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IMAGES THAT ANIMATE THE DESIGN OF NORMAN JAFFE'S HOUSES

MOVEMENT SYSTEMS AS GENERATORS OF BUILT FORM: AN ARTICLE BY KALLMANN AND McKINNELL

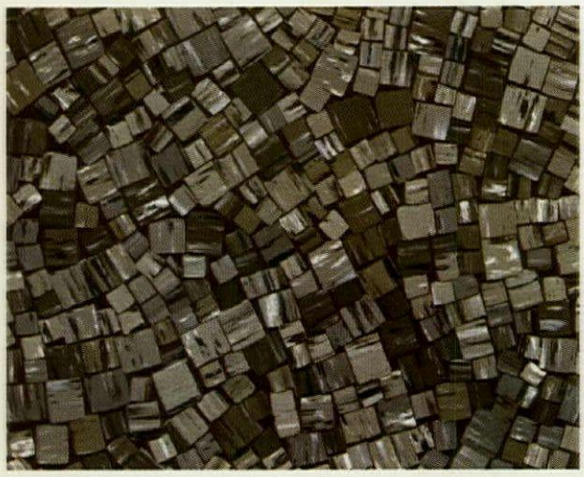
BUILDING TYPES STUDY: RECREATION

FULL CONTENTS ON PAGES 10 AND 11

ARCHITECTURAL RECORD

NOVEMBER 1975 11 A McGRAW-HILL PUBLICATION FOUR DOLLARS PER COPY

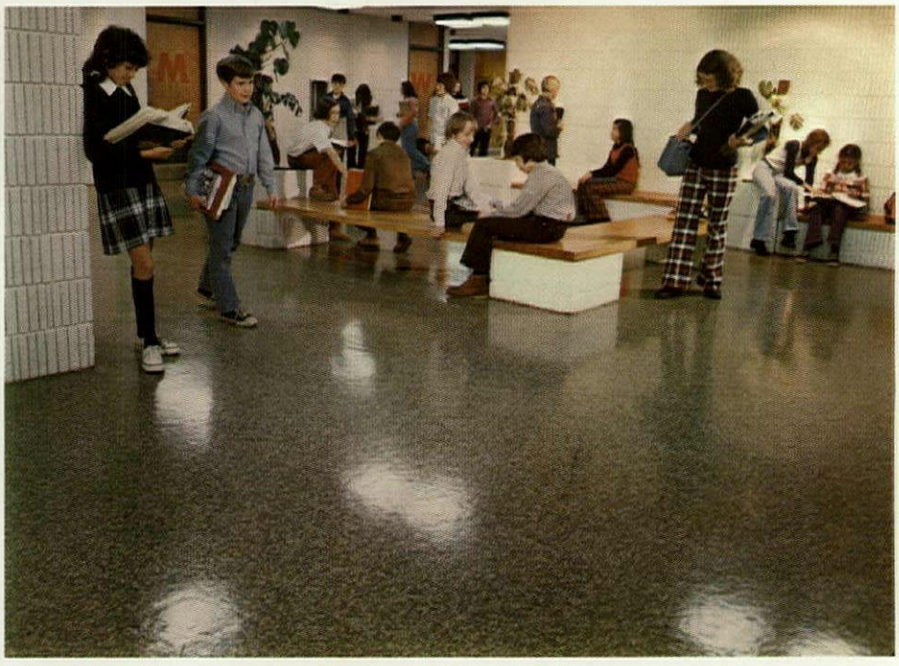
The Brigantine® floor from Armstrong. At Jonas Clarke Junior High School, it fights 777 kids a day and always comes back for more.



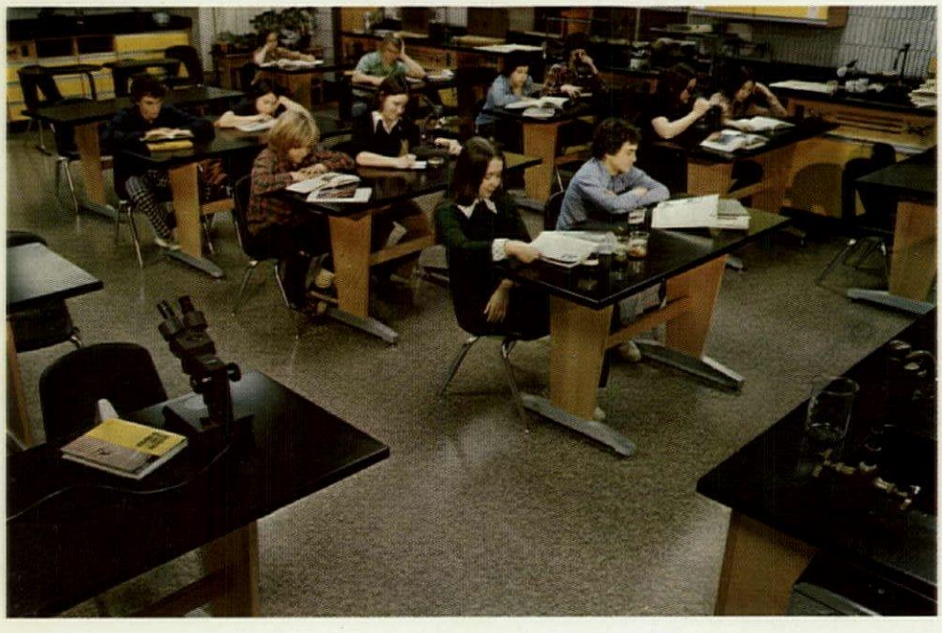
In a day's time, 777 kids can beat a floor covering senseless.

In a year's time, they can murder it.

But at Jonas Clarke Junior High in Lexington, Mass., the kids have met their match. In Brigantine Vinyl Corlon® from Armstrong. The sheet vinyl floor covering that's taken its punishment for two and a half years. And still looks almost as fresh and undaunted as the day it started out.



You'll find Brigantine throughout the school. In entrance halls, classrooms, labs, locker rooms, cafeteria. Where the kids track mud and snow on it, tramp busy feet on it, spill liquids and food all over it, do their darndest to make it roll over and play dead.



But for all its beauty, Brigantine is loaded with hardhearted practicality. Its vinyl composition is rugged enough for high-traffic areas. And since spills can't soak into Brigantine's

tough virtually nonporous surface, it's easy to keep sparkling clean. In fact, the high school's custodian will tell you that with Brigantine's dirt-hiding capability and a routine maintenance schedule, it's relatively simple to keep the floor looking its best.

Brigantine is available in a wide spectrum of colors that fit virtually any decor. And it comes in rolls 6 feet wide and up to 90 feet long, that not only make installation easy but eliminate a lot of seams. So if you need a floor that can take a beating and still look like a beauty with minimum care, you now know its name. Brigantine Vinyl Corlon. For more information, write Armstrong, 306 Rock Street, Lancaster, Pa. 17604.

Architects: Drummey Rosane Anderson, Inc., Wellesley, Mass. Flooring Contractor: M. Frank Higgins & Co., Inc., Boston, Mass.

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Letters to the editor

Your editorial in the August issue regarding the internship program proposed by NCARB and AIA was most encouraging. As a young architect who recently completed his required experience under the "old system" and successfully passed the new professional exam (an extremely relevant experience), I feel that there is a genuine need for and definite benefits to be gained by instituting such a program.

I must also congratulate NCARB and AIA in their apparent success in formulating and obtaining approval for such a program. Having attempted to institute such a program through the Professional Employment Practices Committee of the Detroit Chapter of the AIA, I can appreciate the effort involved.

However, I believe that the optimism expressed regarding the support by the employers in the profession will not be proven when the actual support is requested. This reliance might very well result in nothing more than "formalizing" the experience reporting system which exists today unless the sponsorship element, independent of the source of employment, and a valid means of interchange between participants is stressed. Otherwise, the important elements of objectivity and cross-fertilization might be lost.

I wholeheartedly support the effort and wish it every success. This is one architect who will say "yes" when he is asked to volunteer his time.

Thomas A. Luchi, architect
Lake Orion, Michigan

Bravo Robert L. Miller!

Your essay on dog house (September) was the best on record.

Bruno Bottarelli
A. H. Wunderlich & Associates
Addison, Illinois

Robert Miller's discussion of his seminal doghouse design (September) has had a lasting impact on my life and work. I have spent considerable energy trying to improve the interpersonal process between architect and client, and never once considered the real, vital issues involved in developing a program through interspecies communication. All I can say is "thanks" for printing something I can really sink my teeth into.

Fritz Steele, Ph.D.
Boston, Mass.

The interiors of the Westinghouse Round Rock facility are featured in July's RECORD. Unfortunately, the New York penchant for individual credit was misdirected my way. We want to thank Laurie Reams for a job well done.

Jeffry Corbin, Director
CRS Interior/Graphic
Houston, Texas

I wish to call your attention to a serious error in the July issue of RECORD regarding the Westinghouse plant at Round Rock, Texas. You state that the Interior/Graphics designer for this project was Jeffry Corbin; also, that "Corbin developed signage and color coding" and that he "designed the office interiors". None of these statements is true. It was my project in toto.

I realize that it would be virtually impossible for you to check the veracity of this type of information beforehand, but I hope you will now take the opportunity to set the record straight.

Lauri Reams Smith
Austin, Texas

Calendar

NOVEMBER

Current-January 4 The Architecture of the Ecole Des Beaux Arts, the Museum of Modern Art, New York City. Contact: Arthur Drexler, Director, Department of Architecture and Design, MOMA, 11 West 53 Street, New York, N.Y. 10019.

16-18 Conference on Architecture for the Justice System, Key Bridge Motor Hotel, Arlington, Va. Sponsored by The American Institute of Architects. Contact: Mark Maves or Evagene Bond, AIA, 1735 New York Avenue, N.W., Washington, D.C. 20006.

18-20 Seminar on Firesafety in Buildings, Lincolnwood Hyatt House, Lincolnwood, Ill. Contact: The Registrar, Educational Services Department, Portland Cement Association, Old Orchard Rd., Skokie, Ill. 60076.

21-January 4 Images of an Era: The American Poster 1945-1975, an exhibition, Corcoran Gallery of Art, Washington, D.C. Contact: Corcoran Gallery of Art, 17th & New York Avenue, N.W., Washington, D.C.

25-January 18 Nelson/Eames/Girard/Propst: The Design Process at Herman Miller, an exhibition of furniture, fabrics and interior architectural systems, Walker Art Center, Minneapolis, Minn. Contact: Walker Art Center, Vineland Place, Minneapolis, Minn. 55403.

DECEMBER

3-5 Conference on "Health Facility Planning and Design in the Developing Countries," World Trade Center, New York. Co-sponsored by the Health Services Planning and Design Program of Columbia University's Graduate School of Architecture and Planning, and the World Trade Institute. Contact: The Registrar, World Trade Institute, One World Trade Center, 55th Floor, New York, N.Y. 10048.

4-5 Professional Marketing Workshops, Philadelphia. Contact: Building Industry Development Services, 1301 20th Street, N.W., Washington, D.C. 20036. Phone (202) 785-2133.

JANUARY

24-28 Solar heating and cooling workshops and product exhibit, Hyatt House Hotel, Los Angeles International Airport. Sponsored by the Solar Energy Industries Association. Contact: SEIA, 1001 Connecticut Avenue, N.W., Suite 632, Washington, D.C. 20036.

29-30 A/E Federal Programs Conference, a briefing by Federal officials on new Standard Forms 254 and 255, Federal construction budgets, competitive bidding, and overseas markets. Sponsored by the Committee on Federal Procurement of A/E Services (COFPAES). Contact: Marshall E. Purnell, AIA, 1735 New York Avenue, N.W., Washington, D.C. 20006. (See News Reports)

FEBRUARY

2-4 The Southwest Air-Conditioning, Heating, Refrigerating Exposition, Dallas Convention Center. Contact: International Exposition Co., 200 Park Avenue, New York, N.Y. 10017.

MARCH

16-18 Third Annual Contract Marketplace—New York, Americana Hotel, New York City. Exhibition of contract furnishings, and seminars. Contact: Contract Marketplace, Ltd., Box 908, Larchmont, N.Y. 10538.

24-25 Symposium on building construction, for public and private building owners, National Bureau of Standards, Gaithersburg, Md. Contact: Harry Thompson or James Haecker, Center for Building Technology, NBS, Washington, D.C. 20234.

MAY

24-28 International Symposium on Lower-cost Housing Problems, Regency Hyatt House, Atlanta. Sponsored by Clemson University and the International Association for Housing Science. Contact: Dr. Herbert W. Busching, Dept. of Civil Engineering, Clemson University, Clemson, S.C. 29631.

ARCHITECTURAL RECORD (Combined with AMERICAN ARCHITECT, ARCHITECTURE and WESTERN ARCHITECT AND ENGINEER)

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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.

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 B. Hoglund, controller; David G. Jensen, manufacturing; Gordon L. Jones, marketing; Jerome D. Luntz, planning & development; Walter A. Stanbury, editorial.

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GUARANTEE: Publisher agrees to refund that part of subscription price applying to unfilled part of subscription if service is unsatisfactory.

ASSOCIATED SERVICES/McGraw-Hill Information Systems Co.: Sweet's Catalog Files (Architectural, Light Construction, Interior Design, Industrial Construction, Plant Engineering, Canadian Construction), Dodge Building Cost Services, Dodge Reports and Bulletins, Dodge/SCAN Microfilm Systems, Dodge Management Control Service, Dodge Construction Statistics, Dodge regional construction newspapers (Chicago, Denver, Los Angeles, San Francisco).

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.

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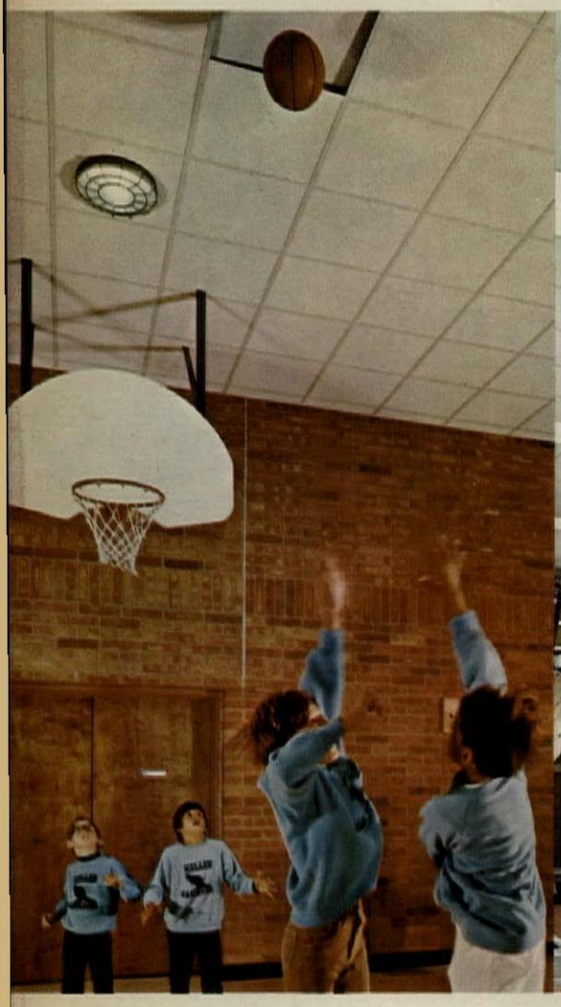
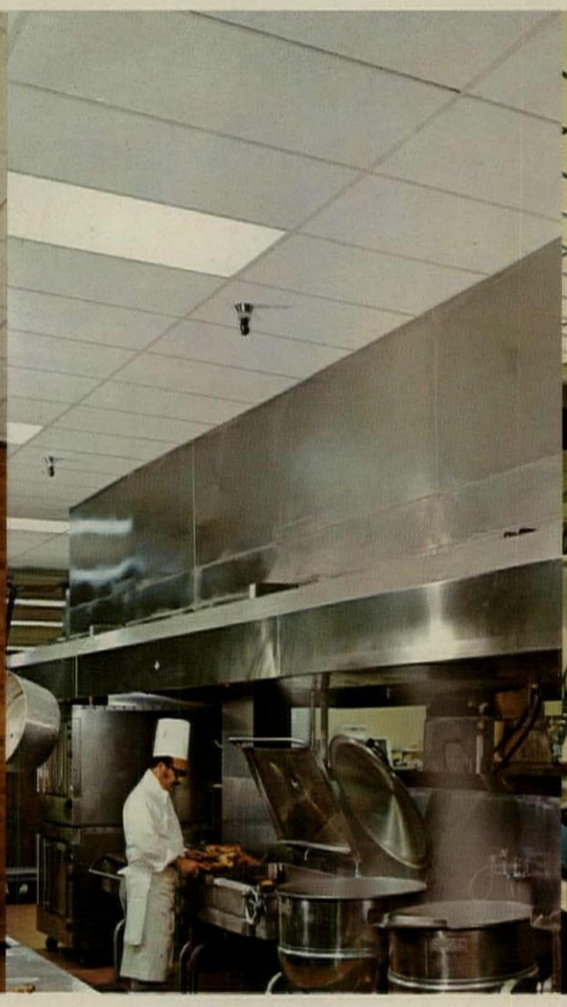
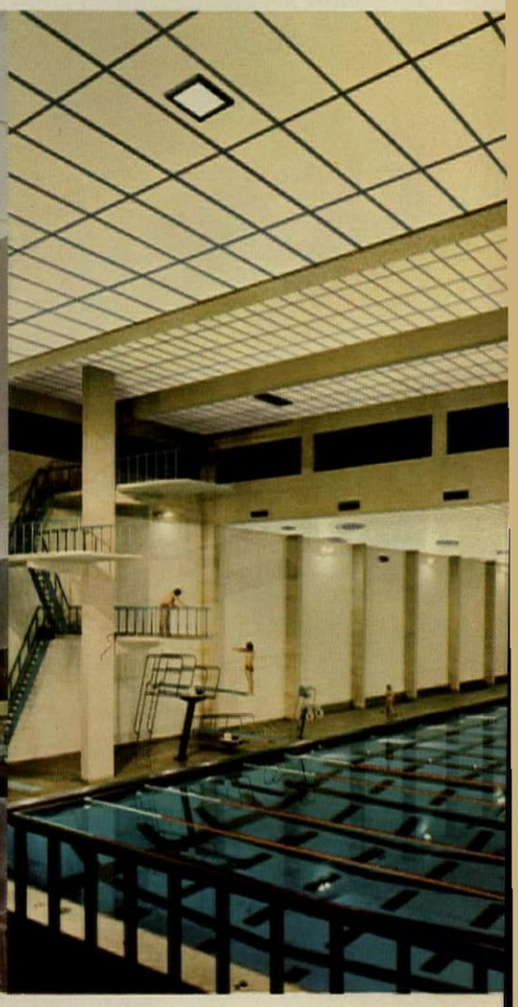
The Villa Olivia Country Club. Bartlett, Illinois

Three ceiling problems, three Conwed solutions.







1. Rough treatment

There are actually two Conwed® solutions to this problem. Our ultra-hard Rock Face™ tile and panels provide both abuse-resistance and beauty and are ideal for unsupervised corridors and public places. Where abuse is heavy—such as a gymnasium—we offer an Impaction Ceiling System. It's designed to take a blow from a high flying ball, give with it, then snap back into place, It's U.L. fire rated too! Both of these solutions were introduced by Conwed.

2. Grime and grease

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And as many more solutions as there are problems.

Conwed has been making ceiling products for over 50 years. We've had one basic way of doing things—isolate a need, and develop a product solution in a form contributing to interior design and minimal maintenance. This approach has made Conwed a concept and product innovator. For more ceiling solutions, write Conwed Corporation, 332 Minnesota Street, St. Paul, Minnesota 55101.

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Ceilings that challenge comparison.

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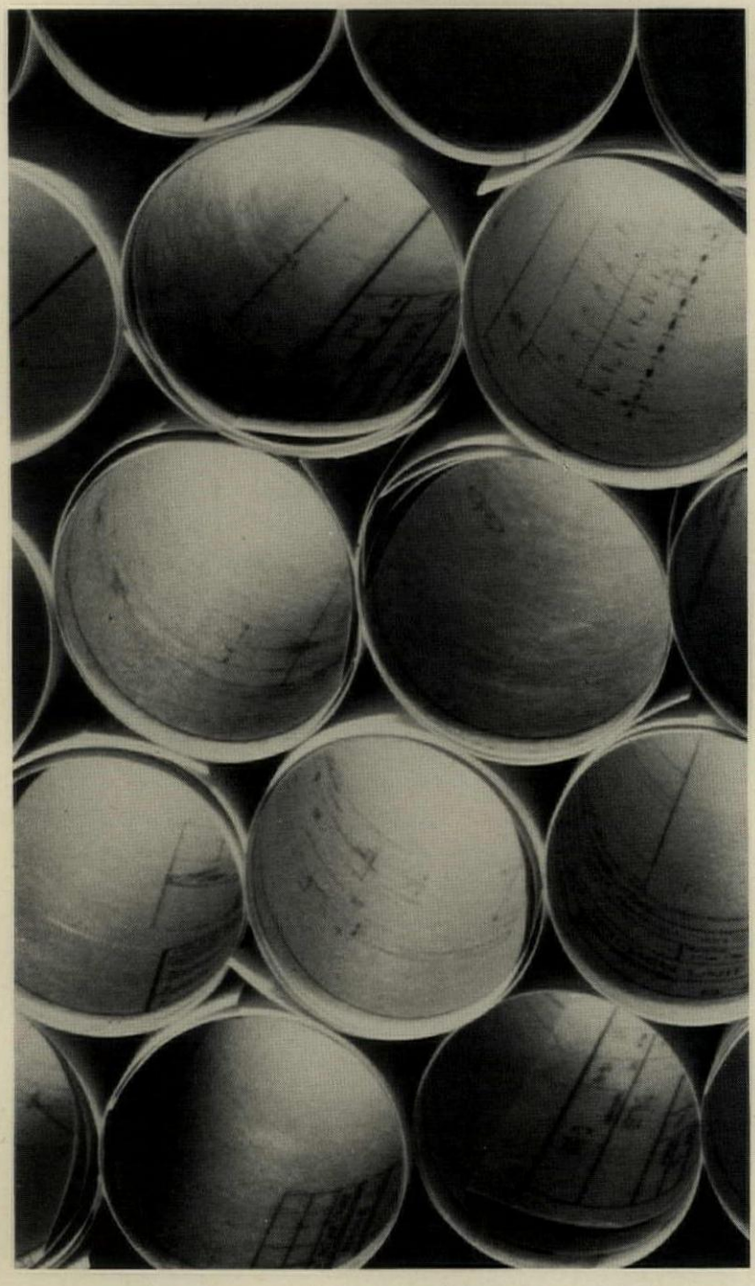
How to get more production out of your drafting room.



We don't mean your draftsmen aren't working hard. Certainly they are! But what exactly are they doing? Probably a lot of their work involves revisions, repetitive elements, maybe even restorations. Much of which could be done in minutes instead of hours—photographically.

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VULCRAFT IS NOT AFRAID OF SCALING NEW HEIGHTS.

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The plans called for a framing system using precast concrete beams and columns, plus steel joists.

But the plans changed. That's when Harvey Construction Company, the general contractor, asked Vulcraft to rise to the occasion.

The first thing Vulcraft did was assist in the redesign of the multi-story building to incorporate joist girders rather than precast concrete beams.

Once the redesign was completed, Vulcraft joist girders and steel joists gave Harvey Construction a number of advantages.

Both Vulcraft products were delivered quickly. On March 7, 1975, the approved drawings were given to Vulcraft. By March 14, the joists and joist girders had been delivered to the job site. All 329 tons of them.

At the job site, the joists and joist girders were easily erected, saving valuable time. In fact, they were all in place only one month and two days after they were brought to the site.

But time wasn't the only important thing saved. Money was saved too, because joist girders were less expensive than precast concrete beams.

That's how Vulcraft helped Harvey Construction make short work of a six-story building. And Vulcraft can help you do the same.

Just contact your local Vulcraft representative. Or write Vulcraft, P.O. Box 17656, Charlotte, North Carolina 28211 for your Joist & Joist Girder Guide. (See Sweet's 5.2/Vu.) Or call (704) 366-7000.

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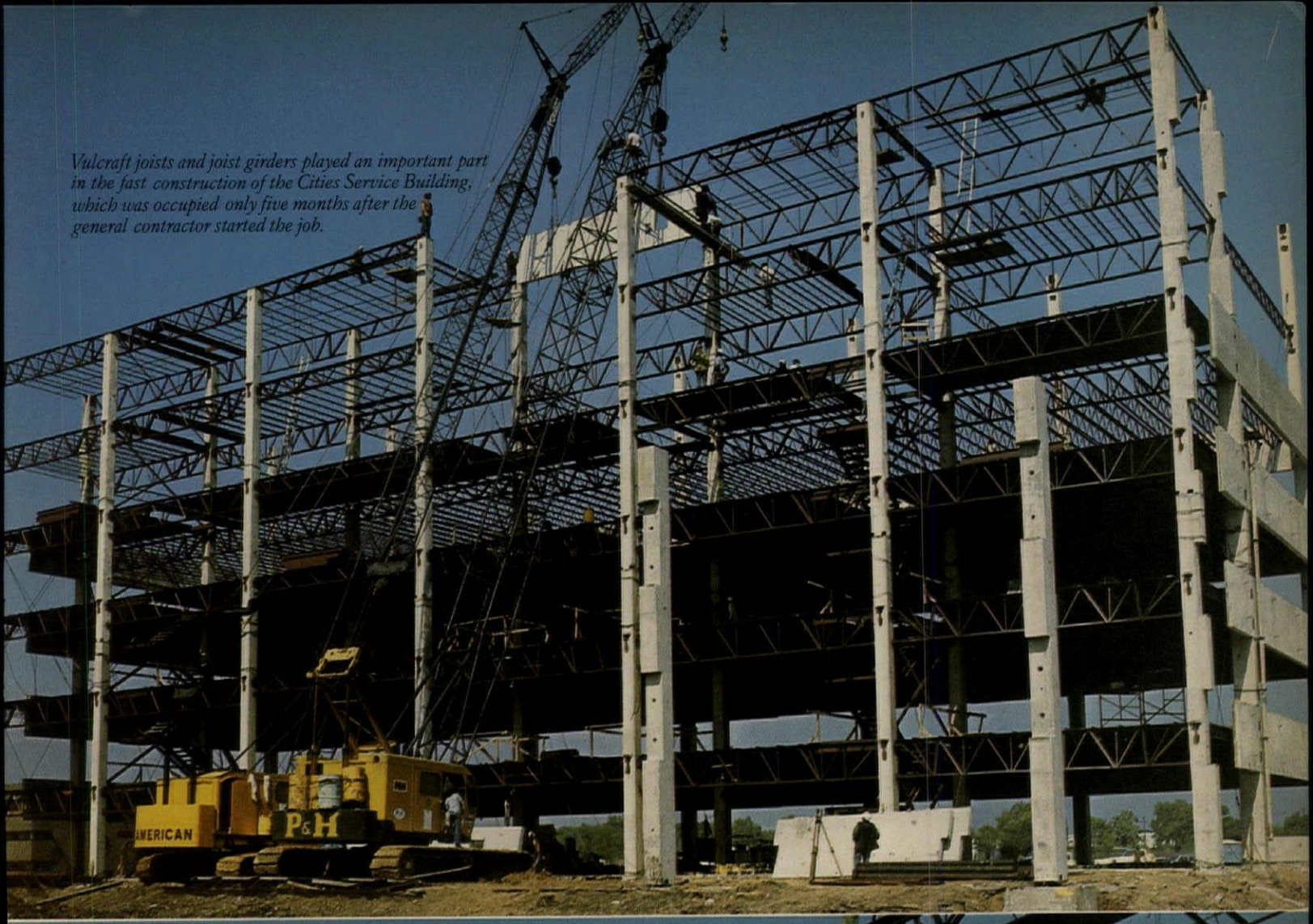

Vulcraft joists and joist girders played an important part in the fast construction of the Cities Service Building, which was occupied only five months after the general contractor started the job.

All Vulcraft joists and joist girders were erected easily and quickly. In fact, they were all in place only one month and two days after they were brought to the construction site.

Cover: Manhattan Square Park
Rochester, New York
Architects: Lawrence Halprin Associates
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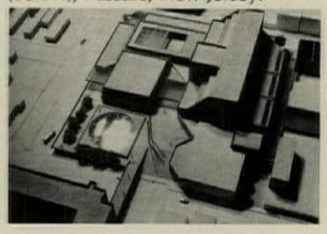
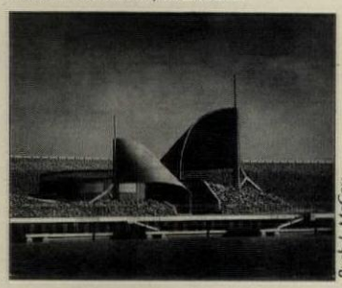
THE RECORD REPORTS



ARCHITECTURAL BUSINESS

FEATURES

BUILDING TYPES STUDY 482



Rush J. McCoy

ARCHITECTURAL ENGINEERING

NEXT MONTH IN RECORD

The search for better buildings at lower cost: Productive buildings of long-lived quality

This issue will be devoted entirely to the architectural response—the planning and design response—to the problem of high and rising costs. A score of case examples will demonstrate the possibility for more productive buildings through design emphasis on "loose fit," more economical configurations, mixed and combined use, and new life for old buildings. An issue-length Building Types Study.

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The attitude of owners OR How can we help them not take the lowest bid?

"There are a great many architects whose responsibility is not design—but the management of design. That is a major responsibility, full of difficult decisions. And we are learning how to make those decisions more effectively and more accurately." So said the Public Building Service's Wally Meisen in a talk to the Architects in Industry Committee of the AIA at its annual meeting, held early in October.

Meisen's talk was important to the attendees—all corporate architects from a broad range of commercial and industrial firms—because they are responsible for the management of the literally billions of dollars in land and buildings owned by their companies. But it is perhaps more important to the thousands of architects in private practice—because the patterns that develop in the GSA and PBS tend to spread and, like it or not, architects who want work from any big and organized clients must react. Said Meisen:

"Our concern has to be not 'What have you done, Mr. Architect?' but 'What can you do for us on this job?'

"'Which architect is best?' is too subjective for us—and in selection we have to breakdown 'good' into small pieces to eliminate any one big bias. Any good design administrator can rank firms pretty well. The problem is how to quantify 'good architect' or 'best architect.' There is, of course, more and more pressure to avoid these selection problems by going to a bid system.

"We are trying hard to establish a system so that we can justify *not* accepting the lowest bid."

GSA is now trying to establish—in terms that, for instance, the GAO and Congress will accept—an architect selection system that will add to the always essential subjective judgments some quantifiable facts that are part of the essential question: "Who is the best architect for this job at this time?"

The new and additional phase of the architect selection process will involve some pretty tough questioning of a "quantitative" sort—the kind of questions that architects ought to be able to answer to prove that they are "the best architect for this job at this time."

Architects will, under the proposed new system, be asked for:

1. The net-to-gross ratio for their last three buildings.

2. The energy use (in Btu per square foot per year) of their last three buildings.

3. How well they met the budgets on their last three buildings, and . . .

4. How well they met the schedule on their last three buildings.

The owners of those "last three buildings" will be queried on the performance of the building.

Additionally, architects will be asked specifically how they intend to handle life-cycle cost calculations (and they'll have to be sophisticated). They'll be asked how they intend to handle the project, and the scope of services proposed. Again—quantifiable information that can be added to subjective judgments.

More trouble still for architects who want to go after government work? Sure. Fair questions? I think so—as long as the architect is given an opportunity to explain variations that, on paper, look unfavorable. (For instance, energy usage may be high for reasons beyond an architect's control.)

And that may not be the end of it. The PBS is considering still further submissions ahead of final selection. A short list of architects may be asked to develop site plans, or identify and justify the structural and/or mechanical system they plan to use. In some cases, architects may be asked to develop concept sketches—"not a commitment of design, but a concept"—as part of the selection process. These latter two steps would, of course, be compensated.

Well, there's a moral. Maybe two morals:

Moral 1. This new, more complex and hopefully "more quantifiable" selection process is—even if it puts a greater burden on the architects—a far better solution than the alternative: bidding on architectural services.

Moral 2. More and more owners—including all the corporate architects from major companies across the country who heard the new government proposal—are demanding more and more assurance that a building will not only be first-class design, but will also be finished on time, within reasonable budget variation, and be economical to maintain and operate. And if architects cannot take these responsibilities for schedule and budget and operating costs, others will take on those responsibilities. And let design take the hindermost. We cannot let that happen.

—Walter F. Wagner, Jr.

The beauty of a communication plan is obvious.

The communications explosion is tough to judge. In the first place, how do you figure the number of new phones and exotic equipment coming soon? You can't. But you can get a good leg up on it. Put a Walkerduct Underfloor System in your building specs. It will help keep your rental outlook in good shape.

By running all the communication, power and signal requirements under the floor inside Walkerduct, you've got nothing to worry about. The building is safer, more efficient and able to handle any future needs quickly, easily and neatly. Without tearing up the floor. Without spending a small fortune.

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Do Plexiglas lighting panels create a fire safety problem? The answer of building officials, rating bureaus and fire fighters is, "No". Here's why:

1) To meet installation requirements under building codes and Underwriters' Laboratories standards, Plexiglas panels must be freely mounted in the lighting fixture.

2) When exposed to an occupancy fire, a properly installed panel will fall from its mounting at a temperature well below the ignition temperature of Plexiglas. Intensive testing and a quarter century of experience have established that Plexiglas lighting panels do not ignite and burn in place.

3) Plexiglas diffusers are not ignited by electrical arcs created in a properly fused system.

Because they meet generally accepted standards of fire safety and eliminate the hazards of glass, Plexiglas lighting lenses and diffusers are accepted under the Uniform Building Code (ICBO), the Southern Building Code (SBCC) and the Basic Code (BOCA).

Safety is only one of several important reasons why Plexiglas is the superior lighting material. We invite you to consider some others.

For your copy of "8 Reasons Why", or technical assistance, call toll-free 800-325-6400* now!

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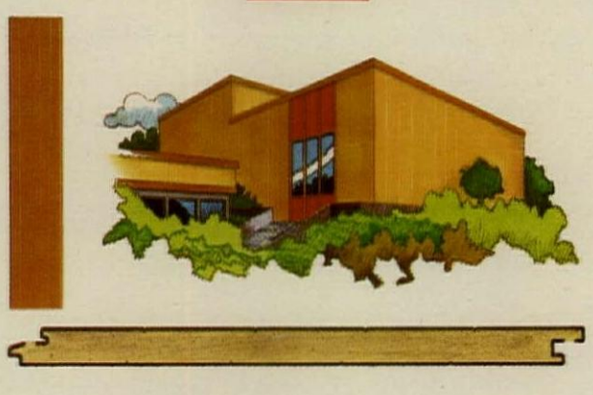
Pre-insulated

Inryco

1



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A one-piece, complete wall section that reduces field erection steps to a minimum. No wall system has fewer parts or can be installed faster. Isocyanurate insulation properties are excellent, and there is no metal-to-metal contact between inner and outer faces. Factory-installed seals at panel joints keep the weather out. Exterior appearance: attractive, flush, monolithic; eight long-life colors in Duofinish 500™ Interior: bright, reflective, flush, white surface in Duofinish 100™

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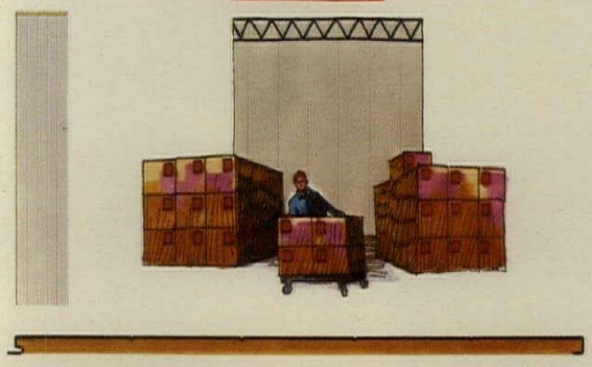

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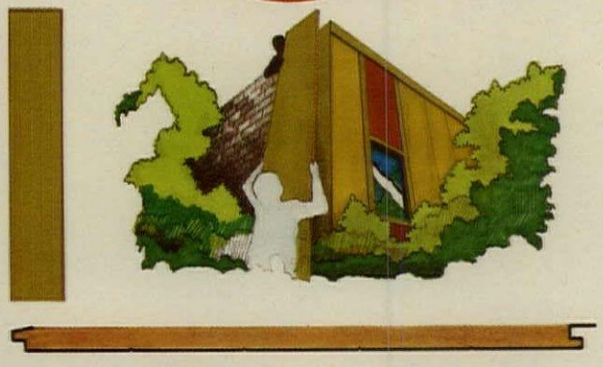
For field assembly in combination with conventional exterior wall panels. Liner creates a flush, easy-to-clean interior wall surface with a long-life Duofinish 100™ white coating that enhances lighting levels. Erection is greatly speeded because factory-installed insulation eliminates the step of insulating in the field. Panels are strong, rigid, easy to handle. For the exterior, the designer can choose any panel from Inryco's broad line of conventional wall systems.

3



Inryco/wall PF
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THE RECORD REPORTS

In Congress, the House Ways and Means Committee has voted to curb real estate tax shelters, and the Senate Banking Committee has cleared legislation that would change the rules of competition between savings and loan associations, banks, and other lending institutions. Both these moves are said to have an impact on the financial structure that funds construction. For instance, curbing the real estate tax shelter could curb the availability of mortgage money, particularly in the case of subsidized housing. Details on page 35.

The Ford Administration will release $264.1 million of impounded funds for subsidized housing, HUD has announced. Secretary Carla A. Hills estimates the money will generate $6.5 billion in new building, as well as 500,000 construction jobs. Details on page 35.

According to the National Governors Conference, states are unilaterally adopting ASHRAE 90-75, the energy conservation building code being promulgated by the American Society of Heating, Refrigeration and Air-Conditioning Engineers. This action may reduce pressure for the current Congress to impose the code. Details on page 34.

James Ingo Freed has been appointed dean of the IIT College of Architecture, Planning and Design. Mr. Freed, an associate partner with the firm of I. M. Pei & Partners, New York, will take up his new post immediately. Details on page 36.

Federal agency officials will meet and brief architects in San Francisco, January 29-30, 1976, at the A/E Federal Programs Conference sponsored by the Committee on Federal Procurement of A/E Services (COFPAES). The meeting will cover new Standard Forms 254 and 255, future Federal construction budgets, energy conservation, competitive bidding and overseas markets. Details on page 34.

HUD will spend $5 million for direct loans to rehabilitate houses in an urban homesteading program, in 22 cities, designed to illustrate the virtues of recycling older housing. Details on page 37.

"Reputation for reliable cost/time estimating" is why design-construct firms are selected by owners, according to *Fortune* magazine's "Corporate Practices and Attitudes toward Industrial/Commercial Construction" study of building projects valued at $5 million or more. Conducted among chief executive officers of the corporations in the Fortune 500, the study revealed that "depth or organization" is also a frequent reason why companies select design/construct firms, general contractors and construction managers. Single copies of the survey are available for $5.75 from *Fortune,* Room 1834B, Time & Life Building, Rockefeller Center, New York, N.Y. 10020.

December 31, 1975, is the deadline for entering the 1976 Plywood Design Awards program. The AIA-approved program is open to all licensed architects and includes prizes of $1000. Projects submitted should reflect combinations of structural and esthetic softwood plywood applications, and must have been completed after December 31, 1973, and before December 31, 1975. For further information, contact the American Plywood Association, 1119 A Street, Tacoma, Wash. 98401.

J.S. Norman, Jr., National Association of Home Builders president, encourages tax incentives to aid the depressed housing industry. In testimony before the Senate Finance Subcommittee in October, he endorsed various legislative proposals that would provide tax incentives for depositors who invest their money in thrift institutions, which provide much of home mortgaging. Details on page 36.

U.S. graduate architects are invited to compete for the 1976 Lloyd Warren Fellowship 63rd Prize of $6000 for one year of travel and/or study abroad. Entrants must be under 30 years of age on July 1, 1976, and be graduates of U.S. schools of architecture. For further information, contact: National Institute for Architectural Education, 20 West 40th Street, New York, N.Y. 10018.

Proceedings are now available from the National Conference of States on Building Codes and Standards for the organization's 7th annual conference, held April 28-May 3, 1974. Presentations in the proceedings include the national fire data system of the National Bureau of Standards' Center for Fire Research, an energy report from an ASHRAE member, and a report from the Consumer Product Safety Commission. Copies of publication 429 may be ordered prepaid at $1.95 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Volume 2 of the National Plan for Energy Research, Development and Demonstration has been released by ERDA. The second volume includes existing programs and those to be considered by Federal agencies. Also discussed are solar energy programs and nonsolar implementation plans by the Federal government. Copies may be obtained from the ERDA Technical Information Center, P.O. Box 62, Oak Ridge, Tenn. 37830.

A/Es will get briefing on Federal programs

Federal agency officials and members of Congress will meet with and brief architects and engineers at the fourth national A/E Federal Programs Conference to be held in San Francisco January 29-30, 1976.

The meeting will focus on such topics as the implementation of new Federal Standard Forms 254 and 255, future Federal agency construction budgets, energy conservation, the issues of competitive bidding, and opportunities in the overseas market. Participating in briefings will be officials from approximately 20 Federal agencies, including the General Services Administration, the Departments of Defense, Housing and Urban Development and Transportation, the Environmental Protection Agency and others. The Conference is sponsored by the Committee on Federal Procurement of A/E Services (COFPAES).

For additional information contact Marshall E. Purnell, co-director of Federal agency liaison, The American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006. Phone (202) 785-7384.

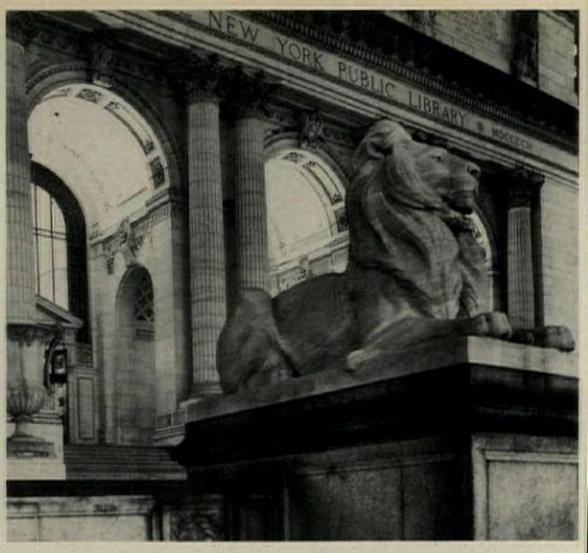
Growing number of states adopt ASHRAE 90-75

States are unilaterally adopting the ASHRAE 90-75 prescriptive energy conservation building code in such numbers that the need for Federal legislation is being reduced.

No one has tallied the exact number of states accepting the code, which was written by the American Society of Heating, Refrigeration and Air-Conditioning Engineers, but staffers of the National Governors Conference say the list numbers a dozen or so now and is growing daily.

Some of the states can adopt the code through executive orders issued by the governor. In others, legislatures must act, and most will not meet until January.

Edmond F. Rovner, general counsel to the Governors Conference, says the states want to be in the position of having codes as tough or tougher than any proposed on the Federal level. Moreover, Rovner says, the states are adopting ASHRAE 90-75 partly out of frustration with Congress. The Federal lawmakers have been considering energy conservation building codes all year, and the measure was still bogged down last month.—*William Hickman, World News, Washington.*



At the National Academy, 150 years of American architecture celebrated in new photographs

The National Academy of Design, a national organization of professional artists and architects in the United States, has included the most significant works of 36 prominent American architects in an exhibition, "A Century and a Half of American Art," on view through November 16 at the Academy's galleries, 1083 Fifth Avenue, New York City.

The architectural works range in time from Bulfinch's 1795 Massachusetts State House (top left), Boston, to Kahn's 1971 Exeter Academy Library (bottom left), N.H., but most of the structures were built in the 20th century.

Among the 19th-century highlights are William Strickland's Greek Revival Second Bank of the United States and the classical Merchant's Exchange, both in Philadelphia. John Haviland's Pennsylvania Institute for the Deaf and Dumb (now Philadelphia College of Art) and his Gothic Revival Eastern State Penitentiary, Philadelphia are also on view.

Of historical interest are the works of the Academy's architectural founders—the 1842 Sub-Treasury Building by Ithiel Town (who also invented the truss bridge) and the 1838 Naval Hospital, New York Naval Shipyard, by Martin E. Thompson.

The exhibition documents the architectural impact of McKim, Mead and White over a 25-year period. Featured in the retrospective are their Morgan Library, University Club and Law Library, Columbia University, all in New York City, as well as the works of their one-time associates: William Kendall's Columbia University, Cass Gilbert's Woolworth Building, John M. Carrère and Thomas Hasting's New York Public Library (top right), and Henry Bacon's Lincoln Memorial, Washington, D.C.

Among other 20th-century highlights are Frank Lloyd Wright's finest Prairie House, the Robie House, Chicago, and

the Johnson Wax Administration Building (bottom right), Racine, Wis.; Paul Cret's Pan-American Union Building (inset), Washington, D.C.; and William A. Delano and Chester H. Aldrich's Knickerbocker Club.

The exhibition also includes George Howe's Philadelphia Savings Fund Societ Building, the first Internationa Style skyscraper in the Unite States; Eero Saarinen's Genera Motors Technical Center, Wa ren, Mich., and Dulles Interna tional Airport, Chantilly, Va and Ludwig Mies van de Rohe's Seagram Building, Ne York City.

All of the architectural e terior and interior photograp were taken in the last year b Alexandre Georges of Ne York City.

The exhibition climax the Academy's anniversary pr gram, which also included t 150th annual exhibition at t academy last spring and "T Academy—The Academic Tr dition in American Art" l summer at the National Colle tion of Fine Arts, Washingto D.C. The present exhibition w tour the United States, but t schedule is not yet available.

Congress takes aim at real estate tax shelters and lending competition

Congress, working with the basic approval of the White House, is moving toward a major overhaul of the tax and financial structure that provides much of the construction industry's funding.

Capitol Hill action, so far, has taken place on two fronts: the House Ways and Means Committee has tentatively voted to curb sharply the use of the existing real estate tax shelters, and the Senate Banking Committee has cleared legislation that would change the rules of competition between savings and loan associations, banks and other lending institutions. The Ways and Means Committee action represents approval of a proposal first submitted to Congress by the Nixon Administration in April 1973.

Under the proposal tentatively agreed to as part of its over-all tax reform package, real estate losses could only be used to offset income from the same real estate project. Existing tax law permits both individuals and corporations to deduct real estate losses from non-real estate income to reduce their over-all Federal tax bills.

The committee action has already triggered a major lobbying campaign by the real estate industry, who argue that the tax shelters are essential if mortgages are to compete in the credit markets against business borrowers willing to pay higher interest rates for their money. A high Administration official counters that that is precisely why the shelters should be removed. Investments, he said, should be made on their economic soundness and not because of the tax shelters they offer real estate investors.

The proposed new limits on artificial accounting losses would not apply to individuals who have an interest in 36 residential units or less. But they would come into play if at any time during a tax year the taxpayer exceeds 36 units.

The tax proposal would have a particularly hard impact on subsidized housing. The National Corporation for Housing Partnerships, which was created in 1968 to use the tax shelter to tap corporations and other new sources of investment for low- and moderate-income housing, fears the new curbs would put it out of business. Unless the committee action is reversed, an NCHP official says, "We grind to a halt, we're finished. We sell to people interested only in one thing—the tax shelter."

Secretary Carla Hills, of the Department of Housing and Urban Development, has written Ways and Means Chairman Al Ullman, (D-Ore.), urging the committee to change its proposal to exempt low- and moderate-income housing, to avoid retroactive application of the new rules to projects already underway, and to adopt rules that would avoid cancellation of any planned construction.

The major hope for opponents of the Ways and Means Committee action now appears to be the possibility that tax reform will be placed on the back burner in Congress while the Democratic leadership attempts to deal with President Ford's controversial $28 billion tax and spending cut proposal. Any final action on tax reform now appears unlikely this year.

The Senate Banking Committee's action on the Administration's Financial Institutions Act could have equal impact on funding for construction and real estate legislation. Approved by the committee, it seeks to make banks and thrift institutions more competitive. Among other things, it would change the rules that have fostered the funneling of savings into savings and loan associations, which are now required by law to invest most of their money in home mortgages.

In its proposed legislation, the Administration, while calling for approximately equal treatment of all financial institutions, also called for the creation of special tax incentives for lending institutions that put more money into mortgages.

But the Senate Banking Committee, while agreeing with the need for such a tax incentive, has no Congressional jurisdiction over tax matters. By law, all tax legislation must originate in the House Ways and Means Committee. Consequently, the Senate action to date has been restricted. The Senate committee has recommended that, unless the Congressional tax committees take action on the mortgage tax incentives the remainder of the proposed Financial Institutions Act not go into effect.

The Ways and Means Committee has tentatively agreed to take up the matter next February, but the committee's calendar has been so altered by the President's recent tax plan that this date could change.—*Frank Swoboda/ Donald Loomis/Stanley Wilson, World News, Washington.*

Administration releases $264.1 million in impounded housing funds

n a major economic and politi-al turnaround, the Ford Administration has decided to use 264.1 million of impounded ousing subsidy funds to stimuate the construction of an estinated 250,000 houses for purhase by moderate-income amilies.

The revised program, a re-italization of Sec. 235, will enerate an estimated $6.5 bilon of new construction, Hous-g Secretary Carla Hills told ewsmen last month, and is exected to create an additional 00,000 construction jobs.

The decision to tap the fro-n funds, said Mrs. Hills, "was r me an economic one." owever, the program was re-ewed and cleared by Pres-ent Ford's White House politi-l advisers in the knowledge that the latest housing figures, released on the same day, would show housing starts dropping slightly in September to a seasonally adjusted rate of 1.24 million, compared to the August rate of 1.28 million.

The revised Sec. 235 program is not expected to be ready to go before January 1. The cost to the Federal budget will not be felt until 1977, when $39 million will be spent on it. The construction of the subsidized housing is expected to be stretched out over about 30 months.

The revised program is directed to families of so-called "moderate income"—that is, up to $11,000 per year, with enough savings to invest $1,500 to $2,000 in downpayment and closing costs. The maximum mortgage, to be insured by the Federal Housing Administration, is $25,200, or up to $28,000 in "high-cost areas."

The $264.1 million will be used to pay monthly mortgage charges as in the original version of the program, except that it can be used to bring the family's mortgage payment only down to 5 per cent, instead of the previous 1 per cent. The Hills version of Sec. 235, she pointed out, "ensures a significant financial commitment to the property, which was lacking in the old program."

The program's funds will be allocated geographically on a formula basis; they can be used for the purchase of new construction or for substantially rehabilitated houses.—*Donald Loomis, Washington.*

Kodak builds booth at Washington Monument

The Eastman Kodak Company, in a joint venture with the National Park Service, is constructing a temporary visitor orientation facility on the grounds of the Washington Monument in Washington, D.C. The one-story, 8000-square-foot facility will house a 300-seat movie theater and will be used to show a 12-minute film on George Washington to the multitude of tourists expected for the Bicentennial celebration in the nation's capital next year.

The National Park Service says that it has for some time felt a need for an added diversion for tourists waiting to go by elevator to the top of the Washington Monument. The Park Service also says that the Kodak facility conforms to its general guidelines of an unobtrusive structure that does not detract from the monument or disturb the view.

Although there will be no sales of camera equipment, film or any other commercial products at the facility, there will be a photo information center included in the structure. The center will be staffed with personnel who will provide advice on photography and help make minor adjustments on photographic equipment at no charge.

According to a spokesman at the Park Service, the Kodak project is unique, and it is highly unlikely that anything of a similar nature will ever be done again. He adds furthermore, "I cannot conceive of a private company coming up with the money for any kind of permanent structure."

The architectural plans for the structure did pass through a network of required approvals, including those of the National Fine Arts Commission and the National Capital Planning Commission. The procedure would be much more stringent for a permanent structure.

Emphasis is put on the fact that the structure is temporary, and that to change its status would require even more approvals and probably an environmental impact statement. The spokesman says that it really is out of the question now.

He says that a facility at the monument has been long hoped for, and that business has offered a solution.

The Park Service is very pleased with the Kodak structure, and with Kodak's low-key role in its design. According to the Park Service, Kodak just carried out what it had envisioned. The spokesman notes that the Service essentially wanted something that would not stand out and that could not be seen from the top of the monument.

The building, begun in July and scheduled for completion in March 1976, was designed by Kodak staff architect Franz Schwenk.—*Jo Ann Tosetti, World News, Washington.*

more news on page 37

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IIT names James Freed dean of architecture

James Ingo Freed, architect and associate partner with the firm of I. M. Pei & Partners, New York City, has been appointed dean of the newly formed College of Architecture, Planning and Design at Illinois Institute of Technology.

Freed, 45, whose work has won numerous awards, is a corporate member of The American Institute of Architects and chairman of the AIA's National Committee on Design. He will head IIT's newest college, which combines the university's School of Architecture and Planning and the Institute of Design.

Freed received his Bachelor of Architecture degree from IIT in 1953. Following service with the United States Army Corps of Engineers, he joined the New York office of Ludwig Mies van der Rohe. In 1956, he joined I. M. Pei & Partners and became an associate partner in 1961.

Freed is a registered architect in five states and with the National Council of Architectural Registration Boards. He was a member of the commission that developed test criteria for the selection of the principal urban designer for New York City.

Among Freed's projects with I. M. Pei & Partners is Kips Bay Plaza in mid-Manhattan, two high-rise housing buildings, with exposed concrete structures and large window areas, arranged to define a park area between the buildings. Because this project helped re-define urban housing standards through new concrete construction methods that were both economical and esthetically pleasing, the firm was given the 1964 FHA Honor Award for residential design.

The early influence of Mies van der Rohe on Freed is evident in his painted aluminum and glass office tower at 88 Pine Street (RECORD, April 1975) in New York's Wall Street area. The building won the Reynolds Aluminum Prize for Distinguished Architecture in 1974 and an AIA Honor Award.

New England AIA honors 14 buildings at Historic Resources convention

Fourteen projects designed within an historic context received awards at an Honor Awards Dinner, Saturday, October 11, 1975, in Newport, R.I. The Honor Awards Program is sponsored by the New England Regional Council of The American Institute of Architects and is held in conjunction with its annual conference, entertained this year by the Rhode Island Chapter. The theme of this year's conference was "Historic Resources," and the Rhode Island Chapter of the AIA is coincidentally its centennial.

Entries were in five categories: restoration, extended use, community contribution, new construction, and urban design and use.


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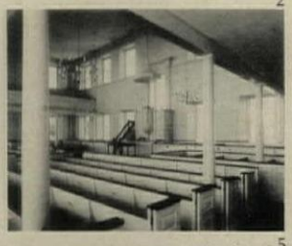
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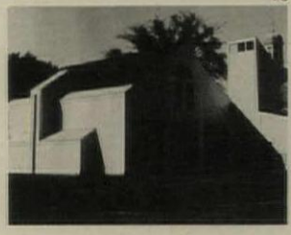
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Photos: 2, Charles N. Pratt; 4, Steve Rosenthal; 5, Phokion Karas; 6, Steve Rosenthal; 7, Ezra Stoller © ESTO; 8, Steve Rosenthal; 9, Nick Wheeler; 11, Laurence Lowry; 12, Phokion Karas.

Fifty entries from all over New England were submitted.

The jury consisted of Antoinette Downing, Chairman of the Rhode Island Historical Preservation Commission; Joseph Eldredge, FAIA, Editor of "Architecture: New England"; Robert G. Neiley of Bastille-Neiley, Boston, and State Preservation Coordinator for Massachusetts; Judith Wolin, Assistant Professor of Architecture, Rhode Island School of Design; and Henry F. Miller, FAIA, Associate Director of Facilities Planning, Yale University, and State Preservation Coordinator for the State of Connecticut.

First Honor Awards in the "Restoration" category went to Irving B. Haynes and Associates of Providence, R.I., for the Slater Mill Complex (**1**) in Pawtucket, R.I.; Jeter, Cook & Jepson of Hartford, Conn., for the First Church of Christ Congregational (**2**), Wethersfield, Conn. Irving Haynes's office also received an Honorable Mention in this category for the United Congregational Church, Little Compton, R.I.

In the category of "Extended Use," a First Honor Award was presented to Childs Bertman Tseckares Associates of Boston for One Winthrop Square Building & Plaza (the Old Record American Building) in Boston (**3**). Larson, Hestekin, Smith, Ltd., of Eau Claire, Wis., received a First Honor Award for the restoration of the Busiel-Seeburg Mill (**4**) in Laconia, N.H., and Anderson Notter Associates, Inc. of Boston received two First Honor Awards in this category, one for the Tannery (**5**) in Peabody, Mass., and the other for the Old Boston City Hall. Stahl/Bennett, Inc., of Boston received an Honorable Mention for the Rockingham House Condominiums (**6**) in Portsmouth, N.H. (See RECORD, December 1974.)

An Honorable Mention in the "Community Contribution" category went to Warren Platner Associates of New Haven, Conn., for Teknor Apex Company (**7**) in Pawtucket, R.I. (See RECORD, January 1975.)

An Honorable Mention in the "New Construction" category went to Ezra D. Ehrenkrantz & Associates of New York City for Canady Hall, undergraduate dormitories, (**8**) at Harvard University. Hill Miller Friedlander Hollander, Inc., of Cambridge, Mass. also received an Honorable Mention for a private residence (**9**) in Boston; as did Ecodesign, Inc., of Cambridge for the Westford Fire and Police Station (**10**) in Westford, Mass.

First Honor Awards in the "Urban Design and Use" category went to James Howland Ballou of Salem, Mass., for the north side of Front Street (**11**) in that town, and to Anderson Notter Associates, Inc., for the Newburyport Historic Redevelopment Project (**12**), Newburyport, Mass.

HEW lets contracts for NBS energy systems

A $140,000 contract that may mean 42 per cent energy savings for a major hospital and a major university complex has been awarded by the Department of Health, Education and Welfare in cooperation with the Experimental Technology Incentives Program in the Commerce Department's National Bureau of Standards (NBS).

The contract is to help HEW's Office of Facilities Engineering and Property Management apply an Integrated Utilities System (IUS) concept in hospital and university settings.

The IUS concept comprises five utility subsystems: on-site generation of electric power, HVAC and hot water, solid waste handling, liquid waste handling, and potable water conservation.

When designed to work together and complement each other with existing technology, these subsystems are expected to reduce energy input to the institutions by about 42 per cent with no reduction in the level of utility services. This energy saving is effected through capture of energy normally lost at central electric power stations, in the transmission lines from the power station to the institution, and in normal solid waste disposal.

The contract was awarded to Reynolds, Smith and Hills, architects, engineers and planners, of Jacksonville, Fla. The firm will select a hospital and university for the experiment.

NAHB backs incentives for savings depositors

J. S. Norman, Jr., president of the National Association of Home Builders (NAHB), has urged Congress to support new proposals that would help overcome the feast or famine mortgage money conditions.

Testifying in October before the Senate Finance Subcommittee on Financial Markets, Norman endorsed various legislative proposals that would provide tax incentives for depositors who invest their money in thrift institutions.

The bill before the Subcommittee (S. 666) would give taxpayers a 20 per cent tax credit on the first $250 invested annually in a special education savings plan at financial institutions that invest at least 50 per cent of their assets in residential loans. It is designed to prevent massive outflows from thrift institutions during fluctuations in the money market.

more news on page 38

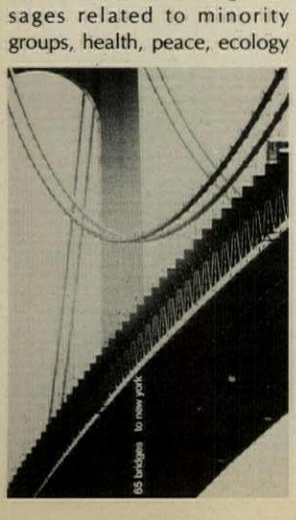
Smithsonian assembles major show of posters

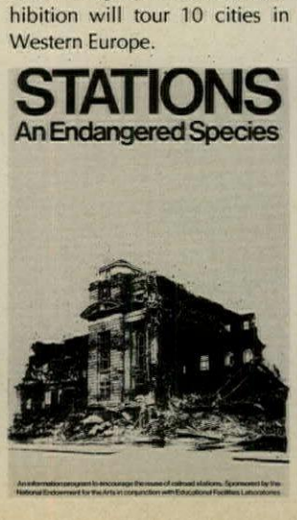
On November 21, a major poster exhibition, "Images of an Era: The American Poster 1945-1975," will premiere at the Corcoran Gallery of Art in Washington, D.C. The exhibition, organized by the Office of Exhibitions Abroad, National Collection of Fine Arts, Smithsonian Institution, will travel after closing in Washington on January 4, 1976, to Houston, Chicago, New York and several European cities.

Organized largely by subject, the exhibition presents through a variety of visual images a picture of the esthetic, political, social and moral climate in America for the past 30 years. It also traces both the Americanization of the medium (which was influenced by European imagery well into the 60s) and the proliferation of its use as a tool for communicating messages related to minority groups, health, peace, ecology and the cities. (Photos show posters from the series on cities.)

The exhibition also includes the debut of the Mobil Bicentennial Poster Collection of works by U.S. artists, titled "America: The Third Century." Robert Rauschenberg, Roy Lichtenstein and James Rosenquist are among the 13 artists commissioned to create signed and numbered prints for the 200-edition portfolio. Proceeds from the sale of these prints will go to charities.

The first part of the Bicentennial year of 1976, "Images of an Era" will travel to: Contemporary Arts Museum, Houston (February 2-March 19, 1976); Museum of Science & Industry, Chicago (April 1-May 2); and the Grey Art Gallery & Study Center, New York University, New York City (May 22-June 30). During 1976-1978, the exhibition will tour 10 cities in Western Europe.





HUD puts $5 million into urban homesteading

Carla Hills, the new HUD secretary, expounds on the cost benefits and other virtues of recycling older housing in the cities, rather than producing more new housing on the outer fringes of the urban sprawl. One of her first moves to get government programs moving in this direction is a greatly expanded program of urban homesteading, backed with a bit of HUD funds.

As national housing programs go, it's peanuts—1000 houses total, sprinkled around 22 cities selected from 61 that applied. Some cities will have 14 units, and some, 100.

It is still a "demonstration program," and the department will soon be letting a contract to housing experts for an impact evaluation that will be part of a report to Congress.

Besides its size, what makes the new program different is the HUD sweetener: an allocation of $5 million for direct HUD loans to rehabilitate the houses that the homesteaders will be able to buy for approximately $1. The loan deal was made part of the package after a meeting with mayors in June. The loan amount, averaging $5000 per unit, is not enough to rehab a house, by any means, but it is at least a token of HUD's commitment.

The cities include: Wilmington, Del., Philadelphia, Baltimore, and Rockford, Ill., all of which offer experience from earlier homesteading programs. The other cities involved are Oakland, Calif., Atlanta, Chicago, Decatur, Ill., Gary, Ind., Indianapolis, South Bend, Ind., Boston, Minneapolis, Kansas City, Mo., Jersey City, N.J., New York City, Islip, N.Y., Cincinnati, Columbus, Ohio, Dallas, Tacoma, Wash., and Milwaukee, Wis.

What Secretary Hills is counting on is city participation—including rehab loans, private financing, and city investment in the selected neighborhoods to keep them from declining further. For example, according to HUD, Atlanta has "pledged $1.38 million for capital improvements and rehabilitation loans, and has a commitment from private lenders for $1 million for permanent mortgage capital." Most of the neighborhood programs were already underway, of course.

Mrs. Hills' homesteading program however, hardly touches the monstrous size of the problem of abandoned inner-city housing; HUD "has in inventory" 62,500 single-family homes, 20 per cent of which are in Detroit. In Detroit alone, HUD has already demolished 10,000 units, and, according to Detroit Congressman William M. Brodhead (D-Mich.), plans to demolish another 3500.

And, as one HUD official noted, "Most abandoned housing doesn't belong to HUD; most belongs to cities that took it over for nonpayment of taxes."—*Donald Loomis, World News, Washington.*

Student competition announced by UIA

The International Union of Architects has announced an international design competition among students of schools of architecture. Organized in conjunction with the June 1976 United Nations Conference on Human Settlements (Habitat 76) in Vancouver, the task is to design a settlement for 10 families in a semi-rural area of eastern Ontario, Canada, to "demonstrate techniques of building for an ecologically balanced way of life."

Students enrolled in schools of architecture affiliated with the International Union of Architects are eligible to compete. Ten schemes will be exhibited and the designers of each will be invited to attend the Habitat 76 forum as guests of the sponsors.

The programs have been published, and registrations must be postmarked by February 1, 1976. Further details may be obtained from Professor John Bland, School of Architecture, McGill University, C.P. 6070, Station A, Montreal, Canada H3C 3G1.

Jakarta welcomes human settlements symposium

Buckminster Fuller and RECORD senior editor Mildred Schmertz were among the attendees at a recent conference held in Jakarta to discuss the patterns of human settlements in developing countries as they grow toward the year 2000. The conference was under the sponsorship of the Indonesian government and the United Nations Development Programme. Mr. Fuller served as a UNDP consultant to the meeting.

UIA defines philosophy behind Habitat 76

Some 20 members of the International Union of Architects (UIA) will meet November 13-17 in the Polish cities of Warsaw and Kazimir to discuss the organization's plans for next June's United Nations conference on Habitat.

UIA Secretary General Michel Weill says the organization has in mind the theme of "a return to a more natural architecture," but has not decided whether it will make a presentation at the conference.

Weill left his Paris headquarters in September for a working visit to Moscow and conversations with Alexander Rotchgov of the Soviet Union and J. Nowicki of Poland, both members of the UIA planning group for "Habitat 76." Weill said discussions were based in part on a statement drafted in May by the late Sir Robert Matthew, a past UIA president. In his statement, Matthew called for a United Nations charter on housing which would reaffirm the "absolute right of every individual and family to shelter," and avow a "world commitment to the provision of adequate shelter for all."

However, calling such a charter "not enough," Weill said the UIA's message "must be written not only in texts, but also in the heart." He said that the UIA would like to recall three principles which are "very simple but often forgotten—by the architects themselves, as well as the politicians."

The first of these principles is respect for site. "We want to develop the slogan 'architecture marries nature,'" said Weill, pointing out that designs are often drafted in open defiance of the natural attributes of the sites upon which they will be realized.

The second principle Weill cited is that of allowing those who are to use facilities a chance to participate in their creation. "Technicians go too far, they provide too much," he said. He suggested that professionals "ought to stop at a given moment" in order to allow the user more influence over the character of his environment.

The final principle stated that "comfort does not mean luxury." Weill argued that man can find physical and intellectual comfort in less sophisticated environments. "We have arrived today at a degree of luxury," he said, "which does not always ensure well-being."—*Ken Jacobsen, World News Paris.*

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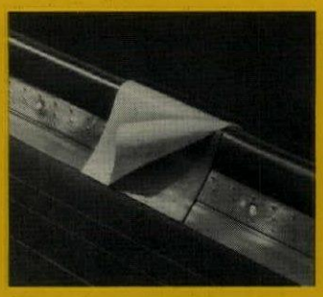

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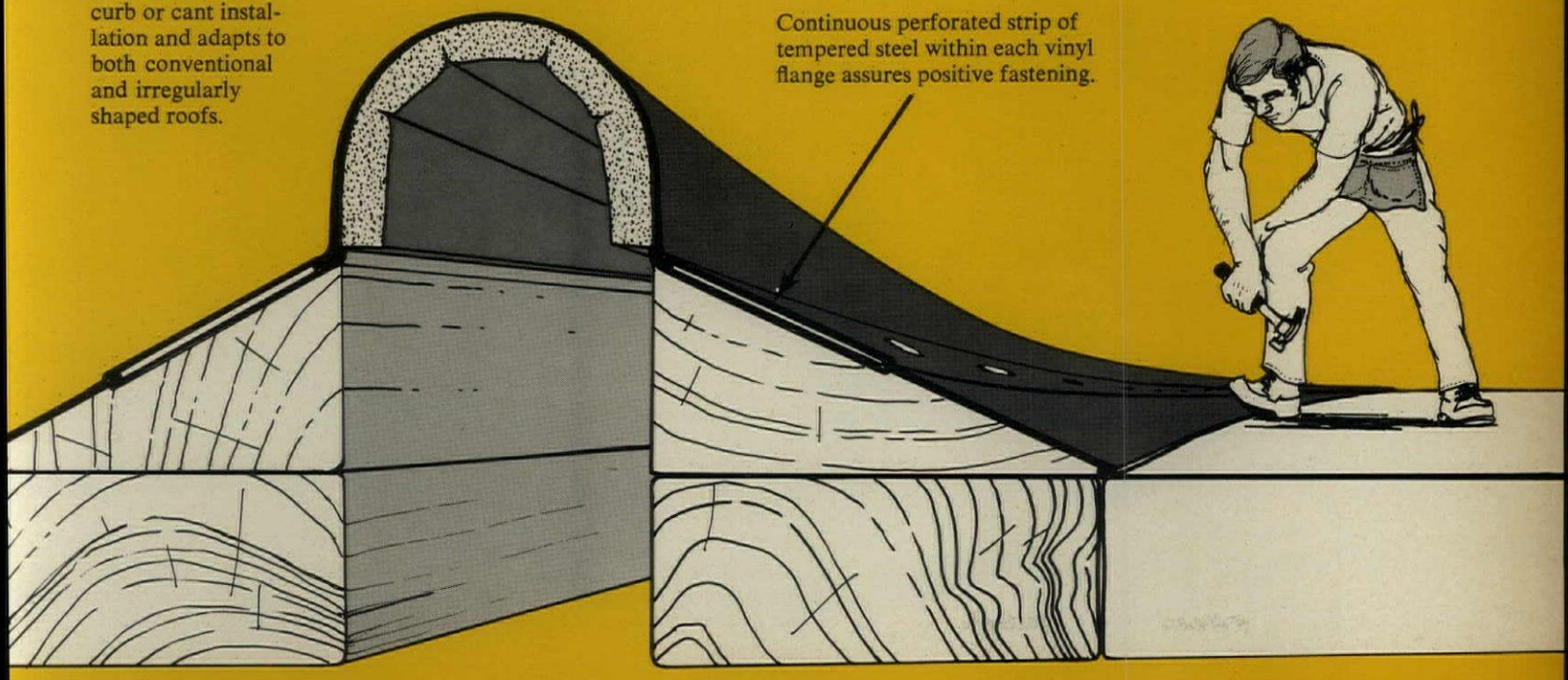

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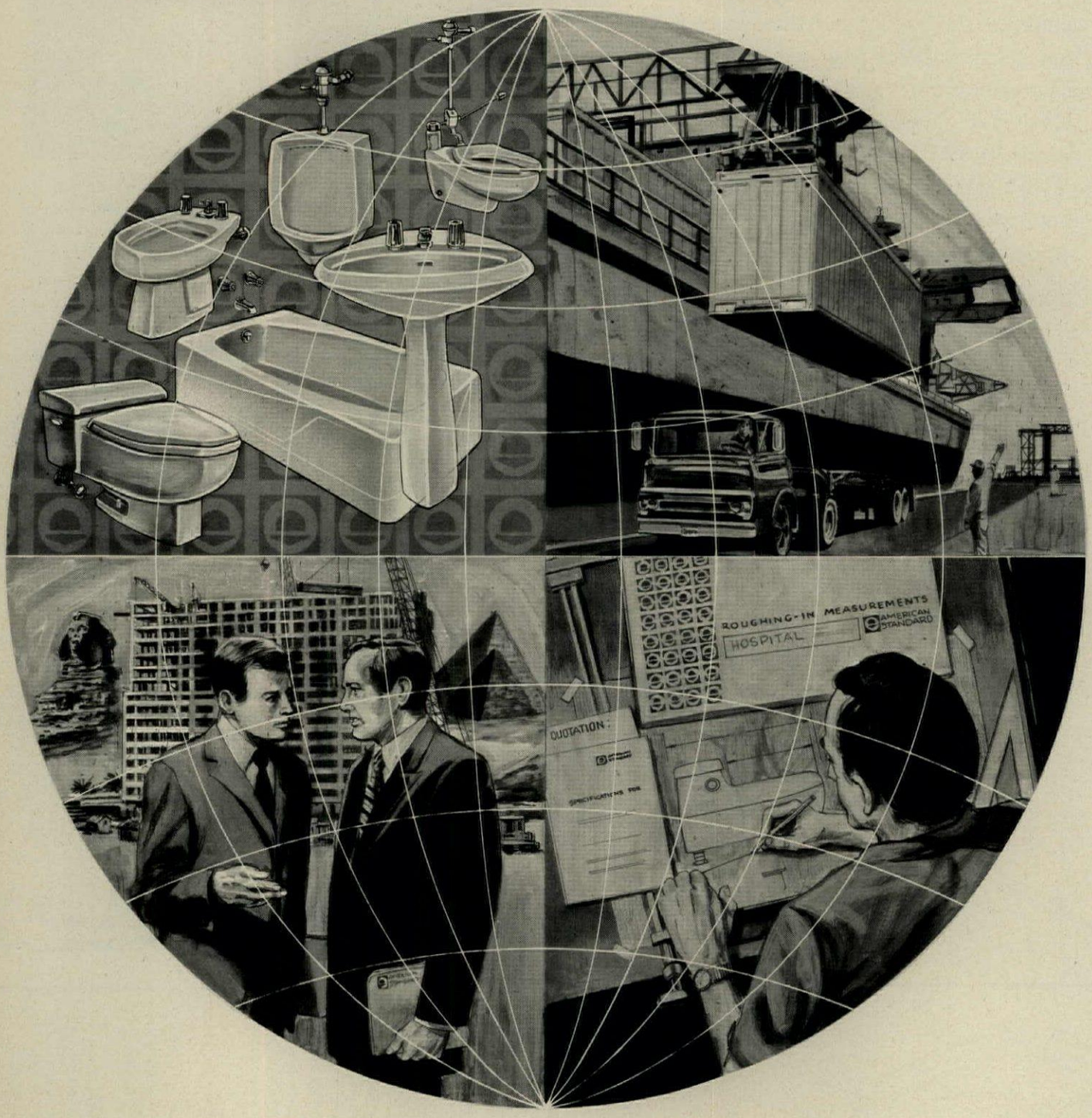

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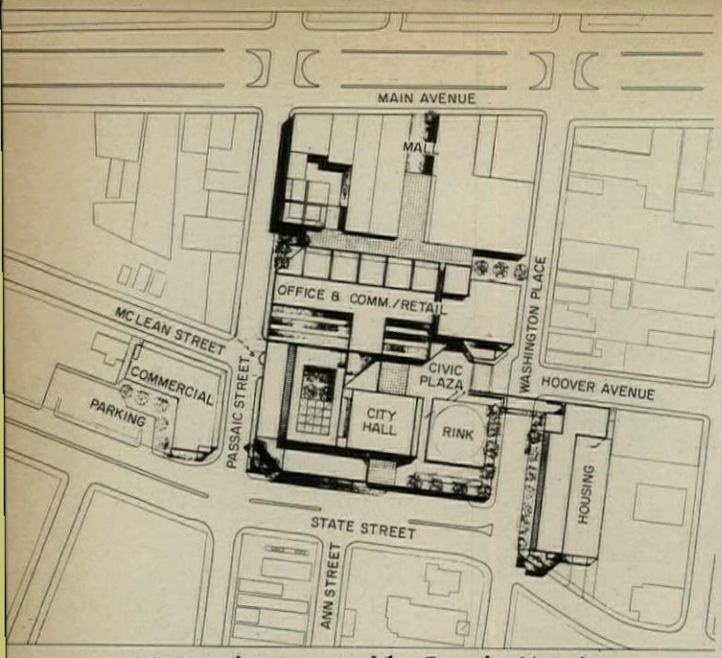
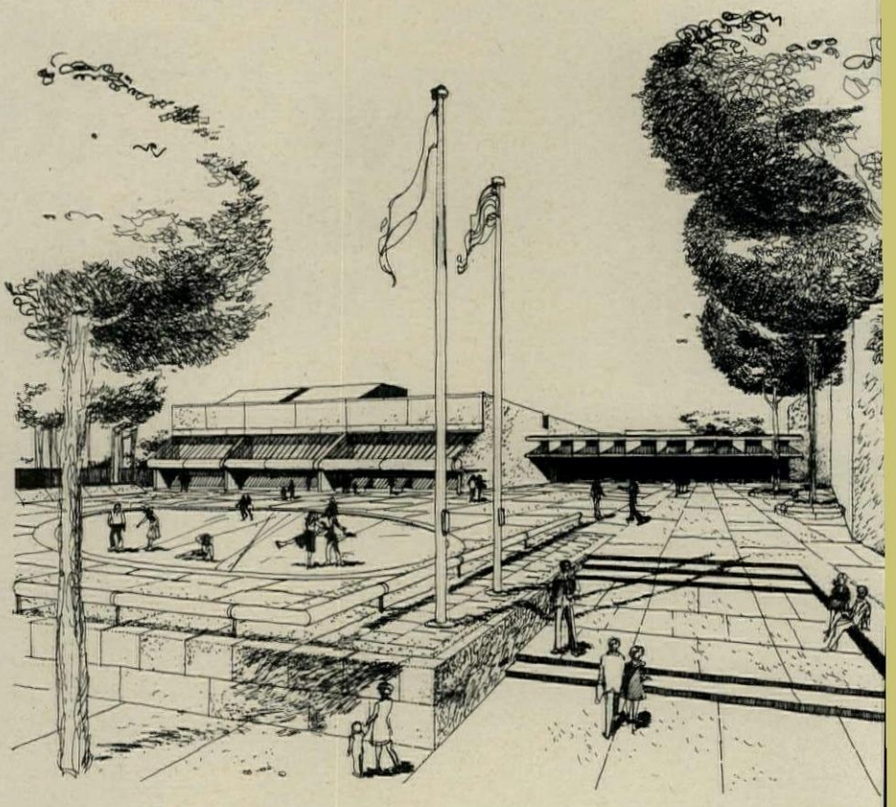


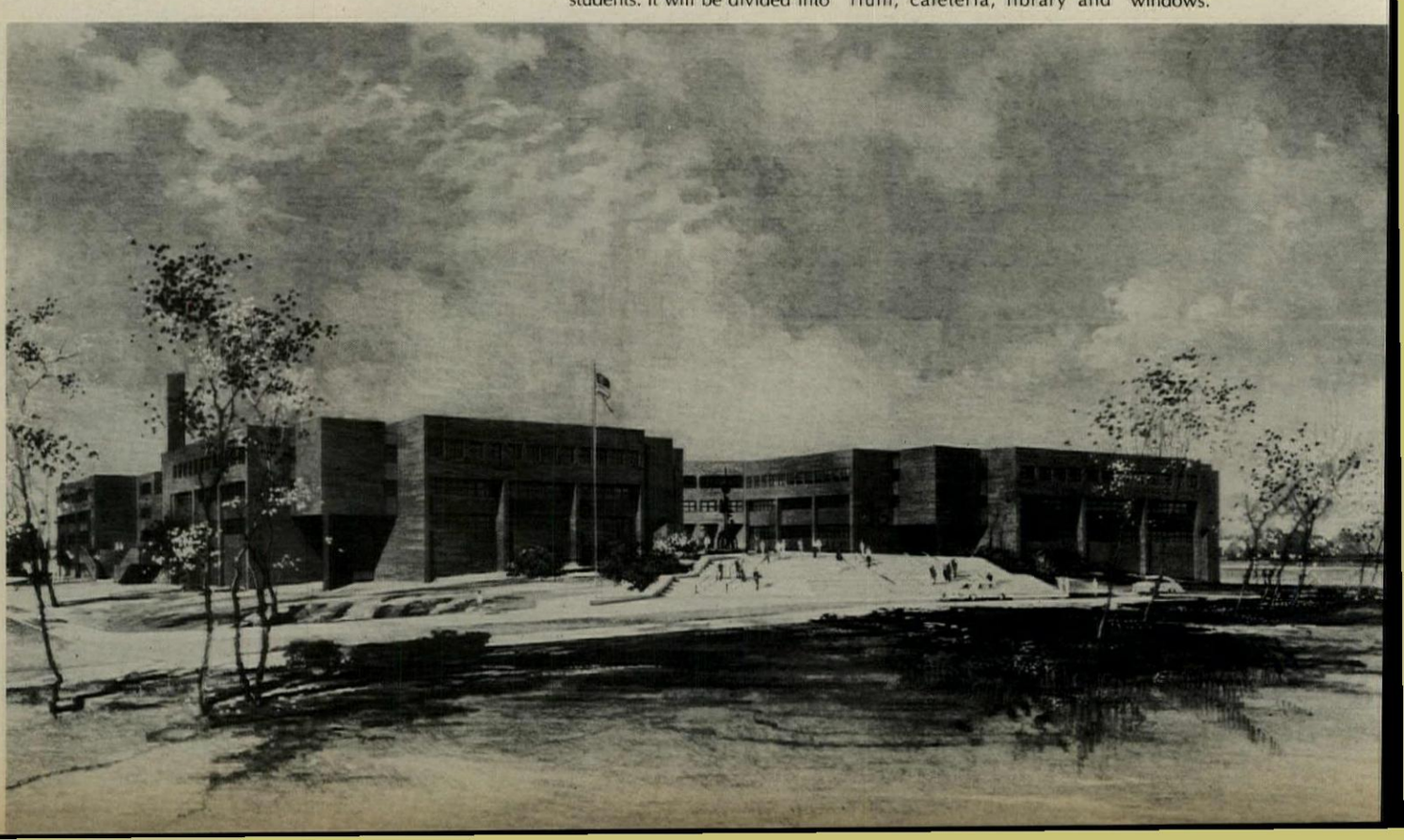
Master plan accepted for Passaic, New Jersey

The city of Passaic, New Jersey, commissioned Stephen Lepp and Associates to prepare this central downtown master plan for public and private development as a civic-commercial center. As yet, no individual buildings are in design. The master plan calls for 1) a zone for the new City Hall and municipal parking, 2) a place for new retail, office and hotel facilities and 3) a site for housing. The plan also indicates a desired building bulk in each of the established zones. Horizontal and vertical circulation are designed to serve three zones—the City Hall and Municipal Parking Facility and the commercial zone; and a pedestrian bridge is planned to link the residential complex with the Civic Plaza that would provide space for seasonal outdoor events, including ice skating.



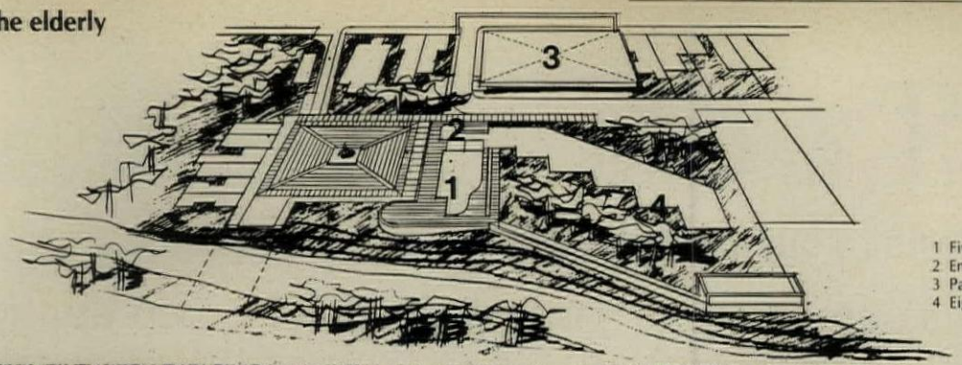
The Eggers Partnership announces construction of a Staten Island high school

Construction contracts have been awarded for the New Dorp High School, to be built on a 26-acre site in Staten Island, New York. The 421,000 sq ft building, designed by The Eggers Partnership, will be a comprehensive high school for 4000 students. It will be divided into four nearly self-contained sub-schools according to a concept aimed at giving students a smaller unit to identify with. Each sub-school will be located on the upper two floors of three-story wings connected to a core containing a divisible auditorium, cafeteria, library and science spaces. On the lowest level of the $24-million building there will be a shop complex and athletic facilities. Construction is to be steel frame, with exterior cladding in brown-iron-spot face brick and dark bronze-finished aluminum windows.

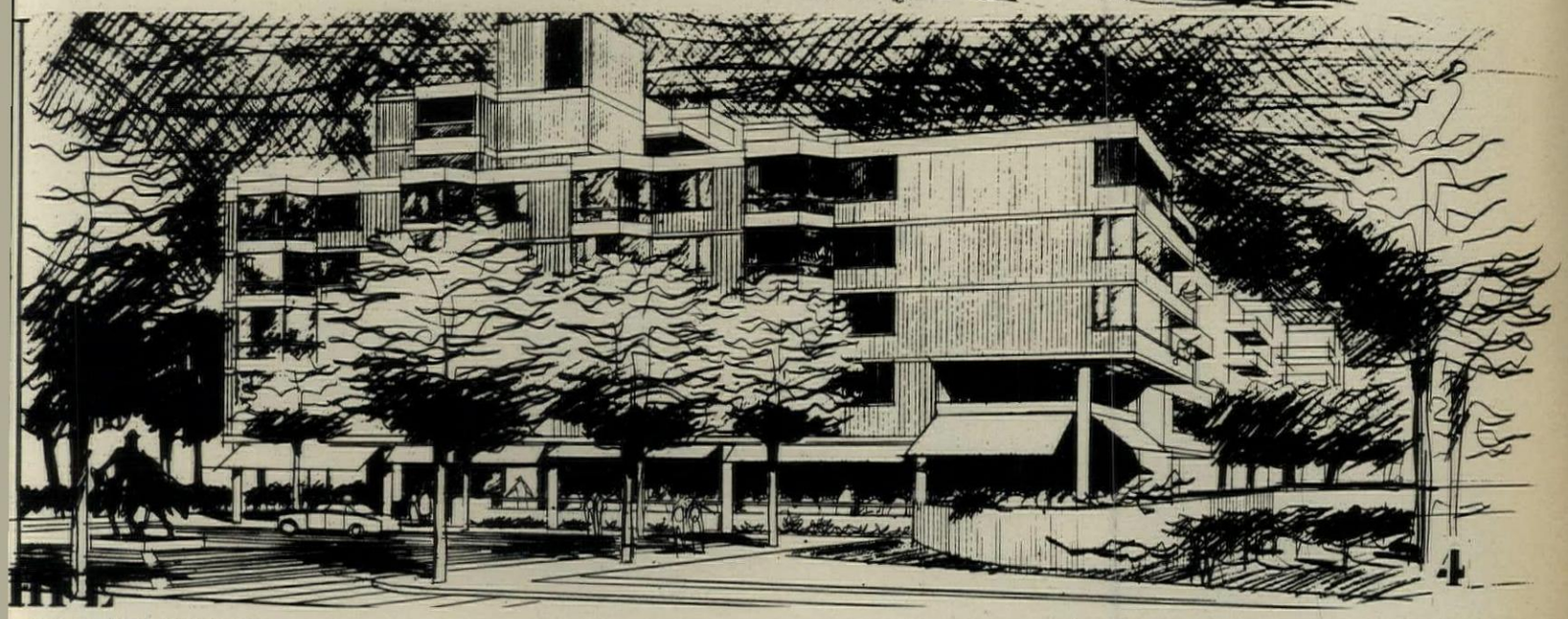


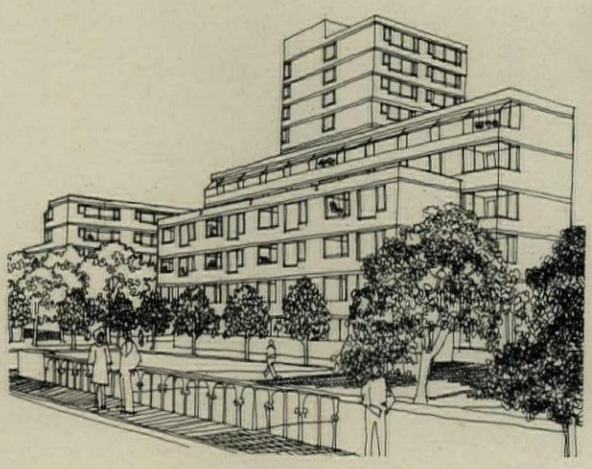
New Jersey architects will build for the elderly

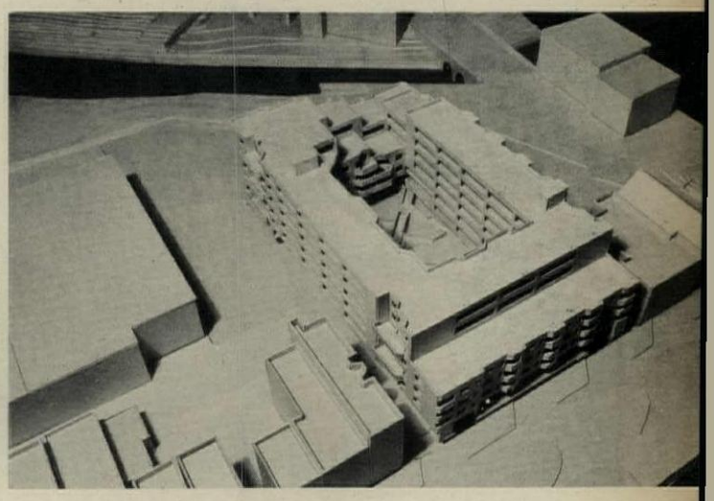
Founded by the Central Chapter of the New Jersey Society of Architects, the Architects Housing Company is a nonprofit corporation for developing and building housing for the elderly in Trenton. One of the first actions of the group included a housing competition, the winner of which is the firm of Geddes, Brecher, Qualls, Cunningham. Their design (shown above) will be constructed in Trenton and financed by the New Jersey Housing Finance Authority. The design consists of a five-story wing (1) with community facilities on the ground floor, adjoined by an eight-story wing (4) bordering an open space along the creek at the edge of the site. The second-prize design (shown immediately right) was submitted by Fred Travisano, architect, and Lee Weintraub, landscape architect. The third prize was awarded to the design (shown far right) by Bernard Rothzeid, with John S. Rhoads.

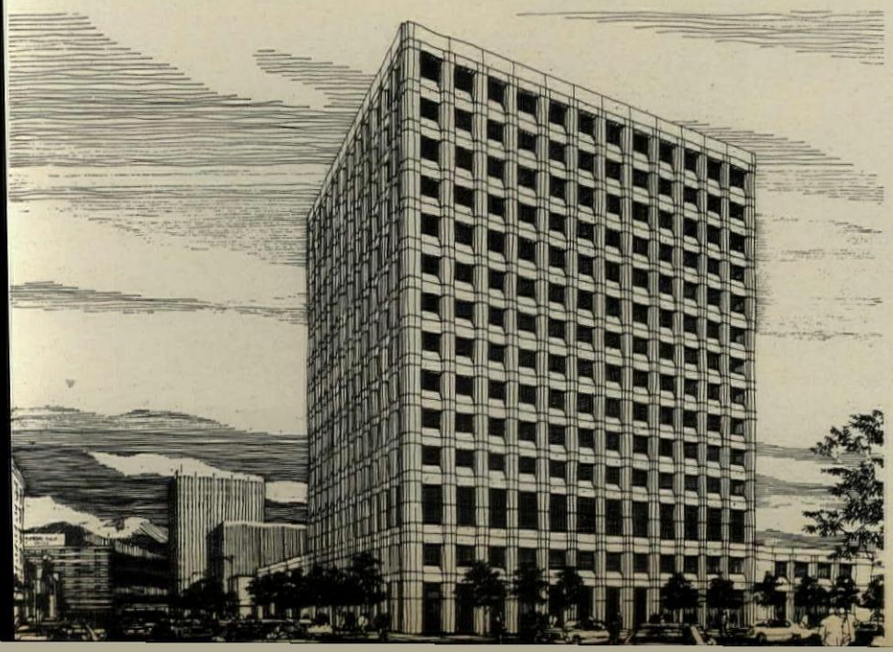


1 Five-story wing
2 Entrance
3 Parking
4 Eight-story wing









Denver offices built under new energy guides

Construction has started on the first phase of Colorado Square, a $13-million office tower and commercial complex being developed by Oxford-Anschutz Development Company of Denver. Designed by Welton Becket and Associates, the 14-story tower is scheduled for completion in December 1976. A subsequent phase on an adjacent quarter-block site to the west will add a twin tower and a continuation of the base. The office building was designed under a new municipal energy conservation ordinance. To meet the criteria, the architects designed cast-in-place concrete columns and spandrels that frame bronze glass window units. The 4-ft wide columns extend more than a foot out from the glass line, tapering inward on two sides, while the spandrels taper inward from the bottom to the 6-ft-square windows. "The width of the columns at the glass line, the size of the windows, and the insulating glass will help to reduce the building's air conditioning loads while the tapering effect will increase visibility," says architect George Hammond, of Becket's Chicago office.

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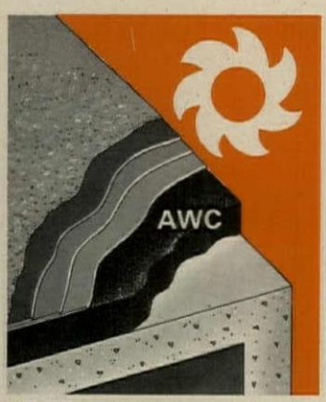

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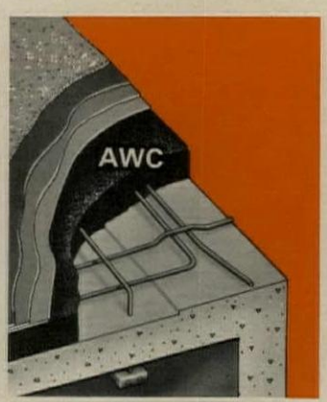

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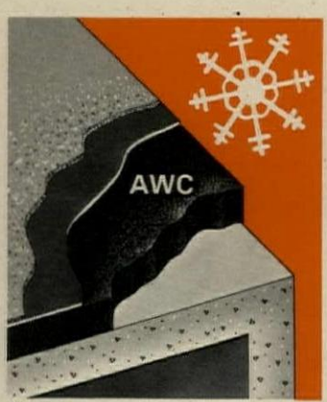

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The Brothers Greene

A GREENE AND GREENE GUIDE, *by Janann Strand; Published by the author, Post Office Box 2725-D, Pasadena, California 91105, 1974, 112 pages, illustrations, $8.00.*

GREENE AND GREENE: ARCHITECTS IN THE RESIDENTIAL STYLE, *By William R. Current and Karen Current; Amon Carter Museum of Western Art, Fort Worth, Texas, 1974, 128 pages, illustrations, $15.00.*

A GUIDE TO THE WORK OF GREENE AND GREENE, *by Randall L. Makinson; Peregrine Smith, Inc., Salt Lake City, 1974, 65 pages, illustrations, $4.95.*

Reviewed by Harwell Hamilton Harris

Reviewing these books means reviewing an important part of my own life. It is a part that touches a place and time that seems the more remarkable the further it is left behind. The houses of Greene and Greene tell of that place and time in terms of intimate living. What seemed unique at the time was only that it had taken so long to happen—this confluence of a beneficent nature, an enlightened era, democratic ideals, free minds, adventuresome spirits. A journey was about to begin. The journey would be endless, the vistas limitless. What seems unique looking backward seemed normal in looking forward. Yet it stopped less than 20 years after it began, less than 10 years after it started to flower.

What the ferment from that confluence did in the lives of two young architects—brothers—who went to California in 1893 to visit their parents, and remained to grow architectural flowers from that ferment, is the subject of *A Greene and Greene Guide*. The author's awareness of how much California became part of the brothers and the brothers part of California is evident in her choice of quotations—not only what the Greenes said but what others said about them. The sources quoted are sufficiently significant of the solid relationship of their buildings to the community—in thought and feeling as well as geography.

Because the Greenes' architecture was a democratic architecture, their little houses differed from their great ones only in size and in certain refinements of execution that wealth afforded. So what David Gamble (soap) or Robert Blacker (lumber) or Charles Pratt (Standard Oil) enjoyed in their houses a hundred others enjoyed in their smaller houses. Each had the same air of assurance. Each expressed the distinctively American attitudes that distinguished the leaders of industrial America from the leaders of a society based on hereditary power and privilege. Ideas—non-existent, unnoticed, ignored or fiercely opposed elsewhere—appeared here and flourished. Concepts concerning health, education, women and a host of other matters found their way into the pattern of these houses and were expressed in large and small ways. The Greenes' great houses were for clients who could share ideas with the architects and make intelligent demands on them. This was the kind of client for whom Wright did his best work. The great houses of both appeared during the same brief period—the decade ending with World War I. When the War was ended, so was this kind of client.

Mrs. Strand's book is a guide to 51 Greene and Greene houses in Pasadena, arranged for four walks, each house represented by sketches, vital statistics, descriptive comments and, usually, a floor plan. It is also a guide to a number of the Greenes' best houses that cannot be included in the walks—buildings in San Francisco, Berkeley, Carmel, Santa Barbara, Ojai, Long Beach, etc.—which are nevertheless described and commented upon. Then there is a list of 150 Greene and Greene structures with street addresses, dates of construction and names of clients.

The literature on the Greenes has grown since *Architectural Forum's* publication of "Greene and Greene" by Jean Murray Bangs in October 1948. Mrs. Strand's *Guide* lists the books, journals, newspapers and miscellaneous publications in which Greene and Greene figure prominently. It is a valuable list for all who find themselves sufficiently intrigued by this small book to want to know more about the buildings, the architects, the manner of their clients or merely a time and place that promised so much and vanished so soon.

Not a part of this book, but by its author, is a cross-indexed file of Greene and Greene drawings, documents, references and memorabilia. This is a central feature of the Greene and Greene Library which occupies the top floor of the Gamble house, now a joint property of the City of Pasadena and the University of Southern California. Since most of this material is in widely separated collections, the index is invaluable. Working drawings, with a few exceptions, are in Columbia University's Avery Library in New York; other material is in the Architectural Documents Collection of the University of California's School of Environmental Design at Berkeley, the AIA Library in Washington and elsewhere.

For the person who cannot visit the houses, *Greene and Greene: Architects in the Residential Style* by William R. Current and Karen Current is the best recourse. It is a book of drawings as well as photographs—the Greenes' own drawings, more than 50, reproduced at a scale big enough for one to read the notes and tell how the architects described their buildings to the craftsmen who built them. The 120 photographs are excellent and describe how well the craftsmen succeeded. Many crafts were involved—woodwork, metalwork, stonework, potterywork, glasswork, gardenwork and others—all bearing the imprint of one mind. Concepts of living shaped the buildings; love shaped every stick and board, and tenderness attended their every joining. This shaping, this jointing, is skillfully delineated in Mr. Current's many photographs. By their very number, these photographs effect something of the experience of the visitor to one of the larger houses: he is in a different world, a Greene and Greene world, where all forms sing together.

In comparing Mr. Current's recent photographs with Mr. Leroy Hulbert's early ones, one sees differences in more than the size of trees or the arrangement of furniture. Mr. Hulbert worked with 8- by 10-inch glass plates so slow the edges of the shadows are softened by the sun's movement during the plate's exposure. The interiors are lighted by only natural light as it enters through openings designed by the architects. Where both indoors and outdoors are included in a single view, each loses in clarity, but the distinction between indoors and outdoors is clearly kept. One enjoys the atmospheric perspective of the early photographs (it's like the half-concealment that intensifies the excitement of discovery). But one

continued on page 47

Harwell Hamilton Harris, retired professor of architecture at North Carolina State University at Raleigh, is the architect of a number of distinguished buildings in Southern California.

REQUIRED READING *continued from page 45*

enjoys, too, the sharpness and modeling in Mr. Current's recent ones (forms tangible enough to make one want to touch them).

Photographs and drawings combine to tell more than either does alone. Plan drawings reveal immediately the concept of the sleeping porch as an integral part of each family bedroom. Photographs of exterior details make clear how fully an extension of the interior Greene and Greene meant these porches to be. The sleeping porches are but one of many features of interest to the social historian. Outdoor sleeping, at least during the summer, was a widespread custom in Southern California at this time, and many called themselves "fresh air fiends" and some went so far as to eat "Graham" bread and chew each mouthful 30 times—"Fletcherizing" it was called. But then, this was a time when climate was thought to be the best cure for tuberculosis and the foothills above Pasadena were sites for sanitariums. In most families, members shared a single porch, and the children's beds might be under a weeping tree in the backyard. Outdoor sleeping continued past World War I and was architecturally dignified for a later generation by R. M. Schindler in rooftop "sleeping baskets" in his 1921 house for himself, by Richard Neutra in a sleeping porch for each bedroom in his 1927 Lovell house and by this reviewer in an enclosed private garden for each bedroom in his 1933 Lowe house. With his private room divided into indoor and outdoor halves, one may express his pleasure in the outdoors in privacy—not "roughing it," but elegantly. Greene and Greene work expresses a civilized attitude toward nature. It is in this attitude as much as in their use of wood or in the pattern of their construction that one senses the Greenes' affinity with the Far East.

The text accompanying the photographs and drawings is by Mrs. Current and introduces the reader to the time and place of the work and something of the personal lives of the two brothers. Also included is something of what was happening elsewhere in the world, then and just before, making the book of value to those whose beginning interest is less in the work itself than in the literature about it. Altogether, this book is an excellent companion to Mrs. Strand's *A Greene and Greene Guide.*

Adding to the present burst of Greene and Greene publication is *A Guide to the the Work of Greene and Greene* by Randall L. Makinson, curator of the Gamble house and author of the chapter on Greene and Greene in Ester McCoy's *Five California Architects* (see RECORD, September 1975, pages 43, 45, 47). Mr. Makinson's guide should not be confused with Mrs. Strand's guide. It is limited to a chronological listing of 137 major structures with the client's name and the address of each building, together with notes as to its present existence, alteration or destruction. The limitation is due to the author's intention to follow it with two other volumes, *Greene and Greene, Architects* and *The Furniture of Greene and Greene.* The present volume is therefore of interest primarily to architectural historians. Eleven photographs and five drawings accompany the text.

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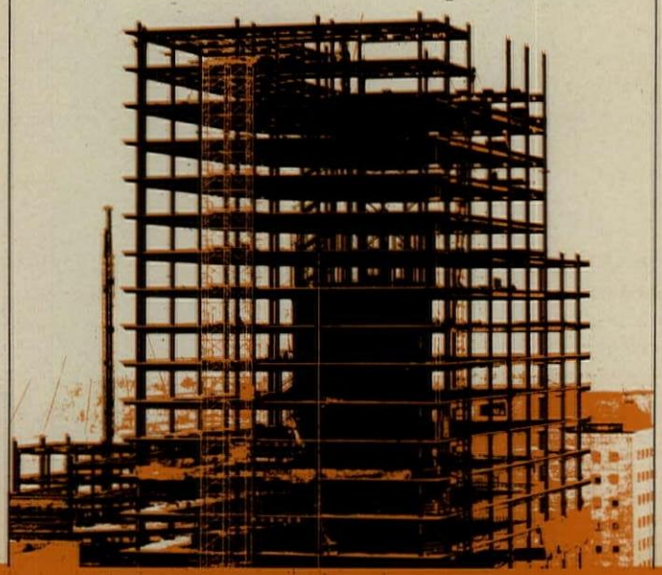

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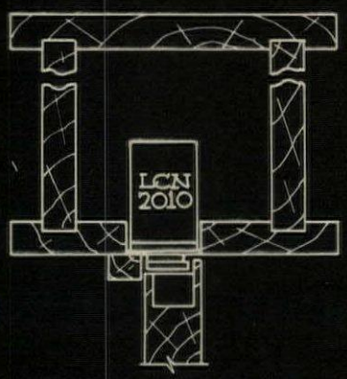

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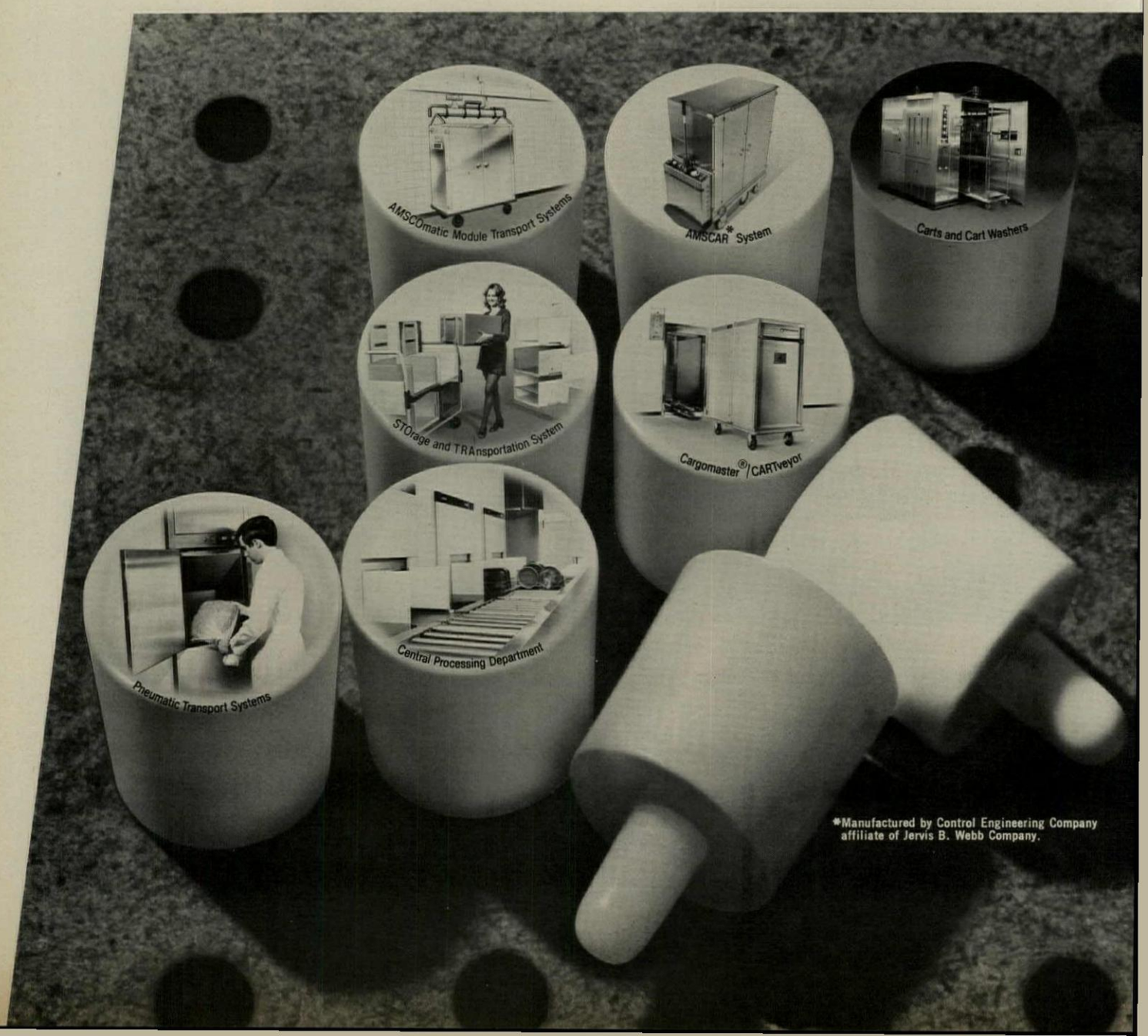

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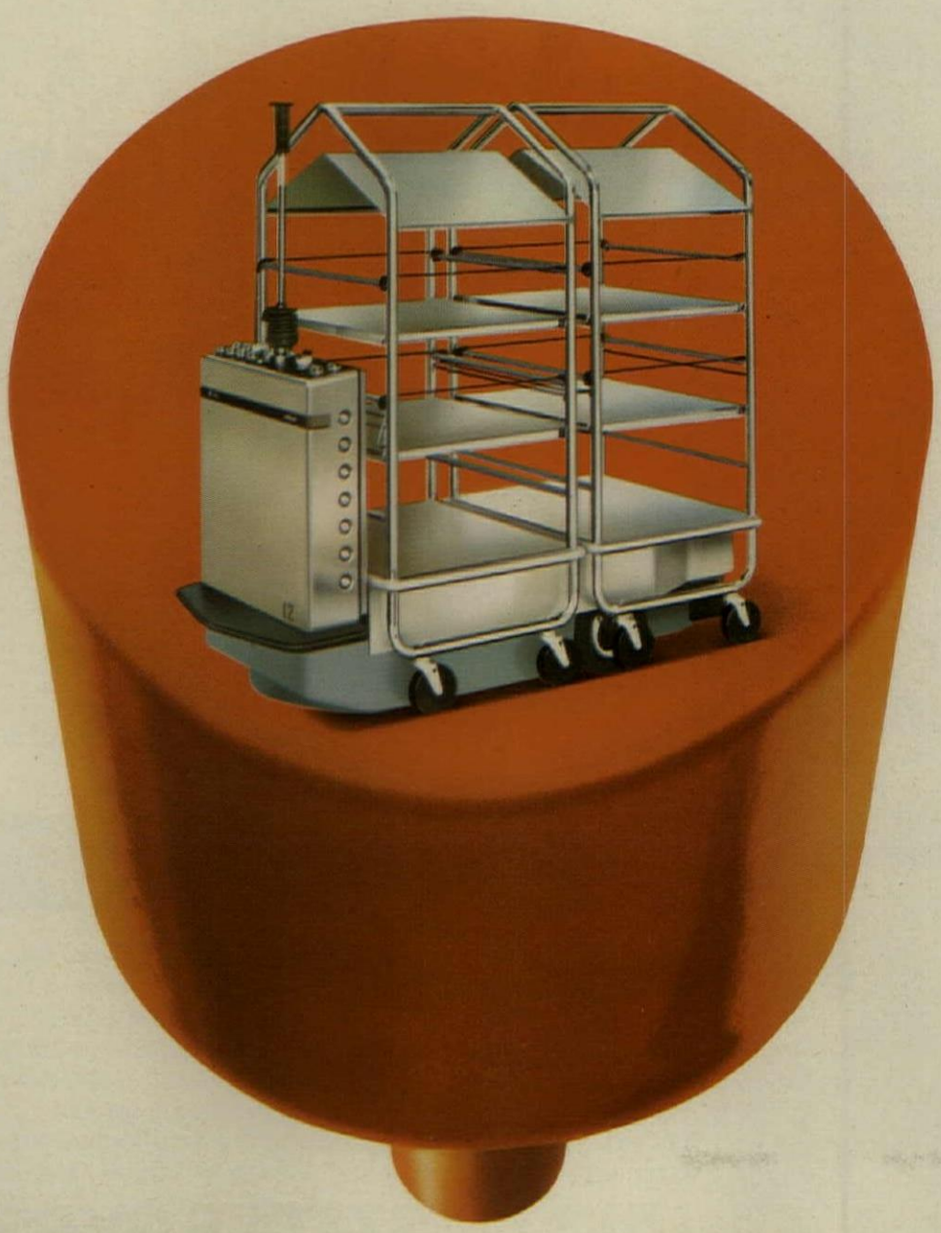

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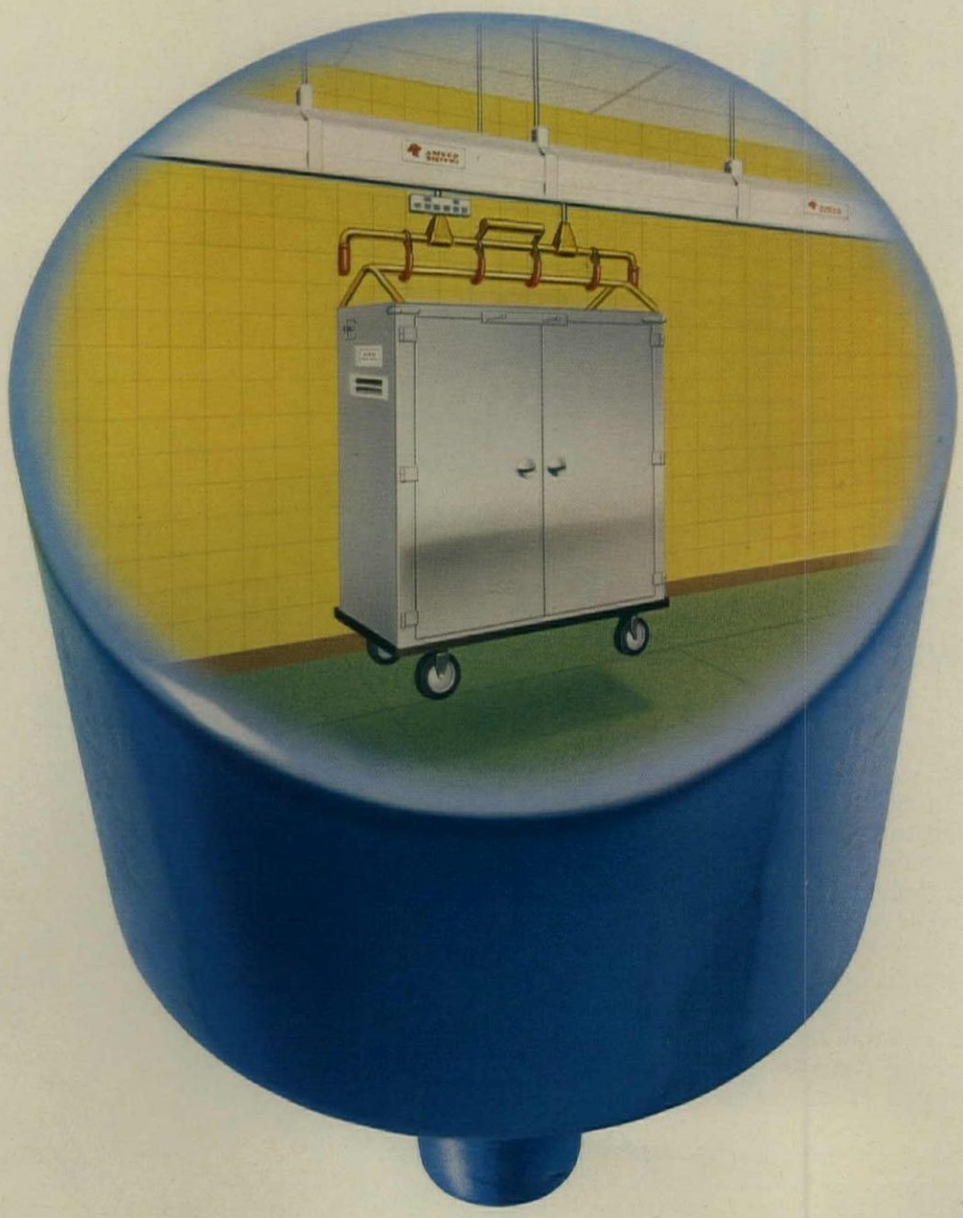

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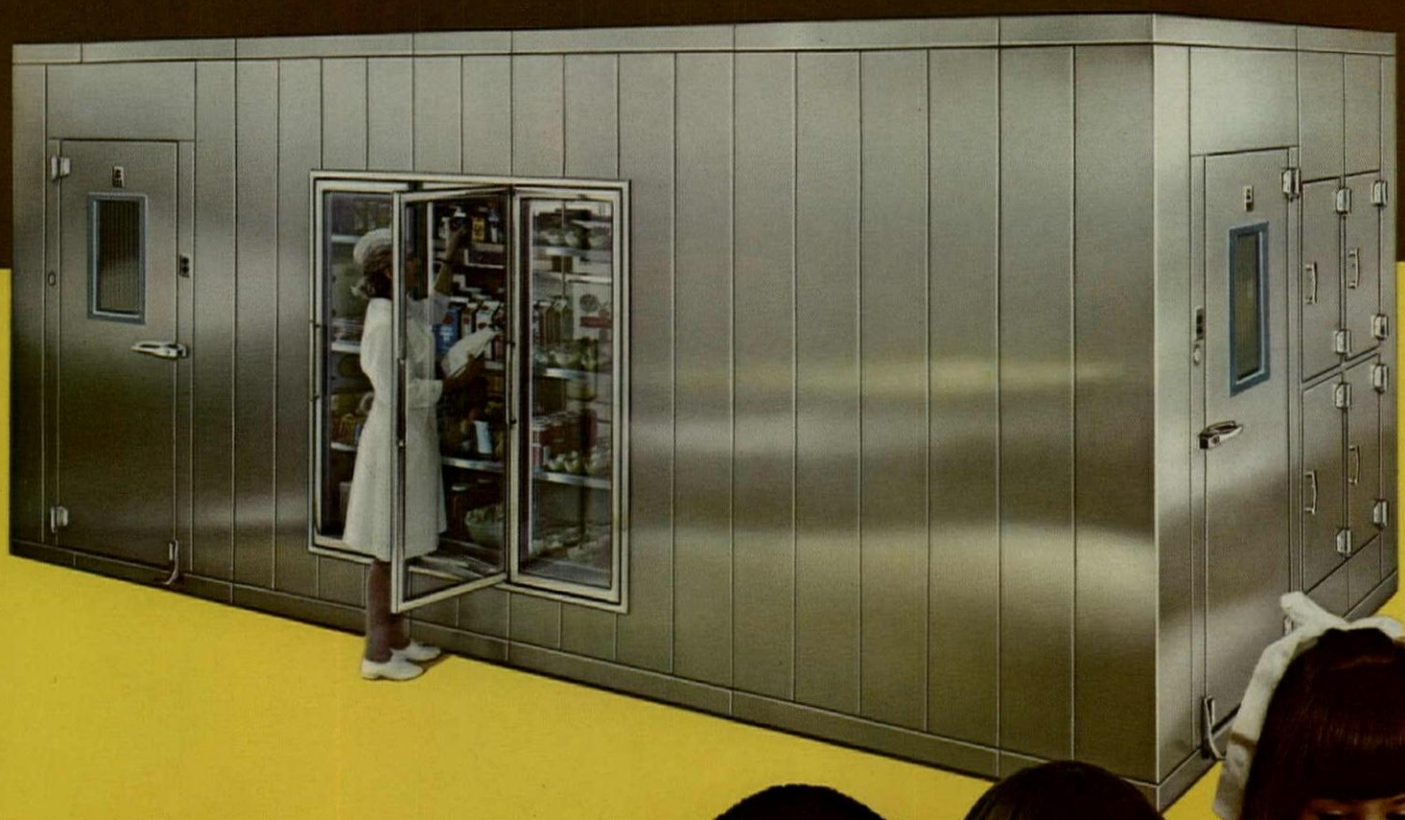

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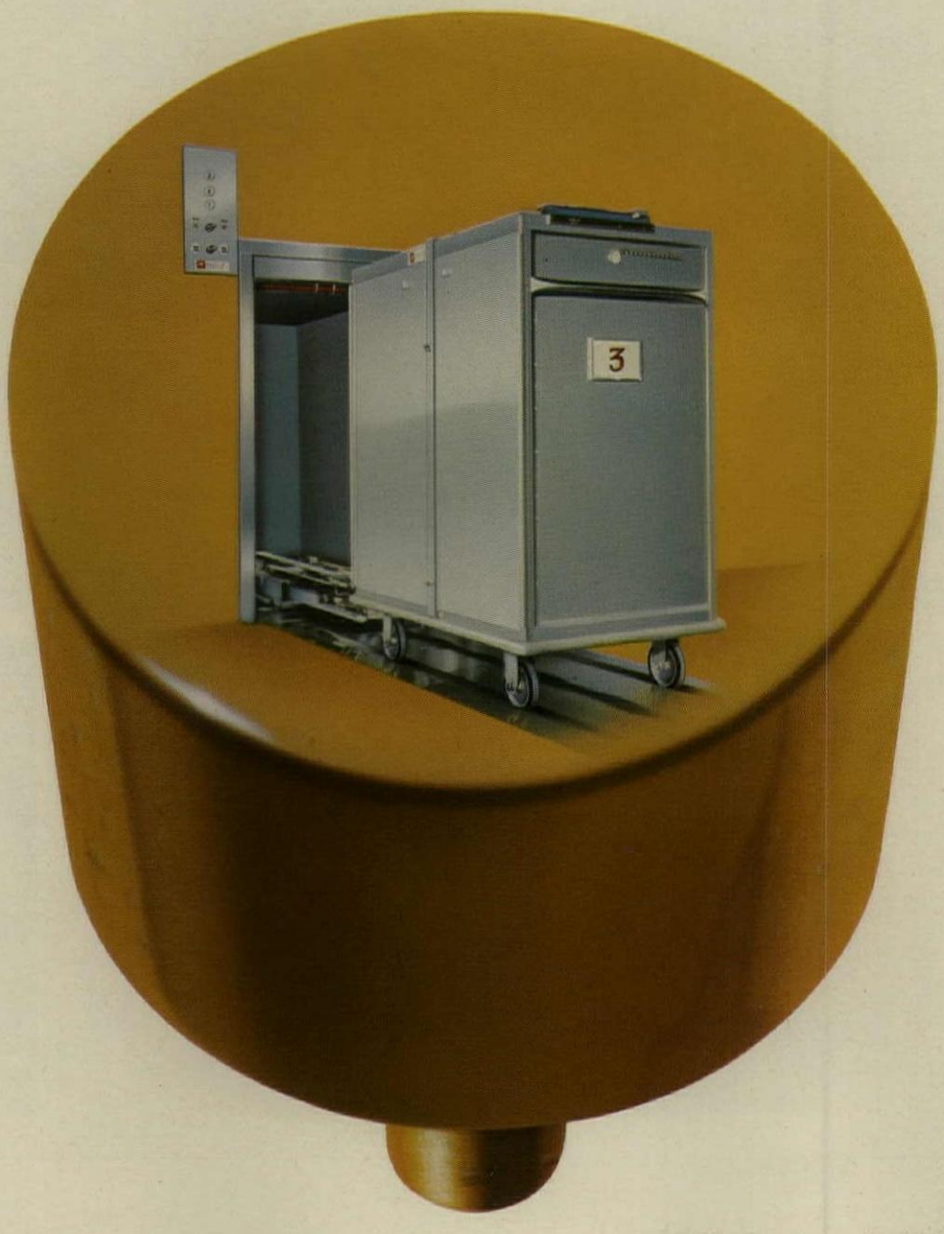

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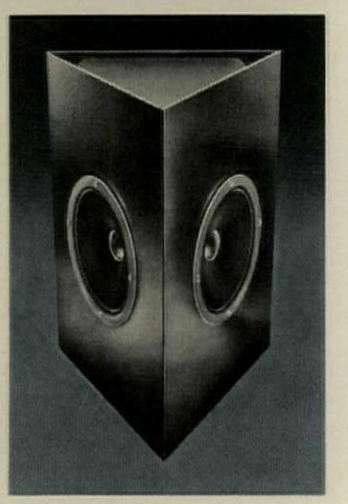

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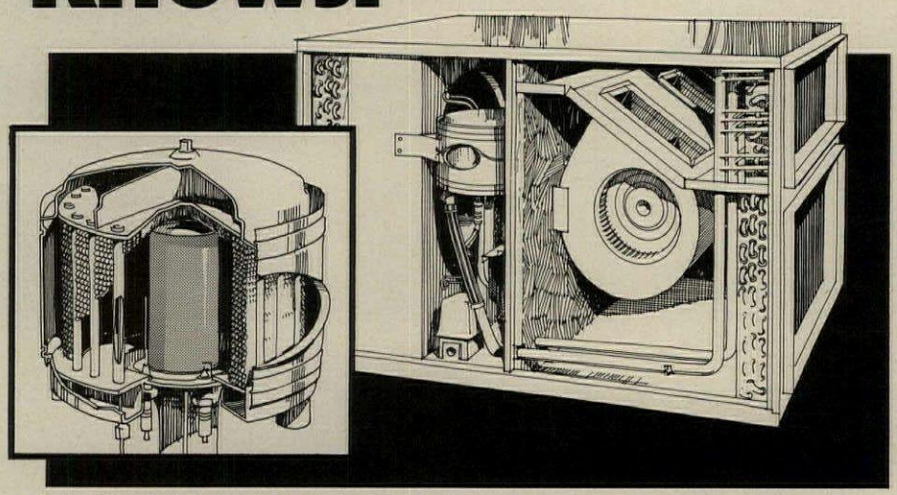

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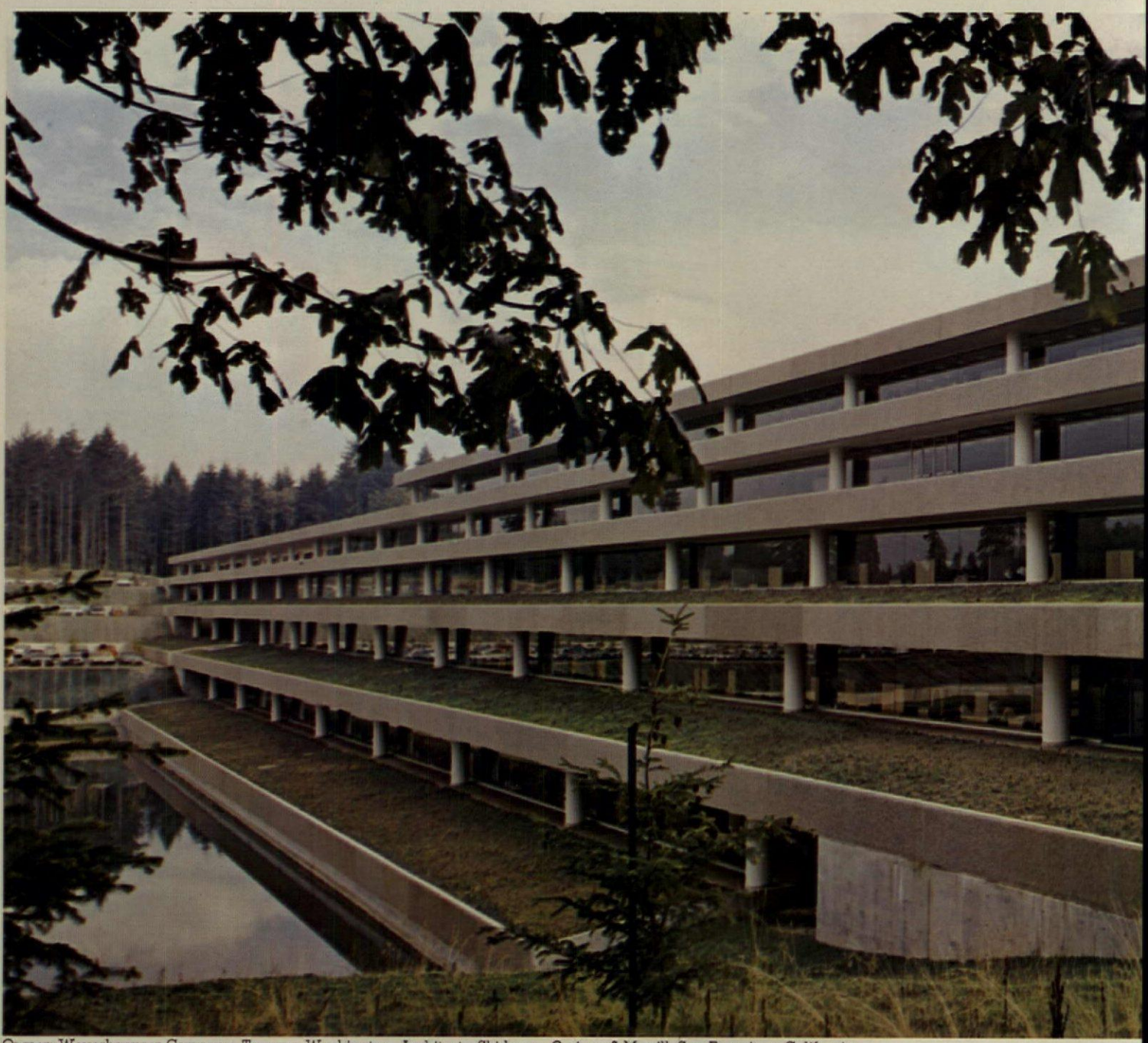

Owner: Weyerhaeuser Company, Tacoma, Washington. Architects: Skidmore, Owings & Merrill, San Francisco, California.
Building Contractor: Swinerton & Walberg, San Francisco, California. Glazing Contractor: Cobbledick-Kibbe Glass Co., Oakland, California.

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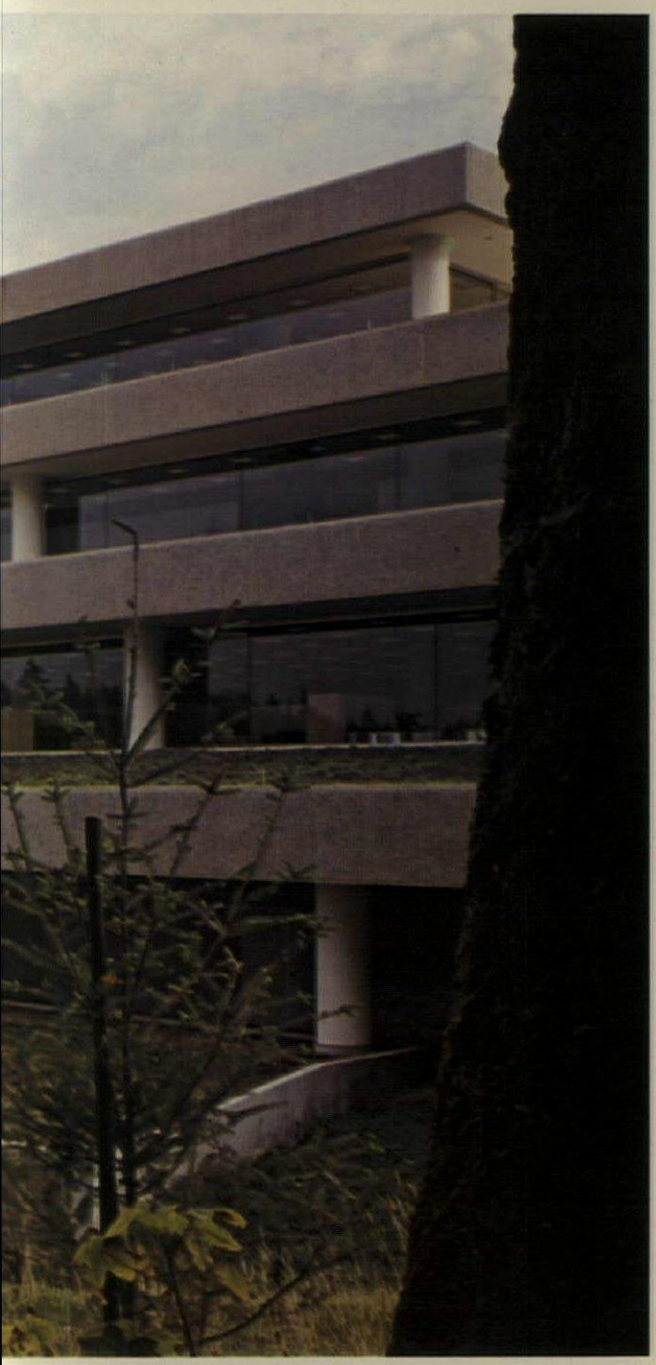

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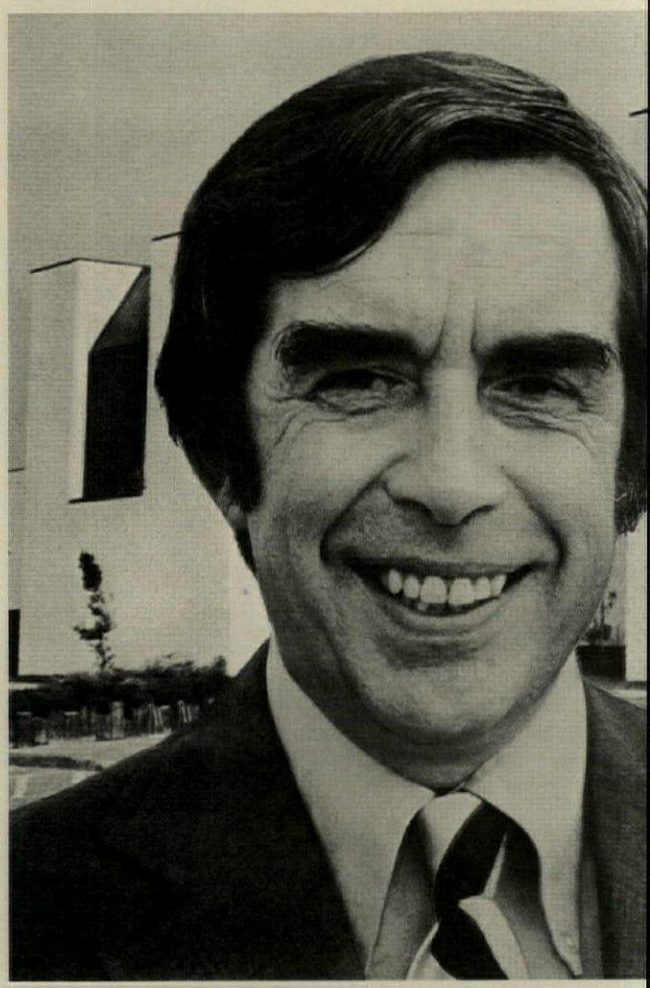

"Normally, we take 12 months to do a job the size of Westwood Fashion Place Mall. But we had to bring this one in within nine. Not easy."

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n Miller and the Westwood Fashion Place Mall in Houston, Texas. Mall covers 750,000 square feet.

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What do the people who work with BlocBond ink of it?

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Dodge/Sweet's Construction Outlook: 1976

Prepared October 1975 by the Economics Department, McGraw-Hill Information Systems Company; George A. Christie, vice president and chief economist.

On the very short list of good things that happened in the construction business during 1975, two events have to rank near the top.

The first was when the Dodge Index reached the bottom of its year-and-a-half-long slide. That occurred in the opening quarter of 1975, and the upturn that followed signaled the beginning of the recovery of the construction industry from its longest and deepest recession in a generation or more. But that recovery couldn't sustain itself very long without the backup of another event. That was the turnaround of the rest of the economy, and it took place during the second quarter. It meant, among other things, that the improvement in building activity that was beginning in the single-family housing market early in 1975 had a good chance of developing into a full-scale, across-the-board expansion of the entire construction industry over the year or two ahead.

Anticipating these cyclical turning points—when they would be reached and how far down the decline would go by the time it bottomed out—was the main concern of the *1975 Construction Outlook*. Now that things are on the way up again, the *1976 Outlook* can attend to a more pleasurable aspect of forecasting: exploring the potential that lies ahead as the recovery phase of the construction cycles picks up momentum.

If past performance is any guide, the potential to be realized over the next couple of years *could be* substantial. When the construction industry broke out of its 1970 recession, it entered a period of unusually rapid expansion. In 1971 the Dodge Index spurted ahead 18 per cent; in 1972, another 14 per cent. In the first two post-recession years, construction contract value rose 34 per cent before settling into its normal annual growth pattern.

The impact of that upswing in contracting on the demand for building materials was equally impressive. The pickup in materials demand came about six months after the upturn of the Dodge Index—the normal lag between contracting and material needs. And over the two-year period from mid-1971 to mid-1973, the gain in materials demand paralleled the earlier recovery in construction contracting almost perfectly, both in dollars and physical volume.

The cyclical upswing of 1971-72 brought the construction industry to 1973—its best year ever, by any measure. That was when construction expenditures, physical volume, employment, and materials used were all at their peak. Now the Dodge Index is again in the same phase of the cycle as it was back in mid-1970, and the industry is again in position to catch the construction market in a strong rebound. The big question: *will things be the same this time around?*

The outcome could be the same or different depending on how conditions have changed since 1970. Let's see how today's circumstances are *unlike* those of the previous recovery.

For one thing, the downward half of the current construction cycle was a good deal more severe than the last one. The duration of the declining phase of the 1970 cycle took a bit less than three quarters; this one ran for six quarters—twice as long. The extent of the decline from peak to trough in the 1970 cycle was 25 per cent (in real terms); this time it was more than 40 per cent. Clearly, this one is not just one more in a series of typical construction cycles.

For another thing, the current cycle has an added dimension—the "energy crisis." It is important to distinguish between the ephemeral effects of the construction cycle and the continuing change brought about by the oily intrigue that came to a climax early in 1974.

Finally, there is the matter of national economic policy, and here it is hard to say whether things have changed or not. If anything, President Ford shows himself to be at least as conservative in economic philosophy as his predecessor, if not more so. The make-up of today's team of economic policymakers (Burns, Simon, Greenspan, et al.)—all Nixon men—guarantees continuity with the past. And the issue they face in 1975 is not greatly different from the one they never quite resolved in 1970: should the problem of recession or the problem of inflation get top priority? In 1975—as in 1970—inflation is clearly the Administration's primary concern, and the target of its hard-nosed economic strategy. In that sense, today's approach to economic policy is hardly distinguishable from the old Nixon "Game Plan" of toughing it out with tight money.

But that strategy finally had to be abandoned in mid-1971 in favor of stimulative monetary and fiscal measures. Neither the strong expansion of construction nor the re-

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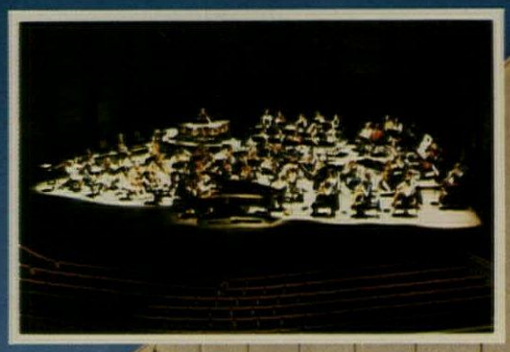

DOVER Stage Lifts

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Birmingham-Jefferson Civic Center Theater and Concert Hall, Birmingham, Al.
Architects: Geddes Brecher Qualls Cunningham, Philadelphia, Pa.
Construction Management/Consultant: Turner Construction Company, Cincinnati, Oh.
General Contractor: Brice Building Company, Birmingham.
Theater Consultants: Jean Rosenthal Associates, Inc., Orange, N.J.
Dover Stage Lifts installed by Dover Elevator Company, Birmingham.

"In many ways 1976 is like 1971, the beginning of the last big boom—and in many ways it is very different . . ."

covery of the economy as a whole during 1972 and 1973 could have happened the way it did without that reversal of the stifling program of 1970—the program that so closely resembles today's approach to economic policy. Of all the differences between the present and the past recovery, the biggest one could be this: unless there is some relaxation of present monetary tightness, much of the potential for expansion of the construction industry in the year or two ahead will never be realized.

To look for a complete reversal of economic policy from restraint to aggressive stimulation in 1976 is unrealistic, even though that's exactly what happened in 1971. But that doesn't rule out relaxation altogether. There is one compelling *non*-economic reason to expect a modification of present austerity and it is this: as much as 1975 has been dominated by economic problems, 1976 will be a political year. In such circumstances, politics usually transcend economics, and the practical politics of 1976 argue for more stimulation of the economy—a continuation of the tax cut, and some easing of the money markets—not dramatically as in 1971, but enough to make a difference, and at least enough to keep the recovery from taking an embarrassing reversal on the eve of elections.

With that key assumption in mind, let's see what 1976 holds for the emerging recovery of the construction industry.

Forecast: residential building

The 1975 recovery in construction began, as it usually does, with an upturn in one-family homebuilding. That happened back in February, when the one-family end of the housing market first began to respond to the strong inflow of savings that poured into the nation's thrift institutions during the second half of 1974. From a low seasonally adjusted annual rate of only 650,000 units in January, one-family home starts rose in a succession of monthly gains to 850,000 by midyear—a six-month improvement of 30 per cent.

Curiously, this six-month period has been labeled by some as a disappointment, and by others as a failure. The typical rationale is that the housing industry suffers from a multitude of problems, not the least of which are excess inventory, an inadequate supply of mortgage money, and a cost structure that has priced the product out of reach of middle-income families.

There may be a problem with the housing market, but it's not among the ones just cited—not, at least, in the first half of 1975. High prices and scarce, costly mortgages are normally thought of as deterrents to the sale of one-family housing. Yet, the strong recovery of singles during the first half of 1975 clearly shows that this is where all the action has been. But in the same six months that single-family building made its 30 per cent recovery, apartment starts simply hit bottom and stayed there. June's rate of 230,000 units was scarcely better than January's low of 210,000. It wasn't until July that the first sign of life appeared in the apartment statistics, but just to prove that one month's increase does not constitute a recovery in this volatile market, August apartment starts dropped right back again.

In the fall of 1975 the housing situation stands about like this: a pretty good recovery in single-family building so far this year, but little to cheer about in the stagnant apartment market. From here, this one-sided recovery could go either of two ways. Nourished by a continuing supply of mortgage money, the single-family upswing would continue into 1976, by which time an apartment recovery would also be taking hold. On the other hand, a prolonged new round of disintermediation (a reversal of savings flows) would yank the rug from under the single-family recovery by year-end as well as dash the hopes for even a delayed recovery of the apartment market.

Disintermediation is no longer a matter of whether but how much. By September the widening differential between interest paid on passbook savings and on alternative higher-yielding investments had already triggered a transfer of deposits. As savings flows dwindled, bankers became cautious about making new mortgage commitments. If this interest-rate spread persists, it will be only a matter of a few months before savings and loan institutions are unable to sustain even their current volume of home mortgage lending, much less increase it.

A crunch of some sort is almost inevitable, as the Treasury—which must borrow heavily in the months ahead to cover its huge recession deficits—meets head-on in the money markets with the Federal Reserve, which is holding dogmatically to a hard line of anti-inflationary restraint. Unless the Fed takes a more accommodating stand, the Treasury's demand for credit can only push rates higher.

One clue to how this dilemma could be resolved is found in the way the recovery of the economy itself is likely to go over the next few quarters. For a while, the pace of the recovery is apt to quicken as industry goes through a brief period of inventory accumulation. (This would be the opposite of the very sharp decline in production during the months last

National estimates 1976

Construction Contract Value (millions of dollars)	1975 preliminary*	1976 Forecast	Per Cent Change
Nonresidential Buildings			
Office Buildings	$ 4,150	$ 4,600	+11
Stores & Other Commercial	5,600	6,300	+13
Manufacturing	5,500	5,500	—
Total Commercial and Manufacturing	$15,250	$ 16,400	+ 8
Educational	$ 6,000	$ 5,850	− 3
Hospital & Health	4,200	4,600	+10
Other Nonresidential Buildings	6,325	6,550	+ 4
Total Institutional & Other	$16,525	$ 17,000	+ 3
Total Nonresidential	$31,775	$ 33,400	+ 5
Residential Buildings			
1- & 2-Family Houses	$24,500	$ 31,800	+30
Apartments	5,700	9,700	+70
Total Housekeeping	$30,200	$ 41,500	+37
Total Nonhousekeeping	$ 1,200	$ 1,500	+25
Total Residential	$31,400	$ 43,000	+37
Nonbuilding Construction			
Highways & Bridges	$10,100	$ 9,800	− 3
Utilities	8,500	9,500	+12
Sewer & Water	6,700	7,500	+12
Other Nonbuilding Construction	6,100	5,600	− 8
Total Nonbuilding	$31,400	$ 32,400	+ 3
Total Construction	$94,575	$108,800	+15
Dodge index (1967=100)	171	197	
Floor Area of New Buildings (millions of square feet)			
Nonresidential Buildings			
Office Buildings	110	115	+ 5
Stores & Other Commercial	320	350	+ 9
Manufacturing	150	175	+17
Total Commercial & Manufacturing	580	640	+10
Educational	160	150	− 6
Hospital & Health	70	75	+ 7
Other Nonresidential Buildings	190	185	− 3
Total Institutional & Other	420	410	− 2
Total Nonresidential	1,000	1,050	+ 5
Residential Buildings			
1- & 2-Family Houses	1,170	1,390	+19
Apartments	290	475	+64
Total Housekeeping	1,460	1,865	+28
Total Nonhousekeeping	35	40	+14
Total Residential	1,495	1,905	+27
Total Buildings	2,495	2,955	+18

* eight months actual; four months estimated

"The potential to be realized over the next couple of years could be substantial . . ."

spring when business inventories were being reduced.) For as long as it lasts, this burst of acceleration will give the Federal Reserve lots of statistical support for its restrictive policies. (A strengthening recovery, they insist, is enough evidence that tight money isn't harmful.) So as the Fed holds tight, and the Treasury borrows its large amounts, interest rates will continue to rise . . . and housing will suffer. Early next year, however, the economy's recovery will begin to sag—partly because the spurt of inventory building will have run its course, and partly as a direct consequence of tight money and high interest rates. That is when the Federal Reserve is likely to back off.

For housing this scenario implies that we must expect a "flat spot" in the curve of recovery (and hope it isn't any worse than just a temporary plateau). This flat spot might stretch over 1975's fourth quarter and next year's first quarter, followed by a resumption of expansion by, or before, mid-1976. The alternative—unrelentingly tight money to the point of sacrificing the recovery altogether—just isn't politically acceptable in an election year.

For single-family building, which has by now reached a rate close to 900,000 units, we see a ceiling of between 1,000,000 and 1,100,000 in 1976. Our forecast of next year's one-family housing starts: 1,025,000. This means that if there is to be a strong gain in total housing next year, most of it will have to come from the multi-family side of the market—where up to now things have been slow to happen.

A lag between the recovery of one-family building and a pickup in apartment construction is normal and reasonable. In prior housing cycles, this lag has been between three and six months, and since the current cycle has been a great deal more severe than average, a six-month (or even longer) lag in the multi-family market is well within the limit of experience. But it's been more than six months now, and if something is going to happen, it had better start happening soon.

It was at this point in the 1970 building cycle that conditions were just right for the extraordinary wave of multi-family building that followed over the next two and a half years. By contrast, the situation in 1975 is less promising.

In 1970, on the eve of the greatest apartment boom ever known, rental vacancy rates revealed the dire shortage of apartment space that had been created by the combination of low rates of building during the 1960's and a burgeoning demand for space resulting from rapid demographic change. The 5.3 per cent vacancy rate of 1970—lowest of any time during the 1960's or the 1970's—compares with a current rate of 6.3 per cent.

While 6.3 per cent is not a high vacancy rate by historical standards, there is some question about its comparability with the earlier period. Rental vacancy rates do *not* include either *unfinished* apartment units or *unsold* condominiums—both of which exist in abundance in certain parts of the country. If today's vacancy rate could be adjusted to reflect the many thousands of available or unfinished condos that are effective substitutes for apartments, it would be a lot higher than 6.3 per cent. In any event, the current recovery of apartment building begins with a considerably closer balance between supply and demand than in 1970.

A second important difference is the status of subsidy programs. During the boom years of 1970, '71, and '72, a total of more than 600,000 new apartment units were built under the various Federal subsidy programs. The 1973 freeze on these programs by President Nixon leaves HUD with little more than its "Section 8" program, emphasizing occupancy of existing units rather than construction of new ones. The recent release of impounded Sec. 235 funds will not stimulate apartment building.

Finally, there is the difference of cost, which in the case of apartment development means financing, building and operating costs. Compared with the early phase of the last apartment cycle, short-term interest rates for construction money are at least 50 per cent higher, and long-term rates for permanent financing are up by perhaps 30 per cent. Construction costs over the five years have risen more than 50 per cent (from $12,800 per unit to $19,000), and operating costs—reflecting the 60 per cent rise in fuel and electricity prices—have been the latest to escalate. Comparing these inflated costs with the smaller 25 per cent rise in rental income since 1970 is what leads developers (and lenders) to conclude, "The arithmetic doesn't work."

So an apartment boom like the last one—the one that zoomed up past the one million rate at its peak—just isn't in the cards at this time, not without 1971-type shortages, not without 1971-type subsidies, and not without 1971-type interest rates. But the rate of apartment starts isn't going to stay at its currently depressed 250,000 unit level forever, either. We estimate a 350,000 rate by the final quarter of 1975, and a total of 500,000 apartment units in 1976.

Together with 1,025,000 single-family homes next year, this partial recovery of apartment construction will bring next year's residential building total to 1,525,000 units—a gain of one-third over the lowly 1,150,000 housing starts of 1975.

This estimated 1.5+ million total is a far cry from the 2.1 million surge of 1971. But curiously enough, 1.5 million units in 1976 will cost in the neighborhood of $40 billion—about 15 per cent *more* than the 1971 cost of 2.1 million units, which, at $35 billion, are beginning to look like the bargain of the decade.

Forecast: nonresidential building

While the cycle in residential building normally leads the general business cycle, nonresidential building typically lags the turns in business activity. The reason is simple enough. More than half of the construction included in the nonresidential building category involves business facilities—factories, warehouses, offices, stores and shopping centers. It is these highly volatile building types, rather than schools, hospitals, and other relatively stable "institutional" buildings, that govern the turning points of nonresidential contracting.

As the economy makes its transition from recession to recovery, industry typically finds itself with considerable excess capacity—the result of cutting back on production in order to trim inventories during the recession phase of the cycle. During the first half of 1975, business experienced especially heavy inventory liquidation, with consequent cutbacks in production. At midyear, when industrial production was finally beginning to advance, only about 75 per cent of available capacity was in use. This slack existing throughout the system is the primary barrier to investment in new facilities. The time it takes for rising production to absorb a good part of this excess capacity is how long it will be before the next upturn in nonresidential building takes hold.

At present (some seven months after the upturn of residential building and four months after the upturn of general business activity), contracting for nonresidential building is still declining and will likely continue to decline for several more months before next year's recovery begins. This strongly suggests some important things about the nonresidential building market in 1976:

- The *direction* of contracting for nonresidential building will be upward through most of 1976, starting from a depressed rate and recovering to a reasonably healthy rate by year-end.
- As the upward phase of the nonresidential cycle progresses, we can expect a significant shift in the composition of this market. Industrial and commercial building, now at its cyclical low, is only 47 per cent of total nonresidential contract value in 1975. In 1976 this share

For housing: ". . . a flat spot over the first quarter . . . a resumption of expansion by, or before, mid-1976."

will rise to about 51 per cent, and in 1977 to as much as 54 per cent.

- The *total amount* of work started in calendar year 1976 won't be greatly different from 1975's total since we'll be experiencing the other half of the cycle (which was in its declining phase through all of the past year).
- The potential for 1977 contracting for nonresidential buildings is considerable since that year will be starting off at a high rate of contracting and the cycle will still be in its ascending phase. Typically, the second post-recession year (in this case 1977) is the one when most of the gain is realized in nonresidential building. The first post-recession year (1976) is the turnaround year.

Manufacturing buildings At mid-1975, when the recession was at its lowest ebb, the Dodge Construction Potentials Bulletin was reporting a statistic that was hard to believe: contracts for manufacturing buildings for the first half of 1975 were *up* . . . and by 35 per cent. Not only does this strange situation demand an explanation, but the explanation itself is an important tip-off to the near future.

One word tells most of the story: energy. In the first half of 1975—in the thick of the recession—the petroleum and chemical industries began work on a record $2 billion of energy-related construction (mostly refineries and processing plants). Those projects accounted for more than half of all the manufacturing construction contracted in those six months. By contrast, general manufacturing took the same kind of nose dive it took in the 1970 recession. Through midyear, contracting for all other factory buildings dropped just over 50 per cent—much in line with previous experience.

Assuming the economy's recovery doesn't falter, two things will have a strong bearing on the strength of industrial building next year. One is that in any upswing, the rate of recovery in the early stages is never as rapid as the decline it follows. After the 1970 recession, for example, it took two and a half years to regain the level that was lost in only one year of decline. For another thing, this time around the energy boom of 1975 adds an extra handicap to the recovery of manufacturing building in 1976. As general manufacturing construction moves up, contracting for refinery and chemical plants will be receding from this year's extraordinary peak. So if energy-related construction drops back to, say, $1.5 billion in 1976 (and it could easily hold this high since there's a huge refinery project scheduled to start in Alaska next spring), a gain of about 20 per cent in *general* industrial contracting next year would bring the 1976 total just about even with 1975's remarkable $5.5 billion.

Regional estimates 1976

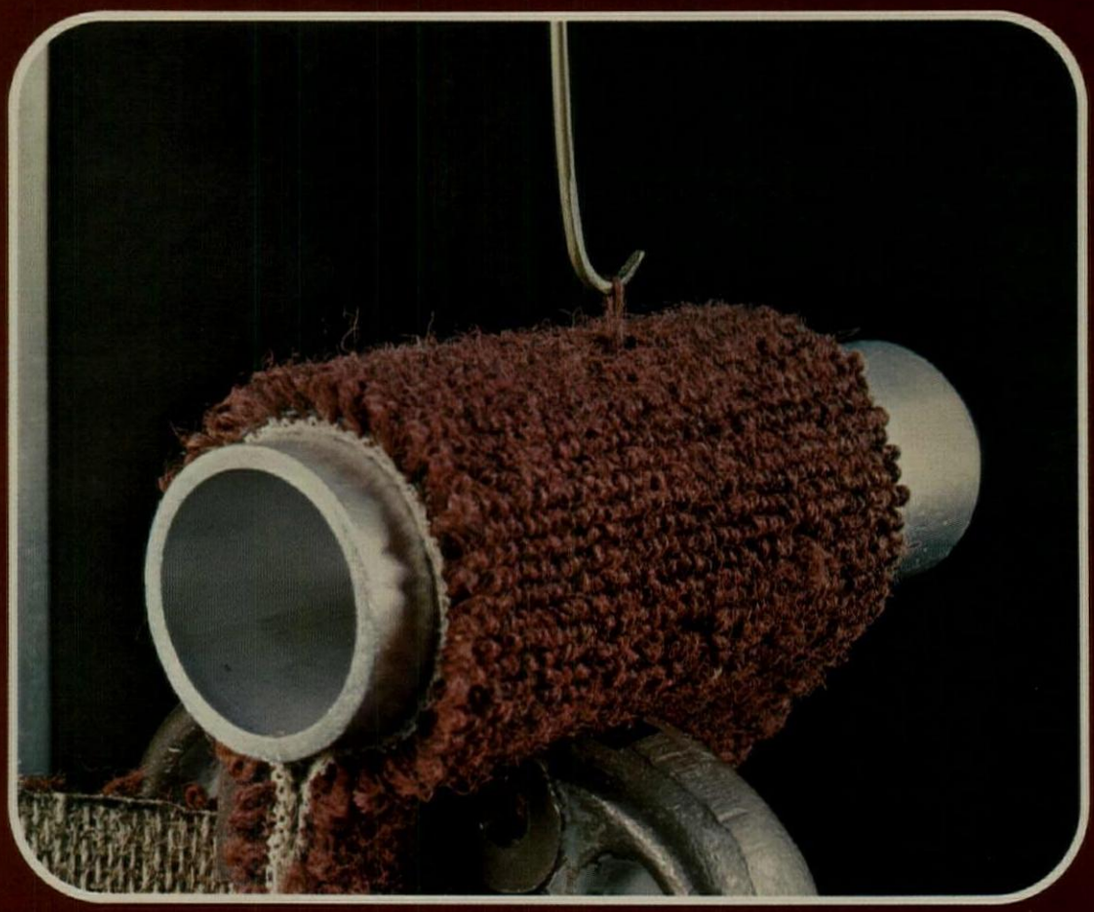
Construction Contract Value (millions of dollars)	Northeast: Conn., D.C., Del., Mass., Md., Maine, N.H., N.J., N.Y., Eastern Pa., R.I., Va., Vt.			Midwest: Northern Ill., Ind., Iowa, Ky., Mich., Minn., N. Dak., Ohio, Western Pa., S. Dak., Wis., W. Va.		
	1975 preliminary*	1976 Forecast	Per Cent Change	1975 preliminary*	1976 Forecast	Per Cent Change
Nonresidential Buildings						
Commercial & Manufacturing	$ 2,600	$ 3,000	+15	$ 3,350	$ 3,600	+ 7
Other	4,150	4,300	+ 4	4,150	4,300	+ 4
Total	$ 6,750	$ 7,300	+ 8	$ 7,500	$ 7,900	+ 5
Residential Buildings						
1- & 2-Family Homes	$ 3,900	$ 4,900	+26	$ 5,900	$ 7,900	+34
Apartments	1,200	2,000	+67	1,500	2,500	+67
Nonhousekeeping	200	300	+50	200	300	+50
Total	$ 5,300	$ 7,200	+36	$ 7,600	$10,700	+41
Nonbuilding Construction						
Highways & Bridges	$ 1,500	$ 1,600	+ 7	$ 2,700	$ 2,600	- 4
Other	4,900	5,600	+14	4,900	5,400	+10
Total	$ 6,400	$ 7,200	+13	$ 7,600	$ 8,000	+ 5
Total Construction	$18,450	$21,700	+18	$22,700	$26,600	+17

Construction Contract Value (millions of dollars)	South: Ala., Ark., Fla., Ga., Southern Ill., Kans., La., Miss., Mo., N. C., Nebr., Okla., S. C., Tenn., Tex.			West: Alaska, Ariz., Calif., Colo., Hawaii, Idaho, Mont., Nev., N. Mex., Ore., Utah, Wash., Wyo.		
	1975 preliminary*	1976 Forecast	Per Cent Change	1975 preliminary*	1976 Forecast	Per Cent Change
Nonresidential Buildings						
Commercial & Manufacturing	$ 5,900	$ 5,800	- 2	$ 3,400	$ 4,000	+18
Other	4,625	4,700	+ 2	3,600	3,700	+ 3
Total	$10,525	$10,500	—	$ 7,000	$ 7,700	+10
Residential Buildings						
1- & 2-Family Homes	$ 9,100	$11,800	+30	$ 5,600	$ 7,200	+29
Apartments	1,300	2,500	+92	1,700	2,700	+59
Nonhousekeeping	500	500	—	300	400	+33
Total	$10,900	$14,800	+36	$ 7,600	$10,300	+36
Nonbuilding Construction						
Highways & Bridges	$ 3,700	$ 3,500	- 5	$ 2,200	$ 2,100	- 5
Other	6,400	6,200	- 3	5,100	5,400	+ 6
Total	$10,100	$ 9,700	- 4	$ 7,300	$ 7,500	+ 3
Total Construction	$31,525	$35,000	+11	$21,900	$25,500	+16

*eight months actual; four months estimated

Commercial buildings The end of a three-and-a-half-year wave of commercial building came to an abrupt halt in the closing months of 1974. Earlier developments in residential building, last year's money crunch, and finally the deepening of the recession in 1975 all took their toll, carrying the rate of contracting for offices, shopping centers and other retailing facilities and commercial warehouses from a peak of close to $14 billion (annual rate) in 1974's third quarter to only $9.5 billion by mid-1975. That's about the rate of commercial building that was going on back in mid-1970 when the whole cycle began.

Most of the steep decline of commercial



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". . . an apartment boom like the last one just isn't in the cards."

building was confined to the latter part of 1974 and the early months of 1975. By this year's third quarter it was evident that the market had stabilized in the range of $9-$10 billion and was looking for reasons that might justify a new advance—a housing recovery that would lead to shopping center development, lower unemployment that would reduce high office building vacancy rates, or less inflation and lower interest rates that would help make development feasible. Some of these conditions for improvement are taking enough hold to justify cautious optimism about an upturn in commercial building in 1976. A tenuous housing recovery has already begun. Unemployment is gradually receding. The odds favor less rather than more inflation next year, and that could provide at least one reason for the Fed to back off its highly restrictive monetary policy (if it wants to). But while these improvements point to recovery of commercial building, they also seem to be saying that, initially at least, the recovery will lack any real drive. No dramatic decline of interest rates is in the cards. No superboom in housing such as occurred in 1971 and 1972 is about to happen. Instead, the improvements in these areas that could stimulate a recovery in commercial building next year are bound to be a lot more modest this time around. And it follows that modest stimuli make for a modest recovery.

Contracting for retail facilities is likely to show earlier strength than office buildings, and may already be in the preliminary stage of an upturn. The 1975 third quarter pickup in the rate of store and shopping center work might be an early indication of the demand for stores that usually derives from a gain in homebuilding. If it is, the improvement that has already taken place in one-family housing starts during the first half of 1975 ought to keep this incipient recovery in retail building alive for a while, at least. But if the housing recovery falters, can retail building be far behind?

It will take more than a little homebuilding to get the stagnant office building market moving. Although the collapse of the office building market between mid-1974 and mid-1975 was unquestionably related to (and aggravated by) the recession, the improving economic outlook for 1976 doesn't guarantee a quick recovery of office building by any means. The main deterrent to recovery of office demand is the unabsorbed residual of the exceptional boom of the early 1970's, which in the past couple of years has set the office vacancy rate soaring to the 12-13 per cent range. And since the office building boom managed to cover all major regions as it meandered around the country, starting in the Northeast back in 1969 and finishing in the South in 1974, there's hardly an area of office scarcity to be found anywhere. Of the several types of commercial buildings, offices are likely to be the last to recover, showing only a nominal gain in 1976.

Institutional buildings All the while that industrial and commercial construction has been going through the gyrations inspired by the business cycles of 1970 and 1975, institutional building has been displaying its outstanding characteristic: steadiness. Five years ago the total volume of contracting for institutional building was 430 million square feet of floor area, and that number serves equally well as an estimate of what 1975's volume will also turn out to be. What's more, the rate of building for the years in between has hardly strayed from this steady level. (Dollar value has risen through inflation, of course, from $13 billion in 1971 to the present $16 billion.)

The stabilizing element in the institutional building market is educational facilities, where the declining trend that set in around the end of the 1960's is just about canceling whatever continuing growth is to be found in such other "institutional" categories as hospitals and other health facilities, religious buildings, public administration buildings, and recreational facilities. There is little reason to expect any significant change in this unchanging building market in 1976. Just as institutional building helped cushion the decline of total nonresidential building during the 1975 recession, so will the stabilizing influence of this sizable but steady portion of the construction market retard the expansion of nonresidential building during the recovery of 1976.

Forecast: Total construction activity in 1976

It all adds up to something well over $100 billion of new construction contract value next year—perhaps as much as $8-9 billion on the high side. At $109 billion, the 1976 total would be 15 per cent above the $95 billion totals for both 1974 and 1975, the recession and recovery years of the construction cycle of the mid-1970's. And it will be more (in inflated dollars, at least) than the previous peak of $98 billion reached in 1973.

But that's not the real significance of next year's outlook. Cyclical expansion isn't something that happens between January 1st and December 31st. The turnaround in construction activity has already begun. Next year's above-average gain of 15 per cent will be the outgrowth of the recovery that is right now in the making.

Something old . . . and something new

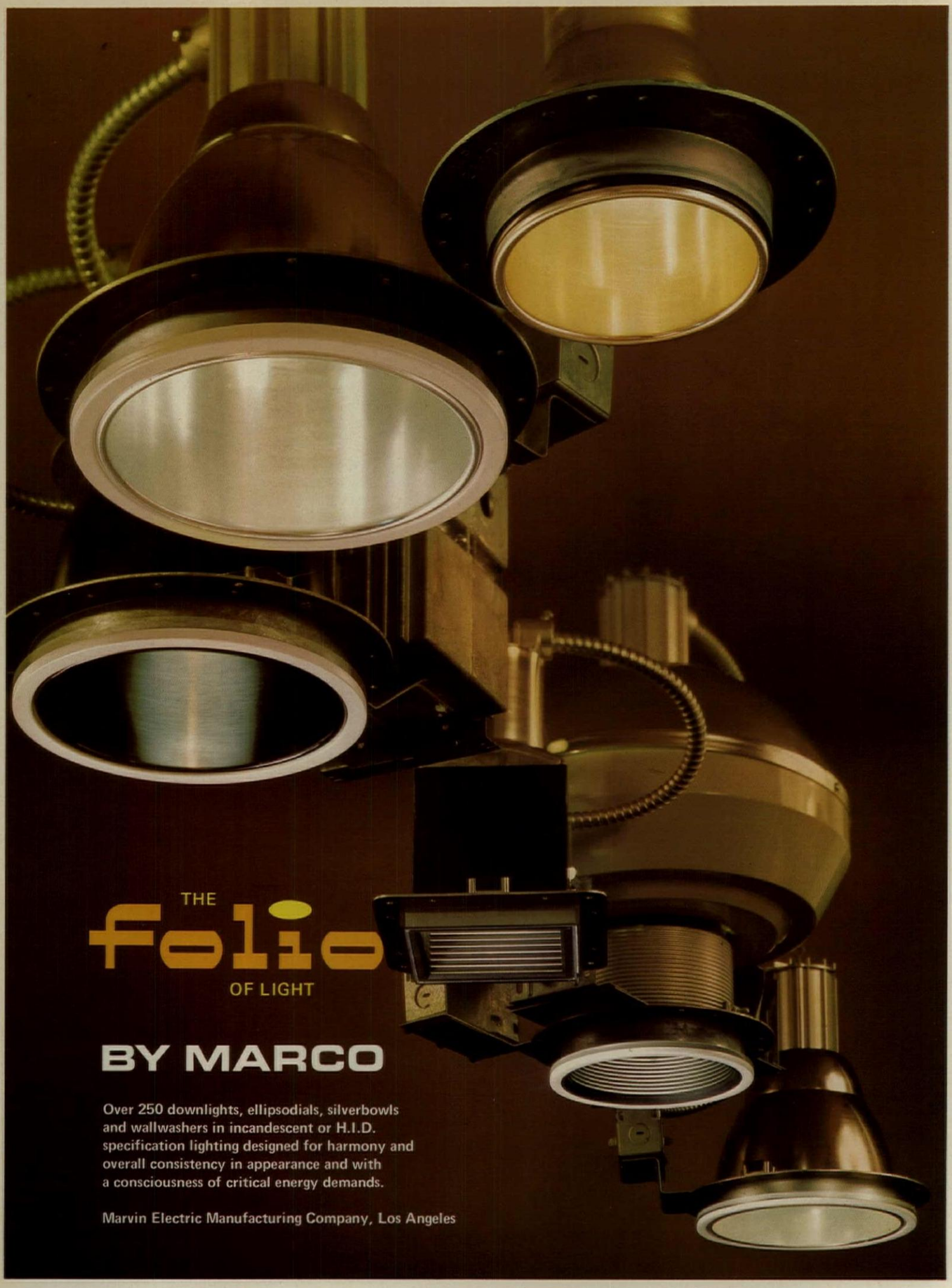
In the second half of 1975, the construction industry is once again in a cyclical upswing, advancing on a period of above-average expansion for the next couple of years. Drawing early strength from gains in housing and energy-related construction, the Dodge Index rose briskly, though erratically, through 1975's second and third quarters, reaching a new high of 208 (1967=100) in August. By that time, it became clear that the economy at large was also beginning to make its recovery—a very necessary condition if construction's rebound is to strengthen and broaden. With these preliminaries out of the way, the normal course of events should bring an upturn before mid-1976 in the one remaining soft spot in construction markets—nonresidential building, typically the last to recover.

That's a pretty optimistic outlook, and it sounds very much like the way the construction boom of 1972-73 got its start. And the similarities are strong. Yet there are a couple of important reservations to keep in mind before chalking up next year's profits. One: This is still a fragile recovery. Without proper care and feeding, it could collapse. Two: Even if it succeeds, the 1975-76 construction recovery will not be a simple replay of the previous cycle. It will have a personality of its own.

The immediate risk to the 1976 expansion of the 1975 recovery in construction is that the Ford Administration ultraconservative economic policies will turn it off before it ever really takes hold. It is axiomatic that construction cannot move ahead without either private lending or public spending—and often it requires a combination of both. Right now we aren't getting much of either. Of most urgent concern is what is happening in the money markets and the threat that tight money poses to the continued recovery of housing.

Under the assumption that the construction market will weather a brief credit crunch this winter, and then resume the expansion that began last spring, there are still some ways the 1976 expansion will be different from its 1972 counterpart.

Housing will have a decidedly smaller part in this upswing than in the previous one. The housing subsidy freeze is the reason. In 1971, '72 and '73, HUD's subsidy programs were at their peak. Today, as the result of the January, 1973, moratorium on subsidies, those programs are dormant. It is no coincidence that during 1974 and 1975 housing production fell two million units short of the goals established by the 1968 Housing and Urban Development Act. In mid-October, HUD's Sec. 235



For more data, circle 46 on inquiry card

Total starts next year: 1,525,000— up one-third over 1975

released $264.1 million in subsidies for middle-income homes and condominiums, allowing us to raise our estimate for 1976 housing starts a little. Without subsidies, the ceiling on next year's housing starts had to be around 1.5 million. Now the range looks to be somewhere between 1.5 and 1.7 million, the best guess being about 1.6 million, since to get beyond that level would require a bigger increase in multi-family housing than seems likely. That means a gain in residential contract value next year of as much as 40 per cent. But percentages aside, it's still only 1.6 million dwelling units—far short of what it should be.

Energy is taking a more dominating role. Today a significantly greater share of the construction dollar is being spent to create or to conserve energy. This is just as true whether the concept is applied to the types of construction demanded (more refineries, pipelines, storage facilities, chemical processing plants, electric generation stations, mass transit facilities) or the design of most structures (involving glass usage, insulation, lighting, heating, air conditioning, etc.).

Non-residential: "Upward— starting from a depressed rate and recovering to a reasonably healthy rate by year end."

Nonbuilding construction, after surging ahead some 20 per cent in 1975, will level off in 1976 as the extraordinary concentration of billions of dollars of construction related to the Trans-Alaska pipeline tapers off. Nevertheless, this is still where most of the nation's answers to its energy problems are to be found. It is probably safe to say that, in terms of national priorities (and the subsidies that convert priorities into realities), energy will take on something of the same role in the second half of the 1970's that housing had in this decade's first half. How else can you interpret the phasing out of HUD's housing subsidy programs, and the substitution of the proposed "Energy Independence Authority"—the Administration's new plan to channel up to $100 billion into energy projects over the next decade?

A third important difference between this recovery and the last one is the cumulative effect of five years of rampant inflation. As construction costs escalated during the first half of the 1970's, prospective owners of buildings reacted by cutting back the size of the structures they built. It's not only the new one-family home that has shrunk in recent years; nonresidential buildings have also been "deflated." Since 1969, when the typical nonresidential building project ran about 16,000 square feet in floor area, average size has declined year by year, building type by building type, to the present average of around 12,000 square feet. The extent of this attrition by inflation can be shown another way: at present, $1,000 "buys" only 35 square feet; five years ago, $1,000 "bought" nearly 50 square feet.

There are indications, however, that the severe inflation of the early 1970's in construction is receding, and for good reason. The demand for building materials has declined roughly 20 per cent during the two-year recession. Unemployment in the building trades is currently on the high side of 20 per cent. As these adverse developments became increasingly evident, construction inflation—as measured by the index of composite construction costs—dropped back from its 14 per cent peak in 1974 to 9 per cent in 1975, and should decline still further in 1976.

Not long ago, soaring wage rates were the main source of inflated building costs, but more recently the unsettling element has been gyrating materials prices. First it was the roller-coaster ride of lumber prices during the housing boom of 1972 and 1973. Then it was the post-controls catch-up of most fabricated products, in 1974, compounded by severe shortages of steel products and other critical materials. These extraordinary circumstances sent the previously stable index of wholesale prices of building products into a series of convulsive jumps—9 per cent in 1973, 16 per cent in 1974, another 8 per cent in 1975. Meanwhile, wage increases in the building trades settled back to the range of 5-10 per cent compared with the 10-15 per cent yearly hikes of the early 1970's.

By mid-1975 reduced demand for materials due to the recession had blunted the sharply upward trend of the wholesale price of building products, and in most cases unpublicized discounting meant actual price reductions. For the immediate future both wage and price pressures in construction are likely to remain a good deal less severe than they have been for the past three years. High unemployment will hold wage demands at or near the cost of living rate for the time being. Materials costs will reflect the volatility of lumber prices and the continued sluggishness of prices of most manufactured products until the housing recovery is reinforced by an upturn in nonresidential building next year. We look for a brief period of stability in the composite index of construction costs over the balance of 1975, followed by an over-all increase of about 7 per cent in 1976—the smallest rise in three years. And if inflation in construction can be held to 7 per cent in 1976, it means that next year's forecast of 15 per cent expansion in contract value implies a strong 8 per cent improvement in the elements of "real" construction—jobs and building products—and a big step back in the direction of the better times of 1972 and 1973.

In a sharp break with traditional lock design, Russwin has created building protection that's in a class by itself . . . the new Emhart High Security Locking System. This advanced concept features inter-locking pins operated by cross-cut configurations in a unique key.* It's virtually pick-proof. And, as an additional security measure, Russwin will duplicate the key only for authorized persons.

This revolutionary system can be tailored to a building without the excessive cost of a complete new security system. While it cannot be operated with keys from other Russwin locks, keys used in this system may operate other selected Russwin locks.

*Patent applied for UL listed

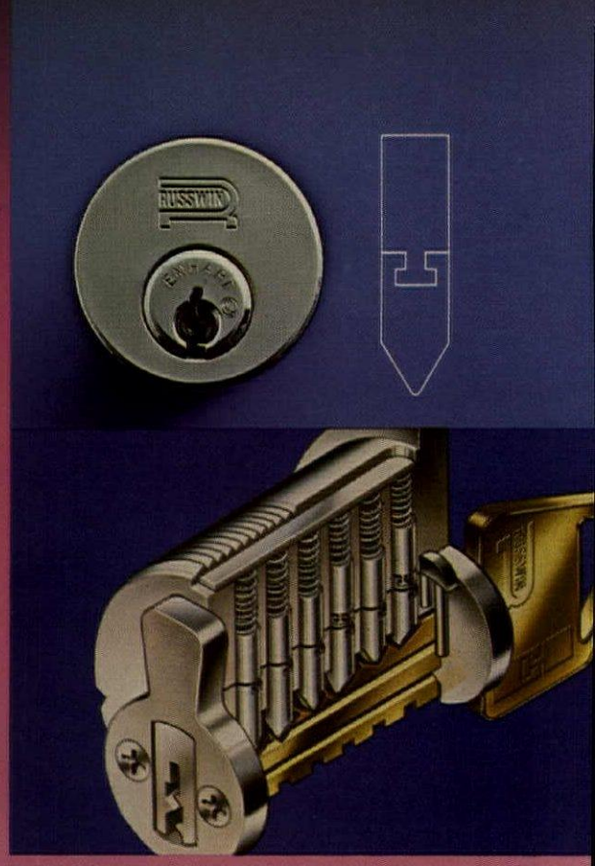
This permits the use of conventional locks in normal security areas and Emhart High Security System locks in critical security areas. All may be operated with one key. If desired, Emhart High Security Cylinders may be superimposed on new or qualified locking systems.

Have Russwin make up a high security package to your custom requirements with a fine quality lock and the Emhart High Security Locking System built into it. You'll have the key to positive building protection in your pocket! For details, write Russwin, Hardware Division, Emhart Corporation, Berlin, Connecticut 06037.

For more data, circle 47 on inquiry card

HARDWARE DIVISION, EMHART CORPORATION
BERLIN, CONN. 06037

RUSSWIN



Emhart High Security Cylinder design presents the would-be intruder with what we believe are insurmountable odds. Angular cross cuts in the key bit simultaneously rotate the lower sections of the two-section pins a precise number of degrees. This action lines up T-slots in their upper ends with mating projections in their upper sections to free the cylinder. A would be intruder must find the exact angle of rotation for each pin to beat the system. Virtually impossible, when you consider the vast number of possible combinations of angles in the 6-pin cylinder!

Protection perfection

U.S. Summary of Building Construction costs

Districts	4/75 to 9/75	9/74 to 9/75	% under NY,NY
Eastern U.S.			
Metro NY-NJ	+4.8	+ 7.9	− 5.4
New England States	+4.3	+ 7.9	− 9.5
Northeastern and North Central States	+5.7	+10.0	− 9.3
Southeastern and South Central States	+4.4	+ 7.8	−23.5
Average Eastern U.S.	+4.9	+ 8.7	−13.3
Western U.S.			
Mississippi River and West Central States	+5.7	+ 9.8	−16.8
Pacific Coast and Rocky Mountain States	+6.1	+11.4	−12.0
Average Western U.S.	+5.9	+10.5	−14.7
United States: Average	+5.2	+ 9.3	−13.8

Average building construction costs have gone up 5.2 percent since last spring and now stand at 9.3 percent above a year ago. 183 metropolitan areas throughout the United States reporting in the current Dodge Building Cost Calculator survey tie the increase to higher hourly wages for building trades craftsmen up 9.9 percent for the year, while building material prices increased 8.8%.

Basic hourly wage rates are 6.0 times what they were in 1941 whereas material prices are about 3.7 times that year.

John H. Farley, senior editor
Dodge Building Cost Services

INDEXES: November 1975 — 1941 = 100.00 (except as noted)

Metropolitan area	Cost differential	Current Indexes non-res.	residential	masonry	steel	% change last 12 months
U.S. Average	8.5	520.0	477.6	512.2	499.5	+ 9.7
Atlanta	7.5	605.4	570.8	596.6	585.8	+ 4.1
Baltimore	8.5	590.5	555.2	581.6	564.7	+ 8.7
Birmingham	7.3	454.2	422.4	442.9	436.6	+ 6.5
Boston	9.0	519.4	490.7	522.0	504.1	+10.9
Buffalo	9.1	578.2	526.9	569.7	552.9	+10.0
Chicago	8.3	555.3	521.4	547.1	540.3	+ 5.8
Cincinnati	8.8	553.0	508.0	545.4	532.4	+10.1
Cleveland	9.0	536.4	492.2	528.5	515.4	+ 4.2
Columbus, Ohio	8.2	534.6	487.0	526.7	511.0	+ 5.9
Dallas	7.9	502.2	476.4	497.2	487.1	+ 4.6
Denver	8.4	557.7	513.9	551.1	539.8	+ 8.6
Detroit	9.8	623.2	568.6	615.8	589.8	+10.9
Houston	7.4	486.0	448.2	478.8	470.3	+13.7
Indianapolis	7.8	458.8	420.9	452.0	441.6	+ 7.5
Kansas City	8.7	512.4	475.6	505.3	496.4	+14.5
Los Angeles	8.5	602.4	540.1	588.9	577.6	+11.5
Louisville	7.6	498.3	458.7	490.9	481.3	+ 7.0
Memphis	8.4	533.9	491.2	526.0	515.4	+11.7
Miami	7.9	563.1	523.6	555.9	542.6	+15.1
Milwaukee	8.7	611.9	555.7	602.9	583.1	+16.1
Minneapolis	8.9	545.8	501.5	539.3	526.8	+10.1
Newark	9.0	498.6	454.9	491.2	477.3	+ 6.4
New Orleans	7.5	500.7	463.7	493.8	484.5	+11.9
New York	10.0	546.3	497.1	533.5	522.2	+ 3.5
Philadelphia	9.1	579.2	536.3	572.3	556.3	+ 9.5
Phoenix (1947 = 100)	8.2	298.0	273.8	293.6	287.3	+11.5
Pittsburgh	8.9	519.0	472.9	512.9	496.7	+ 9.4
St. Louis	8.7	539.4	497.6	532.0	519.9	+11.0
San Antonio (1960 = 100)	7.6	198.9	182.9	196.0	191.9	+ 9.3
San Diego (1960 = 100)	8.7	221.0	201.8	217.7	211.7	+11.0
San Francisco	9.6	776.4	690.3	759.0	738.2	+12.0
Seattle	8.6	535.1	461.8	521.1	502.5	+14.4
Washington, D.C.	8.4	523.5	477.4	515.8	500.9	+11.8

Cost differentials compare current local costs, not indexes, on a scale of 10 based on New York

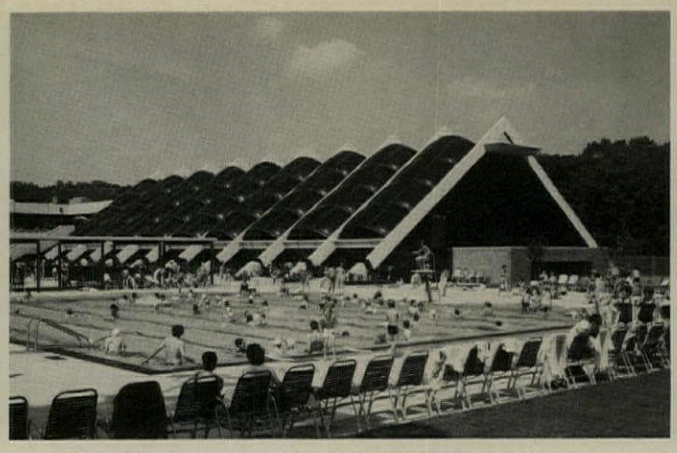
Tables compiled by Dodge Building Cost Services, McGraw-Hill Information Systems Company

HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL NON-RESIDENTIAL BUILDING TYPES, 21 CITIES — 1941 average for each city = 100.00

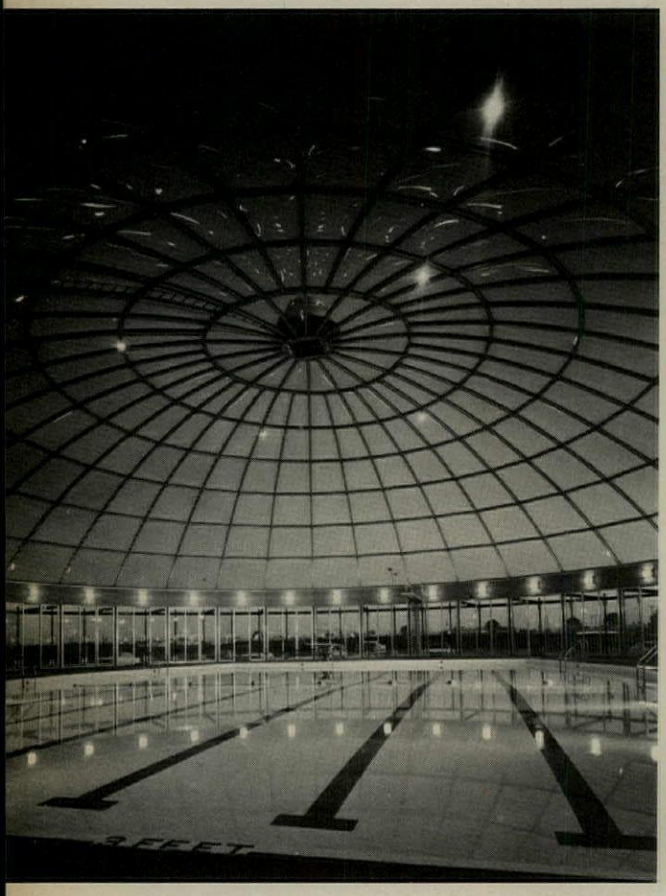
Metropolitan area	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974 (Quarterly) 1st	2nd	3rd	4th	1975 (Quarterly) 1st	2nd	3rd	4th
Atlanta	321.5	329.8	335.7	353.1	384.0	422.4	459.2	497.7	544.8	555.2	556.7	573.5	575.0	583.8	585.3	597.2	
Baltimore	285.7	280.9	295.8	308.7	322.8	348.8	381.7	420.4	475.5	516.3	517.8	532.8	534.3	538.7	540.2	579.6	
Birmingham	265.9	270.7	274.7	284.3	303.4	309.3	331.6	358.3	402.1	405.5	407.0	419.7	421.2	438.6	440.1	447.4	
Boston	257.8	262.0	265.7	277.1	295.0	328.6	362.0	394.4	437.8	455.1	456.6	461.0	462.5	484.1	485.6	511.7	
Chicago	311.7	320.4	328.4	339.5	356.1	386.1	418.8	444.3	508.6	514.2	515.7	528.1	529.6	539.2	540.7	558.6	
Cincinnati	274.0	278.3	288.2	302.6	325.8	348.5	386.1	410.7	462.4	484.5	486.0	498.6	500.1	518.0	519.5	549.1	
Cleveland	292.3	300.7	303.7	331.5	358.3	380.1	415.6	429.3	462.2	490.3	491.8	508,0	509.5	516.6	518.1	529.5	
Dallas	260.8	266.9	270.4	281.7	308.6	327.1	357.9	386.6	436.4	453.7	455.2	476.4	477.9	488.3	489.8	498.1	
Denver	294.0	297.5	305.1	312.5	339.0	368.1	392.9	415.4	461.0	476.1	477.6	508.5	510.0	530.4	531.9	552.1	
Detroit	284.7	296.9	301.2	316.4	352.9	377.4	409.7	433.1	501.0	519.5	521.0	537.2	538.7	554.4	555.9	596.0	
Kansas City	256.4	261.0	264.3	278.0	295.5	315.3	344.7	367.0	405.8	435.6	437.1	443.4	444.9	481.1	482.5	507.6	
Los Angeles	297.1	302.7	310.1	320.1	344.1	361.9	400.9	424.5	504.2	514.3	515.8	531.3	531.8	546.7	548.2	592.6	
Miami	277.5	284.0	286.1	305.3	392.3	353.2	384.7	406.4	447.2	467.6	469.1	484.6	485.5	499.5	501.0	557.4	
Minneapolis	285.0	289.4	300.2	309.4	331.2	361.1	417.1	412.9	456.1	469.7	471.2	487.1	488.6	513.9	515.4	536.5	
New Orleans	256.3	259.8	267.6	274.2	297.5	318.9	341.8	369.7	420.5	437.5	439.0	440.6	442.1	463.5	465.0	493.2	
New York	297.1	304.0	313.6	321.4	344.5	366.0	395.6	423.1	485.3	497.4	498.9	513.8	515.3	524.1	525.5	532.0	
Philadelphia	280.8	286.6	293.7	301.7	321.0	346.5	374.9	419.5	485.1	495.7	497.2	517.0	518.5	531.5	533.0	566.0	
Pittsburgh	267.0	271.1	275.0	293.8	311.0	327.2	362.1	380.3	424.4	443.7	445.2	464.1	465.6	475.2	476.7	508.0	
St. Louis	280.9	288.3	293.2	304.4	324.7	344.4	375.5	402.5	444.2	458.7	460.2	475.2	476.7	497.5	499.0	527.4	
San Francisco	368.6	386.0	390.8	402.9	441.1	465.1	512.3	561.0	632.3	647.1	648.6	671.0	672.5	716.0	717.5	751.8	
Seattle	268.9	275.0	283.5	292.2	317.8	341.8	358.4	371.5	424.4	437.8	439.3	448.7	450.2	472.5	474.0	513.6	

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.

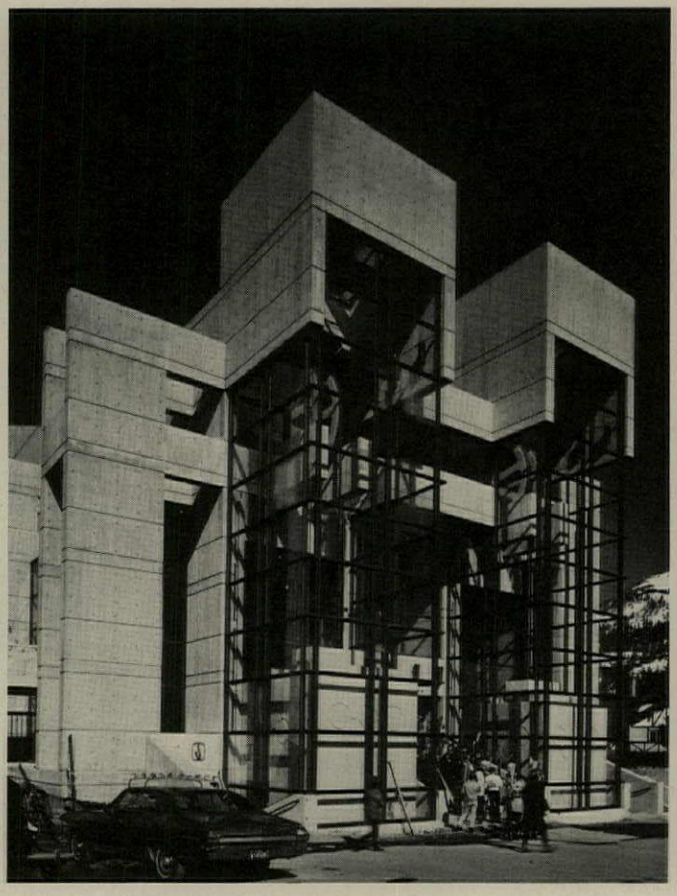
MARSALIS PARK ZOO, Dallas, Texas



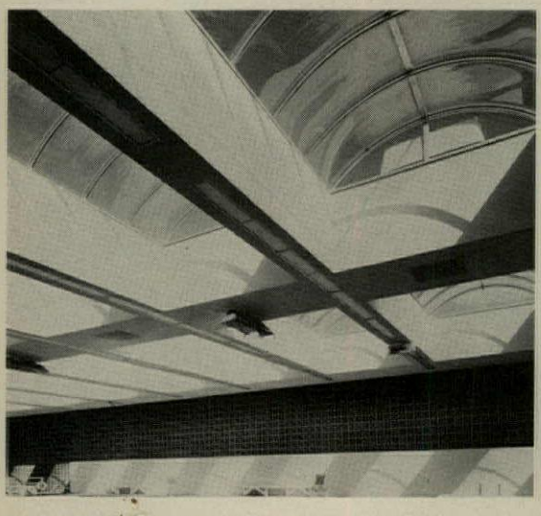
ECHO PARK POOL COMPLEX, Long Island, New York



AQUADOME RECREATION CENTER, Decatur, Ala.



SQUAW VALLEY TRAMWAY TERMINAL, Tahoe City, California



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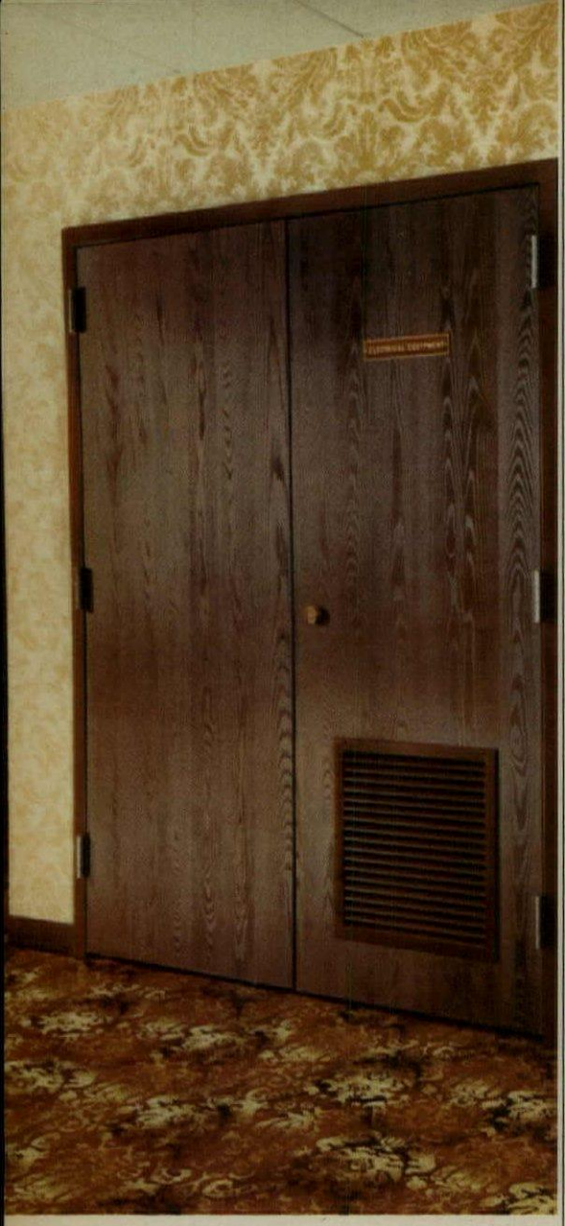

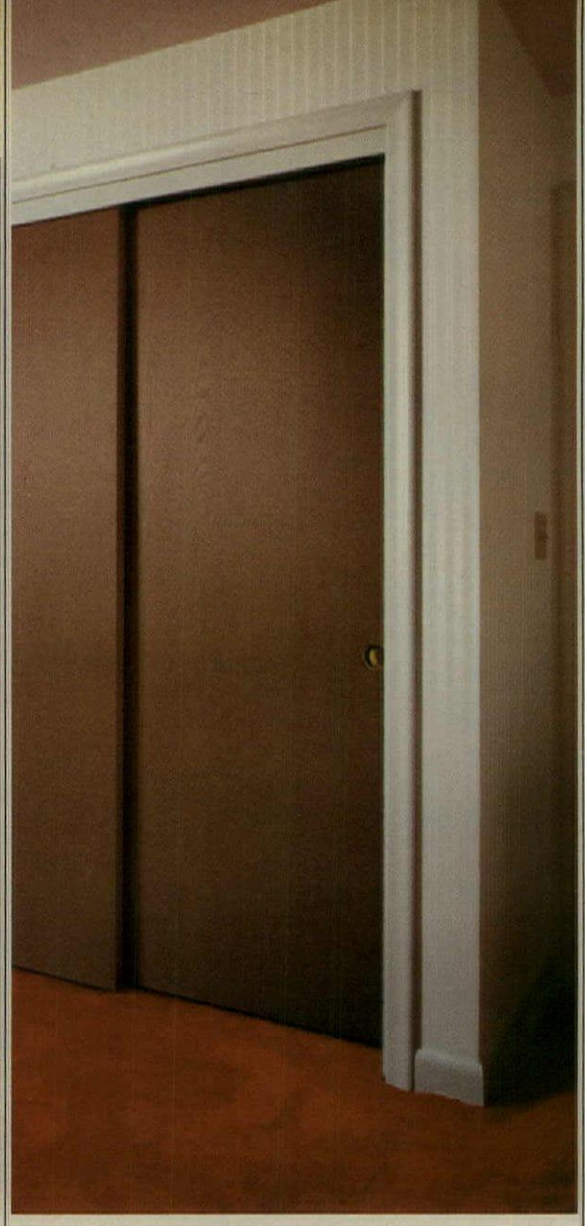

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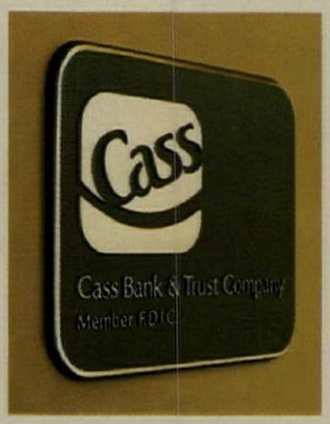

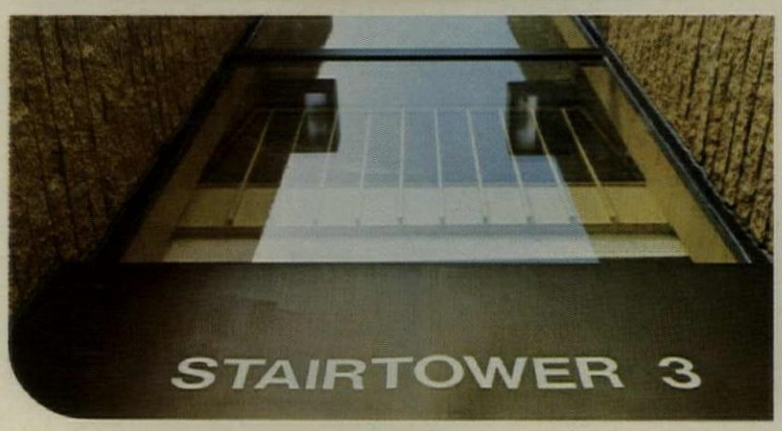

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Acrilan®Plus carpets meet the requirement for a luxurious and impressive appearance in board rooms, executive suites and reception areas. They offer great styling capabilities, a range of vivid colors, resilience, soil resistance and ease of maintenance.

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Take another look at your office building. Then take a look at Acrilan. For restaurants, for board rooms, for sunlit lobbies, for computer areas... Acrilan®acrylic fiber has the versatility to meet their unique requirements. And if it can do all that, think what it can do for an inner office.

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They're easy to roll up and down because they're counter-balanced and equipped with lubricated ball bearings.

They're difficult to tamper with because the compact removable-crank operator is mounted at the top of the door, not at counter level.

The locking device is even hard to find: we conceal it in the footpiece.

Available with slats of galvanized steel, stainless steel or extruded aluminum, Cookson standard counter doors are trim, handsomely styled.

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Cookson counter doors were the best way to close 80 refreshment stand openings in the giant Oakland-Alameda County Coliseum complex. Including the "hot dog-watch dog" above.

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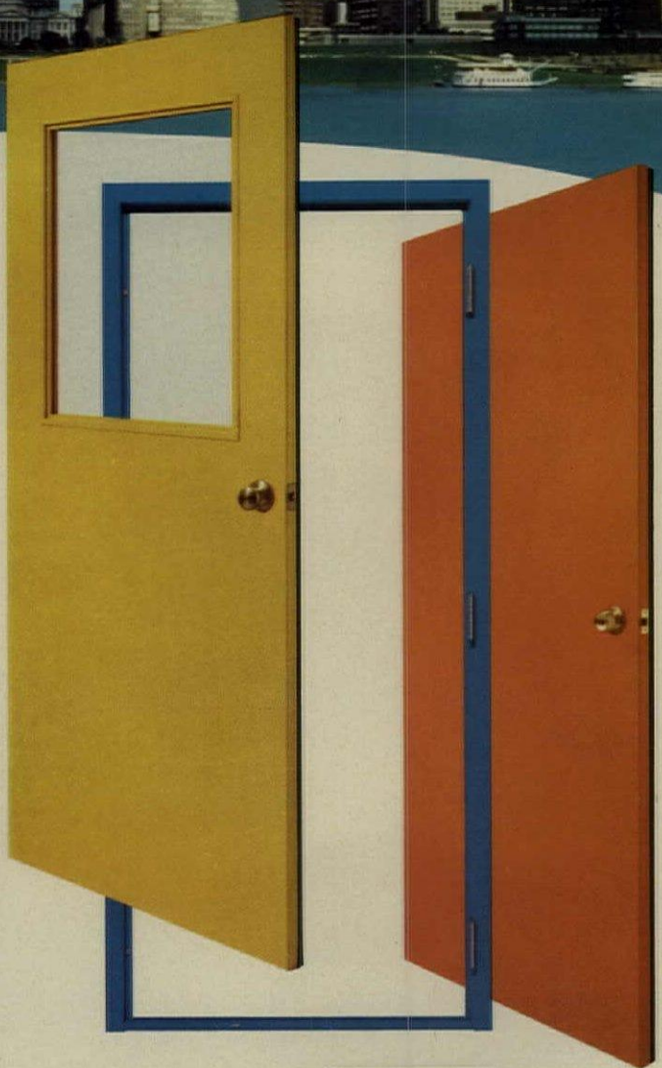
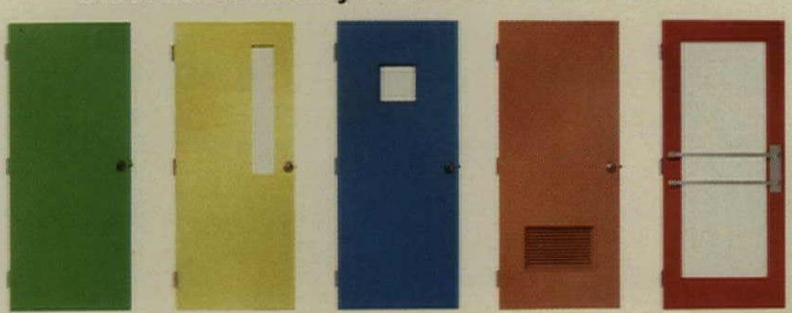


Steel doors satisfy architects' needs better



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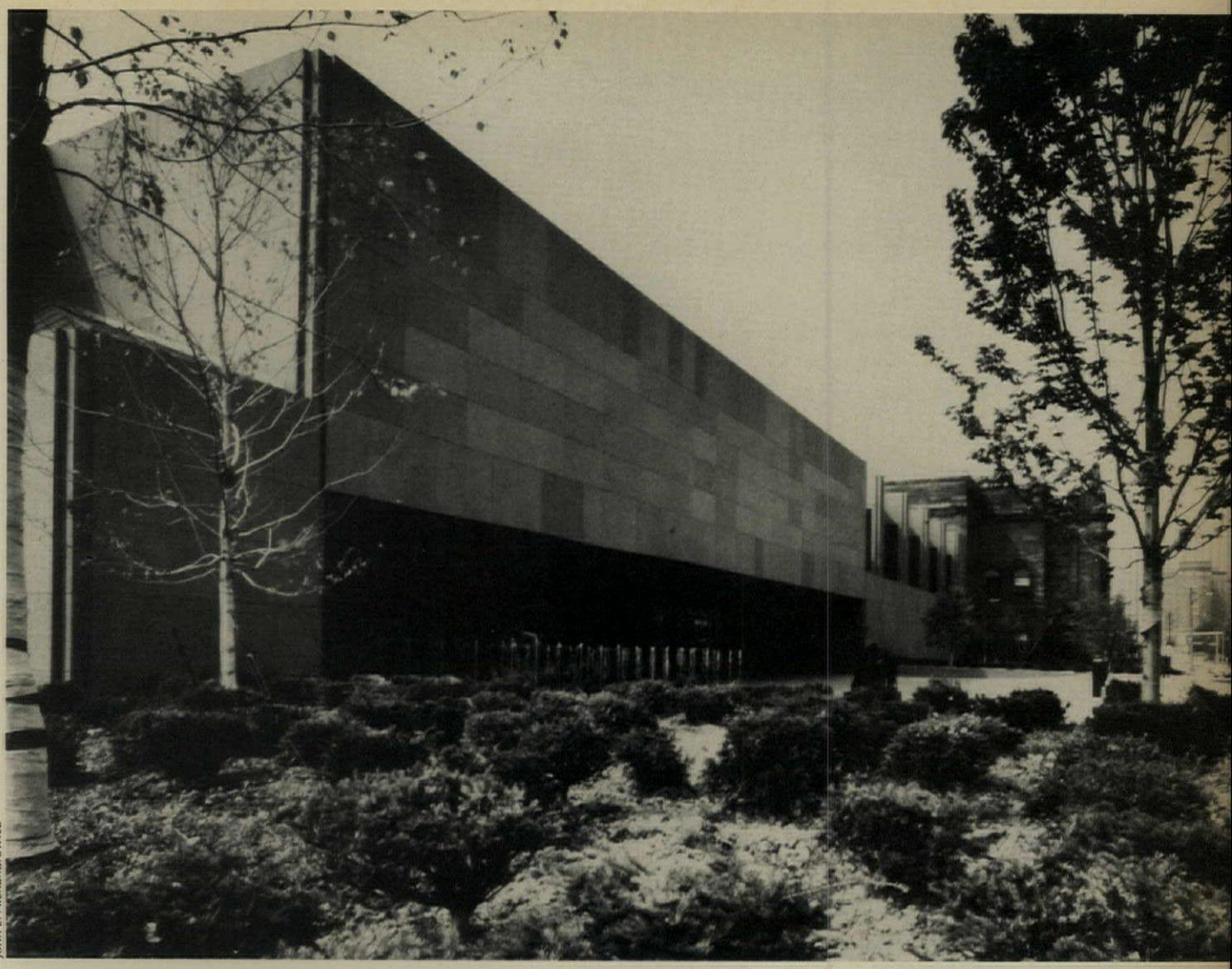


John L. Alexandrowicz

THE SCAIFE GALLERY

. . . Let there be light . . .

Dick Behl, Associated Photographers, Inc.

An initial mandate for Edward Larrabee Barnes' design for the Sarah Scaife Gallery at the Carnegie Institute in Pittsburgh was that there be an abundant supply of pellucid natural light to illuminate the gallery's paintings. The paintings—first-rate Impressionist, Post-Impressionist and American works, plus what director Leon Arkus calls a "spotty" collection from other periods—are a part of a museum of art, which is in turn (with a library, music hall and museum of natural history) a part of the cultural institution founded in Pittsburgh in 1890 by Andrew Carnegie.

Barnes' Scaife Gallery is an addition in several senses—physically it is an addition to an existing building, first built in 1895 and then greatly enlarged in 1907. More generally, though, the new building is an addition to a public institution of mixed use and considerable tradition. So the design task (in addition to providing good natural light for the paintings) was to make the new building well integrated with the old one—caring, for instance, for the modulation between the new galleries and the existing ones, and for the way the stark facade of the addition meets the more softly articulated (but bigger) Carnegie facade.

Two faces

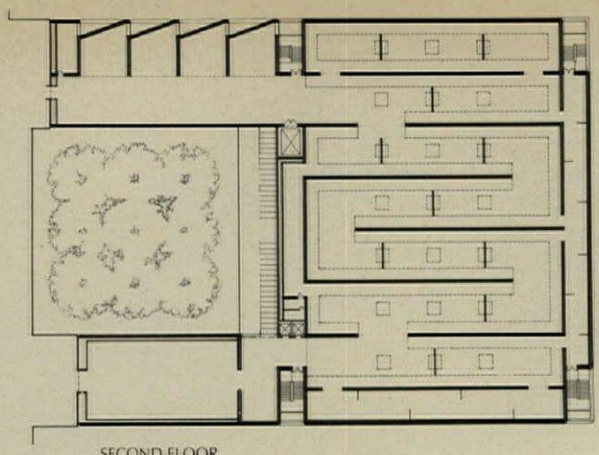
Scaife Gallery has two main entrances (above and left), one of them facing the street, though set back from it,

and echoing something of the formality of the older Carnegie Institute building. The second entrance, which is on the other side of the building and a full level below on the sloping site, opens onto a vehicular access road and, beyond that, to terraced parking lots that can accommodate up to 320 cars. From this entrance, the visitor moves directly into the gallery's courtyard (plans right), which steps gently back upwards to the level of the street entrance, and which is embellished with a waterfall, trees and, of course, works of sculpture from the museum's collection. On two sides the courtyard is flanked by glass-walled promenades (which also double as galleries), and from one of these a massive stone staircase leads upward still farther to the main gallery spaces.

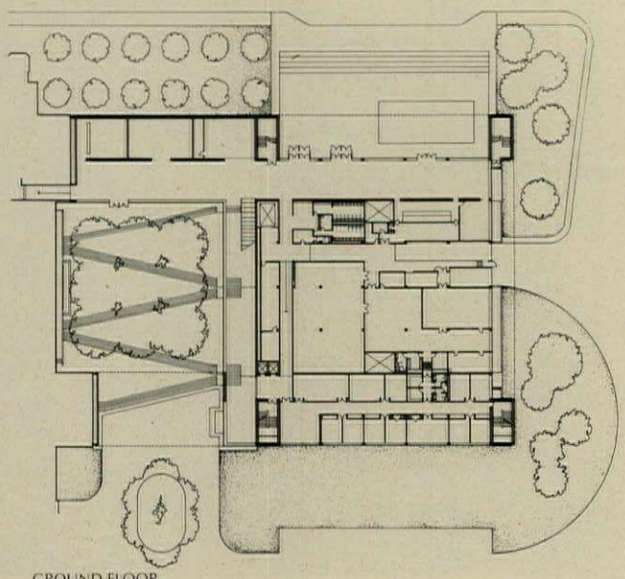
In form the building is a rectilinear mass two stories high on the front and three on the back, with two wings that embrace the courtyard and connect to the existing Carnegie Institute building. On the lowest level (not shown in the adjacent plans, and accessible only from the back side of the building) are a small auditorium, a children's room and rooms for storage and for mechanical equipment. On the main level are the street entrance lobby, a small cafe, a museum shop, more storage and administrative offices and workrooms. Above this level are the main galleries.

Up to the galleries

Having all of the main gallery spaces on the top floor of the new building obviously provides the chance to achieve ideal natural lighting in them, and, as importantly, it puts them on the same level as the existing galleries in the Carnegie Institute. In a three-story building, however, it also results in a relatively small amount of the building's total floor area being devoted to gallery



SECOND FLOOR

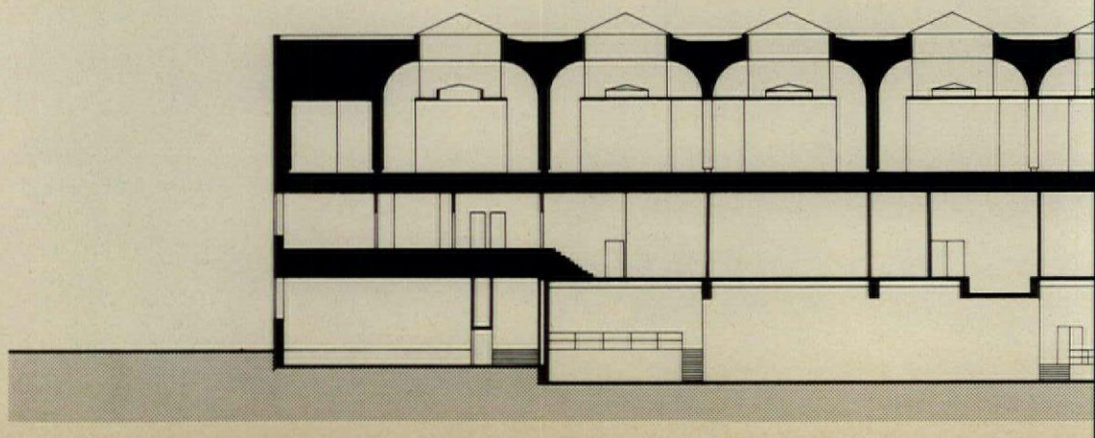


GROUND FLOOR

The photograph on the right shows the courtyard of the Scaife Gallery seen from underneath the main stairway leading to the upper floor. The suspended glass wall system is made of ½-inch tempered glass with ¼-inch tempered glass fins to provide wind bracing in place of mullions. The photograph below shows the stairway from the street side of the building, looking back through the courtyard. Stone cladding is thermal finish Norwegian emerald pearl granite.

John L. Alexandrowicz

The section through the Scaife Gallery on the right shows the natural lighting system in the galleries on the top floor. Daylight enters through skylights on the roof and passes first through a set of horizontal diffusing glass panels and then through a second, vertical set into the gallery space. The pyramidal skylights above the suspended panels are also diffusers above panels that can be removed to admit light straight down onto a piece of sculpture. The artificial lights seen in the photograph above provide substitute light at the same angle as daylight.



John L. Alexandrowicz

space—a phenomenon which, according to the architects, caused no rancor here because of the need for a number of non-gallery rooms in the building, including generous storage and workrooms that serve the older galleries as well as the new ones.

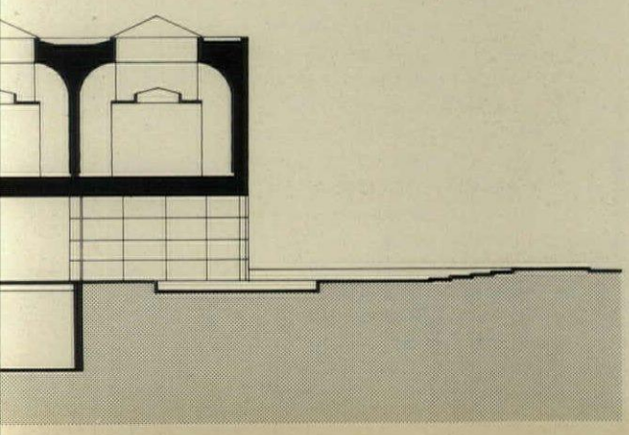
In plan, the new galleries are a series of interlocking U's and demi-U's on which works from the Scaife's permanent collection are displayed. Smaller, more self-contained exhibition areas flank these main gallery spaces on three sides. In connecting the new galleries to the old ones (see plan on the following page), Barnes has developed an even and unjarring choreography—albeit one that encourages (and almost demands) a linear pilgrimage by the visitor.

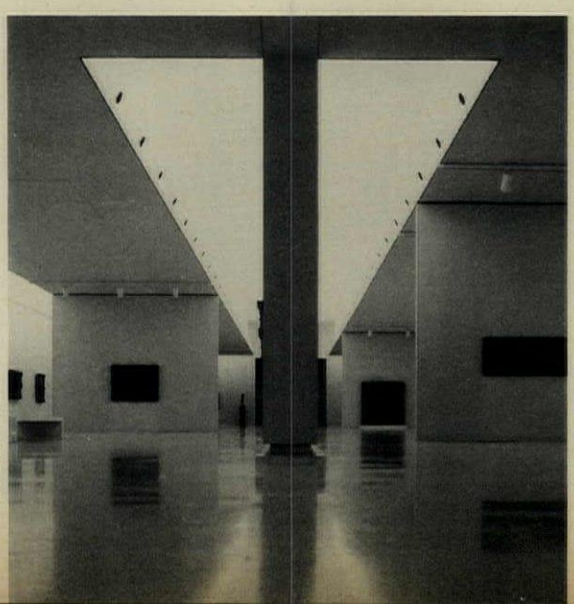
Light on white

In the Scaife Gallery, says Leon Arkus, there are "no intrusive artifices of architecture. The art comes forward unembellished, with all the life the artist gave it." And, according to Barnes, "the second floor—white space with soft modulated daylight—turns all attention to the paintings." Thus the director and the architect of the Scaife articulate the prevailing contemporary view of how art should be displayed: with as little intrusion as possible from the surrounding environment. (This view, it is worth noting, stands in contrast to the centuries-old custom of hanging paintings on colored and textured walls in elaborate architectural spaces, and Barnes himself points out that the Modern penchant for white walls suits some paintings, like Impressionist ones, better than others, like somber Old Masters.) The Scaife Gallery follows the non-intrusive Modern persuasion, but elegantly varies and enlivens it with a soft and even shower of natural light that enters through skylights, passes through two diffusers and then bounces from vaults that spring from the walls where the paintings are hung—providing the greatest level of intensity there (in contrast to the usual skylit gallery, where the ceiling is brightest), and subtly changing in color with the hour of day and with the seasons.

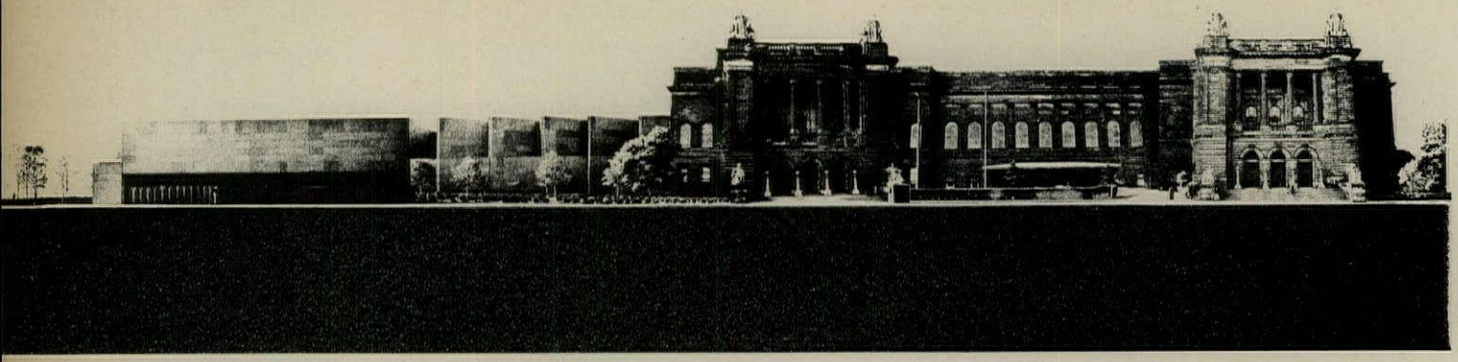
—Gerald Allen

SARAH SCAIFE GALLERY, Carnegie Institute, Pittsburgh, Pennsylvania. Architect: *Edward Larrabee Barnes—associate-in-charge: Percy K. Keck; project architect: Armand P. Avakian.* Engineers: *Severud Associates* (structural); *Swindell-Dressler Company* (civil); *Joseph R. Loring and Associates, Inc.* (mechanical and electrical). Consultants: *Bolt, Beranek and Newman, Inc.* (acoustical); *Donald L. Bliss* (lighting); *Mary Barnes and Paul Planert Design Associates, Inc.* (interiors); *Dan Kiley and Partners* (landscape); *Dimianos and Pedone* (graphics); *Turner Construction Company* (cost). General contractor: *Turner Construction Company.*

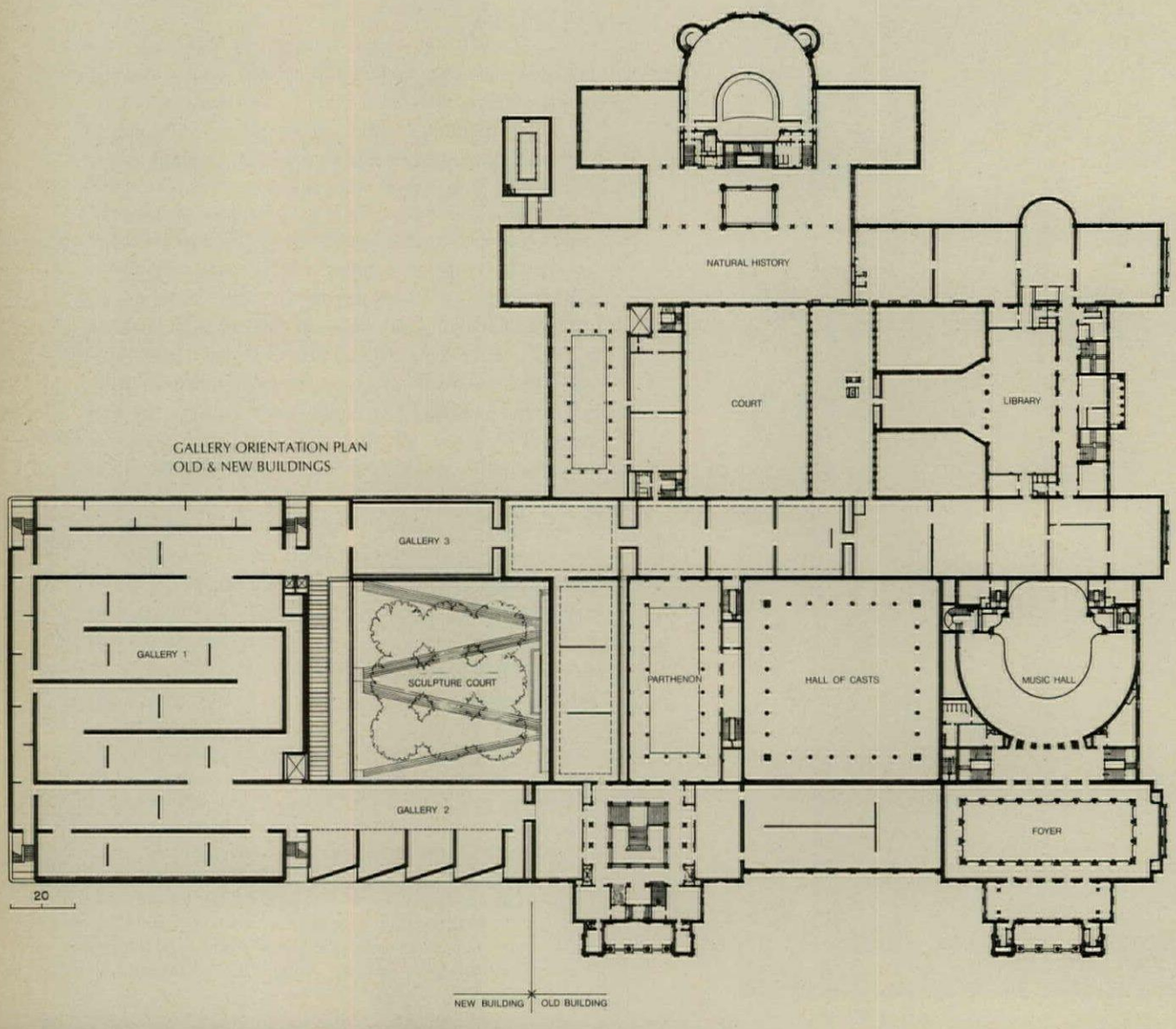




Ronald A. Layport



GALLERY ORIENTATION PLAN
OLD & NEW BUILDINGS



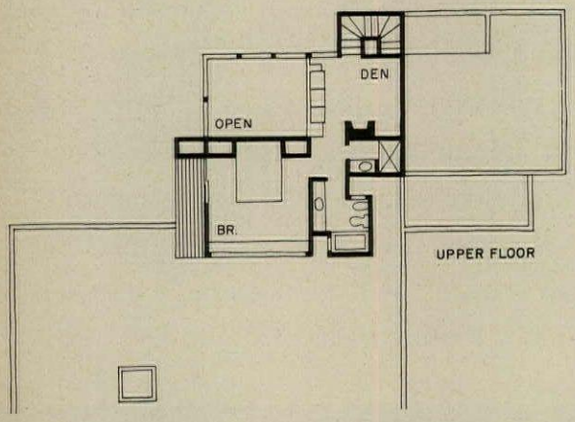
Ronald A. Layport photos

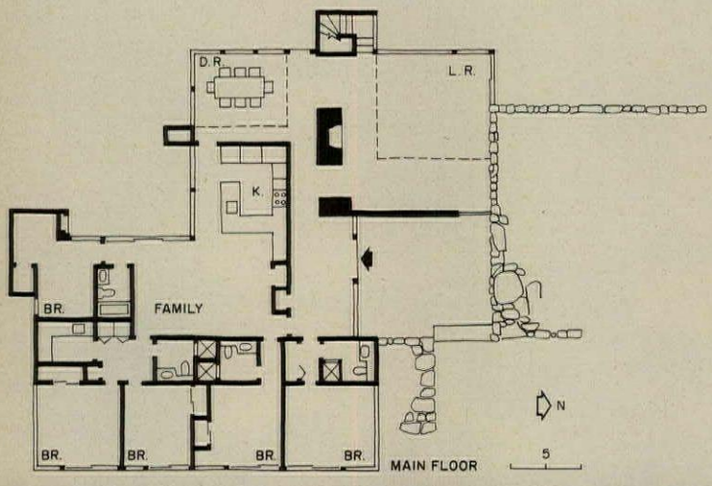
Much of the plan form of the Scaife Gallery is generated by the older Carnegie Institute to which it is joined. The two wings that surround the courtyard are extensions of protrusions on the older building, and the square plan of the courtyard itself recalls the square Hall of Casts inside the Carnegie building. The rectangular mass of the main part of the new building expansively suggests a third pavilion to complement the two Beaux Arts ones next door. The photograph on the left shows the fountains just outside the street-side entrance.

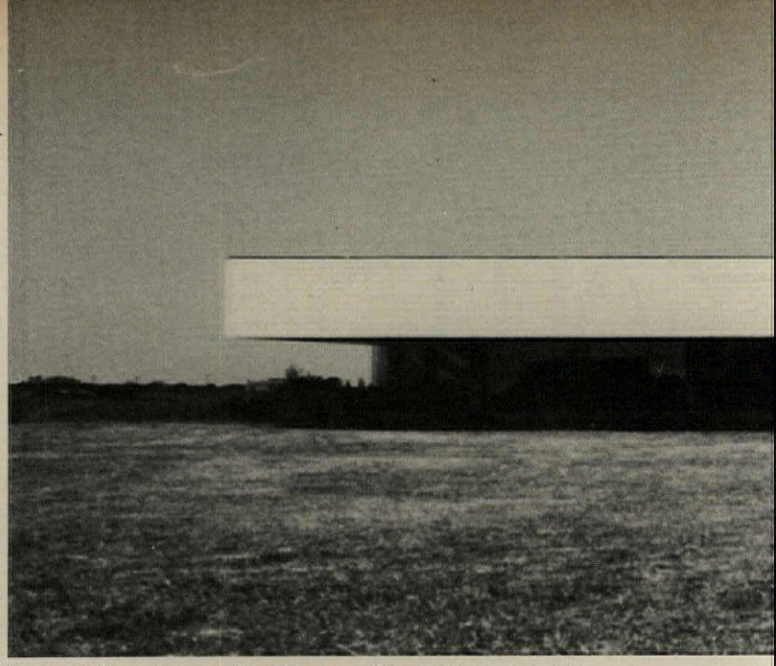
NORMAN JAFFE'S HOUSES

belong to that Romantic stream in American building that is lyrical and frankly idiosyncratic—that stream that seeks its formal inspiration in images stored up and reconstructed from the remembered past. The images, sometimes drawn from film, are as varied as human experience allows. These images may be his own or his clients, usually a compound of both, but they nearly always include elements of fantasy—elements that are blended and necessarily blurred in the translation into building. Even in blurred form, though, their presence is felt to the extent that each house in this portfolio has a substantially different look, tempo and formal idiom. But where there are differences, there are also striking similarities. Jaffe's houses nearly always respond sympathetically to their sites. They almost always celebrate a sense of shelter that finds expression in powerful roof forms with deep, overhanging eaves, sometimes reaching down to grade. And, all show signs of the familiar struggle between formal concerns and the routine requirements of day-to-day living.

Tom Yee photos.





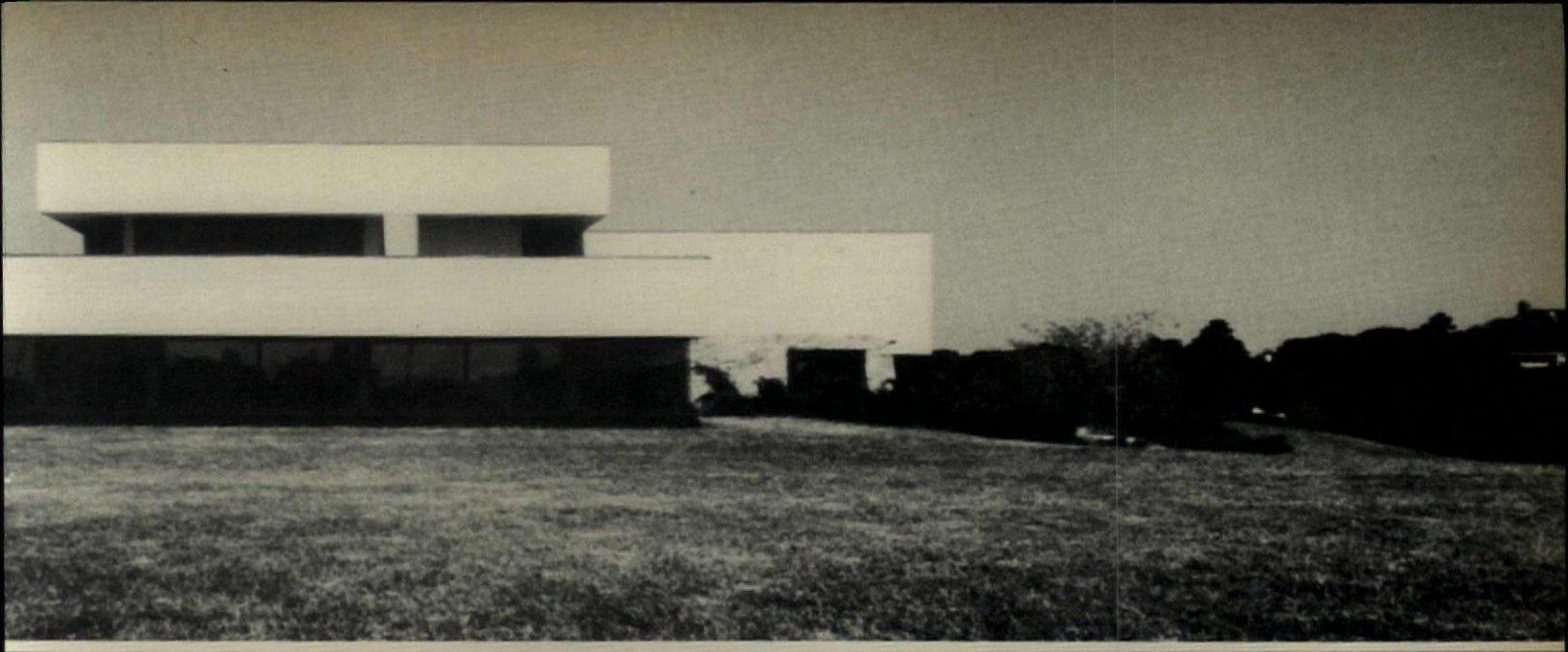


"Long, flat planes of cedar, cantilevered over a stone base" is the phrase Jaffe uses to describe the fundamental concept of this house he designed for the Marvin Schlacters on a flat site in Bridgehampton, Long Island. Here, more than in the houses that follow, the ground has been carefully prepared to receive the house. Its mild undulations have been augmented to contrast with the sharp-edged, severely horizontal volumes of the house and to make the ground plane an integral part of the whole composition (see photo previous page).

The stone is laid up in natural cleavage with mortarless top courses held only by the bermed earth surrounding them. The glazing line is set back and protected by the deep overhangs of the cedar-clad superstructure. The gravel of the driveway is an apron leading right to the front door.

Inside, the space flows effortlessly through a combination of low- and high-ceilinged areas culminating in the living-dining space (photo below right). Rich, high-contrast finishes and simple but expressive details give the Schlacter house an elegant, voluptuous quality that excites the eye and stimulates the senses.

SCHLACTER HOUSE, Long Island, New York. Architect: *Norman Jaffe—Mark Matthews, job captain.* Contractor: *M.S. Construction Company.*

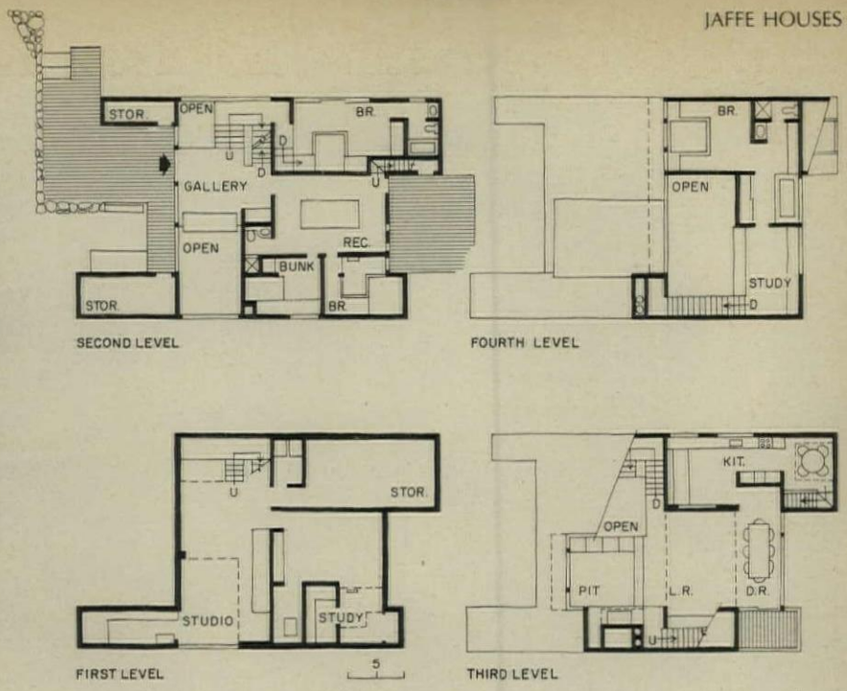


The architect's own house and studio in Bridgehampton is a synthesis of the wood shingles, steeply-pitched roofs, dormers and chimneys that traditionally characterize regional houses in eastern Long Island. Though exaggerating these features in scale, the house stops safely short of burlesquing them, for nowhere are the functions of the house compromised by these exaggerations.

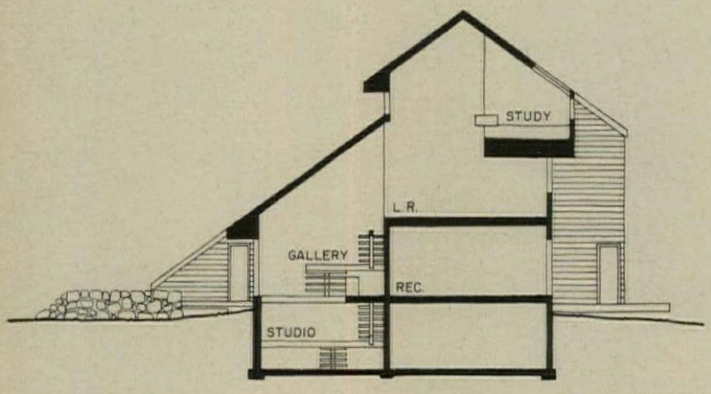
Stepping up under the roof at the intermediate levels are a complex series of spaces, Piranesian in conception and thrust, which house the regular range of domestic spaces. Under these, but not pressed down by them, is the architect's studio (next pages), a double-height space filled with daylight from several sources. The uppermost level houses a master bedroom, bath and small study, from which the spatial composition is most fully revealed (photo left). The massive chimney includes a large skylight that brings daylight deep into the house.

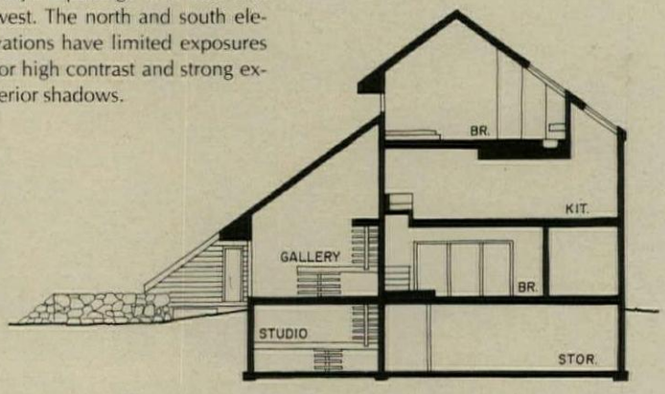
Throughout the interiors, wood is used skillfully in ways that exploit its potential for warmth, color and pattern.

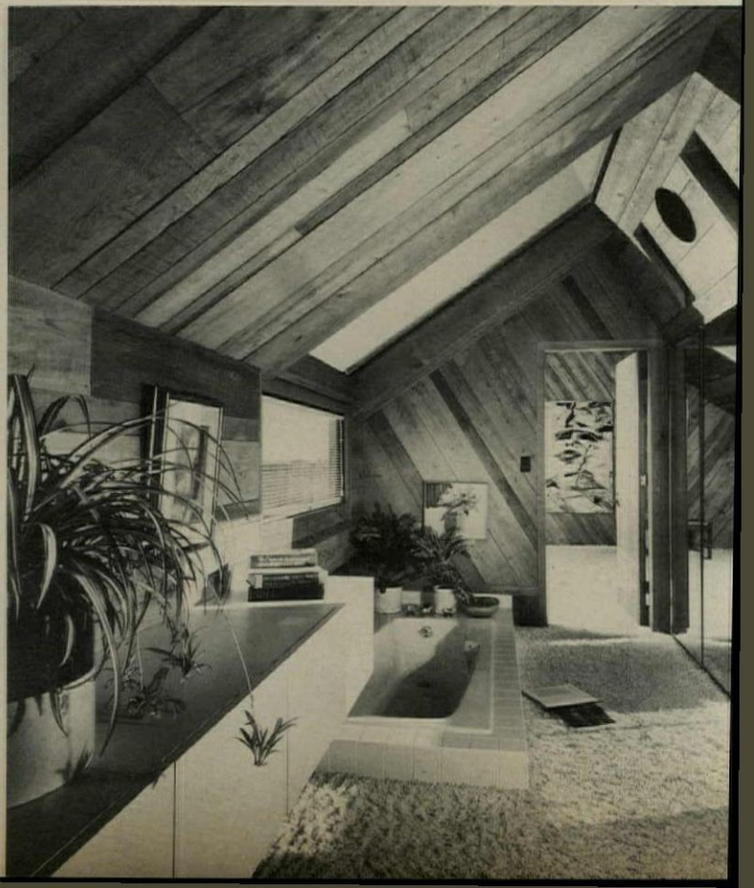
JAFFE HOUSE, Bridgehampton, Long Island, New York. Architect and contractor: *Norman Jaffe.*

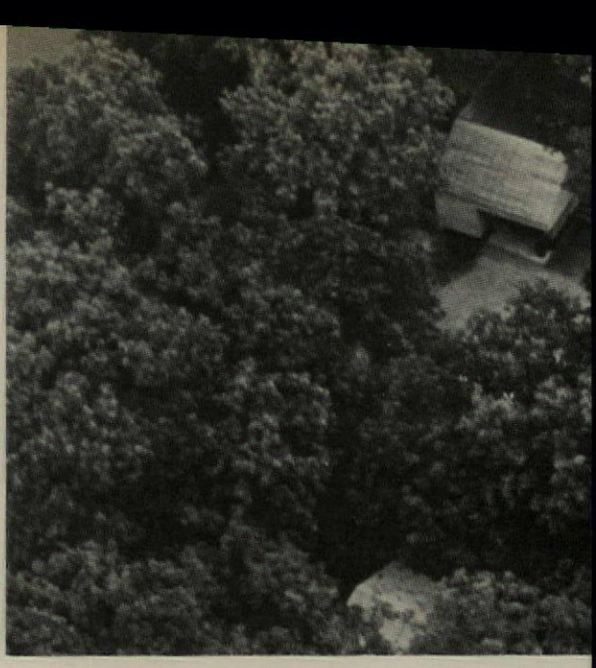


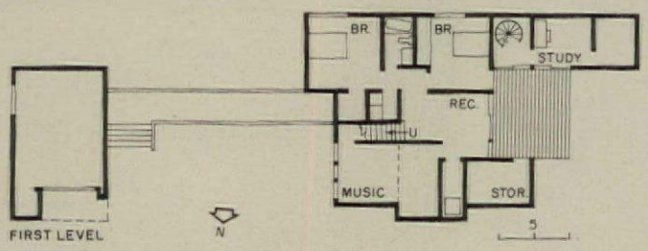
Interior walls of the Jaffe house are finished in cypress. Floors are Pennsylvania slate and pine. Major openings face east and west. The north and south elevations have limited exposures for high contrast and strong exterior shadows.







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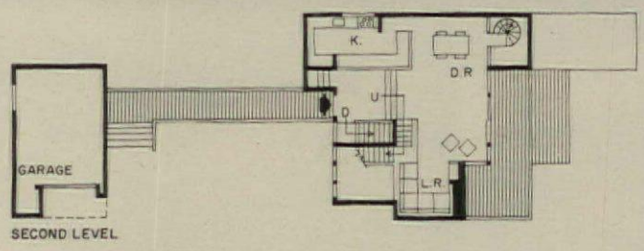
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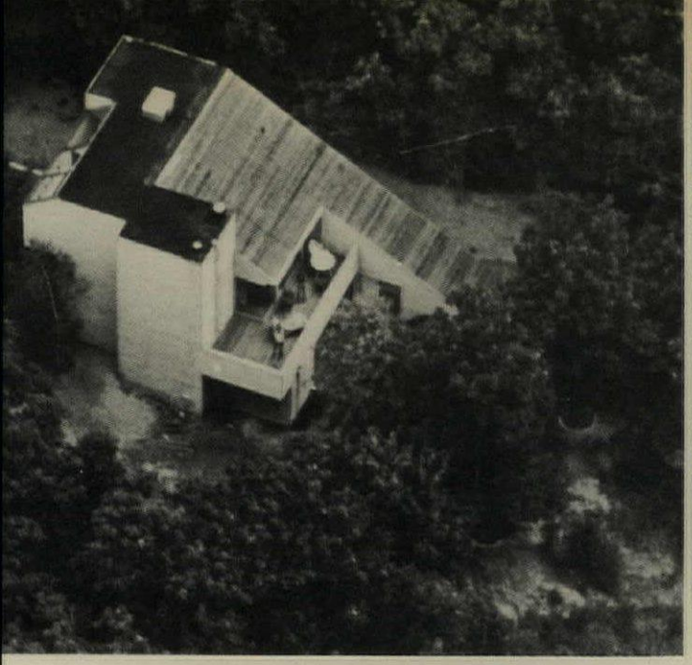
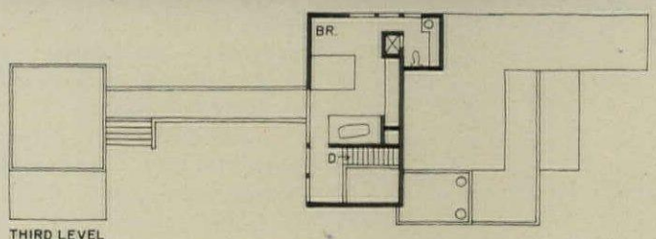
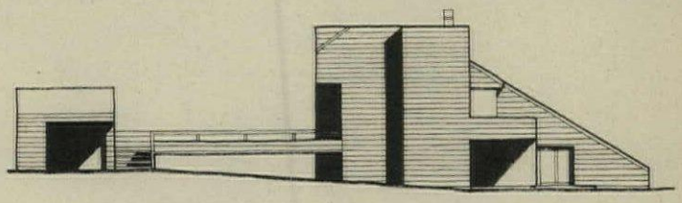




THIRD LEVEL

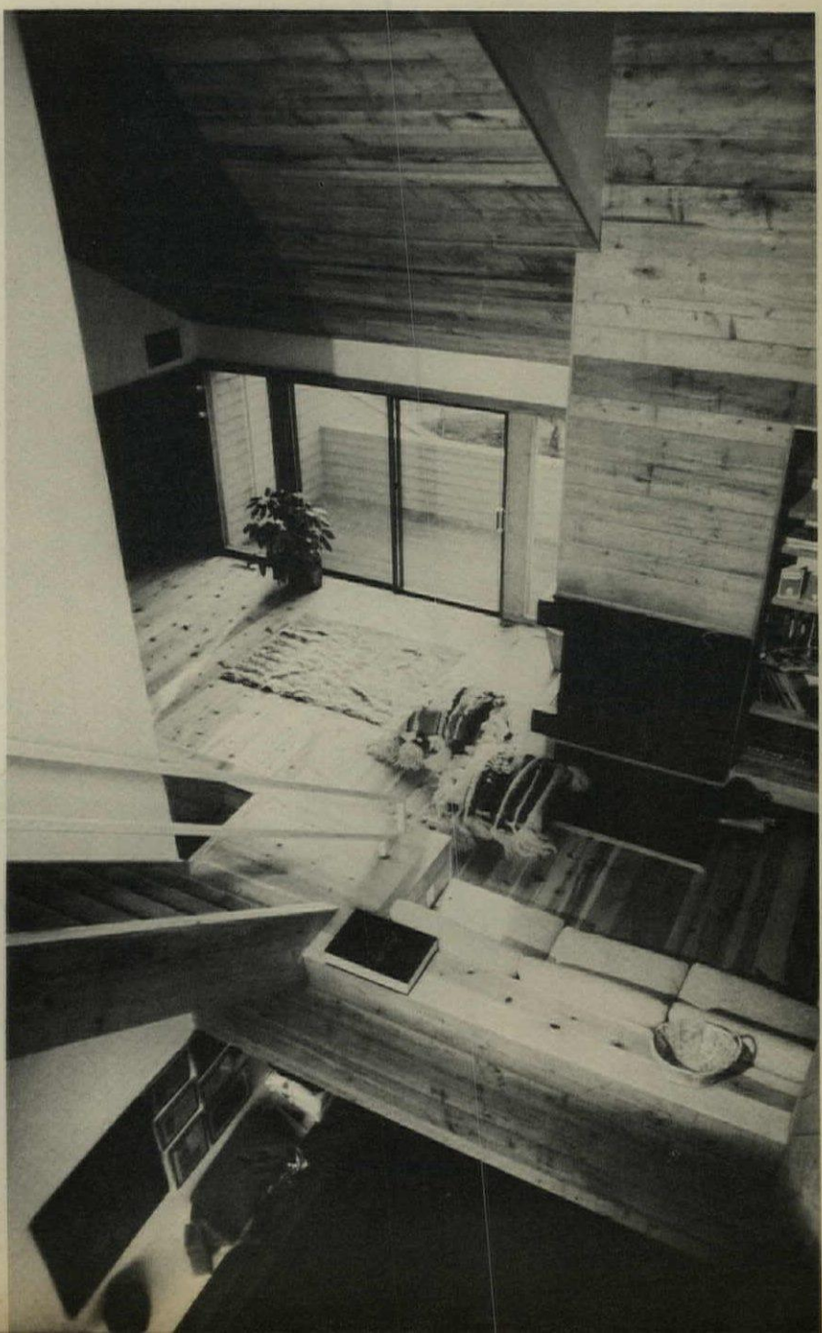


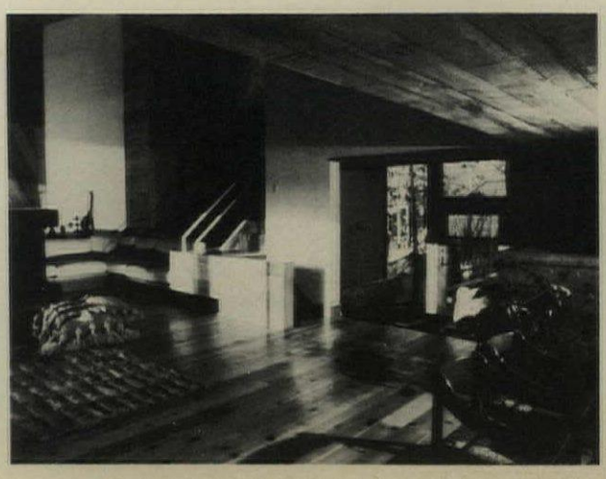
Jazz musician Chico Hamilton's house is sited on a narrow, gently-contoured site in eastern Long Island. Jaffe decided to emphasize the depth of the site by building along the site's long axis and creating a focal space out of the area between the house and the garage. He bridged this area to allow the natural landscape to continue without interruption and to create a device that allows deceleration between the pace of the automobile and the slower tempo of household activities.

The resolution of forms in the Hamilton house seems pleasantly ambiguous. Though severely modified by a section of broad, sloping roof, the basic cube form of the house remains legible, especially in the aerial photo above. The portion subtracted from the cube by sloping the roof is restored to the total volume by extending the sloping section down to grade.

The spatial cadences of the house are lively and expressive, stringing together a series of activity areas both vertically and horizontally. Inside, the principal finish materials are cypress and drywall. For the exterior, Jaffe has used cedar clapboarding for wall and—unexpectedly—for the sloping roof as well.

HAMILTON HOUSE, Long Island, New York. Architect: *Norman Jaffe.* Contractor: *M.K. Construction Company.*



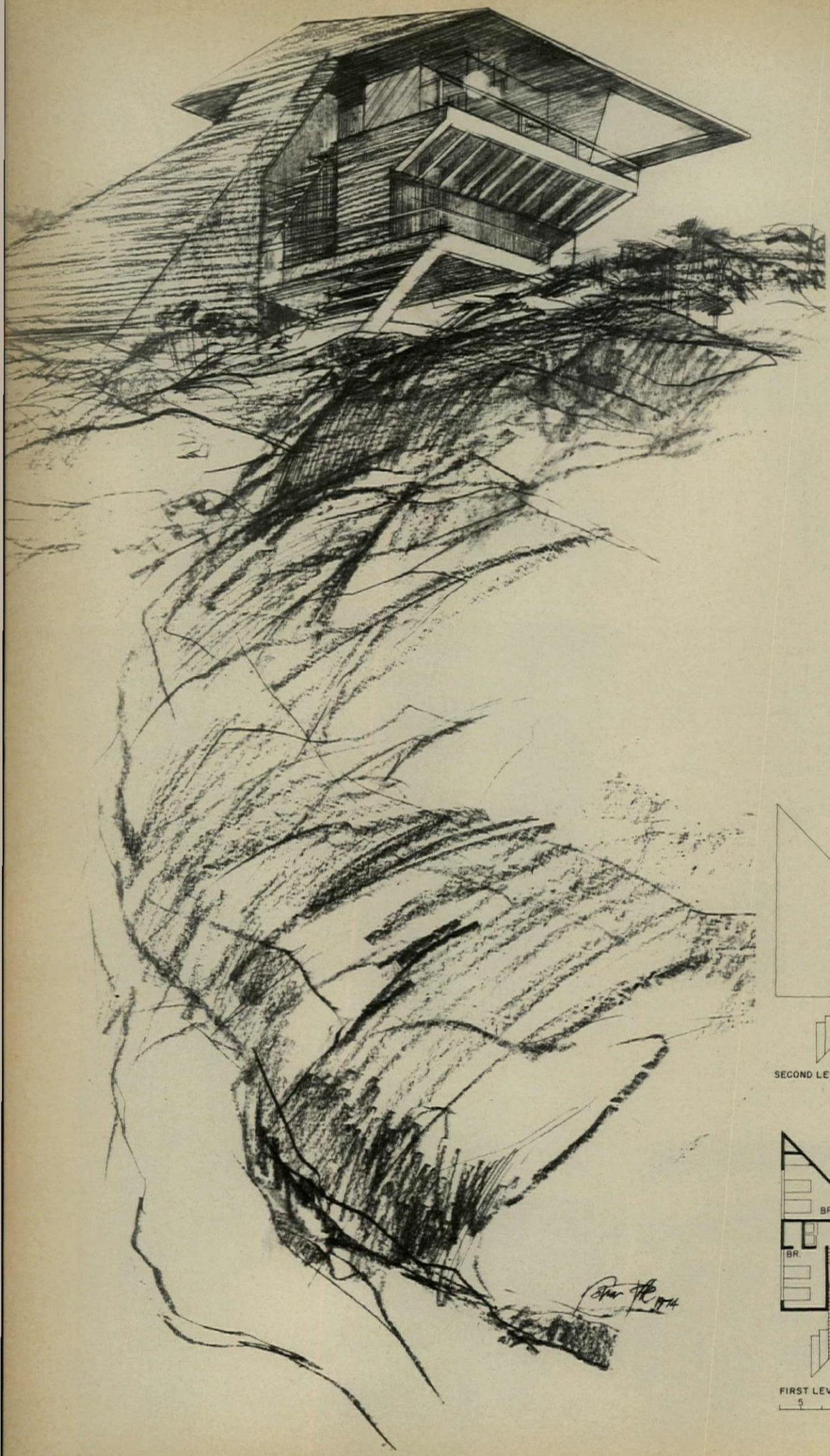


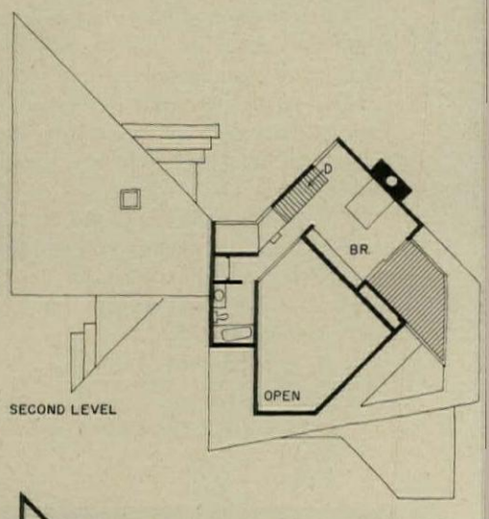
The three projects here and on the next page, all under construction, show Jaffe's conceptual power at work in the early stages of design.

On a Montauk site (left), Jaffe is locating the house at the edge of a steep cliff that descends abruptly to the shoreline and offers panoramic views of the Atlantic. Here the massing of the house celebrates the act of looking, of straining to see the view. The house clings to its site and offers shelter to its occupants while it gives them panoramic vistas of the sea as it arches majestically over the horizon.

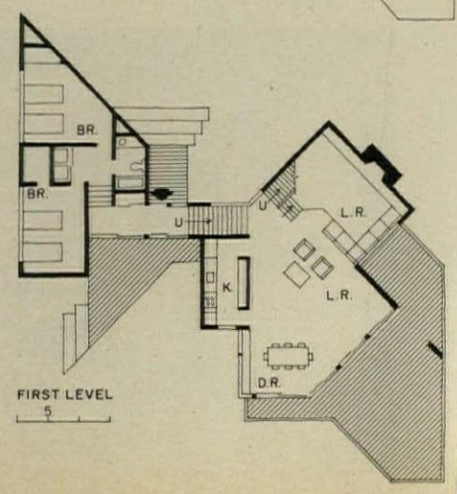
The visitor, sensing the tension between building and site, himself turns back and forth between the house and the view.

In a 30-acre valley (right), the writer-owner demanded a house with a sense of the past, present and future. The past is represented by the masonry monoliths—local granite laid up in a steep and traditional batter; the present is the use of space apportioned for contemporary lifestyles, while the future will be embodied in spare, shaped-edged industrial details. Glass meeting stone, for instance, will be held by specially-designed, pre-set glazing channels. Glass will meet glass in delicate, invisible miters.

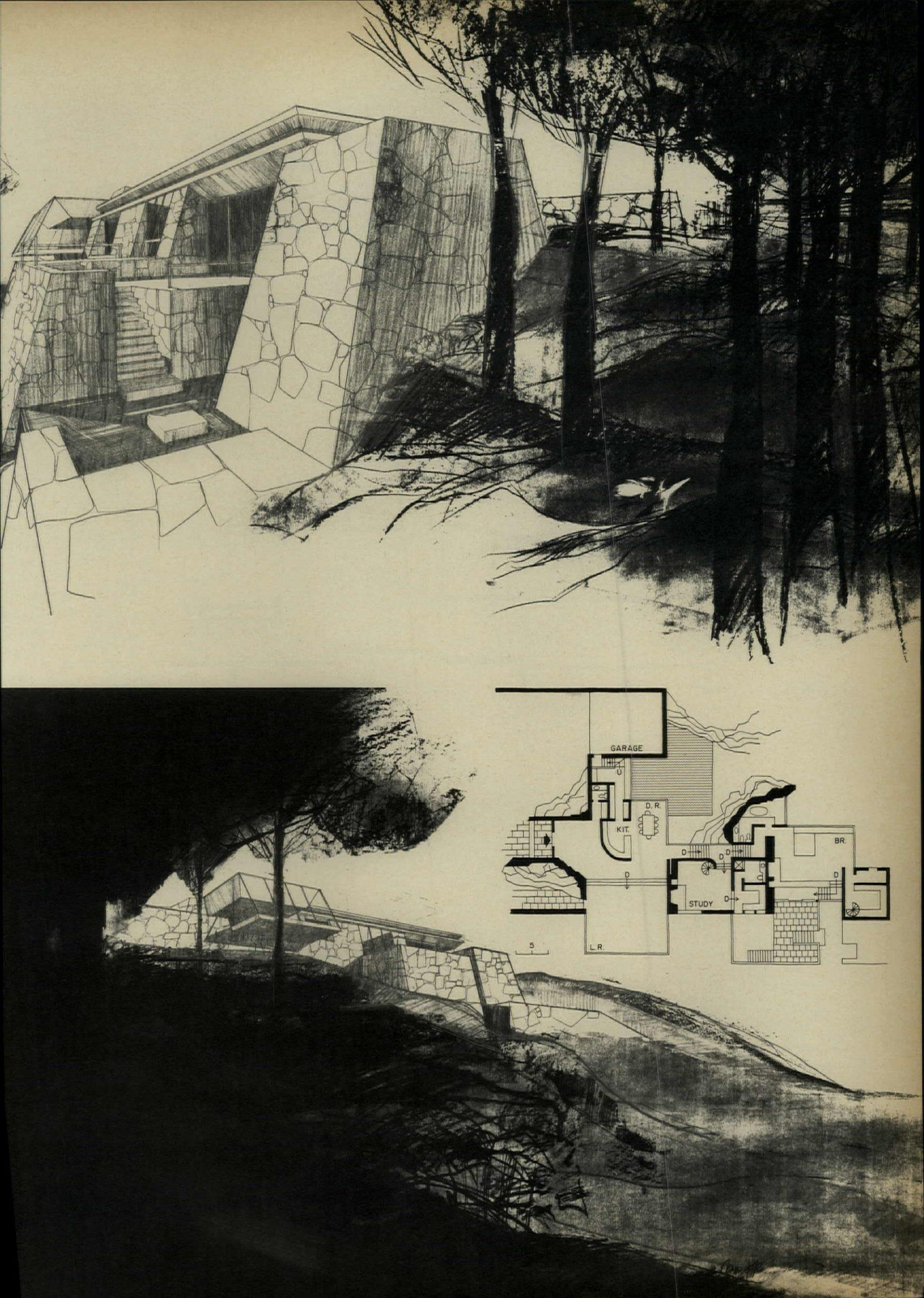




SECOND LEVEL



FIRST LEVEL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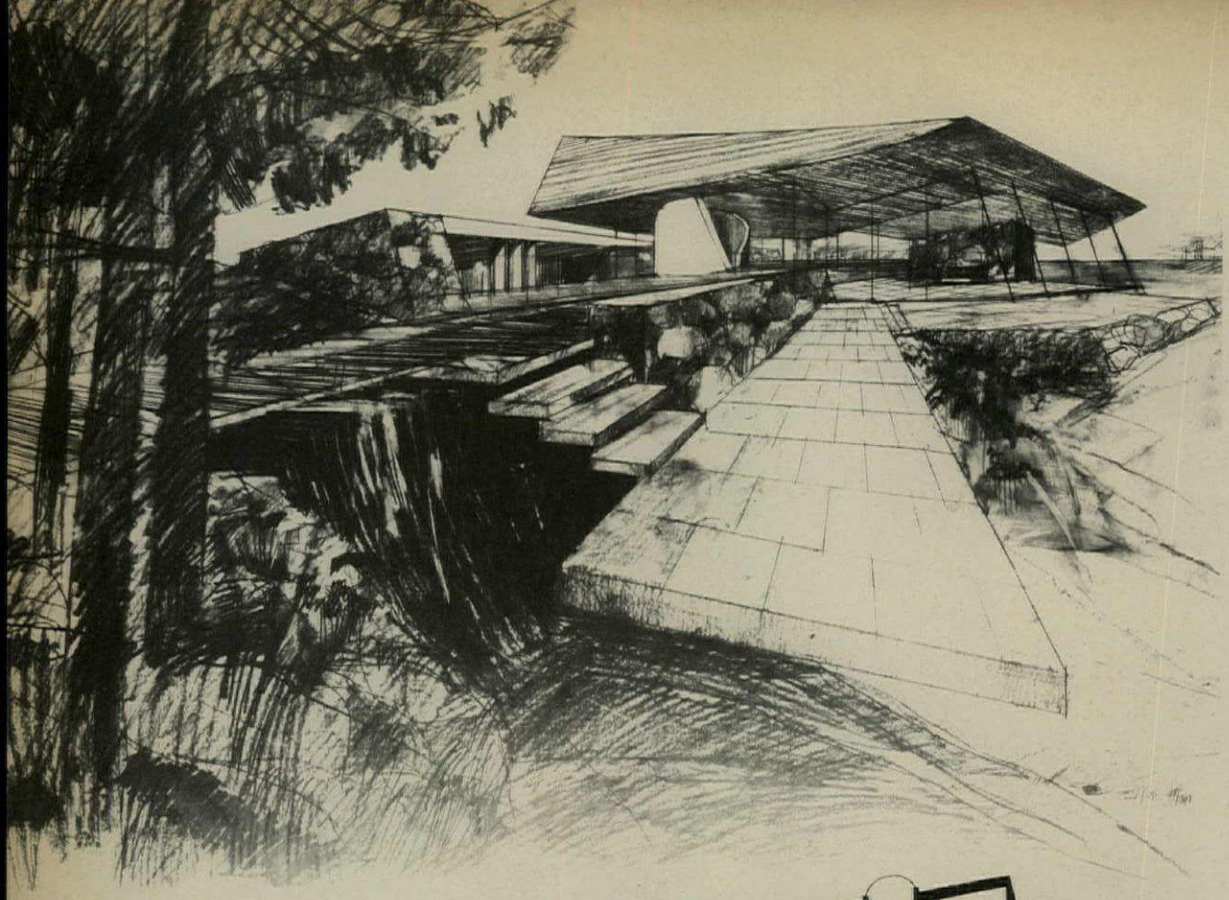
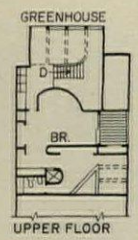
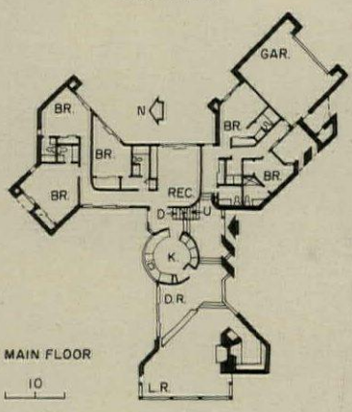
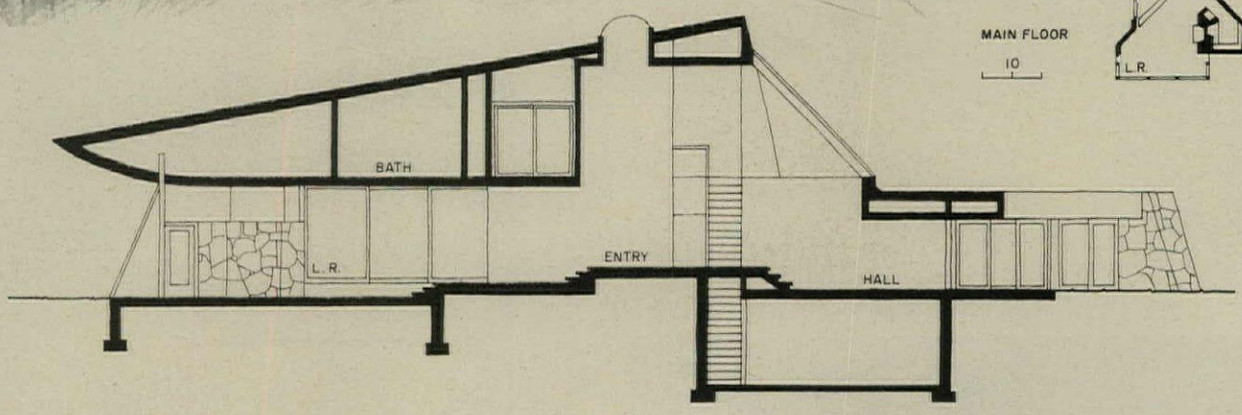
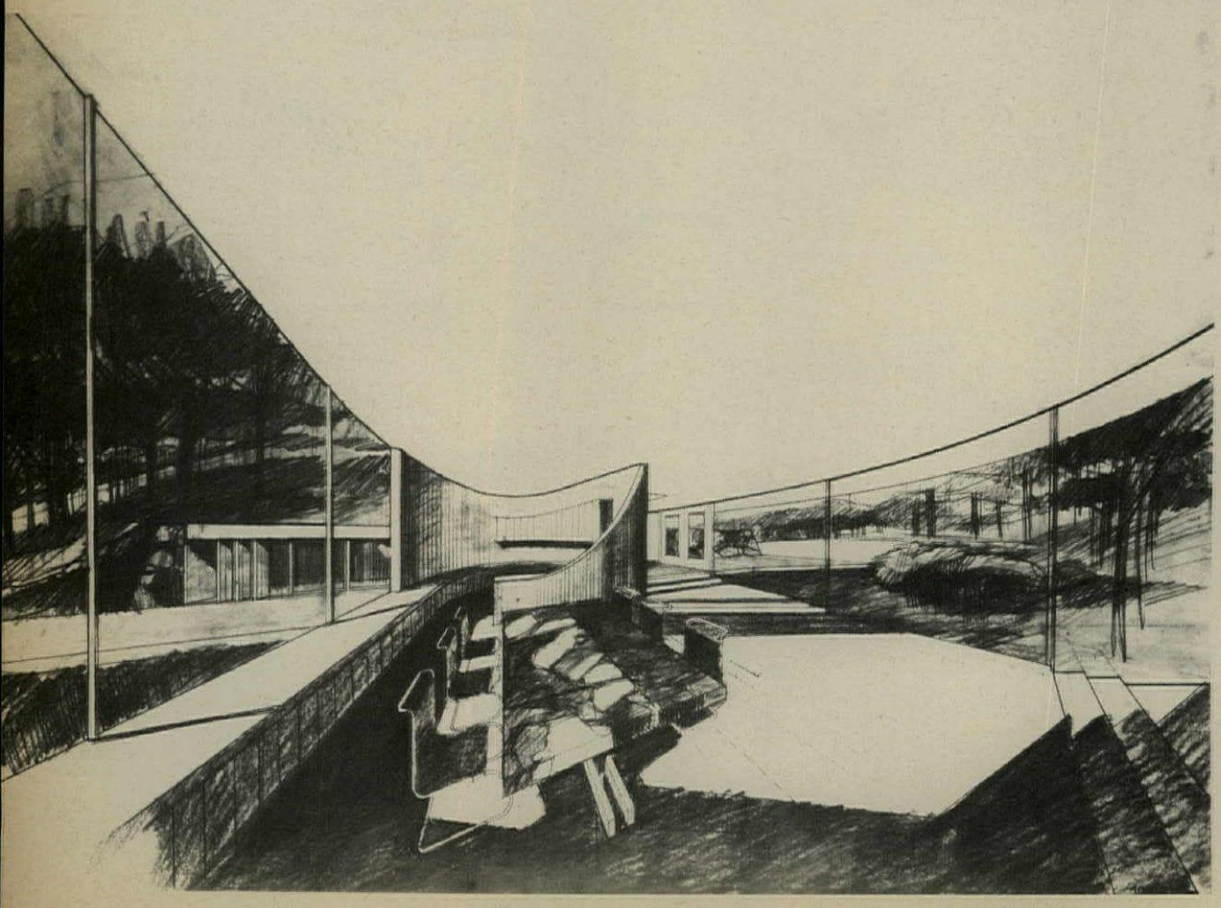










For a four-acre site dominated by a grove of giant beech trees, Jaffe wanted his design to express a lyrical gesture of greeting. The roof is the upturned palm, open and sheltering; the column, a wrist supporting that palm; the glass walls, an unambiguous invitation to enter.

The interiors will be warm and welcoming in the selection of finishes, informal in planning and in the choice of details.

"But has not architecture its own special attributes, which are no part of the work which it is music's function to create and recreate? Certainly it has. Architecture, by virtue of its actual limitations, can exploit our capacity for dramatizing ourselves, for heightening the action of ordinary life; it can increase man's psychological stature to an angel's. All this it does through its irrevocable attachment to function. The dramatizing of movements appropriate to architecture (and impossible without architecture), movements like entering through a door, looking out of window—mounting steps or walking on a terrace—is something with which music has nothing to do. Here is architecture's special province which on the one hand constricts its movement and on the other intensifies its meaning."

—John Summerson, "Heavenly Mansions"

MOVEMENT SYSTEMS AS GENERATORS OF BUILT FORM

by G. M. Kallmann and N. M. McKinnell

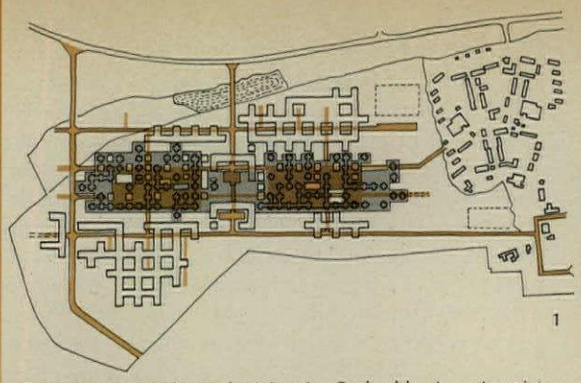
John Summerson's concept of architecture as the dramatization of the movements of people to heighten the action of ordinary life is implicit in the work of architects Gerhard M. Kallmann and Noel M. McKinnell. ARCHITECTURAL RECORD described their Boston City Hall (February 1969) as "a splendid, multi-level, random-focus stage for crowd scenes." Their athletics building for Phillips Exeter Academy (June 1971) is "a celebration of sport—a building invested with life—in which activities are sequentially visible to visitors and athletes as they move through the complex along its multi-level spine." To introduce their theory of movement as the generator of the forms they build, the two architects point out that there has been in our time "a significant degree of polarization between space for movement and the space it serves and connects. . . . Inevitably, buildings for public use are structured on the model of cities—movement spaces become indoor streets serving blocks of 'real estate' of a changeable, indeterminate nature, while the routes and the public spaces created by their intersections are the points of fix." For Kallmann and McKinnell, buildings can no longer be thought of as isolated autonomous objects. Today, in their firm's own work, their interest in movement systems is a search for linking and ordering devices for buildings that are considered elements in the continuity of the city or countryside in which they are built—links in time between forms already built and those of the future.

—Mildred F. Schmertz

The architect tends to view with reluctance or at best with skepticism any formal basis for a theory of architecture. It is not difficult to understand the reason for this attitude; the variety of built form made possible by the new structural and environmental technologies has been encouraged by a profession which, since the 19th century and in spite of the Modern Movement, values originality and the work of genius above the establishment of a decent norm for the constructed environment. The consequent devaluation of the common language of architecture, coupled with the chronic difficulty that most of us have in thinking about the formative process, has led to a persistent search for a theoretical basis for design action among disciplines more susceptible than our own to intellectual schematization. In its most extreme form this attitude has resulted in an attempt to abrogate the architects' form making responsibility entirely.The notion persists that it will be unnecessary to make any conscious decision about the form of what is to be built if only enough of the correct data can be fed into the computer. This idea has recently been joined by that which suggests that the potential user is better able to determine the form most suited to his and society's needs than is the architect, and that the architect's responsibility in the design process is to render only such technical assistance as is necessary. It would be comforting to be able to invest our formal decisions with the clarity, precision and objectivity of mathematical procedures. It would be equally re-assuring to know that, far from being imposed on the user, the built form derived directly from his stated desires without the intervening agency of alien pre-conceptions or predilictions. Even if these extreme positions of abrogation with respect to form making responsibility are rejected, it is easier to grasp and employ a consequential, cause and effect view of the relationship between function and form than it is to accept the idea of a reciprocal and symbiotic interdependence.

However, in spite of the currently more fashionable and more publicized efforts to establish a theoretical basis for form making in areas peripheral to architecture, it is possible to discern a persistent, if often unacknowledged, effort to continue the attempts to render more objective the assessment of the degree of fit between program and form and to explore rationally the suggestions of built form possibilities begun in the twenties and thirties.

Typical of these attempts and most long-lived is the idea of a "type form." The notion that there may be a consistent relationship between pattern of use, pattern of form and technique that will produce building "types" with characteristic forms has been explored by Leslie Martin in the Sixth Gropius Lecture given at Harvard University in 1966. Most architects accept and use a theory of building types although this acceptance is often tacit and the theory is often utilized unconsciously with the consequential risk of misapplication. Nonetheless, the theory of type forms has had a profound and ordering effect on architecture since the twenties.



1

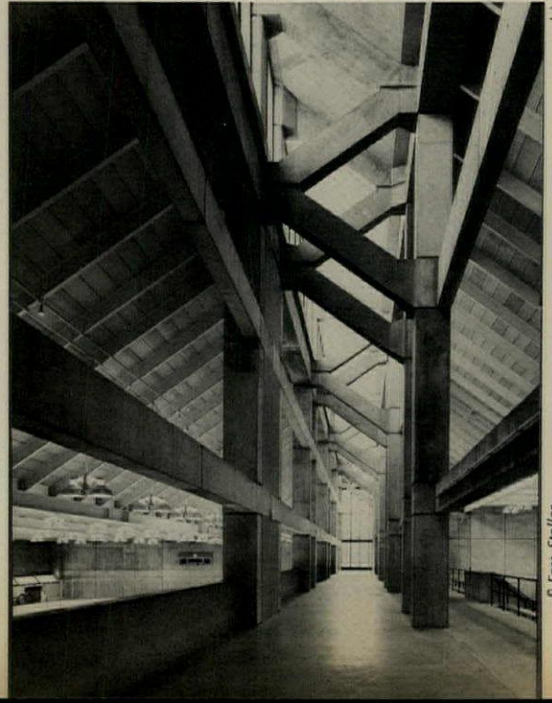
Proposal for Loughborough University, England by Arup Associates

2

The Great Hall for the Law Courts Competition of 1866 by J. P. Seddon

Central spine, Physical Education Facilities, Phillips Exeter Academy

3



© Ezra Stoller

Another and complementary area of theoretical interest is that which seeks to establish "type systems" rather than "type forms." In these inquiries, generic, rather than particular issues of building performance are examined and consonant form systems are proposed. Such "type systems" may often be used at the occasion of quite different building programs. Indeed, some have passed into commercial manufacture and, like the S.C.S.D. system, are bought and used for a variety of functions in addition to that for which they were initially intended. The issues most frequently addressed by the authors of such form systems are programmatic indeterminacy and growth. Characteristically, type systems are aggregations of similar units of space-build in an open-ended pattern accommodating diverse and possibly changing functions. Typical of the more sophisticated work that is being done in this field is the proposal for Loughborough University, England, by Arup Associates, (*Figure 1*).

A third pattern of inquiry is that which focuses on the movement systems implicit in any architectural program and attempts to derive from them a structuring device for the built form. An interest in morphological arrangements generated by movement and accessibility is an integral part of contemporary architectural thought that has its roots in the 19th century. Since the ambitious architectural projects for public buildings of the Victorian era, such as the Great Hall for the Law Courts Competition of 1866 by J. P. Seddon (*Figure 2*), the movement of increasing numbers of people through ever larger and more complex enclosures has been reflected in the morphology of buildings. New hierarchies of space build have been established and have, in our time, led to a significant degree of polarization between space for movement and the space it serves and connects. Today this can be seen even in the private domain of the individual house, which is often planned as if it were a city with major distinction made between circulatory spaces and served areas. Inevitably,

buildings for public use are structured on the model of cities—movement spaces become indoor streets serving blocks of "real estate" of a changeable, indeterminate nature while the routes and the public spaces created by their intersections are the points of fix. One suspects that 19th century interest in these matters was spurred initially by programmatic necessity, fostered by the appeal of the novel and made possible through the often daring exploitation of a new structural technology. In the twenties and thirties, a celebration of movement was an appropriate expression of the "spirit of the age" that so concerned the pioneers of the Modern Movement, as well as a practical necessity in buildings intended to realize the cubist spatial experience. Today, in our firm's own work, our interest in movement systems stems more from a search for ordering and linking devices.

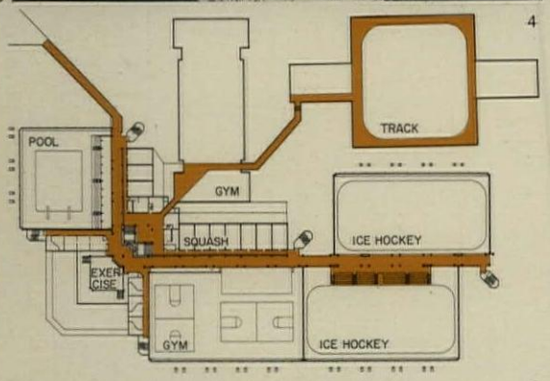
Like many of our contemporaries, we regard the buildings we design not as autonomous but as elements in the continuity of the city or countryside in which we build. We see them also as a link in time between that which exists already as built form and that which will be built in the future. We have, therefore, sought formal disciplines and ordering strategies that hold out the promise of yielding connectivity and extendability over time as well as in space. In much of our work we have adopted a design strategy in which spaces are supported by an armature of the movement system. Using this strategy, we have tried to answer the problem of what can and should be fixed and what needs to grow and change; we have made a distinction of longevity for different spaces and parts of the building and we have tried to provide for the possibility of a dialogue between the interior ordering system of the building and the system or non-system of the existing surroundings.

Our inquiry has led us into an exploration of morphological principles that have validity at the urban scale. These principles have been tested at the occasion of a variety of different programs and site demands. The degree to which the design solutions give promise of a valid strategy can best be evaluated by examining their basic plan organization, the role the movement system plays as a social generator and in establishing the image quality of the built form, and the urban stance or gesture the built form assumes as the result of the dialogue between its own structuring and the environmental context.

Plan organization

Three different types of arrangement have been used in this work: (*Figure 6*)

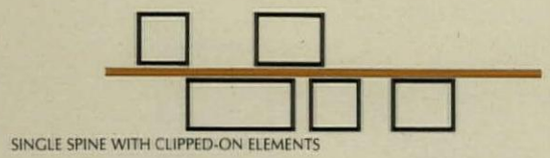
George Zimberg



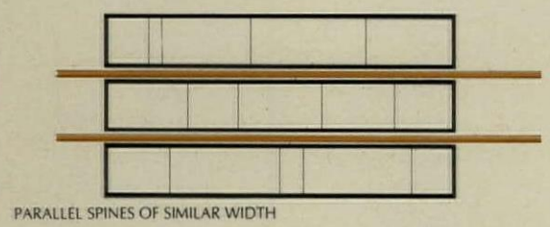
4

Plan and entrace facade, Physical Education Facilities, Phillips Exeter Academy

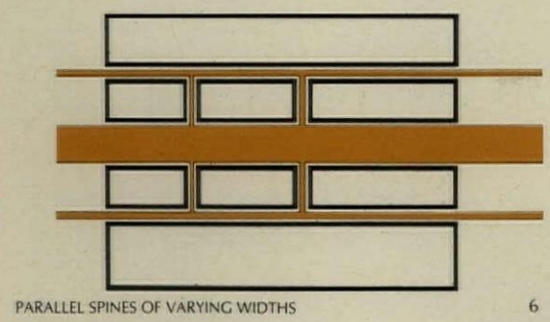
5



SINGLE SPINE WITH CLIPPED-ON ELEMENTS



PARALLEL SPINES OF SIMILAR WIDTH

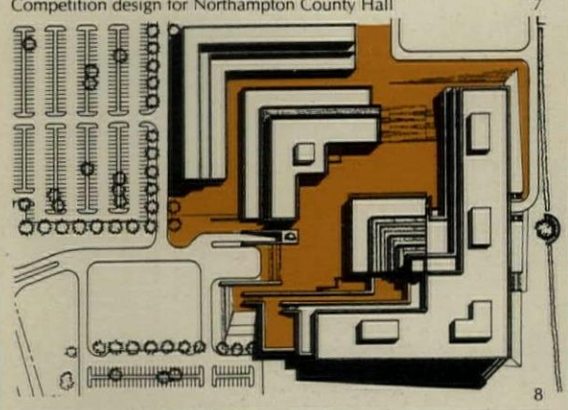


PARALLEL SPINES OF VARYING WIDTHS

6

Competition design for Northampton County Hall

7



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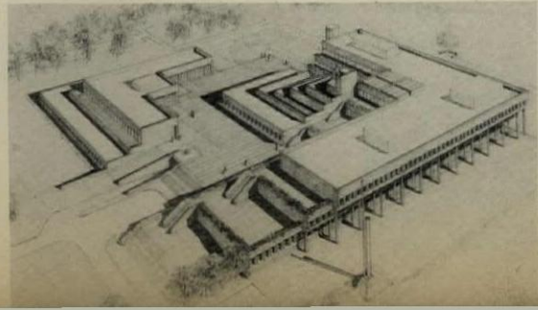


1. A single spine to which are attached volumes of space either discrete or contiguous. 2. Parallel tracks of circulation space (spines) alternating regularly in plan with consistently sized zones of use space. The necessary cross links between spines often tend to develop this system toward a lattice. 3. Parallel tracks of space of varying widths serving different functions. A more flexible morphology than those described above and one which allows a hierarchical interweaving of circulatory routes and use spaces. An example of this approach is the 1973 competition design for Northampton County Hall (*Figures 7, 8*).

These arrangements have been used in straight line, bent through 90 degrees or in other geometrical configurations generated by the peculiarities of a site. Common to almost all of them is a lineal open-endedness that provides for growth. The arrangements allow for flexibility in the design and future use of the served space zones.

Movement system

When fully developed beyond a purely operational organization for horizontal and vertical circulation, the movement system becomes the major infrastructure giving order to the built form and attracting to itself spaces for communication, encounter and concourse. Frequently, these amplifications of the circulatory system into an enriched variety of ambivalently non-programmed but identifiable places serve the essential function of making the building a place for social interaction. These places become the civilizing elements of the plan serving as orienting devices and points of fix within the often large areas of flexible and non-descriptive spaces. Being generated by a concern for the extended social purpose of large and public use buildings they act in similar fashion to the streets and squares of the city. They make for identity of place and are the key to the comprehensibility of the built form. The movement systems become the armature around which the more flexible use spaces are arranged and in so doing they establish themselves as more permanent elements in the building organization. As such, they attract those other elements of permanence—columns, piers, etc.—and in this way they relieve the served spaces of the intrusion of fixed structural supports that inhibit flexibility of use. More importantly, the armature of the movement is frequently made coincident with the structural spine of the complex as in the Phillips Exeter Academy physical education facilities (*Figures 3, 4, 5*). The intensification and density of structural members around the movement system

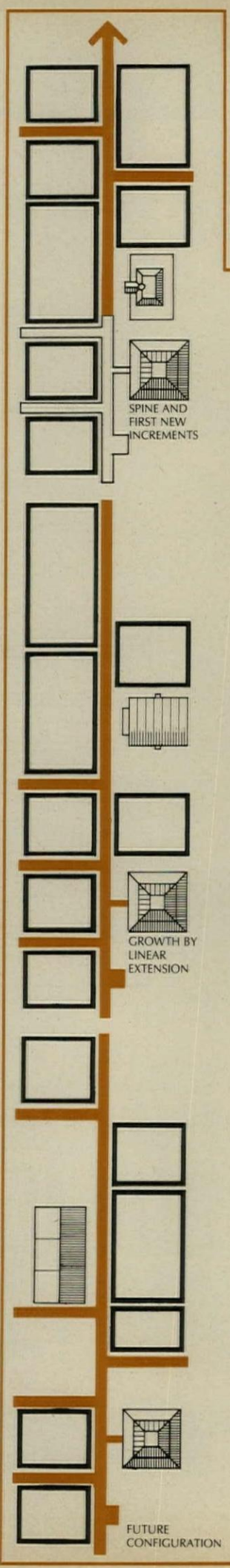
heighten the image quality and increase the memorability of the spine as place.

The image quality and memorability is further intensified by the introduction of natural light into the movement system, often by way of clerestories or skylights. The identification of such routes with a view of the sky and an awareness of time and weather establishes the movement systems as a link with the world outside.

Urban form

As building complexes become larger, and their programs more and more indeterminate, they tend increasingly toward neutral configurations. It is the inclination of their systems to aspire to their own archetypal perfection and under the pressing demand for total flexibility to become "dispassionate" lattices. However, if generated solely by its own autonomous system, the built form can become alienated from the context and present to the immediate environment only the manifestation of an internal logic. In order to counteract this tendency, an architecture of relatedness will seek to modify the platonic purity of the system's schema by an emphatic response to inner or outer contradiction of program or site. It is this response and elasticity which, by bringing about a deformation of the system, will link the inner and outer world of the building and will anchor it in a unique environmental situation. If the movement system that is the armature around which the built form is generated is itself responsive to the place, then the essence of the resultant form will display a sympathy with its context. Moreover, because the generative formal impulse is linear and not centroidal the essential imagery is one of connectivity and continuity not formal or geometric self-sufficiency. The movement system does not, however, dictate by itself alone the exact configuration of the ultimate building envelope since the enclosed volume may be declared as an incremental aggregation of discrete parts or as a continuum and this again may be adjusted with respect to exterior urbanistic determinates such as scale and comprehensibility.

Finally, an architecture organized by an infrastructure of movement systems is able to reinforce the urban structure that is itself generated by patterns of mobility; not only can the movement system of the building extend that of the city, but the linear organizations that result from such a morphology can adjust themselves to and reinforce existing or embryonic street patterns and the enclosure of the built form can become also the walls of the street.



Harvard University master plan for athletic facilities (1972)

The single spine system employed as a planning strategy in its simplest form. The master plan proposes for the Soldiers Field site a linear aggregation of sports halls. These were to be arranged in a zone between the existing halls along Storrow Drive and the stadium.

Plan organization

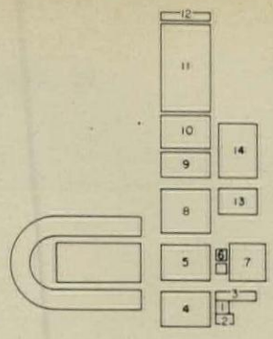
A spine for circulation links a consolidated service element of lockers, showers, equipment and storage located at grade level with a series of halls for different sports. The halls are either discrete or contiguous one to the other. The spine allows for movement of spectators at an upper level and independent from the athletes at the ground level. The system is capable of growth and permutation by linear extension or by infill between halls; by demolition and replacement.

Movement system

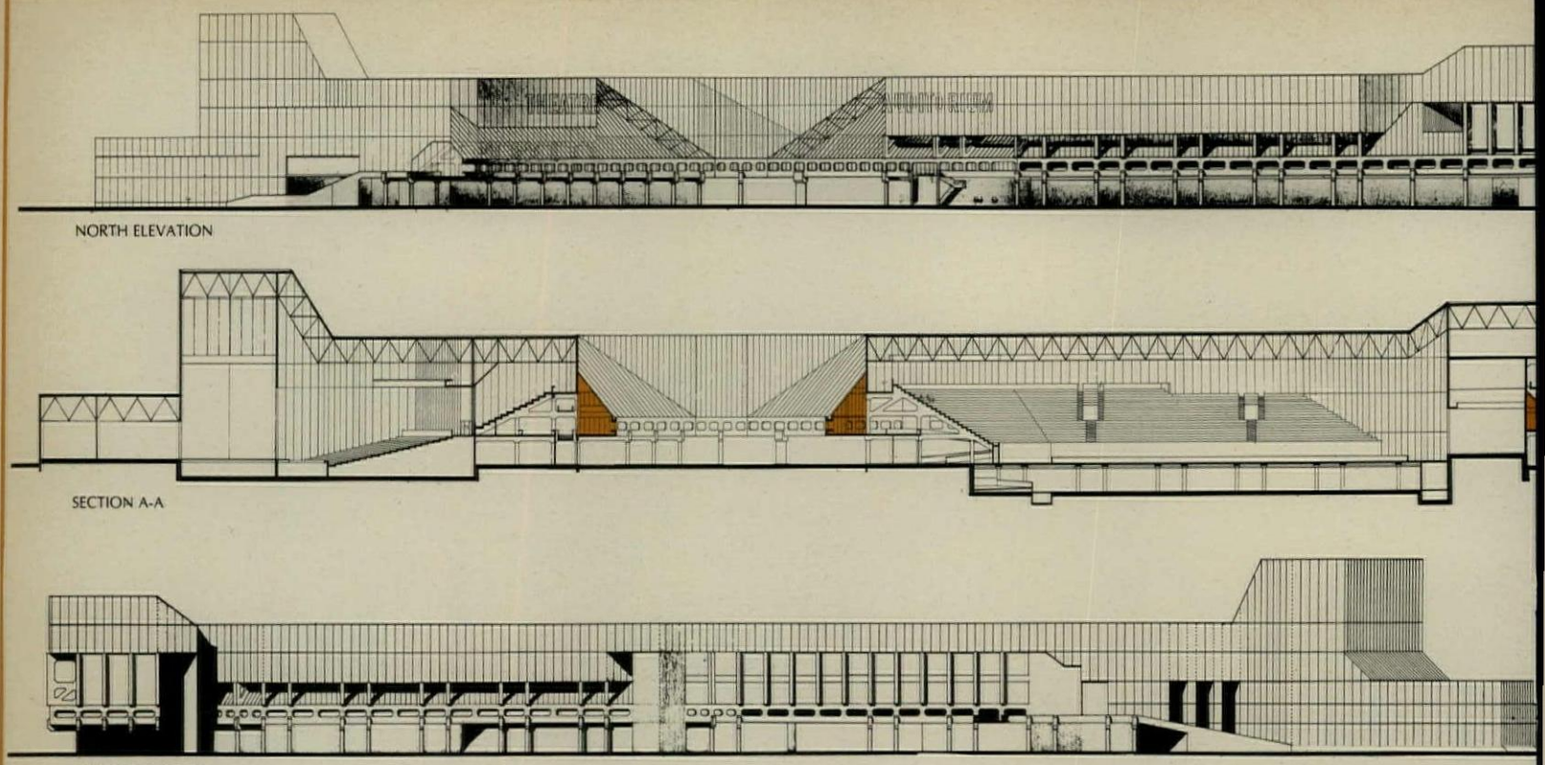
The spine, which at different levels accommodates visitors and participants, becomes a place for meeting and orientation. It funnels the movement and distribution of people through a generous entry space and control point to the activity areas and the spectator galleries. The longitudinal major spine and the cross connectors are generously proportioned for the movement of large numbers of spectators, with entry and terminals marked by access stairs and ramps. The spine provides access to daylight and view of the river as well as of the sports activities. By intermittently displaying to the outside the movement of people within the complex this disposition overcomes the noncommunicative aspects of the closed hall spaces and produces an image of liveliness.

Urban form

The design strategy employs the device of the spinal cord to organize visually an otherwise unpredictable accretion of halls. The existing volumes of the Dillon Field House and the Briggs Cage are seen as unique object-like masses against the continuum of the glass spine.



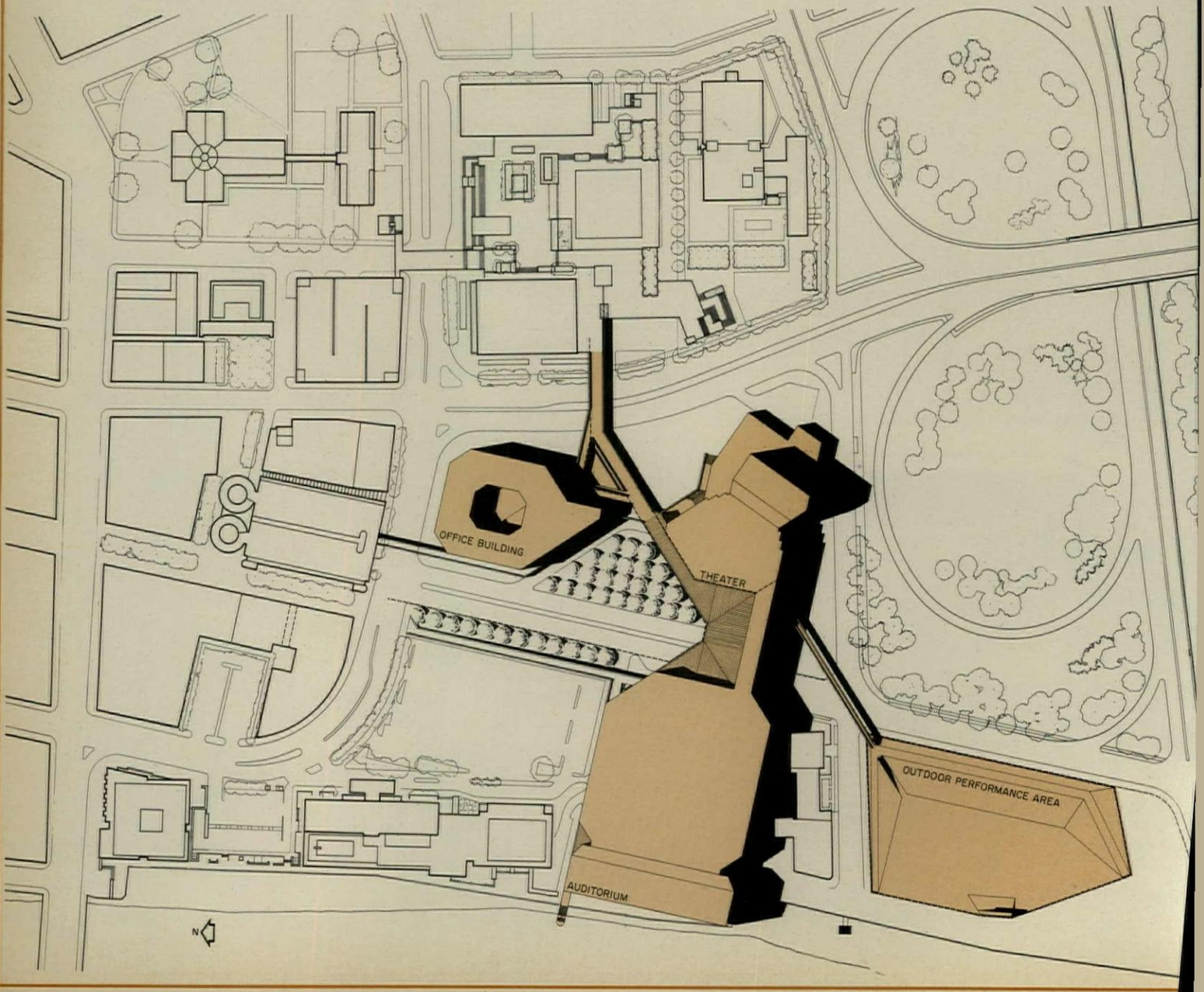
1. Entry
2. Squash courts
3. Office space plus wrestling, fencing and weight training
4. Fifty meter swimming pool
5. Utility rooms and rifle range
6. Handball and squash
7. Renovated Briggs Cage
8. Ice hockey
9. Recreational ice skating
10. Indoor baseball practice facility
11. Indoor track and tennis
12. Storage
13, 14. Indoor tennis



NORTH ELEVATION

SECTION A-A

SOUTH ELEVATION



Broome County cultural center competition (1967)

The program called for the design of a cultural center complex and the coherent development of an important urban site stretching from the new civic center to the Chenango River, in Binghamton, N.Y.

Plan organization

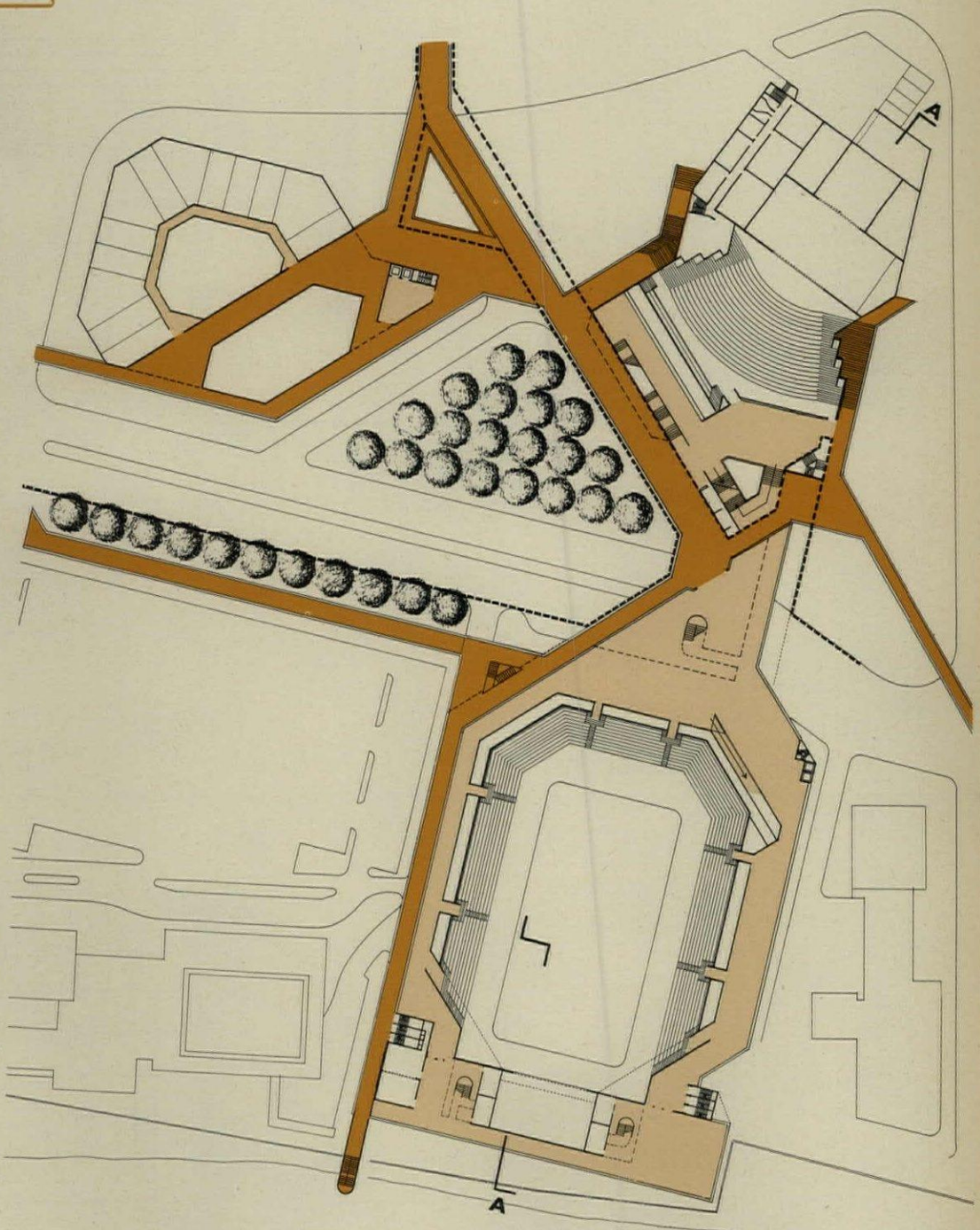
The three main program elements, a multi-purpose auditorium, a performing arts theater and a professional office block are attached to a bent spine which bridges a major thoroughfare. The spine is entered from a tree-lined mall on the west side of the access road and from a small park on the east side. The spine extends outwards from the complex to connect with the central business district, the civic center and the riverside promenade. A fourth element, an outdoor performance area close to the river, is connected by means of a branch spur of the spine.

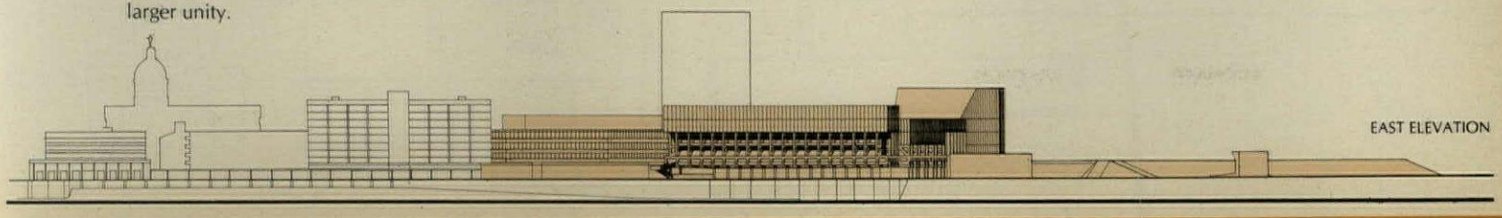
Movement system

The route which links the halls and the office block is amplified to provide for movement from the civic center to the river promenade. Off it lie the foyers and lobbies that serve the hall spaces. At the place where the two elements generating most movement, the auditorium and the theater, face each other the spine is dramatically enlarged to form a covered town room, with cafes, concessions, indoor planting and view of the downtown district.

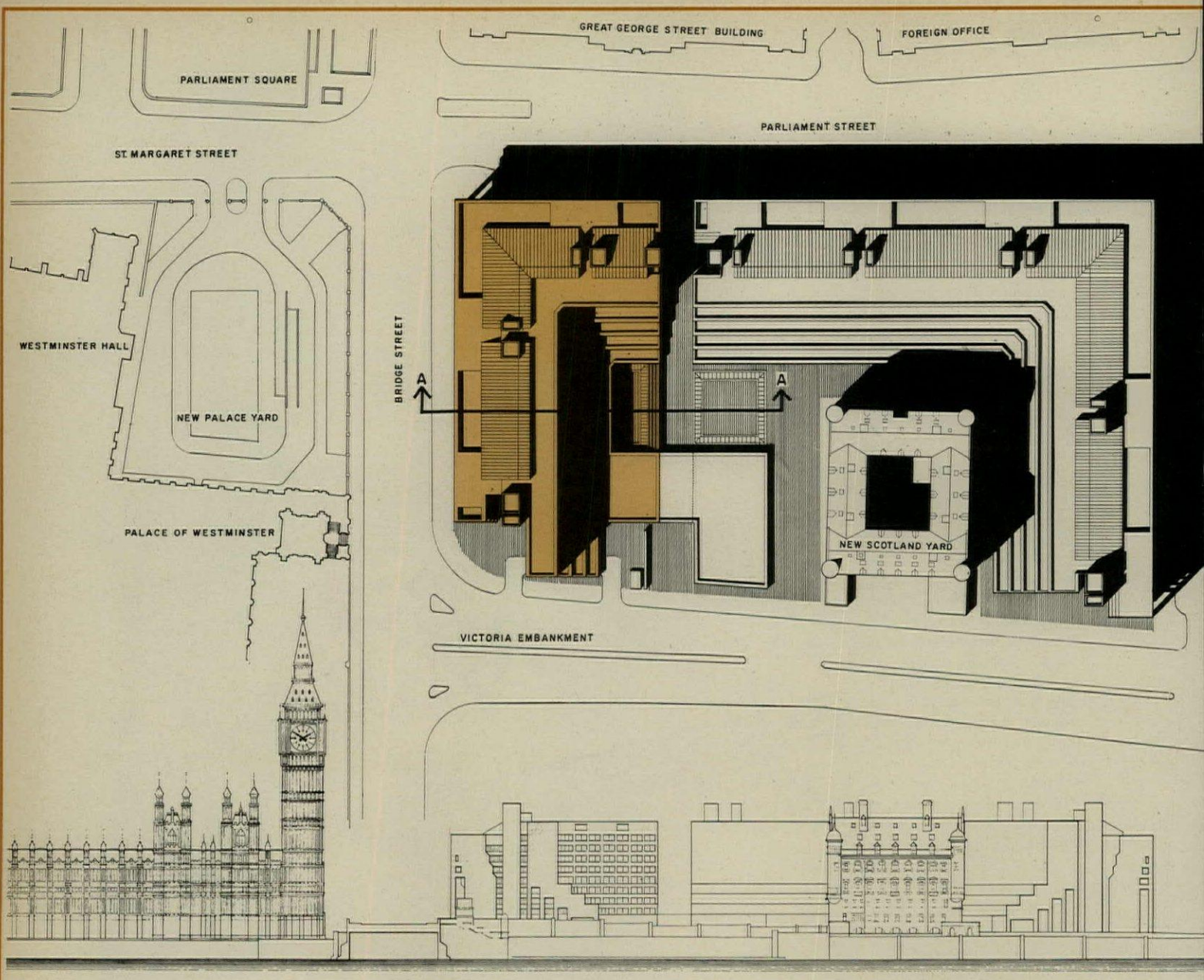
Urban form

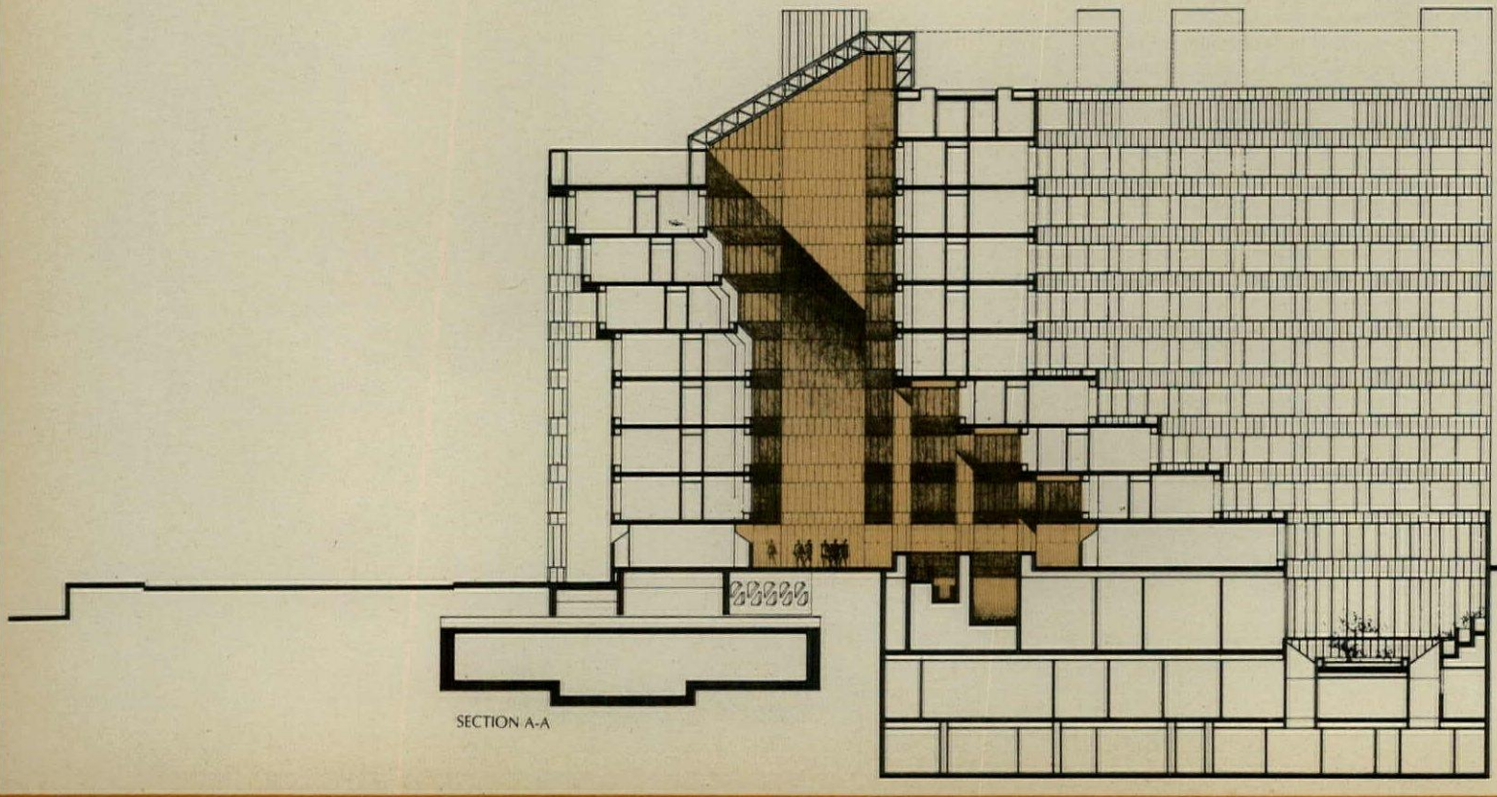
The complex is conceived as an amalgam of consolidated parts rather than articulated elements. For that reason, the movement system is externalized as a major configurative element wrapping around the halls and office block. The potential separateness of the hall volumes is then welded into the larger unity.



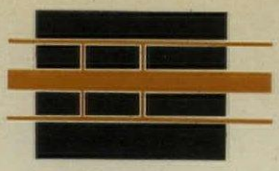


EAST ELEVATION


GREAT GEORGE STREET BUILDING
FOREIGN OFFICE
PARLIAMENT SQUARE
PARLIAMENT STREET
ST. MARGARET STREET
WESTMINSTER HALL
NEW PALACE YARD
BRIDGE STREET
A
A
PALACE OF WESTMINSTER
NEW SCOTLAND YARD
VICTORIA EMBANKMENT



SECTION A-A



Parliamentary offices, London (1973)

The subject of a Commonwealth competition, the building is to provide office space for Members of Parliament who could not be accommodated in the Palace of Westminster across the street. The site faces the Thames embankment and extends to Parliament Square at its other extremity.

Plan organization

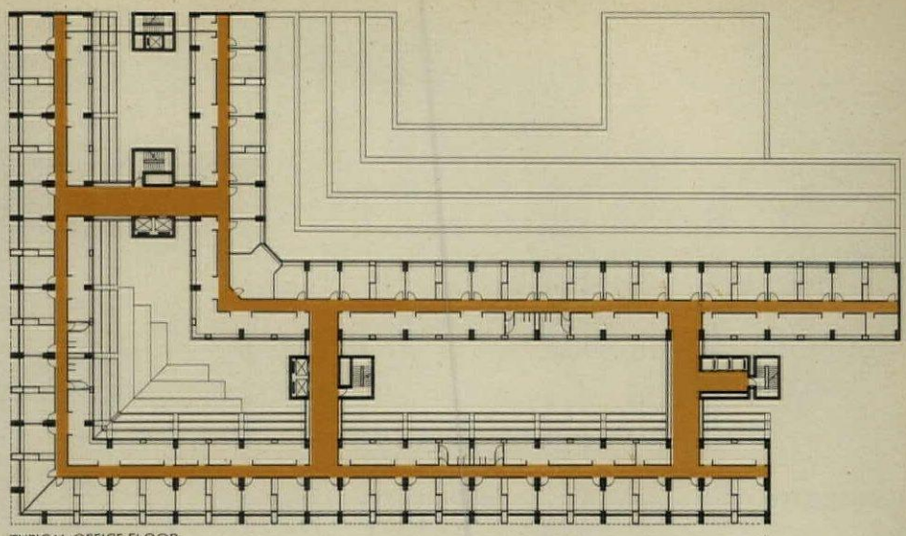
The plan organization is one of parallel bands of space differentiated by function but not necessarily conforming to the simple alternation of circulation with use space pattern employed in the design for the Minnesota Student Union or Woodhull Hospital, Brooklyn. Two L-shaped tracks of space running parallel to each other are separated by a skylit gallery. Within each track subsidiary parallel zones of use are defined; the Members' rooms are located on the exterior wall of each track with views of the Palace of Westminster, Whitehall and the river. The secretarial/service zone is adjacent to the skylit gallery. At the ground floor, the gallery forms the entrance hall that connects assembly spaces, stairs and elevator cores.

Movement system

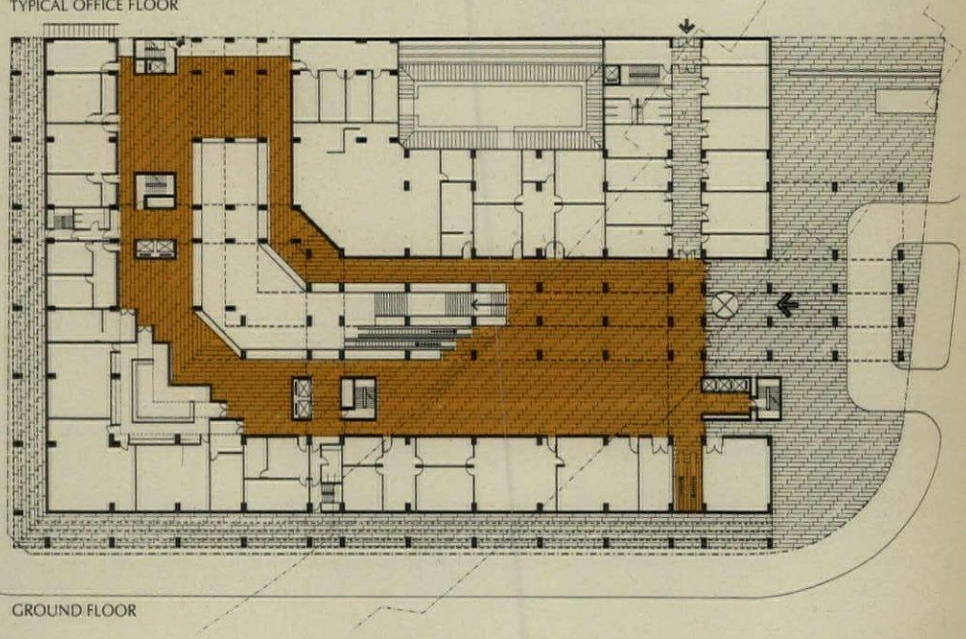
A deliberate attempt has been made to create a *"salle des pas perdus"* at ground level—a lobby of the form that has traditionally provided the place for meeting between elected representatives of the people and their constituents. The skylit gallery/entrance hall/lobby extends through the full height of the building and links spatially and visually all plan elements.

Urban form

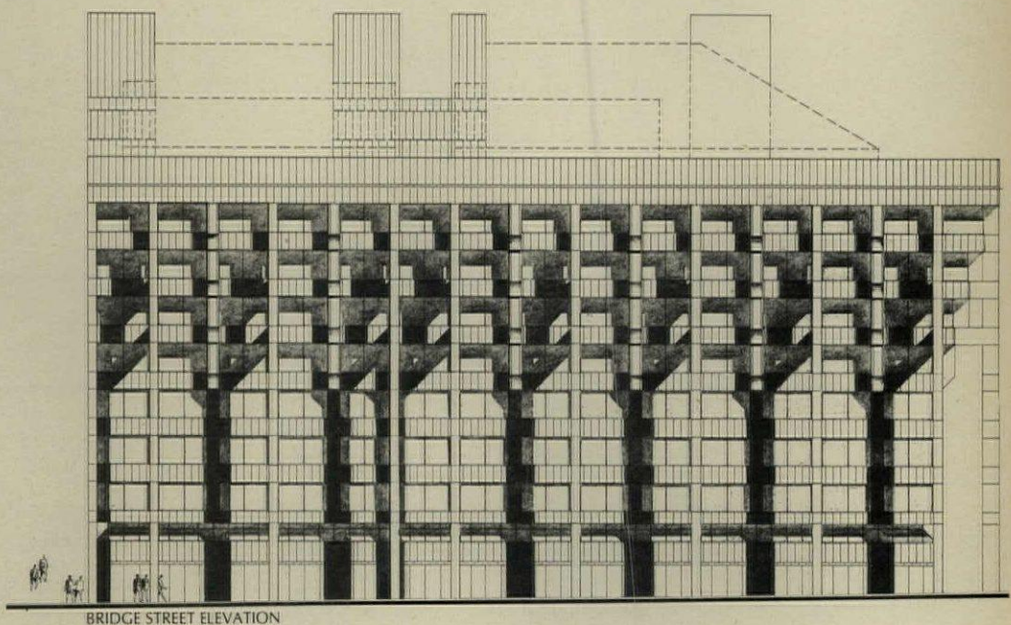
The parallel tracks of office space and the skylit lobby that they define turn through 90 degrees to follow the existing street pattern. The organization in section allows for a generous colonnade along Bridge Street and Parliament Street from which the pageantry of London's civic affairs may be viewed. An open terraced section faces the river.



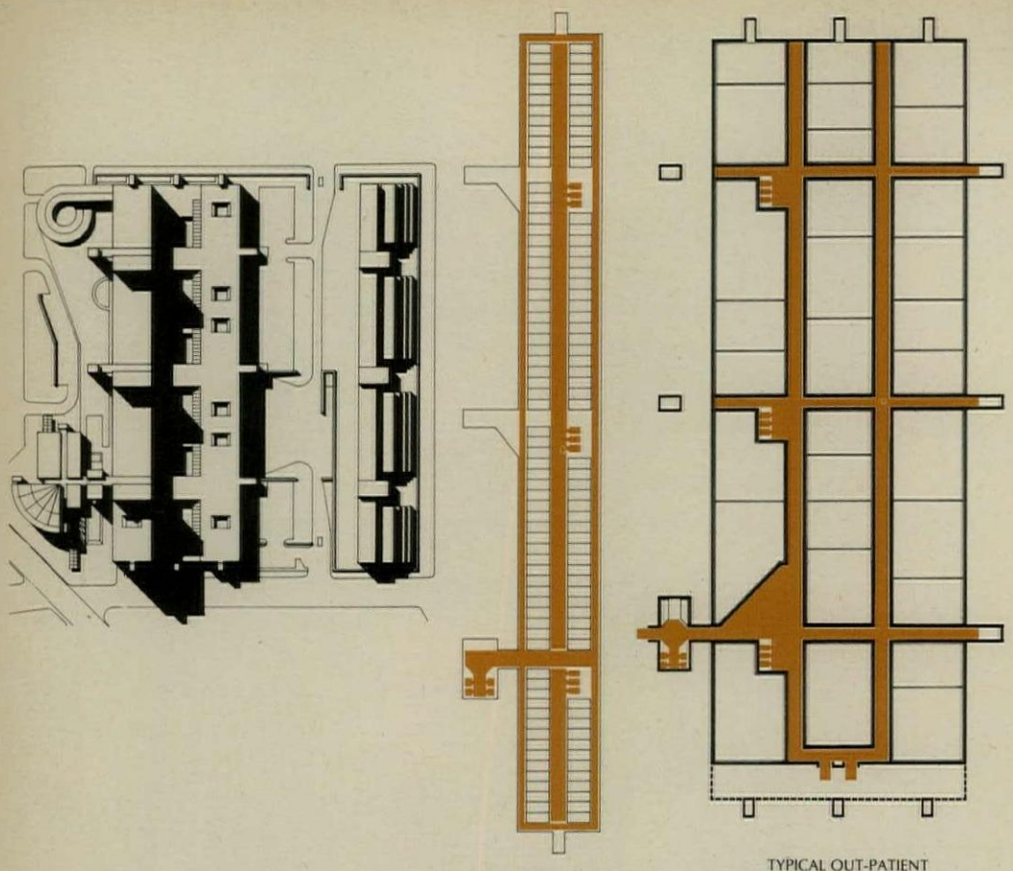
TYPICAL OFFICE FLOOR



GROUND FLOOR



BRIDGE STREET ELEVATION



TYPICAL PATIENT CARE FLOOR

TYPICAL OUT-PATIENT CLINIC FLOOR

Woodhull medical and mental health center, Brooklyn, N. Y.

Done in association with Russo & Sonder and now nearing completion this hospital program of 850,000 square feet is accommodated in three lower levels of service, ambulatory care and treatment, above them a parking level, a level for mental health care and over the eastern track five levels of inpatient care. Each floor is served by a level containing the mechanical services.

Plan organization

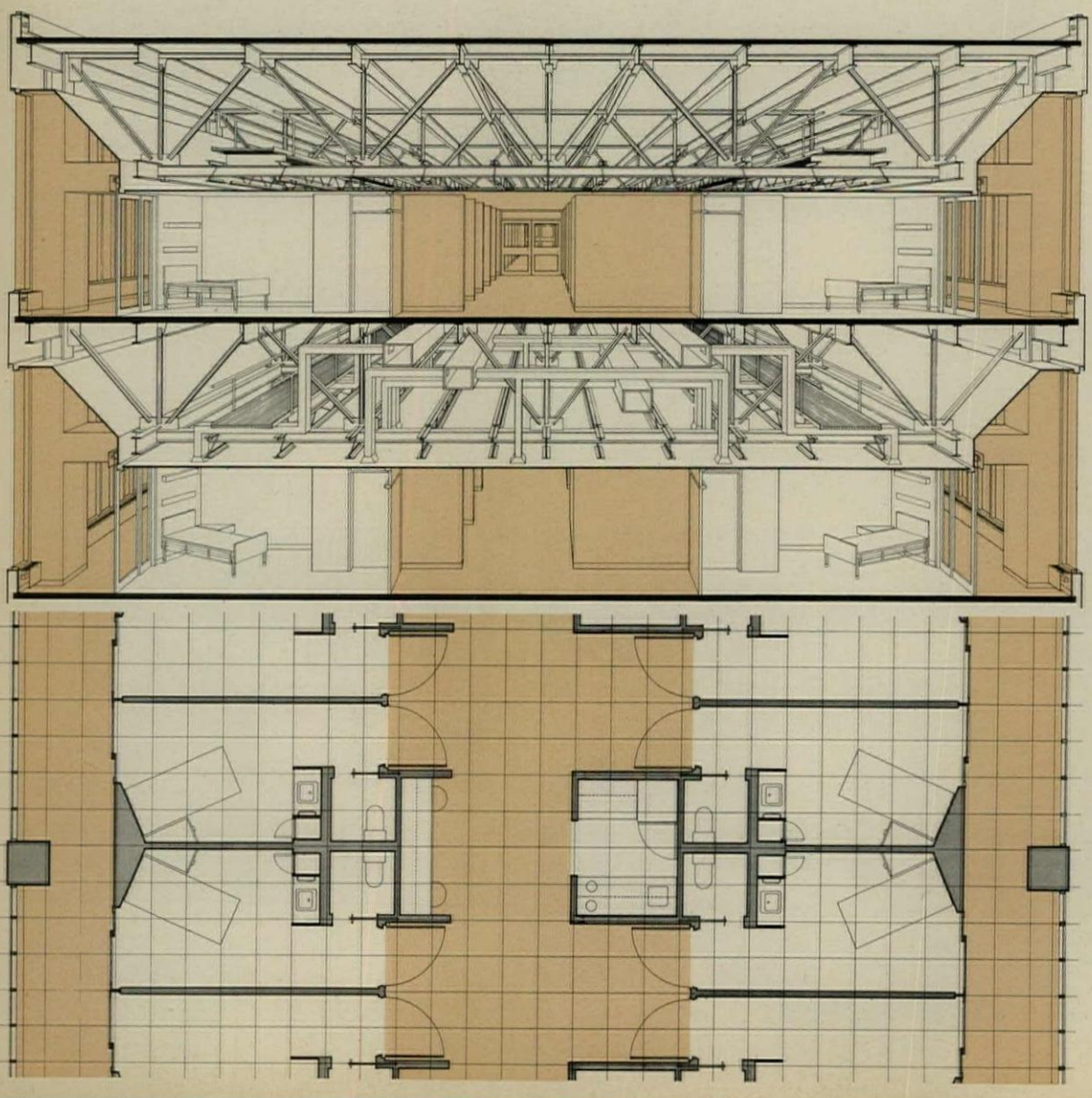
In this scheme the simple, horizontal arrangement of spine and served volumes is replaced by a more complex linear matrix. On both patient care levels and on the much larger lower three floors circulatory routes of varying widths alternate with broader use zones. The system can expand horizontally at the lower levels to provide another track of use zone and circulatory spine and upward growth of two more levels for inpatient care is possible. At the ambulatory care level, clinics are accommodated in three column-free tracks 68 ft 10½ in. wide.

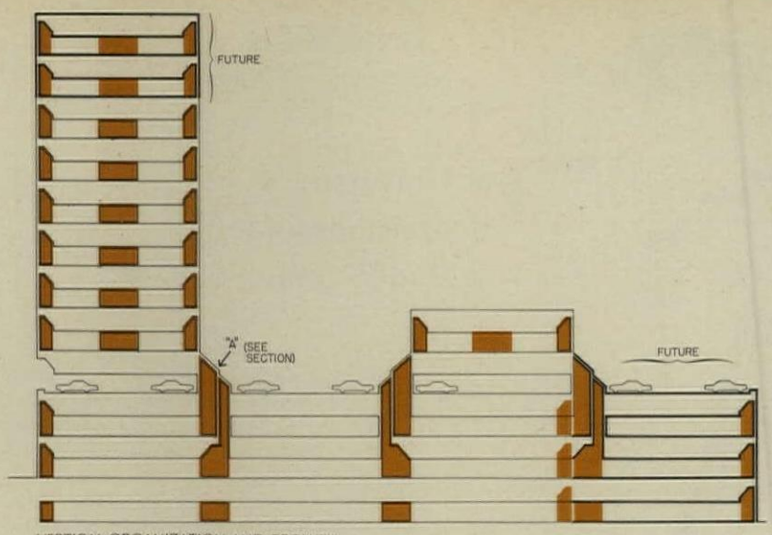
Movement system

In so deep a building complex the major circulatory routes are developed beyond the function of access, into major orienting devices providing amenity beyond the purely clinical function of the building. At significant points the circulatory route is distended to invade the use zone to provide places for sitting, gathering, etc. Such places form points of reference in an otherwise anonymous matrix of regular interior streets.

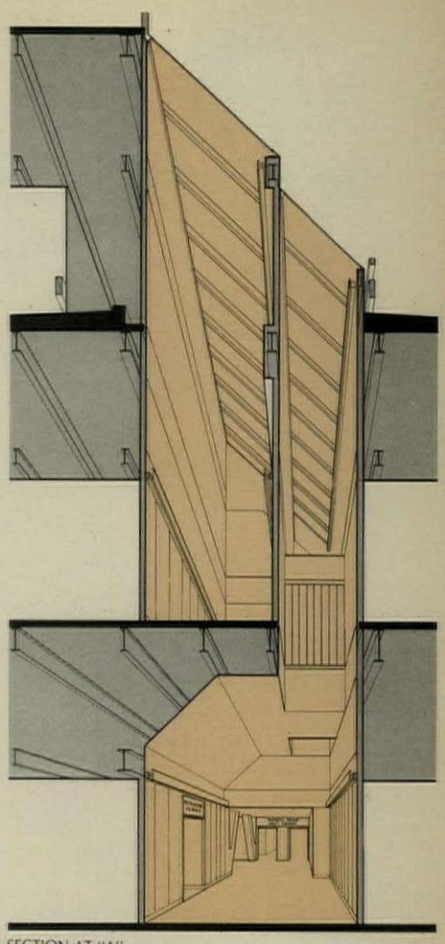
Urban form

The linear tracks of space served by glass roofed indoor streets and the visitors daylit corridor suggest an affinity to street patterns of the neighborhood. The eventual addition of housing for staff parallel and close to the west boundary of the site will reinforce the existing street pattern, and, in addition will create a linear park running north-south.

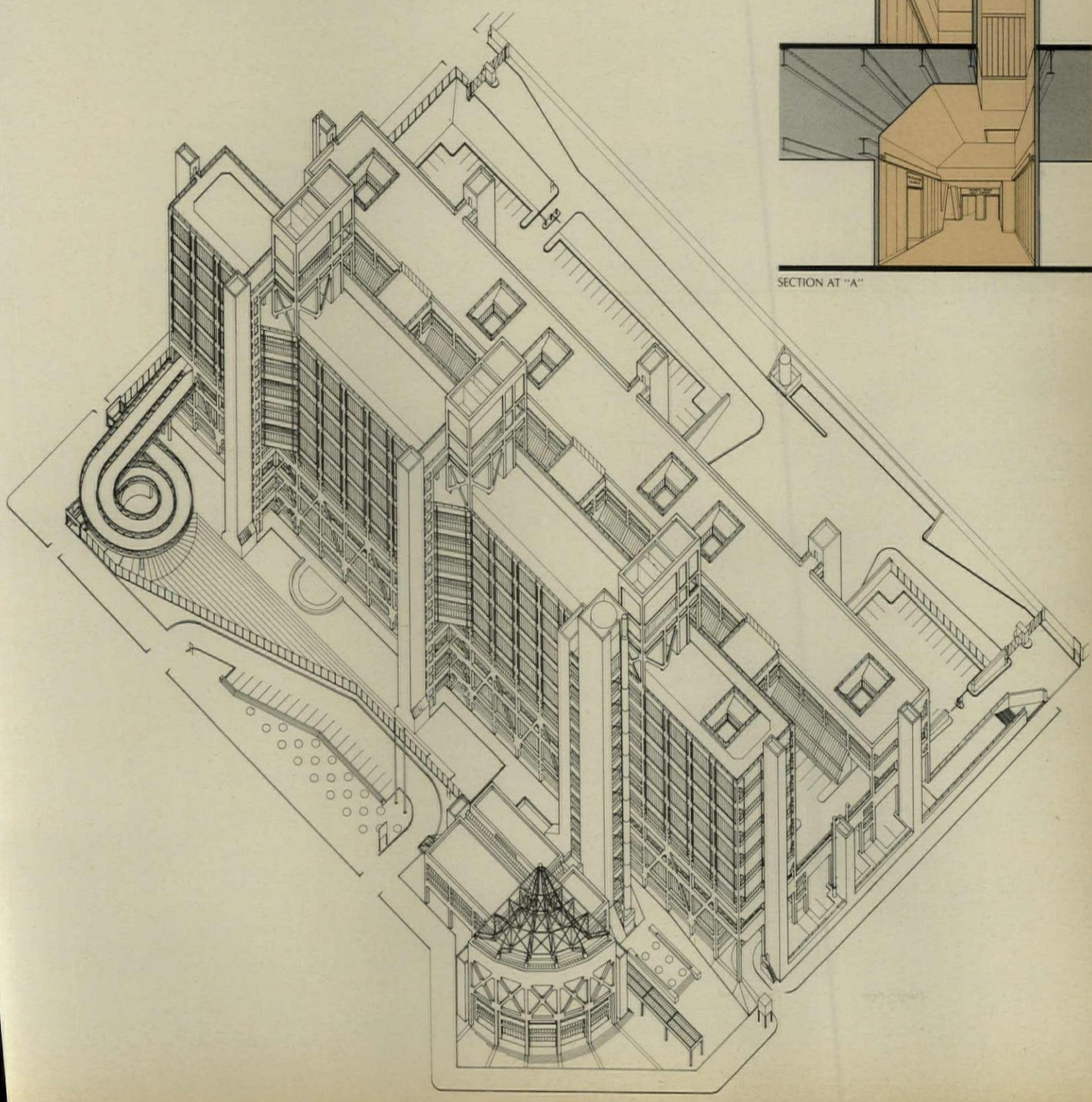


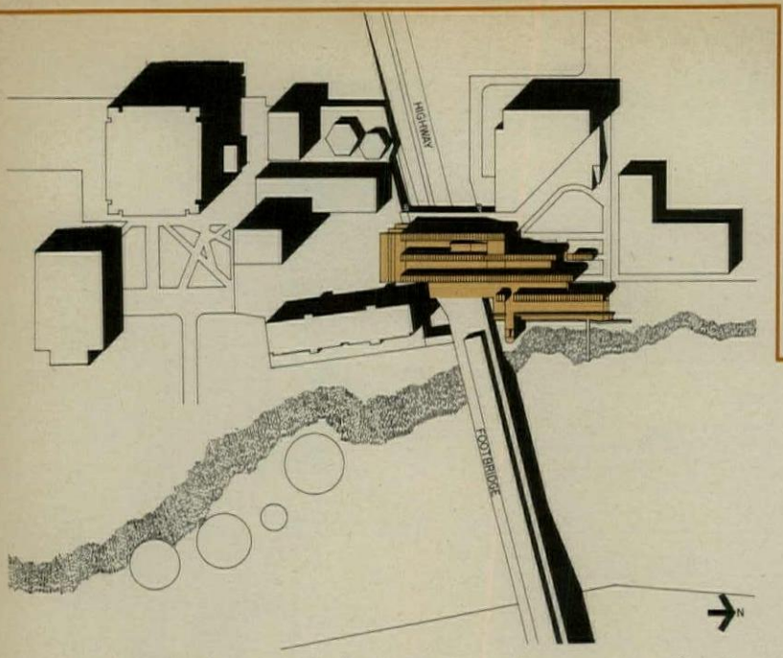


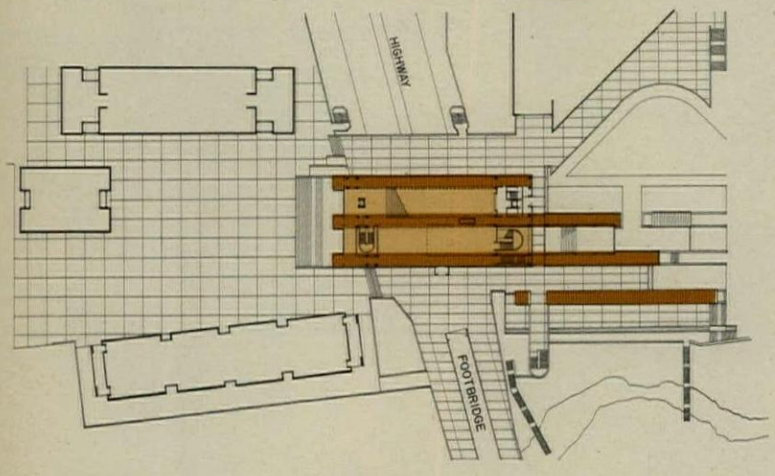
VERTICAL ORGANIZATION AND GROWTH



SECTION AT "A"





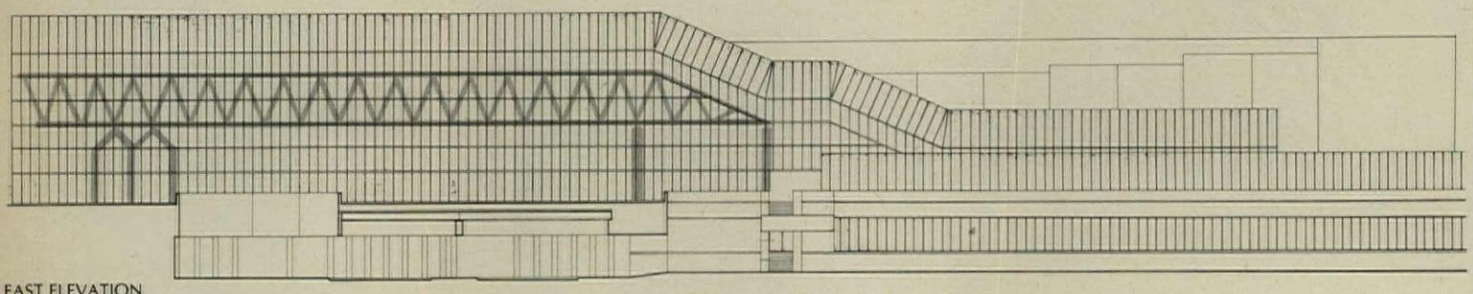


University of Minnesota student union (1973)

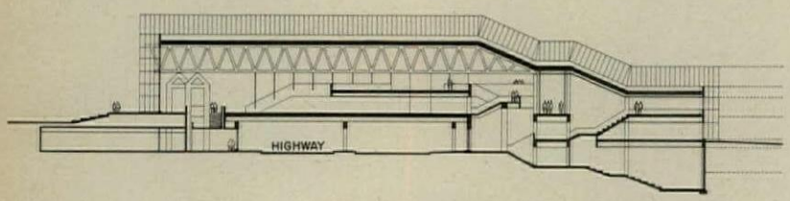
The program called for a degree of indeterminacy in order to be able to respond to the accelerated change of life style of successive generations of students. There were requirements for a major gathering space which came to be called the "town square," a multi-purpose room for performances of all kinds, a cafeteria and restaurants, and space suitable for division into shops and offices.

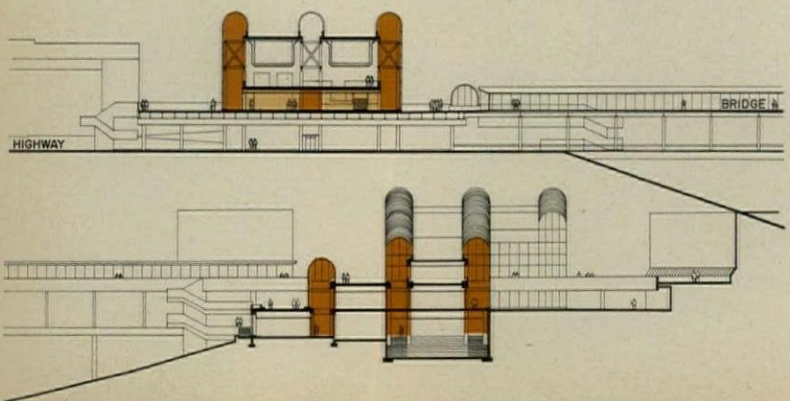
Plan organization

Four tracks of circulation space alternate with and serve four tracks of use space. The building is planned to serve and promote all scales of social intercourse. For this reason, the physical separation of circulation network from served spaces is never severe, though a strong visual distinction is made between the movement spaces and the use zones.



EAST ELEVATION





Movement system

The whole building is conceived as a social generator and meeting place. The circulatory routes are enlarged in many places and particularly at the points of vertical change to form stepped tiers for gathering.

Urban form

The building itself acts as an urban connector linking across the highway the south part of the campus with the north campus. it is traversed at the plaza level by a passageway leading to the classroom complex to the northwest and is approached by a pedestrian bridge crossing the Mississippi River and connecting the old eastern campus with the west bank.

DESIGN FOR RECREATION

Giving lighthearted buildings and structures a contextual "fit" can be fun

Cherry Creek Park Marina

In the desire to express an appropriate exuberance, designers have often given recreational construction an expansive "mind of its own" unrelated to its more work-a-day surroundings. In contrast, structures of every sort by concerned designers today realized an advanced attitude: they fit into their surroundings (and limitations), and *they express exuberance—as shown on the following pages—C.K.H.*

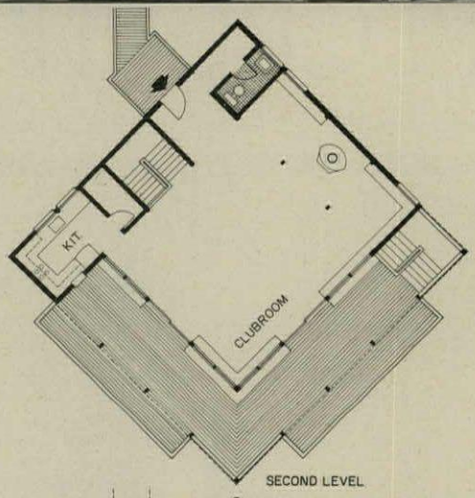
A fresh form can answer needs of tradition and economy with style

In order to recognize two very limiting constraints, architect David Austin designed the Castine (Maine) Yacht Club by traditional means and in almost traditional form. Castine has a known history dating to the sixteenth century, and a strong flavor of (real) pre-Revolutionary architecture. Its sailing enthusiasts had a very limited budget (approximately $35,000) when they commissioned this center for their sport. Austin has created a highly visible new building with a compact, simple outline and weathering finish—similar to a multitude of utilitarian structures which dot the Maine coast. And construction incorporates an existing surrounding pier that was the foundation for the old customs house from which the British Crown collected revenues for the college of Halifax.

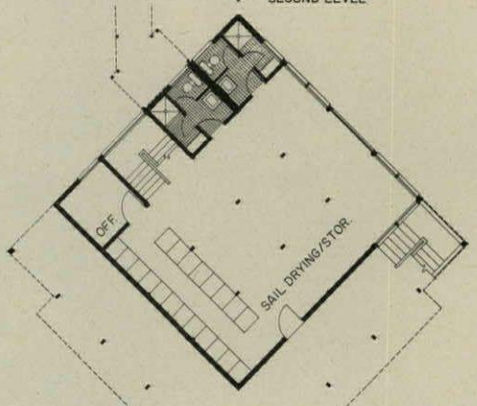
To organize the club's functions, Austin used an eight-foot difference in level between the adjacent street and the pier to place the social activities on the top level and other activities below. This took advantage of the hipped roof, designed for local context, to expose the interesting structure from within and to add the volume under the roof to the height of the main clubroom. It also solved a planning problem typical in clubhouses by allowing both the social and the sport-associated functions (here located on the level below) to face the same "active" harbor side of the building. To take full advantage of the harbor view thus gained, the building is placed at an angle so that windows opening to a porch reveal a broad panorama on two sides. The sport-associated functions include both an office and space for drying sails and storage.

To keep the cost of the 2500-square-foot building within the tight budget, Austin used customary local materials and construction methods. In the wooden post-and-beam construction, columns are located on an eight-foot grid, except in the social room, which is spanned by composite wood and steel trusses fabricated on the site. They are typical of nineteenth century industrial construction in New England. The building is unheated and the "shiplap" siding, stained a soft gray on the exterior, is also exposed on the inside of the building. Engineering was performed by the architect for this relatively simple structure.

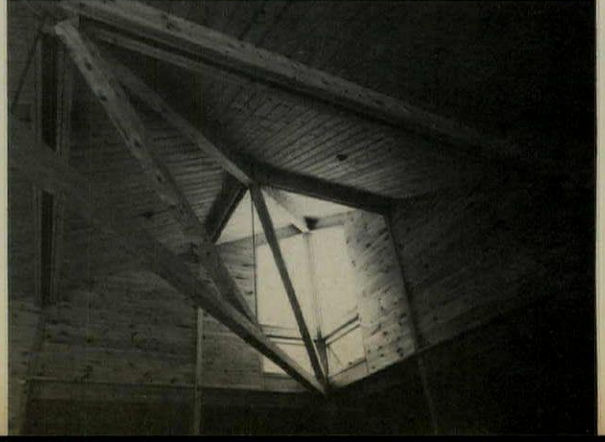
CASTINE YACHT CLUB, Castine, Maine. Architect: *David Austin*. General contractor: *Emery Witham*.

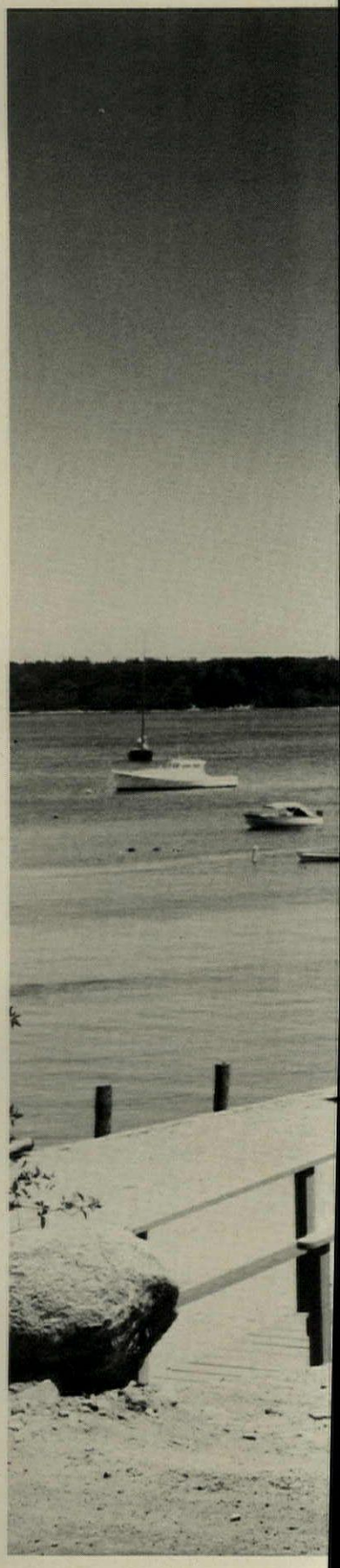


SECOND LEVEL



FIRST LEVEL 5





Bold forms establish a sense of place in "wide-open" spaces

As opposed to the "background" structures of stone and timber often commissioned for large parks devoted to active recreation, these three isolated groups of structures—by their individual visual strengths—establish reference points in the vast open landscape of the Cherry Creek Reservoir near Denver. Designed by architects Cabell Childress Associates, they create sophisticated though differing images; the buildings, by their arrangement, contain small "urban" spaces. And all of this is appropriate to the site and forms an "extension" of the ambiance of the urban center that touches the park's border. There was a limited budget, and another constraint was the structures' ability to withstand periodic flooding. Perhaps most importantly, the Cherry Creek structures represent a breakthrough for design commissioned by local government; besides winning A.I.A. awards, the picnic shelters (photo, right top) and the marina (photos, right) were displayed as "desirable solutions" at a 1974 Colorado Design Assembly sponsored by the Governor.

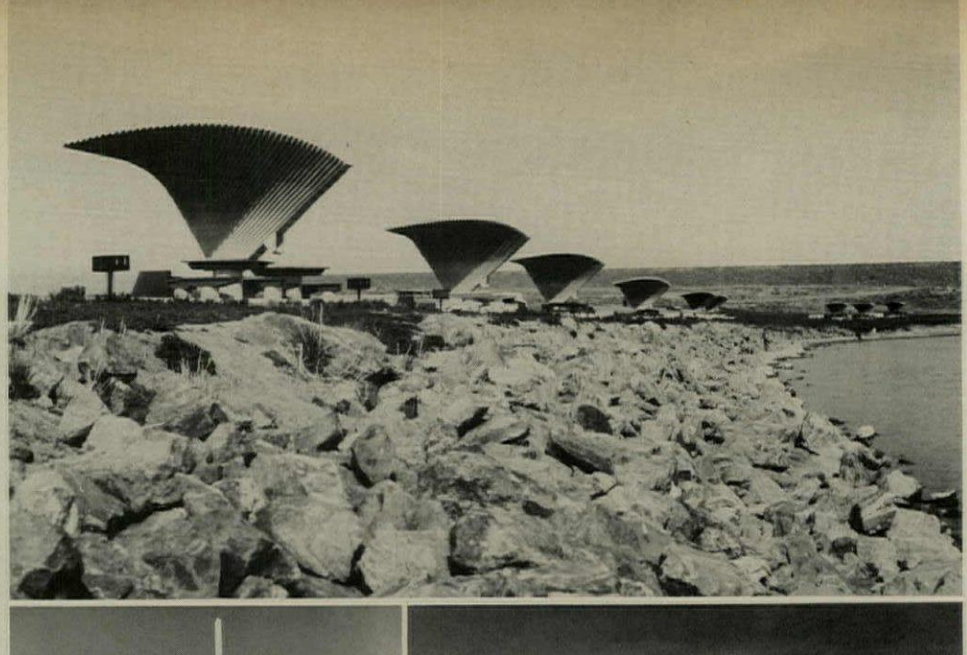
The marina's full budget of $67,000 was to include a clear indication to distant boats of its purpose: home base. The architect's answer was two identifying concrete "sails in full wind" painted bright orange.

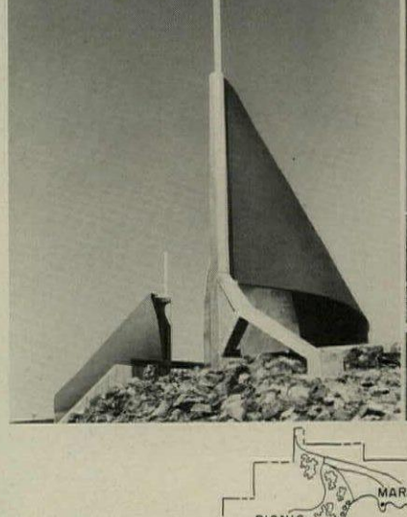
To produce the "flying wing" shapes of the concrete picnic shelters, the architects worked with sculptor Robert Behrens. The flaring roofs each shelter two tables from sun and rain, and give identity to a strip of relatively featureless shore line. The formwork was made from 3- by 6-inch timbers threaded together on pipe, and the optimum number for one form's use (10) dictated the number of structures currently in place. At the beach facility, the low buildings produce contained outdoor spaces.

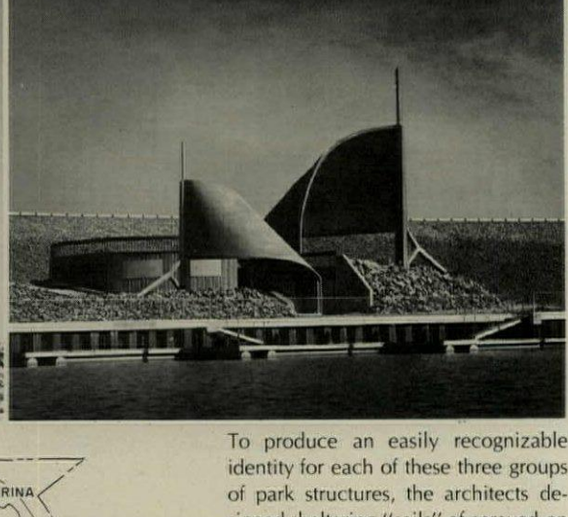
CHERRY CREEK MARINA, Denver, Colorado. Owner: *Colorado Department of Parks.* Architects: *Cabell Childress and Martha Russell.* Structural engineer: *Borman & Melcher.* General contractor: *Hyder Construction Co.*

CHERRY CREEK PICNIC SHELTERS, Denver, Colorado. Owner: *Colorado Department of Parks.* Architects: *Cabell Childress.* Sculptor: *Robert Behrens.* Structural engineers: *KKBNA.* General contractor: *Blackinton & Decker.*

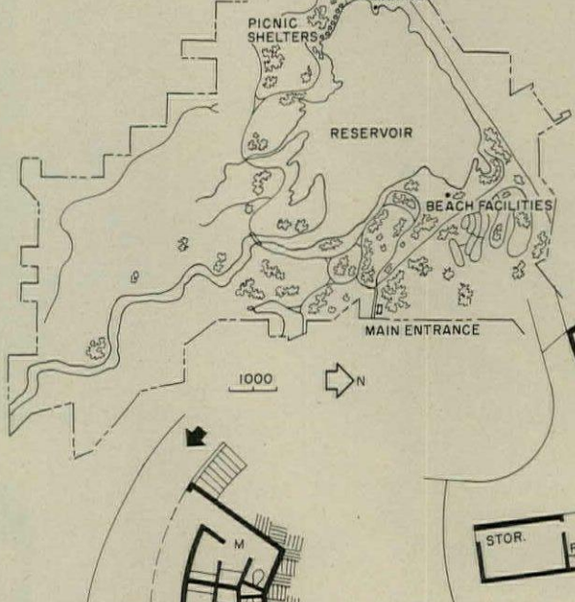
CHERRY CREEK BEACH FACILITIES, Denver, Colorado. Owner: *Colorado Department of Parks.* Architects: *Cabell Childress.* Engineers: KKBNA (structural); *McFall & Konkel* (mechanical); Sol Flax (electrical). Contractor: Connor Construction Co.

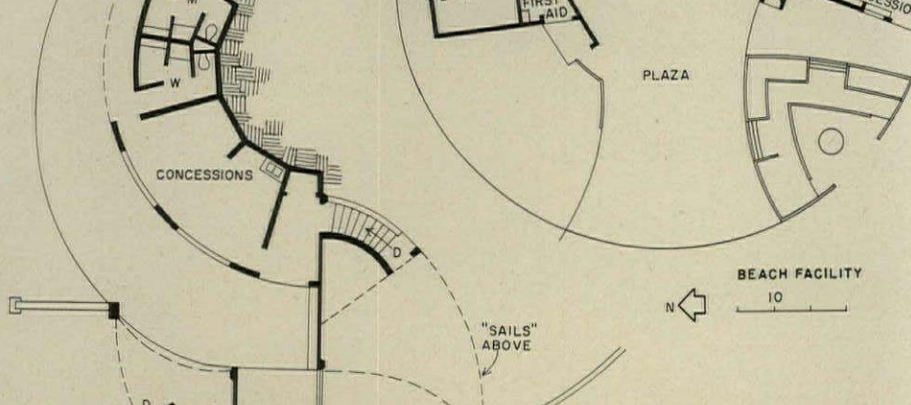






To produce an easily recognizable identity for each of these three groups of park structures, the architects designed sheltering "sails" of sprayed-on concrete for the marina (photos above), poured concrete "wings" for the picnic shelters (photo, top) and a rectilinear concrete-block building for the bath house (photo, opposite). The high orange-painted shapes of the marina, as "signs", can be seen by distant boats.





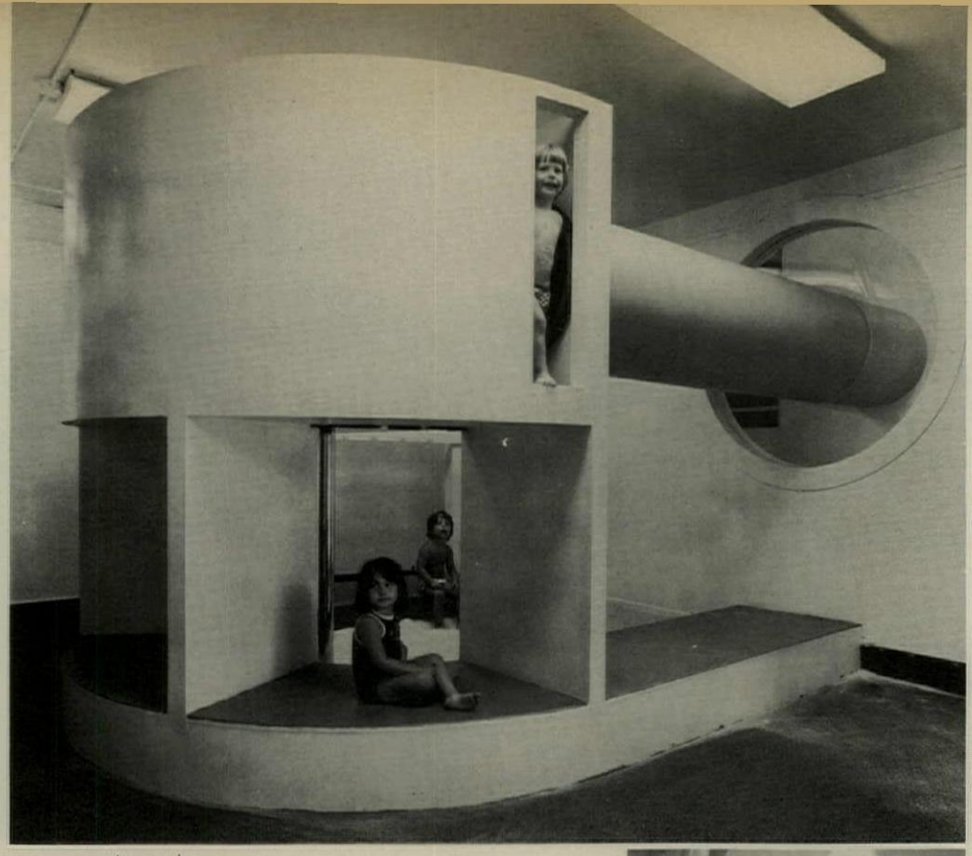
Alexander Berens photos (except as noted)

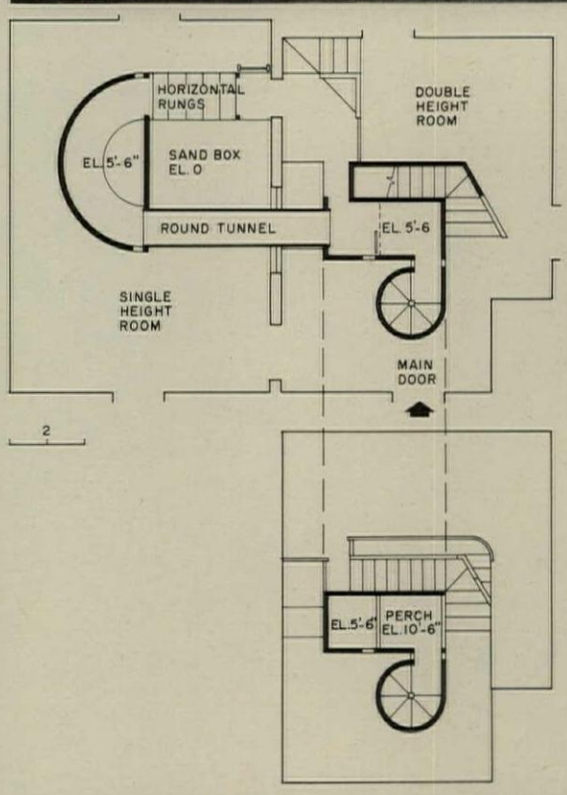
Playful shapes transform an old building with respect

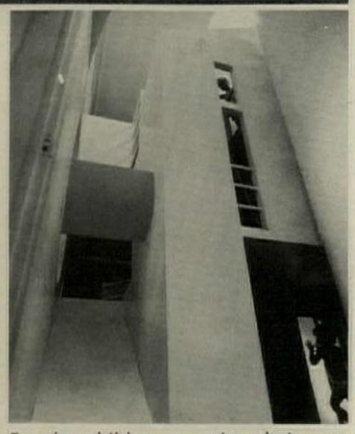
Outdoor structures for the dissipation of young children's activity-urges have become common throughout the country in playgrounds with swings, slides, seesaws and other space-consuming fabrications. But with bad weather, those facilities' users are generally expected to restrain their natural exertions—at least until reaching the age for indoor play provided by some kindergartens (see RECORD, May, 1975, pages 128-129). Architects Gordon & Meltzer, who designed the kindergarten, have transferred their energies to a new problem: providing an always and publicly available facility for pre-school-age amusement, within an existing pool house (photo, bottom) on a former estate on Great Neck, Long Island. Part of the new Steppingstone Park, the pool house is devoted also to community services including adult educational programs and social functions. For the needs of young children, the program for re-use included two rooms set aside for active play by up to 60 five-year-olds supervised by only their parents. A balcony in one of the rooms, the building's cental two-story-high former entrance hall, was designated for use by watchful adults.

In designing an indoor facility for children, the architects realized that limitations of space precluded the usual swings and seesaws, and—at the same time—that more static constructions would hold little appeal unless they provided challenging experiences. Accordingly, the architects have given the users a series of temptingly varied opportunities to both satisfy their curiosity and their needs for exertion. Each new direction taken demands an ongoing decision-making process, which the architects see as a major factor in sustaining interest; and the enthusiasm of the youthful users bears this out. The play structure was built for only $13,000 by Department personnel using hardboard nailed to wood studs. Vertical surfaces were painted with latex enamel, and horizontal surfaces were covered with carpet. The only major changes to the surrounding building were the addition of a "stock" skylight over the double-height room and the round hole glazed with acrylic between the two rooms. Existing mechanical and electrical services were maintained.

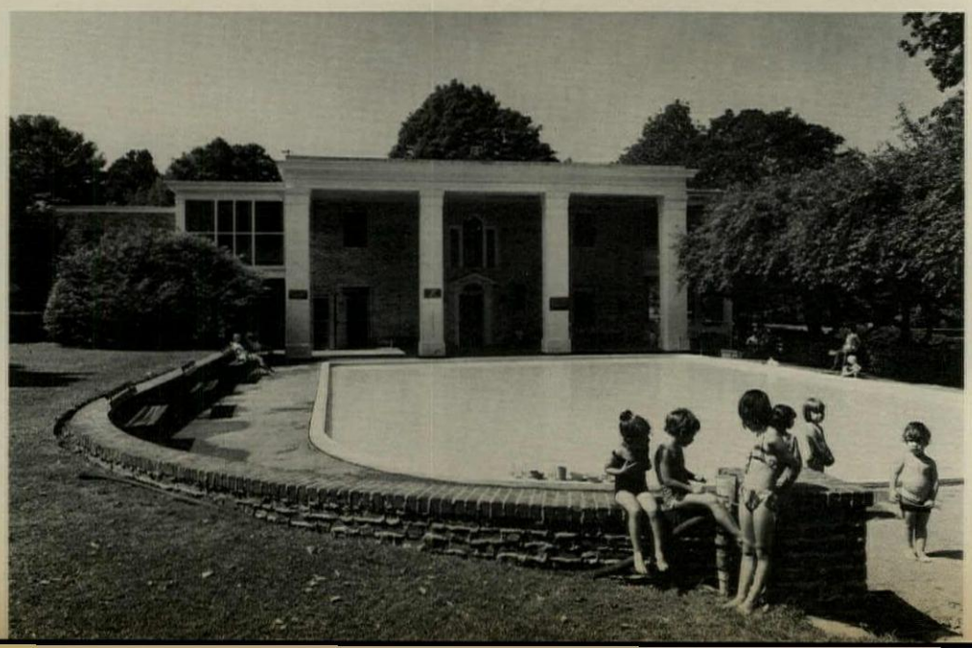
MAIN BUILDING AT STEPPINGSTONE PARK, Great Neck, Long Island. Owner: *Great Neck Park District.* Architects: *Gordon & Meltzer.* General contractor: *J. Flowers Construction Co.*







For the children, entering their new play-environment in an existing building, there is a linear progression of experiences. The users can go up a short vertical ladder to a series of horizontal bars for hand-over-hand swinging in the one-story room (left in plan above). Here, the rounded structure (photo, top) surrounds a sand box at floor level, and connects with a round tunnel leading to a tower in the double-height room. Access is gained to the perch (photo, right) by stairs in the tower.



Gil Amiaga photos

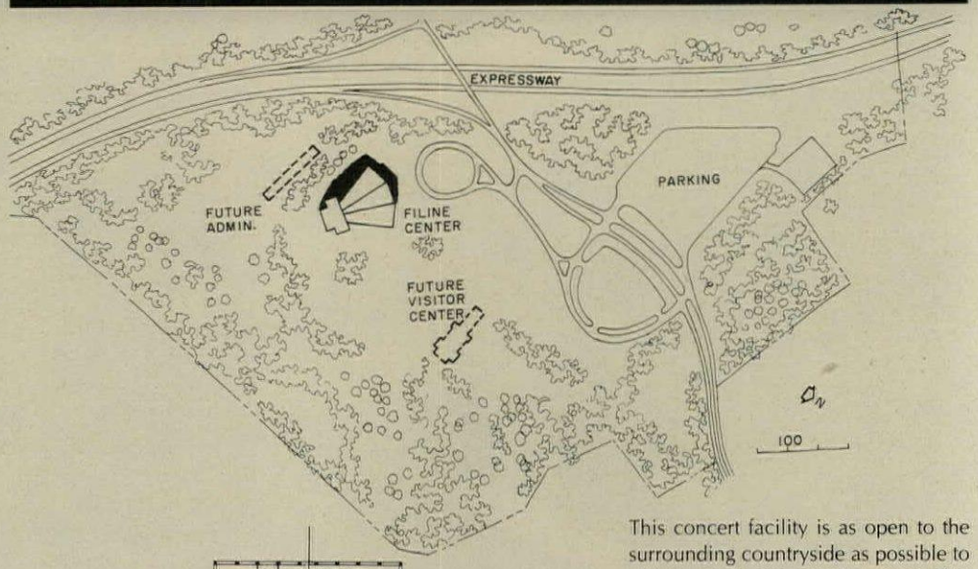
A "bare-bones" pavilion lets the natural landscape help in a musical success

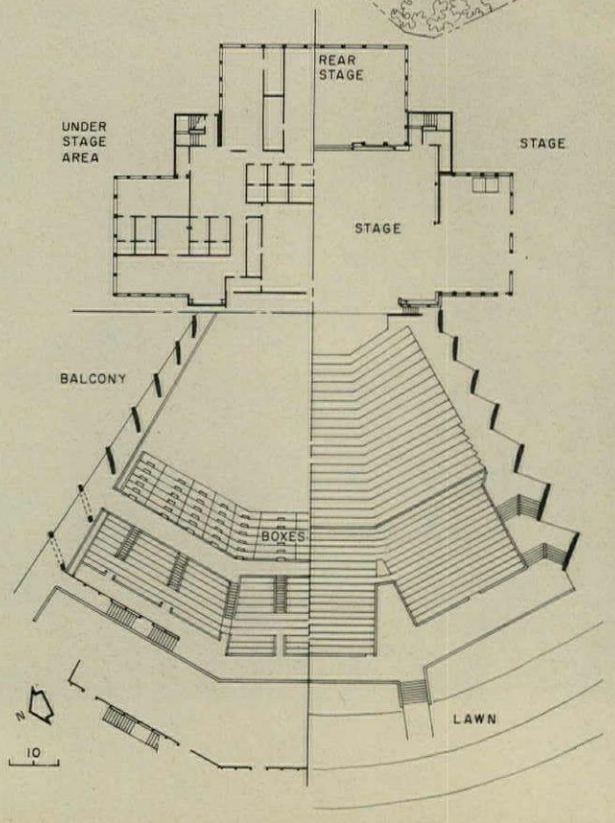
The Filene Center shown here is a concert pavilion designed by architects MacFadyen & Knowles in the Wolf Trap Farm Park in Fairfax County, Virginia. The 130 acres of rolling countryside in the park were donated to the National Park System in 1966, and are the subject of the master plan (shown below) by architect Edward Knowles to include other performing-arts facilities, a visitors' center, offices placed to block noises from the adjacent expressway and extensive parking. The long-term plan calls for largely undisturbed natural conditions on most of the site.

In designing the concert facility for a massive audience of up to 6,500 persons, the architects reduced the structure to a functional minimum to lessen its visual impact on the countryside (as well as to keep within the budget of $3 million). Little more than basic elements have been built to project sound from the stage in an ideal manner to such a large audience. And with the exception of those in a thousand seats in the balcony, the audience sits on the natural slope of the ground. This allows half of the patrons to sit on the lawn outside of the shelter—while maintaining good visual contact with the performance. Even those within the enclosure look directly into the woods on both sides of the stage.

To achieve their goals, the architects, together with acoustical consultant Paul Veneklasen, examined the minimum physical requirements of each building element that would produce the desired characteristics of sound. In keeping with the philosophy of providing only that which is needed, the architectural result is described by Knowles as a profusion of disparate parts. These are united by the single material of red cedar, which is used structurally in the roof (a system utilizing 154-foot-long composite "queen post" trusses) and as sheathing for the steel and concrete construction of the rest of the building. Wood was chosen for both its ability to complement the natural site and its acoustical qualities.

FILENE CENTER, Wolf Trap Farm Park, Virginia. Owner: *National Parks Service.* Architects: *John MacFadyen and Edward Knowles—associate: Alfredo DeVido.* Engineers: *Lev Zetlin & Associates* (structural); *Peter Flack* (mechanical). Consultants: *Paul Veneklasen* (acoustics); *Clarke and Rapuano, Inc.* (landscape); *Robert Brannigan Associates* (stage).





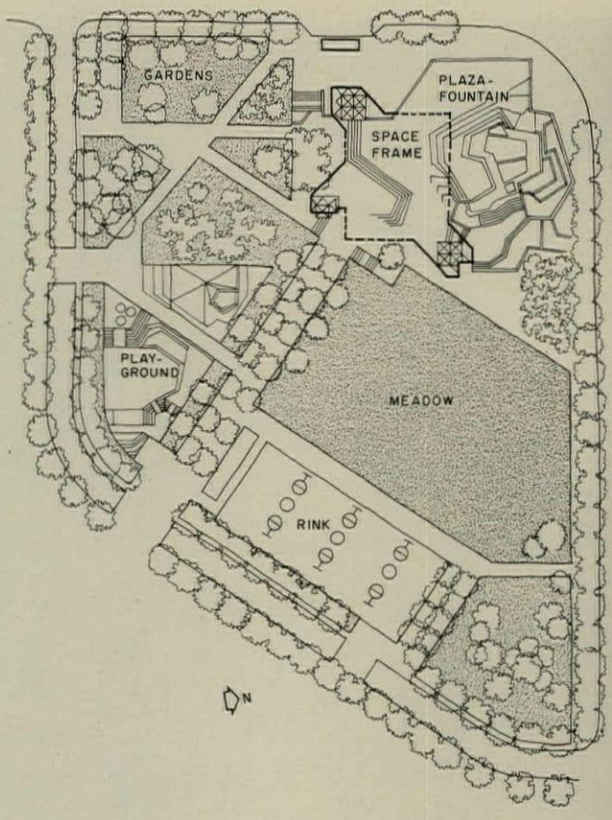
This concert facility is as open to the surrounding countryside as possible to still create an acoustical success. The natural slope of a hill on the site provides an ideal situation for viewing the stage from the surrounding lawns.

Unstructured activity downtown gains identity from a big "non-structure"

Manhattan Square Park, in the Southeast Loop section of Rochester, was intended as a focus of open space on a five-acre site between the new high-rise commercial center and a residential urban renewal area to be built by the ill-fated New York State Urban Development Corporation. Today, the previously-demolished renewal area (left and bottom off the site plan) contains one distinguished building by Gruzen and Partners (see RECORD October, 1974, "Crisis in Housing") and little else. The park is likely to remain on the edge of "no man's land" for some time to come. But, fortunately, landscape architects Lawrence Halprin Associates took a strong design approach, in creating the just-finished park, which assures a sense of centrality without the fact. The architects gave a strong identity to the area by the construction of an enormous space frame covering some 21,000 square feet (photo bottom and opposite). This provides partial shading from the sun, and viewing platforms on the tower for the energetic.

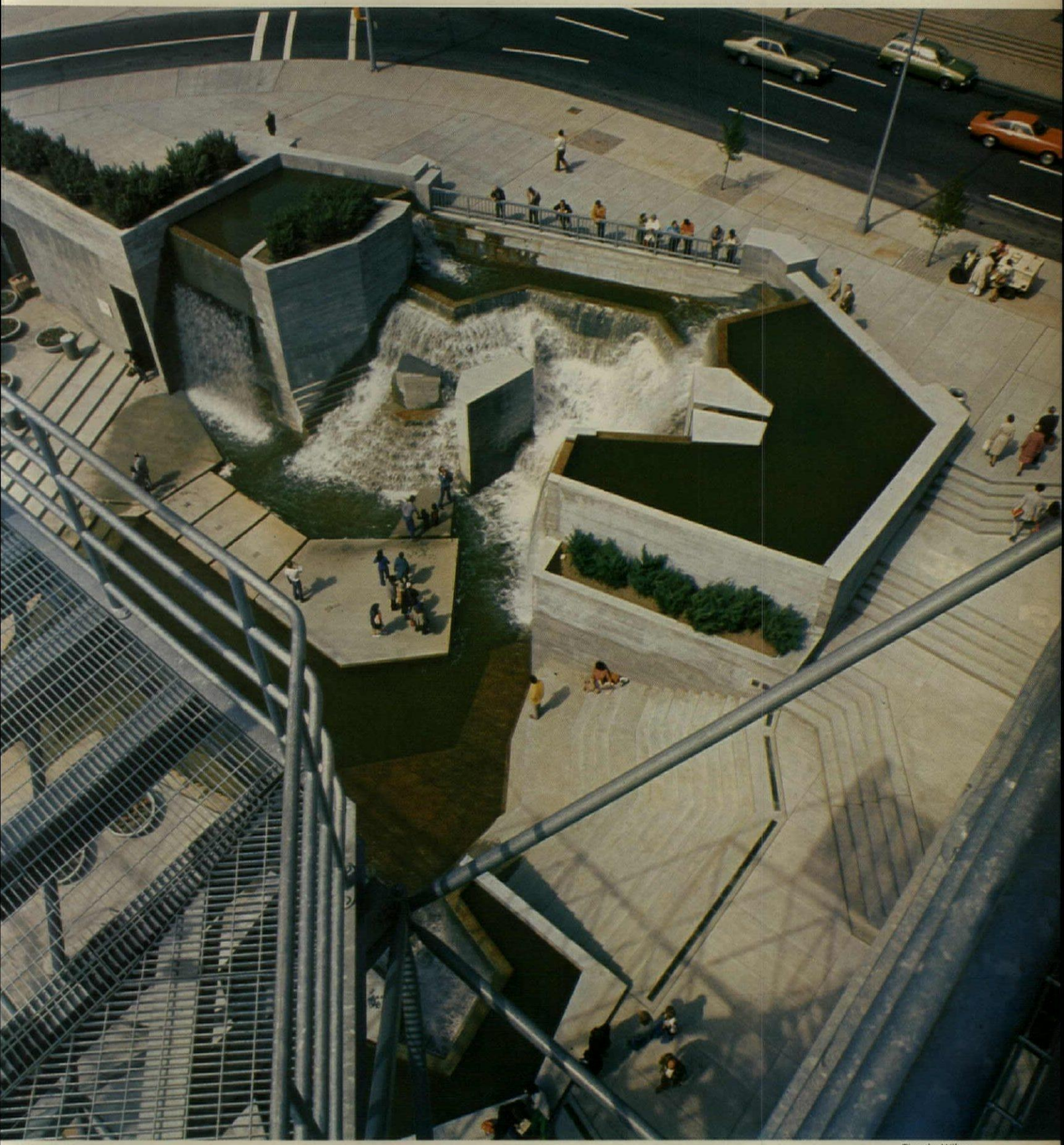
The plaza-fountain under the space frame is an introduction to the park's more pastorial pleasures, and is connected by a pedestrian underpass to the adjacent business section. Constant activity is assured by a restaurant, and the ability to use the pool area as the stage of an amphitheater. A promenade runs from the plaza, diagonally across the site. This separates a garden (top of plan) for passive relaxation and the enjoyment of horticultural specimens adjacent to a playground, from a meadow and ice-skating rink (bottom of plan). The rink converts to use for court games in the summer. The refrigeration system in the rink circulates freon directly to the ice, and uses the fountain as a cooling tower where heat rejection acts as a supplementary method of heating the water in winter.

MANHATTAN SQUARE PARK, Rochester, New York. Owner: *City of Rochester.* Landscape architects: *Lawrence Halprin Associates—associate-in-charge: Timothy Wilson; designer; Jack Gaffney.* Engineers: *GFDS Engineers* (site structures); *Lev Zetlin* (space frame); *Woodward Lundgren & Associates* (soils); *Beamer/Wilkinson & Associates* (mechanical/electrical). Cost consultant: *John Meadows.* Contractors: *Robert Hyland & Sons, Inc.* (general construction): *H. J. Otten & Co.* (hvac); *Vanderlind Electric Corp.* (electrical); *Gates Air Conditioning, Inc.* (plumbing).

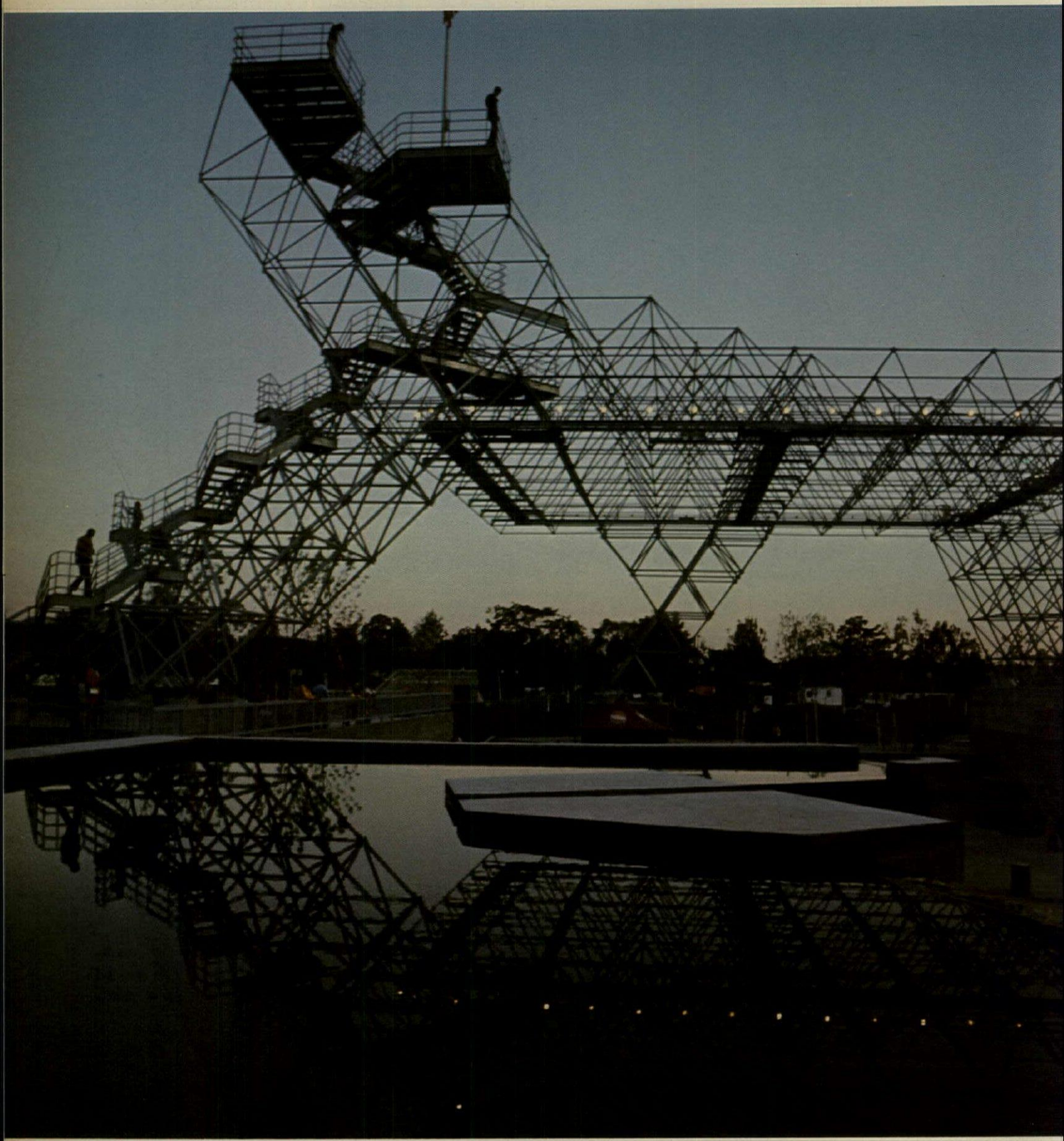


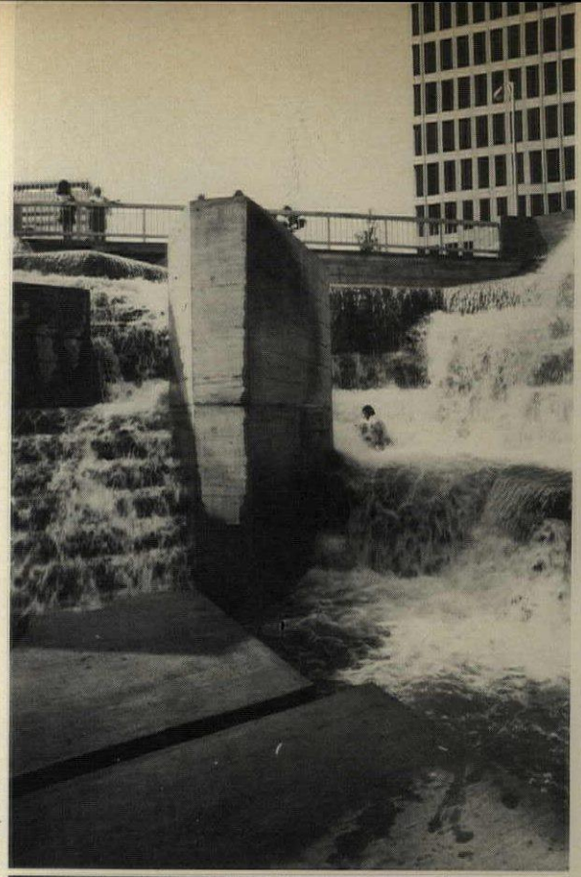
Located at the intersection of two heavily trafficked streets, a plaza-fountain (similar to—but larger than Halprin's LoveJoy Plaza in Portland) pours 30 million gallons of water per day into an amphitheater sunken below street-level. This, together with one of the largest flat space frames ever built, forms a spectacular introduction to the remaining Park, designed for relatively unstructured activities.

John Veltri photos (except as noted)



Timothy Wilson





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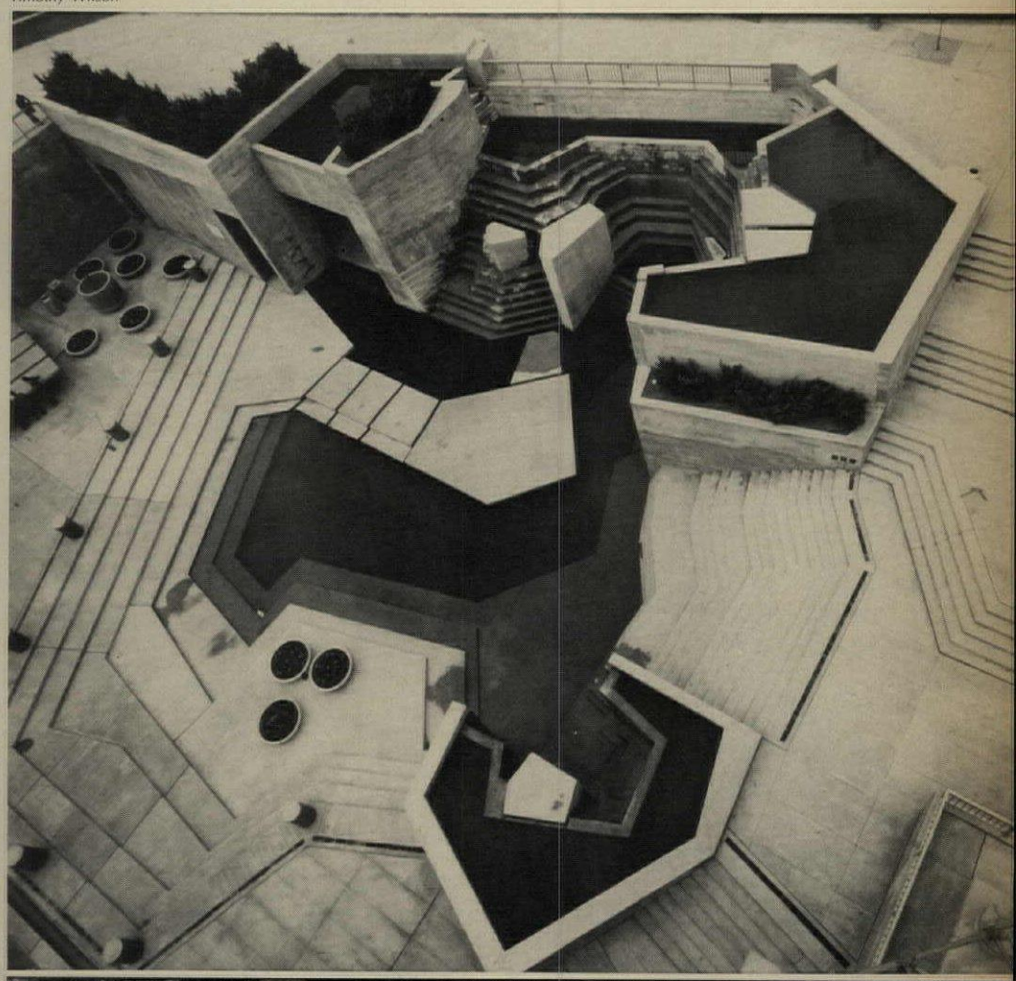
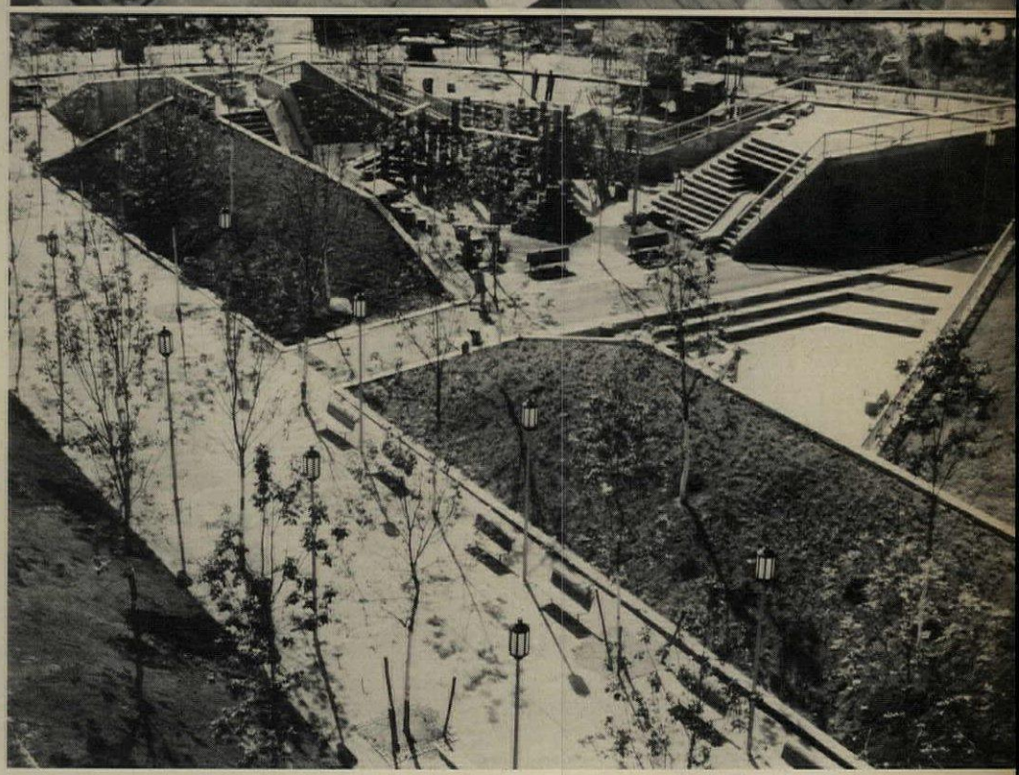




Cantilevered on three pre-placed supports, the square galvanized-steel space frame was assembled on the ground and lifted into place. It provides a visible symbol of the park, as well as observation points and a support for mechanical systems. "Participation in water" is a concept well-established by Halprin, who has provided a fountain here that can be "turned off" to produce an amphitheater (photo top, right). Walls and paving are concrete, which is both smoothly and "rough-board" formed. A playground for children (photos above and right) has been provided behind earth berms so that parents can enjoy the peace of adjacent gardens.

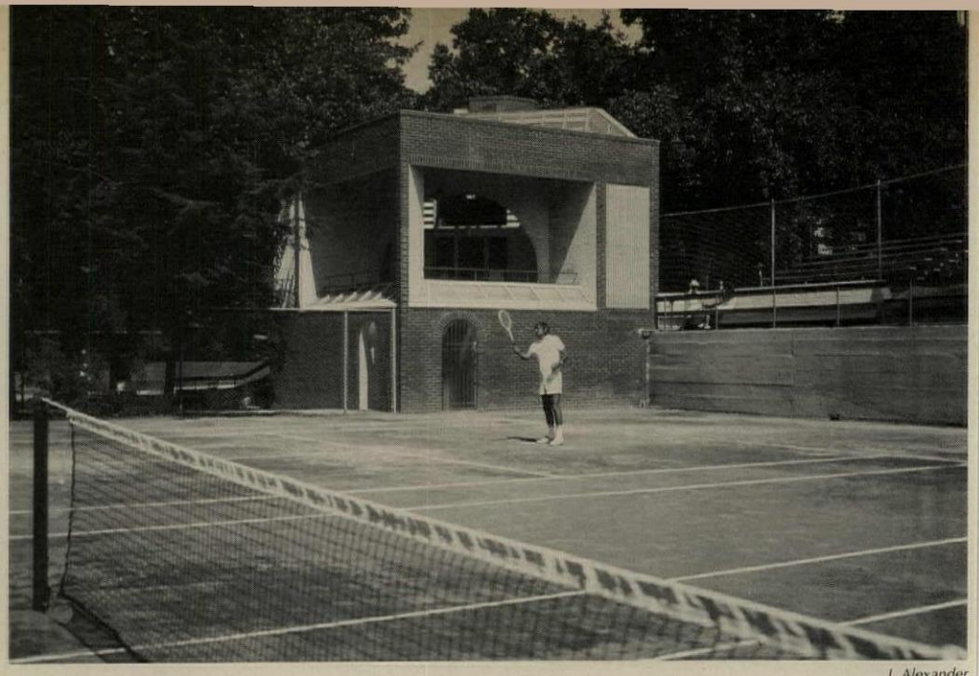
A traditional campus gets a contemporary "gatehouse" in an unlikely place

At Saint Alban's School in Washington, D.C., a small utilitarian building that might have received less attention than most has been made into the gateway to the campus's athletic facilities on a drive leading to the impressive Episcopal Cathedral. Wanting to provide toilets and a small supply store for the tennis courts, the School commissioned architects Hartman-Cox to provide the facilities on a tiny plot of ground between the courts' chainlink fence and the broad stairs that are the main entrance to the football field at the top. The site is at the end of a long row of 10 courts placed side-by-side, and would have required users to cross all of the courts between their own and the entry if a better solution were not found.

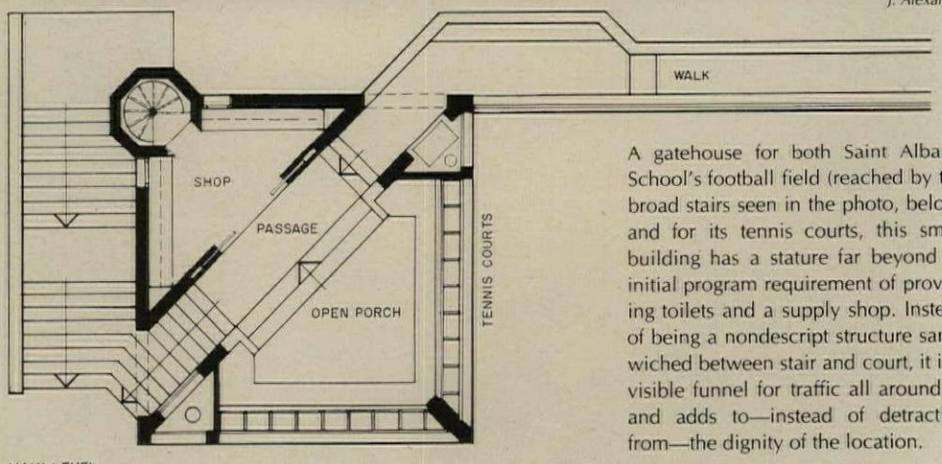
To arrive at a more meaningful building than circumstances might have created, the architects regarded their new structure as a gatehouse for both the athletic field and for the tennis courts. Intruding onto the existing stair's broad width, the new building contains a second stair which leads diagonally through the building to a new court-access walkway. The walkway is at the top of an existing retaining wall running the full length of the lined-up courts. Players now proceed naturally through the building under the slanted skylight on their way to and from their games, and the traffic thus created stimulates business for the store (which can also monitor access) and encourages use of the covered porch from which spectators can view the activity. On the level below the walk are located the toilet and locker-room facilities, lit by translucent skylights located below the porch railing. The construction cost of $70,000 includes reinforced-brick lintels and real arches.

To recognize the Gothic architecture of the campus, the designers have purposely kept their design uncompetitive in materials and form, while maintaining the appropriate scale necessary to spell out the expanded gateway function. This function is indicated not only by the generous proportions of openings and height but also by the octagonal tower containing the stair.

SAINT ALBAN'S SCHOOL TENNIS CLUB, Washington, D.C. Owner: *National Episcopal Cathedral Foundation.* Architects: *Hartman-Cox.* Structural engineer: *James M. Cutts.* General contractor: *John D. Clayborne.*

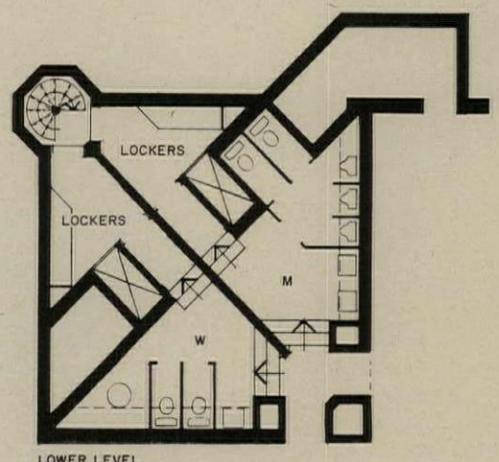


J. Alexander



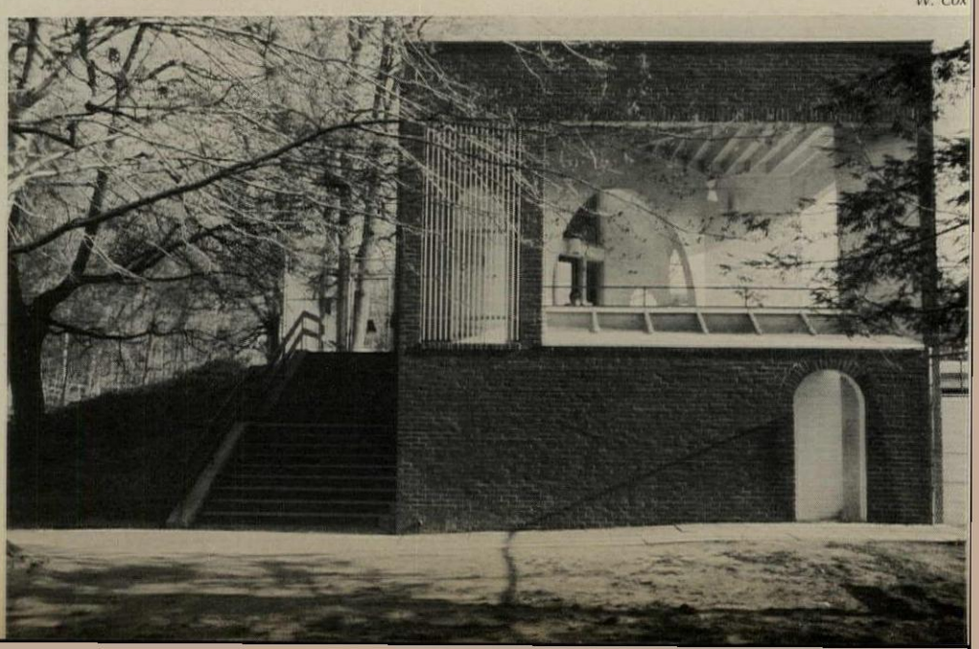
MAIN LEVEL

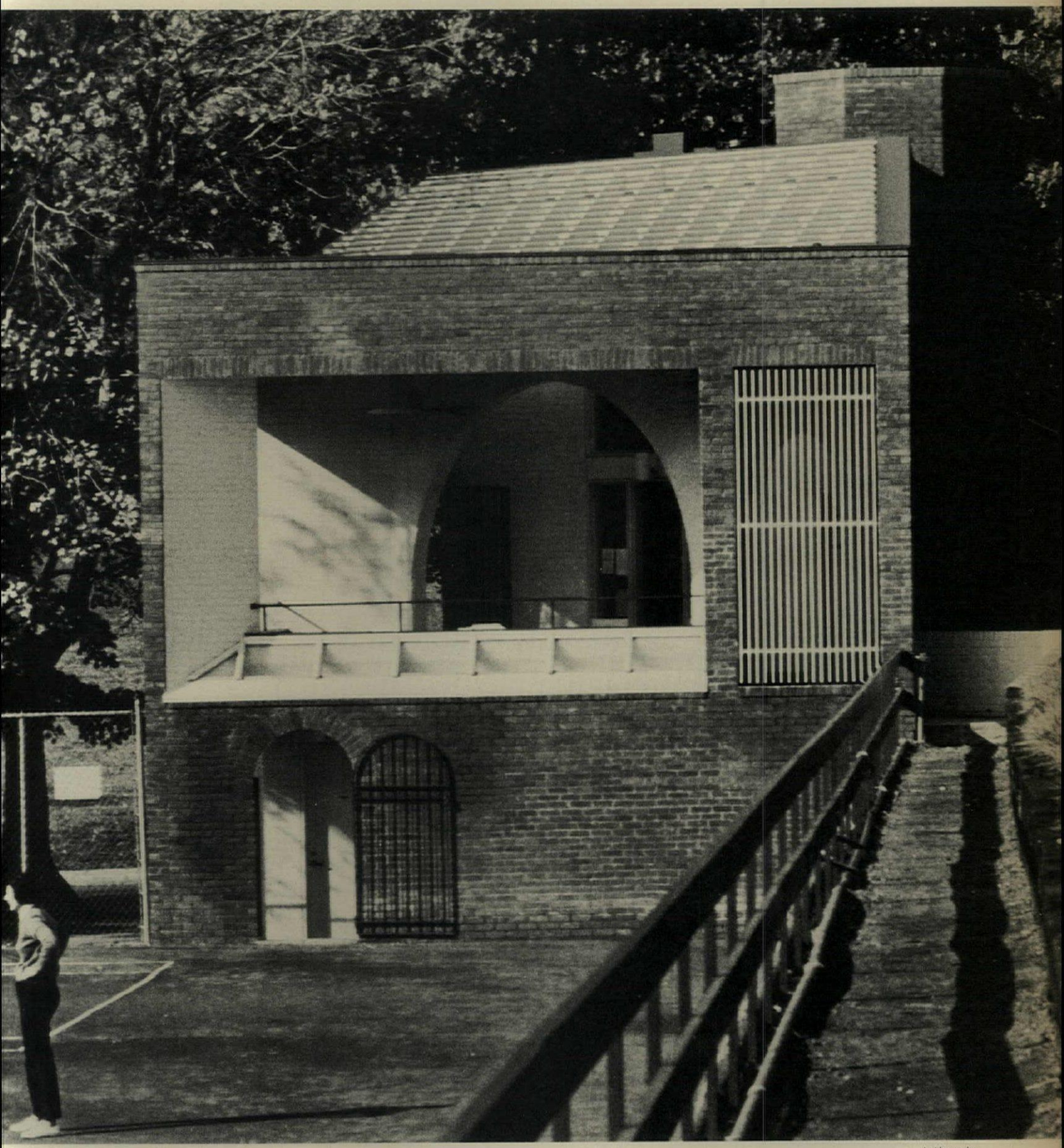
A gatehouse for both Saint Alban's School's football field (reached by the broad stairs seen in the photo, below) and for its tennis courts, this small building has a stature far beyond its initial program requirement of providing toilets and a supply shop. Instead of being a nondescript structure sandwiched between stair and court, it is a visible funnel for traffic all around it, and adds to—instead of detracting from—the dignity of the location.



LOWER LEVEL

W. Cox





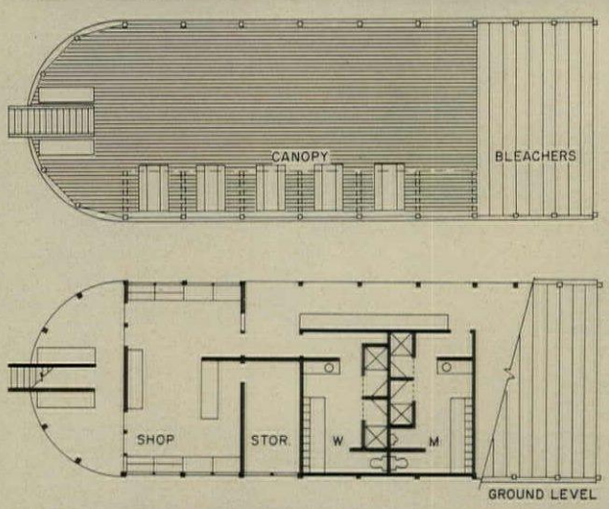
J. Alexander

Good planning and minimal additions make a celebration of basic requirements

Facing a similar program to that of Hartman-Cox's project on the preceding two pages, architects Hodne/Stageberg were commissioned to design a minimal "background" building to provide a small shop and toilet facilities for the tennis courts of a suburban sports club near Minneapolis, Minnesota. The budget was $50,000 for construction, site work and fees; and what the clients received for a low cost within the budget was something more than they expected.

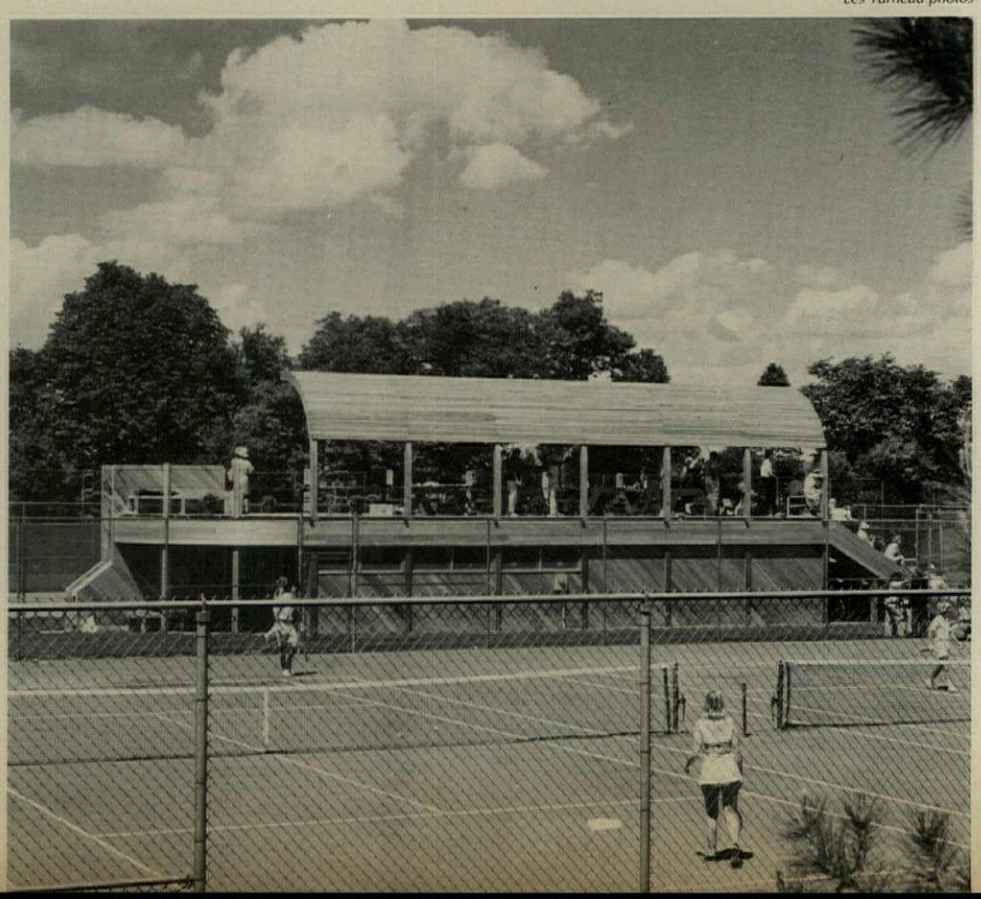
The courts are on the flat top of a hill, far removed from the central clubhouse or any other buildings. Before the project shown here, they lacked a sense of being tied to a "place" by virtue of their unconfined, windswept location. In designing the new building, the architects' first decision was to place a visible form directly in the center of the court area both for convenience and to give the area an identity. Within the constraints of the budget, a platform was constructed on the roof for viewing the surrounding games and for picnics (the architects even designed the furniture for dining families); and the platform was shielded by the half arch of a continuous sunshade, which gives the building its most identifying character. Steps to the roof deck were built at both ends and include those which double as bleachers (photo, top) facing the exhibition court. These extra-wide steps also face the main approach to the courts, and serve as an invitation to use the raised area. The basic building, containing only a thousand square feet of utilitarian functions (in shop, storage, lockers and toilet-shower facilities), seems visually secondary to the exuberance of structure and activity on top, and—as such—makes a festive celebration of the sport that the building is intended to serve. Both the construction and finish are natural cedar without treatment. Special wind reinforcement was required to secure the sunshade against the high velocities that affect the exposed area. And the few "extra" features of this building have combined with the basic functions to create a building of far greater importance than ever expected.

TENNIS PAVILION, WOODHILL COUNTRY CLUB, Wayzata, Minnesota. Owner: *Woodhill Country Club.* Architects: *The Hodne/Stageberg Partners.* Structural engineer: *Meyer, Borgman, Johnson.* General contractor: *Joe Peterson Construction Co.*



Inviting tennis enthusiasts to climb to an upper level deck, the wide bleachers-stairs face the building's approach and the exhibition courts. On the deck, a curved sunshade adds to the comfort of those viewing games or using the picnic tables. The sunshade also gives importance and a lighthearted feeling to a minimal building for basically convenience facilities.

Les Turneau photos



Conditioned air gets used three times in an energy-conscious design

Maximum benefit is wrung from conditioned air at the $12.5-million Service Center for the County of Santa Clara located in San Jose, California. Return air from the middle of the three buildings that compose the center is first used to condition the skylight-covered central court of this four-story building. But exhaust air from the court is not dumped to the outdoors; rather the engineers use it still another time for the warehouse portion of Building 1 and for the shops in Building 3.

The buildings are interconnected by an underground utility/access tunnel that also serves as a duct for the air supplied to the warehouse and to the shops.

The system works this way: Conditioned air is supplied to the office spaces through 4- by 4-ft air-handling luminaires. Air is returned through the lamp compartment of the luminaires and flows into the plenum above the ceiling. From the plenum, the air is pulled out into the court through slots in the concrete fascia beam surrounding the court on each floor. Air in the court is drawn down into the exhaust/return fan through wood grilles around the perimeter of the court planting areas. Pressure from the exhaust/return fan forces air through the utility tunnels.

Air supplied to Building 1 provides general ventilation for the warehouse area, as well as for some shops and specialty-type storage areas. Air supplied to Building 3 provides ventilation for the general shop areas, as well as make-up air for the wood shop exhaust system and for the paint booth exhaust system.

The main fan room below Building 2 is used as a discharge plenum for the exhaust/return fan. Automatically controlled dampers determine how much air is directed to the supply fan systems of Building 2, how much to the utility tunnels, and how much to the exhaust. When outdoor temperature allows the system to supply in excess of 50 per cent outdoor air, automatic dampers located at the roof in two exhaust duct risers start to open; at 100 per cent outdoor air they are fully open. These dampers are controlled by pressure sensing devices that maintain pressures in the fan room high enough to force the excess return air through the utility tunnels.

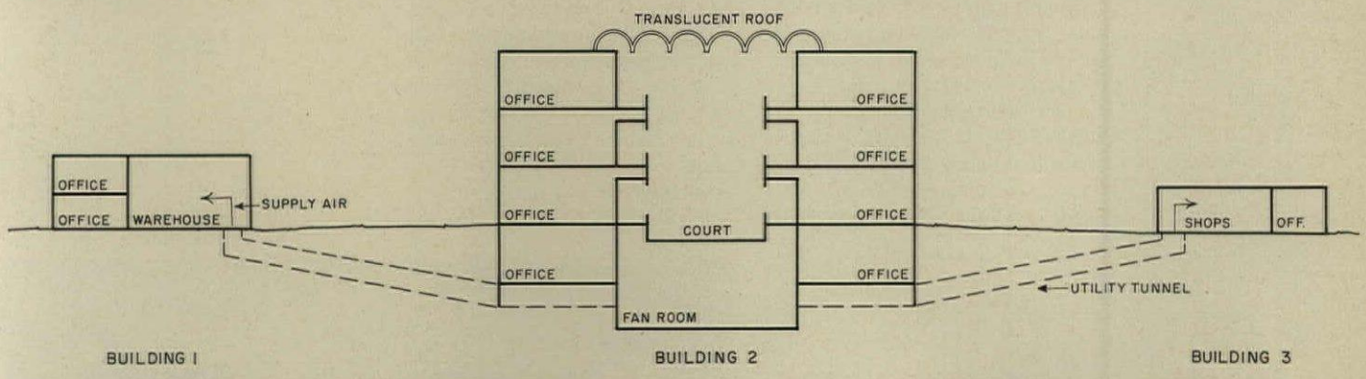
Building 2 has vertical utility shafts to get conditioned air to the office floors. They each house a cold-duct riser; an exhaust-duct riser; plumbing risers; sprinkler-pipe risers; steam, hot-water and chilled-water risers. The shafts also act as warm-air plenums.

By not using a ducted return-air system, the engineers, Westcon Associates, estimate that approximately 460 square feet of building floor area was saved for other uses.

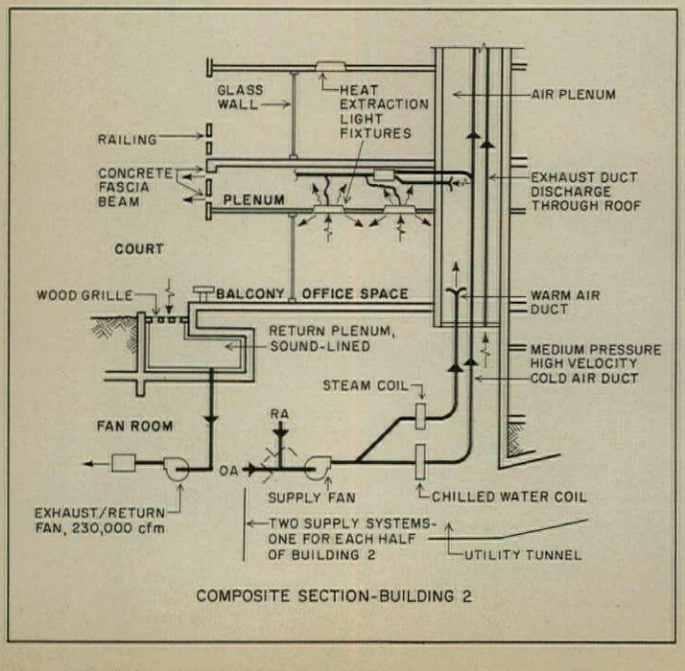
The court was designed to be colder than the enclosed office spaces in winter and warmer in summer. The balconies around the court serve as circulation between offices and from offices to exits. The engineers explain that these temperature differentials help make the court seem like an outdoor area, yet not so warm or cold as to cause discomfort.

A central heating and cooling plant for all three buildings is located adjacent to Building 2. Buildings 1 and 3 have their own mechanical rooms with hvac equipment to condition the air for their office areas.

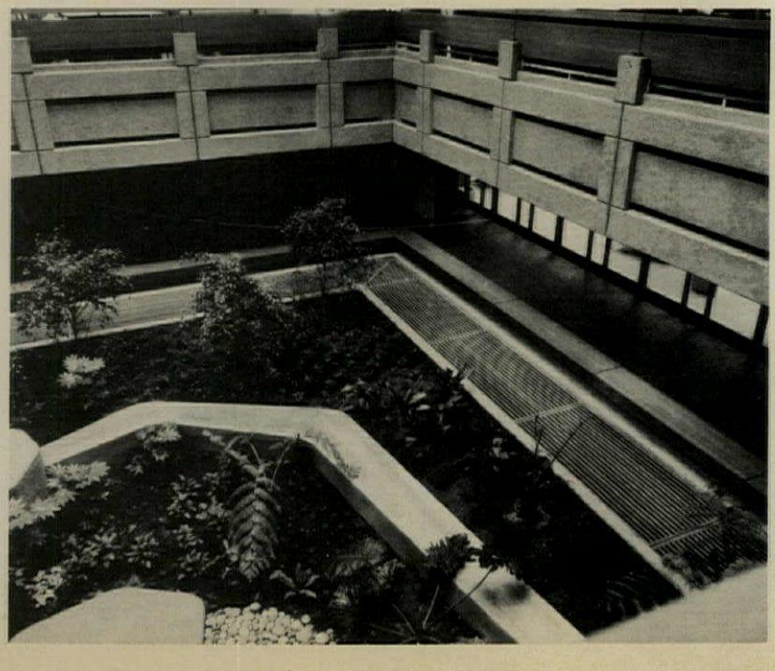
COUNTY OF SANTA CLARA SERVICE CENTER, California. Architects: *Hawley & Peterson*. Engineers: *T. T. Seibert* (structural); *Westcon Associates* (mechanical/electrical). Mechanical contractor: *O. C. McDonald*.



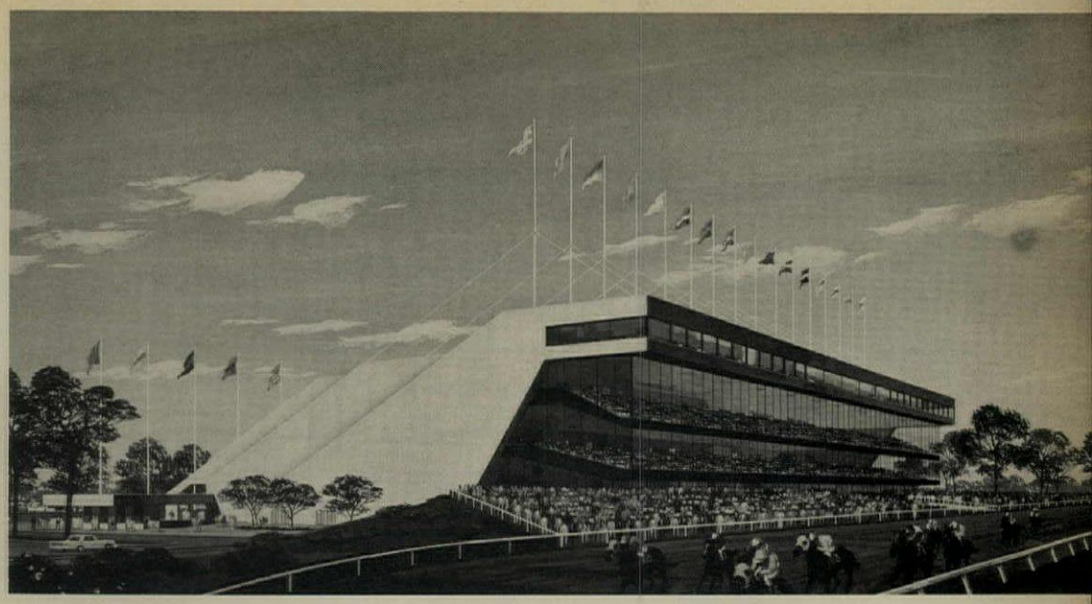
Return air from office spaces is drawn by a large exhaust/return-air fan from ceiling plenums into the central court, through grade-level return grilles, and into the main fan room of Building 2. Pressure from this fan pushes air through utility tunnels connecting Building 2 with Buildings 1 and 3, where this air is used to ventilate warehouse and shop areas. Vertical utility shafts in Building 2 are used to supply cold and warm air to offices and to contain plumbing and sprinkler piping. The shaft itself serves as a warm-air plenum. Exhaust air is ducted to the roof. Automatic dampers regulate how much air is exhausted, depending upon the amount of outdoor air introduced, but sufficient pressure is always maintained to force air returned from the court through the tunnels to Buildings 1 and 3.



COMPOSITE SECTION-BUILDING 2



A neat way to get good sight lines: cable-and-hanger suspended stands



Design of the racetrack grandstand for the New Jersey Sports and Exposition Complex provides minimal-obstruction viewing for spectators. This is made possible, first of all, by a cable-and-hanger suspension system for the superbox and the clubhouse. (Lower stands are column-supported.) But in addition, consideration had to be given to the size and spacing of mullions to avoid a "venetian-blind" effect when spectators are looking at an oblique angle toward the turns.

The suspension system consists of mast-supported cables tied in the back to building columns, and in the front to a trussed frame from which the superbox and clubhouse are suspended by steel-bar hangers.

Special attention had to be paid to live load with this structure because fans will move about, particularly to watch the race finishes. For this reason, five transverse trusses were provided between each pair of main trusses to stiffen the frame and equalize loading. Furthermore, live-load deflection had to be limited to avoid uncomfortable vibration due to movement of people. The structure was designed for a maximum live-load deflection at hanger points of 2 in., though 3 in. is allowable with respect to the glazing system design.

Mullions, spaced 10 ft on-center, are rigidly connected at the grandstand level, with horizontal bracing at various levels up to the superbox floor. Pockets for the glazing system permit it to remain in a fixed position while the structural system moves vertically in response to changes in live load.

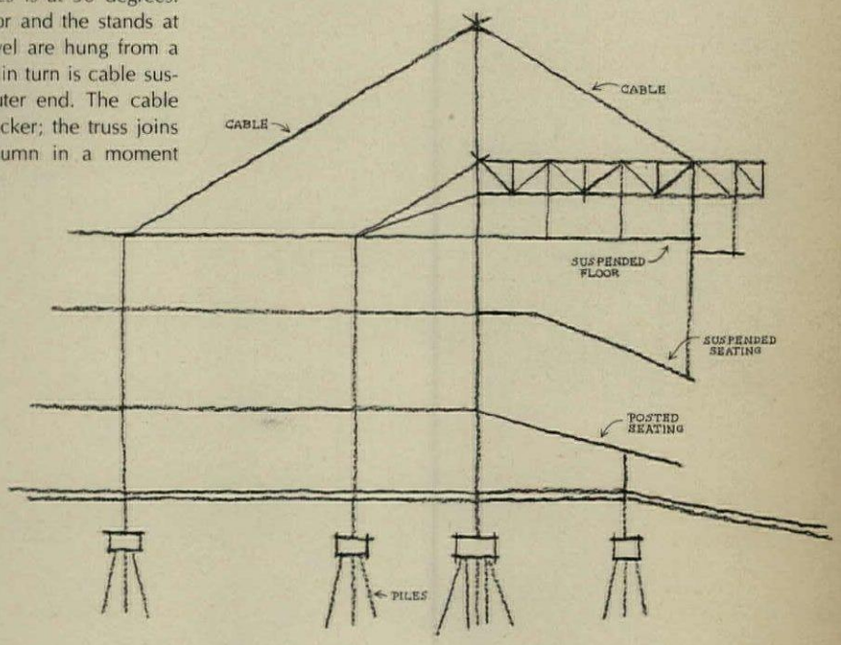
Cables, 3½ in. in diameter and in groups of three, are spaced 30 ft apart, the principal structural module of the building. Intermediate steel beams were used so that the L-shaped precast units that support seats need only be 15 ft in length (15-ft units are likely to be more level than 30-ft units).

Because of the 30-ft spacing of cable supports, it was necessary, for practical reasons, to use three 3½-in. diameter cables. Since an odd number of cables such as this is not a usual configuration, special attention had to be given to the design of the cable anchorages.

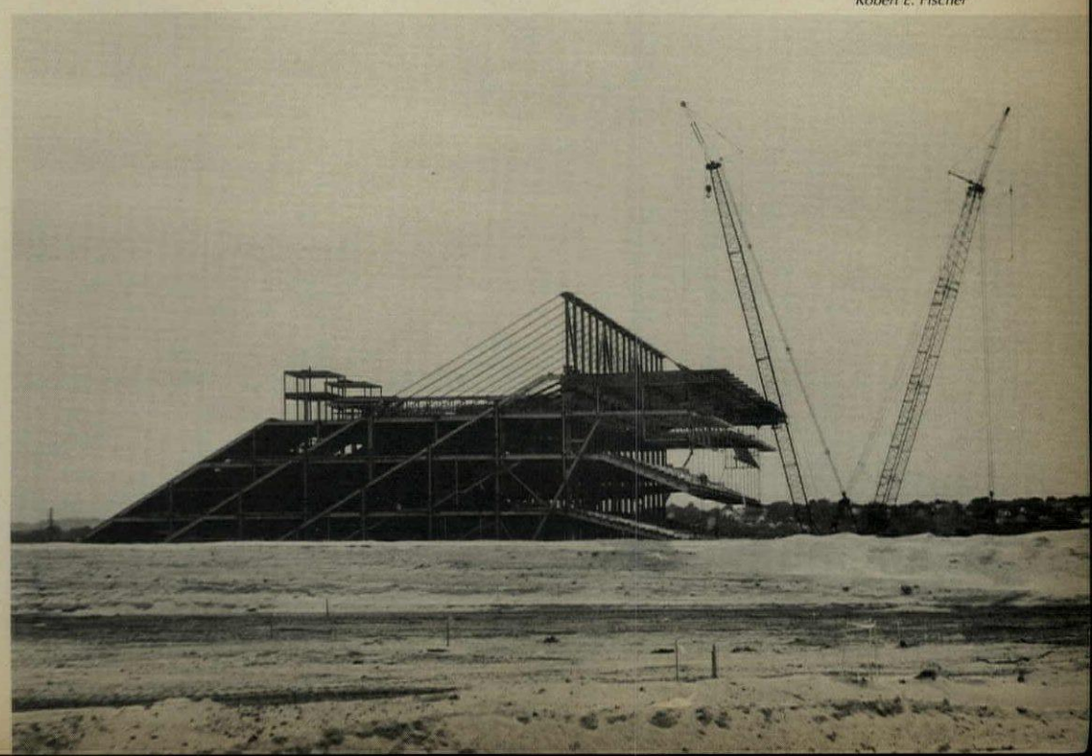
A planar computer analysis was used to determine forces and displacements of the cables, trusses, and columns supporting the cable structure. Frequency analysis by computer showed the structure to be adequate with regard to vibration.

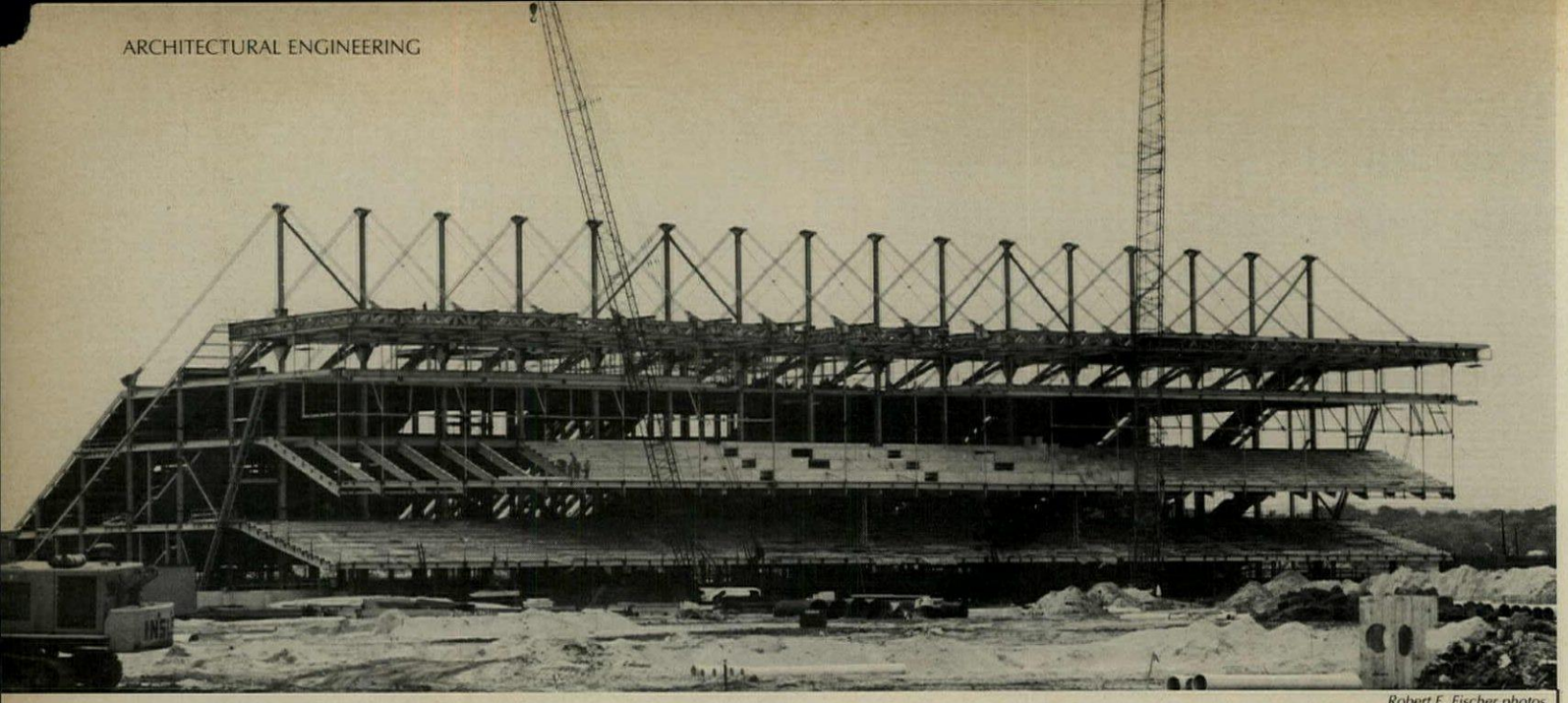
RACING GRANDSTAND, near East Rutherford, New Jersey. Owner: *New Jersey Sports & Exposition Authority*. Design architects and engineers: *Ewing Cole Erdman & Eubank*. Engineers: *Synergo Company* (structural, mechanical, electrical); *Clauss & Nolan* (civil). Consultant: *Arthur Froelich FAIA, & Associates* (racing facilities). Coordinating architects for New Jersey Sports & Exposition Complex: *Ewing Cole Erdman & Eubank/ Clauss & Nolan*.

The raked outlines of the racing grandstand stem from the 30-degree slope of escalators and stairs—even the rear slope of the cables is at 30 degrees. The superbox floor and the stands at the clubhouse level are hung from a 73-ft truss, which in turn is cable suspended at the outer end. The cable mast rests on a rocker; the truss joins the mast-line column in a moment connection.



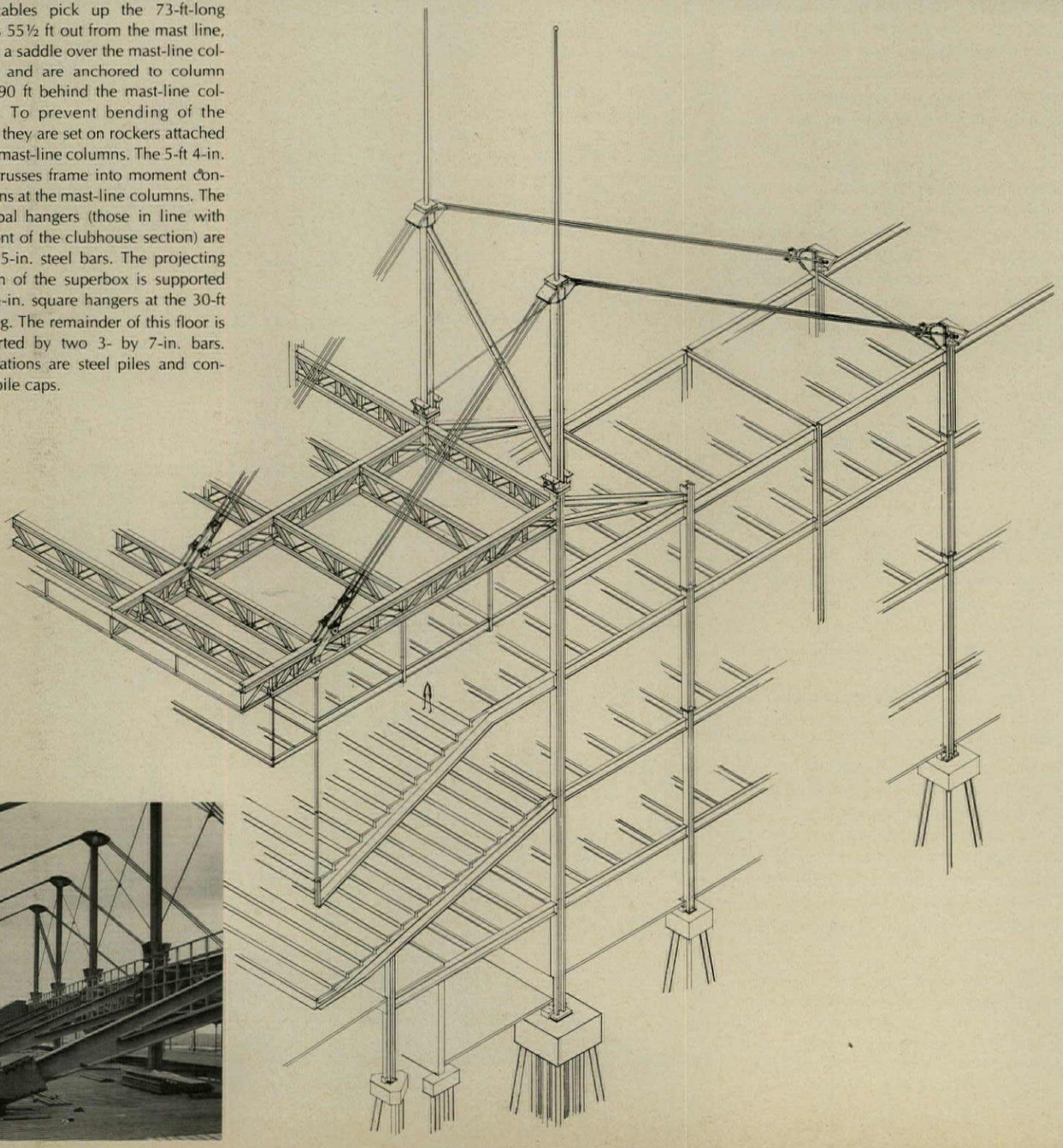
Robert E. Fischer





Robert E. Fischer photos

The cables pick up the 73-ft-long trusses 55½ ft out from the mast line, ride in a saddle over the mast-line columns, and are anchored to column stubs 90 ft behind the mast-line columns. To prevent bending of the masts, they are set on rockers attached to the mast-line columns. The 5-ft 4-in. deep trusses frame into moment connections at the mast-line columns. The principal hangers (those in line with the front of the clubhouse section) are 3- by 5-in. steel bars. The projecting portion of the superbox is supported by 1½-in. square hangers at the 30-ft spacing. The remainder of this floor is supported by two 3- by 7-in. bars. Foundations are steel piles and concrete pile caps.



or more information, circle item numbers on
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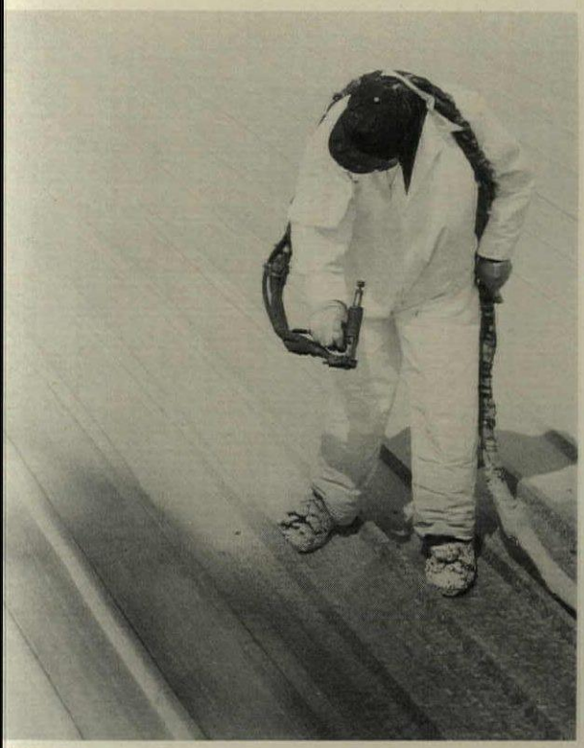


igid foam roofing can be sprayed in cold weather

Designed to improve the economics of spray application on roofs, this "super-smooth" 3-lb over-all density *Isofoam* rigid polyurethane foam system is said to retain the same smoothness over a temperature range of 65-120 deg F. The two-component system can be froth-sprayed even during colder months, providing a surface over which the protective coating can be easily applied. ▪ Witco Chemical Corp., New Castle, Del.

Circle 300 on inquiry card

Office chairs built for total fire retardance

This office seating designed by Robert L. Wilson is constructed on *Noryl* phenylene oxide, with seat and back cushions molded of fire-retardant polyurethane. The company claims that the "Elite Series" can be 100 per cent fire-retardant, fully meeting government safety standards. The shell comes in ebony, brown and "sand," and features a chrome-plated steel pedestal base with swivel-tilt mechanism. Various nylon and vinyl fabrics are offered. ▪ Chromecraft Corp., Senatobia, Miss.

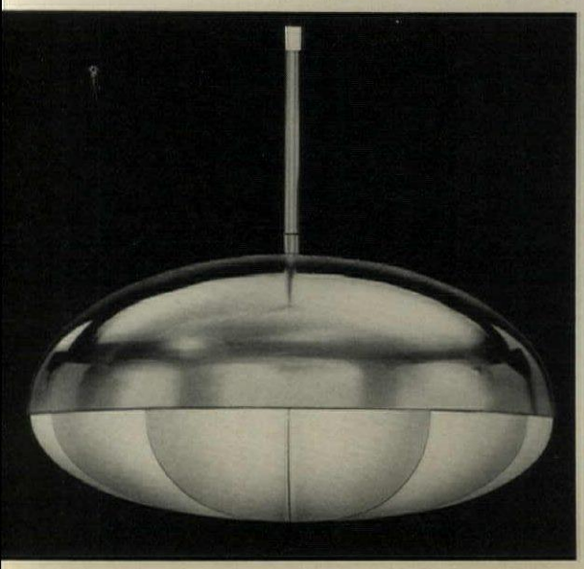
Circle 301 on inquiry card

Colored slats combine to create many patterns

"Duplex" blinds featuring any of numerous colors on the top side and an off-white underside are suggested for residential and commercial installations where 1-in. and 1⅜-in. slat blinds are required. The colors may be combined in the same blind. Nearly invisible polyester vertical cords support the slats, and headrails with operating mechanism fully enclosed are miniaturized to a 1-in. square section. ▪ Marathon Carey-McFall Co., Philadelphia, Pa.

Circle 302 on inquiry card

Light fixture available in three shapes, three colors



Designed for high light output, this fixture in the "Louvre" line is available in circular, square and rectangular contours, with optional finishes of polished nickel, bronze and black. ▪ The Feldman Co., Los Angeles, Calif.

Circle 303 on inquiry card

more products on page 145

Mailboxes aim for high security, low maintenance

A vertical apartment mailbox meets all new U.S. Postal Service requirements, according to the company. The unit has striated extruded aluminum doors, mounted on an extruded aluminum grid frame. Compartments measure 5 in. wide by 15 in. high by 6 in. deep. Each box is equipped with a five-pin tumbler cylinder lock. The "Classic" is offered in clear anodized and gold anodized finishes. ▪ American Device Mfg. Co., Steeleville, Ill.

Circle 304 on inquiry card

Sculptured walls by Robertson as low as $7.50 /₵

San Mateo County Social Services Building. Palo Alto, Calif.
Architect:
James W. Foug & Assoc.
Owner:
Bay Road Community Corp.
Contractor:
Johnson & Mape Construction Co.

Robertson

H. H. Robertson Company
400 Holiday Drive
Pittsburgh, Pennsylvania 1522

For more information, circle item numbers on Reader Service Inquiry Card, pages 205-206.

AUTOMATED DOORS / "The Quick Door Story," a four-page brochure describes seven ways automatic door operators help to save on everything from heating or cooling to lift truck time, up to $3000 a year per door. Door operators can be installed on new or existing swing, sliding, or folding doors. ▪ Air-Lec Industries, Inc., Madison, Wis.

Circle 400 on inquiry card

CEILING SYSTEM / The brochure, entitled "Dimensionaire Ceiling System, Air Distribution Design Data," outlines the four characteristics of the over-all system: sound control, comfort control, lighting adaptability and esthetics. Graphs, charts and photos demonstrate air distribution performance, air-bar spacing, air-tube sizing and dimensions. A quick design guide also provides performance information. A feature/benefits chart is included. ▪ Owens-Corning Fiberglas Corp., Toledo, Ohio.

Circle 401 on inquiry card

SPRINKLER MAINTENANCE / A brochure gives details of a four-part inspection, maintenance, repair and emergency service program offered for fire sprinkler systems. This manufacturer and installer of sprinkler systems also maintains nationwide crews of inspectors and sprinkler technicians to inspect, test, maintain, extend and service any fixed fire protection system. The brochure cites the advantages and tasks performed in this periodic service. ▪ Grinnell Fire Protection Systems Co., Inc., Providence, R.I.

Circle 402 on inquiry card

SOUND-CONTROL WALLS / Wall systems that sound-condition interiors with decorative effects are described in the "Quiet Wall" full-color guide for architects. "Vicracoustic" wall units come in five constructions, with a selection of decorative finishes. ▪ L. E. Carpenter and Co., Wharton, N.J.

Circle 403 on inquiry card

SPECIAL COATINGS / A series of maintenance guides designed to solve special coating problems in various industries has been published for problems in all the following areas: meat and poultry processing plants; pulp and paper plants; sugar mills and refineries; the dairy products and citrus industries; the brewing and malting industry; concrete plants and quarries; cement manufacturing plants; the coal and ore mining industry; the steel industry; canning plants; and bakeries. Each guide has three sections: (1) A System Selector, (2) A Coating System Section and (3) A Surface Preparation Guide. ▪ Rust-Oleum Corp., Evanston, Ill.

Circle 404 on inquiry card

ARCHITECTURAL GLASS / A 12-page illustrated brochure on architectural glass products includes a detailed product chart providing architects, designers and specifiers with a reference to product application, schematic details, performance characteristics and suggested specifications. Design application, size limitations and performance data are also given. The line, known as "EGP," consists of solar reflective glass, thermal insulating glass, sound control, laminated and security glass for the construction industry. ▪ Shatterproof Glass Corp., Detroit, Mich.

Circle 405 on inquiry card

ROOF DECK / Energy conservation data for the company's poured gypsum roof decks is the subject of a six-page brochure providing conversion tables and guides for calculating fuel and energy savings of these decks compared with insulated steel roof decks. ▪ United States Gypsum Co., Chicago, Ill.

Circle 406 on inquiry card

SPIRAL DUCT / An eight-page catalog demonstrates the company's capabilities in the mass production of spiral metal duct and fittings for any industrial or commercial air handling system and for either supplying or exhausting air. This catalog also includes a table itemizing standardized duct diameters, weights and gauges. ▪ United Sheet Metal Div., United McGill Corp., Westerville, Ohio.

Circle 407 on inquiry card

OUTDOOR LIGHTING / A 12-page brochure describes applications for the company's *Module 600* modular outdoor luminaire, which is now available for use with high-pressure sodium and horizontal-burning metal halide lamps. The booklet explains how the optical system incorporates a contoured reflector and one-piece prismatic glass refractor for brightness control and broad, uniform area illumination. ▪ Holophane Div., Johns-Manville, Denver, Colo.

Circle 408 on inquiry card

PRESERVING HOUSES / "Back to the City—A Guide to Urban Preservation," published by the Brownstone Revival Committee of New York, contains the edited proceedings of a conference held in September 1974. The theme of the conference was: the preservation of old houses and neighborhoods in the nation's cities. The 80-page book may be ordered at $5 per copy. ▪ Brownstone Revival Committee, New York City.

Circle 409 on inquiry card

DECORATIVE FRAMING / An expanded line of multi-use chrome moldings and art framing materials is described in a four-page brochure. The decorative chrome moldings feature solid wood core construction with a chrome finish. Styling details include multiple fluting, rounds of varying widths, beveled angles and multi-stepped designs. ▪ Cardcrafts, Inc., New York City.

Circle 410 on inquiry card

PIPING INSULATION / Thicknesses of thermal insulation for hot piping are increased approximately 50 per cent in a new revision of the General Services Administration's latest version of "Guide Specification PBS 4-1516." The specification applies to insulation for mechanical equipment, piping, and ducts within buildings funded or maintained by the GSA. ▪ General Services Administration, Washington, D.C.

Circle 411 on inquiry card

CLOCK STYLES / A 20-page color catalog illustrating the company's contemporary division for 1975-76, includes wall, desk, mantel and floor models. Office clocks designed by George Nelson and the world time clock are other highlights of the collection. ▪ Howard Miller Clock Co., Zeeland, Mich.

Circle 412 on inquiry card

PLYWOOD DIAPHRAGM CONSTRUCTION / "Plywood Diaphragm Construction," a 14-page guide, has been updated to include the latest information for optimum design of plywood diaphragms. Through the use of design examples and discussion, tables and formulas, the technical brochure contains guidelines for the design of structural diaphragms, including such information as the calculation of loads and diaphragm shears, determination of plywood panel layout, recommended nailing schedules, required chord dimensions, calculation of deflection ratios and anchorage recommendations. ▪ American Plywood Assn., Tacoma, Wash.

Circle 413 on inquiry card

more literature on page 165

more data, circle 59 on inquiry card

For more data, circle 60 on inquiry card

Here's how you can specify an extra-tough decorative surface for both horizontal and vertical applications of high-pressure laminates.

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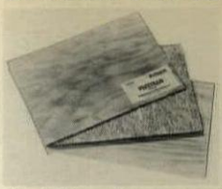
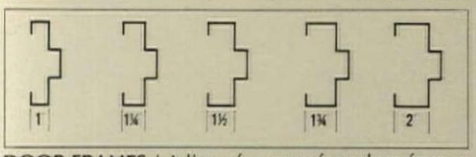
COMPOSITE PLYWOOD / *Plystran* plywood, a composite core sheathing plywood, utilizes a structural core of wood strands aligned in the 4-ft direction to replace the conventional "D" grade veneer core. Exterior type phenolic resins are used to bond 8-ft face and back veneers perpendicular to the direction of core alignment to maximize strength and dimensional stability in the panel. The new panel product is free of core voids, gaps and laps. It is recommended for roof, sidewall and subfloor sheathing. ▪ Potlatch Corp., Spokane, Wash.



Circle 305 on inquiry card



DOOR FRAMES / A line of narrow face door frames can be furnished with either a 1-, 1¼-, 1½-, 1¾- or 2-in. face dimension, in jam depths from 4½ through 12 in. in ⅛-in. increments. They are available in either knocked-down or welded types. ▪ Curries Mfg., Inc., Mason City, Iowa.

Circle 306 on inquiry card

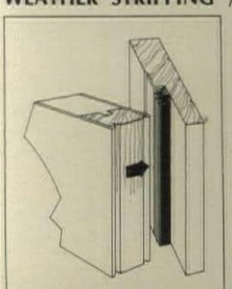
DEMAND CONTROL SYSTEM / Demand control systems are designed to enable industrial and commercial users to reduce the cost of the electrical energy they consume. The system incorporates a variable time base load cycler that makes it possible to manually program groups of four, six or eight electrical loads for various on-off time combinations. Standard features of the new system also provide for selection of both minimum and maximum cycling modes for each group of electrical loads. The system is available in five basic models with selectable options to fit various applications. ▪ Sangamo Electric Co., Springfield, Ill.

Circle 307 on inquiry card

PRINT-VAPOR-ELIMINATOR / Called "The Scavenger," the unit attaches to all current models in the company's printer line: Models 146, 747, 121 and 350. "The Scavenger" removes virtually all of the residual ammonia vapor from prints as they exit from the whiteprint machines, and no liquid neutralizing baths are employed. ▪ Blu-Ray, Inc., Essex, Conn.

Circle 308 on inquiry card

WEATHER STRIPPING / An improved magnetic weather stripping, which is now a part of the company's steel door entry system, is said to eliminate the problem of "plasticizer migration," that leaves marks around the perimeter of the door. The weather stripping combines a compression seal on the outside face, and a magnetic seal on the head and lock side for a positive seal. ▪ Lake Shore Industries, Toledo, Ohio.



Circle 309 on inquiry card

More products on page 147

J-M adds a new dimension to big ceilings. The sculptured look.

Big ceilings can be dull and drab.

Or, they can be exciting design elements that are at once uniquely distinctive and dramatic, yet practical.

Distinctive and dramatic because you can choose from three styles—J-M's new Prismatic,™ Acousti-Shell® and Profile®—all with deep, boldly sculptured contours, enabling you to emphasize big ceilings, rather than trying to hide them.

Practical because J-M fiber glass panels are light in weight, have strength, rigidity, high light reflectance, and excellent sound absorption characteristics. They come in large sizes—up to 4' x 4'—so they go up fast, for low installed cost.

Next time you have a big ceiling to design—for enclosed malls, shopping centers, supermarkets, auditoriums, recreation centers, sports arenas, and other large areas—look to sculptured fiber glass panels, manufactured exclusively by Johns-Manville.

And look to your nearby J-M sales office for help with ceiling design and specifications. Or contact Steve Lym, Johns-Manville, Greenwood Plaza, Denver, Colorado 80217. 303/770-1000.

J-M sculptured fiber glass panel line

Prismatic J-M's newest. Unique in their boldly sculptured contours. Prismatic panels permit an almost endless array of prismatic geometric shapes with design potential limited only by your imagination. 4' x 4' size.

Acousti-Shell Available in vaulted and coffered designs, both strongly textured, imparting an impressive sculptured character to the area it serves. 2' x 2' and 4' x 4' sizes.

Profile A distinctively curved, deeply vaulted shape and reveal edge add a strong recessed grid pattern to the appearance of any large ceiling area. Has extremely high light reflectance. 2' x 2' size.

JM

Johns-Manville

For more data, circle 63 on inquiry card

TRANSPARENT NOISE BARRIER / A limp, flexible, transparent PVC film that resists the passage of sound waves and reduces noise transmission is recommended for use as hanging curtains and as "windows" in opaque curtains and fabricated enclosures for noise control systems where visual monitoring is desired. "Coustiview" is said to be flexible, easy to handle, and resistant to yellowing, fading and clouding in normal industrial applications, including continuous temperatures ranging from −40 to 180°F. ▪ Ferro Corp., Norwalk, Conn.

Circle 310 on inquiry card

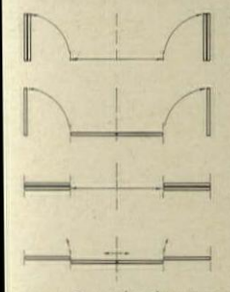
WATERPROOFING TAPE / A gray *Flashband* heavy-duty "peel and stick" aluminum-faced sealing tape with an additional gray vinyl coating offers savings up to 50 per cent, compared with conventional methods of flashing, sealing and repairing, according to the manufacturer. Hand pressure is all that is required to press it into place. It can be formed to any contour. The company reports that the bond formed by the asphalt seal gets stronger with time and that the product has a certified minimum life of 15 years. Both the gray vinyl-coated and aluminum types can be painted. ▪ Evode, Inc., Somerdale, N.J.

Circle 311 on inquiry card

DISPLAY SYSTEMS / "Spectrum 8/45," a KD display system, features frames that are assembled at any of eight pivot points around the frame connector, at 45 deg angles. Tubular frames are chrome-plated, available in several widths and heights, with lighting options. The panels are offered in 17 standard colors. Table frames, special shelving units, apparel racks, cork boards and molded plastic panels for graphic exhibits are all part of the display systems. ▪ Peter Pepper Products, Gardena, Calif.

Circle 312 on inquiry card

INTENSIVE CARE DOOR / A four-way door unit designed specifically for intensive care areas features two center doors that slide on tracks; the outer doors swing open, allowing access to the room. Within seconds the center panels can slide to join the swinging doors, locking automatically, to provide a full 14-ft open expanse. Completely manual, with only three mechanical parts, these doors afford almost maintenance-free operation and comply with non-electrical requirements for the use of oxygen. Available in two-, three- or four-door units in either standard aluminum or wood construction, they fit openings up to 14 ft with no center poles. ▪ Century Institutional Products, Barrington, Ill.



Circle 313 on inquiry card

More products on page 157

Both carpets cost the same. But 68% of the people we asked preferred the one on the left, thanks to high-density foam.

The carpet on the left has 22 ounces of fiber and 38 ounces of foam per square yard. The one on the right has 26 ounces of fiber and 18 ounces of foam. Both have exactly the same raw materials cost.

We asked 150 women in three cities—Philadelphia, Chicago and Los Angeles—to walk on both. Then we asked them to tell us which one they preferred. Which one they judged to be of higher quality. And which one they thought would be more expensive.

Of the 150 women we asked, 68% preferred the one on the left, 67% judged it to be of higher quality, and 63% thought it would be more expensive. Even though the one on the right actually had a higher fiber content.

The results speak for themselves. When you specify a *quality high density* backing for your latex foam backed carpets, you'll have noticeably higher perceived quality and greater consumer appeal. Which means you'll have more satisfied customers, and be able to maintain higher mark-ups.

Your Goodyear Chemicals representative will be happy to discuss with you the complete results of this study. To get in touch with him, just write Goodyear Chemicals, Dept. 7187, Box 9115, Akron, Ohio 44305.

GOODYEAR
CHEMICALS

beautiful glass us together.

re expensive.
No matter what shape your next ding is taking, there's probably a high-performance glass that can e it shape up a little better.
And that one beautiful glass can g us together, too.
Find out more. Write for our book, chitectural Glass Products," or refer to Sweets Architectural File, Catalog Code 8.26 Pp. PPG Industries, Inc., One Gateway Center, Pittsburgh, Pa. 15222.

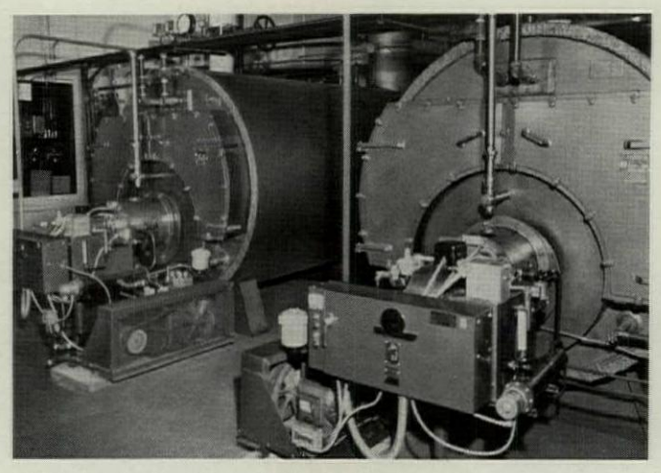
PPG: a Concern for the Future

PPG INDUSTRIES

When it comes to energy savings, here's why you should come to Dunham-Bush:

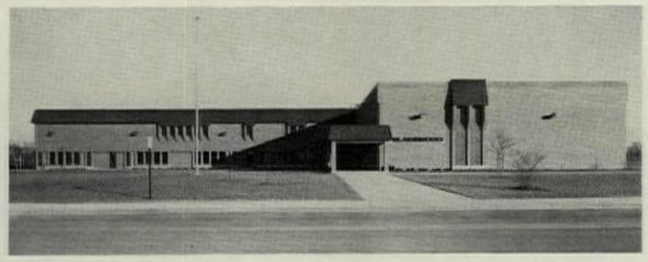
Dunham-Bush saves a Montgomery Ward store $29,200 in installed equipment cost — $3,580 per year in air conditioning energy costs — projected annual energy savings by 1980: $7,160.

...with a direct expansion air conditioning system featuring Dunham-Bush Rotary Screw Compressors.



Iron Fireman Burners save a Brooklyn building 41,739 gals. of fuel oil per year — reduce fuel oil consumption 52% — save $16,000 at today's prices.

...by up-dating a heating system with two Iron Fireman Burners.



Dunham-Bush saves a Milwaukee school $9,913 per year in heating and cooling energy costs — equivalent to 121 days free heating and cooling every year.

...with a heat recovery system featuring a Dunham-Bush Rotary Screw Compressor Packaged Chiller.

More ways to Save Energy with Dunham-Bush Equipment

• Aqua-Matic Heat Pumps recover and redistribute heat.

The Aqua-Matic System provides simultaneous heating and cooling. While one area is being cooled, the heat from that area is reclaimed and transferred to areas requiring heat. This eliminates to a great extent the need to generate heat for the system.

• Renovate your present steam heating system.

Dunham-Bush Steam Traps conserve fuel and reduce operating costs: assure full capacity of the terminal equipment and no loss of steam to the returns and atmosphere.

Dunham-Bush Vacuum Pumps will speed circulation of steam through rapid air removal, maximize fuel efficiency.

When it comes to energy savings, come to the people with a proven record in energy savings. Contact your Dunham-Bush Sales Office listed in the Yellow Pages or write direct.

DUNHAM-BUSH, INC.
175 South Street, West Hartford, Conn. 06110
One of The Signal Companies

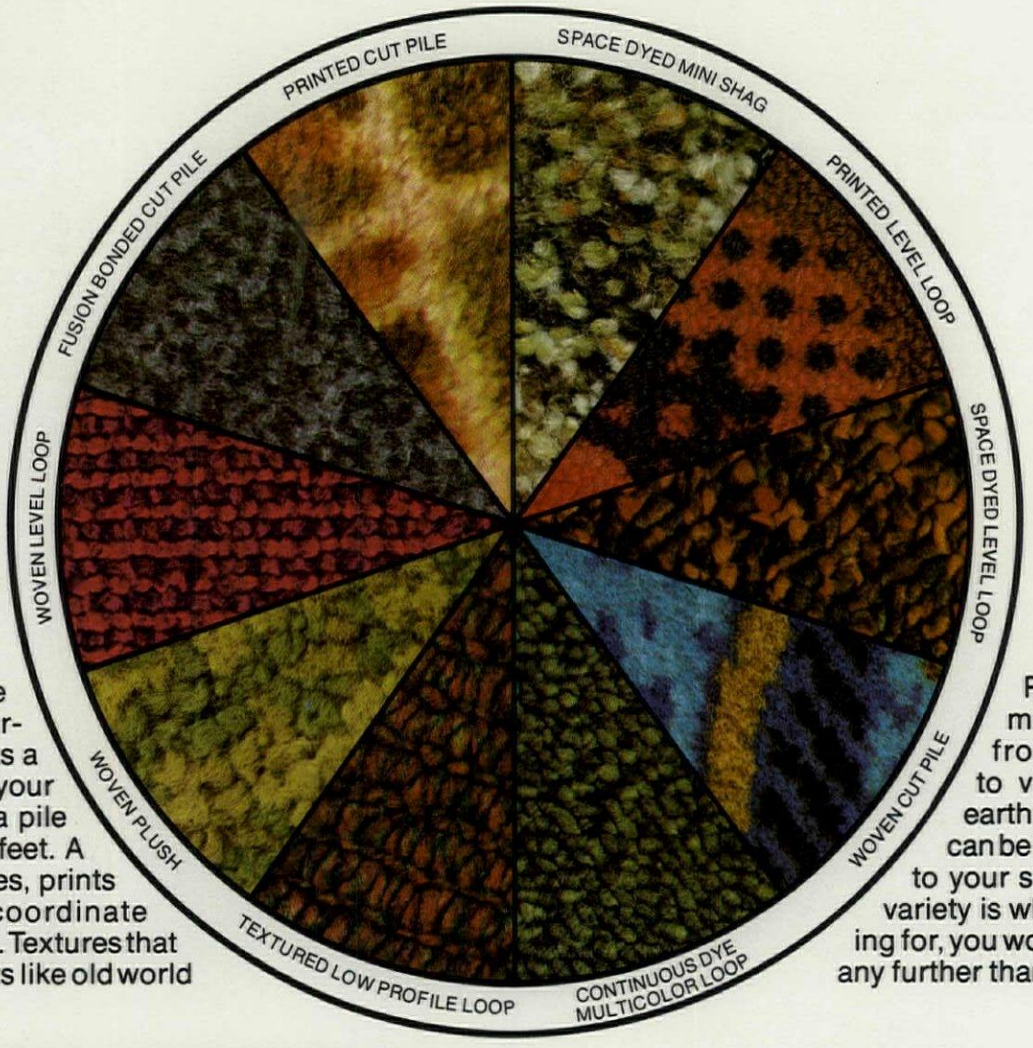
For more data, circle 67 on inquiry card

For more data, circle 68 on inqui

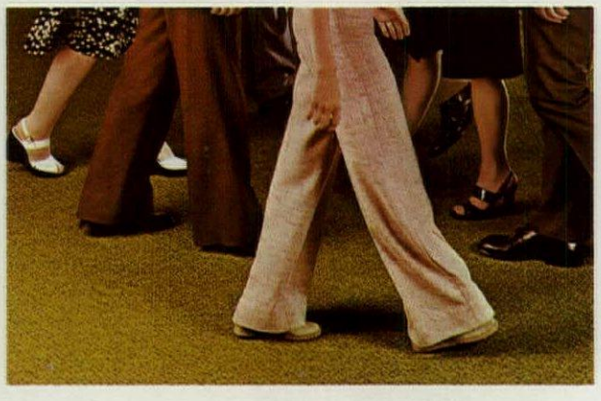
When it comes to carpeting, Anso® has everything the other nylon has,

and...everything it hasn't.

The other nylon has great variety.
Anso has great variety.

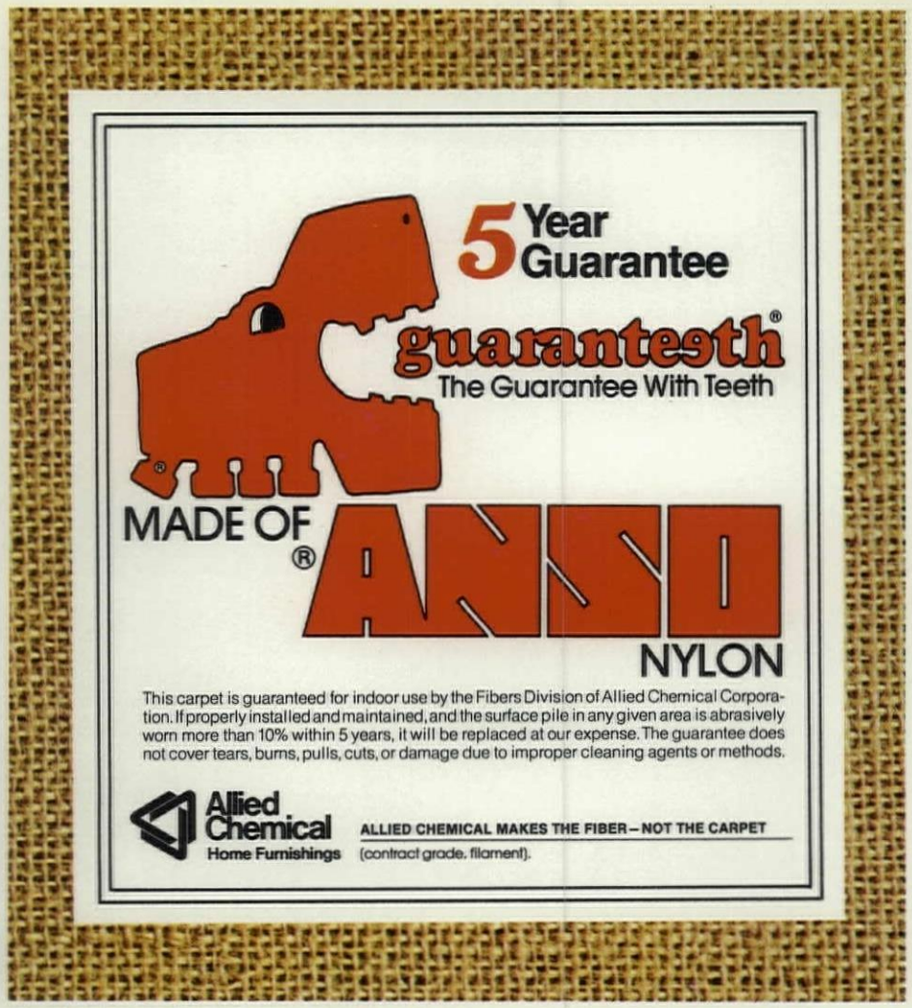


Whatever you're looking for, carpet of ANSO has a style to satisfy your eye as well as a pile to please your feet. A range of textures, prints and colors to coordinate with any interior. Textures that can take it. Prints like old world Persians and mosaics. Colors from soft pastels to vivid clears and earth tones. Or colors can be blended exactly to your specifications. If variety is what you're looking for, you won't have to look any further than ANSO.



THE OTHER NYLON IS ANTI-SOIL. ANSO IS ANTI-SOIL.

When you specify carpet made of ANSO, you get a second generation, anti-soil nylon fiber. A nylon fiber with a modified shape that makes it smoother. The result is that soil is more easily removed by ordinary cleaning methods. So it stays looking "like new" year after year.



And... Anso has the 5-year guarantee.

Allied Chemical's Guaranteeth®, the guarantee with teeth, is the strongest fiber guarantee in the carpet industry. It was also the first. Simply, it states:

- If any carpet of ANSO fiber wears more than 10% within the first 5 years, we'll replace it... Free.
- Allied Chemical will pay the entire cost of removal and re-installation. Including labor.
- Wear is not averaged over the carpet surface so any wear, anywhere, is covered.
- Allied Chemical will pay 100% of the replacement cost up to the very last guaranteed day. The offer is not pro-rated.
- All claims are investigated by an independent nationwide testing organization.
- ANSO-X anti-shock nylon is guaranteed against static-shock for the life of the carpet.

And...Anso has a solid-core construction to resist liquid borne soil

When it comes to staining, ANSO gives you extra protection. Because ANSO is a solid-core nylon, common stain-producing materials like ink, beverages, oily materials etc., can't penetrate or be entrapped in the fiber. Most can be removed easily with a damp cloth. If something out of the ordinary spills, our free carpet care booklet provides instructions for easy removal.

AND... ANSO HAS A MANDATORY CERTIFICATION PROGRAM.

Before they receive the ANSO label, carpets of ANSO are put through rigorous tests in a carefully supervised certification program. These tests include: pile yarn content, density factor, pile height, adhesion of backing, tuft bind, flammability, taber abrasion and color fastness. We make the exact minimum specifications available to you, so when you specify carpet of ANSO, you know what you are getting. Just ask for form A-22.

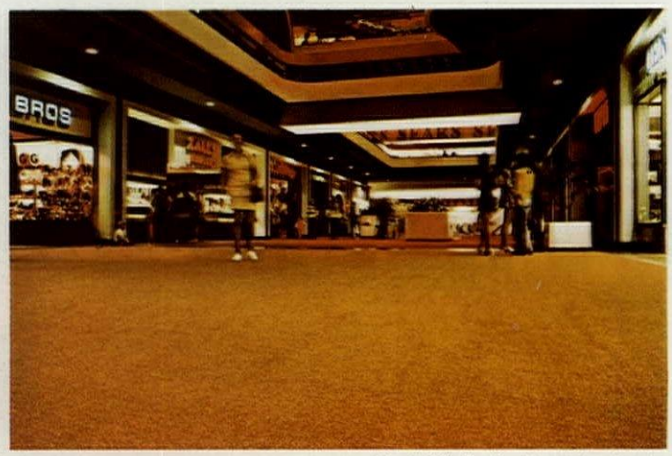
AND...ANSO HAS 2 CUSTOMER SERVICE PROGRAMS

1. Our Custom Specification Program helps us determine your exact installation needs so we can help you fill your requirements precisely. And most economically. Allied Chemical specialists are available nation-wide to assist you.

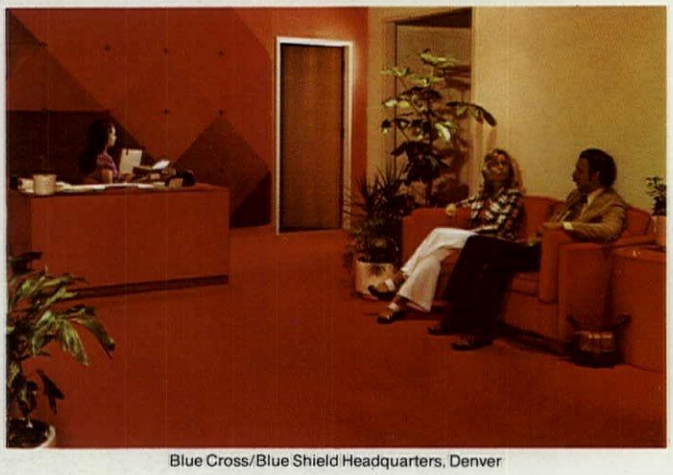
2. Our Masterwork Styling Program enables us to custom design carpets for special installations where aesthetics are of particular importance. Minimum yardage depends on carpet and manufacturer you select.

Put our 100 million plus square yards of experience on your floor.

The Hertige School, Miami, Florida



Northridge Fashion Center, Los Angeles



Blue Cross/Blue Shield Headquarters, Denver

ANSO is the most widely used guaranteed carpet fiber today. When you specify carpet of ANSO, you put 100 million plus square yards of experience to work on your floor. Above are some typical ANSO installations.

Anso®: The carpet nylon with the 5 year guarantee.

Allied Chemical
Home Furnishings

New-ANSO-X®

The third generation nylon guaranteed against annoying carpet shock from static electricity for the life of the carpet. For a free brochure on ANSO-X anti-shock nylon, and a list of carpets currently available with this fiber, please check here. ☐

For further information phone the Contract Carpet Dept.: 212-736-7000 or return the following coupon
Allied Chemical, Home Furnishings Merchandising, 1411 Broadway, N.Y., N.Y. 10018.
Please send additional information on the following:

☐ Mills carrying carpets of ANSO nylon. ☐ Appointment with ANSO Contract Specialists

☐ Custom Specification Program ☐ Masterwork Styling Program

☐ Information requested for ☐ current project ☐ future project (Please give brief description)

_____

_____

Name_____ Position_____

Company_____ Address_____

City_____ State_____ Zip_____ Telephone_____

A

TALKING CALCULATOR / With a solid-state synthesized voice, this line of talking calculators provides both an eight-digit visual display and solid-state voice read-out for the basic four functions plus all numeral entries and results. ▪ Master Specialties Co., Costa Mesa, Calif.

Circle 314 on inquiry card

ELASTOMERIC SEALANT / A sealant that adheres to almost any surface—including concrete and *Teflon*-coated materials—is designed to provide an impenetrable, low-pressure seal in applications that might involve water, acids, gases, or air-borne particulate matter. In most cases, little or no surface preparation or cleaning is required for tape application. Tests with various surfaces have demonstrated that the sealant's typical 90-deg peel-back adhesion values range from 15 to 30 lbs per in. of width. ▪ 3M Co., St. Paul, Minn.

Circle 315 on inquiry card

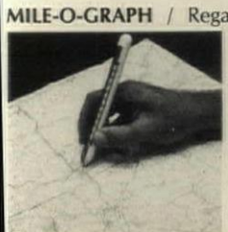
HANGING BAFFLES / *Sonex* acoustic foam is now available in the form of baffles that can hang above loud machinery. The baffles are 32 by 48 in. and 3 in. thick. Eyelets are provided for hanging vertically or horizontally, or for suspending the baffles on 6-in. wall stand-off spacers. An optional film facing is available on one side of the baffle to protect against oil, smoke or moisture. ▪ Charles Industries Corp., Minneapolis, Minn.

Circle 316 on inquiry card

WOOD PRESERVATIVE / "Pentagard" is paintable within 24 hours; stops rot, decay, and moss; and kills termites, powder post beetles, and other boring insects, according to the manufacturer. It can be used on all wood that comes in contact with soil or excessive moisture. ▪ Zehrung Corp., Portland, Ore.

Circle 317 on inquiry card

MILE-O-GRAPH / Regardless of twists, turns or curves, the user runs the product along the route on any map and reads the exact miles thru the magnified window. It is also available for nautical miles, kilometers and architects scale. ▪ Joseph Mennen Co., Lynbrook, N.Y.



Circle 318 on inquiry card

More products on page 159

Here's the new, "large economy size" steel heat and smoke vent

Underwriters' Laboratories, Inc. listed. Factory Mutual Research Corp. approved.

for 5′-0″, 5′-6″ and 6′-0″ wide spans ...in lengths from 6′-0″ to 12′-0″

Now, when you need automatically operating heat and smoke vents for buildings with 5-ft., 5-ft. 6-in. or 6-ft. joist spacings, you don't have to settle for aluminum units. Big Smoky brings you the strength and economy of steel.

Its unique composite cover design—with galvanized steel cover and liner laminated to an inner core of 2″ thick rigid foam insulation—provides a variety of benefits: **Strength**...will safely carry loads of 70 psf; **Rigidity**...surface continuously supported by firm inner core; **Light Weight**...comparable to internally reinforced aluminum covers; **Excellent Insulation**..."U" factor of .093 (compared to .26 for 1″ thick glass fiber); **Condensation Control**...no cold spots.

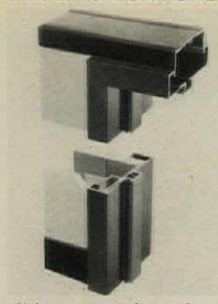
Big smoky is a well designed, carefully made, good looking vent with clean, straight, non-sagging lines. It has passed the rigid test standards of Underwriters' Laboratories and Factory Mutual to assure dependable performance. For complete details on sizes, construction and operating features, write to: Special Products Group—Milcor Division; INRYCO, Inc.; Dept. L, 4033 W. Burnham Street; Milwaukee, Wisconsin 53201.

INRYCO
an **INLAND STEEL** company

General Offices: Melrose Park, Illinois
Formerly INLAND-RYERSON CONSTRUCTION PRODUCTS CO.

For more data, circle 70 on inquiry card

FRAMING COMPONENTS / Two series of coordinated aluminum framing components for use in all steel - stud - and - gypsum fixed partitions provide matching door and window frames to accommodate virtually all typical wall and glazing conditions. Included are frames for entrance doors, by-passing and pocket sliders, pass-through windows and other special units. Ceiling runners and frames can be furnished for both 3¾- and 5¼-in. wall thicknesses. Both are available in clear anodize, bronze and black hard-coat anodize, and baked enamel finished to any matched color. ▪ Vaughan Walls, Inc., Los Angeles, Calif.



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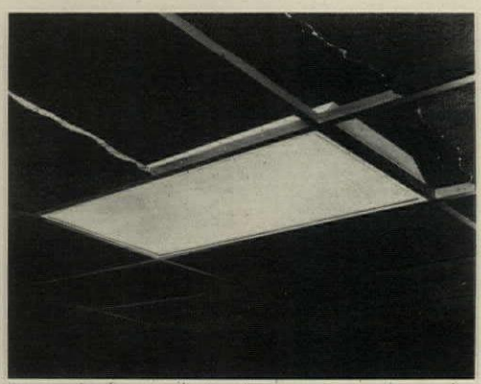


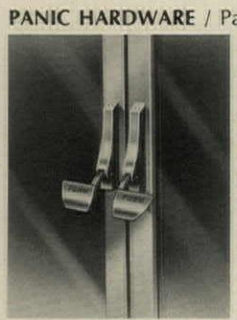
RECESSED FLUORESCENT / An ultra-thin (3½-in.-deep) recessed troffer houses either two or four rapid-start F40 fluorescent lamps. The unit measures 2 by 4 ft, and has a body die-formed of heavy gauge sheet steel, ribbed and embossed for rigidity. *Heft* fixtures are designed to lay into an exposed "T" grid ceiling system. ▪ Keene Corp., Union, N.J.

Circle 320 on inquiry card

ALUMINUM CANOPIES / The aluminum shelters are available in a choice of colors, finished in baked enamel. Interlocking underside panels, coated in a special polyester weather-resistant finish, prevent insects from nesting and breeding. The canopies are custom built to individual specifications. ▪ Alcan Building Products Div., Alcan Aluminum Corp., Warren, Ohio.

Circle 321 on inquiry card

PANIC HARDWARE / Panic exit hardware is now available on emergency egress (break-away) models of the company's *Electra-Slide* and *Hydra-Slide* automatic sliding entrances. The paddle-type actuator mounted on the interior side of the sliding door signals "PUSH," instantly retracting a top-and-bottom holding device and allowing the locked sliding door to swing out a full 90 deg. The entire panic exit mechanism is tamper-proof and, other than the paddle actuator, is completely concealed in the door frame. The actuator is available anodized or painted to match or contrast door finish. ▪ Ronan & Kunzl, Inc., Marshall, Mich.



Circle 322 on inquiry card

More products on page 161

What if they have to get out in a hurry?

Where there's a possibility of fire, cushioning foam of Du Pont Neoprene means potentially more evacuation time.

Cushioning materials in areas of public assembly need no clanging cymbals to attract attention. They have attention—from federal authorities, local fire marshals and commissions who have a hand in setting fire codes. Foam of Du Pont Neoprene is attracting attention, too, because it provides outstanding performance on two crucial counts:

- First, Neoprene foam can be used to design chairs with high resistance to flame ignition.
- Second, if ignited it exhibits a lower rate of heat generation and flame propagation than do other common cushioning materials.

In addition, Neoprene foam lets you design durability and comfort into even the most irregular seating styles. Resilient Neoprene foam does not harden or crumble on aging, stands up to oils, most chemicals and cleaning fluids as well as moisture and temperature changes.

When you specify foam cushioning of Du Pont Neoprene, you get a material that's proven itself by more than 16 years of service in public seating and bedding applications where the possibility of fire is of significant concern—in schools and ships, airplanes and auditoriums, trains, theatres and hospitals.

For more information on suppliers of Neoprene foam cushions or finished seats made of Neoprene, write: Du Pont Co., Room 24354, Wilmington, DE 19898.

Cushioning Foam of Du Pont Neoprene

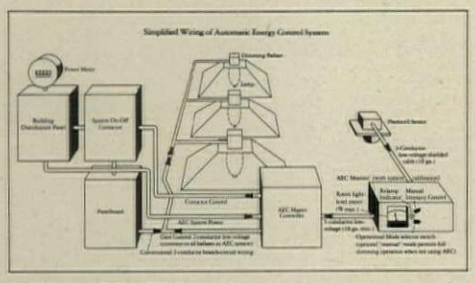
DU PONT
REG. U.S. PAT. OFF.

PRODUCT REPORTS *continued from page 159*

POST-TOP / This outdoor lighting fixture features a

diffuser of tempered, impact-resistant bronze reflective glass that suggests its use for parking lots and walkways outside reflective glass buildings. The unit comes with either round or square cast-aluminum slip fitters to fit either round or square poles. The fixture will accommodate 175-, 250- or 400-watt mercury vapor lamps or 150- or 250-watt high-pressure sodium lamps. The housing is a combination of fabricated extruded aluminum and cast aluminum, finished in a dark bronze. ▪ ITT Landmark Lighting, Southaven, Miss.

Circle 323 on inquiry card



ENERGY CONTROL / Previously announced for mercury vapor lamps only, these Automatic Energy Control systems now also operate high-wattage high-pressure sodium and metal halide lamps. The AEC equipment allows automatic control of lamp power to provide only that output needed for desired foot-candle levels. A photocell sensor measures the area's light level, and resulting commands to the system increase or decrease lamp power to all luminaires in the system as necessary. ▪ Wide-Lite Corp., Houston, Tex.

Circle 324 on inquiry card

DRAWING FILMS / Wash-off films offer architectural and engineering organizations a wet-erasable material for making drawing copies that can be corrected and modified. Images may be erased and the base can be drawn on with either drafting pencil or pen. Films are silver-sensitized, negative-working materials on a semi-translucent base that can be used for reproducing both line drawings and screened halftones. They are available in a wide variety of sheet and roll sizes, with a matte finish on one or both sides and in either contact or projection speed. ▪ Chemco Photoproducts Co., Glen Cove, N.Y.

Circle 325 on inquiry card

OFF-LINE PLOTTING / Consisting of a magnetic tape drive, computer and 36-in. drum plotter, the "6000 Series" off-line plotting system features a speed selector for optimum speed/quality output, and operates off line at speeds up to 4000 increments per second (14.4 in. per second). Increment size is 0.025 in. The "6000 Series" is recommended for such applications as engineering, city planning, structural design, map making, management reports and electronic data processing. ▪ Zeta Research, Lafayette, Calif.

Circle 326 on inquiry card

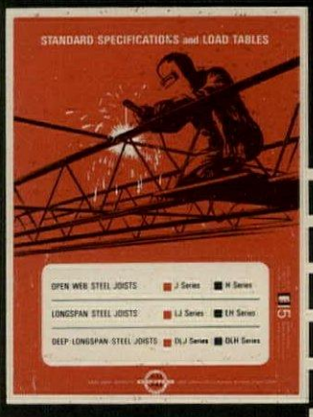
More products on page 163

Baker's Bay builders chose steel joists "for economy and speedy construction."

"Ease" readily describes Baker's Bay Condominium. Set in a relaxing rural atmosphere on the banks of the Delaware River, 144 spacious units provide the utmost in easy living.

Ease of construction – with the help of steel joists – is part of the Baker's Bay story, too. Open web steel joists support a corrugated metal deck and two-and-a-half inch concrete slab. Morton J. Berman, president of Arthur A Kober Construction Company of Bala Cynwyd, Pa., chose steel joists "because they were the most economical means of construction and allowed for fast construction." Joseph L. Hoffman and Associates were the structural engineers; Richard E. Martin and Associates were the architects.

Steel joists are the practical choice for more reasons than speed and ease. We've gathered together lots of facts on the advantages of using steel joists in all types of construction. Send for our latest edition of Specifications and Load Tables for Open Web Steel Joists, Longspan Joists and Deep Longspan Joists.



STEEL JOIST INSTITUTE
2001 Jefferson Davis Hwy.
Arlington, Virginia 22202

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

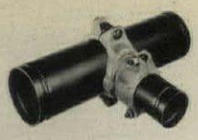
Please send me your new copy of Specifications and Load Tables.

NAME _____
TITLE _____
FIRM _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

75007

For more data, circle 76 on inquiry card

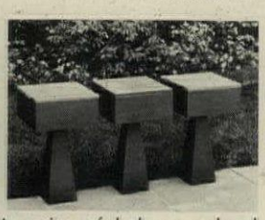
STEEL WATER PIPE / Roll-groove lightwall steel water pipe, designed to conform with ASTM specifications A-120 and A-53 Pressure Valves for sprinkler systems, results in up to a 45 per cent weight savings over comparable diameter Schedule #40 iron pipe. Quick-coupling devices are said to eliminate the need for costly threading and reduce the problems of critical alignment. The pipe is also suited for cooling tower piping, domestic hot and cold water lines, condenser water lines, fire standpipes, roof drains, hot water heating, chilled water lines and machinery room pipes. ▪ Berger Industries, Inc., Maspeth, N.Y.



Circle 327 on inquiry card

MATERIALS HOIST / A twin platform model materials hoist with its two cantilevered cages on a single mast, has the work capacity and versatility of the "six-post" tower or two individual towers, while retaining the fast, low-cost erection and operation inherent in a single mast, according to the company. It can lift in various size cages, 5000 lbs of materials to heights up to 500 ft at an average speed of 175 fpm. A remote control electro-hydraulic system with hand-held controls permits the operator to be as far as 75 ft away. ▪ Getman Brothers Mfg. Co., Marion, Ohio.

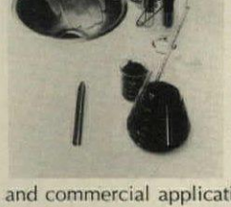
Circle 328 on inquiry card



SITE LUMINAIRES / A series of below-eye-level lights, which also double as seats or signage, will resist vandalism, according to the company. In addition to the standard down-light units, other models in the "Chesspiece" series provide down-light with accent side-lighting, up-lighting or total area illumination. Units incorporating internally illuminated signage panels are also available. Finishes include standard black-painted or optional mirror-polished metal, simulated concrete, bronze paint or laminated wood. All models can be ordered for use with 50- or 100-watt mercury vapor lamps or for incandescent operation. ▪ Moldcast Lighting Div., Weil-McLain Co., Inc., Newark, N.J.

Circle 329 on inquiry card

CHEMICALLY-RESISTANT LAMINATE / "Chem-Surf," a chemically resistant laminated plastic in 14 colors, is recommended for laboratory work surfaces in pathogenic, dental, medical, educational, and photo labs. It is ideal for hospital nurses' stations as well as many other institutional and commercial applications requiring a chemical-resistant work surface. To color-coordinate both the horizontal and vertical plane of the work surface, the company has introduced *Soli-Core*, a chemical resistant self-edging. ▪ Wilson Art, Temple, Tex.



Circle 330 on inquiry card

On the floor. In the floor. Leakproof.

Overly puts therapy pools where others don't.

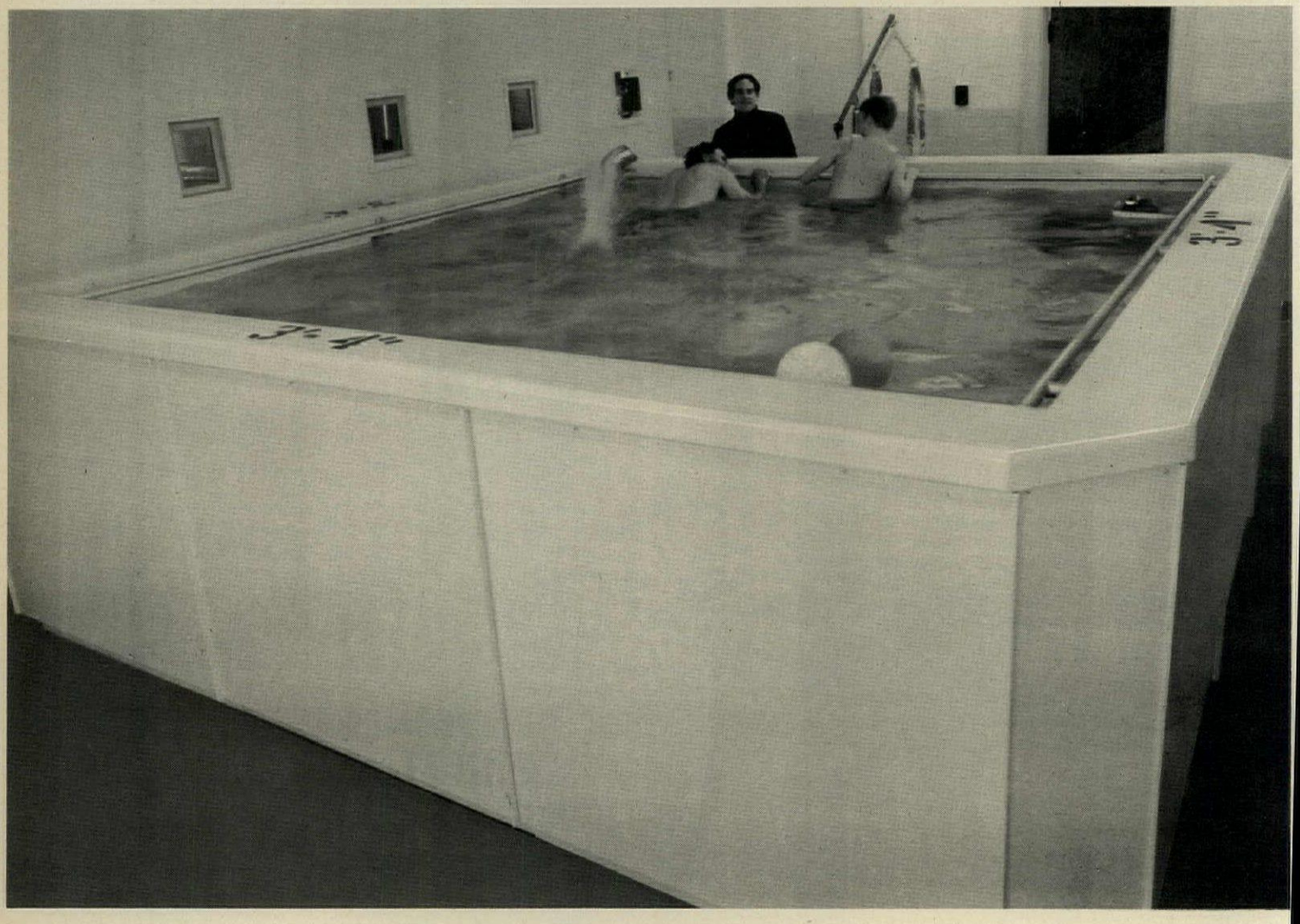
This new modular design demonstrates one of the many advantages of Overly welded aluminum therapy pools: versatility. It was designed to be installed on the floor of an existing building (so sections had to fit through a doorway) and is used in an innovative teaching and therapy program for retarded children. Like all Overly therapy pools, it is warranted leakproof from defects in materials and workmanship.

Overly can design, fabricate and install any type of aluminum or stainless steel therapy pool you need, in a new building, an existing building, or on your roof. Ramps, stairs, railings are available. Heating and water treatment equipment can also be supplied, as well as a variety of patient-lifting and transfer equipment.

Other Overly therapy pool advantages include low maintenance and ease of disinfection. And they're vacuum-tested for leaks after installation.

overly
MANUFACTURING CO
DOES WHAT OTHERS DON'T.

Send for our warranty, and for more information on our many therapy pool capabilities, see us in Sweet's or write Overly Manufacturing Company, 574 W. Otterman Street, Greensburg, Pa. 15601.



For more data, circle 77 on inquiry card

OFFICE LITERATURE *continued from page 143*

LIGHTING SPECIFICATION / A specification catalog covers "StoncoLine" lighting fixtures for incandescent, tungsten-halogen and H.I.D. lighting sources, including mercury vapor, metal halide and high- and low-pressure sodium, in virtually all wattages and for most indoor and outdoor applications. Complete fixture details include engineering features, applications, photometrics, electrical characteristics, options and accessories, and suggested formal specifications. ▪ Keene Corp., Union, N.J.

Circle 414 on inquiry card

REMODELING BROCHURE / "Getting Back to the Basics . . . with Metal Lath and Steel Framing" is an illustrated brochure featuring four projects: a church activities center, a discount store, an office building, and a major historic restoration. Both interior and exterior applications are shown. Original use varies from an old general store (for the church activities center) to an old hotel (for the office building). ▪ Metal Lath/Steel Framing Assn., Chicago, Ill.

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LIQUID MEMBRANE WATERPROOFING / A brochure describes the characteristics and uses of liquid membrane waterproofing material. This hot-applied rubberized asphalt forms a flexible, self-healing membrane that bonds positively to horizontal and vertical surfaces. Also described are the ways in which liquid membrane can seal: control joints; expansion joints; shrinkage cracks and flex cracks and flashing points. ▪ Uniroyal, Inc., Chicago, Ill.

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LABORATORY CATALOG / A 400-page catalog describes over 1000 products for medical, chemical, petro-chemical, petroleum research and industrial laboratories. The catalog is cross-indexed for quick reference. ▪ Lab-Line Instruments, Inc., Melrose Park, Ill.

Circle 417 on inquiry card

SCIENTIFIC FURNITURE / Spanning the spectrum from modular casework to mobile furniture to fume hoods to specialized instrumentation equipment, the "Guide to Scientific Furniture" contains 40 product groups for new or renovated laboratory facilities. ▪ United Technical Corp., Leominster, Mass.

Circle 418 on inquiry card

RAILING SYSTEM / A four-page brochure features an aluminum system offered in two standard heights. For applications which require mounting at the floor level, the standard height is 42 in. A lower profile railing is available with a standard height of 21.65 in. The finish of extruded railing sections is a clear anodic coating. Posts and exposed accessories are coated with a 1 mil nominal thickness baked-on enamel finish. ▪ Horizal Offenhauser, Inc., Richardson, Texas.

Circle 419 on inquiry card

HEAVY-DUTY COATING / A new heat and acid resistant fluoroelastomer coating for steel, concrete and brick surfaces is the subject of an illustrated brochure describing technical specifications, application procedures and case history performance. ▪ The M.W. Kellogg Co., Houston, Tex.

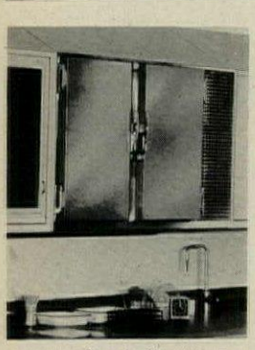
Circle 420 on inquiry card

HEATING/COOLING COILS / The catalog briefly describes 12 coil types, which range from the smaller steam and hot water, duct-mounted booster coils, to the larger steam, hot water, chilled water and refrigerant blast coils. ▪ The Singer Co., Carteret, N.J.

Circle 421 on inquiry card

AE/UPDATE

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



EYE-LEVEL LAB REFRIGERATORS WITH MODULAR COMPATIBILITY fit flush with existing or planned casework to achieve a clean, uninterrupted line of design. Stainless steel throughout, exteriors can be finished to your specifications. Model illustrated, 30"H x 54"L x 13"D, has a 6.6 foot capacity. Blower coil cooling system with condensate evaporator and accumulator eliminates need for drain. Explosion-proof interior available. Easily serviced from front. Write: Jewett Refrigerator Co., Inc., 2 Letchworth St., Buffalo, N.Y. 14213

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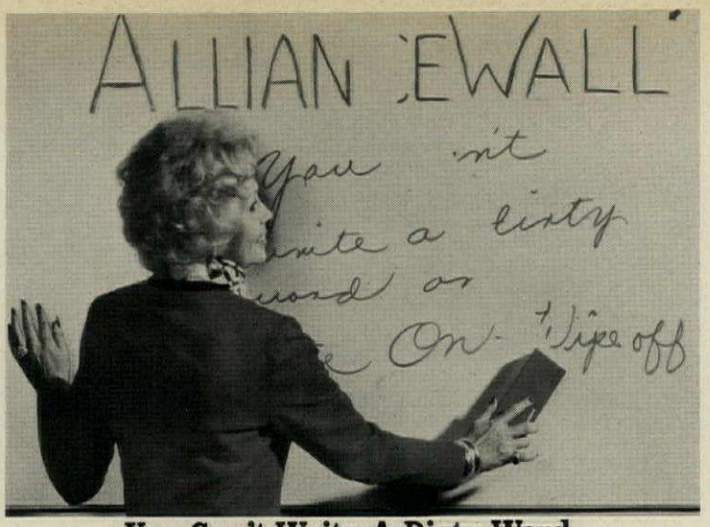
RECORD IMPRESSIONS CATALOG

SEND FOR A COMPLETE, DETAILED CATALOG of "Record Impressions." A convenient service offering reprints of Building Type Studies, Interiors and Special Reports. Offered are more than 30 items including back issues of Record Houses 1968 and 1970; Product Reports '73 and the practical reference guide, "Air Conditioning: A New Interpretation." Address your request to: Record Impressions, Architectural Record, 1221 Avenue of the Americas, New York, New York 10020, Att: Joseph R. Wunk



You Can't Write A Dirty Word With AllianceWall's Rite-On, Wipe-Off System

Specially treated porcelain-on-steel panels and dry marker pens are combined to create a completely DUSTLESS WRITING SYSTEM. Writing dries instantly. Can be erased with a dry cloth or felt eraser. Laminated to low-cost gypsum board, AllianceWall Rite-On, Wipe-Off panels are fireproof, inexpensive to install and maintenance free. Panels double as bulletin board when used with miniature magnets. Also make excellent projection screens. Can be used with any partition system. No special lighting required. Writing surface is guaranteed for 50 years.

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Manufacturing plants in Alliance, Ohio; Okmulgee, Oklahoma; Genk, Belgium and Odense, Denmark.

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Olympic Overcoat or Olympic Stain. Guaranteed satisfaction you won't get with paint.

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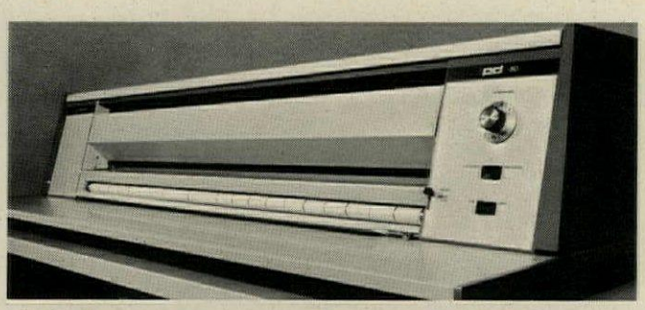
Olympic Stain, 1148 N.W. Leary Way, Seattle, WA 98107
A division of COMERCO, INC.



Why you should have America's favorite convenience copier.

Thousands of hard-to-please customers now use Bruning's odorless, instant-on, 110-volt PD-80. It's America's most popular engineering convenience copier, for good reason.

Plug in a PD-80 where it's handy for your draftsmen. See how it boosts productivity by delivering high quality prints without delays.

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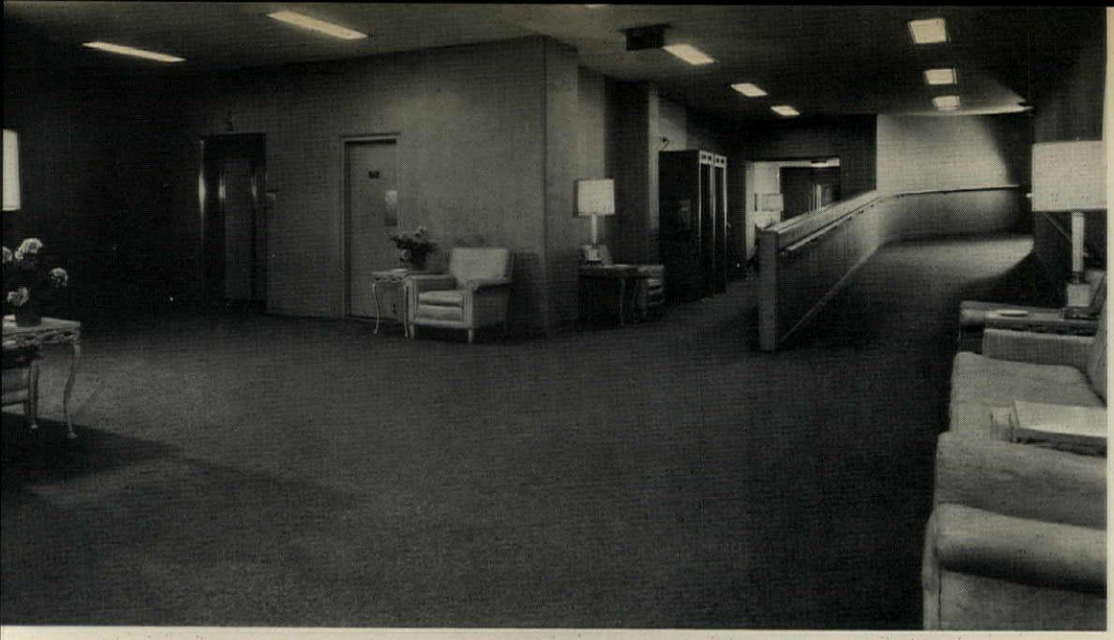
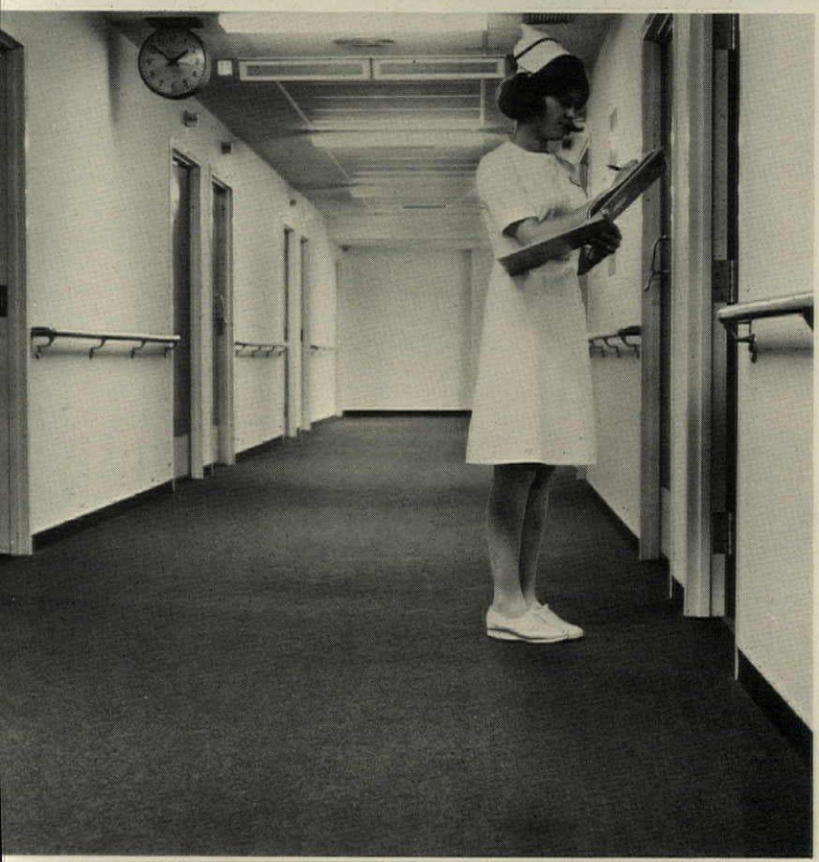




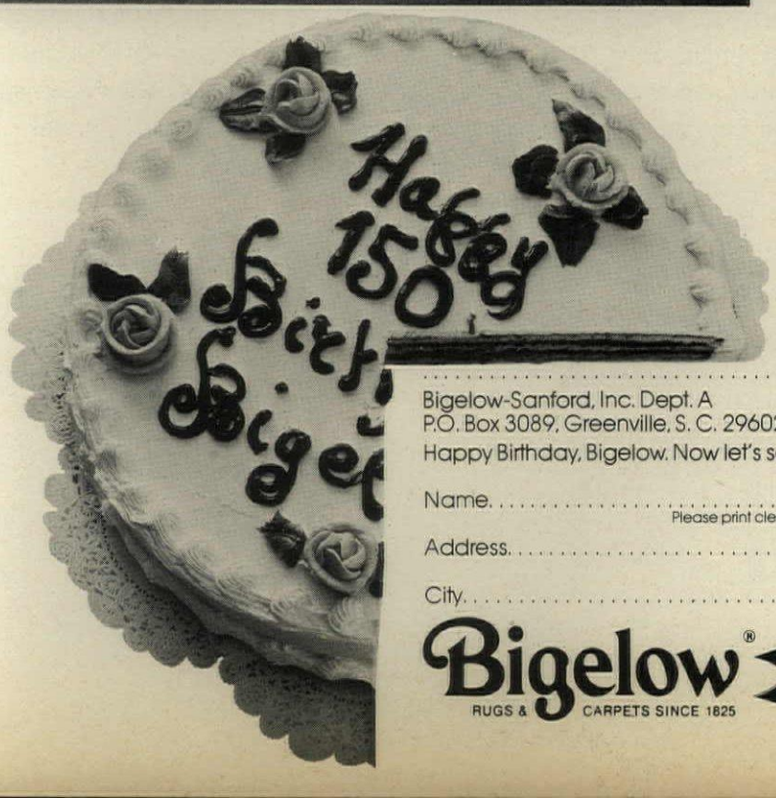
Hospital after hospital after hospital prescribed proven carpet by Bigelow.

If you're doing a hospital job, you can create your own specifications for the carpet you want. And we can make it for you.

However, we have another suggestion. Why not specify carpeting that's already proven it can take the hard use (not to mention abuse) patients, visitors and staff deal out. Carpet that's repeatedly demonstrated it can take a beating year after year after year.

Bigelow has that kind of proven in actual hospital use carpeting ready for you in a wide selection of styles and patterns. Carpet that is the result of research and development combined with the realistic experience gained in hundreds of hospital installations.

And speaking of experience, what better proof than the fact that Bigelow is now celebrating their 150th Birthday. From 1825-1975, Bigelow—America's most experienced carpet maker. We can give you the best advice, the best in everything to do with carpets because we've been doing it longer and doing it better than anyone else.



Bigelow-Sanford, Inc. Dept. A
P.O. Box 3089, Greenville, S. C. 29602

Happy Birthday, Bigelow. Now let's see what your 150 years of experience can do for me on a hospital job.

Name..... Title.....
Please print clearly.

Address.....

City..... State..... Zip.....

Bigelow®
RUGS & CARPETS SINCE 1825

AMERICA'S MOST EXPERIENCED CARPET MAKER

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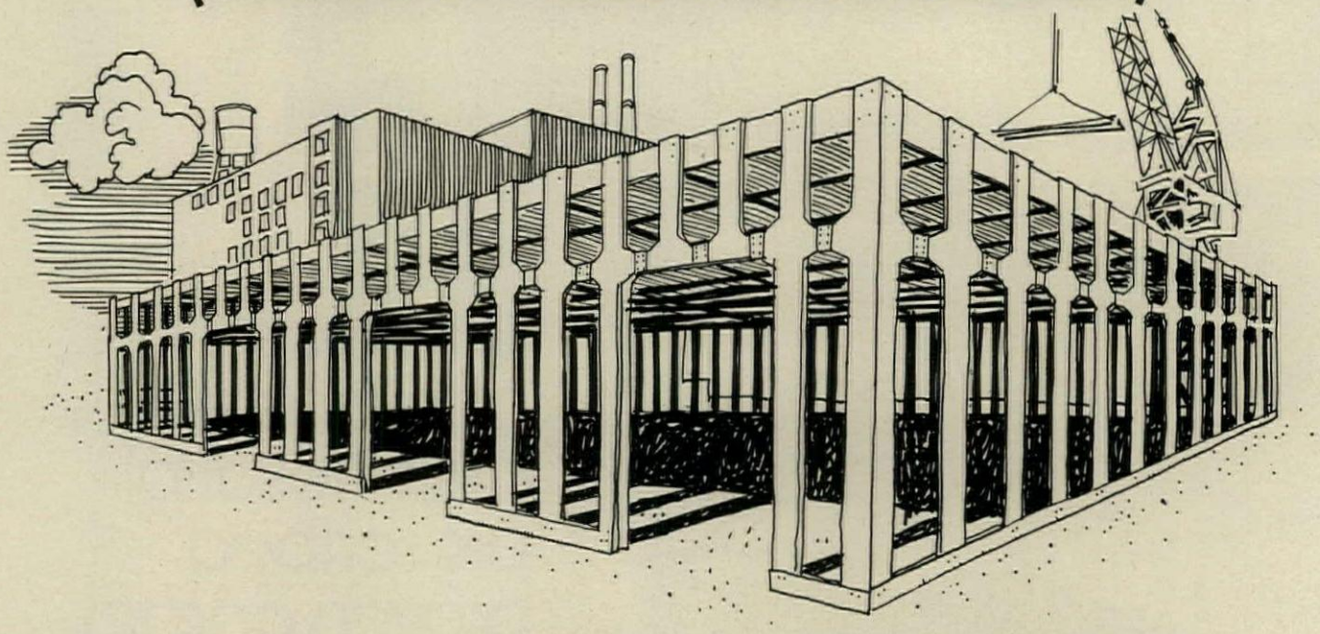
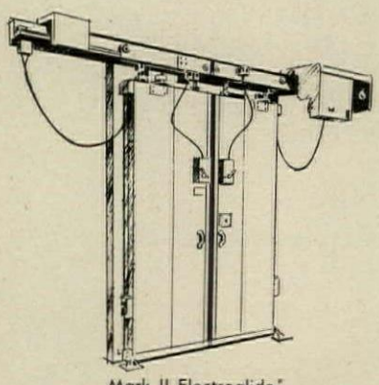
BEFORE.

(YOU BUY A COLD STORAGE DOOR)



Consider this.
We offer the most complete line of cold storage doors available from anybody. For you, it means the right door.

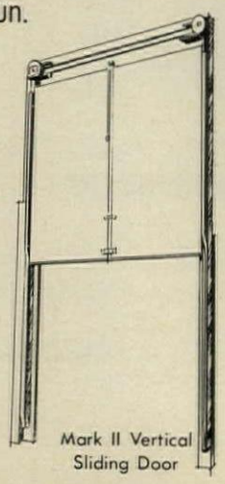
It's simple. We won't try to tailor your requirements to our products. With our complete line of quality doors, we can tailor our products to your requirements.



Mark II Electroglide® Horizontal Sliding Door

Consider this.
We won't recommend a door until we've had a chance to consult you about your operation.

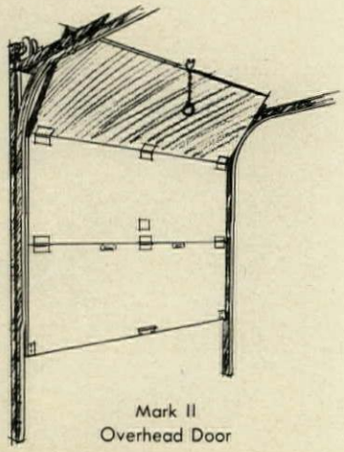
We'll dig deep for the solution to your door problem. With the most technically knowledgeable sales and engineering staff, we'll recommend the door that will save you time and money in the long run.



Mark II Vertical Sliding Door

Consider this.
We maintain a large inventory of readily available replacement parts. We don't plan obsolescence.

Every Jamison door is manufactured to a quality standard set to assure years of reliable service. But replacement parts sometimes are needed. And when you need them, we'll see that you get them. Fast!!



Mark II Overhead Door

AFTER.

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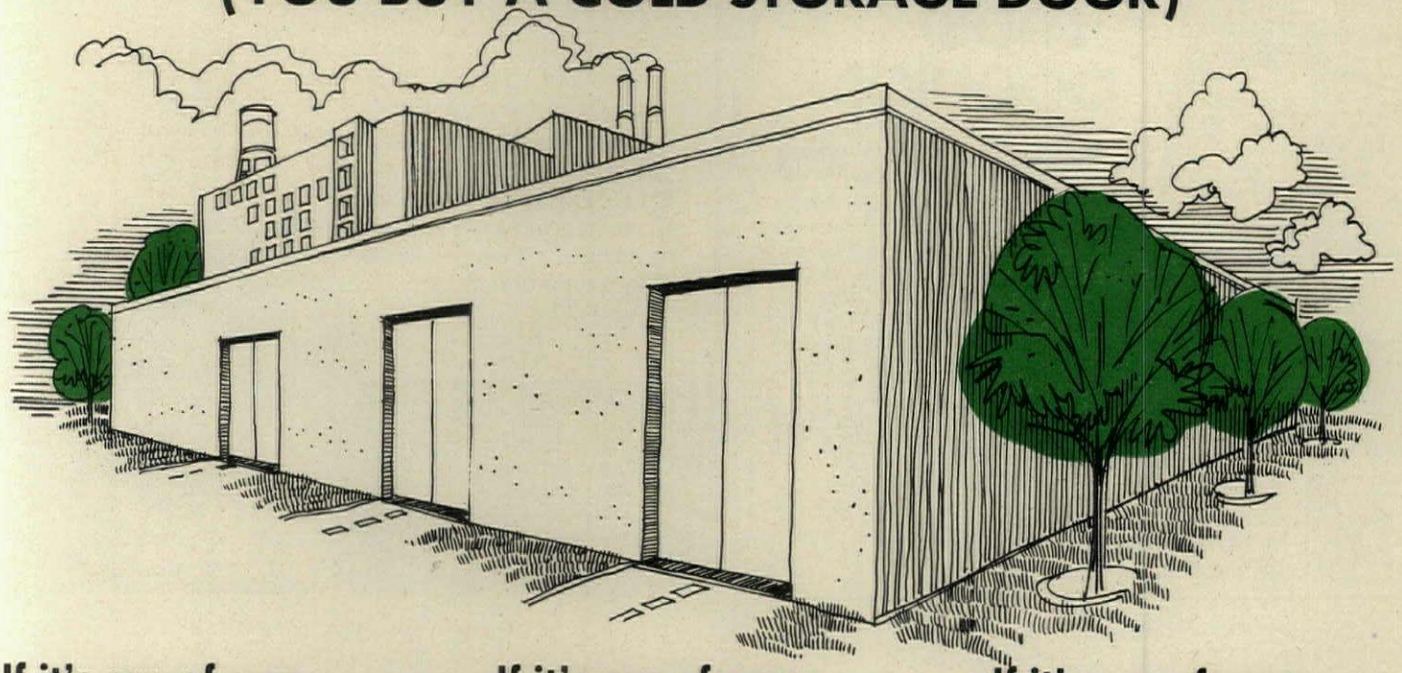

If it's one of ours, our field service people will be available to make sure your door is 100% operational.

We provide the information and the know-how to make sure your door works the way it's supposed to. Part of the deal is our people are on call until it does. It's all part of the service.

If it's one of ours, you'll get a free education on care and feeding.

A good cold storage door is precision equipment. Our seminars on preventive maintenance are open to your personnel and to your contractor. Write us for full details.

If it's one of ours, you can get a 3-year guarantee.

Our premium quality Mark II doors carry the longest, strongest guarantee in the industry. A standard 1-year guarantee applies to the rest of our line. Either way, you're way ahead with Jamison.

The Mark II 3-year guarantee. Only Jamison has it.

COLD STORAGE DOORS BY
JAMISON
JAMISON DOOR CO · HAGERSTOWN, MD 21740

In Japan, Taiwan, Republic of Korea, Contact:
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Chuo-Ku, Tokyo, 103 Japan

In Finland, Scandinavia, Europe, U.S.S.R., Contact:
Huurre Oy
P.O. Box 530
33541 Tampere, Finland

In Australia, Singapore, Indonesia, Malaysia, Contact:
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Osborne Park
Perth, West Australia

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AAMA tells why Aluminum Windows are America's most popular

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Find out why more residential windows are sold "made of aluminum" than any other material. It's a matter of beauty, low maintenance and energy savings . . .Important features to help sell houses in a tough market. Look for the AAMA Certification Label: Your guide to quality aluminum windows.

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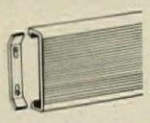
TROLLEY RAIL PREVENTS BROKEN WALLS!

"FLOAT" design plastic rail acts as a continuous bumper to provide wall and corner protection.

• Low Cost • Ideal for heavy traffic areas (corridors, kitchens, laundries, service areas) in hospitals, schools, commercial and industrial buildings. • Easy installation for new construction or remodelling and repair.



Easily installed wall brackets hold 8" x 1 3/16" rail which snaps into place.

CLASS "A" FLAME - SPREAD RATING

FREE BROCHURE GIVES COMPLETE DETAILS
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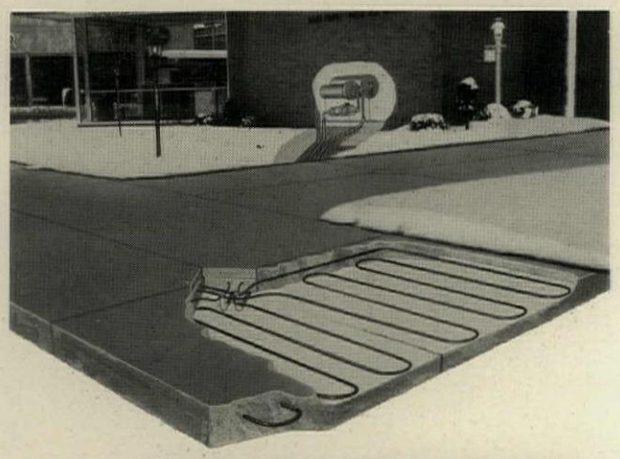
Terrazzo's beauty starts at the floor and ends with your imagination. An architect's Design Data Book illustrates many available patterns in full color. It was prepared by the National Terrazzo and Mosaic Association in cooperation with a team of professional color consultants and architectural interior designers. This valuable book is available free to any practicing architect. Write terrazzo 2A West Loudoun Street, Leesburg, VA 22075.



AUTOMATIC SNOW CONTROL with GUARANTEED Reliability

The patented Hume system sets state-of-the-art performance standards for in-ground automatic snow melting. So reliable, it's backed by a full five-year pipe system warranty. Our latest illustrated brochure contains full details and system specifications. Send for your copy today or see us in Sweets under Section 15.13.

HUME SNOW MELTING SYSTEMS, INC.
4405 FERNLEE AVENUE • ROYAL OAK, MICHIGAN 48073
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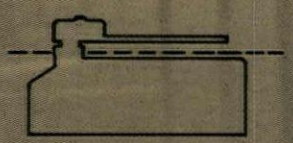
FABULOUS 20's

First opened in 1929, these busy doors are controlled today by Rixson 25 Series door closers, installed 46 years ago.

Scores of Rixson concealed floor closers here in Chicago's ever-prestigious Riverside Plaza Building, and tens of thousands throughout the world, have provided reliable service, under very demanding conditions, decade after decade. That's economy.



Today's famous 27 Series concealed floor closer

75 ANNIVERSARY

Holabird & Root, architects and engineers

RIXSON-FIREMARK, INC.

9100 W. Belmont Ave., Franklin Park, IL 60131
In Canada: Rixson-Firemark (Can.) Ltd.

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Sanymetals Mean "Choice"

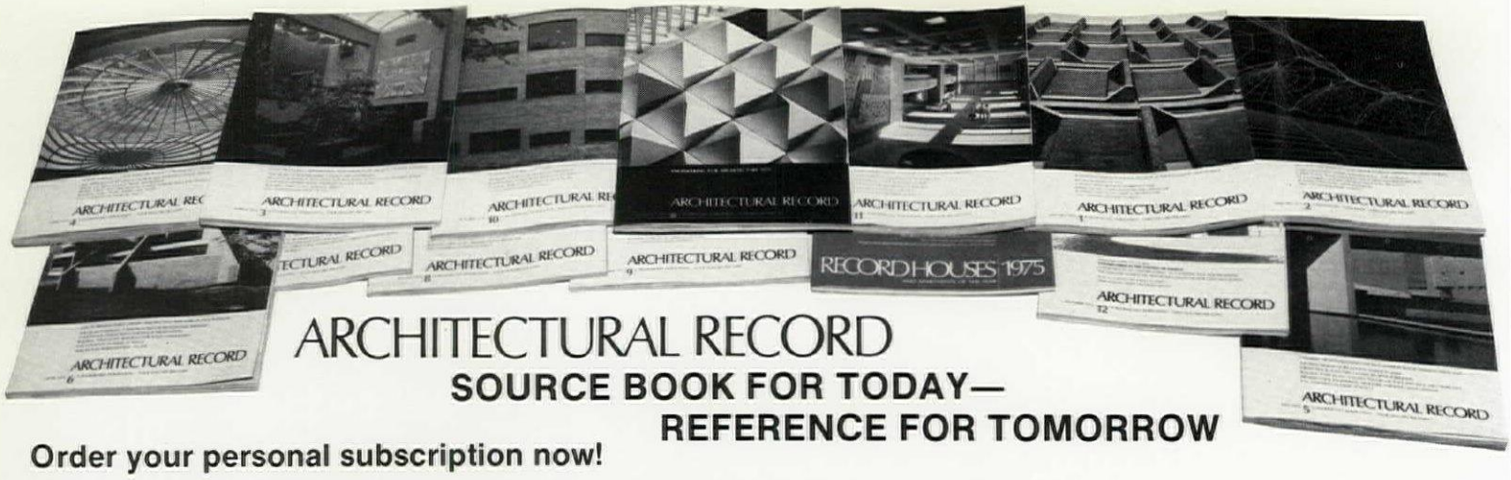
. . . "Choice" means highest grade and choice means almost unlimited combinations of materials, colors and styles.

Sanymetal stainless steel, porcelain on steel, laminated plastic and baked acrylic on steel mix and match . . . with colors — with materials. What an idea! You can call on the rugged strength only steel offers for pilasters where rigidity pays off. Then add the "warmth" of wood grain laminated plastic doors. Or, call on the non-corrosive combination of stainless for pilasters and porcelain for doors and panels . . . you get the features you need and the beauty you want. Sanymetals unique flush, smooth surface with recessed hardware is the final touch. Your Sanymetal Rep has all the facts for the combination of your choice.

Sanymetals

THE *Sanymetal* PRODUCTS COMPANY, INC

1701 URBANA ROAD, CLEVELAND, OHIO 44112



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You can still obtain these useful issues of Architectural Record

1974	(Building Types Study)
January	Record Interiors of 1974; Design for Ski Resorts
February	Industrial Buildings
March	High Rise Office Buildings; Housing in Europe
April	Stores and shops
May	Convention Hotels
mid-May	Record Houses and Apartments of 1974 (Spotlight issue)
June	Public Administration Buildings
July	Community Colleges; New Life For Old Buildings
August	Health facilities; Branch Bank Buildings
mid-August	Engineering for Architecture (Spotlight issue)
September	Religious Buildings; 4 Interiors
October	Museums
mid-October	Product Reports (Spotlight issue)
November	Airports; Houses in San Francisco
December	Conservation in the Context of Change

1975	(Building Types Study)
January	Campus Architecture; Record Interiors of 1975
February	Medical Facilities; Correctional Institutions
March	Housing Design
April	Stores and Shops; High Rise Apartment Design
May	Schools That Reuse Space
mid-May	Record Houses and Apartments of 1975 (Spotlight issue)
June	Buildings for Waste Management
July	Conservation and Reuse of Buildings
August	Bank Design
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September	Hospitals
October	Multi-family Housing
mid-October	Product Reports (Spotlight issue)

The height of good looks can now be 75 feet.

If you want your buildings to have the good looks of glass, you should take a good look at Pilkington's 'Armourfloat'* Suspended Glass Assembly System.

For a start you can think twice as tall. Up to 75 feet. Or in the case of the Sarah Scaife Gallery 42 feet.

You can think smooth and uncluttered too because there are no protruding external mullions.

The assembly is made of safety glass, specially tempered to be unaffected by sudden atomospheric changes. It can be designed to withstand virtually any wind force.

Because it is suspended from overhead it means that should someone drive a 100-ton Henry Moore through it, the panels around the break remain intact, which makes life safer for passers-by.

What's more the design scope is practically unlimited. 'Armourfloat' suspended assembly systems go where you want them to go.

And don't take our word for all this, the design concept has been justified through the UK Government funded Agrément Board.

Write for a full illustrated brochure to Doug Curry, Pilkington Brothers Canada Limited, 101 Richmond Street West, Toronto 1, Ontario. Cables: Pilkho Tor. Telephone: (416) 363 7561.

And you'll discover that with the Pilkington system the sky's the limit. Well, 75 feet anyway.

PILKINGTON

Glass. We make it work harder for you.

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Sarah Scaife Gallery, Pittsburgh.
Architect: Edward Larrabee Barnes–New York.
Installers: Watson-Standard Co.
*Trade mark.


Pedro Cypress
Gray Design #211

Masonite® captures the lost look of Pecky Cypress.

Until now, it would have cost a small fortune to panel a room with Pecky Cypress.

But now you can specify the beauty of Pecky Cypress in durable, economical, hardboard paneling. Only from Masonite. We've captured the rich random look of real Pecky Cypress. Right down to the rare "character marks" and impressions.

Just look at what happens when you put it in a rec room, bedroom or study. Masonite's Pecky Cypress Design turns an ordinary room into a showcase.

And our Pecky Cypress Design paneling features a man-made finish on real Masonite brand hardboard. So it's tough. It can take knocks, bumps and bruises; won't splinter or crack. And like all Masonite hardboard paneling, cleaning Pecky Cypress Design is as easy as a wipe with a damp sponge.

You can put six panels of the Pecky Cypress Design side-by-side without repeating the design. So you can maintain a random planking look, even on long walls.

Pecky Cypress
White Design #210

Pecky Cypress
Golden Design #213

Pecky Cypress
Brown Design #214

So, when you're looking for the elegant authenticity of Pecky Cypress, specify Masonite's new Pecky Cypress Design; it's available in four intriguing finishes.

When you ask for Masonite paneling, make sure you get the Masonite brand.

MASONITE® CORPORATION

29 N. Wacker Chicago, Ill. 60606

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J-M Expand-O-Flash® Expansion Joint Covers. Combine strength with stretch in a prefabricated expansion joint cover.

Roof expansion joints can be a prob
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But the problem is one that's easily
solved.

With J-M Expand-O-Flash Expan
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Expand-O-Flash is the original pre
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Two preformed metal flanges are
joined by a strip of neoprene in a pa
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the neoprene to the metal. Closed
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the underside of the neoprene.

The metal provides strength; the
neoprene provides stretch—two re
quirements for any effective joint cove

Expand-O-Flash Expansion Join
Covers are extremely versatile, offered
in: curb form; straight flange; WS
Waterstop—for vertical wall expan
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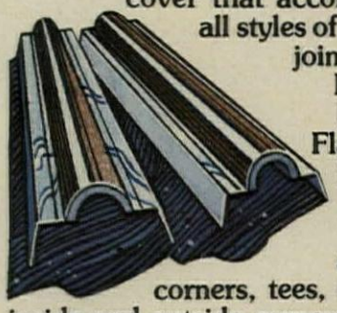
all styles of expansio
joint opening



In additio
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in a variet
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shapes fo
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All install quickly and easily to for
a strong yet flexible watertight, weat
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Expand-O-Flash Expansion Join
Covers are sold by distributors natio
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Korte, 303/770-1000.

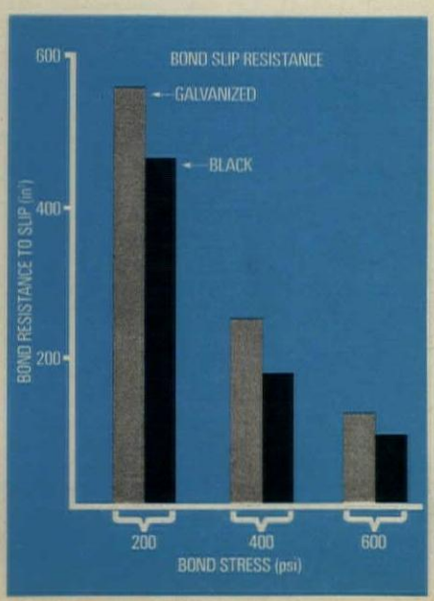
The single-source built-up roofing system

For more data, circle 94 on inquiry card

Johns-Manville

Galvanizing strengthens concrete's grip on reinforcing steel and then prevents corrosion from prying it loose.

Extensive tests employing American Concrete Institute procedure 208-58 showed that the bond of concrete to galvanized steel was equal to or usually better than the bond of concrete to black steel. The graph shows typical results. The layer of zinc which galvanizing metallurgically bonds into the steel rebar insures against subsurface rust pressure which can force the concrete away from the steel, causing cracking, staining and spalling. Even in the aggressive marine environment of Bermuda, galvanized rebar has kept its grip on concrete for over 25 years with no sign of loosening.



An increasing number of architects and highway engineers are specifying galvanized rebar to prevent concrete deterioration in buildings and bridge decks.

If you would like more information, write on your letterhead for a copy of our booklet "GALVANIZED REINFORCING BAR—Undercover Protection For Concrete."

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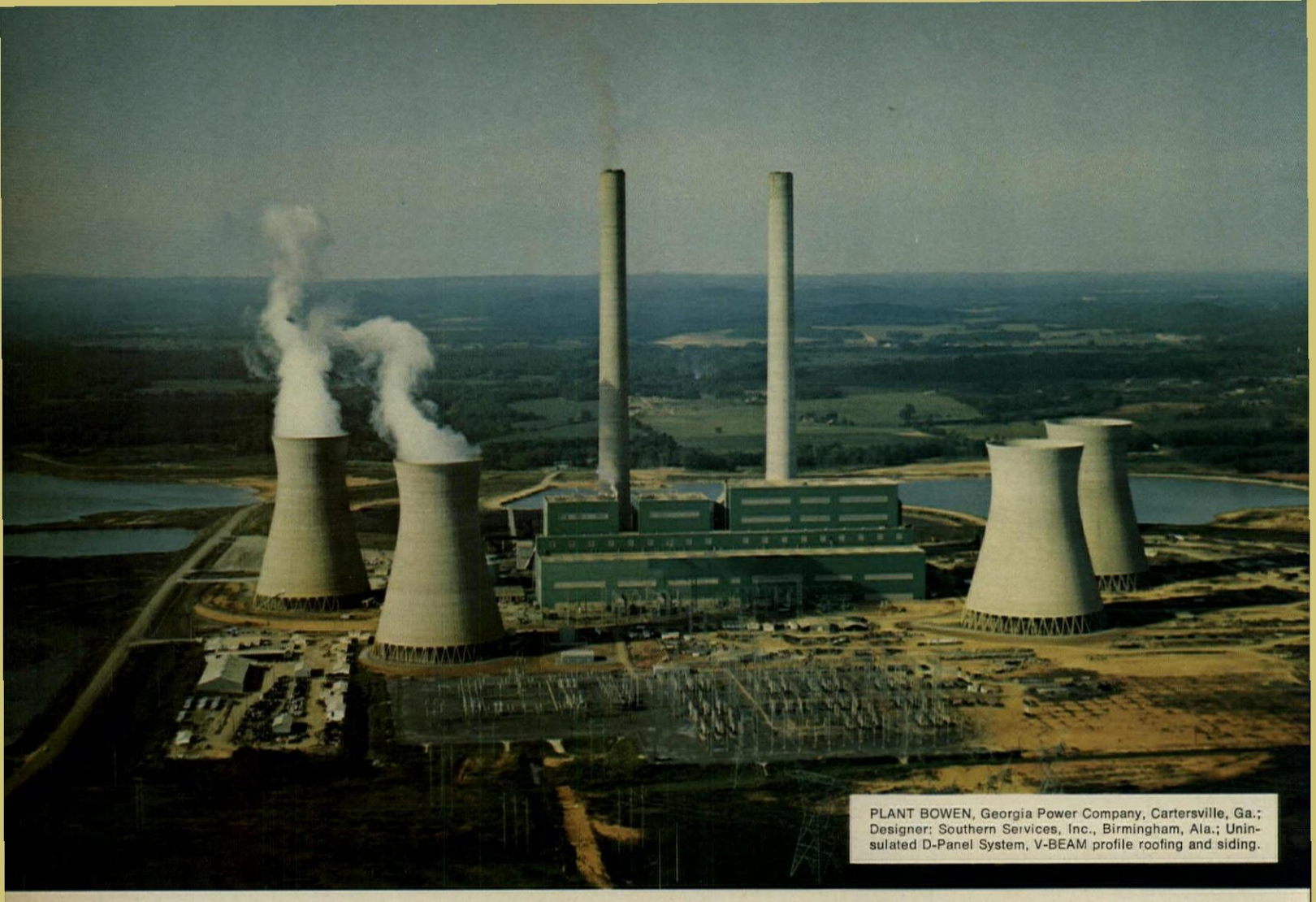

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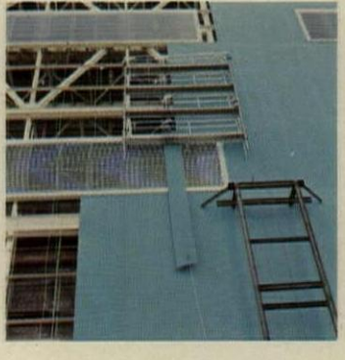

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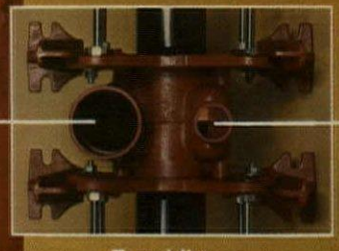
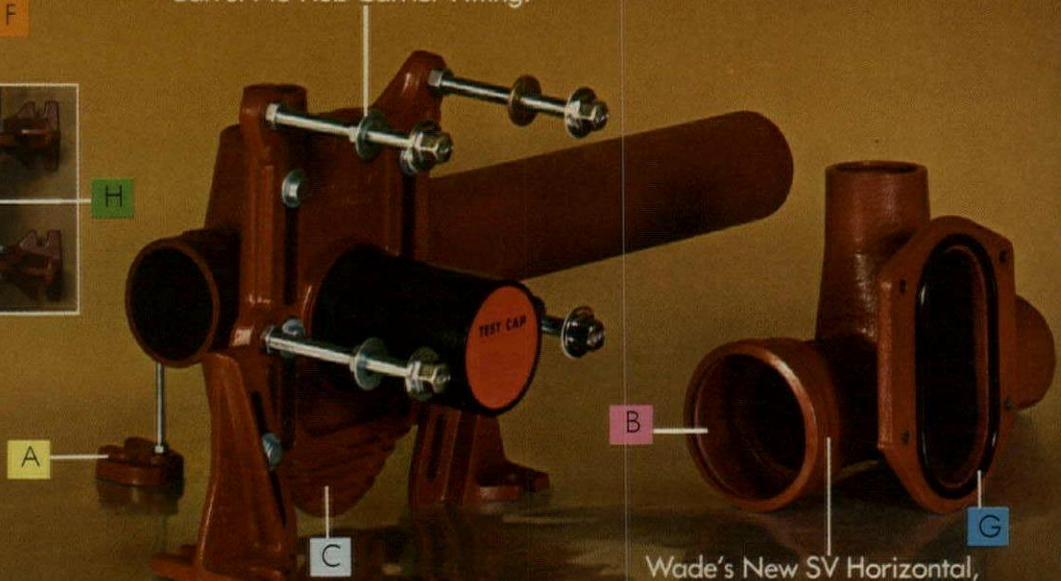


Top View

Wade's New Horizontal Long Barrel No-Hub Carrier-Fitting.



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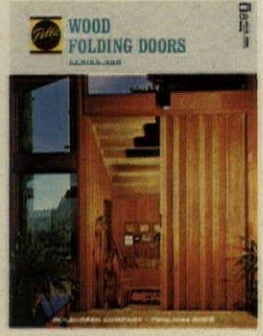

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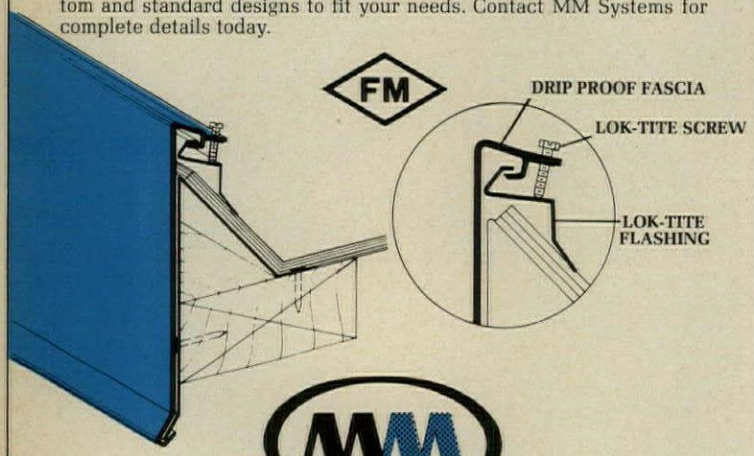

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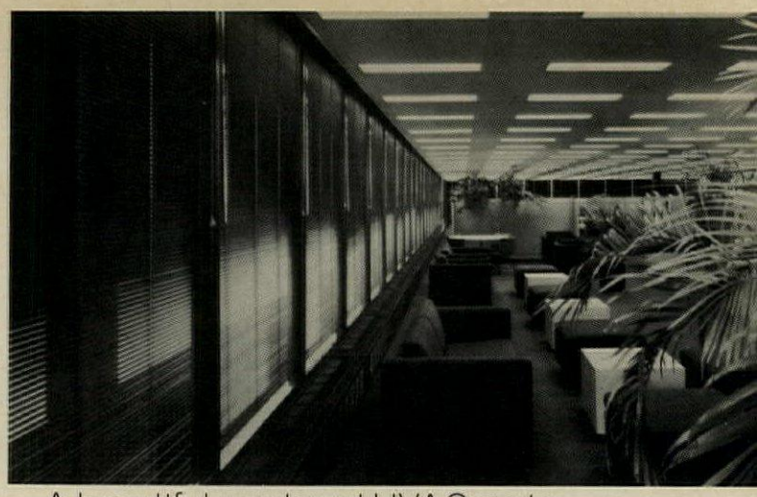

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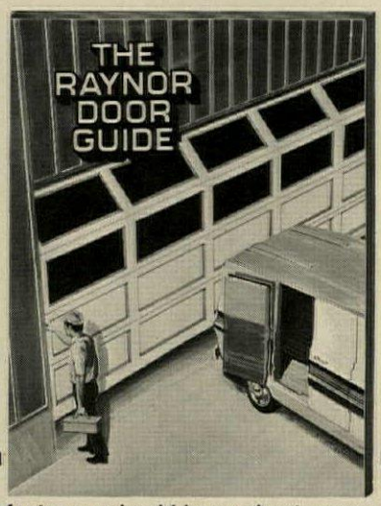

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Structural Engineers: Paul Weidlinger, New York, N.Y.
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General Contractor: Turner Construction Co.,
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Exterior Structural Steel Fabricator/Erector:
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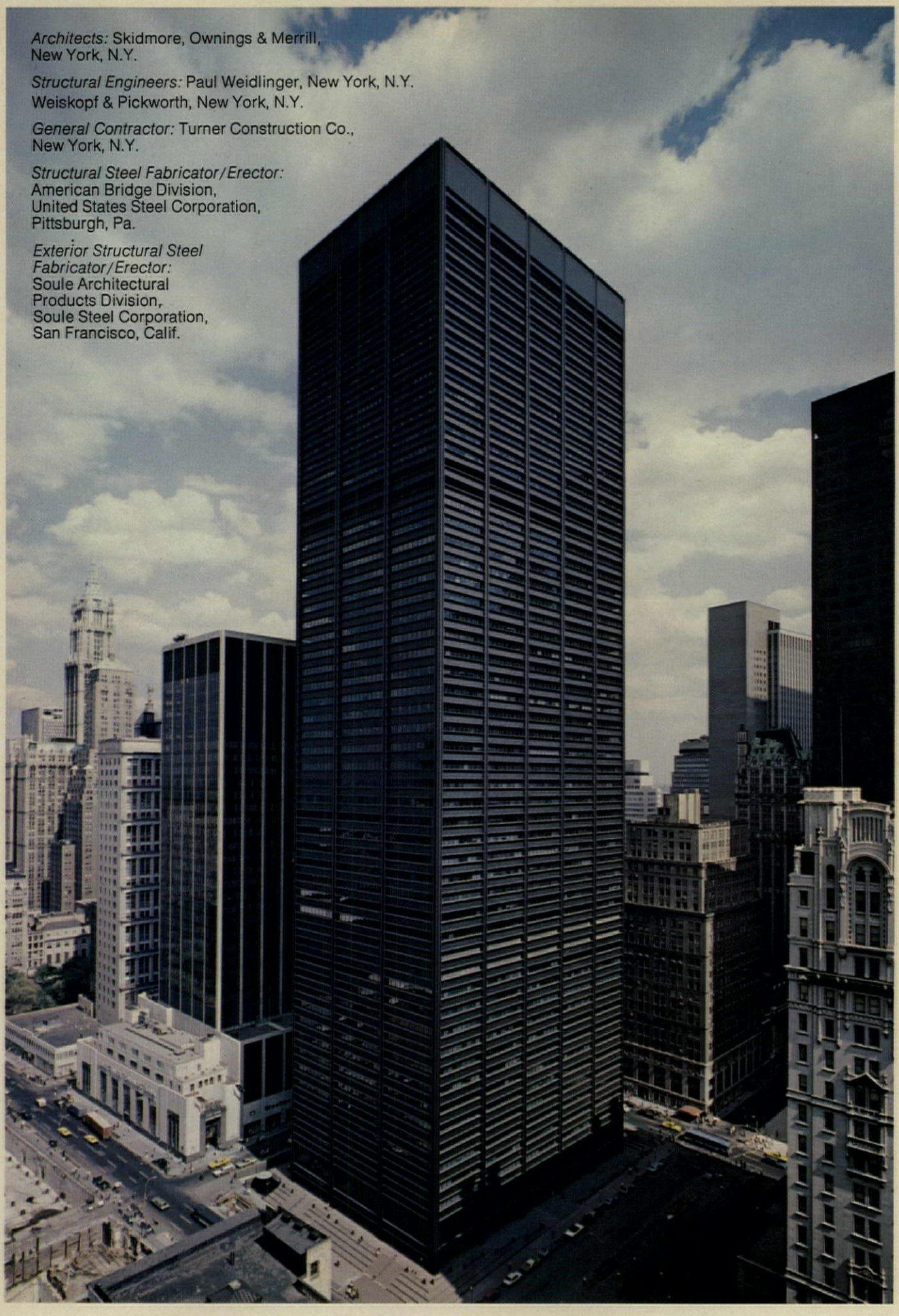

Flame shielding concept proves feasible in exposed steel high-rise building.

To prove that flame-shielding works, tests were conducted on a full-scale mock-up.

There's a new, economical way to fire protect exposed steel. It's called flame-shielding and it eliminates the need to cover exterior surfaces with fireproofing material.

This new concept was utilized in a high-rise office building for the first time in the One Liberty Plaza Building, New York City.

Months of elaborate testing resulted in the "Board of Standards and Appeals of the City of New York" granting special permission to use exposed steel without conventional fire protection. The tests convinced them that flame-shielding really works.

The flame shields, attached to the flanges of the spandrel girders, deflect flame outward—away from the girders—preventing it from curling back onto the exposed steel surfaces.

Spanning 47'6", these spandrel members consist of 70-inch-deep built-up steel girders with 14 gage steel sheet flange shielding. The girder, as a structural member, supports cladding, frames for fixed and vertically pivoted windows and a portion of the floor construction. Cladding for the column and flame shielding for the spandrel flange is galvanized sheet steel while the spandrel girder steel is ASTM A36.

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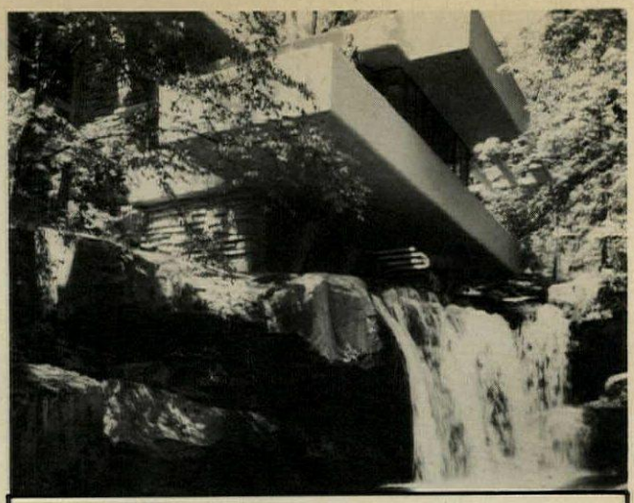

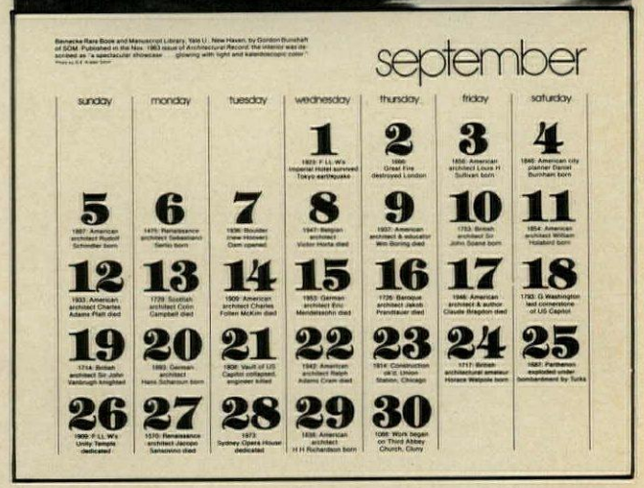

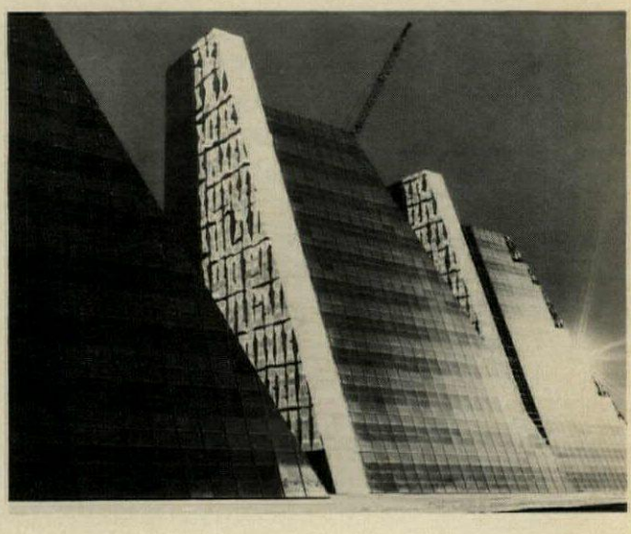

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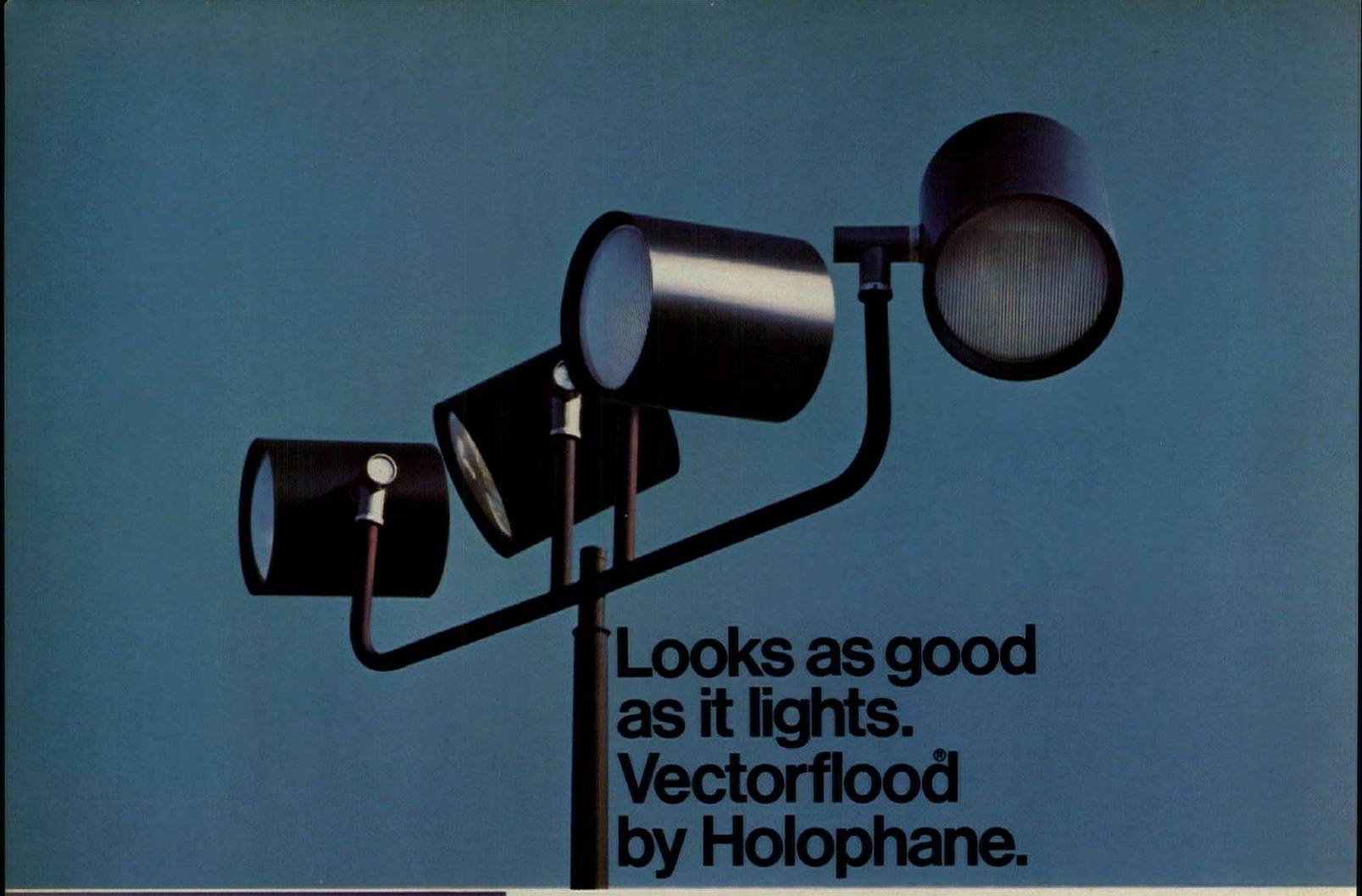

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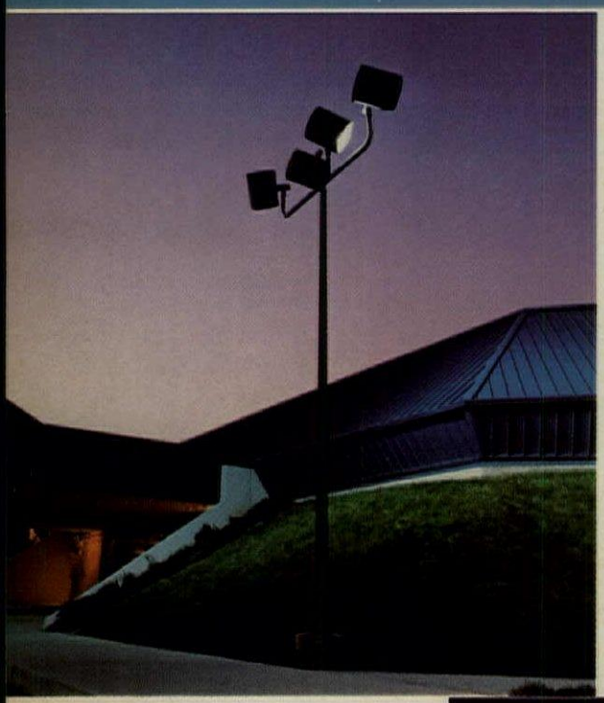

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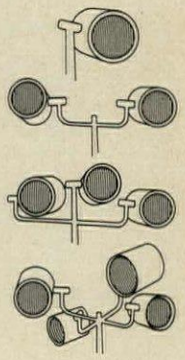

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Structural Engineer:
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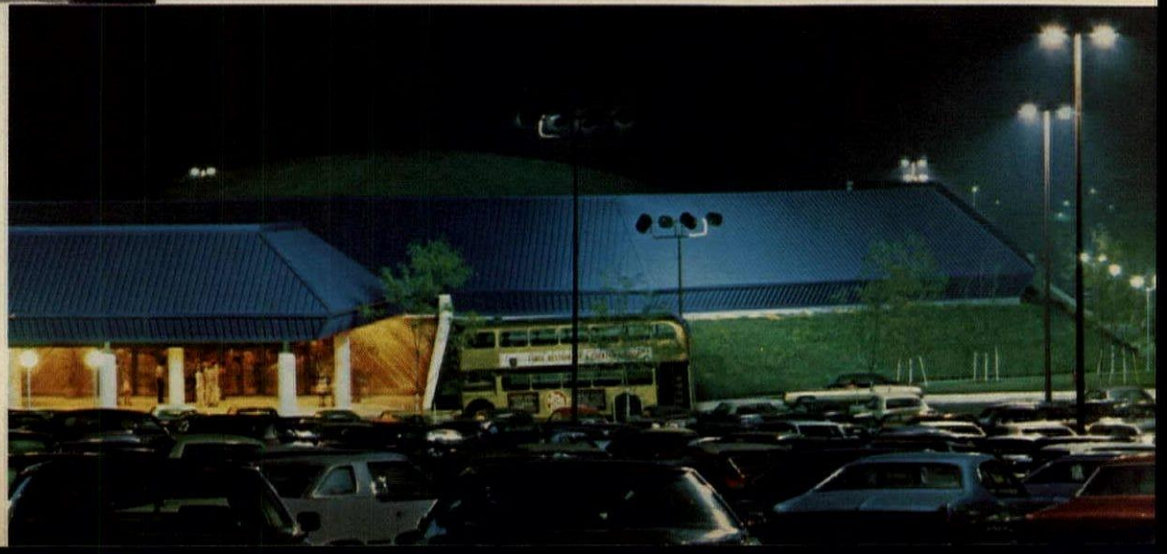

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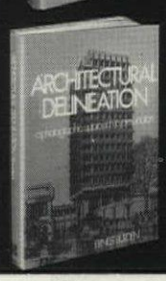

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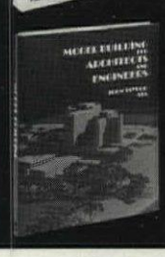

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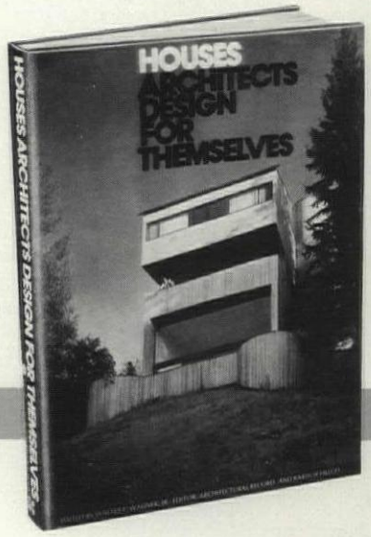

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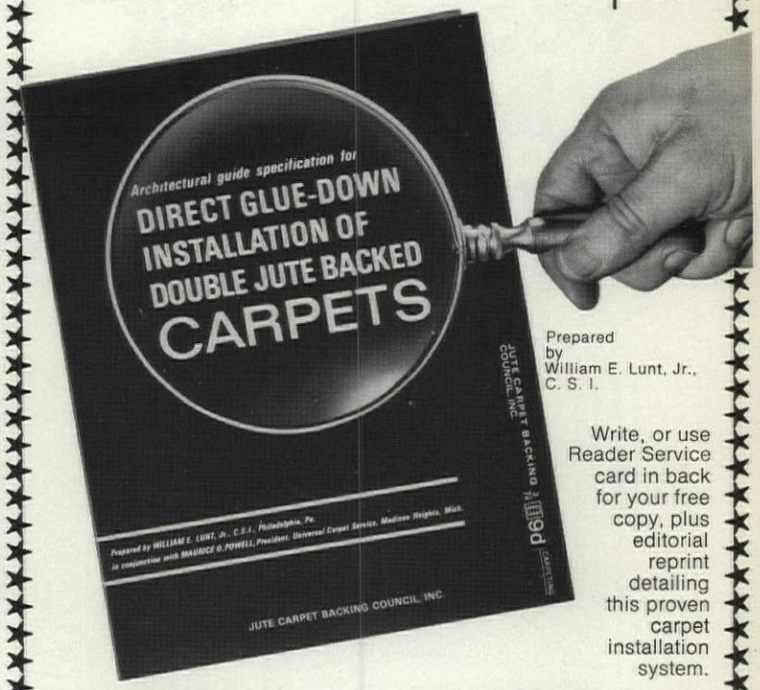

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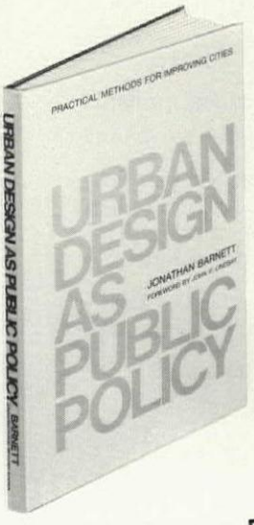

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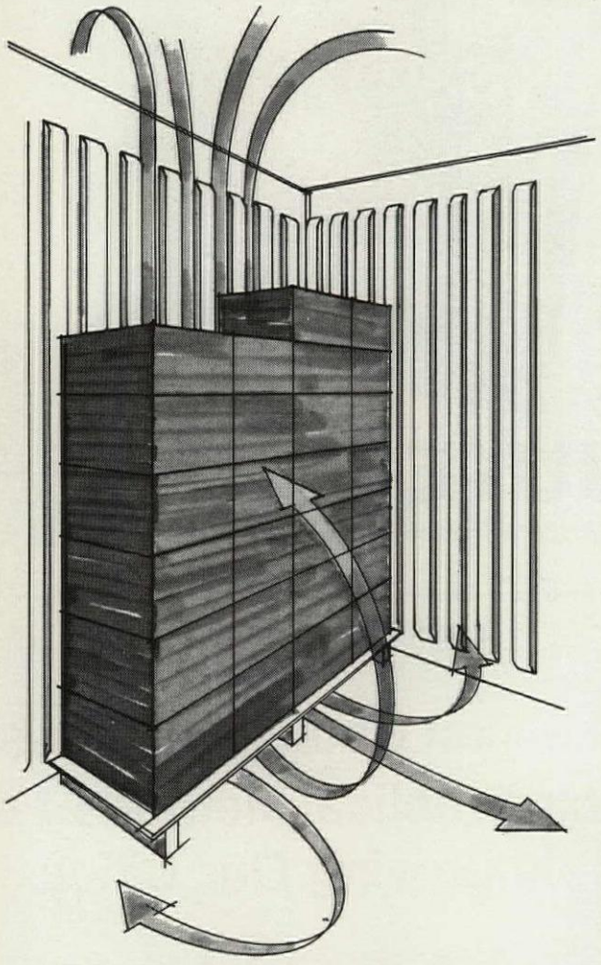

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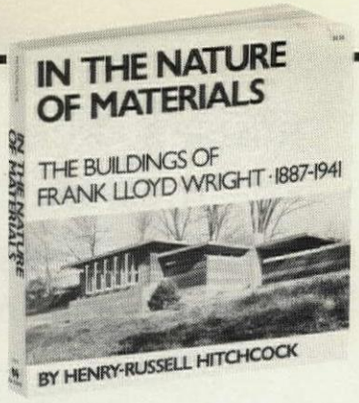

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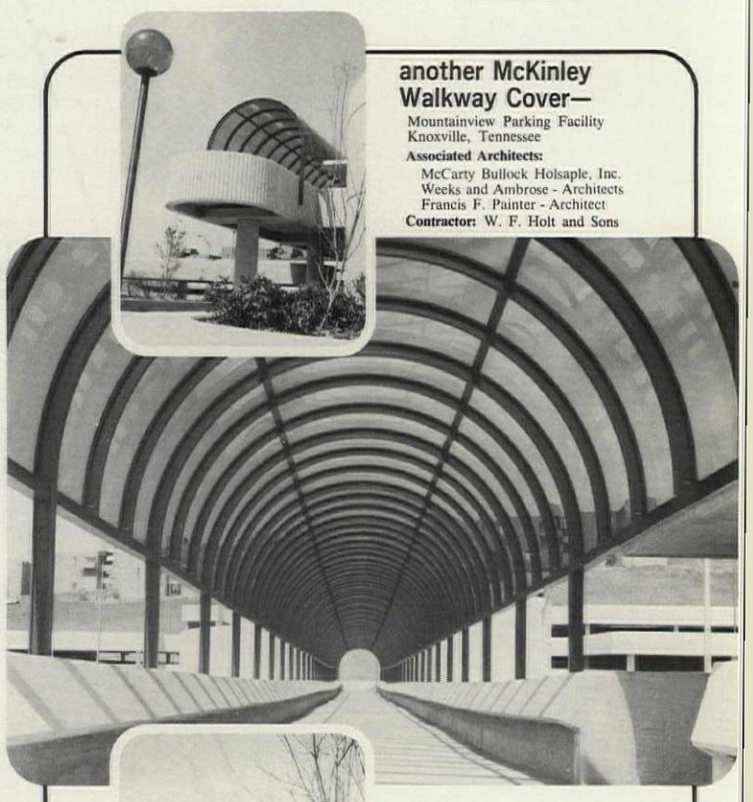

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4. Location of Known Office of Publication—1221 Avenue of the Americas, New York, N.Y. 10020.

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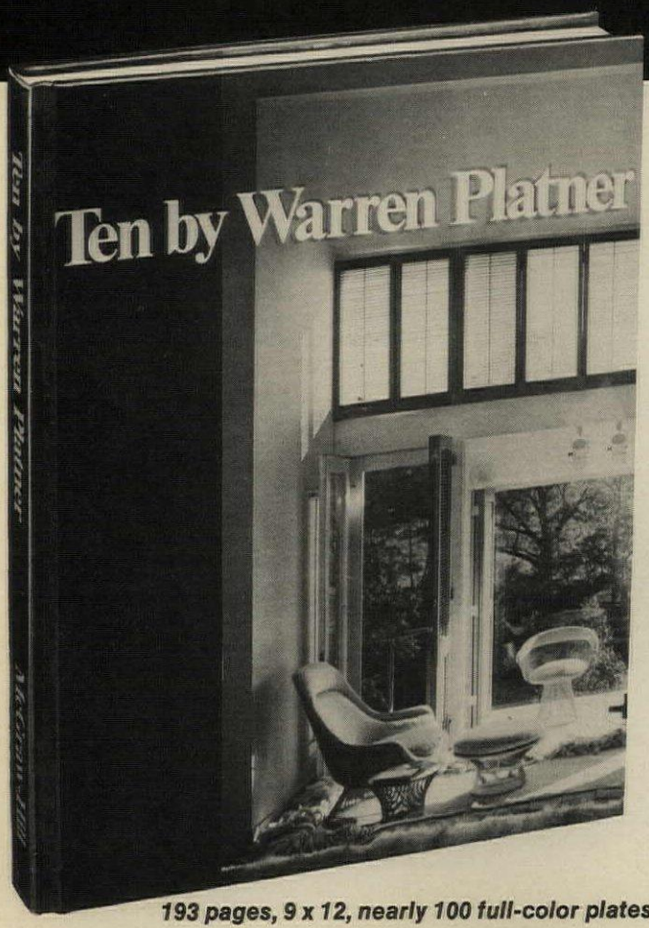

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The firms of William Jordan, Architect and Edward J. Meiers, Architect, both of Nashville, have formed the firm of **Jordan & Meiers Architects, P.A.** with offices at 2020 21st Avenue South, Nashville, Tenn.

Friedman and McKenna AIA Architects Inc., have expanded to new offices located at 4100 Kennedy Boulevard, Suite 300, Tampa, Fla.

Edwin M. Bennett, formerly a partner in the firm of Tucker, Sadler and Bennett, has established his own structural design consulting firm, **Bennett Engineers,** at 7840 Mission Center Court, San Diego, Cal.

The name of Loebl Schlossman Bennett & Dart, architects and engineers, Chicago, has been changed to **Loebl Schlossman Dart & Hackl.**

Charles H. Brittain, AIA and Charles Sammy Thompson, AIA have annouced the formation of **Brittain/Thompson, Architects,** 805 American Federal Building, Macon, Ga.

The Ziedler Partnership Inc., Detroit, has expanded to new Ann Arbor offices at 836 Cliffs Drive, Ypsilanti, Michigan.

The new firm of **Brooks Waldman Associates** has opened its offices at 7500 West Mississippi, Denver, Colo.

Broome, Selig, Oringdulph and Partners has reorganized and changed its name to **Broome, Oringdulph, O'Toole, Rudolph and Associates,** 733 N. W. 20th, Portland, Ore.

The partners and associates of The Office of Mies van der Rohe have announced their new office name to **Fujikawa Conterato Lohan and Associates** with offices at One Illinois Center, Chicago, Ill.

The architectural and planning firm of **Haas:Greenfield:Associates** has moved to new quarters at 2438 W. 3rd Street, Los Angeles, Cal.

Stegner • Hendrickson • McNutt • Sullivan, architects and engineers, has opened a branch office at 6750 France Avenue South, Suite 123, Minneapolis. The firm also has offices in Brainerd and Marshall, Minnesota.

Miller, Wihry and Lee, Inc., Louisville, has opened an office at 1511 K Street N.W., Washington, D.C.

Promotions, new associates

James Falick, AIA has joined The Klein Partnership, Houston, as a principal and director of Health Care Facilities.

Daniel, Mann, Johnson, & Mendenhall, Los Angeles, has announced the appointment of **Richard J. Bouchard** as vice president and director of Transportation Programs.

Der Scutt has joined the firm of Poor, Swanke, Hayden & Connell, New York City, as an associate.

The firm of Collins and Rimer, Architects Inc., Cleveland, has announced that **Randall J. Gordon** is now an associate of the firm.

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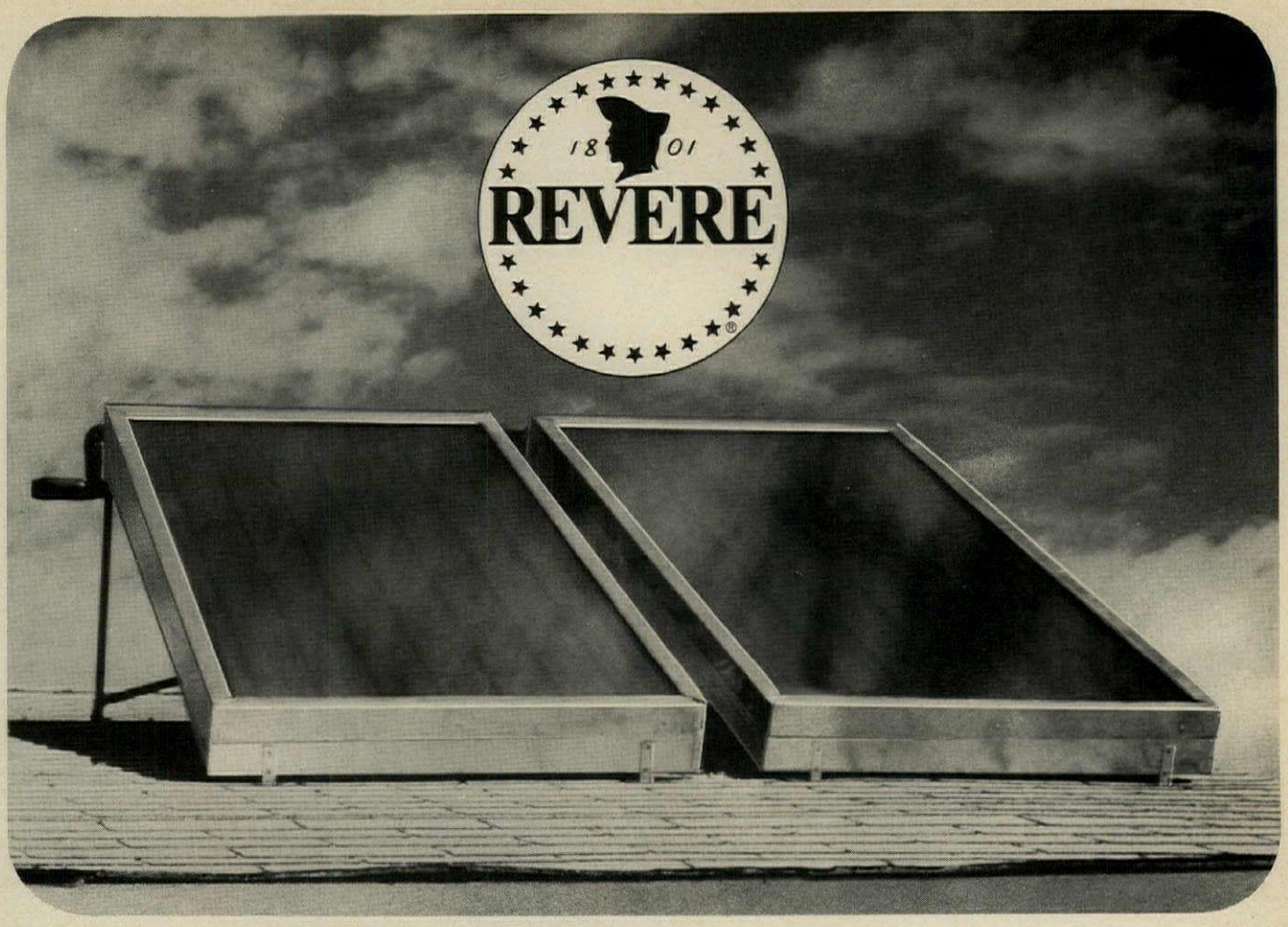

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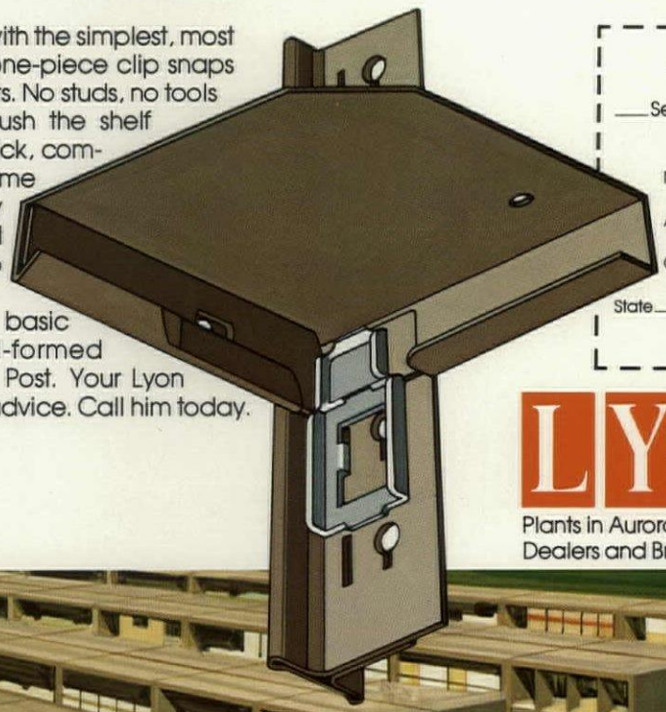

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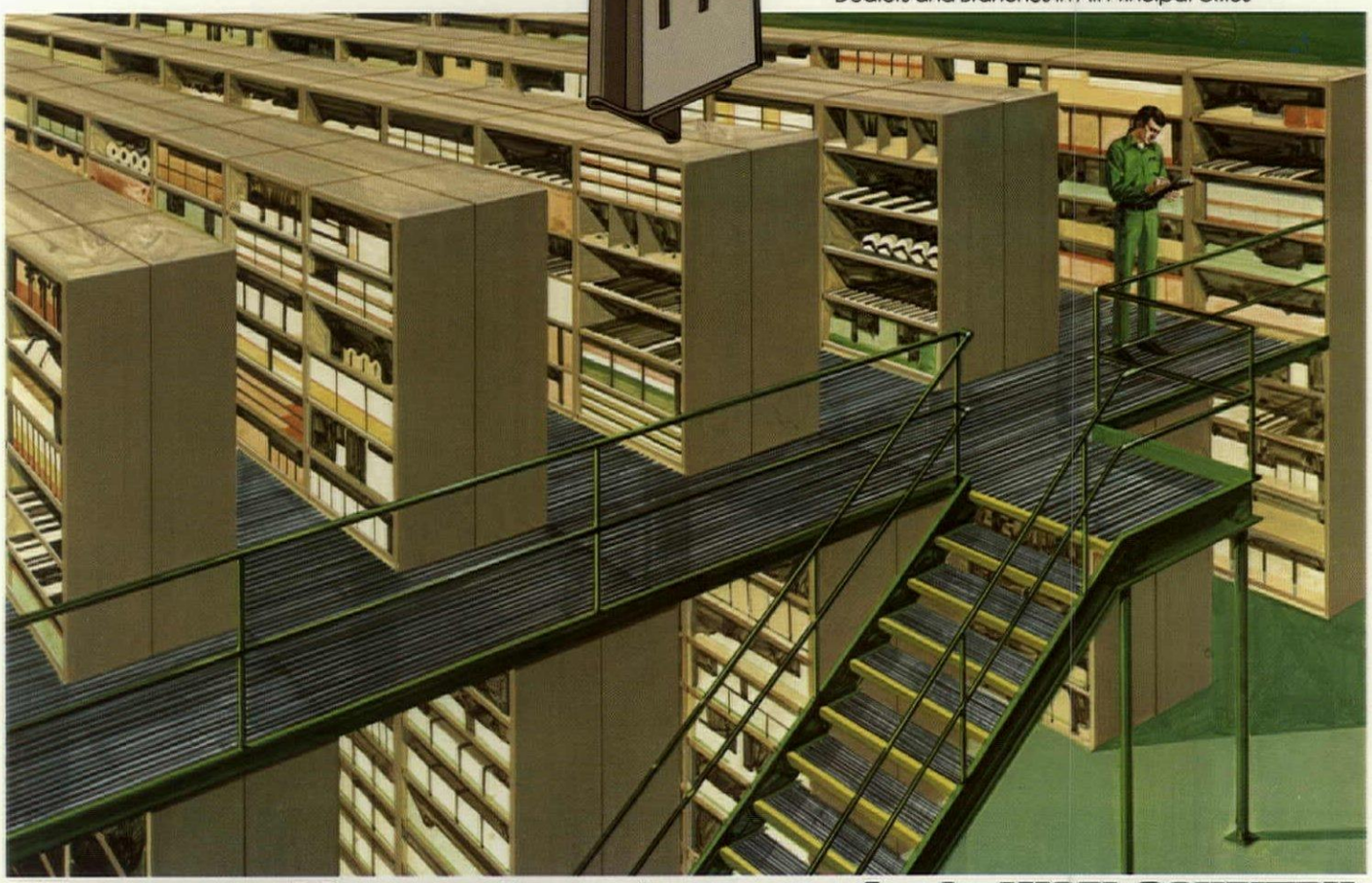

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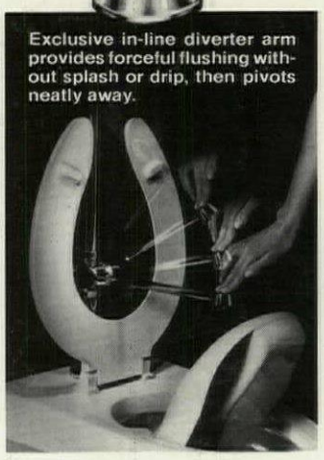

Exclusive in-line diverter arm provides forceful flushing without splash or drip, then pivots neatly away.

Eliminating the expensive installation of a hose spray bedpan washer with its separate pedal valves, etc., the Sloan Slimline Bedpan Washer saves both time and money.

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