



PAUL RUDOLPH: STATE SERVICE CENTER, BOSTON, MASSACHUSETTS

RICHARD MEIER: PRIVATE SPACES AND PUBLIC SPACES

WARREN PLATNER'S OWN HOUSE IN GUILFORD, CONNECTICUT

BUILDING TYPES STUDY: FLEXIBLE SPACE IN RELIGIOUS BUILDINGS

FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

JULY 1973 **7** A MCGRAW-HILL PUBLICATION THREE DOLLARS PER COPY

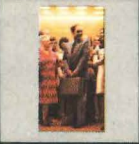
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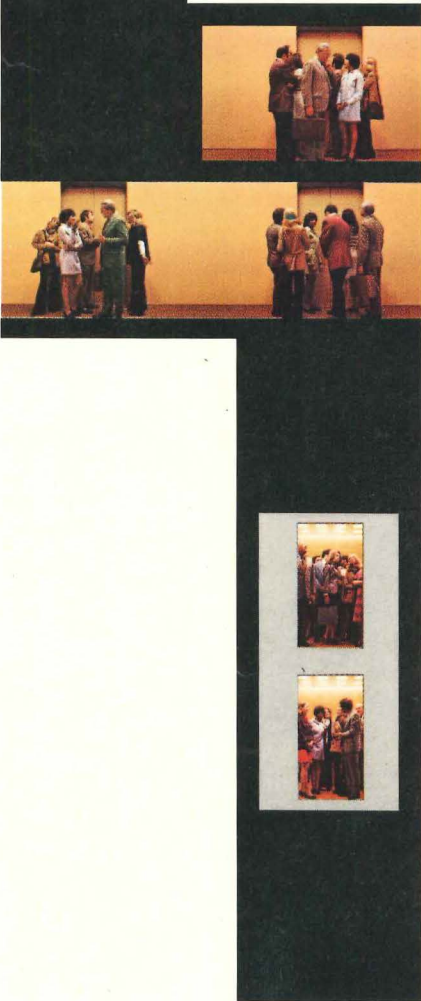


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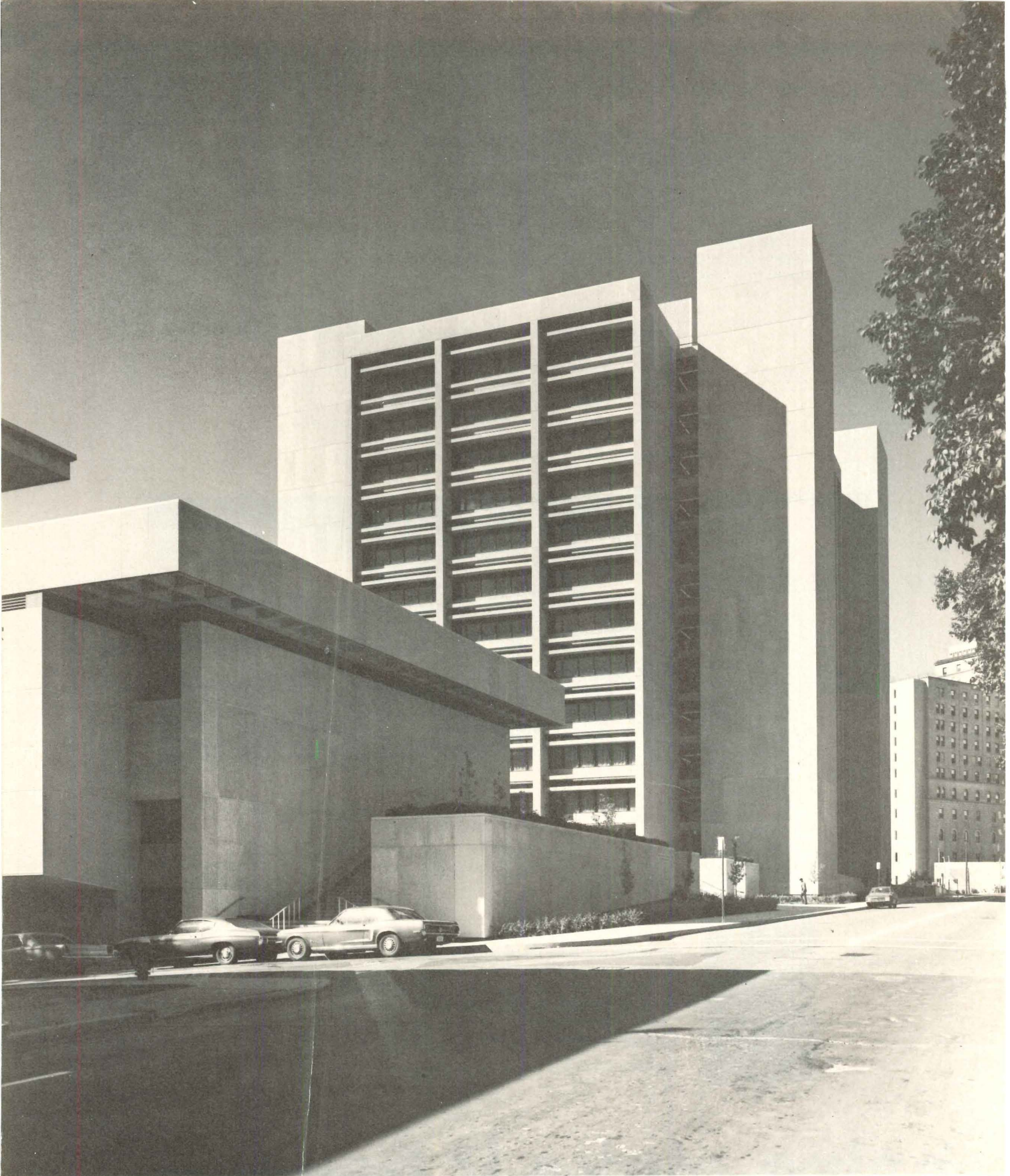


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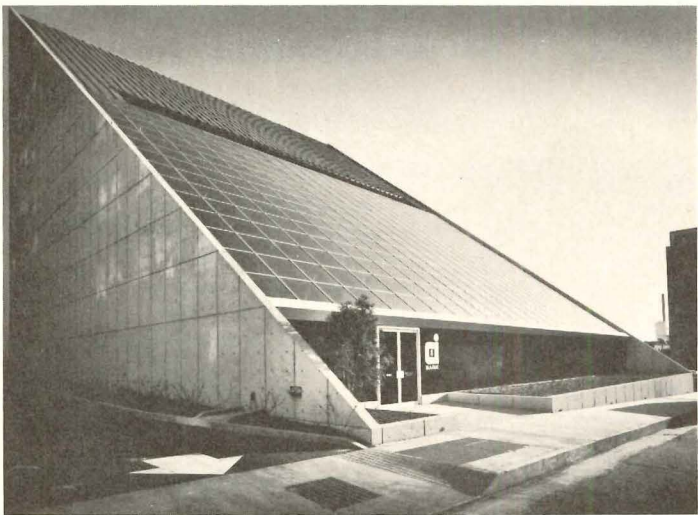
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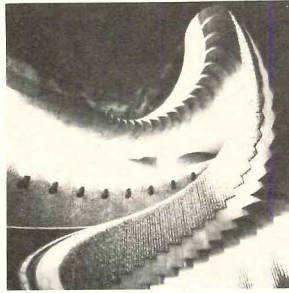
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Boston, Massachusetts
Coordinating architect: Paul Rudolph
Photographer: Robert Perron

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9 Editorial

Energy conservation: some random thoughts on how to get the job started

33 News in brief

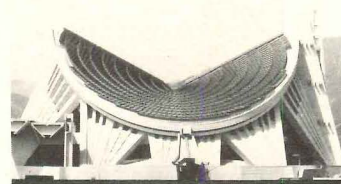
Short items of major national interest as well as up-coming meetings and events.

34 News reports

Report of the National Commission on Fire Prevention and Control released. Federal Trade Commission charges plastics industry with deceptive practices. Grants for City Edges Program announced by National Endowment for the Arts. Laurance S. Rockefeller Task Force releases report on land use.

37 Buildings in the news

Philip Morris Research Center Tower, Richmond, Virginia. Blue Bonnets Development, Montreal. Federal Reserve Bank of Boston. Town Center, Detroit. John F. Kennedy Library Cambridge, Massachusetts. BMW Headquarters, Munich, West Germany. Sho Hondo (below), Shizuoka Prefecture, Japan.



41 Required Reading

ARCHITECTURAL BUSINESS

55 Guidelines to European practice

The climate of condominium and other kinds of developer activity in Europe provides opportunities for U.S. architects, but, says Robert Brodsky of Brodsky, Hopf & Adler, there are important differences in practice that are pointed out here.

57 Construction management

A Fairfax County, Virginia high school brought together a demonstration of CM/VE applied to systems building, performance specifications and phased construction in a high quality building for optimum cost.

61 Building cost indexes

Growth plus inflation equals a record GNP

63 Building activity

As predicted in the F.W. Dodge Outlook for 1973, industrial building construction is a pacesetter this year, but Jim Carlson raises a few signal flags tied to recent developments including the price freeze and Phase 4.



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

EXECUTIVE, EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: 1221 Avenue of the Americas, New York, N.Y. 10020. Other Editorial Offices: 425 Battery Street, San Francisco, Cal. 94111; 1249 National Press Building, Washington, D.C. 20004.

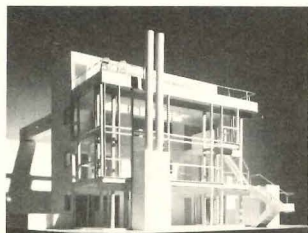
PUBLICATION OFFICE: 1221 Avenue of the Americas, New York, New York 10020. Second class postage paid at New York, New York 10001 and at additional mailing offices.

OFFICERS OF McGRAW-HILL PUBLICATIONS COMPANY: John R. Emery, president; J. Elton Tuohig, executive vice president-administration; David J. McGrath, group publisher-vice president; senior vice presidents: Ralph Blackburn, circulation; John R. Callahan, editorial; John B. Hoglund, controller; David G. Jensen, manufacturing; Gordon L. Jones, marketing; Jerome D. Luntz, planning & development.

FEATURES

89 Richard Meier in expanding scope

Three residential projects of widely varied program, site and user-client requirements demonstrate a consistent growth of design principles, skillfully manipulated to meet new needs. From the single-family house to a commercial city block plan to limited-income housing, determination carries through.



Ezra Stoller © ESTO

99 Platner House

Ingeniously but modestly set into the landscape of rural Connecticut, Warren Platner's house is a series of connected pavilions that provide a variety of stages for daily living.

105 A vision of human space

Carl John Black, a young humanist, critic and teacher, examines the symbolic content of Paul Rudolph's conceptual designs for the State Service Government Center, Boston, Massachusetts.

BUILDING TYPES STUDY 450

117 Flexible space in religious buildings

In a day of great diversity of religious belief and questioning, church building has continued at a steady but somewhat staid pace. In today's church building, the most common characteristic is the flexibility of use provided by the design: space which connotes spiritual quality for religious services, adaptable for secular uses as well.

118 Blessed Sacrament Roman Catholic Church, East Hartford, Connecticut.
Russell Gibson von Dohlen, Architects.

122 Church of Our Divine Savior, Chico, California.
Patrick Quinn and Francis Oda, Architects.

126 Church of the Brethren, Live Oak, California.
Dutcher, George and Hanf, Architects.

128 Chaminade Chapel, Karonga, Malawi, Africa.
Richard Fleischman Architects, Inc.



130 Bethlehem Lutheran Church, Santa Rosa, California.
Duncombe/Roland/Miller, Architects.

ARCHITECTURAL ENGINEERING

133 Skyscraper expresses its steel frame, and shows it too

When U.S. Steel decided to put up a high-rise office building in downtown Manhattan as an investment, they wanted innovative approaches to be taken in the steel structure and other building technologies. So they commissioned Skidmore, Owings & Merrill and a host of technical and other consultants to investigate possibilities within the cost strictures of a speculative office building. The realization is shown in photos and details.



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149 Product Reports

151 Office Literature

183 Personal Business

191 A/E Update

195 Record Impressions

202 Classified Advertising

204 Advertising Index

207 Reader Service Inquiry Card

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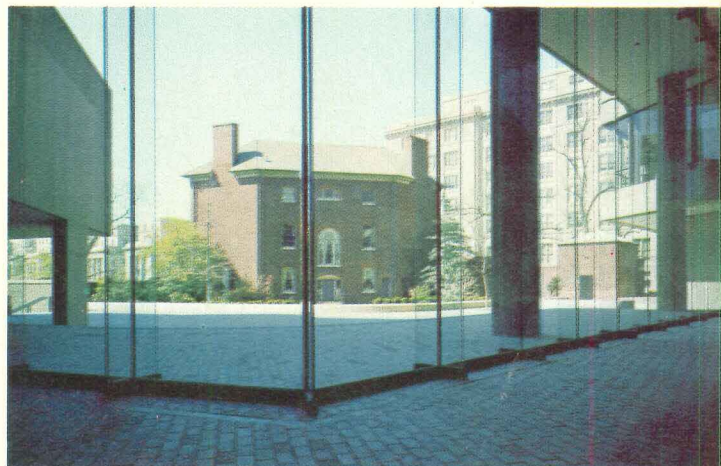
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THIS ISSUE is published in national and separate editions. Additional pages of separate edition numbered or allowed for as follows: Western Section 32-1 through 32-4. POSTMASTER: Please send form 3579 to Fulfillment Manager, ARCHITECTURAL RECORD, P.O. Box 430, Hightstown, N.J. 08520.







PPG's Total Vision System™ in the new AIA Headquarters gives you an unobstructed view of 1799.



The new AIA Headquarters Building shares the site of its historical counterpart, The Octagon House, to make a contrasting but complementing architectural statement.

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Total Vision Systems are available as a single-source construction package from PPG. Complete information on glass recommendations, installation techniques, glazing details, test results, and other data is contained in the TVS™ Data Folder. Contact your PPG Architectural Representative or write PPG Industries, Inc., Technical Services Department, One Gateway Center, Pittsburgh, Pa. 15222.

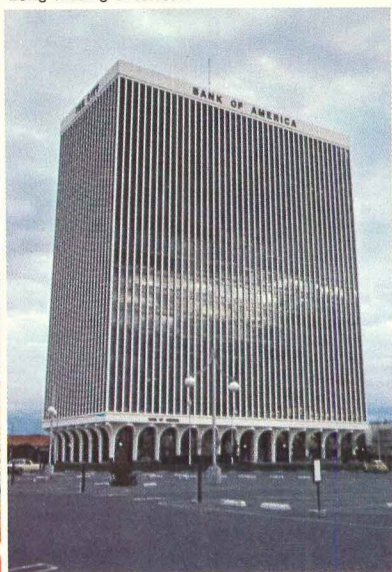
PPG: a Concern for the Future

Owner: The American Institute of Architects
Architect: The Architects Collaborative, Cambridge, Mass.



Wall street.

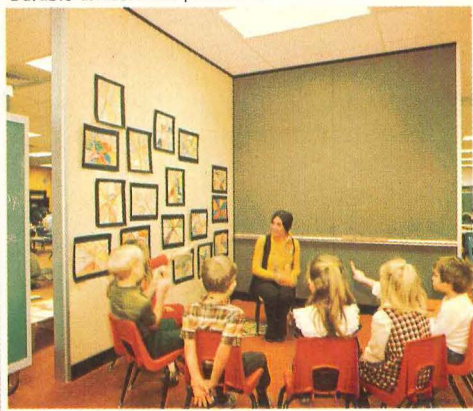
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Energy conservation: random thoughts on getting on with the job

I wonder if this editorial will have any special urgency because I'm writing it in a brand-new, multi-million dollar—and browned-out—office building. I've put off writing this editorial for a number of months because I find I have no real, no grand, no comprehensive plan to propose (like an editor should). And I sure don't know enough about the more exquisite complexities of engineering to dare any complex engineering proposals. (I suppose I should feel better about that since the President of the United States with all of his facilities to draw on doesn't seem to know what to suggest either.)

But I do know this: the energy crisis is so serious now, and getting worse at a galloping rate, that there is no excuse for doing nothing. If we can't as a nation come up with a grand plan, we ought at least to start on the little pieces. Herewith a list of little pieces worth that we can accomplish with no technological or political breakthrough, and that in my view at least are worth getting on with—some that we can accomplish as architects and engineers, and some that we can accomplish as citizens:

- We can start specifying—for housing and for non-residential buildings alike—energy-efficient equipment; and start persuading clients (including homebuilders) that they've got to accept (indeed that it will cost them less in the long run to accept) any higher first costs that are involved. That persuasion should be easier than it was even a year ago: more and more homebuilders are finding that they can't get assurances of adequate power supply for projects they have planned. In a Washington meeting, an NAHB committee was told by Robert Shepherd, Office of Energy Programs chief at the Commerce Department that he expected more and more "spot shortages," and that the builders might pay more attention to cost-benefit analysis of alternate heating and air-conditioning systems. Shepherd predicted that more and more buyers would be asking builders how much it costs to heat and cool a house as well as how much it sells for—and I'll bet he's right.

The manufacturers have the know-how to build this more efficient equipment, if anyone asks them so. As David McNitt of ITT's Environmental Products Division said at RECORD's energy-conservation Round Table (January 1972): "We look at engineers' improvements which will reduce the energy consumption of a product at a given btu, and we say 'Who is going to pay the difference . . . that we should have to put into this product to reduce its energy

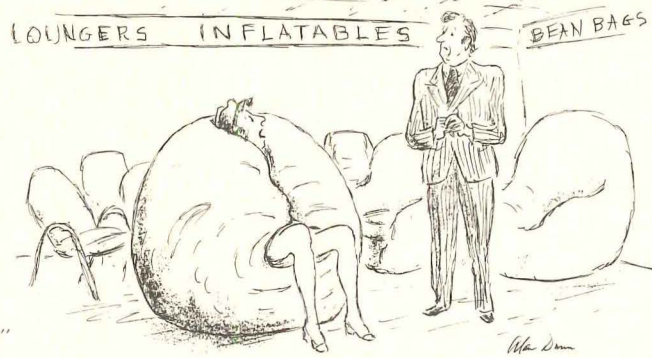
consumption?'"—and we haven't found an answer . . . We can change our priorities, but I think we would want to be satisfied as to who was willing to pay a little more in initial costs. . . ."

- \$43,560 isn't a lot of money, but it's a start for the AIA's non-profit Research Corporation's study of energy conservation in buildings and the options available to designers for reducing energy use. That study—being conducted by Lee Windheim of Leo Daly's office—is part of a larger study financed by the Ford Foundation that will, it is hoped, be an overview of policy issues affecting energy use, and supply real alternates (with recommendations) for solving the over-all problem. Further, the AIA's Task Force under Leo Daly has been working with the National Bureau of Standards to search for ways that architects can input effectively with the NBS's new Center for Building Technology. Finally, architect Dick Stein, who has involved himself deeply in conservation problems, has made a major proposal to the National Science Foundation for a study in energy conservation.

The reason for all architects and engineers to interest themselves in this kind of conservation study effort seems to me pretty clear and pressing. If we don't get on with reducing the energy requirements of buildings, we're going to get it laid on us. More and more, you hear the notion that buildings should be designed on the basis of an energy "budget"—the total amount of energy that a building will be permitted to use. That "budget" might be enforced in a number of ways—by quotas from utilities, or by really tough taxes on excess use, or by tilting rates to the heavy users. Or we might just get quotas laid on by the Feds—to whom energy conservation is not just a technical problem, but an international political problem involving The Pipeline, off-shore drilling, and our relationships with the Middle East.

- RECORD's Round Table listed a lot of steps that could be taken right now to decrease energy usage of buildings. Examples: more use of sun shades; reconsideration of exterior wall designs; reflective or heat absorbent glass; overhangs; recycling of air; a re-examination of the "all-glass" esthetic unless higher-quality glass is used; effective use (or, in summer, minimization) of the sun load on a building through more sophisticated air-handling; more effective insulation. And perhaps most important of all, we can re-examine (and use) the old rules of siting to minimize heat loading. As engineer Frank Bridgers pointed out at the Round Table:

—Drawn for ARCHITECTURAL RECORD
By Alan Dunn



"Can you show me something in Chippendale?"

"By turning a building (that is two-and-a-half times longer than it is wide, with 50 per cent glass) 90 degrees you knock 30 per cent off the cooling load. Any architect or engineer can add his own list of tools to cut energy.

As citizens (with, one assumes, more social consciousness and perhaps a better training to understand such things than many have), we can argue the case for some of the broad changes that all of us may have to accept as one way out of the energy crisis:

- We can argue that it is not exactly entirely the "environmentalists" fault that we're in this mess. Russell Train, the President's top environmental advisor, said it well in a mid-June speech: "The so-called energy crisis stems from the economic forces and complexities of the energy industry, from the difficulty in planning for our voracious energy appetite, from the need to satisfy social values other than those that depend on energy, and from a failure to address our growing energy problems earlier."

Sure, environmental concerns are holding up some power-plant construction and well (it seems to me) they should. The many utilities which are staking their (and their customers') future on nuclear power generation may have persuaded themselves about the safety and waste disposal problems of such plants, but they sure haven't persuaded even the informed and interested segment of the general public—and they must. Much simpler—but still not attacked effectively—are questions about thermal pollution: mention that question to a utility man and he says "But the costs . . ." "I just can't believe that there isn't some effective and non-costly solution to that problem: wider dispersal of the hot water? Spectacular fountains? Maybe—and as you know there's a lot of experimentation in this area—we can turn a negative into a positive and use that hot water in the new science of warm-water agriculture.

- Architects can also argue (or at least think about) the possibility that we must reconsider our "standards" of comfort and convenience—our standards of lighting level, thermal comfort conditions, elevator waiting time, and space per person in offices. That—as un-American as it sounds—may just be in the cards; witness the increasing pressure of smaller cars. Responsible observers have said that by forcing reductions (perhaps, as in Western Europe, by stiff taxes on large automobiles) in the weight, size and horsepower, we can double the miles-per-gallon of private vehicles. I do know that my MGB uses half as much gas as my wife's station wagon. We may have to get used to ideas like this—as the Europeans have—and we might as well get started on that. Who knows—if we try it, we might like it.—Walter F. Wagner Jr.

P.S. on energy conservation: the argument the utilities should use

In the midst of all the screaming and counter-screaming—"We have to build new power plants!" "Not here!"—there's a point that the utility men seldom make: It is to their financial disadvantage, as corporations, to build those new plants. William Gilfallan, sales vice president of Duquesne Light Company, said it this way in a recent speech to the EEA: "Historically in our industry, the cost of new facilities has been less than the cost of existing facilities already installed. This would due in large part to advances in technology and the economy of scale. And we must recognize the important part played by equipment manufacturers in this

accomplishment. Historically, the new lower-cost facilities meant that new load could be served at a lower cost than existing load to every customer's benefit. So we sold aggressively.

"Now the combined impact of higher cost capital and the spiralling cost of constructing new facilities has resulted in present costs being greater than embedded costs." In short, new megawatts cost more than old megawatts—and the utilities' incentive to build ain't what it used to be. And the thought that their pressure to build is now largely "professional"—that is, to meet their commitment to supply power on demand—softens my point of view.

The National Endowment takes its upgrading effort to the schools

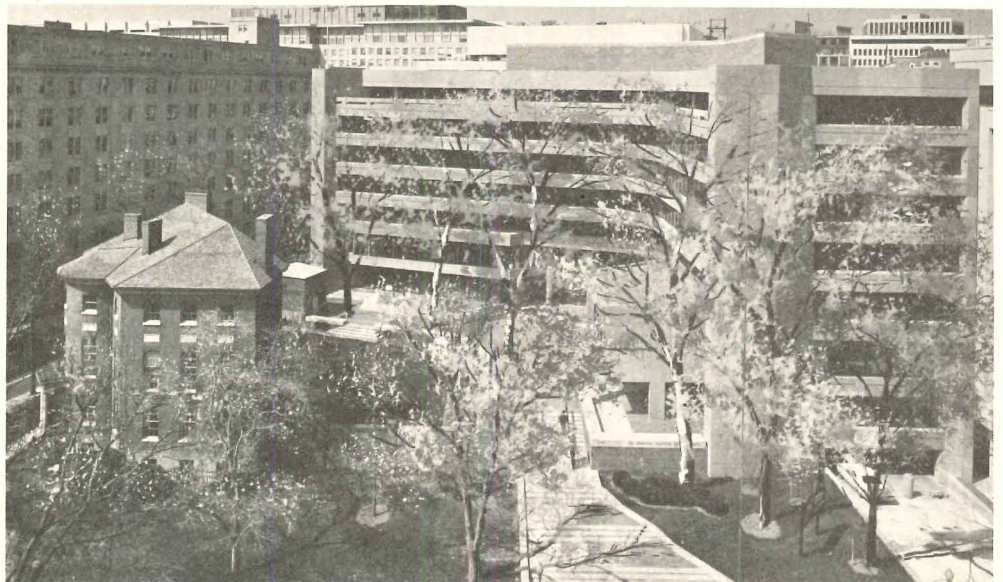
. . . and that seems to me a helping hand where a helping hand is needed. The Endowment says it will make grant funds available to some schools on a matching basis for a variety of programs that could serve to strengthen their capabilities, including curriculum development and research. Deadline for submissions is upon the schools: July 20th. The Endowment also hopes to launch a pilot program in fiscal 1974 making grants for design fees on new cultural facilities—covering both new structures and adaptation of existing buildings.

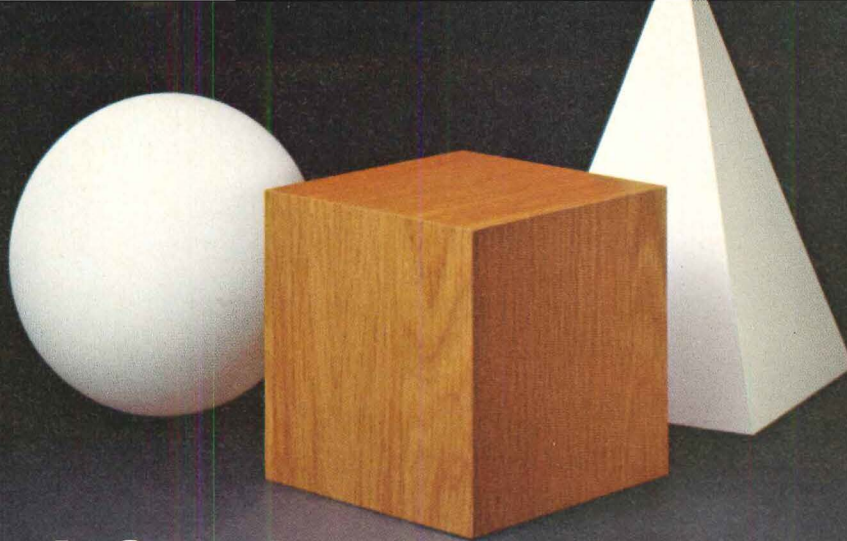
These new activities, seems to me, are an excellent and effective addition to the Endowment's excellent programs in upgrading the design of Federal architecture—such as the Design Assembly and the Task Force on Guiding Principles for Federal Architecture. Every once in a long while an organization comes along that seems to have the right people and the right kind of financing and the right motivation at the right time: and, as I've said on these pages before, the National Endowment seems to be one of those. . . .

If nature could only grow trees like George Cooper Rudolph can

Below is a rather special kind of letter to the editor. Mr. Rudolph, one of the great architectural renders, sent me a copy of the four-color photograph reproduced on pages 132 and 133 of the May issue, with this comment. "For those architects who are worried about the 'cold appearance' of the AIA Headquarters, the

enclosed impressions of 50 years hence may cheer them up. As Miss Schmertz said; the distance between the buildings is ideal." Myself, I like the AIA building very much just as it is today, but I certainly hope to see it when nature has grown the trees the way George painted them in. —W.W.





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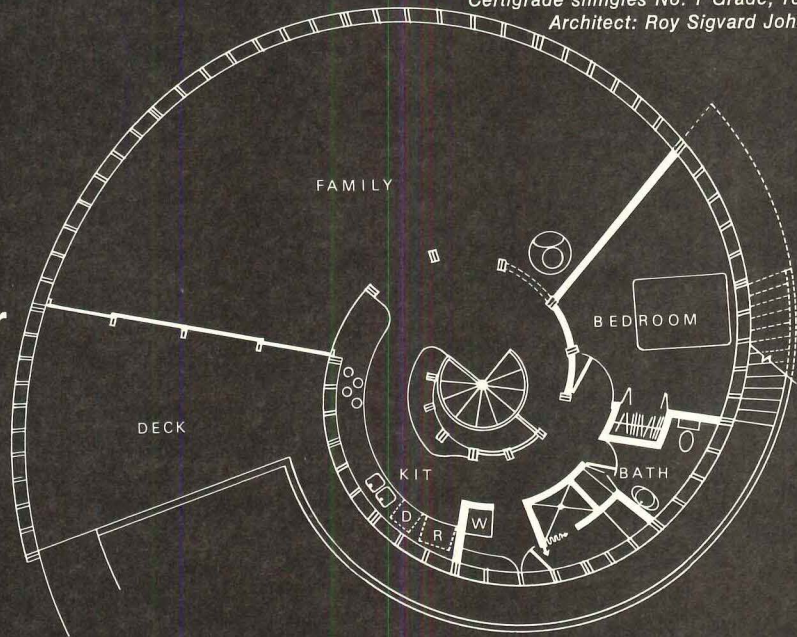


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Architect: Roy Sigvard Johnson.

**Red cedar
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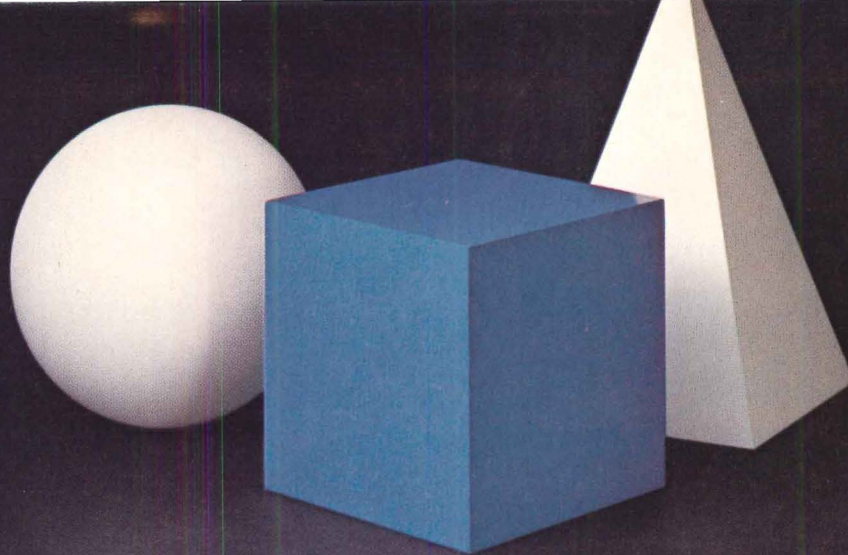


Red Cedar Shingle & Handsplit Shake Bureau

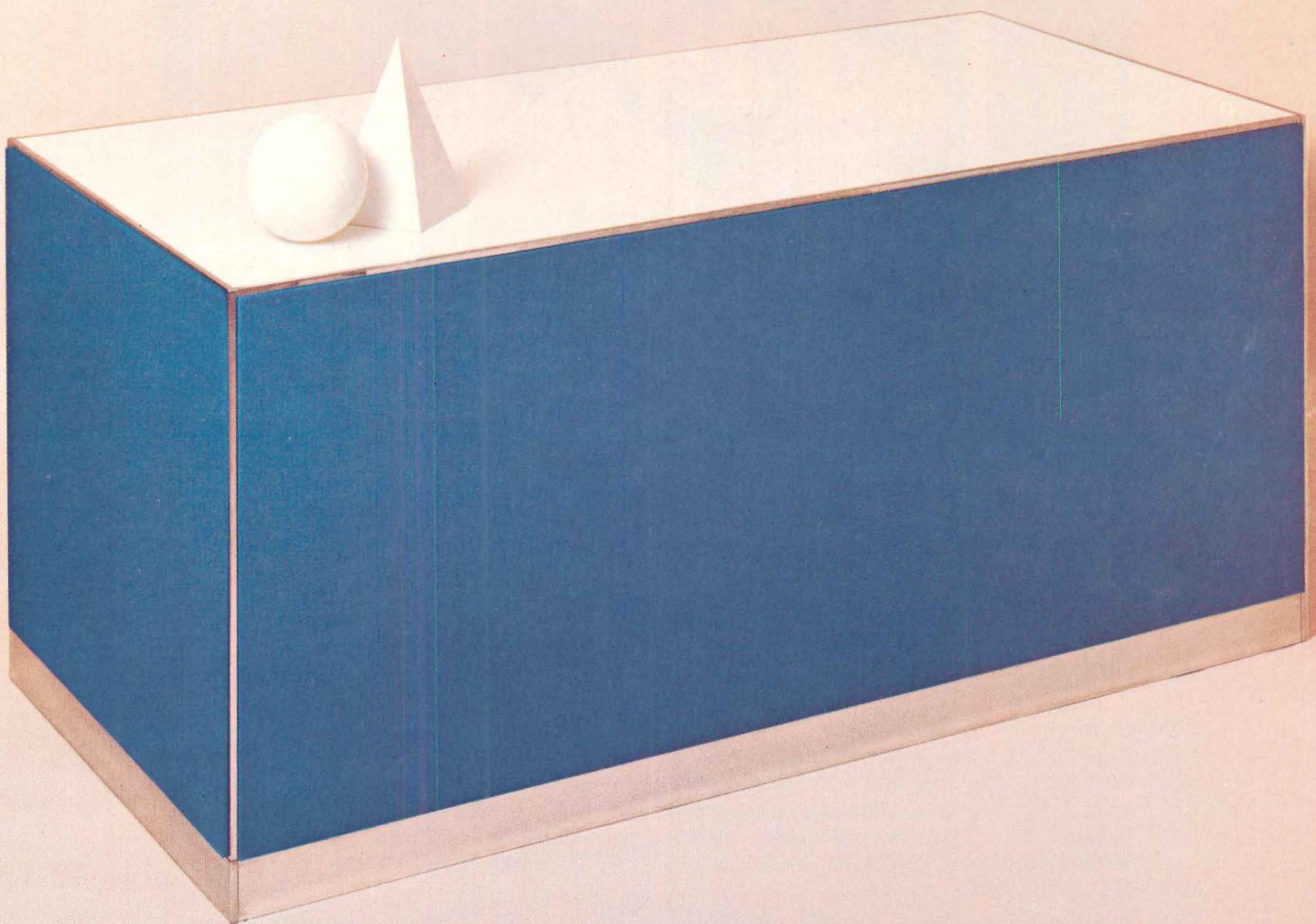
One of a series presented by members of the American Wood Council.

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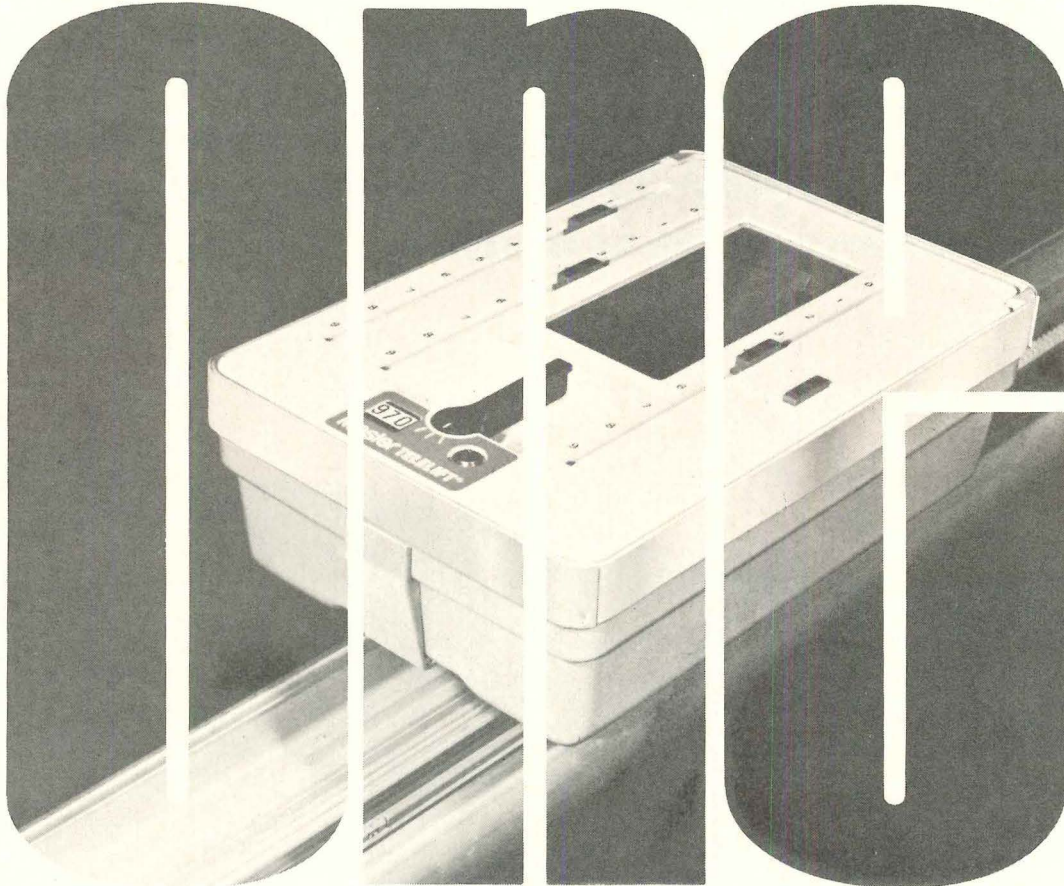
This general office desk with enameled steel finish can easily be adapted to a middle-management function by adding a wood top. Like all other models, this desk is built around an all-welded, unitized steel frame. This vibration-free structure supports the top, exterior panels, and drawer suspensions. The top and end panels are easily removed for wiring installation or alteration. Once installed, wiring is completely concealed by full-height design. And to keep the surfaces of the desk clean and smooth, we've eliminated all protruding hardware.



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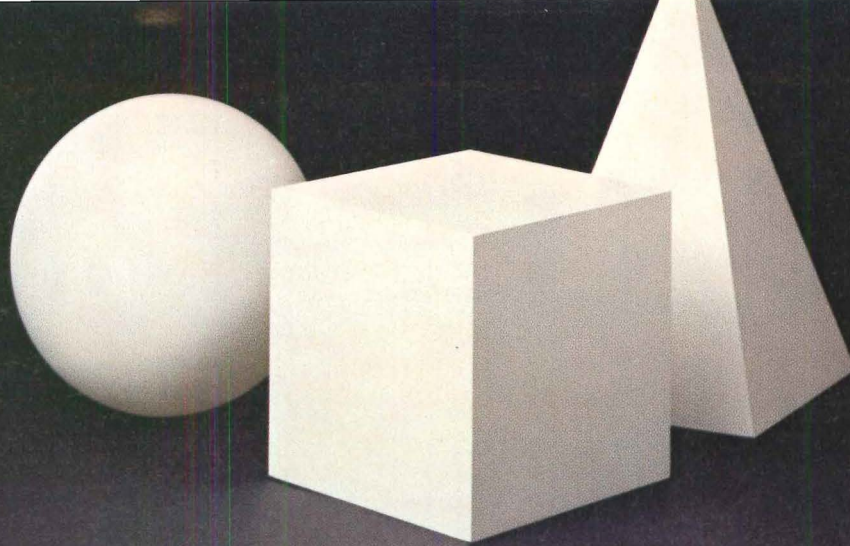
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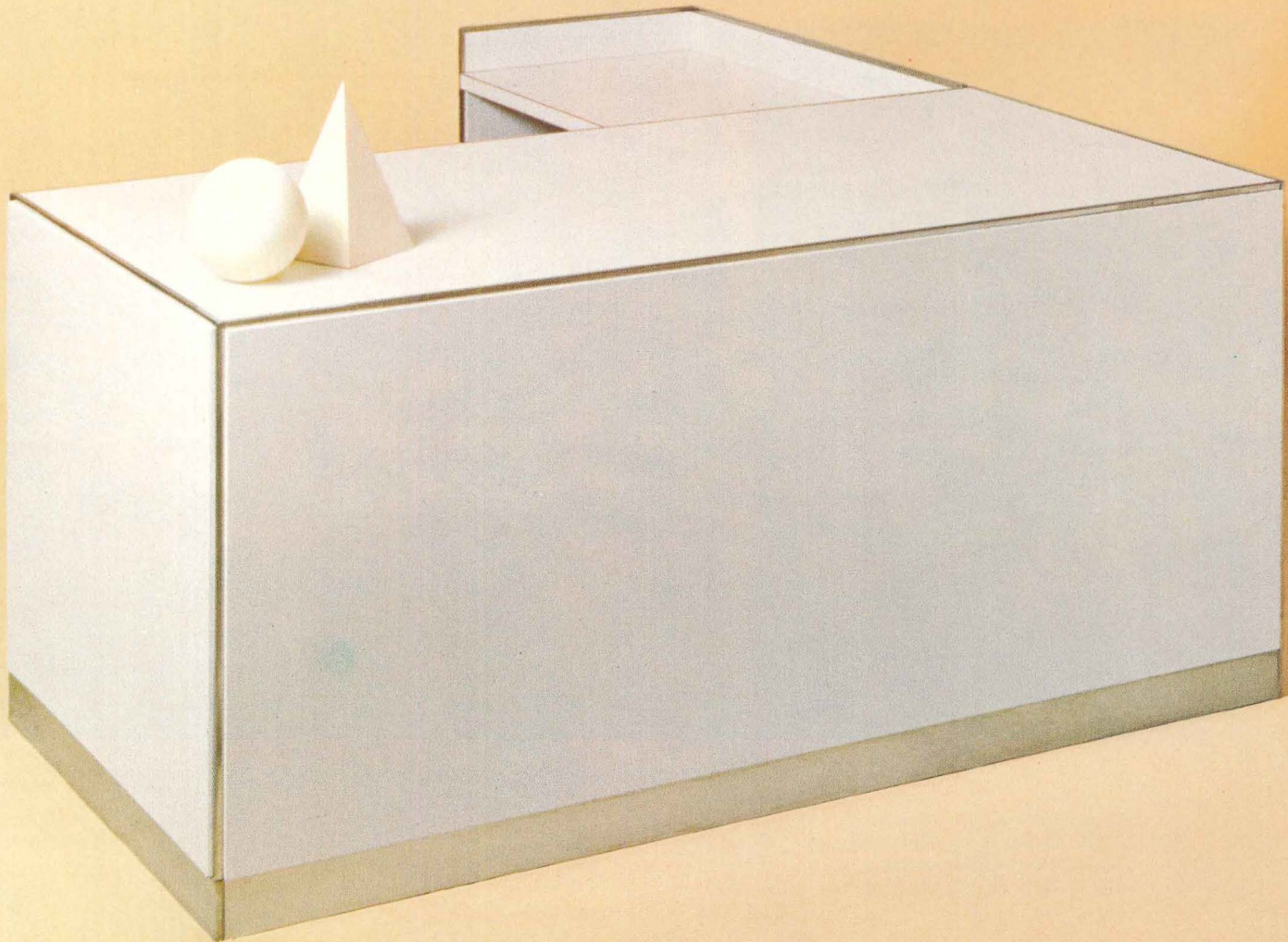
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Telelift is available in section 14.3 of the Sweet's Architectural Catalog File.

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Secretarial desk with extension. Even in this model, there's no sacrifice of attention to detail. The bold appearance, for instance, is crisply defined by polished stainless steel trim around the perimeter of the desk. Utility? Full-height design provides one-third more storage capacity than conventional desks. Elegant, practical: The Davis Allen Collection. See your GF representative. Or write to us. GF Business Equipment, Inc., Youngstown, Ohio 44501, and Toronto, Ontario, Canada.

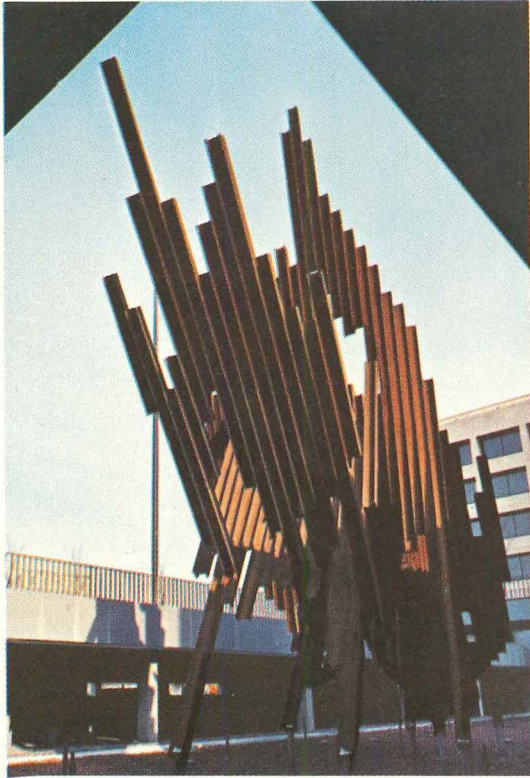


GF Business Equipment, Inc.

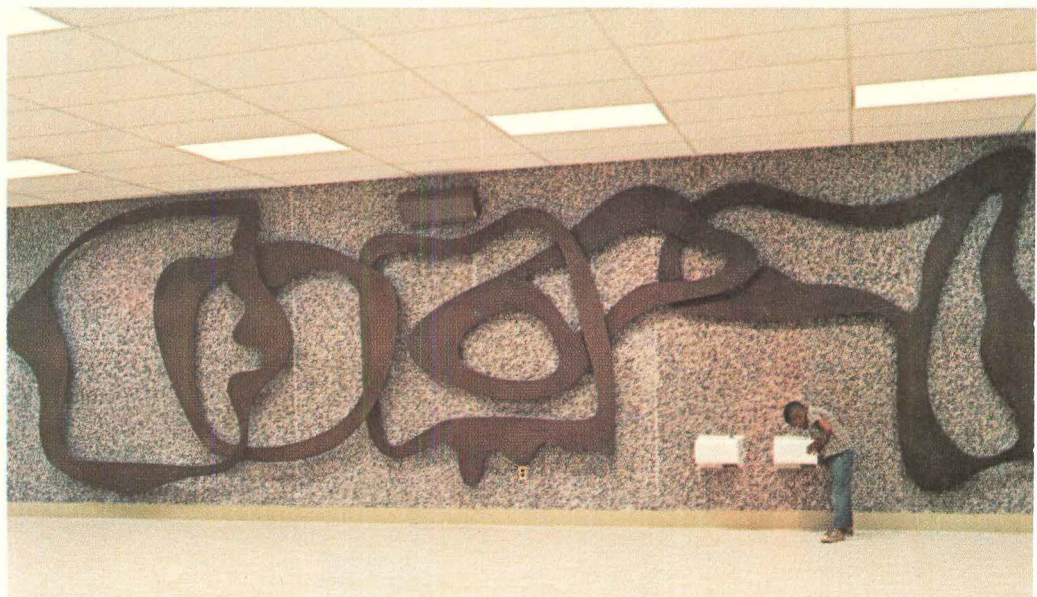
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Theme Tower.
Sculptor: Aristides Demetrios, San Francisco.
Owner: Cabot, Cabot & Forbes, South San Francisco.

Sculptor: Masao Kinoshita (of Sasaki, Dawson,
DeMay Associates), Watertown, Massachusetts.
Owner: Governmental Civic Center, State of New
York, Broome County, and City of Binghamton.



Interior, pre-weathered sculpture.
Sculptor: William Leizman, Baltimore.
Owner: City of Baltimore, Department of
Education, Rognell Heights Elementary School.



Sculptures in Weathering Steel

Sculptor: Michael Bigger, Providence.
Owner: Biological Society of Cincinnati.



Architects have long been aware of the aesthetic values of Bethlehem's Mayari R Weathering Steel. The rich, earthy beauty of this material exposed, weathered, and textured can be seen in hundreds of unpainted applications for buildings, bridges, and other structures.

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Weathering Steel can be ideal for sculpture.

But you don't have to be an artist to use it creatively in a building or a bridge. Why not express your own design in Weathering Steel?

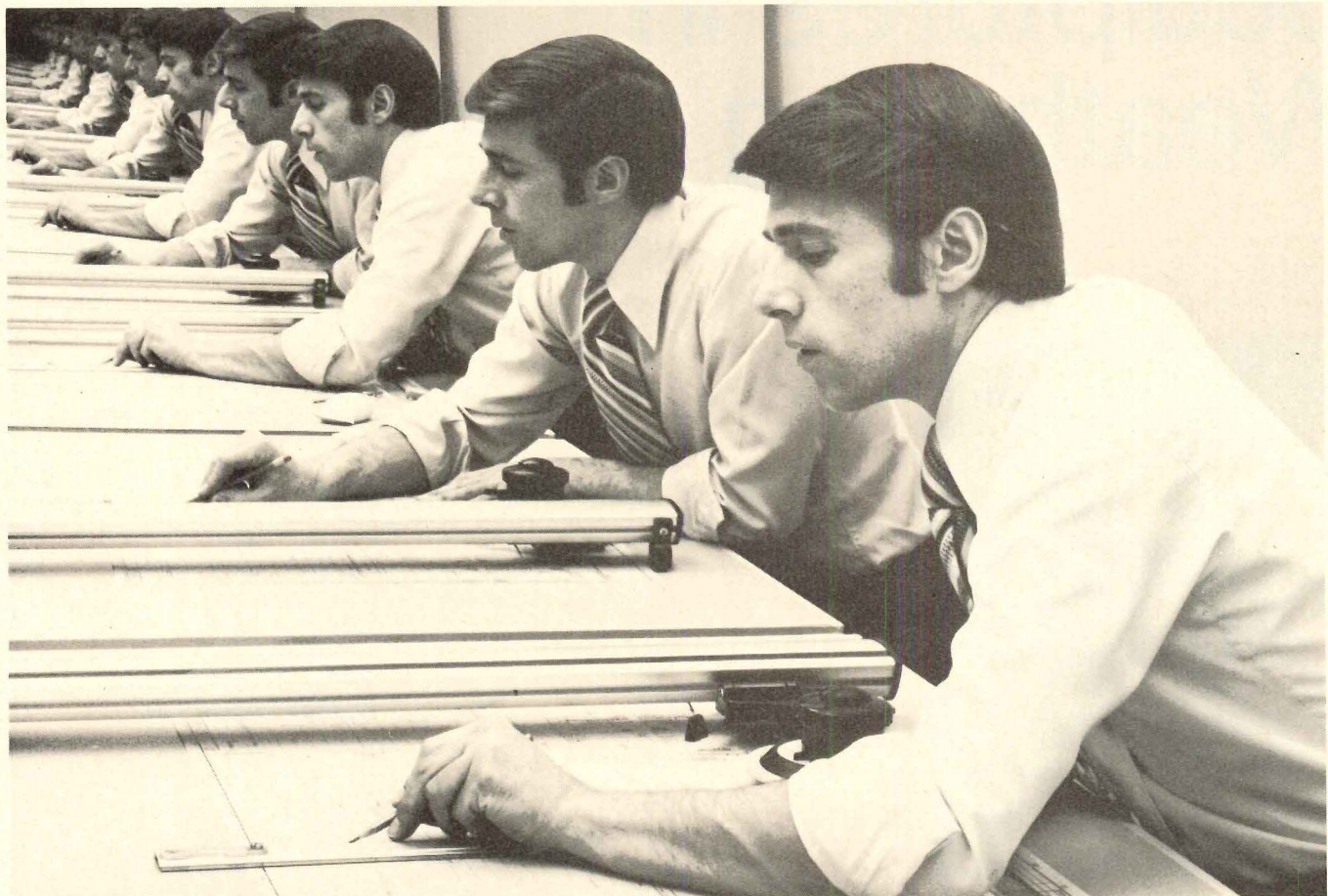
Before you try Mayari R, ask for our Booklet 2781 which contains information on the consideration of staining, fabricating, and product and quantity availability in the use of Weathering Steel. Bethlehem Steel Corporation, Bethlehem, PA 18016.



Sculptor: Larry Griffis, Jr., Buffalo.
Owner: Ashford Hollow Foundation, Buffalo.

Bethlehem 

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For additional information write: Eastman Kodak Company, Business Systems Markets Division, Dept. DP 868, Rochester, N.Y. 14650.

Kodak products for engineering data systems.



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it was fruitless.

Davis' "Cobblestone" carpet got hit with a pie, right on its pile of HERCULON® olefin fiber. But "Cobblestone" had the last laugh, when all that natural juice filling cleaned up quickly and easily.

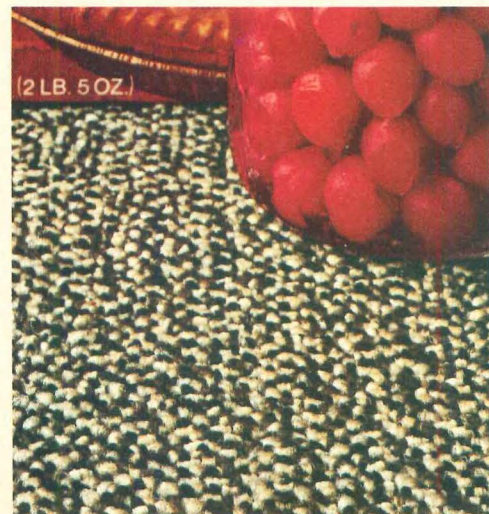
The stain resistance of HERCULON, coupled with uncommon resistance to abrasion and fading, gives you the ideal carpet for any commercial installation. "Cobblestone" . . . made

with cabled yarns of 2600 denier HERCULON. Mrs. Smith's couldn't stay sweet on it. But your clients will.

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Keene knows interior systems like nobody else because we make the products that go into them. Our interior lighting divisions make a full range of overhead fixtures, including new high-value lines of static, air handling and heat exchange troffers. Our Accesso™ ceiling system accommodates a wide variety of acoustical materials. And our movable partitions, all designed for snap-in installation on a single framing system, enable you to rearrange office space flexibly.

Keene's systems approach is catching on. Our Spec 100 system has gone into commercial buildings like the Detroit & Northern Savings & Loan. And other interior systems have proved especially useful for elementary, high school and college applications.

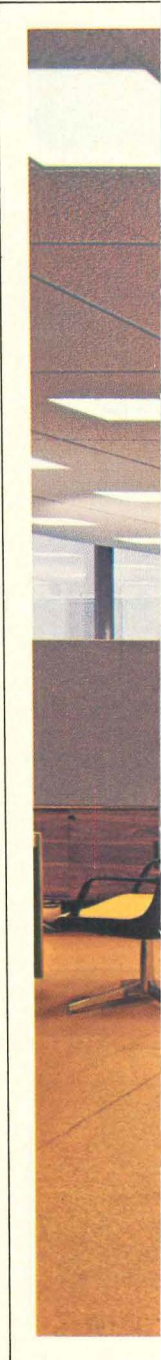
For details on interior systems, write Keene Corporation, Interior Products & Systems Division, U.S. Route #1, Princeton, N.J. 08540. For data on products, please circle Reader Service numbers.

KEENE
CORPORATION

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

We've just begun to grow.

Spec 100 system 50; movable partitions 52; custom lighting 61; ceiling tile and board 62; fluorescent fixtures 63.

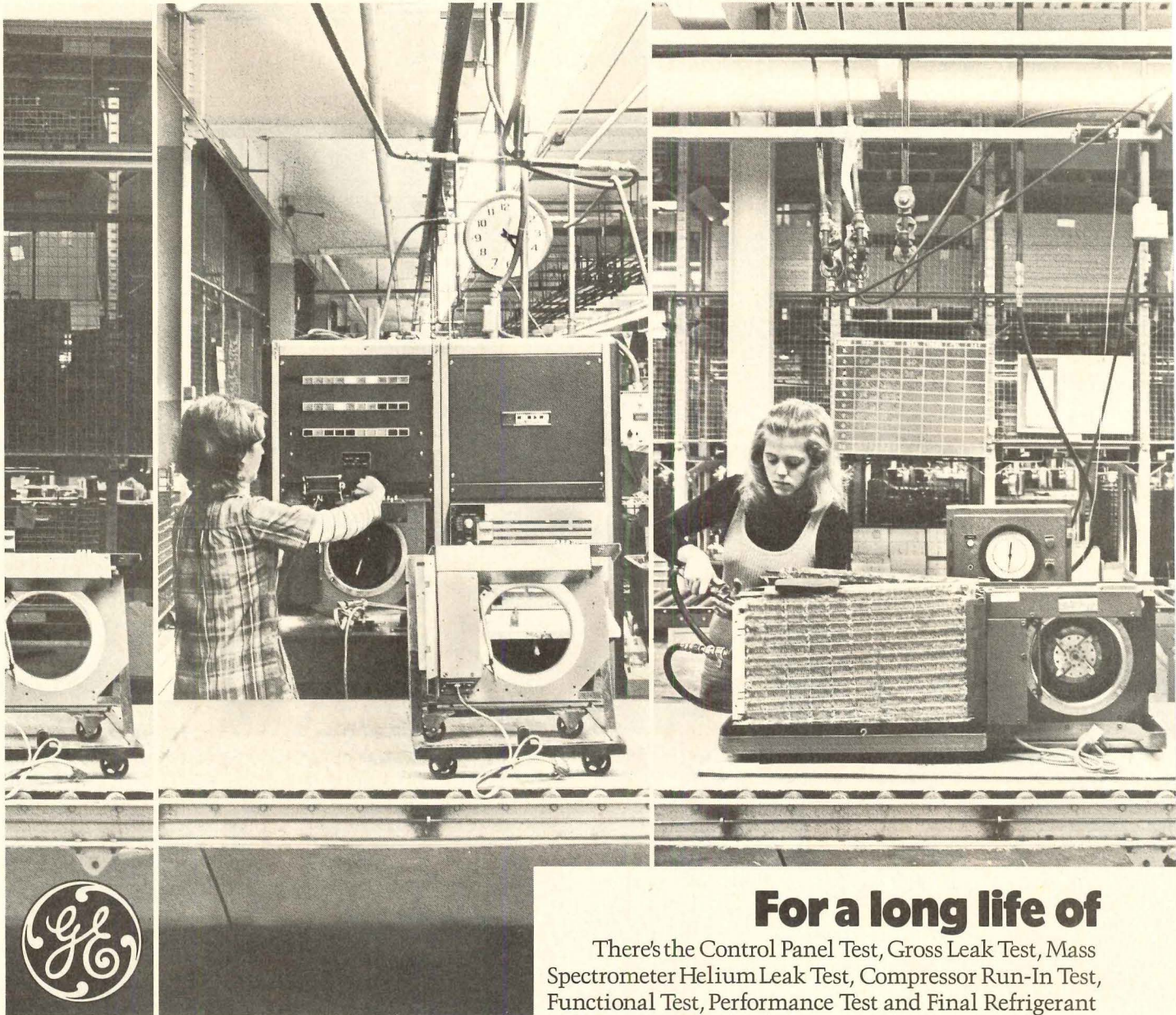


In the Keene Spec 100 system shown here, air, light and acoustical functions are interdesigned in architecturally styled, self-contained modules. (Detroit & Northern Savings & Loan Association, Hancock, Mich. Architects: Tarapata, MacMahon, Paulsen Corporation, Bloomfield Hills, Mich.)



In addition to Spec 100, Keene can provide other interior systems, as well as individual components. Our ceiling suspension systems feature easy access. Keene movable partitions are available in many panel materials and colors. And as a major lighting manufacturer, we can provide every standard commercial fixture, or even help you individualize special lighting.

General Electric Each unit has to pass 7 different tests.



For a long life of

There's the Control Panel Test, Gross Leak Test, Mass Spectrometer Helium Leak Test, Compressor Run-In Test, Functional Test, Performance Test and Final Refrigerant Leak Detector Test.

Seven tests in all that every single Zoneline Unit has to go through. A quality control computer monitors the test equipment results and immediately reports out-of-limit conditions.

Then additional tests are run on representative units from each batch, for example:

Monitor Room Tests including: 5 and 10 weeks of evaluations on load capacities, the Extra Functional Test that runs 24 hours on and 24 hours off until efficiency becomes impaired, and the daily Customer Audit Test.

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heavy duty service.

ity Test, Outdoor and Indoor Acoustical Tests, and Temperature-and-Humidity Tests.

It takes top quality air conditioners to pass these tests at our new facility in Columbia, Maryland and the Zonline packaged terminal air conditioners that do are top quality air conditioners.

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JAMES A. KNOWLES
James A. Knowles & Associates, Inc.
Consulting Engineers



Avco Financial Center, Newport Beach, California • Owner: Balboa Insurance Company • Architects: Welton Becket and Associates • Consulting Mechanical Engineers: James A. Knowles & Associates, Inc., Los Angeles • Glazing Contractor: Golden State Glass Company, Los Angeles

"BUT WINNING THAT ENERGY CONSERVATION AWARD WAS A VERY SATISFYING SURPRISE!"

RAY BORING
Building Manager
Avco Financial Center



The Avco Financial Tower at Newport Beach soars into the California skies in everchanging beauty. Many things about the building are gratifyingly predictable, however.

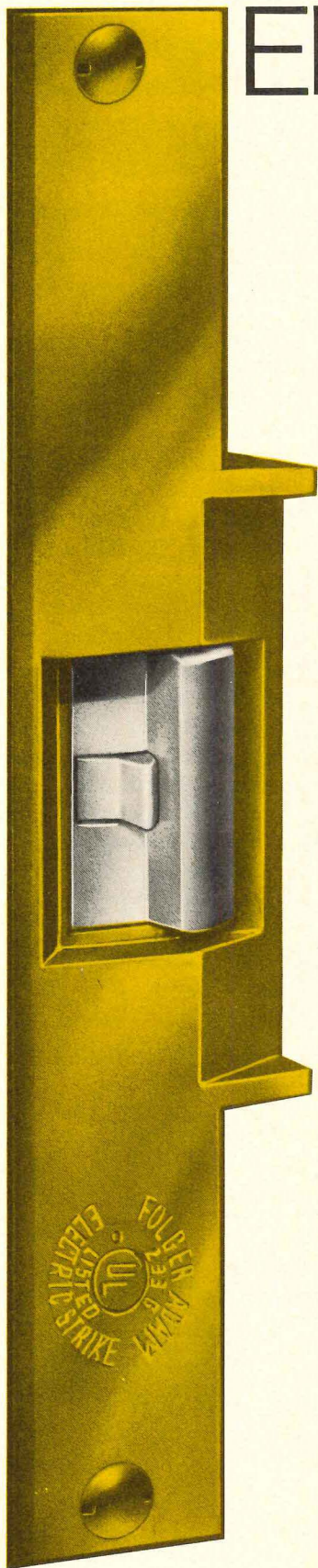
The engineering consultants—James A. Knowles & Associates—predicted that the use of Thermopane® insulating units made with Vari-Tran® coated glass from LOF would save Avco almost \$20,000 annually in owning and operating costs when compared to conventional bronze plate glass. Additionally, LOF reflective glass enabled the owner to install smaller fan-coil machinery on the upper 15 floors, thereby gaining more than 6,000 square feet of rental area for the owner.

Now, the Avco Financial Tower has won the 1972 Utilization of Energy Award in Southern California, a tribute to sound design and selection of materials that is made more meaningful by the energy crisis that afflicts many parts of the country.

An LOF architectural representative can't guarantee that yours will be an award winning building, but he can show you how building owners can conserve on operating costs. For the entire story, send for our brochure, "Reach for a Rainbow." Libbey-Owens-Ford Company, Dept. R-773, Toledo, Ohio 43695.

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

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

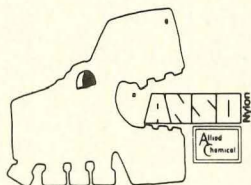
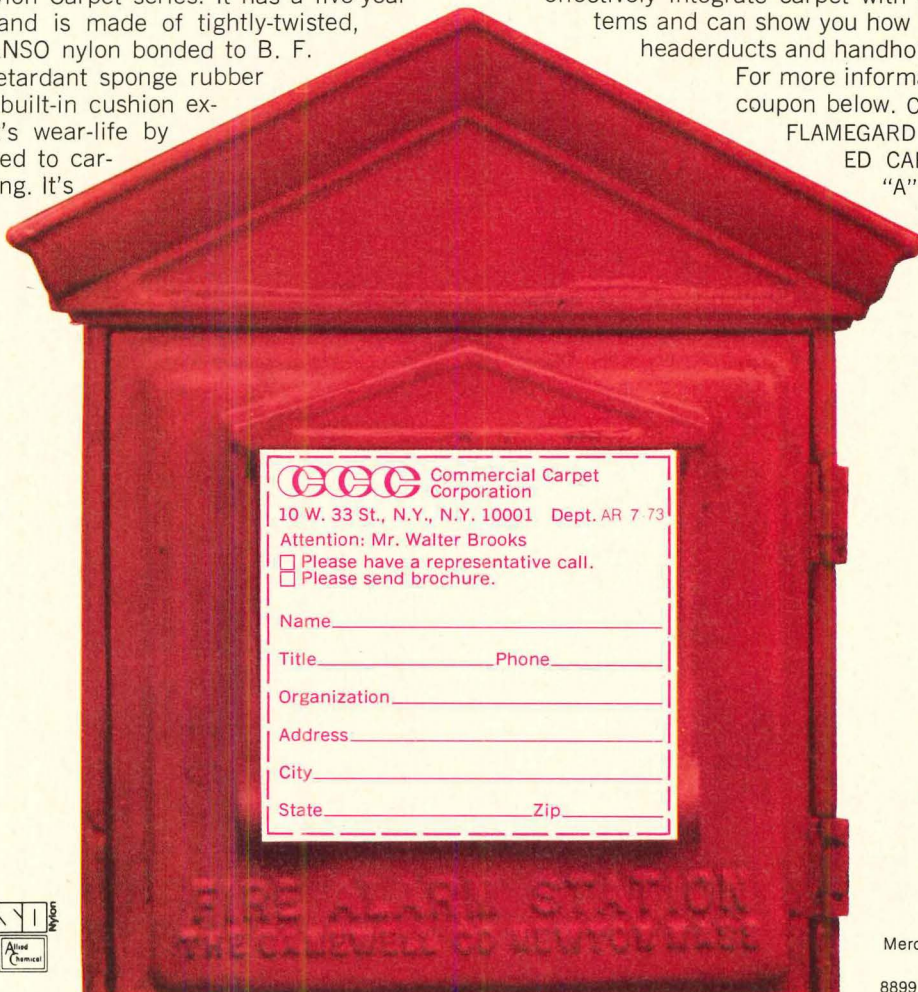
Since fire safety is a major concern to us, we've just introduced a fire-retardant, spongebonded carpet with a Class "A" flamespread rating. We call it NATURALWEAVE FLAMEGARD and it meets *all* governmental flamespread standards.

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

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

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Built 75 years ago at a total cost of \$5,000, Wethersfield, Connecticut's Grange Hall is still a focal point of community action in this historic Connecticut River town. And the mortise lock is the same Sargent hardware specified in the building's original plans.

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Durasan: environment.

Bright. Cheerful. Practical.

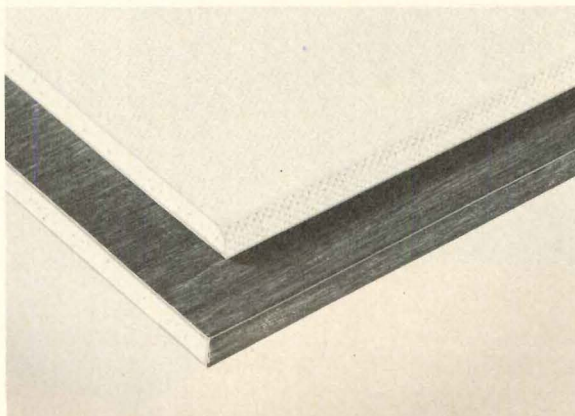
Durasan . . . the vinyl-surfaced gypsum wallboard has style and beauty . . . yet is practical all the way. Practical because you save when you specify. Your client saves in future maintenance.

First, you save on installation. Because these 4'-wide, ceiling height panels can be nailed to studs, laminated to existing surfaces, or inserted in Gold Bond Contempo-Wall® demountable partitions. So you can install Durasan in new construction. Use Durasan for remodeling. Or consider Durasan for 'landscaping partitions' or movable wall designs.

Second, you save on finishing. Once Durasan is up, it's finished. Each gypsum panel is surfaced with one of many textures, patterns, or colors of vinyl film . . . factory laminated to insure good bond.

Finally, Durasan offers some savings any client will appreciate. Its tough vinyl surface is stain resistant, easy to wipe clean. And it stays clean and new looking for years. The Durasan colors and textures won't "date" a building either.

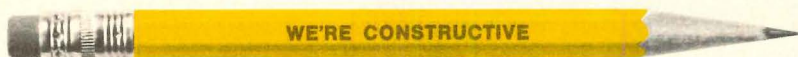
Durasan is just one of many constructive ideas for a better environment. Talk to your Gold Bond man. Or write National Gypsum Company, Gold Bond Building Products Division, Dept. AR-73G Buffalo, N. Y. 14225.



Durasan panels save money. With its bonded vinyl surface, a Durasan wall costs less installed than building a wall and then applying a comparable vinyl wall covering.



This is how fast Durasan goes up. Without interrupting normal work, workers can install Durasan panels. And if Durasan makes remodeling that easy, think how easy it makes new construction.



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Anso[®] nylon's five year guarantee. It means the McCarran Airport carpet won't wear out its welcome.

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McCarran Airport, 30,000 yards, Jupiter Flamegard, Commercial Carpet Corporation.



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The guarantee with teeth.**

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The report of the National Commission on Fire Prevention and Control criticizes professionals. In the recently released findings, there is a recommendation that architectural and engineering schools train professionals in fire safety design or face loss of Federal money. Other topics mentioned are discussed on page 34.

There will and must be greater citizen involvement in land use, according to a new report prepared by the Laurance S. Rockefeller Task Force as a citizens' policy guide to urban growth. The task force found that an emerging American attitude questions traditional assumptions about the desirability of urban development. Details on page 34.

July 20 is the deadline for architectural schools to submit applications for National Endowment grants, which will be available on a matching basis for curriculum development and research. Applications and details on the program can be requested from: Director, Architecture and Environmental Arts Program, National Endowment for the Arts, Washington, D.C. 20506.

The National Endowment for the Arts plans to make grants for design fees on cultural facilities. This program could provide matching funds to cover the first one-fourth of the architect's or engineer's fee on both new structures and adaptation of existing ones. Further information can be obtained as in the item above.

George Anselevicius has been named Chairman, Architecture Department, Harvard Graduate School of Design, effective July 1. He replaces Jerzy Soltan who will continue as Nelson Robinson Jr. professor of Architecture and Urban Design. Mr. Anselevicius was formerly dean of the Architecture School at Washington University.

President Nixon has signed a bill extending for one year the Hill-Burton hospital construction program. The bill authorizes \$197.2 million for construction in fiscal 1974.

Serge Chermayeff received the Gold Medal of the Royal Architectural Institute of Canada, at the Institute's Annual Assembly in Montreal, May 29 through June 2. The Gold Medal, the organization's highest distinction presented to an individual, was presented to Mr. Chermayeff, professor emeritus, Yale University, in recognition of a lifetime of distinguished contribution to the profession, to architecture and to the arts.

Honorary Fellowship was conferred on S. Scott Ferebee, AIA President, by the Royal Architectural Institute of Canada at the Annual Assembly. Alexander J. Gordon, president of RAIC, also received an honorary Fellowship.

The cost of home ownership is up by 91.7 per cent since 1952, according to the Bureau of Labor Statistics. This increase is outdistanced only by the rise in services costs. Reasons are the increased cost of materials, scarce land and the increase in demand for homes.

The Department of Defense has requested \$3 billion for construction spending in 1974. Congress is studying the request which includes \$116 million for pollution abatement facilities and \$351.9 million for new housing.

Frank Lloyd Wright and the Francis W. Little House, an exhibition at New York's Metropolitan Museum of Art, will run through September 9. Exhibition of furniture, leaded glass, drawings, plans and photographs of the house, built between 1912 and 1914, reveal the complex relationship between the architect and the client. The living room, considered one of Wright's finest domestic interiors, will be installed in the Museum's new American Museum, scheduled to open in 1976.

Professionals are invited to submit papers on any subject relating to concrete by November 1, 1973 for an international conference to be held in New York City, in May and June, 1974. Organized by the Prestressed Concrete Institute, the conference will focus on construction, product development, design and research pertaining to concrete. Papers in English, French, German and Russian should be sent to: Secretary General, Fédération Internationale de la Précontrainte, Terminal House, Grosvenor Gardens, London SW1, England.

The New York State Council on Architecture has a workbook to build public awareness of architecture. Part of a program jointly sponsored with the National Endowment for the Arts, the *Community Workbook* includes regular input to help raise the public's interest in the man-made environment. For more information, write the New York Council on Architecture, 810 Seventh Avenue, New York, New York 10019.

Revenue sharing funds are being used by cities for building, rather than for services, according to a report released last month at the Mayors' Conference in San Francisco. It was hoped by the Administration that the money would be used to cut local property taxes, but the majority of the cities report using this income for road and sewer improvement, and other public building programs.

Thirty-seven grants awarded to study city edges

Thirty-seven grants totaling over \$1.1 million to municipalities, planning and environmental groups in 34 states, Puerto Rico and the District of Columbia for "city edges" projects have been announced by Nancy Hanks, chairman of the National Endowment for the Arts.

"City Edges" is the first phase of a long-range program, under the Architecture-Environmental Arts Program of the Endowment, created to highlight problems of urban design and planning and assist in their solution.

Judging by the more than 350 grant applications submitted, a city edge can be as obvious as a riverfront or as elusive as a line drawn on a zoning map. The range of identifiable edges for which research and development study funds were requested includes waterfronts, highways and railroads, inner city borderline areas, palisades, and historic landmark districts.

To evaluate the program's 350 applications, the National Endowment appointed a review panel of five professionals in architecture and related fields. They are: Rodney E. Engelen, urban planner; O'Neil Ford, architect; Hugh Hardy, architect; Ralph R. Rapson, dean of the School of Architecture at the University of Minnesota; and William Houseman, editor of *Environment Monthly*.

A sampling of the projects to receive grants includes: *Cambridge, Massachusetts*: With this grant, architect-planner Allen Gerstenberger will study a "time edge"—the problems created by darkness in the city, particularly for pedestrians. The goal will be to compile criteria for designing safe and functional pedestrian paths, for both daylight and afterdark hours. In his application, Gerstenberger noted that cities are designed essentially for daytime use and thus safety and visibility

limitations result in "an extremely inefficient system." *Chapel Hill, North Carolina*: To be administered by the Center for Urban and Regional Studies at the University of North Carolina, this project will investigate the various city edges involving social interactions and neighborhood security as they relate to low- and middle-income housing programs. The objectives are intended to have national application.

Cincinnati, Ohio: Cincinnati's outstanding physical feature—its steep hillsides separating contrasting sections of town—will be studied by the Cincinnati Institute for the purpose of establishing a "dependable mechanism" in the form of a "trust" to protect and enhance the hillside edges. Some of the specific responsibilities of the trust will be to identify the most critical areas, to foster public discussion and understanding, and to retain legal counsel for setting up interim protective measures.

San Francisco, California: The objective of this grant, to be carried out by the Sierra Club Foundation will be to produce a study which, when executed might "transform obsolete Port of San Francisco piers into a place for extensive public use and enjoyment . . . an amusement park, public gathering space, and performing arts area comparable in purpose and quality to Copenhagen's Tivoli Gardens."

New York, New York: This funding will permit the study of a man-made city edge that is not yet in existence—New York's proposed Second Avenue subway line (below). A consulting team of architects, planners and advisors will be retained by the Municipal Art Society of New York to develop a master plan to help govern the expected growth along the new line from 14th to 96th Streets in Manhattan. Construction has started.

New York, New York: One of the least appreciated urban spaces—rooftops—will be studied by the School of Art and Architecture at Cooper Union. Several aims will be pursued by the investigating team. Among them: the use of rooftops for public and semi-public cultural and recreational facilities, legal regulations, low-cost design, construction and equipment solutions.



[In January of this year, the Mead Library of Ideas in New York City staged a highly entertaining and not really so tongue-in-cheek exhibit called "City Farming," the point being that there are numerous ways now-wasted city spaces can provide food, recreation and even profit. The show was developed by the Cooper Union School of Art and Architecture, based on ideas and drawings of student, Douglas W. Kelley. The drawing above is Mr. Kelley's, a bit of wit that suggests raising bees on the rooftops of Gotham. Ed.]

Builders group charges trade union coercion

The National Labor Relations Board is pondering one of the more significant injunctive cases of its history. The Associated Builders and Contractors, Inc., a 5000-member organization of "merit" contractors, mainly open-shop, filed the procedure against the 17 basic building trades of the AFL-CIO charging a national conspiracy of violence and coercion.

The move stemmed from a series of destructive demonstrations that have plagued member projects recently.

Associated Builders and Contractors president John P. Trimmer said that his organization was backing its charges with some 3000 pages of evidence purporting to show that a national conspiracy exists to drive the open-shop contractor and his workers out of the construction business. The NLRB is asked to grant a nationwide cease and desist order against all the unions named and require them to pay the wages and benefits lost during the alleged illegal activities.

FTC alleges plastics industry misconduct

The Federal Trade Commission has moved against the plastics industry in its long-awaited action regarding safety of plastics use, particularly in construction.

It said it would name the Society of the Plastics Industry and a number of producers in a complaint alleging deceptive practices and inadequate test methods. If defendants will not agree to a consent order, it will seek action in court, the FTC indicated. The Commission's investigations have centered on polyurethane, polystyrene and cellular plastics.

The SPI, obviously caught by surprise in the FTC's sudden action, issued a statement expressing shock at being named in the proposed complaint. It claimed it had been cooperative with the Commission in the latter's prolonged investigation of combustibility of plastics in the built environment and had taken major steps to launch new research and in other ways encourage safe use of plastics.

The effect of the FTC action, it is believed, will be to limit the use of plastic foam insulation which produces highly poisonous fumes when heated. Many such installations have been made in high-rise buildings and the latest attention was focused on the subject in reports from Skylab that high temperatures there had caused such toxic gases to accumulate.

The SPI, in its response to the FTC announcement, said it was especially shocked since the standards and test methods FTC now questions were developed through recognized standards-making organizations under court approved procedures. These ensure participation, not only by the various product manufacturers, it said, but by consumer representatives and government officials as well. The Society indicated it would be willing to enter a consent settlement.

US Post Office resumes \$5 billion program

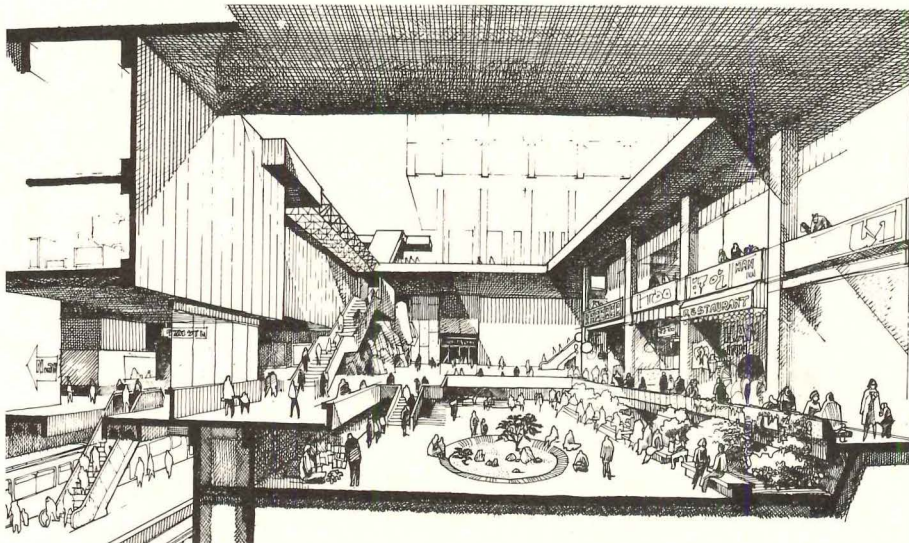
After months of delay in the post office building program the U. S. Postal Service has finally decided upon a course of action looking toward quick resumption of its \$5 billion building program.

The activity was virtually thrown into limbo the first of this year when the White House ordered USPS to take back responsibility for its construction from the U. S. Army Corps of Engineers. At that time, the Service's facilities officials said they would seek a management alternative, either through in-house operations or private construction managers.

At a recent conference in San Francisco, the decision was reached to hire a single contractor to manage construction projects. This will serve as a stop-gap device until the USPS can build up its own forces in the next few years to handle the gigantic building effort, but some observers feel it will require more time to get the Department's more than 200 people on staff and operating smoothly.

Robert E. Isaacs, assistant postmaster general for engineering and logistics expects to advertise within 30 days for a single contractor to manage the major projects of new construction and modernization. Such a manager will 1) provide management support to both headquarters and the regions in conducting the day-to-day business of construction and architect-engineer service, and 2) assist postal management in developing a complete in-house capability to assume the total program within the USPS over the next two or three years.

A/E's and contractors interested in this program will be looking largely to regional officials. Procurement responsibility will be delegated to the regions; headquarters has left them considerable flexibility in administering details of the program. Final authority, of course, rests in Washington with Isaacs.



Senate votes new life for National Endowment

The Senate has voted a new three-year life for the National Foundation on the Arts and the Humanities with new spending authorities of \$160 million in fiscal 1974, \$280 million in 1975 and \$400 million in 1976.

The action followed two days of off- and on-floor debate over the size of the funds, with Senator William Proxmire (D-Wis.) trying hard to trim back the proposed increases. The committee bill finally prevailed, however, and now it is up to the House to approve or modify the Senate version. Appropriations for the programs are in different legislation.

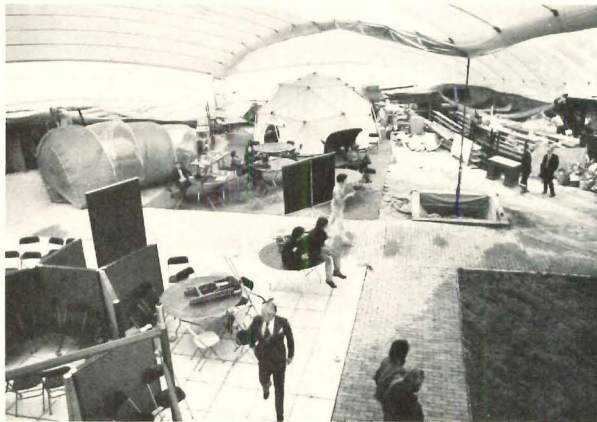
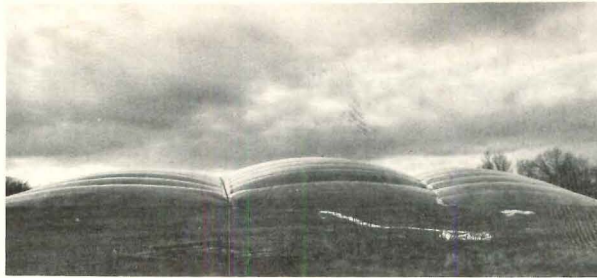
Senator Proxmire, in trying to beat the strong show of floor support for the committee bill, cited a Foundation grant of \$33,263 to the New York State Council on Architecture for a program to develop public awareness of architecture and the quality of the manmade environment. (See item, Briefs section.) "That may or may not be a useful project," he commented, "but those who can best determine that question would be the officials in the Department of Housing and Urban Development." [Gulp. Ed.]

The debate revealed that individuals donate \$2.5 billion to arts and humanities causes, about 10 times the amount provided in the authorizing bill.

The committee report on the bill cited new directions taken by the National Endowment for the Arts, whose authorizations have grown from \$7.5 million in 1965 to \$40 million in the current year. Mentioned was the program formerly titled Architecture, Planning and Design which now is called Architecture + Environmental Arts (see item on City Edges). Also pointed out by the committee was the Endowment's close involvement with activities of the nation's Bicentennial Celebration now being planned.

The new bill makes more specific the authority for making grants for renovation and construction. In its reports, the committee endorsed the Arts Endowment provision that all renovation grants be awarded on the basis of at least three dollars from non-Federal sources for every one dollar from Federal coffers. Language in the measure provides that renovation exceeding \$250,000 in cost must be approved by two-thirds of those from the National Council on the Arts attending the meeting at which the project is discussed.

(See other items on Endowment activities in Briefs section, preceding page.)



Air support structure scene of two-day seminar

The state of the art for air structures, particularly regarding their use for housing educational activities, was reviewed in detail at the recent two-day conference sponsored by the Building Research Institute and Educational Facilities Laboratories at Baltimore and Columbia, Maryland.

Site of some of the sessions was the 32,400 square foot "bubble" built by architectural students for Antioch College at Columbia. This \$178,000 structure, maintained at an estimated cost of \$17,500 per year, was the subject of a presentation at the May 23 meeting.

The structure can be deflated and moved. Its function is described as serving "as temporary base" for students working in independent study programs in the new town of Columbia. It has required about three years to design and build and consists of 36 pieces of vinyl skin welded into six sheets which were assembled by the Goodyear technique over four centrally-spaced tie-downs that are anchored in dry wells to receive rain runoff.

The program presented case studies on air structures work in Canada and some European locations in addition to U.S. projects.

Keynote speaker Cedric Price, a practicing architect in England and a pioneer in air structures development said that in his country these buildings were still in the "make do and amend" stage of development. Air structures can, if viewed in a certain light, distort time and space, he said, to their great advantage. At the same time, he said this type of construction should never be considered merely as cheap substitute for

enclosing space in the conventional way.

In a general introduction to the conference, Harold Gores, president of EFL, New York, expressed a view that "if anything pulls down this new venture, it will be the overextending of the technology." He advised the industry not to pursue encapsulation to the ultimate, not to "cover the earth" until smaller sections are proved out in practice. He hoped the private sector can be encouraged to participate with risk capital and help develop this new art form.

It was agreed that the state of the art has advanced markedly since a similar conference was held in Chicago a couple of years ago. Robert M. Engelbrecht, AIA Chicago, was chairman for both the Chicago and Columbia and Baltimore conferences.

Dr. Frei Otto, director of the Institute for Lightweight Structures, Stuttgart, West Germany, traced the development of lightweight units which he referred to as biological structures, deriving this description from his photography of cellular structures. He cautioned that all envelopes should be considered as experimental, not permanent structures and he described large envelope enclosures as "protective clouds over the landscape."

Shown left to right: Dr. Frei Otto; Walter Bird, president, Birdair Structures, Harold Gores.



Laurance S. Rockefeller land-use report issued

Taking full advantage of what it considers a "new mood" in America—a new awareness of land development problems—the Laurance S. Rockefeller Task Force has issued its preliminary report on the use of land.

This 260-page book, to be followed soon by a more complete treatise on the subject, is viewed as a citizens' policy guide to urban growth. With that as a subtitle it reflects the group's conviction that there must and will be greater citizen involvement with land development processes.

The task force found that the new mood in American attitudes toward emerging questions traditional assumptions about the desirability of urban growth.

"The motivation is not primarily economic," the report states. "It appears to be a part of a rising emphasis on human values, on the preservation of natural and cultural characteristics which make for a humanly satisfying living environment."

Among the recommendations, to appear in detail in the upcoming final report, is one calling for citizen suits appealing local regulatory decisions. Citizen suits to enforce ordinance requirements also should be permitted, it is stated. And the Task Force endorses the move in Congress toward a new national land use policy law authorizing Federal funding for states to assert control over land use of state or regional impact and concern.

Its study led to endorsement of the new communities, or growth unit concept. On this point one recommendation will urge governments to use all ac-

ceptable means to channel as much development as possible into new communities or, to the extent that these might not be achievable, into growth units as urged by the American Institute of Architects.

More specifically, the recommendations call for the Federal government to encourage open space protection by formulating, mapping, and publicizing a set of advisory national open space classifications.

A summary of the report lists among 63 recommendations one which would establish "a convenient, nondiscretionary mechanism" to permit the mass of small development projects to proceed without elaborate review. This was compared to the existing non-discretionary building permit.

What many industry interests are certain to dislike among the findings is that which would apply the impact statement approach to all major and unusual developments.

Many developers, and in some instances the Federal government itself, have been harassed by the environmental impact statement requirements, charging projects have been slowed and their costs increased by this relatively new mandate.

Implementation of the Rockefeller Task Force report, developed only since last September, could have a profound impact on state and local land-use controls, property rights and values, public agency review, the relations between private development and public facilities, tax policies and the recreation-land, second-home market.

Fire control measures introduced in Congress

Identical bills seeking to implement the many recommendations contained in the report of the National Commission on Fire Prevention and Control have been introduced in Congress.

Basically, the proposed law calls upon the new U.S. Fire Administration it would create, to survey the entire fire problem, assess new problem areas and evaluate the cost and impact of possible solution alternatives. It would recommend actions, coordinate studies, disseminate technical information and undertake research.

The new USFA proposed to be within HUD, could name technical and other advisory committees from outside government to advise on administration of the program.

Operation of a National Fire Data System calls for incor-

porating collected data (including property loss, causes, locations and number of fires) into a standard data processing and information retrieval system.

One of the more useful activities authorized under the research and development portion of the legislation deals with wide distribution of information on research and development.

There would be a program of Federal grants for research as well as grants for state and local program assistance. Allocations of \$20,000 to each state for preparation and adoption of its master plan for fire protection would be authorized.

The Commission presented a proposed annual program operating budget of just over \$153 million as an indication of "minimum operating program needs and as a starting point for discussion."

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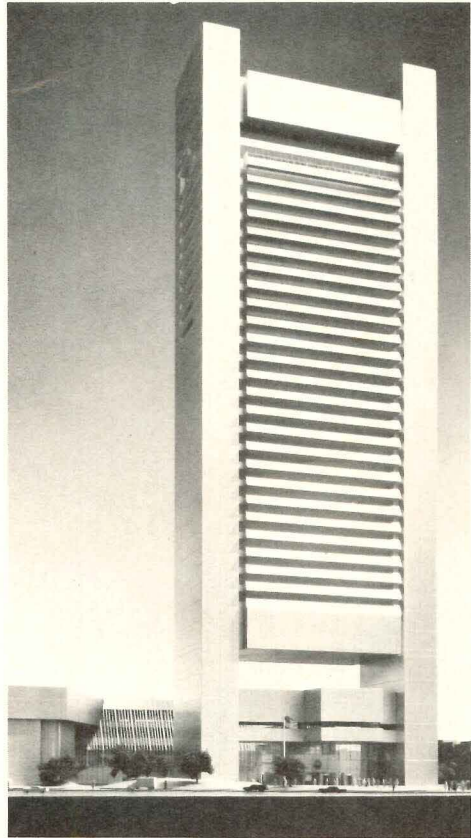
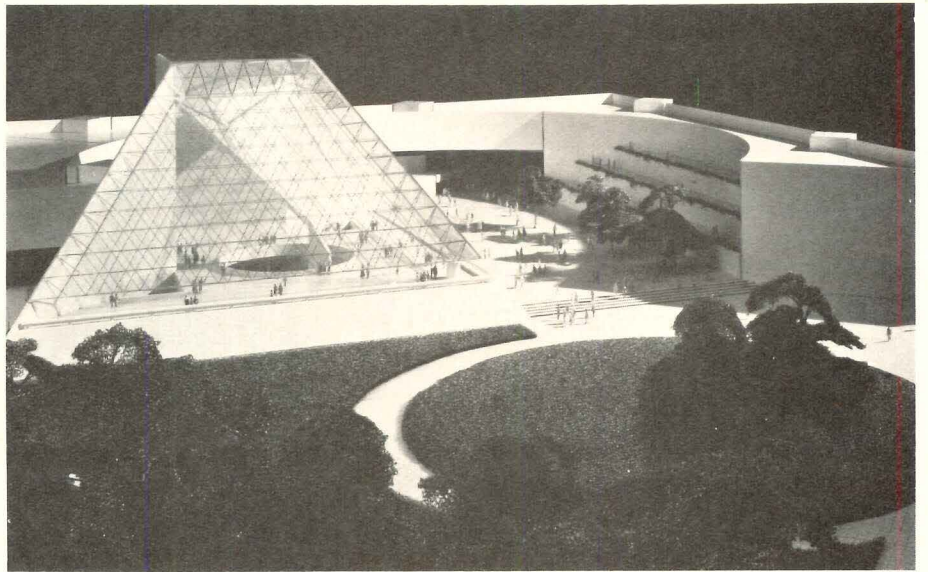
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Boston bank to contain a money museum

Among current projects of Hugh Stubbins and Associates is this building in Boston, Massachusetts. The 600-ft high Federal Reserve Bank of Boston under construction downtown will occupy a 5.7-acre site and comprise over one million gross sq ft. The low-rise wing contains a Money Museum, library, auditorium and roof-top cafeteria and garden. Being built at a cost of \$62 million, the building will be completed in 1975.



John Fitzgerald Kennedy Library will house Harvard's government school

Plans for the \$27 million Kennedy Library were announced last month, on the anniversary of the late President's birth. Designed by I. M. Pei & Partners, the brick, concrete and glass structure will occupy a 12-acre site, formerly a streetcar yard, on the banks of the Charles River near Harvard. "Because of the relatively large piece of land we have," said Pei, "we'll be able to do something rather fortunate here...we can build lightly and maintain the scale, volume and bulk of the Harvard houses." A 75-ft, seven-story pyramidal pavilion will house a museum for documents and memorabilia associated with President Kennedy's life. The brick and reinforced concrete building adjacent to the museum will rise only 55 ft and the



total structure will comprise 300,000 sq ft. The 125-ft multi-level plaza faces a small park and the river. Most visitors will enter through a 65-ft wide arcade and pedestrian mall from Harvard Square on the opposite side of the building. Harvard's

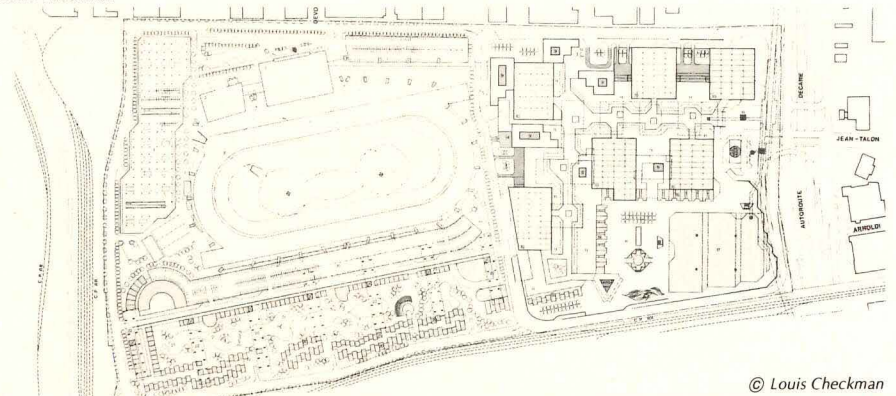
Kennedy School of Government and Politics will be located in the building, scheduled for completion in May 1976. There is opposition to the project due to its potential as a tourist mecca, and GSA has been asked to make an environmental impact study.

Summer Olympics in Montreal spurs redevelopment around Blue Bonnets Racetrack

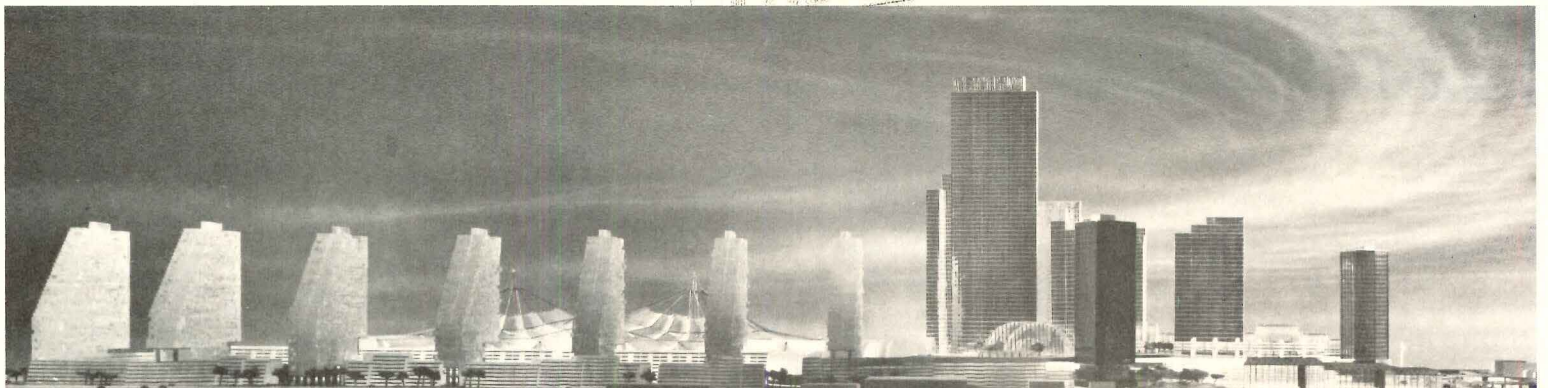
The 146-acre Blue Bonnets Racetrack property in the geographic heart of Montreal is to be the site of a \$750 million commercial and residential development, with the first phase to be completed in time for the 1976 Summer Olympics. Designed and planned by Gruen Associates, in association with Campeau Corporation's Archi-

tectural Division, the development includes a racetrack (under the tent-like structure) and convention center, in addition to hotels, offices, luxury apartments and six major department stores. The equivalent of 48 per cent of the site will be allocated to open space. Construction will begin late this year on the initial phase of the plan.

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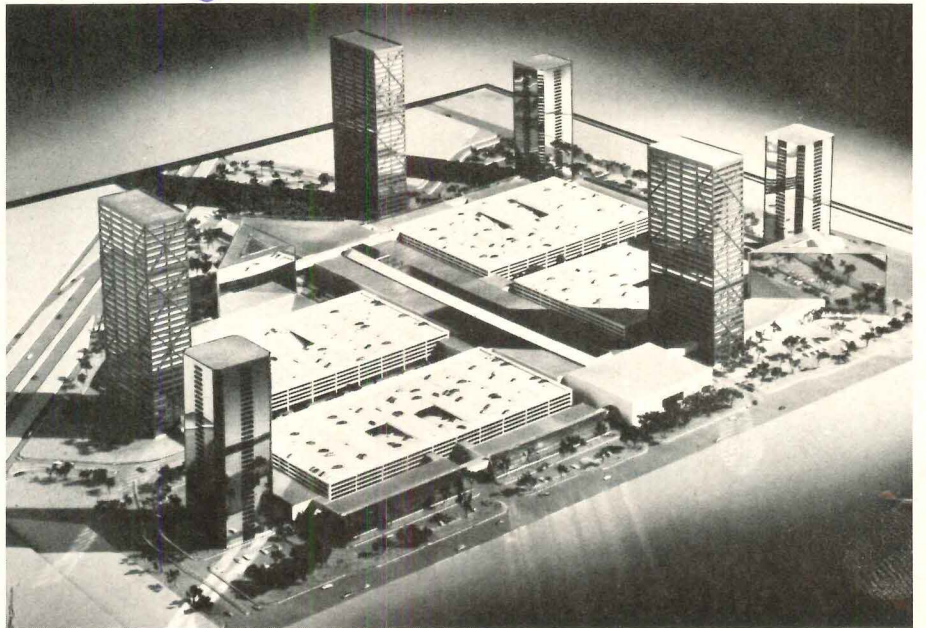


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German office tower has suspended floors

The administration building for the Munich-based BMW automotive company is an 18-story pre-stressed concrete tower on a three-story base, designed to "transmit the impression of precision and formal beauty associated with the image of a car factory." So states the architect, Karl Schwanzer of Vienna. The building core consists of four open tubes in concrete, inter-linked via beams and slabs. At the top of the cores, the four arms of a protruding crosshead beam support the total load of the suspended floors, the loads being transferred to the cores by four suspension columns. The floor slabs are light-weight reinforced ribbed concrete. Cladding of the structure is cast aluminum, creating the first such facade in Europe, a thin, three-dimensional skin. The building method permitted erection in 26 months, including preparation of working drawings.

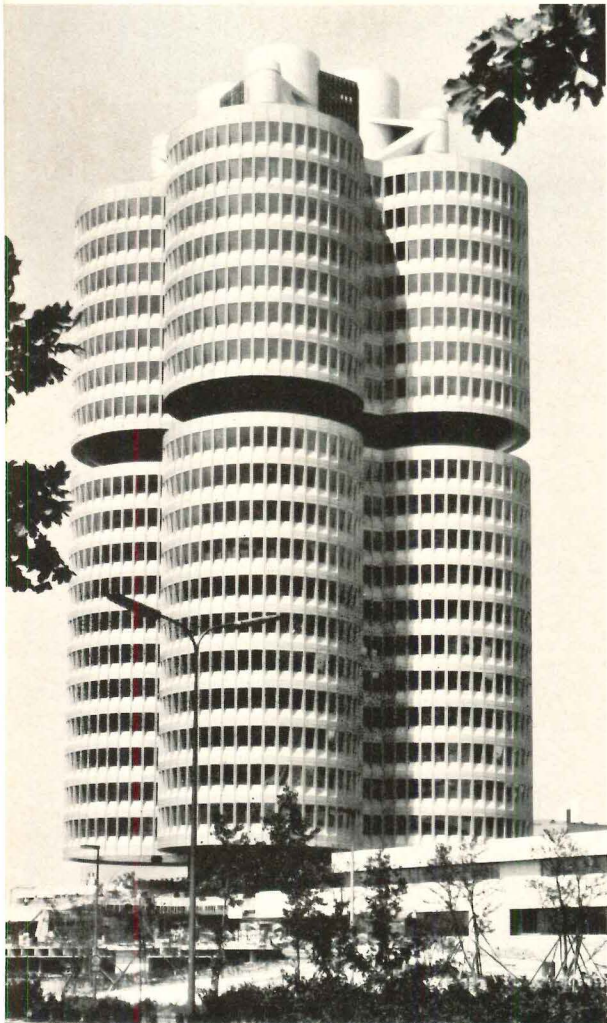


Residential and commercial complex will be built near Detroit

Town Center, a residential and commercial complex to be built on the northwest edge of Detroit, will comprise six buildings of 30 or more stories, plus theaters, hotels, a major retail mall and

parking for more than 10,000 cars. Designed by Neuhaus & Taylor, this total living environment on 70 acres will be one of the largest such communities in the Midwest and will take from

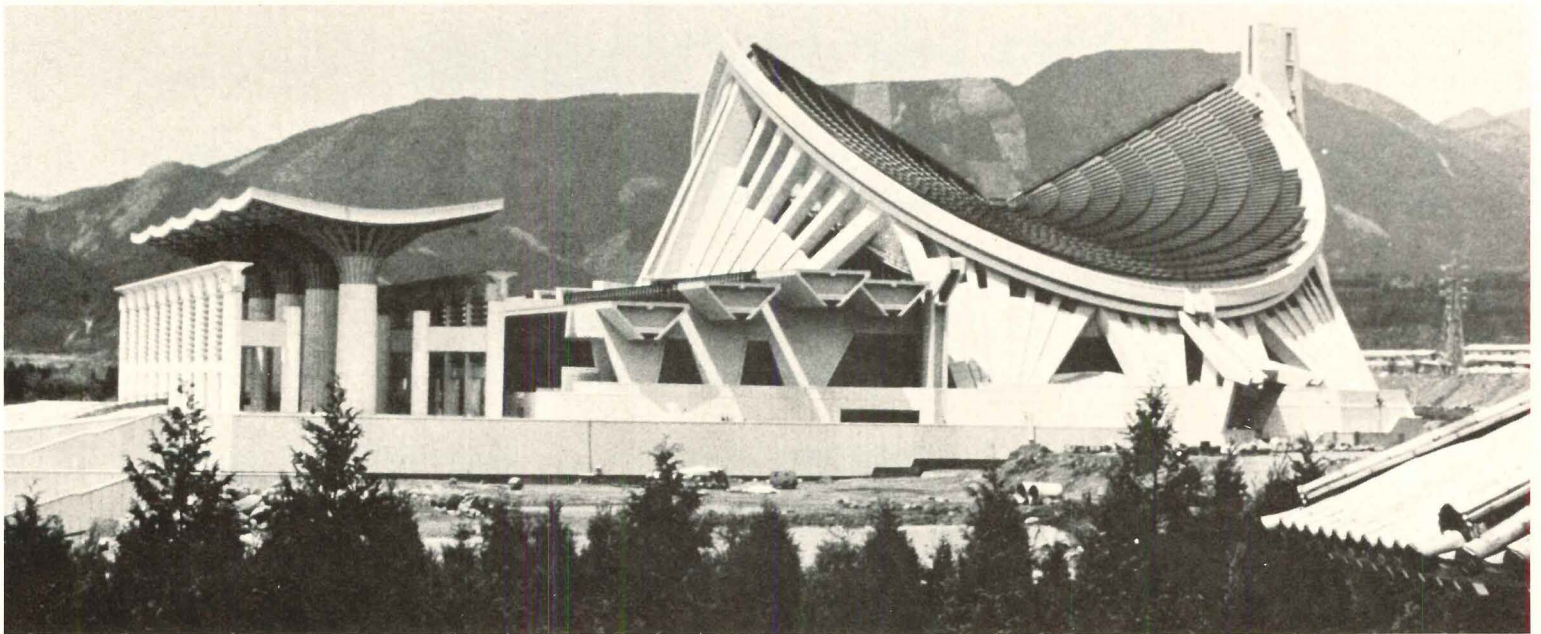
five to ten years to complete, according to PIC Realty, an affiliate of the Prudential Insurance Company. Phase I of the program will include a theme building with Galleria shops.



Research tower added to growing industrial complex in Richmond

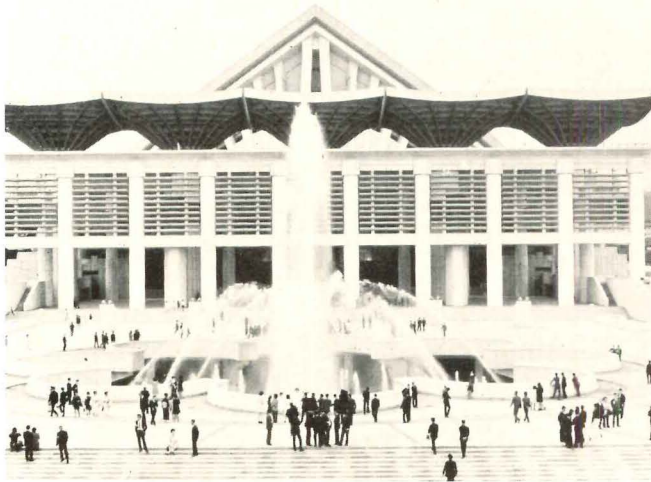
Recently dedicated is the 8-story, \$6 million Research Center Tower designed by Ulrich Franzen for Philip Morris' Richmond, Virginia headquarters complex. Covered as a project in RECORD, May 1966, the building adds modular lab space for the company's research and development programs which are conducted in a six-building complex. Under construction, is a 1.6-million sq ft manufacturing complex (upper left in aerial view) designed by Gordon Bunshaft, of Skidmore, Owings & Merrill.





Buddhist temple in Japan elaborately planned for vast pilgrimages

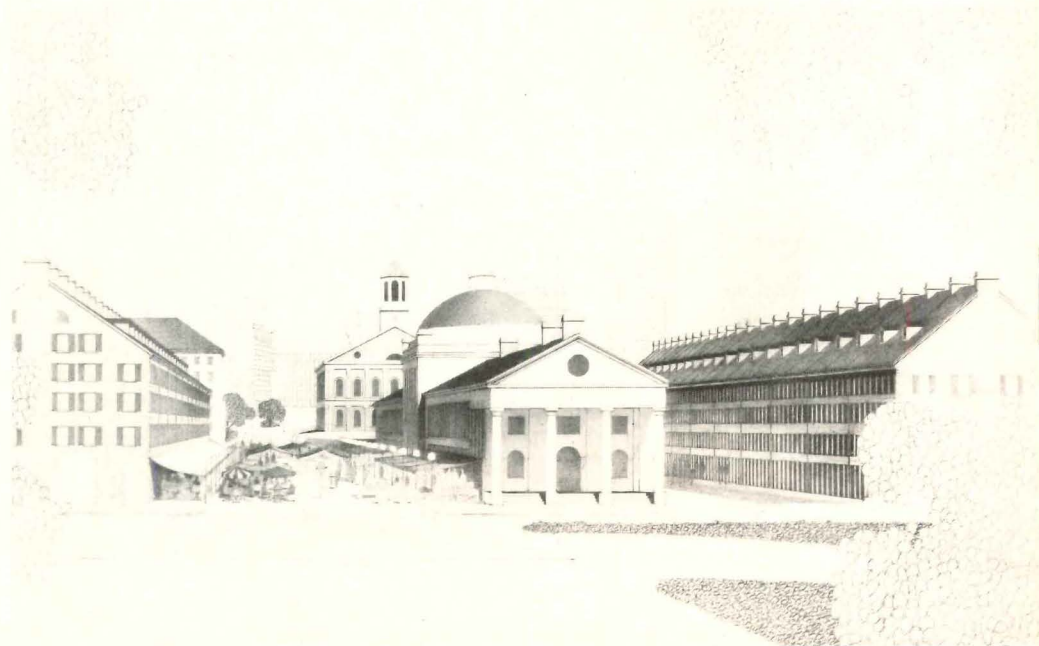
Completed last year at a cost of \$81 million, Sho Hondo is the major temple of the Nichiren Shoshu Buddhist sect and sits at the base of Mt. Fuji. The structure is actually four buildings arranged linearly and planned for the efficient entry/exit of nearly 5400 pilgrims, who can be seated in the main sanctuary. A 363- by 272-ft elliptical suspended roof peaks at 182 ft and sweeps down to its lowest point, 66 ft above the floor. The semi-rigid roof is framed between the inner tension ring and the outer compression ring by concentric rings and curved radial steel beams. Twenty clusters of inclined concrete columns support the roof, finished in cast aluminum plates. Surfacing is marble and granite. Kimio Yokoyama is the architect.



Boston's historic Faneuil Hall area to be restored

The architect-developer team of the Rouse Company and Benjamin Thompson & Associates has been selected by the Boston Redevelopment Authority to restore the historic Faneuil Hall Markets area (as it looks now, above) in preparation for the 1975 opening of Boston's Bicentennial Celebration. The plan calls for developing a round-the-clock traffic-free

market district featuring food, shopping, amusements and diverse activities in a three-block area of six acres. The market buildings—over 500 feet in length—would be restored to their historic condition architecturally, but to the functions for which the Market and adjacent blocks were built in 1825-6. Total budget is \$18 million. Work is under way.



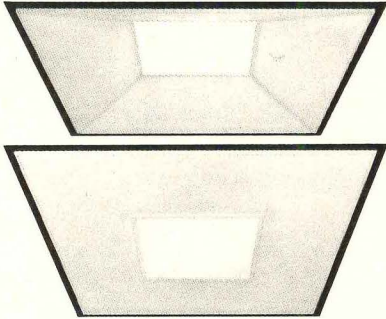
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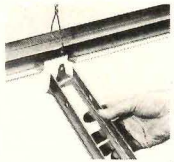
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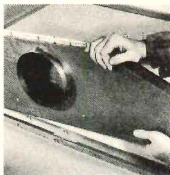
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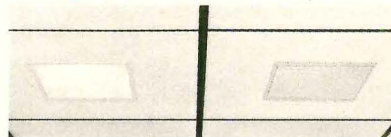
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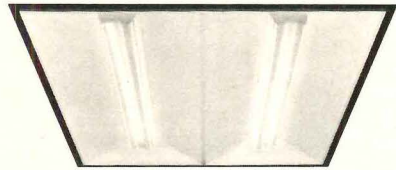


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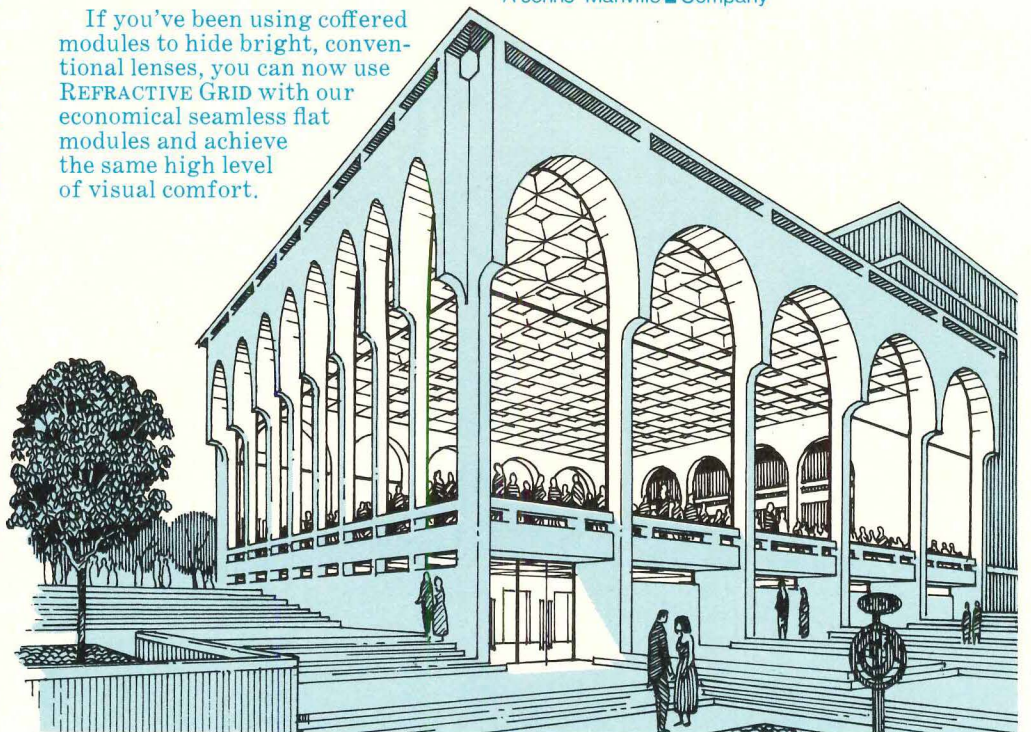
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Quo Vadis?

NEW BRITISH ARCHITECTURE, by Robert Maxwell; Praeger, New York, 1973, 199 pages, illus., \$25.00. URBAN SPACE AND STRUCTURES: edited by Sir Leslie Martin and Lionel March; Cambridge University Press, 1972, 272 pages, diagrams, \$19.50.

Two new books offer the American reader insights into two quite different aspects of the British architectural scene. The first, *New British Architecture*, is a survey of significant buildings, generally from the 1960's. There is an excellent introduction by Robert Maxwell, dealing with post-war British architecture in terms of its polemical, social, intellectual context. The ample number of buildings in the book (50) are categorized by type rather than by architect, including single- and multi-family houses, university buildings, institutional and commercial buildings, and civic centers. Each building is illustrated with drawings, photographs, and a brief description. Although beautifully laid out, with a wide range of styles and talents represented, the book gives each building coverage that is rather thin, whetting the appetite rather than informing completely. The reader always finds himself wishing for one more plan or photograph.

The second book, *Urban Space and Structures*, is a set of essays produced by a group of architectural researchers and graduate students working in the heady, intellectual, if somewhat removed, atmosphere of the Centre for Land Use and Built-Form Studies at Cambridge University. The essays, working papers which are more speculative than substantial, make an impassioned, sometimes brilliant, and often boring case for a mathematical approach to the design of the environment at all levels of size and complexity. The essays by Sir Leslie Martin and Lionel March, which are the best in the book, suggest new arrangements of built form at the level of the individual building. Other essays deal with the relationships between activities, space and location of a university campus, which the authors term an urban sub-system. At the level of the total urban system, a team of researchers headed by Marcial Echenique compare, by means of computer models, the old town of Reading with the New Towns of Stevenage, Hook and Milton Keynes. Though all the essays suggest topics of general interest, only those by Martin and March deal with a specialized approach to architecture in a manner accessible to the general reader; the other essays will have more appeal to readers caught up in enthusiasms for computer modeling.

What makes for fascinating reading and looking for the American architect are the distinctions which emerge in both books between two generations of British architects—one which reached maturity after World War II, and another which has been evident only since the end of the sixties—how each generation characterizes its obligations and aspirations, and which ghosts haunt each one.

The generation which dominated the 50's and early 60's in England, led by the Smithsons, James Stirling, Colin Wilson, and Denys Lasdun, was on the one hand disillusioned by what

they regarded as the sterile forms which the International Style had finally produced. On the other hand they were energized by the writings and post-war buildings of Le Corbusier (even as Corbusier continued to be two steps ahead of all the young architects). For this group of architects, the crucial problem was one of form: how they could design buildings which were rational and objective without being forced into the all-white models provided by the modern masters in the 20's? It seems curious now that although forms were challenged, at least two of the basic tenets of the International Style were never really questioned. The first of these was the vision of a new rational architecture symbolic of a new social order as an antidote to the stylistic and social excesses of the 19th century (which prevented architects of the sixties from learning from Architecture before 1910). The second was the vision of the modern architect, full of missionary zeal, giving new direction to the common everyday culture (which prevented architects from learning from vernacular architecture unless it was removed in time and space, like an Italian hill town). The problem of form, in retrospect, was therefore only a local skirmish.

The Smithsons and others believed as intensely as the modern masters that architecture was a service for furthering the social good, and that its form was inextricably related to a revolutionary new social order. They believed that the architect was not only obligated but also capable of creating an altogether original modern environment, unique to this age, unfettered by the past and fitted to the essential needs of life. This period, like the twenties, was one of great optimism, of fervent intellectual argument, and formal invention. The decade saw buildings of dazzling brilliance, as well as some which were incredibly heavy-handed and stodgy. For all the erratic results and uncertain formalism, there was never any doubting the essential aim of the game, nor any questioning of the high aspirations and sense of missionary zeal felt by architects.

The second generation in each book, just now beginning to get commissions and involved in serious research, takes a much cooler, cynical, and detached view of its obligations and aspirations. Gone are the problems of form, mostly by ignoring or discounting them; gone are the possibilities of social change implicit in a building commission; gone even is the imperative to produce a physical or at least a permanent physical solution to a commission; gone are the heroic Corbusian efforts to design the new city. Symptomatically, Echenique and others in the Cambridge book are content to describe and model the existing environment, and, like social scientists, they decline to speculate on how the model might lead to a new physical environment of special quality.

This tale of the distinctions between two generations of British architects is interesting because it is all too familiar here at home. Faced with the apparent bankruptcy of the forms, motives, and directions of the 1930's and 1950's, which produced overly sterile or heavily formal buildings and most certainly did not, as had been hoped, revolutionize life in the world,



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many young architects are uncertain about what they should be aspiring to do and in whose interest it should be done. Indeed they seem uncertain what the form of a humane environment really is, from whence it derives, and how it might be realized. In this same manner, neither book suggests much direction, preferring instead to be non-committal and equivocal.

—Richard Oliver

Mr. Oliver, currently practicing in New York, studied architecture at Cambridge University, and has taught at the University of Texas and UCLA.

Also Received

STONE PROPERTIES IN MAN'S ENVIRONMENT *Applied Mineralogy, Volume 4*, by E. M. Winkler; Springer-Verlag, New York, 1973, 230 pages, illus., charts, diagrams, \$33.70.

Thorough yet accessible, this book should be useful to architects and engineers in avoiding the mis-application of stone in various environmental conditions and, when necessary, in counteracting stone decay in existing buildings.

PALLISER'S MODEL HOMES: *Showing a Variety of Designs for Model Dwellings*, by Palliser, Palliser & Co.; Glenwood Publishers, Felton, California, 1972, 96 pages, illus., \$4.95.

A reprint of a pattern book first published in 1878, this assortment of designs and practical tips on the art of housebuilding offers a charming view of small-scale, late nineteenth century domestic architecture.

RIVERS IN THE CITY, by Roy Mann; Praeger, New York and Washington, 1973, 256 pages, illus., \$20.00.

An overwhelming majority of the memorable cities in the world are built near a body of water; this phenomenon occurred, obviously, for practical reasons, but the result has through the centuries carried with it a good many fringe benefits. The author of this new book looks at the relationships between important rivers in the United States and western Europe and at the major urban centers that have flourished along their banks. He analyzes 15 urban river landscapes with a thoughtful eye towards preserving their ecological, cultural and aesthetic values and improving the industrial, technological and recreational uses of these precious natural resources in future urban development.

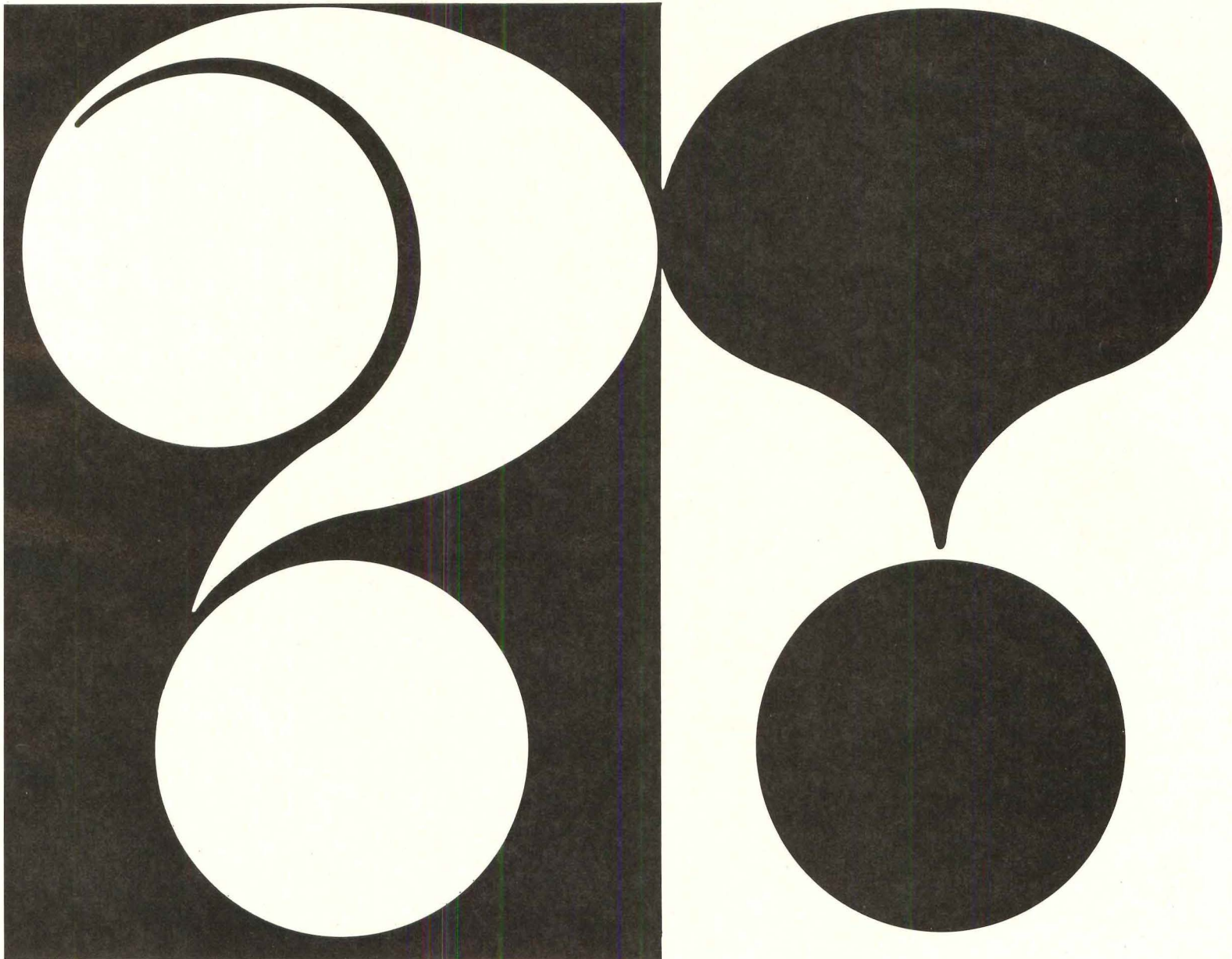
CITY DEVELOPMENT: *A Study of Parks, Gardens, and Culture-Institutes: A Report to the Carnegie Dunfermline Trust*, by Patrick Geddes, with an introduction by Peter Green; Rutgers University Press, New Brunswick, New Jersey, 1973, 232 pages, illus., \$22.50.

In 1903 Andrew Carnegie bequeathed a munificent trust to the town of Dumfermline, Scotland, his birthplace, for its development. Two men, one of them Patrick Geddes, were commissioned to submit proposals. The present book is a reprint of Geddes's proposal and is an interesting, energetic and exhaustive document in the history of town planning—even though it was never implemented in its entirety.

THE RELIGIOUS ARCHITECTURE OF NEW MEXICO, by George Kubler; University of New Mexico Press, Albuquerque, 1972, 232 pages, illus., \$15.00. A fourth, revised edition of Mr. Kubler's authoritative work.

The Barrett Roof Inspection & Service Program.

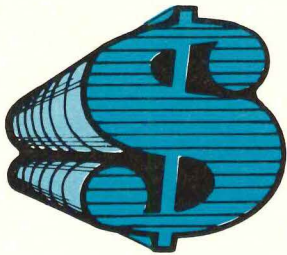
Questions & Answers



The Barrett Roof Inspection & Service Program.

Questions & Answers

The Celotex Corporation conducted a series of interviews with architects all across the country to determine their awareness of the advantages and benefits the Barrett Roof Inspection and Service Program offers to building owners. The questions and answers on the following pages represent a composite of these interviews. We hope they will be helpful to you.



How does the Barrett Roof Inspection and Service Program differ from the 20-year bond plan which has been so widely specified for so many years?

The most important difference is the amount of liability which Celotex assumes. The old standard 20-year bond limits the manufacturer's liability to a total of \$10 per square during the entire 20-year period. Under the new program, there is no limit to the amount Celotex will pay, during the entire period of the contract, to correct leaks due to causes covered in the contract.

Let's use a practical example to illustrate the difference. You have a 20,000 square foot roof. A series of leaks develops and it is determined that the roofing manufacturer is to pay the cost of repair. Under the old bond plan, our maximum liability is \$2,000. When that \$2,000 has been expended, there is no further monetary liability, regardless of the bond issue date. Under the new contract, Celotex would pay for repair of all leaks covered, during the full period of the contract.

This program also differs from the old bond plan in period of coverage, in cost, and offers additional inspection service.

What is the period of coverage under this program?

The contract covers a period of 10 years. It also gives the owner an option to renew for an additional 10 years, if he makes recommended corrections and preventive repairs to the structure and to the roof, which our inspector determines are necessary to put the roof in satisfactory condition for continued good performance. This feature provides a valuable service which the bond did not offer: at no cost, at the end of 10 years, the building owner receives a roof inspection and recommendations which conceivably could help him avoid costly trouble. He can then elect to renew the contract.

\$3/10

What does the building owner pay for coverage under your program?

Cost for the initial 10 years is \$3 per square. Cost to renew the contract for a second 10-year period will be two-thirds of the charge for the initial 10-year period in effect at that time.

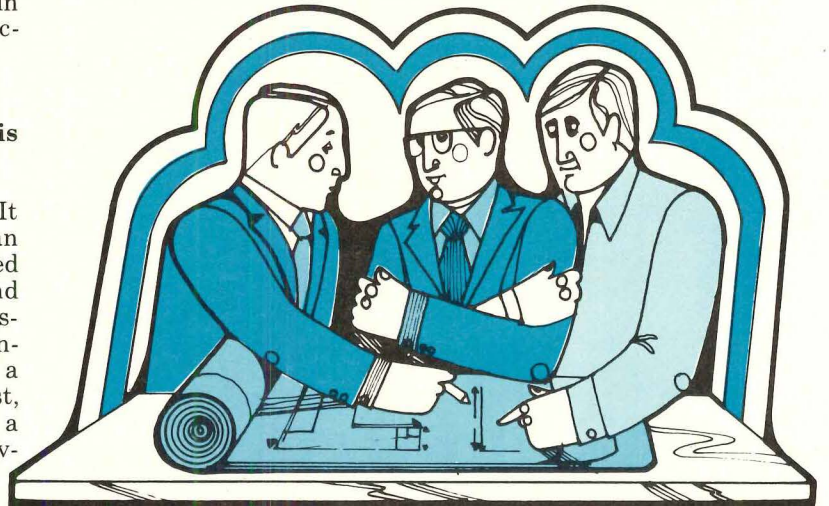
Cost of the program, for the initial period, is the same as the current cost of the old 20-year bond—yet this plan provides additional inspection service and has no monetary limit on leak-repair costs. When compared to the cost of the bond and to the cost of independent inspection services—which do not provide monetary guarantee in case of leaks, or continuing inspection service—our program is obviously the best investment of all.

How does the owner benefit by renewing the contract for a second 10-year period? Why not just make recommended repairs, if any, and save the cost of renewing?

If no problems are indicated, he may be saving money by not renewing. If he renews, however, he gets all the original benefits for another 10 years: unlimited manufacturer liability in case of leaks due to covered causes; free inspections should leaks occur; and free inspection and recommendations, on request, when alterations or additions are contemplated.

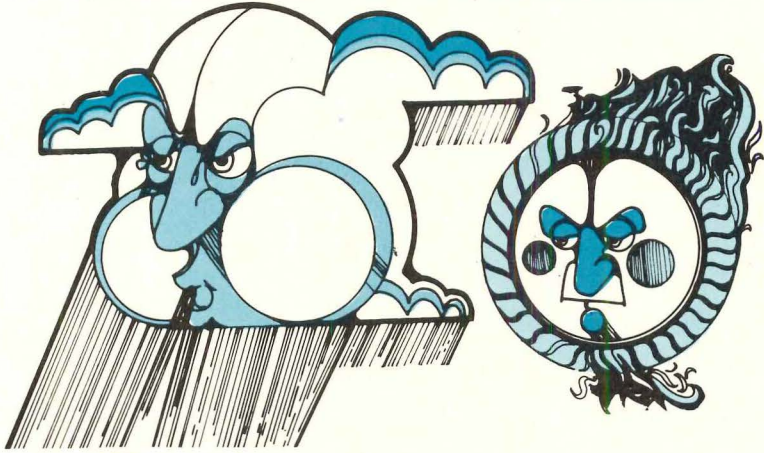
What other services and inspections are included in the program?

To begin with, on request, a qualified Celotex representative will review plans and specifications, attend pre-job meetings, and make recommendations. During application and after completion, inspections will be made and notice of inspection will be sent to the architect or owner. When the roof is two years old, another inspection will be made. And we'll make the 10-year inspection and recommendations, if requested, at no charge, even if the contract is not renewed.



Does the Celotex liability apply to repair of leaks caused by faulty application, as well as to leaks due to defective roofing materials?

Yes. This contract clearly states that Celotex will pay all costs of repairs necessary to correct roof leaks resulting from errors in workmanship of roofing contractors in applying Barrett roofing membrane and flashing materials. It also covers leaks due to failure of those materials resulting from usual and ordinary wear and weather. This liability does not apply, however, to errors in building design or construction.



Does your guarantee include expansion joint covers?

Yes, it includes the Barrett Expansion Joint Shield when installed in conjunction with a roof that is covered by our contract. It does not guarantee any other expansion joint cover even though that cover is installed by a Barrett Approved Roofing Contractor on a roof where Barrett roofing membrane and flashing are bonded. To our knowledge, Celotex is the only manufacturer offering a guarantee-type plan that includes an expansion joint cover.

If I specify a reputable brand of roofing materials, and the general contractor retains a reputable roofer, isn't that sufficient assurance of good roof performance? Why should my clients spend the additional \$3 per square?

It is true that under those conditions you minimize the risk of leaks due to faulty materials or application. Our roofing materials are produced totally by machine under quality control methods, and there is very little risk of their failing. On the other hand, application of these materials is largely manual and the chance for leaks due to human error is far greater.

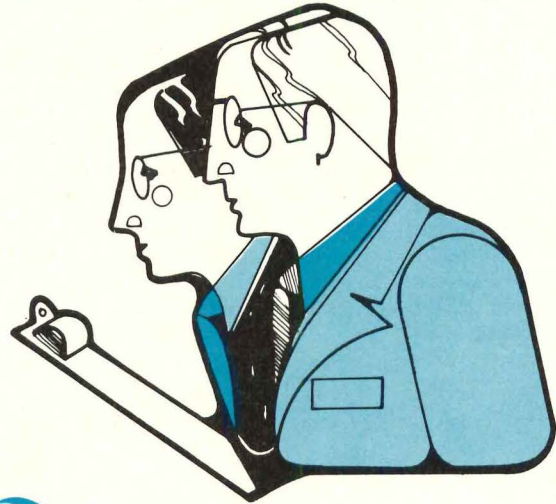
No matter how good the roofing contractor's reputation is, or how dedicated he is to doing a first-class job, one of his workmen can make an error, or fail to follow an instruction, or neglect to follow some requirement of the specification, and a leak can result. The Barrett contract protects the owner against cost of repairing leaks resulting from this situation.

As with most types of insurance, the buyer hopes he will not have to collect, but the nominal cost makes it a wise investment in protection.



Does your on-the-job inspection insure proper application and adherence to specifications?

While no inspection can include every minute of time for every workman and every square foot of the roof during application, the purpose of our inspections is to assist the contractor in making sure the roof is being applied as specified. An error can occur on any roof, no matter how diligent the inspector. Under our program, chances for these errors are minimized in two ways: (1) the two-party inspections, ours and the contractor's, (2) the fact that only Barrett Approved Roofing Contractors are authorized to apply our guaranteed roofs. Contractors must meet the highest industry standards to qualify for approval.



Why should the building owner buy an inspection and service contract to protect against the possibility of leaks due to faulty application? Doesn't the roofing contractor bear a responsibility for good workmanship?

In some localities the roofer has a written obligation to repair leaks due to faulty application during the first two years after completion, but no liability of any kind after the first two years. Some roofers accept responsibility for their work for two years or even longer, but do not enter into a written agreement. In short, there is no standard industry practice. During a 10-year period, a roofing firm may change management and policies.

Experience has proved that the most reliable protection for the building owner is a long-term guarantee by an established roofing manufacturer. Barrett introduced the roofing bond in 1916, and all major manufacturers adopted the same type of plan. The Barrett Roof Inspection and Service Program is an updated version of the bond plan, with additional owner benefits.

One of our large clients has thousands of squares of built-up roofs installed annually. Wouldn't it be to his advantage to set up a \$3 per square reserve fund for possible repairs, rather than buy your inspection and service contract?

It could work out that way. He may never have to spend any money for repairs due to faulty application or materials, and he would have saved the contract fee. On the other hand, one serious leak problem could wipe out his entire fund. What you are suggesting amounts to an underwriting plan with very little leverage. There would be no opportunity to spread repair costs against fees from a large number of owners as is normally done under insurance-type programs. Being his own underwriter could end up being a very uneconomical choice.



(SEE PRECEDING PAGES)

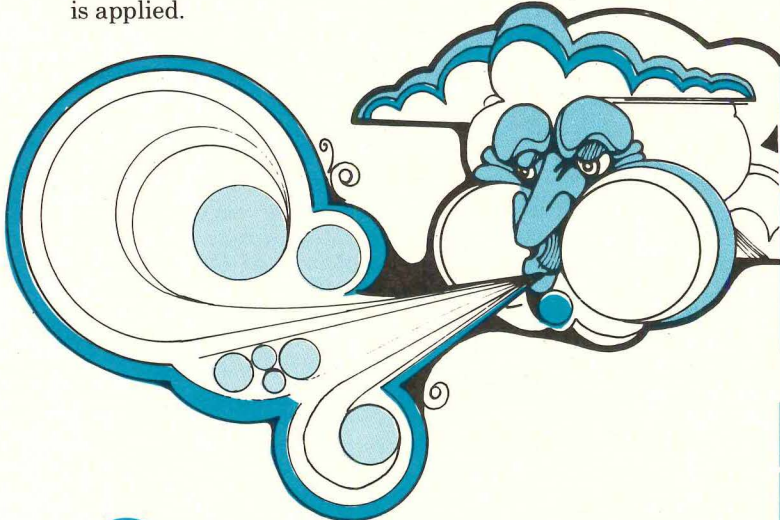
The Barrett Roof Inspection & Service Program.

Questions & Answers



What types of leak problems are not covered by your contract?

The contract plainly states that Celotex is not liable for leaks or damage caused by: natural disasters such as hurricanes, hail or windstorms; or by structural failures; or by changes in building uses unless approved in advance by Celotex; or by additional installations on or through the membrane, or repairs to roofing or flashing membrane, after completion, unless accepted by Celotex. Nor is Celotex responsible for damage to interior, building contents, roof insulation or deck over which roofing membrane is applied.



How will it be determined whether a leak is due to errors in application, faulty materials, structural movement or other causes?

When we are notified that a leak has occurred, a Celotex representative will inspect the roof. The architect and owner may be present or represented. In most cases, the cause of leaks will be readily apparent. For example, leaks through openings in the plies in an area where there is no evidence of structural movement, or leaks through blisters which may have ruptured due to drying out, would be ascribed to improper application and cost of repairs would be paid by Celotex. If the trouble is due to structural movement, evidence is usually equally apparent. If a flashing has broken away from a wall in which there are severe cracks, the cause is obviously building movement and is not covered.



Do other roofing manufacturers offer this new-type contract?

While a number of other major manufacturers offer inspection and service contracts that are close to the Barrett contract, the Celotex guarantee is the only one, to our knowledge, that includes an expansion joint cover—the Barrett Expansion Joint Shield.



Does Celotex still offer the old-type roofing bond?

Yes. Even though we strongly feel that our new Barrett Roof Inspection and Service Program is a far better program for building owners, we will continue to offer the bond as long as necessary from a competitive standpoint. Also, many existing specifications calling for "bonded roofs" were written before the new program was developed, and Barrett Approved Roofing Contractors must be kept in position to bid these jobs.

FREE



If Roof Inspection And Service Programs Were Free. . . chances are that architects and building owners would insist they be included in every specification. Therefore, the added cost would seem to be the determining factor in deciding whether or not guarantee-type coverage should be specified. *What is the added cost of the Barrett Roof Inspection and Service Program in relations to total building cost?*

	School 2 floors 100 MSF	Hospital 6 floors 180 MSF	Factory 1 story 100 MSF	Office Building 10 floors 200 MSF
Sq. Ft. Cost of Building	\$24.	\$45.	\$14.	\$18.
Total Cost of Building	\$2.4 million	\$8.1 million	\$1.4 million	\$3.6 million

ADDED COST FOR 10-YEAR BARRETT PROGRAM*

Total of \$3 per 100 Sq. Ft.	\$1,500	\$900	\$3,000	\$600
Per Sq. Ft. of Building	1½¢	½¢	3¢	3/10¢

*10-YEAR BARRETT ROOF INSPECTION AND SERVICE CONTRACT PROGRAM

The actual added cost for the Barrett Roof Inspection and Service Program is small. It is relatively insignificant in the total sq. ft. cost of the building. When consideration is given to the period covered (10 years) and the no-monetary-limit feature, the program is indeed extremely low-cost protection.

We'll welcome your request to have a Celotex representative tell you more about the Barrett Roof Inspection and Service Program and supply you with data on Barrett roofing products and systems . . . "everything from the deck up."

Celotex*

BUILDING PRODUCTS

The Celotex Corporation
Tampa, Florida 33607
Subsidiary of Jim Walter Corporation *Trademark

For more data, circle 28 on inquiry card

BARRETT ROOF INSPECTION AND SERVICE CONTRACT

No. C 000

THE CELOTEX CORPORATION, UNDER THE PROVISIONS STATED HEREIN, WILL PROVIDE INSPECTION AND REPAIR SERVICE TO THE BARRETT ROOF DESCRIBED BELOW FOR A PERIOD OF TEN (10) YEARS FROM DATE OF COMPLETION.

Owner: _____

Building Description: _____

Location: _____

Roof Specification No.: _____ Flashing Specification No.: _____

Area of Roof Under Contract: _____

Lineal Ft. of Flashing Under Contract: _____

Date of Completion: _____

Roofing Contractor: _____

COVERAGE

The Celotex Corporation will pay all costs of repairs necessary to correct roof leaks resulting from the following causes:

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Deterioration of Barrett roofing membrane or Barrett base flashing resulting from usual and ordinary effects of wear and weather. 2. Errors or mistakes in workmanship of roofing contractor in applying the Barrett roofing membrane and Barrett base flashing. 3. Blisters, bare spots, buckles, wrinkles and ridges, in the roofing membrane. | <ol style="list-style-type: none"> 4. Splits in roofing membrane or base flashing except as excluded below. 5. Damage to roofing membrane or base flashing resulting from extreme fluctuations in temperature. 6. Breaks in flashing strips over gravel stop or other metal flanges. 7. Slippage of roofing membrane or base flashing. |
|---|--|

EXCLUSIONS

The Celotex Corporation will not be responsible for leaks or consequential damage caused by any one or combination of:

- | | |
|---|--|
| <ol style="list-style-type: none"> A. Natural disasters including but not limited to floods, lightning, hurricanes, hail, windstorms, earthquakes, tornadoes. B. Structural failures such as settling, shifting, distorting, splitting or cracking of roof decks, walls, girders, partitions, foundations, etc. C. Improper application or failure of any component underlying the roofing membrane or base flashing such as deck, roof insulation, vapor barrier, etc. D. Changes in the original principal usage to which building is put unless approved in advance in writing by Celotex. | <ol style="list-style-type: none"> E. Erection or construction of any additional installation on or through the roofing membrane or base flashing after date of completion unless installed in a manner prescribed and accepted by Celotex. F. Application of or repairs to roofing membrane or base flashing after date of completion unless done in a manner prescribed and accepted by Celotex. G. Under no circumstances whatsoever shall Celotex be liable for damage to interior, contents of building, roof insulation, roof deck or other base over which roofing membrane or base flashing is applied. |
|---|--|

ACTION

In the event leaks from any cause should occur, owner shall notify Celotex promptly, confirming such notice in writing. Celotex will inspect the roof, and if cause of leak is within the coverage as stated above, Celotex

will arrange for repairs to be made at no cost to owner. If cause of leak is not covered, Celotex will not be responsible for cost of any repairs.

RENEWAL OPTION

At the end of the initial ten (10) year period, the owner shall have the option to renew this contract for an additional (10) ten years under the following conditions:

During the tenth year of this contract, if the owner of the building so requests, Celotex will make an inspection of the roof and issue to the owner a report on the condition of the roof outlining any and all maintenance work that should be done. This inspection by Celotex is free of charge and without obligation.

scribed in the report performed at his cost by a roofing contractor acceptable to Celotex and will notify Celotex upon the completion of this work. Maintenance work required must be completed no later than 90 days after expiration date of this contract.

Upon payment of a charge which shall not exceed 2/3 of the then current initial service fee being charged by Celotex, the roof will be reinspected by Celotex and, if found to be acceptable, this contract will be extended for an additional ten (10) year period.

If the owner elects to exercise his option to renew this contract, he shall have the maintenance work de-

Celotex makes no guarantees of any kind, express or implied, except as herein stated.

By EA Franklin
Attorney-in-fact

The Celotex Corporation • 1500 North Dale Mabry • Tampa, Florida 33607
Subsidiary of Jim Walter Corporation

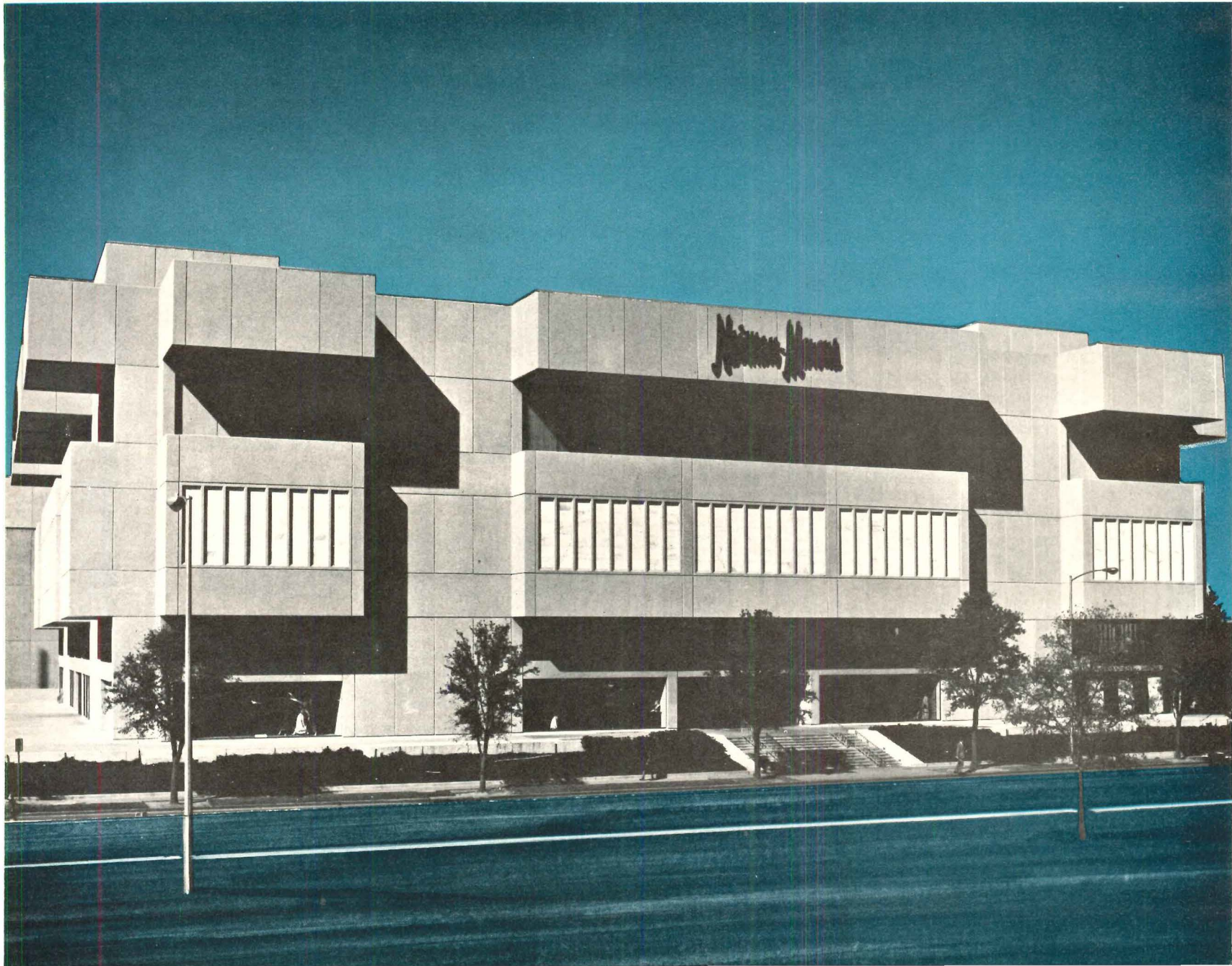
**Outstanding
protection for
quality merchandise.
All-weather Crete
insulates the
Neiman-Marcus store
in Houston.**

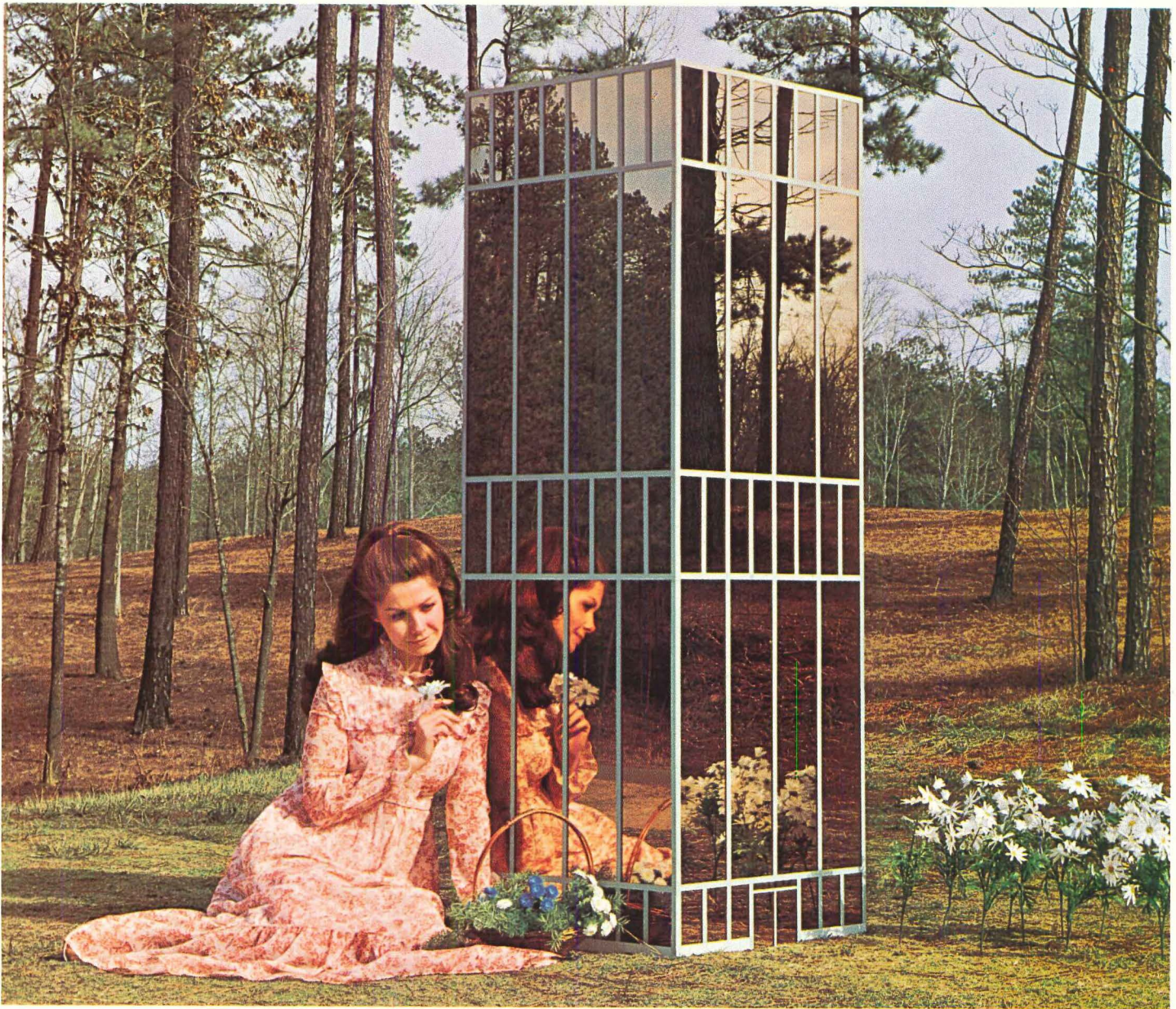
Neiman-Marcus is truly a quality name in retail merchandising. Hellmuth, Obata & Kassabaum, Inc. have designed the new Houston store in keeping with this reputation. All-weather Crete insulation is used in the roof deck and offers not only the finest in thermal protection, but a real money-saving value in long range cost savings. All-weather Crete can be sloped to drains for positive water drainage. Its application by local licensed applicators assures experienced installation on every building. Dry application with no curing time speeds roofing and construction. These and many other unique features make All-weather Crete truly the quality name in insulation for roof decks, plazas and numerous other constructions. It's no wonder All-weather Crete was selected to protect an architectural achievement such as the Neiman-Marcus building. For complete information, contact Silbrico Corporation, 6300 River Road, Hodgkins, Illinois 60525, (312) 735-3322, or see Sweets for the address of your local applicator.



For more data, circle 29 on inquiry card

Neiman-Marcus Store, Houston • Hellmuth, Obata & Kassabaum, Inc., Architects • Photo, Ezra Stoller Associates, Inc.





ASG's
Reflectovue®
Not just another
pretty face.

Combining form and function. Aesthetics and reality. That's the role of the American architect as he reaches into the 21st century. To build cities that serve the needs of people as well as commerce. To conceive of buildings that reflect the natural grace and beauty of the environment around them.

And, ASG's Reflectovue is one of the creative tools the architect has to work with to achieve those goals.

Not only is Reflectovue aesthetically pleasing, it is solidly functional and economically rewarding.

For instance, when used with Tru-Therm® insulating units, Reflectovue has been proven a superior heat reflector. It has the best thermal performance, the lowest "U" value, and the lowest

shading coefficient when compared, color to color, to any other reflective glass in the industry.

Controlling heat loss and gain means that less equipment is required for heating and air conditioning. Less fuel is required. Creating less pollution.

ASG Reflectovue is available in Gold, Silver and Chrome in Tru-Therm insulating units, or in laminated glass.

ASG Reflectovue. Not just another pretty face, but a new and exciting concept in environmental architecture.

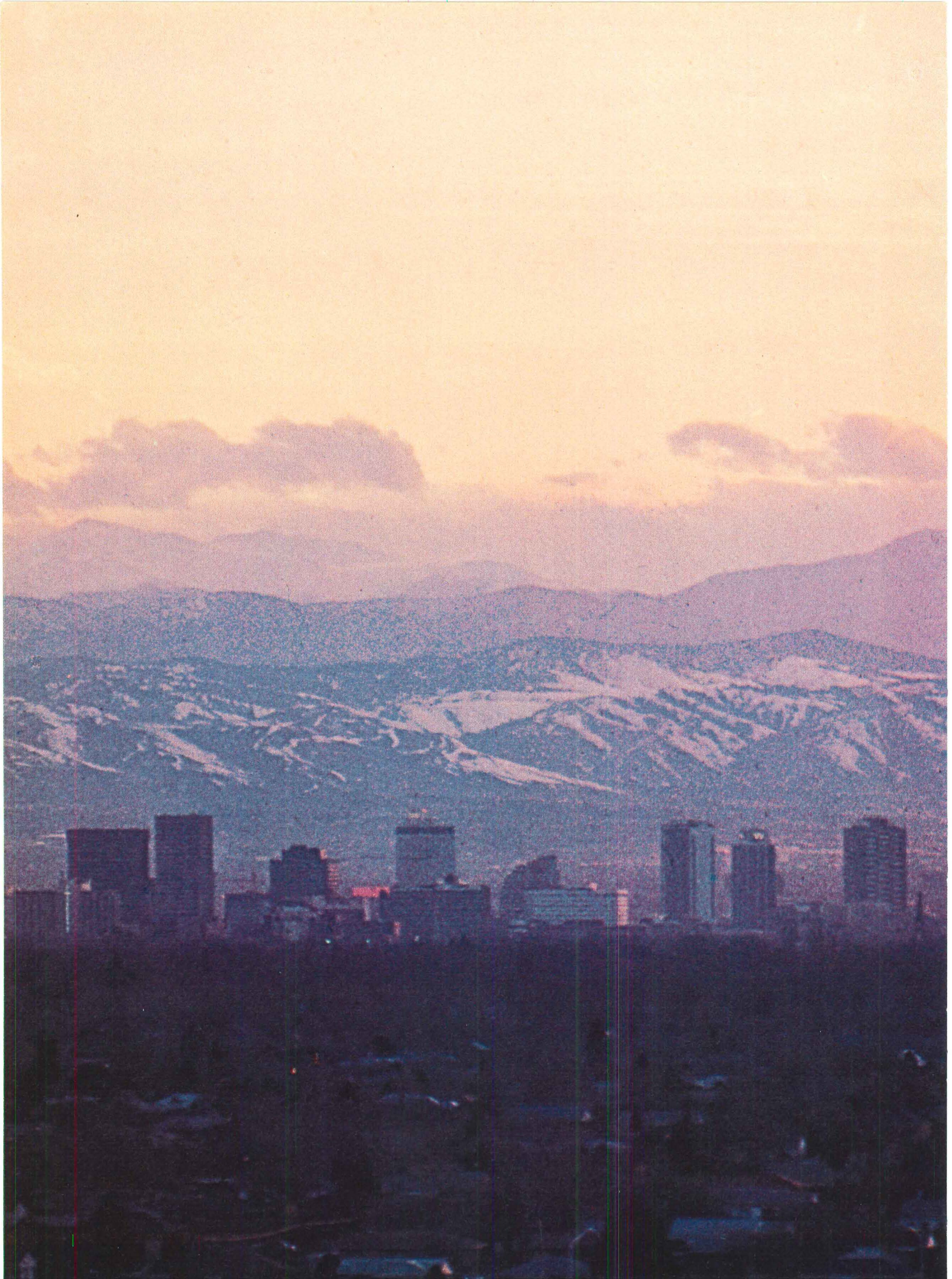
Another reason why now, more than ever, ASG is The Glass Company.



ASG Industries Inc.

The Glass Company P.O. Box 929, Kingsport, Tennessee 37662

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We helped Denver cure its drinking problem.

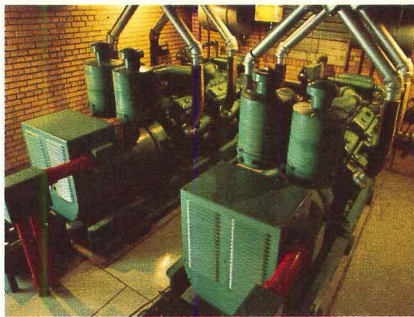
Denver is a man-made jewel. Implanted neatly into the uncut beauty of the Rockies, it embellishes one of nature's great settings.

As beautiful as Denver's setting is, though, it places the city one mountain away from its water supply. Millions of gallons of fresh water flow daily down the western slopes of the Rockies. But on the eastern side, the Denver side, the air is dry and the water scarce.

In the 1920's, however, this situation was eased. At the cost of 15 million dollars, two tunnels were augered straight through the Continental Divide. One tunnel brought the railroad. The other brought water.

Today, the Moffat Filter Plant supplies the people of Denver with 170 million gallons of water a day. Obviously, the continuous operation of this plant is vital to the city. This is why its power source is so carefully pro-

tected. Protected by two Detroit Diesel Generator Sets.



In 1962, the Detroit Diesel Allison Distributor in Denver furnished these twin 16V-71 300 KW standby generators. Detroit Diesels were chosen for three good reasons: 1. These engines have proven their reliability in countless hours of the toughest kind of work. 2. They are basically simple engines; easy and inexpensive to maintain. 3. And most important, the Detroit Diesel Allison Distributor had the know-how to handle the entire job from start to finish.

In the 11 years since they've been in use, these engines have been called upon several times during power

outages in the Denver area. In each case the big 16V's have kicked over right on cue. Without a minute's interruption to Denver's water supply.

Without actually knowing it, the people of Denver depend heavily on these Detroit Diesel engines. And, if part of your job is finding and specifying power that people depend on, then you should find out more about Detroit Diesel Powered Electric Sets.

Just check with your nearest Detroit Diesel Allison Distributor. He'll work with you in every way possible. Actually custom building the exact set for your job. Any job.

To find out more, just clip this coupon and we'll send you the latest catalog on Detroit Diesel Powered Electric Sets.



Detroit Diesel Allison
Division of General Motors
P.O. Box 81, Birmingham, Mich. 48012

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COMPANY _____

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With the warmth of wood patio doors, rooms take on a cozy, homey feeling. A bright, friendly look which metal doesn't have. And when you couple such warmth with trouble-free Caradco design, you can talk pure pleasure. Even the price is heartwarming!

You'll like the maintenance-free beauty . . . it's prefinished inside and out to blend with any decor. Concealed adjustable rollers assure easy to open, easy to close, no bind operation. Tempered insulating glass, interlocking no-draft weatherstripping and thermal barrier sill bring quiet, no draft, all weather-comfort to your home.

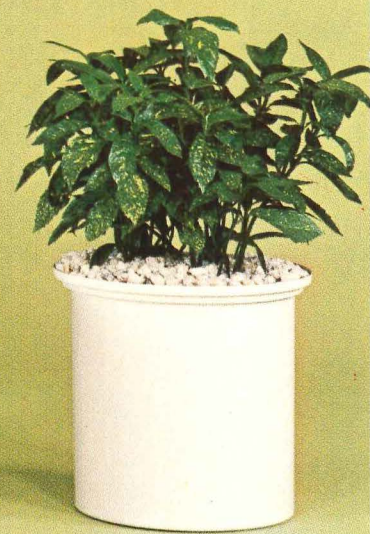
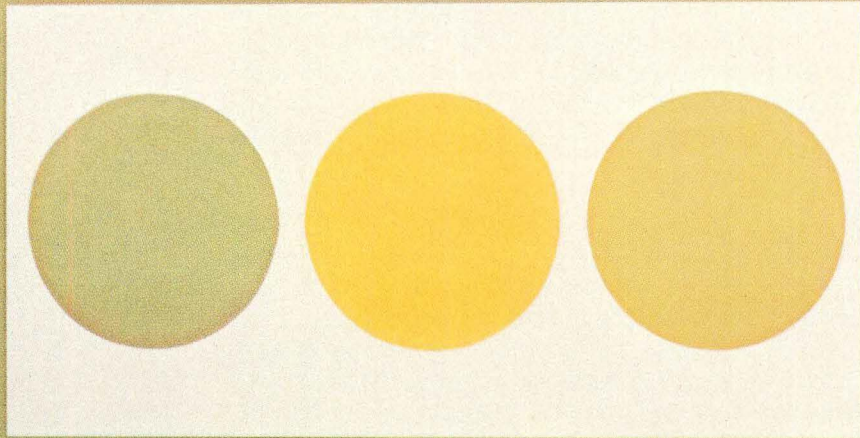
But you really must see and try this new PF-Plus Wood Patio Door to appreciate how much romance it can put into your homes and apartments. Give your Caradco Distributor a call today.

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Window and Door Division**
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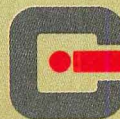
Main Plant: Dubuque, Iowa 52001
Hainesport Assembly Plant
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Guidelines to European architectural practice

The following outline of what American developers and architects should know about European practice was delivered as a talk by Robert Brodsky, executive vice-president of the New York firm of Brodsky, Hopf & Adler Architects and Engineers, to a mid-April seminar in Marbella, Spain, sponsored by the Real Estate Review and Real Estate Institute of New York University.

Although the subject of this discussion has to do with the development of a general understanding of the architect's problems and responsibilities in European practice, my remarks will be primarily predicated on project development in France, where my experience, and that of my firm, have been most recently concentrated.

In this experience, although we have learned that there are many similarities to problems and ground rules in the United States, there are vital differences. Although I am not quite inclined to say, "vive la différence" the American developer and his architect had best get to know these differences well if they are to realize the very attractive potentials that await them on the European continent.

These differences have to do with zoning laws and ordinances, ecology, esthetics, costs; they deal with local customs, and with materials. As they relate to these considerations, European policies are, you will soon find, considerably more restrictive than those of the United States. And these restrictions, although certainly not insurmountable, must be included in your initial planning of real estate development in Europe.

All of us are, of course, quite familiar with the problem of conforming with zoning and ordinances. Most of the countries of Western Europe have adopted zoning laws very similar to our own. These pertain to requirements of land area per dwelling unit, road frontage, yard requirements and parking, among others. But today European zoning codes are becoming more stringent. They now include provisions for such matters as architectural review, engineering requirements for sewers and water, road specifications, and other factors.

In France, the zoning and building codes are tied together. To file plans in France, one is required also to engage the services of a consulting French architect. The plans are then filed at the Prefecture General level and, on their approval, you are provided with a *Permit de Construire*, the paper that says you may begin construction.

Before obtaining this permit, however, one must go through a number of formalities.

First you are required to prepare a site plan, in which you will indicate the scheme: the type and number of buildings, number of units, density, parking, and so on. A meeting with the local equivalent of a zoning board is then arranged for. There, you will be confronted by the *Architecte de Conseil*, the consulting architect, who will ask most of the questions and whose opinion will carry considerable weight. Most often, a second meeting will be required before you are permitted to make your formal submission to the board.

This formal submission consists of a set of preliminary plans for roads, water, sewers, ducts, buildings and of the other facilities to be provided. If public facilities buildings, such as restaurants or hotels, are to be included, preliminary plans for ventilation, heating and plumbing facilities must also be shown. And cost estimates must be provided. Then, it will take from two to three months before you will receive a response. Once approval is given, no additional plans need be filed.

No additional plans—but—one more interesting surprise does await you. You will be invited to participate in a discussion related to Z. A. C. I'm not quite certain of the words constituting this acronym, or whether it may not be more appropriately designated "Z.A.P.," but I can tell you with some authority what, in plain English, it does mean. Literally translated, it stands for, "How much will you pay for schools, hospitals, water, garbage disposal, etc. . . . *If we give you an approval?*" It is, in effect, a tax levied on the developer for putting his facilities in that area. The developer's contribution could take the form of a donation to a new school, adding a wing to the hospital, building a sewer plant, or whatever, the size of this contribution being directly related to the scope of your project.

It goes without saying that you will be well advised to take into consideration such supplementary costs when developing your initial project cost estimates.

As we've seen, European zoning problems are quite similar to those we know in the United States. Building codes contain the same fire and health protection requirements we know at home, but, added to these, are social requirements that are much more stringent than those with which we are familiar in the States.

In Europe, esthetics are a particularly important consideration and your compliance with the regulations pertaining to them is vital

to the acceptance of any real estate development plan.

The use of the land area and how it is developed is a matter of real concern in Europe today. Wooded lands are fast disappearing and, in France, special areas have been designated for the express purpose of protecting the woods. The design of villas and apartments must take into consideration the desires of the prospective client for such amenities as gardens, pools, tennis and horseback riding at the time site development is started. As a means for providing green space as well as for preserving wooded areas, the concept of cluster housing is a preferred alternative in Europe to the more prevalent American practice of providing for one house per acre of half-acre. All plans must be submitted to a Review Board.

Other matters related to esthetics which are of vital public concern have to do with the design of the buildings and with the materials to be used. In preparing your proposal, the design concept is usually covered adequately by a simple statement to the effect that the buildings will blend with the surroundings, but the material selection can be a problem unless agreement regarding their choice is reached early. Color of tile for roofs, exterior walls, etc. can be dictated by the zoning board if the problem had not been discussed and agreed on beforehand. The architectural facades of old buildings will be carefully scrutinized before approval is given.

There is one area of special public concern that has now taken the spotlight in Europe with an intensity at least equal to that in the United States. The protection and rejuvenation of the ecology now has top priority in Europe—and with good reason. Since pollution has already affected the Mediterranean, the Atlantic Coast, parts of the English Channel, and most of the rivers in Europe, stringent rules and regulations planned to implement effective controls are being adopted and enforced. Strong measures are now being taken to regenerate that which has been ruined and despoiled, and to save that which remains in reasonably healthy condition.

In France, strict regulations have been instituted for the control of sewage treatment plants. B.O.D. requirements on the order of 95 per cent removal mandate the utilization of complete treatment plants. It is, however, possible to deposit this effluent in a river, but always with careful monitoring.

All matters affecting the protection and maintenance of green areas and beaches, as well as the habitats of fish and wildlife have

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become the concern not only of the press and the general public, but of national and local governments as well. There is an all-encompassing interest that constitutes a hurdle that would be quite difficult to overcome. It is, therefore, an area of development activity that must be carefully considered—one which should be discussed with the authorities in order to determine specific requirements before plans are developed too far—and along forbidden directions.

In Europe, as elsewhere today, special consideration must be given to control costs. But, particularly in Europe, in view of the situation we have just outlined, special thought must be given to the factors affecting costs that can be controlled by the architect. This included planning for engineering economy, and I stress engineering, since it represents almost 40 per cent of the total project cost. Layouts of roads and utilities, including sewage plants and water systems, reflect importantly on the cost per unit of building and in order to establish and maintain an effective control of cash flow, proper phasing of site work is a vital consideration.

Costs are affected, too, by the availability of materials. With changes now taking place as a result of the Common Market, and these include the removal of tariffs on many products, the architect has more freedom of choice in the selection of materials.

Labor, then, becomes the next factor affecting costs. This varies with the type of labor required, whether skilled or unskilled, its level of productivity and with its ability to adapt to the use of new materials. Shortages of skilled labor in most of Western Europe have had the expected effect of escalating costs.

No differently than in the United States, the European architect is totally and personally responsible for all of his work. In France, the architect *must* carry "Errors and Omissions" insurance to the full value of his projects. But in Europe, the architect seldom does a complete set of plans. He develops the design concept and will then allow the contractor to prepare the engineering drawings. Occasionally, an architect will hire a *Bureau d'Etudes* for a large project. This is the equivalent of a large architectural drafting company to which design drawings are furnished, from which they prepare working drawings.

In Europe, the architects are usually small practitioners. An office of 20 men is considered quite large. Their approach to architecture is usually the "Beaux-Arts" approach, quite different from that of the business-oriented American architect. The concept of time being money does not seem to exist there. You can also readily sense the fear of governmental authority which obviously colors their thinking and approach. Our American attitude of "let's try it this way, if it doesn't work we'll change it" is a frightening one to the French architect. Yet, surprisingly, our experience has been that the local authorities view this in the light of being something new and novel—and we have found that they do not resent it.

Working in Europe is a challenge. Some things are different, many are the same. Special care and good management are the key, and these must be paired up with competent professional architectural and engineering help.

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School is proving ground for modern methods

Application of construction management, value engineering, systems building, performance specifications and phased construction resulted in on-time delivery of the 340,000-square-foot Chantilly High School in Fairfax County, Virginia, within an austere budget on the order of \$20 per gross square foot. This was accomplished in spite of the fact that special conditions conspired to add cost to the project. For example, the school is located in the flight pattern of Dulles Airport, so a sound barrier shell rated at about 45 db included double half-inch plate windows and seven-inch concrete walls with one inch polyurethane insulation. Also, the program for 2500 students plus 300 part-time vocational students from other schools called for large and costly areas of shop, laboratory, food service and assembly spaces in the two-story structure.

Key to economics of the school design and construction was the fullest cooperation among the architects, consultants, systems manufacturers, and especially the client school board represented by Edward Stephan, assistant superintendent for construction.

The school had been previously designed along conventional procedures by architects Beery, Rio & Associates and costed out on the order of \$8 million. That was about a million more than the board was prepared to finance. Meanwhile, the need for several additional elementary schools encouraged Mr. Stephan to talk over with the architects the possibility of applying some of the lessons learned in California, Toronto and elsewhere using a systems approach and taking advantage of multiple purchasing.

The result was a commission to Beery, Rio & Associates as project architects for the high school, the firm of Jansons Roberts Taylor Associates as systems architects, and McKee-Berger-Mansueto, Inc. as construction management and value engineering consultants. These three firms proceeded to cost out the systems approach based on the project architect's schematics for the high school. The idea was that the systems architect would then be able to coordinate application of the systems design among other architects for design of the elementary schools.

A bond issue for construction of the elementary schools was defeated by county voters. The previously approved budget for the high school remained in force, however, and although the conventional design was more costly than the county had anticipated, the high school project remained as a real one.

The three firms and Mr. Stephan decided to go ahead with the systems approach to the high school program on the grounds that it was large enough to interest potential suppliers of systems, and the economic situation in the county was such that there was interested response by manufacturers to the idea of bidding on various portions of the project.

Performance specs for five systems evaluated

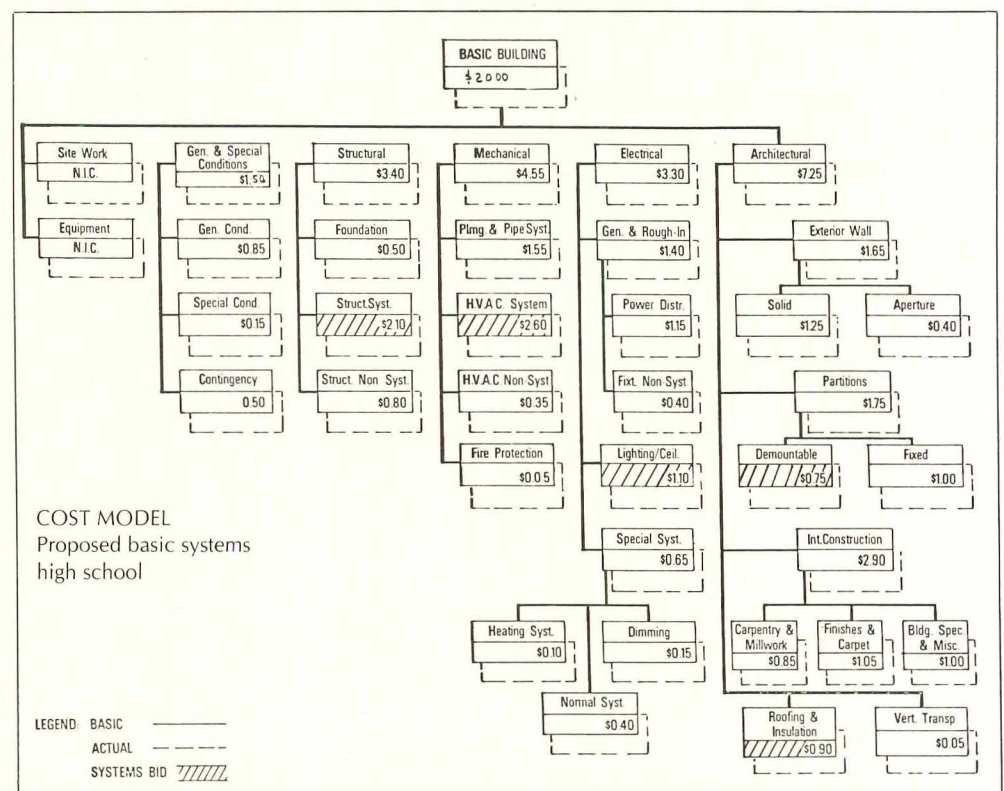
The value engineering director of MBM, A. J. Dell'Isola, helped to identify five of the building sub-systems comprising about 40 per cent of the total cost, and the project and systems architects together with the involved engineers proceeded with fleshing out the systems designs so that they could be bid by potential suppliers. The designs were documented by performance specifications so that suppliers could respond within their own areas of specialty. The value engineers were then charged with the responsibility of relating bid responses not only to first cost but to the maintenance and replacement factors involved in life cycle costing. The five systems involved were: structural, hvac, lighting/ceiling, demountable partitions, and roofing/insulation systems.

A cost model, based on an aggregate of \$20 per gross square foot was drawn up, and each of the components of the building, both in-system and out-of-system, was assigned an acceptable cost limit based on the aggregate experience of comparable school construction.

As Mr. Dell'Isola describes it, purchasing on the basis of performance specifications might proceed as follows. While the consultants had estimated 75 cents per square foot for demountable partitions, the low bid came in at 80 cents per square foot. Referral of the problem back to the architects and value engineers identified opportunities to reduce the cost and resulted in a savings of about \$39,000. This was without sacrifice to the owner's objectives of flexibility and sound isolation. It dealt, actually, with mounting methods and trim.

Bidding on others of the five systems as well as out-of-system portions of the over-all work proceeded as the construction managers pulled out their bid packages and proffered them as separate items. For this project, 14 separate bid packages were used.

The combination of these procedures together with phased construction and frequent large orientation meetings among offering manufacturers, local subcontractors, school



officials, architects, engineers and consultants resulted in a smooth, albeit busy, operation which saved about \$1.25 million below the cost of the conventionally designed school.

Manufacturers contribute to systems cost analysis

Focus of the procedures, says Dell'Isola, is on total costs of designing, building and operating the project. For example, although the performance specifications for the bid systems were based on those developed for Toronto, Florida and California, the value engineers nevertheless reexamined them to identify those items where manufacturers would require more specific information before the performance specifications were made final. The role of the value engineer in this examination was to: a) be sure at least two manufacturers would bid on each system, b) review with manufacturers' technical personnel any restrictive or unclear requirements; c) evaluate resulting cost data.

Many times, the technical personnel of the manufacturers were able to be specific about the cost components of systems. For example, the lighting/ceiling system called for a 45 db sound rating. Interior partitions on the other hand were to be rated at 35 db. A field test

check showed that it was difficult to establish the difference in these ratings under the prevailing circumstances. The ceiling manufacturers reported that the 45 db requirement added about 10 to 15 per cent to the cost of the system over a 35 db system. The owners and architects then agreed that the 45 db rating for the ceiling system was established without taking into account the sound barrier effects of the roofing system. It was, therefore, agreed that the ceiling could be rated at 35 db while the roofing system and above-ceiling spaces absorbed the rest of the sound barrier requirements. The result was a saving of over \$35,000.

Life cycle costing supports quality objectives

Superimposed over this kind of attention to the specifics of each segment of the cost model was a life cycle ownership evaluation. This helped keep in perspective the imperatives of control at each point in the system.

Another example of value engineering was its application to the building skin. Initial market studies indicated masonry to be the most economical in first cost. Nevertheless, precast manufacturers were invited to respond to the parameters of the performance specification.

Meanwhile, continuing market research showed that a mason and brick shortage was causing an increase in masonry costs and as much as 90 days delay in delivery of materials. MBM then urged the owner and architects to consider precast as well as masonry bids, all with a proviso that a time frame be tied into the bid. The reasoning was that in addition to first cost considerations, it was necessary to have the school open for the fall session in spite of having lost about six months in the redesign process. The successful bidder was a precaster (Granite Research Industries) who would provide a seven-inch precast panel with one inch of insulation for \$5.25 per square foot of panel. This he was able to promise on time because of his ability to adapt special forming methods applied to panels as large as 30 by 10 feet.

Again, on the hvac system, the basis of award was the life cycle cost including fuel, maintenance and operation costs over 15 years. On that basis, the award went to the fifth lowest of eight bidders. The system selected was a roof-mounted central year-round air conditioning system, oil fired, which had the side effect of some \$100,000 savings in electrical distribution and consumption costs, off-setting a somewhat higher first cost.

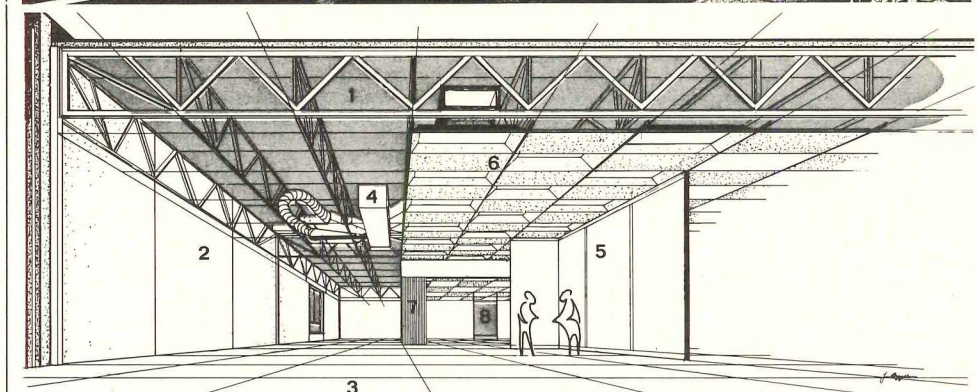
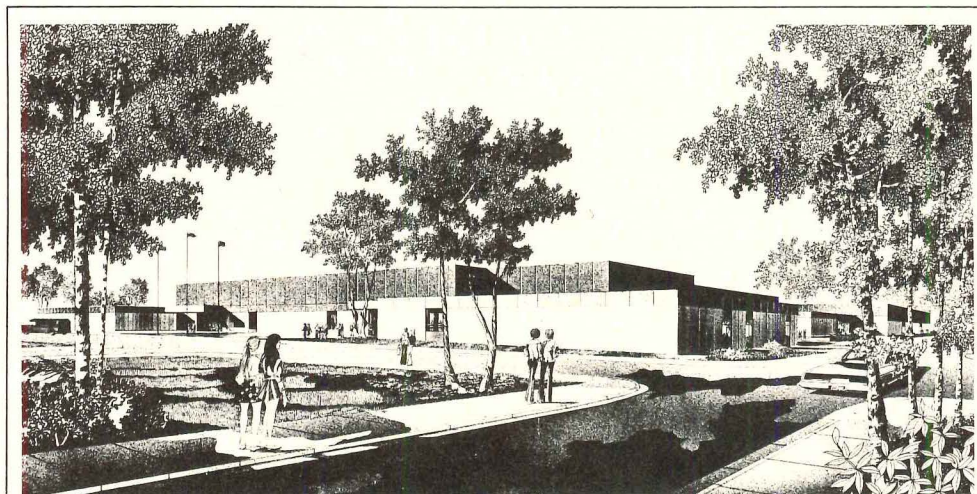
On this project the construction managers sought interested participation of contractors by a value engineering incentive provision in each prime contract. These provisions allow contractors to share in the savings on any approved proposal. The result of this provision was four proposals by contractors amounting to over \$39,000 in contract savings.

The management information system used on this project provided monthly reports to the owners and architects, giving the job status with respect to both schedule of completion and current budget target. These reports reflect the status of each of the 14 contracts issued on this project and a review of progress from the initial estimate through current phase, including itemization of change orders or revisions.

Architects see process as resulting in better buildings

Project architect Edgar Beery reports that the only difficulty encountered on this project was a relatively brief one. It arose mainly from unfamiliarity of some contractors with the performance specification, the systems approach, and the consequently intensified relationship of manufacturers to the job. Once the program of orientation meetings had relieved some of the apprehensions and answered some of the questions about the procedure, most of the participants were enthusiastic about the improved organization and efficiency of the overall project.

The architect finds a certain discipline in these procedures that is beneficial not only in cost savings and speed of delivery, but also in the direction of architectural thinking in terms of performance and quality. He believes that the building is a better building because of these disciplines and attentions and that the broad base of communication with contractors and manufacturers, while causing an increase in the amount of conference time, actually reduces both the over-all design time and the completion schedule of the building.



Systems construction: This project was developed to utilize off-the-shelf systems and interfacing modular components designed for the project.

1. The structure is based on a 5x5 ft. grid with floor bays of 30x30 ft. and roof bays generally 30x60. The steel structural system supports a fully integrated ceiling-lighting system, and a heating, ventilating and air-conditioning system.
2. The exterior precast concrete skin consists of insulated concrete panels, some as large as 10x40 ft., and providing the exterior finished wall and the interior finished surface.
3. Carpeted floors.

4. A central heating, ventilating and airconditioning plant to serve large distributing units for zones throughout the building.
5. Movable metal partitions are being used where feasible to provide maximum flexibility in space arrangement and utility. Special attention has been given to arrangement of spaces by activity, and soundproof partitions and doors have been used to contain noise in areas such as music, metal working, etc.
6. Ceiling-lighting.
7. Movable folding walls.
8. Movable visual dividers.

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The carpets, from Milliken's "Decor East" collection, have the long-lasting quality and cleanability essential to hotel use. And they open new vistas for exciting commercial decorating. "We got the right atmosphere and the right carpet," says Mr. Schneider. V. C. Glass Co. in Louisville supplied the carpet for the Galt House installation. For information about all Milliken contract carpets, call or write Deering Milliken, Inc., Contract Carpet Manager, LaGrange, Georgia 30240. (404) 883-5511.



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1973 is shaping up as another record-breaking year, even bigger than we forecast at its beginning. Back in January we were on the high side of the forecasting fraternity with a Gross National Product of \$1271 billion, up 10.3 per cent over 1972. We expected 6.2 per cent real growth and 4 per cent price inflation. Now we are forecasting GNP to reach \$1283 billion this year for a gain of 11.4 per cent, with real growth accounting for 6.8 per cent and prices about 4.3 per cent.

We expect the rate of real growth to subside throughout the year from the superboom pace of the first quarter. Phase 4 can only result in tougher price controls than Phase 3. Monetary policy will tighten further.

The first quarter growth rate was an unsustainable rate of 7.6 per cent. We now (May 3) expect a rate of about 6.5 per cent in the second quarter, which would mean a first-half gain of over 7 per cent on an annual basis. The last half should show a rate of increase of about 4 per cent, with the final quarter coming around 3 per cent. The capital goods boom should carry the economy to a slight plus in the first quarter of 1974.

The main drive for the business sector of the economy, which covers private investment in new plants and equipment, inventories and residential construction, will come from business investment in new facilities.

Douglas Greenwald, Chief Economist, Economics Department, McGraw-Hill Publications Company

INDEXES: July 1973		1941=100.00 (except as noted)				% change last 12 months
Metropolitan area	Cost differential	Current Indexes				
		non-res.	residential	masonry	steel	
U.S. Average	8.2	412.7	387.5	403.8	393.8	+ 9.28
Atlanta	7.6	524.7	494.8	510.1	498.5	+ 9.35
Baltimore	8.0	451.4	424.4	440.5	427.0	+13.95
Birmingham	7.2	378.5	352.1	365.9	361.5	+ 9.25
Boston	8.9	421.4	398.2	416.7	404.9	+ 9.80
Buffalo	9.0	461.1	433.0	453.9	440.0	+ 9.63
Chicago	8.2	473.9	450.6	457.9	450.8	+10.12
Cincinnati	8.4	438.0	412.2	427.4	416.4	+ 7.70
Cleveland	8.8	444.9	418.6	435.0	424.3	+ 5.26
Columbus, Ohio	8.0	432.1	405.8	419.2	411.4	+ 7.47
Dallas	7.5	413.0	399.9	411.5	395.7	+11.69
Denver	7.8	436.3	410.5	430.0	416.0	+ 7.91
Detroit	9.4	470.6	448.3	472.8	454.2	+11.22
Houston	7.2	381.9	359.6	373.0	365.4	+ 6.37
Indianapolis	7.6	376.1	353.3	367.1	359.0	+ 5.73
Kansas City	8.1	394.7	373.0	385.4	375.6	+11.26
Los Angeles	8.1	465.3	425.4	449.8	441.6	+11.22
Louisville	7.4	408.3	383.5	397.7	388.5	+ 8.76
Memphis	7.3	384.0	360.6	370.7	365.0	+ 6.77
Miami	7.7	426.0	405.9	413.4	405.1	+ 7.10
Milwaukee	8.1	457.1	429.3	448.9	434.9	+ 6.25
Minneapolis	8.6	437.4	411.5	430.4	419.6	+ 7.27
Newark	8.6	405.4	380.7	398.8	390.4	+ 7.89
New Orleans	7.1	389.0	367.3	381.9	373.4	+ 8.97
New York	10.0	466.0	433.2	454.2	442.5	+11.63
Philadelphia	9.1	466.4	444.4	462.0	449.1	+16.57
Phoenix (1947 = 100)	7.8	238.3	223.8	230.0	226.3	+10.60
Pittsburgh	8.8	412.8	388.4	407.2	395.1	+11.54
St. Louis	8.6	434.4	411.0	427.8	417.7	+11.04
San Antonio (1960 = 100)	7.0	151.5	142.4	146.0	143.7	+ 3.90
San Diego (1960 = 100)	8.0	166.2	156.2	162.5	158.9	+10.30
San Francisco	9.4	621.9	568.6	615.2	596.7	+13.33
Seattle	8.2	400.5	358.5	396.0	380.6	+ 7.00
Washington, D.C.	7.7	389.9	366.2	378.3	369.4	+ 9.49

Cost differentials compare current local costs, not indexes.

Tables compiled by Dodge Building Cost Services, McGraw-Hill Information Systems Company

HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL NON-RESIDENTIAL BUILDING TYPES, 21 CITIES										1941 average for each city = 100.00							
Metropolitan area	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972 (Quarterly)				1973 (Quarterly)			
										1st	2nd	3rd	4th	1st	2nd	3rd	4th
Atlanta	306.7	313.7	321.5	329.8	335.7	353.1	384.0	422.4	459.2	472.5	473.7	496.1	497.7	516.4	518.0		
Baltimore	275.5	280.6	285.7	280.9	295.8	308.7	322.8	348.8	381.7	388.1	389.3	418.8	420.4	441.8	443.6		
Birmingham	256.3	260.9	265.9	270.7	274.7	284.3	303.4	309.3	331.6	340.4	341.6	356.7	358.3	371.7	373.2		
Boston	244.1	252.1	257.8	262.0	265.7	277.1	295.0	328.6	362.0	377.3	378.5	392.8	394.4	414.0	415.6		
Chicago	301.0	306.6	311.7	320.4	328.4	339.5	356.1	386.1	418.8	422.8	424.0	442.7	444.3	465.3	466.9		
Cincinnati	263.9	269.5	274.0	278.3	288.2	302.6	325.8	348.5	386.1	399.9	401.1	400.1	410.7	430.4	432.0		
Cleveland	275.8	283.0	292.3	300.7	303.7	331.5	358.3	380.1	415.6	415.2	416.4	427.7	429.3	436.7	438.3		
Dallas	253.0	256.4	260.8	266.9	270.4	281.7	308.6	327.1	357.9	364.9	366.1	385.0	386.6	407.3	408.9		
Denver	282.5	287.3	294.0	297.5	305.1	312.5	339.0	368.1	392.9	398.3	399.5	413.8	415.4	429.5	431.1		
Detroit	272.2	277.7	284.7	296.9	301.2	316.4	352.9	377.4	409.7	416.9	418.1	431.5	433.1	463.4	465.0		
Kansas City	247.8	250.5	256.4	261.0	264.3	278.0	295.5	315.3	344.7	348.7	349.9	365.4	367.0	387.7	389.3		
Los Angeles	282.5	288.2	297.1	302.7	310.1	320.1	344.1	361.9	400.9	407.8	409.0	422.9	424.5	453.3	454.9		
Miami	269.3	274.4	277.5	284.0	286.1	305.3	392.3	353.2	384.7	391.5	392.7	404.8	406.4	419.0	420.6		
Minneapolis	275.3	282.4	285.0	289.4	300.2	309.4	331.2	361.1	417.1	401.7	402.9	411.3	412.9	430.6	432.2		
New Orleans	284.3	240.9	256.3	259.8	267.6	274.2	297.5	318.9	341.8	350.9	352.1	368.1	369.7	382.1	383.7		
New York	282.3	289.4	297.1	304.0	313.6	321.4	344.5	366.0	395.6	406.5	407.7	421.5	423.1	453.5	455.1		
Philadelphia	271.2	275.2	280.8	286.6	293.7	301.7	321.0	346.5	374.9	394.2	395.4	417.9	419.5	459.3	460.9		
Pittsburgh	258.2	263.8	267.0	271.1	275.0	293.8	311.0	327.2	362.1	364.5	365.7	378.7	380.3	406.3	407.9		
St. Louis	263.4	272.1	280.9	288.3	293.2	304.4	324.7	344.4	375.5	385.5	386.7	400.9	402.5	427.8	429.4		
San Francisco	352.4	365.4	368.6	386.0	390.8	402.9	441.1	465.1	512.3	535.3	536.5	559.4	561.0	606.4	608.0		
Seattle	260.6	266.6	268.9	275.0	283.5	292.2	317.8	341.8	358.4	363.0	364.5	369.9	371.5	388.4	390.0		

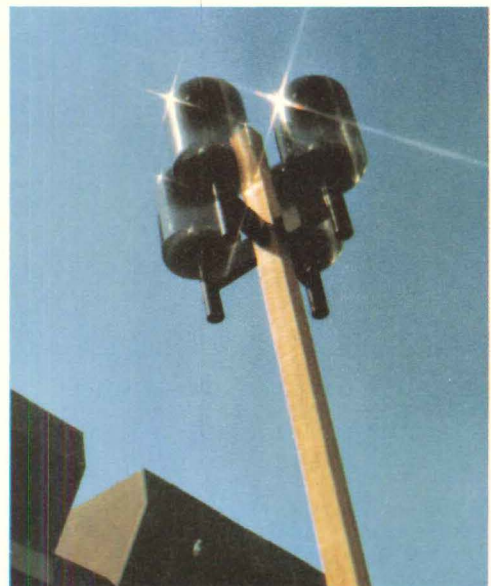
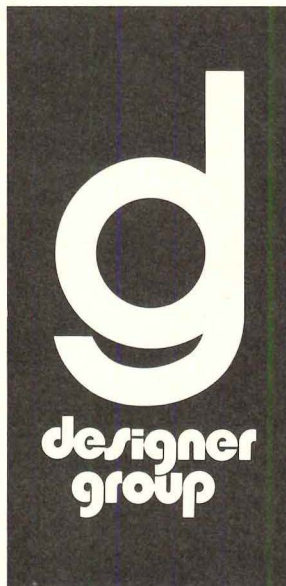
Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) divided by the index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than the costs in the other.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

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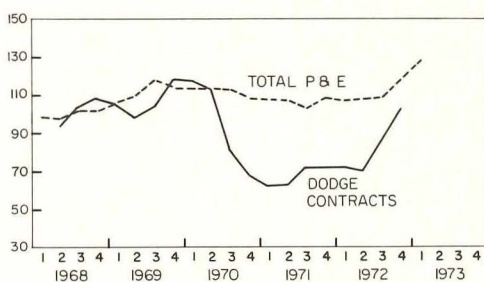


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Industrial building: how long a run?

Industrial building was picked as the "construction category most likely to succeed in 1973" as early as last October, when our annual Construction Outlook was first released. And, its performance through the first half of this year has done nothing to dispel that initial optimism. In fact, the 1973 estimates were adjusted upward in both the first and second updates of the original Outlook. In addition, recent capital spending surveys pretty much confirm our optimistic contract award forecast. But with a growing "Recession-'74" Club within the economics profession, there's sufficient cause to review the future course of this, the most cyclical of all building types. Review, not so much for what's going to happen during the rest of this year, because a healthy contracting gain (over one-third) is almost a certainty, but to reassess the potential beyond 1973.

The chart below gives a clear indication of the impact an economic downturn like the one in 1970 can have on the manufacturing contract award series. Contracting for new industrial plants fell off by 50 per cent between the first quarter of 1970 and the first quarter of 1971. The decline in total plant and equipment expenditures, on the other hand, was nowhere near as severe, as manufacturers continued to invest in newer, more modern cost-cutting



Seasonally adjusted indexes of manufacturing plant and equipment expenditures, and Dodge manufacturing contracts (three-quarter moving average) (1968=100)

equipment, even though the need for new plant capacity was not there. The contract award series, since it leads actual expenditures, began to gather strength in mid-1971, a quarter or so before the total plant and equipment series turned the corner. But, growth in neither indicator was very impressive until late in 1972, when the economy, generally, began to accelerate. As the chart suggests, knowledge about the turning points of the business cycle is the key to determining short-term trends in the industrial contract award series.

Well, in what phase of the business cycle

will we be by the end of this year? This begets an even more basic question; what phase of the business cycle are we in now? And, here, we've got to contend with what really amounts to two diametrically opposed views. Some business pundits have looked at the unemployment rate, currently hovering around five per cent, pointed to the late sixties when it was between three and four per cent, and have come up with the conclusion that, when compared with potential, the economy still is underperforming to the tune of at least one-half a million jobs. The current surge in prices, often an indication that an economy is at, or exceeding its capacity to produce goods and services, they see as partly the result of temporary shortages in a few key industries, and partly the interpretation of Phase III by business as a mandate to go forth and mark-up. But, the current 60 day price freeze, and perhaps the reimposition of some of the old Phase II measures after that should cure this situation. If these policies are coupled with some stronger monetary and fiscal measures to slow us down from the "fast burn-out" growth rate of this year's first half, this school feels that sustainable growth is no real problem for the short-term beyond 1973.

Some think creating more jobs may turn the crank of inflation

Another school of thought views things quite the other way. They see the recent surge of prices as an indication that the economy is in fact operating at or over its full potential right now. They also believe that this overheating is going to lead to a burnout by year-end, and that 1974 is going to go into the chart books with a shaded bar—used to indicate a recession year—pasted over it. The rationale here is based on the belief that a four per cent unemployment rate is no longer a meaningful gage of the economy's full potential. Shifts in the structure of the labor force, it's believed—the higher proportion of young, minority group, and female workers coupled with what has become a highly complex technical economy—have made the four per cent unemployment goal an unreasonable one. In other words, even though four and a half, or five per cent of the labor force may be "unemployed," all the "productive" jobs, in terms of the economy's technology, are filled. The economy simply does not have the capacity to generate jobs at the skill level these unemployed people represent, any more. And by trying to push the economy to try and create them you are only turning the crank of inflation.

Well, where do the strengths in the argu-

ments lie? One of the points that the Recession-'74 group has emphasized is that one of the measures of economic potential, capacity utilization, is too low, and in need of revision. An unrepresentative figure, they state, led government planners to the conclusion that there was more idle capacity in the economy than actually existed during the last recession, and caused them to be too expansive with monetary and fiscal policy. There is evidence that government capacity utilization figures have tended to be too low in the recent past. And, part of this may be due to the failure to account for equipment like pollution control devices that represent capital expenditure, but do not represent a net addition to output capacity. It also seems that recent monetary and fiscal policies have been too stimulative. But, it's also pretty clear that many of the current bottlenecks in the economy are the result of confusion or disputes over policy, as in the petroleum industry and the pollution emissions issue, or simply poor planning as in the case of agriculture. The one major bona fide supply bottleneck we really saw recently was in the lumber industry. And that, with housing starts on the decline, looks to be on the way to curing itself. Also, there's nothing to say that, even at this late date, clear decisive government policy like the current 60-day freeze can't rectify any of these situations, provided it's followed up with something stronger than Phase III once it's over.

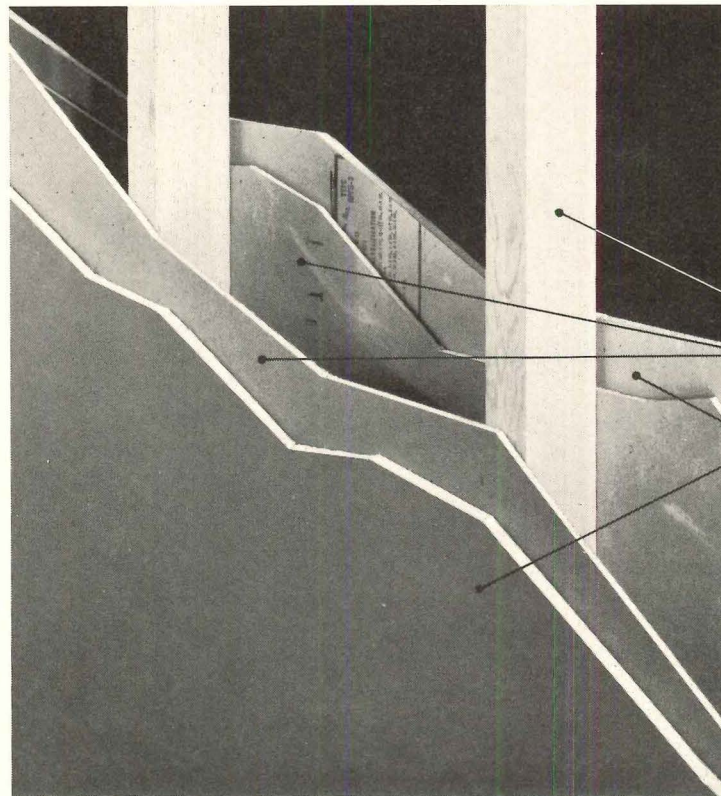
The major argument on the Recession '74 side is the four per cent unemployment rate issue though. And here, there is probably some merit to the argument that demographic shifts and technological change have acted to render this goal obsolete. But, this type of change is evolutionary, not revolutionary. And to argue this tack you've got to develop a case for these major institutional changes occurring in the short space of five years. Because the economy sustained a 3.7 per cent average unemployment rate from 1966 to 1969 with a rate of inflation at least no worse than today's.

Finally, if uneasiness over the balance of payments situation and/or general malaise over Watergate do generate some reassessments of business spending plans later in the year, this only makes the case for further gains in 1974 stronger, rather than weaker, as it serves to reduce the danger of burnout still further. A prospect that the government's new tougher position with respect to prices also can't help but enhance.

James E. Carlson, Manager, Economic Research,
McGraw-Hill Information Systems Company

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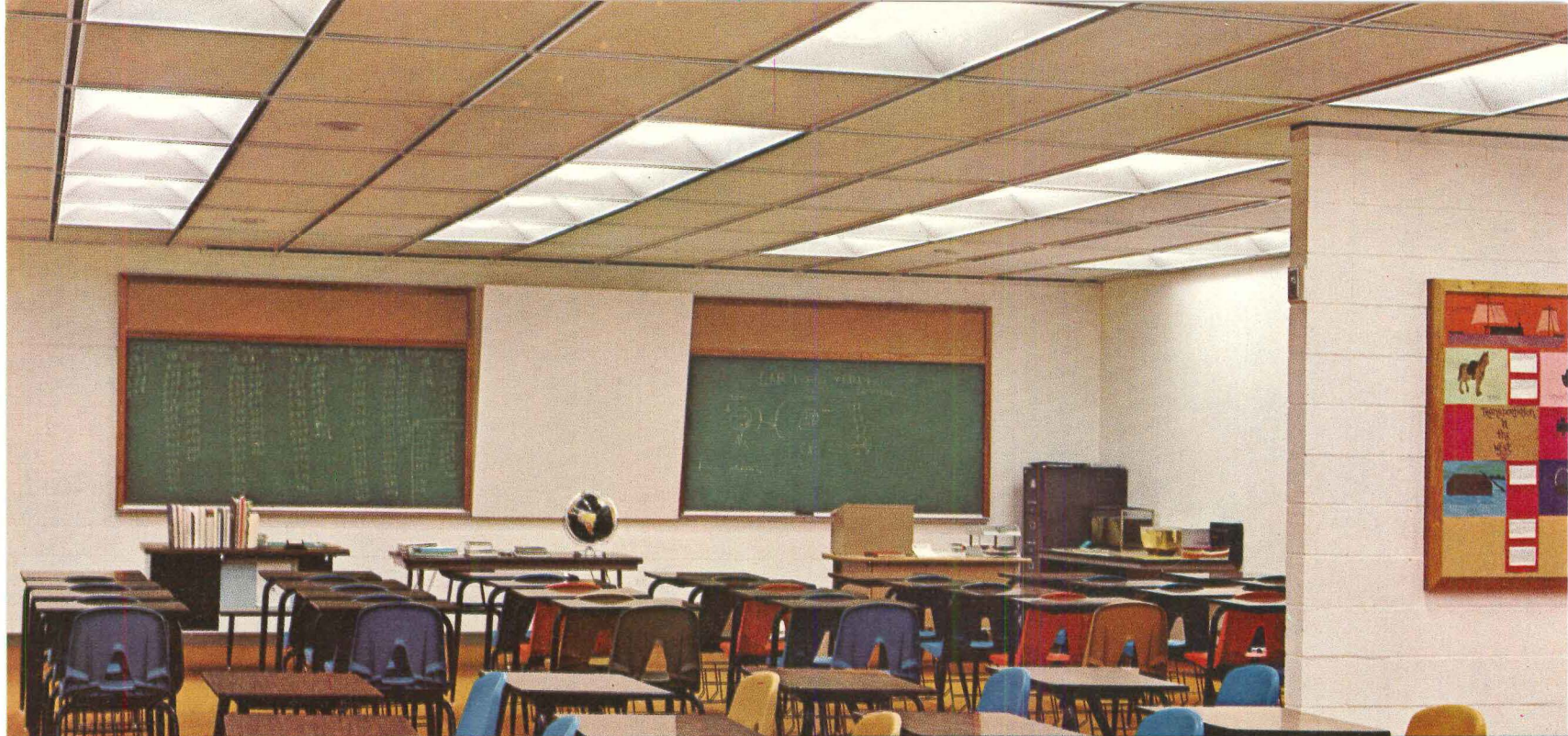
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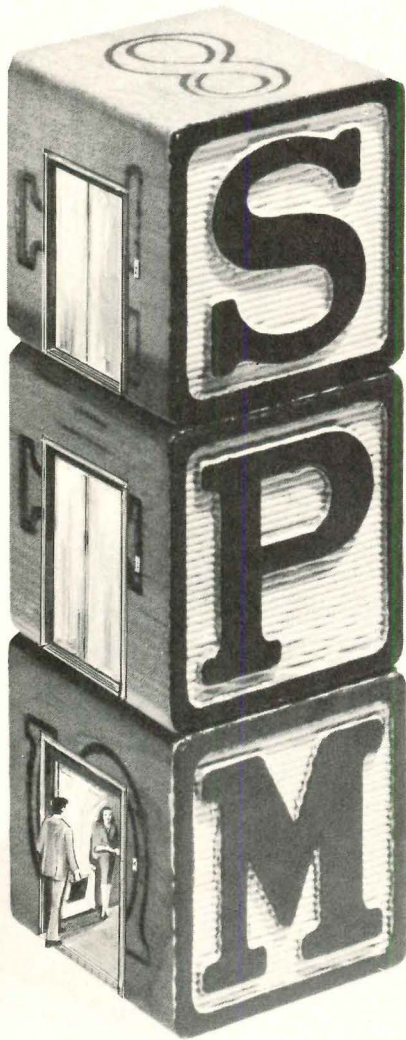
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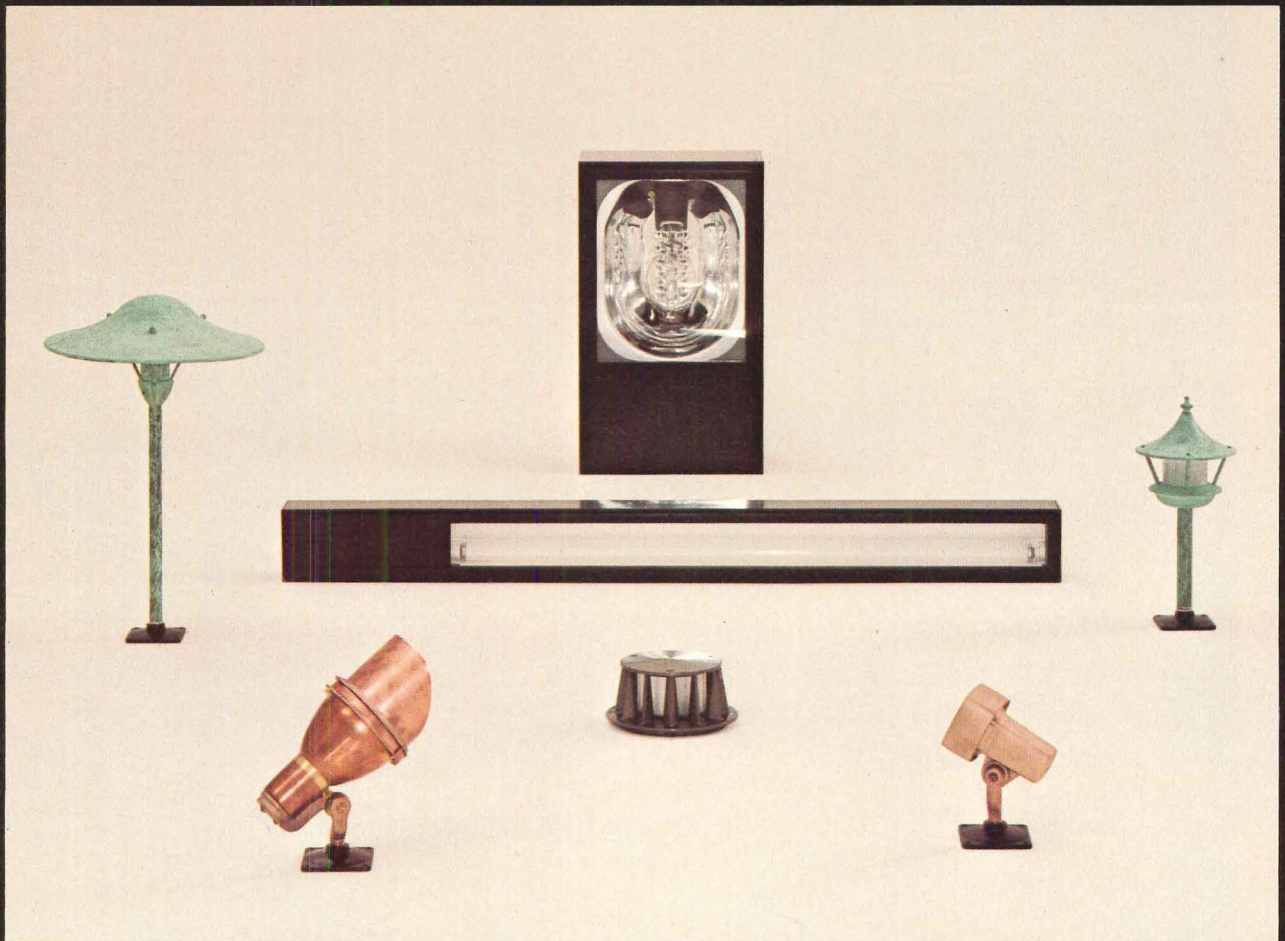
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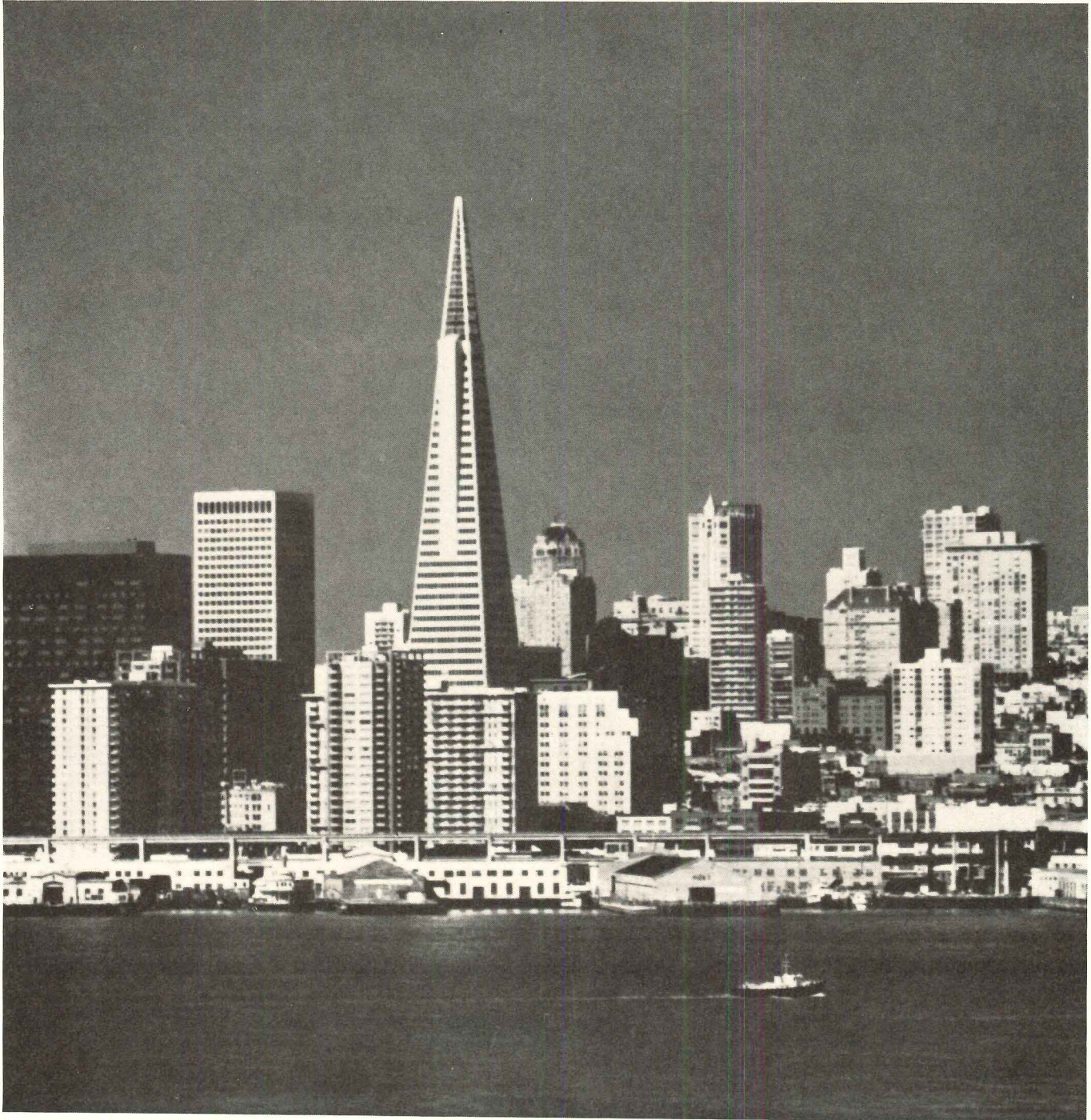
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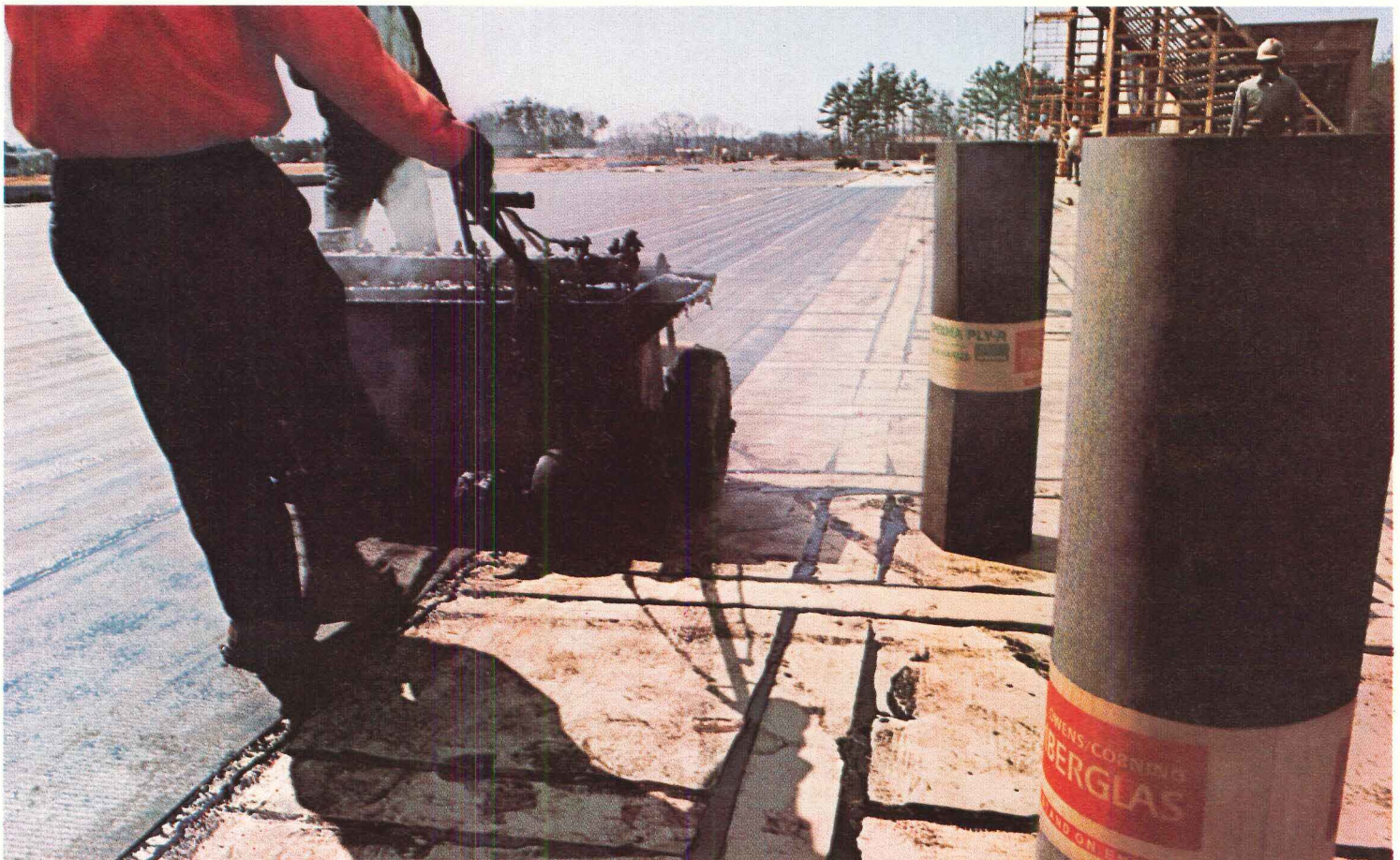
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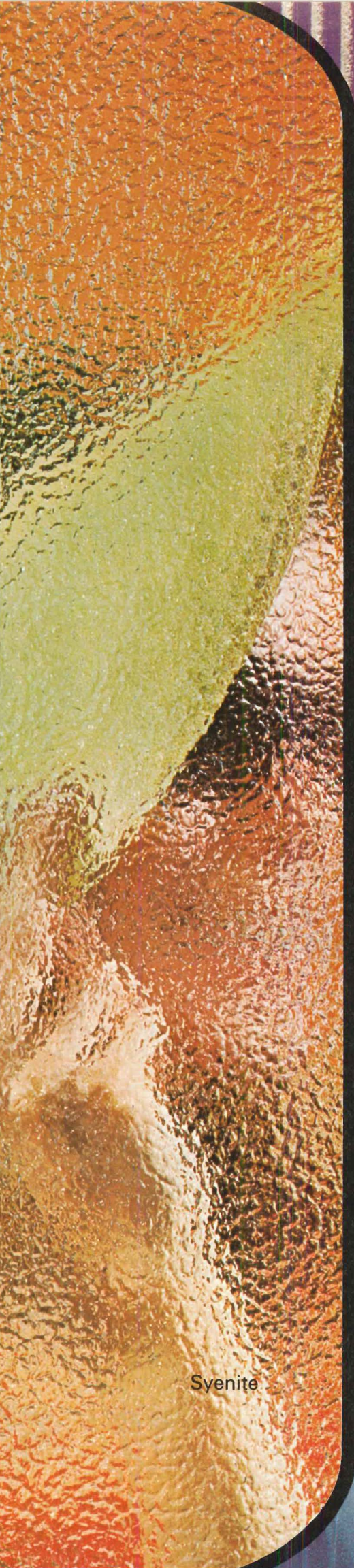
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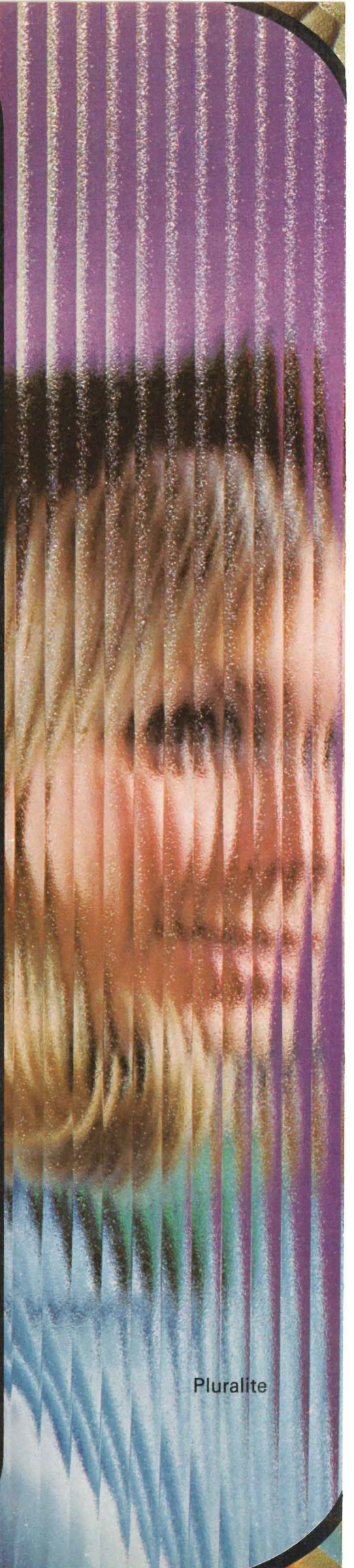
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Hylite



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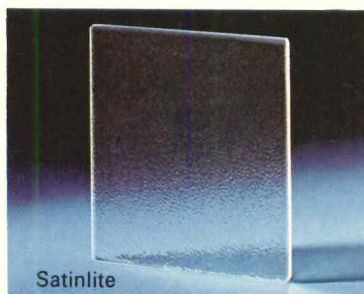


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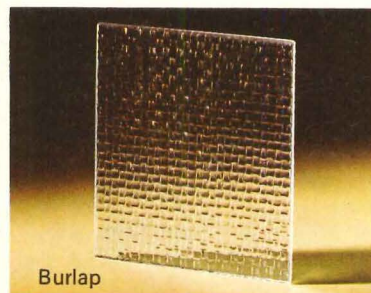
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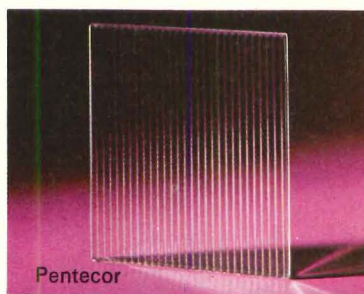
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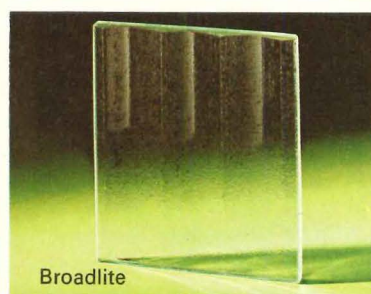
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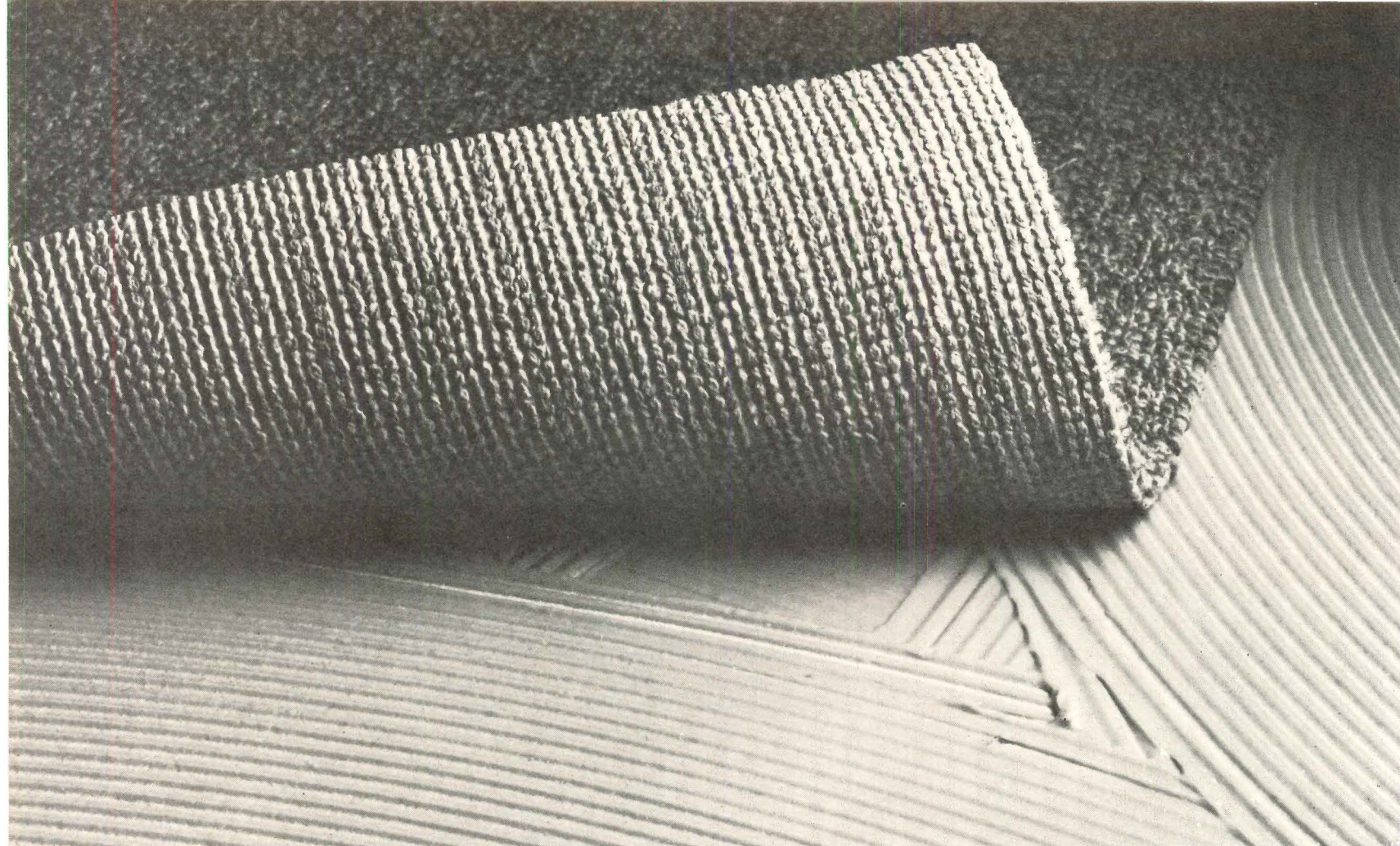
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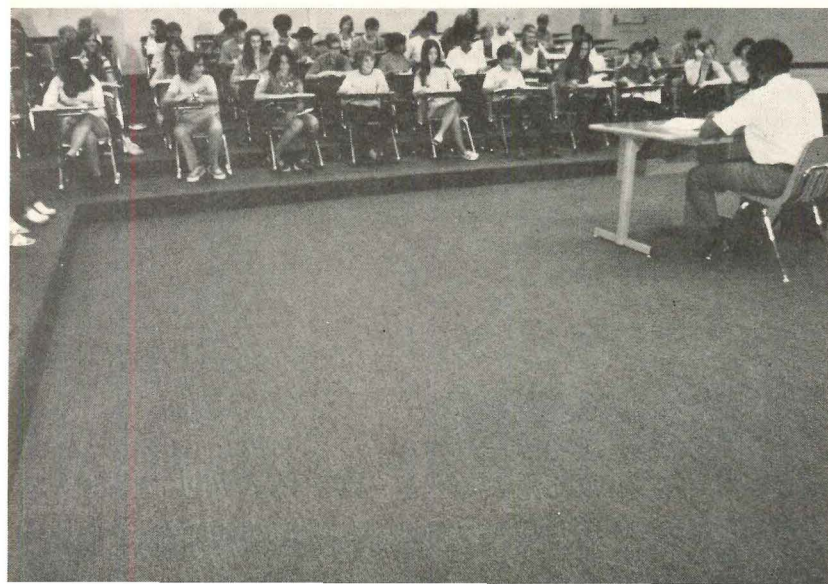
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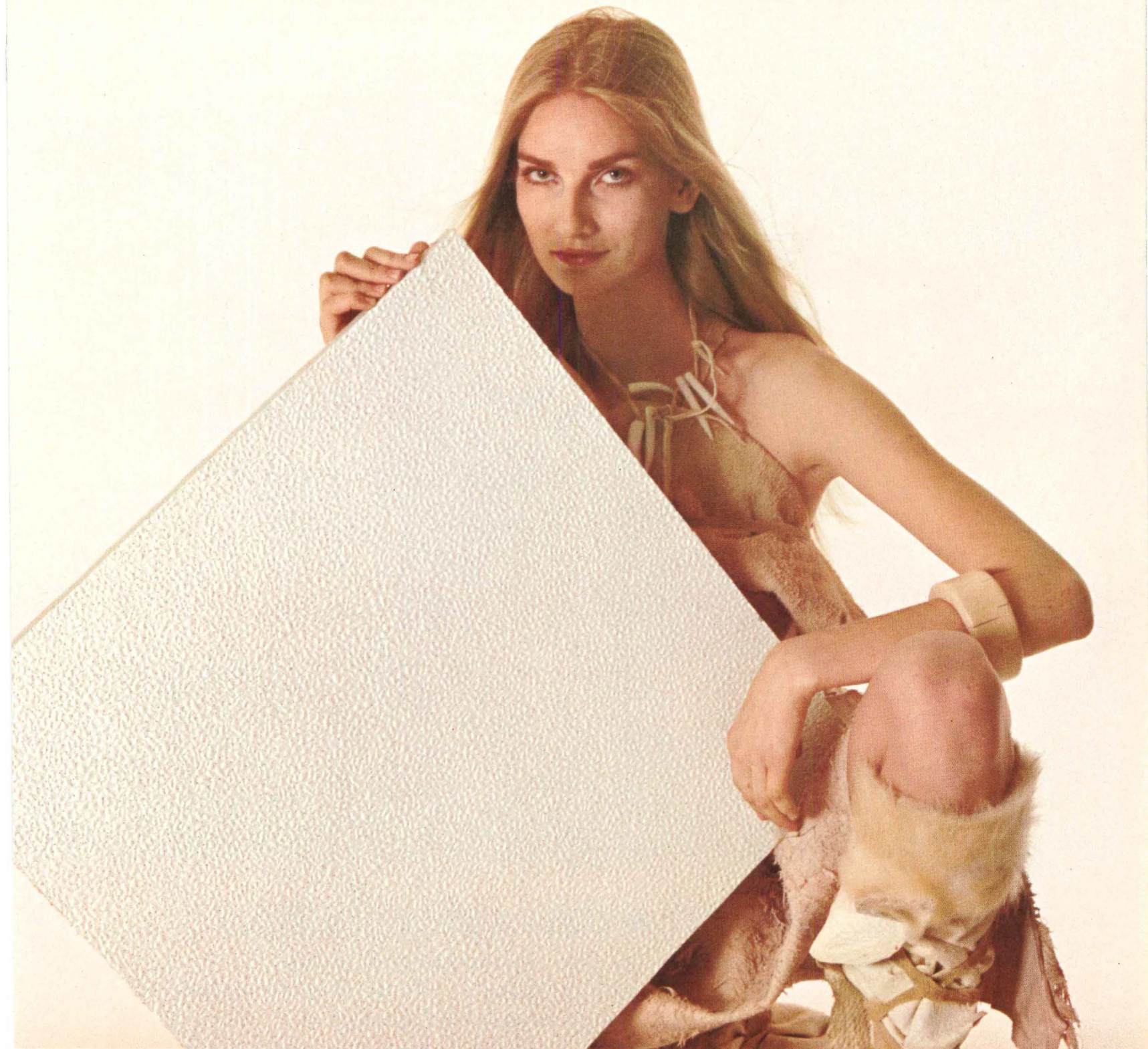


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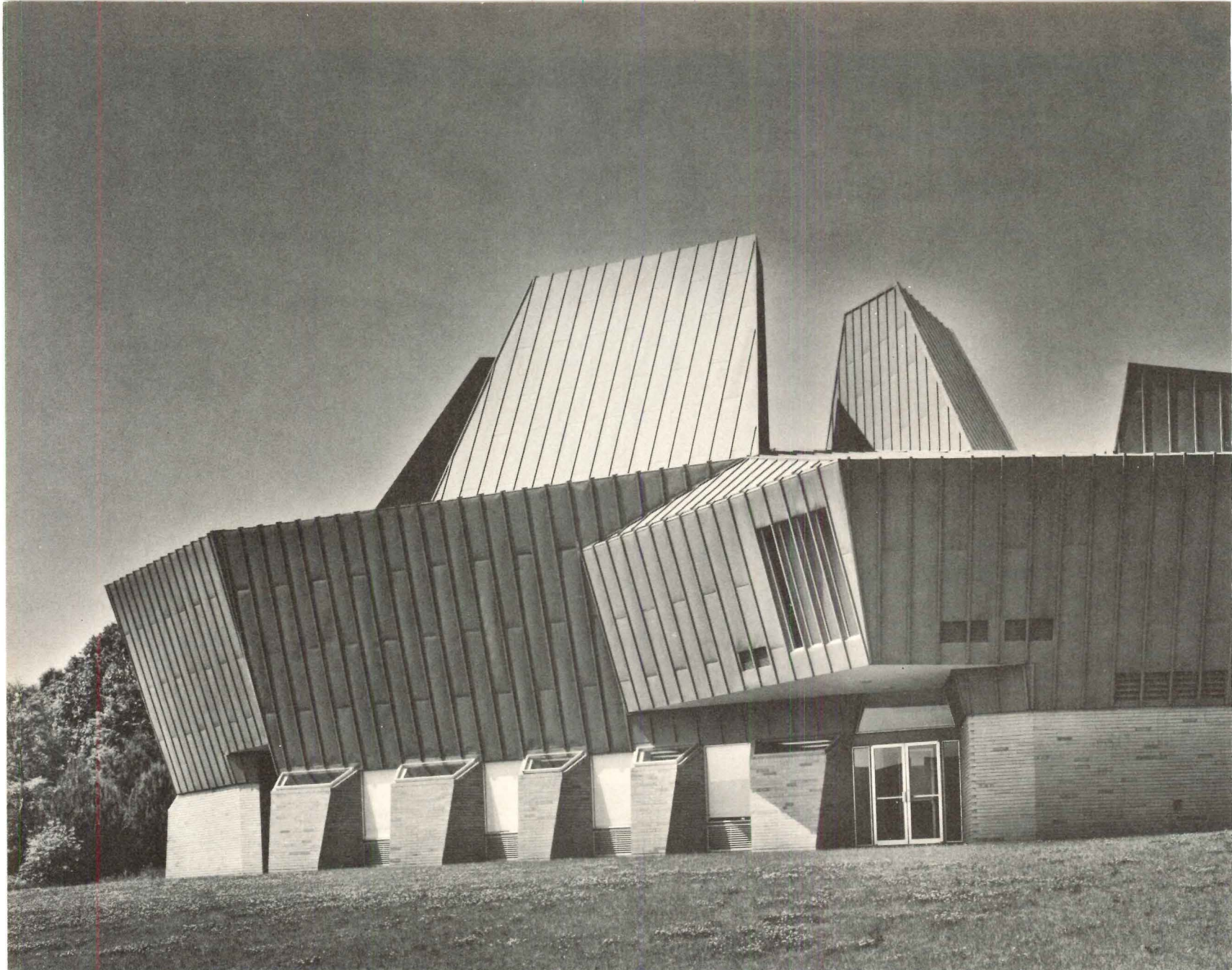
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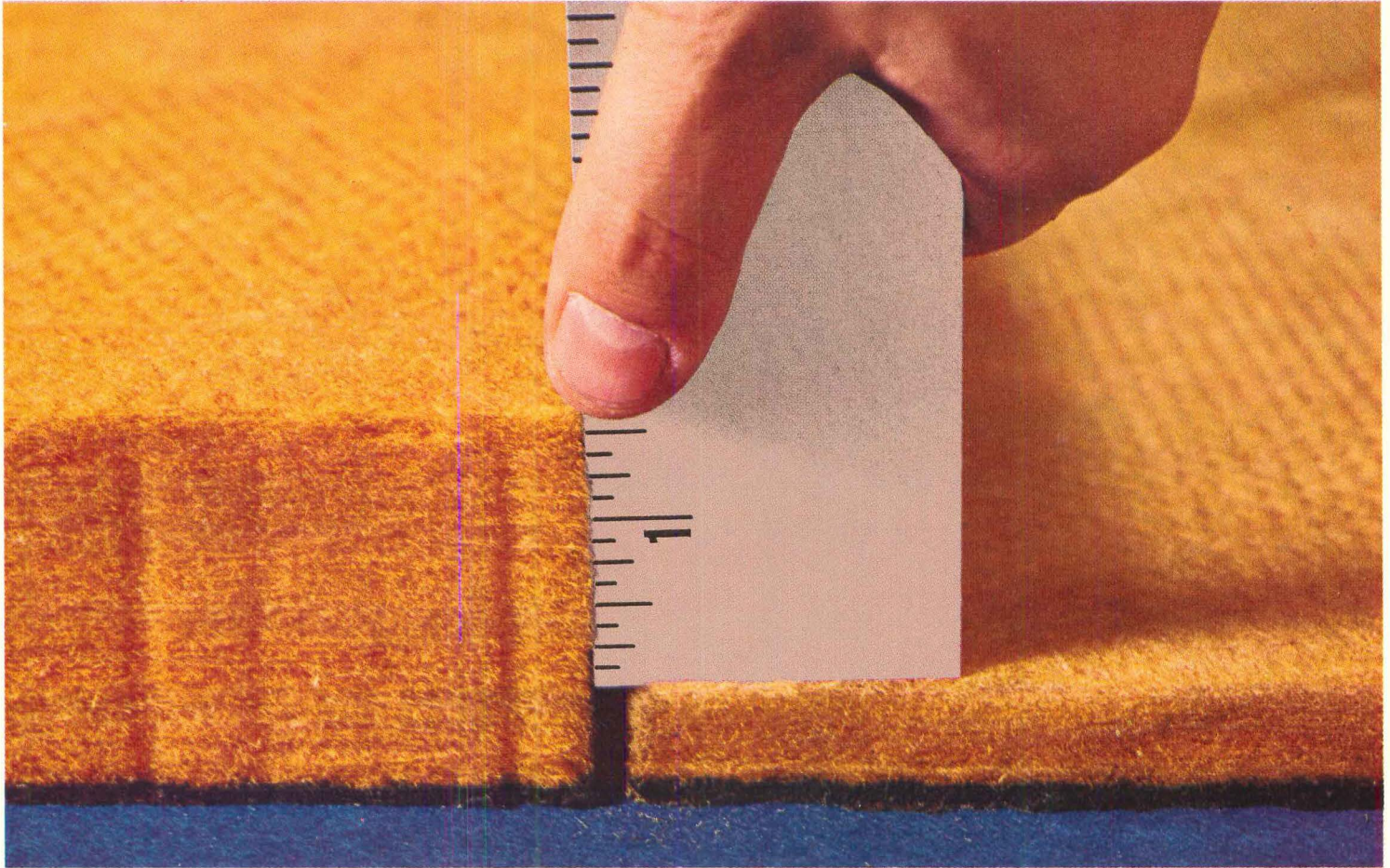
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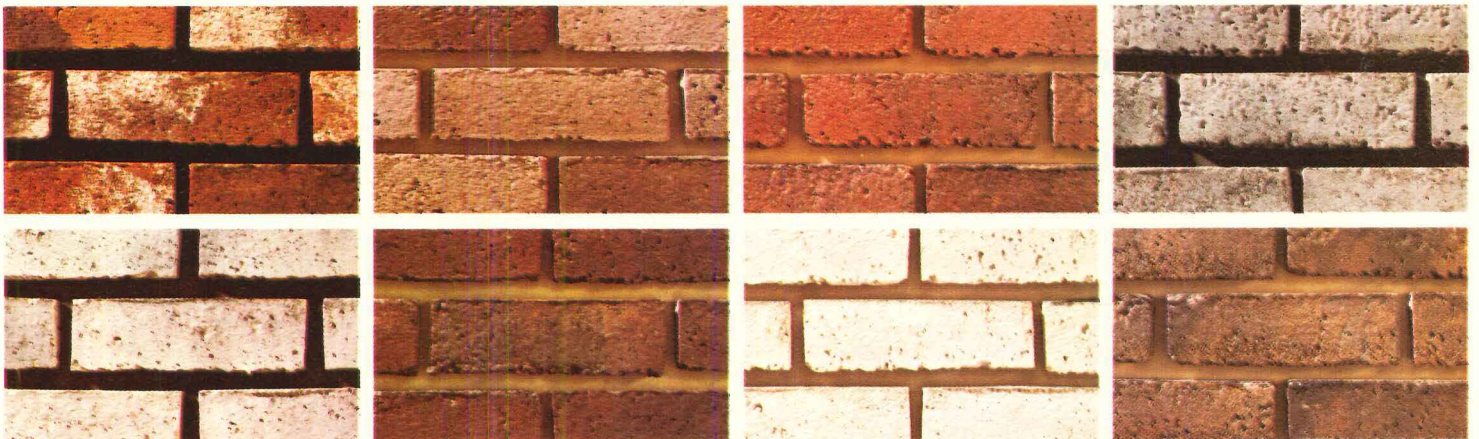
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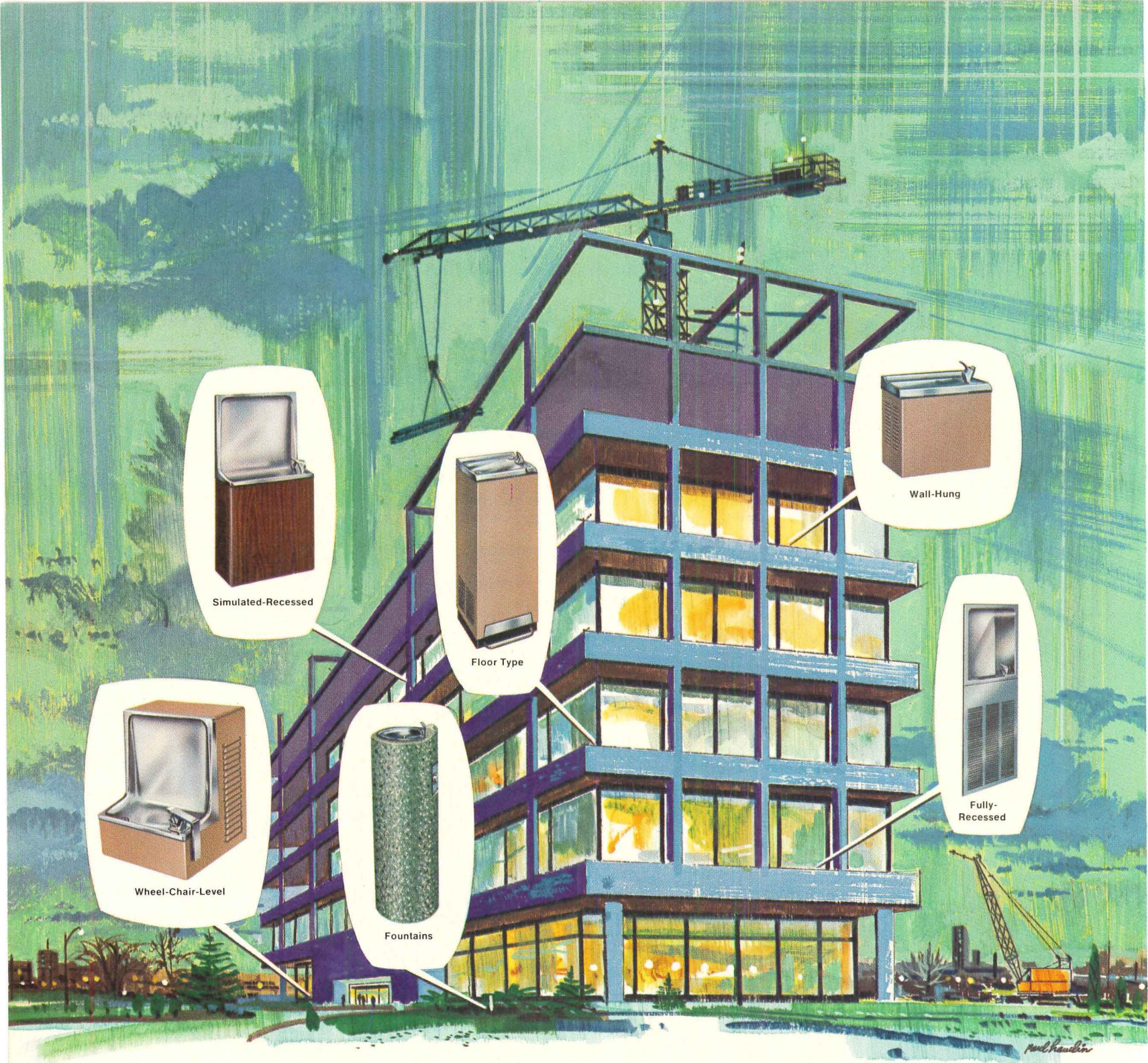
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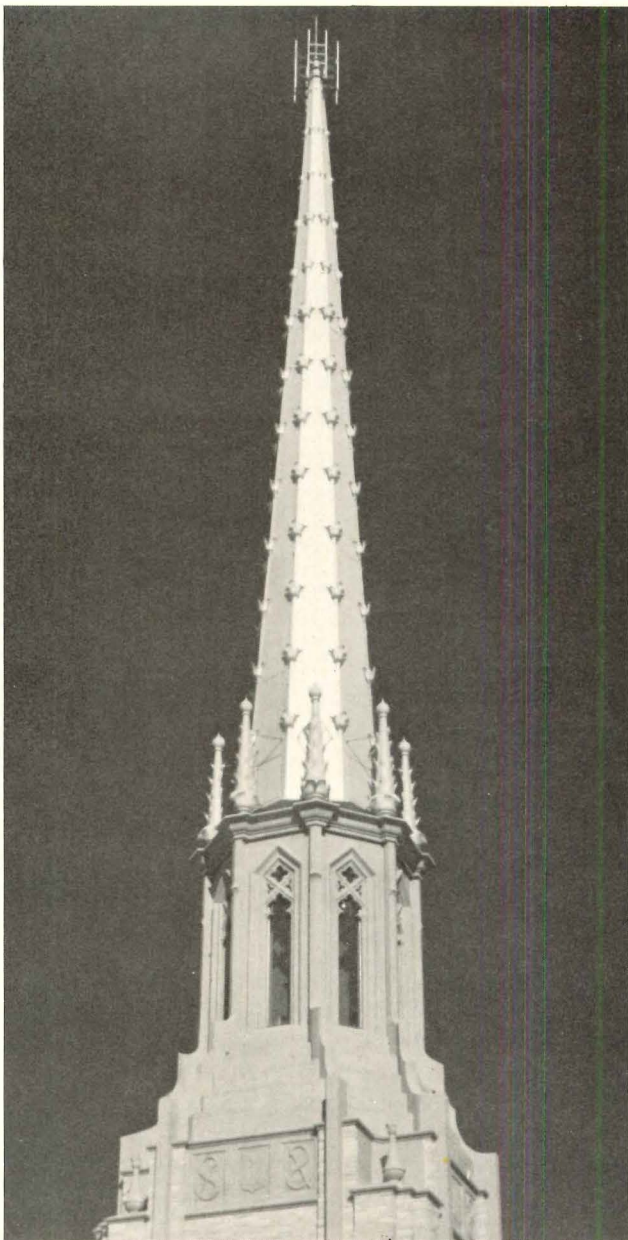
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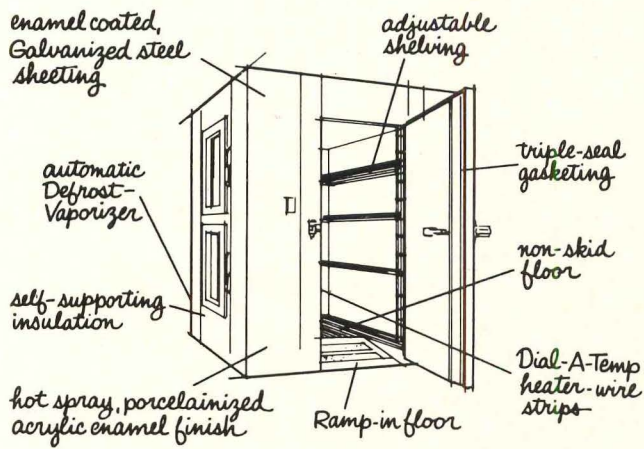


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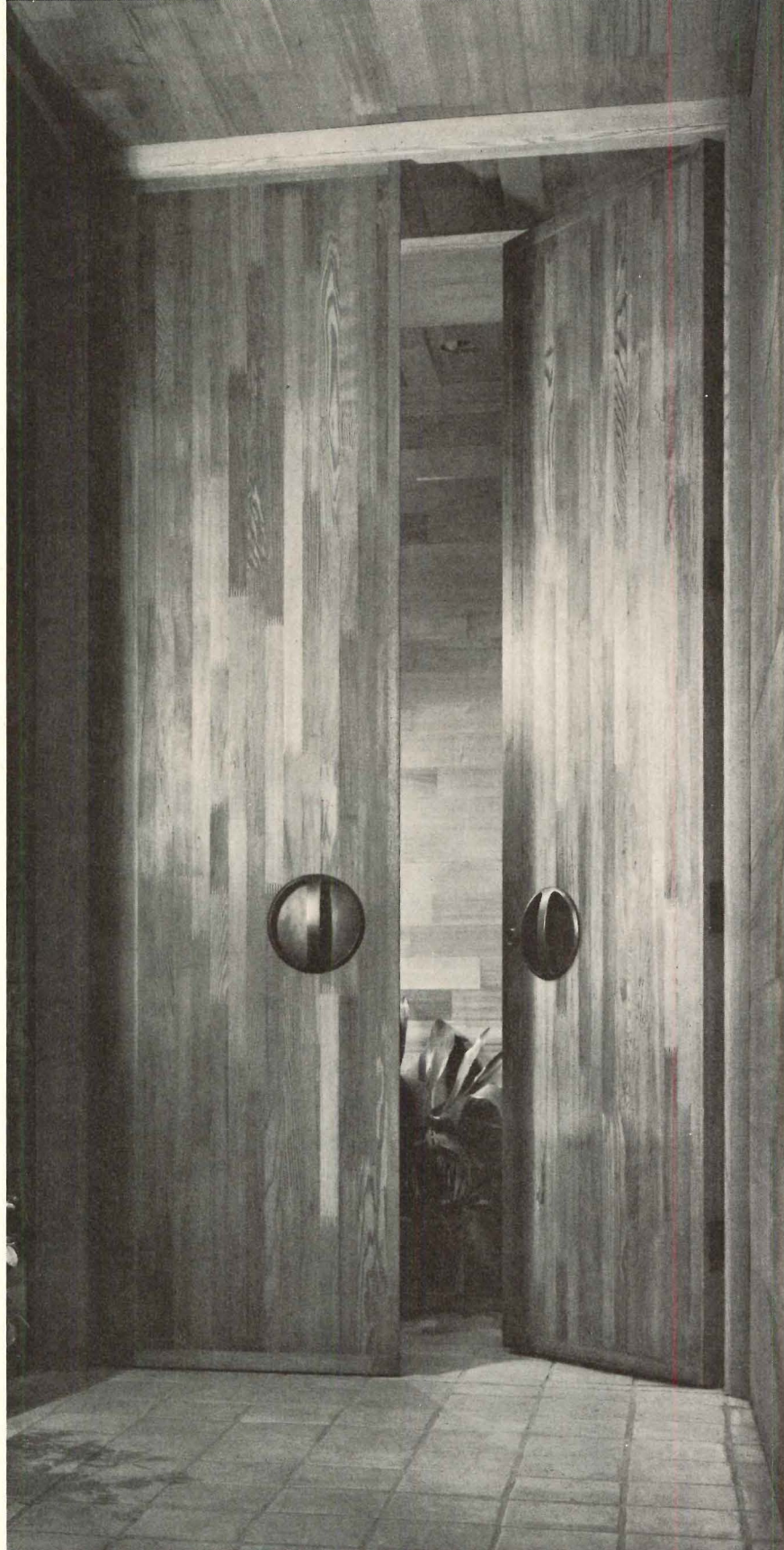
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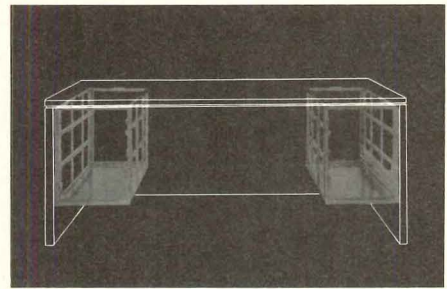
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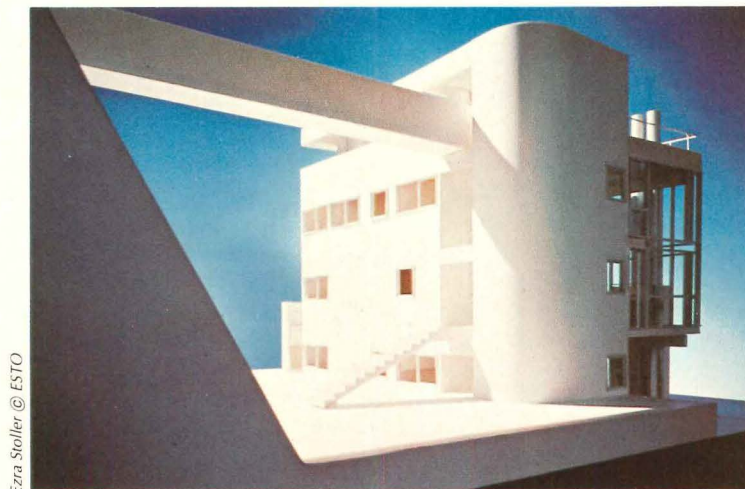
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RICHARD MEIER: PUBLIC SPACE AND PRIVATE SPACE



Working initially with that basic of building types, the single-family house, Richard Meier evolved a highly developed design logic that might have cornered a lesser man in one niche or have been forgotten in broader practice. The consistency with which self imposed disciplines are used in an ever widening range of problems is a mark of Meier's ability. Shown here are three projects which have a common residential nature, although his experience is hardly now so limited.

The design logic is generated by spatial organization, which is graphically broken down into the equivalent of the residential private, semi-private and the public spaces no matter what the building type. In the house shown above, bedrooms as well as bathrooms and other service functions are in an enclosed element which anchors a completely glazed, large-scale living area oriented to a deliberate outlook. Between is a semi-private circulation strip going top-to-bottom and end-to-end. As the building types expand, classrooms, offices or whole apartments become the private space equivalent, and are again contained in solid volumes directing the shape and organization of the open common areas.

A formal recognition of the nature of different building spaces (as well as other design logics used) is not unique, but it is in conscious disciplined reinforcement of such ideas that the strength of the architect's particular approach is achieved. In the house, enclosed spaces are typically bearing-wall construction, and flush windows become part of the homogeneous enclosing fabric. The mass described is opposed to the living area void, which is often framed in steel columns for extra invisibility of support. At a larger scale, the structural dichotomy is not so easily achieved, and the outer skin takes on an even more important role in expressing the different functions. In the last project shown here, Twin Parks Northeast (pages 94-98), the structural expression is necessarily limited to the inclusion of columns in partitions on the upper apartment floors and their exposure on the lower public levels, but the buildings' enclosure leaves no ambiguities. Exterior walls above are flush as possible, and windows, although large, are pushed forward to become part of the even, flat surface. The open levels below are more analogous to the semi-private function in the house and are enclosed in the building volume by brick-clad perimeter columns. The architect has developed the highest level of his hierarchy outside, and the grand community-related public spaces are those formed by the smaller scale buildings.

Where such seemingly formal ideas do not break down with expanding scope, they can be found in the upgrading of established relations. The house living room becomes the common area of an apart-

ment complex. Again such ideas are clear when they are applied with respect for the variable considerations in differing commissions. The following three projects share a residential nature in common, but they do not share site and programmatic considerations, or the social-client circumstances under which the solutions were achieved. Still, taken in such contexts, the consistencies can be seen. The sheathing material in one may be wood siding and the other red-brown brick, but all materials are similarly used to reinforce the same idea of closed versus open volumes. The house may be isolated on an open site, and the larger urban projects related to their existing neighborhood while creating their own open space, but the principle is the same. In the house, the design recognizes the desirability of the surroundings and includes them in the public area by virtue of exposure from within, while also saying that the man-made building and its natural environment are unique. The opaque enclosed element screens the one undesirable outlook, an elevated road connected by the high entrance bridge. The urban projects are an entirely different matter, and the problem becomes one of containing the public areas by opaque enclosures while not turning the new housing's back to the surrounding neighborhood.

Certainly not all can be reduced to obvious logistics, and the architect is quick to point out that other factors do indeed enter in. He lists these as including historical precedent, personal intuition, and the complex "balance of opposite parts necessary to achieve an agreeable whole." A look at the following buildings will confirm that Meier has applied a considerable amount of personal manipulation within the framework of his design discipline. Sensing the right way to introduce the viewer, to expand and contract the spaces and alter the scale to better dramatic advantage, he produces a result with strong emotional as well as rational values.

Perhaps one of the greatest consistencies in Richard Meier's work is his determination. That is not just the determination to adhere to design principle, but the determination to see it through and do whatever is needed to make it meaningful to the user. The latter might seem somewhat predetermined for an architect known for expensive private houses, but this is also the same architect who believed in a New York City limited-income artist housing project called Westbeth and stuck by it through many years of headaches to see it become a reality. This same determination is visible in the work with the community and a multi-headed state agency to produce the housing shown here for lower-income Bronx residents.

—Charles Hoyt

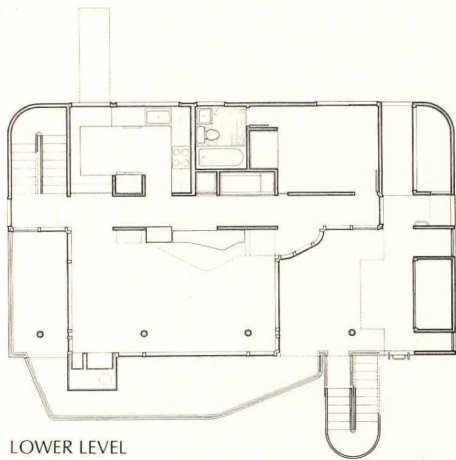
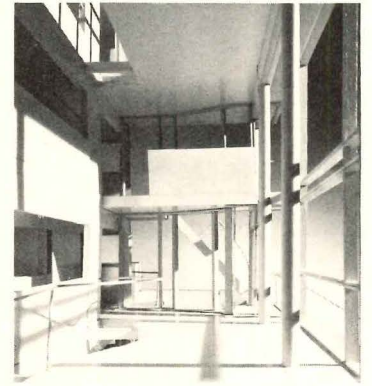
The Douglas house on a Lake Michigan beach is currently being built and exemplifies the architect's basic design approach. Functions are separated vertically in a clear expression of their use. A wood bearing wall element—seen at the top of plans below and to the left of the side elevation—contains private bedrooms and service spaces, and forms a solid shield against the raised public road to the east. It encloses two children's rooms at the upper level, zoned away from the parents' on the middle level and guests and kitchen on the lower.

Passing through this opaque block on an elevated bridge from

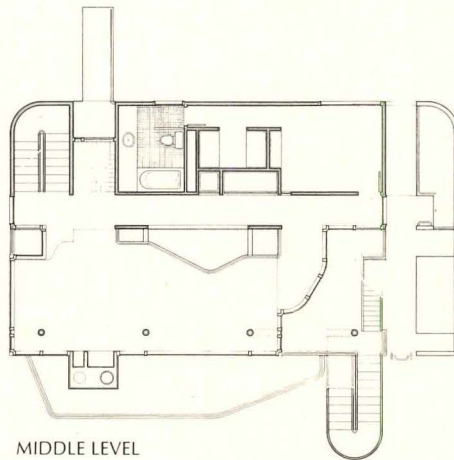
the road and down the bisecting circulation spine, the lake panorama opens up across the double-height, middle-level living area shown on the right. Visually connected by floor openings are dining and guest living on the lower level with direct access to the beach. This whole public side of the house becomes a transparent cage buffered and directed by its solid backup. Thin steel columns support the roof and the seemingly suspended floor areas within. As an indication of the architect's personal control on such design logic, structured visual direction is achieved by arrangement of fireplace, balconies, stairs

and even the minimal mullions and columns which define where the viewer is in relation to what he is seeing outside. Areas carved out of the enclosed public volume lend ambiguity to what is out and in. This is more than a vacation house for a family of four—it is a distillation of a creative approach carried through with the joy we might hope to find in all buildings.

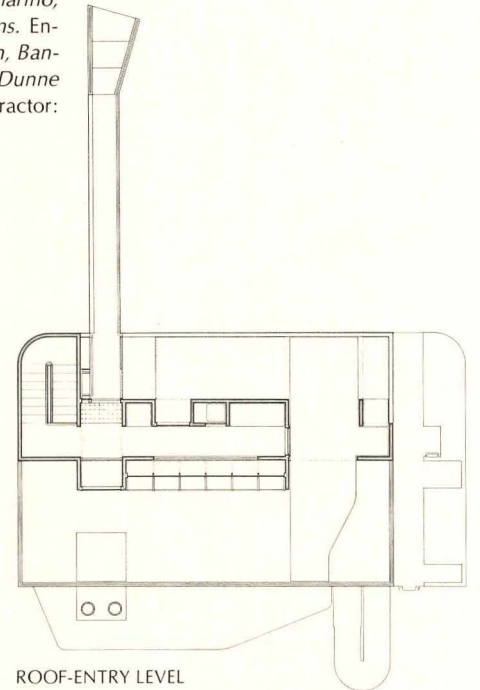
VACATION HOUSE; Harbor Springs, Michigan. Architects: *Richard Meier—team members: John Colamarino, Sherman Kung and Tod Williams.* Engineers: *Severud, Perrone, Strum, Bandel (structural); Dalton and Dunne (mechanical).* General contractor: *Jordon Sheperd Inc.*



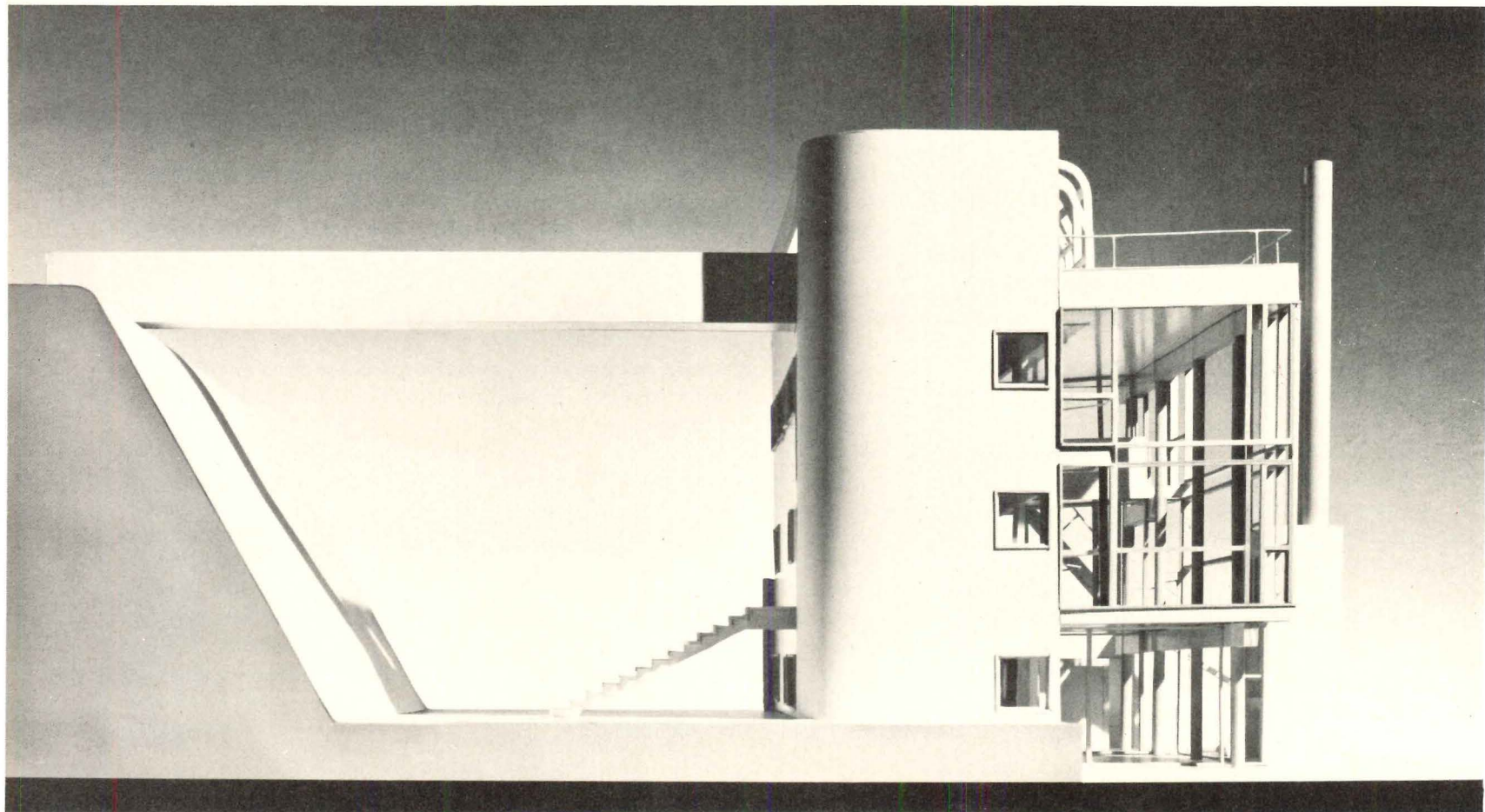
LOWER LEVEL

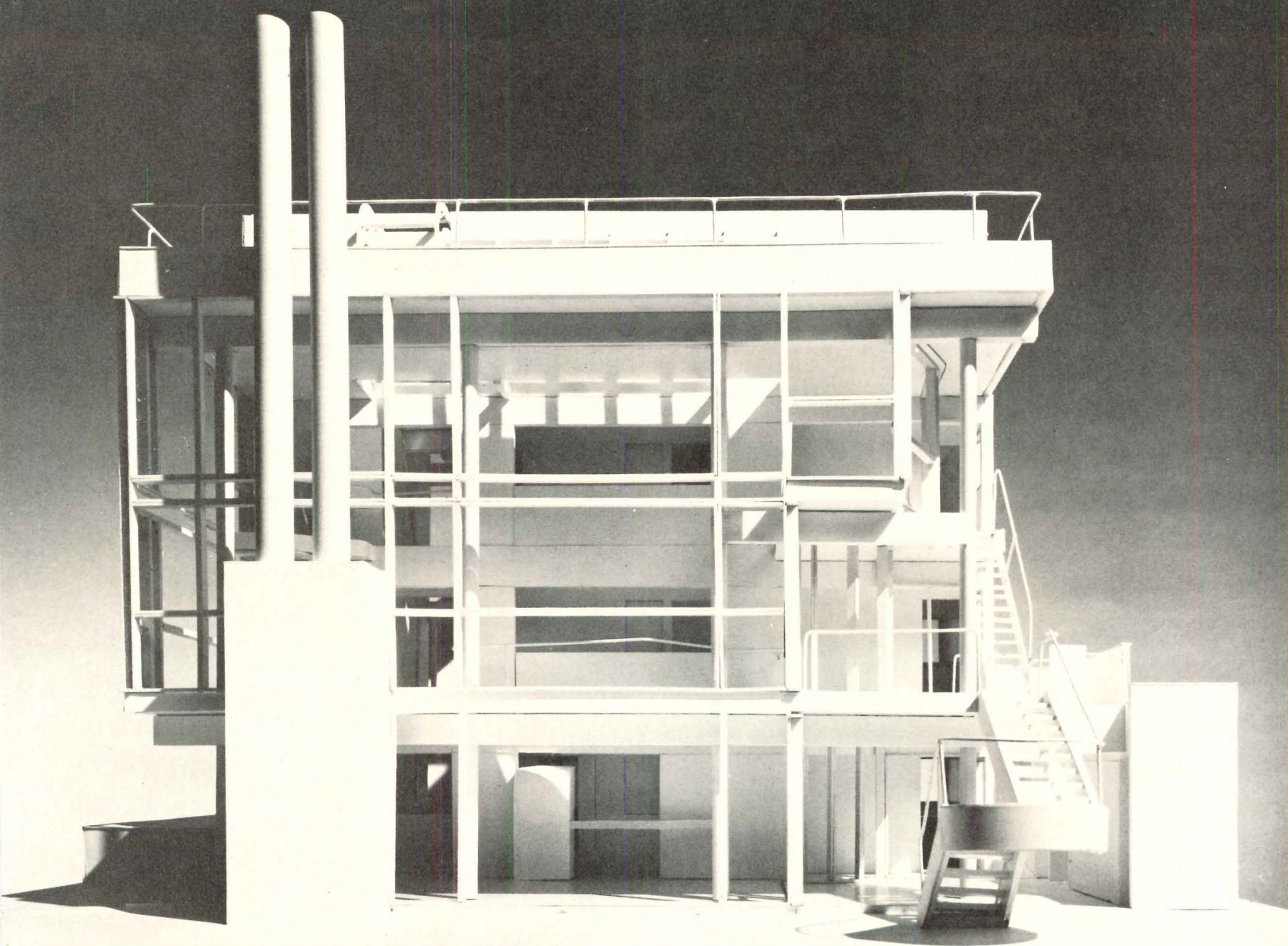


MIDDLE LEVEL



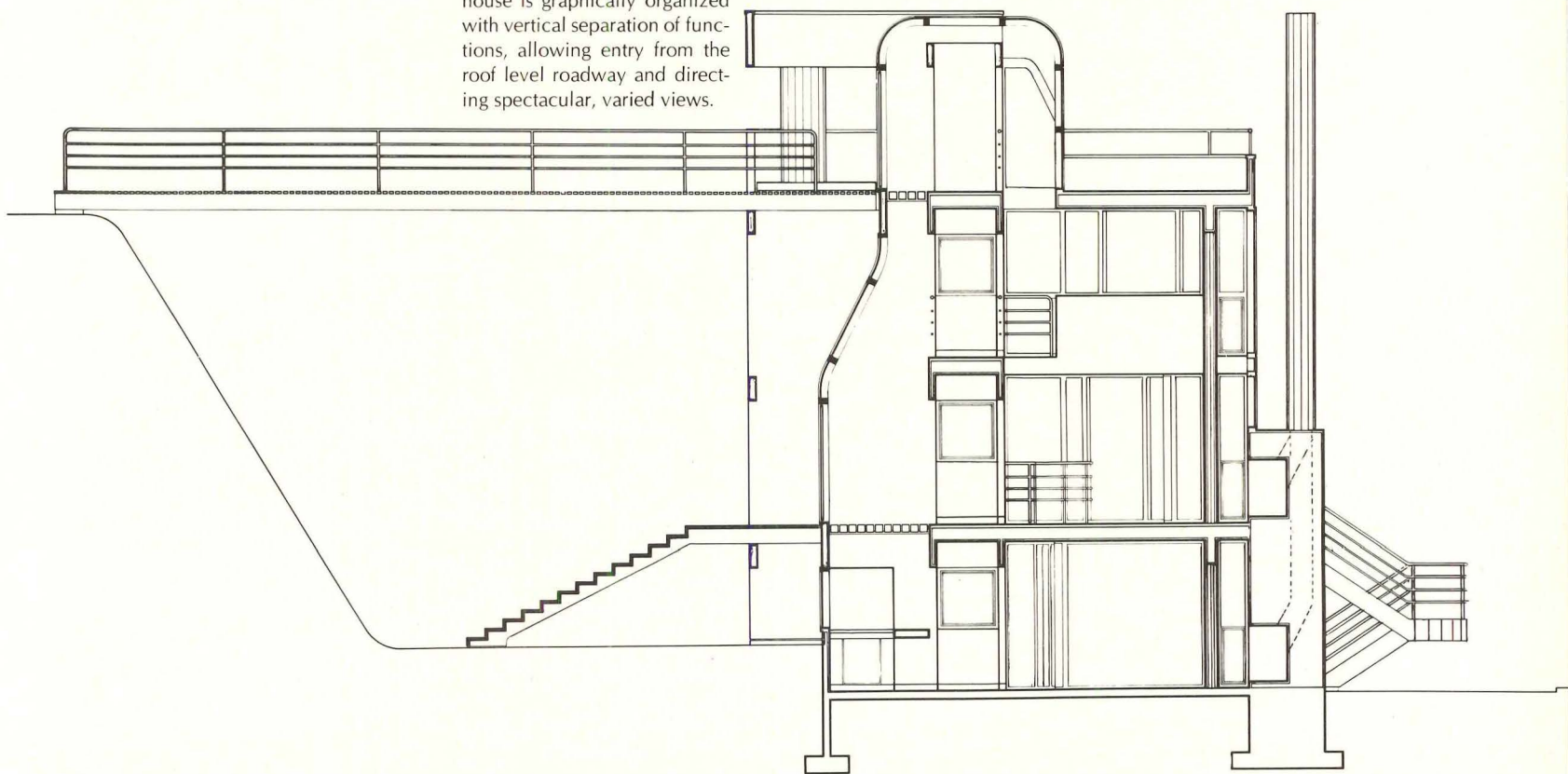
ROOF-ENTRY LEVEL





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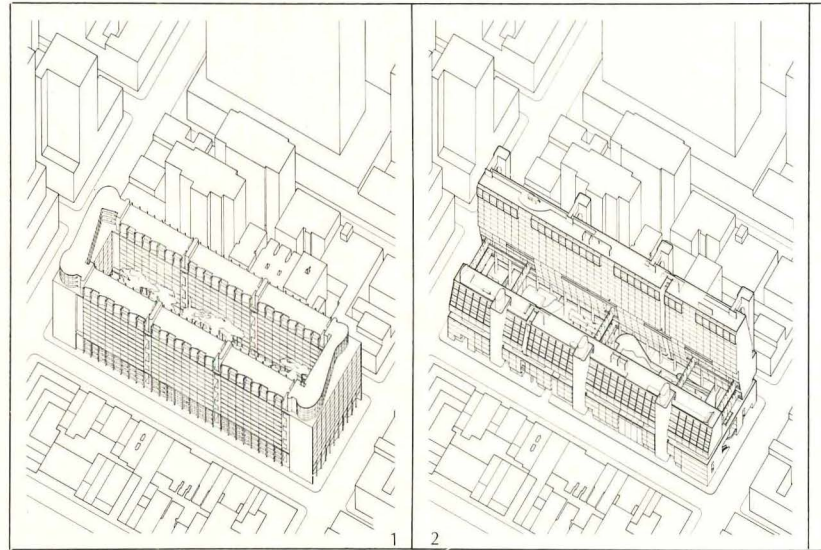
Designed within a highly developed discipline and making a good site from a potentially impossible one, this lakeside house is graphically organized with vertical separation of functions, allowing entry from the roof level roadway and directing spectacular, varied views.



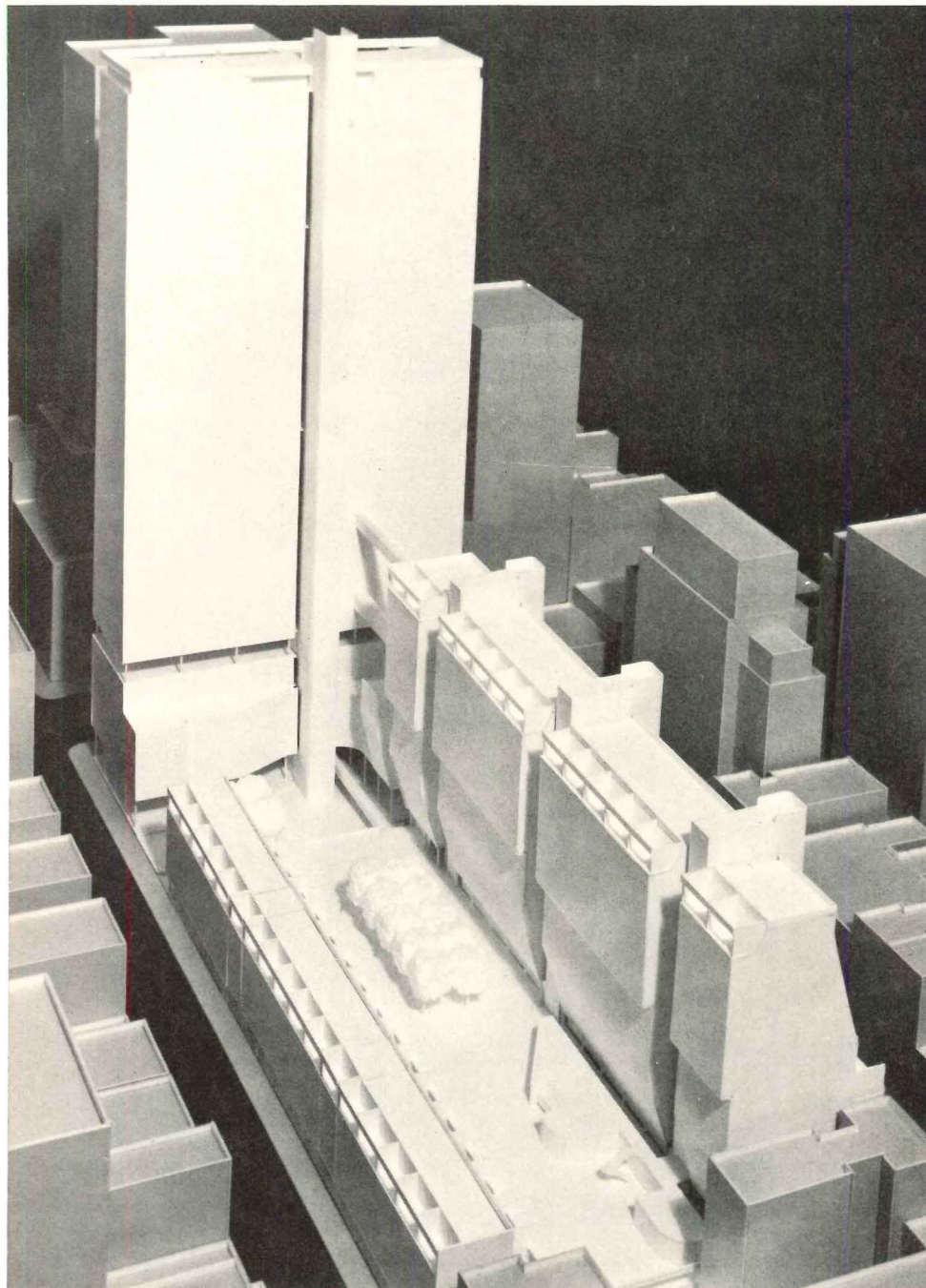
Designed in conjunction with Emery Roth and Sons, the seven alternate proposals shown here are an indication of the resiliency with which Richard Meier's disciplines can be applied to a wide range of solutions. Asked by the private developer to study ways in which the land might be used, the architects were given a basic criteria of flexibility in both occupancy type and construction phasing. A general solution was the establishment of a major, public-oriented central space, contained by the solid volumes of the buildings around it. The degree of public versus private site use varies with each proposal. The alternatives allow retention of

existing and new townhouses under the high-rise construction. Sun orientation was another major consideration and produced residential use on the long sides of the block facing south, and flexible commercial or apartment use was sited on the shorter ends facing east and west. Further design work may produce a combination of aspects of all the alternates such as suggested in the model below.

Architects: *Emery Roth & Sons and Richard Meier and Associates—team: R. Meier, R. Roth Jr., S. Bromley, J. Colamarino, B. Littenberg, A. Melemede, A. Pena, M. Schwarting, H. Smith-Miller, P. Szilagyl, T. Williams.*



7



1. Conceived as a building of single-construction phase, this proposal allows the most sunlight to surrounding streets but has less than maximum density. It is clearly the most ordinary solution.

2. In this linear scheme theoretically allowing for extension to adjacent blocks, the ends of the central spaces are left free for connections across the avenues.

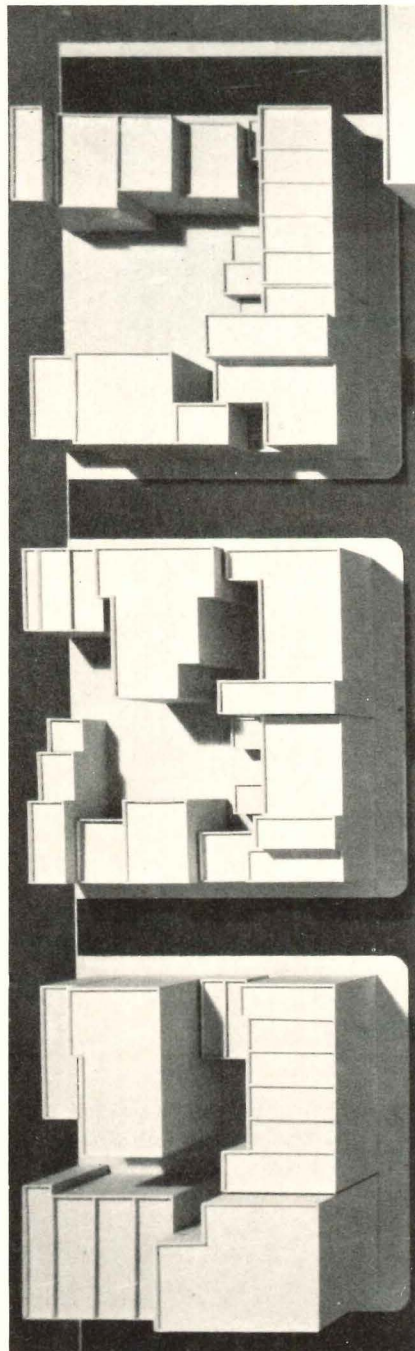
3. Again facing all buildings north-south, this solution proposes a single flexible-use building placed above townhouses. This provides a percentage of private site use rare in urban plans.

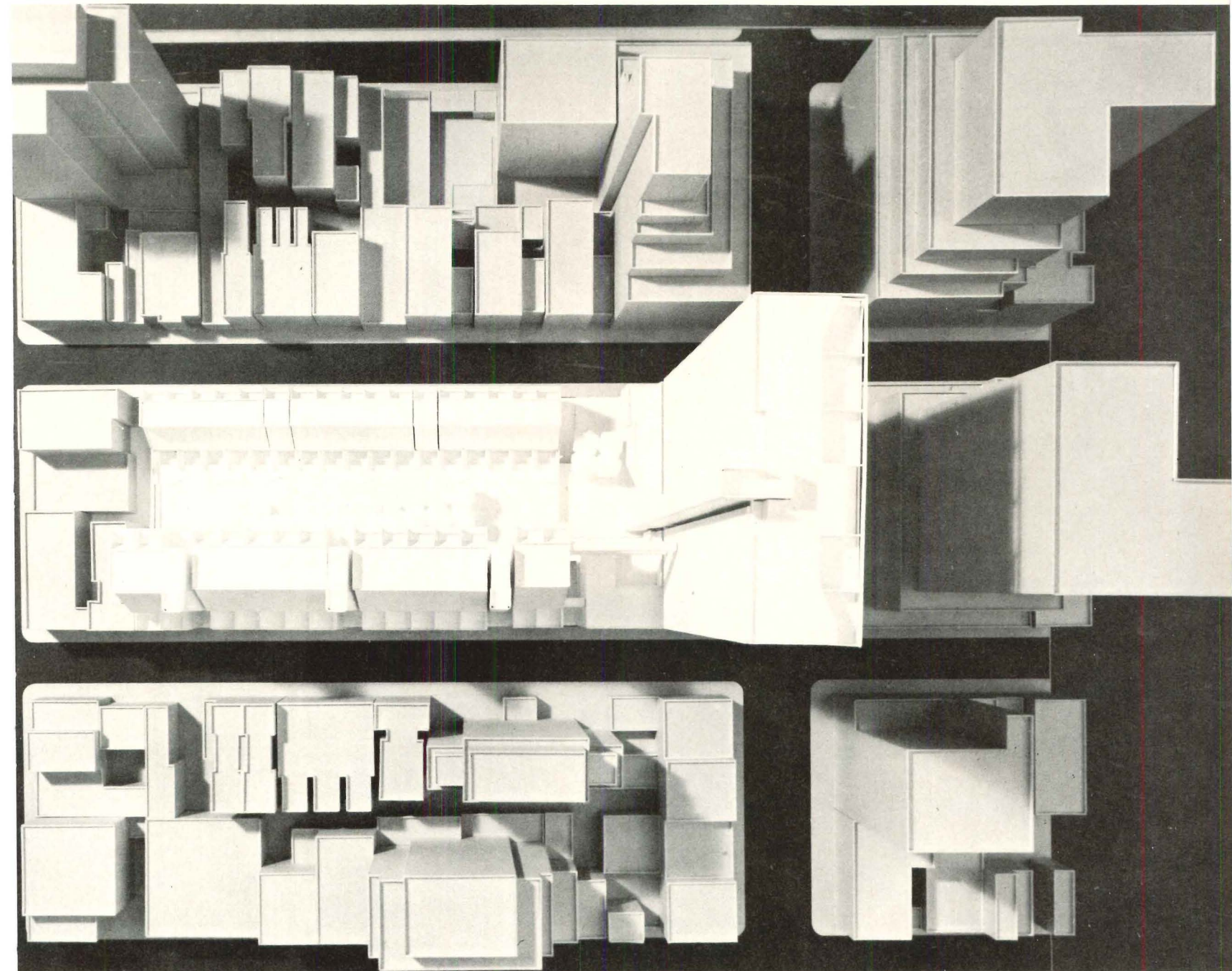
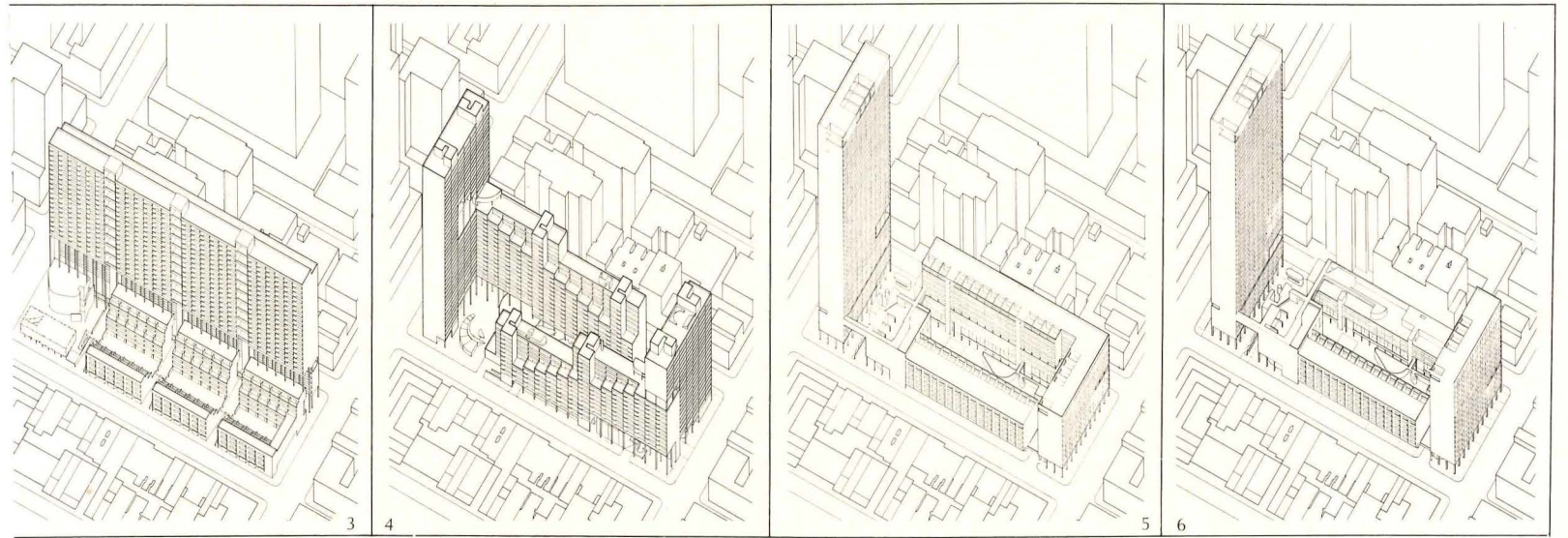
4. Stepping down the sun angle, the two interlocking buildings give roof line variation and private roof-top spaces. In this unusual scheme, the relationship of the two buildings provides maximum public ground level access.

5. The most flexible in construction phasing, this alternate allows for town house construction on both long streets and concentrates multiple-use in two high-rise buildings.

6. This similar plan, by placing a multiple dwelling in place of one of the townhouse rows, provides less variation, but lower density.

7. The proposal shown in model form to the left and right, combines aspects of all the study alternates above. Existing buildings are allowed to remain on one block end.





With this design scheme of hard edged volumes, containing small-scale private uses and defining large-scale public spaces, Richard Meier has resolved perhaps his most challenging design problem to date. Given parts of three adjacent blocks on an irregular site in the Twin Parks section of the Bronx, Meier's problem was to produce badly needed housing within a low budget, while reinforcing the existing neighborhood and at the same time creating an architecturally decisive entity.

The over-all massing, isometrically described on the opposite page, places the lower buildings so that they and the existing six-story

neighbors form public spaces of both intricacy and larger symbolic meaning. These spaces do not just serve for recreation and relaxation, but form a new nucleus for the entire neighborhood. Higher buildings face existing city parks outside the drawing's boundaries, and give a "sense of place" to the two major plazas, while carefully not blocking the sun, and producing an even greater density than required (523 versus 400 units). Approaching the isometric from center top (view at upper right, opposite page) a smaller scale common space has been ingeniously cut from one of the few rectangular block intersections by

the placement of the building. The lower leg of the southernmost building is straight ahead, and the large scale plaza defined therein is about to be revealed. Entering and turning back to face the building opposite (view at upper left, opposite page), the full containment of this major public area, jumping a closed street and the basic block structure, is realized.

The other defined space at the right of the isometric is not so happy and is devoted to parking. Original parking requirements dictated entire open site coverage, but determined manipulation of grades produced a garage under the publicly usable portion of the

site. The relation of the southernmost street grade to the upper plaza and the lower garage is shown in the top photo overleaf. The architect was active in achieving a switch of an adjacent, "vest pocket" park designation to cover funds for development, but economies seriously cut over-all site improvement. The large scale sculptured concrete benches remain as one of the few vestiges of a much more ambitious scheme, designed to lend a final air of humanity. The expanse of concrete, seen in the plaza below, is the roof of the parking garage and was originally to have been developed with planting.

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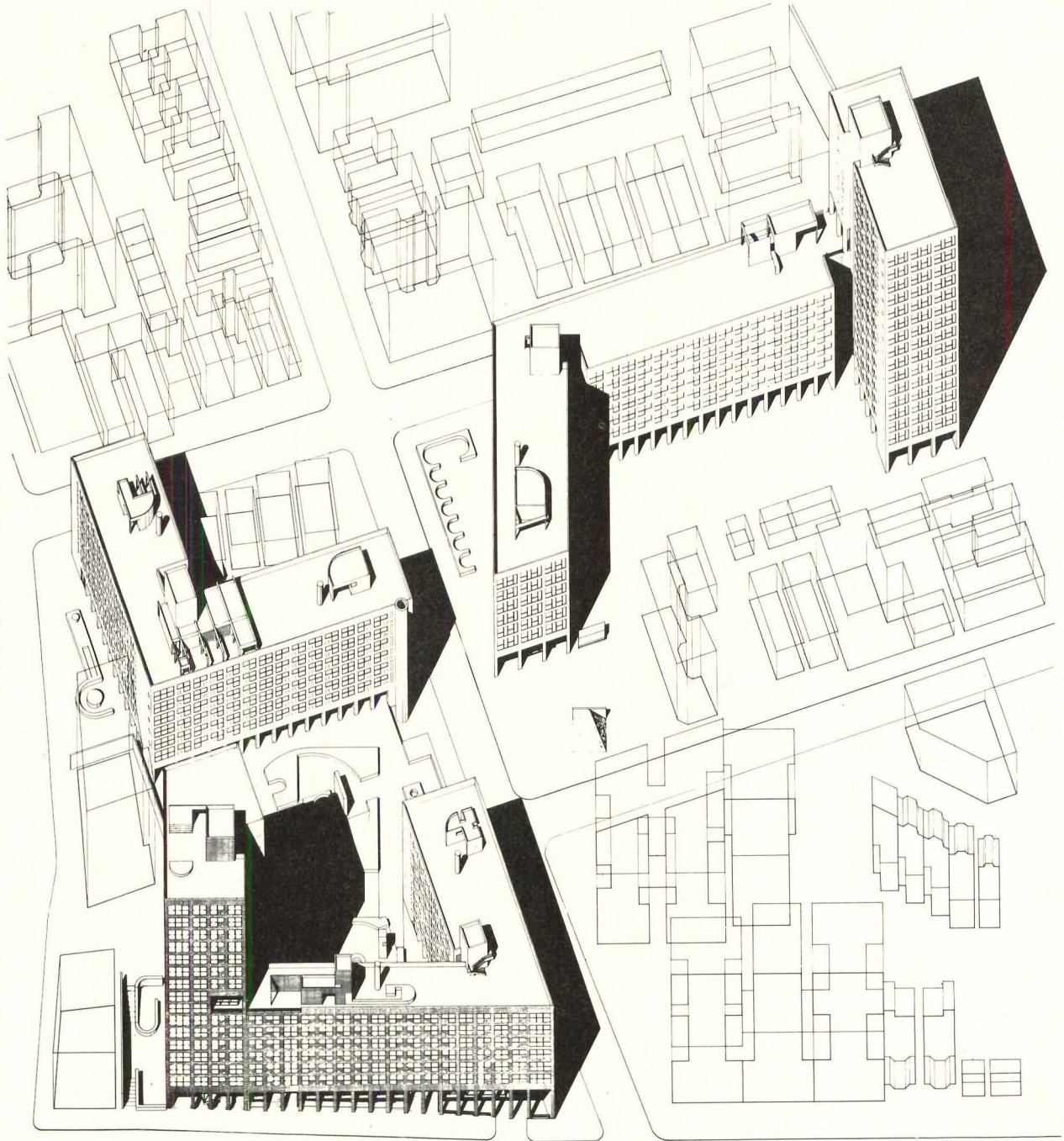




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Dorothy Alexander



The over-all building massing, shown at the right, relates strong solid elements in a decisive manner and forms spaces of varied interest on an originally disjointed site. The more enclosed plaza is seen on the opposite page and above left. The other view is into that plaza from the smaller scaled triangular one, top of isometric.

This project was recently awarded a prestigious Bard Award for design excellence in public buildings by the City Club of New York.

Meier was commissioned by the New York State Urban Development Corporation soon after the concept of the Twin Parks projects, and was subject to some of the same growing pains as the client. While an attempt was made to establish standards and guidelines, some midstream changes occurred. One was a shift from boiler-fired to electric heating, which necessitated major ground level redesign. Realizing that an over-all, meaningful resolution was not going to be easily accom-

plished, the architect took initial steps toward problem simplification. Conventional poured concrete construction and traditional apartment layouts were an early decision.

This Twin Parks project was one of the first of many selected by developers choosing from those offered by the public client. It was chosen, said developer Fred DeMatteis, because of its straightforward building plans and the high percentage of repetitive, efficient simplex units (typical layouts are on the bottom of the opposite page). Single-loaded corridors, intended to light outdoor spaces and offer easy surveillance were par-

tially eliminated for budget savings. The brick cladding was sensibly chosen in common with several other projects for UDC in Twin Parks, though this choice is far from the architect's previous inclination to ambiguous white surfaces.

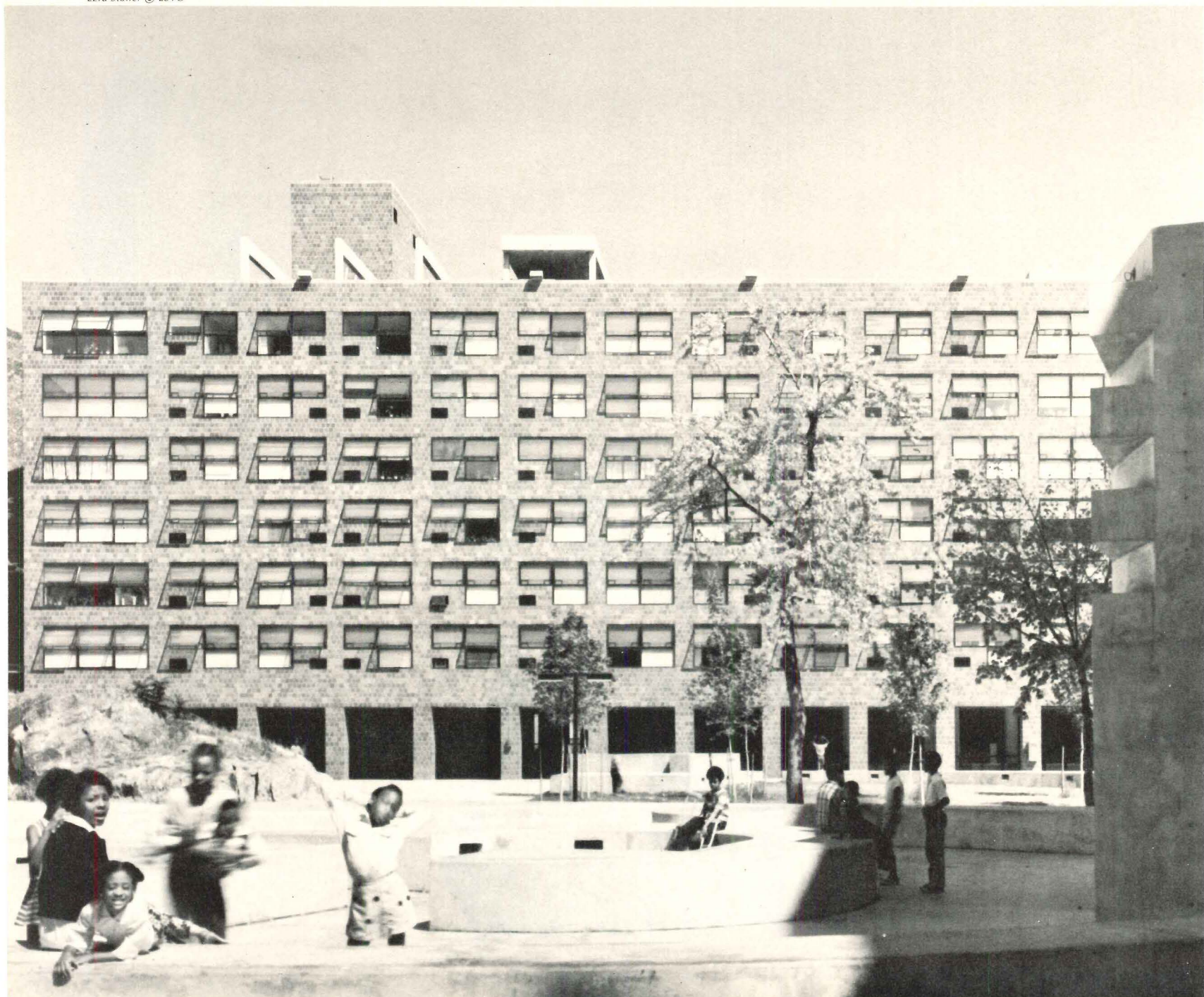
In an effort to compensate for the clearly small, sometimes unworkable, programmed rooms (the client has since increased such standards), apartment windows are maximum in size, though this requires seemingly unreasonable partition contortions. Meier avoided a monotonous cadence by grouping windows in large scale blocks (as the above middle right

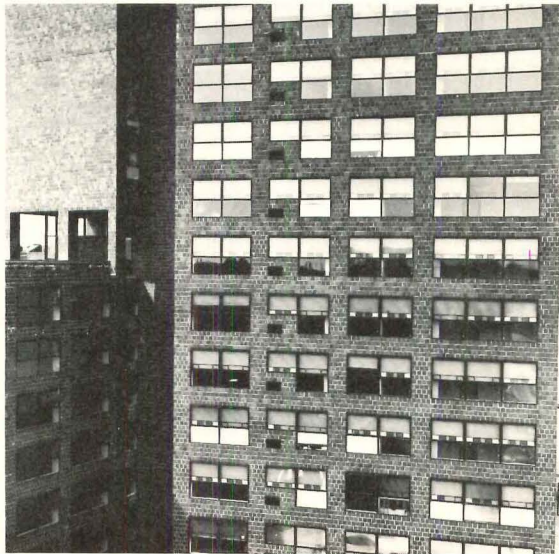
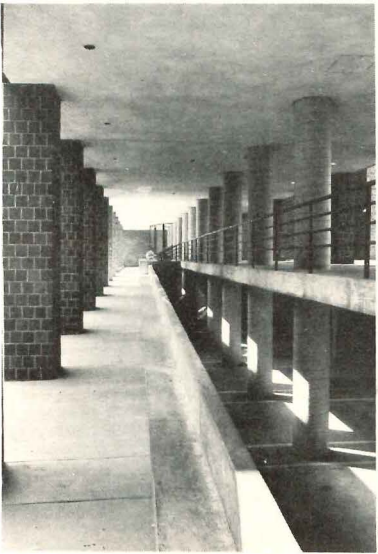
photograph); and the glazing is pushed to the building face to minimize the detailing and emphasize the buildings as masses defining outdoor spaces.

To fulfill the UDC's role of bolstering and (hopefully) turning around slipping neighborhood situations, a tough site in a difficult neighborhood was chosen, and everyone involved knew it. The site sits on the borderline between two ethnic neighborhood groups. If any physical effort could turn down the burner, it had to be a major statement of confidence that these groups could live together.

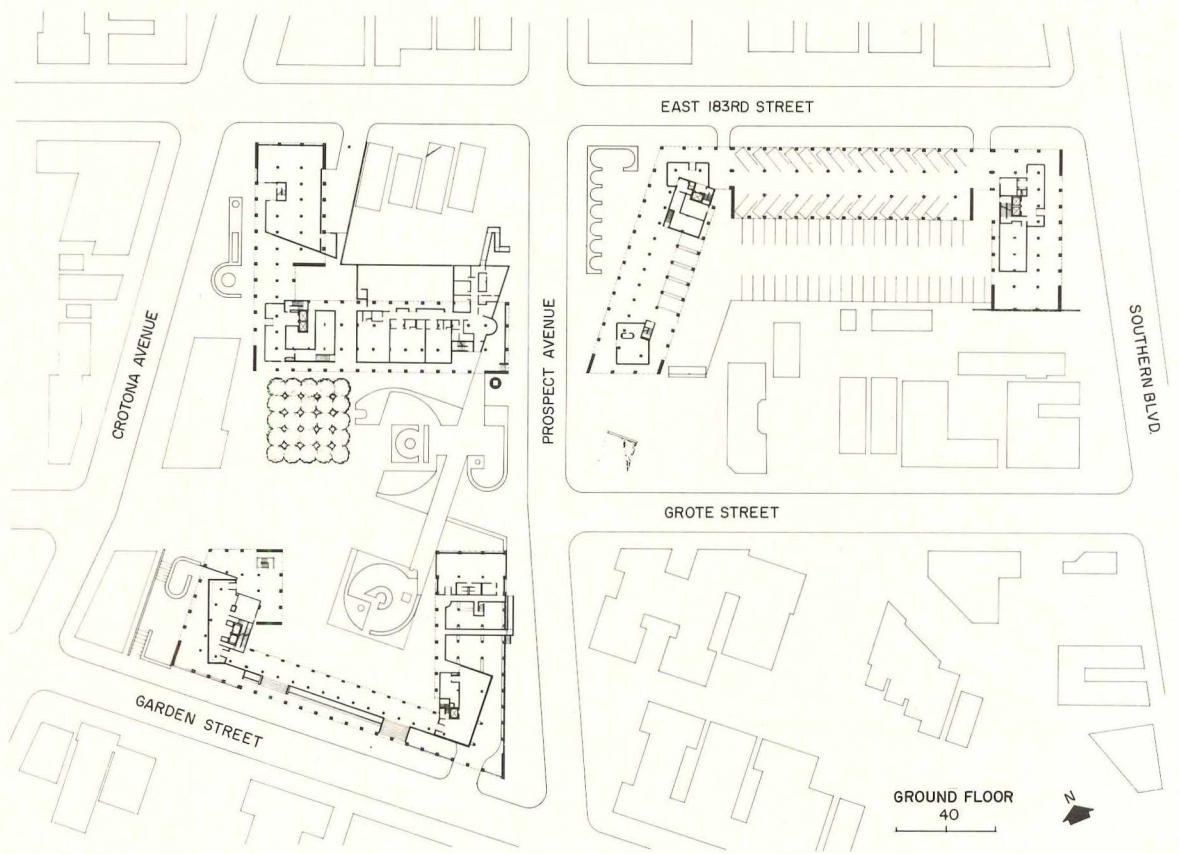
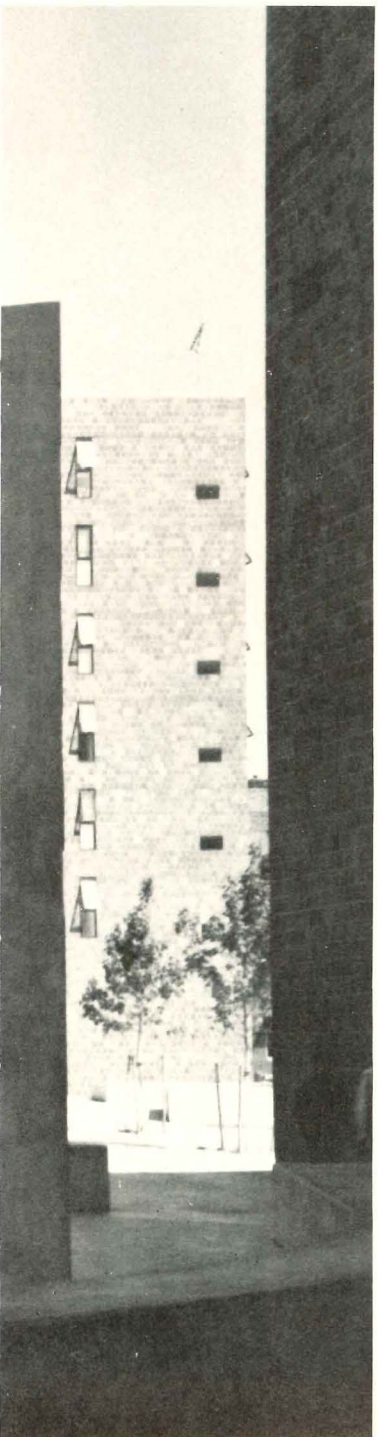
Given the site limitations, this

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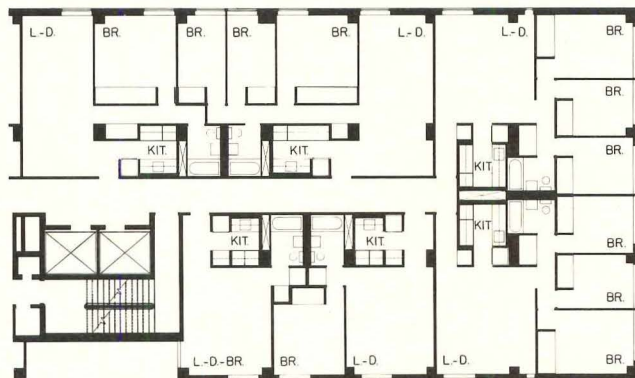




Dorothy Alexander photos



Working with the most economical apartment layouts, conventional construction and repetitive window types, Richard Meier nonetheless made a strong statement at the larger scale into which the parts were assembled. Parking was partially accommodated on open ground floors (plan right) and in a garage under the plaza. The relation of Garden Street and the upper plaza can be seen above.



housing might have taken the form of infill, but this would have neglected problems of social context and any natural assets. The architect knew that this stronger solution was required if any psychological dent was to be made.

While great effort has been made to relate to the existing buildings in scale, orientation, and roof lines—and selected street patterns have been maintained—as mentioned earlier, there is something new: a neighborhood nucleus. Perhaps the most controversial aspect of the design was the architect's intention that the exterior public spaces should be open to the neighborhood. In the large

view, the architect has provided an open passage aspect as consistent with the public benefit. The general design success here might well be an example of how a building complex can become more of a success than any of its parts might indicate.

TWIN PARKS NORTHEAST. Architects: *Richard Meier—team: Murray Emslie, Donald Evans, Paul Jenkins, Douglas Kahn, Carl Meinhardt, Steven Potters and Henry Smith Miller.* Engineer: *Robert Rosenwasser (structural).* Landscape architect: *Joseph Gangeni.* General contractor: *Leon D. De Matteis and Sons Inc.* Owner: *The New York State Urban Development Corp. and the De Matteis Organization.*



Dorothy Alexander

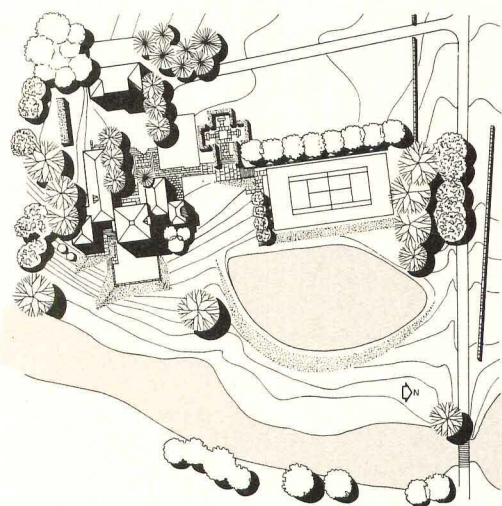


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Susan Mc Cartney

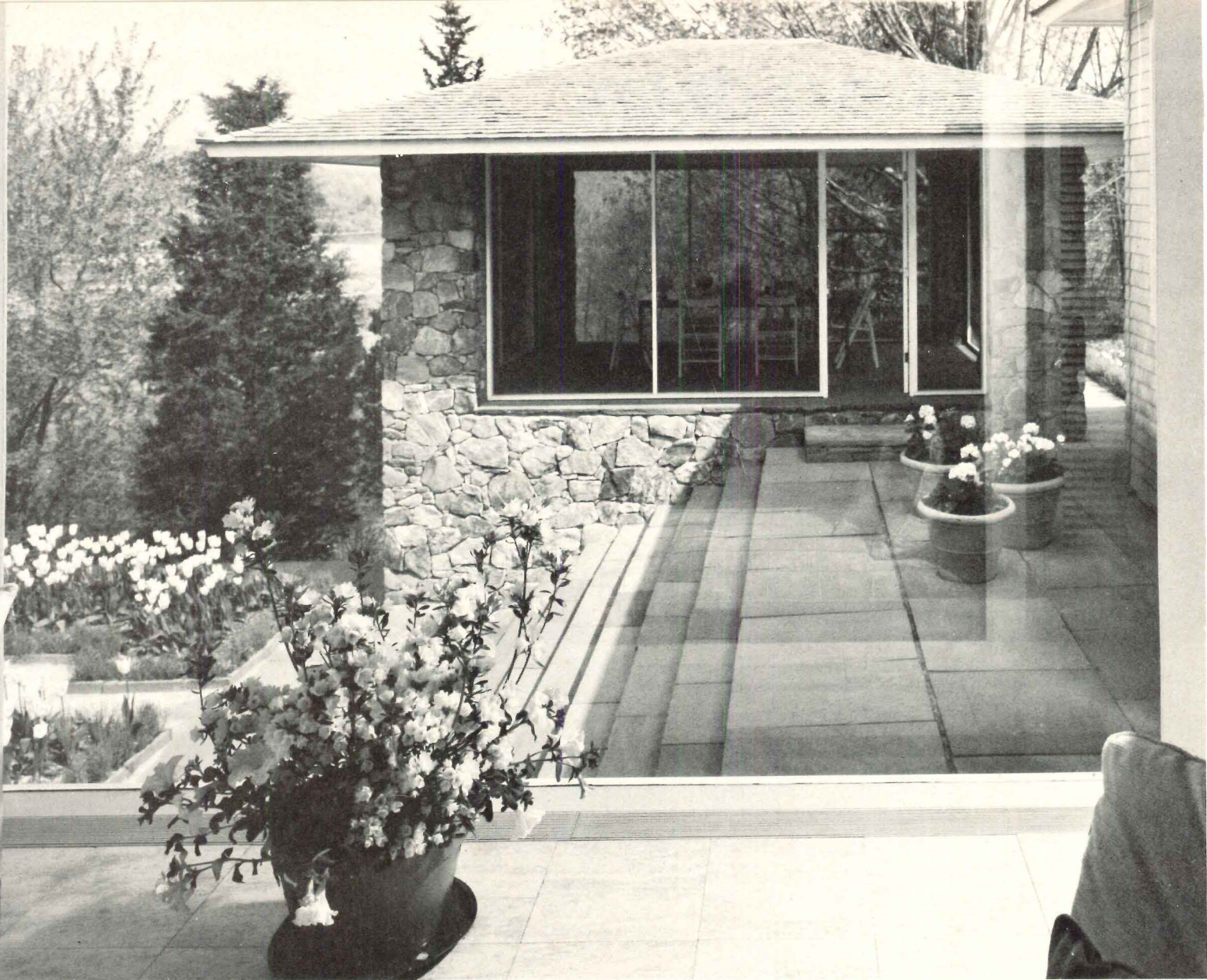
THE PLATNER HOUSE IN CONNECTICUT



The 2.7-acre site for Warren Platner's own house (plan left) is bounded on the north side by a country road from which a driveway leads to a parking area behind the house in the southeastern part of the property. Here the land falls away sharply to a stream and, beyond, to woods and a salt marsh. "The best buildings," Platner has said, "are conceived as one with the development of the site, and as an extension of and enhancement to their surroundings." In this case the simultaneous development of building and land involved placing the house where it could at once command the most pleasing views and also be screened from the road and entrance drive, providing the occupants and their visitors an appropriate progression from public to private realms. That the house is built on steeply sloping land also provides the chance for a variety of level changes from one part to the next, and the excitement of, for

instance, entering the screen porch (extreme left in photograph above) from the terrace on one side and then finding oneself far above the ground on the other.

The roofs and most of the exterior walls of Platner's house are sheathed in white cedar shingles, and the chimney and the screen porch are built of natural fieldstone set in mortar, with the mortar set back and chinking stones used to simulate a dry-set, rubble pattern. These materials, as well as the apparently casual composition of the whole house, help make it—to use the architect's own terms again—an extension and enhancement of the rural surroundings. In an altogether different dimension, the shingles and fieldstone recall traditional ways of building in New England. Though it is, in fact, designed and detailed with great care, the house from the outside exhibits an admirable modesty and respect for the land it occupies.



Ezra Stoller © ESTO photos

Platner conceived his house as a set of separate but interrelated pavilions which vary in scale and outlook as well as in function. The pavilions are arranged loosely, as much in accordance with the qualities of the site as with any compact, formal scheme. Some architects might regard this way of composing a house as too casual, yet the fact remains that it is a way honored by tradition, particularly in farm buildings in New England. The answer to whether it is "good" or "bad" depends to some extent on personal taste. Platner points out that he and his family prefer to live in "a series of separate spaces where each occasion can have its special character," and that the arrangement of his house provides certain other advantages as well. The connections between pavilions, for instance, provide the chance for vertical as well as horizontal movement—down some stairs from the living room to the library, then down

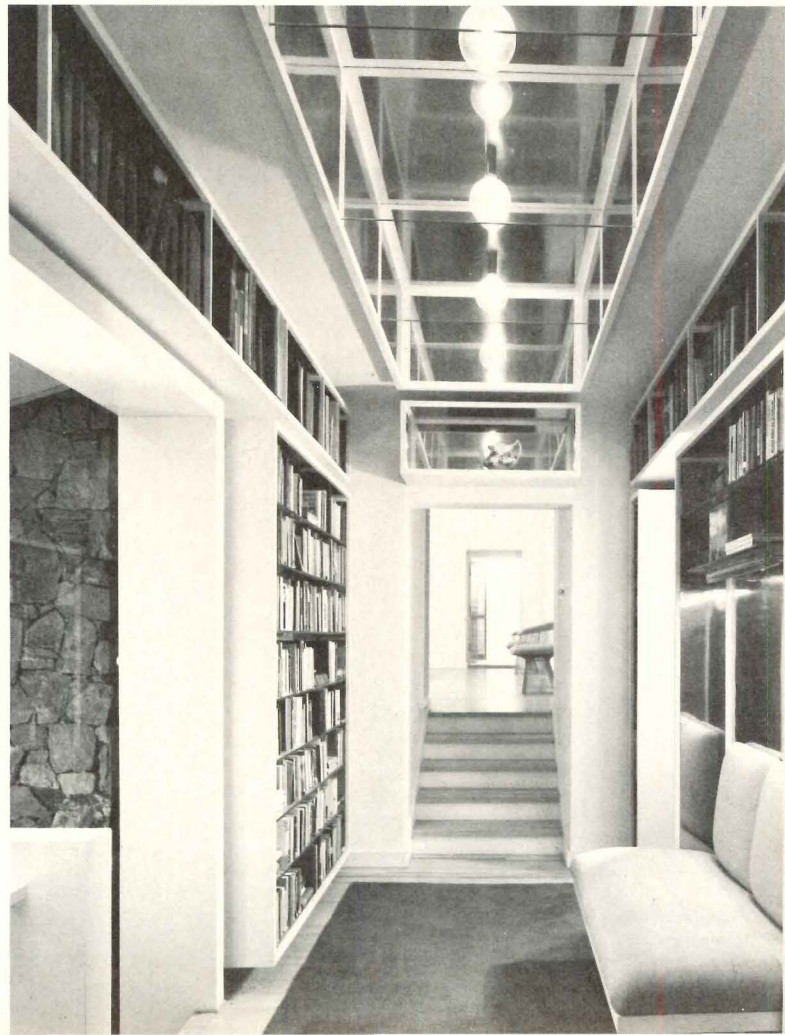
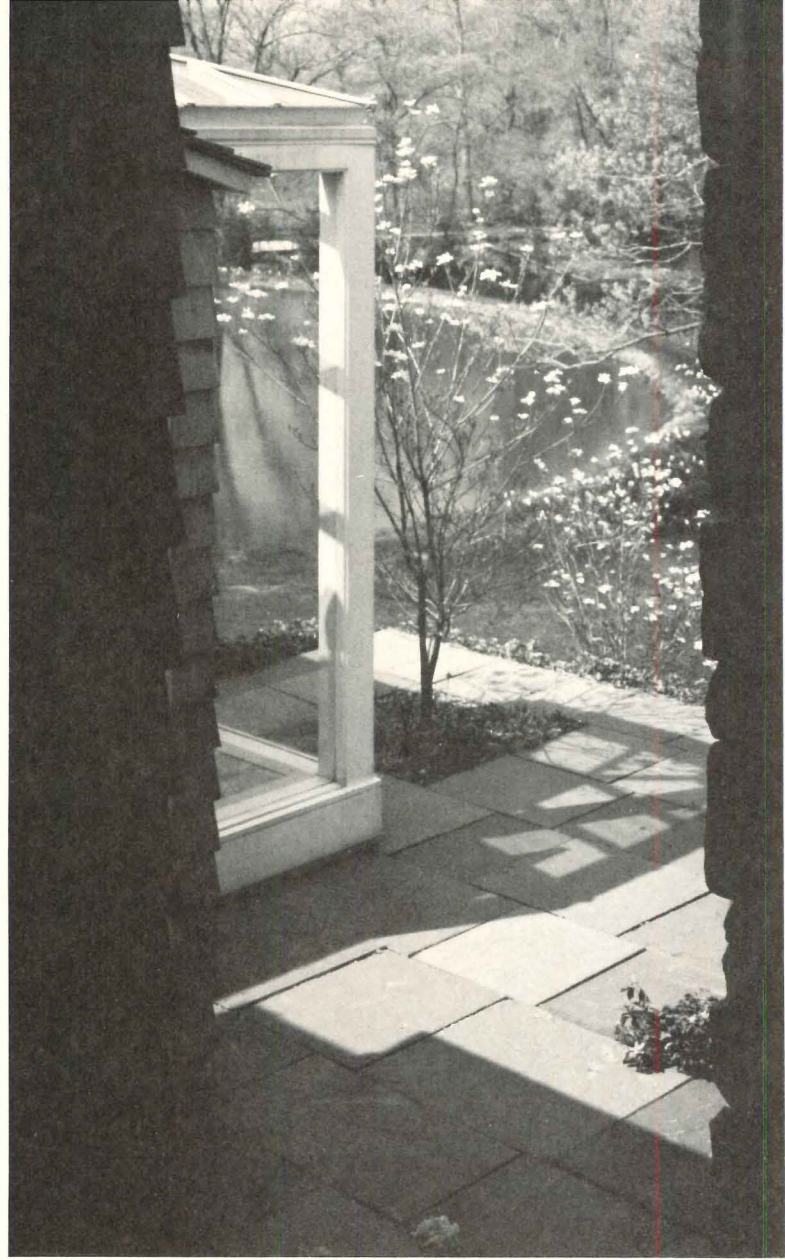
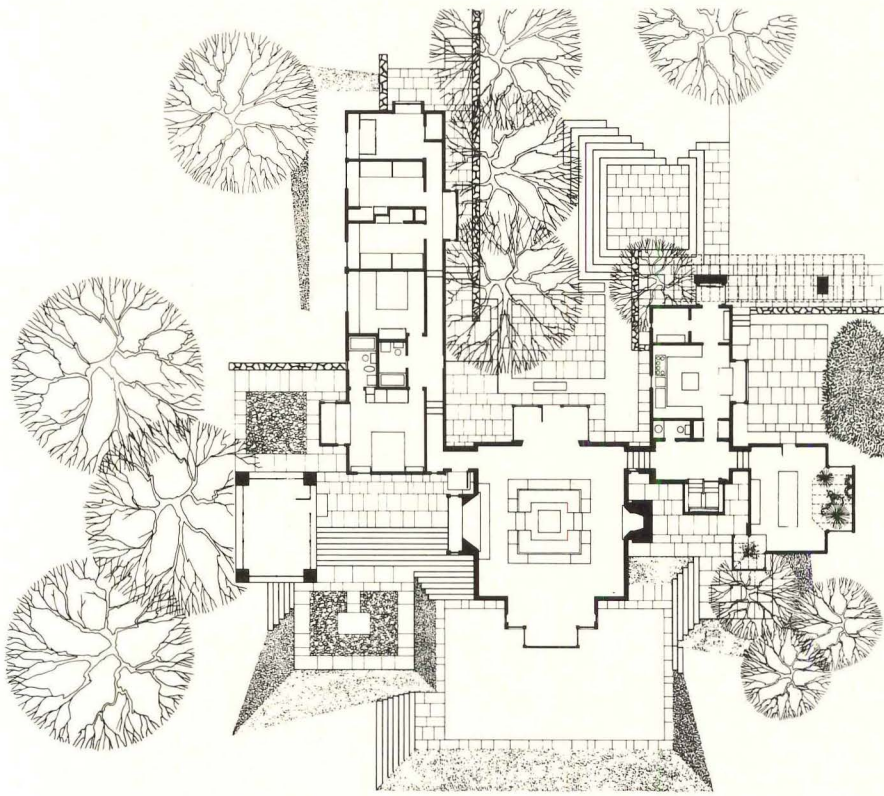
some more to the dining room. The pavilions themselves, too, enclose a terrace on the back of the house, and, on the front and side, they allow for terraces in between—exterior spaces from which to enjoy the pleasures of the site, or descend to the stream or the pond below, the latter of which, together with the tennis court, is another enhancement of the land.

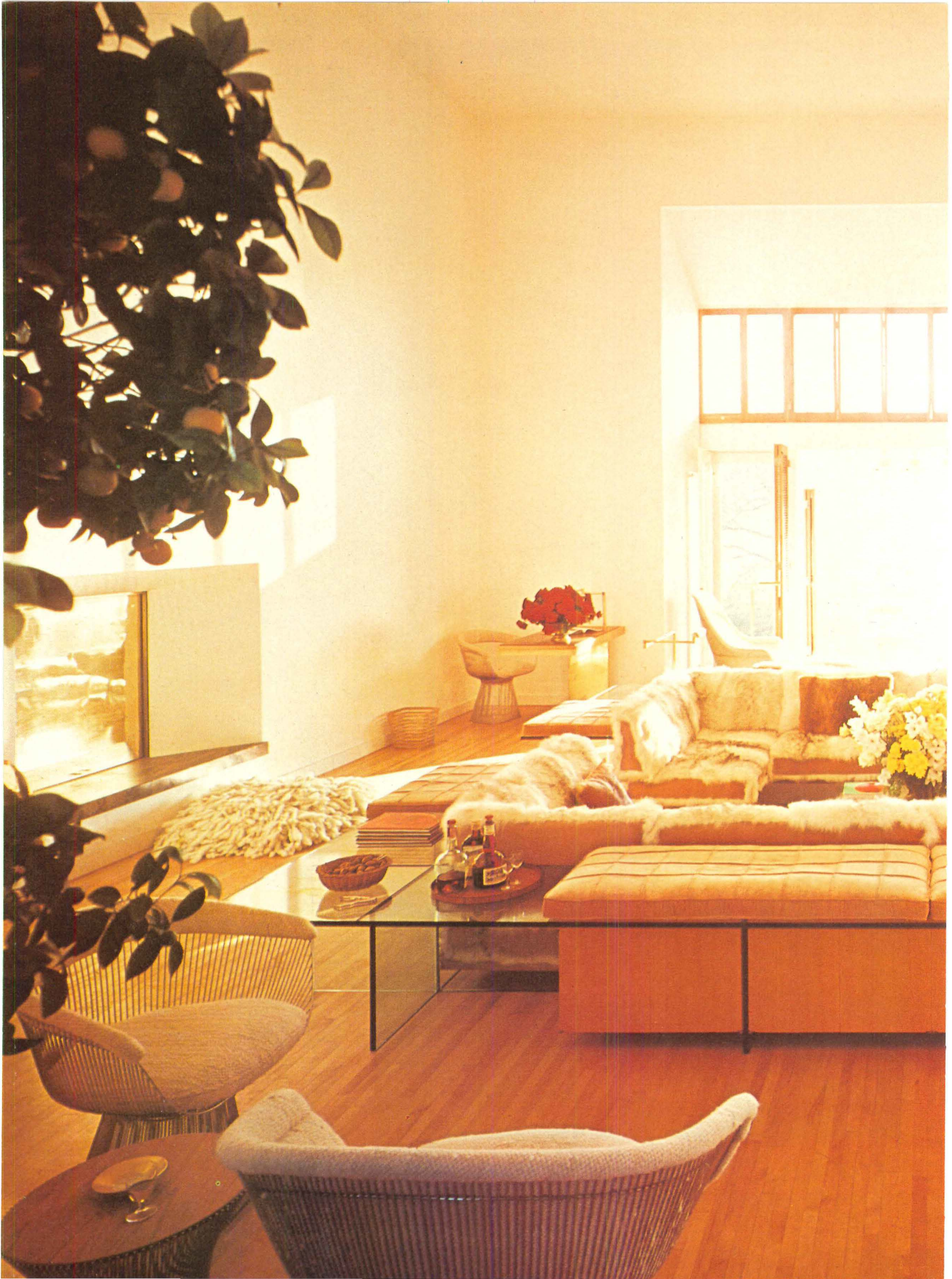
There are a number of bay windows in the house, and many of them have window seats. Spaces that are not actually outdoors, but which do not feel altogether indoors either, they offer still more possibilities for enjoying the landscape. There is indeed an orderly progression from outdoors to in—from the rough, unaltered woodlands and salt marsh to the more carefully manicured lawn on the site itself, to the still more formal terraces, to the bay windows—"inside outsides"—to the interiors of each pavilion. These, as Platner describes them, are

"formal spaces—that is, spaces that visually have definite form—and we live informally in them." They are, too, finished with the meticulous care for which Platner is well known. Each kitchen cabinet, each bookcase, each light fixture, each piece of furniture bears evidence of extensive concern on the part of the designer and considerable craftsmanship on the part of the maker. Together all of these elements, set in the clear and formal spaces of the house, combine to make a true "inside" that stands in sharp and elegant distinction to the Connecticut landscape outdoors.

PLATNER HOUSE, Connecticut. Architects: Warren Platner Associates—associates of Warren Platner on this project: David Connell, Paul Plumer, and James Wiebe. Engineers: Pfisterer, Tor and Associates (structural); John A. Altieri (mechanical/electrical). Consultants: Jill Mitchell (graphics); Sheila Hicks (textiles). Contractor: The George C. Field Company.

Since the house is made up of five pavillions, four of them connected (plan below), there are views across terraces from one part to another (left and right). The most frequently used entrance to the house is through the kitchen (below), "where", as Platner points out, "the action often is." One proceeds through the library (below right) up five stairs to the living room (shown on the following two pages).









One of the bedrooms is shown on the left; it is small and compact, and its window overlooks a wooded ravine below. The dining room (shown below) is designed to include a conservatory, but in such a way that it is the plants, rather than the people, who are in the sun.



Mental Health building,
looking south into central plaza (O)

A VISION OF HUMAN SPACE

BY CARL JOHN BLACK

PAUL RUDOLPH: BOSTON STATE SERVICE CENTER

Paul Rudolph once said, "Psychological demands are met primarily through the manipulation of space and the use of symbols." Most of today's architectural critics write about space as total abstraction. They have little to say about its symbolic values, about space as a felt experience. When architectural writers talk about form and space, they speak in terms of solids and voids, vertical thrusts, intersecting planes, juxtapositions of scale, symmetry and other formal concerns. Interpretation for human meaning is ignored. Unacknowledged are the philosophical, esthetic and psychological considerations which truly inform the work. Carl John Black, a young humanist, critic and teacher, formerly faculty member in the School for Humanities and Social Research at the Massachusetts Institute of Technology and in the Division of Languages and Literature at Bard College, has never had formal training in architecture or the history of architecture. Nevertheless, he sees Rudolph's work as especially rich in symbolic content and feels that the conceptual drawings provide a key to the architect's spatial symbolism. Black has collected and assembled Rudolph's drawings over the last several years for his forthcoming book *Human Space: Conceptions and Constructions of Paul Rudolph*, copyright 1973 by Carl John Black, to be published by Harper & Row, and for a traveling exhibition sponsored by the Cooper-Hewitt National Museum of Design, a private branch of the Smithsonian Institution. Because Black's insights deepen one's comprehension of Rudolph's work and his interpretations seem so very fresh to us, we have decided to publish an excerpt. All that follows is in the author's words from a chapter, "The Space of Human Government."—*Mildred F. Schmertz.*

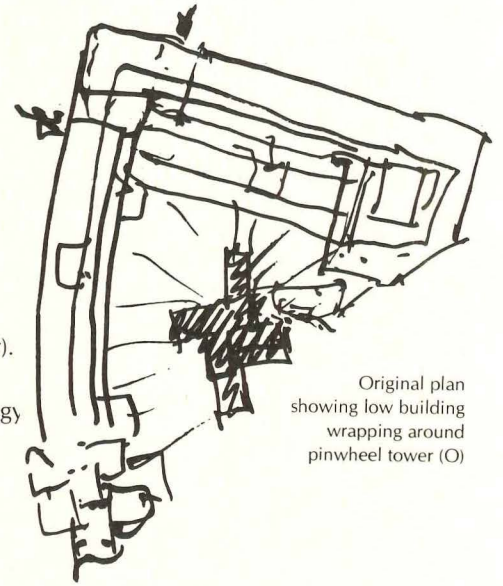
O: original, pre-construction conceptual sketch done by Rudolph
S: Studio drawing done by an assistant sometimes reworked by Rudolph
P: Post-construction sketch or drawing done by Rudolph
R: Redrawn by Rudolph from an unreproducible print of a lost conceptual sketch

All drawings used with the permission of Paul Rudolph

"I wanted to hollow out a concavity at the bottom of Beacon Hill, a spiraling space like a

CONCH

in negative relation to the convex dome of the State Capitol on top of the Hill. I wanted it to wrap around a tower which turned and was not only visible in its upward thrust but penetrating visibly below the ground." Rudolph hints at the symbolic content of the Service Center. The image-cluster: Water-Serpent-Cave-Shell, is a constant in the symbolism of "primitive" cultures and corresponds to a deep structure of human consciousness. Rudolph improvised his spaces with astonishing consistency around these symbols. A key image is the staircase of the Mental Health Clinic (see cover). It recalls the form of the "wentletrap" shell, meaning "winding staircase" in Dutch. In mythology the conch, spiral and coiled serpent emerged as images of earth rhythms and life cycles which ruled birth, death, regeneration, health, agriculture, the social order and the dispensation of justice. Aphrodite—Goddess of Desire—was born in a conch, and the association of shells with the female embryos and Venus cults is beyond dispute in the history of symbolism. In Rudolph's design, these symbolic allusions to the female are strongly balanced by the thrust of the unbuilt tower around which the "shell space" spirals. This towering spine-wheels in on itself, but this movement is resolved by the strength of the axis, symbol of endurance and return. By contrast to the rationalist space of Bulfinch's domed symmetry, Rudolph's building is a vision of deep-earth symbolism, the life-meanings of which lie at the heart of government's humane service to its people.

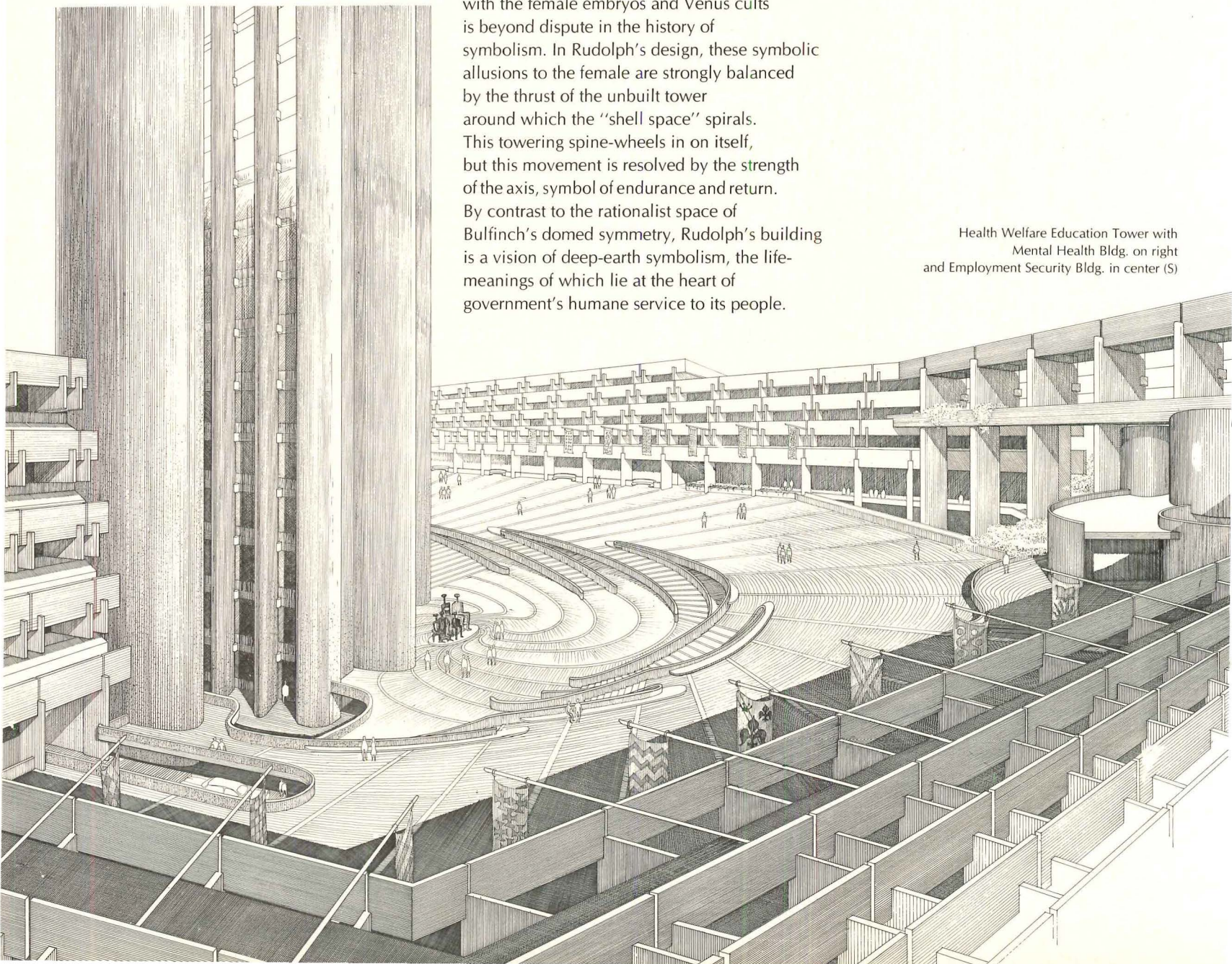


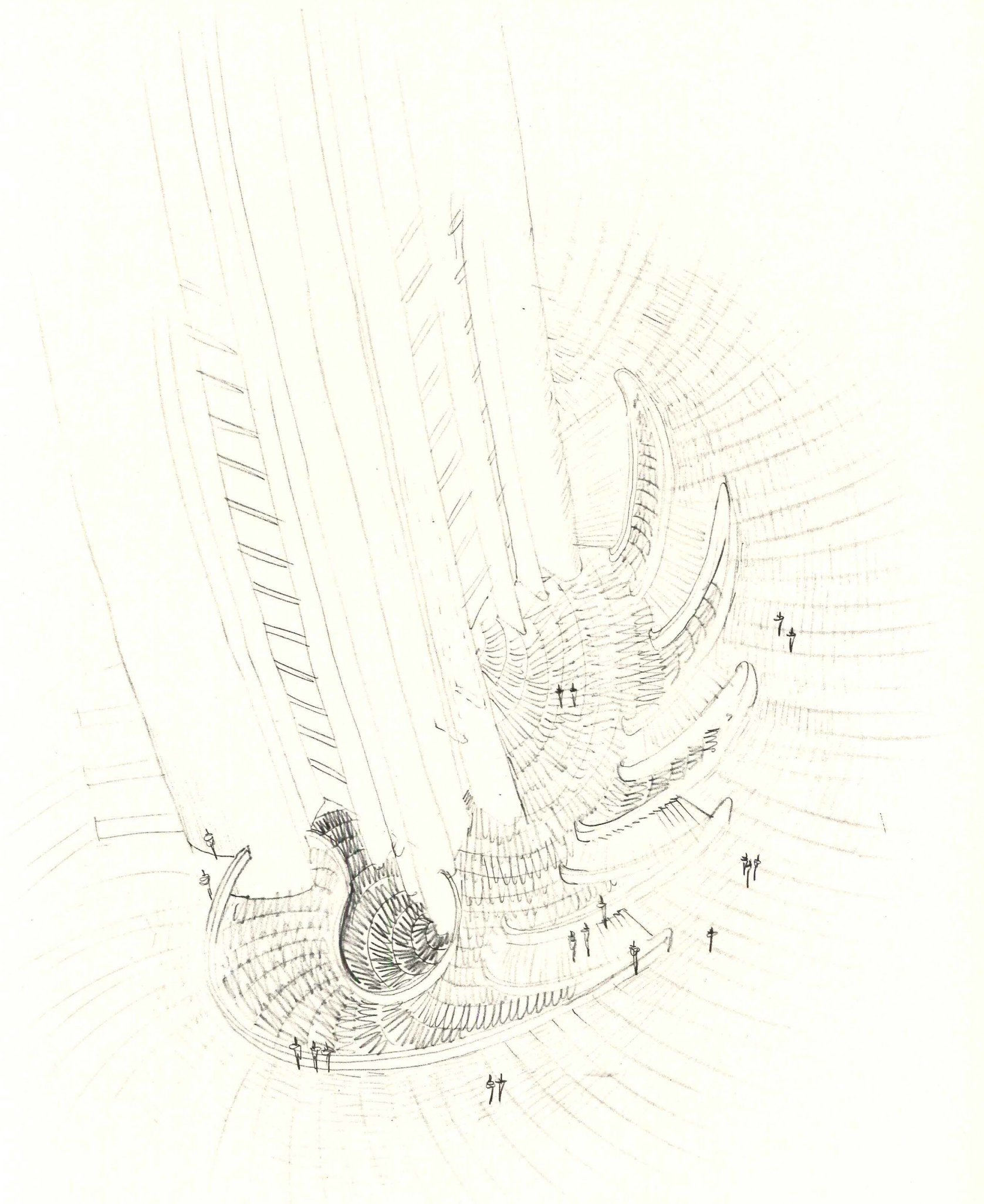
Original plan showing low building wrapping around pinwheel tower (O)

Health Welfare Education Tower with Mental Health Bldg. on right and Employment Security Bldg. in center (S)



Aerial perspective photo of the State Service Center, tower unbuilt





HWE Tower showing three descending levels of plaza (O)

Hand-drawn

A mysterious, almost totemic tie knits Boston to the sea.

The totems of SEA AND SHELLS

lie in the memory of things—the rising of Venus, the endless curl of waves, the fixity of fossils ticking off the crust of time. . . . The architect has twisted, curved and smeared the line, erased and mangled the paper to wrench from the gyrations of a scallop the serenity of an empty cup. He calls it a plaza for rest and passing through. A bus stop. But just below the practical surface of things at the invisible edge of activity, the most forgotten of us all will ride the waves of time and sit in the broader depths of remembering. The receptionist looked out to the plaza. "It reminds me like either you're going down and you're going right into the ocean or you're coming up. . . . It's situated in a place that's close to the ocean and it gives you that feeling. You could figure it was a water snake. You get that there as the waves. You know, the way the waves come in, the tide comes in?" Tide marks become an image of a wing. A winged serpent. Pindar tells us that the father of All Things is a winged serpent. In the image of these spaces "I trod the shelly pavement of the deep, And swam its current . . . voices soft As ripple of light waves along the shore."

Plan for steps and drain, north plaza (O)

Roof plan: copper seam patterns, stair and service tubes (S)

Plan: east plaza of HWE unbuilt (O)



Plan, north plaza, stairs, seating, drain and sculpture base and modeling of the plaza
A horizontal "sculpture" scheme as a solution for drainage (R)

Photography by Y. Futagawa



"The Sea, in celebration on its steps, like an ode of stone."

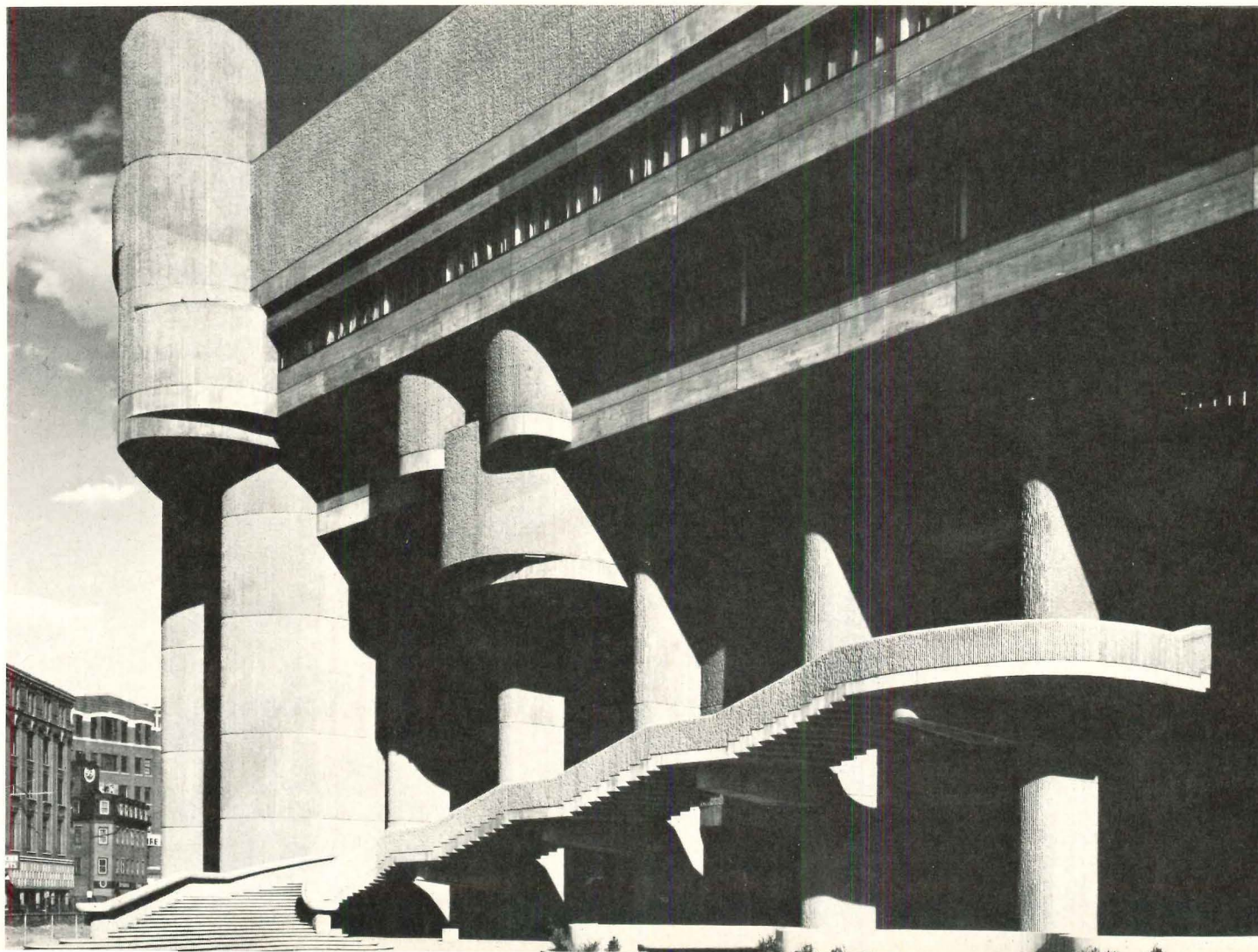
(Seamarks, St.-John Perse)

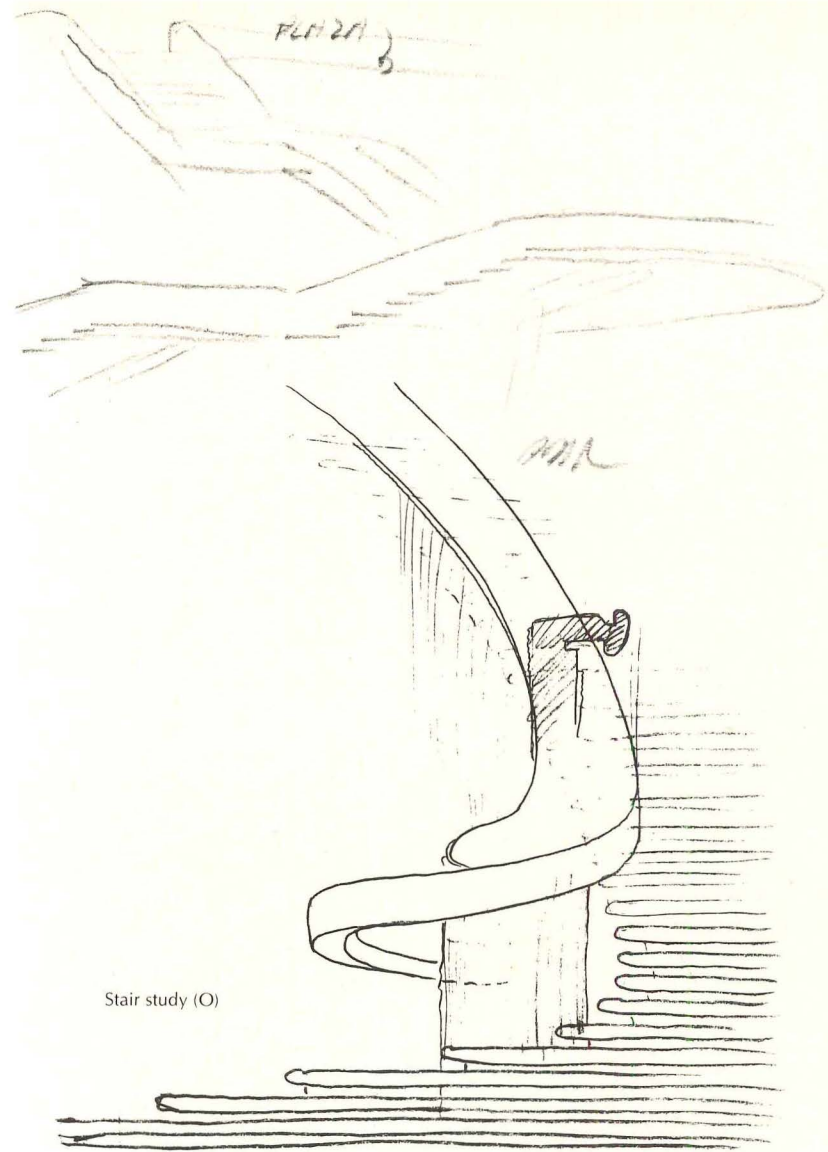
EBB AND FLOW

is the pulse of time, the rhythm of furling and unfurling of surfaces and space. Rudolph's building is full of the hard permanence of ruins. Not an image of decay, but an exuberant vision of being-there. The State Service Center is a hymn to enclosure: the freedom of protection, the sweeping spaces of a defined openness, and the reassurance of massive pylons. All elements are expressive of

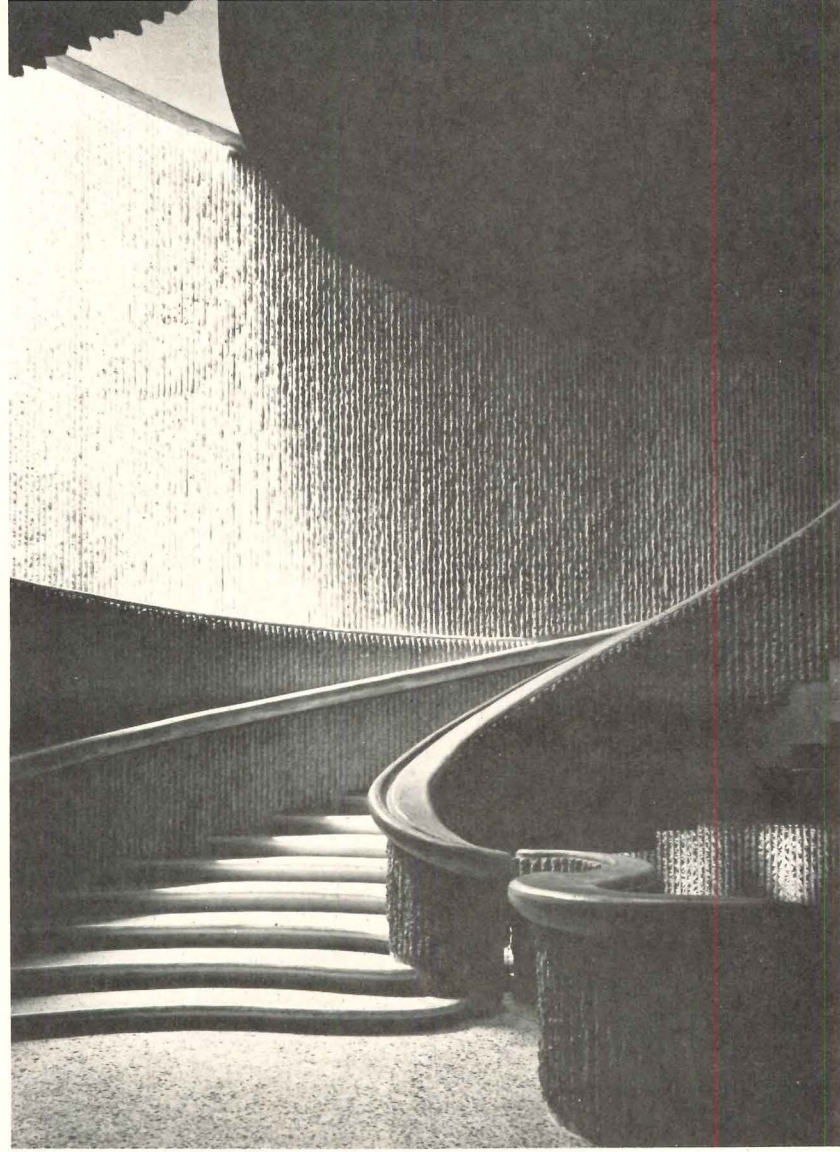
Stairs from north plaza through Mental Health Bldg. snaking through porch towards south. (photo same) (R)

the sheer power of enclosed nothingness, but they celebrate a nothingness turned to the full uses of life. The architect's vision is monolithic, but the monolith moves into life, flowing outward, spiraling upward in the wheel of change. The monolith dissolves into movement as baroque staircases break against gigantic columns and impenetrable walls. It is as though matter had by magic metamorphosis melted into liquid arabesques. "Abhorrent is the rest/ In undulating rooms/Whose amplitude no end invades,/ Whose axis never comes." Rudolph seems to have discerned Emily Dickinson's fears of fluid chambers, for his design gives a towering axis to ceaseless movement and change and captures not only the nature of government to evolve but its will to endure. Image of material power, image of the sea, image of government: Rudolph's building contains the changing discontinuities of human moments and the permanence of timelessness.





Stair study (O)



Main stair, Mental Health Building

Entrance foyer to Mental Health Building

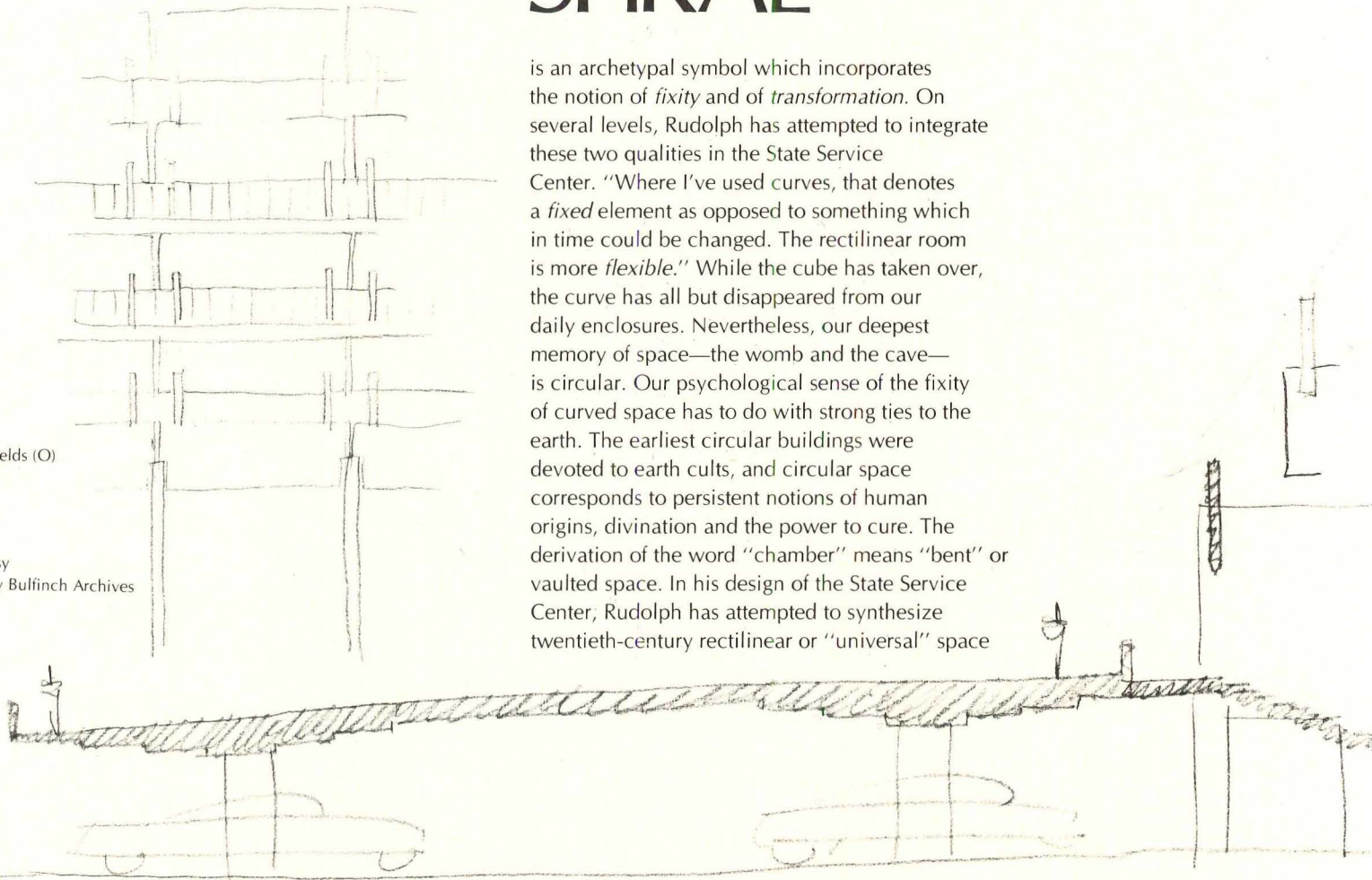


Carl Jung's studies of the psychological process of individuation reveal that the **SPIRAL**

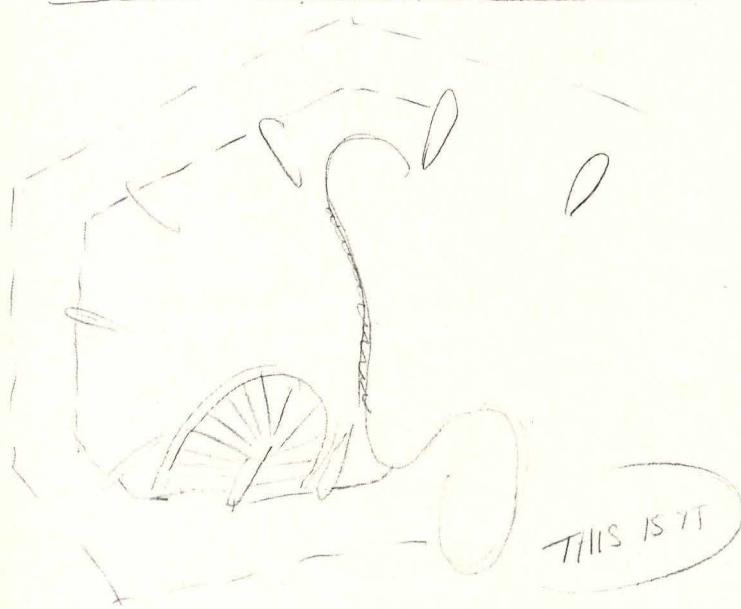
is an archetypal symbol which incorporates the notion of *fixity* and of *transformation*. On several levels, Rudolph has attempted to integrate these two qualities in the State Service Center. "Where I've used curves, that denotes a *fixed* element as opposed to something which in time could be changed. The rectilinear room is more *flexible*." While the cube has taken over, the curve has all but disappeared from our daily enclosures. Nevertheless, our deepest memory of space—the womb and the cave—is circular. Our psychological sense of the fixity of curved space has to do with strong ties to the earth. The earliest circular buildings were devoted to earth cults, and circular space corresponds to persistent notions of human origins, divination and the power to cure. The derivation of the word "chamber" means "bent" or vaulted space. In his design of the State Service Center, Rudolph has attempted to synthesize twentieth-century rectilinear or "universal" space

Study, sun shields (O)

Courtesy Shepley Bulfinch Archives

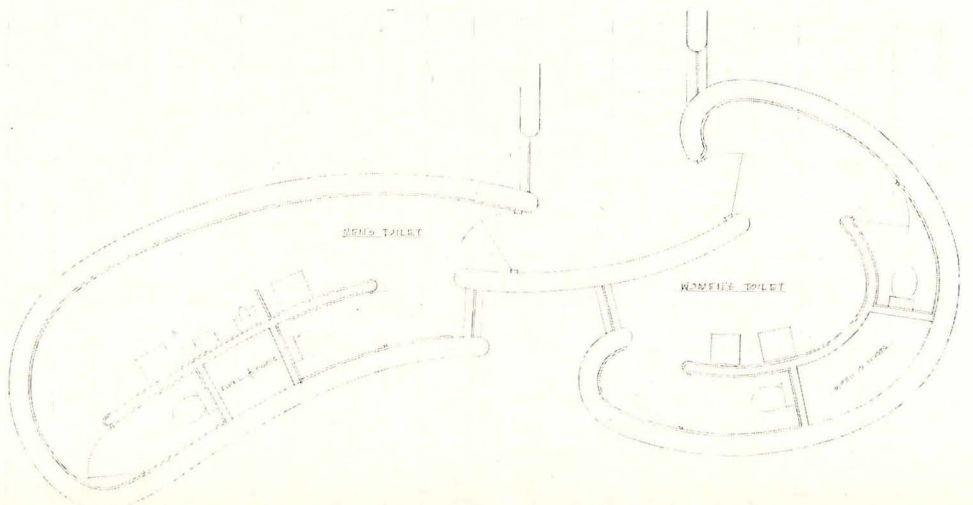


and "primordial" curved space with its deeper psychological appeals. Part of the solution to this synthesis lies in the spiral. The spiral has a diagonal thrust which, in the case of a rectangular space, allows for it to be "stepped back." This stepping back or slanting of the facade allows for "swinging" a rectilinear structure into curved formation (see photo, page 106). It permits one, in the face of many rectangles, to get the natural "feel" of the curve. Rudolph has carried the synthesis of rectangle and circle over to his concept of the tower. His original sketch (page 106) shows the tower in the form of a pinwheel or swastika, an ancient mandala symbol which incorporates straight lines at right angles rotating in a circle. In its eternal return to the same point while moving ever higher, the spiral is an eloquent symbol of a search for spatial "origins" while moving on to create new architectural modes.

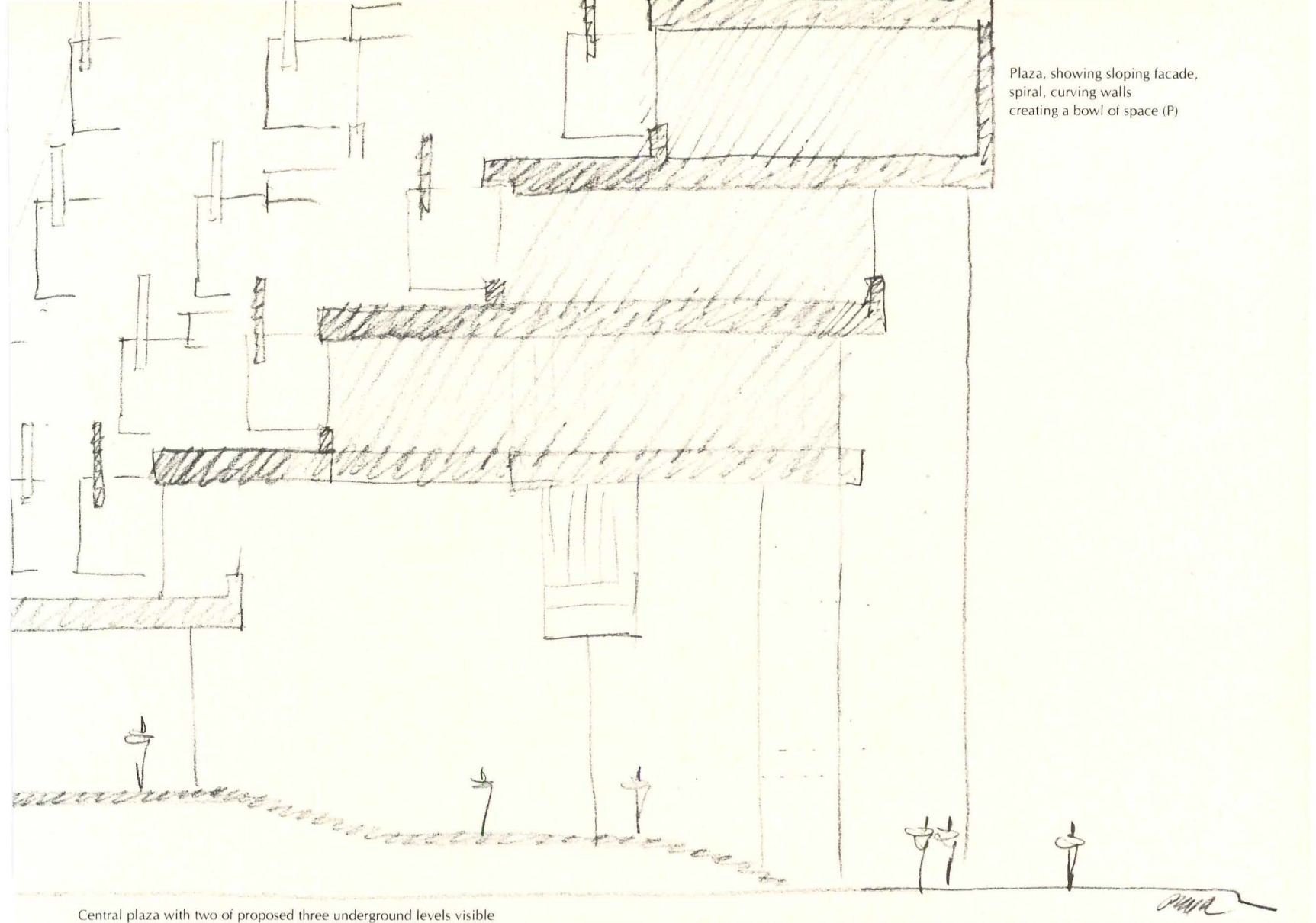


Plan, porch with bent wall of Employment Security Bldg. Outdoor stairs from main plaza going down into garage (O). Courtesy Shepley Bulfinch Archives

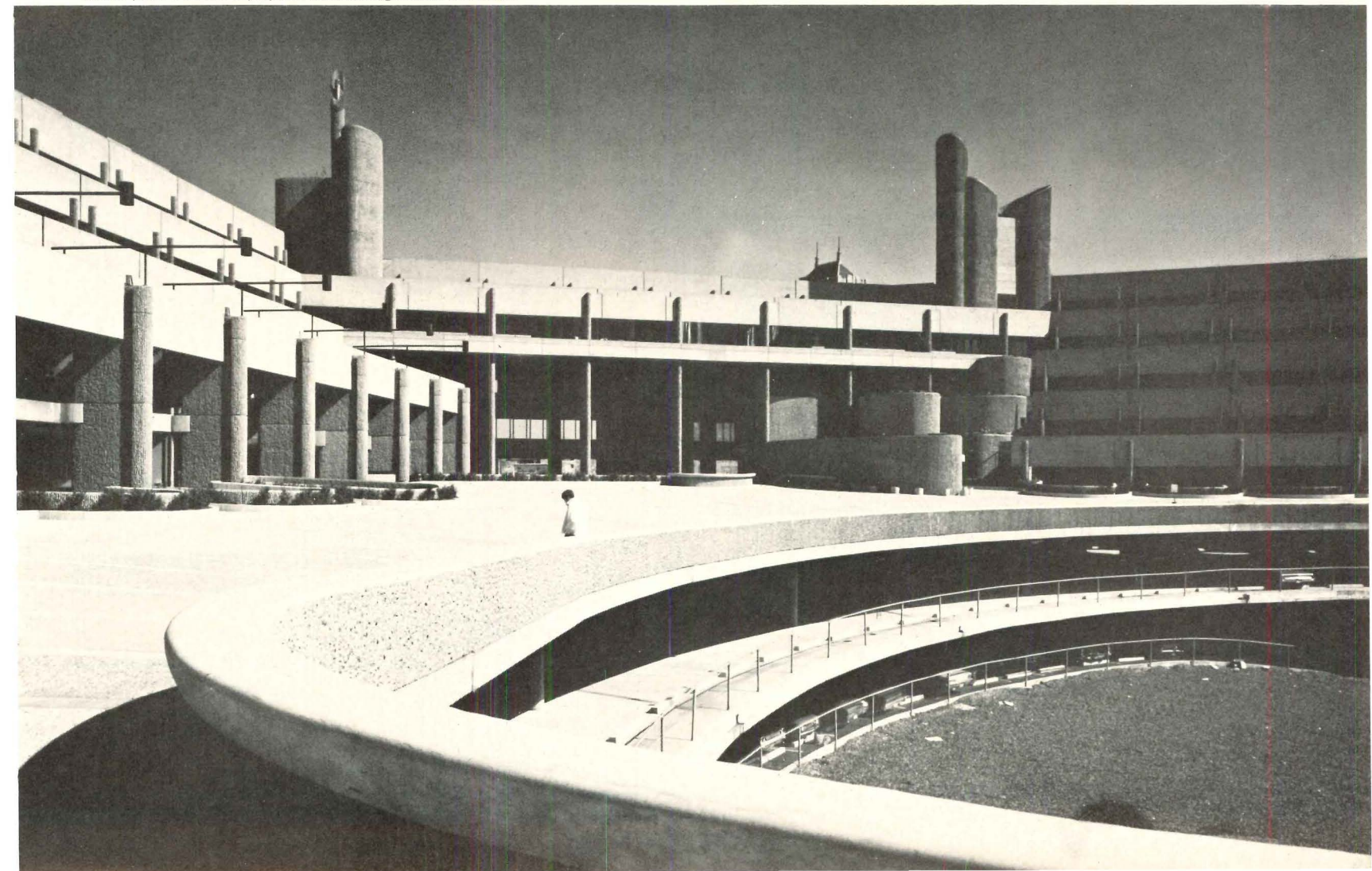
Toilet plan. Unbuilt for Health, Welfare Education. Fixed element, curved space



Plaza, showing sloping facade,
spiral, curving walls
creating a bowl of space (P)



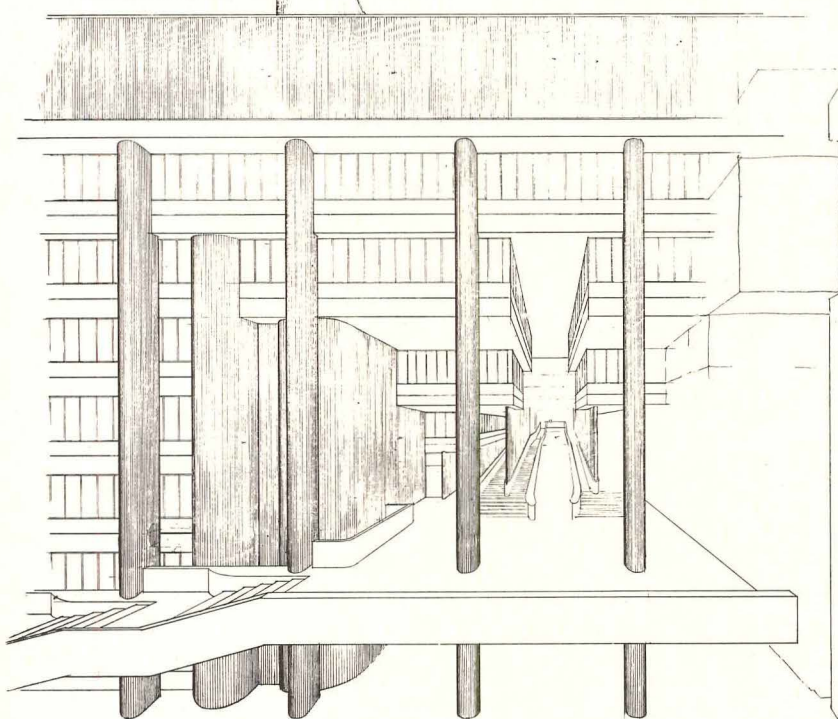
Central plaza with two of proposed three underground levels visible



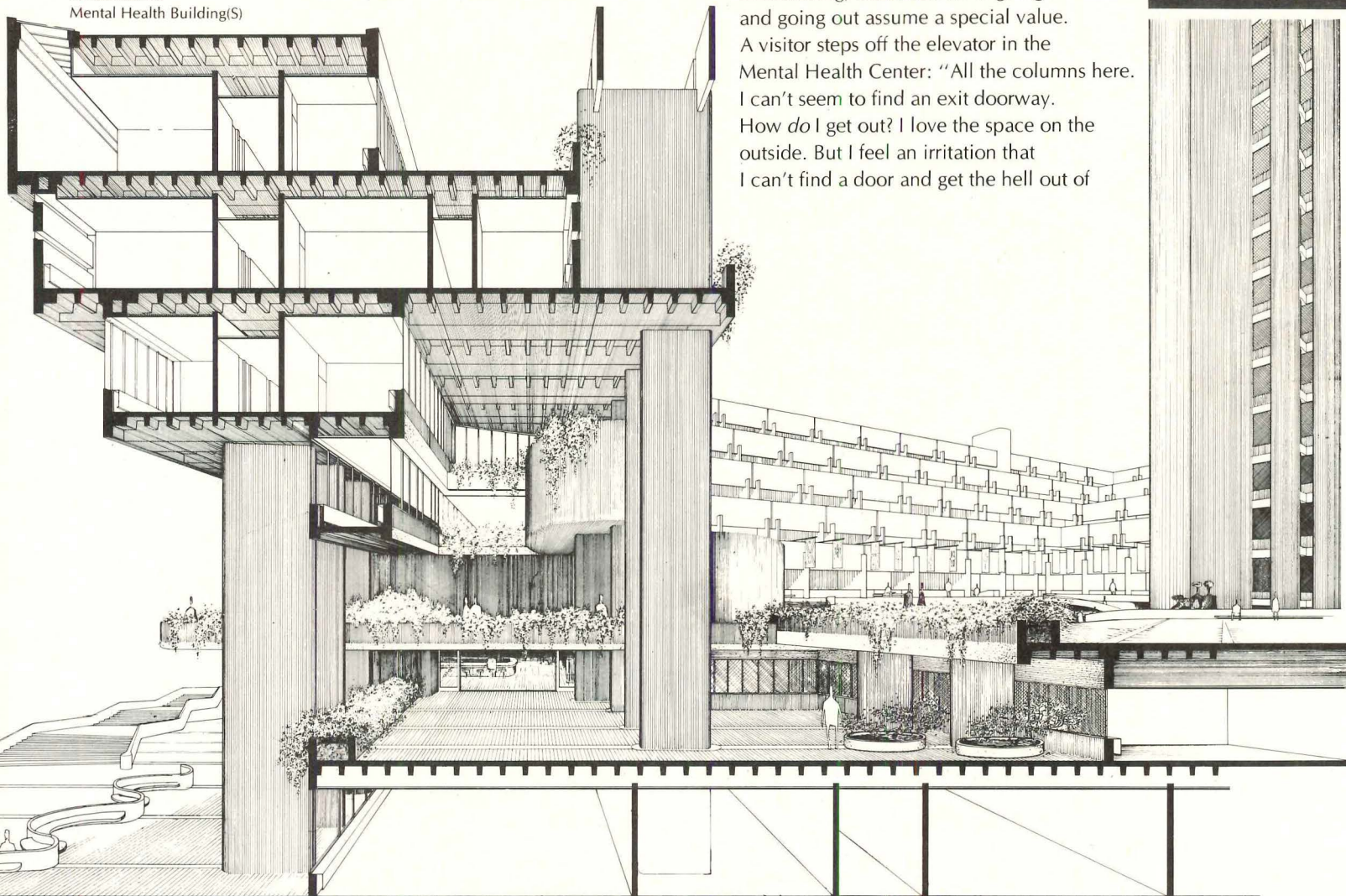
By following Ariadne's umbilical thread, Theseus found a one-way exit to the world.

THE LABYRINTH

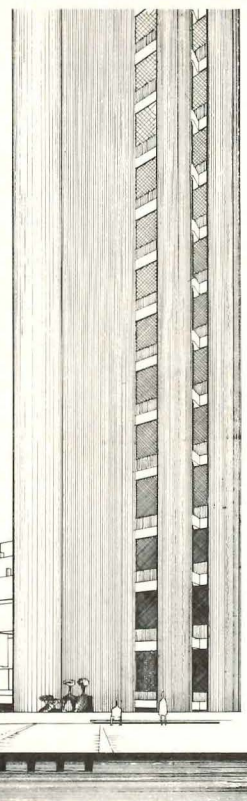
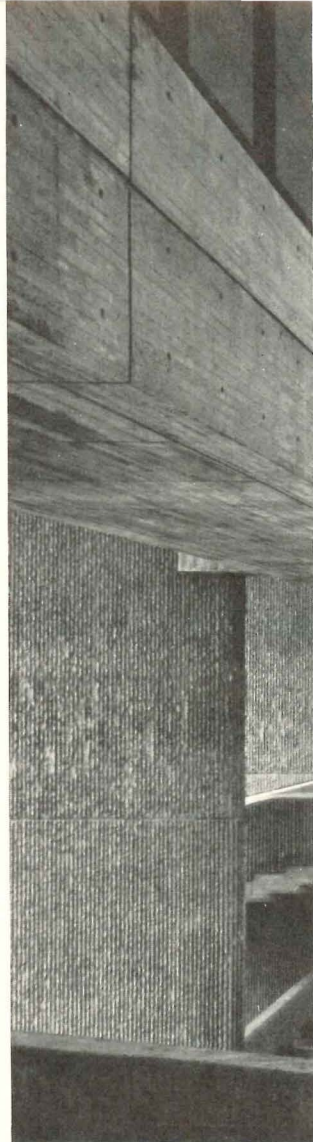
Unbuilt connector between Mental Health (right) and Health, Welfare Education (left). Also entrance to underground garages (S)



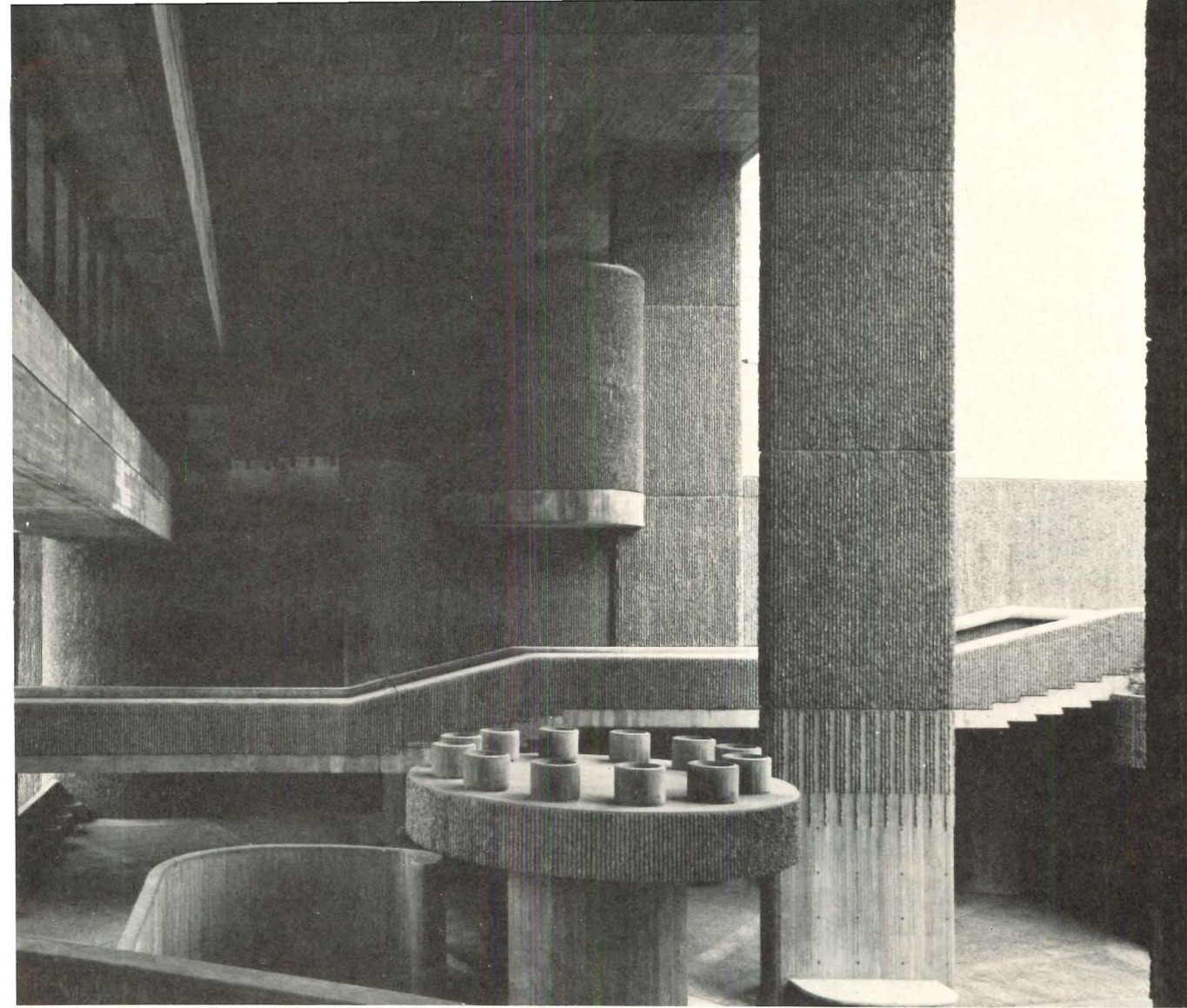
Crosssection of Mental Health Building(S)



is the other side of interiority. From the moment man is born into the world, he carries his interiority with him and is condemned forever to walk on the outside of things. But the mind remembers when its interiority was at one with Being, and in remembrance of this, performs the sacred rite of going-on. To enter an enclosure is to perform this rite. Thus the paramount importance of the door: point of ritual penetration into the mass of the world. Doors celebrate the victory of space (consciousness) over density (unconsciousness). This victory is a form of psychic redemption, overcoming the split between inside and outside. Rudolph's design invites us to participate in the full rites of space: the rite of going-in, but also that of going-out, of being on *this* side as well as the other side of interiority. He mystifies us by playing on our credulity that buildings open to a purpose and exit to a place to go. His entrances and exits are rarely clearly *there*. He beckons us to search for space. It is never given. In searching, the functions of going in and going out assume a special value. A visitor steps off the elevator in the Mental Health Center: "All the columns here. I can't seem to find an exit doorway. How *do* I get out? I love the space on the outside. But I feel an irritation that I can't find a door and get the hell out of



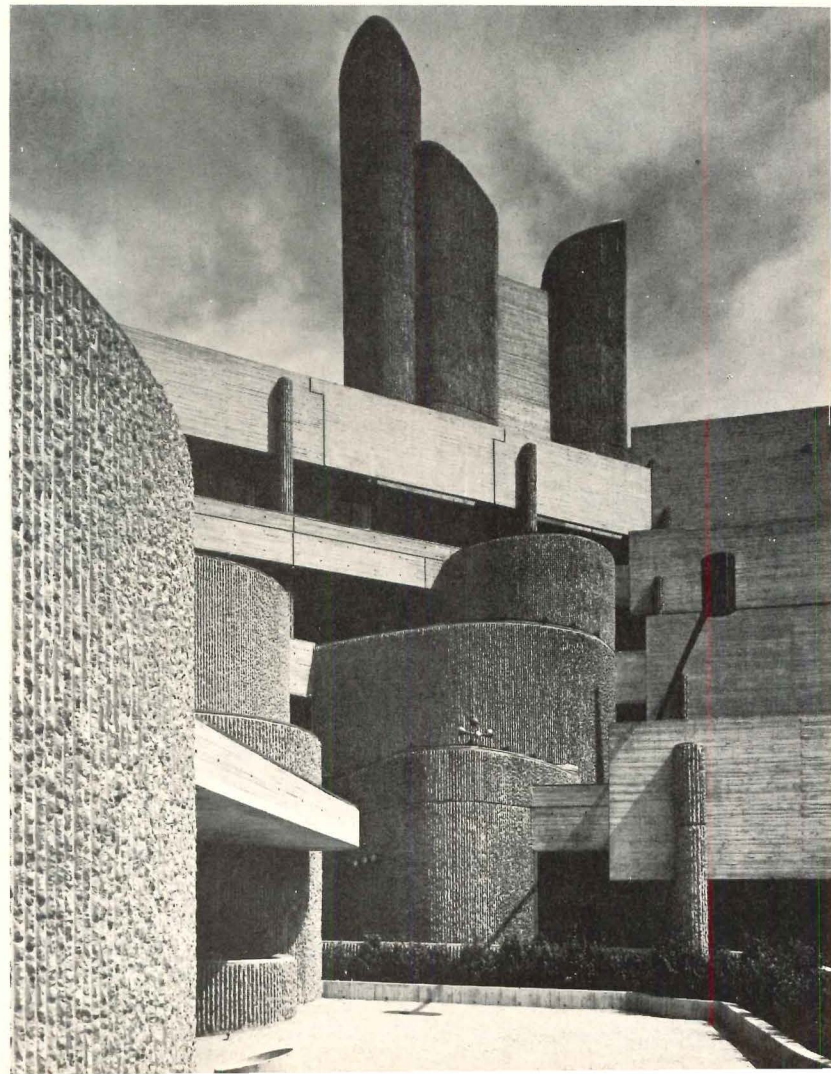
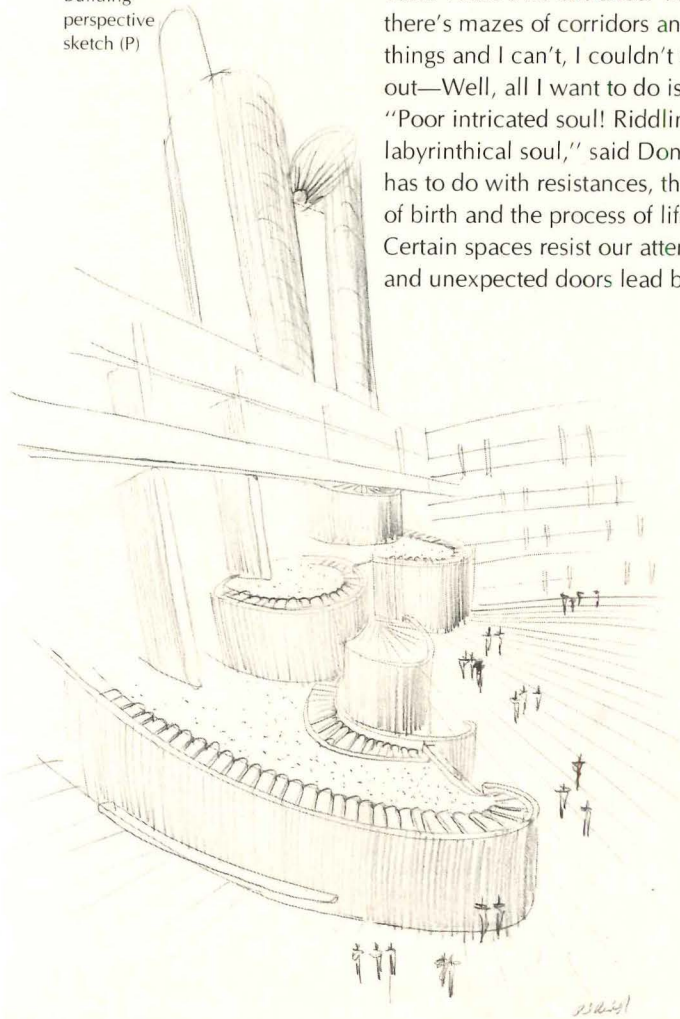
Mental Health Building:
exposed bridgeway,
walkway, stair
and covered corridor



Mental Health
entrance and
conference rooms

Mental Health
Building
perspective
sketch (P)

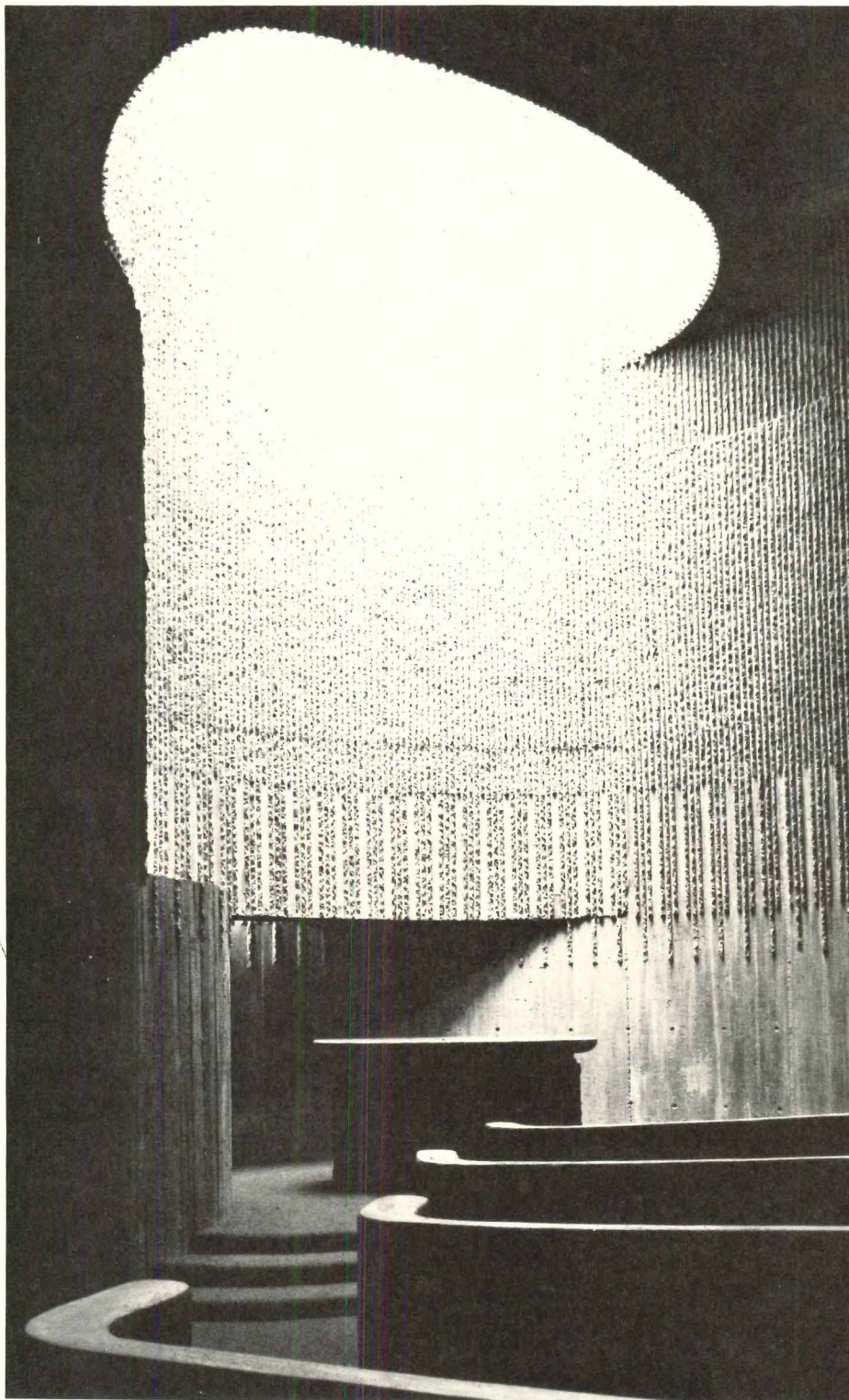
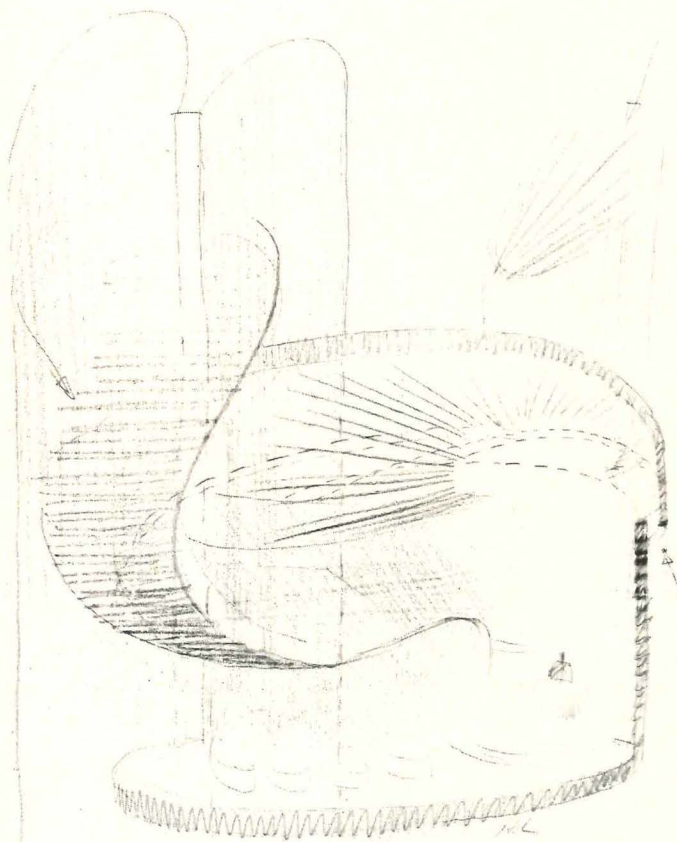
here. There's no entrance. You look, and there's mazes of corridors and circles and things and I can't, I couldn't find my way out—Well, all I want to do is get out now!" "Poor intricated soul! Riddling, perplexed, labyrinthical soul," said Donne. The labyrinth has to do with resistances, the resistance of birth and the process of life until death. Certain spaces resist our attempts, and unexpected doors lead back out.



But with each resistance overcome, we find the journey has taken us farther inward until we reach

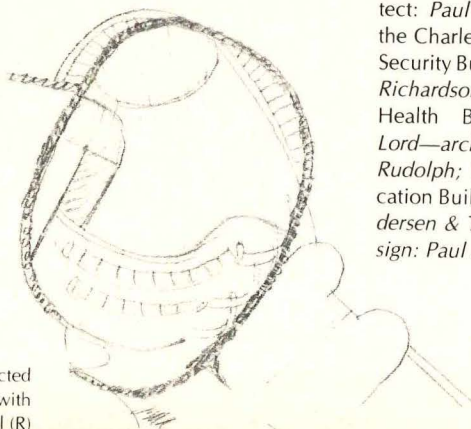
THE CAVE

of mind, innermost space, throne room of the heart. Do the walls weep for some unknown suffering? Or do they weep with the beneficent moisture which attracted souls and divinities to caves and made them sacred before the creation of temples? The Chapel is full of the primordial emptiness and secretness of space buried in the earth. Yet it is spinning high up, its overlapping forms ripping off from the confinement of matter. This is the Center of the coil, "a sunless crypt unsealed," where light traces a faint memory of a shell and becomes the New Entrance, the nimbus of space turned into holiness.



Chapel, Mental Health Building, ground level

Cutaway view of Mental Health Chapel, showing stair and service towers (P)



Reflected ceiling plan with skylight and balcony of Chapel (R)

STATE SERVICE CENTER, Boston, Massachusetts. Coordinating architect: *Paul Rudolph*. Architects for the Charles F. Hurley Employment Security Building: *Shepley Bulfinch Richardson and Abbott*; Mental Health Building: *Desmond & Lord*—architectural design: *Paul Rudolph*; Health, Welfare & Education Building: *M.A. Dyer and Pedersen & Tilney*—architectural design: *Paul Rudolph*.

FLEXIBLE SPACE IN RELIGIOUS BUILDINGS

In a quiet way, a revolution has been taking place in the design of church buildings. There were some indications of it in the early sixties, but it was brought into the open at the 1966 conference in San Francisco of The Guild for Religious Architecture, where the questions were openly asked: "When church buildings are monuments, should there be church buildings? If there is a church building, for what is it to be used? What is the church's relevance to today?" and perhaps most penetrating of all, to church member and contributor, for whom the economics of church building are inescapable, and to the architect, who must deal with the program, "Why should the church building be used only one day out of seven?"

What has happened since then offers a few clues to the answers to those questions. For one thing, although church buildings have continued to be built at a fairly steady rate—3500 to 4000 new buildings a year—that rate is nowhere near the rate of the earlier decade. And this has induced considerable reappraisal of purpose, mission and need.

Also, when church buildings have been built since then, they have been unlike traditional church buildings—not because building committees, or architects, or both, were striving for a fashionable contemporary architectural expression, or searching for a means of making a strong image, but because these buildings resulted directly from the particular needs of the people of the church. Thus people—not liturgy, or unidirectional function, or structure—have become the major influence on the design, form and plan of an increasing number of church buildings.

Simplicity, directness, relevance to needs, flexibility and adaptability: these are the design goals of the building programs for new church structures today. And of these goals, flexibility is the most important. Whatever space is built must have flexibility, must be usable for secular activities as well as for religious functions, and must not be the character-less "facility" so many multi-purpose places have been in the past. Economics has been a major factor in this new requirement, of course; but common sense about idle space cannot be ignored in understanding this new approach to use of religious buildings.

To design multi-use space which works as well, and is as appropriate, for social occasions as for church services is a challenge—of a different order from ringing one's own changes on Gothic or Colonial, but just as difficult, if not more so, to solve satisfactorily. The church buildings shown on the following pages show in what ways some architects have taken the challenge. Even in designing for traditional function and liturgy, as in the Bethlehem Lutheran Church (pages 130-132), traditional form does not necessarily have to follow.

A major part of the problem of designing for churches is the programming, and many architects have found this a distressingly slow and sometimes almost fruitless process because the church itself had such difficulty in expressing its special and individual beliefs. Some architects, however, found that denominational bureaus could accomplish much of this basic work before they were selected, and that this method smoothed the way for their own work. The decline of the rate of new church building in recent years has led to phasing out or considerations of merger of some of these bureaus, and one—the Department of Architectural Services of the American Baptist Extension Corporation—has accepted contracts from other denominations to provide their services to individual churches, as it did in the case of the Church of the Brethren in Live Oak, California (pages 126-127). Since the Baptists built almost a third of all the new church buildings last year, it is understandable that their bureau is in a strong position by virtue of volume as well as by the character and quality of its service (which does not include architectural service, despite its name).

The three other churches in this Study—the Church of the Blessed Sacrament in Connecticut, Our Divine Savior in California and Chaminade Chapel in Malawi, Africa—have an important characteristic in common: they derive directly from the needs of the people they serve. The resulting buildings are simple and strong in form and in expression, and they have the kind of character which, being strong itself, can adapt without losing its identity and its entity.

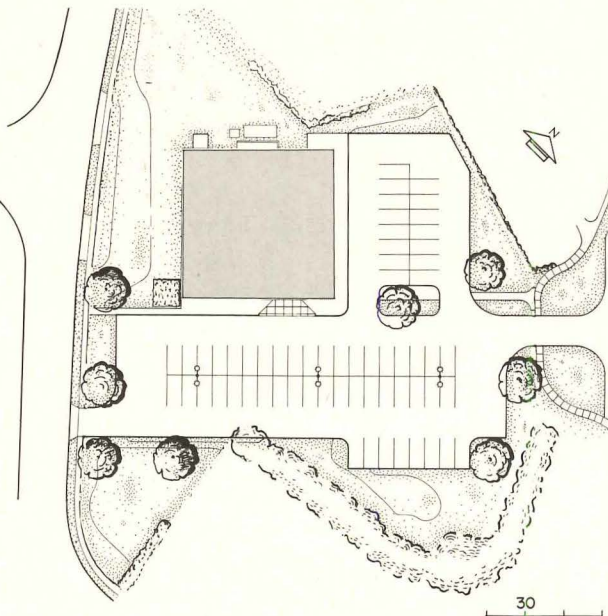
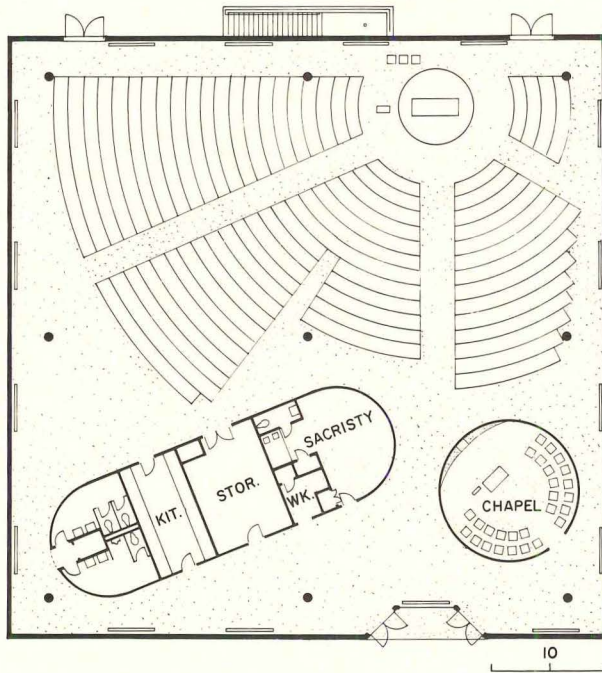
There is no clear view to the kind of church building that the future will require. But for today, the building which lets the church reach out to the community in service answers more than the monument that stood aside from the community.

—Elisabeth Kendall Thompson

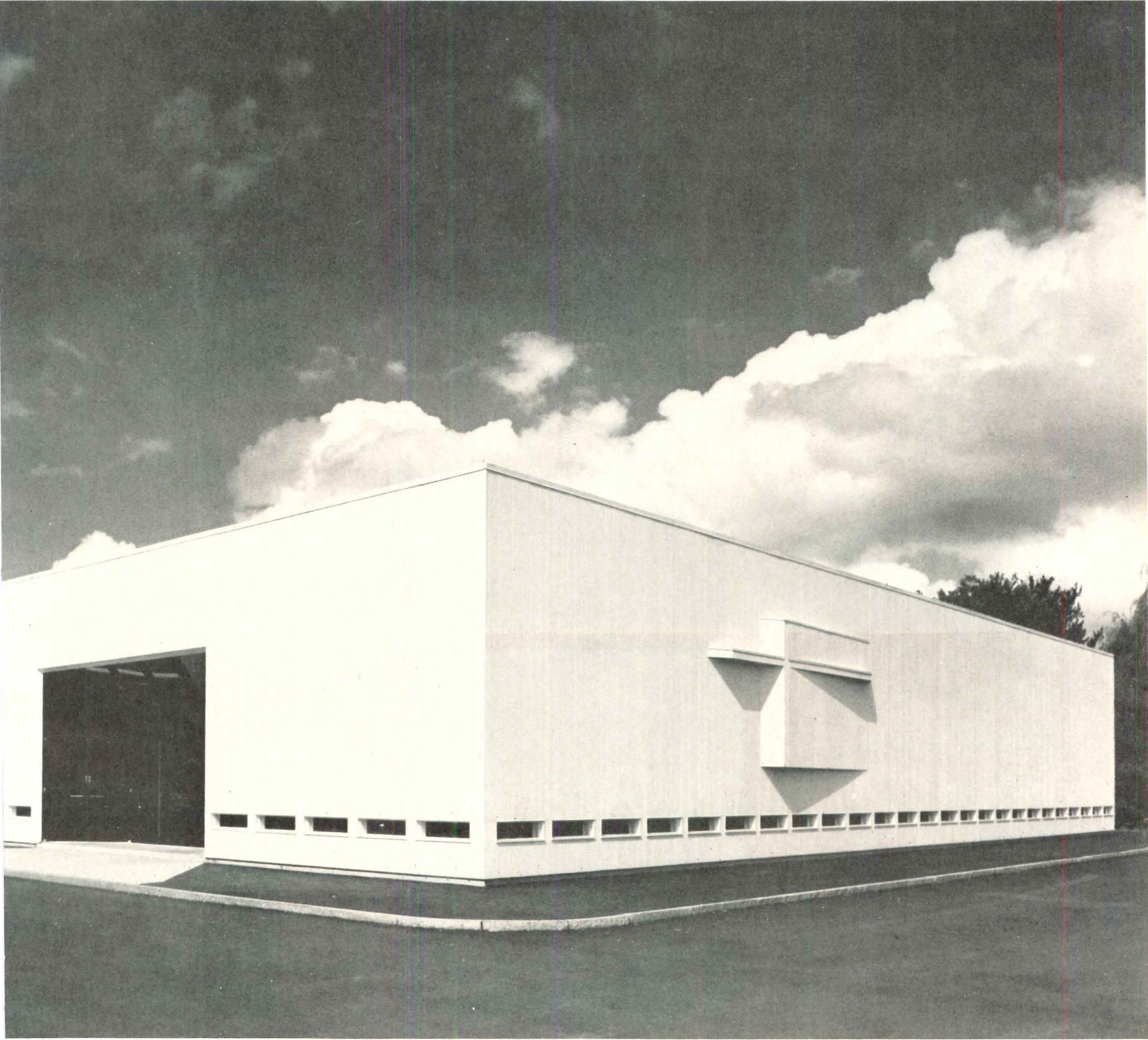
A simple cube of space that adjusts to function and that emphasizes people, not structure

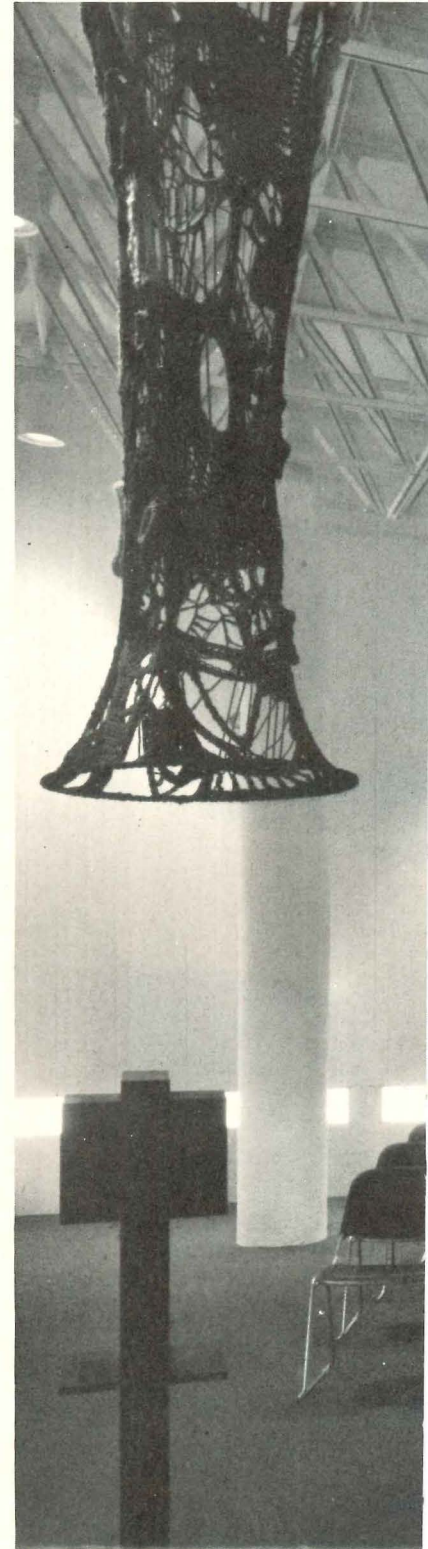
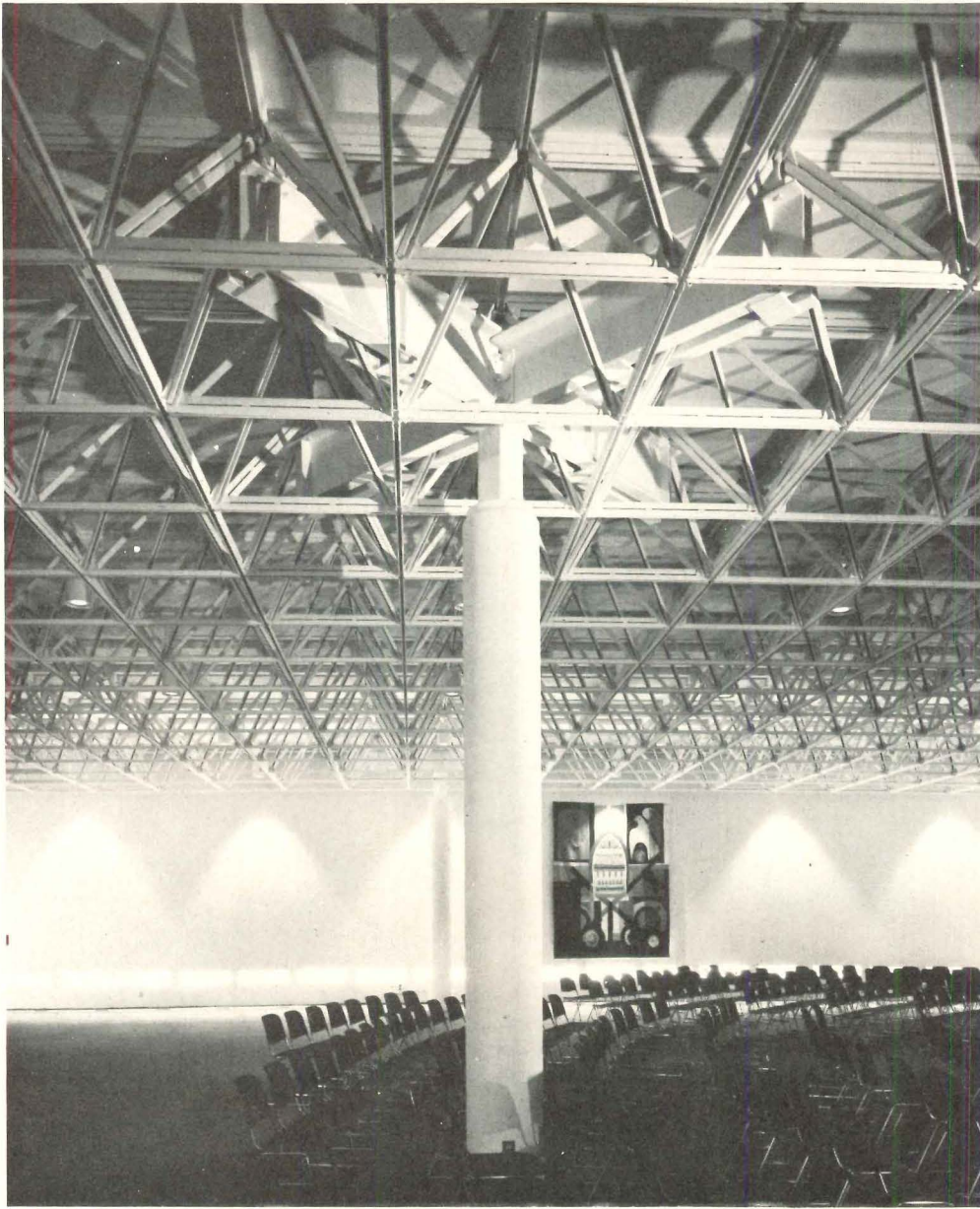
An emphasis on people, not structure, and on space that adjusts to church functions instead of the function having to adjust to the space, led to the totally flexible nave and sanctuary of the Church of the Blessed Sacrament in East Hartford, Connecticut. Only two elements in this interior space are fixed: the circular 25-seat chapel and the sacristy-storage-kitchen-lavatory unit, both freestanding and located near the entrance so as to form, between them, a narthex. All sanctuary furniture is movable—the 500 chairs are stackable, the altar, ambo, seat and font can all be stored—so that the character of the open nave can be completely changed as its use for other than religious services changes. This space is used for a variety of purposes, all related to the church program and varying from parish business meetings to social functions. For smaller group meetings, the narthex becomes a meeting room. The structure is simple: nine columns support an exposed space frame, all elements of which are painted white. Light fixtures are suspended within the space frame, and banners, tapestries and other pieces of art hang from it, adding bright colors to the white walls. The simple, almost plain exterior, faced with vertical cedar boards painted white, is surprisingly in scale—with the volume of space enclosed—with the surrounding neighborhood. The building cost \$268,000.

CHURCH OF THE BLESSED SACRAMENT, East Hartford, Connecticut. Architects: *Russell Gibson von Dohlen Inc.*—John L. Riley, partner-in-charge of design; Allen P. Tracy, structural design; Ralph H. Gibson, Jr., acoustics. Engineers: *Peter Dalton & Associates* (mechanical/electrical). Landscape architects: *Maine & Associates*. Consultant: *Russell Vacanti of Vision in Design*, liturgical appointments. Contractor: *The Hall & Fiske Company*.

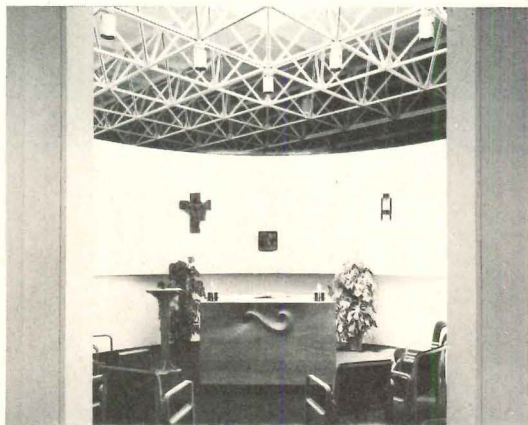


Charles N. Pratt photos





The all-white nave is important in creating the character of the interior. The red carpet throughout the interior is the only permanent color in the building, since the colorful banners and other art work suspended from the space frame can be moved. When furnishings are moved and stored for special events, the character of the interior is completely changed, but with the required fittings for religious service in place, the dignity and serenity of a church is re-established. The small circular chapel at the entrance, however, is a permanent religious space, with fixed furnishings. In it is kept the reserved sacrament, and it is the place where daily and memorial masses are said. Its white stained walls are 12 feet high, and open at the top. The narthex is used for baptisms and meetings.

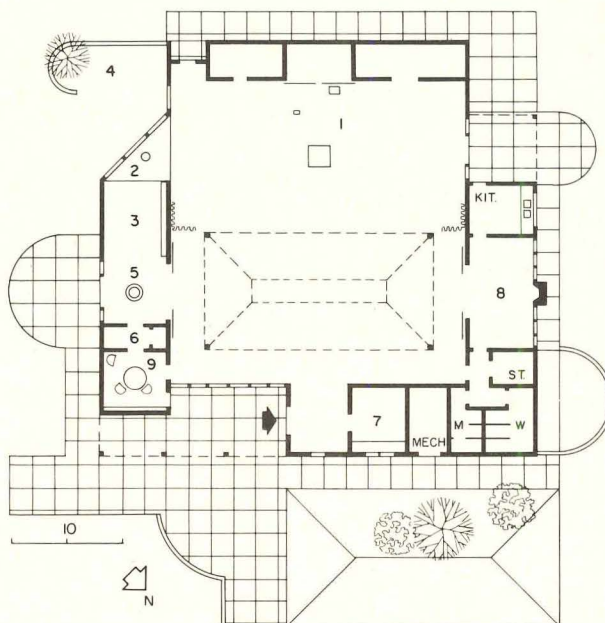
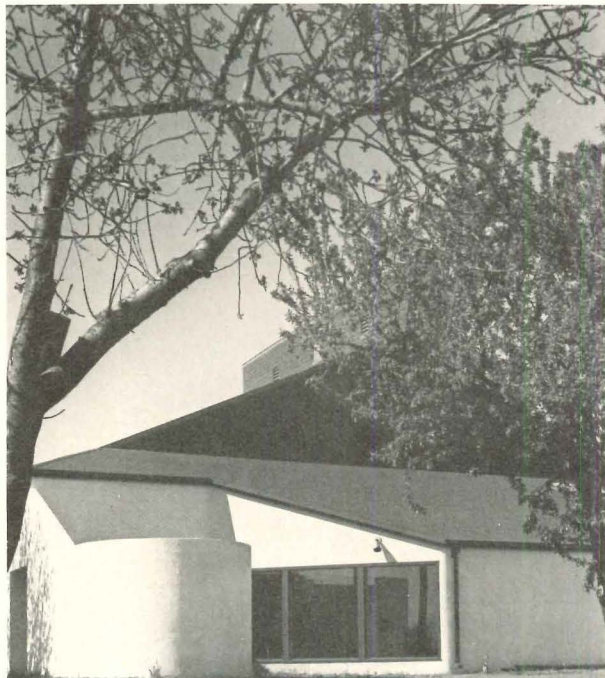
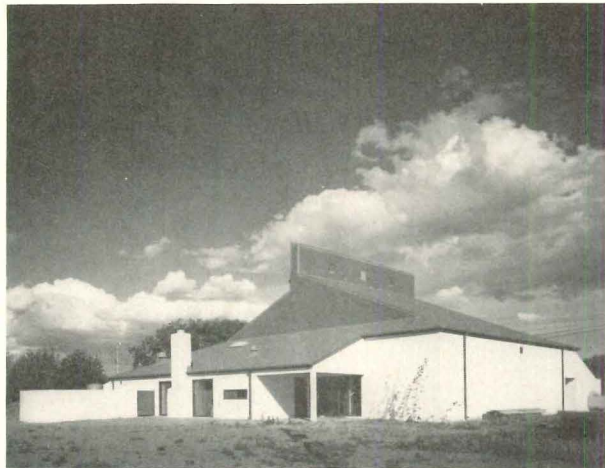




A religious landmark in the community, flexible in use and relevant to parish needs

The Church of our Divine Savior in Chico, California, is designed as a "place of encounter," for the individual with groups of people in ritual and social situations. Every provision of the plan answers a requirement of an encounter: the chapel, tabernacle and garden are quiet places for meditation; confessional and counseling office are for face-to-face talk; at the baptistery, a small group can gather, and can flow in to the main space or out to the garden, or be cut off from activities in the rest of the building. Small groups can meet in the lounge; for informal occasions with chair, lectern and table removed, large groups can meet, dance or play games in the main space. With sanctuary furniture in place—in *whatever* place is appropriate to the occasion and the group size—as many as 370 can attend mass in the same space. The main space can become two spaces without losing its identity; the two spaces can become one without losing their identity. One part of the main space is architecturally defined by four columns and an inclined plane which acts as an interior "roof" but is open to the skylight of the main space. When divided, this main space can provide space on one side for 200 people in an informal activity and on the other for 200 people gathered around the table at mass. Without ostentation, this church, like many others of today, emphasizes people and their needs, and it becomes, in an area of trailer parks and small homes, a landmark of importance and a focus of neighborhood activities. The building is air-conditioned.

CHURCH OF OUR DIVINE SAVIOR,
Chico, California. Architects: *Patrick J. Quinn and Francis Oda*. Engineers: *McCain & Associates* (structural); *Belden & Wistort* (mechanical/electrical). Contractor: *Novak Construction Co.*

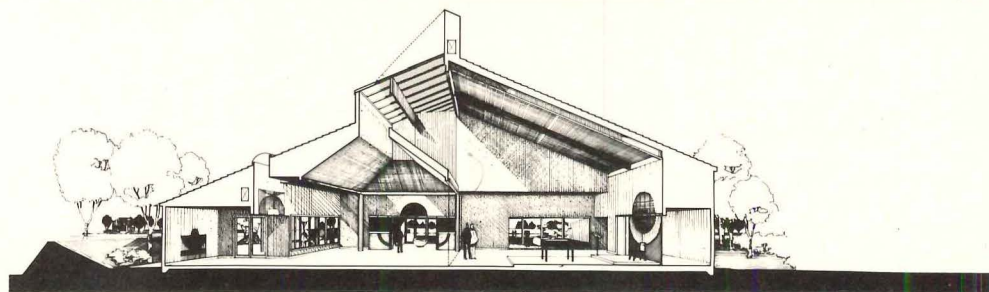
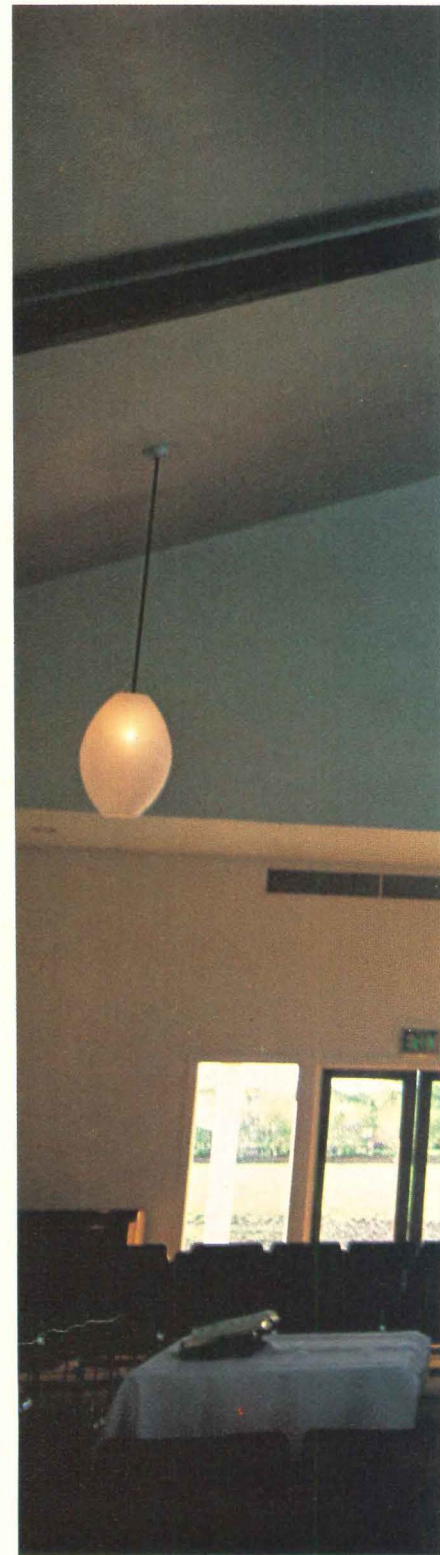


1. Movable altar, lectern, seat
2. Tabernacle
3. Meditation Chapel
4. Meditation Garden
5. Baptismal Font
6. Confessional
7. Sacristy
8. Lounge
9. Office

Randall Fleming photos



Four years ago, while design for Our Divine Savior Church was still in preliminary form, The Guild for Religious Architecture gave it one of its annual awards commenting, however, that "while the congregation's seating should be movable, there seems no reason why the altar should be too." Today it is the unmovable altar (and all other unmovable sanctuary furniture) that is more likely to be questioned. The award recognized the degree of flexibility designed into the main space, as the photographs show: (top) traditional nave sanctuary relationship, with seats for 160 (or more if seats are placed on three sides of the altar); (center) seating for 300 around the altar, filling the whole space; and (bottom and opposite page) simultaneous use of the main space, here divided for two kinds of activity (worship in one, meeting in the other), and two areas at the sides. The chapel at left for meditation, the lounge for a small study group. The building was constructed at a cost of \$126,000 including site work, furnishings and carpet.

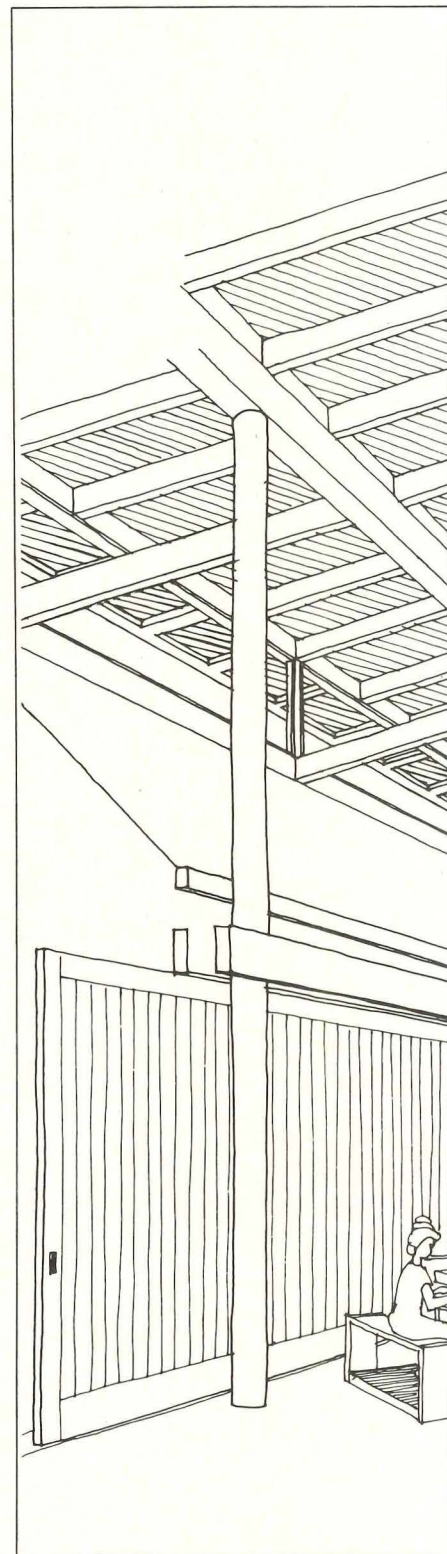
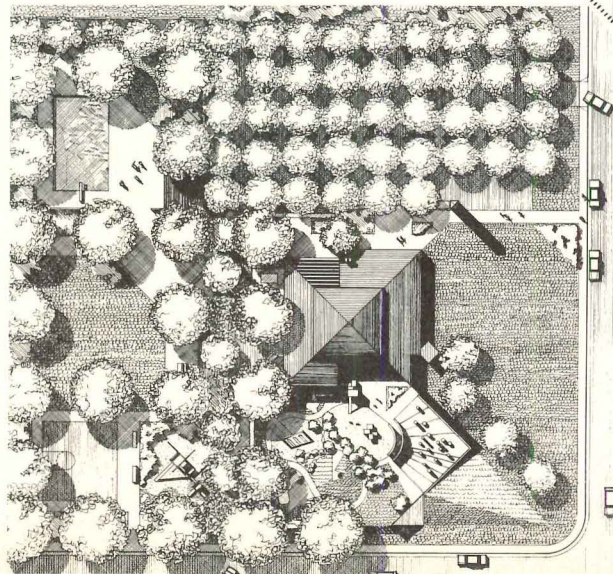
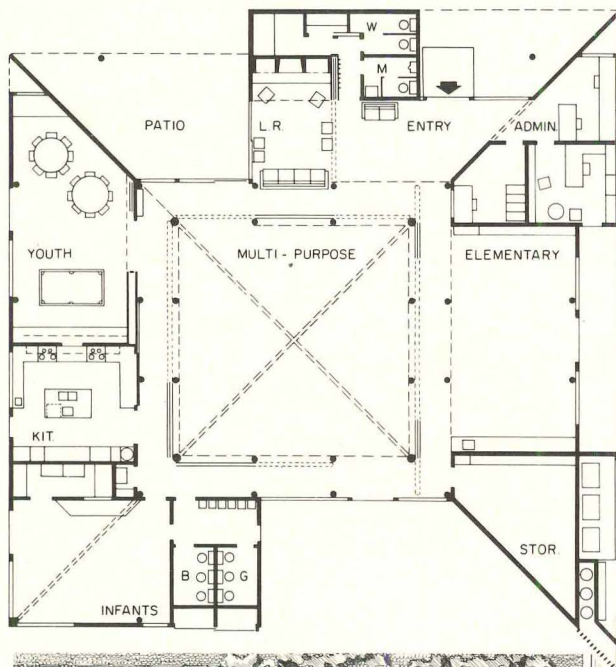
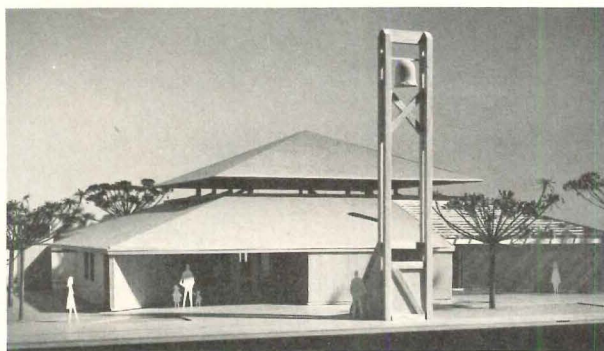


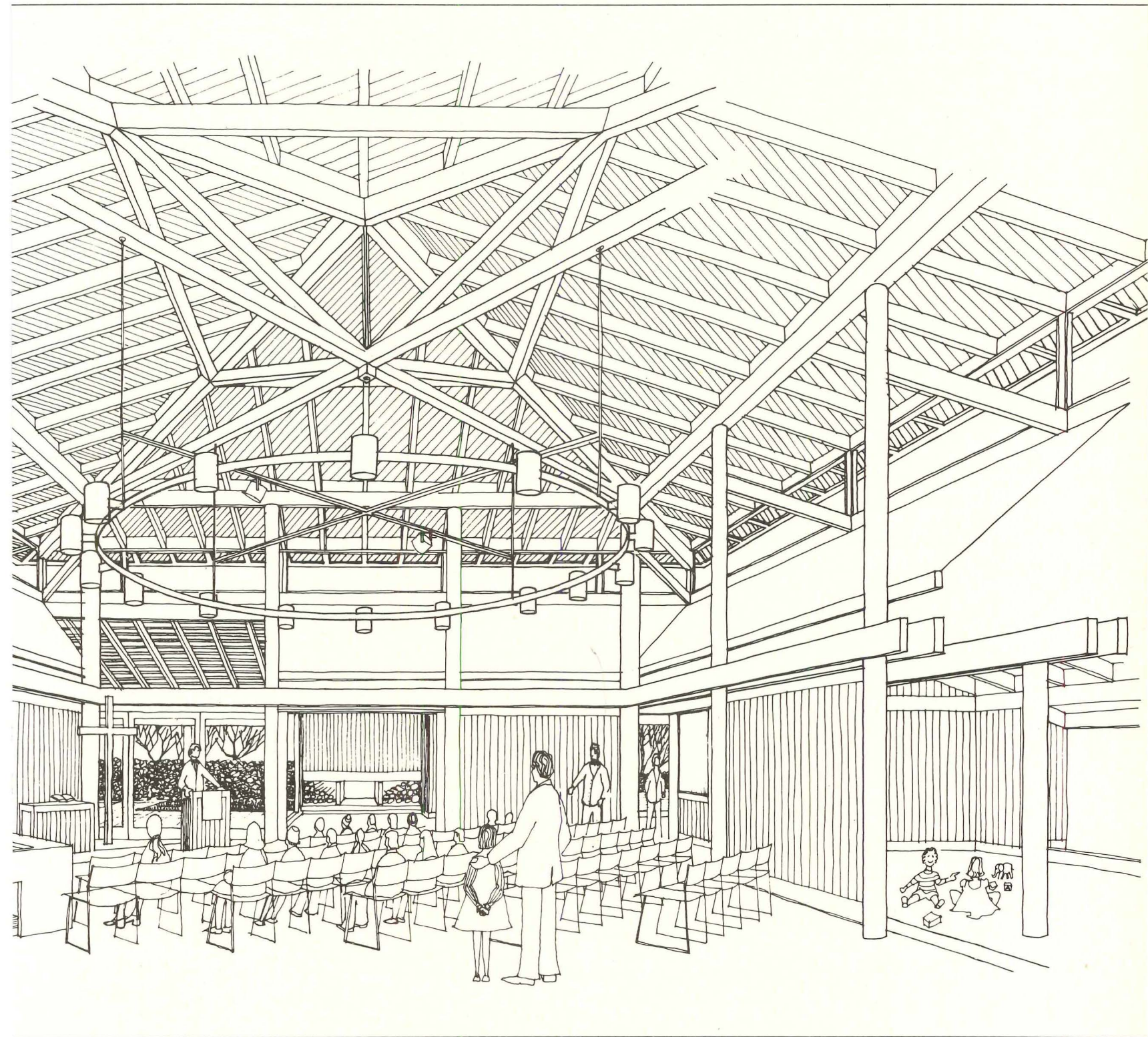


A place of service in the community: weekdays, for child care; Sundays, for church

The Church of the Brethren in the rural community of Live Oak, California, is designed for full-time use, meeting community as well as church needs. On weekdays the major spaces of the building are used as a child care center, a facility that the town lacked and desperately needed, and that the church wanted to provide as part of its program of community service. In the evening the building is used for a variety of other activities, both church and community-oriented. The new building replaces an earlier Carpenter Gothic structure on a small lot which could not accommodate an expanded program of activities. Although the program for the new building premised a multi-use space rather than a specifically designed meeting room, the Building Council members had a clear idea of the character that they wanted this principal space to have when they wrote: "It must be a simple place of beauty for worship... a warm enfolding room but at the same time durable and able to withstand the wear and tear of many uses." A difficult and challenging assignment, but achieved here in plan and design. The high, open, natural-lighted main space, with vistas to patio and play garden, has the required character, and with sliding panels on all four sides, is adaptable for privacy and size. The building will be completed this year, cost \$138,000.

CHURCH OF THE BROTHERS, Live Oak, California. Architects: *Dutcher, George and Hanf*. Engineers: *Goplen & Yokoyama* (structural/foundation); *Marion, Cerbatos and Tomasi* (mechanical/electrical). Consultants: *Bolt Beranek & Newman Inc.* (acoustical), *Fred D. Pitman* (architectural representative, Department of Architectural Services, American Baptist Extension Corporation). Landscape architects: *Dutcher, George and Hanf*. Contractor: *Lamon Construction Co. Inc.*

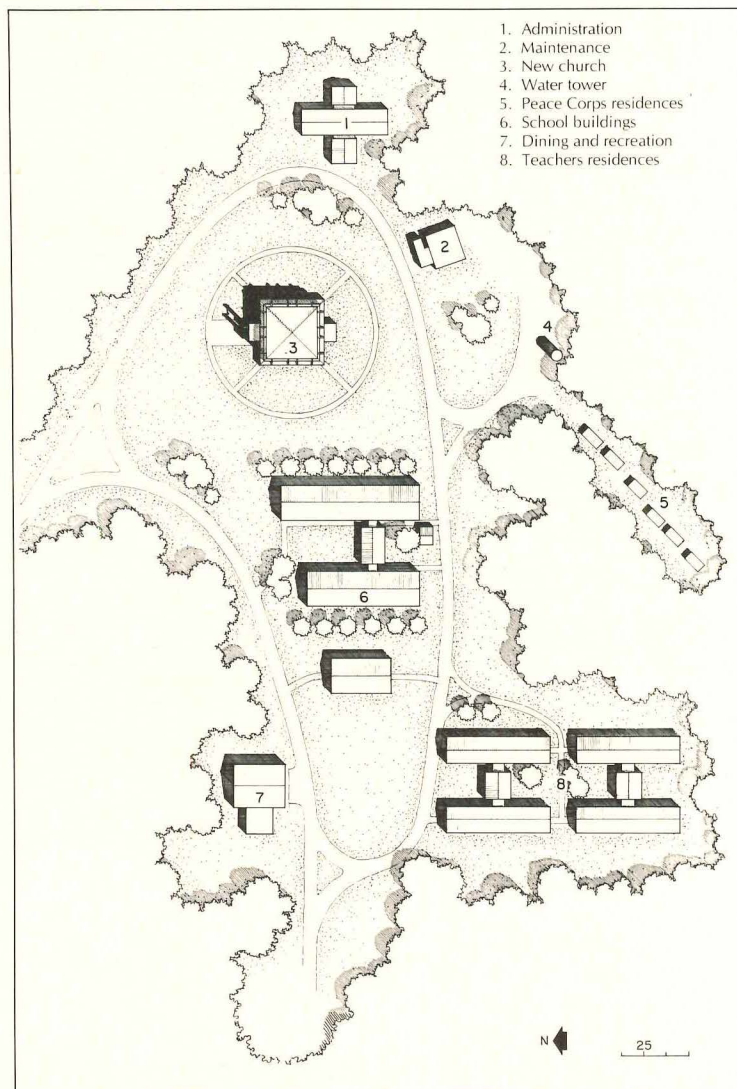
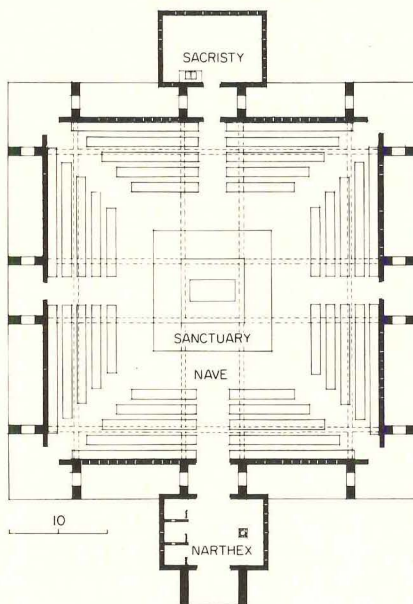


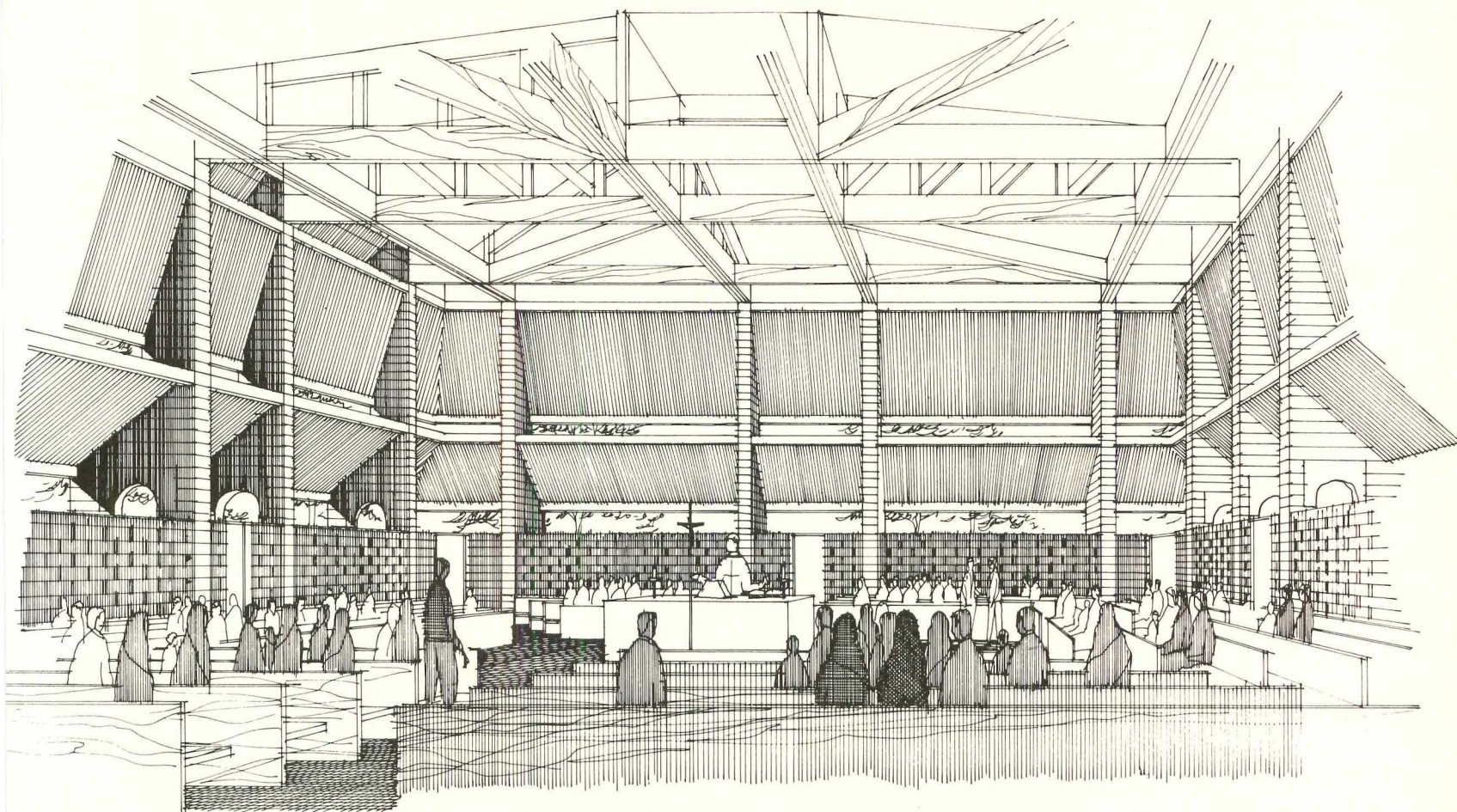
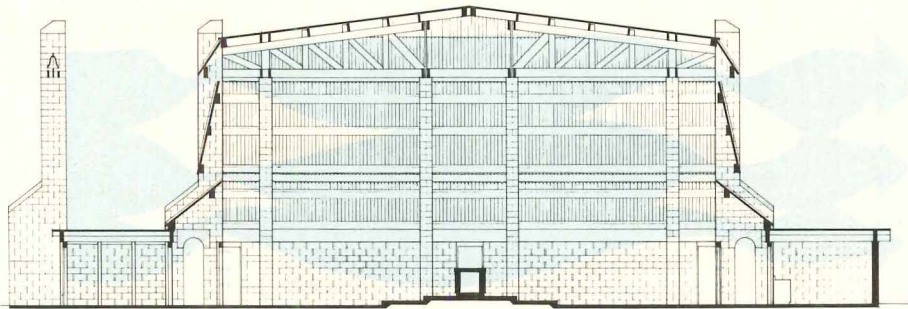


Designed as a simple, direct response to an African mission's religious and climatic needs

In an exceptionally simple and direct way, this chapel for the Marianist Missionaries' Chaminade School in south central Africa reflects and responds to the needs—climatic as well as liturgical—of a rural community in a hot and humid country. That it so successfully meets the needs of this remote location is the more remarkable for its having been designed in Cleveland, Ohio. The square plan was chosen for the straightforward, economical way the space it produces can be built. The decision to base the building on a square proved out functionally (and in line with Vatican II) as well as in construction. The altar is in the center with five rows of pews around it seating 400 people. Confessional and baptistery are in the narthex; the sacristy is on the opposite side. The site is in a clearing in the bush on which the existing school buildings are located. Since all materials had to be brought by boat to the site and all construction was by native labor, structure and materials were kept as uncomplicated as possible. Columns are of concrete block, made on the site, and trusses are of timber (safe from termites at that height). The roof is of corrugated metal and walls are of the same material, each panel independent of its neighbor and angled differently to provide openings for ventilation along the perimeter of the building. Free circulation of air is important to comfort in that part of the world, and the ingenious handling of the wall panels allows a continuous flow of air. The overhanging roof and the angled wall panels also take care of excessive water in the rainy season.

CHAMINADE CHAPEL, Karonga, Malawi, Architects: *Richard Fleischman Architects Inc.* Engineers: *Richard Gensert Association (structural).*

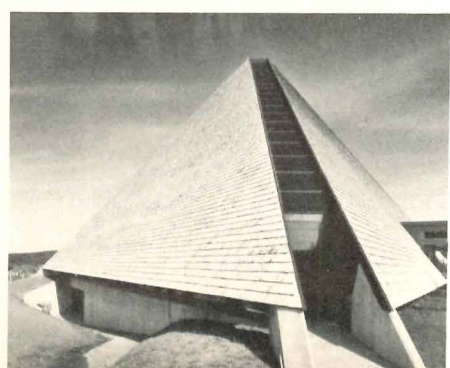
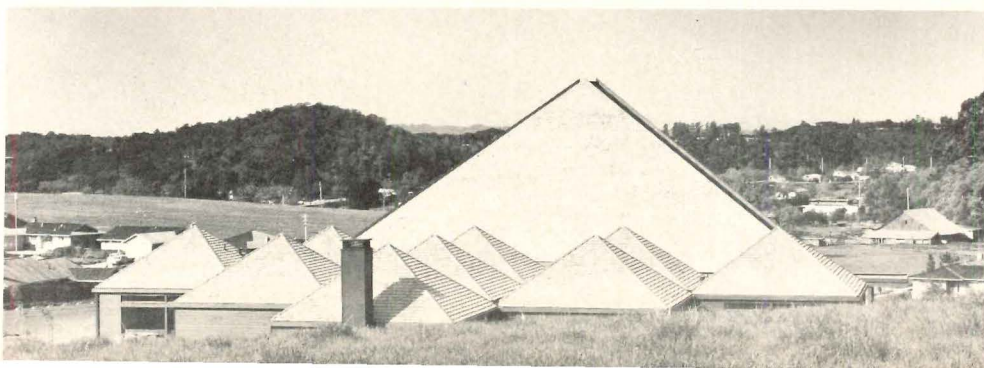
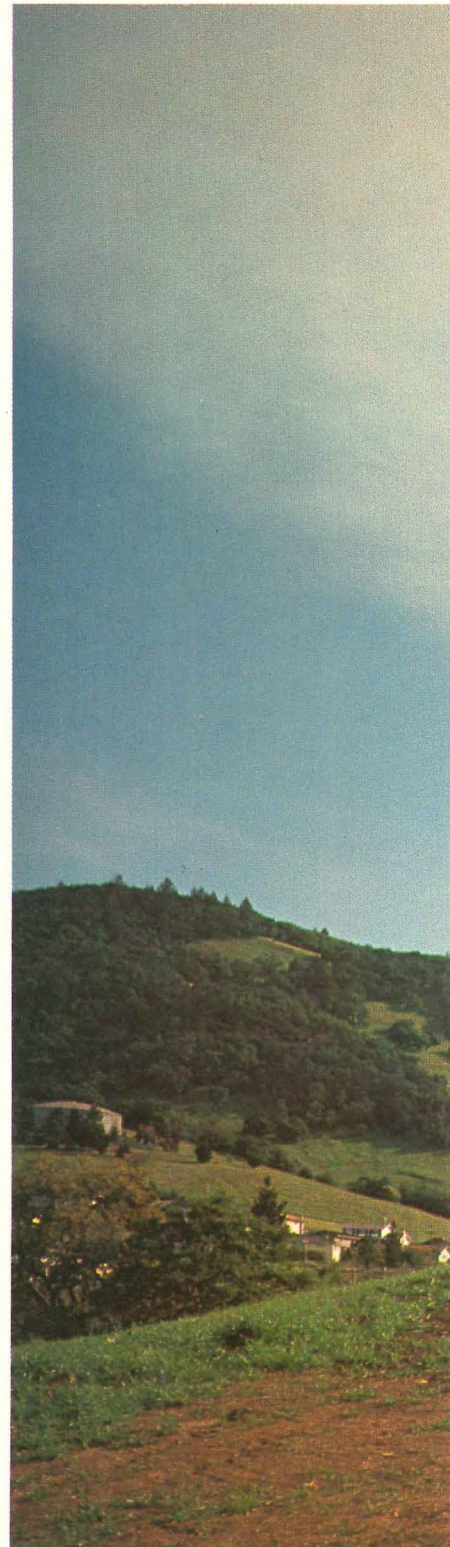
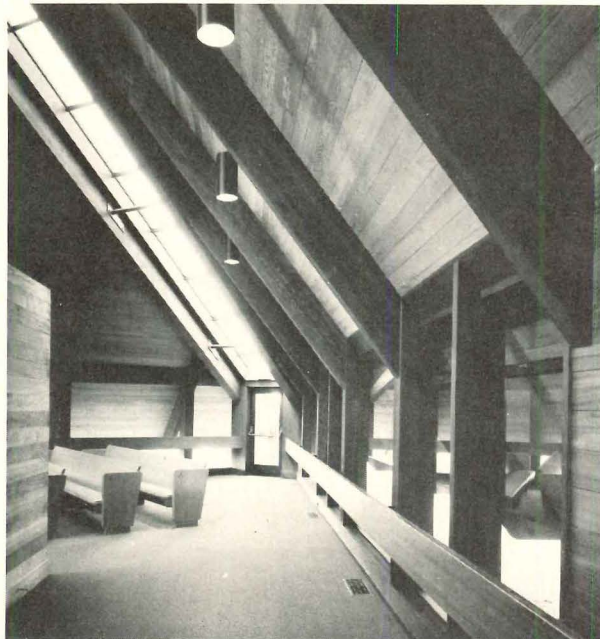
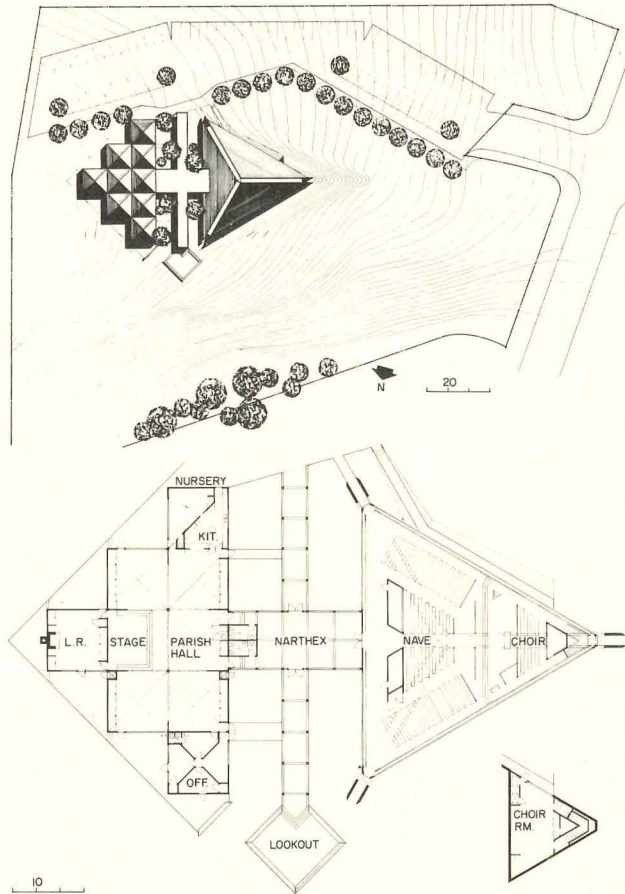




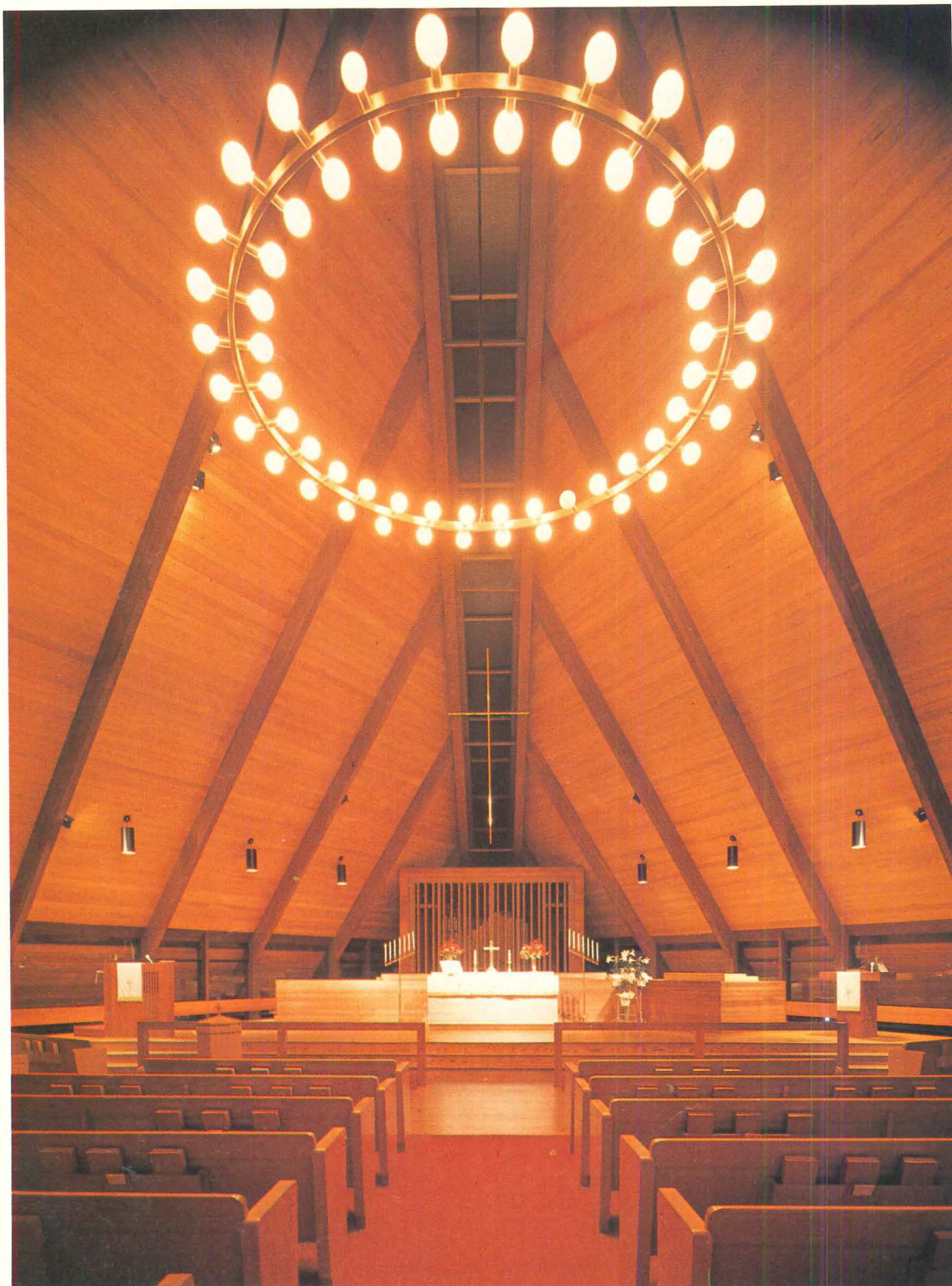
In a new suburban location, a strong, simple and nontraditional form for traditional functions

Relocated from downtown Santa Rosa, when a redevelopment project encroached on its existing building, to a six-acre suburban site where it could serve a growing neighborhood, Bethlehem Lutheran Church is both traditional in feeling and non-traditional in form. The triangular plan with its four banks of pews (instead of the more usual two) derives from the program requirement that the congregation have the sense of gathering around the altar without actually doing so. The tetrahedral form of the building is a direct reflection of the plan, but is appropriate to the building's location on the crest of a hill surrounded by other hills. The simplicity and directness of the pyramidal form, broken only by the skylight, satisfied both the congregation's request for a simple form and the architects' hope that they could provide a building of timelessness. The cedar-shingled roof does not reach to the ground but stops short above glass walls on the perimeter. Inside, the frame is exposed and redwood boards fill in between bents. A single chandelier is used for primary lighting of the building. The organ is behind the altar. Thanks to the sloping site, the choir room could be located below the chancel. Freestanding redwood "boxes" at the entrance provide a "crying room" and storage space. Originally, the program called for separate buildings for sanctuary, parish hall and Sunday school. The final plan put parish hall, Sunday school and offices in one building made up of 25-foot modules.

BETHLEHEM LUTHERAN CHURCH, Santa Rosa, California. Architects: *Duncombe/Roland/Miller*. Engineers: *Forell-Elsessor-Chan* (structural); *Harding-Miller-Lawson* (foundation / soils); *Marion, Cerbatos and Tomasi* (mechanical/electrical). Contractor: *Todd Construction Company*.





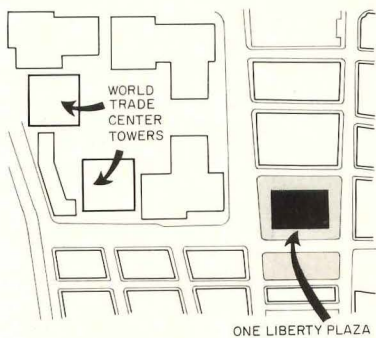


Although the altar is on axis with a central aisle in a traditional relationship between chancel and nave, the seating arrangement suggests a less formal relationship and gives the sense of closeness to the altar that the program required. A bank of low windows on the perimeter admits natural light. The 14,000 square foot building cost \$368,000.



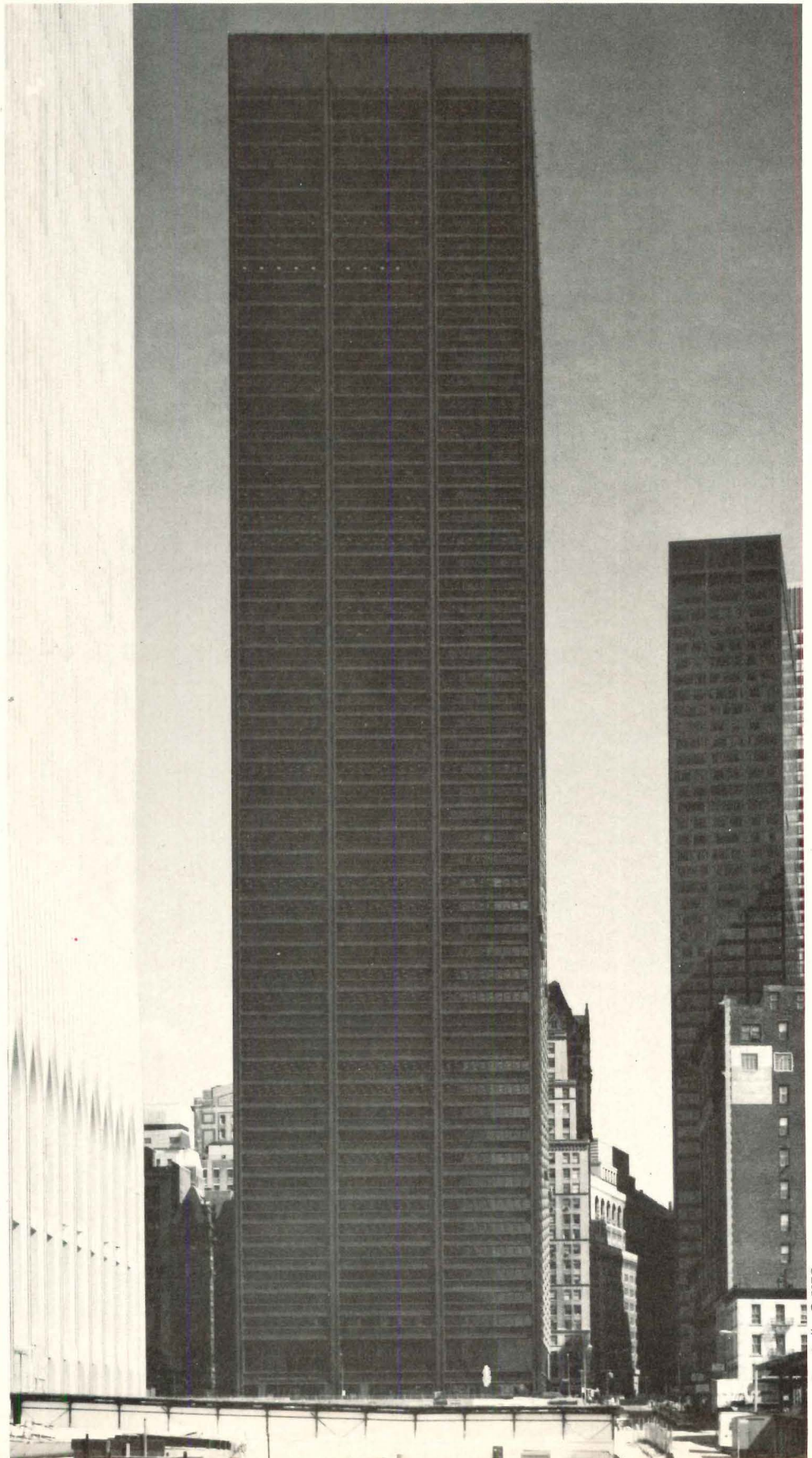
Research leads to a bolder expression of the steel frame

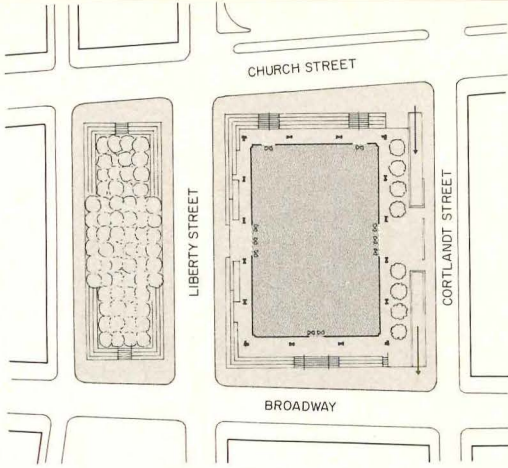
The strong, bold lines of the 54-story One Liberty Plaza in Manhattan's Lower West Side stand out in sharp contrast to its blander neighbors. First of all, the building is a design statement; but more than that, it is an experiment in the use of steel—all within the constraints of speculative building costs. The building is a design statement because its initiator and partner United States Steel wanted one. But also they wanted costs kept down because it is an investment building for them as well as for the major tenant, Merrill Lynch Pierce Fenner & Smith, and the developer, Galbreath-Ruffin.



Seeking to stimulate innovation and progressive design in buildings made of steel—and in this one in particular—U. S. Steel commissioned the New York office of Skidmore, Owings & Merrill and their consultants, in a separately-financed study from the building design, itself, to, "investigate the design and use of materials in all phases of high-rise office building construction." Weidlinger Associates and Weiskopf & Pickworth were joint venture structural engineers; in the final design Weidlinger was responsible for the wind-bracing, while Weiskopf & Pickworth did the foundation design and the rest of the superstructure. Syska & Hennessy studied a wide variety of air-conditioning systems, lighting systems, and elevating. Galbreath-Ruffin Corporation reviewed design studies relating to rental efficiency, maintenance and operating costs. Turner Construction Company delved into erection systems and costs.

The time was propitious for investigation into structural possibilities because structural design of high-rise office buildings had begun to take some new directions—in wind-bracing, exterior bearing walls, and weight reduction. Further, research personnel at U. S. Steel's Applied Research Laboratory had produced studies that: 1) envisioned buildings with walls of plate steel that functioned efficiently as structure; and also that 2) suggested new approaches to the fire protection of the exterior steel framing



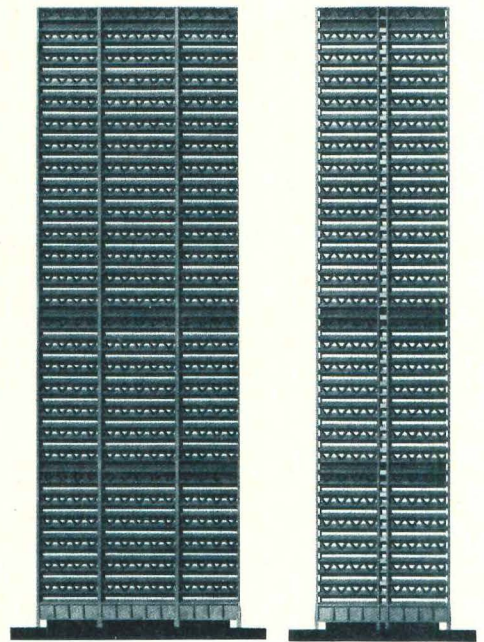
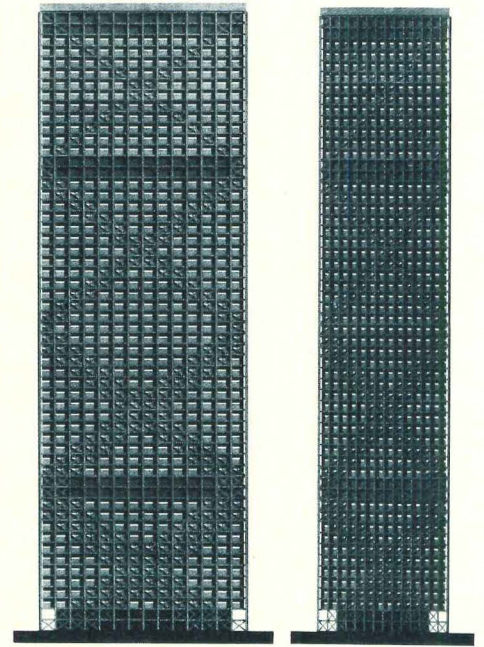
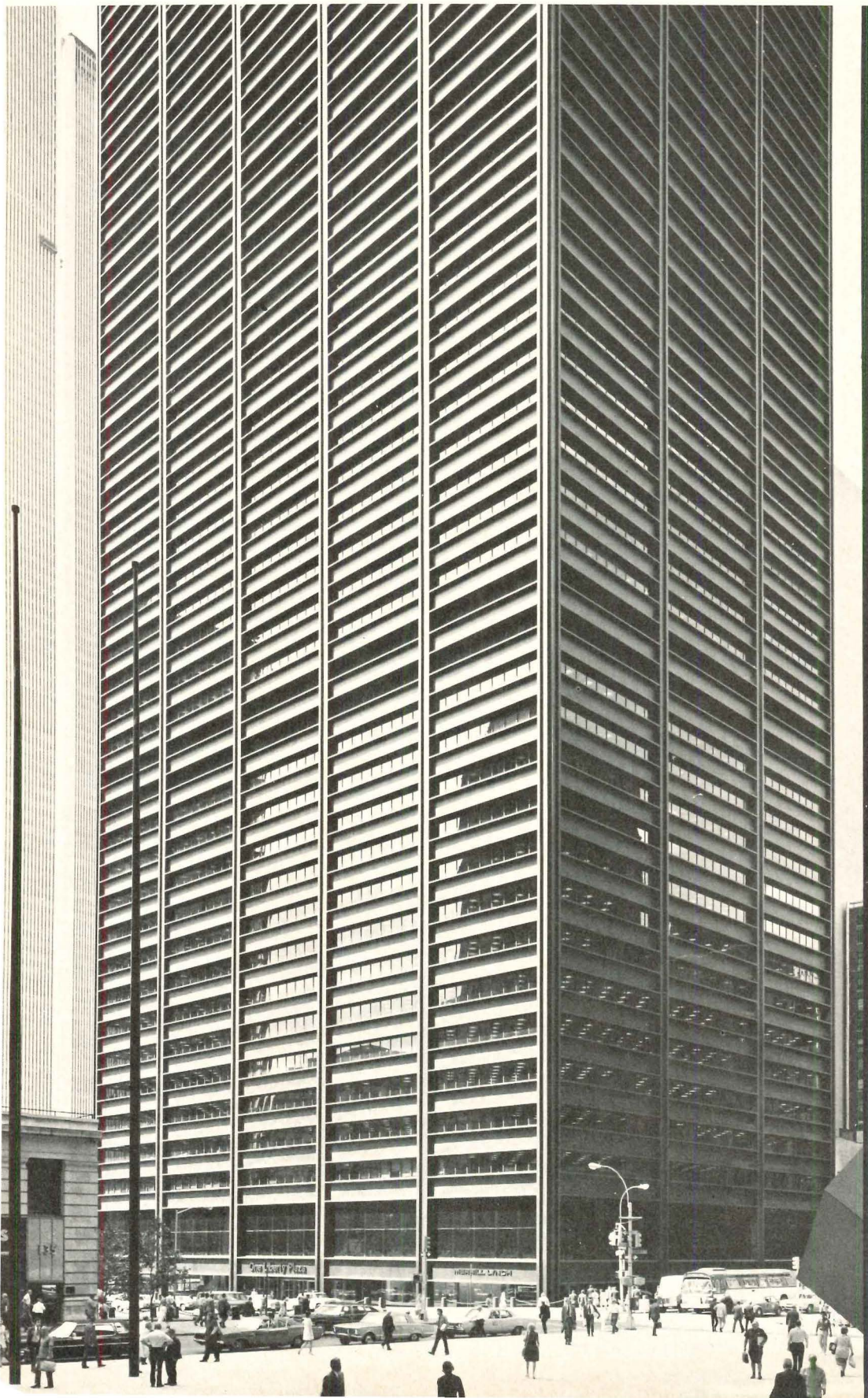


of high-rise buildings. Of nine prototype walls that were studied by SOM and their structural engineers, two involved steel-plate bearing walls, with each facade forming a "perforated monolithic steel plate devoid of columns or beams." Lack of fire testing of these schemes—which, obviously, would have had to be exceedingly exhaustive—plus uncertainties regarding costs, caused the elimination of these schemes.

On the other hand, theoretical fire studies by U. S. Steel's Applied Research Laboratory combined with actual fire tests led to the use

of a new concept for protecting the spandrel plate girders which allowed a large portion of their exterior surface to be exposed to the weather. Flame canopies shield the outdoor side of spandrel girder flanges from excessive temperatures in the event of fire, and the outdoor side of the web has no fire protective material at all.

The building occupies a large percentage of its block-size site, allowed by the City Planning Commission because the owner was willing to develop an adjacent property as a small open-space park. Structurally, the building has



The three prototypes (out of nine) most favored for the frame, and hence for exterior expression are shown here. Fabrication costs were a negative factor for the Warren-truss prototype. This plus unresolved fire-protection problems of the exposed steel framing for both this scheme and the X-braced scheme led to the final selection of the rigid frame of husky columns and deep spandrels.

wide bays on the exterior and is clear span from exterior to core. The split-core plan—conceived to permit more efficient utilization of core-zone spaces—allowed wide, two-story-high trusses to be used in the core area for wind bracing in the narrow direction of the building. The rigid frame formed by deep plate-girder spandrels and heavy, built-up colums takes the wind load in the long direction, and part of it in the narrow direction.

While expressing the structural steel frame of a building is hardly new, the way it has been executed here definitely is new. Rather than

being a cage-like expression, the spandrel girders are as high as the windows, and visually the flanges have been extended by the flame shields. This not only results in stronger accents in the facade, but functionally improves the sun-shading capability—just as deep reveals did in buildings of some years ago.

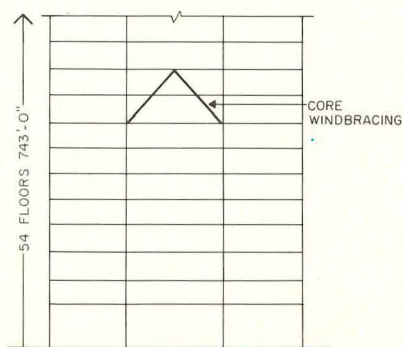
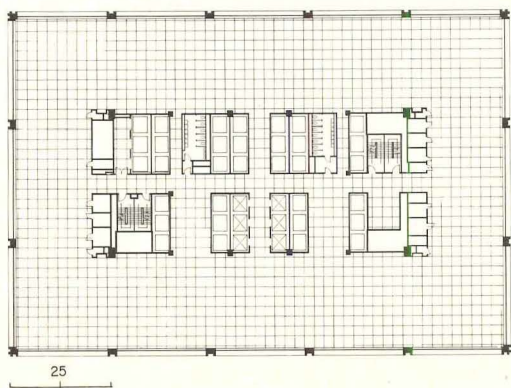
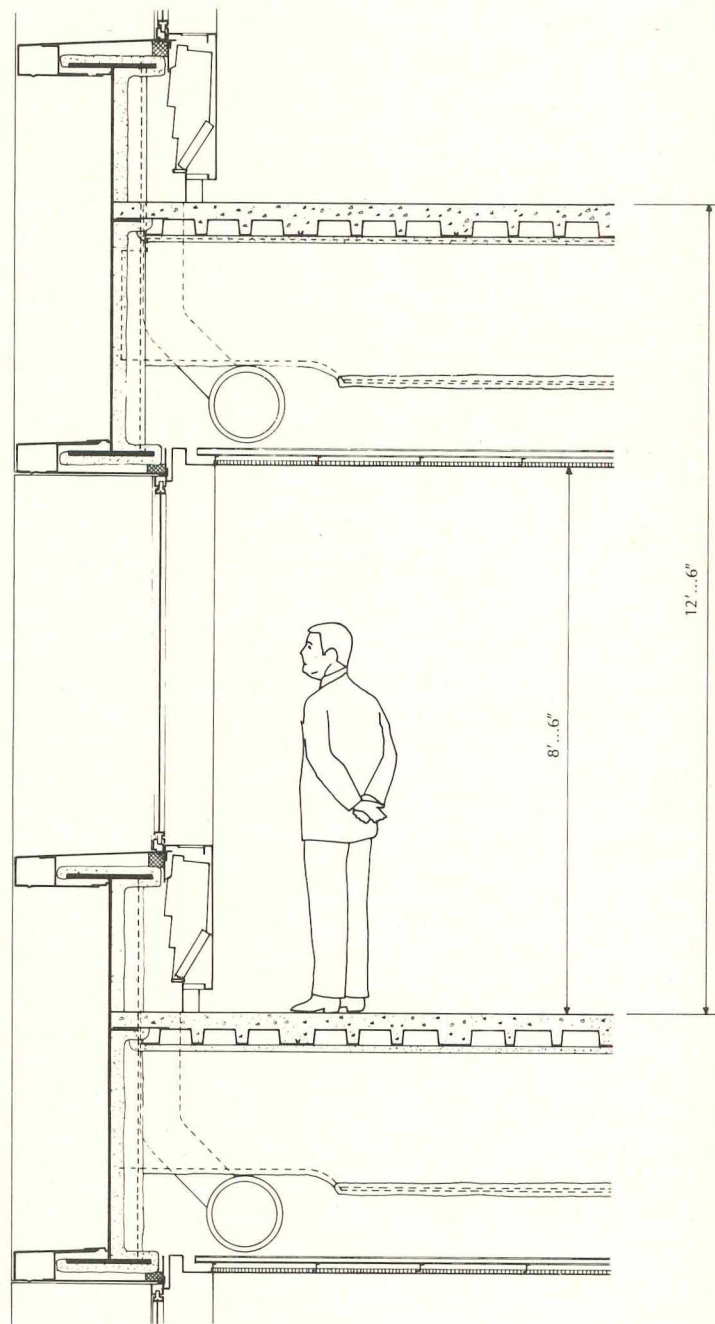
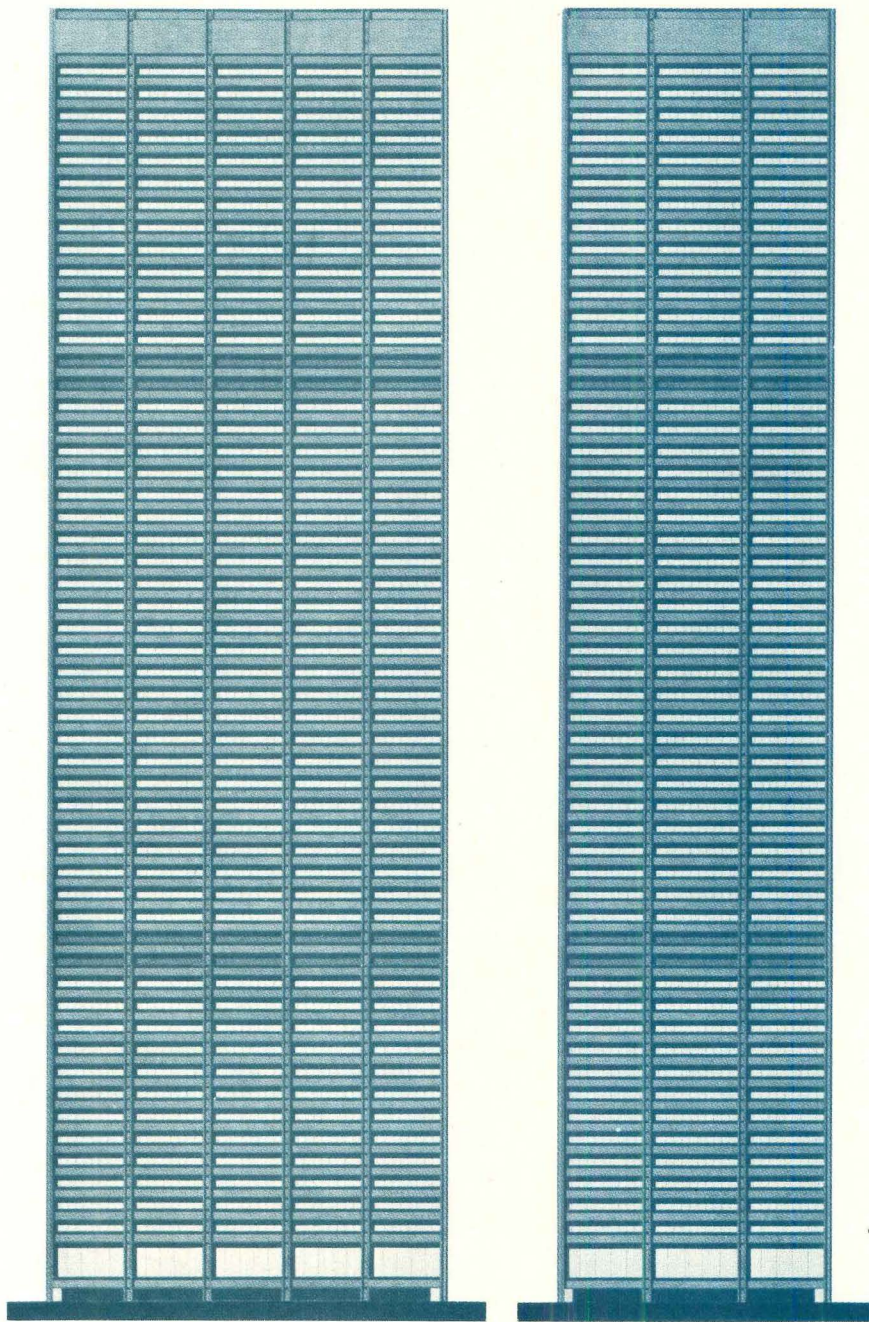
Of the nine structural framing schemes investigated, the three shown below in renderings were the most seriously considered. While the two that did not win out used less steel (particularly the X-braced scheme), higher fabrication and cladding costs of these schemes made the

rigid-frame design selected more economical.

In one version, story-high Warren trusses, spanning 90 feet between columns, each supported two structural floors, one from the top chord and the other from the bottom. The diagonals of the trusses were connected by tension cables to give continuity for wind bracing.

In another version, small-bay X-bracing was oriented in a large X pattern, providing large-scale diagonal wind bracing to the exterior structural frame.

The X-braced prototype was found in the studies to have the least total cost for structure



The facade has equal heights of spandrel girder and window. The spandrels have, visually, wider flanges than usual because of the steel flame shields that enclose them. The drawing shows where a sprayed-on mineral fireproofing material is applied. The outer face of the web, and portions of the flanges are not covered. The two-story truss wind bracing is shown in the sketch left.

because of dramatic savings in steel tonnage—about 50 per cent less than the structural system chosen, and over 40 per cent less than the Warren-truss system. But the architects' studies showed that savings in cladding costs for the scheme used more than offset the savings in the structural frame. Beyond this, there were unresolved problems with respect to fireprotecting the exterior frames of the two other prototypes.

Always looming in the picture, of course, are the hard realities (sometimes difficult for architects and engineers to swallow) of having to sacrifice theoretical efficiencies for heavier

but lower-cost framing systems (and sometimes engineers would like to see more proof of this). In any event, for such buildings as this one, steel fabricators generally opt for larger and fewer pieces with fewer connections, in spite of the fact that tonnage is larger. This even applies to floor framing: at One Liberty Plaza, American Bridge preferred to cut a multiplicity of penetrations in the floor beams, rather than go to open-web trusses.

The exception, of course, appears to be the speculative skyscraper which does not call for a bold structural expression, and in which ten-

ants are willing to put up with interior columns in rental space. Invariably these buildings tend to more closely spaced columns and thinner spandrels, using rolled, rather than built-up, sections.

Fire protection for the framing system selected for the building involved a combination of steel flame-impingement shields, size of windows and their location, and sprayed-on mineral-fiber fire-protective material. Spandrel girders have fireproofing on the interior side of the web and the outer faces of top and bottom flanges. Columns, on the other hand, are fully

Bo Parker © ESTO



The exposed steel webs, the flame shields over spandrel flanges and the steel column covers were all given a field coat of black paint on top of a zinc-paint primer. Joints are weather-protected by beads of sealant in a color that matches the paint.

The ground floor contains the lobby and various commercial spaces, while the second floor has a branch bank.



Bo Parker

Flame shields are fastened to angles bolted to channels that are welded 4 ft 8 in. o.c. to the spandrel flanges. Column covers are bolted to the web of the spandrels. Sprayed-on mineral fireproofing covers all potentially vulnerable areas. Space between fireproofing and column cover has foamed-in-place urethane foam to minimize thermal movement of the columns.

coated with mineral fireproofing. The steel flame shields entirely cover the weather side of the spandrel flanges, and the columns are entirely encased with steel cladding. Column stiffeners are covered by the cladding, rather than being expressed, because of what this would have cost. And on the weather side, space between column fireproofing and the steel cladding is filled with foamed-in-place, urethane foam thermal insulation (it has a flame spread rating of less than 25). This insulation is necessary to limit thermal expansion and contraction of the exterior columns.

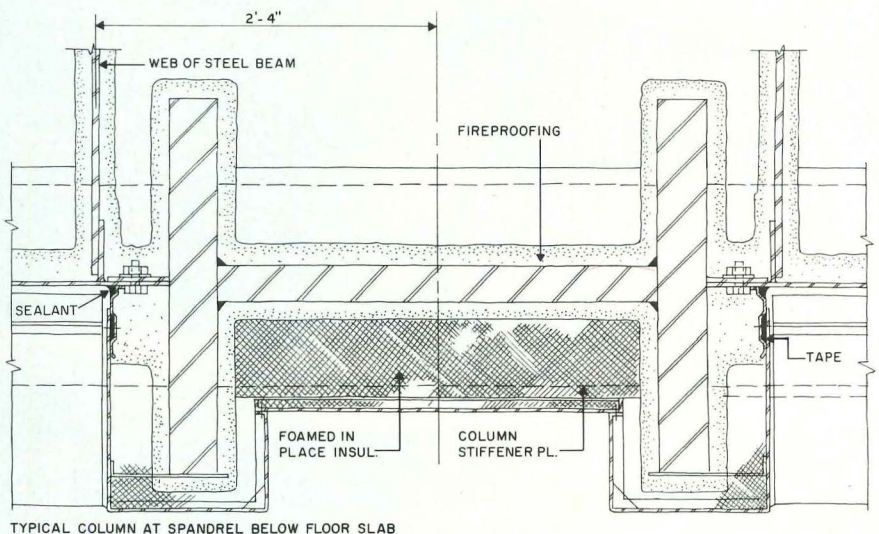
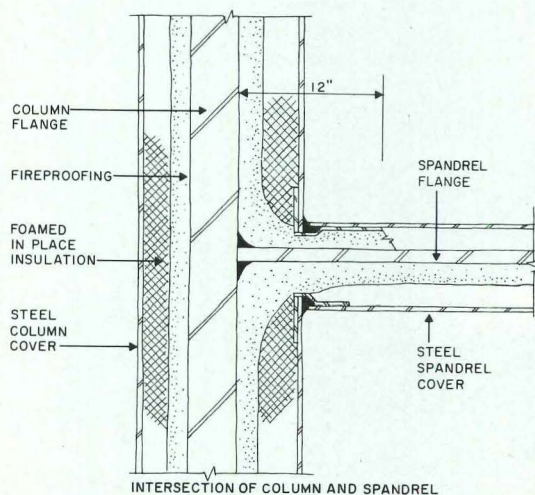
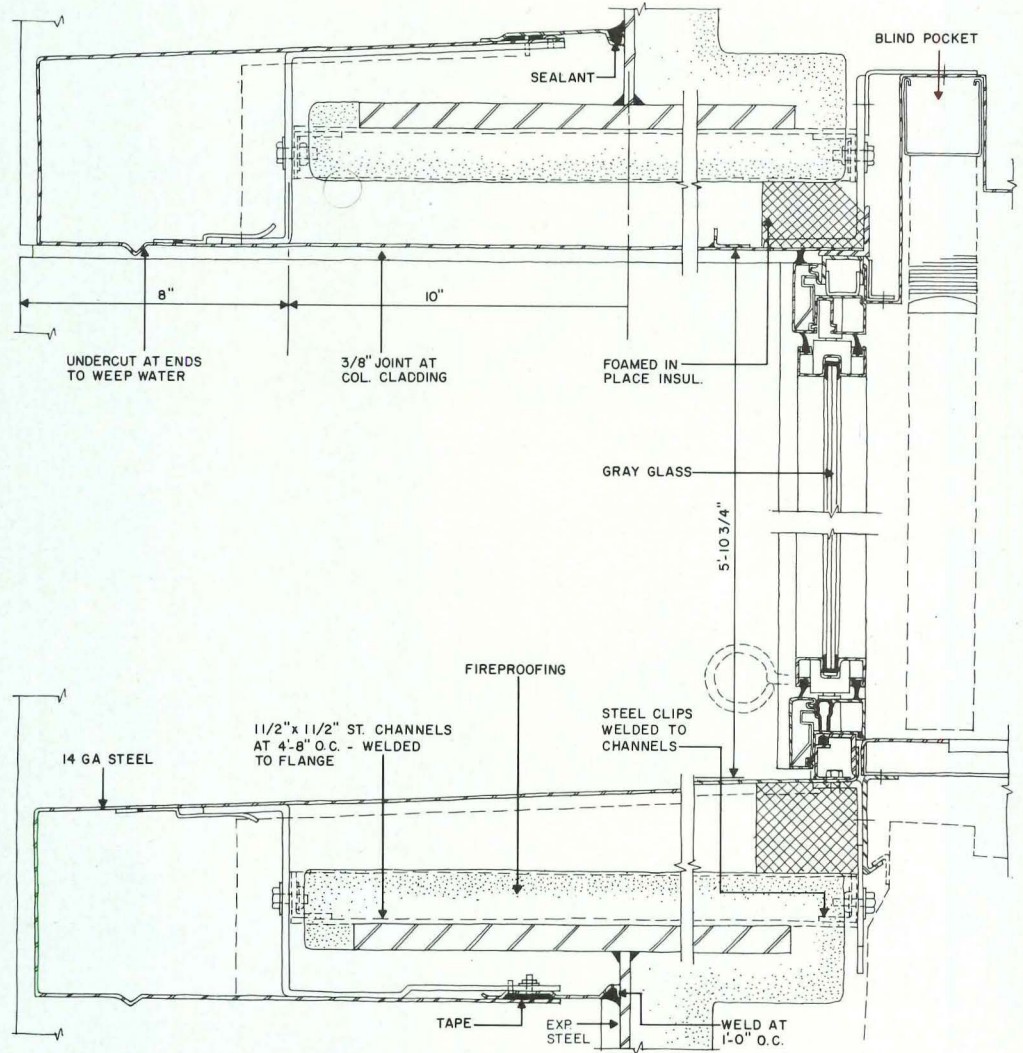
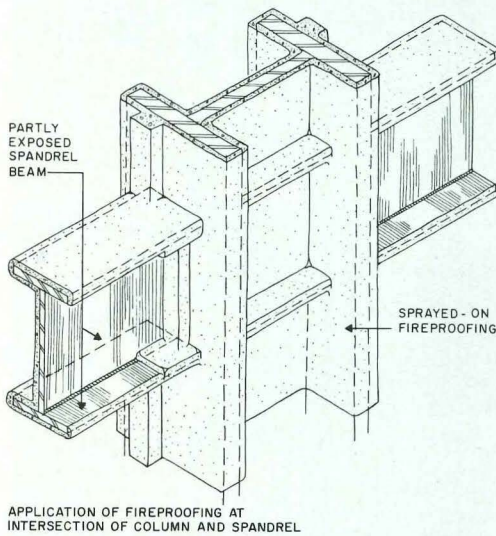
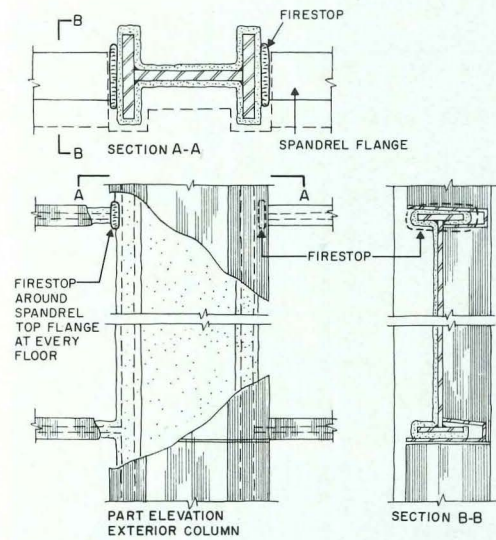
Additionally, the building department required firestopping at the spandrel girder-column connection.

The exterior—frame and cladding—were painted black in the field following prime coats of zinc paint, and black-pigmented sealant was applied to joints between the cladding and the exposed steel of the spandrel.

The horizontally pivoted windows—a U. S. Steel product—fill the vertical space between spandrels on all upper floors, and are attached to angles fastened to the flanges of the spandrel girders.

On the second floor, fixed sash is used because it is high-ceilinged and designed for commercial-space usage—Chase Manhattan Bank already occupies a large portion of the floor. This space was put on the second floor because the site drops rapidly in elevation from east to west. Originally the architects had conceived of the entire ground being open except for supporting columns and elevator shafts, but commercial considerations favored the total space being utilized.

The hvac system is more in a conventional, but nonetheless progressive, direction. Perime-



ter areas are conditioned by an induction system, and interior zones by a variable-air-volume system. The building standard called for separate ceiling air diffusers for interior zones, but tenants, generally, are upgrading, visually, to air-supply-return type of lighting fixtures.

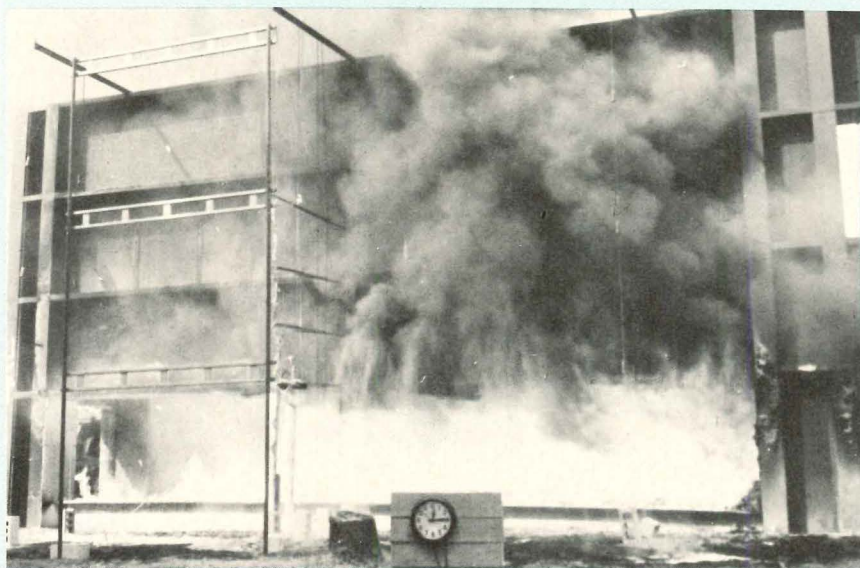
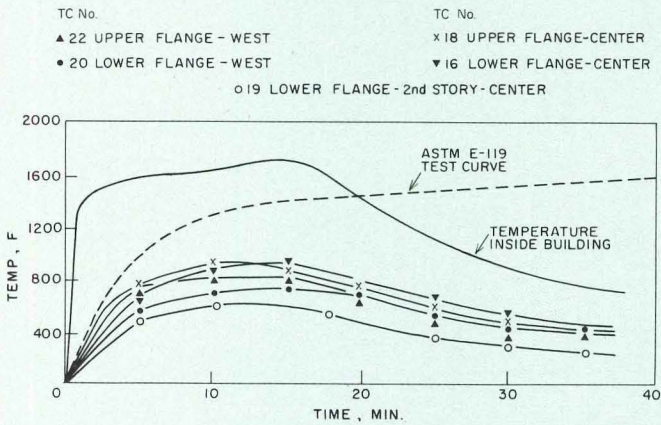
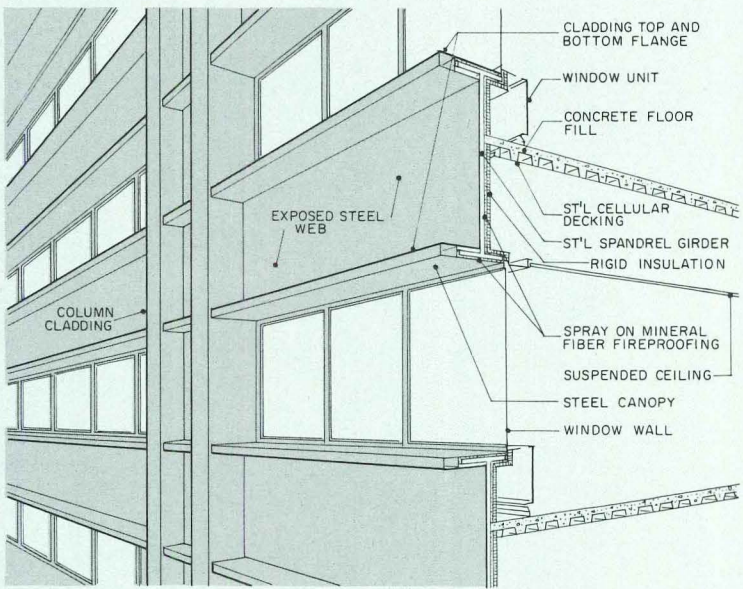
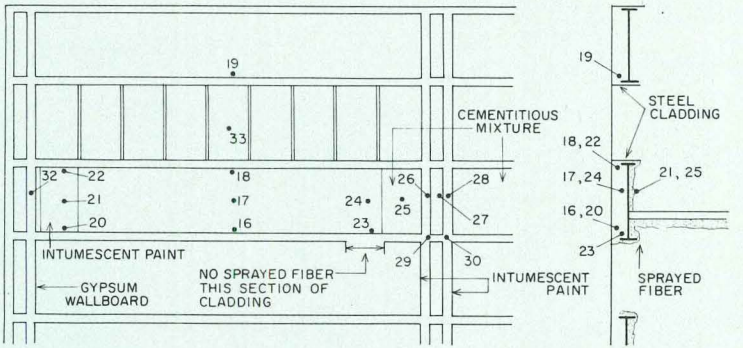
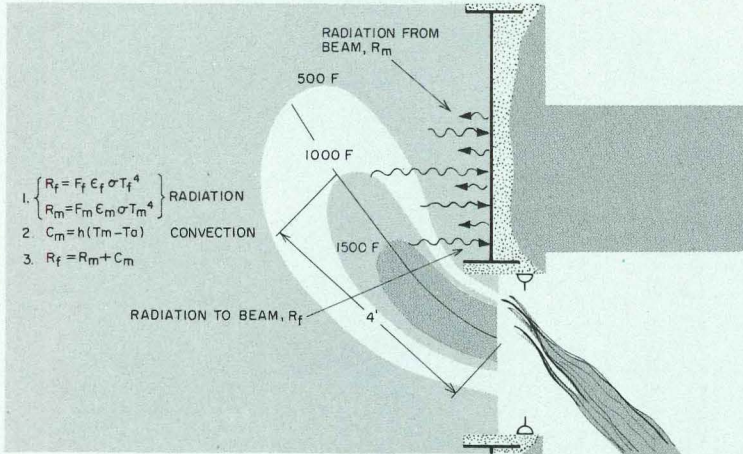
Because of the shallow space at columns, only water piping for the induction units is run there. Ductwork to serve them emanates from mechanical chases in the core and then turns laterally to feed induction units via penetrations through the floor. To provide enough room for the lateral ductwork, floor beams were notched

in the bottom corner next to the spandrel.

Lighting is by 28- by 28-in., prismatic-lens luminaires with lampholders provided to take either two or three U-tube fluorescent lamps. Three-lamp units are put in a checkerboard. A number of pyramidal-coffer lighting systems using a variety of types of fluorescent and HID lamps were mocked up and costed, but the owners' economics favored the flat ceiling using perforated metal panels in the areas between luminaires. Prior to the commissioned research study, the engineers say, U-tube lamps had been used only for special sign lighting, and

were produced only in Europe. But the engineers were able to induce manufacturers to bring them on the market here for interior building illumination.

ONE LIBERTY PLAZA, New York City, N.Y. Owner: Trinity Place Corporation. Architects: Skidmore, Owings & Merrill—partner-in-charge: Roy O. Allen; project manager: Walter A. Rutes; senior designer: Thomas G. Killian. Engineers: Weidlinger Associates and Weiskopf & Pickworth, joint venture (structural); Syska & Hennessy, Inc. (mechanical and electrical). General Contractor: Turner Construction Company. Developer: Galbreath-Ruffin Corporation.



The drawings on this page indicate the basis of the flame shield concept, and some results of fire tests on a one-bay mock-up. The idea of the shield on flanges is to deflect flame of a fire inside away from the spandrel.

The elevation shows location of thermocouples for measuring steel temperatures, and the graph indicates what some of these temperatures were. They all are below what is considered to be the safe limit for steel.

Columns always were intended to be protected by some fireproofing material, and to be covered with steel cladding.

Condominiums Enter The Bronze Age



Architect: Stanford G. Brooks, Philadelphia, Penna.
General Contractor: R&H Construction Co., Fort Washington, Pa.
Curtain Wall Contractor: Howard Window Company, Hialeah, Fla.

The new Briar House condominium in suburban Philadelphia is an interesting example of the compatibility of porcelain-on-steel with precast concrete, brick and glass. AllianceWall porcelain-on-steel panels come in four new bronze colors at prices 40% to 60% less than hard coat finishes.

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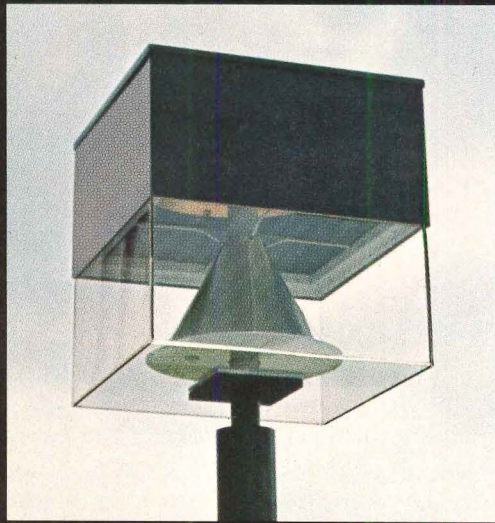
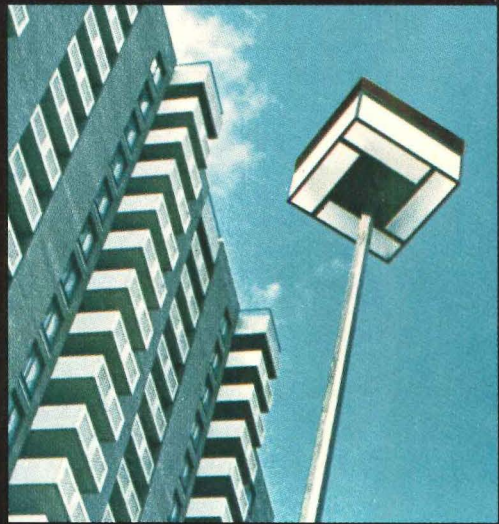
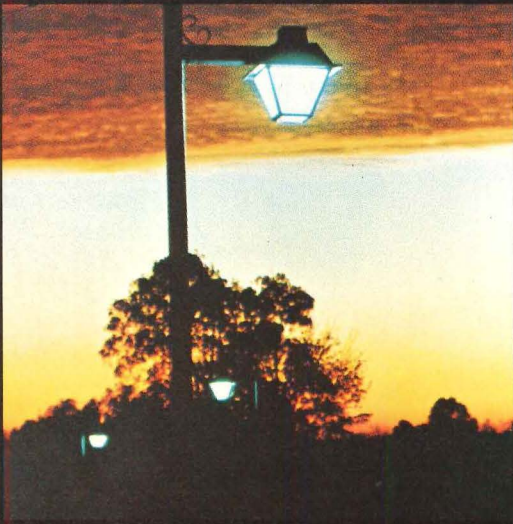
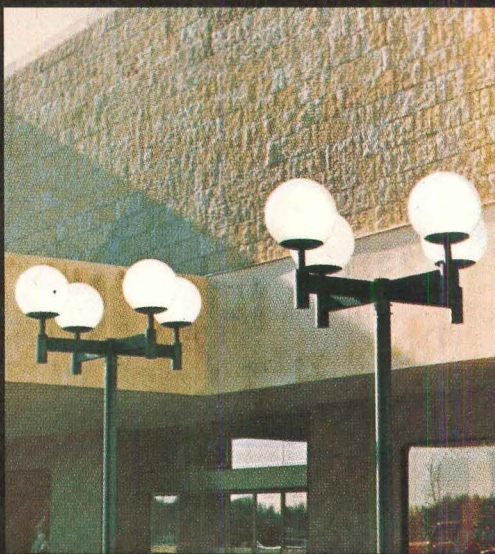
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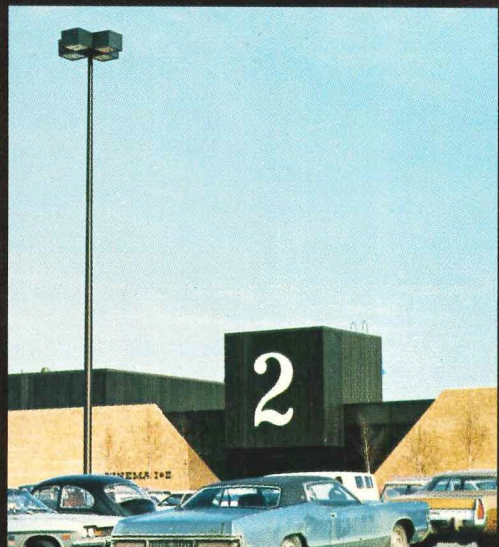
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given.



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what you
make it.





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what you
make it.**



As business and leisure hours grow later all the time, you'll want to make it all you can. Good lighting welcomes people in, establishes a mood, and reflects your image.

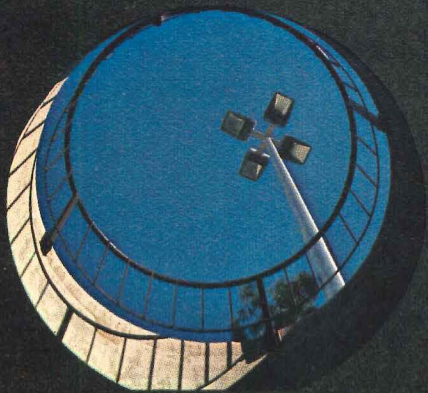
Light lets you take liberties with a design. Or nature. Getting it right is a complex matter. It means blending aesthetics, technology, and economics, just so. It means coordinating with local authorities, your neighbors, and your building team. It means you need help. It comes best from a single, professional source.



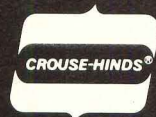
We're help. We're your Light House, with a complete selection of fixtures. With customizing capabilities limited only by imagination and a sharp pencil. With lighting specialists, coast to coast, ready for action to get you all the light your future will need.

To bring it all together, to make it all you want at night, get an early start on your lighting design. Call us.

Crouse-Hinds Company,
Lighting Products Division,
Syracuse, New York 13201.



**Your
Light
House
is
Crouse-Hinds.**



CROUSE-HINDS

For more data, circle 69 on inquiry card

TECHNICAL KNOCKOUTS.

At the World Trade Center...bright new ideas using stainless steel.

For the seven-story lobbies . . .

More than 35,000 feet of matched stainless panels without a ripple or a fastener show-through . . . created by architect Minoru Yamasaki for the new twin-tower World Trade Center in New York City. With the help of the fabricator-erector, the local Steel Service Center, the polishing source, and Republic's mill, the desired result was achieved. A total of 1,000-plus stainless panels in bright #8 mirror finish, soaring seven gleaming stories from the lobby floor. A technical knockout made possible by the cooperation of these suppliers with the architects and builders.

For moving 2,400 people per hour, per door . . .

196 of perhaps the most advanced revolving doors ever designed. Manufactured by Crane Fulview Glass Door Company, these 9-foot doors feature manual speed control which prevents rapid acceleration of the door, factory set to engage at 12 rpm, and a special panic proof mechanism that causes the wings to fold flat whenever pressure is exerted from two different directions. To meet the aesthetic and durability demands of the job: Republic ENDURO® Type 304 stainless steel with a prebuffed finish. This finish permits better inspection at the mill and at Crane's plant because any surface flaw is immediately apparent.

For serving 6,000 lunches a day . . .

This kitchen for the State of New York's multimillion-dollar dining room high in the South tower utilizes the newest design ideas in fast food preparation and service. And it will stay bright and gleaming, day after day, cleaning after cleaning, because nearly everything in sight is Type 304 stainless steel.



Other elements of the building interior using stainless steel include curved floor gratings, flashing, curved railings, escalators, and elevators.

Looking for equally memorable achievements? Consider American-made Republic ENDURO stainless steels in sheet, strip, bar, billet, special sections, tubing, pipe, wire, plate. Your choice of finishes, sizes, chemistries, tempers . . . available from our mill or Steel Service Centers nationwide. It's your guarantee the beauty will last forever.

For "in-depth" information on these unique applications using stainless steel, write Republic Steel Corporation, Cleveland OH 44101.

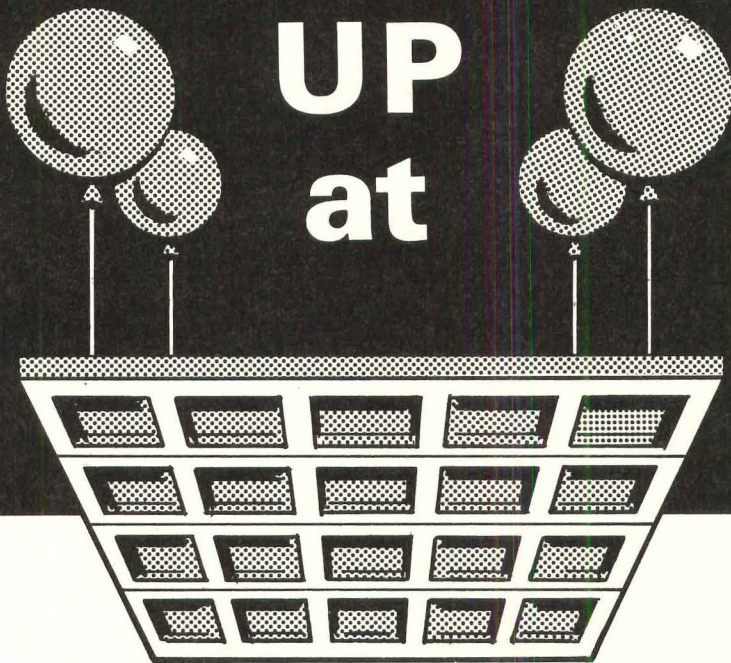
Republicsteel



For more data, circle 70 on inquiry card



WHAT'S UP at



McKEE DOOR

V.I.P. among other things!

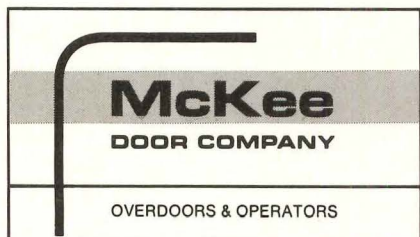
Many things are going on these days at McKee Door Company which will benefit our many customers.

For instance, renewed emphasis on V.I.P.—Value In Place. A dollar buys more tangible value at McKee, whether your need is for commercial, industrial or residential overdoors. Our extensive line of overdoors and operators utilizes the best available materials and components to assure trouble-free operating performance. Customer protection is guaranteed by advanced design, superior workmanship and individual product registration.

Look up to McKee, the 45-year-old new force in the overdoor business. You'll find new products, ideas, services, distribution, prices, and value.

Get to know us better by letting our authorized distributor bid your next job.

See our Catalog in Sweets File 8.9 Mc.



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For more data, circle 71 on inquiry card

FLOORING FREEBIE

Give us your name and address, and we'll give you the newest in Quiet Zone™ Vinyl Corlon®. Sample, information, and complete specs on a significant addition to the Quiet Zone line. Yours free. Just tell us where to send it.

In brief, here's what makes a Quiet Zone floor worth knowing about:

Quiet—A thick foam-vinyl backing cushions the sound of footsteps and falling objects.

Comfort—The same cushion makes walking and standing more comfortable.

Practicality—It cleans easily, and it's hard to wear out because the Quiet Zone wear surface is virtually nonporous, heavy-duty vinyl.

Beauty—Choose from 6 colors each in 2 handsome patterns. It'll go with almost anything.

Quiet Zone has proved itself in numerous installations. Write Armstrong, 307 Rock Street, Lancaster, Pa. 17604, and let it prove itself right in your office.

FROM THE INDOOR WORLD® OF

Armstrong

For more data, circle 1 on inquiry card



LIGHTING UP AMERICA ...community needs by design

Exterior lighting fixtures
using Lexan® shapes

Steel or aluminum
construction

Select from creative
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or from your speci-
fications and designs.

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For more data, circle 72 on inquiry card

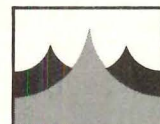
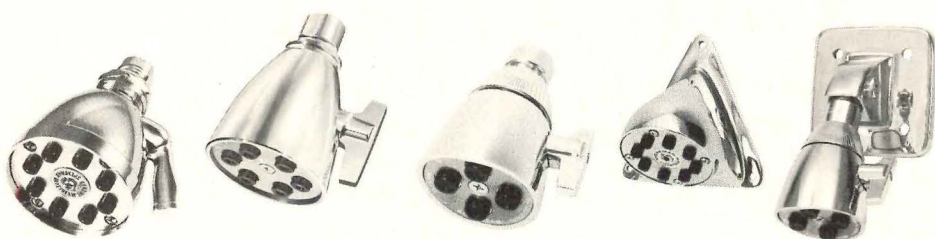
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**Shower Heads
with Autoflo[®]**

Speakman's Anystream Shower Heads with Autoflo answer today's demand for water conservation. From the standpoint of ecology or economy . . . from the viewpoint of residential or commercial and institutional clients . . . the emphasis is on the *more efficient* use of water. And here's the beautiful way to do it. All models in the distinctively styled Anystream line are available with Speakman's patented water-saver, Autoflo is tamper-proof and maintenance-free . . . assures a satisfactory water flow rate . . . yet it can save thousands of gallons (and dollars) on each unit in the course of a year. Write for our new Anystream flyer and complete information.

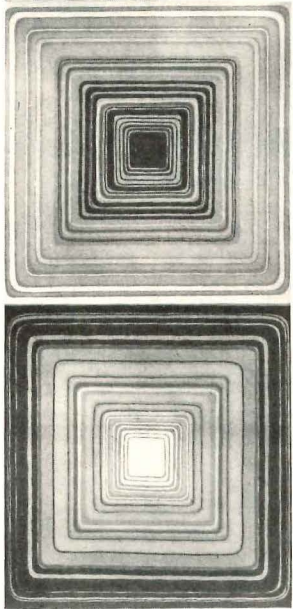


Speakman Company

WILMINGTON, DELAWARE 19899

For more data, circle 73 on inquiry card

For more information, circle item numbers on Readers Service Inquiry Card, pages 207-208.



Geometrics featured in acrylic wallpapers

Tracking Station is a pattern made of squares within squares, delineated by varying shades. Available in three colorways, including red, brown and green, each with a companion stripe. Rounded corners soften the effect of this graphic, one of many offered in acrylic coated wallpapers adaptable to many areas. The repeat of the pattern shown is 42 in., with each square 21 in. on a side. ■ Wall Trends, Inc., New York City.

Circle 300 on inquiry card

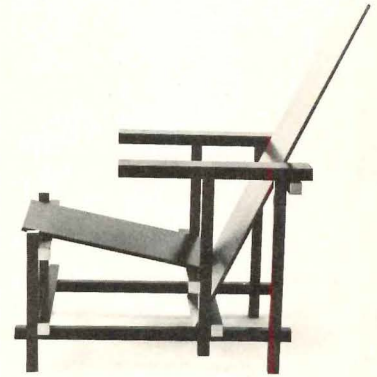


From Italy, lounge seating that goes on and on and on and . . .

Virgil Forchiassin designed *Digit*, a system of single elements of molded foam easily connected one to the other, according to the company. The foam is reinforced with metal. The basic unit is a two-sectioned chair, to which single elements can be added indefinitely with the aid of metal connectors. A three-seat sofa is shown. The customer must sup-

ply fabric of the stretch or knit variety. Each section sits on a plastic base plate. The company claims the seating is strong and comfortable, highly recommended for commercial applications. Assemblies can be only in straight lines. This is a very economical seating system, amusing to look at. ■ Stendig Inc., New York City.

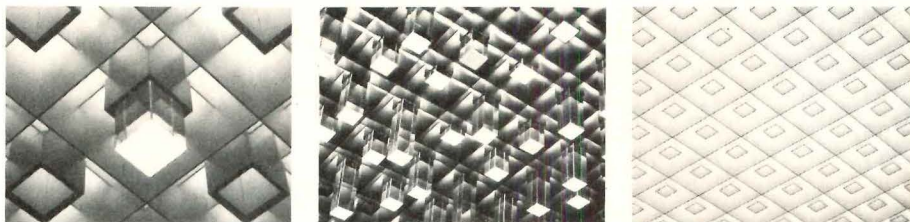
Circle 302 on inquiry card



Furniture classics to be produced anew

The *Masters Collection* will consist of authorized and controlled exact reproductions of original designs as cataloged in many international museums, executed by modern masters according to the company. The first designs presented are the "Red and Blue" (shown) and "Zig-Zag" chairs by Dutch architect Gerrit Thomas Rietveld. Both are fabricated in solid beechwood. ■ Atelier International, Ltd., New York City.

Circle 303 on inquiry card



One ceiling system provides many designs with snap-on ease

The system uses 1-in. square cells recessed within concentric 3-in. cells. Colors are white, gold, bronze or made to order. The accent pieces may be applied in matching or contrasting colors. At left, accent pieces with an acrylic crystal insert are

shown. The middle photo shows some of the variations. The right photo is of the basic ceiling, a simple illuminated surface. Matrix panels are 3 ft square. ■ Neo-Ray Lighting Systems, Inc., Brooklyn, N.Y.

Circle 301 on inquiry card



Rethinking the executive desk in wood and chrome

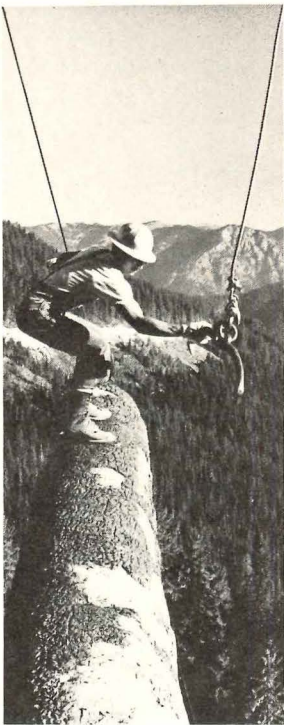
The *Astro Series* includes a desk, credenza and conference table for executive office applications. The three-drawer desk is supported on a mirror-polished chrome base and measures 84 in. long, 40 in. wide and 29 in. high. It is 4 in. thick. The

coordinating credenza measures 84 in. long and 21 in. wide, and is wall-hung. All pieces are available in genuine walnut or oak. ■ Office Suites, Inc., Chicago, Ill.

Circle 304 on inquiry card
more products on page 163



Potlatch Corporation: A new name, renewed commitments and a bright outlook.



How do you know Potlatch?

As a supplier of wood products, paper-board, printing and business papers, packaging or private-branded consumer products?

Potlatch Forests, Inc. was all of those things. Now, to better represent our diversity, we are Potlatch Corporation. The name change and the new Potlatch signature are part of a corporate identity program that seeks to underscore our business philosophy and the emphasis we place on talented, well-trained and highly motivated people.

People are important at Potlatch because every business we're in is tough and competitive. Our success depends on the ability of our people to deliver the right product at the right price—to innovate, to use resources wisely, to keep ahead of market trends and demands. Because we believe people are our key resource, we have increased our commitment to human development at every level, initiating comprehensive programs to motivate our people and to enhance the skills of our managers.

What will our emphasis on people and planning do for you? We believe it will make Potlatch an even better company to do business with, because we are committed to extending our basic capabilities within the markets we serve.

Potlatch people want to do an ever-better job of meeting their customers' needs. And that's how we want you to know us.

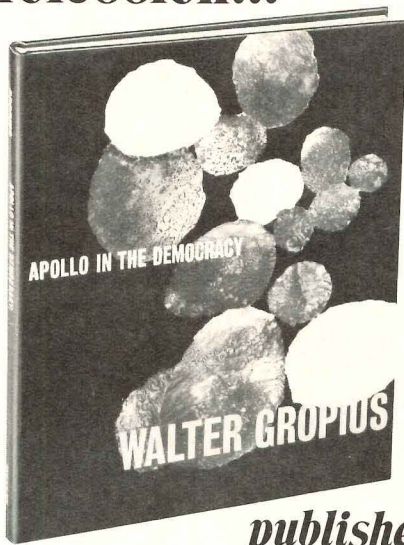
Potlatch

Potlatch people mean business

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San Francisco, California 94119

For more data, circle 74 on inquiry card

A provocative man's reflections on his profession...



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in a rare collection
of papers and addresses.*

Here, in this 240-page book you can share in the life and ideas of Walter Gropius, a man who fought long and hard—and many times most controversially—to develop a unique architectural environment for mankind.

In this remarkable book, Gropius leads you through his thoughts and design ideas that made up his remarkable talent.

He discusses:

The disorientation of man in our society, and our loss of many of our artistic goals.

The need for more public involvement in the arts.

The famous architects that he knew and worked with (including personal, and often touching, portraits of people like Wright, Le Corbusier, Behrens, van der Rohe and many others).

The role of architects in leading the quest for the development of man's artistic talent.

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For more information, circle item numbers on
Readers Service Inquiry Card, pages 207-208.

PARKING GARAGE / A 12-page color booklet illustrates and describes 13 parking garages and various coating systems used throughout the projects. Coatings include primers, protective and decorative finish systems for interior and exterior surfaces, and paints for maintenance. Both steel and concrete garages are featured. ■ Tnemec Co., Inc., Kansas City, Mo.

Circle 400 on inquiry card

ACOUSTICAL CEILING SYSTEM / A 4-page color brochure on the new Pyrotex 100 acoustical ceiling system illustrates the design flexibility permitted with these panels in achieving a semi-concealed suspension system. Recommended for use in schools and other institutional buildings where unusual configurations may be needed. ■ Simpson Timber Co., Seattle, Wash.

Circle 401 on inquiry card

DRAFTING PAPER / A folder describes the broad choice of tracing papers available from the company and includes samples. ■ Bruning Div., Addressograph-Multigraph Corp., Schaumburg, Ill.

Circle 402 on inquiry card

COMMERCIAL LIGHTING / The catalog combines into one reference book the company's complete line of commercial lighting systems using high intensity discharge lamps. The publication includes typical data, coefficients of utilization, and sound ratings to assist lighting users. ■ General Electric Co., Hendersonville, N.C.

Circle 403 on inquiry card

EDUCATIONAL ENTRANCES / A 6-page color brochure describes the Entara-XD educational entrance system designed for strength and security, in schools and colleges. ■ Kawneer/AMAX, Niles, Mich.

Circle 404 on inquiry card

ALUMINUM TRIM / A catalog shows the latest mansard, gravel stops, fascias, copings and soffits that comprise the manufacturer's line of architectural aluminum trims coordinated in style and color. This catalog presents complete specification data with detailed drawings and color chips. ■ Construction Specialties, Inc., Cranford, N.J.

Circle 405 on inquiry card

BANK VAULT SYSTEMS / A booklet details erection procedures, specifications and includes a selection guide for this patented Steelcrete bank vault construction technique. It exceeds the requirements of the Insurance Service Office for highest rating. ■ Wheeling-Pittsburgh Steel Corp., Pittsburgh, Pa.

Circle 406 on inquiry card

ADHESIVES / A 4-page, fully illustrated catalog describing Scotch-Grip Wood Adhesive 5230, Scotch-Grip Construction Mastic 4314 and Scotch-Weld Polymer Bond Structural Wood Adhesive System for high-strength wood bonding applications tells how these high-strength, weather-resistant adhesives can reduce construction cost and improve building quality. ■ 3M Co., St. Paul, Minn.

Circle 407 on inquiry card

DUCT SOUND REDUCTION / Field-applied sound reducing treatments for ductwork and piping, employing sheet lead, are described in a free brochure. Test data on typical installations are given to demonstrate the degree of silencing to be expected. ■ American Smelting & Refining Co., Newark, N.J.

Circle 408 on inquiry card

MOVABLE WALL SYSTEMS / Tips on selecting a movable wall system for any type application—restaurant, school, office, hotel, or other building—are given in a 12-page designer publication on both track-mounted and portable partition wall systems available in color, wood grains, and textures. ■ Kwik-Wall Co., Springfield, Ill.

Circle 409 on inquiry card

SILICONE SEALANTS / An 8-page color brochure gives application information about four types of silicone building sealants, designed for sealing expansion and contraction joints in buildings, precast concrete panel joints, shower stalls and many other interior and exterior building construction joints. ■ Dow Corning Corp., Midland, Mich.

Circle 410 on inquiry card

OPERABLE WALLS / Panels can be placed anywhere along an overhead track in either flat or 45 or 90 degree angular arrangements to create complete walls or landscape screens for large or small study/meeting groups. Individual panels can negotiate 90 degree turns without cumbersome switches or even curved track. Panels available in full height chalk and tackable surfaces, are described in a 4-page brochure. ■ Panelfold Doors Inc., Miami, Fla.

Circle 411 on inquiry card

EMERGENCY POWER / This 4-page brochure describes the features and specifications of solid state battery powered generators that automatically keep standard fluorescent or incandescent lighting fixtures or other electrical or electronic equipment operating during power failures. ■ Stanby Systems, Inc., Medford, Mass.

Circle 412 on inquiry card

ROOFTOP CHECK LIST / A 4-page check list of operating and equipment characteristics, unrelated to any brand, is being offered at no charge to specifiers and builders. Also included is a list of suggestions for reducing energy costs on rooftop heating/air-conditioning units. ■ Better Heating-Cooling Council, Berkeley Heights, N.J.

Circle 413 on inquiry card

TURF IRRIGATION / The brochure, titled "The Innovators Solve Turf Irrigation Problems in Park and Recreation Areas," points out that turf areas serving different purposes can be accommodated with precision and efficiency, regardless of topography, soil or climatic conditions, geographic location or seasonal changes, with modern automatic irrigation systems. ■ The Toro Co., Riverside, Cal.

Circle 414 on inquiry card

SOUND CONTROL FOAM / A lightweight spray-in-place flexible urethane foam for sound attenuation is claimed by the manufacturer to provide outstanding sound reduction control. A product information sheet lists chemical and physical properties, in addition to a rotating table detailing noise absorption coefficients for various thicknesses of foam. ■ United Foam Corp., Compton, Cal.

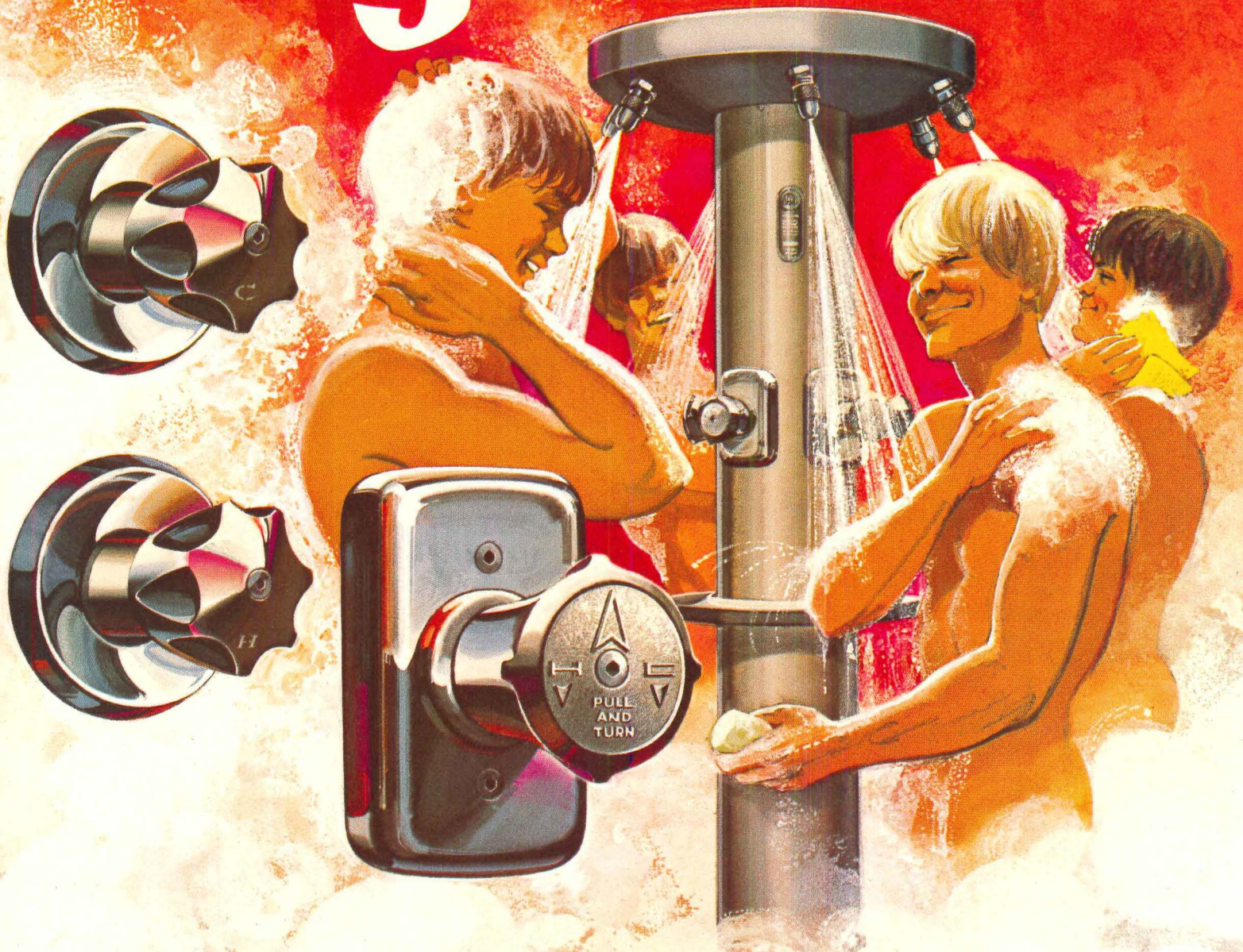
Circle 415 on inquiry card

TWO-WAY SLAB DESIGN / The supplement is intended for architects and structural engineers already using the 1971 ACI Code. With this tool, according to CRSI, an engineer can match design speed with the 1971 Code against anyone using the old codes; \$4.00. ■ Concrete Reinforcing Steel Institute, Chicago.

Circle 416 on inquiry card

more literature on page 203

Bright idea



Shower valves guaranteed for $83\frac{1}{3}$ years.

We guarantee our Bradtrol and Pos-I-Pak shower valves for $83\frac{1}{3}$ years . . . an even 1000 months. If either valve leaks or drips during that time, we furnish replacement parts free of charge. We can give you a guarantee like this because our Bradtrol permanently lubricated single control valve has just one moving part. No washers, O-rings, springs or seals. Nothing to wear out or corrode. And the Pos-I-Pak valve for hot and cold or tempered water. No washers here either. No seats, threads or packing. So no leaking.

You can specify either for any shower we make. For Column showers that serve from 2 to 6 people with a single set of connections. For Panelon® Econo-wall® Wall-saver® and Corner showers that put every inch of floor and wall space to use. Showers that save money during installation and afterwards. Ask your Bradley washroom systems specialist for complete guarantee details. And write for latest literature. Or call (414) 251-6000. Telex 2-6751. Bradley Corporation, 9109 Fountain Blvd., Menomonee Falls, Wisconsin 53051.

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

For more reasons why BRUNSLON is the specifier's top choice, send for Ben Franklin's Hero Kit. It's packed with information for architects and specifiers about carpeting, static, and static-control.

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Call 312/379-9600 to cut your on-site-costs

With Inryco®/Fenmark® Steel Grid Curtain Wall System.

We supply factory-assembled steel wall grids up to 40' high and 8' wide ready for glazing. This means fewer parts to handle, fewer connections to make, less caulking on the job.

Ultra-narrow sight lines.

Made possible by the strength of steel which also permits larger uninterrupted glass areas. Infill panels can be any material the designer wants—steel, glass, porcelain, or aggregate.

Unmatched weather integrity.

The effects of driving wind and rain are controlled by Fenmark's unique drainage system. Grid walls can be designed to provide good U factors and to accommodate insulating glass up to 1" thick. Steel grid is zinc-coated and given a durable baked-on finish.

Adapts equally well to steel or concrete construction.

Inryco/Fenmark grids attach easily to structural members or can be incorporated into pre-cast or cast-

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We would like to put our construction experience and know-how to work for you. For quick action, call 312/379-9600 and ask for the Fenmark Division. Or, if you prefer, mail the coupon—you'll hear back from us right away.



All-welded 5' x 26' grids delivered to site with insulated steel interior panels. Gold reflective glass used for both exterior spandrels and insulated windows.

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I'm involved in planning for a _____ story building with concrete frame,
 steel

and would like to discuss features of Inryco/Fenmark Steel-Grid Wall System.

Nothing on the boards at the moment, but would like to receive literature.

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Title _____

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Beauty That's Much More Than Skin Deep...



Split Block with Medusa White

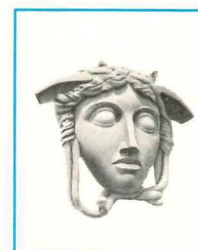
It's easy to see that Split Block made with Medusa White Cement is beautiful on the surface! But its real beauty is more than on the surface.

Your economical Split Block wall provides a lasting beauty of fire-safety, sound absorption construction, self-insulation and

freedom from costly, continual maintenance. All of which adds up to more than meets the eye for your building dollar.

It is a strikingly elegant design tool combining practicality that retains inherent wall beauty over many, many years. And one thing more, it's readily available now — nationwide — in a wide assortment of colors and textures.

So satisfy your esthetic and economic values at the same time with one beautiful wall material . . . Split Block with Medusa White. And for matching, contrasting or complementing mortar, specify Medusa Custom Color Masonry Cements . . . in any of a multitude of colors. For more information, write Medusa Cement Company, P. O. Box 5668, Cleveland, Ohio 44101.



For more data, circle 79 on inquiry card

MEDUSA CEMENT COMPANY Division of Medusa Corporation

New Amarlite BTI-680 High Rise System gives both concealed and baffled drainage plus thermal barrier!

This new BTI-680 stick system offers several improvements over others designed for high-rise applications, when you desire a vertical accent and thermal insulation.

A new, different kind of horizontal member with cover stiffener makes possible the advantage of concealed and baffled drainage, preventing water from backing into the system.

The vertical mullion design distributes metal more efficiently than similar high-rise systems. So there's more strength per pound of aluminum.

Horizontals run continuous through the verticals, reducing cuts and shelf clips. Installation is further simplified through a "T" design of the bolts that fasten the inside and outside mullion components to each other.

Write for Specification File 8.14 An.

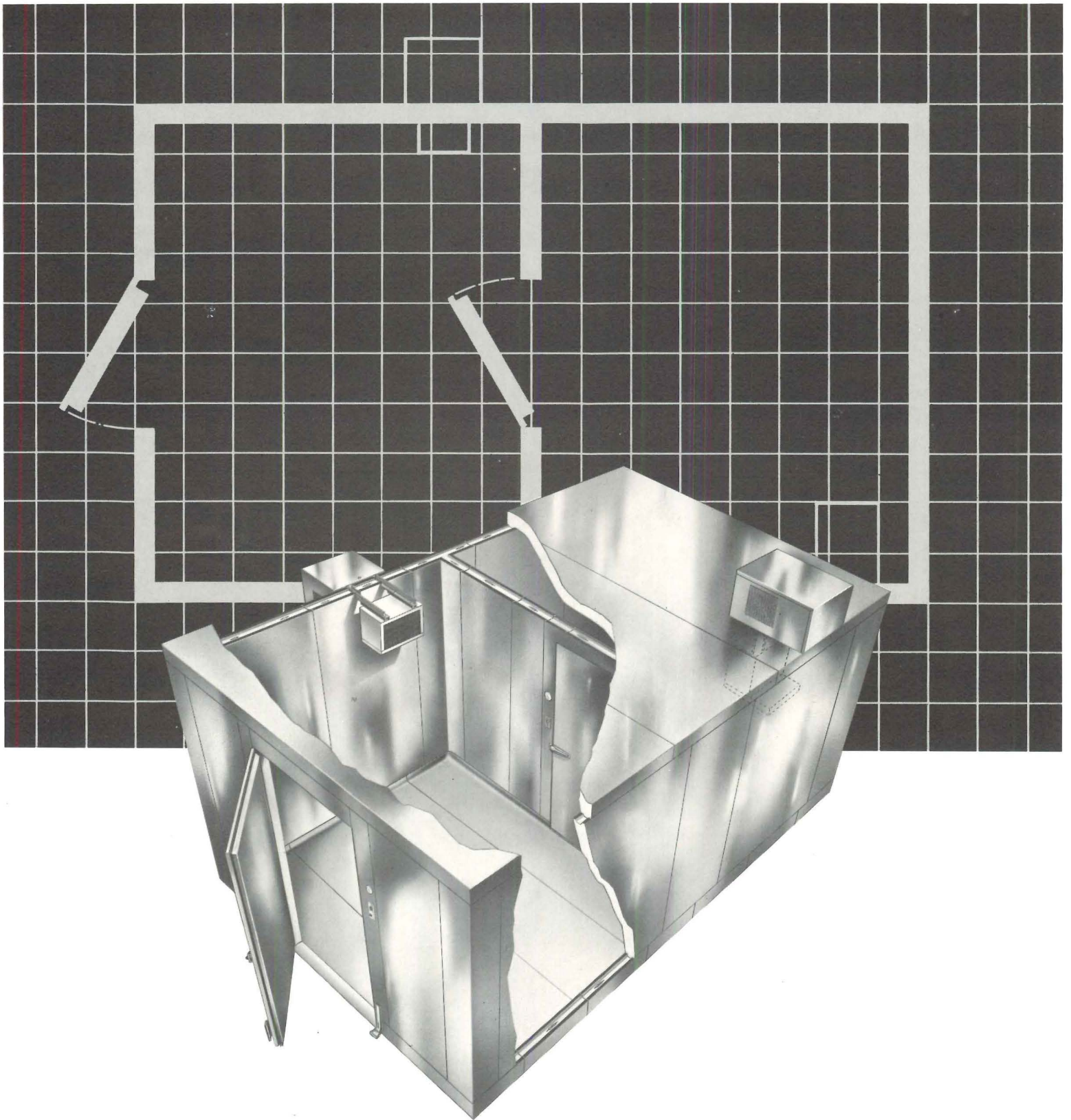


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The BTI-680 features a thermal break solving problems of heat transfer, expansion and contraction, and condensation. New horizontal design with cover stiffener permits concealed, baffled drainage.



THE FULL-SIZE MODULAR WALK-IN



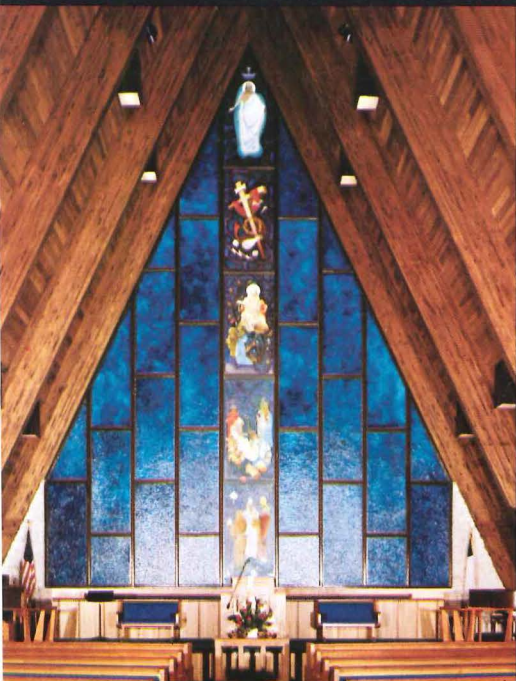
Vollrath has it. Makes your specification work easier, simplifies layout. Gives your customer greater net storage capacity (compared to nominally sized walk-ins). All constructed in accordance with N.S.F. and U.L. standards. Wide choice of options, finishes, self contained or remote refrigeration systems. Ask your Vollrath equipment specialist for details, or send for your comprehensive design/specification manual.



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For more data, circle 81 on inquiry card

sticks & stones can't break our bones
and **GRAFFITI** will never harm us!!!



Krinklglas is the translucent fiberglass-reinforced decorative / structural plastic that is the proven replacement for glass and stained glass.

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International award-winning Krinklglas has a textured surface that resists scratching or marring, excellent chemical resistance and weatherability, and eliminates replacement due to carelessness or deliberate vandalism. Krinklglas is unequalled for both indoor or outdoor use...here is functional beauty that captures the very essence of architectural and decorative genius! Use and specify Krinklglas; save clients time, money, and worry.



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refer to our full color brochure
1973 Sweet's Catalog 8:26 DIM

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Ask a roofer about slope. He'll tell you about Tapered Foamglas[®] insulation.

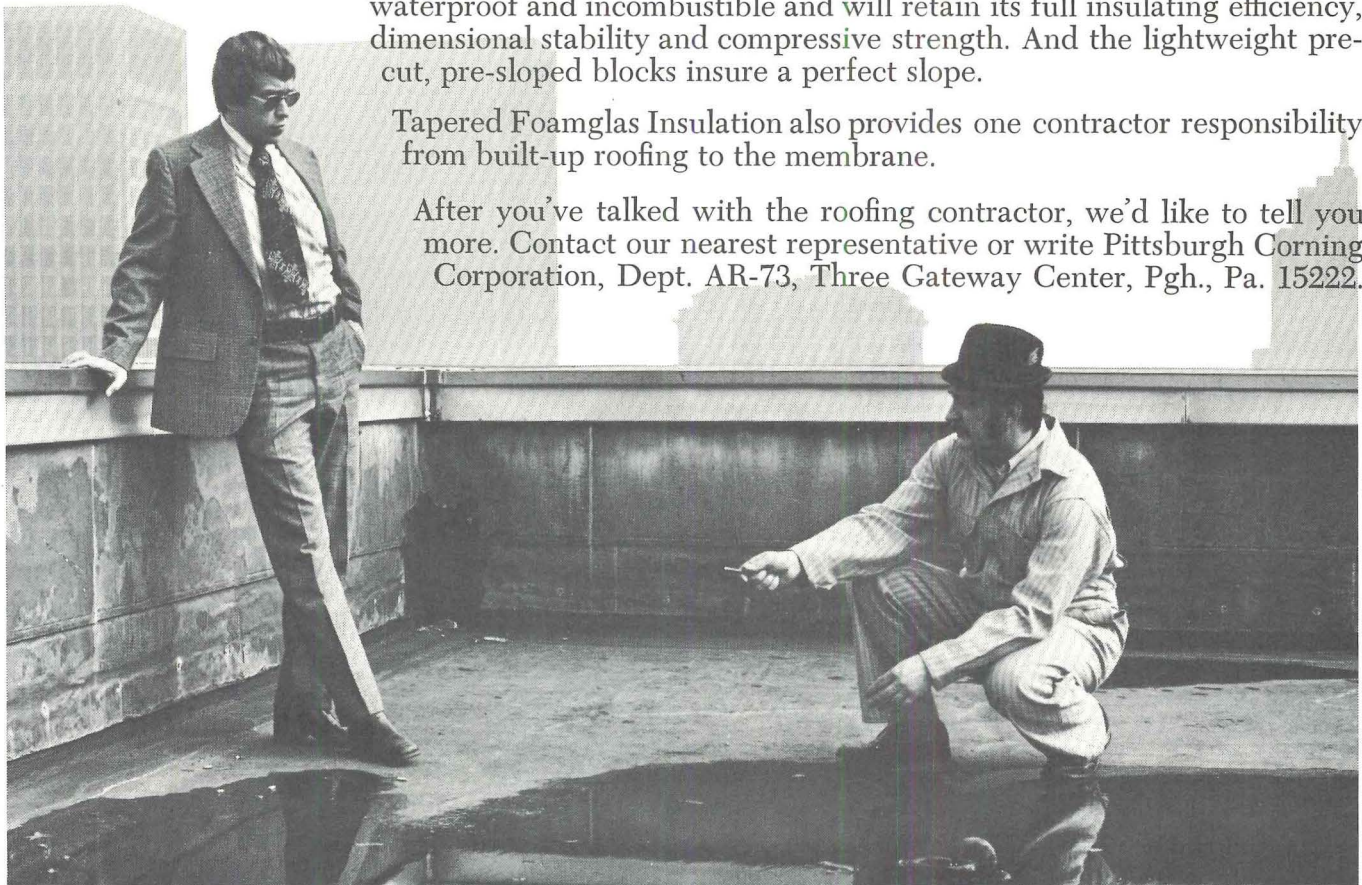
PITTSBURGH
pc
CORNING

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

He'll tell you Tapered Foamglas Insulation isn't the cheapest product on the roofing market. But the cheaper products don't have 20 year guarantees, either — a guarantee that Tapered Foamglas Insulation will remain waterproof and incombustible and will retain its full insulating efficiency, dimensional stability and compressive strength. And the lightweight pre-cut, pre-sloped blocks insure a perfect slope.

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

After you've talked with the roofing contractor, we'd like to tell you more. Contact our nearest representative or write Pittsburgh Corning Corporation, Dept. AR-73, Three Gateway Center, Pgh., Pa. 15222.





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

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



Everything hinges on Hager.

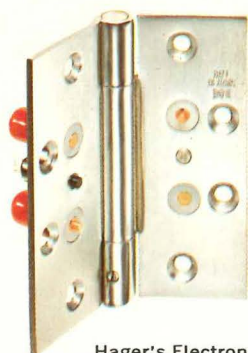
If you insist on quality, insist on Hager hinges.

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

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

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

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



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



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



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



Everything hinges on Hager.



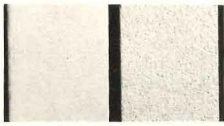
Hager's self-adjusting Raconteur hinge.
PAT. NO. 3,394,428

HID FLOODLIGHT / Ellipsoid styling is featured on this unit for commercial exteriors. Ground-mounted *Elliptra III* units use separate but integral ballast mounted in the conical base section. Mercury vapor, metal halide, or high-pressure sodium lamps of 400 or 1000 watts may be used. Pole-mounted units are available for remote-ballast operation only. ■ Wide-Lite Corp., Houston, Tex.



Circle 305 on inquiry card

MINERAL FIBER CLADDING / *Qasal* is a flat, integrally-colored white panel composed of incombustible mineral fibers and cement. This structural facing and decorative cladding is produced in two finishes (shown)—a smooth surface and a lightly textured finish. Suggested applications include fascias, spandrels and insert panels; soffits; mullions and column covers. *Qasal* is promoted as an esthetic alternative to traditional masonry surfaces. Available in maximum sizes up to 64% by 126 in. in thicknesses of 1/4, 15/32 and 19/32 in. Application shown is on a Berlin apartment building designed by Walter Gropius and Vohrig. ■ Champion International, New York City.



Circle 306 on inquiry card

SURFACE CYLINDERS / The fixture is available in brushed aluminum, *bron-zotic*, matte white or black finishes, with various liner combinations. Included in the four sizes is a 3 1/2-in. baffle unit for miniature lamps. All units fit 3/4 or 4 in. outlet boxes. ■ Prescolite, San Leandro, Cal.



Circle 307 on inquiry card

AIR CONDITIONING UNITS / With optional heating the *Tri-Line II* is a condenser that can be combined with a modular evaporator-blower and with electric, hot water or steam heating sections to provide 51 different applications. The evaporator-blower and heating coils are only 10 1/2 in.-high and can be changed in the field for upflow or horizontal use, in homes and apartments. ■ Stewart-Warner Corp., Lebanon, Ind.



Circle 308 on inquiry card

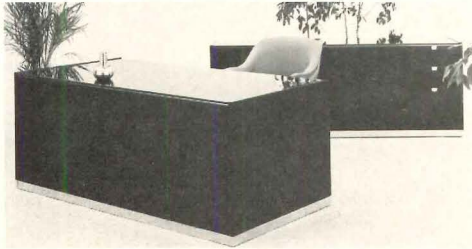
ILLUMINATED ADDRESS / This outside light adapts to all home or apartment styles. It installs easily using low voltage door-bell wires and operates for just pennies a year according to the company. A bulb change every ten years is the only maintenance required. ■ Martrex Inc., Wheaton, Ill.



Circle 309 on inquiry card

SYSTEMS DESK / The *F-3 Executive* features full side panels and tops finished in oiled rosewood, flat-sliced white oak, or hand-rubbed lacquer or walnut veneer. Other veneers and finishes are available upon request. The 72- by 36-in. double pedestal desk is available only with a one-piece, flush back panel. ■ Sunar Ltd., Toronto, Ont.

Circle 310 on inquiry card



TUFTED CARPET / Designed for the contract market, *Ocracoke* is made of 100 per cent solution-dyed 24 denier olefin (LM) staple with secondary backing. *Ocracoke* is made with low level loop tufted effects. Because of its 20-oz. face weight, it has a clearly defined, deeply ribbed effect, and is hard to distinguish from tufted carpet according to the company. *Ocracoke* is resistant to rot, moisture, mildew and insects, and can go indoors or out. ■ Phillips Fibers Corp., Greenville, S.C.

Circle 311 on inquiry card
more products on page 176

Raynor Doors For The Most Unlikely Garagemates

Granted, most people don't keep a biplane and a restored '32 Chevy in their garage. But if they did, Raynor makes garage doors to handle them. If the door your plans call for isn't a stock size, Raynor can make it for you. And you can choose from fiberglass, wood, steel or aluminum, in an imagination-stirring choice of styles. If you're building enclosures for anything from mini-cars to giant locomotives, check with Raynor for the best garage door solution. Even if your current projects don't call for garage doors, be ready —send for your catalog.

RAYNOR MANUFACTURING COMPANY
Dept. AR-7 DIXON, ILLINOIS 61021



For more data, circle 85 on inquiry card

ZONOLITE® Masonry Fill Insulation, poured into cores or cavities of masonry walls, usually reduces heat loss by 50%—and more in some cases.

To the owner, this means his insulation cost is paid back to him in two or three years. Then savings continue year after year. A fact that should be of importance to every specifier or builder.

Heating and cooling savings are impressive in every area. Example:

	Chicago	Atlanta	Mpls.	Phila.	Denver
Combined Heating/Cooling Savings*	\$6400	\$3500	\$8150	\$6450	\$5400
Installed Cost of Insulation	1700	1700	1700	1700	1700
Average Annual Return on Insulation Investment	38%	21%	48%	38%	32%

*10-year savings from insulating walls; 8" lightweight block; 2-story office building, net exterior wall area 10,000 sq. ft.

The new FHA standards for multi-family housing require masonry walls to have a heat loss factor ("U" value) no higher than .17. ZONOLITE Masonry Fill is the most economical way to bring block walls into conformance—as low as 17 cents per square foot installed, for 8" block.

In addition to cost savings, consider these important features:

Improves comfort—Inside wall temperatures are increased up to 13°F. in winter. Body-to-wall radiant heat loss is reduced. Greater comfort results. Summer conditions are improved, too.

Increases fire resistance—Adding ZONOLITE Masonry Fill to a 2-hour fire-rated lightweight block gives more than four hours extra protection—earns 4-hour UL rating.

Cuts sound transmission—Users report that Masonry Fill in exterior or party walls improves the sound resistance.

For full information, contact your ZONOLITE sales office. Or send for booklet MF-164A, to Construction Products Division, W. R. Grace & Co., 62 Whittemore Avenue, Cambridge, Mass. 02140.



CONSTRUCTION PRODUCTS

For every dollar invested
ZONOLITE Masonry Fill
Insulation returns
up to 48% every year.

For more data, circle 86 on inquiry card

TOWER CONTROLS MAINTENANCE COSTS WITH LONG-LIFE DURANAR[®] 200 FLUOROPOLYMER COATING

Looking for ways to add extra years of maintenance-free beauty to metal buildings? Borrow an idea from this new control tower, the first of 96 to be built by Pascoe Steel Corporation.

The tower's brilliant white finish is DURANAR 200, the coating that withstands weathering for 20 years or more. And offers a high level of protection from ultraviolet deterioration

and chemical attack.

What about cost? This unique fluoropolymer coating combines rich beauty and unexcelled durability at a cost significantly under other "long-life" finishes. Which explains why so many architects and metal building manufacturers are putting DURANAR 200 in the specs.

Choose from an exciting spectrum

of colors—all computer-controlled for perfect match. In flat or semi-gloss finishes. See Sweet's Architectural or Industrial Construction Files 9.10/PPG. Or contact your coil coater, panel manufacturer or PPG INDUSTRIES, Inc., Dept. 13S, One Gateway Center, Pittsburgh, Pa. 15222.

PPG: a Concern for the Future



For more data, circle 87 on inquiry card

FAA CONTROL TOWER,
Chino Airport, Chino, California

Tower manufactured and erected
by Pascoe Steel Corporation,
Pomona, California

Announcing Trane Air Conditioning Economics.

First comprehensive system/energy/economics analysis program.

TRANE Air Conditioning Economics (TRACE) is a unique, comprehensive computer program which compares the economic effect of alternative air conditioning systems, as well as architectural, energy and building use alternatives, on the first cost and operating cost of a proposed building. TRACE allows the professional engineer to present an economic study of these alternatives to the building owner in specific comparative economic terms.

The need for such a program is recognized.

First cost studies alone are no longer adequate. Many building owners are now asking for economic studies on all factors which affect their investment. They realize that both first cost and operating costs must be evaluated to find that unique combination of energy, air conditioning systems and equipment which has initial and operating cost that will give the building owner the best response toward the financial objectives he has set for his building project.

The cost of operating an air conditioning and heating system can represent 20 percent of the total operating cost of a building. By optimizing the heating and air conditioning system, energy cost can be reduced by as much as 25 percent. On buildings that generate a profit, this can mean an increase in cash flow as much as 10 percent.

Furthermore, it is accepted that energy resources must be used more wisely, and predicted that energy costs will soon rise substantially. Over 8 percent of the energy used in the U.S.A. is for heating and air conditioning.

But the need was difficult to meet.

Optimizing first and operating costs over the life of a building (life cycle cost) is a daunting task. All the architectural and construction alternatives that affect the total economic performance of the heating and air conditioning system should be considered at the building's conceptual stage.

Consider the variables:

- architectural design alternatives
- energy alternatives
- air conditioning system alternatives
- mechanical equipment alternatives
- building use alternatives
- economic alternatives

Evaluating alternatives is arduous, complex, and time-consuming. Therefore, many buildings do not have optimized life cycle costs, and many owners are paying too much for their air conditioning.

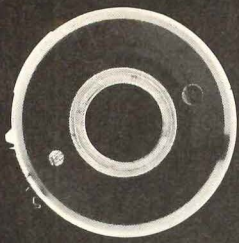
TRACE meets the need.

TRANE Air Conditioning Economics utilizes the computer to allow the design engineer to make an economic study that compares all viable alternatives, with results stated in terms meaningful to the owner.

In a few days, TRACE enables the designer to evaluate practically any alternative that will affect the economics of the air conditioning system, and establish an optimum relationship between its first and operating costs. Using the data obtained, the engineer can then go on to make specific recommendations.

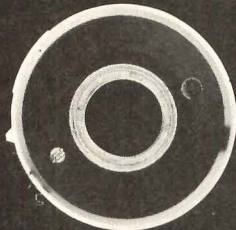
TRACE is a very flexible program, designed to accept performance data on virtually any type or brand of air conditioning equipment.

TRACE is therefore a tool that enables a designer to make an affordable, accurate, comprehensive



WEATHER TAPE

U.S. weather tape from the station nearest the proposed building. Hourly weather data such as dry bulb, wet bulb, dew point, barometric pressure, wind velocity, and cloud cover for an entire year are condensed to 12 days of weather, each representing a day for each month of year.



EQUIPMENT PERFORMANCE TAPE

Performance data on cooling, heating, air moving and accessory equipment. If equipment is not listed, user provides performance data.

INPUT

BUILDING DESCRIPTION

- LOCATION
- ZONES
- DESIGN DATA

SYSTEMS DESCRIPTION

- SYSTEM TYPES
- ECONOMIZER

EQUIPMENT DESCRIPTION

- EQUIPMENT TYPES
- PUMP HEADS

ECONOMIC DATA

- MORTGAGE LIFE
- ECONOMIC FACTORS
- FIRST COST
- MAINTENANCE COST

OPERATIONS

LOAD PHASE

PEAK & HOURLY LOADS BY ZONE

DESIGN PHASE

CFM & SUPPLY AIR DRY BULB BY ZONE

SYSTEM SIMULATION PHASE

EQUIPMENT LOADS BY SYSTEM BY HOUR

EQUIPMENT SIMULATION PHASE

ENERGY CONSUMPTION BY UTILITY

ECONOMIC ANALYSIS PHASE

OUTPUT

ECONOMIC COMPARISONS OF ALTERNATIVES

THE PROGRAM

The TRANE Air Conditioning Economics Program uses ASHRAE and industry standard techniques to simulate the performances of alternative building air conditioning systems to arrive at the operating costs of each. The total economics of the alternatives are then analyzed and compared. Against any one building description, the program can compare the effect of up to four system/equipment/economic alternatives, providing the user with criteria for economic decision.

Whenever available, ASHRAE Guide techniques and accepted industry practices were used as the basis for calculations. As phases of the program were completed, procedures were verified with leading consultants in the fields involved. TRANE will make available to users of TRACE, a highly comprehensive documentation manual.

The program is broken down into the 5 major phases shown at the left. Each requires certain input to describe the building and develop engineering alternatives. Each phase performs its respective function and passes generated data on to succeeding phases.

and meaningful economic study—an economic study not confined purely to TRANE air conditioning systems, but one which reaches out into the general economic parameters of a building which affect the air conditioning economics.

TRACE is easy to use.

Once the engineer has the conceptual design criteria and general economic factors affecting air conditioning system selection, actual computer input can be completed in less than an hour.

The TRACE program is run at the TRANE Computer Center, with about a one-week turnaround. It's available to professional engineers on a fee basis.

We invite consulting engineers to make an appraisal in depth of TRANE Air Conditioning Economics. Please call your local TRANE Commercial Air Conditioning Division Sales Office or write us.

The TRANE Company, Commercial Air Conditioning Division, La Crosse, Wisconsin 54601.



The new generation of Norton[®] Automatic Door Operators

4 new benefits in a field-proven product

Quiet

We've incorporated a new hydraulic pump that drastically reduces the discernible noise level. It completely eliminates the whirr and whine, making it ideal for installations like hospitals and restaurants. Finally... an unobtrusive noise level.

Fewer Moving Parts...

have always been a Norton benefit. But now we've reduced the number of parts even further. So you have less to maintain, fewer places to have problems—for even greater dependability.

Improved Door Control

In selecting a new hydraulic pump we were able to increase the torque for smoother, more effective opening. And we've improved our circuitry for finer, more adaptable control.

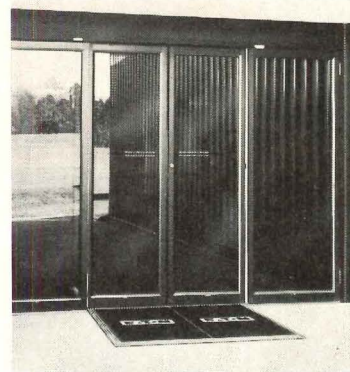
System Responsibility

for specifications, sales, installation and maintenance for an automatic door system, all from a single source. The way it's always been, but we've improved the entire setup. We appointed Prime Dealers to offer more, even better service. And we've continued to train our Nationwide Norton Service Organization to provide you the maintenance and service you need... when you need it.

Same Dependability

We've simply made improvements on the Norton Automatic Operator that's proven itself in so many installations.

For more information ask your Norton Dealer, your Norton Representative or contact Eaton Corporation, Lock and Hardware Division, Norton Marketing Department, Box 25288, Charlotte, N.C. 28212.



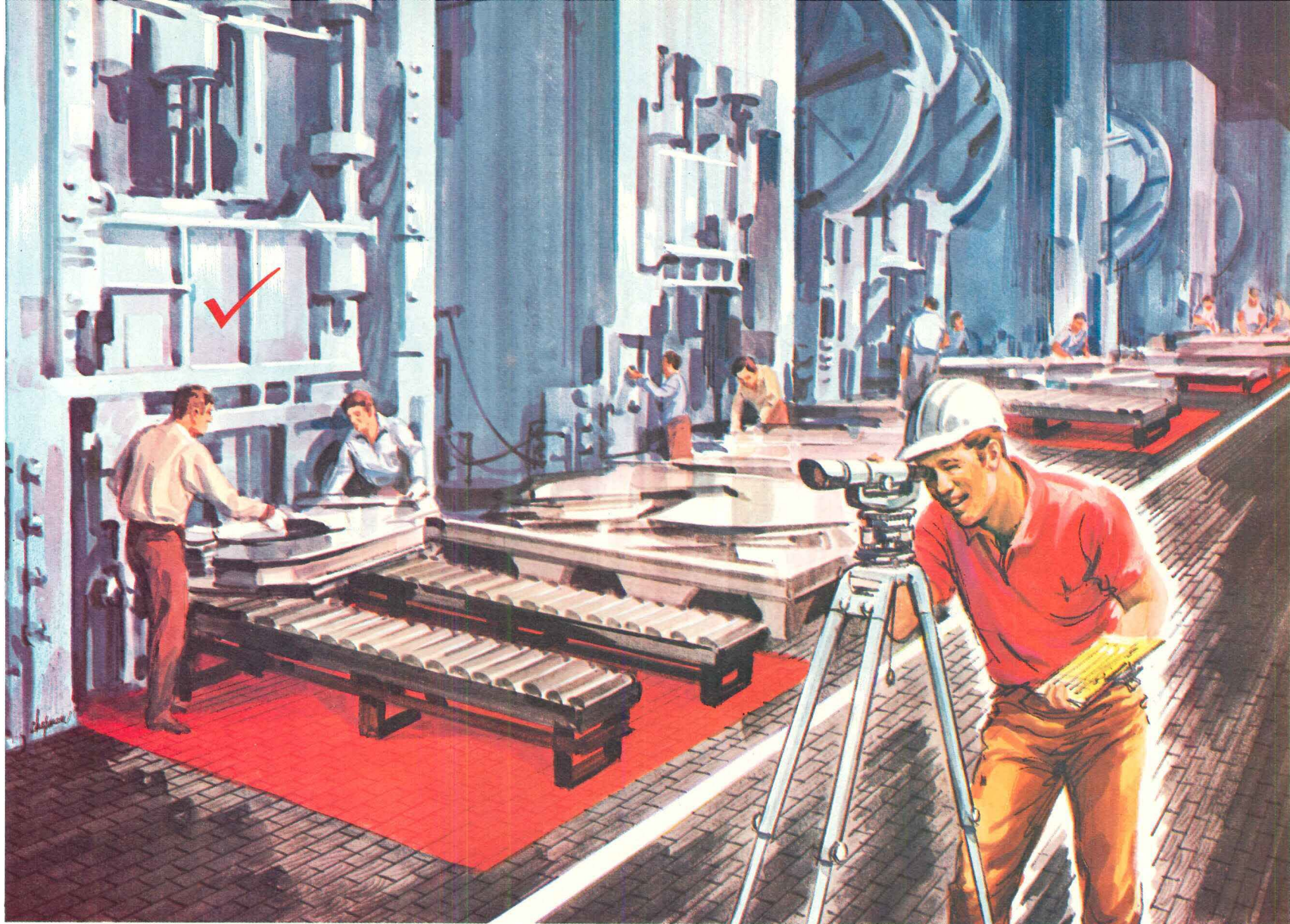
Norton Automatic Operator Systems

Series 2000, Transom Mounted for new and existing construction.
Series 4000, Completely Concealed in almost any door manufacturer's header (4" x 5" minimum).

Series 5000 & 9000 for sliding doors; as an operator (5000); or as complete entrance package (9000).
All control methods and schemes.

EAT•N Security Products
& Systems

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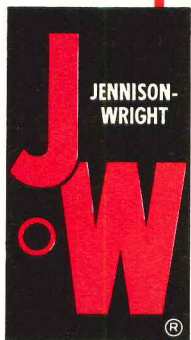
Engineered

FACTORY FLOORS

by Jennison-Wright

ADVANTAGES OF KREOLITE® FLOORS:

1. Easy relocation and concealment of service lines to machinery.
2. Speed and economy of replacement in aisles and other heavy wear areas.
3. Special finishes for absolutely dust-free surfaces.
4. Versatility in providing for in-floor conveyor systems, tow-lines, etc.
- ✓ 5. Measurable contributions to noise abatement.
6. Easy installation of oil dispersal and/or recovery systems.
7. Traditional properties of comfort through insulation.
8. Non-sparking surface in volatile areas.
9. Reduction of damage to dropped tools and products.
10. Priced for profitable production.



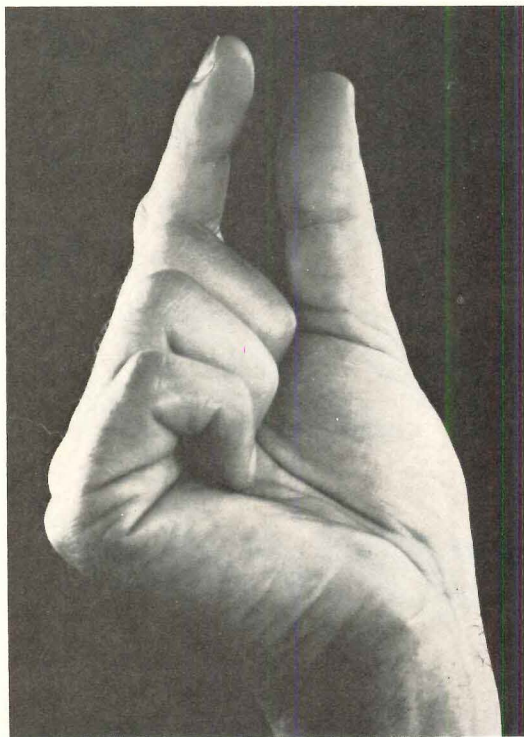
At first glance, wood blocks don't look sophisticated. It would be easy to assume that their installation requires a minimum of preplanning, but this is not so in most cases. Your flooring should be engineered to your requirements just as your factory was. Jennison-Wright Kreolite® End Grain Wood Block Floors have many advantages (see panel at left), but to take full advantage of their features, preplanning is most desirable. Our Design Engineers will gladly perform this service at no charge.

The Jennison-Wright Corp., P. O. Box 691, Toledo, Ohio 43694

... you'll find us in Sweet's Catalog and in the Yellow Pages

For more data, circle 90 on inquiry card

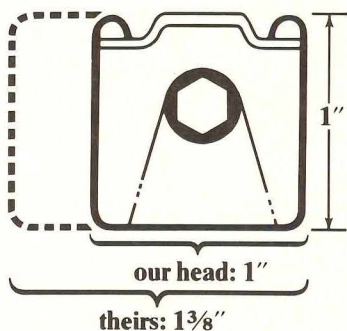
When we started to design the Mark II Blind we were just this far from a breakthrough.



We set out to design the slimmest, smoothest working narrow-slat blind possible. And now we've done it. We attacked the cumbersome headrail

problem, and designed out $\frac{3}{8}$ ", giving us a trim 1"x1". No other blind has a slimmer head than that!

Why go to all this trouble for a headrail?



Because we know the architect or designer would like to see us disappear. So our 1" head and bottom rails aesthetically blend into the blind. Open or fully closed, the Mark II rails are virtually unseen. And a full range of decorator colors

provides total flexibility of design coordination. The reason you can't do without us is function, of course. The Mark II has been engineered for

maximum glare reduction and heat gain control. We made internal improvements too, like the crash-proof lock that snubs the cords without tearing them. And the smooth tilt-action that's responsive to the lightest touch. And the spring-tempered slats that won't bow or sag.

Now that we've completed the Mark II, we know we were right! We were on top of a breakthrough!

Venette Mark II Blind

For complete details, specifications and color selection, write Alcan Building Products, 4519 Mahoning Avenue, N.W., Warren, Ohio 44483

Alcan Aluminum Corporation



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THE

SUPER

DOZEN



From **Fluoropon**[®]

THE SUPER DOZEN

Dial (312) 296-6611 for "Long-Distance" Fluoropon Metal Building Coating Colors

The Super Dozen

Fluoropon's most popular colors are manufactured in volume at lower costs. The savings? They're passed on to you! The results? *The Super Dozen* reduces square foot cost!

The Super Dozen Extended Economy

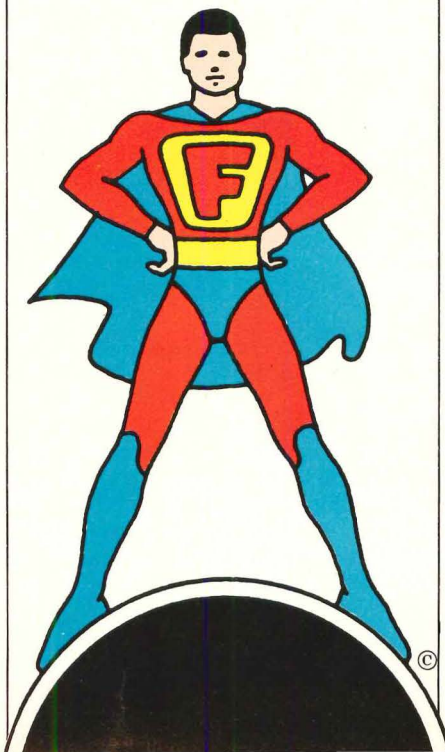
Priced competitively with many lower strength fluorocarbon coatings, the heavy-bodied, *Super Dozen* Fluoropon colors provide increased savings . . . savings you can pass along to your clients.

Extended Life

"Long-Distance" Fluoropon gives more mileage!
"Long-Distance" Fluoropon means a durable, flexible finish!
"Long-Distance" Fluoropon is a full-strength fluorocarbon* and provides these high quality standards:

*Fluoropon contains a minimum of 70% Kynar-500 resin . . . in accordance with the Pennwalt license agreement.

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- Super color retention and chalk resistance
- Super adhesion
- Super chip and peel resistance
- Super flexibility



The savings and beauty of "Long-Distance" Fluoropon is available in these *Super Dozen* colors:

- Medium Bronze
- Rawhide
- Brown
- Classic Bronze
- Citation Gold
- Slate
- Ivy
- Green
- Pewter
- White
- Military Blue
- Parchment

Want competitive prices? Years of maintenance-free life? More information on *The Super Dozen* Fluoropon colors?

Dial DeSoto, Inc.
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DeSoto, Inc.
Chemical Coatings Division
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Des Plaines, Illinois 60018

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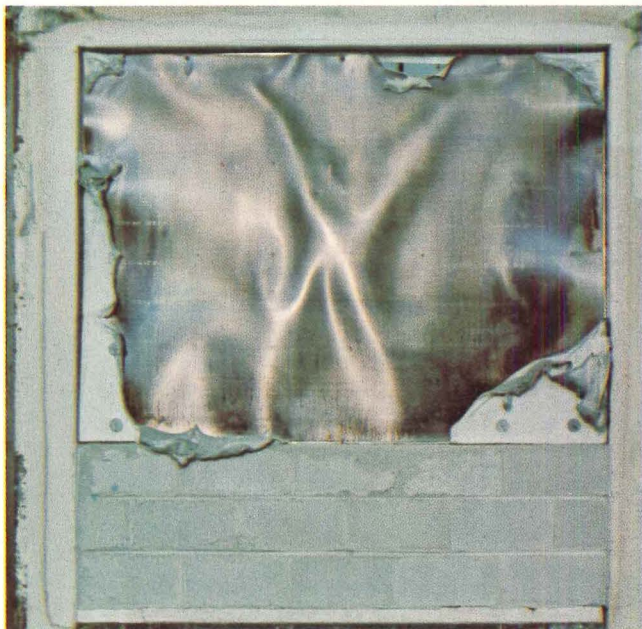
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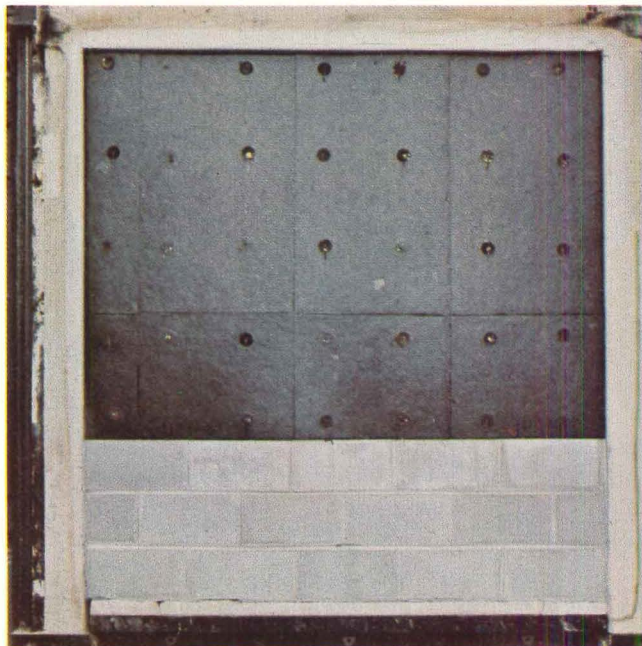


▲ Furnace fire comparison test at the U.S.G. Research Center resulted in complete disintegration of polyurethane foam insulation within five minutes.



▲ Identical fire testing of glass fiber curtain wall insulation resulted in melting and general deterioration within twenty-six minutes.

▼ Same test, dramatically different result. After a 2-hour exposure, THERMAFIBER Curtain Wall insulation remained intact and still afforded protection to the aluminum panel.



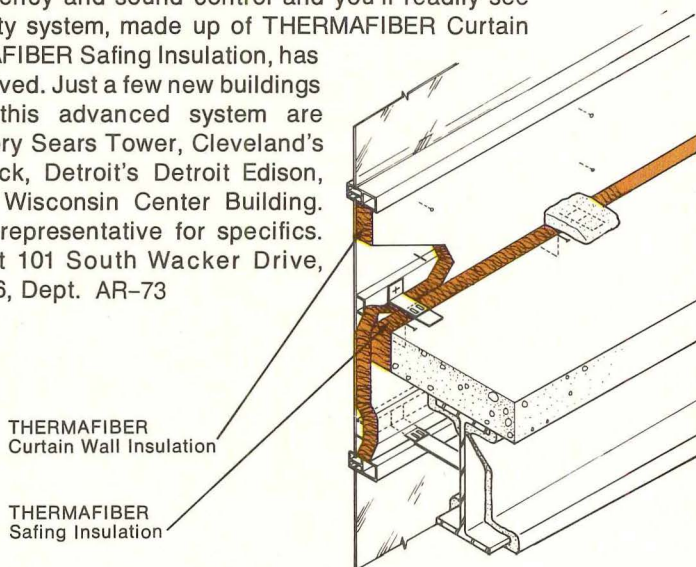
New THERMAFIBER[®] fire-safety system for high-rise construction.

THERMAFIBER Curtain Wall Insulation proved its effectiveness in recent 2 and 3-hour fire tests witnessed and certified by recognized consulting engineers. Temperatures were controlled to follow the ASTM E119 standard time-temperature curve. THERMAFIBER Curtain Wall Insulation protects spandrel panels, exterior column covers, window and track fillers. This quality fire-resistant product is available in regular blankets or foil-faced to eliminate need for separate vapor barrier. Attachment is mechanical using impaling clips or fasteners. See test pictures at left for the revealing results of this highly effective fire-safety system component.

THERMAFIBER Safing Insulation also proved its superior fire-resistance in a separate 3-hour fire test. Furnace temperatures conformed to the ASTM E119 time-temperature curve. Results showed a melt point of over 2000°F. The Fire Hazard Classification for unfaced curtain wall and safing, tested in accordance with ASTM E84, is Flame Spread 15, Fuel Contributed 0, Smoke Developed 0 (foil-faced: 25-0-0).

THERMAFIBER Safing Insulation provides the compressibility to allow it to be installed between the floor and curtain wall; yet it's sufficiently resilient to seal the gap tightly. Insertion on support brackets or impaling clips is recommended. THERMAFIBER is non-corrosive to steel or aluminum, vermin-proof, moisture-resistant and mildew-proof.

Add thermal efficiency and sound control and you'll readily see why this fire-safety system, made up of THERMAFIBER Curtain Wall and THERMAFIBER Safing Insulation, has been so well received. Just a few new buildings now employing this advanced system are Chicago's 110-story Sears Tower, Cleveland's Diamond Shamrock, Detroit's Detroit Edison, and Milwaukee's Wisconsin Center Building. See your U.S.G. representative for specifics. Or write to us at 101 South Wacker Drive, Chicago, Ill. 60606, Dept. AR-73



UNITED STATES GYPSUM 
BUILDING AMERICA

For more data, circle 94 on inquiry card

**It's not your
cup of tea,
but it may be
your problem.**

Times have changed.

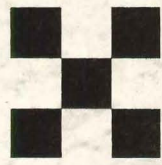
As an architect, you are often specifying carpets for institutional buildings where only a few short years ago carpeting was unheard of and unthought of.

Sometimes the owner wants carpet because of the low noise factors and sometimes simply for appearance—and there you are caught between the pile and the coffee spots. Not only must you specify a good durable carpet but you feel responsible to suggest a proper maintenance procedure to keep that carpet

clean and attractive.

Carpetsheen works fast, is easy to use and doesn't require the usual expensive carpet care equipment, either. Best of all, it does an outstanding cleaning job on both natural and synthetic fibers...including shag. Even the toughest spills, like coffee, cola, tar and blood come out with Carpetsheen.

We would be happy to send you our "How to Care for Carpets Booklet" which you can incorporate with the Owner's Maintenance Manual.



The all-in-one carpet care product.

CARPETSHEEN
by hillyard

Professional floor care products worldwide
Corporate offices: St. Joseph, Missouri 64502



31222

For more data, circle 95 on inquiry card

Glasweld gives you the durability of masonry, the beauty of glass, the flame-resistance of stone, and the low cost of Glasweld.

Oregon Institute of Technology, Klamath Falls, Oregon.
Skidmore, Owings & Merrill, Architects.



With all that going for it, no wonder the architects chose Glasweld® for this building in Oregon.

And no wonder builders and architects are using Glasweld to achieve interesting effects on low-rise buildings, as well as skyscrapers.

Glasweld is a flat, inorganic fiber-reinforced panel, coated with an all-mineral, colored enamel surface.

It is highly versatile, too. Except for the windows, all

major surfaces in this photograph are Glasweld. Window-wall insert panels, fascias and fabricated coffer soffits. Even interior wall linings.

Another feature is permanence. The kind you find in the very best grades of porcelain enamel and ceramic tile.

As if that weren't enough: Glasweld is incombustible, waterproof, impervious to stains, simple to cut and drill, and easily applied. So, installation and maintenance

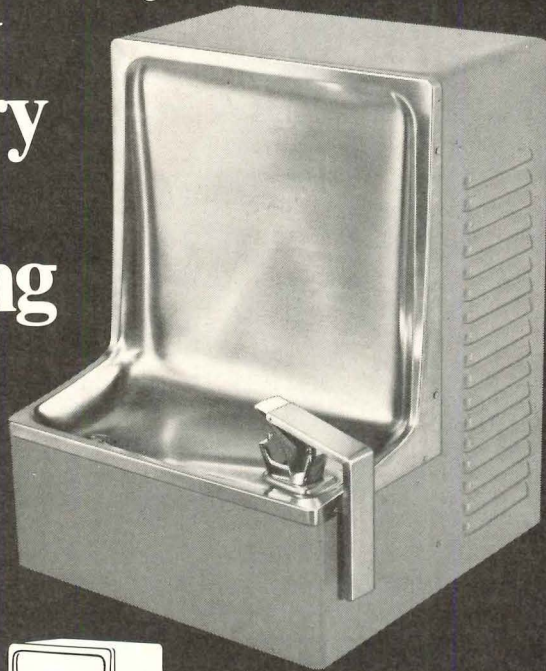
costs are low.

But the real beauty of Glasweld is on the surface. The fine-brushed slate surface, the two textured sand finishes, and the 23 other colors.

Like to know more? Contact your U.S. Plywood Branch Office. We can tell you all about Glasweld *and* the rest of our extensive line of exterior cladding.

EXTERIOR
CLADDING BY
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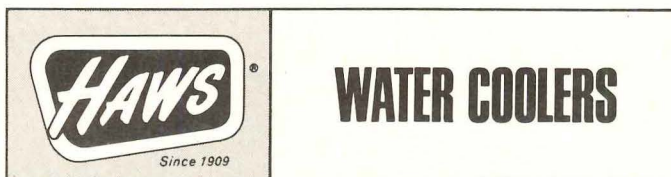
A necessary facility for every public building



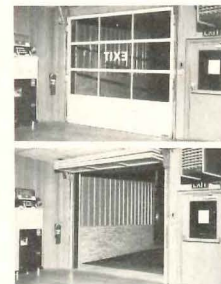
Haws HWC-6 water cooler is designed for persons in wheelchairs. It extends out from the wall and is mounted at a convenient height from the floor so that a person can easily wheel up to it. A compound-action bubbler valve actuates the cooler from a push on the side or top, making it easy to operate by handicapped persons.

Model HWC-6 helps you comply with public law 90-480 which states that buildings constructed, leased, or financed by the federal government must provide facilities suitable for use by the physically handicapped.

Available in stainless steel at extra cost. Dual height water cooler fountains also available. Write for detailed information. **Haws Drinking Faucet Co., 4th & Page Sts., Berkeley, Ca. 94710.**



STACKING OVERHEAD DOORS /



The *Verti-Pak* stacking door eliminates the need for an overhead track assembly. Working on hinged bi-fold sections and riding on quiet, nylon tire ball bearing rollers, the stacking door saves space. Manufactured in aluminum it is available in many styles and sizes for standard openings. Special sizes are available upon request. ■ Bernardi Brothers, Inc., Harrisburg, Pa.

Circle 312 on inquiry card

FIREPROOFING /

A system to fireproof structural steel, and replacing sprayed fireproofing, is claimed by the company to help protect construction workers and the general public by eliminating the dispersion of pollutants. The fire-tested and UL rated *Structo-Gard* system consists of mineral fiber board which is applied to steel beams and columns, utilizing a stud welding gun which fixes the material to the structural member with a steel stud and friction washer. ■ Johns-Manville, Denver, Colo.



Circle 313 on inquiry card

SPIRAL STAIR /



Made of all-stock components, this installation actually consists of two spiral stairs stacked on a single core pipe. Treads are adjustable. Interior or exterior installation is recommended. Available in three stock sizes for space-saving convenience: 4 ft, 5 ft and 6 ft in diameter. ■

Logan Co., Louisville, Ky.

Circle 314 on inquiry card

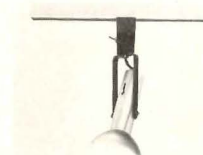
FIRE DETECTOR /

The unit, 7 in. in diameter, is an ionization-type detector, capable of sensing products of combustion in all four stages of a fire. Its distinctive, audible alarm horn can awaken people who are sound asleep. The unit is designed for direct ceiling surface mounting or mounting to a 1 1/8 in. deep, 4 in. square outlet box. UL listed. ■ BRK Electronics, Aurora, Ill.



Circle 315 on inquiry card

TRACK LIGHTS /



A modular track lighting system for window display, showrooms, art galleries, etc. comes in standard 4 ft and 8 ft tracks that can be cut to any desired length. Each fixture has its own on/off switch. Units with

white, black and satin aluminum finishes are available. Bronze finishes may be obtained on special order. ■ Lightron of Cornwall, Cornwall-on-Hudson, N.Y.

Circle 316 on inquiry card

more products on page 194

For more data, circle 97 on inquiry card



a) Grandstand, Indiana State Fairgrounds, Indianapolis, Ind. b) Kimberly-Clark Warehouse, Fullerton, Calif. c) Berths 80 & 82, Elizabeth-Port Authority Marine Terminal, in Elizabeth, N.J. d) Indoor pool, Kensington Club, Inc., South Bend, Ind. e) Delta Air Lines Hangar, Atlanta, Ga.

This is Alcoa Snug Rib roofing.
It's flat, tight and handsome.

Alcoa® Snug Rib roofing gives you all the advantages and savings of low-pitch construction plus excellent leak resistance. Since slopes as low as ¼ in. in 12 in. are possible, there's less dead space to heat or air condition. The patented Snug Seam® joint holds panel edges securely in place to create a weathertight seal, and there are no through fasteners to penetrate the weathering membrane. Since Snug Rib roofing is a "floating" system, it moves under thermal cycling, so locked-up thermal stresses are eliminated. Installa-

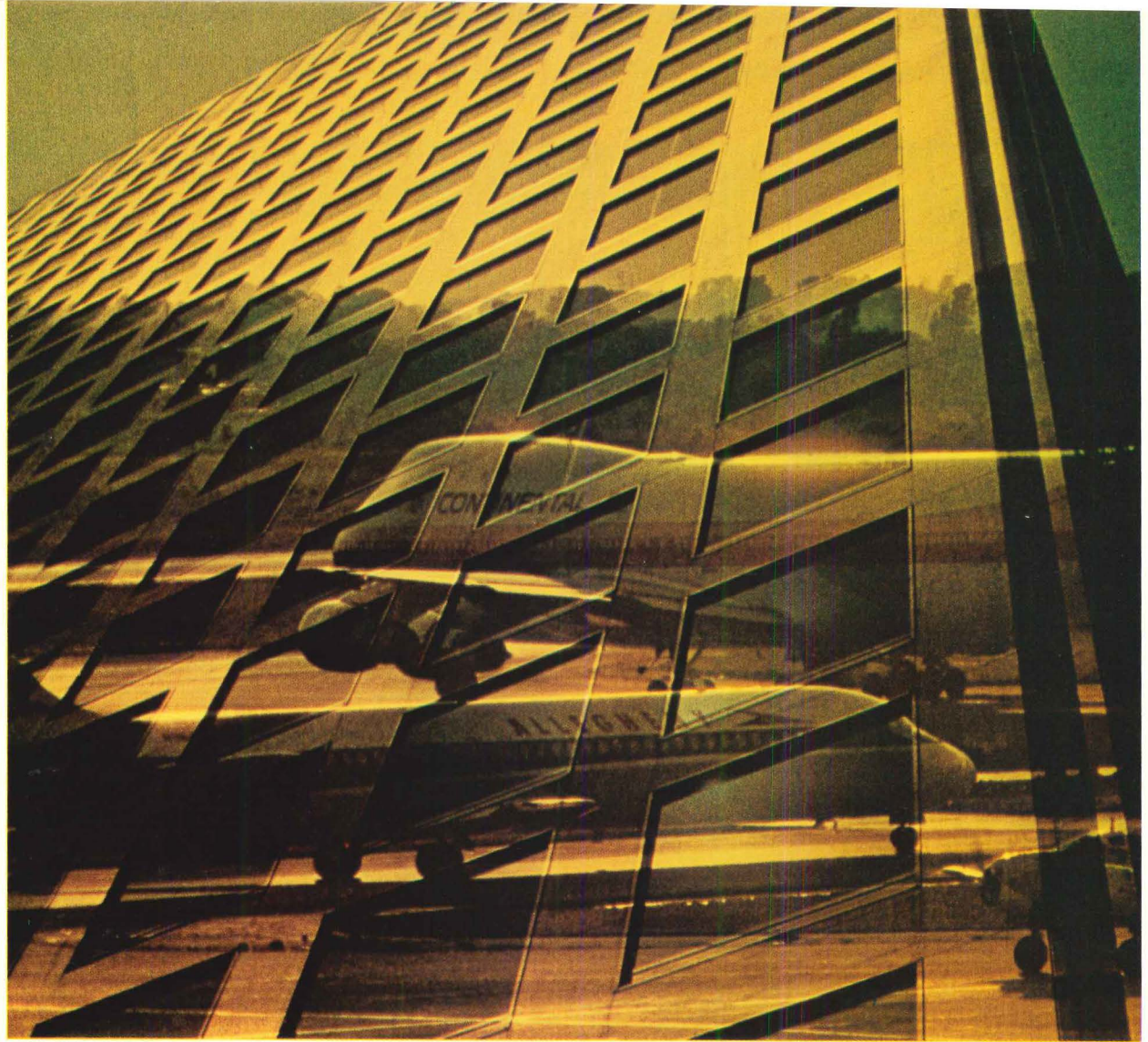
tion is fast and easy, and savings continue over the life of the building because aluminum requires so little maintenance. On most buildings end laps can be eliminated because lengths are limited only by shipping conditions. Handsome Alcoa Snug Rib roofing is ideal for swim clubs, industrial and port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



Change for the better with Alcoa Aluminum



For more data, circle 98 on inquiry card



You're looking at Sound Control

Shatterproof Sound Control Glass doesn't look different, it just sounds different. Quiet, peaceful, relaxed.

Take a good look. Sound Control is serious business. Without it . . . health is endangered, productivity falls off, vacancies occur, and businesses are forced to re-locate.

With it a building has everything going. Especially when Sound Control is combined with other Shatterproof functions such as Heat and Cold Protection, Solar Rejection, Glare Reduction, Security and Safety. And reduced operating costs.

In clear and tones of bronze and gray as well as subdued reflective tones of bronze, gold, gray, and chrome . . . in the largest quality sizes in the industry.

For a deeper look at Sound Control write for our Sound Control Brochure. Shatterproof Glass Corporation, Dept. 101B, 4815 Cabot Ave., Detroit, Michigan 48210. Phone: 313 / 582-6200.

Shatterproof
GLASS CORPORATION *Architectural Division*

For more data, circle 99 on inquiry card



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... alive with individuality, personality and warmth. New Summitstyles provide that 'handcrafted' appearance... each tile unique yet "perfect" together. Summitstyles are for wherever there's creative concern for individuality, color, decoration, texture and beauty... at a cost that's less than some wall surfaces that wear out. Summitstyles... for walls

everywhere—in kitchens and corridors... baths or boutiques... and for decor from intimate to animated.

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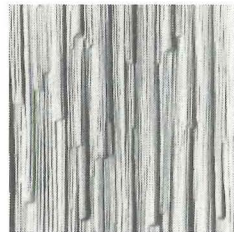
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 glass insulation... plus
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 to meet almost any
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 requirement. Shown
 here are just a few...



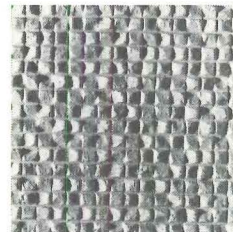
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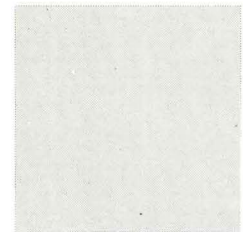
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 feature a bold mosaic
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J-M's all-in-one wall.

A new total wall concept that provides fast enclosure,
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Here's an exterior panel system that could completely change your ideas about walls. J-M's new total wall concept offers almost endless design possibilities—gives the builder new latitude and versatility—while providing important economies resulting from shop fabrication and panel-

ization, fast enclosure, lower construction costs and weight savings.

The system is particularly suited for middle and high rise apartments, office and commercial buildings. It permits exterior treatments which combine the appearance and beauty of natural stone

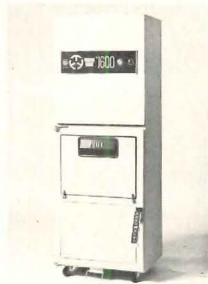
in a simulated product with the accent of reverse or batten joints.

J-M has put it all together in an all-in-one wall system that's attractive, that goes together fast, goes up fast. Details are yours on request from Johns-Manville, Box 5108, Denver, Colorado 80217.

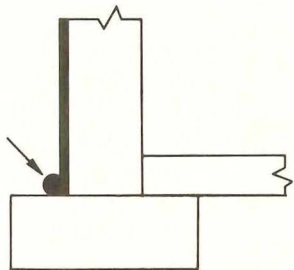
Johns-Manville 

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

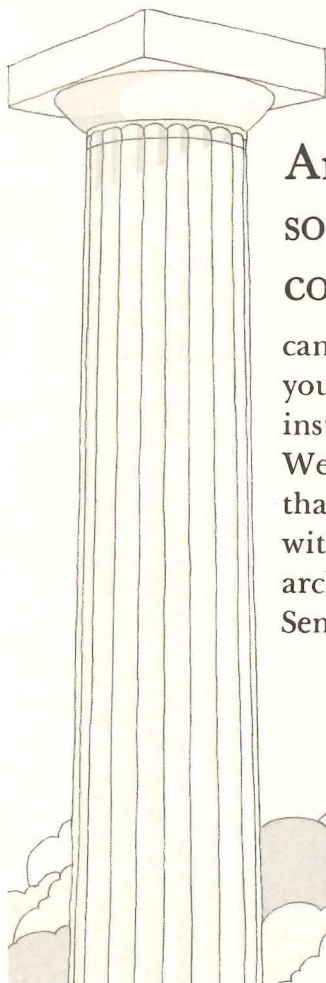


For more data, circle 103 on inquiry card



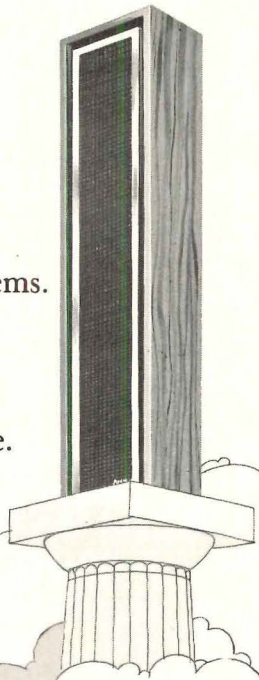
VOLCLAY BENTONITE PANEL WATER-PROOFING SYSTEM IMPROVED. A new method has been developed to seal the joint where below-grade walls bear on footings. Bagged bentonite, previously poured along the base of panel protected walls, has been replaced with bentonite packed in water soluble plastic units 2'0" long x 2" diameter, called Volclay Hydrobar Tubes. "Hydrobar" placement eliminates pouring time and assures uniform coverage, along a critical area. Write: American Colloid Company, P.O. Box 228, Skokie, Illinois 60076.

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The ARIES Pneumatic stool . . . a bold new venture in pneumatic seating comfort that challenges traditional raised seating concepts. Five shell designs atop a sturdy, modern base with wide-track Kevi casters or glides. Seat and footrest adjust pneumatically within a 7" range. A star is born . . . ARIES from Krueger.

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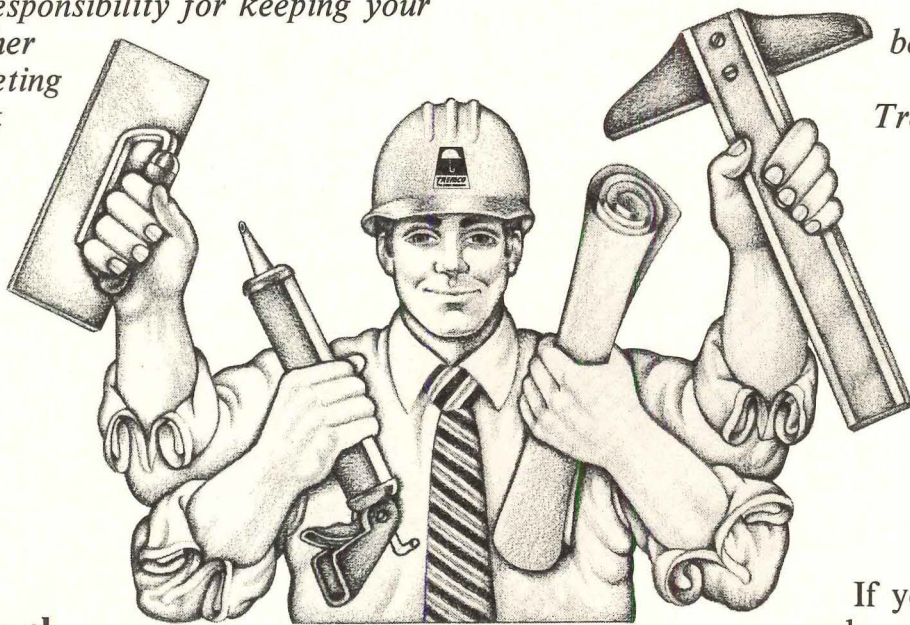
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You can talk to a lot of different people about a lot of different waterproofing systems. Or you can talk to us about it all.

Think of all the advantages there are to having one source for all your waterproofing needs — convenience, assured system compatibility and one overall responsibility for keeping your building dry. Rather than 3 or 4 competing sources, you work with just one. Tremco's

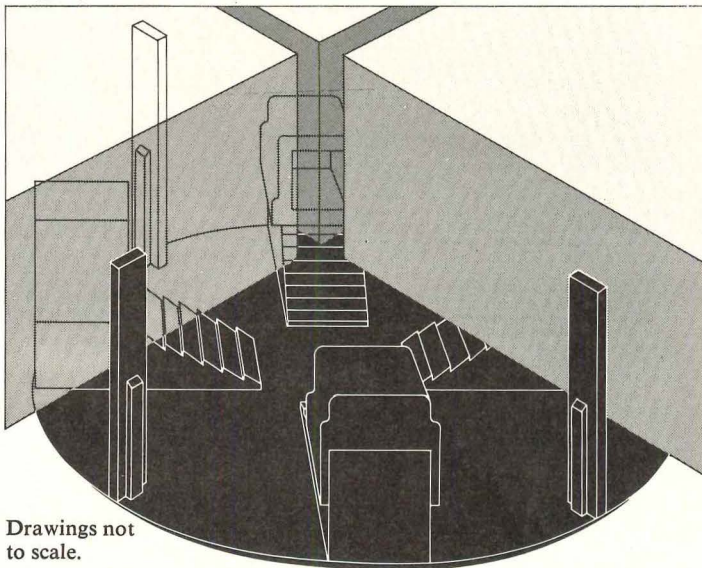
representative assists you with specifications, information and service from drawing board to job site instruction. And wherever you need waterproofing — below, on or above grade — there's a Tremco system that will do the job effectively.



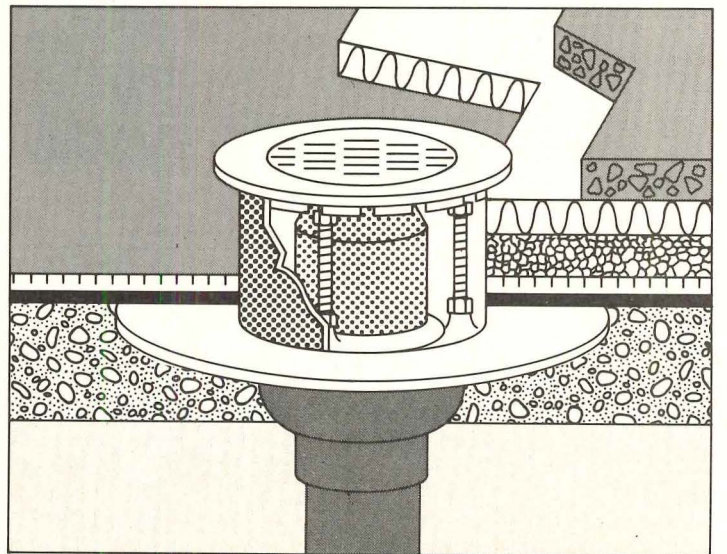
Two systems for keeping water out at the ground level.

TREMproof™ liquid polymers form a monolithic seamless blanket. They are adaptable to insulated or non-insulated applications, exhibit excellent cold weather flexibility and elongation properties, and will withstand continuous water immersion. These properties make them perfect for use with either of the following waterproofing systems.

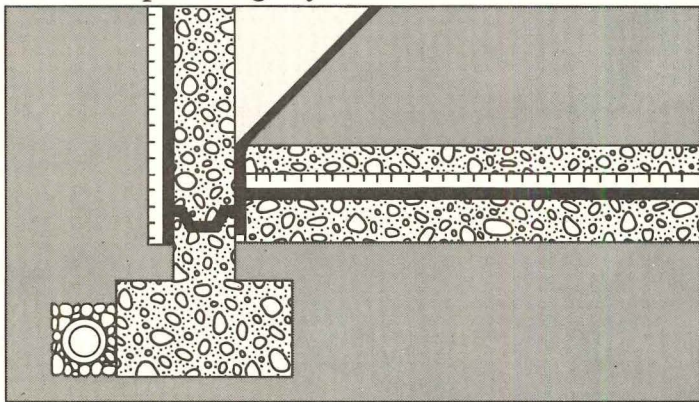
If you're considering a decorative plaza, deck or terrace, you should consider pavers. Our KingPin™ pedestal gives you design freedom, a level paver surface and uniform open joints between pavers. The KingPin supports the paver surface above the structural slab waterproofed with TREMproof. Water runs through the open joints in the paver surface and down the drains at the structural slab level.



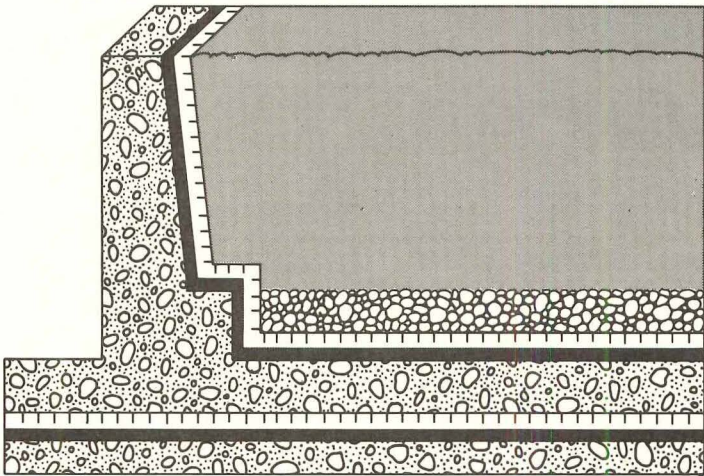
Drawings not to scale.



If you're designing a poured concrete wearing slab, our unique All-Level Drain used with TREMproof assures positive drainage on all levels. Water is taken off the traffic surfaces, the insulation layer, the percolation layer, and the waterproofing layer itself.



Of course TREMproof liquid polymers can be used for the waterproofing of foundations, planters, reflecting pools, etc. They're self-adhering and become an integral part of the



structure. Their superior adhesive quality prevents any lateral movement of water between the substrate and waterproofing blanket.

Systems to waterproof traffic-bearing surfaces. TREMproof Systems also come in a decorative, moisture-curing liquid polymer for the traffic-bearing surface of plazas, balconies, terraces, interior floors, etc. It cures to a flexible, seamless blanket and becomes an integral part of the structure. It's easy to use and has excel-

lent resistance to abrasion, chemical spillage and ponded water.

Systems for interior waterproofing.

For those difficult interior waterproofing jobs such as washrooms, and mechanical equipment rooms, TREMproof Systems make for easy, labor saving application in single- or twin-slab construction.

A variety of masonry preservatives.

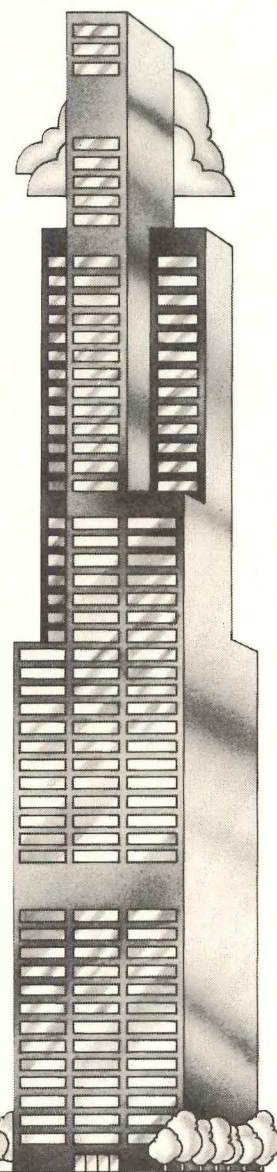
To complete the waterproofing job, Tremco can provide you with a wide variety of preservatives to keep water out of masonry walls. You can select from heavy-bodied decorative preservatives available in architectural colors. Or, choose from our clear, transparent preservatives that retain the natural beauty of the masonry.

A complete system, one source.

Is there any reason why Tremco shouldn't be your one source for waterproofing?

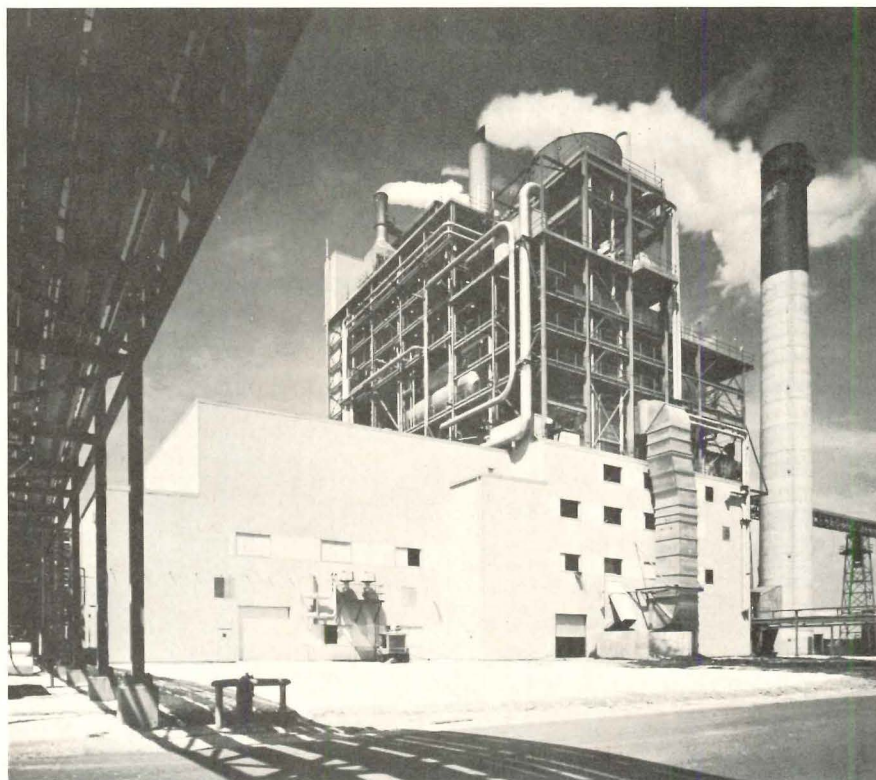
We've waterproofed some of the world's largest buildings. For over 45 years, we've been providing top quality leak proof systems and products, such as our job proven sealants MONO®, DYmeric® and Lasto-Meric®, and our roofing edging system, Tremline™.

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Water is the life blood of a paper mill—but it can be murder on siding. So Boise Cascade's new mill in DeRidder, La., is protected from red rust by 200,000 square feet of Reynolds Aluminum Commercial Siding. The special Fluoropon Blue Colorweld® finish means the mill will stay new-looking for years. And economical. Maintenance costs—like installation costs—are minimal. The big, strong, lightweight panels see to that.

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



For more data, circle 108 on inquiry card

PANELIZED BUILDING /



This octagon-shaped building can be assembled as a single unit or one of a group, and is available in 800 and 1200 sq ft models. The basic structure without panels suggests use as a park pavilion. Panel walls include concession windows, display windows, sliding glass doors, garage doors, etc., all factory-produced to any requirements. Walls are insulated and the building may be wired, plumbed, etc. ■ Game Time, Inc., Litchfield, Mich.

Circle 317 on inquiry card

FIRE-ALARM SYSTEM /

For high-rise structures, Directone couples both a distinctive instantly-recognized fire alarm alerting signal and a voice-command communication for directing occupants to safe locations. The communication module, with its microphone switch, automatically overrides the continuous fire tone and permits evacuation commands to be given directly through the same fire alarm horn. ■ Federal Sign & Signal Corp., Shelby, Ohio.



Circle 318 on inquiry card

ELECTRIFICATION SYSTEM /



Chan-L-Wire is a type of overhead electrification that provides means of tapping off up to 277-volt lighting fixtures, power tools or other electrical equipment at any place, and in any combination, according to the company. The system combines a four-conductor flat cable assembly that installs smoothly in standard 1½ in. 12 gauge U-shaped metal channel, and offers color coded taps. Recommended for extensive runs of fluorescent lighting in warehouses, plants and major commercial buildings. ■ Rucker Insul-8 Corp., San Carlos, Cal.

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PEDESTAL FOUNTAIN Model 3030,

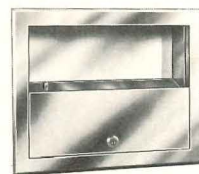
made of concrete with vandal-resistant features, has a stainless steel receptor and is available in either exposed aggregate or sandblasted finish, made to any color specified by the customer. A matching circular concrete base step is available.

■ Haws Drinking Faucet Co., Berkeley, Cal.



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FLUSH-FRONT ASH TRAY /



Designed for recessing in 3 in. walls, this wall urn ash tray is vandal-proof, stainless steel and fits a wall opening 12 in. wide by 9½ in. high. The cabinet door is equipped with a tumbler lock. No mitered corners detract from the seamless appearance. ■ Bobrick Washroom Equipment, Inc., New York City.

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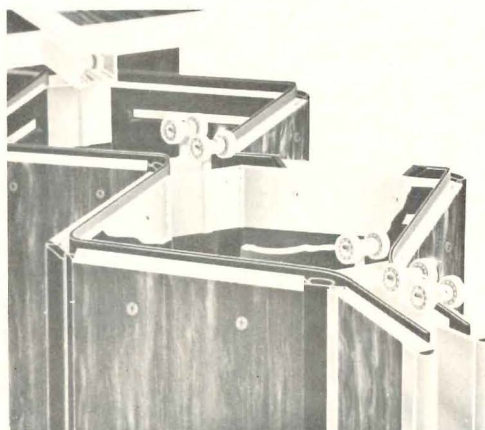
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Separate padding under a carpet will increase its life.
Don't specify carpeting without separate padding.



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The future of parking garages is wide open!

(Because the steel-framed, long-span concept gives you more usable space at lower cost.)

Right now, an increasing number of long-span, open-type parking garages conceived in exposed steel are on the drawing boards—and many have already been constructed. For very good reasons.

Steel means fewer interior columns! Long-span, steel-framed structures are lighter, reduce the number of interior columns and need fewer footings. This means more wide open spaces. So, self-parking is easier and attendant-parking more efficient. And with steel, you're not tightly locked-in to a structural plan—you can rearrange the parking layout, and even add more levels at a later date.

Steel parking structures have low fire risk! A recent extensive survey showed that losses resulting from fire in open-type parking garages were insignificant. Realizing this, many cities are permitting code deviations in allowable heights and areas of unprotected steel parking structures. Also, a recent fire test conducted in an actual parking structure in Scranton, Pa., showed no



damage to bare steel structured members exposed to the fire. Naturally, with little or no fireproofing necessary, construction costs can be cut considerably.

Just how much can you save? Perhaps as much as \$1 per square foot!

Steel goes up faster! Erection of structures with steel can be faster than other systems. Recently, in Detroit, a three-level, open-deck parking struc-

of 156,800 sq. ft. was finished in just five and a half months. So, you can lower costs by lessening the time it takes to build!

Steel is more economical! Faster construction also means that you can generate cash flow much sooner. With this factor and all others considered, steel framing often turns out to be the most economical system. And with the benefit of more usable space, it is proving to be the most practical and desirable system, too.

Consider erecting your next parking garage with exposed steel...and

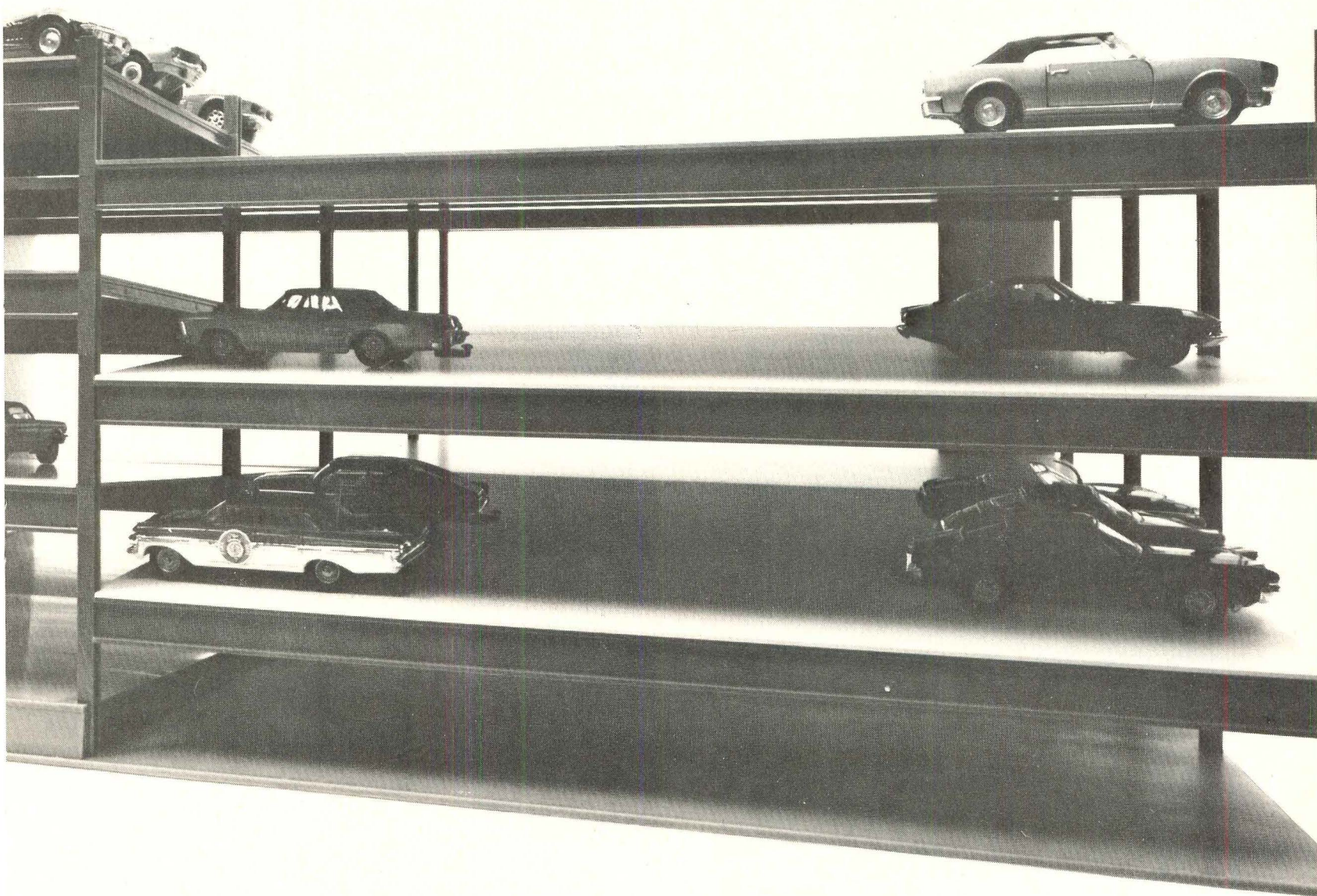
spaces!

For a copy of our Brochure "Technical Report on Steel-Framed Parking Structures" (ADUSS 27-5264-01) and to find out how we can help you program your next garage, call our nearest sales office and ask for a USS Construction Marketing Representative. Or write to U.S. Steel, Box 86, Pittsburgh, Pa. 15230.



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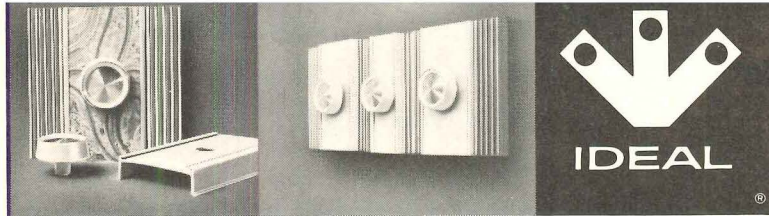
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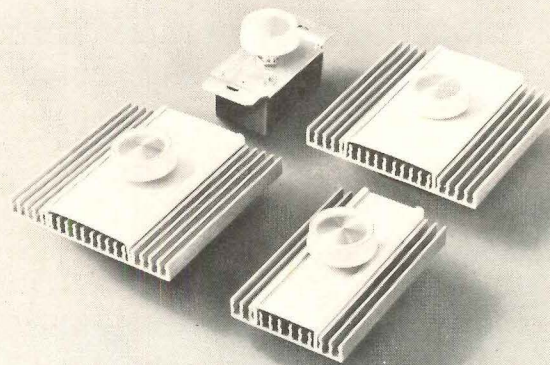
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Incandescent, Fluorescent Dimmer Switches from Ideal.

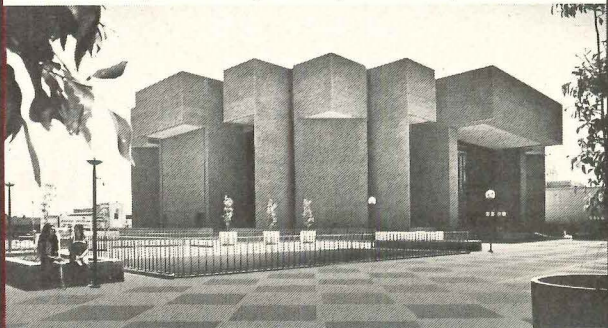
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IDEAL INDUSTRIES, INC., 1328G Becker Pl., Sycamore, Ill. 60178
In Canada: IDI Electric (Canada) Ltd., Ontario



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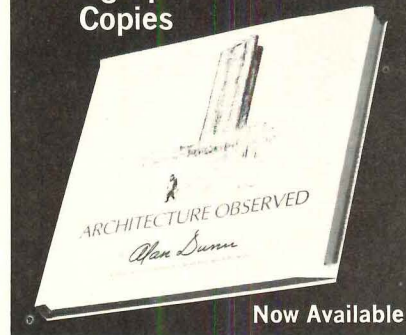
KEMIKO, Inc., Dept. AR7

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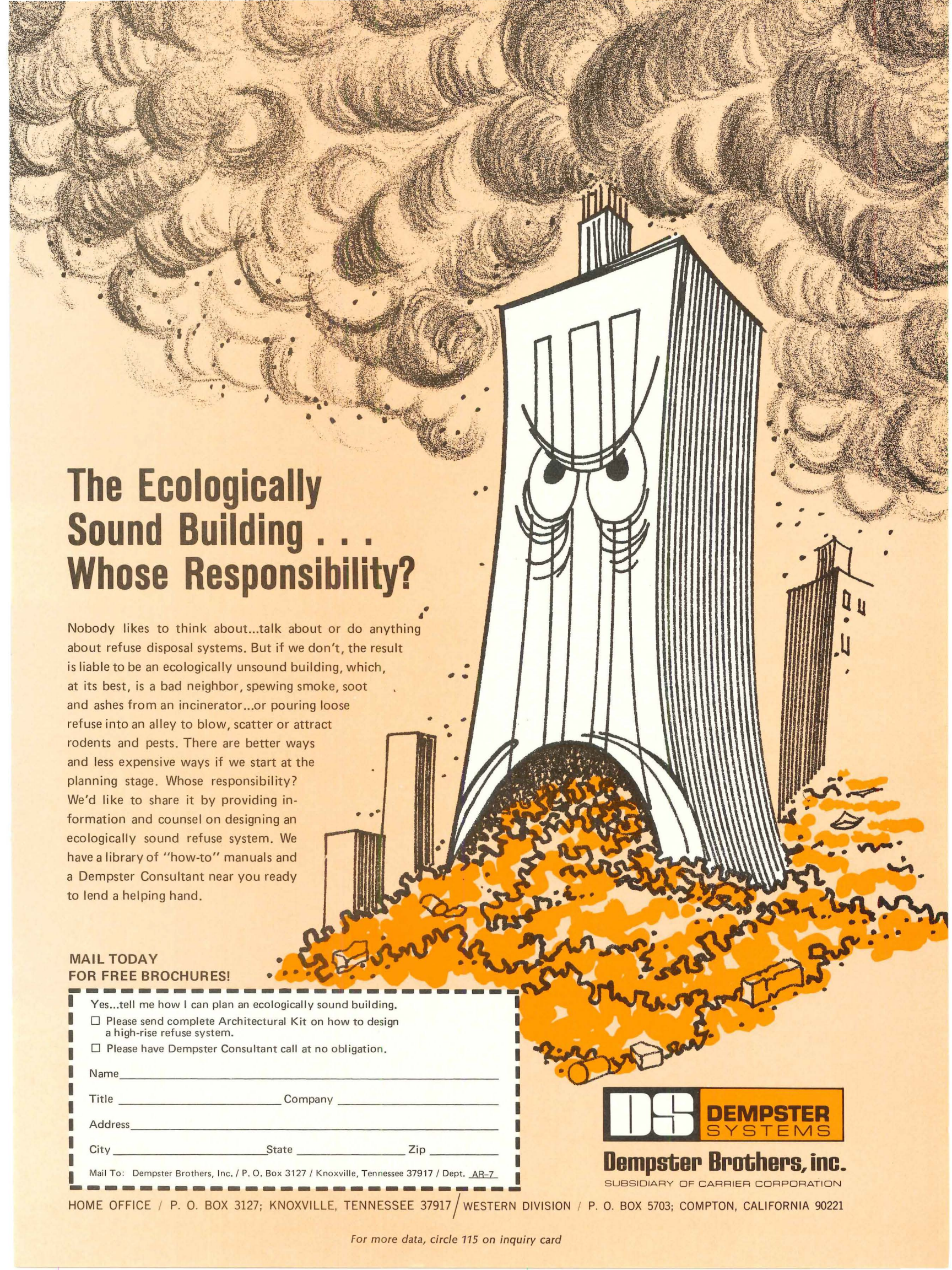
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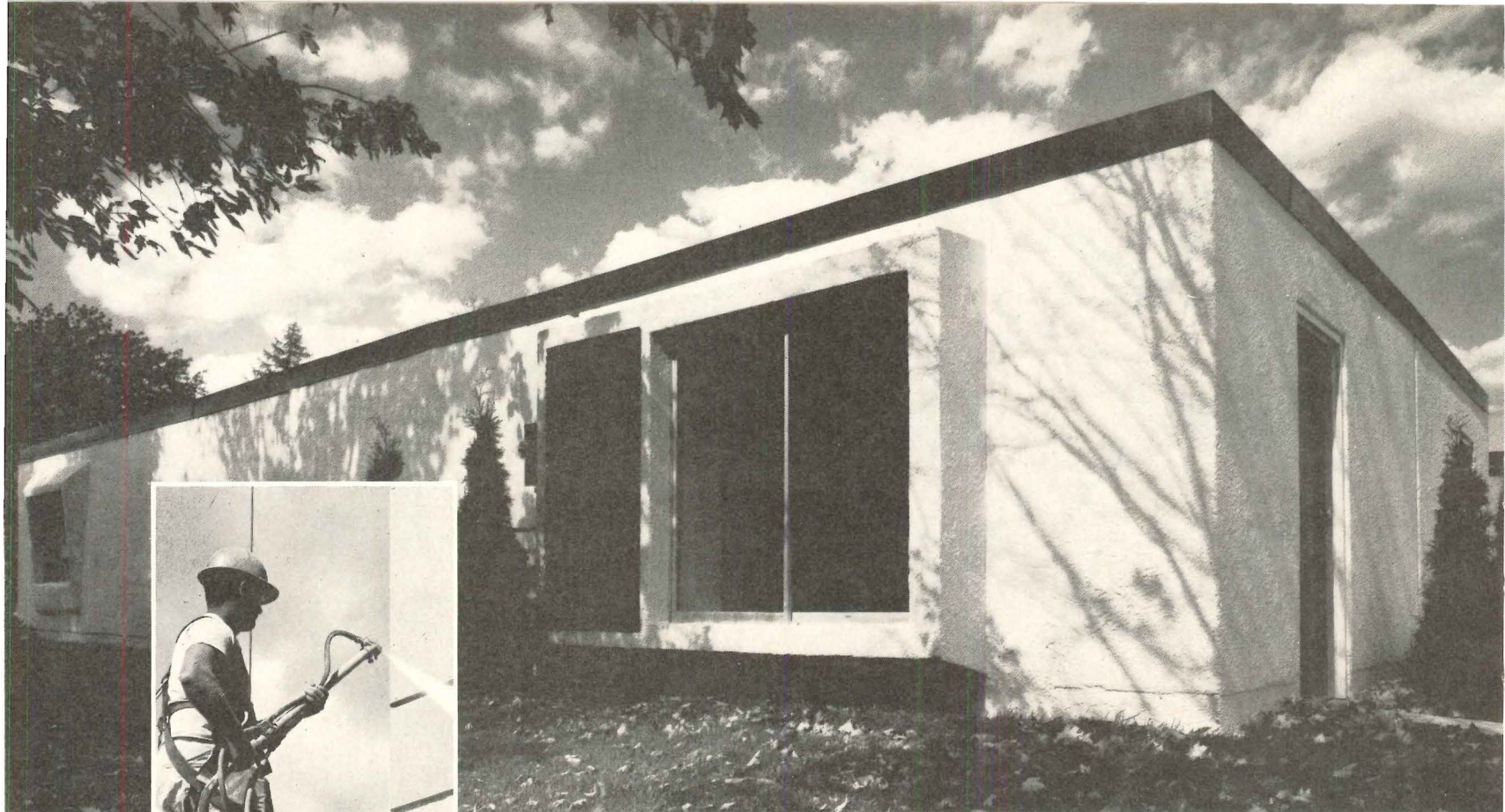


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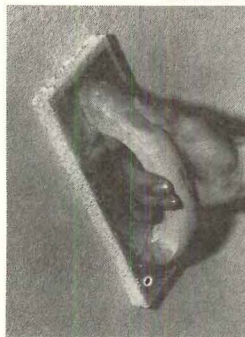
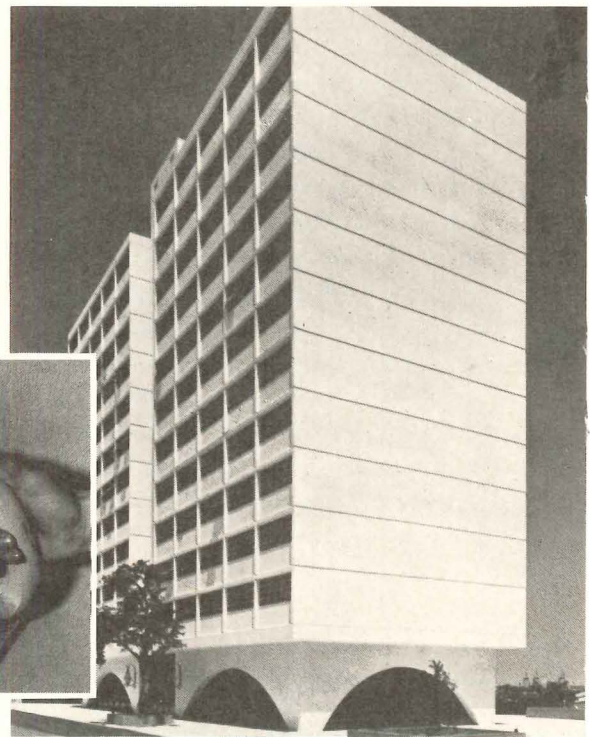
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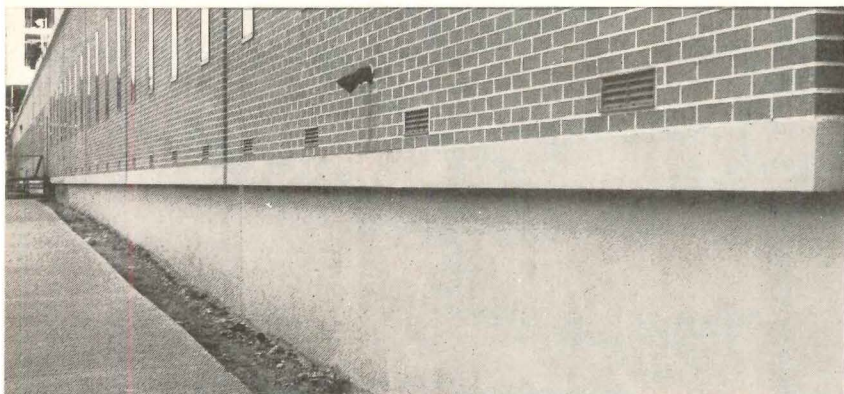
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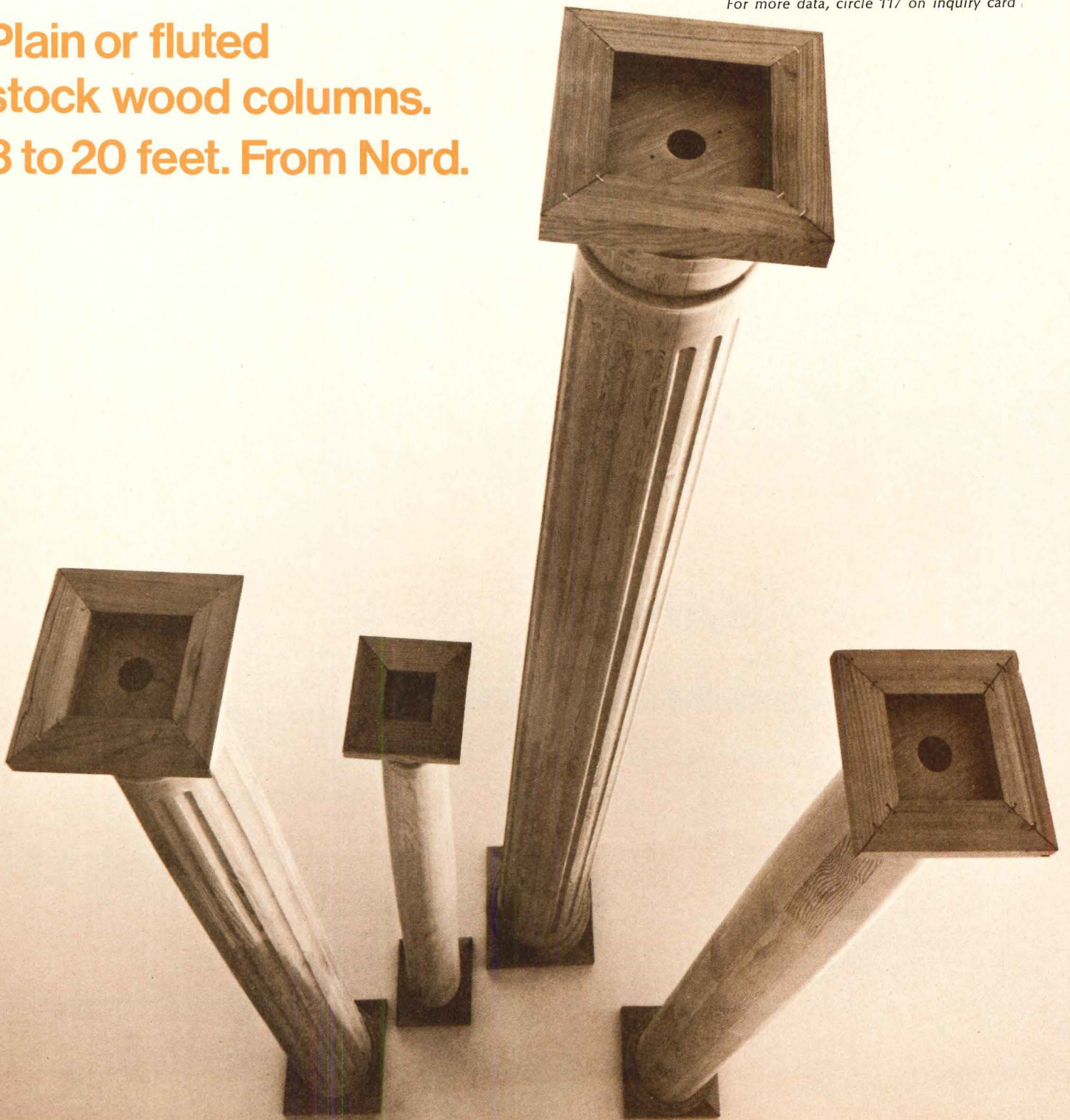
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FURNITURE PRICES / A 1973/1974 net price list for the trade, contains drawings, furniture specifications and a listing called "Furniture we can ship fast" . . . furniture that is stocked in depth. ■ Stendig, Inc., New York City.

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SMALL BLOWERS / An 8-page brochure describes three series of blowers that comply easily with OSHA noise requirements, fit within a 12 in. cube and weigh approximately 25 lbs. Blowers deliver up to 1000 cfm. ■ Paxton Products, Inc., Santa Monica, Cal.

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PREFINISHED WOOD DOORS / In embossed or plain finishes, and flame-resistant UL-approved, doors qualifying for B label or C label fire resistance rating have been introduced under the name *Dura-Print Dors*. Offered are hollow-core and solid-core flush doors and folding door units in choice of walnut or birch printed grains on lauan or hardboard (embossing on lauan doors only). ■ Mohawk Flush Doors, Inc., South Bend, Ind.

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PLAY/LEARN CATALOG / More than 40 new preschool products for self-development through creative play are described and illustrated in a new full-color catalog on child-scaled play environments, climbers, play shelters, slides, swings and do-it-yourself construction projects. Also included are graphic arts products, early-year trampolines, picnic-work tables, sand boxes, rest mats and cots, and storage units, all safety-engineered. ■ PlayLearn Products, St. Louis, Mo.

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GRAPHICS COMPUTER / A 12-page illustrated color brochure describing the *Cogo-8* minicomputer-based coordinate geometry system is available without charge to help engineers and architects solve graphics problems involving general land surveys, traverse adjustments, horizontal alignment and vertical curves. ■ Digital Equipment, Maynard, Mass.

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VERTICAL FILES / A low-cost contemporary grouping is described in an 8-page booklet available from the manufacturer. While the files are part of an economical, contemporary line, they are standard with a reinforced steel framework, corner torque plates to keep drawer openings square, cradle suspension that rolls on hardened steel balls and acrylic finishes. ■ Steelcase Inc., Grand Rapids, Mich.

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SIGNAGE / An identification systems approach is described in a 24-page catalog illustrating typical applications and also containing complete specifications for various types of building signage, including lettering, materials, mountings, colors and finishes. A special section outlines architectural specifications. ■ Jas. Matthews & Co., Pittsburgh, Pa.

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ENVIRONMENTAL IMPACT GUIDE / A new booklet *Assessing Environmental Impact* is being offered as a guide for managing the volume of necessary data required in the preparation of Environmental Impact Statements, Reports and Drafts under Federal and California Law. ■ Environmental Research & Counsel, San Clemente, Cal.

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- A Architectural File (green)
- I Industrial Construction File (blue)
- L Light Construction File (yellow)
- D Interior Design File (black)

A

A-L-Alcan Aluminum Corp.	170
A Alliance Wall Corporation	139
A-D Allied Chemical Corp., Fibers Div.	32
A-I-L Aluminum Co. of America	177
Amarlite Products Div.	157
A-I American Colloid	191
American Enka Corp.	67
Architectural Record Books ..	151, 198
Argos Products Co.	191
A-I-L-D Armstrong Cork Co.	143
A-I-L ASG Industries Inc.	49
Atlantic Richfield Company	183
A AVM Corporation Jamestown Products Division	56

B

A Bally Case & Cooler, Inc. ...3rd Cover Bell Helicopter Co.	41
Bethlehem Steel Corp.	16-17
A-I Bradley Corporation	152
Burning Division-Addressograph Multigraph Corporation	205
A-D Brunswick Corporation	153

C

A-L Caradco Division of Scovill Mfg. Co.	52-53
Carpet Cushion Council	195
A-I Ceco Corp.	73
A-I Celotex Corp.	43 to 47, 68-69
A Combustion Engineering—C-E Glass Division	76-77
Commercial Carpet Corporation	27
Cramer Industries, Inc.	54
A Crouse-Hinds Company	140-141

D

Dallas Market Center	32-1
Deering Milliken, Inc.	60
A Dempster Brothers, Inc.	199
I DeSoto, Inc.	171
A-I Detroit Diesel Allison Div.— General Motors	50-51
A Dimensional Plastics Corp.	159
A Dover Corp., Elevator Div.	2-3
D DuPont Textile Fibers—Tyvar ...	78
Dynamit Nobel of America Inc.	190A-190B

E

A Eastman Kodak Co.	18
A Easton Corporation, Dispenser Division	84

A Eaton Corp., Lock & Hardware Div., Norton Door Closer Dept.	168
Eaton Truck components/ATA Foundation	189

F

Folger Adam Co.	26
A Follansbee Steel Corp.	80
Forms & Surfaces	87

G

Gaco Western Inc.	32-4
A-I-L General Electric Co.	22-23
A-I-L-D Georgia-Pacific Corporation	64
GF Business Equipment	11, 13, 15
A Goodyear Tire & Rubber Co.	59
A-I-L Grace & Co., Construction Products, W.R.	164
Grinnell Fire Protection Systems	190

H

Hager Hinge Company	161-162
A Haws Drinking Faucet Company	176
A-L-D Hercules Incorporated	19
A-I Hillyard Chemical Co.	174
Holophane Co., Inc.	40

I

A Ickes-Braun Glasshouses Inc.	198
Ideal Industries Inc.	198
A Inland-Ryerson Construction Products Co.	154-155

J

A Jamestown Products Division; AVM Corporation	56
A-I Jennison-Wright Corp.	169
J.G. Furniture Company, Inc ...	85
A-I-L-D Johns-Manville Corp., Architectural Division	180
Jute Carpet Backing Council, Inc.	74

K

A-I-L Kaiser Mirawal	8
A Keene Corp.	20-21
Kemiko Inc.	198
A Kim Lighting Inc.	71
A-D Krueger	191

L

L'Architecture D'Aujourd'hui ...	172
A-I-L Libbey-Owens-Ford Co.	24-25

M

McGraw-Hill, Inc.	188
A McKee Door Co.	143
A-I McQuay Division McQuay— Perfex, Inc.	206
Medusa Corp.	156
i Monsanto Company, Textiles Div.	145-148
A Montgomery Elevator Co.	70
A Mosler/Airmatic Systems Division	14

N

A-I-L-D National Gypsum Co.	30-31
L-D Nord Co., E.A.	201
A Nor-Lake, Inc.	87

O

A Overly Mfg.	85
A-I-L-D Owens-Corning Fiberglas Corp.	75, 81

P

A-L-D Panelfold Doors, Inc.	195
A Parker Co., Charles	203
A-L Pella Rolscreen Co.	181-182
Pfizer Inc.-Minerals, Pigments, Metals Division	32-3
A-I Pittsburgh Corning Corp.	160
A-L-D Potlatch Corp.	150
PPG Industries Inc.	165
A-L PPG Industries, Inc., Commercial Glass	6-7
Process Solvent Co.	56

R

Rapistan Inc.	36
A-I Raynor Mfg. Co.	163
A-L Red Cedar Shingle & Handsplit Shake Bureau	12
A-I Republic Steel Corp.	142
A-I-L Reynolds Metals Co.	194
A-L Rohm & Haas Company	66
A Rus-Tique Brik	82-83

S

A Sargent & Company	28-29
A-I Shatterproof Glass Co.	178
A Silbrico Corp.	48
Sloan Valve Company	4th Cover
Southern California Gas Company	32-2
A Spaulding Co., J.H.	62
Speakman Company	144
A Spencer Turbine Co.	205
Square D Company	86
A Standard Dry Wall Products, Inc.	200
Steelcase Inc.	88
A Summitville Tiles, Inc.	179

T

A-I Thiokol Chemical Corp.	72
Thonet American Chair Company	65
A Tony Team, Inc., The	191
A-I Trane Co.	166-167
A Tremco Mfg. Co.	192-193
Trimble House	143

U

A-I-D United States Gypsum Co.	79, 173
A-L-D U.S. Plywood Corp.	175
A-I United States Steel Corp.	196-197

V

Vollrath Co.	158
-------------------	-----

W

Watson Mfg. Co.	42
Westinghouse Electric— Corporate	2nd Cover-1
Westinghouse Fluorescent Lamp Div.	186-187

X

Xerox Corporation	184-185
------------------------	---------

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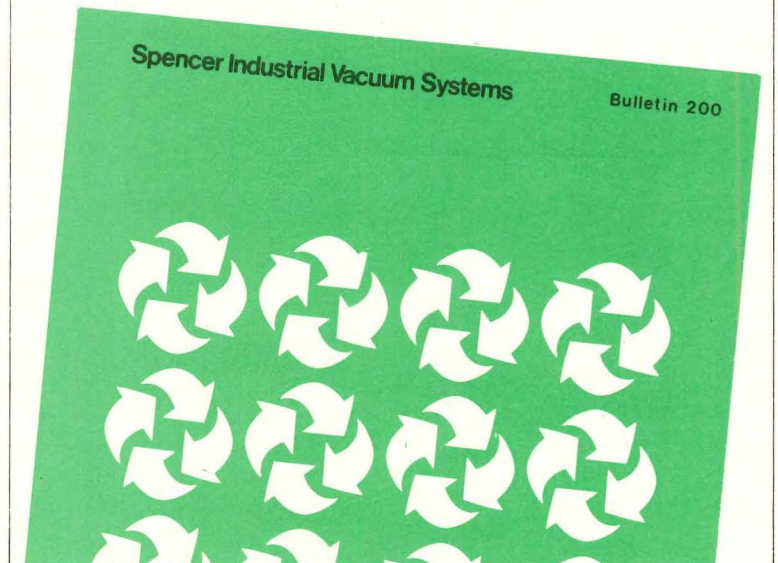
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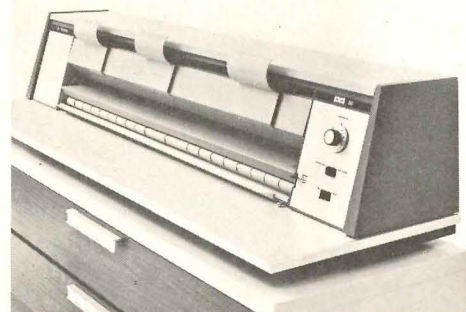
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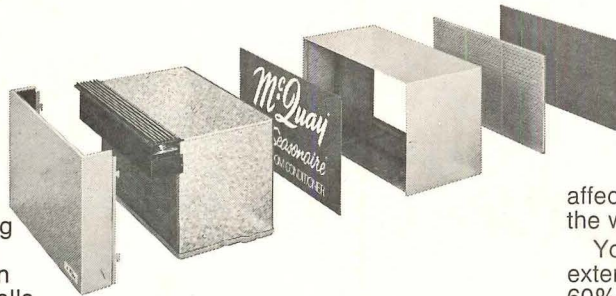


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Quiet? It's well-insulated to suppress sound, with a shielded room-blower intake and isolated compressor and fan motor. So the noise level is down where it should be.

Naturally, it's attractively designed to blend in with any decor, too. And of course there's individual room control so the occupant just picks the temperature he wants and the thermostat maintains it automatically.

Here's another plus: individual units can be turned off in unoccupied areas. Which reduces operating costs. And since each unit operates independently, any malfunction affects only one area rather than the whole building.

You can even specify a duct-extension option that permits up to 60% of the unit's capacity to be directed to an adjacent room located to the right or left of the unit.

We could go on and on about the new Seasonaire® Packaged Terminal Air Conditioner. And if you're interested, we'll send you all the facts. Just contact your McQuay representative or write to: McQuay Division, McQuay-Perflex Inc., Box 1551, 13600 Industrial Park Blvd., Minneapolis, Minn. 55440.

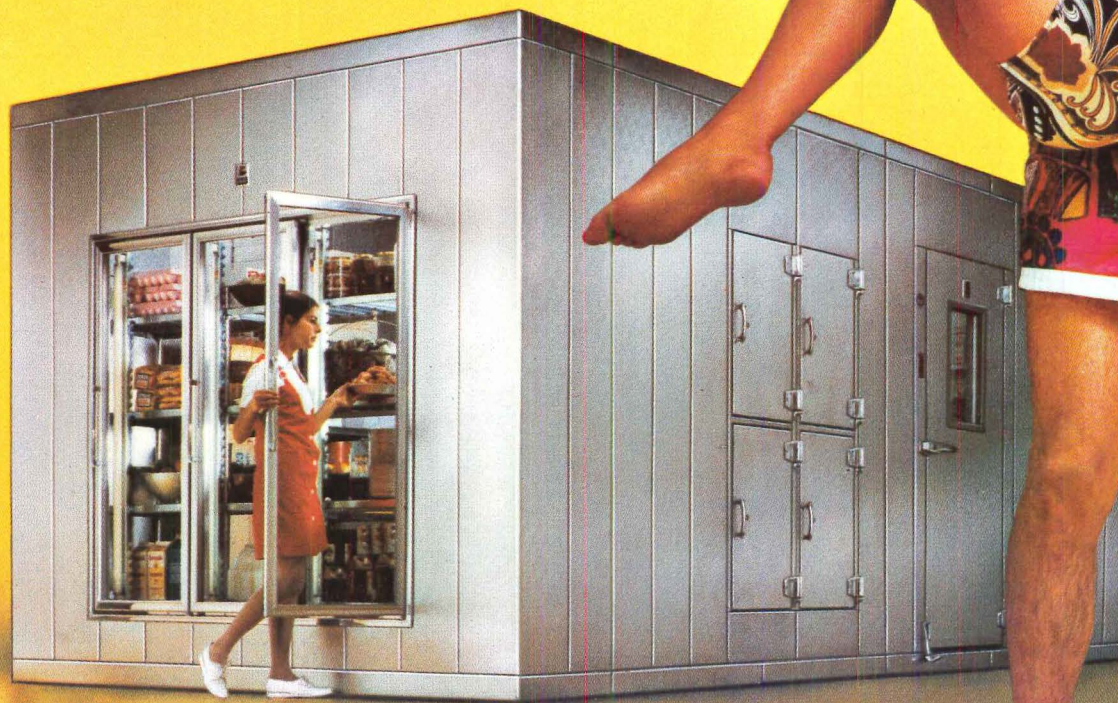
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Bally Walk-In Coolers and Freezers belong everywhere mass feeding takes place. They can be assembled in any size for indoor or outdoor use from standard panels insulated with four inches of foamed-in-place urethane, UL 25 low flame spread rated and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

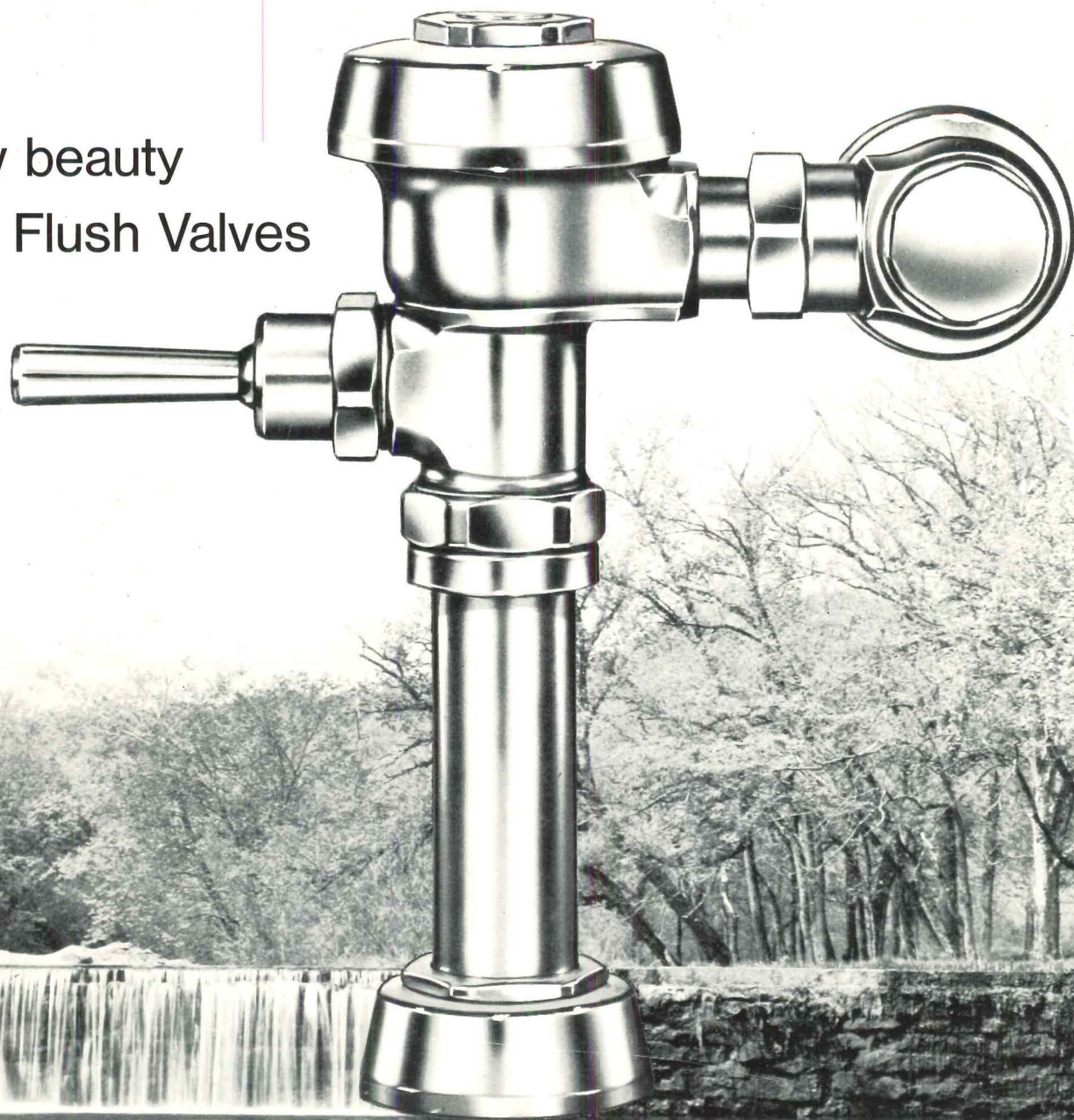


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