wastes. It required no detergents, no fertilizers and no insecticides. The forest was supremely in tune with the pace of all creation. And it was host to uncountable species of plants and animals, including more than a few of our own kind. In the Philadelphia forest, dust was virtually unknown. Wind was something to be heard only far above in the tops of the trees. And the moderating effect of

Author: The times have finally caught up with Malcolm Wells. He wrote a major article on underground construction in 1965 (P/A, Feb. 1965, p. 174) and ever since has devoted much of his time and his Cherry Hill, N.J. practice to the problem of building without destroying land.









From forest to city is the direction of man's progress, yet it is the wilderness that provides a standard against which to measure man's buildings and cities, says the author.

the huge forest kept summers cooler and winters warmer than the ones we have today. In fact, the only forest products we could possibly have objected to were the bugs. And the forest was beautiful, every living inch of it, with a beauty we can no longer even imagine.

Measuring the city of today against such a standard is so humiliating we usually refuse to do it. We call the comparisons irrelevant or unfair or even silly. But they aren't; *the wilderness and the city have exactly the same goal: sustenance of a successful living community on the land.* The wilderness had millions of years of blind trial and error in which to shape its near-perfect responses; we've had a couple of thousand years and have managed to find only a few. Damned few.

The shameful cities we've created have only one treasure (to human eyes, anyway), and that treasure is people — human beings and human resources; our culture: the arts, the sciences, and the whole fund of knowledge and wealth that goes with them. The rest of the city is pure failure, for it does what the wilderness long since learned not to do.

The city destroys pure air. It destroys pure water. It repels extra water that might have been stored for use during droughts. It creates no food for its inhabitants. It feeds, waters and powers itself by depleting vast areas beyond its own borders. It destroys rich soil. It destroys silence. It consumes none of its own wastes. It creates dust. It requires extensive maintenance and megatons of detergents and poisons. It is utterly out of step with all natural rhythms. It destroys beauty. It makes winters and summers more severe. And it is host, really, to only one species.

Now, none of this would seem very important to us if the city offered a really livable habitat for our one lone species, but it doesn't. The city, and its suburbs, is sometimes almost unfit for human habitation. It's becoming less fit rather than more fit every day. And since we can't change our physiological characteristics — not yet, anyway — if we are to survive we've got to change the very nature of the city itself.

Whether we like it or not, we inhabit bodies that evolved through eons of pure, unpolluted, silent beauty; bodies that lived in daily competition with a dozen other species. But now we offer our same unchangeable bodies exactly the opposite: impure, polluted, noisy ugliness, and daily competition with only one species: their own.

That's why it's so important that we recognize the value of the lessons the wilderness offers and the need to apply them right now. We can't get well until we first find out just how sick we are. Which brings me back to the Absolutely Constant Incontestably Stable Architectural Value Scale.

The charts on the next page show how the long-lost Philadelphia forest would have scored and, if you don't mind being depressed, how man's works compare with the miracle of wilderness. Here is my previous rating of any building featured in P/A. I have no idea what it is but I can rate it, sight unseen, and not be very far off.

But before you think I'm criticizing anyone in particular, let me rate my own best project on the same basis. This is a little factory built on some sound ecologic principles and highly publicized locally as being of real significance.

Still not much to brag about, is it? The best we can say for it is that it's on the green side of the ledger again, and that it points the way to even more hopeful ratings later. Or do you find the comparisons in these graphs unfair? They really aren't, you know. We can't have different sets of rules for different players. Every creature and every community on spaceship Earth must finally be judged by this chart.

Some lessons to learn

No, it's not unfair; not at all, and it hints at some really solid answers to our environmental problems, answers like using those recycling toilets the Canadians have invented, or reusing all our cooling and process water. Wilderness know-how could teach us how to use solar energy and to re-use all our wastes. More and more of our buildings would go underground. So would highways and parking lots. Some of our food would be grown on rooftop farms where today nothing but housetops stretch to the horizon. All kinds of wilderness-based practices come to mind once we start thinking of wilderness as a master guide for cities rather than as the antithesis of them. We'll learn to collect and use rainwater even on city lands rather than divert it to the nearest storm drain. We'll start composting city trash and garbage — and sewage, too — on a mammoth scale, as they do in some European countries, turning the wastes into rich, soil-building mulches. And our architecture, as it begins to express the new values, will become really beautiful again, naturally — an earth art back where it belongs. As building becomes truly functional in this wider sense we'll unconsciously texture it and arrange it with an eye to weather moderation, no longer creating the sterile chasms that so multiply the winds. And, as the city becomes a garden of life and the lost species of plants and animals start to move back into town again, we'll find that we'll want to live there again, too. Benign, that's what the new city will be. And beautiful.

If we tried hard enough we could build buildings right now that would rate a few positive scores on the great wilderness scale, but so long as the total score was in the red we'd still be losing the race. It shows us just how far we've fallen, how we've lost contact with all real values in our temporary love affair with progress.

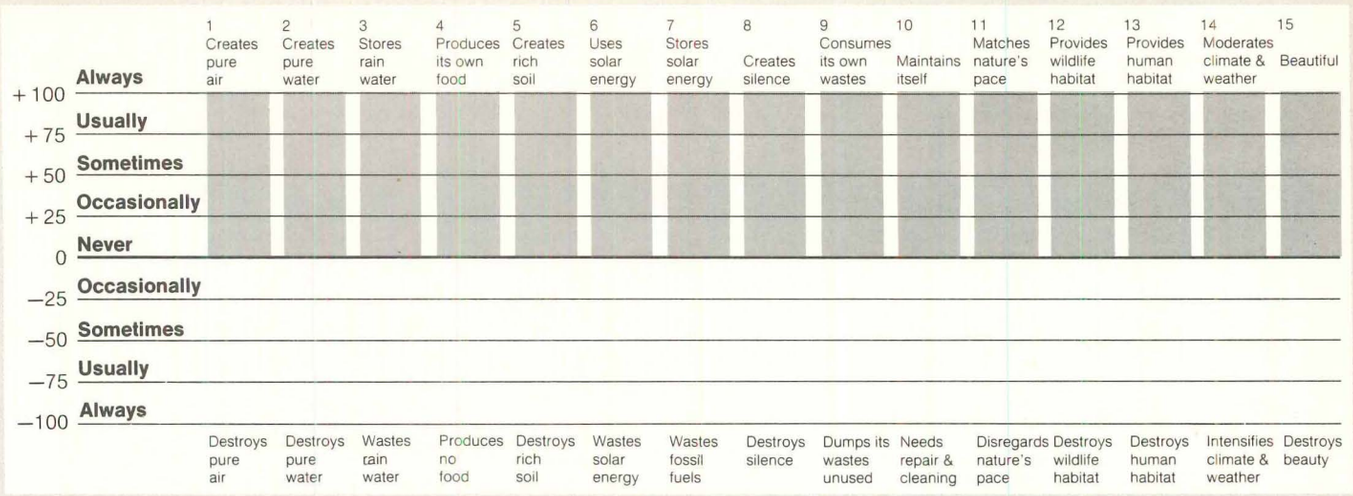
If we worked an architectural miracle, drawing on the finest ecologic knowledge currently available, we might get well up into the green half of the scale but hardly above 25 percent.

And by a national crusade of effort we might even rise to 50 percent. But 75 and 100 percent might elude us forever, prolonging the threat of environmental destruction for centuries. As long as we deplete living land in order to supply our sterile cities, the balances will be tilted against us, and no amount of rationalizing will change the situation.

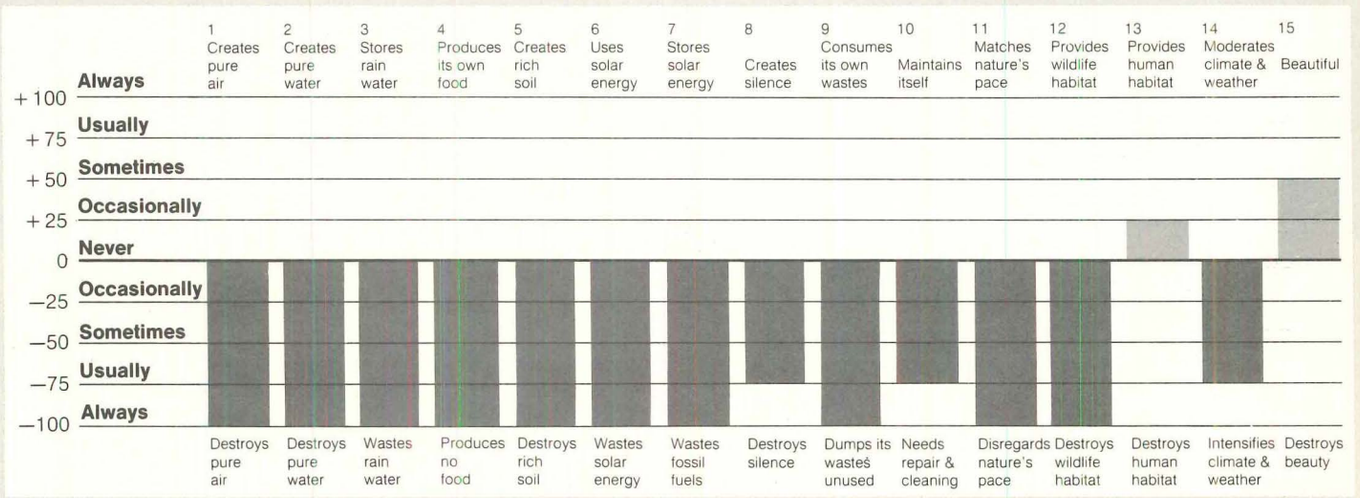
So it's a question of survival. It no longer matters very much how a building looks, and architecture can never again be judged on — what was it? — its firmness, commodity and delight. The prospect is not very hopeful but it isn't hopeless, either. Maybe we will go ahead and destroy ourselves right on schedule but you'll never convince me that it was inevitable.

What Henry Thoreau said 150 years ago can still be said today: "Man's capacities have never been measured; nor are we to judge of what he can do by any precedents, so little has been tried."

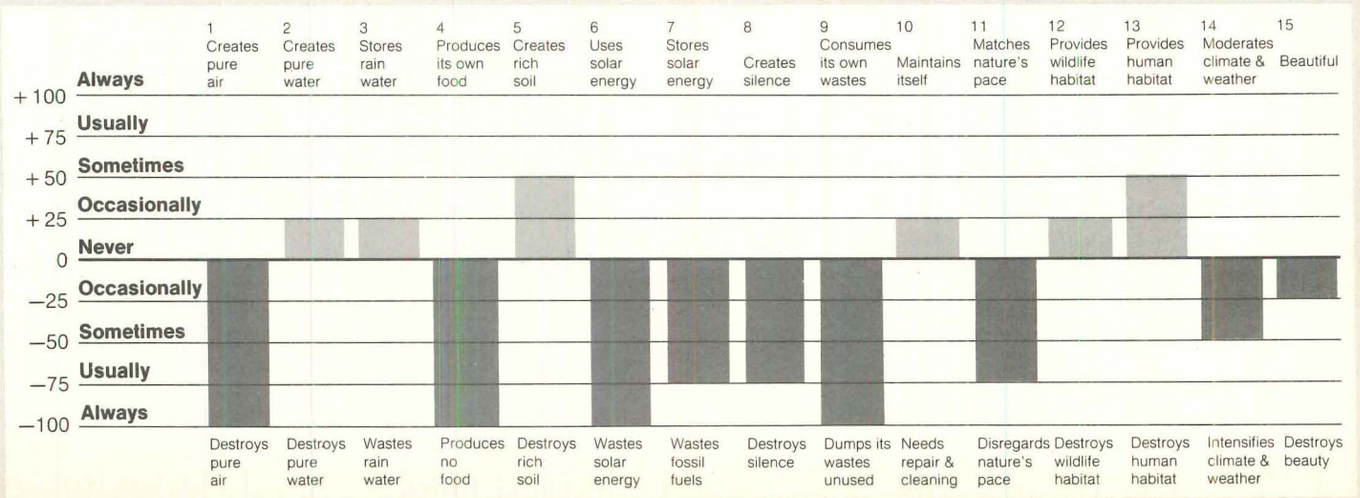
Philadelphia's primeval forest: +1500 Score (out of a possible perfect +1500)



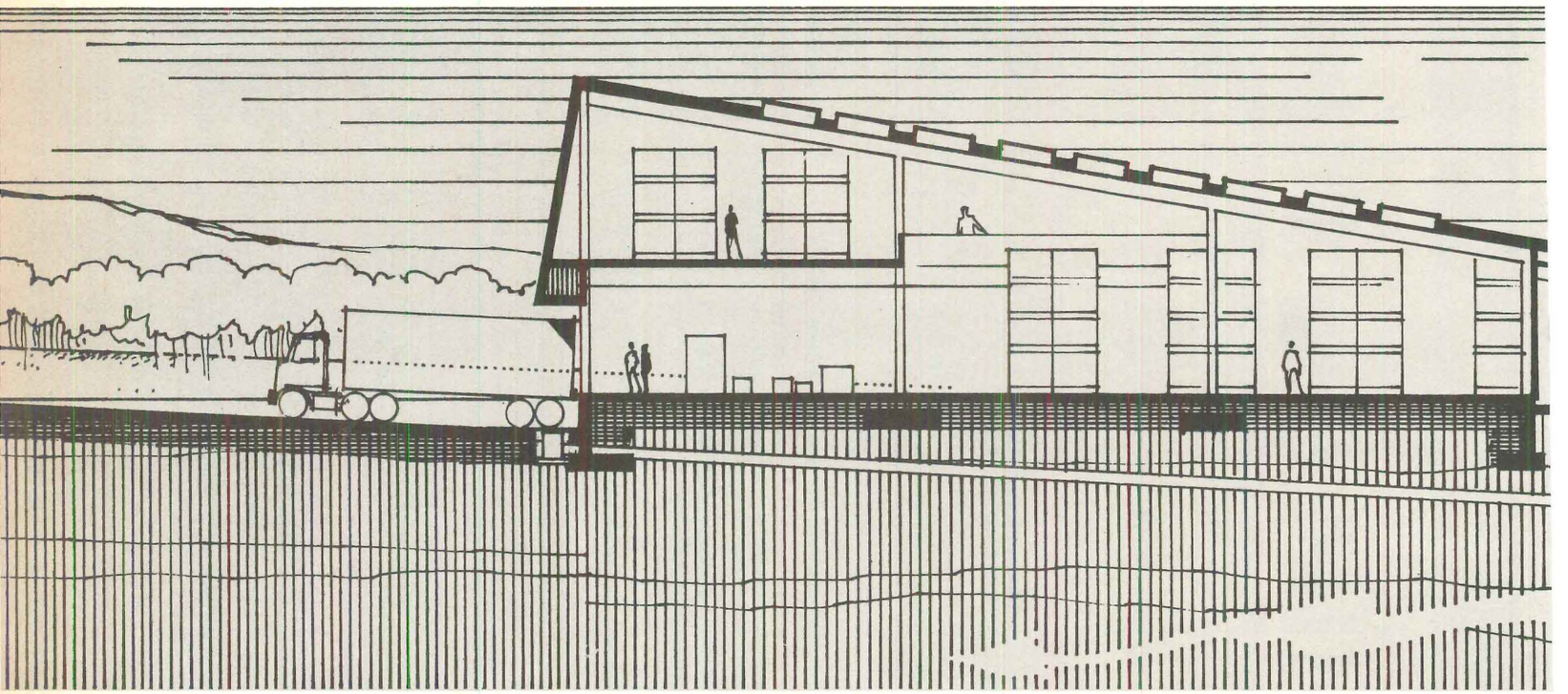
Any building featured in P/A: −1150 Score (out of a possible perfect +1500)



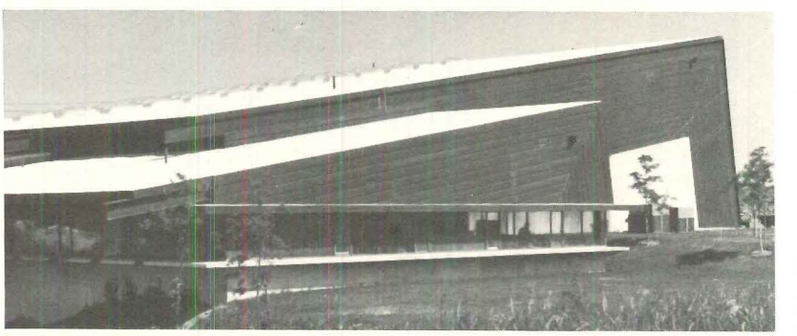
My best 'conservation architecture': −500 Score (out of a possible perfect +1500)



Wells picks his best



Malcolm Wells describes his 20,000 sq ft office, factory and warehouse for Construction Fasteners, Inc., a concrete and weathering steel building near Reading, Pa.

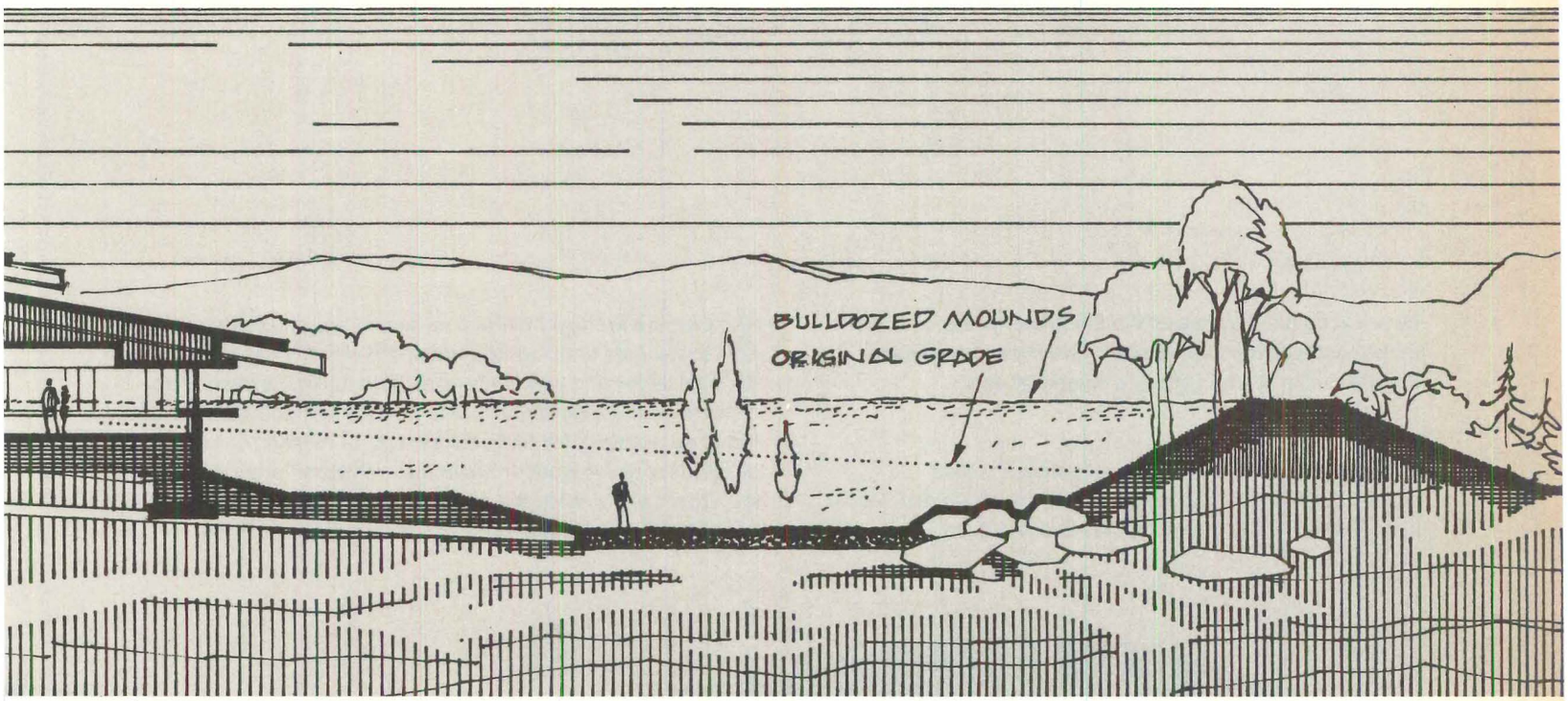


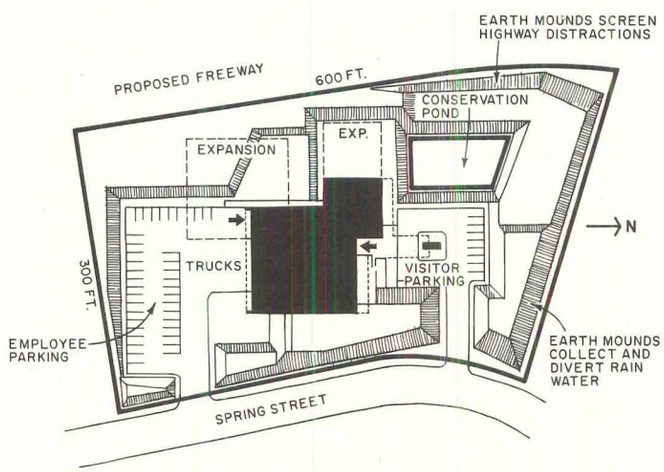
The site was a rounded hilltop of worn out farm land, two or three acres ready for the final blow—industrialization. But the owner was as concerned as we, and he let us reshape the entire site with huge earth mounds. Not only did we trap all rainwater that might have left the site, we created a private little world cut off from its ugly neighbors.

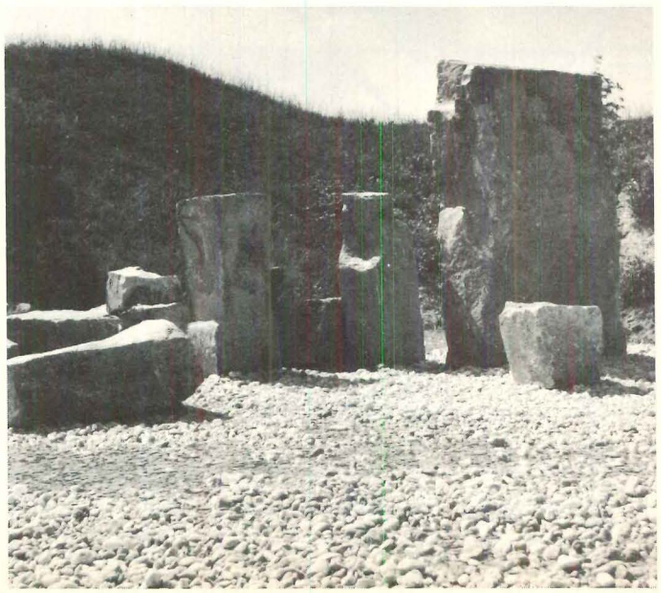
Now ordinarily, you wouldn't look twice at a little rusty shed of a factory like this, and I wouldn't blame you. But the architecture isn't in the building this time; not all of it, anyway. It's in the earth sculpture that tries to heal the wounds caused by the building. Then building and site work together. A lot of neighbors downstream have been saved a lot of flooding and erosion, and one little bit of hilltop is starting back along that long, long road to land-health again.

Water conservation isn't the only thing we tried to accomplish. That worn out soil was a disgrace, and it would have been even more of a disgrace to rob some other site of its topsoil just to cover this one. So we decided to let the land rebuild itself. Crown vetch was the key; it not only puts nitrogen back into the soil and makes mowing unnecessary, it holds down weeds and offers small game cover.

And in the sunken pebble garden: this week, pebbles; next week, who knows? Probably a shallow pond. But the water's being saved, not wasted.







Rainwater drains from all parts of site into sculpture court (top, right) where it slowly filters through pebbles back into ground. Factory site is slowly being covered with crown vetch planted to restore nitrogen to soil (left). (Photos: Graphic Studio.)

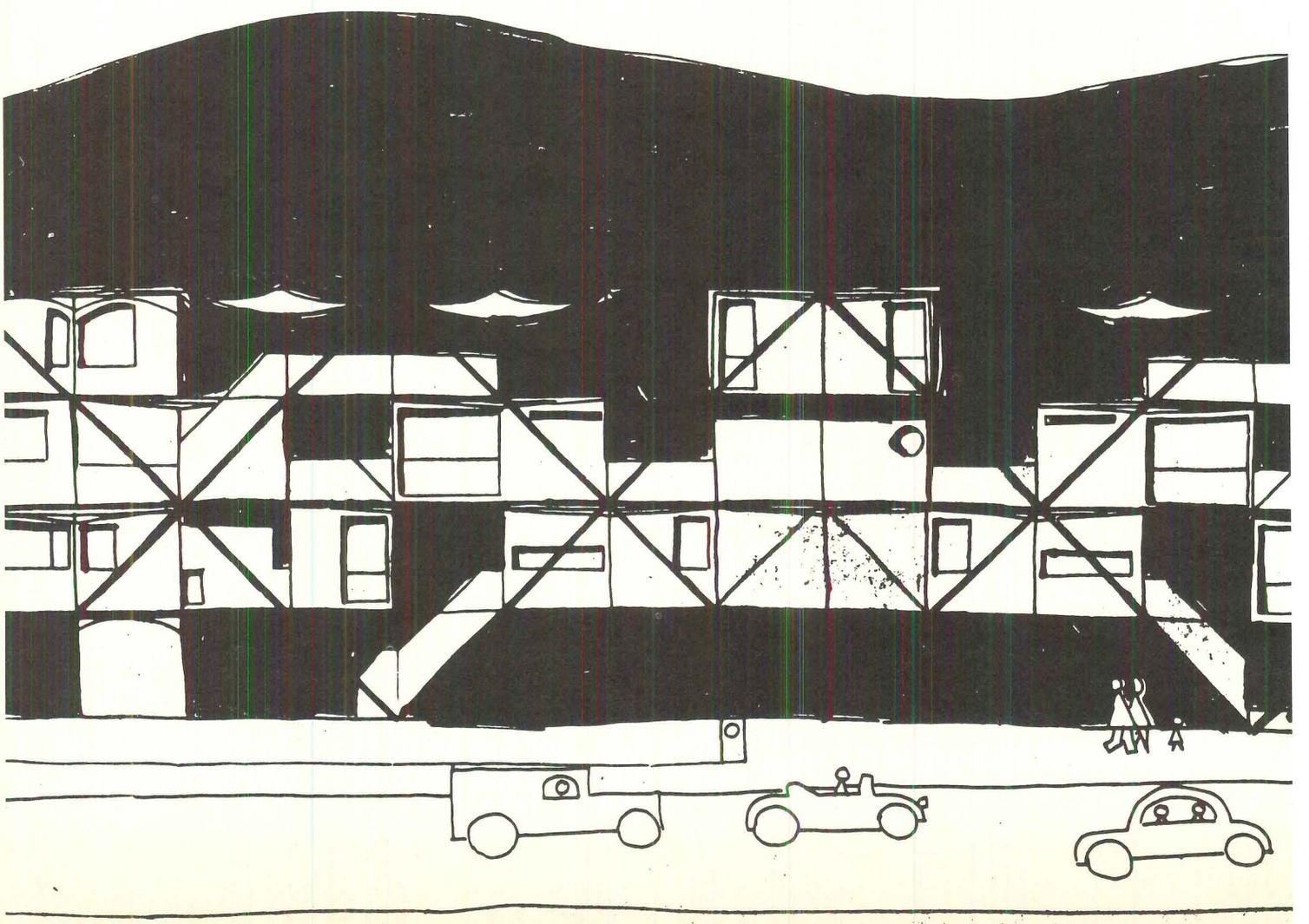
The Flatwriter: choice by computer

Yona Friedman

Developing his theories of the flexible city, the author devised the Flatwriter as a way to involve future inhabitants in planning their own apartments

Author: The Hungarian-born architect participated in the 1957 Tenth CIAM, and the following year formed GEAM (now GIAP) in Paris, where he lives and practices.

Because the architect of the past served a single client, he was able to become thoroughly acquainted with the client's individual tastes and way of life—he could make the client's decisions for him. The majority of architects designing housing today do not work for millionaires, but for millions of individuals who will work or live in the architects' projects. The architect cannot study the behavior of each user; instead, he constructs an ideal user—usually a mirror image of him-



self—and plans for this ideal. Since he designs to a common standard of perfection, none of the individually imperfect users is satisfied. The architect cannot possibly ascertain their preferences and, therefore, should not presume to choose for them. He should, instead, devise methods of promoting choice among the users themselves.

Self-decision is possible for groups only if the individual is aware of his preferences. No matter how irrational these preferences may seem, the individual must be allowed to express them; he must also be apprised of the attendant risks and dangers. The group, being no more than an ensemble of loosely linked individuals, will find itself affected by the choices of its members.

The task of the architect is to warn each user of the effect of each individual act of choice. For example, the location of a new building will affect all of the city's inhabitants. The public, instead of being told only of the form of the building, has the right to know the repercussions the project will have on its way of life. This foreknowledge of possible results, whether accepted, rejected or ignored, allows the exercise of a popular vote for or against any project by the individual and the group. Even if the artistic form of the building is not known or understood by each inhabitant, if the aspect crucial to him is presented in understandable terms of the consequence to him, this foreknowledge allows the individual to vote for or against any project.

The Flatwriter project, conceived although not executed for the world's fair at Osaka, allows the individual to select and print out his future housing preferences. He can locate his dwelling within a given infrastructure of services and be warned of the possible consequences of his decisions.

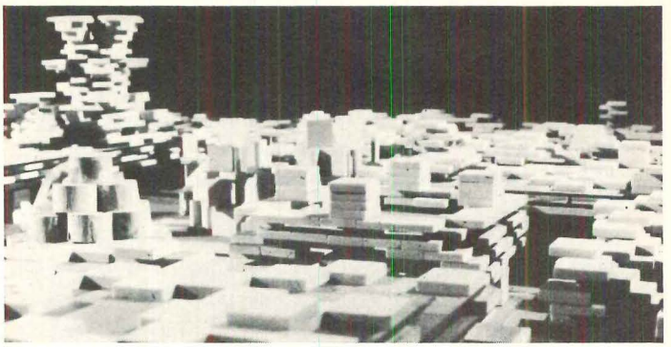
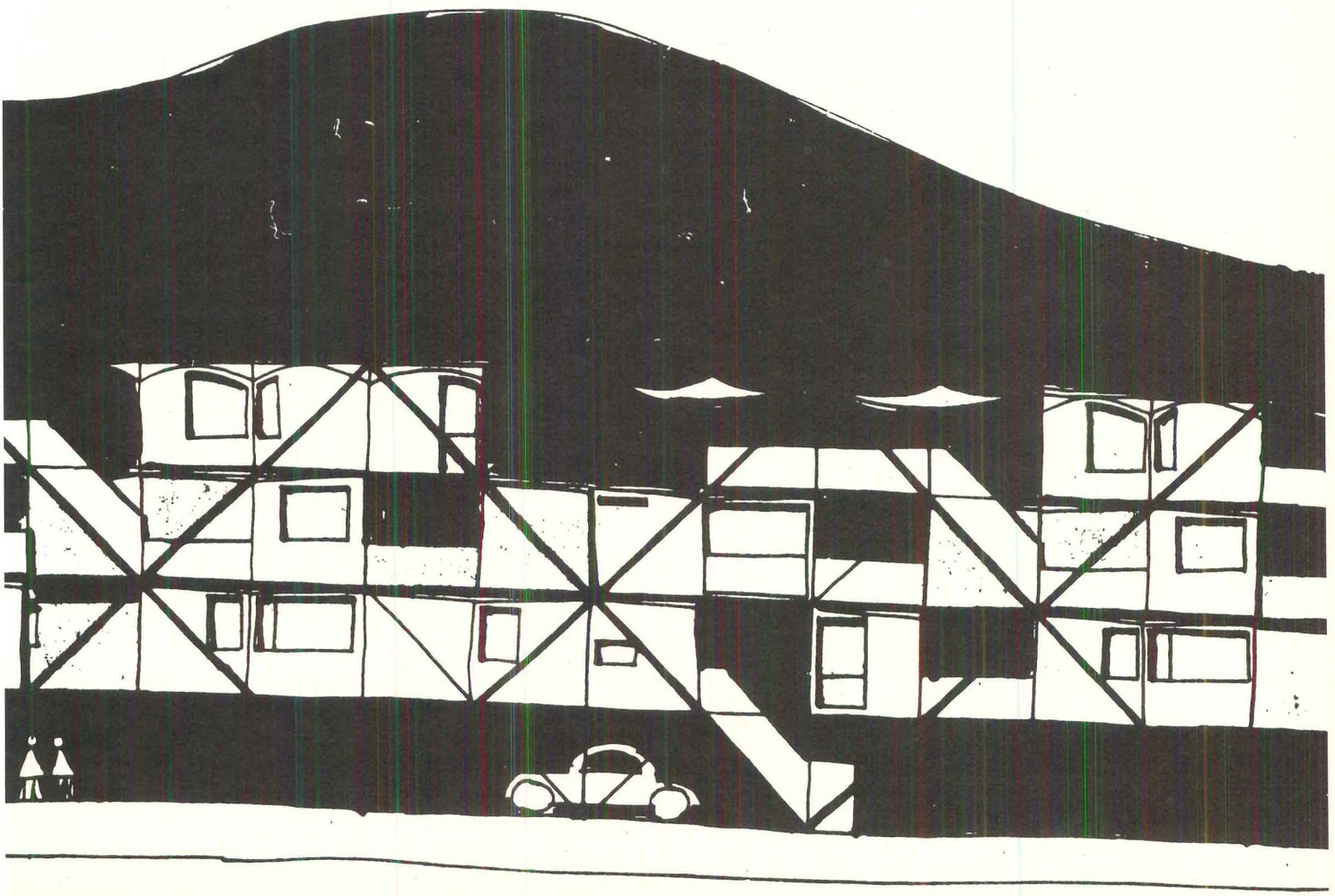


Photo: John-Pierre Aubert

The Flatwriter keyboard consists of 53 keys, each printing the figure shown upon it. They represent configurations possible within three volumes as well as the different forms that can be assumed by each volume. These choices are predicated by a framework of existing stocks of prefabricated elements, service units, bathroom and kitchen units, and by the location of each within the house structure. Costs are also computed for each selection.

It is thus possible for any future resident of a neighborhood to print his preference for an apartment. He does this by utiliz-



ing a simple code that visualizes all elements involved in his decision in such a way that his decision is easily comprehended by the constructor as well as by all other residents of the future neighborhood.

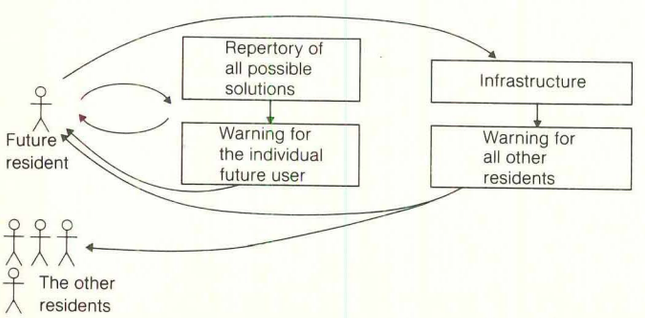
The Flatwriter contains a repertory of several million plans for possible apartments; it can issue warnings concerning the consequences implied by any projected use pattern, and it can estimate whether the site chosen by a future resident conflicts with that of any other resident.

The use of the Flatwriter implies the simultaneous use of an infrastructure—an empty skeleton construction of several floors. The infrastructure is designed in order to (a) permit the implementation of *any possible choice* from the repertory by simple insertion of rooms, etc. within the voids of the infrastructure, (b) make possible any transformation (correction) of any possible implemented chosen plan realized within the infrastructure, and to do this without imposing a transformation or correction on the infrastructure itself. All transformations of a chosen plan implemented within the infrastructure concern only the mobile elements (walls, partition, floors, ceilings, etc.) inserted in the infrastructure (infillings of the infrastructure). A service network of water supply and disposal, electricity, telephone and other services is contained within this skeleton.

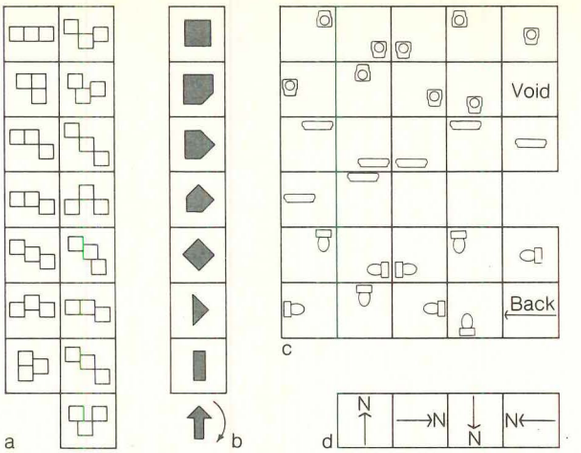
The Flatwriter makes it possible, in the planning stage, for any future resident of a town (infrastructure): (a) to choose the plan and character of his apartment—his private environment—(an act that today is practiced by the architect), (b) to choose the site of his private environment within the town—public environment—and get a building permit instantaneously (an act that today is supposed to be done by the local municipal authority) and, (c) to be informed about the particular issues concerning himself directly, himself and his home, issues implied by any new event (intervention) anywhere within the town (an act that today is omitted).

The Flatwriter is thus an application of a new information process between the future user and the object he wants to use; it makes individual decision possible within very wide boundaries, and it provides a direct way for anybody to correct his own errors without the help of intermediary professionals.

The following drawings, diagrams and captions describe the use and choices of the Flatwriter and how it will help the architect accomplish his new task of determining the choices and lifestyles of a great number of clients.

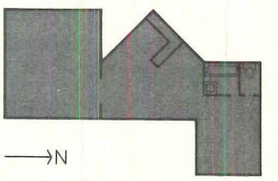


Organizational diagram, above, is explained through the following interactions of residents with the Flatwriter.

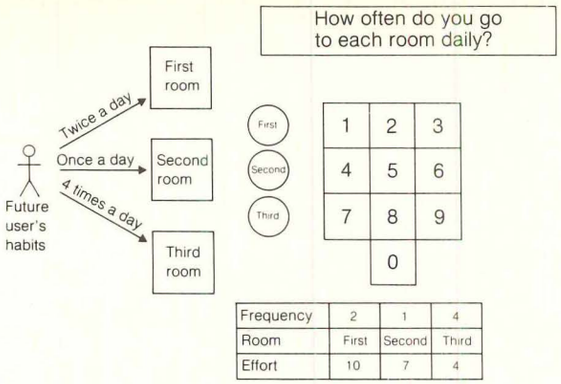


The keyboard of the Flatwriter contains: all possible linkages and configurations of three distinct volumes (three volumes used here to simplify explanations and illustrations); all shapes any of the volumes can have (depending on the given technological context); all possible positions for a packaged kitchen, bathroom or any special equipment; all climatic orientations the apartment can have. Mr. X types, using this keyboard, as he would on an ordinary typewriter. He (a) chooses a configuration, then (b), one after the other he chooses the shapes he wants for each room in his apartment, then (c) he locates his kitchen, bathroom facilities within the spaces and, finally, he (d) decides the orientation of his home. He uses only 8 to 9 keys, selected among the 53 keys of the Flatwriter, thus choosing his plan for his apartment from some millions of possible plans offered by the machine (with its 53 keys).

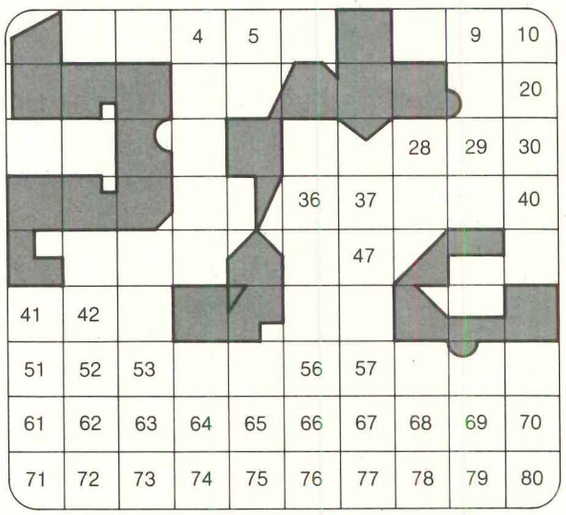
At this stage Mr. X makes all decisions. The machine does nothing other than print on a slip of paper the decisions (plan) of Mr. X, without opposing or criticizing these decisions. The Flatwriter will print, for example, if Mr. X pushes the above keys, the following plan, and it will also calculate the price of the apartment chosen by Mr. X.



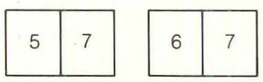
Mr. X turns to another keyboard (or dial): that of habit frequencies. He has to indicate how often he is in the habit of going (following his own knowledge of himself) to his different rooms (to his bathroom, to his kitchen, etc.). These habit frequencies represent a characteristic parameter of his personal way of life. He pushes the keys representing the frequencies of his in-home errands (following his own estimate) based on his image of his future home.



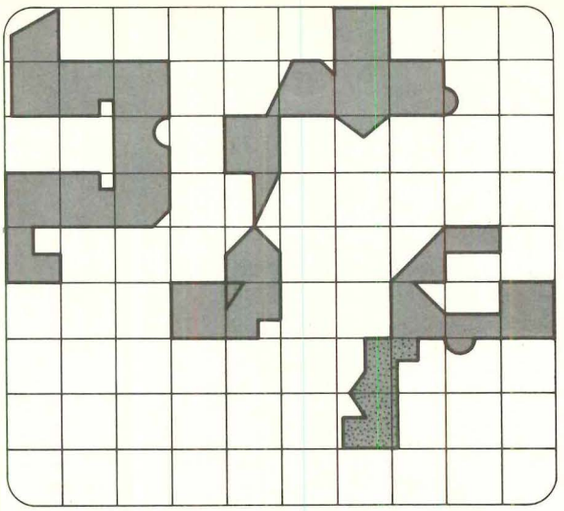
The first warning of Flatwriter arrives. It indicates for Mr. X what issues he can expect concerning his own tiredness, comfort, isolation, communication, etc., based on the habits he specified and the plan he chose. The effort is implied in the utilization of each room of his future home. If this effort, calculated on his own information, seems disadvantageous for Mr. X, he might choose another plan (by changing, for example, the linkage or the proposed function of some rooms), or he might prefer to change his habits (the frequencies of his in-home errands).



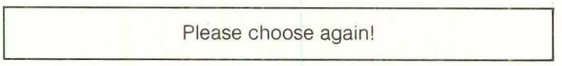
The next part of the Flatwriter reproduces, on a TV screen, the plan of an infrastructure: i.e., an empty multistory skeleton. Each void of this skeleton is identified by a number. A void occupied by some other apartment chosen previously by a neighbor of Mr. X presents, instead of a number, the outline of this apartment.



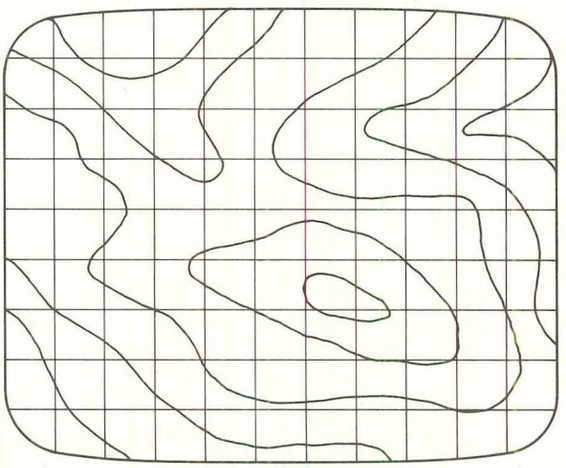
Mr. X composes on the keyboard (dial) the numbers of the voids he intends to have as the site of his apartment. If Mr. X chose the above voids:



The Flatwriter inserts on the screen the outline of the apartment chosen by Mr. X in his chosen voids of the infrastructure, controlling simultaneously whether Mr. X's choice of a site does or does not obstruct the access, the incidence of natural light, or the possibility of natural ventilation for one of the flats whose site was chosen earlier by some of his neighbors.



If Mr. X's chosen apartment or chosen site disturbs any apartment chosen before and registered by the Flatwriter for the benefit of one of his neighbors, the machine lights a panel.



Once the control accepts to insert Mr. X's apartment at the site in the voids within the infrastructure chosen by him, the Flatwriter calculates the effort-chart for the whole infrastructure, the chart being modified by the site-choice of Mr. X. The efforts shown in this chart correspond to the situation of all flats and public services inserted in the infrastructure at any given time. This chart is superprinted on the TV screen, which shows as well the occupation pattern (in a different color) within the infrastructure, or it can be presented on a separate TV screen beside the first one.

This chart informs *all* residents about issues implied by any new intervention (newcomers' site-choices for public services, new attraction points, etc.) within the infrastructure. The chart shows—or explains in a very rough interpretation—if the number of by-passers at any wanted point of the infrastructure (for example, near Mr. X's apartment, or to Mr. Y's or Mr. Z's residence) changes.

This information is very important because noise, calm, air pollution, commercial values, accessibility, etc. of any site within a town depend on the local-effort value.

Air filtration

John Kettleman, PE

Selecting air filters for maximum performance is important in control of air quality. This article reviews basic types of filters and their capabilities

To most laymen, air conditioning means cooling of air in order to keep an occupied space at a comfortable temperature. Air conditioning also means environmental control of air quality within the space. While temperature and humidity are obvious terms, air quality is not.

In the past, air quality has pretty much been determined by the percentage of fresh air circulated. If all the supply air was fresh air, the air quality was considered better than if only 10 percent of the supply air was fresh air. With increasing air pollution, the term "fresh air" has less significance in determining air quality. In some areas fresh air may have a negative effect on air quality. In such a situation air filtration becomes an important consideration in an air conditioning system.

Filter capability

Today's filters are capable of removing particulate and gaseous material from the air. They are effective for particle sizes ranging from about 0.3 microns to large grit particles. (For comparison, tobacco smoke particles range from 0.01 microns to 1 micron.)

Proper air filtration for commercial buildings can minimize the impurities introduced from the fresh air, but cannot prevent contaminants from being introduced directly into the space by other means (smoking, cooking, from tenants' clothing and other materials introduced into the space).

Filter performance is measured by two basic means: efficiency and dust holding capacity. The ratio of dust fed to dust arrested determines efficiency, while dust holding capacity gives some indication of the relative filter life. The industry is working toward standardization of these criteria. In the future performance data for filters should be certified by ASHRAE and the American Filter Institute.

Types of filters

For purposes of this article, there are three basic types of filters. Permanent filters are designed to be cleaned and reused. A common example of this type is the carburetor air filter in power mowers. Their efficiency is low, dust holding capacity poor, and use is limited to such things as grease filters for kitchen range hoods and for paint spray booths.

In general, permanent filters are not desirable because maintenance cost is high. The labor involved is very often not skilled enough to clean the filters properly. Space must be provided to clean the filters and to stock the ones used to replace those being cleaned.

Replaceable filters, designed to be thrown away after their useful life, are the most common type. Efficiencies range from very low (15 percent) to very high (99.997 percent). Dust holding capacity varies from nil to substantial. Many variations of permanent or replaceable frames and media are available. These filters are often installed in pairs, the first being a low efficiency, low cost pre-filter, and the second a high efficiency, costly filter. The pre-filter extends the life of the main filter by a factor of three or four.

Replaceable filters provide the necessary range of efficiencies and require minimum maintenance which can be properly performed by semiskilled personnel. The engineer's challenge is to find the right combination of efficiency and dust holding capacity for the necessary air quality at the lowest possible owning and operating cost.

Electronic filters are capable of high efficiency. The basic principle is to pass the air stream through a high intensity electrical field, charge the dirt particles, and then attract them to an oppositely charged plate. (This is a very general description and is not completely accurate for all types of electronic or electrostatic filters.)

The same maintenance and cleaning problems exist for electronic filters as for permanent ones. The material extracted from the air stream builds up on the plates and eventually they must be cleaned. In addition, the efficiency of electronic filters is closely related to uniform air distribution across the filter. The space to insure this type of air flow is usually not available or is prohibitively expensive. High initial cost and the unwillingness of the owner to accept the high voltage hazards are also factors in their low use.

Other types of filters include charcoal filters, space charge filters, and dust and moisture separators. These have special limited applications to be defined in a subsequent article.

Filter selection

Determining the proper type of filtration for any project requires analysis of initial costs, replacement costs, space requirements, operating costs and caliber of operating personnel. In the last analysis, the final performance of the air filtration system is up to the owner's operating and maintenance personnel. The most efficient and costly filters will not perform properly unless installed properly and replaced when their rated life is expended. In addition, design intent is often thwarted when the operating personnel attempt to lower costs by buying less efficient replacement filters from unreliable manufacturers.

In this connection, some manufacturers are now considering offering owners a maintenance contract which would cover the cost of replacement filters, changing filters and guaranteeing performance.

Author: John Kettleman is an associate of Syska & Hennessy, Inc., Consulting Engineers, New York City.

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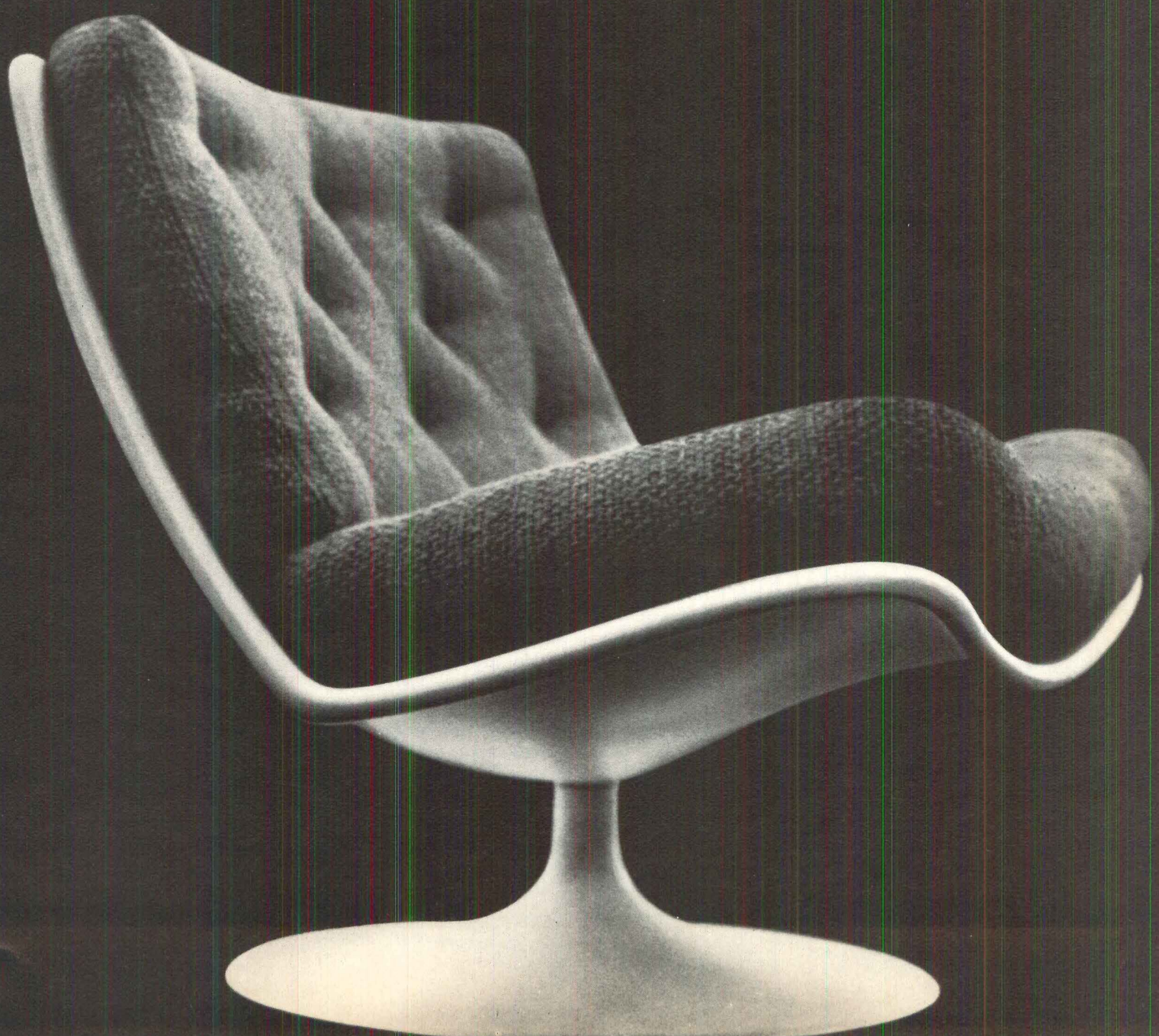

Specifications clinic

American softwood lumber standards

Harold J. Rosen, PE, FCSI

The revised American Softwood Lumber Standard is now in effect. This article reports the new relationship of size to moisture content, and new uniform grade names

The long awaited revision of the American Softwood Lumber Standard, formerly Simplified Practice Recommendation SPR 16–53, was issued by the U.S. Department of Commerce and became effective on September 1, 1970. This standard, developed by the National Bureau of Standards, will be known as Voluntary Product Standard PS 20–70 and represents the first major revision in lumber standards since 1938.

PS 20–70 and the National Grading Rule have opened the way for uniformity among the various lumber species that has not existed before, which should simplify specifying species and grades for different uses. Primarily, approval of this standard means that for the first time moisture content is recognized as a factor for determining standard lumber sizes. All lumber producing regions will now have to follow the same rules in the manufacturing process; namely, the relationship of size to moisture content. Under the old ALS, the established sizes applied equally to green and dry lumber. This meant that green lumber of some species could be dressed to the same size as dry lumber despite later shrinkage.

There will now be two standard sizes for softwood lumber; one for lumber finished at a moisture content of 19 percent or less, and one for lumber finished in an unseasoned or green condition. Theoretically, both seasoned and unseasoned lumber will be the same size after reaching equilibrium moisture content in a building. Obviously producers of green lumber must now accept the penalty of cutting it a size larger than dry material. In addition green and dry lumber must now be so identified on grade stamps.

Examples of standard sizes for dimension lumber:

Nominal	Seasoned	Unseasoned
2×4	1½×3½	$1^{9}/_{16}\times3^{9}/_{16}$
2×6	1½×5½	$1^{9}/_{16}\times5^{5}/_{8}$
2×8	1½×7¼	$1^{9}/_{16}\times7^{1}/_{2}$
2×10	1½×9¼	$1^{9}/_{16}\times9^{1}/_{2}$
2×12	1½×11¼	$1^{9}/_{16}\times11^{1}/_{2}$

Three and four in. thicknesses will be 2½ in. and 3½ in. respectively for seasoned lumber and $2^{9}/_{16}$ in. and $3^{9}/_{16}$ in. for unseasoned.

Equally important under the new standard is that grade names used by various species will be uniform under the National Grading Rule Committee. The standardization of grade names will eliminate the confusion that has often plagued specifiers in the past. This committee established under PS 20–70 will establish, maintain and make available grade strength ratios, nomenclature and descriptions of grades for dimension lumber conforming to American Lumber Standards. All approved grading rules must conform to the provisions of the National Grading Rule.

The National Grading Rule for Dimension Lumber classifications are:

A. Two width categories
1. 2″–4″ thick × 2″–4″ wide
2. 2″–4″ thick × 6″ wide and wider

B. Five use categories

Dimension to 4 in.:

1. Structural light framing (engineering application, high strength, 2×4's for trussed rafters).
2. Light framing (nonstructural 2×4's, good appearance, lower strength).
3. Studs (limited to lengths 10 feet and shorter).

Dimension 6 in. and wider:

4. Structural joists and planks (engineering applications, high strength).

Dimension 2 in. and wider designed for special uses:

5. Appearance (good appearance, high strength). For example, in lieu of the structural joists and planks grade that a designer might use for an exposed plank and beam roof system, he would select and specify the new appearance grade since it combines C & Better grade appearance with No. 1 strength.

Within each of the five use categories will be a maximum of four grades except that any grading agency may develop a grade with higher strength ratio for material of higher strength than the four standard grades. Standard grades are:

1. Structural light framing
   Select structural (Sel str) No. 1, No. 2, No. 3.
2. Light framing
   Construction (Constr), Standard (Stand), Utility (Util)
3. Stud grade
4. Structural joists and planks
   Select structural (Sel str) No. 1, No. 2, No. 3.
5. Appearance

The new standard requires that allowable stress values in grading rules of various species be developed in compliance with guides laid down by the National Bureau of Standards for appropriate ASTM standards and criteria and subject to technical review by the Forest Products Laboratory.

Implementation of PS 20–70 introduces many benefits for the architect, builder, inspector and consumer. These include: (1) broader representation on the ALS Committee, (2) increased enforcement of rules and regulations established in the standard, (3) explicit regulations regarding grademarks and grademarking, (4) uniform grades and grade names for all species, (5) stressgrading of all species and all grades.

PS 20–70 is available from the U.S. Government Printing Office, Washington, D.C.

Author: Harold Rosen is Chief Specifications Writer of Skidmore, Owings & Merrill, New York City.

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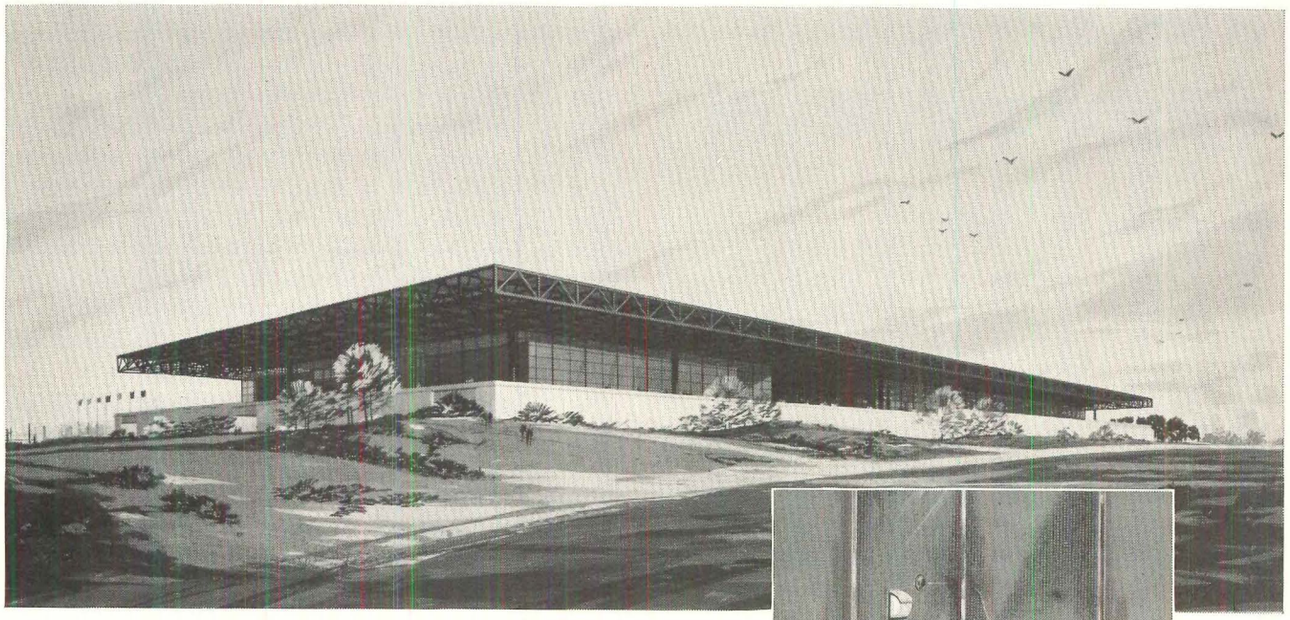

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Though actually a third larger than its predecessor, the new structure manages to create an atmosphere of warmth and intimacy unique in so massive a building. This illusion stems from the Architect's ability to design the lobby, corridors and other public areas as a series of elements rather than as a formidable, overwhelming monolith.

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Protection against negligence charges

Bernard Tomson and Norman Coplan

The 'General Conditions of the Contract for Construction' issued by the AIA, offers the practicing architect protection against charges of negligence

One of the important concerns of the practicing architect is to insulate himself, insofar as possible, against charges of negligent performance where injury or loss is occasioned on a project because of some action or inaction on the part of the contractor. The United States Supreme Court has recently commented on the indemnification clause contained in the "General Conditions of the Contract for Construction" issued by the American Institute of Architects. This indicated a broader application in providing indemnification to the owner and architect than indemnification provisions contained in certain Government contracts. (*United States v. M. O. Sekinger, Jr.* etc., 90 S. Ct. 880).

The Supreme Court case involved a construction contract between the United States and a plumbing contractor for certain work to be performed at a United States Marine Base in South Carolina. The indemnity provision which was contained in that contract, and which was common to fixed-price Government construction contracts, provides that the contractor "shall be responsible for all damages to persons or property that occur as a result of his fault or negligence. . . ." The United States Supreme Court agreed to consider the application of this provision.

The facts in this case involved an employee of a plumbing contractor who was working on a particular section of pipe which had been partially constructed above a street. He was injured by coming into contact with an electric wire carrying 2400 volts of electricity which was located about four or five feet above the place where he was working. The employee, although entitled to benefits against his employer under South Carolina's Workmen's Compensation Law, also commenced a suit against the United States on the ground that his injuries had been sustained as the result of the Government's negligence in failing to de-energize the wire and advise the contractor's employees that the electric wire had not been de-energized. Eventually a judgment was awarded against the United States in the amount of $45,000.

The United States proceeded to institute suit against the plumbing contractor, the employer, alleging that the contractor's negligence had been responsible for the employee's injuries and that the United States should therefore be fully indemnified for the judgment which had been obtained against it and which it had paid. The Government alleged that the contractor was required to perform his contract with the United States "properly and safely and to provide workmanlike service in the performance of said work."

The United States Court of Appeals in the Fifth Circuit held that an indemnitee cannot recover for his own negligence in the absence of a contractual provision which clearly and unmistakably provided for this result. The Court concluded that since the construction contract did not unequivocally provide that the Government was entitled to be indemnified for its own negligence and since the claimed negligence of the contractor was relatively slight as compared to the Government's negligence, no recovery would be permitted.

The decision of the Federal Circuit Court was appealed to the United States Supreme Court and the decision of the lower court was reversed in a divided decision. The majority of the Supreme Court agreed with the lower court that if the owner expects to shift the ultimate responsibility for its negligence to the contractors on a project, the mutual intention and agreement of the parties to this effect must appear with clarity on the face of the contract. The court concluded, however, that the language of the Government contract did not manifest such intention and contrasted such language with Section 4.18.1 of the General Conditions of the Construction Contract issued by the American Institute of Architects, which expressly provides that the contractor shall indemnify and hold harmless the owner and the architect for damages attributable, whether caused in whole or in part, by any negligence of the contractor "regardless of whether or not it is caused in part by a party indemnified" thereunder.

The majority opinion of the Supreme Court, however, rejected the conclusion of the lower court that the contractor was not required to make any indemnification for any part of the damages even if caused by his negligence, stating: ". . . the most reasonable construction of the clause . . . is that liability be premised on the basis of comparative negligence. In the first place, this interpretation is consistent with the plain language of the clause, for Sekinger will be required to indemnify the United States to the full extent that its negligence, if any, contributed to the injuries to the employee.

"Secondly, the principle that indemnification for the indemnitee's own negligence must be clearly and unequivocally indicated as the intention of the parties is preserved intact. In no event will Sekinger be required to indemnify the United States to the extent that the injuries were attributable to the negligence, if any, of the United States. In short, Sekinger will be responsible for the damages caused by its negligence; similarly, responsibility will fall upon the United States to the extent that it was negligent."

The minority opinion disagreed with this conclusion, stating that the Government contract no more says that the contractor shall reimburse the Government for his share of joint negligence than that he shall be a liability insurer for the Government's sole negligence.

Authors: Bernard Tomson is a District Court Judge, Nassau County, N.Y., Hon. AIA. Norman Coplan, Attorney, is Counsel to the New York State Chapter of the AIA.

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Beyond Habitat

Beyond Habitat. *By Moshe Safdie. Edited by John Kettle. Cambridge: MIT Press, 1970. 244 pp. $10.*

Herewith, a duet of comments to a single book. Those by our editor Forrest Wilson were provoked by his coverage of Expo '67 where he met and grew to respect Moshe Safdie. The review by Lawrence Lerner, president of Saphier, Lerner, Schindler, Inc. is inspired by identification with as well as interest in the planning problems of the here, the now and after.

Safdie's book is important because it shows how a few men with guts and ideas can protect these ideas against all odds — government beaurocracy, building producers, self-interest and the professional jealousies of engineers, architects and planners.

In many ways it is a naive book. Safdie recounts the ills of the profession that those who have worked in it all of their lives have accepted and taken for granted as restrictions of the design process. No one ever told him that he could not accomplish what he did, so he accomplished it. But it was not Safdie's triumph alone. There were older men in positions of power, men such as August Kommendant, Churchill, Fuller who apparently had not grown up.

Most biographies of architects are boring. They are records of egocentric accomplishments. This is not. It recounts a battle to get something started and then the doing of it. The climate at Expo was one of excitement, of dedication. It was the beginning of a Canadian architectural nationalism that, unlike most nationalism, resulted in a great deal of fine architecture. One feels that Ontario Place in Toronto and the very good if not great buildings that are being erected there are due to the spirit that, if not born at Expo, at least came to self-realization there.

I first met Safdie in 1966 and was struck by his ideas. He was one of the first to realize the validity of some of the ideas of the thirties which we clothed in a monumental autocratic architecture. He saw what was behind them. He thinks in terms of groups of people, rather than the individual. He applies the density of Mediterranean structures to the density of city living.

This is a book of the tremendous energy of the young or the ageless who have a conviction. The number of times that Habitat has been redesigned, presented and argued about without losing its integrity as an ideal is as much a credit to the stamina of the designers as it is to their youth. Habitat exists and its worth is as much in the idea, not necessarily original, as to the men who made it work. Safdie is not necessarily a brilliant designer; there are many who are as gifted. His unusual characteristic is his perseverance. Ideas have very little validity by themselves. But coupled with the raw courage of Safdie and his group of young designers who kindled the dreams of his older contemporaries, they are unbeatable.

Personally I like Habitat. I always have. To me it means all of the things that Safdie claimed it was supposed to mean. It is not only a nice place to visit but a nice place to live. [Forrest Wilson]

"If I were king, how I would make life a constant delight for my subjects!" That's the transcribed essence of Moshe Safdie's "Beyond Habitat." It is a superb book; exuberant, critical, disdainful, creative, naive arrogant and humble. It is a book by a man with a bubbling, boiling, driving energy — almost a divine-right motivated ambition to improve the world.

The first half of his book leads the reader through the difficult gestation and birth period of Expo and Habitat '67. Every practicing professional will recognize the frustrations he himself has been through a thousand times. An adventure story complete with villains and heroes emerges excitingly from the push-pull story of the beaurocracy-bugged development of a revolutionary idea.

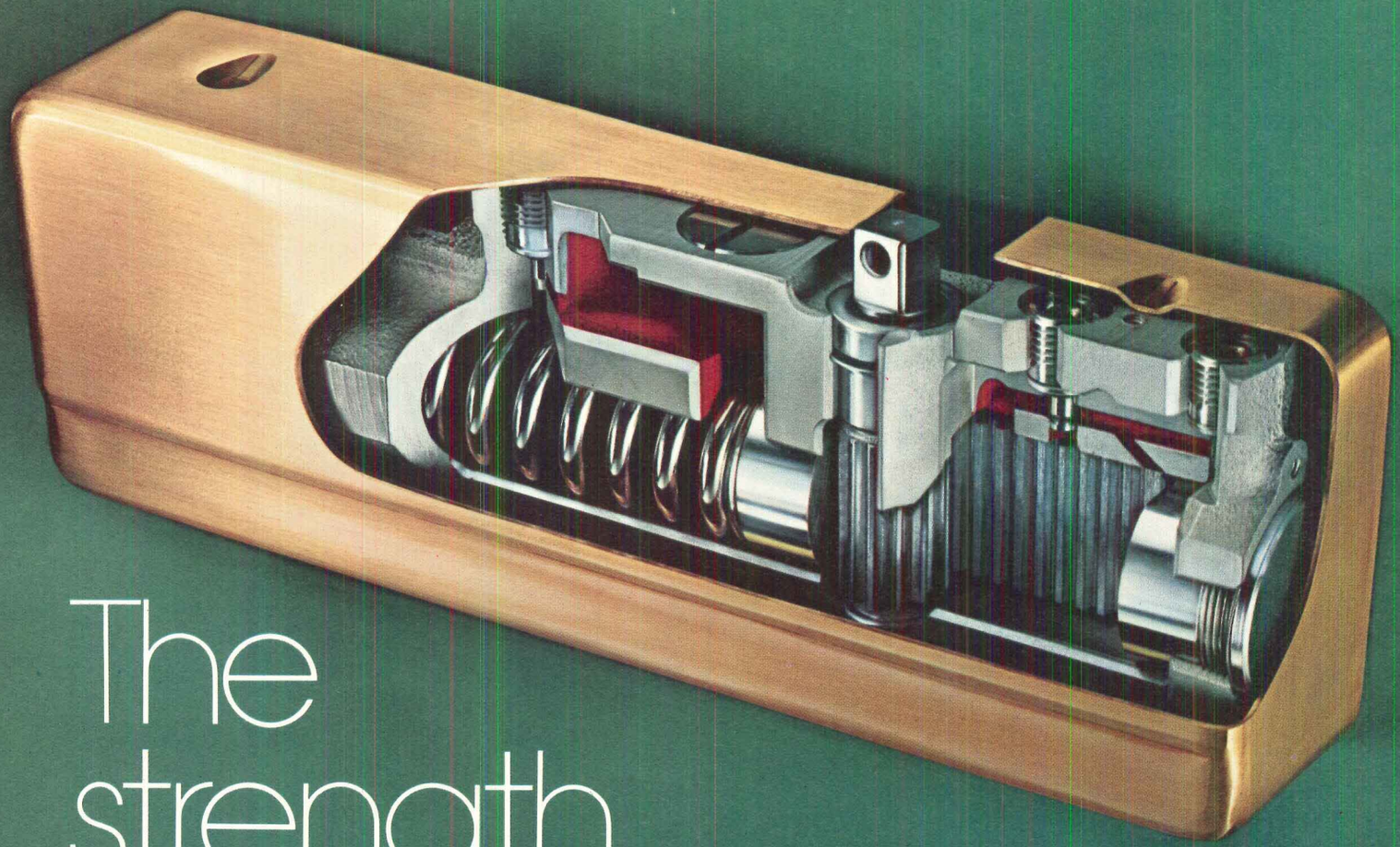
Safdie's convictions regarding the environment — global and private — are so lucid and inspired one does not realize that only one of the many projects narrated has been brought through the morass of vested tradition and political status quo to realization.

Safdie does not hit and run. In one breath he names names and castigates the sterility and paralyses of our present planning methods. In the next, he makes what he thinks are cogent suggestions to revolutionize and improve the system. Safdie is the rare professional who, despite his messianic architectural zeal to be all things to all people, knows that all occupants of all spaces are, like he himself, living, thinking, conscious, self-sacred individuals, in the broadest sense. He states this understanding loudly and clearly.

Despite these protestations, his descriptions of his own great ego, and his behavior in expediting the critical path of his own projects leaves the hint, although unmentioned, of possible bodies by the roadside after the whirlwind of Safdie's attainment has passed through. It would not be the first nor the last time that a price had to be paid for improving man's lot. Safdie's brand of talent, drive and values are what this world needs more of. Let's hope that as he grows and leaves marks, he retains the desire to further document them for our edification, amusement and improvement. [Lawrence Lerner]

Recommended Practice for Engineered Brick Masonry. *Second Edition. By James G. Gross, Robert D. Dikkers and John C. Grogan. McLean, Va.: Structural Clay Products Institute, 1969. 337 pp., $7.50.*

Reviewed by William J. McGuinness. The reviewer is a partner in the firm of McGuinness & Duncan, Engineers, and formerly chairman of the Department of Structural Design at Pratt Institute.
[continued on page 130]



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

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

The Bazaar was created by Callister & Payne, Community Planners; and August Rath, architect.


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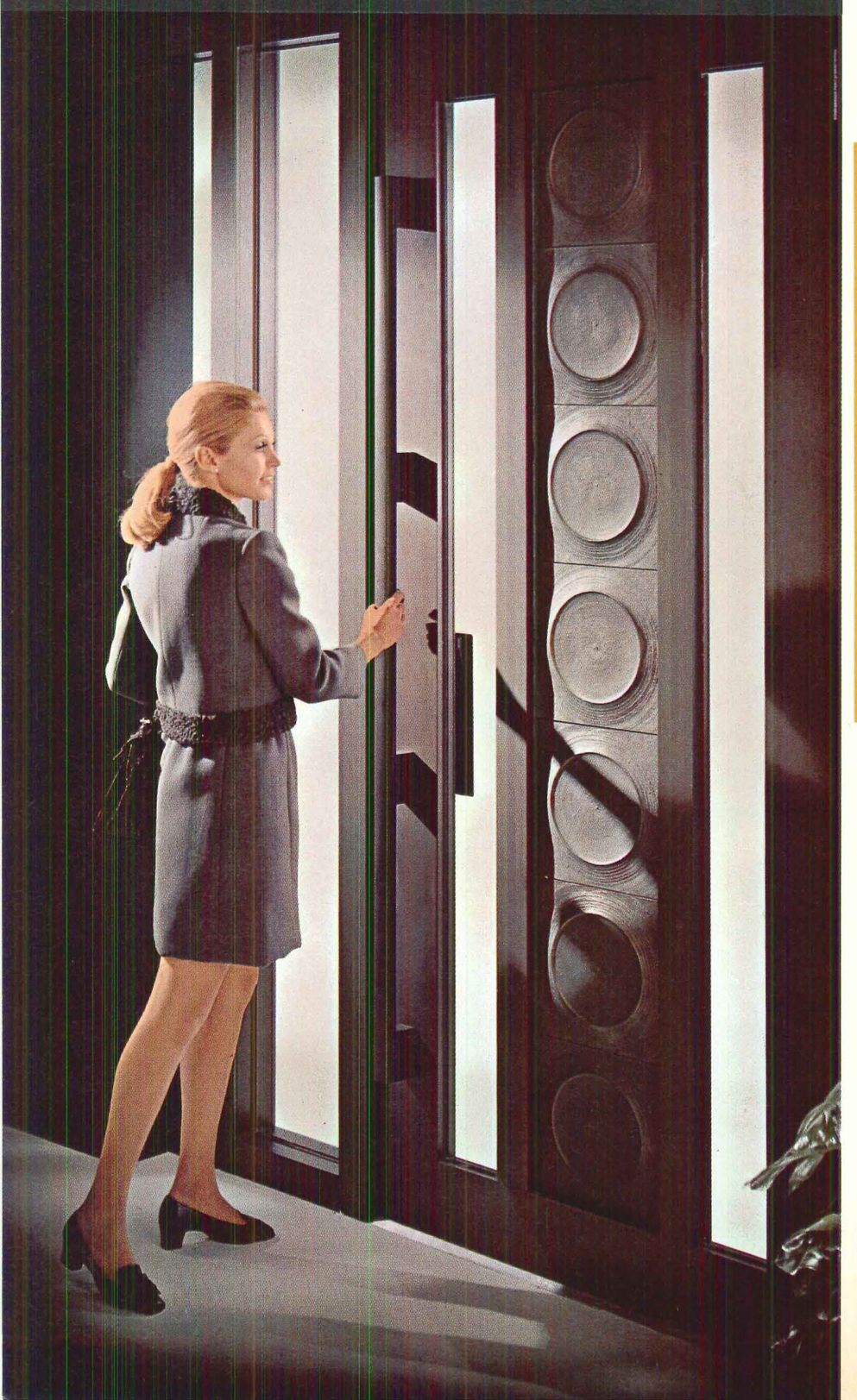

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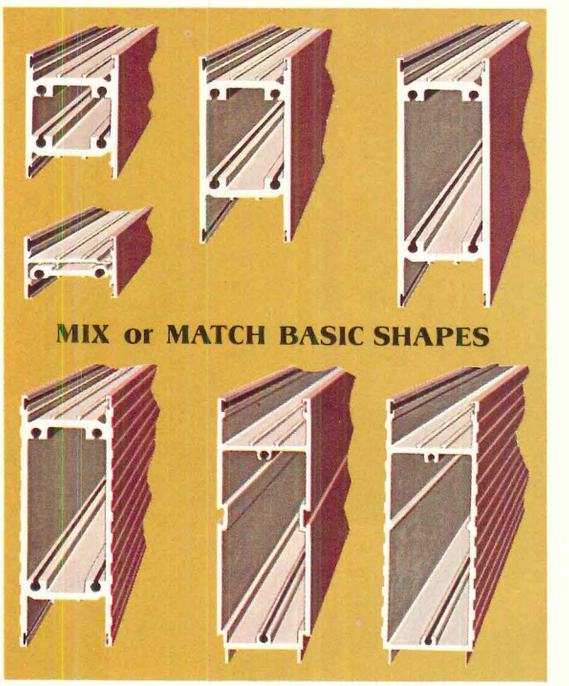

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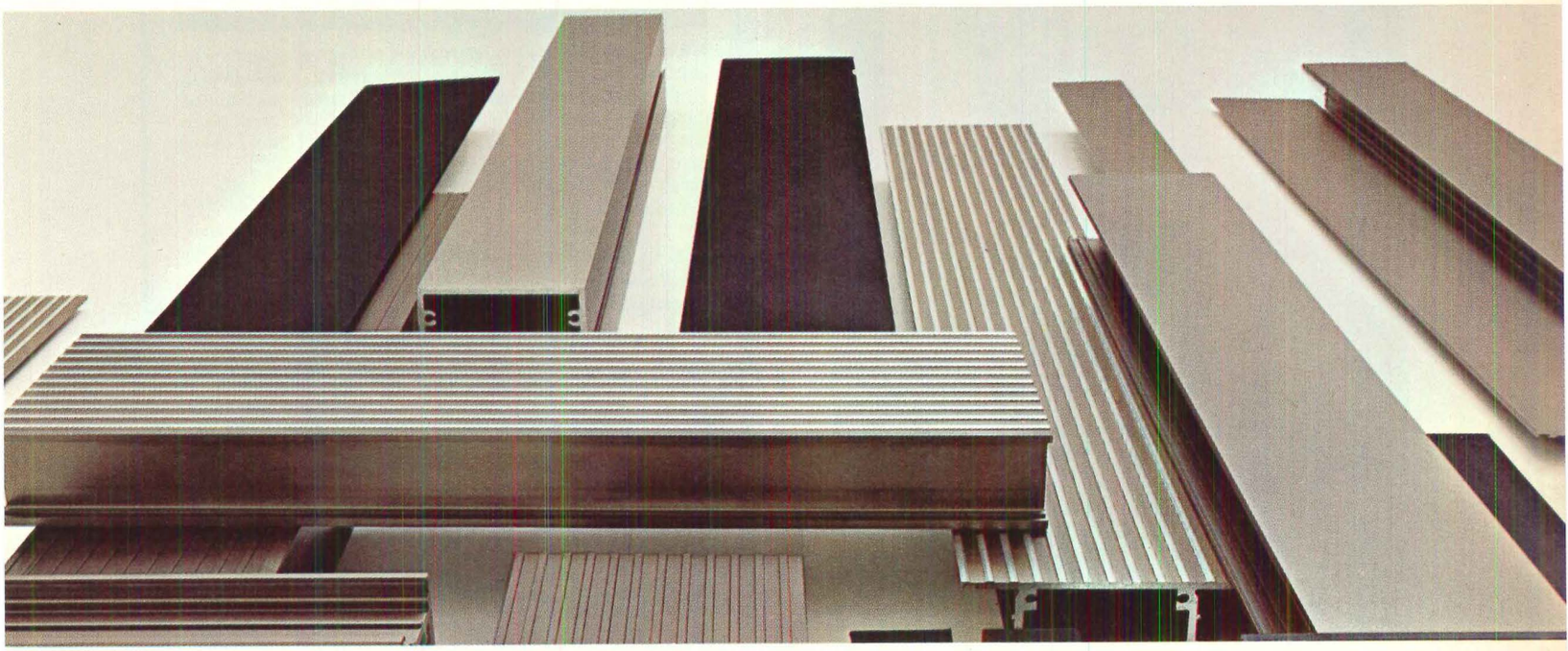

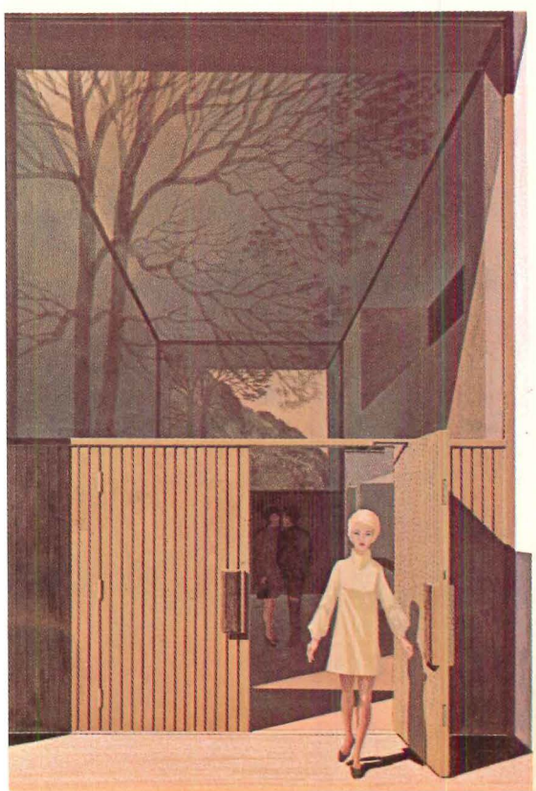

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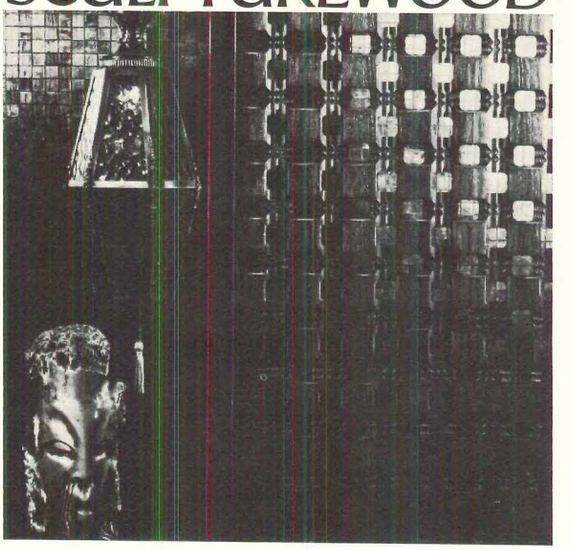

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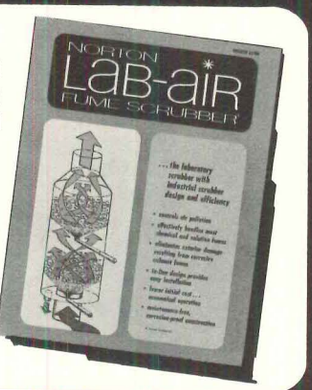

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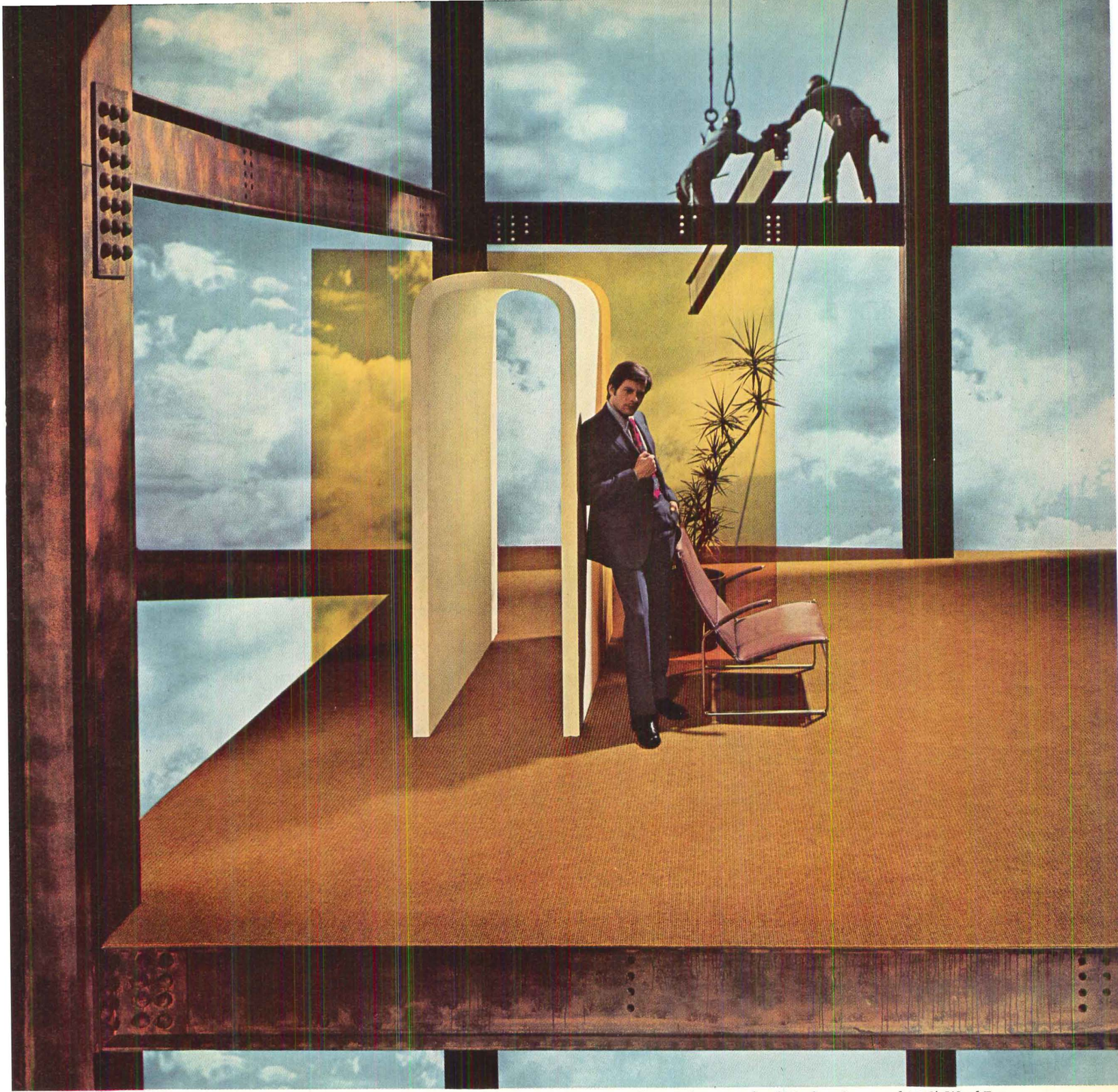

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Photographs: Bill Rothschild

Owner: City of Port Washington, N.Y. Architect: Curtis and Davis. Structural Engineer: A. A. Abdalian. General Contractor: M. Stark Construction Co. POZZOLITH Ready-Mixed Concrete: Certified Industries, Division of U.S. Steel, Hicksville, N.Y.

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"The most beautiful concrete job I've ever seen in my life." So said one of the committee members of the Concrete Industry Board (New York) in judging the Port Washington Public Library, Port Washington, Long Island. The structure was unanimously awarded the CIB's Annual Award for 1970.

Located on a grassy knoll overlooking Manhasset Bay, the 34,500-square foot, split-level structure displays exposed architectural concrete with formboard finish inside and out. The awards committee stated that the finish shows not the slightest imperfection throughout.

An important factor in achieving the desired concrete was the specification and use of *POZZOLITH* admixture. *POZZOLITH* helped make the high-strength concrete more placeable and workable, resulting in better consolidation in the forms. The result was concrete that faithfully reproduced the grain of the formboard and a surface dense and strong enough to retain this appearance over the years.

The Port Washington Library joins an already impressive list of concrete structures that reflect the performance benefits of *POZZOLITH*. And *POZZOLITH* delivers its benefits where performance counts—on the job and in the finished structure. That's why, over the years, *POZZOLITH* has earned the name "The Performance Admixture."

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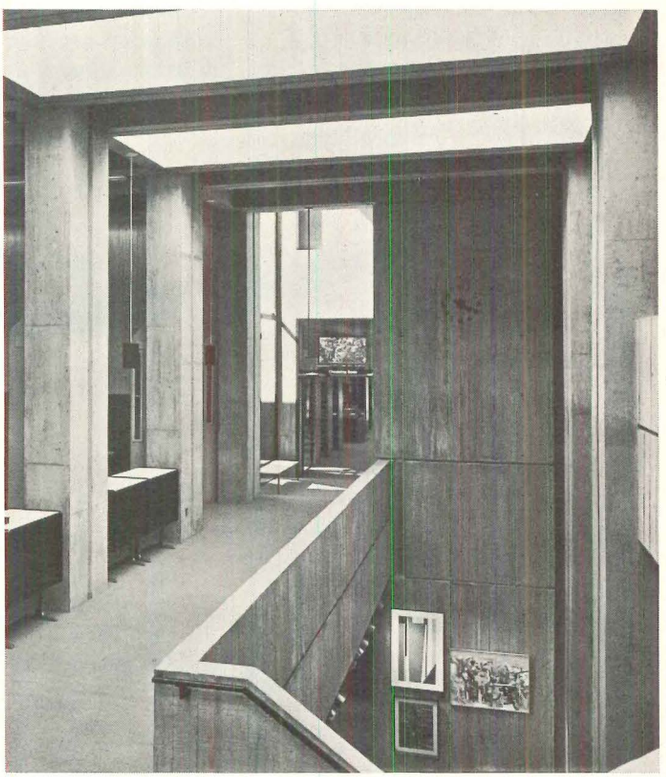

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Books continued from page 120

It is a delight to find that a renaissance in the use of the world's most ancient structural material has produced an engineering manual based upon research and development comparable to the best research efforts given to newer products.

Following the destruction by fire of the ancient city of Babylon 2600 years ago, it was rebuilt with kiln-fired brick set in hot bitumen. This was, at the time, a relatively new method. The old city had been built of reeds and mud.

By the time the Colosseum was erected in A.D. 70 the bricks were of better quality and laid in a mortar which utilized puzzuolan cement, a product of volcanic ash that approaches our modern portland cement in quality. The time-honored beehive method of firing bricks by piling the molded clay units around a fire persisted into the 20th Century, yielding some good brick, some overburned deformed clinkers and some underburned soft "salmon" brick. Modern methods of brick firing have assured sound brick of ultimate compressive values of from 2000 to 14,000 (plus) psi for single units. It will be noted that these structural elements are as good as or better than basic concrete which, in conventional building operations, is expected to have an ultimate strength of 2000 to 5000 psi.

Of course, it is not possible to utilize the full value of the highest strength brick units because all bricks must be laid in mortar to hold them together, or, as some consider, apart. In addition to holding the bricks apart, the mortar, a fine aggregate concrete, renders the assembled brick masonry weaker. Adding lime to the mortar to make it reasonably workable and a little more water-resistant makes it weaker still. Finally, a great weakening effect is sometimes brought about by unsupervised poor workmanship.

Yet, with good materials, proper control and inspection, ultimate strengths as high as 4600 psi are achievable as confirmed by the table, "Assumed Compressive Strength of Brick Masonry," in the new manual. This puts good brick masonry in the same strength class as good concrete. The table further shows that the ultimate strength of brick masonry so inspected and supervised is about 50 percent greater than that of unsupervised work. Unlike steel, the manufacture of which is complete on its arrival at the site except for connections, brick masonry, no less than concrete, requires the control supervision affords during the building process.

But brick and mortar had been "good enough" through the centuries and by the early 1800s was, on a worldwide basis, the primary structural material, albeit bulky and dependent upon thickness for stress minimization and on bulk and gravity for resistance to lateral forces. By that time the scientific basis for modern structural design had been established. From 1570 to 1810 it had had its impetus in the technical philosophies of Galileo, Descartes, Hooke, Newton, Leibnitz, Bernoulli, Euler, Coulomb and Young. Its application, however, to brick masonry was quite deficient in shear, tension and bending resistance.

Instead, the benefits of structural design were applied in the use of rolled sections of wrought iron that appeared in 1850 and to reinforced concrete beginning about 1890. The steel frames that rose above the conventional six stories following the advent of the Eiffel Tower in 1889 were a curious combination of brick and structural steel. The lower stories consisted of brick walls several feet thick enclosing the

[continued on page 135]

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structural frame. The upper stories emerged tentatively as steel frames supporting brick walls of minimum thickness on their steel spandrels.

After it was found that brick was not needed for frame bracing or load bearing, the steel spandrels boldly carried the thin brick panel walls on all stories. Later it was found that lighter materials could be used instead of brick. The culmination of this trend is seen in the World Trade Center Towers whose 110 stories feature exterior walls of aluminum-faced, closely spaced steel verticals with only narrow glass panels between. And so brick has been left to develop its own structural use, which it has done admirably.

The first step after improving the quality of brick, mortar and site supervision was to improve the qualities of brick masonry in resistance to shear, tension and bending. This has been done by the refinement of reinforced brickwork. It involves the use of imbedded steel reinforcing rods making possible the use of slim columns for both concentric and eccentric loading, members that have value in bending and thin panels that resist wind and other lateral forces. The second step was the development of the manual here described.

Based upon the earlier great works of Harry Plummer of the Structural Clay Products Institute, current contributions of the three authors and of a distinguished panel of seven consulting engineers, and building on the earlier 1966 edition, the new manual is excellent.

Among many other innovations, the several examples of designs of 10-story wall-bearing brick buildings featuring the effective use of intersecting planes are unique. The theory and application of reinforced brick is developed fully. The book is principally for practicing structural engineers, architects and engineering and architecture students.

Kinetic Architecture *by William Zuk, and Roger H. Clark, New York: Van Nostrand Reinhold, 1970. 160 pp. 143 illus. $14.95.*

Reviewed by Robert P. Burns, Jr., head of the Department of Architecture, North Carolina State University, Raleigh, North Carolina.

"Ours is an age of change, of dynamicism, of unrest, of revolution. This is an age of rapid transportation, of instant communication, of high-speed computers, and an explosion of knowledge. With a society that is mobile and dynamic, with technological developments occurring at an unprecedented rate, with an increasing inability to accurately predict the future, with changes of great magnitude taking place within short periods of time, with other disciplines and interests working themselves into architecture, and with an obvious move toward an open-endedness in all aspects of life, we must move toward kinetic architecture, an architecture which can adapt to a changing set of pressures which mould form," write authors William Zuk and Roger H. Clark in their introduction to *Kinetic Architecture.*

This new book is an attempt to develop a comprehensive theory, description and argument for an approach to architecture which is responsive to change, a condition viewed as pervasive and accelerating, the essential characteristic of contemporary society. William Zuk, professor of architecture in charge of architectural struc-

[continued on page 142]

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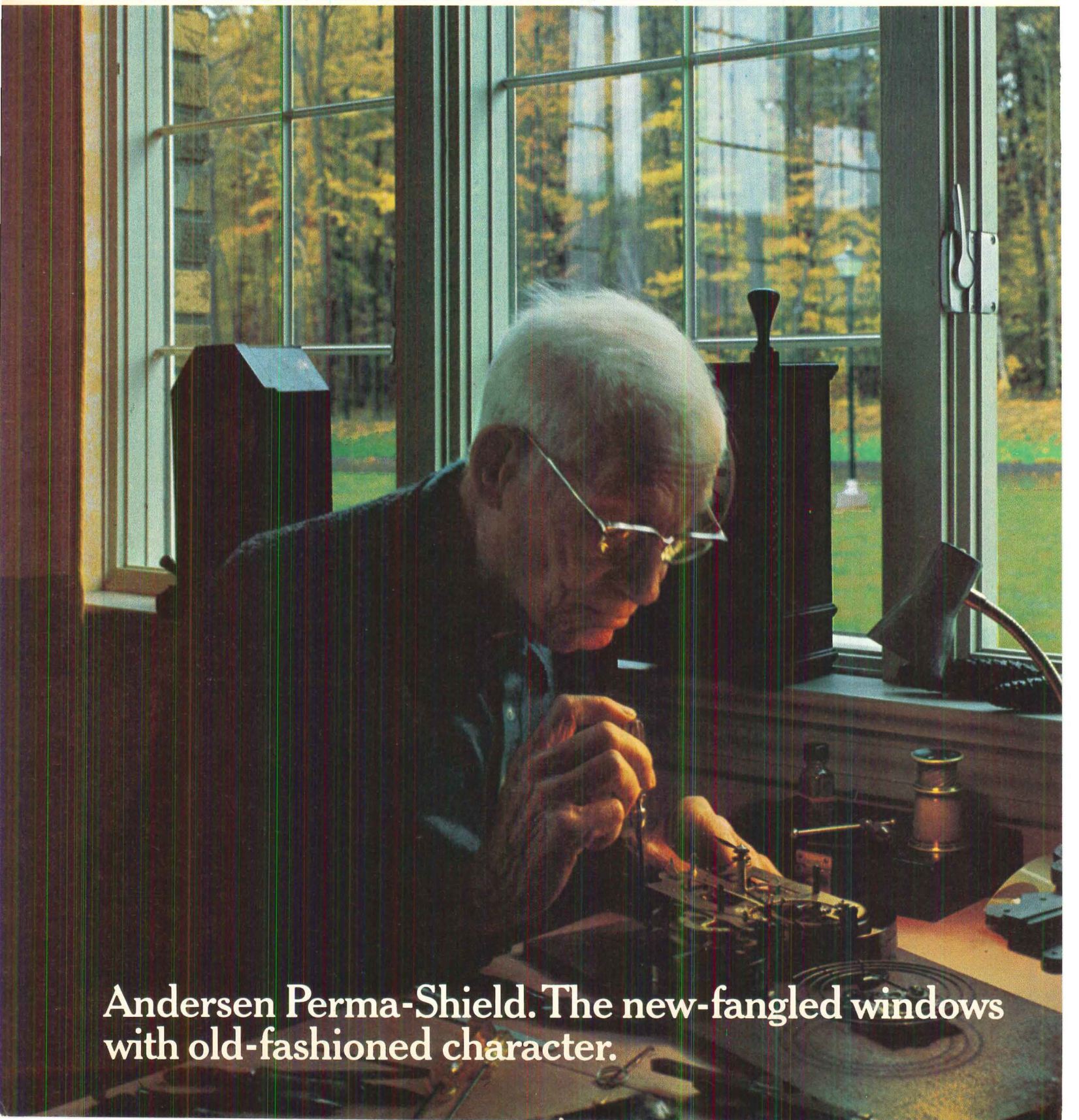
Building: Kimberly Hall Nursing Home, Windsor, Connecticut. Architects: Moore and Salsbury, West Hartford, Connecticut.



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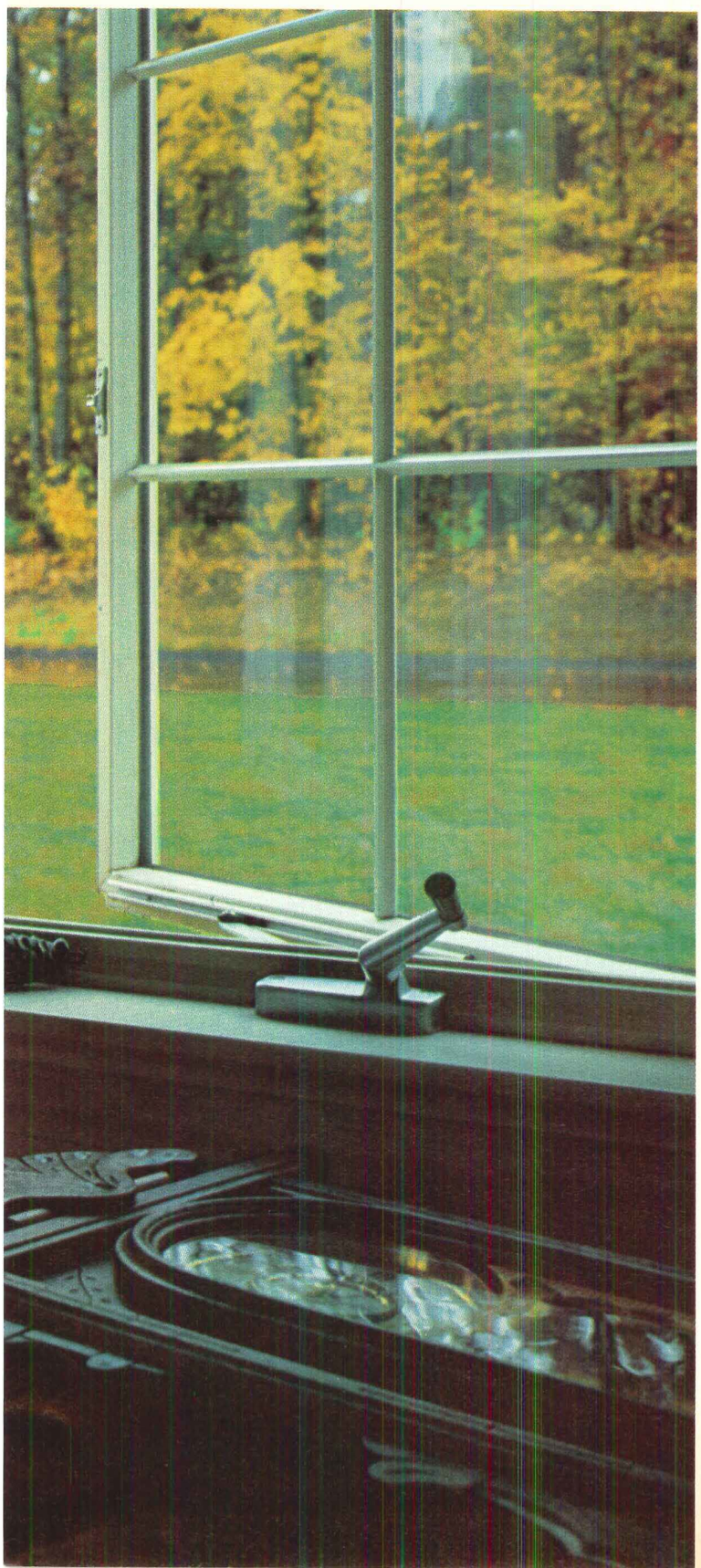

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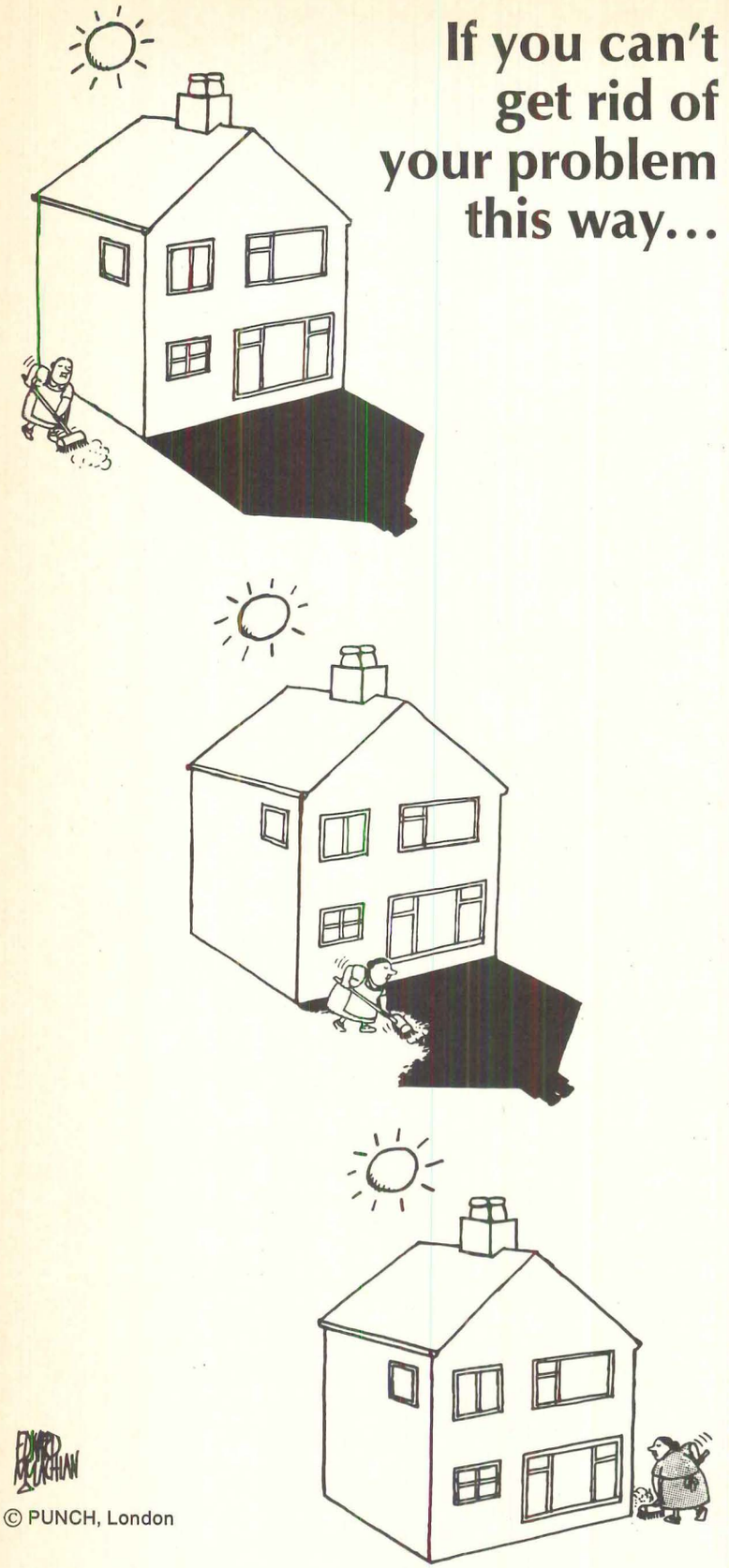

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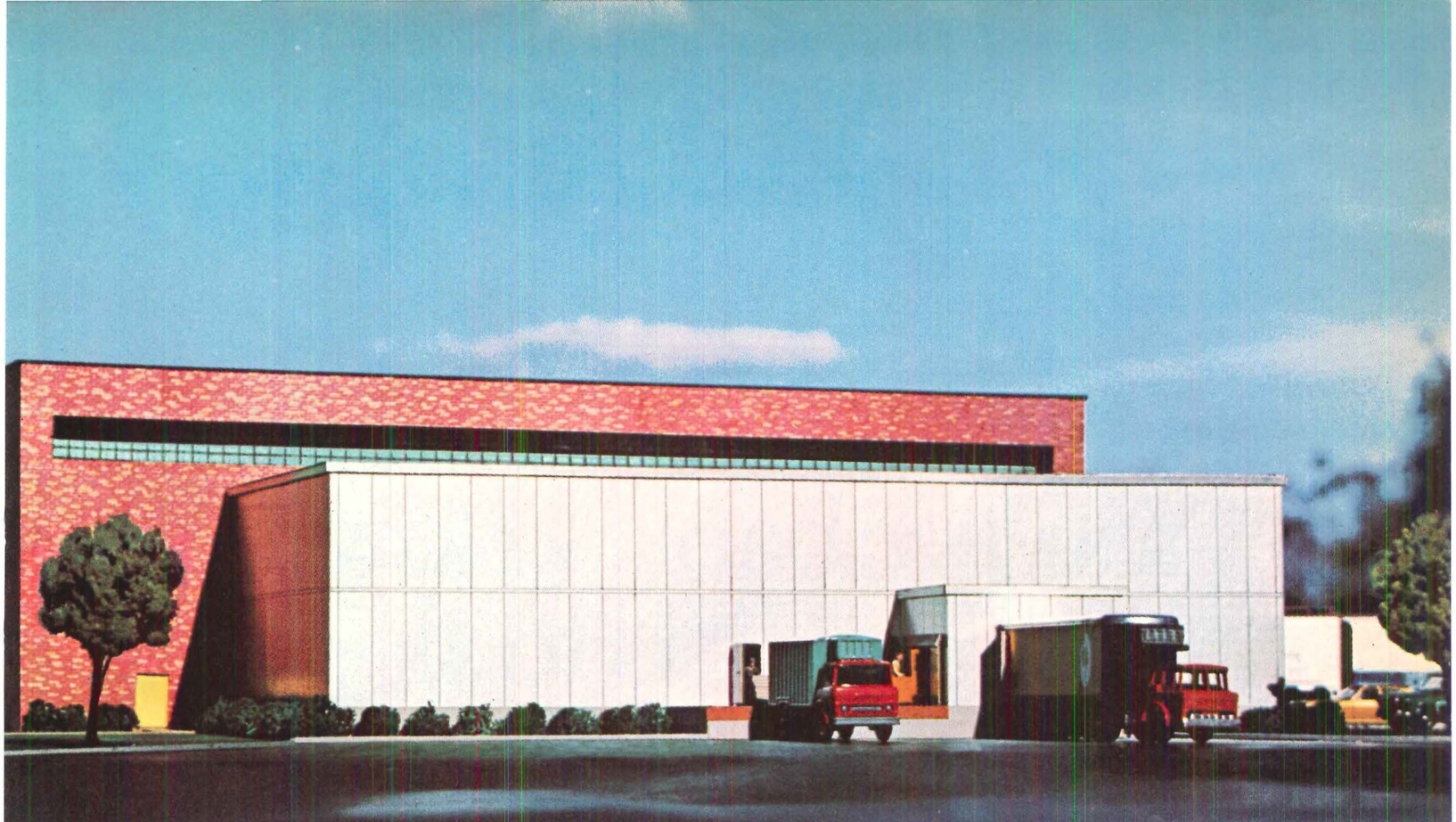

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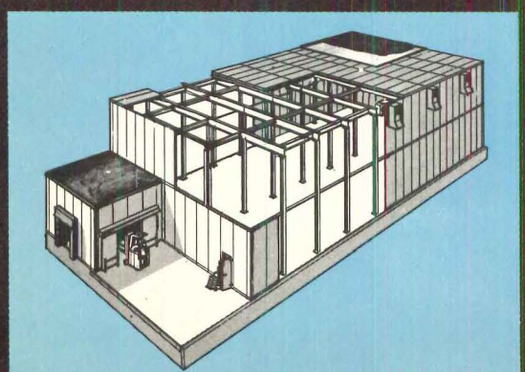

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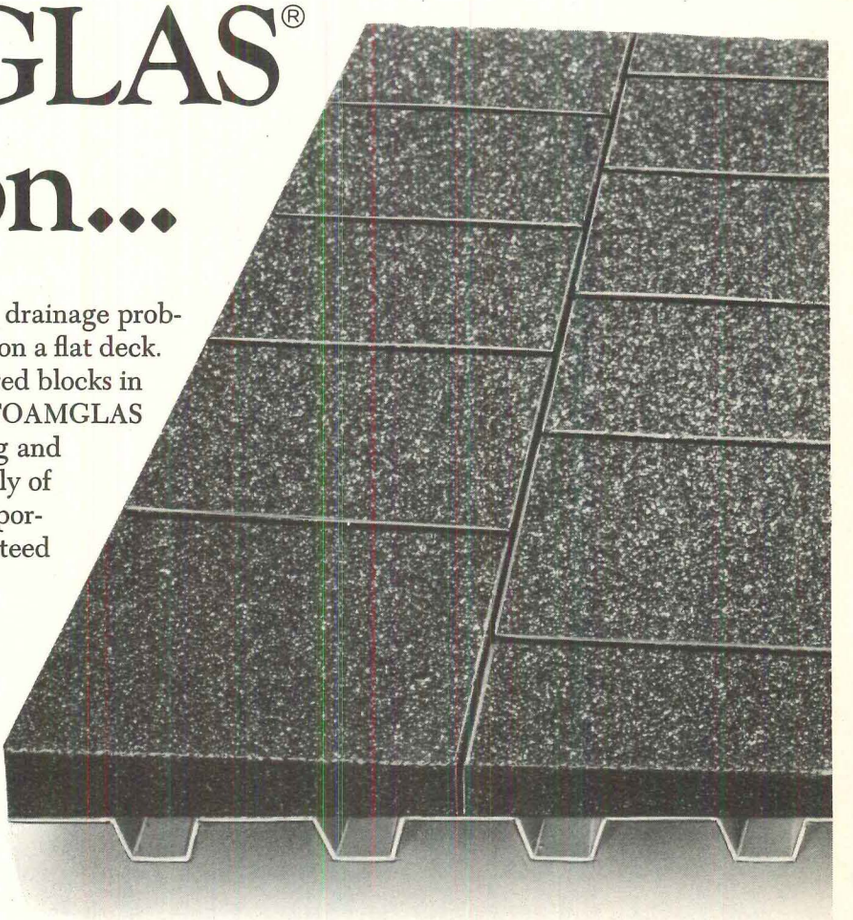

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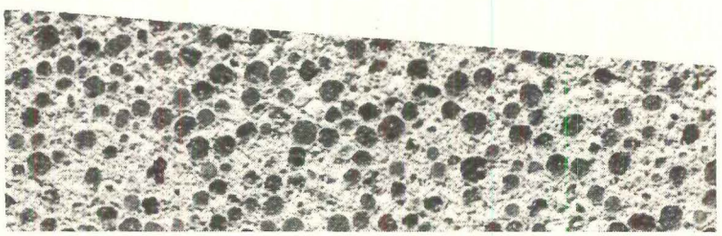

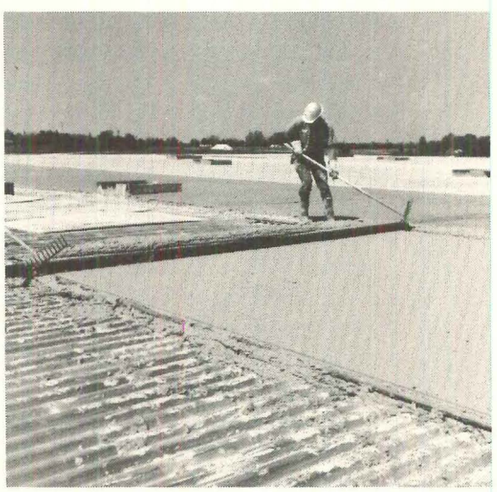

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tures at the University of Virginia, is a frequent contributor to professional journals and the author of *Concepts of Structure.* Roger H. Clark previously taught at the University of Virginia and is now assistant professor of architecture at North Carolina State University's School of Design where he teaches and does research in the application of kinetic architecture. They argue that the static nature of most past architecture makes it inadequate to satisfy the rapidly evolving needs of a society in flux. "What happens," they ask, "to fixed structures that are built to last for about one hundred years when they have outlived their usefulness within five or ten years, or very often before they are even completed?" For a society confronted with vast problems created by obsolete, deteriorating structures, the resulting imperative is to develop an approach to architecture that recognizes the changing pressures which generate form and to enlarge our technological capability to interpret these pressures into architecture.

The description of kinetic architecture as presented in this handsome, liberally illustrated volume is not a national or particularly novel concept, nor does it represent an unprecedented departure from historical traditions and emerging practices. In fact, the roots of an architecture physically adaptable to changing pressures and requirements are firmly established, as the authors point out, in nature, technology and in architecture itself, both in its historical manifestations and in current tendencies toward mobile and disposable structures. The real goal of this book, and what seems to me its major achievement, is to give form and a coherent structure to an emergent movement with profound implications for the future of architecture. By providing an historical and scientific basis, by establishing a framework which resolves many divergent tendencies and by identifying common principles which unite a whole range of seemingly unrelated developments, *Kinetic Architecture* presents a concise and convincing theoretical foundation and justification for a potentially rewarding new direction for architecture.

The book is divided into four major sections: Introduction, Kinetic Geneses, Architectural Applications and Implications. The Introduction establishes the essential theory of an adaptable architecture. In contrast to certain traditional views of ar-

[continued on page 154]

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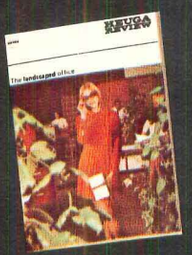

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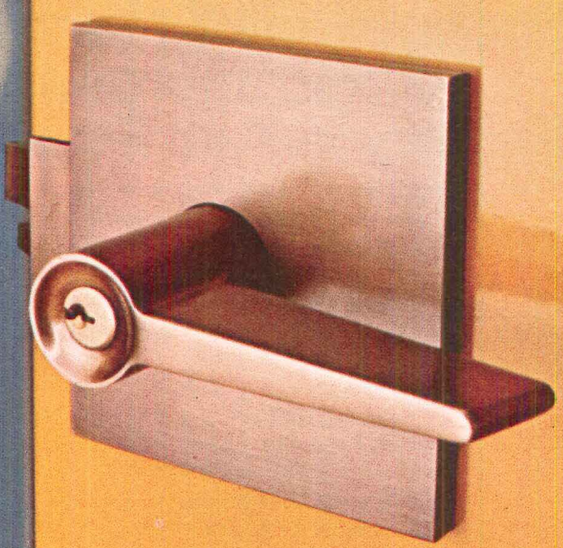

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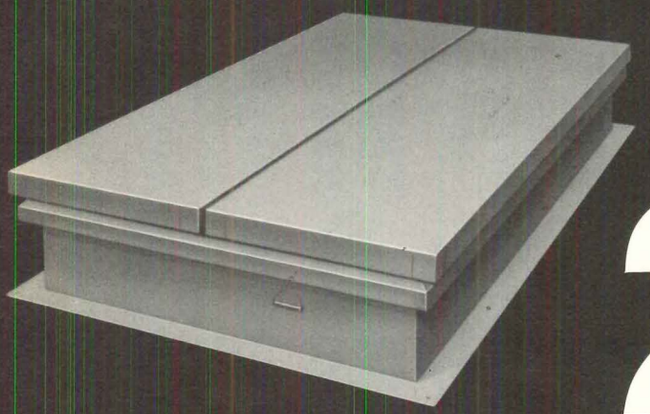

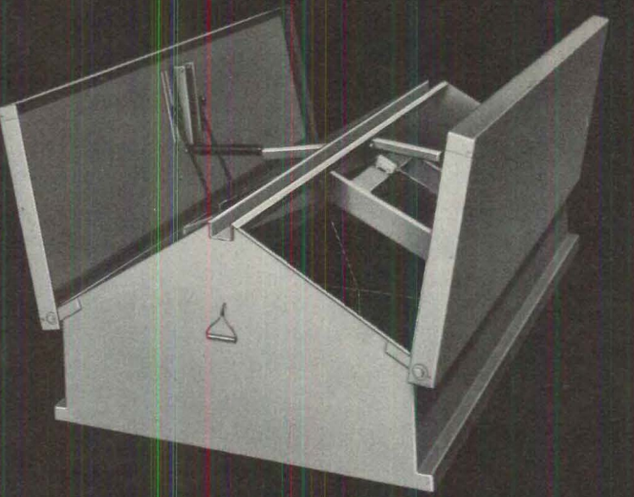

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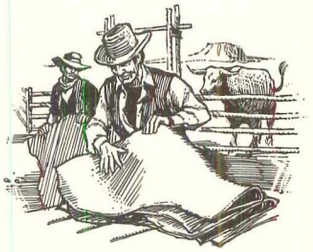

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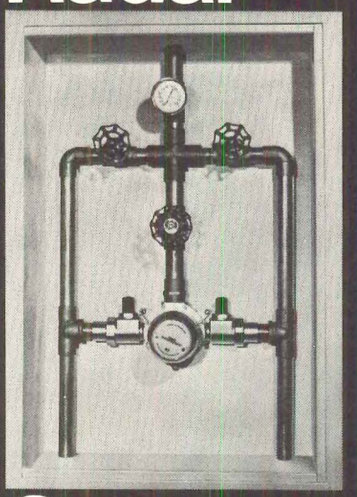

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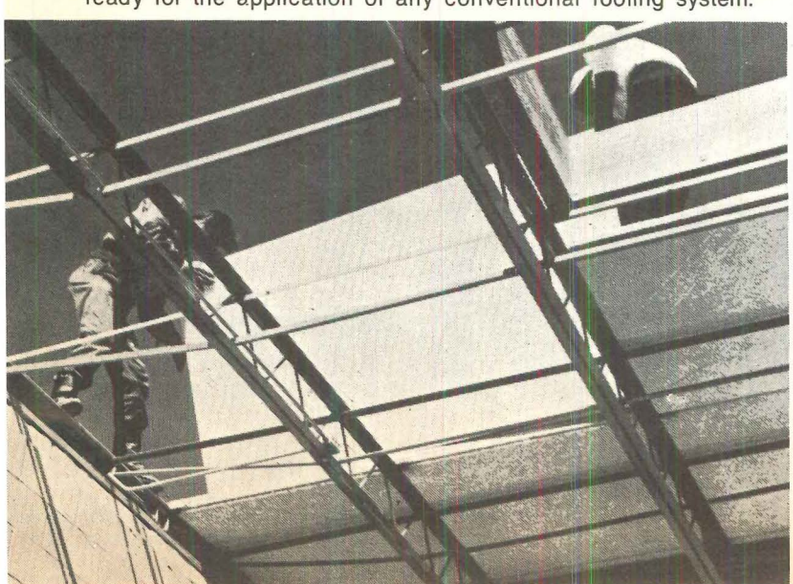


TECTUM II with factory-applied urethane foam is roof deck, acoustical ceiling, vapor barrier and more; all in one beautiful, strong, lightweight, fully insulating material.

Books continued from page 142

chitecture as "frozen music," the authors argue that environments can serve man only if they respond to the complex needs and changes that take place in them. They choose, however, to substitute the concept of "pressure" as being a more inclusive and active form generator than "need." Architecture is described as a "three-dimensional form-response to a set of pressures." Thus is established the basic relationship between pressure and form, or, more specifically, form as a response to pressure. Architectural form can then be conceived as generated by a set of interacting pressures. A change in any one pressure will naturally affect the whole and demand a formal response. When the dimension of time is added to the notion of pressure/form-response, the implications of an adaptable or "kinetic" architecture become extremely far-reaching.

The authors suggest that the pressures to which form must respond are of two types: physical and nonphysical. The physical pressures are chiefly the result of functional considerations and the need to control natural and man-made environmental factors. The nonphysical realm of pressures are those relating to human response to the physical environment—the social, creative, cultural and psychological bases of behavior to which the aspirations of architecture as an art form are most commonly directed.

Technology is identified at the interface of the set of pressures and the new form. "It is technology which gives us the ability to interpret the set of pressures and the situations under which they exist." Optimistically, the authors state that the thrust of technology "has now removed us from past shackles of means and has provided us with new and greater freedoms of choice increasing our capacities to solve problems."

The section on Kinetic Geneses examines the historical and scientific bases of kinetics. Examples of natural adaptation in plants and animals are described, with special emphasis on types of motion. The human body is seen as particularly instructive: "literally every principle of kinetic structures may be found in the physiology and morphology of the human body." Developments in related technological fields are investigated to illustrate potential applications in architecture. Finally the evolution of kinetic experimentation in architecture is examined, revealing a surprisingly rich heritage of development, from such modest and ubiquitous elements as doors, windows and elevators to relatively recent innovations such as flip-top stadia and mobile homes.

Having presented a definition of kinetic architecture and arguments for its adoption as the most feasible way of quickly and efficiently accommodating man's constantly evolving environmental needs, the authors propose specific applications of kineticism in architecture.

In the third section, Architectural Applications, a framework of eight classes of kinetic architecture is established to describe the general categories of kineticism. This classification system, while admittedly overlapping, provides a useful frame of reference for examining many examples of adaptable building and for relating a highly diversified range of tendencies to certain shared principles.

The classifications divide rather neatly into two basic groups: the first four can be [continued on page 156]

Books continued from page 154

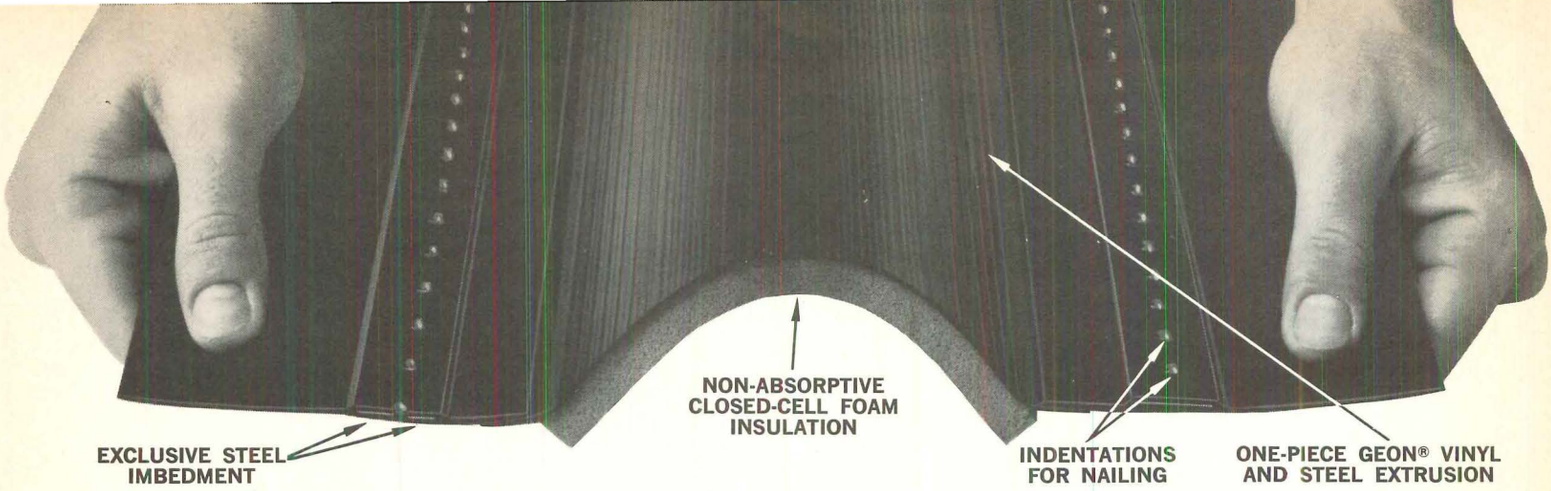
seen as closed-system kinetics, constrained by original decisions; the latter four are open-ended systems, capable of greater variations and unanticipated modifications. Each category is illustrated by buildings, projects and speculative studies, including works by Fuller, Rudolph, Nervi, Zetlin, the Metabolists and the Archigram Group (whose projects hold a unique fascination for the authors). Most of the examples selected are characterized by a concern "with basic kinematics and topology of kinetic space and not with predetermined forms as derived by the conventional structure and space considerations of static architecture." It is argued that this approach is essential if the full potential of kinetic architecture be realized.

Implications, the concluding section, speculates on future developments in materials technology, construction, urban planning, architectural practice, economics and property rights, architectural education and lifestyle. Foreseen are such predictable developments as a highly industrialized building industry with a "used building" inventory; extensive use of light, high strength materials; employment of increasingly sophisticated planning and design techniques; abandonment of obsolete codes and legal restrictions for flexible, performance-oriented control mechanisms; and technologically revolutionary urban infrastructures. It is predicted that the adoption of kinetic architecture will lead inevitably to a fundamental reorientation of attitudes toward the physical environment. Previously accepted concepts of cultural stability will be replaced by an ethic of change with greatly enhanced opportunities for individual choice—architecture itself will evolve new forms, less deterministic, infinitely variable, responsive to human needs, producing "dynamic images of order to our wildly changing world."

Kinetic Architecture ultimately must survive several inexcusable printing bloopers as well as some difficulties in quality and organization of graphic material. In a number of cases illustrations and written descriptions are separated by several pages which rendered this reader a bit confused and exasperated. A more serious reservation can be raised about a small number of illustrated projects, especially certain relatively crude student models, which are reproduced in large, poorly composed photographs. In contrast, the original line drawings are expressive and together with the other graphic material constitute an integral part of the book's thesis.

It would be unfortunate if *Kinetic Architecture* fails to find an appreciative following. One wonders how an aquarian age, much given to mysticism, introspection and treatises on complexity and contradiction will respond to the enlightened pragmatism of *Kinetic Architecture.* Even with its graphic inconsistencies, it is an attractive and appealing book. Some may be critical of a perceived lack of sophistication in the author's celebration of technology. In my view, this goes to the central issue: is the basic extrapolation logical or likely? The authors state, "What is presented is not an architecture of fantasy, but a prediction for the future based upon a natural evolution, a reasoned and reasonable extension of accelerating trends, and a need to satisfy a dynamically changing society."

One suspects that Professors Zuk and Clark have caught an accurate glimpse of architecture's future and in so doing have produced an affirmative and stimulating examination of its origins and evolution.



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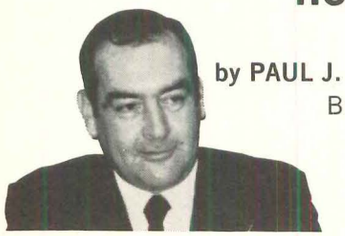

by **PAUL J. RAABE**, Products Manager, Building Products Division, GREFCO, Inc.

A subsidiary of General Refractories Company

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

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

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

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PAUL: Molten vinyl flowing through the perforations "keys" the metal in place. The slight indentations occurring every ¾" along the imbedment show where nails can be driven.

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

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

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

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PAUL: Sure, it eliminates most of the splicing.

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

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

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

YOU: **Why furnish nails?**

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

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

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

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

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

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

YOU: **Is the name set?**

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

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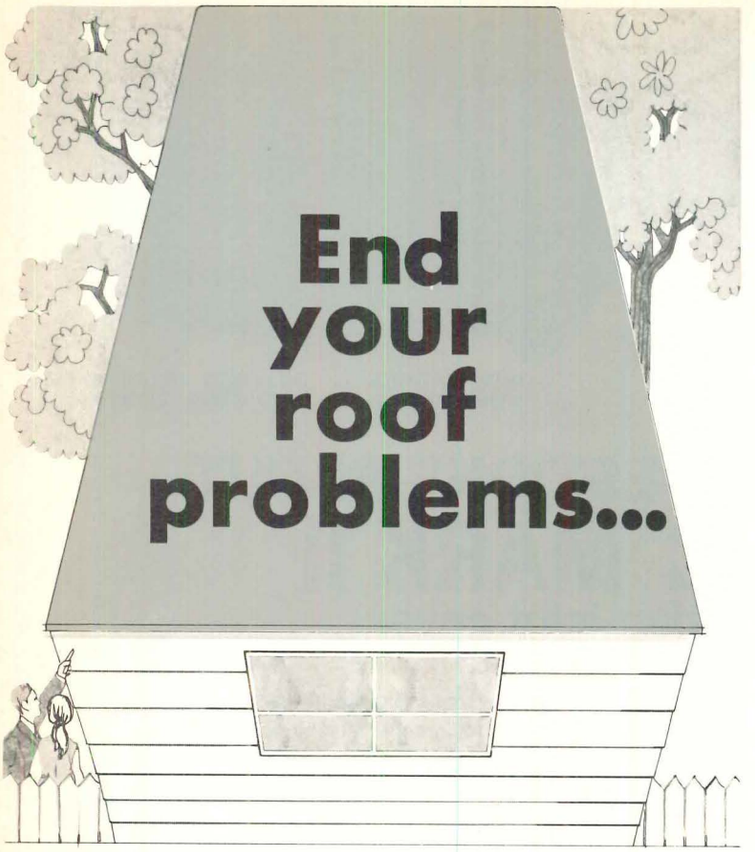

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Notices

Appointments
Rossetti/Associates, Architects, Detroit, names **James W. Smith, AIA,** as an associate for design, and **Stanton Glover, Jr.,** associate for graphics.

Richard A. Tater, AIA, was named a vice president of Hague-Richards Associates, Ltd., Chicago.

Felix E. Massaro, PE, was appointed management consultant of ENGINEERS incorporated, Newark.

Daniel, Mann, Johnson & Mendenhall, Los Angeles, name **Stanley M. Smith,** a member of the board of directors.

Partners appointed to Vincent G. Kling & Partners are **Frederick G. Roth, FAIA,** director of the design disciplines; **Albert J. Huber, AIA,** director of operations; **Walter C. Taylor, Esq.,** director of administration and finance; **Joseph Marzella, AIA,** staff affairs. Also **Eric Chung, Lewis Eisenstadt, William B. Hayward, B. Lee Hutchinson, Robert A. Kear, Vincent G. Kling, Jr., Dan Peter Kopple, John Larkin, Jonathan Naylor** and **John Rutkowski.**

Charles H. Stark, III, AIA, and **Dean L. Lashbrook, PE,** have been admitted to partnership in the Toledo architectural and engineering firm of Richards, Bauer & Moorhead.

New firms
Robert K. Vance, 421 Ridge St., Madison, Wis., has formed **Construction Time Control,** offering a critical path method (CPM) consulting service.

Goldsmith, Yamasaki, Specht & Anderson, a specialized design firm, 75 East Wacker Dr., Chicago.

Richard D. McFarland, Architect, Pier 3, San Francisco.

Mergers
Howard P. Hoffman Associates, Inc., New York City corporate real estate consultants, and Frank Grad & Sons, architects, engineers and planners of Newark, announce the formation of **Grad-Hoffman, Inc.,** New York City.

Expansions
Vincent G. Kling & Associates, Philadelphia, will be **Vincent G. Kling & Partners** and will become a multi-disciplinary environment design organization.

New addresses
Ecodesign, 180 Franklin St., Cambridge, Mass. 02139.

Frank Orr, 3324 West End Ave., Nashville, Tenn. 37203.

Allen & Hoshall, 2430 Poplar Ave., Memphis, Tenn. 38101.

Good Design Associates, 310 Lafayette Building, South Bend, Ind. 46601.

Name changes
William E. Nix, Architect, will be known as **Nix, Spencer, Herolz & Durham, Inc.,** Houston.

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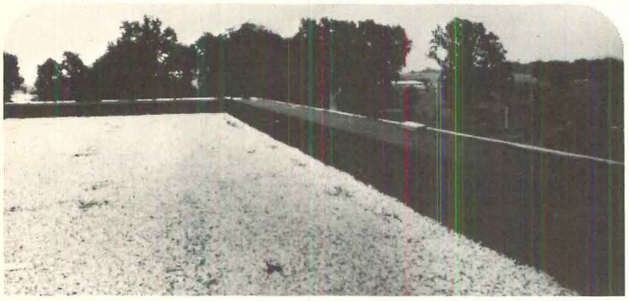

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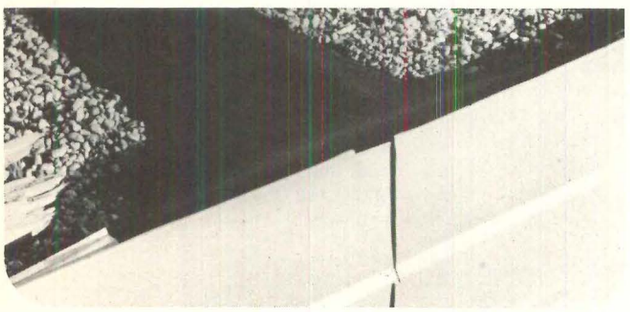

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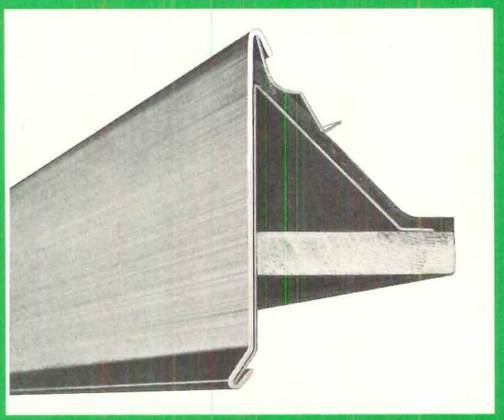

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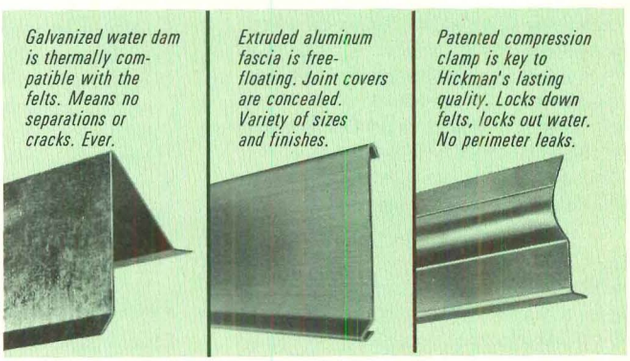

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[Continued on page 164]

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