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KOHN PEDERSON FOX FIND VARIED FORM IN A NEW FUNCTIONALISM
PHOENIX' LATH HOUSE: CENTERPIECE FOR URBAN REVITALIZATION
ROUND TABLE: STEEL STRUCTURES IN ARCHITECTURE
BUILDING TYPES STUDY: FIVE NEW ENGLAND SCHOOL BUILDINGS
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ARCHITECTURAL RECORD

JUNE 1981

6

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Letters to the editor

I am very pleased to have been included in the special interiors issue [RECORD, mid-February 1981]. It is a particular honor to be in the first of what I believe will be an important annual event in publishing.

Robert A. M. Stern
Robert A. M. Stern Architects
New York City

Record Interiors is a knockout!

C. David Robinson
Robinson Mills & Williams
San Francisco

What an exceptional program the Aga Khan awards was—from even a first glance-through of the projects shown in RECORD [November 1980, pages 104-127], the impression was refreshing. Instead of "the latest thing," we see "the realest thing," based in care and history. When we read about the make-up of the jury, we can understand that the projects were looked at very differently from the usual way of awards programs. Involvement of such diverse points of view as philosophy, history, demography and sociology broaden the base no end. And then, of course, these people were asked to look into the projects and behind them, instead of just at them.

I wish more architectural projects could not only be judged this way but could be designed with such a variety of input.

Sarah P. Harkness, FAIA
The Architects Collaborative
Cambridge, Massachusetts

I must congratulate you on your comprehensive coverage of the various projects that received the 1980 Aga Khan Awards in your issue of November 1980. Your magazine reaches us in our part of the world after a gap of almost five or six months, and hence the issue has only just been received by us. As one of the recipients of the Aga Khan Awards for Architecture 1980, I am compelled to point out an error in the architectural credits for the design of the Mughal Hotel at Agra. The project was designed by the totally Indian firm ARCOP Design Group, and not by Arcop Associates of Montreal, as mentioned in your issue.

I must of course concede that the responsibility for this misreporting does not lie with you—as most of the printed literature given by the Aga Khan Award for Architecture mentioned the firm responsible for the project as Arcop Associates. However, the correct facts need to be presented.

Ranjit Sabikhi
The Design Group
New Delhi, India

It was a delight to see Fay Jones's Thorncrown Chapel on the cover of

RECORD [March 1981], and the fine coverage of its origin in the mind of a nonarchitect, and its poetic revelation by a very sensitive designer. It is evident that the basic principles at work in this tiny gem of nature are those of the Old Master, properly sensed and understood. This in itself is a tribute to Jones, since so many architects cannot bring themselves to participate in the sometimes anguishing slow growth that is required to learn a grammar before being able to speak eloquently.

This little building says more about the art of architecture than all of the other current stylistic buildings (completely without style) being created by very gifted architects hell-bent on a personality cult that makes Frank Lloyd Wright's pale in comparison. As I view what is being done in the name of publishing and the tragic grab for "fame," I wonder what these very talented architects could be doing if they would concentrate on the reality of life today (any day). I believe that we would all be surprised. There is much that is good that is being done, but my God!, most of these things are exercises in utter futility.

I believe that it was Lewis Mumford who wrote that the artist (architect) goes through three stages of development. The first is that of the infant who shouts, "Look at me!" The second is that of the maturing artist who says, "I have something to show to you." The third is that of the mature artist who quietly leaves a beautiful gift and asks for no headlines proclaiming his unselfish act. I believe that most of us are stuck in category number one, or else my eyes are deceived by the plethora of pretty drawings, born-again bad history, and esoteric polemics devoid of any true meaning for nonacademic humanity.

Thanks again for the coverage of Thorncrown Chapel. And thanks again to Fay Jones, whose career seems to fall more toward Mumford's category number three, whether published or not.

Robert C. Broward, Architect
Jacksonville, Florida

Your student survey (RECORD, January 1981, pages 84-89) was extremely instructive. As well-educated and concerned young laymen about to turn professional, the students have opinions that may be as good a source of market research as we have. It seems significant, therefore, that the soft-edge, humanist, organic school of Wright, Aalto and Kahn overwhelmed Corbu by three to one. The runaway vote for Corbu's least Cubist work, the chapel at Ronchamp, would seem to have made the landslide complete.

Walter A. Rutes, FAIA
Cordova, Tennessee
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Calendar

JUNE

5-6 Seminar, "The Design and Analysis of Earth Integrated/Solar Buildings," sponsored by Architectural Extension, Oklahoma State University. Contact: Jody Proppe, Hon. AIA, Architectural Extension, Oklahoma State University, 115 Architecture Building, Stillwater, Okla. 74078.

15-17 Workshop, "Design of Residential Passive Solar Systems," sponsored by the University of Delaware Institute of Energy Conversion. Contact: Institute of Energy Conversion, University of Delaware, One Pike Creek Center, Wilmington, Del. 19808.

15-19 Professional Development series, Value Engineering and Life Cycle Costing Workshops, sponsored by the American Consulting Engineers Council and AIA; at the Hyatt Regency Houston, Texas. Program will be repeated Sept. 28-Oct. 2 in Las Vegas and Nov. 2-6 in Mexico City. Contact: ACEC Professional Development and Meetings Division, 1015 15th St., N.W., Washington, D.C. 20005.

16-19 NEOCON 13, at the Merchandise Mart, Chicago.

28 through July 2 Annual meeting of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.; at the Netherland Hilton Hotel, Cincinnati. Contact: Ralph Burkowski, ASHRAE, 345 E. 47th St., New York, N.Y. 10017.

26-27 Professional Development program, "Architects and Real Estate Development," sponsored by the California Council of AIA; held in San Diego. Contact: CC/AIA, 1414 K St., Suite 320, Sacramento, Calif. 95814.

JULY

Through July 5 Exhibition, "Contemporary Classics: Furniture of the Masters," at the High Museum of Art, 1280 Peachtree St., N.E., Atlanta, Ga.

10 Seminar, "Design/Build and the Law (for Architects, Engineers and Owners)," at the Fairmont Hotel, San Francisco. Program will be repeated Sept. 17 in Washington, D.C., Oct. 15 in Chicago and Nov. 11 in Dallas. Contact: ARCHITECTURAL RECORD SEMINARS, 1221 Avenue of the Americas, New York, N.Y. 10020 (212/997-3088).

24-27 ASID National Conference and International Exposition of Designer Sources, "Celebration '81: The First 50 Years." Contact: Ed Gips, Conference Coordinator, ASID, 730 Fifth Ave., New York, N.Y. 10019.

25 through September 15 Exhibition, "Marcel Breuer: Furniture and Interior Design," at the Museum of Modern Art, 11 W. 53rd St., New York, N.Y.

Through September 15 Exhibition, "Metaphors for a Sense of Place: Wall Street at 'O' Gravity," drawings by architect Grover Mouton; at The Lobby, 369 Lexington Ave., New York, N.Y.

ARCHITECTURAL RECORD (Combined with AMERICAN ARCHITECT, ARCHITECTURE and WESTERN ARCHITECT AND ENGINEER) (ISSN0003-858X) June 1981, Vol. 169, No. 8. Title® reg. in U.S. Patent Office, copyright© 1981 by McGraw-Hill, Inc. All rights reserved. Indexed in Reader's Guide to Periodical Literature, Art Index, Applied Science and Technology Index, Engineering Index, and The Architectural Index.

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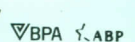
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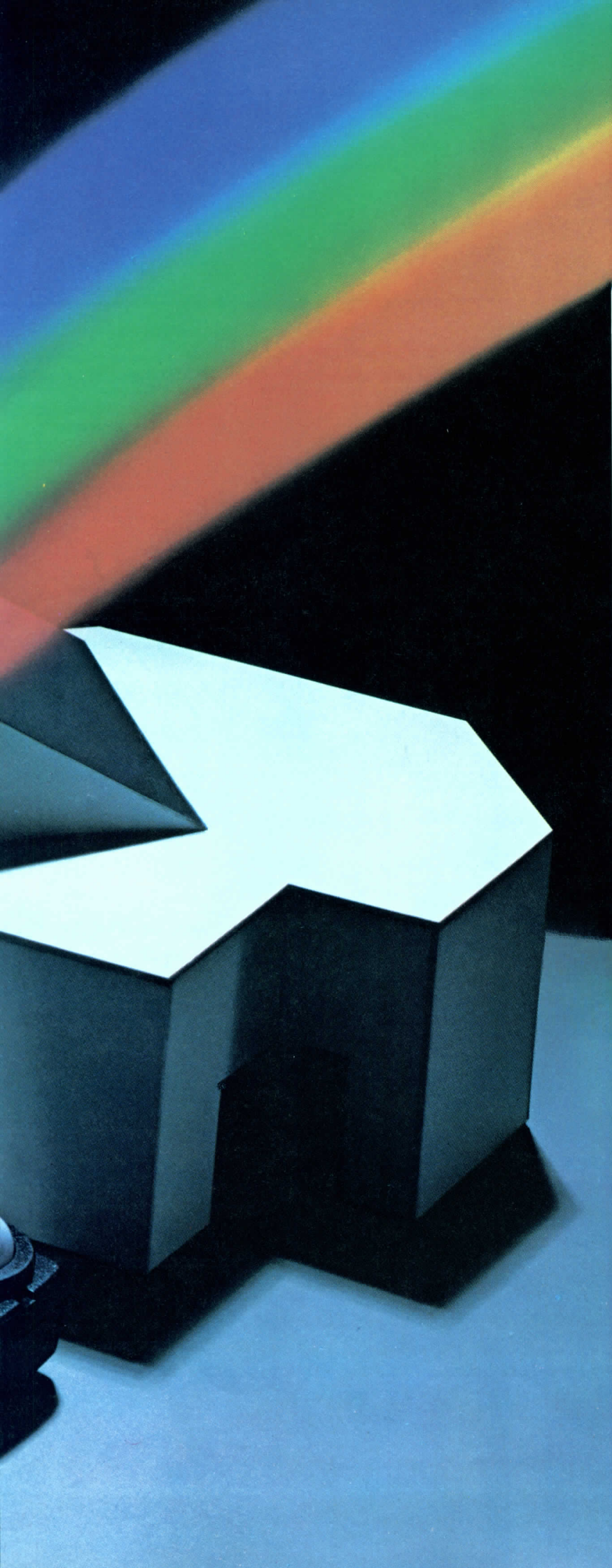
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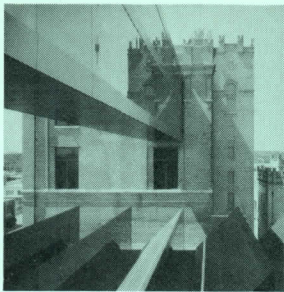
THE JURY Respected professionals in the fields of architecture and engineering will judge the entries.

HOW TO ENTER The entry package has all the details. Write Mary G. Reinbolt, Department 123, Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659. Or call her at (419) 248-8053. Entries must be received no later than August 28, 1981.

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THE RECORD REPORTS

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Something big is happening in a big hurry in the design of those big office towers

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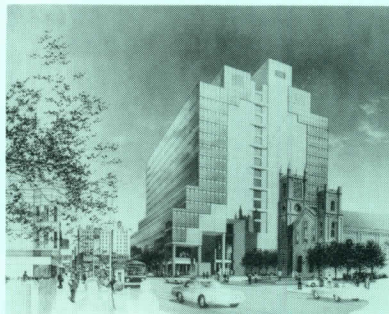
33 News in brief

35 News reports

An exhibition entitled "Marcel Breuer: Furniture and Interiors" will open at New York's Museum of Modern Art next month; Knoll International honors Breuer with the first GFI/Knoll Creative Leadership Award. The American Consulting Engineers Council is launching a multi-million dollar advertising campaign. The Department of Housing and Urban Development (HUD) is about to issue an order deregulating housing standards. White House budget cuts may count the public buildings program as another casualty. The Empire State Building celebrates its 50th birthday.

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The world's largest wood-domed sports and convention facility. The new Pitney Bowes Corporate Center designed by I.M. Pei & Partners. The winning design for a \$70-million Federal office complex in New York. A California library by Albert C. Martin and Associates. A municipal Center in New Jersey by The Hillier Group. A major mixed-use development for Washington by Perkins & Will.



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Architect Paul W. T. Pippin suggests how firms of all sizes can operate more effectively by coordinating project management with design and production.

67 America's "new beginning:" a big plus for industrial building

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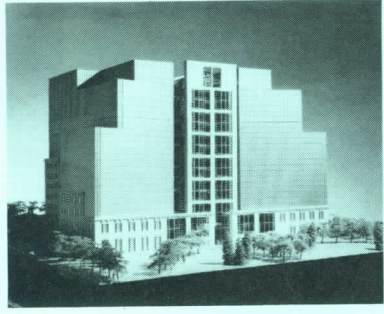
69 Building costs

Metals prices are up, lumber down—but over-all costs are holding steady, according to surveys by McGraw-Hill Cost Information Systems.

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81 Kohn Pedersen Fox finds varied form in a new functionalism

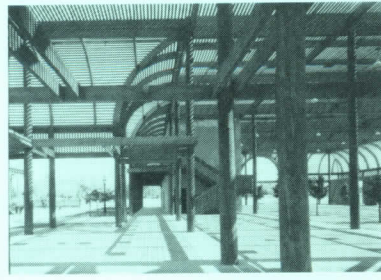
A New York firm, examining the design of office buildings, for clients both corporate and commercial, finds a new definition of functionalism—one that takes into account not only the internal forces of program needs, but external forces like urban development, neighboring architecture, pedestrian and driver perceptions, and a place on the skyline.



Jack Horner

92 An old brewery born again as the San Antonio Museum of Art
Cambridge Seven Associates and Greyhound Designgroup transform the handsome turn-of-the-century Lone Star Brewing Company into an outstanding new museum.

100 Open-air pavilion complements historic area
Designed by Robert Frankeberger, the Lath House is a major element in a grand scheme to revitalize downtown Phoenix. As part of a development called Heritage Square—located on the original townsite—the Lath House enhances a group of historic 19th Century houses.



Wayne Thom

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112 Five schools in New England
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118 Addition to Martha's Vineyard Regional High School Martha's Vineyard, Massachusetts
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120 Watson Hall Hotchkiss School Lakeville, Connecticut
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Robert Perron

122 Flobelle Fairbanks Burden Classroom Building, Portsmouth Abbey School Portsmouth, Rhode Island
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124 Dining hall and offices Connecticut Junior Republic School Litchfield, Connecticut
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In a meeting co-sponsored by ARCHITECTURAL RECORD and the American Iron and Steel Institute, a group of 21 architects, engineers, academics and steel-industry executives discussed wide-ranging questions on steel and architectural design, new fire protection approaches, and new developments in structural design.

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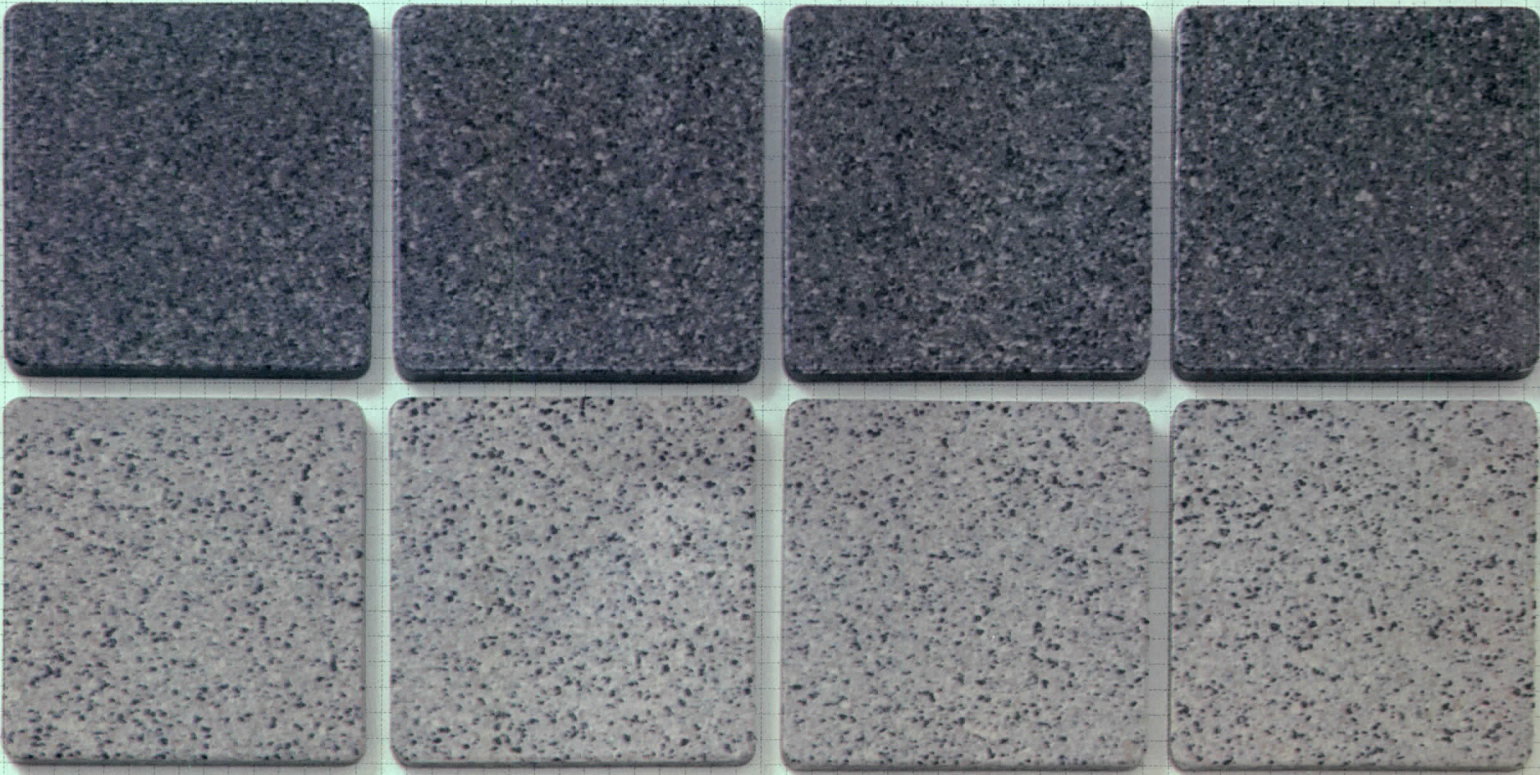
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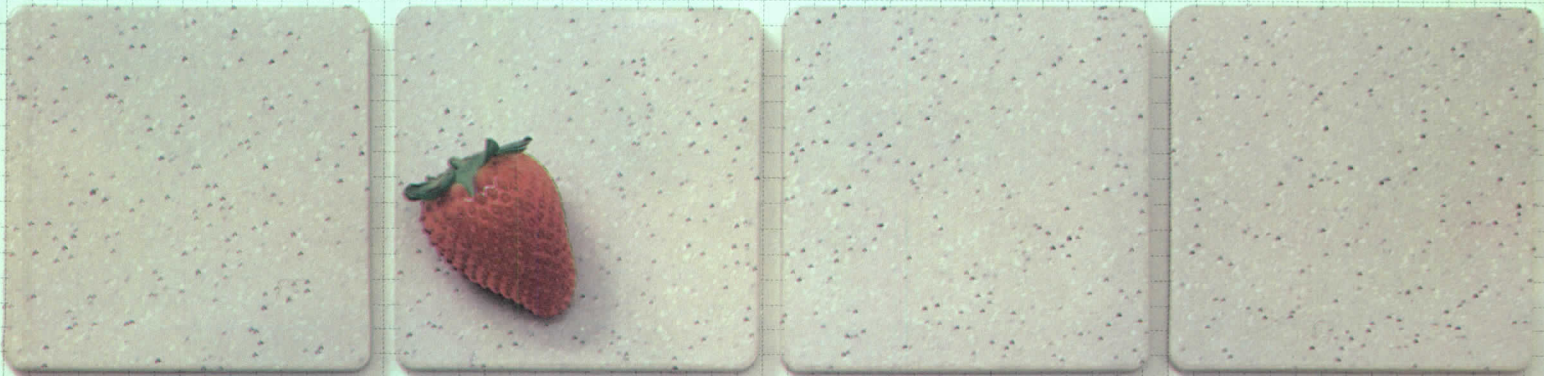
NEXT MONTH IN RECORD

Building Types Study: Record Apartments 1981
The editors of ARCHITECTURAL RECORD have selected six projects that represent current trends in multi-family housing. From a five-unit luxury condominium in Los Angeles to a renovated 1813 nail factory in Connecticut to Irving Gill-inspired garden apartments in Houston, the work being premiated in Record Apartments 1981 suggests the range of solutions appropriate to specific housing problems. The tie that binds this compendium is a consistent sensitivity—in scale, materials, and forms—to the program, the economics, and the context.

Porcelain Floor Tile



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Something big is happening in a big hurry in the design of those big office towers

For the better part of the last twenty years, everyone has been complaining about those "boring office buildings." But until recently no one has done much about it. The main reason those "cereal boxes" have popped up like dandelions is that (to quote from this month's article on new tower designs) "developers saw that the esthetic and intellectual rigor imposed on the building type by Mies van der Rohe was susceptible to low-cost knock-offs." That was just what most client/developers wanted, and their architects went ahead and designed them until the "better streets" of many of our cities are literally lined with these corporate clones. And most of those new buildings have generated about as much excitement and enthusiasm as a new dandelion.

There was a time when the arrival of a new "skyscraper" was a real event. Raymond Hood's Chicago Tribune Tower and Cass Gilbert's Woolworth Building and William Van Allen's Chrysler Building (and a host of others like them) made an impact on their cities, made an impact on the public, and made an impact on architectural thought. They were exciting!

Well, the excitement is coming back. Across the country we see rising a whole new breed of "skyscrapers"—buildings that make a mark on the skyline, that have individuality, that relate to the public passing by or through. Buildings that relate not just to the bottom line, but to the new concerns imposed by energy costs, and the new concerns about fitting their urban context. Buildings that explore new design directions, that can have an impact on architectural thought, and that (think of it!) must have been fun to design.

When did the new excitement start? You can pick your own "first glimmer"—and somebody will surely write a book on "The Origins of the New Skyscraper" about five years from now. For me (though it was mostly a technological experiment) SOM's "Big John" Hancock in Chicago (RECORD, January 1967) seems an important pioneer for its height, its shape, and its mixed-use. More recently, and more vividly, Johnson Burgee's Pennzoil Plaza in Houston (November 1976) got clients and architects alike thinking—not just because it was a strikingly handsome and exuberant building, and not just because it was designed by a firm whose work always attracts study, but because it was commis-

sioned by Gerald Hines—who is surely one of the most thoughtful, cost-conscious, and successful developers ever. And then there's Hugh Stubbins' Citicorp (RECORD, June 1978)—which sure makes a mark on the skyline with its slanted top and shiny skin, but more importantly incorporates down at street level a mass of shops and stores and restaurants (and, of course, the church) that attracts people in enthusiastic crowds from morning to late in the evening.

And lately, we've been seeing more and more new towers that deserve careful study. In March, we published five new office buildings by SOM, and not one of them is anything like "a boring box." Various, they explore different treatments of each elevation; mixed use—including even an enclosed urban park; building-high atriums that revolutionize both the office space and the whole public use of the lobby space; new colors; more flexible and open working spaces.

This month (page 81), we present five other striking tower designs by the fast-growing Kohn Pederson Fox firm—buildings which, in the thoughtful words of associate editor Grace Anderson, "represent nothing as simple as a striving for new and dazzling form—though they have that, too. Rather, the forms spring from the scrupulous application of what might be recognized as a newly defined functionalism, one that includes the external forces of urban context—among them the shapes, materials, and purposes of neighboring architecture and the desiderata of a given city's planning and development. . . ."

What's the reason behind this exciting new exploration? Part of it is the rethinking that has grown from our concerns over energy—for most of these designs relate strongly, among other things, to conservation. Part of it is the growing philosophical conviction that "context" is as important in a big-city skyscraper as we now understand it is in any other form of architecture. Part of it is a growing public demand that architecture really relate to people. Part of it is a growing client understanding that good design makes good sense in the marketplace—that it helps rent office space, helps bring people downtown, helps build vitality—and that the competitive arithmetic has changed in response to these forces. And part of it (three cheers!) is that good architects are doing what good architects always do—striving for better and more responsive design. —W.W.

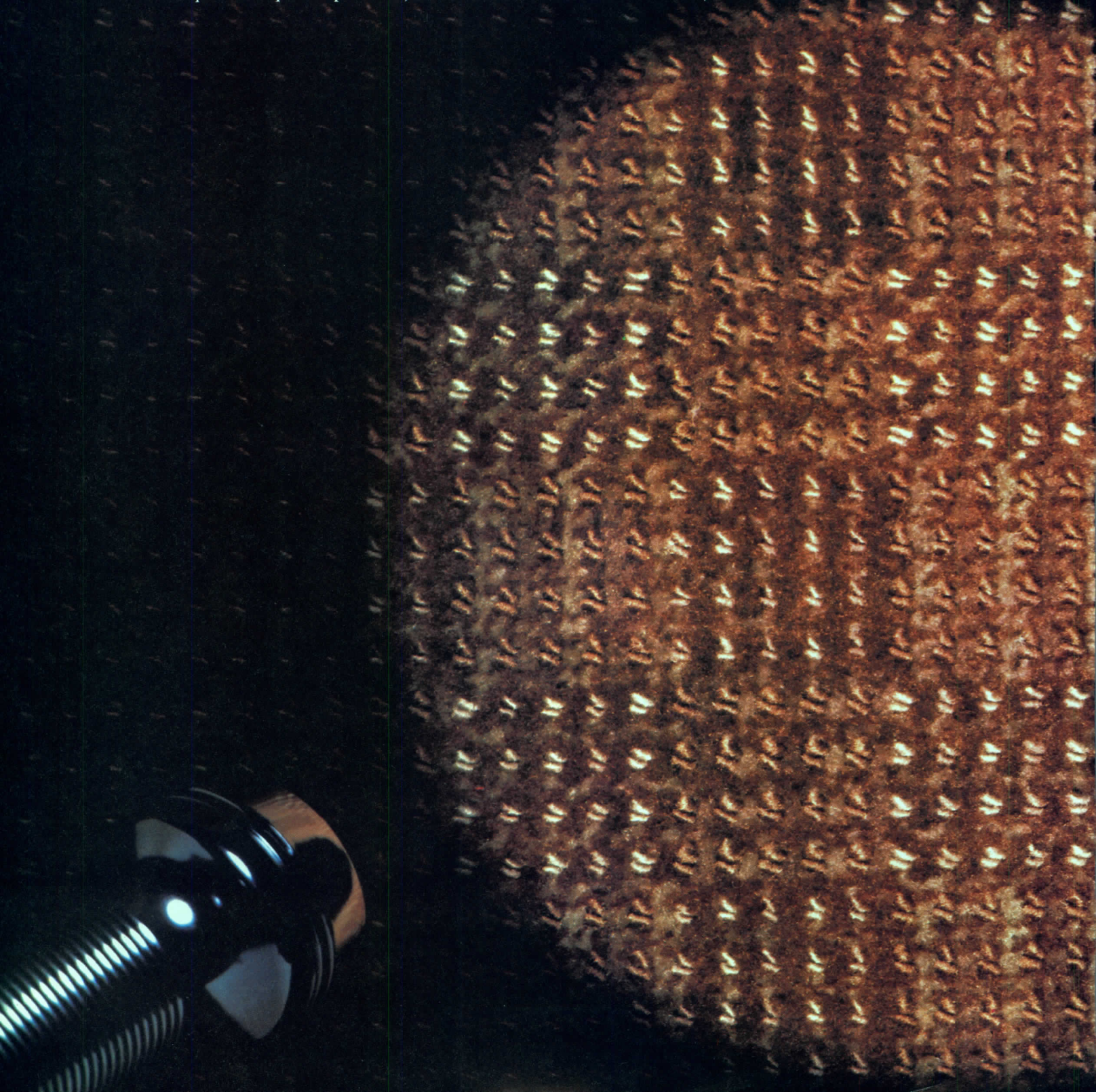
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NEWS IN BRIEF
 NEWS REPORTS
 BUILDINGS IN THE NEWS
 DESIGN AWARDS/COMPETITIONS
 REQUIRED READING

The winner of the Vietnam Veterans Memorial Competition is Maya Ying Lin, a 21-year-old Yale University architecture student. Ms. Lin's design was selected from a field of 1,421 entries. For details see page 47.

March contracts for new construction, at \$13.9 billion, showed the building market stabilizing at 27 per cent above last year's depressed level. According to George A. Christie, vice president and chief economist for the F.W. Dodge Division of McGraw-Hill Information Systems Company: "As long as interest rates aren't boosted again, there's a good chance that building activity will hold close to its present level for a while." At the end of three months, the cumulative value of all construction started in 1981 was \$34.6 billion, a gain of 8 per cent over the 1980 amount. Contracts for nonresidential building totaled \$13.4 billion in 1981's opening quarter, a gain of 14 per cent over last year's figure; the figure for residential building totaled \$14.4 billion, a gain of 12 per cent over 1980.

The Connecticut Trust for Historic Preservation will present "Adaptive Re-use: Opportunities for Housing," a conference to be held at Yale University on June 25. The conference is designed as a training program to establish the step-by-step process of initiating, planning, and financing a re-use project. For registration information contact: Jack A. Gold, Assistant Director, Connecticut Trust for Historic Preservation, 152 Temple Street, New Haven, Connecticut 06510 (203/562-6312).

The National Trust for Historic Preservation will hold its 35th National Preservation Conference from September 30 to October 4, in New Orleans. A major theme of this year's conference will be "historic districts and their impact on the historic preservation movement." The five-day meeting is expected to attract 2,500 preservationists. For additional information contact: Lyn Snoddon, National Trust for Historic Preservation, 1785 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Jean Pierre deMonchaux has been named dean of M.I.T.'s School of Architecture and Planning. Mr. deMonchaux—an Australian architect, urban designer and planner—will succeed Dean William L. Porter, who will resume his teaching responsibilities at M.I.T. The appointment becomes effective September 1, 1981.

One-year Rome Prize Fellowships in Architecture and Design Arts have been awarded to Robert Sherman Kahn, of Kohn Pedersen Fox Associates, and David B. Middleton, who is currently teaching architecture at Syracuse University. Four mid-career Fellowships in Architecture and Design Arts—funded by the National Endowment for the Arts—were awarded to: William McMinn, dean of Architecture at Mississippi State University; Fred Travisano, a partner in Clarke and Travisano; Paul Steinberg, a stage designer currently on the faculty of Parsons School of Design; and Emily Whiteside, director of the Galveston County Cultural Arts Council from 1971 to 1980. Additionally, the Steedman Committee of the Department of Architecture at Washington University awarded the Steedman/American Academy Fellowship to Craig Walton, a member of the Boston office of SOM.

William A. McGee of Cambridge, Massachusetts, has been named the 1981 Rotch Scholar. Mr. McGee will receive \$13,000 for eight months abroad. The 1981 Second Rotch Scholar is David Collins of Boston. Mr. Collins will receive \$7,000 for four months abroad. John M. Reimnitz of Cambridge, Massachusetts, has been named the 1981 Rotch Alternate. The Rotch Traveling Scholarship is an annual award supervised by the Boston Society of Architects.

A retrospective exhibition of the work of Jack Lenor Larsen will open at the *Musee des Arts Decoratifs* in Paris on September 24. The exhibition is comprised of 300 works covering 30 years and spanning all areas of textile arts; also included will be Larsen's specially commissioned works including his collaborations with Frank Lloyd Wright and Louis Kahn. A catalog will be published in conjunction with the exhibition with an essay by Mildred Constantine, former curator of the Architecture and Design Collection of the Museum of Modern Art in New York City.

An exhibition entitled "Furniture by Architects" will be at the Hayden Gallery at MIT until June 28. The two-part exhibit features work by contemporary architects—including Richard Meier, Emilio Ambasz, Frank Gehry, Stanley Tigerman, Machado/Silvetti, Robert Mangurian, Tod Williams/Billie Tsien—and a photographic survey of earlier furniture designs by Walter Gropius, Josef Hoffman, Alvar Aalto, Charles and Ray Eames, Frank Lloyd Wright, Gerrit Rietveld, and Antoni Gaudí, among others.

The New York Historical Society is sponsoring an exhibition of architectural photographs entitled "Manhattan Observed: 14 Photographers Look at New York, 1972-1981." Photographs by Michael George, Ruth Orkin, Jan Staller, and Serge Hambourg will be included in the show, which opens July 1. For a complete exhibition schedule contact: Edith Sakell, The New York Historical Society, 170 Central Park West, New York, New York 10024.

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In celebration of Breuer

1981 seems to be the year of Marcel Breuer. In March, he received the sixth annual Award for Excellence in Architectural Education (RECORD, April, page 33), sponsored by the AIA and the Association of Collegiate Schools of Architecture; in May, he was presented with the first General Felt Industries/Knoll International Creative Leadership Award for "outstanding contributions to the quality of contemporary life in the fields of architecture, design, and art"; and on July 25th, New York City's Museum of Modern Art (MOMA) will open an exhibition entitled "Marcel Breuer: Furniture and Interiors."

The MOMA exhibition is the third in a series on the most important designers of the 20th century; the first two were devoted respectively to Mies van der Rohe and Charles and Ray Eames.

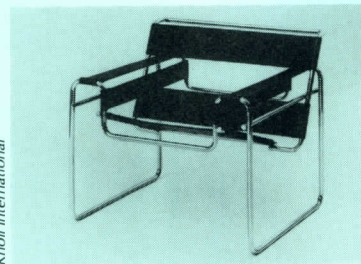
"Marcel Breuer: Furniture and Interiors" will include 45 pieces of

furniture, original drawings for furniture and interior designs, copies of catalogs and brochures, and enlargements of documentary photographs. Additionally, full-scale photographic enlargements of selected Breuer interiors will be installed behind the related pieces of furniture.

The interiors represented in the exhibition will include major commissions executed in Germany and England in the '20s and '30s, Breuer's own house in Lincoln, Massachusetts (which he designed with Walter Gropius), the Geller House on Long Island, and the dining area of the house that was built in the garden of MOMA in 1949 (photo right).

To accompany the exhibition the museum will publish a 224-page monograph detailing Breuer's furniture and interior designs from his Bauhaus years to 1959. Christopher Wilk will write the monograph, serve as guest curator, and co-direct the exhibition with J. Stewart Johnson.

After its September 15th closing in New York, "Marcel Breuer: Furniture and Interiors" will travel to Baltimore, Winnipeg, Cleveland, and Montreal.



The Wassily Chair (1925).

Knoll International

Ambitious Federal building program jeopardized by pay-as-you-go mandate

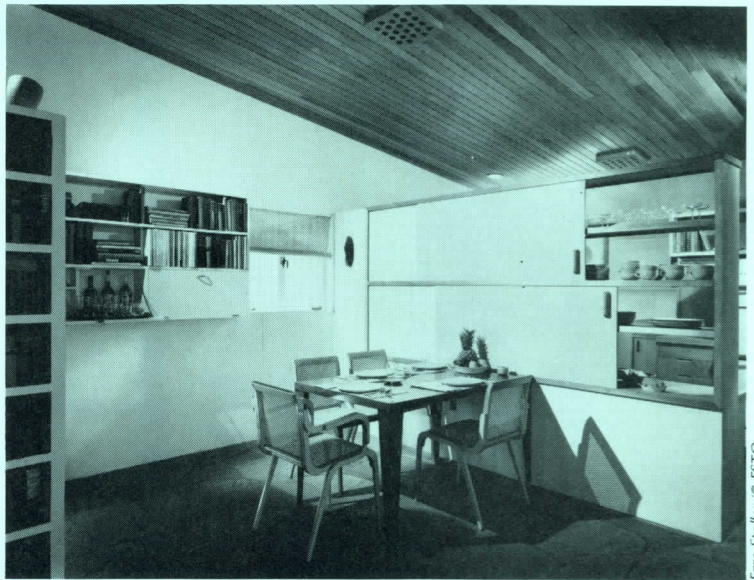
An accelerated public buildings program is the latest casualty of the Federal budget cutting fever. Under pressure from the White House Office of Management and Budget (OMB), the Senate has dismissed a plan to pay for new Federal construction with "time-financing" (construction loans). Without time-financing—which the GSA and both houses of Congress sought for two years—the public buildings program will remain on a pay-as-you-go basis, and that means a less ambitious program.

Although the House Public Works Committee has not given up on time-financing, the Senate's agreement to drop it, plus the threat of a Reagan veto, strongly suggest that it has little chance of approval. With time-financing eliminated, the Senate has approved (by a 93-0 vote) a bill which rewrites the Public Buildings Law: the bill calls for establishing a supervising architect in GSA's Public Building Service (PBS), and the Commissioner of Public Buildings becomes a position subject to Senate confirmation. The bill also specifies that a "substantial" percentage of the architect/engineer selections are to be

based on design competitions. Additionally, the Senate bill calls for GSA to prepare an annual construction program for approval by the lawmakers: the House bill does not have this language and if it prevails, the practice of approving buildings on a one-by-one basis will continue.

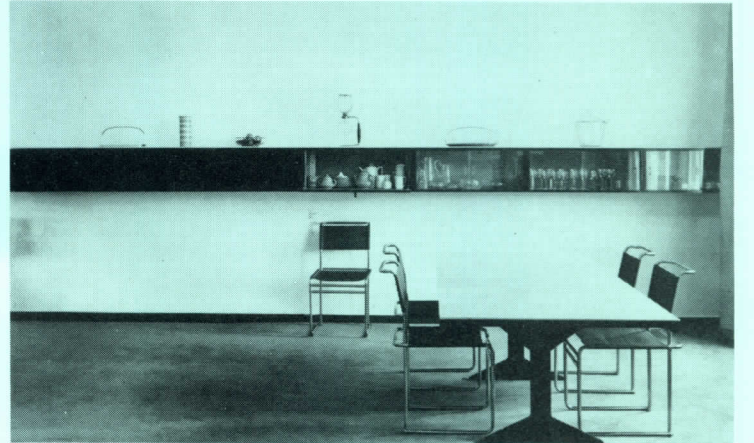
The revision to the Public Buildings Law was first offered by Senator Daniel Patrick Moynihan; its prime purpose was to reverse the trend toward the use of leased space for government office workers. The new Senate-approved bill includes a statement by the lawmakers saying they hope the cost of leasing can be reduced. (Earlier versions imposed a timetable for new construction activity to lessen government dependence on leased space; meeting the goals would have required the spending of almost \$40 billion over the next two decades.)

A spokesman for the senators says they still hope that OMB, which controls Federal spending, will attempt to speed up new construction activity through direct appropriations. But despite a Federal lease payment bill approaching \$1 billion, there is not much optimism—at least until the current economy wave passes. —William Hickman, *World News, Washington*.



House in the garden at The Museum of Modern Art, dining area (1949).

Piscador House (1926).



Ezra Stoller © ESTO

The deregulation of housing design: a giant step forward according to HUD

The Department of Housing and Urban Development is about to issue an order relaxing many of the provisions of the Minimum Property Standards (MPS). The intention is to turn housing design regulation over to the marketplace; eventually, HUD would like to totally drop the MPS in favor of health and safety regulations in the model building codes.

The Minimum Property Standards have been used for 40 years; HUD's Federal Housing Administration Mortgage Insurance has been contingent on adherence to the standards. In recent years, the standards have become increasingly prescriptive, covering such details as towel bars in bathrooms, closets in bedrooms, and shelves in linen closets. The current mood, however, is that many of the standards involve marketability; in other words, the important standards will be demanded by buyers and there is no reason for the Federal government to become over-involved. Philip Abrams, General Deputy Assistant Secretary for HUD, comments: "We are not going to tell people every last detail of housing design and how to

build things. . . . The marketplace ought to decide."

The new, less exacting set of regulations—which HUD hopes to have in force by early summer—is the product of the Carter Administration. Mr. Abrams says that the new Administration went along with the Carter-prompted changes in the interest of expediency; however, the Reagan White House will encourage dropping even more standards.

As an example of the cost of satisfying the current standards, Mr. Abrams points to the mandate for multi-family housing that insists on a design that prevents "progressive collapses"—that is, each floor has to be strong enough to withstand the accumulation of pressure from a collapse on a higher level. No occupied building in the U.S. has ever suffered such a collapse, and designing to avoid one adds 20 per cent to the cost of a building's structure.

The deregulation of housing design is a popular cause: The National Institute for Building Sciences (NIBS), Vice President George Bush's Regulatory Council, and the National Association of Homebuilders (NAHB) are all urging the removal of the Minimum Property Standards.

—Donald Loomis, *World News, Washington*. continued on page 37

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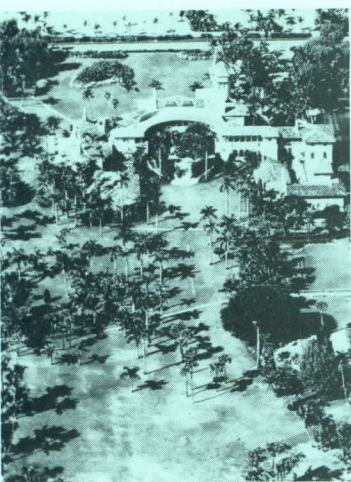
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When cereal heiress Marjorie Merriweather Post died, she willed "Mar-A-Lago," her spectacular 17-acre estate in Palm Beach, Florida, to the U.S. government as a vacation retreat for visiting dignitaries. Last year, Congress returned the property to the Post Foundation, and the estate is now being offered for sale.

The 115-room main residence, numerous guest cottages and staff quarters, and private nine-hole golf course are the work of architect Marion Wyeth. Joseph Urban, the architect for Emperor Franz Josef and the Khedive in Egypt, was called in for the elaborate detailing. The estate was completed in 1927.

According to Carol Ann Marshall of Sotheby Parke Bernet International Realty, "Mar-A-Lago" should break the U.S. record of \$14.5 million for the highest price ever received for a U.S. residential property. Interested parties should contact Ms. Marshall in New York City at 212/472-3465.

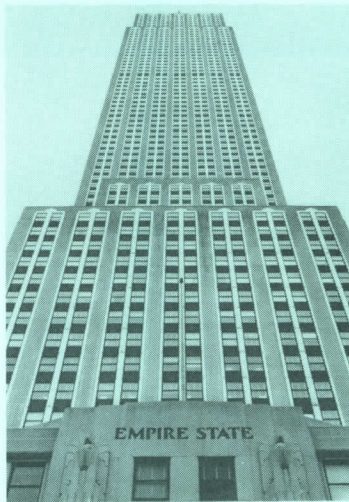
Engineers turn to advertising for upgrading and clarifying public image

The American Consulting Engineers Council (ACEC) is launching a multi-million dollar advertising campaign designed to sharpen the public image of consulting engineers. Executives of consulting engineering firms worry that they are too often confused with other kinds of consultants, some of whom have developed unfavorable reputations. At a recent meeting in Las Vegas, proponents of the proposed campaign pointed to the success of similar advertising campaigns by the AIA and the American Society of Civil Engineers.

The ACEC program has two parts: first, a \$145,000-per-year spending plan to beef up the Council's news bureau and to conduct a fund-raising drive, and second, the allocation of \$500,000 per year for five years on institutional and issues advertising. The campaign will be directed to the business users of construction services.

In approving the plan, some of the engineers grumbled that too many architects were trying to take more than their share of credit for energy-efficient designs. And a survey presented at the Las Vegas meeting suggested that hardly anyone outside the construction industry can correctly describe the function of consulting engineers: architects, they say, have a clearly focused and highly favorable public image.

The ACEC leaders also voted to increase the association's efforts in business practice services to members and to add a public affairs staff member who will concentrate on regulatory matters. —William Hickman, *World News, Washington*.



The Empire State Building celebrates its 50th birthday

On May 1, 1931, at 11:30 a.m. President Herbert Hoover pushed a button in Washington, D.C., that illuminated the lobby of the Empire State Building in New York City, thereby officially opening the world's tallest office building.

Designed by architect William Lamb—a 1911 graduate of the Ecole des Beaux Arts—of Shreve, Lamb, and Harmon and rising 1,248 feet above 34th Street and Fifth Avenue in Manhattan, the 102-story, \$52-million Empire State Building was designed, built, and occupied in only 18 months. Until 1971, when the first World Trade Center was completed, it was the tallest building in New York.

Despite a tepid critical reception (according to the January 1932 issue of RECORD: "it is just another building to walk past—adequate perhaps but humdrum"), the Empire State Build-



ing's popular appeal has never waned—no doubt aided by Fay Wray and *King Kong*—and as a symbol of American commerce, urbanity, and prowess, the limestone skyscraper is without equal.

On April 30, 1981, 50 years after its opening, the Empire State Building hosted its own birthday party by staging a *Star Wars*-type laser show. Stretching 10 miles out from midtown Manhattan, the beams, sprays, and sheets of blue and red laser light panned the horizon on a 360-degree path.

Two young architects pay homage to the Empire State Building

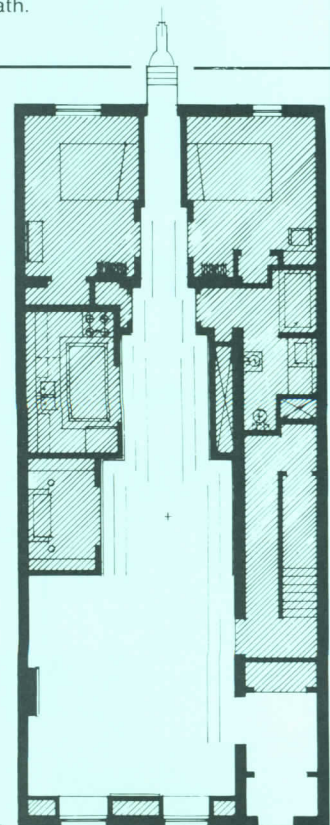
Ben Benedict and Carl Pucci (Bump-Zoid) searched no farther than the backyard of the garden apartment they were renovating for architectural inspiration. Located in the Chelsea section of New York City, the apartment's garden offers a rousing perspective of the Empire State Building, located only a few blocks north.


Benedict and Pucci appropriated the skyscraper's profile as the plan for their renovation: "The spirit of the Empire State Building is summoned to the heart of this Chelsea apartment. Setbacks, glass walls, and aluminum stripes load the central space with skyscraper romance and jazzy pretense. The stretched axis brings light and views to the whole floor and allows each room that opens on to it to express its own character in lighthearted syncopation."



From the entry, one moves through the living room, dining area (with an acrylic plastic light fixture in the shape of guess who?), and down

an attenuating hall that opens to a den, kitchen, bathroom, and two bedrooms, before gaining access to the garden.





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Hyatt Regency Louisville, Louisville, Kentucky

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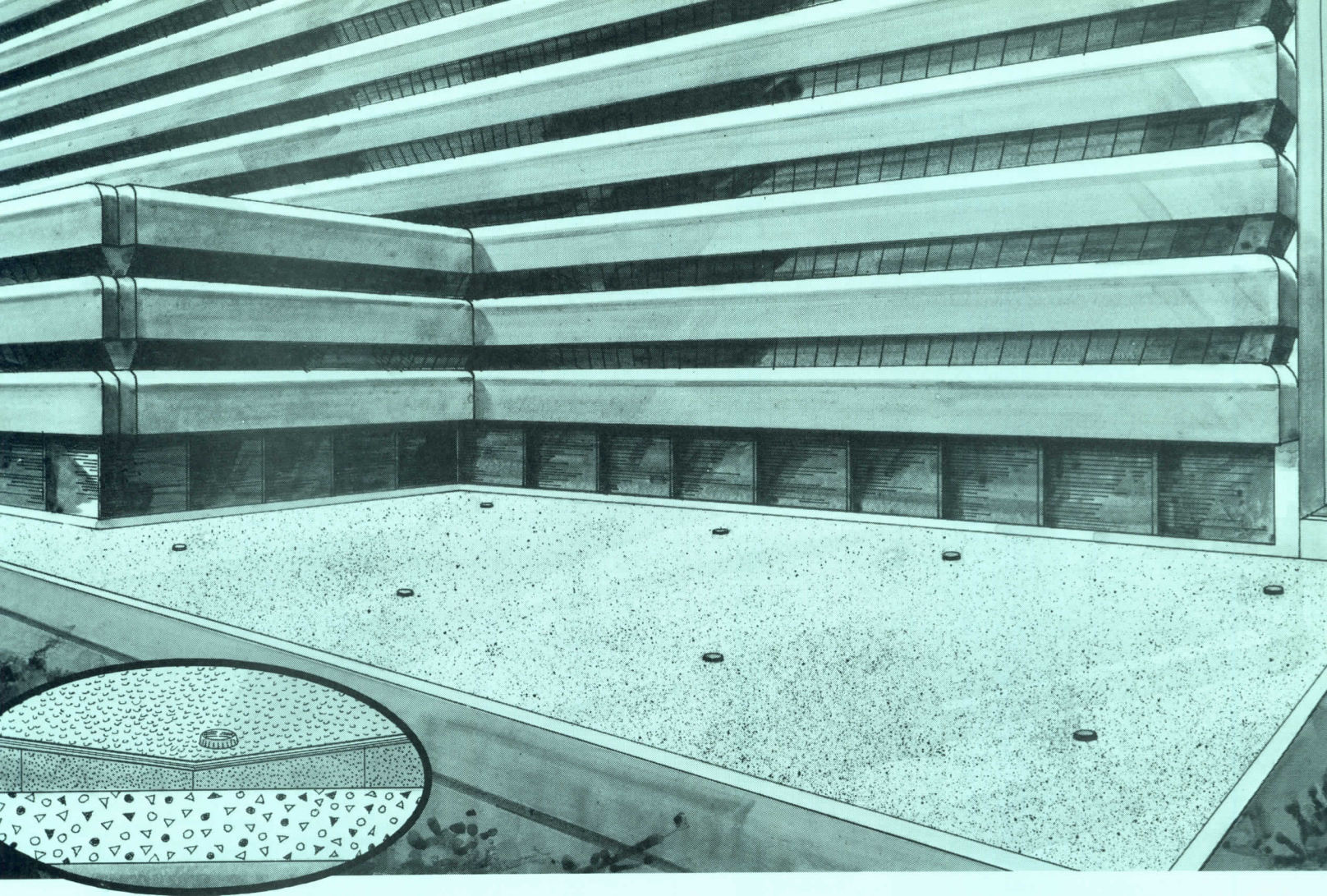
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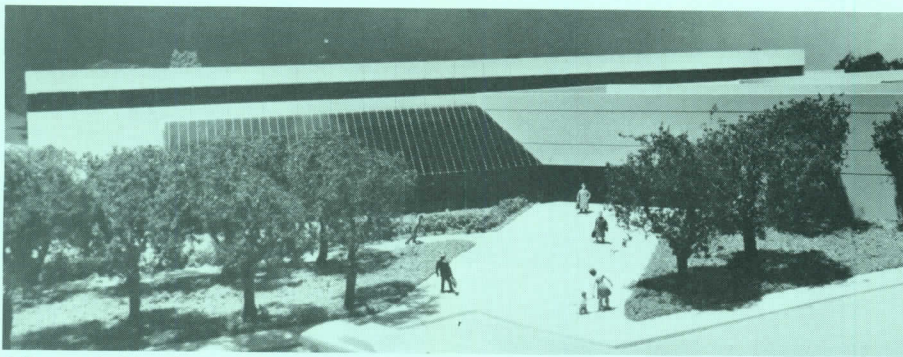
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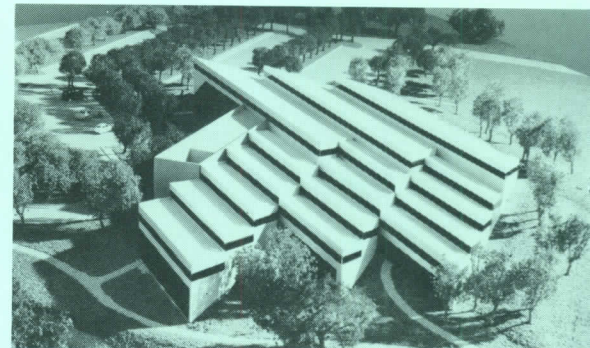
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Albert C. Martin & Associates' energy efficient design for a community library in California

Energy efficiency, low maintenance, and compatibility with the site were the design criteria presented to Albert C. Martin & Associates for this \$7.5-million library in Thousand Oaks, California. The 55,000-square-foot steel structure will be composed of modules

(built off-site) and a greenhouse/community room off the main entrance. According to the architects: "The computer was a tremendous help during the design process." The building is oriented on a north-south axis with clerestory windows to let in north



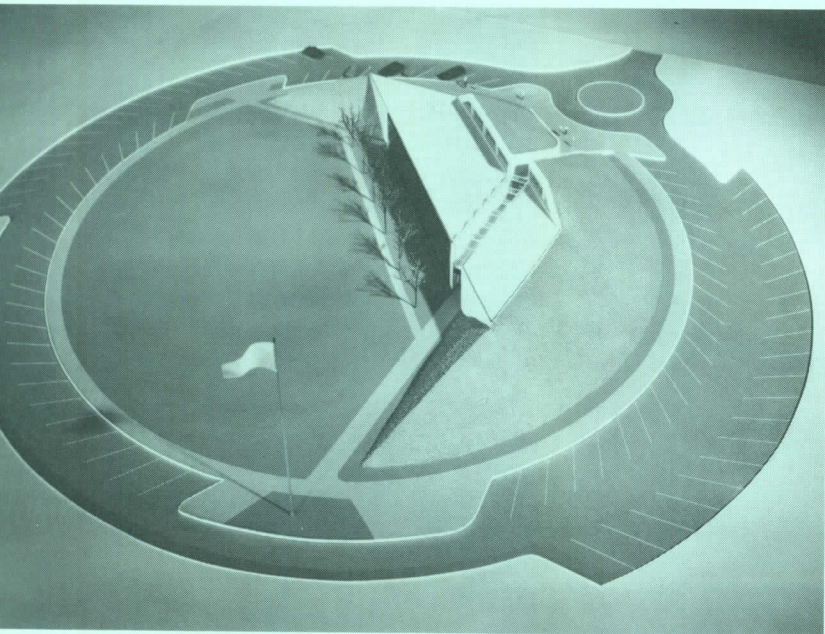
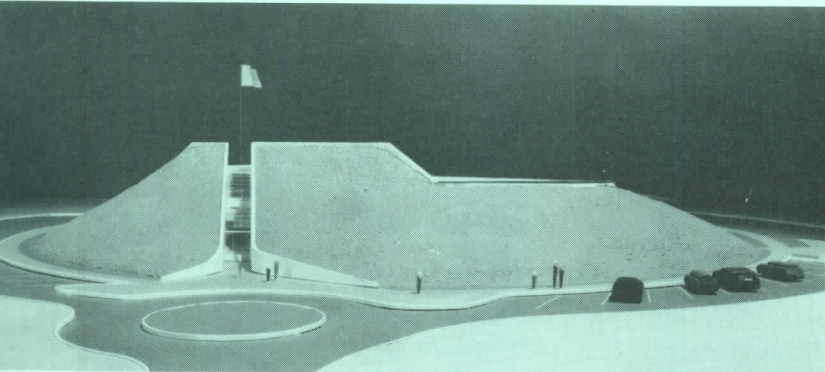
light: this cool, diffused light will be supplemented by direct sunlight admitted through horizontal side windows. The building's natural ventilation system will let in air at low elevations; as the air heats and rises, it will escape through vents near the ceiling. During

part of the year, this—along with operable windows—will provide enough natural cooling to keep the interior comfortable. Mechanical heating and cooling will be boosted by the circulation of hot or chilled water stored in insulated underground tanks.

A trapezoidal municipal center on a circular site

For the new East Windsor Township Municipal Center in New Jersey, the Princeton-based Hillier Group has designed for a 7.7-acre circular site an 18,000-square-foot two-story trapezoidal building that, according to the architects, will be "68 per cent more heat efficient than conventional two-story building design." The poured-in-place

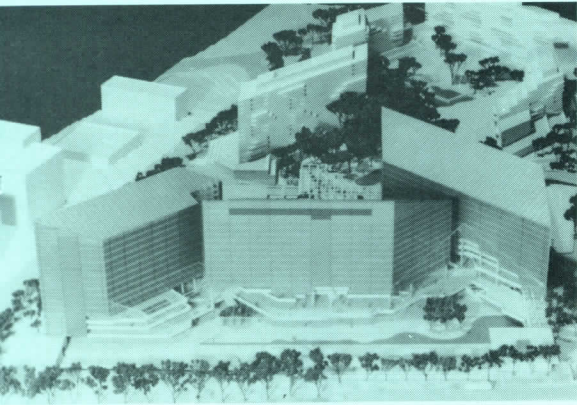
reinforced concrete structure will feature a Trombe wall with double-insulated glass and a six-inch airwall for the southern exposure, and a mass concrete wall (over a foot thick) designed to accommodate thermal storage from clerestories for the northern exposure; the eastern and western exposures will be buried beneath earth berms.



Joint venture wins competition for \$70-million Federal offices

The joint venture of Gruzen & Partners, The Ehrenkrantz Group, and Syska & Hennessy, Inc., has been selected as the winning design team in a General Services Administration-sponsored competition for the design of the new \$70-million Social Security Administration Northeastern Program Service Center to be constructed in Jamaica, New York. The 942,800-square-foot office complex will house more than 3,000 employees. The proposed rectilinear structure has a strong east-west orientation; along the street, four- and six-story steps pull out from the main 15-story mass to achieve a scale more compatible with the neighborhood. The winning design calls for an inner "solar court" around which the SSA's special functions—training and conference rooms, auditorium, computer

center, support facilities, and cafeteria—will be clustered. The solar court is oriented to the south, to allow for maximum sun penetration in the winter. According to the joint venture team: "Numerous energy-saving elements will be integrated into the submission including passive solar heating to achieve a highly efficient energy budget . . . the building's mechanical systems incorporate a heat recovery system, which reclaims heat generated by lighting, equipment and people." The other five finalists in the GSA-sponsored competition were: The Egger Group; Kohn Pedersen Fox/Cannon Design; Perkins & Will/Urbahn Associates; Swanke Hayden Connell & Partners; and John Carl Warnecke & Associates. Construction is expected to begin in 1983.



mammoth mixed-use development for Greater Washington, D.C.

The Washington Metropolitan Area Transit Authority is proceeding with a 2.2-million-square-foot mixed-use development on a 33-acre site adjacent to the future White Flint Metro station in Rockville, Maryland. The project includes two 15-story office buildings and a 14-story hotel clad in anodized aluminum panels) connected by a retail

galleria which will run the length of the Metro platform. The housing consists of four eight- to fourteen-story condominium apartments. Perkins & Will, the over-all planner of the project, will carry out the detailed design of the office buildings, the hotel, and the commercial complex. Cohen and Haft, Holtz Kerxton are the architects for the housing.



RTKL's addition to Baltimore's Inner Harbor

Construction began in March on a new office building and garage complex along the north side of Baltimore's Inner Harbor. The project, called Inner Harbor Center, includes the renovation of an existing 50-car garage plus the addition of a connecting 660-car garage and a new 11-story, 53,000-square-foot office building. RTKL Associates Inc. of Baltimore is both the archi-

tect and engineer for the project and will be the major tenant of the office building. Both the office building and garage will be connected to Baltimore's Inner Harbor (see RECORD, October 1980, pages 100-106) by a pedestrian bridge. The 11-story office building will be a reinforced concrete structure with a precast concrete panel and reflective glass exterior.

Tacoma, Washington, to have world's largest wood dome

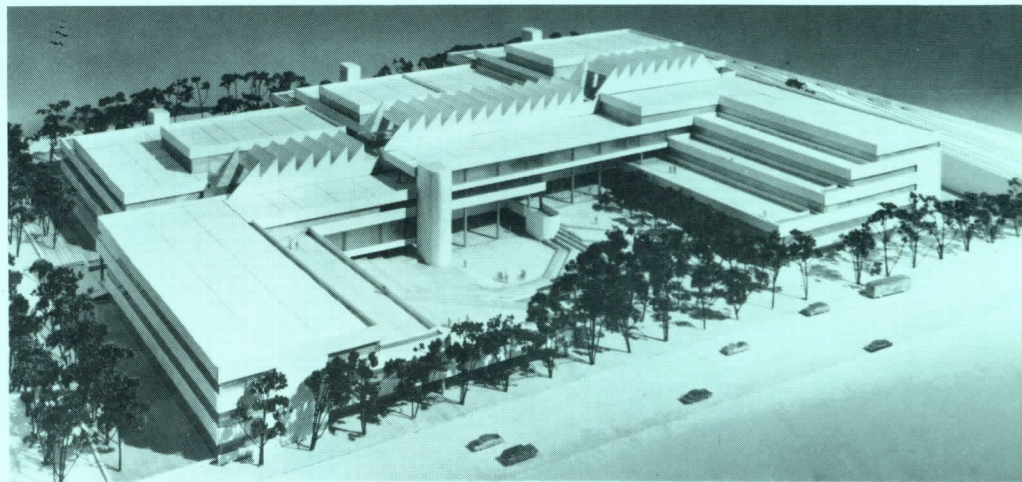
Thanks to a nationwide design/build competition, Tacoma, Washington, will have the world's largest wood dome structure (15 stories high and 530 feet in diameter) for its new sports and convention center. The \$29.3-million facility was designed by the Phoenix-based firm of Rossman, Schneider and Gadbery as principals in a design/build team that includes Merit Construction Company and McGranahan Architects. Tacoma city officials indicated the dome concept was highly persuasive in their decision. Ross-



Koppes Photography

man, Schneider and Gadbery pioneered the "ensphere concept" in 1975 with a similar dome at Northern Arizona University. The concept, they

say, embodies a reticulated glue-laminated dome covering the structure from the ground up, thus eliminating most traditional wall and roof supports.



Gruzen & Partners' core campus for a New York college

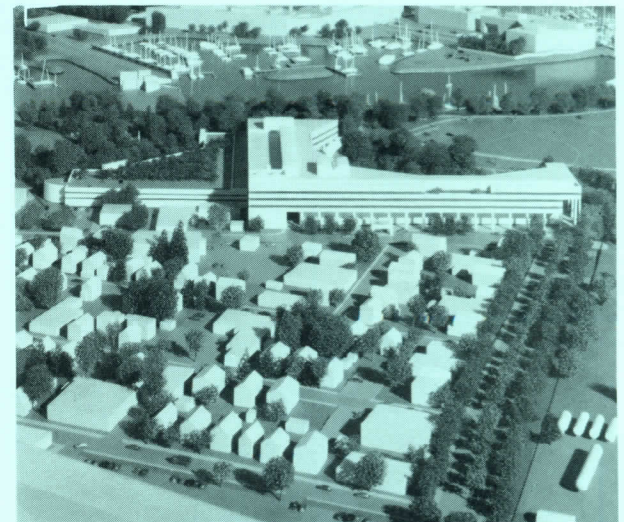
Construction has begun on a \$68-million campus project for York College of the City University of New York in Jamaica, New York. According to Jordan L. Gruzen, chairman of architects Gruzen & Partners: "The core campus will feature an indoor academic street or covered mall which will serve

as an all-weather gathering place . . . and a center of identity/orientation space for students and community." The mall links administrative and library services on one side with academic spaces on the other via a series of bridges. West of the mall, a terraced service building contains all of

the required academic spaces; east of the mall, an administrative, library, and student activity structure surrounds an outdoor multilevel campus plaza. The current Gruzen-designed scheme represents the core of a larger campus, which will eventually encompass six city blocks.

I.M. Pei & Partners' Corporate Center for Pitney Bowes

Plans were unveiled in April for a Pitney Bowes Corporate Center, to be built in the South End of Stamford, Connecticut. The 442,455-square-foot, five-story office complex designed by I.M. Pei & Partners will provide office space for 1,100 employees. The crescent-shaped building will face a park and Stamford Harbor on the south side; along the public-facing facade, the architects have stretched a 500-foot-long columned arcade. Occupancy is slated for 1984.



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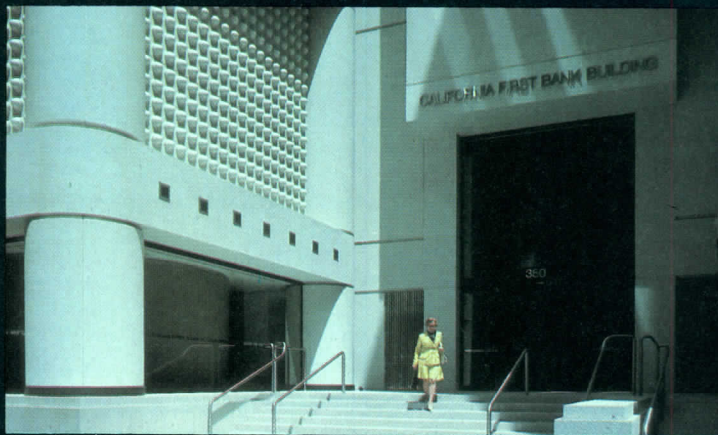
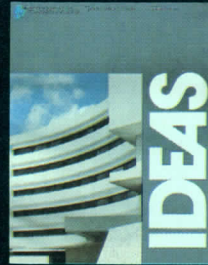
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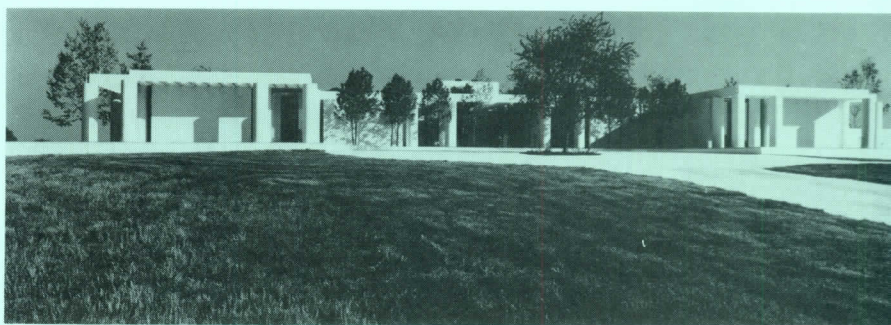
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DESIGN AWARDS/COMPETITIONS

Winners in this country's oldest and largest annual design awards program devoted solely to housing, the Homes for Better Living Awards, were announced last month at the AIA National Convention. The awards program is sponsored jointly by AIA and *Housing*, a sister McGraw-Hill publication. The 11 projects given First Honor awards and the nine Merit Award recipients are illustrated on these two pages and overleaf. Jurors remarked on the presence of "historical recall" and a "regional approach" in every design honored in the Custom House category. Production housing submitted to the program was cited for its straightforward attention to "programmatic needs, contextual needs, the needs of the city."



1 Robert C. Lautman



4 Robert C. Lautman; © 1980, Knapp Communication Corp., courtesy Architectural Digest



2 Gordon H. Schenck, Jr.



5 Warren J. Cox



3 Joseph W. Molitor



6 Ed Hershberger

HOMES FOR BETTER LIVING AWARDS

The Homes for Better Living awards encompass custom projects as well as production houses, with a separate jury for each category. This year's jurors for custom work were Don Hisaka, AIA, jury chairman; Barbara Neski, FAIA; John Field, AIA; Jefferson Riley, AIA; Walter F. Wagner, AIA, editor of *ARCHITECTURAL RECORD*; Linda A. Pinto, associate member AIA; and Matthew Eric Poe, architectural student. Production houses were judged by Howard J. Backen, AIA, jury chairman; Peter Samton, FAIA; Remmert Huygens, AIA; June Vollman, senior editor of *Housing*; Philip Sheridan,

builder; James F. Culpepper, associate member AIA; and Yvonne Kearney, architectural student.

1. House in Eastern Pennsylvania; Hugh Newell Jacobsen, FAIA, architect (First Honor Award, Custom Houses; see *RECORD*, mid-May 1981, pages 116-121). The jury found this "telescope" house "wonderfully playful within the shapes that had once been so confining."

2. House in Tampa, Florida; Rowe Holmes Associates Architects, Inc. (First Honor Award, Custom Houses). The client, a lumber dealer, wanted a wooden house suited to a semi-tropi-

cal climate. Following indigenous Florida building forms, living areas are raised one story above grade to guard against flooding.

3. Gaffney House, Romansville, Pennsylvania; Bohlin Powell Larkin Cywinski, architects (First Honor Award, Custom Houses; see *RECORD*, mid-May 1981, pages 64-67). Winner of a 1981 National AIA Honor Award, this 1,400-square-foot dwelling was built within the stone walls of a ruined barn.

4. House in Lexington, Kentucky; Hugh Newell Jacobsen, FAIA, architect (First Honor Award, Custom



Richard Sexton, "Matrix"



9

© Rob Super



Kaz Tsuruta



10

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11

Ron Gordon/Sadin Karant

Houses). The white columns and classical symmetry of old plantation houses are updated in a 7,500-square-foot residence at the center of a horse farm. The panel remarked that, despite the project's lavish scale, "it is as disciplined as a vacation house with a tight budget."

5. House in Washington, D.C.; Hartman-Cox Architects (First Honor Award, Custom Remodeling). Jurors were impressed by the sensitive handling of materials that blends a two-story extension (right of central bay in photo) into the fabric of an existing wood-and-stucco neo-Tudor house.

6. Hoyt Square, Portland, Oregon; Robert S. Leeb/Architects (First Honor Award, Multifamily; see RECORD, February 1981, pages 102-103). This 24-unit condominium project mixes single-level dwellings with two-story town houses. The jury cited its "openness and pleasant scale."

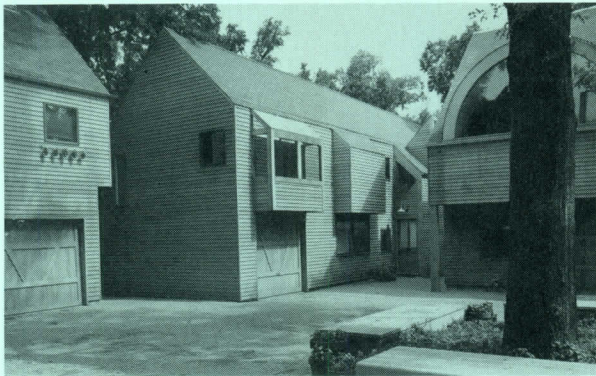
7. Macondray Terrace, San Francisco; Hood Miller Associates, architects (First Honor Award, Multifamily). Located on a steep slope of Russian Hill, this infill project fully exploits a high-density plan to fit 13 dwelling units—each with its own deck or patio—into a lot only 60 feet wide.

8. Albany Oaks, Albany, California; Edmund Burger, architect (First Honor Award, Multifamily). In order to preserve the root structure of existing trees as a buffer against erosion, nine condominiums were elevated on concrete piers. Walkways and bridges weave in and out of tree trunks and branches.

9. St. Mary's Gardens, Oakland, California; Peters, Clayberg & Caulfield, architects (First Honor Award, Multifamily Subsidized). This 101-unit housing project for the elderly has also won a 1981 AIA Honor Award (see RECORD, May 1981, page 46).

10. Fitzwater Factory Court, Philadelphia; Baker Rothschild Horn Blyth, architects (First Honor Award, Multifamily Rehabilitation). Three buildings formerly occupied by a mattress factory have been converted into seven luxury apartments and four single-family houses.

11. Mergenthaler Linotype Lofts, Chicago; Ken Schroeder & Associates (First Honor Award, Multifamily Rehabilitation). Kitchens, bathrooms and dressing areas are the only fixed enclosures within 21 lofts. A luncheonette next door has been recycled as an "urban ruin."



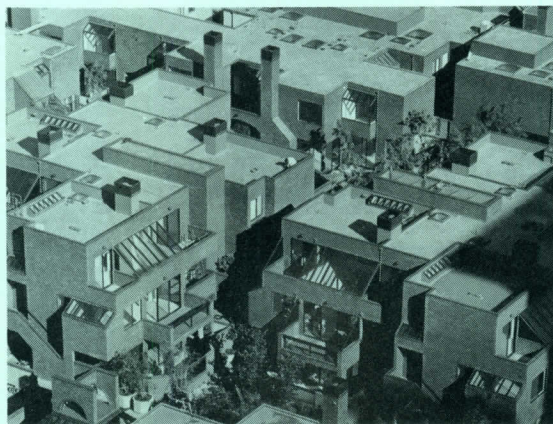
12 Photographers Associated



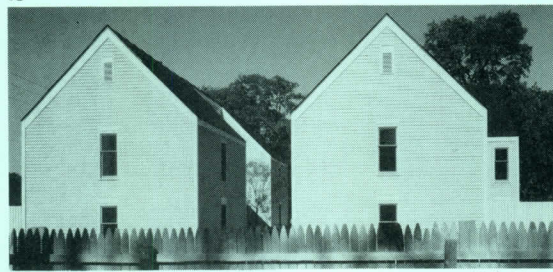
13 Joshua Freiwald



17 Taft Architects



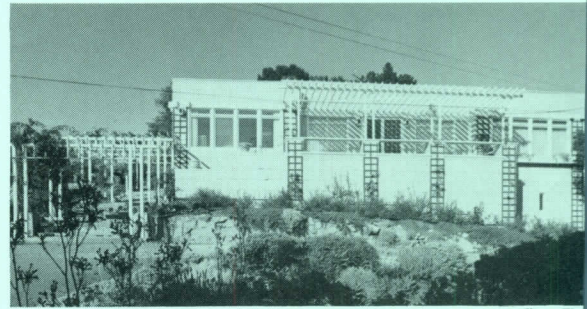
16 Joshua Freiwald



18 Philip Turner



14 ©Rob Sullivan



15 William Ziesenheim



19 John Parslow



20 ©Steve Rosen

12. Bowen Residence, Omaha, Nebraska; Bahr Vermeer & Haecker, Architects, Ltd. (Award of Merit, Custom Houses). A narrow lot determined the 16-foot width of this city house. An open roof structure reminiscent of Nebraska barns gives a sense of interior space.

13. House in Santa Clara County, California; Fisher-Friedman Associates (Award of Merit, Custom Houses; see RECORD, mid-May 1981, pages 74-77). "A very controlled artistic result."

14. Bear Ridge Development, Orinda, California; David C. Boone, Carl Kolbeck, architects (Award of Merit,

Merchant Built). A complex of 23 single-family houses, Bear Ridge was intended to demonstrate that planned unit development can respect a scenic landscape.

15. Fremont Older Residence, Saratoga, California; Goodwin B. Steinberg Associates, architects (Award of Merit, Custom Remodeling). This 1908 house is a remarkable precursor of 1920s modernism. Restoration was carried out with private funds, although the house is owned by a regional park.

16. Golden Gateway, San Francisco; Fisher-Friedman Associates (Award of

Merit, Multifamily; see RECORD, February 1981, pages 96-99). Reinforcement of street life was a top priority in this low-rise project.

17. Grove Court Townhouses, Houston; Taft Architects (Award of Merit, Multifamily). One juror commented that "The families who live here are going to . . . create a large family unit." Walled courtyards recall local garden apartments of the '20s.

18. Lake Bluff Townhouses, Lake Bluff, Illinois; Nagle Hartray & Associates, Ltd. (Award of Merit, Multifamily). The architects grouped two triplex rows of dwellings around a

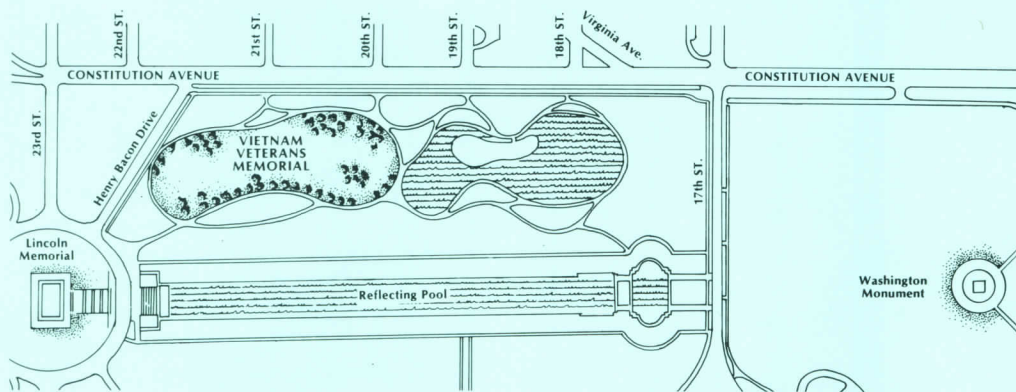
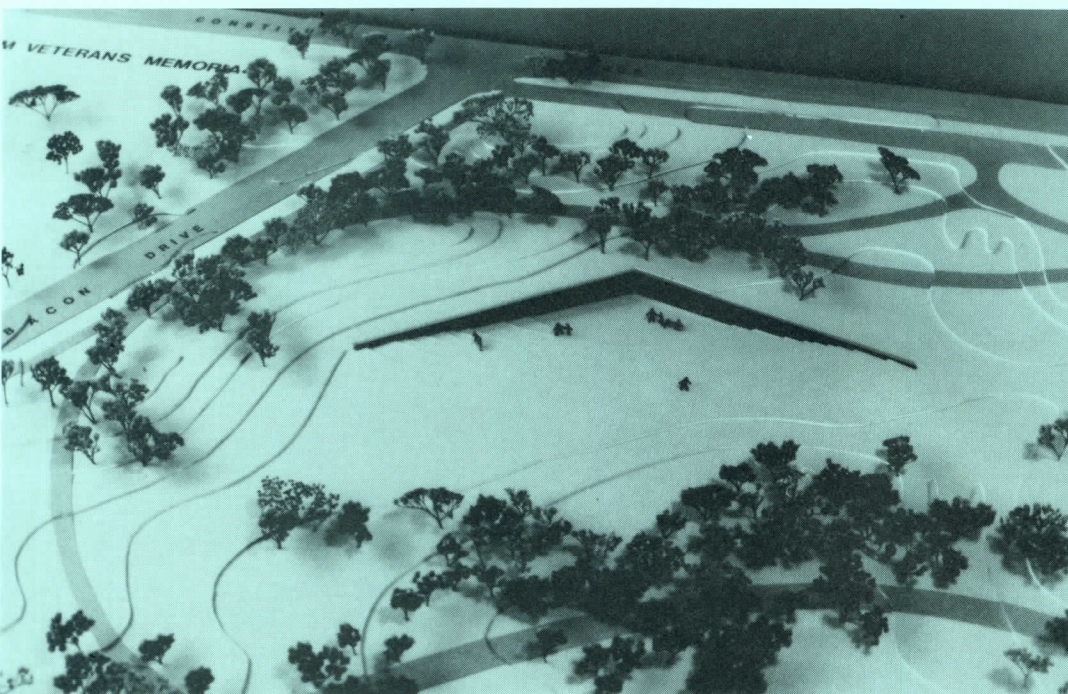
central court. Peaked-gable facades were designed to blend into a context of existing single-family houses.

19. The Eagle, Brooklyn, New York; Rothzeit Kaiserman & Thomson, P.C., architects (Award of Merit). The remodeling of a warehouse involved construction of a new atrium and insertion of windows for dramatic views of Manhattan's skyline.

20. The Bangor House, Bangor, Maine; CBT/Childs Bertman Tseckares & Casendino Inc. (Award of Merit, Multifamily Rehabilitation). A landmark hotel has been converted into housing for the elderly.



B. Chesvoir



VIETNAM VETERANS MEMORIAL DESIGN COMPETITION

Maya Ying Lin, a 21-year-old architecture student at Yale University, has won an open competition for a memorial to veterans of the Vietnam War, to be established on two acres of national park land in Washington, D.C. One of 1,421 entries—an all-time American record—Ms. Lin's design was selected by a distinguished jury: Pietro Belluschi, FAIA; Harry Weese, FAIA; Grady Clay, editor of *Landscape Architecture*; landscape architects Garrett Eckbo and Hideo Sasaki; and sculptors Richard H. Hunt, Constantino Nivola, and James Rosati. Paul D. Spreiregen, FAIA, served as

competition advisor. The competition was organized by the the Vietnam Veterans Memorial Fund, with assistance from the National Endowment for the Arts Design Arts Program.

The premiated scheme consists of two polished black stone walls, each 200 feet long, converging into a V-shaped cleft in the earth, 10 feet deep at the point of its sloped grassy floor. The walls, which extend towards the Washington Monument and the Lincoln Memorial, are to be inscribed with the names of 57,692 men and women who died in the war. Ms. Lin's design was praised for

Calendar

Red Cedar Shingle & Handsplit Shake Bureau Design Competition.

Entry blanks are due June 12. Contact the Red Cedar Shingle & Handsplit Shake Bureau Awards Program, 515 116th Ave. N.E., Suite 275, Bellevue, Washington 98004.

Missoula, Montana Riverfront Corridor Design Competition.

The National Endowment for the Arts Design Arts Program and the Missoula/City Spirit Facilities Steering Committee are sponsoring a competition to create a link between existing and projected cultural and recreational facilities. July 15 is the registration deadline for the first stage of the two-stage competition. Five design teams will be selected to participate in a one-week on-site competition. Each team must include a principal member from at least one of the following states: Montana, Colorado, Utah, Arizona, New Mexico, Nevada, Idaho, California, Washington or Oregon. Teams must also be legally qualified to provide professional services in Montana. Details are available from William O. Coffee, Chairman, Missoula/City Spirit Facilities Committee, 115 West Front Street, Missoula, Montana 59801 (406/542-2744).

Rancho Bernardo Performing Arts Center Competition.

The deadline for prequalifying submissions has been extended to August 7. For information contact Terry Hughes, Project Director, Performing Arts Center Project, P.O. Box 28344, San Diego, California 92128 (714/485-8121).

Owens-Corning Fiberglas Energy Conservation Awards Program.

Entry forms must be submitted by August 28. Judging will take place in mid-September. For additional information, contact Mary G. Reinbolt, Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659 (419/248-8053).

eschewing the specific symbolism that characterized many other entries. "In a heterogeneous society symbols don't work," one juror observed. "They arrest thought rather than expanding it." The entire jury agreed that "The designer has created an eloquent place where the simple meeting of earth, sky, and remembered names contains messages for all who will know this place." Besides receiving \$20,000 for winning the competition, Ms. Lin will act as advisor on the \$7-million project, which is scheduled for completion by Veterans Day, 1982.



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Urbanism

THE HISTORY OF THE CITY, by Leonardo Benevolo, translated by Geoffrey Culverwell; The MIT Press, \$90.

Reviewed by Richard Guy Wilson

Leonardo Benevolo has enjoyed a long and distinguished career as an architectural historian teaching in Rome, Florence, and Venice and at several universities abroad. His writings include *Architecture of the Renaissance* (1978) and *History of Modern Architecture* (1971). However, his major reputation probably rests upon his 1963 book *Origins of Modern Town Planning* (originally published as *Le Origine dell'Urbanistica Moderna*), which identified the twin and separate traditions of utopian ideological thought and technical improvements that underlie so much of our thinking about cities and the form they should take. Quasi-Marxist in approach, the book brilliantly synthesized the political and physical aspects of the 19th-century city. Hence, great expectations were aroused when Benevolo's *The History of the City* was announced: perhaps here would be a consummate reinterpretation of the development of urban form along political and physical, or formal, lines.

Unfortunately, that is not the case. The book is a disappointment, an overly expensive and overweight tome, impossible to hold in your lap. It is a tremendous collection of illustrations, but the purposes are unclear. If one put the some 1500 illustrations into an unmarked box and asked people to define the subject matter or the title of the book, it is doubtful whether *The History of the City* would emerge. For included are not only very good city plans, views, and details of the urban fabric but an assortment of other illustrations of coins, pottery, paintings, and architecture that relate in only the most tenuous way to the text and the subject.

Of course, one agrees that the history of the city is the history of civilization, but why a detail of a capital from San Lorenzo, the head of the Laocoon, a bedroom at Chateau Vaux le Vicomte, or the 1851 cast iron statue of Andromeda? The selection of illustrations displays a total lack of discipline. In fairness to Benevolo, he does announce in the introduction that the book "is in the form of a short written text combined with a large number of illustrations." Many of the drawings were the result of a drawing course devised for the Liceo Scientifico to provide a basic introduction on the environment. The result, however, is uneven, and the actual relation of the text to many of the illustrations on the city is spotty, if ever made.

The actual subject matter, the transformation of the urban environment, is confined to Europe and the Near East, though some references are made to the Far East, Africa, and the Americas as they relate to western

settlements. The division of the subject matter is traditional, with 14 chapters that cover the basic periods: i.e., prehistory, Greece, Rome, medieval, and so on. For the most part the treatment is perfunctory, containing the usual information. In several cases, an attempt is made to treat a town or city in depth; however, as in the case of Bologna in the Middle Ages, the result is more like a Baedeker tour guide than historical interpretation. Nuremberg is treated as a medieval town with numerous drawings, views, and 19th-century photographs, but then two photographs are shown of a Nazi rally and the War Crimes Tribunal. Admittedly, the Nazis are part of the history of Nuremberg, but the photos are an inflammatory insertion lacking explanation.

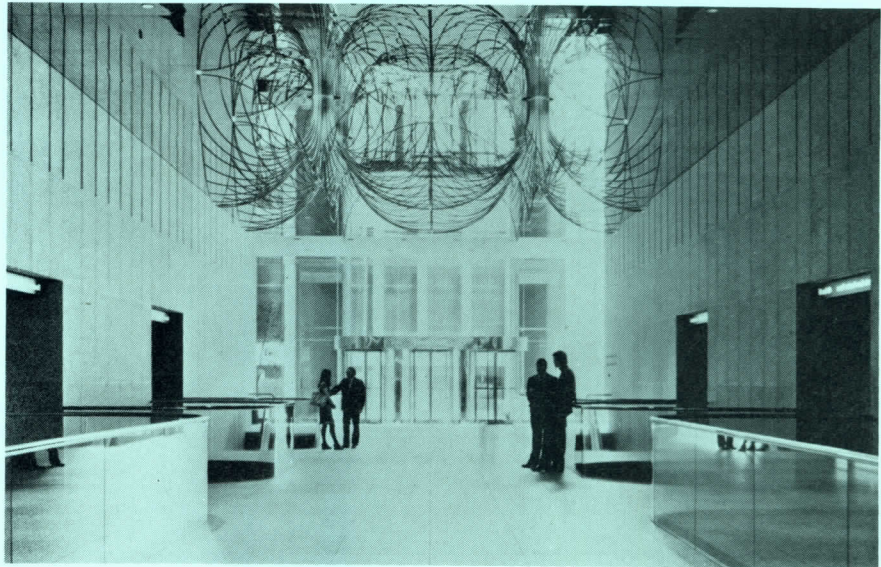
The most lively and ultimately satisfying portion of the book covers the last 200 years and the development of the industrial revolution, the "post-liberal" city, the "modern city," and the current situation. Here, Benevolo has been able to re-examine some of his earlier ideas and provide new interpretations. The search for a balance between public interest and the private sector was never adequately achieved in the "post-liberal" city, leading to the skewed boundaries between public street and private property and the destruction of the older city.

The modern solution was to seek a new model; however, in the case of most architects this meant basically untraditional physical forms and an incomplete understanding of

continued on page 51

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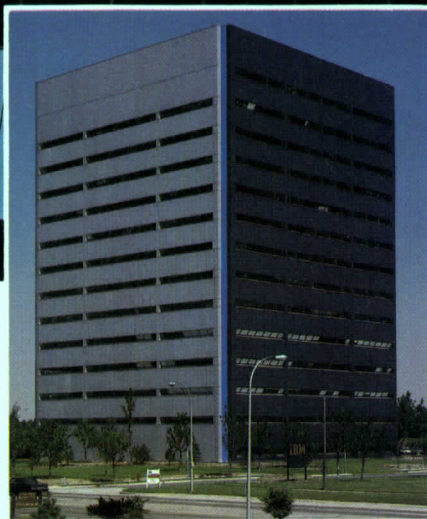
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Richard Wilson is chairman of the Division of Architectural History at the University of Virginia. He is currently at work on a book entitled *The AIA Gold Medal*, to be published by McGraw-Hill.

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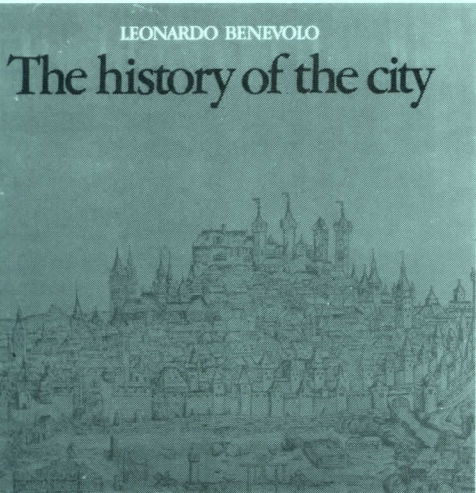
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how to effect political change. The result, as we all know, has been a vast number of master plans, schemes for expansion and growth, and new towns. Although based on supposedly apolitical "scientific" research and analysis, these have resulted in the improvement of the environment for a wealthy and dominant minority. Benevolo ends the book on this somewhat less than hopeful note: modern architecture and its urban models have served only the wealthy, the promise is lost because of political naïvete and disinterest. For the American reader, this political commentary appears as typically European, and yet it is wise to remember that much of this was the original basis of modern architecture and city planning.

In summary, Benevolo's *The History of the City* is unsatisfying; the illustrations are excellent, but uncertain. However, the last 300 pages do provide some new thought that can be stimulating.



LETTERS TO THE EDITORS *continued from page 4*

It was very satisfying to read Ada Louise Huxtable's perceptive and articulate review of the current confusing state of architecture. [RECORD, January 1981, pages 72-79]. When Post-Modernism first appeared, it offered the exciting possibility of freedom from Modernism's noisy polemics and arbitrary formalism, a more flexible and human architecture. Mrs. Huxtable's article shows how it has not given us this.

Many elements of "Post-" Modernism are as inaccessible and irrelevant as dogmatic Modern, confirming that it is only a continuation, not a successor. Perhaps it is now time to write articles entitled "The Failure of Post-Modernism" and "Modernism is Almost All Right," or maybe it's time for the critics to invent a new style called Neo-Modernism to replace this peculiar "Post-" thing.

*Stephen W. Cole
Denver*

Ada Louise Huxtable's "The Troubled State of Modern Architecture" well articulated our schizophrenic architectural condition. Her comments were incisive, but let me add one other factor that I think greatly influences our troubled state: the fashion plate psychology of our profession.

I suppose that throughout the 20th century this condition has become worse due to mass communication, but ideas and styles that used to take centuries to develop are now fed, digested and regurgitated within the period of a decade, or less. Our profession apes the sensationalism of dress design, which is calculated for knock-your-socks-off impact and for one-year obsolescence.

Architecture is far too important and has far too lasting an impact to stoop to this type of instant appeal. In the historical context, if one of our generations came up with one lasting idea, we would be creatively way ahead of our ancestors. We should not consider ourselves esthetically retarded if we don't make a new discovery with each new

building. The complexity of the materials, sites and programs that are before us should rightly take a hundred years to shape into a legitimate and mature style.

*George Haecker, AIA
Bahr, Vermeer & Haecker, Architects
Omaha*

Correction

In a recent news story (RECORD, April 1981, page 37), the magazine should have credited Mitchell/Giurgola—Frank Schlesinger Associated Architects for their collaborative effort in joint venture on the Pennsylvania Avenue complex in Washington, D. C., including a hotel, offices and retail facilities.



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Project management: the third discipline in architectural practice

Project management is still a stepchild in many offices—often handled as a “sideline” by the project designer or the production head. Drawing on his own extensive experience, architect Paul W. T. Pippin argues the case for project management as a third discipline given equal billing with design and production. Mr. Pippin outlines the project manager’s basic goals and discusses how the benefits of project management—increased efficiency, greater profits, and client satisfaction—can be enjoyed by firms of every size.

by Paul W.T. Pippin, AIA

For the sake of argument let us assume that, once the client has signed the contract, the practice of architecture within an office may be divided into three disciplines. The first discipline is design (including programming and interiors), the second is production (covering all operations to develop the total contract documents), and discipline number three is project management. Office administration (supporting staff, accounting, maintenance, supplies, etc.) is not included as a specifically architectural discipline because it applies to professional offices of all types.

In both large and small architectural offices, the disciplines of design and production are conventionally defined as two distinct departments, comprising personnel with different talents and interests. But project management is still undergoing development as a separate discipline and struggling for equal status with design and production. Of course, there have always been project managers in fact if not necessarily in name, because buildings had to get built. But the definition of title and exact responsibilities to be discharged came much later than those for design and production. Even now, when one mentions the design and production departments a clear picture comes to view, but not so with the project management group—because the latter varies so much in its organization within different offices.

Originally, a project manager might have been a designer or production person simultaneously responsible for *managing projects* on a catch-as-catch-can basis. In many cases, the person given the dual assignment was hard put to do justice to both roles. In order to relieve design and production personnel of such chores, project management slowly developed into a full-time job involving tremendous responsibilities.

Unfortunately, the project manager became something of a second-class citizen in the office, especially in the very beginning,

Paul W. T. Pippin, AIA, was an associate partner and project manager with Skidmore, Owings & Merrill for 15 of his 27 years with the firm. He is currently teaching seminars in project management in the schools of architecture at Yale and Columbia universities.

owing to the “elitism” of designers, which was sometimes tacitly, if not overtly, encouraged by principals in the office. Frequently, the very designers who looked down on the project manager’s role were the most dependent on it, and even with a fine set of contract documents could never have got their designs built without the project manager. With time, even the die-hards began to acknowledge the project manager’s value, and project managers themselves began to come forward and make their presence felt.

The mission of a project manager can be seen as having three goals:

1. To assist the office in producing the best possible architecture.
2. To help keep the office out of trouble.
3. To make a profit on every job.

In order to realize the above goals, the project manager must first be well trained architecturally and have extensive experience in either design or production. (It is my personal experience that a design background offers more versatile experience for a project manager.) Second, he must organize his daily work and orient the staff assigned to the project so that he reviews all operations and contacts on the job coming into the office, as well as leaving it. The latter procedure is of prime importance and it has tremendous appeal to clients. It also prevents unilateral action by project staff that could not only short-circuit communications and create serious problems within the office, but erode the client’s confidence, as well.

It is only with the assumption of over-all control of a project by a single manager that work can move forcefully in a definite policy direction towards a successful conclusion. This can be achieved if the project manager carries out the following responsibilities:

- Prepare the owner-architect contract for the partners’ approval.
- Review the owner’s contract with the general contractor or construction manager if requested to do so by the owner.
- Prepare contracts with consultants for the partners’ approval.
- Prepare a master schedule outlining critical

deadlines for the architects and consultants during design, production, and construction.

- Prepare the in-house operating budget.
- Schedule regular meetings to coordinate the activities of design and production as they relate to all parties involved. These meetings ought to include: weekly in-house coordination meetings with the architect’s staff; weekly coordination meetings with the architects and consultants; and weekly coordination meetings with representatives of the owner, architect, consultants, and general contractor or construction manager.
- Attend all major presentations and follow their preparation to make sure they are on schedule.
- Review all minutes of meetings before they are distributed.
- Review all job progress reports.
- Receive all correspondence on the project directly, route all communications, and initiate and sign all correspondence.
- Prepare owner’s and consultant’s billing schedules for the duration of the project.
- Review all requisitions, bulletins, change orders, and certificates of payment for approval.
- Permit no extra services or overtime without the owner’s approval.
- Review and approve all invoices before they are issued.
- Carry out all conditions of the contract.

It is important that all project managers in an office be charged with the same responsibilities and perform them in compliance with policies and procedures set down by the office. There is nothing more confusing and frustrating for an employee, or for a client, than to work with different project managers who operate according to totally different methods. The only way to standardize operating procedures is to have a project-management department headed by a general partner. Standard project management operating procedures do not demand hard-and-fast rules, but rather procedures that are applied judiciously in working on different types of buildings with different clients, different in-house staffs, different contractors, or different construction managers. The fact that there is usually no project management department *per se* in most offices does not preclude the urgent need for such a department. It must also be remembered that there is a subtle difference between managing a project and the operations known as “office practice.” Project management means just what it says—the management of a project—

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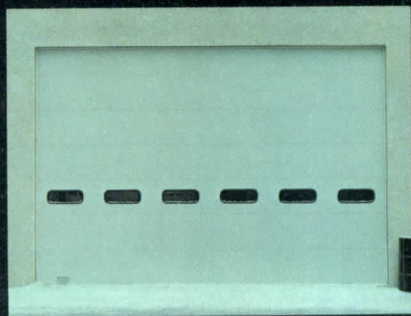
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not running the office.

How does an office establish the procedures for a project management department? The first step is the development of a manual, prepared by a capable project manager within the firm. This manual would include input from all experienced staff and the official approval of senior members. A series of meetings should then be held to review the material with the project managers as a group and, once this orientation period is over, the project managers should meet monthly to keep the manual realistic and up-to-date. If the office does not have an experienced project manager capable of developing such a manual, a consultant may be invited to conduct seminars, or a selected group might be sent to courses given outside the office.

Even if an office has an organized group of project managers, regardless of how well they have been trained, there is little hope for a truly successful operation unless the principals in the office are equally well informed on their policies and procedures and fully support their implementation. Too often the principals in a large office are too busy, "too important," or too quick to minimize the value of project management to attend orientation sessions or even find out what the process is all about. This is perhaps the greatest problem a project manager has to contend with in his own firm.

Charrettes are a disruptive problem in any office. Diligent project management can greatly reduce the occurrence of expensive and exhausting crash effort by carefully monitoring the project daily, holding weekly in-house meetings with project staff to check that assignments are on schedule, and arranging for assistance exactly when it is needed instead of a day or two before the deadline. Charrettes are frequently brought about by partners who are too busy to follow the job carefully until it has progressed for some time and then attempt to make last-minute changes that put the project way behind schedule. A strong project manager can overcome this practice in the early stages by having the senior designer assemble all material developed to date for thorough review by a partner.

Project managers are indispensable for the successful administration and coordination of team efforts, especially as architects engage more and more consultants for specialized fields of work. The fast-track approach, which involves a series of deadlines to issue bid-packages during the actual development of the project, also requires constant supervision and scheduling by the project manager to meet the demanding timetable of the general contractor or construction manager. Punctuality is especially important, now that inflation makes conventional bidding almost prohibitive.

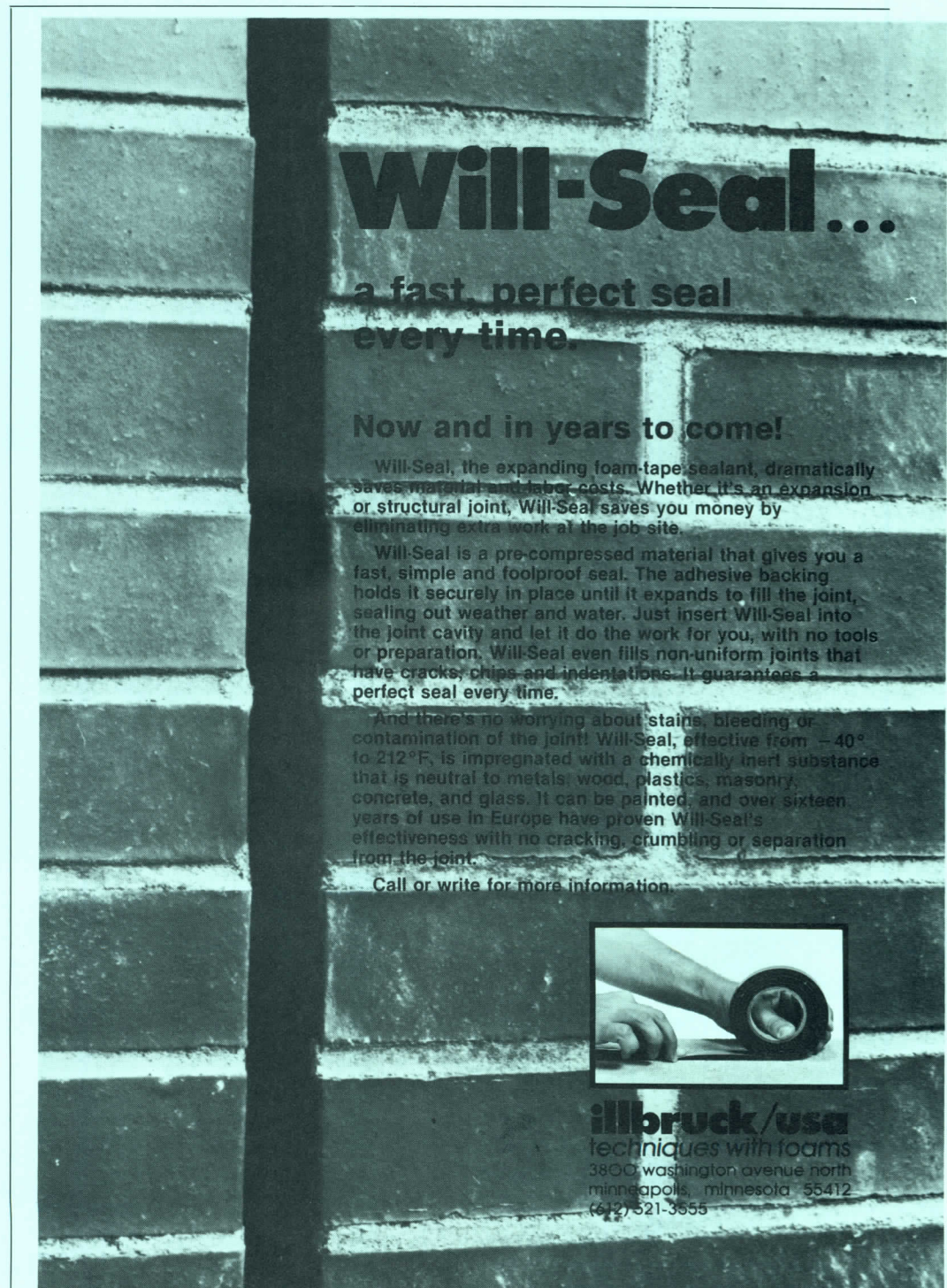
An able project manager can increase the profit of the firm beyond anyone's imagination without sacrificing the quality of architecture or under-staffing the project. These goals are accomplished by monthly monitoring of budgets, selective staffing appropriate

to each project, assignment of personnel only as required, careful control of expense accounts and nonreimbursable costs, billing of clients for extra services not covered in the base fees, and, when possible, investment of accumulated fees in short-term MMCs or Treasury bills until the fees are needed. This last option is especially feasible when the project manager stipulates that if invoices are not paid within the specified deadline a late-payment charge is required.

A growing number of architectural schools are recognizing the importance of project management by offering courses in the subject. The fact that students voluntarily and enthusiastically enroll in such courses, which are usually available only as electives, indicates that they are aware that there is more to architecture than just design. In the

future, these courses should be required, not just elected. At any stage of an architectural career, project management procedures are basic to the development of good judgment and decision-making according to the particular characteristics of a project.

It can be shown over and over again—in small offices as well as large—that satisfied clients, trouble-free projects, and increased profits can all be realized by a well-structured project-management system. The size of the office has absolutely nothing to do with the policies and procedures. The only difference is that in a small office you may be doing the actual work yourself while in a large office you may be directing others to do it. The organization of a project management department in your own office is worth a try. There is nothing to lose and everything to gain.



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America's "new beginning:" a big plus for industrial building

In his February address to the nation, President Reagan outlined a four-pronged recovery plan to break the country's "cycle of negative expectations." Combining tax cuts for individuals, depreciation reform for business, reduced Federal budget growth, "prudent relief" from Federal regulations, and noninflationary monetary policy, the program's thrust is to spur revitalization and expansion of the nation's productive capacity. Recent passage of House and Senate budget resolutions, while important, are just the early Congressional steps toward implementing their portion of the program. Sometime this summer, after much debate—and under pressure from the President and the people—Congress will pass an actual program-by-program budget and a tax bill to stimulate savings and investment. In response, industrial building will become a growth market for the construction industry.

This outlook contrasts sharply with the uninspired performance of manufacturing building in the late 1970s. Overbuilding, which was exposed during the recession of 1974-75, severely constrained industrial building until mid-1977. Thereafter, an expanding economy, which raised capacity utilization rates above 80 per cent, boosted the construction of manufacturing space, although not to its earlier levels. Instead, in order to improve efficiency and meet Federal anti-pollution standards, manufacturers directed a larger share of their capital spending into equipment rather than construction. Inflation, coupled with increasingly tougher environmental regulations, kept pushing up the cost of building, encouraging manufacturers to substitute labor for capital. Consequently, at the peak of the past cycle in 1979, industrial building amounted to 243 million square feet, substantially less than the amount at the cyclical peaks in 1969 (317 million) and 1973 (293 million).

Since its 1979 peak, manufacturing building has traced an erratic path. But during 1981 it will shift direction, reversing its downswing and moving onto a long-term growth curve. Currently (May 15th), a slowing economy is forcing many manufacturers to lower their capacity utilization, weakening their demand for additional industrial space. Early in the second half, once the President's tax cuts and defense budget are passed, conditions will change dramatically. Rising consumer and military demands for goods will boost production, raising capacity utilization and increasing manufacturers' need for space. However, this down-up pattern means that manufacturing building in 1981, at 190 million square feet, will fall 11 per cent below its 1980 level. Next year, as the recovery in this area gains momentum, industrial building is expected to reach 220 million square feet.

Looking farther ahead, the benefits from controlling Federal budgetary growth, from reducing inflation, and from the Administra-

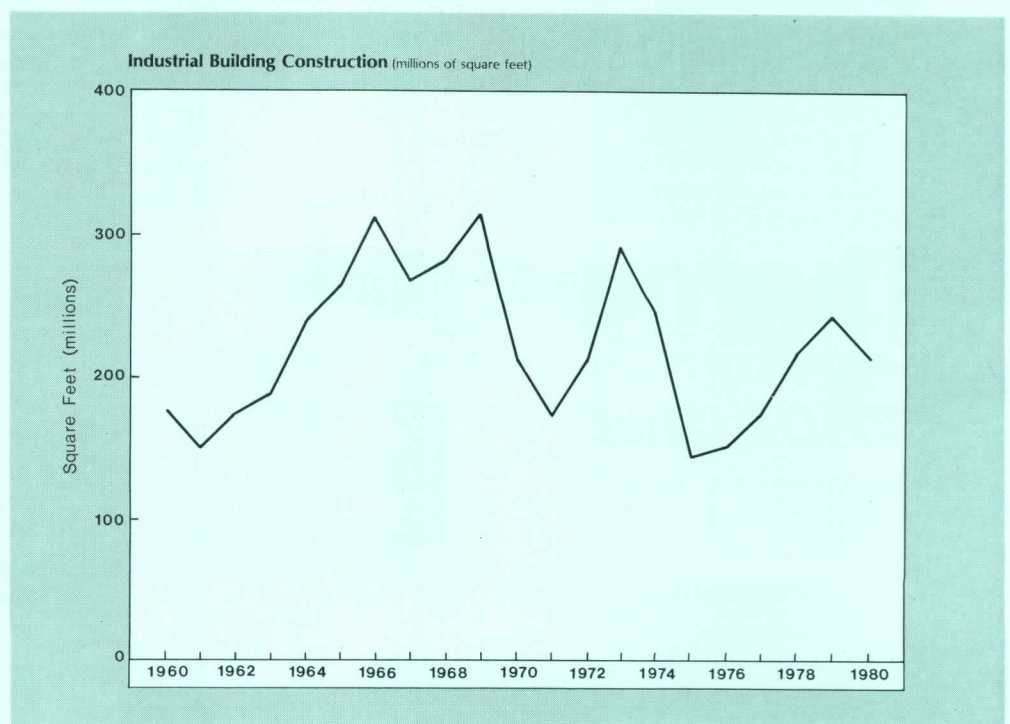
tion's aggressive pursuit of regulatory relief—each of which will take time to work through the economy—will join with the strong cyclical expansion to boost industrial building. By the middle of the decade, manufacturing construction could be approaching the range of 270-280 million square feet—still below the peak of the late '60s, but substantially above the 1979 peak.

In terms of location, regional shares of industrial building will register some mild surprises. For nearly 20 years, the Northeast has steadily lost ground in this market. But an aggressive, if unnoticed, campaign to attract industry—especially defense and high technology companies—ended the decline and even boosted the region's share of manufacturing square footage to 16 per cent in 1979/80. Continued modest improvement

could raise the Northeast's share to 17 per cent in 1985—though this is still a far cry from its nearly 25 per cent share in the 1960s.

Until the late '70s, the Midwest's share of industrial building hovered around 30 per cent. Last year this share plummeted to less than 25 per cent, due to the mounting difficulties of the automobile industry, including its material supplies, and the second quarter recession. However, it is this region, especially its capital goods manufacturers, which stands to benefit the most from the Administration's program to revitalize the nation's industrial capacity. After a poor showing in 1981, the Midwest is expected to begin recouping some of its market share, reaching the range of 27 to 28 per cent by the mid-eighties. The South boosted its share of manufacturing building from 26 per cent in the early '60s to 32 per cent in the '70s. The West did even better, raising its share from 17 per cent in the early '60s to 24 per cent in the late '70s. During the next five years, these shares are expected to slip slightly (31-32 per cent for the South and 23-24 per cent for the West), because of the modest improvement in the Northeast and Midwest.

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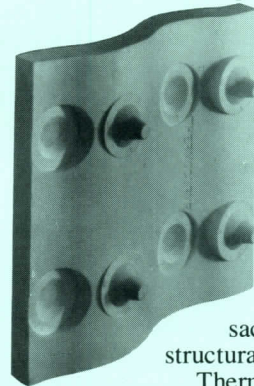
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Metals prices up, lumber down—but over-all costs hold steady

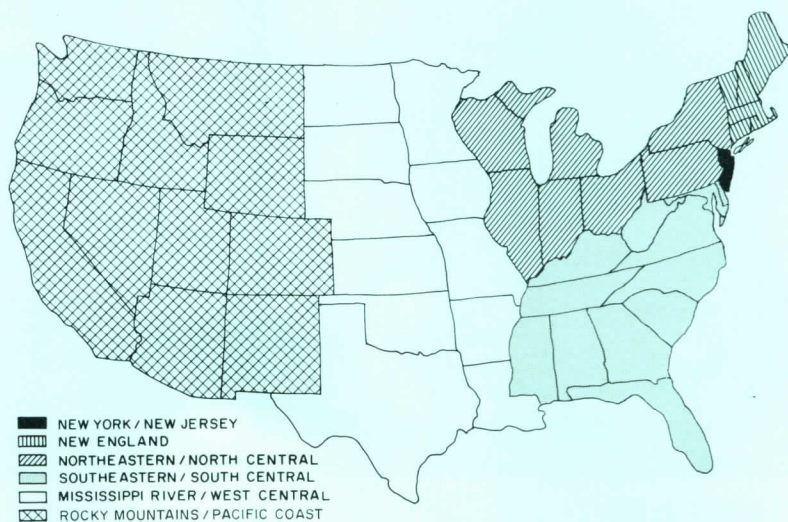
According to a recent survey by McGraw-Hill Cost Information Systems, steel prices are starting to rise from one to two per cent per month. Copper pipe and wire, which were still on a downturn until the end of April, are showing a price increase—the first since January. Lumber prices seem to have returned to their 1980 low point, a decline that was indicated by a slowdown of production in lumber mills. April saw the beginning of a five

per cent cost increase for plywood, and a 5.8 per cent increase for Douglas fir utility two-by-four material. On the other hand, framing lumber is still six per cent below last year's figures, because of the depressed housing industry. The general trend of materials and labor costs nationwide has indicated no significant percentage differences. Working from first-quarter data and current indications for the next few months, it is anticipated that

the over-all inflation factor for construction costs based on demand for materials and anticipated contract negotiations should remain at the nine-to-ten per cent level for 1981. McGraw-Hill Cost Information Systems studies are conducted semi-annually by mail and telephone, and involve contacts with building products distributors, construction labor consultants, and both general and specialty contractors.

SUMMARY OF BUILDING COSTS

Districts	Number of metro areas	9/80 to 3/81 %	3/80 to 3/81 %	1941 to 3/81 %
Eastern U.S.				
Metro NY-NJ	16	1.8	8.4	668.30
New England States	21	2.1	4.9	681.16
Northeastern and North				
Central States	46	2.3	6.5	750.92
Southeastern and South				
Central States	39	2.2	6.9	691.33
Average Eastern U.S.	122	2.10	6.05	697.93
Western U.S.				
Mississippi River and				
West Central States	35	2.3	6.7	741.61
Pacific Coast and Rocky				
Mountain States	25	2.5	6.0	851.50
Average Western U.S.	60	2.40	6.35	796.56
United States: Average	182	2.25	6.20	747.25



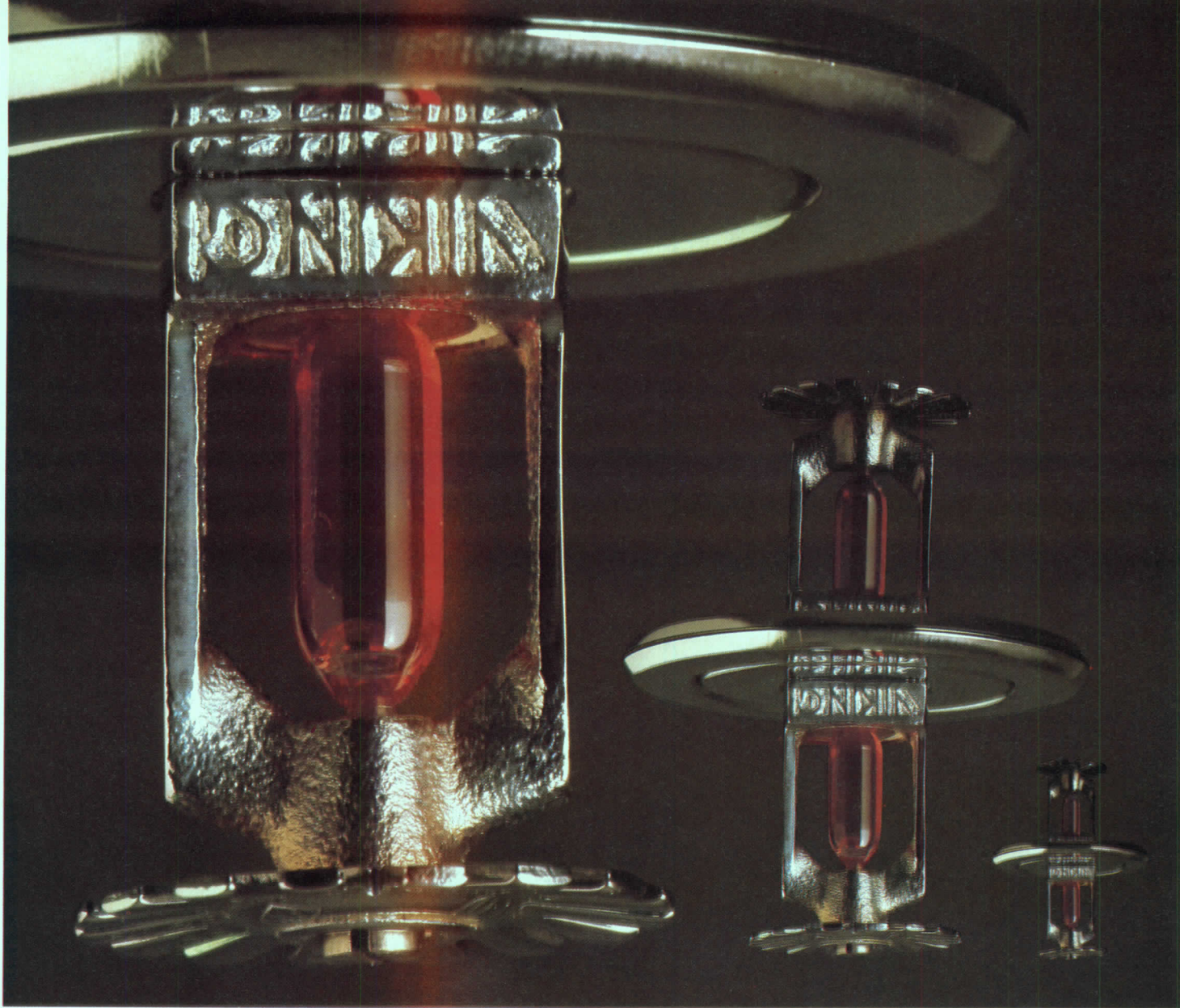
HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL NON-RESIDENTIAL BUILDING TYPES, 21 CITIES

1941 average for each city = 100.00

Metropolitan area	1971-1978								1979				1980				1981
	1971	1972	1973	1974	1975	1976	1977	1978	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st
Atlanta	459.2	497.7	544.8	575.0	598.7	657.1	714.2	755.8	819.6	836.0	872.1	904.3	875.6	901.9	935.1	964.3	961.3
Baltimore	381.7	420.4	475.5	534.3	581.1	585.0	635.6	662.2	729.6	744.2	773.6	802.2	779.0	802.4	817.2	825.3	836.0
Birmingham	331.6	358.3	402.1	421.2	448.9	551.9	585.4	609.2	704.1	718.2	724.5	751.3	736.8	758.9	757.4	764.9	781.6
Boston	362.0	394.4	437.8	462.5	513.2	555.9	587.7	759.5	691.9	705.7	718.9	745.4	736.2	758.3	752.4	759.9	769.0
Chicago	418.8	444.3	508.6	529.6	560.1	635.2	689.9	717.3	805.4	821.5	885.9	918.7	889.4	916.1	944.5	953.9	963.4
Cincinnati	386.1	410.7	462.4	500.1	550.6	609.8	656.6	669.5	750.7	765.7	810.0	840.0	823.0	847.7	868.3	876.9	887.4
Cleveland	415.6	429.3	462.2	509.5	531.0	632.9	625.2	653.5	794.7	810.6	853.6	885.1	881.8	908.3	920.6	929.8	936.3
Dallas	357.9	386.6	436.4	477.9	499.6	538.5	615.2	637.6	739.0	753.8	873.0	905.3	787.7	811.3	827.1	835.3	869.3
Denver	392.9	415.4	461.0	510.0	553.6	616.0	703.8	730.5	803.2	819.3	847.4	878.8	905.9	933.1	927.6	936.8	934.1
Detroit	409.7	433.1	501.0	538.7	597.5	617.2	664.2	756.6	840.6	857.4	865.5	897.6	860.5	886.3	911.3	920.4	945.9
Kansas City	344.7	367.0	405.8	444.9	509.1	547.3	603.0	631.8	657.7	670.8	711.0	737.3	735.2	757.3	771.2	789.9	791.3
Los Angeles	400.9	424.5	504.2	531.8	594.1	673.1	756.8	784.2	886.3	904.0	955.4	990.8	978.3	1007.6	1022.3	1032.5	1056.0
Miami	384.7	406.4	447.2	485.5	558.9	592.5	628.4	649.0	686.1	699.8	736.9	764.1	742.8	765.1	777.0	784.7	788.7
Minneapolis	417.1	412.9	456.1	488.6	538.0	564.1	629.4	651.3	793.4	809.3	824.3	854.8	827.6	852.4	848.3	856.7	871.2
New Orleans	341.8	369.7	420.5	442.1	494.7	534.8	614.7	637.0	697.7	711.6	734.7	761.9	753.8	776.4	785.5	793.3	816.9
New York	395.6	423.1	485.3	515.3	533.5	580.8	619.8	646.3	666.6	679.9	778.9	807.8	793.7	817.5	815.1	831.4	838.7
Philadelphia	374.9	419.5	485.1	518.5	567.5	579.2	658.8	680.0	778.0	793.5	814.6	844.8	830.9	855.8	849.2	857.6	869.6
Pittsburgh	362.1	380.3	424.4	465.6	509.5	526.3	589.6	614.0	692.2	706.0	736.5	763.8	746.1	768.5	773.0	788.4	795.4
St. Louis	375.5	402.5	444.2	476.7	528.9	537.1	617.1	637.4	752.0	767.0	782.8	811.8	786.7	810.3	820.5	836.9	839.4
San Francisco	512.3	561.0	632.3	672.5	753.3	820.8	963.2	990.0	1239.0	1263.8	1200.3	1244.8	1202.7	1238.8	1260.4	1285.6	1320.9
Seattle	358.4	371.5	424.4	450.2	515.1	570.5	629.6	669.0	700.7	714.7	761.0	789.1	763.3	786.2	807.6	823.7	829.4

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

Fourth quarter figures for the Summary of Building Costs given in the March RECORD were projections made by McGraw-Hill Cost Information Systems on the basis of key economic factors during the preceding six to nine months. All figures in the current Summary are actual data, derived from a survey of industry sources.



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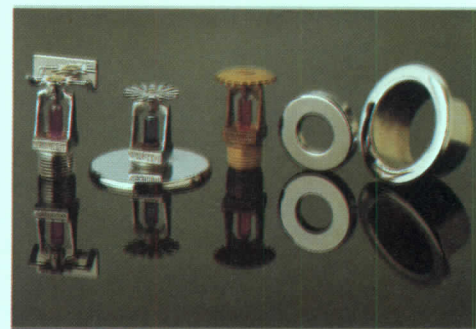
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KOHN PEDERSEN FOX: EXTERNAL FORCES SHAPE MULTIFORM TOWERS

The design of office buildings finds itself now in a state of transition, not to say ferment. During the 1960s, building developers saw that the esthetic and intellectual rigor imposed on the building type by Mies van der Rohe was susceptible to low-cost knock-offs, and architects grew to despise the derivative, boring "office box." Some, like Michael Graves at Portland, Oregon, have attacked their boredom by applying a new decorative face to the form. Others, like Philip Johnson at Pennzoil in Houston, have attacked it by rethinking the shape of such buildings.

The New York City firm Kohn Pedersen Fox Associates wants to have it both ways, and it is in the process of establishing a convincing claim to success.

The designs emerging from the firm differ as markedly from each other as they do from the office box. Despite their relatively exotic shapes, however, the five designs shown here represent nothing as simple as a striving for new and dazzling form—though they have that, too. Rather, the forms spring from the scrupulous application of what might be recognized as a newly defined functionalism, one that includes the external forces of urban context—the shapes, materials and purposes of neighboring architecture and the desiderata of a given city's planning and development. Internal forces, deriving from the program and user needs, are likely to be fairly standard in cities, the firm believes, although they may well be paramount in rural buildings.

The formal variety evidenced in the five axonometric drawings at right is thus no accident. Kohn Pedersen Fox, in the firm's written design philosophy, considers all building form the certain outcome of "a physical dialogue between the internal forces of a building's program and the external forces of a building's context. . . . This dialogue is expressed in the enclosing wall of the structure." The dialogue may produce more than one valid design conclusion.

Both of the firm's chief designers—principal William Pedersen and design partner Arthur May—model in clay, the better to hear the dialogue and develop massing. May, who picked up the technique as a student under Louis Kahn, says he likes to work in clay because it is three-dimensional and easily corrected. Pedersen uses the approach only for urban structures (he sees rural buildings as essentially sculptural expressions of internal forces), and gestures forcefully to illustrate the strong forces thrust on urban buildings.

In any case, again quoting Kohn Pedersen Fox's design philosophy, "Within an urban

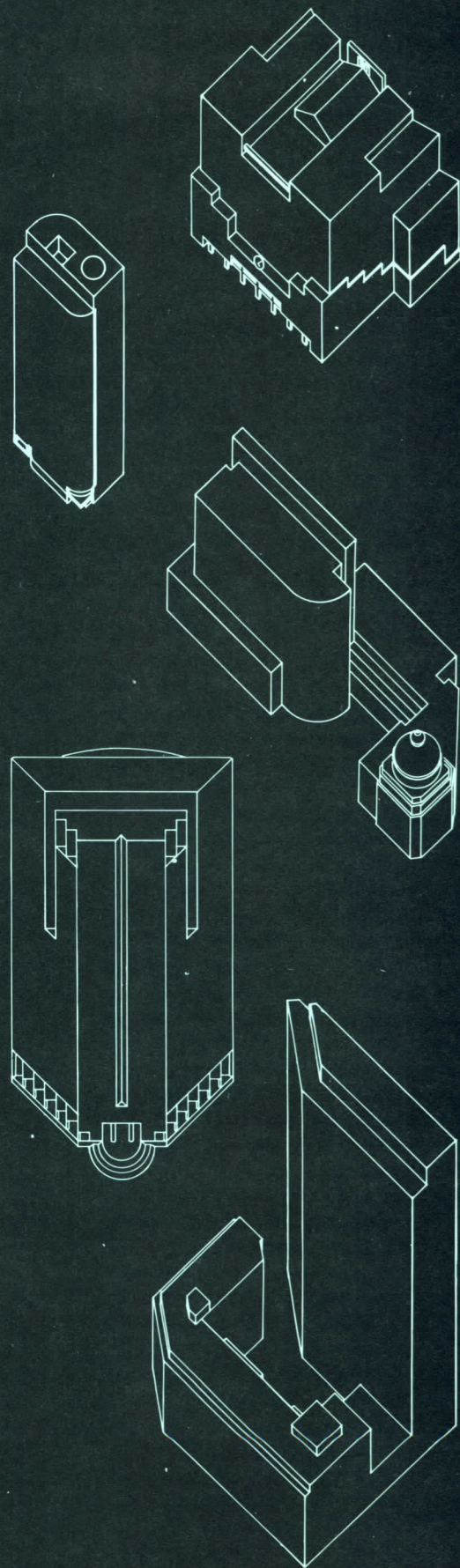
context, a structure meets fundamentally different conditions on each of its four sides. . . . If all of these external forces are respected, the resultant design should be only comprehensible when seen within its given context. Taken from its context, it lacks the support which gives it meaning." And one of the attributes shared by these five buildings is three, sometimes four, distinct facades.

The designs of Kohn Pedersen Fox also hark back to earlier "rules" of architecture by recognizing the Sullivanesque stricture that skyscrapers, like classical columns, have a base, a shaft and a capital.

At the top of a tower, Pedersen looks for "a lively signature" on the skyline. "The urban tower, as it reaches the sky, has a special responsibility," the firm philosophizes. "A tall structure must terminate. It must come to a logical conclusion." If the upper terminations shown here are sometimes less exuberant than initial designs were, one remembers that all architecture endures budgetary constraints—and three of these buildings were designed under the stern gaze of cost-conscious commercial developers.

The firm concentrates a good portion of its design energies on developing a building's base. According to Pedersen, "The first four or five floors are really crucial to us"—above that level, the pedestrian's vision stops. Four of the buildings shown here have stone bases to support glass towers. (The design at Penn Center also contrasts glass and masonry, but on its sides.) Moreover, the various bases draw heavily on Beaux-Arts motifs, less for reasons of fashion than from overwhelming contextual necessity—at Logan Square to fit into a distinguished institutional precinct, at Buffalo to continue the effect of an existing building along the street, at Wilmington to establish a small and unthreatening scale near family houses. The elaborate base for the building in Chicago is more frankly fanciful.

One more thing strikes an observer of Kohn Pedersen Fox's projects: the firm's apparent predilection for odd and difficult sites—a transitional site between institutional and commercial Philadelphia, for instance, another transition from downtown to theatrical Buffalo, or a triangle on a bend of the Chicago River. Part of the reason, principal Eugene Kohn ruefully acknowledges, is the lack of virgin sites in old, established cities. But one also guesses that the challenge of oddness and difficulty puts Pedersen and May on their mettle, forcing them to discover wells of imagination left untapped by mundane assignments. — Grace M. Anderson



From top to bottom: Hercules Incorporated Headquarters, Wilmington, Delaware; Eight Penn Center, Philadelphia; Buffalo Savings Bank, Buffalo, New York; 333 Wacker Drive, Chicago; One Logan Square, Philadelphia.

Axonometric drawings by Ilona Richter

**In Buffalo:
Neo-Beaux-Arts facade
and a landscaped void
set off a gilded dome**

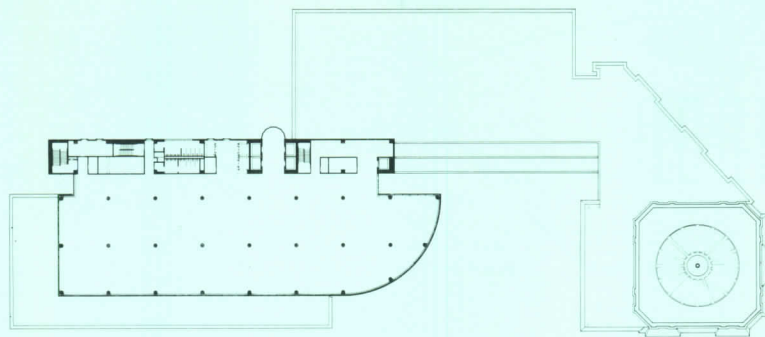
External forces pressed hard on Kohn Pedersen Fox's design for the Buffalo Savings Bank. For one thing, the gold dome above the original Beaux-Arts building, built in 1901, had become the bank's symbol. For another, the site effectually marks the north end of Main Street's business development. At the same time, the city was anxious to continue the movement of the street past the bank to its theater district.

The crux of Pedersen's solution is not building but a void: a parklike forecourt (see plans) between the old dome and a new office tower. Its chief purpose is to set the dome off as a free-standing jewel.

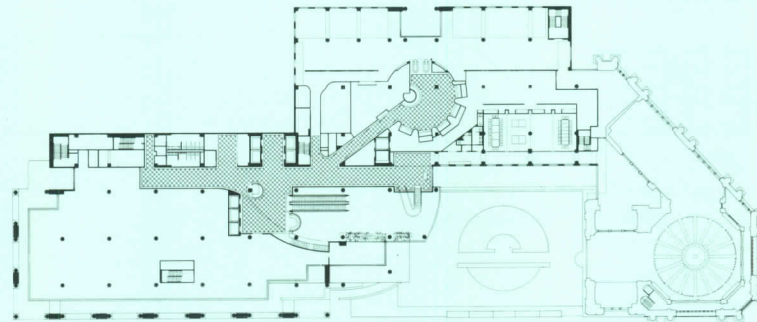
The design called for the demolition of an assortment of unrelated bank additions, saving only the dome and a matching 1933 addition next to it. To continue the facade along Main Street without letting the scale of the requisite 15-story office building overwhelm the sidewalk, a four-story mass pushes forward of the tower to carry the cornice line to the end of the block.

Moreover, although the office building has a straightforward modern curtain wall of reflective gray glass, the Beaux-Arts style of the dome also continues to the end of the block. This design was anything but straightforward. On the north face of the dome toward the forecourt, the facade reproduces the existing granite face of the corner building. On the projection in front of the tower, however, where granite was prohibitively expensive and copying the 80-year-old style unseemly, a concrete front recalls dressed ashlar and green marble lunettes pay tribute to fanlights without mocking them.

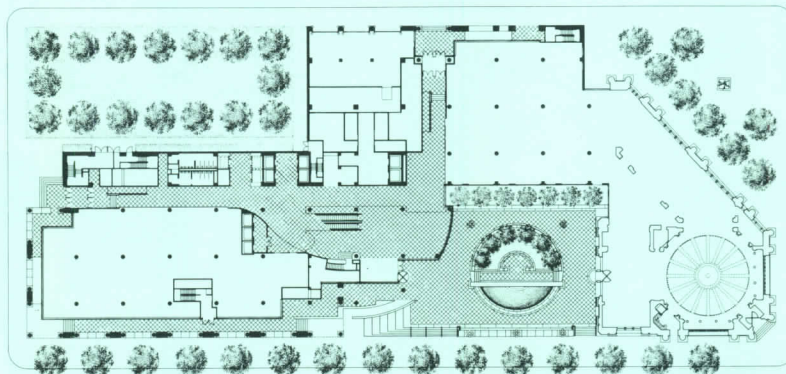
BUFFALO SAVINGS BANK HEAD-QUARTERS, Buffalo, New York. Architects: *Kohn Pedersen Fox Associates, P. C.*—A. Eugene Kohn, partner-in-charge; William Pedersen, partner-in-charge of design; Patricia Conway, partner-in-charge of planning; Laurence Goldberg, project manager; William C. Louie, project designer; Eileen Weingarten, job captain. Associated architect: *Milstein, Wittek, Davis & Associates, Architects*. Development manager: *Peter Pattison Associates, Inc.*



TYPICAL FLOOR

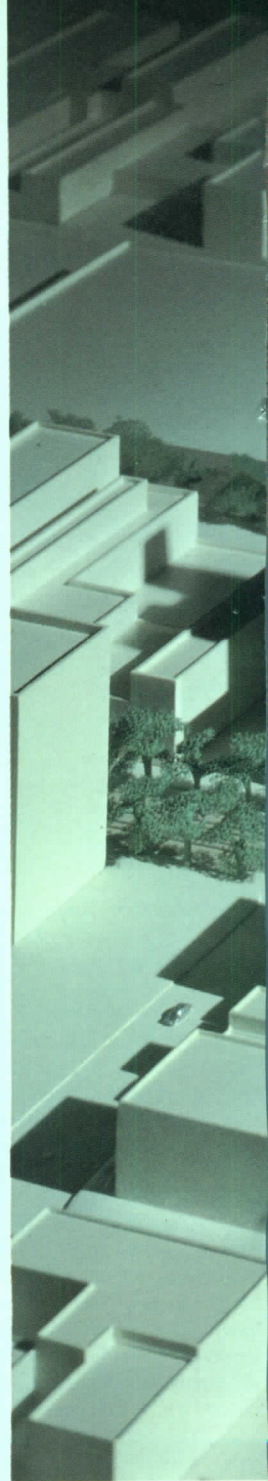


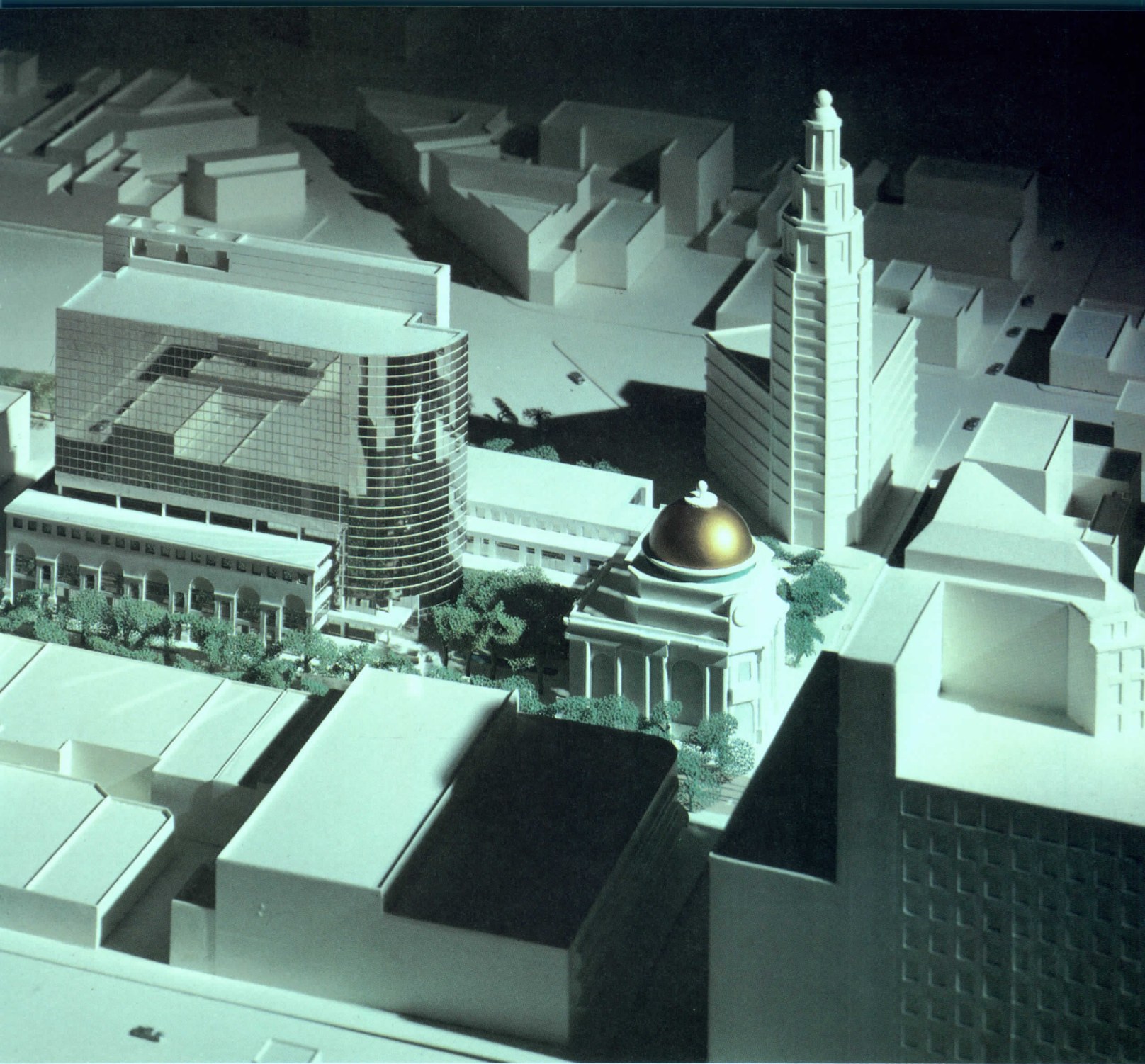
SECOND FLOOR



GROUND FLOOR

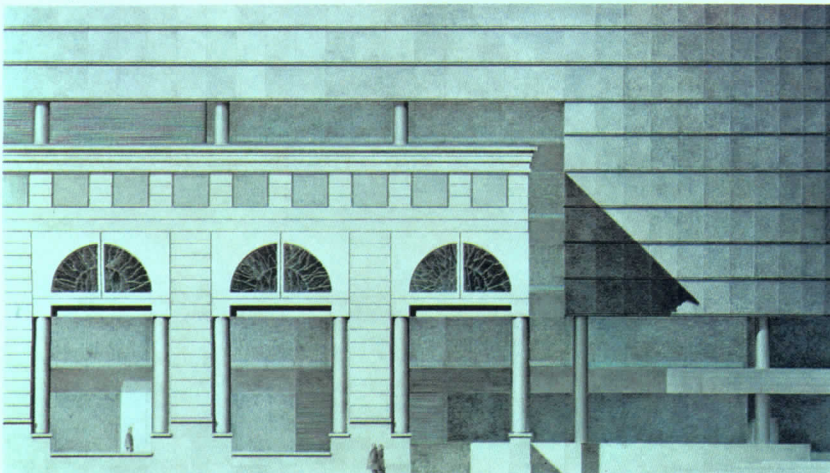
Drawings by Ilona Rider





Rendering by William C. Louie

Behind the Neo-Beaux-Arts colonnade that extends the masonry front of the Buffalo Savings Bank to the end of the block, pedestrians can stroll through an arcade just above the sidewalk to exit at the far end. A formal masonry wall in front of the forecourt declares the private nature of the space without repelling visitors. Esthetically, it maintains the street line: Pedersen deplors plazas that "bleed" space to destroy essential urban quality. The first phase, now under construction, will be completed in 1983.



© Jock Pottle photos



In Wilmington: a stone base tames the impact of a green glass cube

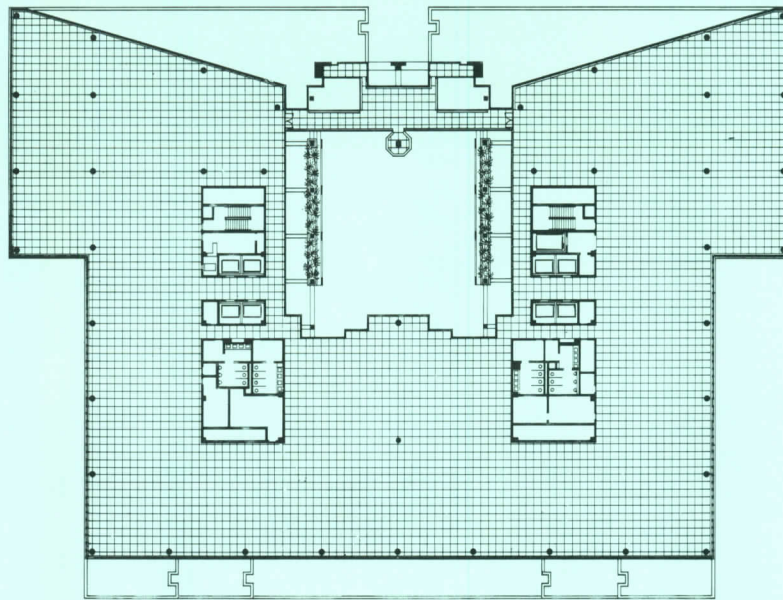
Unlike the shape of other buildings shown in this collection, the form of Hercules' headquarters is a response to powerful internal forces: to accommodate a large work force in a 12-story building, the company needed 40,000 to 47,000 square feet per floor. "That's an enormous spread," designer May observes. "You end up with a footprint of some 67,000 square feet."

External contextual forces were also at work, exacting particular care for the wall. Like so many of Kohn Pedersen Fox's projects, this, too, occupies a transitional site—the "front" facing downtown's Rodney Square three blocks away, the "back" facing a quasi-rural park and Brandywine Creek, and one side facing small-scale residences.

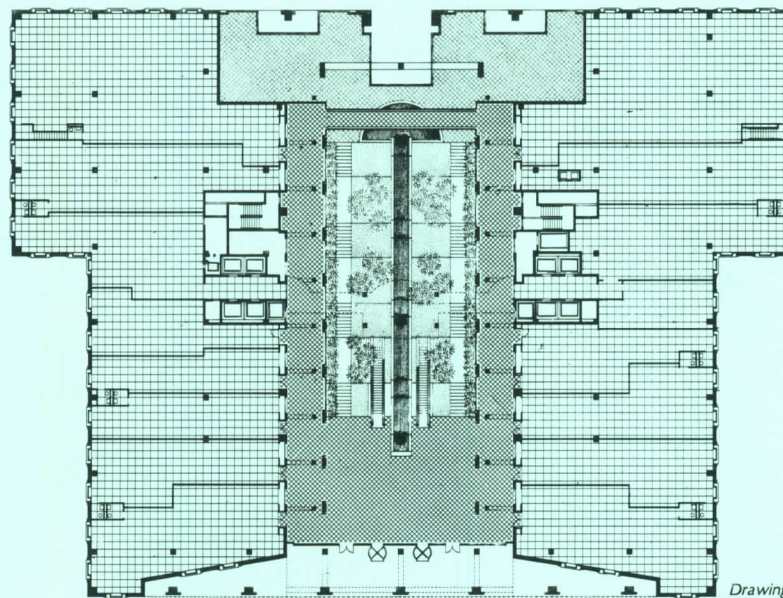
To acknowledge the pastoral nature of the public land behind the building, May inflected the shape (see plan and photo) to embrace the park and diagonal views both upstream and down. (The wedge-shaped inflection is repeated under the entrance overhang.)

The light granite that wraps the base of the reflective glass office building does not answer any need to conform to existing architecture, as at Buffalo and Logan Square, though it does refer to the traditional masonry style downtown with heavy sills and carved corbels. Rather, the base is designed to reduce the effect of bulk and create a recognizably human scale. The base expresses nothing but human scale: the only function behind the wall is work space, just like that behind the glass wall above. The broken cornice line is equally arbitrary, May confesses, though he hopes it creates "the effect of a side street in New York, where you look down a street to see different cornice heights on different houses."

HERCULES INCORPORATED HEAD-QUARTERS, Wilmington, Delaware. Owner: *Hercules Incorporated*. Architect: *Kohn Pedersen Fox Associates, P. C.*—*Sheldon Fox, partner-in-charge; Arthur May, partner-in-charge of design; Demetrios Pantazis, project manager; Robert Evans, senior designer; Mark Strauss, project planner*. Construction manager: *DeSabatino CM*.



TYPICAL FLOOR

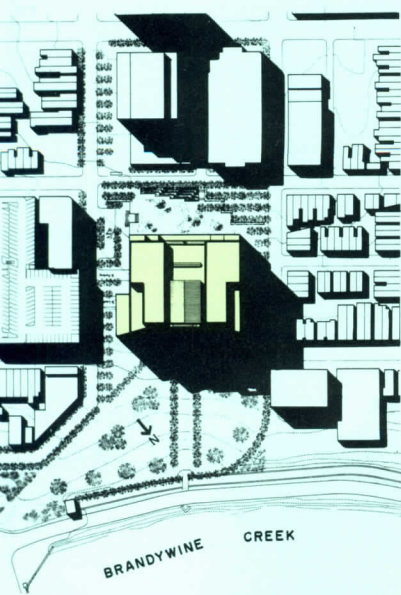
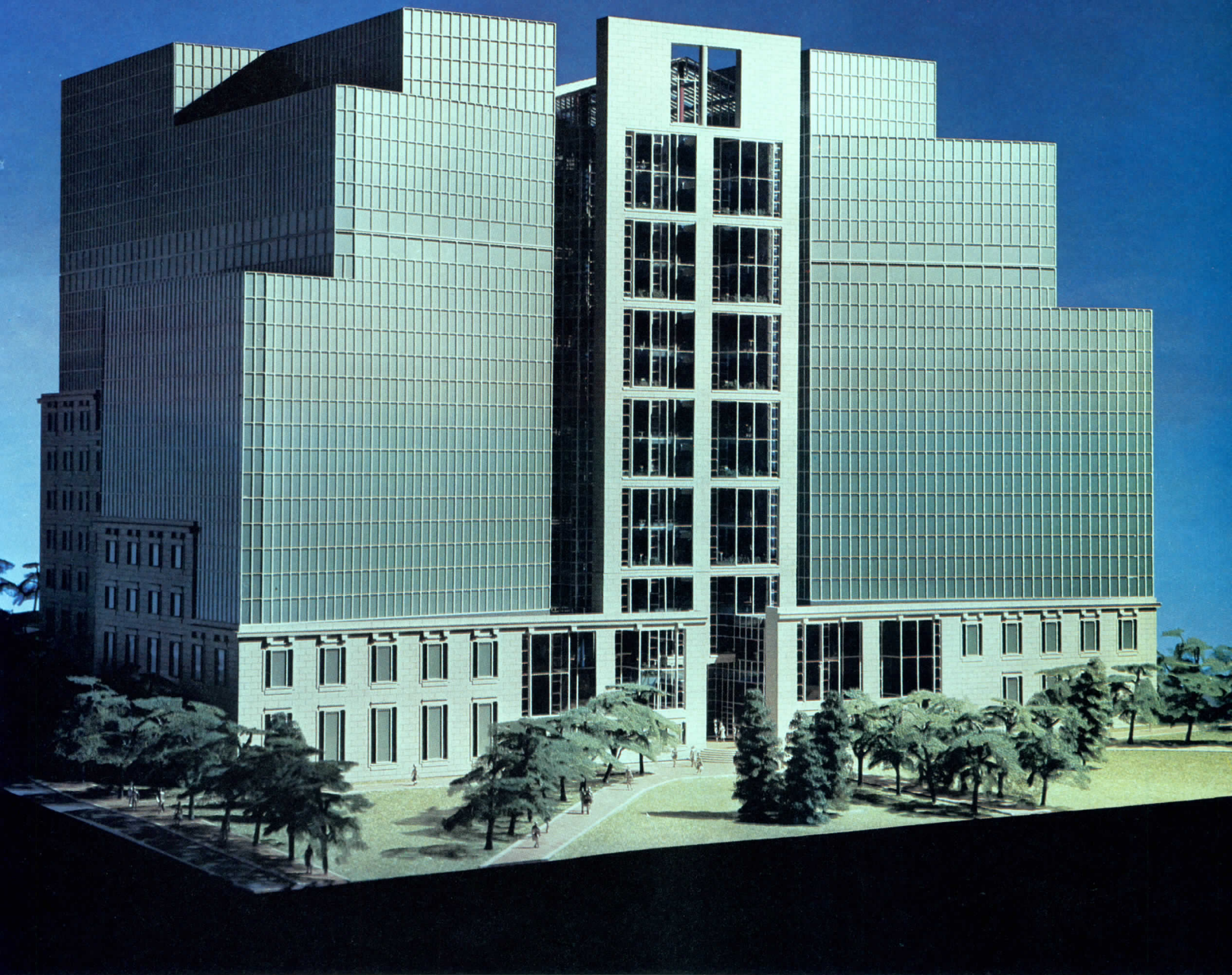


GROUND FLOOR

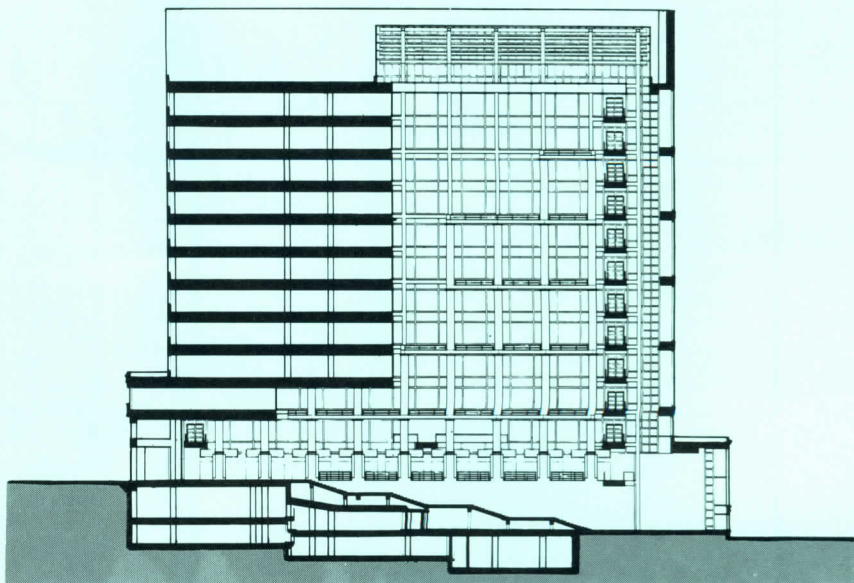
Drawings by Ilona Rider



©Jack Horner



Office floors at Hercules occupy a U-shape (see plan) which is filled in by an atrium. One of the company's highest priorities for the building was to create an image that would lend its employees identity and stature; another was to welcome the public and give access through the building to the park. The site drops sharply as it approaches the creek, and strollers will descend stairs and ramps, stopping to eat and shop along the way. To offset what May feared might be a "vacuous box," the tall atrium will be lined with stucco columns and planters supporting a network of climbing vines. The owners broke ground last November.



LONGITUDINAL SECTION

In Philadelphia: transitional complex has offices downtown, a hotel on Logan Square

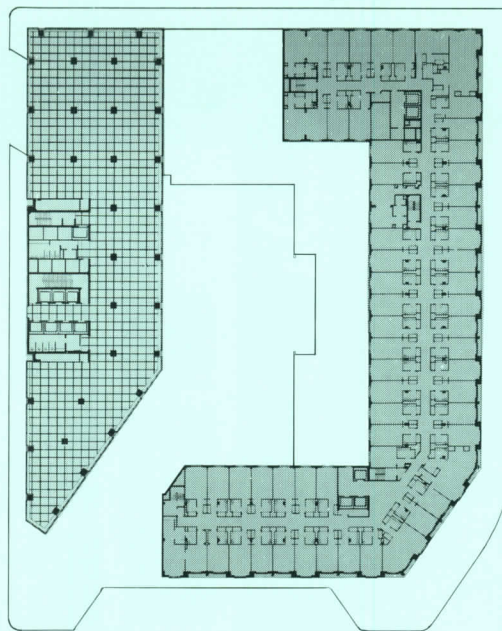
At One Logan Square, designer Arthur May has employed devices seen on other Kohn Pedersen Fox projects: an interior courtyard, a decorative base, a combination of stone and glass. But the mix, the massing, and the base are nonetheless different—how could they not be given the external forces at work here? Dealing with a dichotomous site and a dichotomous client (hotel and office developers), May has designed a dichotomous complex: low hotel and tall offices.

One side of the site faces Logan Square, a distinguished Philadelphia plaza surrounded by such institutions as the city library and the Roman Catholic cathedral. The site lay fallow for more than 20 years, the city jealously guarding the character of the locale and indeed rejecting at least two earlier designs. This project fills the square's last vacancy, and the hotel will be its only commercial building.

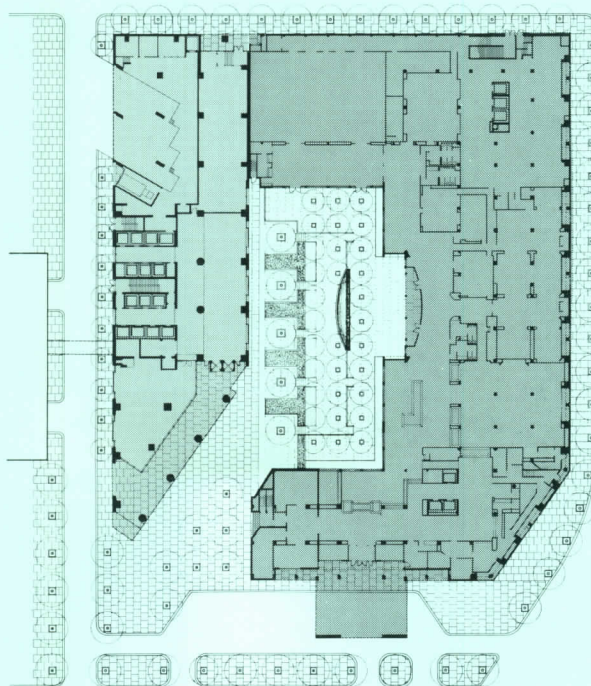
The other side of the site faces Philadelphia's central business district. The 30-story rental office building that fills this side of the site will serve as background to the 400-room deluxe hotel. Though they abut, the two buildings are entirely separate, sharing only the courtyard, which provides what May calls "break-out" areas from the office lobby and the hotel's dining room.

The massing of the buildings and their beveled corners derive from the fact that Benjamin Franklin Parkway, "the Champs Elysées of Philadelphia," cuts through Logan Square diagonally, severing one corner of the site. The buildings, now under construction, will fill the site to the curb line, but May took advantage of the angle to turn an imposing corner on the hotel and to enter the courtyard askew.

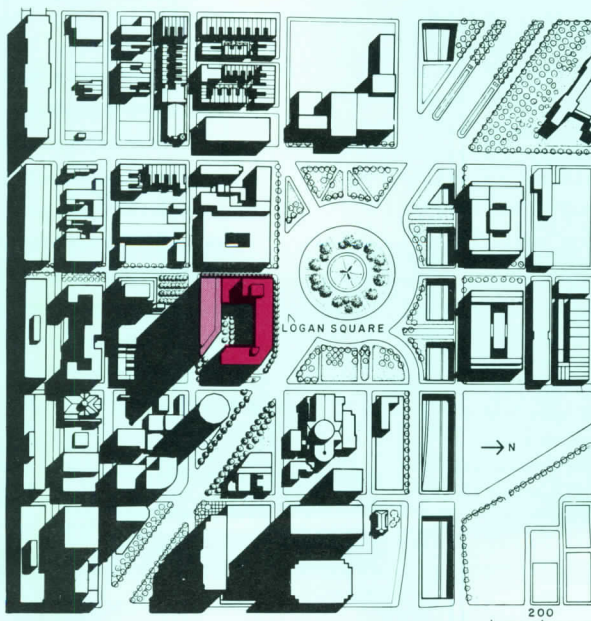
ONE LOGAN SQUARE, Philadelphia. Owner: *One Logan Square Associates, a joint venture by subsidiaries of INA Corporation, Urban Investment and Development Co., and Four Seasons Hotels Ltd.* Architect: *Kohn Pedersen Fox Associates, P. C.—A. Eugene Kohn, partner-in-charge; Arthur May, partner-in-charge of design; Robert L. Cioppa, administrative partner; Myron Sigal, project manager; Anthony Pellicchia, project designer.*



TYPICAL FLOORS



GROUND FLOORS

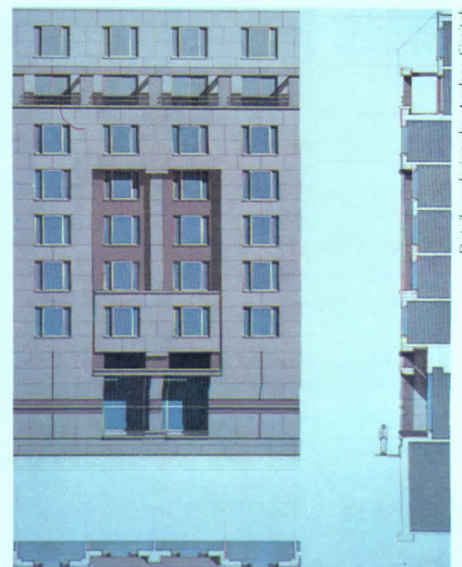
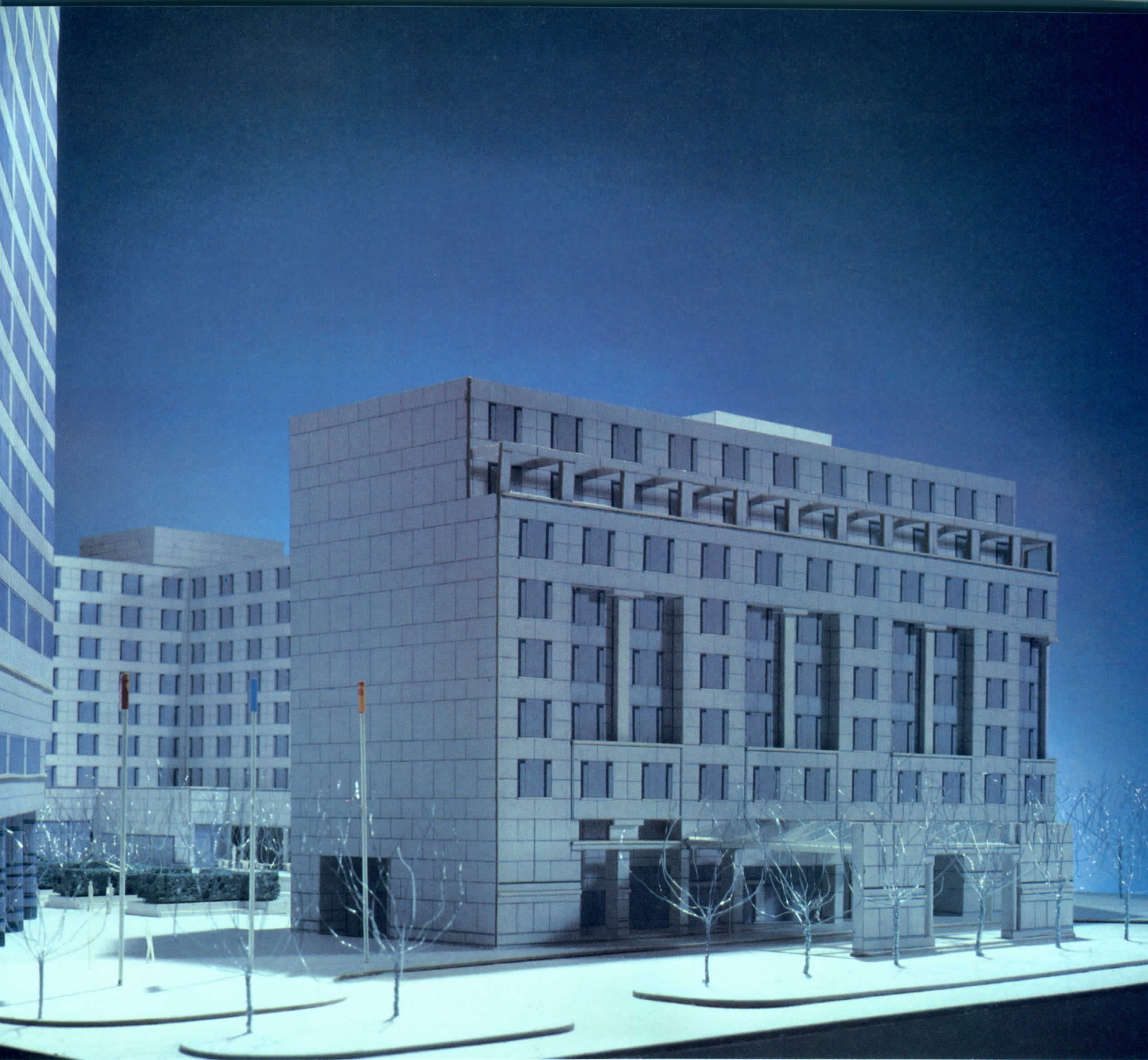


Drawings by Ilona Kider

©Jack Potte photos



Because of the high quality and dignified manner of the Beaux-Arts buildings around Logan Square, May took special pains proportioning and detailing the hotel facade. Beyond that, restrictions placed on height and setbacks demanded extra care in profiling the wall. At the base, niches regularly interrupt the wall to give scale at pedestrian level. The facade is finished with flame-treated pinkish granite, and niches punctuating the rhythm of the square windows are finished with the same granite, polished to have a darker color. At the top of the facade, a loggia screens a two-story penthouse.



Detail renderings by Andrea Simitch

In Philadelphia: a big bay window puts a pretty face on an in-fill box

Though the office building at Eight Penn Center in Philadelphia has a conventional planning program—speculative rental office space—Arthur May discerned outside forces aplenty to produce an individual form.

The site calls for an in-fill building surrounded by larger office towers built in the '60s for the city's downtown development plan. It lies only three blocks away from Kohn Pedersen Fox's Logan Square project (see location plan opposite).

A very small lot for profitable office development (it replaces a public ice-skating rink), it offered the client three advantages: proximity to the parent company's headquarters, access to transit and a citywide pedestrian concourse below grade, and a front on a major thoroughfare.

Essentially a poured concrete box with a self-effacing wall and punched square windows much like those across the street, the building has an assortment of curved corners that impart unexpected grace to the tower. A concrete corner at the back curves to admit light and air to an existing building. This curve becomes the elevator core, a sweeping bank of six cabs, and frees the center of the floors for offices. Were it not for the curve, the elevator bank could not be so long, May points out—“If you have four cabs in a row, sometimes you have to put on roller skates to catch one. Here you stand away at an angle.”

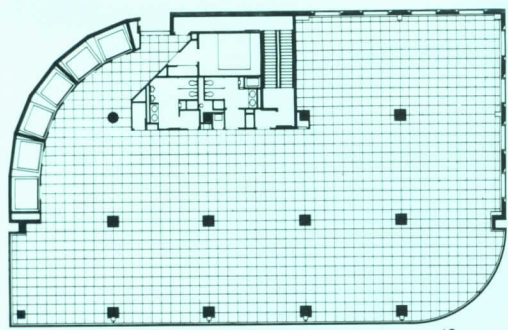
The front of the building carries a huge “bay window,” also curved at one corner as it leads into the concrete box. Still another curve at the base guides visitors to the front entrance.

About half of the 23-story structure is in place.

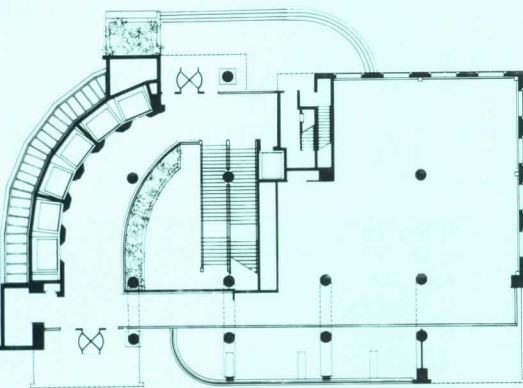
EIGHT PENN CENTER/COMMONWEALTH LAND TITLE INSURANCE BUILDING, Philadelphia. Owner: *Reliance Development Company, Inc.* Architect: *Kohn Pedersen Fox Associates, P. C.*—A. Eugene Kohn, partner-in-charge; Arthur May, partner-in-charge of design; Robert L. Cioppa, administrative partner; Robert Evans, senior designer; Patricia Conway, partner-in-charge of planning and interior design (*Kohn Pedersen Fox Conway Associates, Inc., Planning Consultants and Interior Designers*).



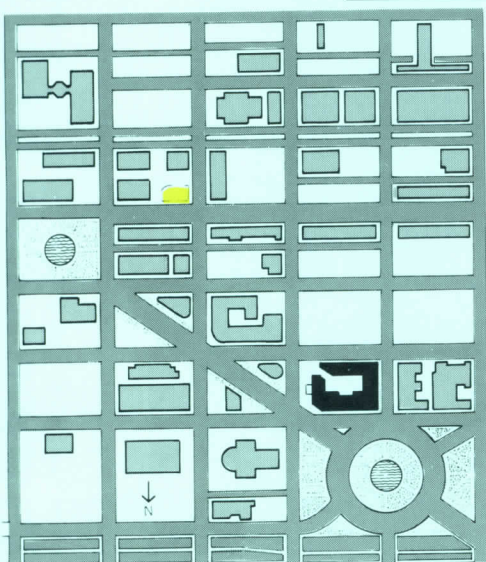
Perspective by Lebbeus Woods



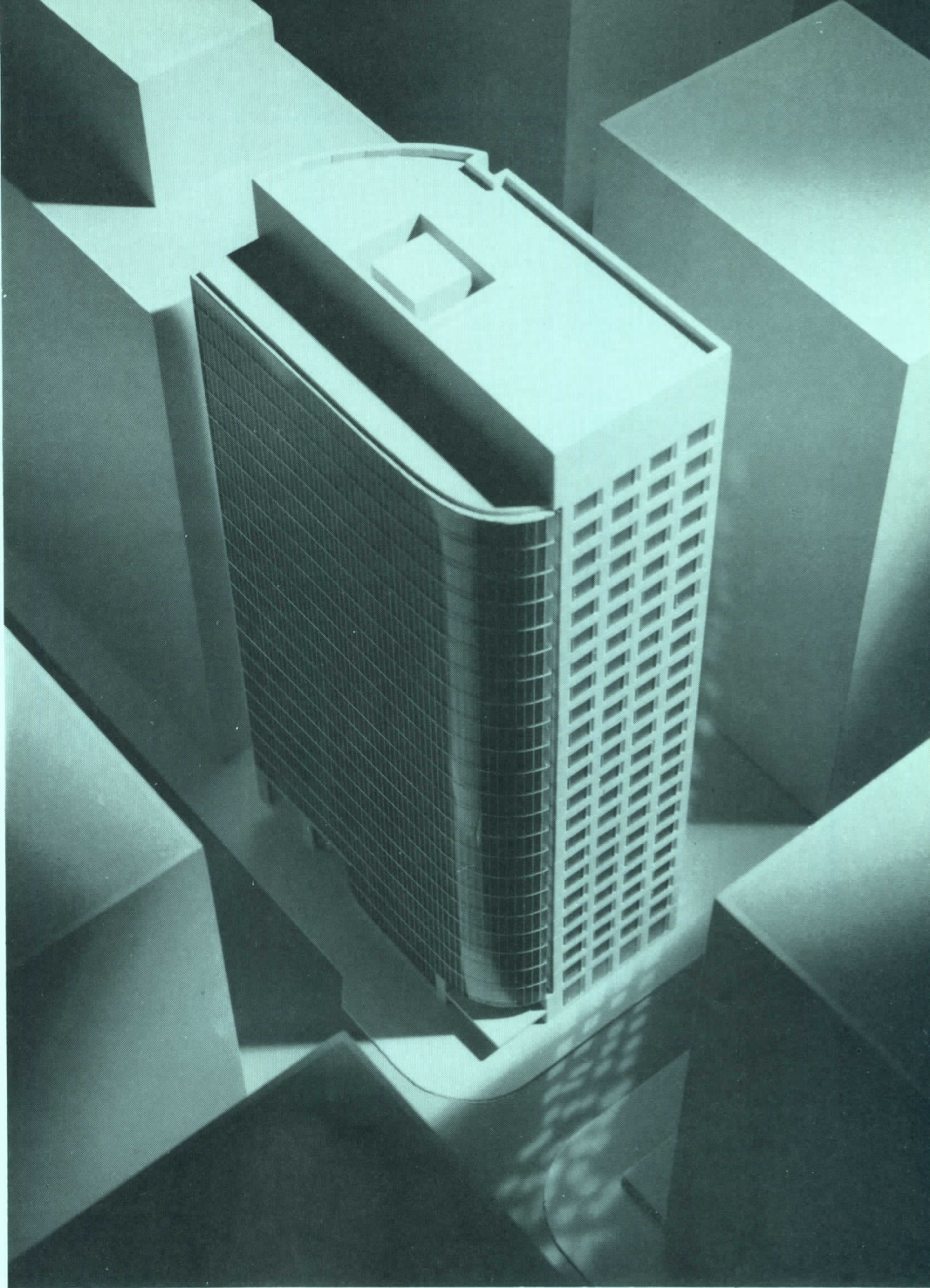
TYPICAL FLOOR



GROUND FLOOR

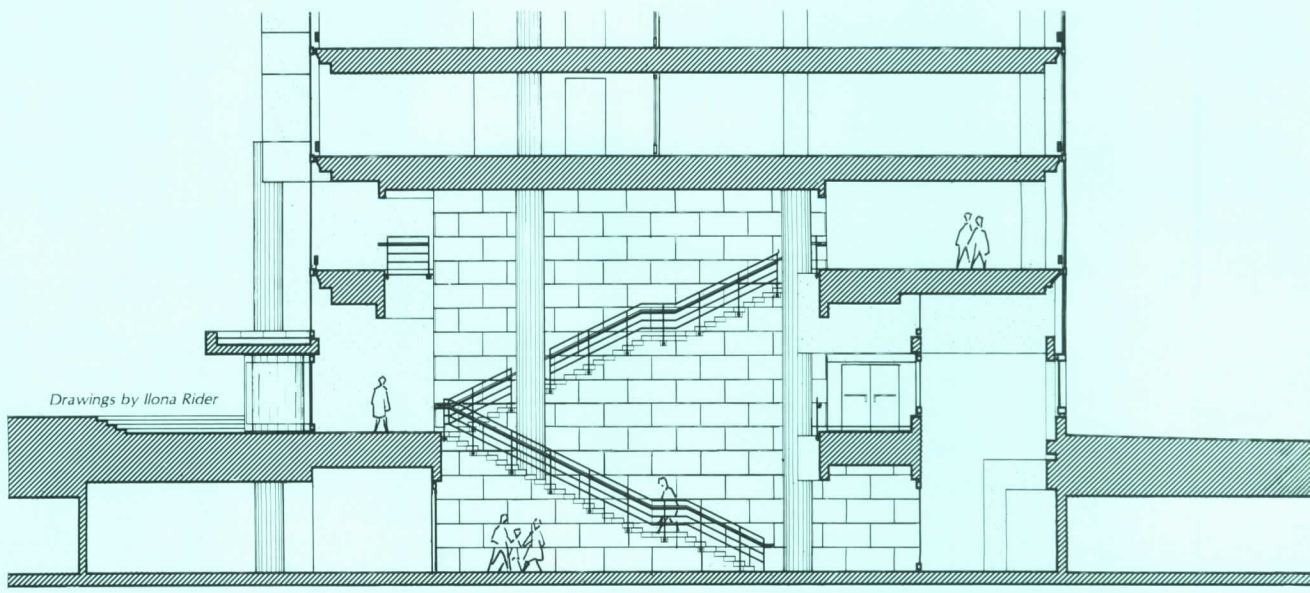


LOCATION PLAN



© Jack Horner

The base of Eight Penn Center, less assertive than others in this collection so as to maintain human scale on the small site, nonetheless gives pedestrians a measure of well-mannered grandeur, combining clear glass and reflective green glass. A travertine box hung above the main entry takes its form from two large transfer beams, needed because of railroad tracks beneath the building. The nicest surprise, however, is inside the lobby, where visitors, especially those using the dropped entry in back, find a three-story atrium (right) with one stairway going up to a restaurant, another down to mass transit and a pedestrian concourse.



Drawings by Ilona Rider

LONGITUDINAL SECTION



AN OLD BREWERY BORN AGAIN AS THE SAN ANTONIO MUSEUM OF ART



The Cambridge Seven changed the brewery's exterior as little as possible. Because art must be protected from too much daylight, most of the windows were bricked up, stuccoed and painted with a deep blue enamel

to bring them into harmony with the new gray-tinted glass windows (photo bottom right). Local preservationists urged that the original mullions (photo middle right) be restored, but the architects argued for the econ-

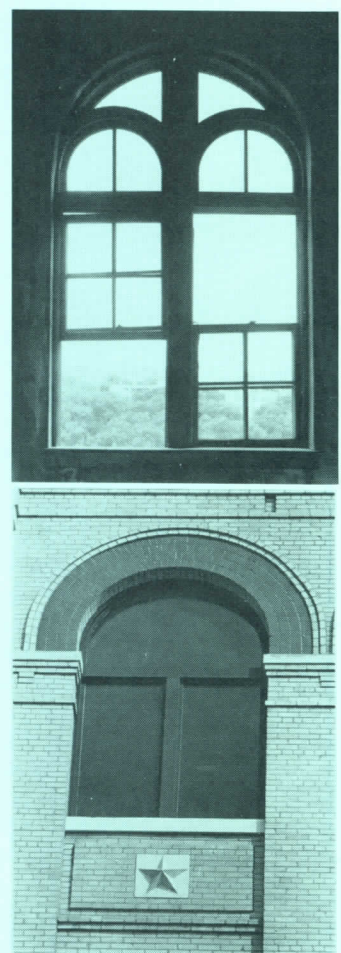
omy and simplicity of larger panes. Cambridge Seven caused the voussoirs of the semi-circular window arches to be painted a deep red—perhaps as a nod toward the red sandstone and granite San Antonio

county courthouse, a Neo-Romanesque work contemporary with the brewery. The cast metal stars on the spandrels cover old drain spouts and resemble star-shaped tie-rod caps elsewhere on the facades. Other



Cambridge Seven Associates from Boston and Greyhound Designgroup from New York have transformed a fine old brewery in San Antonio into a splendid new art museum. It is the latest in a series of important restorations and adaptive re-uses for this historic city, which until now was most famous for its restored missions, including that mission turned fortress, the Alamo. Like the Alamo, the handsome turn-of-the-century brewery, which houses the new San Antonio Museum of Art, began as an important place. In its heyday as the original Lone Star Brewing Company (no kin to the present institution of the same name) it produced 65,000 barrels of beer a year. Its beautifully proportioned interior spaces, which appear to have been designed by a masterful contemporary architect for the sole purpose of enhancing the display of art, were originally shaped to hold interconnecting silos, cereal cookers, mash tubs, kettles and fermenting tanks and to store malted barley, corn, rice and hops.

Beginning in 1895 and finishing in 1904, the architects who put it all together were the St. Louis firm of E. Jungerfeld and Co., assisted by San Antonio architects Wahrenberger and Beckman. Their building was technologically abreast of its time. They used cast iron columns and steel beams supporting a floor system of brick and concrete vaults and wrapped the entire complex with heavy masonry bearing walls. These walls with their masonry arched windows and doors are Romanesque Revival in style, probably inspired by San Antonio's magnificent Neo-Romanesque county courthouse, which was completed in 1896 just after design work for Lone Star began. But the brewery architects were as unfettered in their stylistic quotations as any Post-Modernist. They abandoned Romanesque at the cornice of their Italianate brewery, springing to early Gothic for the parapets, which recreate almost literally the forked Ghibelline battlements in Verona and thereby suggest the silhouette of a medieval walled town. Probably few people in those days asked what such metaphors had to do with beer, but the architects may have selected medieval forms to connote the fact that beer making (as old as Egypt) first became a commercial enterprise during the European Middle Ages.



©Nick Wheeler photos

exterior signs of new life are the steel and tinted glass footbridge replacing the old suspended bridge (photo top), new skylights for the lobby (the former wash house), and four bright awnings at the entrance.

Lone Star closed in 1925. By 1970, when the San Antonio Museum Association took an option to purchase, the buildings were in total disrepair. In spite of their condition the Association was attracted to the brewery buildings because they were worthy of preservation as landmark period pieces and because the site was located along the San Antonio River. This narrow stream has been the center of urban recreational life in downtown San Antonio since 1939-40 when its river banks were first lined with trees, promenades and riverside cafes. This network will extend to the museum. So far only the brew-house and storehouse have been converted, and at least six other buildings within the complex are available for expansion.

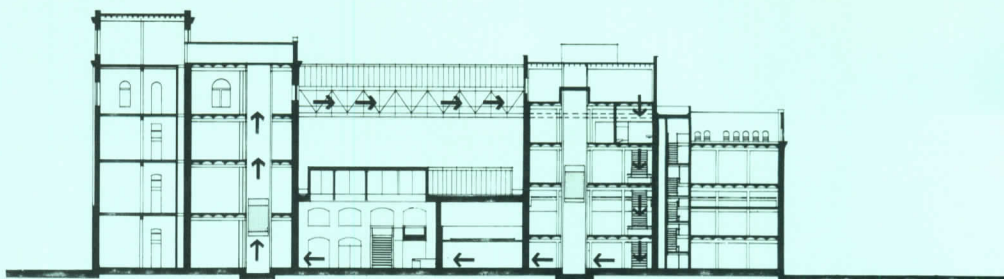
The work that has been carried out so far is of great distinction. Peter Chermayeff and Richard Tuve of Cambridge Seven have executed a technically demanding task without letting the effort show. Their necessary additions—skylights, a footbridge, a penthouse restaurant and an exterior stair tower—are all designed of a piece in a common vocabulary of structure and materials (gray tinted glass and dark metal), which stands out clearly from the old yellow brick walls of the brewery and announces that something very new and different is going on. They have threaded the new mechanical services into the old spaces without concealing the beautiful structural system. Further, they established a pattern of visitor movement that simplifies yet engagingly complicates the path through the collections and allows one to perceive the art from surprising angles. Finally, they conceived the most magical translucent, mirrored and chromed elevators, which turn ascending and descending into a real ride.

Jerome Lawton of Greyhound Design-group and consultant Stuart Silver have devised an exhibition system so delicate and subtle that it hardly appears to exist. The quiet craft which has lit and placed each object in almost invisible cases in galleries of delicate colors makes one conscious only of the art they are serving.

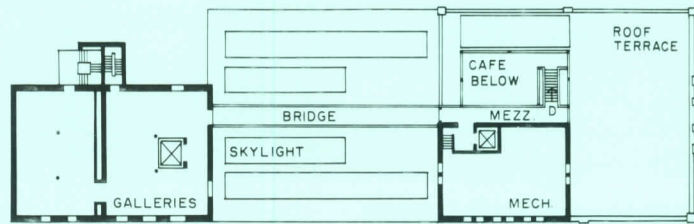
The cost of creating 66,000 square feet of exhibition space has come to \$7.2 million, of which \$3.4 million in grants came from the Economic Development Administration of the U. S. Department of Commerce. Additional funding was provided by the City of San Antonio and a number of Texas-based foundations, corporations and individuals.

—Mildred F. Schmertz

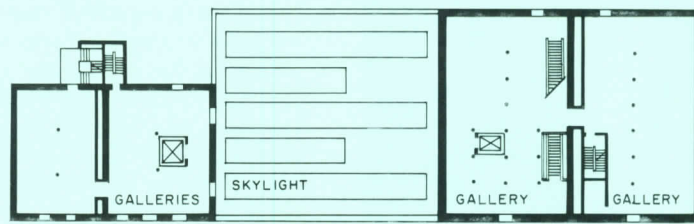
SAN ANTONIO MUSEUM OF ART, San Antonio, Texas. Owner: *San Antonio Museum Association*. Architects: *Cambridge Seven Associates, Inc.*—principal-in-charge: *Peter Chermayeff*; principals: *Charles Redmon, Ivan Chermayeff*; project architect: *Richard Tuve*; designer: *Edward C. Benner*. Associated architects: *Chumney, Jones and Kell*. Consultants: *Le Messurier Associates/SCI* (structural); *Galson & Galson Consulting Engineers* (mechanical/electrical); *Howard Brandston Lighting Design, Inc.* (lighting); *Greyhound Designgroup* (gallery exhibition design, production and installation interior design). General contractor: *Guido Brothers Construction Company*.



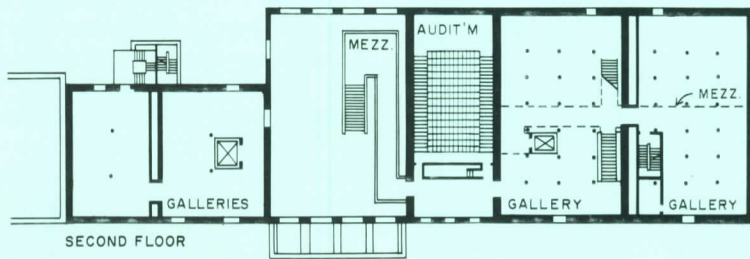
SECTION A-A



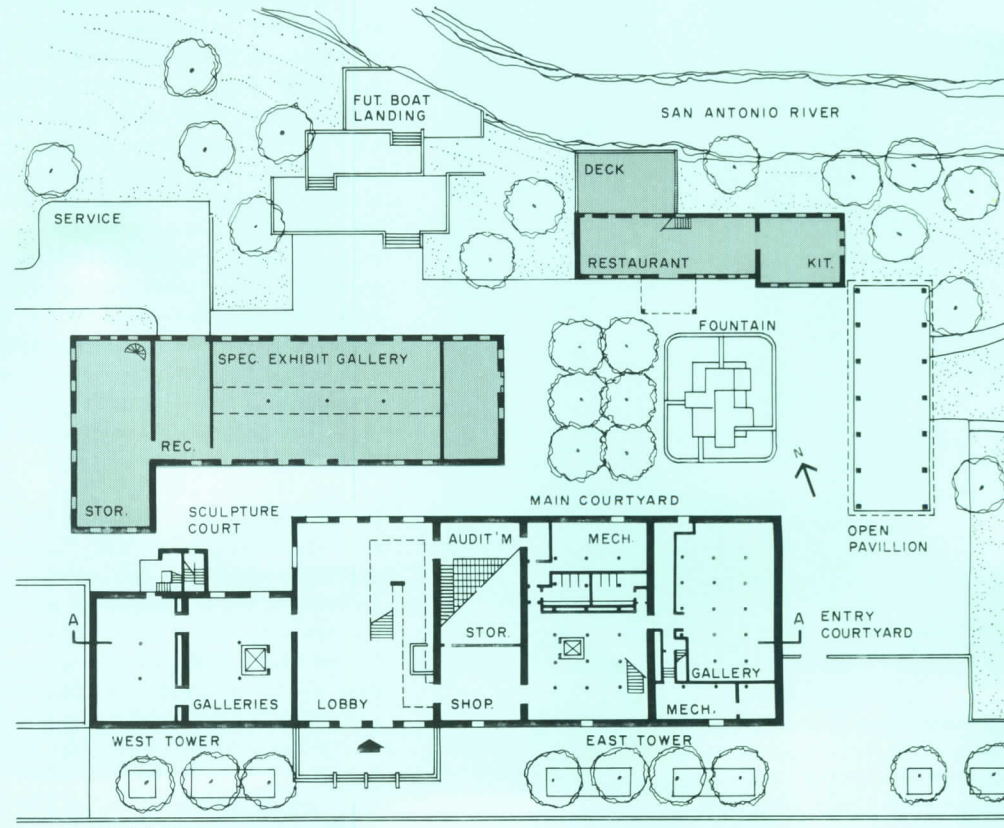
FOURTH FLOOR



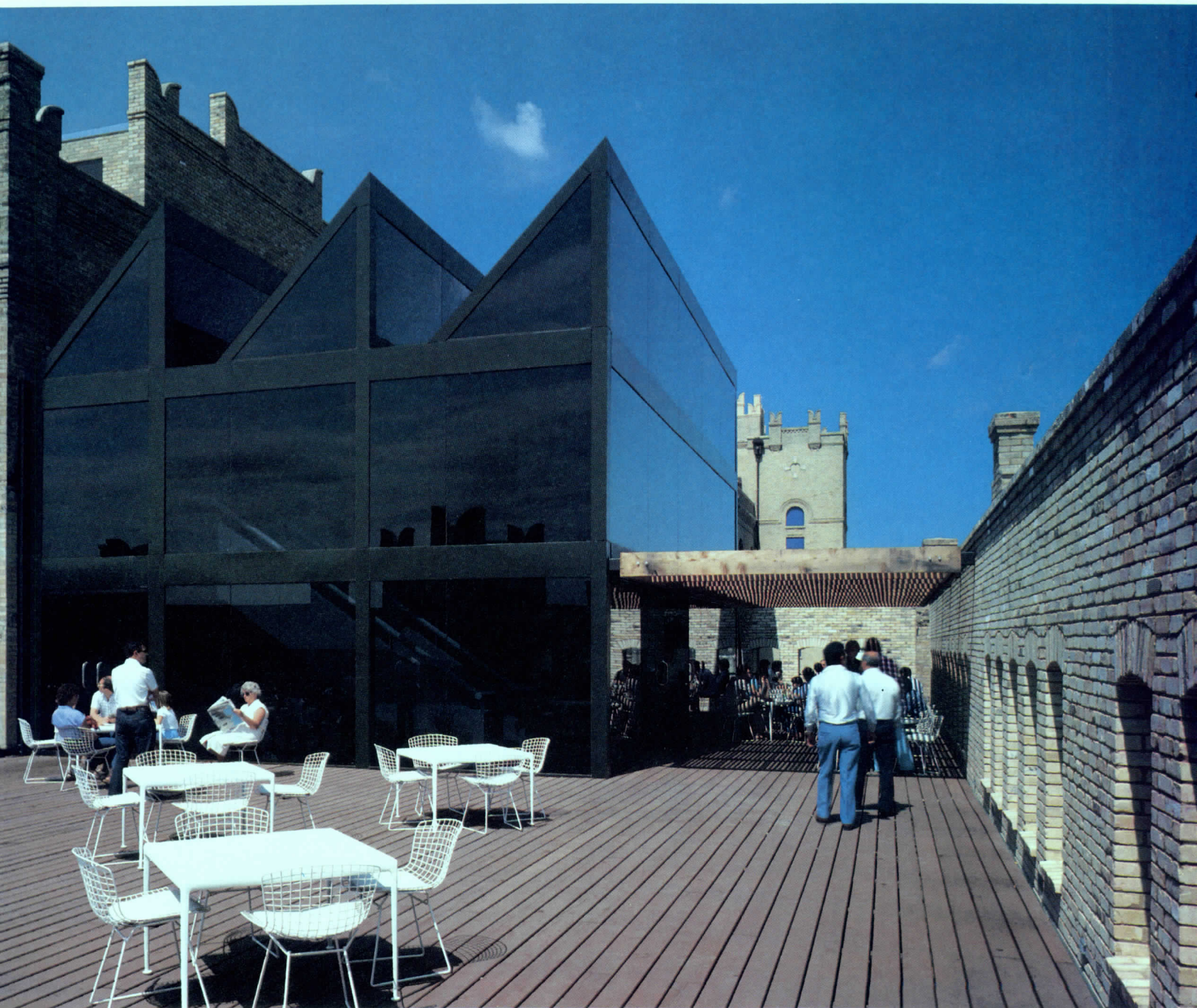
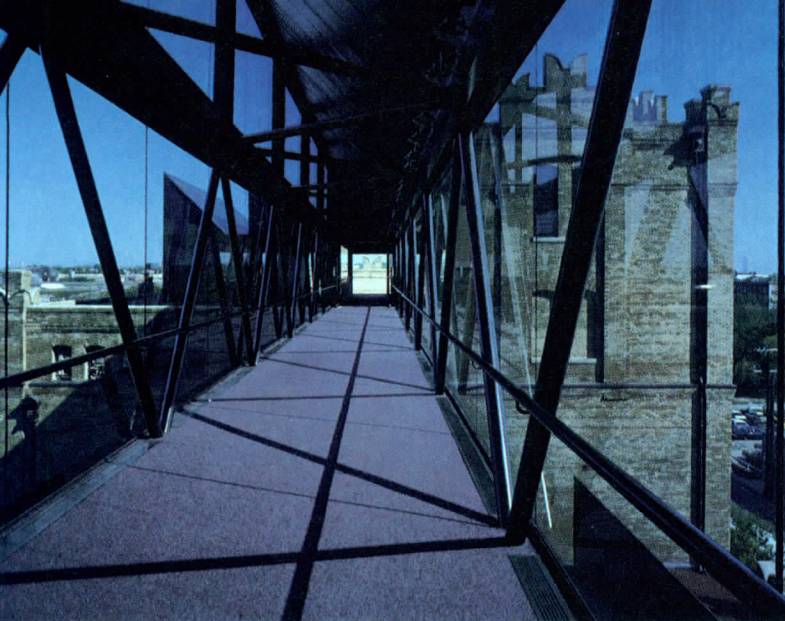
THIRD FLOOR



SECOND FLOOR



GROUND FLOOR



For Cambridge Seven it was of first importance to design the museum as an interconnecting sequence of richly varied spaces. Visitors are meant to sense these galleries kinetically as they move through them. The art

itself is very strongly perceived even as one simply passes by it since the objects can be seen from many angles and perspectives. Although one may view the collections in any sequence one chooses, the recom-

mended route from the main foyer is to enter the west, or higher, tower first and proceed upward, by stair or glass elevator, floor by floor. At the top floor one crosses to the east tower by means of the foot bridge

(top left) and descends one flight to the roof terrace and cafe (above and top right) then proceeds downward by way of two floors and a mezzanine to the main floor gallery, lobby and gift shop.



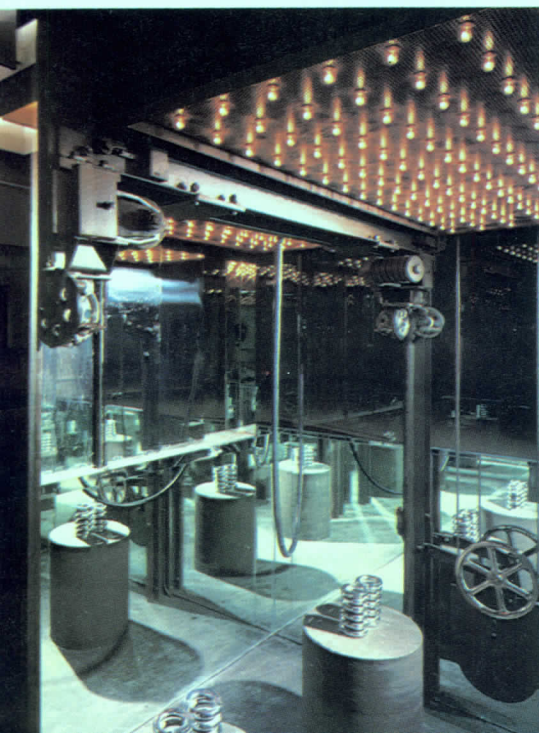
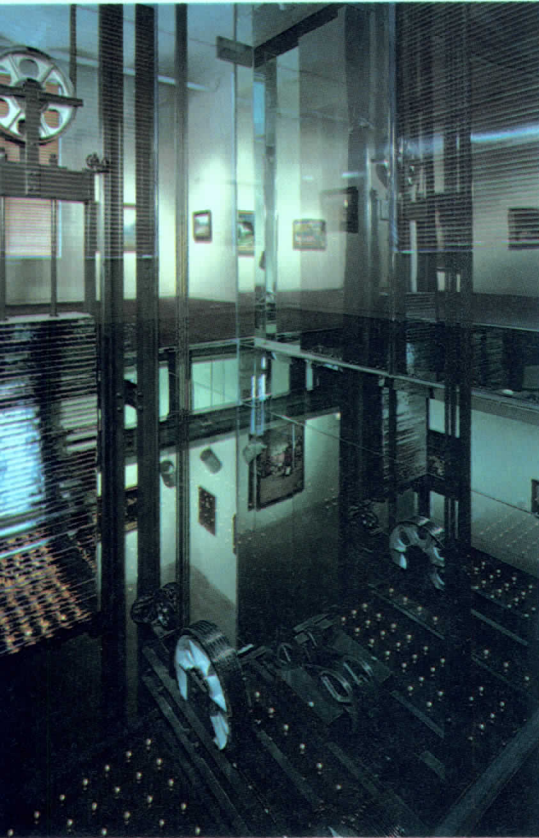
The brewery's east and west towers, by good fortune, are connected by a lower central wing perfectly proportioned to contain the museum's foyer (above) and the auditorium and gift shop (not shown). Here Cambridge

Seven replaced the old roof with skylights occasionally interrupted by sun baffles in gray, yellow and red. The railing of the new stair and mezzanine has a larger diameter than function strictly requires (approximately four

inches), appearing and feeling strong and solid in harmony with other rather hefty industrial details which remain of the brewery, particularly its cast iron columns. The tile floors match the exterior brick paving.

Architect Peter Chermayeff wanted to celebrate the idea of movement within the museum and made the two elevators, one in each tower, the focus of this idea: "I want the elevator trip to be a real *ride*." The elevator shafts are continuous, transparent vertical showcases for the display of the moving elevator cabs and their mechanisms. The cabs are all-glass; the counterweights, wheels, gears and springs chrome plated, announcing their functional beauty and thus transforming them into kinetic sculpture. The wall containing the elevator doors and other solid surfaces within the shaft are mirrored. The remaining three walls are of transparent glass attached at two points to the solid

elevator door wall and at the opposite points by means of chrome-plated clips to the cast iron columns (photo below). The top and bottom of each elevator cab is covered with a grid of tiny lights, approximately six inches on center. On each floor and from every angle the cabs are wonderful to watch. The chrome-plated mechanism quietly and sedately functions as its shimmering surfaces and tiny lights are reflected to infinity in the mirrors. From within the elevator, art is approached like never before, since the transparency of the entire assembly allows the visitor to see important pieces of each collection in sequence and in four directions as he moves from floor to floor.





David Arnold



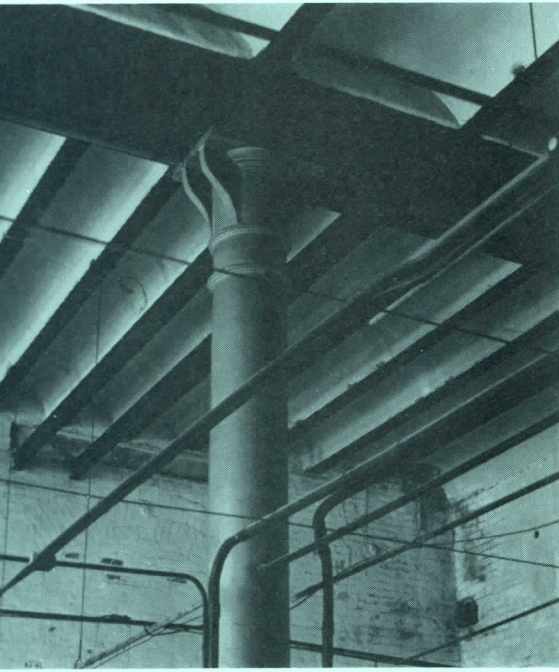
Cambridge Seven elected to expose the old brewery's structural system (photo at top left and opposite page left middle). The mechanical and electrical installations required by a modern museum had to be unobtrusively

inserted. The top floors of each of the two towers house the hvac equipment, and vertical supply and return air ducts are concealed within double walls which bisect each tower. As the photo (above) and detail

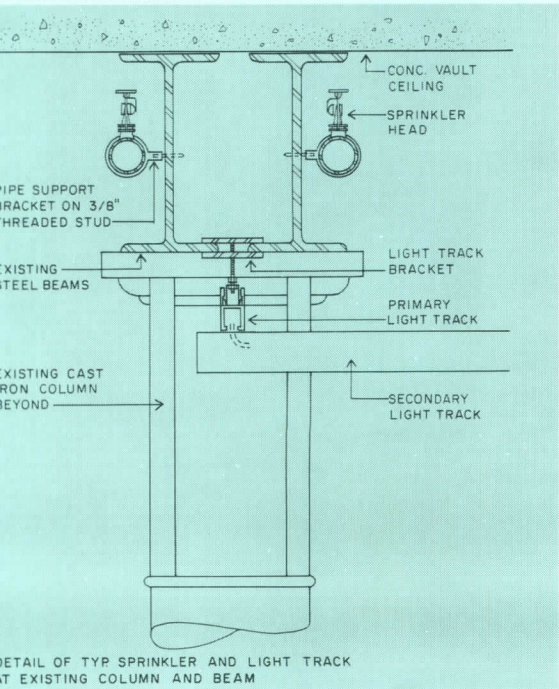
(opposite page) indicate, the sprinkler system is attached to the webs of the existing I-beams and the light track brackets are inserted in the slots between them. The octagonal steel frames, (top photos) once formed

openings for three-story-high malt silos. For light control, Cambridge Seven devised horizontally sliding wooden screens with fixed louvers at a 45-degree angle (photo opposite page top right).

Greyhound Designgroup devised the permanent installation for the entire museum. Their presentation of the art is as distinguished as the architectural renovation itself and is the work of Jerome Lawton, Designgroup's president, and Stuart Silver, a museum design consultant and vice-president of design communications for Knoll International. Designgroup chose subtle combinations of neutral tones for the wall surfaces, floors, beams and columns for each gallery. They also created an unusually handsome system of exhibition equipment, which includes expandable, easily stored exhibit cases and vitrines, a variable platform and pedestal system, and movable video information centers.



David Arnold





Open-air pavilion is centerpiece of revitalized historic area

"A thriving, revitalized downtown could make a city out of our endless suburb . . . for no shopping center can emulate a downtown's sense of place, no branch office can pretend to be at the heart of matters," argues Phoenix architect Robert Frankeberger. Phoenix, like many of the newer, sprawling cities has suffered severe problems caused by decentralization of retail and office facilities. Toward this revitalization goal, and what may become its symbol, is the development through restoration and new construction of a small block, marked only as number 14 on the city maps, but known as the original townsite.

Called Heritage Square, this development could be the proving ground for a grander vision of converting what are now parking lots, vacant parcels of land, dilapidated buildings and a skid row known as "The Deuce" into a burgeoning cultural/historical/retail/office/residential complex in an area to the east and south of the central business district.

While the catalyst for Heritage Square is the restoration of the stately landmark Rosson House (bottom right), the centerpiece is the Lath House—an open-air pavilion to be used for outdoor concerts, arts and crafts shows, festivals, exhibits and convention events (for the convention center is only one block away). It is a remarkably appropriate architectural solution to the special problems of the hot Southwest climate, a new structure that relates in spirit to its historic neighbors,

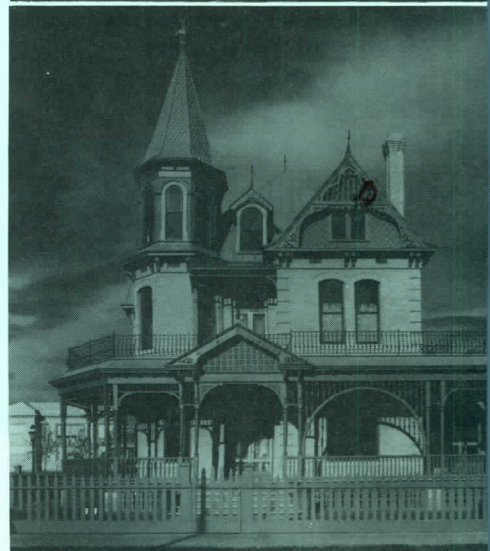
and a space large enough to accommodate sizeable community events.

Covering about one-third of the block (see site plan opposite page) it took hundreds of Douglas fir poles and laminated wood beams to define a space that is 220 feet long, 80 feet wide and 23,200 square feet (with the inclusion of a block of meeting rooms). A latticework of laths filters sunlight, yet allows air to circulate, thereby creating a microclimate that is an immediately noticeable relief from the harsh sun.

Frankeberger was inspired in part by Bertram Goodhue's Conservatory in San Diego's Balboa Park, but he was also mindful of other buildings on the site in scale and proportions. The two-story-high structure maintains the same eave-to-ridge line height of the bungalows on the block, and the roof curvature softens its mass. Opening along an arcade, which surrounds the structure and is reminiscent of those once found along most business fronts in downtown, are large arched entrances.

The plan of the Lath House is broken into two segments—the grand expanse which links to a greenhouse under skylights (not fully developed yet), and an enclosed set of meeting rooms and back-up facilities. The floor is brick, set in 10-foot-square grid patterns. Lighting for evening events is by industrial-type fixtures in the Lath House, and period-piece light standards throughout the grounds of the Square.

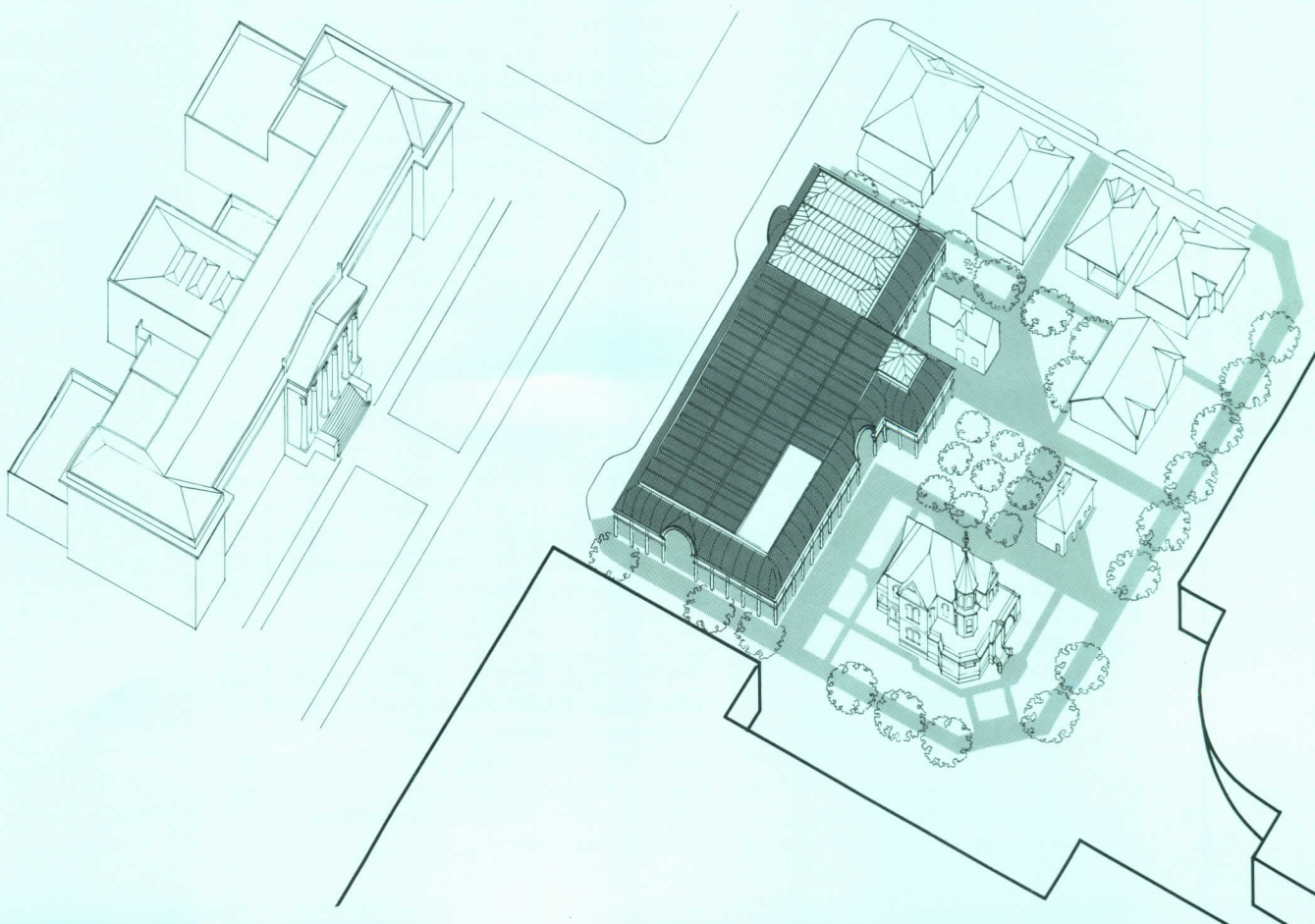
Since Phoenix is short on historical build-

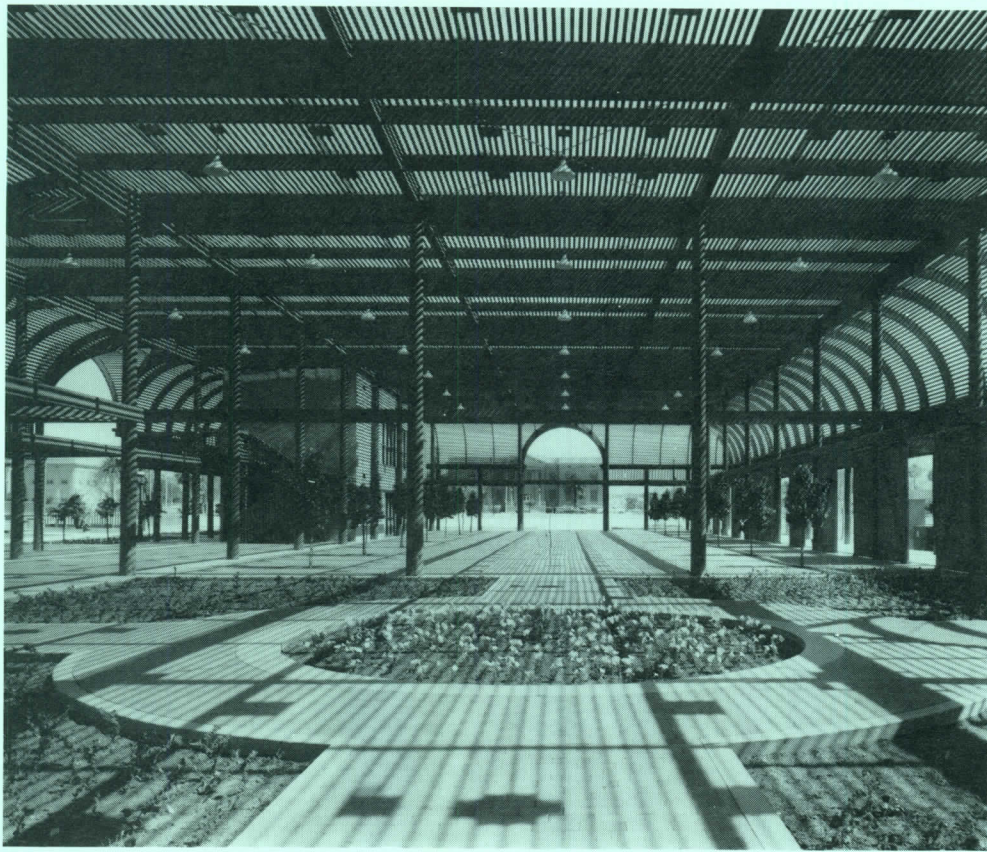




Heritage Square encourages the rebirth of downtown Phoenix with restoration and new construction . . .

of a scheme to continue revitalization of downtown Phoenix is the development—through restoration, rehabilitation and new construction—of a block now called Heritage Square (see site plan). Because the Rosson House (left) stands on the original townsite, and of its noteworthy quality, it has been restored and is used for museum and meeting rooms. Other neighboring residences are being converted into museum and office space. The new construction on the site is a grand, new open-air pavilion called the Lath House (above, right and overleaf). This wood-framed structure can be used for a variety of public and private events, day and night, and has already been the location of a Chapter party for the Central Arizona/AIA. Heritage Square received landmark status in 1976. Monroe Grade School across the street from the Lath House (also seen in site plan) is being considered for an art center.





LATH HOUSE AT HERITAGE SQUARE

ings the restoration of the Rosson House is particularly noteworthy. Built in 1894 for Dr. Roland L. Rosson, it was designed by architect Alexander P. Petit in Queen Anne style with Eastlake ornamentation. In 1972 it was placed on the National Historic Register of Places. The house was fully restored after that by Frankeberger and a team of architect-volunteers as a local AIA Chapter project. It is now used as a museum and meeting center.

Several other houses on the site—the Silva House, the Teeter house, and two others called Stevens-Haustgen houses, a 1920's duplex and a carriage house—were respected in the plan. The Teeter and Stevens-Haustgen houses are being rehabilitated by Gerald A. Doyle and Associates. These bungalows are all small scale and represent a mix of styles ranging from the California "arts and crafts" movement to revivals of various other periods. They will house civic and community organizations including the headquarters of the Central Arizona Chapter of the AIA, the Historical Society, and a museum for the Salt River Project.

While the city still retains ownership of Block 14, the money for restoration of the Rosson House and other historic structures on the site, and the design work of the Lath House came from private donations, and Federal funding from a grant of the public works program of the Economic Development Administration, and a Department of the Interior Grant-in-Aid for Historic Preservation.

While Frankeberger was a member of

the Rosson House restoration committee, he became so intrigued with the area's potential that he developed a comprehensive area plan. As he said, "One can't plan in a vacuum. I see this whole area as a unit." The development would include expanding the nearby Civic Plaza (RECORD, June 1973) by adding 40,000 square feet of exhibition space, a 400-seat and a 1,200-seat theater, construction of a Mexican Mercado (arts and crafts center), adding other shops and businesses and perhaps a hotel, reviving a trolley line which ran through the area, and providing underground parking. Also included is a proposal to turn part of the Phoenix Union High School (a campus-like neo-classical set of buildings nearby) into a community college for the performing arts, and Monroe Grade School (see site plan) into an arts center.

The success of the revitalization of downtown Phoenix will, of course, depend on the proper orchestration of all the complex elements, but the wonderful and viable Heritage Square development should be regarded as one of Phoenix' finest center-city advances in that direction.

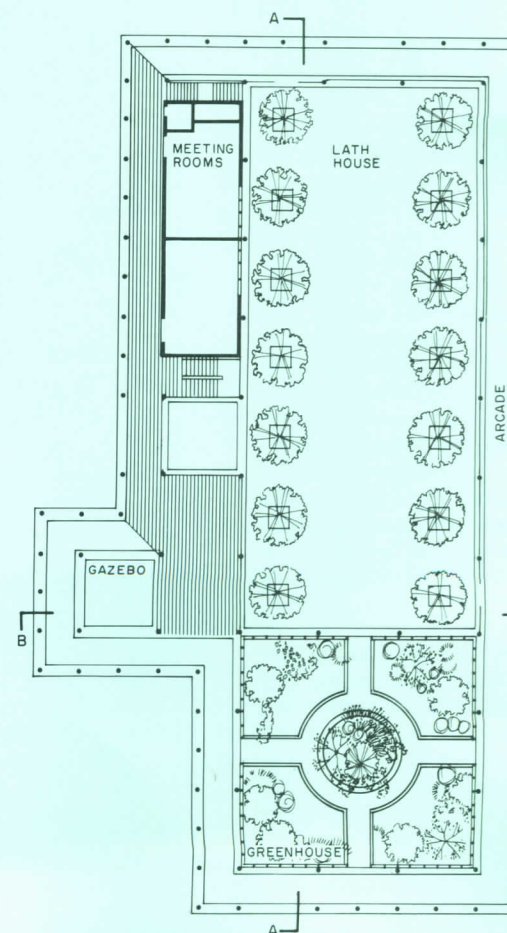
—Janet Nairn

LATH HOUSE AT HERITAGE SQUARE, Phoenix, Arizona. Owner: *City of Phoenix*. Architect: *Robert R. Frankeberger*. Engineers: *Caruso Engineering Associates* (structural); *Lowry, Sorensen, Willcoxson Engineers* (electrical/mechanical). Landscape architect: *Jim Wheat*. General contractor: *J.R. Porter Construction Company*.



Wayne Thom photos

... and the newest addition

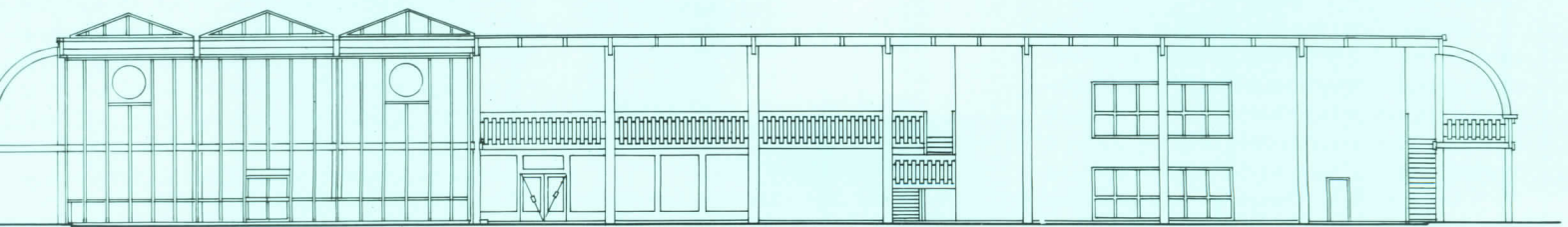




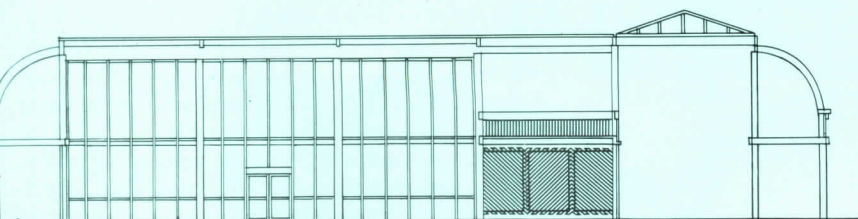
Stage Square in Phoenix is the Lath House—an open-air pavilion for special events and exhibits

Receiving such plaudits as “a total delight” and “a fresh answer to community space” from the architectural jury which awarded the Lath House an Honor Award in 1980, the vast latticework structure defines and modulates the open arena (above and top left) and establishes a micro-climate which effective-

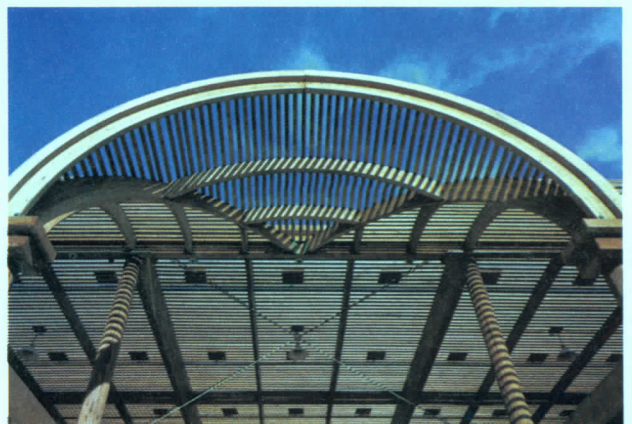
ly combats the hot weather. Smaller enclosed meeting rooms were also included to diversify the usable space (see floor plan). A series of wood barn doors (as seen in the sections) can enclose the structure for security reasons, to shield street noise, and can be opened to facilitate moving exhibits in-and-out.



SECTION A-A



SECTION B-B



Architects at the Round Table made clear at the outset that expression of structure in architectural design has lower priority than it did a short while ago among various esthetic and engineering concerns. Leading off, Chicago architect Helmut Jahn observed, "I wouldn't quite say that structural expression is out of vogue, but it certainly is not one of the primary elements. It still is pursued, of course, in those structures which require careful engineering strategies, such as very tall buildings. But in terms of many urban structures such as office and apartment buildings, there is much more attention to over-all form and treatment of the skin in the surface of the buildings.

"There are a lot of changed sensibilities in the field," he said, "a more open attitude, a much greater diversity. A lot of architects have moved away from a strict problem-solving attitude."

"Expression can be anything," averred Peter McCleary, chairman of the Department of Architecture at the University of Pennsylvania, who was trained as an engineer. "Structure is one thing. Circulation, movement, systems are others. Recent designs which may seem more irrational, and which are less commonly understood, are buildings which have a metaphorical relationship to elements of the past. Some will be shorter-lived, and some will be longer-lived, and no one is pretending that he has the right solution.

"Architectural theoreticians are saying that engineering is so advanced (it is not true, we know!) that the pragmatic problems have all been solved, so they want to deal with semantic issues, which have to do with meaning and architecture, and with syntactic issues, which have to do with the language of architecture. They are looking for ways to locate the structural elements that have nothing to do with manufacture or fabrication or assembly—or indeed engineering. They are now saying that the column can be located in space to split two views. They are interested in using the column not just as a structural element, but also as an element that defines space and tells you about the totality of your context."

Added New Haven architect and Yale teacher Herbert Newman: "There is no self-consciousness now about our new technology that makes us feel that we must express it in a way that differentiates and separates it morally from the past. At the beginning of the twentieth century, theorists believed that there was a morality in the new architecture that was a response to the new technology. But 'beauty' is coming back. 'Ornamentation' is no longer a dirty word—ornament as an expression of the different ways ornamental materials come together, ornament as an expression of a structural idea, ornament to cover a joint.

"I think that structural expressionism really is architecture as ornament. Paul Rudolph, who is maybe the most successful of the structural expressionists, was really using structure as ornament when he did buildings in the '50s and '60s.

ROUND TABLE

Steel structures in architecture: trends and new developments

CO-SPONSORED BY
ARCHITECTURAL RECORD
AND
AMERICAN IRON AND STEEL
INSTITUTE

A group of 21 architects, engineers, academics and steel-industry executives convened to address these important questions of the day on steel in building:

- **How are design trends in architecture affecting the design of steel structures in high-rise and low-rise buildings?**
- **Is structural expressionism still alive and well?**
- **In terms of product, where is the steel industry today?**
- **What is the new design procedure the steel industry has produced for the fire safety of exposed structural steel?**
- **What are the gray areas of structural analysis with respect to wind and earthquake?**
- **What are the new developments in cold-formed steel structures and their specification?**
- **What kinds of help do architects and engineers need from the steel industry?**

For ARCHITECTURAL RECORD:
Walter F. Wagner, Jr., editor
Robert E. Fischer, senior editor

"Architects are concerned about making a connection with the past—putting memory into our buildings. Architecture is a reflection of what society is about right now. Architects are being forced to design with issues other than structural functionalism in mind—issues such as energy conservation and building preservation, and conservation.

"How does all this affect structure and a search for beauty? Buildings want to fall down the higher they get because the wind is going to knock them over. They also want to fall down because gravity is pushing on them. Architects will constantly be dealing with—or ignoring—those two major forces. I won't predict which. But today we see gifted architects dealing with those issues of wind and gravity in tall buildings in very exciting ways."

If structural expressionism is on the wane, does this mean structures are getting simpler or more complex?

Replied Helmut Jahn: "When I say that the sensibilities have changed, I don't mean that we don't pay attention any more to the structural problems. There are a couple of buildings our firm is doing which are probably as complicated as any we have done before.

"One of these is an addition to the Board of Trade in Chicago, which is probably one of the most complicated buildings we have ever done, working with Lev Zetlin Associates as structural engineers. This is a 40,000-sq-ft trading floor which is basically column-free; with an office building sitting on top with load transfer through trusses. The overriding consideration was an architectural relationship to the existing building—a very famous Art Deco building of the '20s. There was a certain confidence that, with all the possibilities available, the structural problems could be solved in steel construction. There is a confidence that we can use technology in a way as to allow a much greater manipulation than in the past, which follows from a lot of improved techniques in manufacturing, fire protection, erection, and so on."

Commented Richard Tomasetti, partner in Lev Zetlin Associates: "Even though the Board of Trade structure is not expressed on the outside of this building, I think that the average person when he walks through that trading space will look around and say, 'Where am I? This is a slice in the middle of a high-rise building. What is holding it up above me?'"

Tomasetti had his own definition of what true expression of structure is. "It is," he said, "when the structure makes a positive contribution to the building in more than one way. I think it has to make a positive contribution to the over-all reduction of cost and to the efficiency of a building.

"I get very concerned when people think only of pounds of steel per square foot of building. I get concerned when in a meeting someone says, 'Gee, 20 pounds per square foot! The building across the street has only 18!' Usually I ask, 'Have you considered the connections yet?' We have

designed buildings in which, by putting in a little additional weight, we solved the problem of keeping all the bracing either in the walls or in the core, and gained another foot or two in the total net area which a lot of people become very happy about."

But Fazlur Khan argued that the rational approach is far from dead

Engineer Khan, partner in Skidmore, Owings & Merrill, who has contributed to architectural form through such innovative structures as Chicago's John Hancock Building and Sears Tower, and more recently, the fabric-roof Haj terminal in Jeddah, Saudi Arabia, was not ready for structure to be dismissed as an ingredient of design. "It seems to me," he said, "that the inherent logic of a well-detailed structure and a rational approach to its solution that elegantly resolves the space-forming is always going to be interesting; always going to be a very important part of architecture. The separation of the two is not necessary. Good architecture—particularly the kind that will have a transcendental quality—will not be created out of a dichotomy of structure and esthetics, but a combination of the two.

"I don't think in good architecture that ornamentation violated or covered the rational side of architecture. I have a simple example—a simple mosque in Teheran, the Sepah Salar. Here is a fantastic brick-vault design; the ornamentation always left an edge of the structure clearly expressed so that the structure and the ornamentation enhanced one another instead of one covering up the other.

"Leonardo da Vinci said that the limits of man's imagination are the materials he has. In his time architects as master builders were in fact structural engineers, thinking of the environment at the same time. They also were people of great taste and responded to the social and cultural needs of the time."

Pompidou Center in Paris proved a useful focal point for debate over the proper role of structure as a form-giver and a problem-solver

The turning point away from systems as a predominant form of architectural expression, toward a more historical reference base and toward ornamentation and decoration, was the Pompidou Center (Beaubourg) in Paris, argued Helmut Jahn. "It is an example of a building that uses exposed steel and systems (actually, most of the steel is fire-proofed). It is a building that has a lot of nostalgia about it. It is probably the most highly visible piece of architecture that expresses all those desires of this past period and put them all together in expressing structure and mechanical systems. But at the same time it put them together to the point where the idea cannot be developed much further. This is really when the new period started."

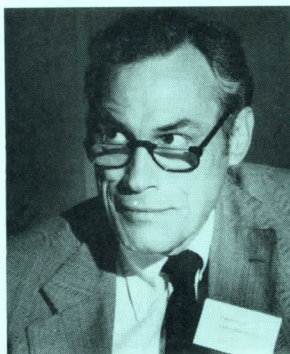
"Perhaps," said Fazlur Khan, "architects are looking for a way to avoid over-control by technology—obviously some buildings have been very clearly expressing this concept. Maybe architects feel that, indeed,



Lew Brunner
director of marketing
American Institute of Steel Construction
Chicago



Stephen E. Chehi
manager, sales engineering
Bethlehem Steel Corporation
Bethlehem, Pennsylvania



Howard A. Clunn
project development manager
Turner Construction Company
New York City

there must be other ways of creating spaces without showing the columns and the beams and all the structure. The Pompidou Center is, in my opinion, an architectural tour de force. But it is a structural tour de force at the same time. It is not a rational solution. It is an expression of architecture to create a sense of awe, or a sense of grand things happening. It is not a clean, simple, effective structural solution. It is a solution that is deliberately backhanded to show that great things can happen by putting in projections and by pulling by wires and cables. Even after what was done as a structural tour de force, the expression failed inside the building, at least to me—because the interior was cluttered up with all kinds of things."

San Francisco engineer Ephraim Hirsch echoed Fazlur Khan's feelings about the Pompidou Center, "The Pompidou Center seems to me a little perverse in that it is a problem-creation. The question in architecture is, 'Should there be a problem to solve, or should there be a problem to be eliminated? Shouldn't problems be minimized by the melding of the various design disciplines in the input?'

"A disturbing trend I've found recurring in architecture is the use of structure as decoration—in the sense of structural elements being plucked out and applied as kind of an appliqué—a bit of truss here, a bit of what looks like an X-brace or a rigid frame. But it really isn't holding up anything. It is an effort, it seems to me, to pay homage to structure, but not really using it as part of what it really is supposed to do."

Hirsch said: "I see nothing wrong in covering up structure with decoration, or using decoration and leaving the line of structure behind it."

But several panelists argued that the basics are still the best . . .

"Structure is not a gym trick," Hirsch continued: "I heard the word 'gymnastics' earlier. If anything is a gym trick it is our defying gravity, and our defying earthquakes and wind. Even putting a plank from here to there and walking across it is a stunt because we are defying a force that wants to pull us to the ground. But structure should not be flamboyant. It has to come out of a logic. I think that great architecture and great structure occur when the logic of the structure and the logic of the architecture work together. The architect and the structural engineer have to perceive what it is the building wants to do and to be sympathetic to each other's professions. Sometimes you have to 'lie a little,' maybe, and push in a certain direction if you sense that that is what the building wants to be and give a really structural reason for something that is a design solution."

Engineer Emanuel Pisetznar felt that, "When a building expresses what it is doing, that expression is an honest one that lasts. Fifty years from now that building will still express what it is doing. When someone expresses a building according to what he thinks should be beautiful and disregards what it is doing, it may be successful, but that

depends upon the taste and skill of the fellow doing it. When we see a building like the Nijo Castle in Kyoto, where very beautiful bronze plates were put over the wood joints, the fellow who did that did it with some style. Five hundred years later we say, "Gee! That is beautiful!" "

The point that the design of a building is determined very much by its materials was picked up and elaborated on by engineer Matthys Levy: "Look at the Crystal Palace, for instance, one of the most magnificent prefabricated structures ever built, whose design was determined by the four-foot size of glass that could be manufactured at the time. All of the iron components of the structure were derived from that single module. The idea of modularity is derived primarily from the materials that are used at a given time. The New York City Convention Center by I. M. Pei follows that kind of theme. In this case it is a space frame—a space truss really—that uses elements of a certain length, and the length is determined by the strength of the material as well as by the expanse it has to traverse. The constant that runs through all the history of structures and architecture is that materials very strongly determine a particular style of architecture. Even decoration is determined very much by the materials that are used."

Several of the industry panelists talked about the implication of these design trends on industry

The shift in design sensibilities was acknowledged by Lew Brunner, director of marketing of the American Institute of Steel Construction: "We have seen over the past two decades that architectural expression has been very favorable to the product we manufacture. It was very encouraging for us to be able to exhibit the structural frame in many forms and see buildings created that we thought were truth in structure and truth in architecture.

"The fabricating industry conducts research, and it educates people on the state of the art. We attempt to alert material decision-makers as to the limits of materials in structures. Our research is not exploratory, but rather on the order of how to make the connections more simple, how to determine their reliability from a safety point of view, and how to improve the economics.

"In our manufacturing operations we attempt to reduce manufacturing problems—the expense of material-handling and material-flow problems—to better supply the product within the time-frame required by the builder.

"Our activities probably will remain within these lines, and include the development of codes and standards, the dissemination of information on practices, and assistance to designers in the special interests and needs."

Ron Flucker, manager of plate and structural products for U. S. Steel Corporation, began by reminding the panelists that from the *steel producer's standpoint*, the product is basically a commodity. "Twenty years or more ago we might have looked at participat-



James O. Crooker
product development manager
Butler Manufacturing Company
Kansas City, Missouri



Ezra D. Ehrenkrantz, FAIA
The Ehrenkrantz Group, PC
New York City



Ronald L. Flucker
manager, plate and structural products
U.S. Steel Corporation
Pittsburgh

ing in the market through changing the form or character of the material—we all remember in the '40s and '50s there was an explosion of new products in glass, stainless steel, exposed steel and prestressed concrete.

"Today I think we feel the answer is in design analysis; the computer has given us a tremendous tool. We also look to assembly technology and research basically in performance. We steel producers also need to probe and find out the limits of application of use so we fully understand how the material can be used. If designers want to be able to expose steel, then we want to make sure that we have the tools available so this can be done. We also need to communicate this knowledge in a usable form. Eventually it must be in a very simple form if architects and engineers throughout the country are going to be able to use it."

Producers made the point that if they got in early, they could be a lot more help

Steve Chehi, manager of sales engineering for Bethlehem Steel Corporation, urged that an early dialogue be established among all those who have an influence on the selection and design of structural materials as a key to making intricate and sophisticated building designs more economical. Citing product developments of the recent past such as high-strength steels, high-strength bolting, shear connections for composite design, and others, Chehi said that, "... these came about not because a group of steel producers instructed their researchers to develop new products, but because of the 'demand-pull' from the architectural and structural design professions. These products evolved from out of sensitivity to economics and performance, and from knowing what designers' needs were not being satisfied."

Keith Ritchie, vice president of the Canadian Institute of Steel Construction, agreed with his U. S. peers about the upcoming role of the steel industry in construction: "We don't see new 'wonder steels' in the offing as it relates to building. We do, however, see an increasing involvement of the steel industry in product application. We see a continuing need to work with design teams in keeping up with developments in technology and in the application of new systems. One reason is that we see a failing in the training of Canadian architects in the area of structures: We see architectural teams trying to take systems applicable in 25- and 30-story buildings and apply them to 50- to 60-story buildings without recognizing the difference in the forces involved.

"We like to think that we are the world leaders in the area of computer-aided design. It is long overdue that we use the latest technology of computers not only for analysis, but also for coordinated analysis and design. We believe that it is more difficult to cost out structural systems in steel than it is in concrete so we developed a computer program for estimating the cost of structural steel in buildings."

The one manufacturer at the Round Table who does offer a finished product in

steel, James O. Crooker, product development manager for Butler Manufacturing Company, argued that the metal buildings' industry—by offering a systematized type of product—can improve both time and cost factors in the utilization of steel. "The pre-engineered building is a relatively young industry—less, really, than a decade old. And it has grown tremendously from a typical bland-type building that you are all familiar with to something that offers a package that is relatively open, relatively easy to get, relatively easy to modify and to utilize as a package, and it has continued to improve."

Helmut Jahn called for industry back-up in using exposed steel

The first area in which architects and engineers need some help, said Jahn, is in fire protection. "Codes have gotten a lot tougher. Some of the one-story buildings we built a couple of years ago we couldn't do today in exposed steel, even with sprinklers like we did then. We would at least have to fireproof the columns today, or we would have to raise the whole structure up 20 ft above the floor to comply with code—which would be ridiculous because there usually is no need for that height based on the occupancy and building type.

"For almost every building we do now, we have a life-safety consultant whose primary task is to work out how we can comply with code and still get the building that we want. It is all very confusing, and I think this is something that the industry can get in on at those levels and argue for more sense.

"An example is the current educational effort going on now promoting the concept of fire safety of steel structures based upon limiting the temperature that exposed steel structures (i.e., columns and spandrel beams) may reach during a fire. [Editor's note: this method, known as FS-3, for fire-safe structural steel was discussed in detail later in the Round Table.] We actually used this method for the interior of Illinois Center for downtown Chicago because all the walkways are hung exposed. It is not in the code, but luckily the State does not have to follow city code. I don't see how it can fall on the architect's shoulders to convince the city and the code agency that a system should be used that has already been checked out by your consultant. Maybe the industry has to convince them by making a test, inviting all those people in, and showing them that the system is really safe.

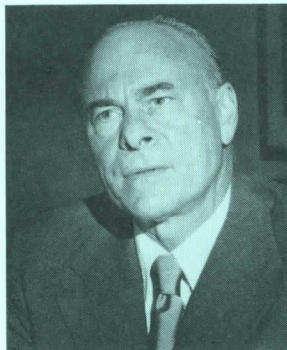
"Another area in which the steel industry can be helpful is cost. Steel is just not competitive in certain building types right now. There are certain buildings where the owner or construction manager tells us right off that they have to be in concrete.

"This is unfortunate because for some building types I have always felt that a steel building is a clearer building; it requires a lot more discipline in design.

"Another problematic area is the time factor. Steel used to have a big time advantage in that it could be built a lot quicker than concrete, but this is disappearing. There have



Ephraim Hirsch
E. G. Hirsch & Associates
structural engineering
San Francisco



David B. Hughes
vice-chairman
PBI Industries
Pittsburgh



Helmut Jahn, AIA
C. F. Murphy Associates
Chicago

been advances in the way they build concrete buildings today, and what hurts steel in that respect is that sometimes it takes a tremendous lead time for a steel building."

The industry argued that they are beginning to cope effectively with the fire protection problem

As general manager for codes and standards for the American Iron & Steel Institute, Chris Tyson reviewed a number of ongoing research programs: "The steel industry is very deeply involved, and has been for quite a number of years, in fire protection. Our budget is on the order of \$100,000 to \$200,000 a year.

"The problem is that the art and science of fire protection is at the state where structural engineering was approximately 100 years ago, and so there are a lot of basic problems to be solved.

"You will notice that most building codes refer to 1-hr, 2-hr, 3-hr and 4-hr ratings. That is too long a time: it has been shown that fires in office buildings may last only 20 minutes or less because of the nature of their fire load. On the other hand, fires are much hotter than what the standard ASTM E-119 test provides for. So what we really have to do is define what the load is, and then we can design against that.

"Two exciting things are happening now as part of our program. The first is we have a research associate at the National Bureau of Standards whose assignment is to look at all the methods throughout the world for calculating fire resistance. In some places, such as Sweden, you can design fire protection for steel by calculations—you don't necessarily have to rely on fire tests.

"A second development is a computer program we have for behavior of steel composite decks during a fire which is operational now in the computer at the National Bureau of Standards. The obvious deficiency is that it has not been tested. So we have erected a two-story, two-bay by two-bay steel frame at NBS in Gaithersburg, which will be fully instrumented so that we can put in a series of walls, floors and roofs, set fires, and monitor the entire structural performance.

"But I should mention several documents we have now that are helpful to architects in designing fire protection for steel buildings. The first is the third edition of *Designing Fire Protection for Steel Columns*. This relates mainly to cementitious and fibrous fire-protection materials, but it goes beyond mere cataloguing of standard fire tests. By formula you can pick out the fire protection you actually need by considering the weight of the steel column and several other criteria.

"Another publication is the 1980 edition of the *U. L. Fire Resistance Directory* in which you will find that for steel beams they have a formula by which you can vary the thickness of fire protection to meet the 1-hr, 1½-hr, or 2½-hr fire ratings. The awkwardness before was that only two steel beam sizes were regularly tested.

"A third design aid available for special application is FS-3 or *Fire Safe Structural Steel*.

This is a calculation procedure intended for exterior spandrel beams and exterior columns which may be protected from a building fire by other building components, but more frequently just by space and distance. We have found that in enforcement agencies there has been some real acceptance of this.

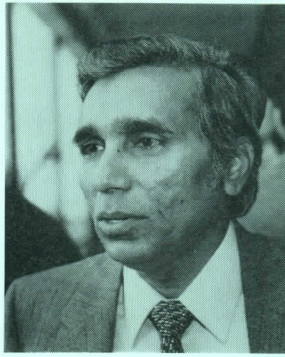
"First of all, about two years ago it was adopted by the EPCOT code (a local code established by the Disney development in Orlando, Florida). A year and a half ago the Southern Building Code Congress International issued a compliance report that can be used for advice to building officials saying in effect: 'We, the staff of SBCCI, have reviewed FS-3, and you can use it provided you follow the procedures therein, and provided you seal the plans. Last year the Building Officials and Code Administrators International issued a research report that can be similarly used. Finally, we are going to the Uniform Building Code Congress, and they will probably issue one also.

"Another approach that has been very satisfactory is to determine that sometimes fire protection is not needed where heretofore it had been required. Recently the International Conference of Building Officials approved an unlimited area, unprotected steel parking garage, provided the parking garage is not over 75 ft high. The reason these people have been convinced is that the fire experience record in parking garages—not repair garages—is very, very good. There really are not very many fires. Where there have been fires they have been limited to one automobile and there has never been any structural damage."

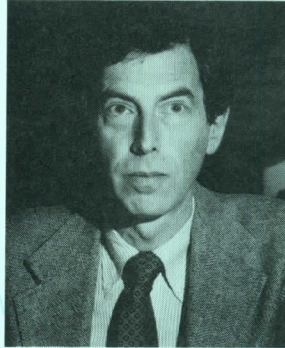
The panelists also talked about new code provisions for use of cold-formed steel

Continued Chris Tyson: "There are some other design reference works that do not relate to fire protection, but which should be of interest to architects and engineers, the first of which is the 1980 edition of the *Specification for the Design of Cold-Formed Steel Structural Members*. Several important changes have been made: There are new design provisions for web thicknesses. Reserve strength beyond local buckling, and, in some cases, beyond elastic limits, particularly for connections, is now allowed.

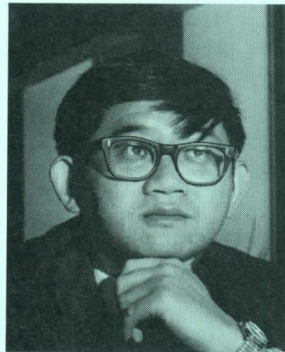
"We don't do all the work ourselves. For example, a wind-load criterion for low-rise buildings has been promulgated by the Metal Building Manufacturers' Association, based upon boundary-layer wind-tunnel work at the University of Western Ontario. We got quite a bit of objection from building officials in the Southeast, an area most frequently subjected to hurricane wind loads. They were worried about anything that looked like it was reducing wind loads for building construction. It was carefully explained to them that while it appears that wind-load requirements have been reduced, at the same time wind loads for certain portions of the structure have been increased, so maybe the total load *really has not changed* very much. What has happened is that there is a better method for designing strength in those parts



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Dr. Le-Wu Lu
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Bethlehem, Pennsylvania

of the metal building where they are needed.

"Another thing you should be interested in is that the American Society of Civil Engineers is about to write their first standard—a design specification for steel composite deck slabs."

Engineer Tomasetti brought up several caveats regarding the use and specification of cold-formed members: "One of the problems is that there appear to be two different industries—hot-rolled and cold-formed, and there is a split in design also.

"Furthermore, if you hand the AISI spec on cold-formed members to the average structural engineer, it will scare the heck out of him! He has to learn about torsion, flexure, buckling, and combining bearing with bending stresses. It becomes very complicated. Somehow there has to be a simplifying process that gets that across to the average design firm, and at least gives some guidelines so they can quickly determine how light-gauge materials can be used. Another problem is that much of the research—and it is very good research—is oriented toward systems. The research on purlins for metal buildings is used with the resistant effect of the metal deck that is on top of it, which is the way it should be to capitalize on the design of a metal building. But it loses its significance when engineers try to use cold-formed members as individual elements.

"Another problem I see is that, the last time I looked, the unit costs of cold-formed material were higher than the unit cost of hot-rolled material. Several years ago I headed a committee on design with light-gauge metal for hyperbolic paraboloids—developing a lot of interesting forms and shapes. But I got disenchanted because when we came up with all the solutions of how to reduce weight—and we reduced weight significantly—the unit cost of the material was so high that there was no way we could beat bar joists and a deck on top of them! I think there is a need for integration within the industry so we can take elements of good from each and combine them in a synergistic way."

Remarked Chris Tyson of AISI: "We try not to hide our specification for design of cold-formed steel members. We will give it and the commentary to anyone free. We also have a three-ring notebook with quite a number of design aids in it. In addition, we have a special design seminar for architects and engineers who want to become expert in this field. The specification is written so that a competent structural engineer can follow it by self-instruction. The awkward part is that the structural engineer doesn't want to be concerned with that learning process until he has some return for his money, and I cannot do anything about that."

Engineer Frank Zamecnik of Spiegel and Zamecnik still thought there is probably not enough dissemination of information to the design professions and contractors on cold-formed structural members: "Very good work has been done by the code standards group defining the special attention that these

very flexible members need in terms of torsion and local buckling, and the interaction of all the members in such an assembly, but I am afraid this is not getting appropriate attention either by designers, or, even in a few cases, by fabricators who are apparently ignoring these requirements."

The Round Table returned to the question of fire and the rational approach of FS-3

Though earlier panelists touched upon the introduction and beginning application of FS-3, *Fire-Safe Structural Steel*, Bethlehem's Roger Wildt described its history and implications. "Let's go back to the '50s. There were a couple of changes that occurred to structural fire protection. One of them was the introduction of lightweight protection of sprayed asbestos, sprayed mineral fiber, gypsum, vermiculite, perlite—the whole bag of lightweights. Along with this change, we had a tremendous proliferation of companies producing fire-protection materials, and each one had to have his own UL tests. This proliferation created a problem for architects and engineers getting drawings approved by code authorities. In the '60s, the steel industry realized that it could not make a contribution either toward the proliferation or rationalization of the many products that were being used because they all were non-steel-industry products.

"We saw that the only way we could help would be to take fire-protection design out of the 'black arts,' as it were. We saw that while there were rational design methods for dead and live load, wind, earthquake, and so on, fire load had not been considered in a similar context. Fire is a load that is a superimposed condition that will eventually cause structural failure if allowed to continue unlimited.

"But codes were totally silent about how you fire-protect the steel on the outside of a building. This was important to us because at that time in the '60s we were trying to promote weathering steel for the exterior of buildings. We had a steel industry need for design information that could be translated into a design method for architects and engineers. So we had an economic rationale to spend over a quarter-million dollars.

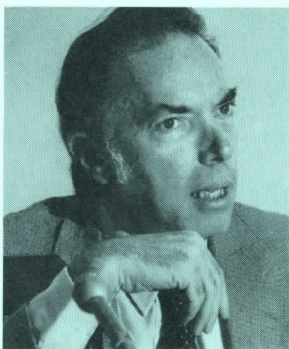
"We started on this in the mid-1960s and were 10 years in developing a data base and at the point of trying to bring all the information together when the Pompidou Center in Paris came along. I don't want to discuss the architectural merits of this building. Suffice it to say it was a building with a fire-protection problem. It was a catalyst for FS-3. The building's structural engineer, Ove Arup & Partners of London, had to cope with the problem of how to fire-protect exposed steel. They drew on some British research and some AISI research and worked up a rationale for design. AISI then retained Ove Arup & Partners to take what they did with Pompidou and make it into a general case—the fire-safe design method for exposed structural steel. After a few drafts and a number of rewrites, and the preparation of a manual, we have what we call FS-3.



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University of Pennsylvania
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Emanuel Pisetzner
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Weiskopf & Pickworth
consulting engineers
New York City

"FS-3 is an interim step. Everything you want to say about its weaknesses I probably will agree with, and throw in a few myself. One of them is: who pays for the design by FS-3, the architect or engineer? How do you coax the owner into it in the first place? We don't have many buildings built by it. We are waiting for the first major one in this country, so we don't have a big data base of confidence.

"But let me tell you about the positives. It is a rational design method. For the first time we have taken the design concept of load (as for dead and live load, and earthquake load) and brought it around so that the designer can design for fire. It is an interim step in that we do not have it in the language of the structural engineer—we now have it in the language of the physicist. You have a choice: You can either learn a little bit about thermodynamics, or you can sit back and wait until it is translated into engineering terms.

"The problem is that we are hellishly overprotecting our structures. How long do you think a fire would burn in this room? I would bet even money on 20 minutes, and I would take pretty good odds for anything over 25. Five pounds per square foot of combustibles will burn out totally within 20 minutes."

Speaking for the practicing professional, Richard Tomasetti argued again for easy-to-use design aids: "There is a need of somehow showing the design professions, and the owners of the type of designs that can result when you use FS-3, the procedure in graphic form which would further encourage people to spend a little extra time digging into the thermodynamics while the industry is further developing its structural 'engineeringese.'"

Helmut Jahn reiterated that his firm had used the method on the Illinois Center building—not on the exterior but the interior because the interior is a court which in some respects is like an exterior area: "We feel for all kinds of reasons, architectural included, that it should be exposed steel. Our consultant, Rolf Jensen, has used the FS-3 method to which the city acted rather negatively. Where we are right now is getting verifications through AISI and through the Ove Arup firm. The state is willing to go along once we get this verification. This all took a lot of education of the client on our part."

Architects and engineers agreed with the industry that a rational approach to fire protection is needed

"The root of the problem is not steel," said Fazlur Khan, "The problem is that ASTM E-119 doesn't relate to reality. It affects not just steel, but it affects the partitions, the prestressed concrete industry, and so on. It is important that the building profession get to the right issue, which is establishing the right fire load, so that we don't have to fight with the fire commissioner every time! The problem is not with the building department—they are always willing to accept a lot of logical things. It is the fire marshal who is not willing to accept anything unless we absolutely guarantee it conforms with E-119. He has

accepted E-119, and, for whatever reason, we cannot change him. The issue to be addressed is getting the right fire load—then the thermodynamics will work much more easily."

Systems' guru Ezra Ehrenkrantz noted that the Federal government accepted a rational approach to fire safety in the systems' bidding approach on a number of Social Security Administration buildings: "For GSA the fire requirements called for a 12-minute protection for the slab because in government office buildings, sprinkler use was mandated, fuel load was modest, and escape routes were reliable. Precedents are being set, and it is only a matter of time before the weight of these precedents provides the basis upon which to generalize the work."

"The beginning of a rational approach to design for fire," remarked engineer Pisetzner, "is the life-safety engineer coming into practice. His work is directed not so much toward structure, per se, but toward atriums and exiting. He presents the idea of fire protection in a rational way, showing that the stereotyped code does not apply to the concept that the architect wants to carry off—you can get a building that 10 years ago would not be approved."

This trend was affirmed by Helmut Jahn who said, "With the last 10 to 15 buildings we have done, we have had a life-safety consultant on every one because you have to look at the total aspect of the building—planning, separations, mechanical systems, enclosure systems. You have to look at a building as a total system. I am a little surprised that more has not been said about the use of sprinkler systems which offer probably one of the biggest tradeoff potentials to alleviate restrictions and constraints put upon structures."

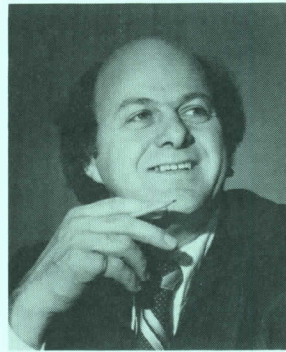
Professor Egor Popov argued that today's higher, bigger buildings call for structural rethinking

Though the rational approach to structural design was taken as a fait accompli by earlier panelists, the academics/researchers at the Round Table described recent investigations aimed at clearing up some of the "gray areas" surrounding structural design approaches and behavior of structures under severe loading conditions.

Professor Egor Popov of the University of California at Berkeley started off by saying that he would limit his remarks to earthquake provisions, but he reminded the Round Table that "even well-established structural systems need to be constantly upgraded. For example," he said, "the most widely used structural system in steel is that of moment-resisting frames. I have no objection to that—it is a fine system. However, the joints are very expensive. We are trying to solve the question of doubler plates—just how extensively we must employ them—because this is a very costly detail. People have a lot of confidence in *moment-resisting frames*. But as engineers doing very tall buildings know, not only must the frame be strong enough, it also must be



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Lev Zetlin Associates Inc.
consulting engineers
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stiff enough to resist either severe wind loads or seismic loads without extreme distortions that would damage the non-structural parts of the frame.

"In buildings with wide floor dimensions, engineers can handle these easily with moment-resisting frames—in fact, it is routine to a large extent. But with narrow buildings, it becomes prohibitive cost-wise to implement the moment-resisting concept, and, traditionally, a variety of bracing systems have been employed—X-braces and so on. There is a reluctance among knowledgeable engineers today to accept static-type analyses. The question is what happens to these X-braces and columns when they are subjected to varied load reversals? This we studied at Berkeley, gathering evidence on what happens when these members are subjected to severe cycling. A computer program can be written which can predict with considerable accuracy the behavior of these braced structures using input from our experimental evidence.

"The trouble with X-braces for buildings subjected to strong earthquakes is that they make the building stiff and extremely high forces can be induced in them, with the danger that they could snap in tension or buckle in compression—they are not good at dissipating energy. Furthermore, when stress reversal takes place with columns, they will not take nearly the same load they could in their original state, but based on our studies, I believe that we can make a good prognosis about their behavior.

"But engineers need not be stuck with just one or the other of these two approaches because there is a third approach which really is a takeoff on a farmer's gate. If you look at how these gates are built, you will see that they are made not just with horizontal and vertical members—such a gate would require a tremendously sturdy joint to resist gravity; it sags. What has been done for years is to put diagonals at the corners. These are simple to implement—you don't have to have a lot of bolts and complicated joinings. This idea can be incorporated in building structures in what I have called the eccentric-braced joint: it combines the advantages of a braced frame by giving you a rather stiff structure, but at the same time the unbraced lengths of columns and beams are ductile, and as they yield under load, they dissipate a lot of energy. We have used this system in one of the tallest buildings in San Francisco, in a bank tower in San Diego, and for the interstitial framing of a hospital."

Interjected Canada's Keith Ritchie: "We have two 30-story eccentric-braced frames being built side-by-side in Montreal, à la Professor Popov, and he didn't even know about it."

The move toward more and more rationality in structural design analysis was developed further by Dr. Le-Wu Lu of the Fritz Engineering Laboratory at Lehigh University: "Everything we do in life involves uncertainty, and structural design is no exception. Generally we have three types of uncertainty in structural design: One is uncertainty with

regard to load. The second is uncertainty in structural analysis. The third is uncertainty with the determination of the resistance of the structure. All these can be separated as individual entities. I think we can determine the resistance of a steel structure more easily than that of a concrete structure. I say this because I have been working mostly on concrete structures for the last four or five years, and I find that it is very difficult to calculate properly the ultimate strength of concrete structures.

"What has been developing of late is the load-and-resistance-factor approach to design (LRFD) that attempts to separate the uncertainties and handle each in a more or less rational fashion based upon probability. If you have these all separated, you can treat each one as more information becomes available. This method would allow us to incorporate quickly the new information that is developed into design practice.

"Because the basic development of the method assumed load and resistance as two separate functions, additional work is necessary for structures subject to dynamic loads because these two functions are not completely separate."

AISI's Chris Tyson noted that an entire issue of the *Structural Journal of ASCE* was devoted to load and resistance factor design (LRFD), and that AISC is getting ready to issue a specification incorporating the method.

Consulting engineer Zamecnik had some reservations, however: "I think the performance of steel structures has been very good. The economy has been good. I fail to see the benefit of supporting the extra effort laid on the shoulders of the design professions to utilize this approach."

The final round-robin emphasized (no surprise!) the real benefits of designer-producer collaboration

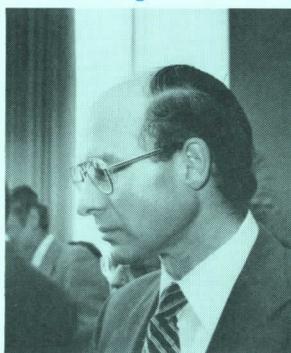
David Hughes, past chairman of AISC, felt that the industry was responding in the right direction to the increasingly complex structural steel building systems resulting from increasingly complex architectural programs: "Fabricators are allocating money from each ton of steel they sell to enhancement of structural steel. Many companies are making individual grants. We (PBI Industries) are helping to support a program being conducted by a protégé of Dr. Khan. Part of the solution to our market problem is exposing the merits of structural steel to the design professions at a very early stage."

Engineer Matthys Levy cited a collaborative project with industry, One Liberty Plaza in New York City, in which spandrel beams were left exposed on the exterior with flame shields being provided on the beams' flanges: "A great deal was learned by the process, and many things that were not used in the actual building were used in subsequent structures."

Richard Tomasetti once again urged the industry to put research results in forms that can easily be used by the design professions: "In this world of fast-track construction today, the sophisticated research being done



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general manager
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Bethlehem Steel Corporation
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Spiegel & Zamecnik, Inc.
consulting engineers
New Haven

has to be oriented toward more quickly usable, simplified results. Armed with these results, the designer has to orient his work toward more simplified construction, fabrication and erection—not just concentrating on minimum weight, and not just on minimum cost of structure, but on minimum cost of building, and on maximizing the usable space in a building."

Turner's Howard Clunn, as a construction manager, also was concerned about what affects the final result and cost: "I like to think of the construction process as a parade. There are two things that will get the parade down the parade route the fastest. First is making a lot of things happen off the parade ground prior to the start. This means minimizing operations at the site, e.g., simplifying field connections, reducing the number of pieces. A second objective is to minimize the start-stop of any one activity. If the steel erector can do his entire activity within his own control, time-wise, without having to wait for others, the over-all activity can be far better controlled. The need for unusual equipment at the site is parallel to attempting to move a huge display in the middle of a parade. It may tend to set your pace instead of being something that can keep up with a faster pace."

Ezra Ehrenkrantz also saw steel structures as part of the organizing process: "The role of a structure as the skeleton to hold up all building functions is at least equaled by its role as an organizer for everything else that goes into the building—especially when one considers what the structure does in defining how all the services will relate, the pacing of how a building is put together, how people can work on it in the building process."

Ephraim Hirsch saw more and more trends toward prefabrication, as with space trusses, where the units assembled are as large as possible. Less field work is very important: "Perhaps we should start thinking in terms of multistory complete frame elements eight to 10 feet wide, double-column braced, and four or five stories high.

"The ideals of materials should be reliability, simplicity, economy and design potential. How well steel, or any material, meets these ideals is a measure of how much of it is going to be used—in addition to what the whims of the designer are."

Concluded Helmut Jahn: "After all these various attempts which go into architecture today I think we ultimately are going to reach again a level of synthesis where the functional, the technical and the esthetic intentions will all come together. Every period of significant architecture in history has always reached that level. It is probably not so much for us to decide, but for history to decide, when this will happen. But I think it is something which drives us all today in making those attempts to come up with a relevant architecture. This ultimately can lead us to a synthesis and to a reconciliation of the technical and cultural forces of our time. I am counting very much on materials such as steel which lend themselves to applications that will help achieve those goals."

FIVE NEW ENGLAND SCHOOLS: REGIONALISM RESTUDIED

Current interest in architectural regionalism makes especially good sense in school design, where a strong spirit of place can enhance young people's appreciation of their cultural and physical environment. No region of the country has a longer or more distinguished academic history than New England and, as the five secondary school projects included in this Building Types Study demonstrate, Yankee schoolmasters continue to demand sound architecture worthy of that heritage. Pietro Belluschi, the architect of a new classroom building at Portsmouth Abbey School in Rhode Island (pages 122-123), has written that "Regionalism at its best . . . is simply a recognition within its own sphere of what architecture is to human beings, a deep regard for their emotional demands [that] need not be forfeited even in the most practical demands of the project. . . ." Loyalty to time-honored values seems only fitting in the schools shown here. All are located in idyllic rural settings, and four of



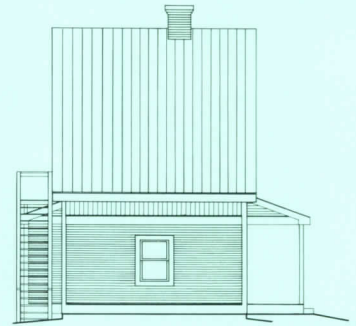
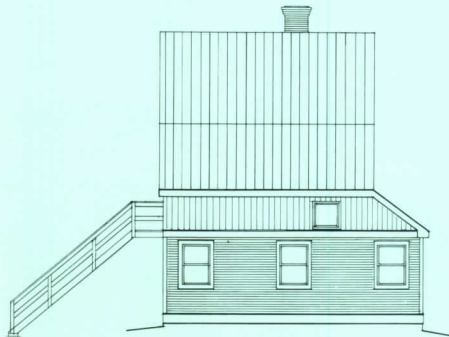
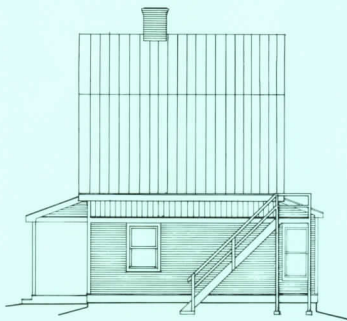
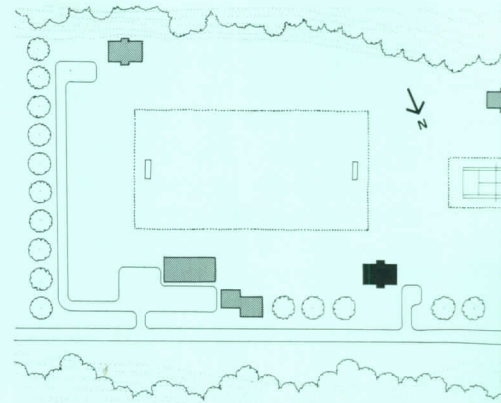
them are privately endowed. Consequently, they have not had to cope directly with the demographic shifts of the past decade that have produced a surplus of classrooms in many Northeastern cities, causing some obsolete facilities to be recycled for different uses (see RECORD, mid-February 1981, pages 70-73). However, tight budgets and the need for energy conservation are nearly universal, and each of these five New England schools has commissioned architecture that responds to its own requirements with pragmatism and grace. In scope and program, these projects encompass a broad spectrum, ranging from the entire campus of a school for college-bound ski racers (below) to the dining hall and offices of a residential treatment center for delinquents, but in their common respect for human scale, the patterns of school life, and the texture of their surroundings, they all exemplify the lessons to be learned from careful study of local tradition.—D.B.



GREEN MOUNTAIN VALLEY SCHOOL

Long before the first snowfall, students at the Green Mountain Valley School in Fayston, Vermont begin dry-land slaloms and other exercises to condition themselves for winter ski racing on the nearby trails of Sugarbush North. A boarding school for 50 boys and girls aged 13 to 19, Green Mountain Valley was founded in 1973 by three ski coaches who believed that aspirants to national and World Cup competitions would best develop their skills in an environment that combines intensive training with a full curriculum of college preparatory instruction. The village-like cluster of frame structures designed by

architect Turner Brooks responds to the school's request for a complex of small, inexpensive buildings where faculty and students could live and work in familial groups. Each of the three dormitories (elevations below, plans overleaf) is provided with a faculty apartment and a communal living room. The main dining hall, library, and classrooms occupy the building at the northeast corner of the site (right). Next door, an existing farmhouse has been remodeled to create administrative offices. The large building shown lower right in the site plan is a projected gymnasium (section overleaf).



"I've always loved the way New England towns press in on a road, making a friendly, elegant place," says architect Turner Brooks. The position of gables on his Green Mountain Valley School buildings is intended to emphasize their dual orientation toward both the entry road and the central playing field. Although all the buildings are based on the same boxy plan, Brooks rings the changes on gable shapes to vary their silhouettes. The hybrid gambrel-saltbox (right) houses a dining hall, library, classrooms, and a meeting room where students watch videotapes of their performance on the slopes. The three dormitories (left) have been nicknamed "Poundcake," "Witch's Hat," and "Gable."



Erik Borg photos



For economy and speed of construction—the entire project was completed in five months, at a cost of \$41 per square foot—Brooks conceived the buildings as simple gable-roofed “boxes,” sheathed in asphalt shingles, spruce clapboard, and number three pine trim. “Everything is dirt cheap—the basic lowly vernacular of this area,” says Brooks. He compares the arrangement of cottages around the central soccer field (which doubles as a miniature town square) to a Victorian camp meeting ground or art colony, an analogy that is borne out by reminiscences of pattern-book Queen Anne

and Shingle Style design in the picturesquely detailed facades. A variety of gable profiles, fenestration, and contrasting siding textures and trim gives each building its pronounced individuality.

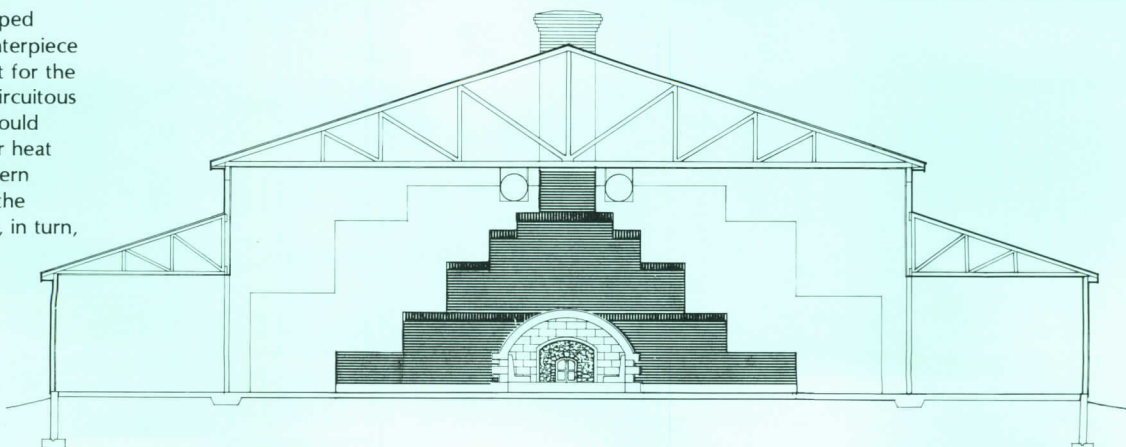
In order to take full advantage of natural light and warmth, compressed rectangular plans present maximum window exposure on their broad southern fronts. Small openings penetrate north-facing walls, where porches shelter stacks of firewood for the cast-iron stoves that heat the entire school. The symbolic family hearth for this Nordic hamlet, a two-story-high “Russian fireplace” in the gym

(below), remains to be built. According to the architect, “a phalanx of sweating youths would throw 10-foot logs onto the blaze every 10 hours.” There is enough room on the stepped sides of the brick chimney-breast for the whole student body to sit down for an après-ski warm-up.

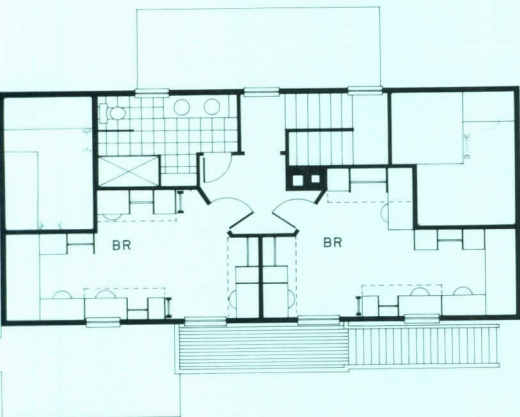
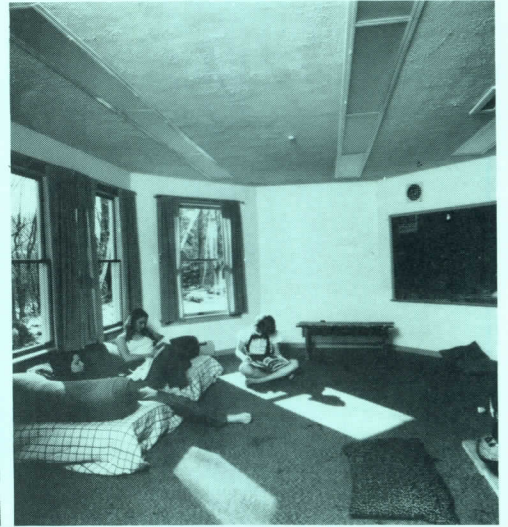
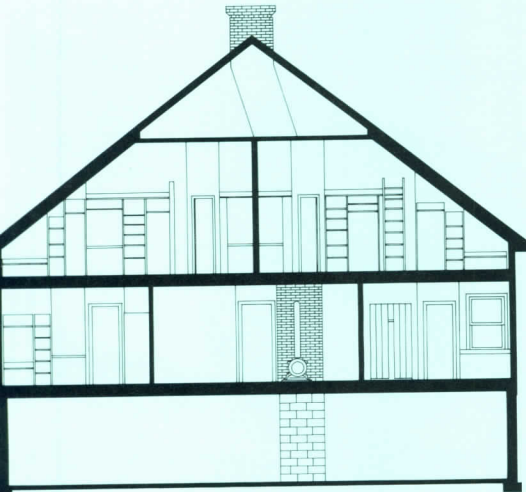
GREEN MOUNTAIN VALLEY SCHOOL, Fayston, Vermont. Architects: *Turner Brooks—Turner Brooks, architect-in-charge; Michael Cadwell, planner and designer; Michael Hassig, designer.* Engineer: *Hugh McIntyre.* Contractors: *Brothers Building Company Inc.; Landmark Inc.*



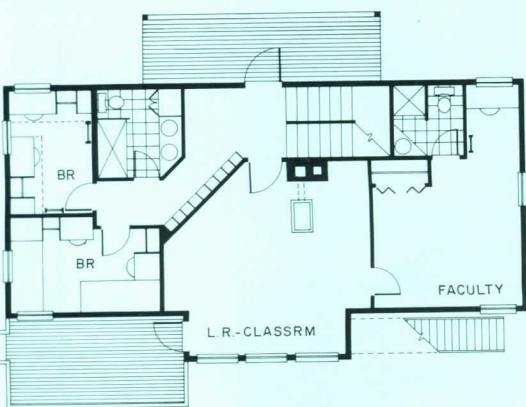
An enormous stepped fireplace is the centerpiece of Brooks's project for the school gym. The circuitous path of the flue would combine with solar heat from a large southern window to warm the masonry mass and, in turn, heat the interior.



The school directors asked for dormitories with an air of rustic domesticity, in keeping with their surroundings. Students of all age groups live together, the sexes segregated by floors. Each house also includes a duplex faculty apartment with its own bathroom and sleeping loft. Communal living rooms are outfitted with blackboards, enabling them to be used as informal classrooms. Woodburning stoves are vented into exposed brick chimneys corbeled inward over the upper stories.



SECOND FLOOR



FIRST FLOOR



MARTHA'S VINEYARD REGIONAL HIGH SCHOOL

Living on an island where most building supplies and fuel must be carried in by boat, the residents of Martha's Vineyard are old hands at energy conservation. Hill Miller Friedlaender Hollander's \$2,539,000 extension to a high school serving all six towns on the Vineyard combines frugal solar design with sturdy elegance. Besides adding ten much-needed classrooms to a one-story 1950s brick schoolhouse, the 28,000-square-foot wing provides three vocational departments geared to training students for employment on the island: a culinary arts section, equipped with a hotel/restaurant kitchen and

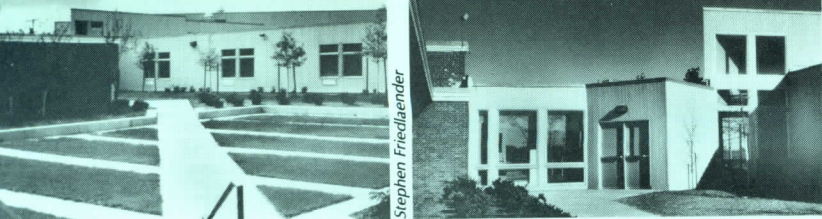
dining room; a building trades shop; and an auto/marine mechanics shop. The areas with highest energy needs—the two shops—face due south, at a 45-degree angle to the rest of the plan, with 1,450 square feet of windows to catch the sun.

Rather than extend the brick and aluminum facades of the existing school, the architect and client agreed to use materials and building techniques typical of local vernacular design. Fire-retardant ship-lap pine siding is stained a classic Martha's Vineyard gray, and windows and doors are framed with solid mahogany and teak—for low maintenance

and an appropriately nautical finish.

ADDITION TO MARTHA'S VINEYARD REGIONAL HIGH SCHOOL, Martha's Vineyard, Massachusetts. Architects: Hill Miller Friedlaender Hollander, Inc. — Stephen Friedlaender, principal-in-charge; Mario J. Torroella, chief designer; Frederick T. Fuetsch, project architect. Engineers: Souza and True, Inc. (structural); R.W. Sullivan, Inc. (plumbing); Scorziello Associates, Inc. (hvac); Lottero and Mason Associates, Inc. (electrical). Landscape architect: V. Michael Weinmayr. Food service consultant: Ronald P. Hirtle. General contractor: Edward R. Marden Corporation.

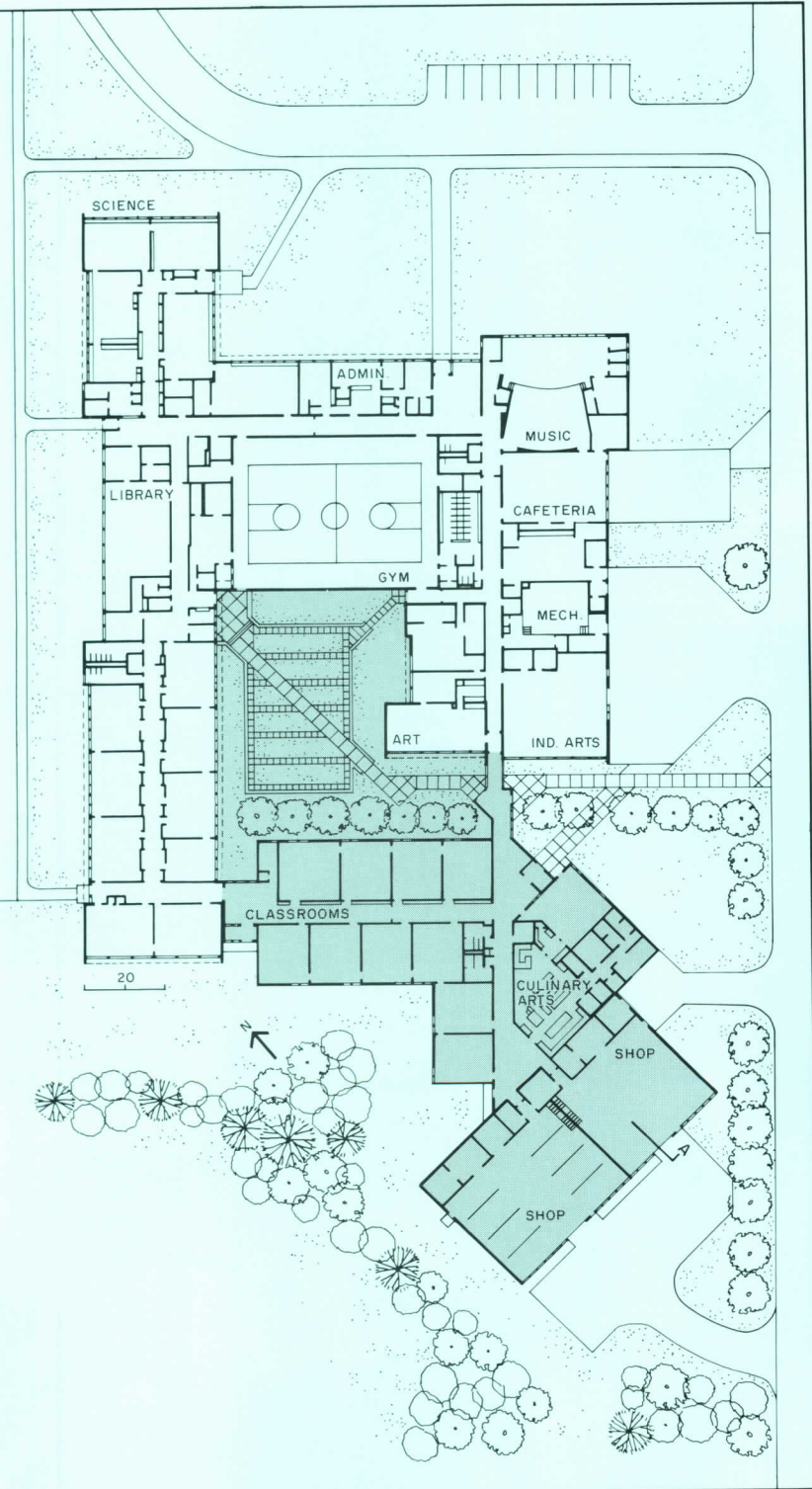
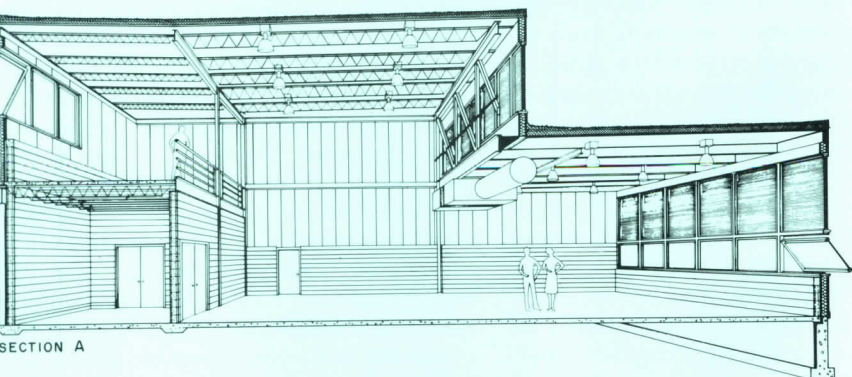




Stephen Frieclaender

By placing a range of classrooms across the open end of a U-shaped area at the back of the old school, the architects created a sheltered courtyard where students can gather. A diagonal walkway leading from locker rooms towards athletic fields to the southeast parallels the 45-degree slant of the new vocational training departments. The intersection of the existing grid and the new diagonal axis is expressed in angled entrances to the courtyard and the extension (opposite and above left). Doors are painted a brilliant purple, the school color. Triangular

alcoves open up the view down double-loaded corridors and make convenient between-class meeting places (below right). Solar efficiency determined the diagonal orientation of the shops (south facade, opposite below; section left). Inside the shops, silvered blinds set between double panes of glass reflect light upward to a heat-absorbing ceiling. A clerestory admits sunlight into the rear of the 55-foot-wide spaces. To allow for seasonal adjustment of the blinds a catwalk was mounted inside the clerestory (below).



HOTCHKISS SCHOOL

"There is only one rule in this school: 'Be a gentleman.'" This maxim, attributed to an early Hotchkiss headmaster, would have to be reworded now that the venerable boys' school has gone co-ed. Yet if any alumnus seeks reassurance that good manners and respect for one's elders are still cherished here, he need only look at Watson Hall, the school's first dormitory designed specifically for girls. In the linked-pavilion plan and Georgian-inspired facades of this \$1,021,000 project, architect Evans Woollen has adhered to some of the school's oldest traditions. The basic composition of a brick structure flanked

by frame wings, all joined along a single corridor, can be traced back to Bruce Price's original main building at Hotchkiss, commissioned in 1893, and a dormitory designed by Loring & Phipps in 1894 (in the foreground of the aerial photo).

While preparing a long-range planning study for the school in 1973, Woollen learned that students found long corridors uncongenial, and that housemasters wanted greater privacy than the old dormitories allowed. Accordingly, Watson Hall was broken down into two brick "houses," each occupied by 16 girls and connected by a common room

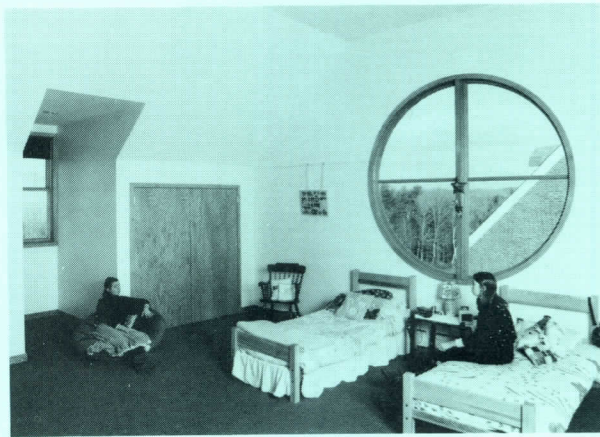
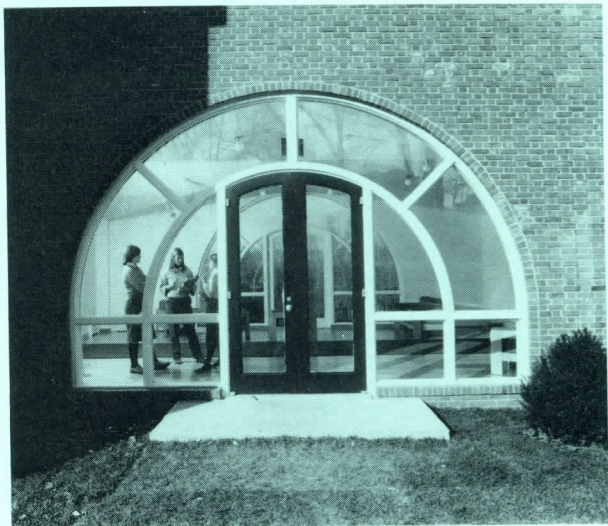
on the first floor, a sun porch on the second, and a widow's walk on the third. Attached at either end is a clapboard cottage for a married housemaster and his family. Woollen strove for an air of Shaker-like modesty, in keeping with the architecture of the Connecticut countryside. However, a sophisticated exaggeration of proportion and geometry makes Watson Hall anything but a banal pastiche. The contrast of triangular and round pedimented dormers, reflecting similar elements in 1920s Cass Gilbert buildings at Hotchkiss, is echoed in boldly overscaled diamond and bull's-eye windows, gables, and



archways. This imaginative reworking of borrowed motifs is a challenging game, but Woollen, a loyal Hotchkiss alumnus, plays it with skill and gentlemanly restraint.

WATSON HALL, Hotchkiss School, Lakeville, Connecticut. Architects: *Woollen Associates—Evans Woollen, AIA, partner-in-charge; Carlyle C. Schroeder, AIA, project architect; Noyes Associates, associated architects.* Engineers: *VanZelm, Heywood & Shadford, Inc. (mechanical/electrical); Besier Gibble & Quirin (structural).* Landscape architects: *Kane & Carruth.* General contractor: *NICOM Industries, Inc.*

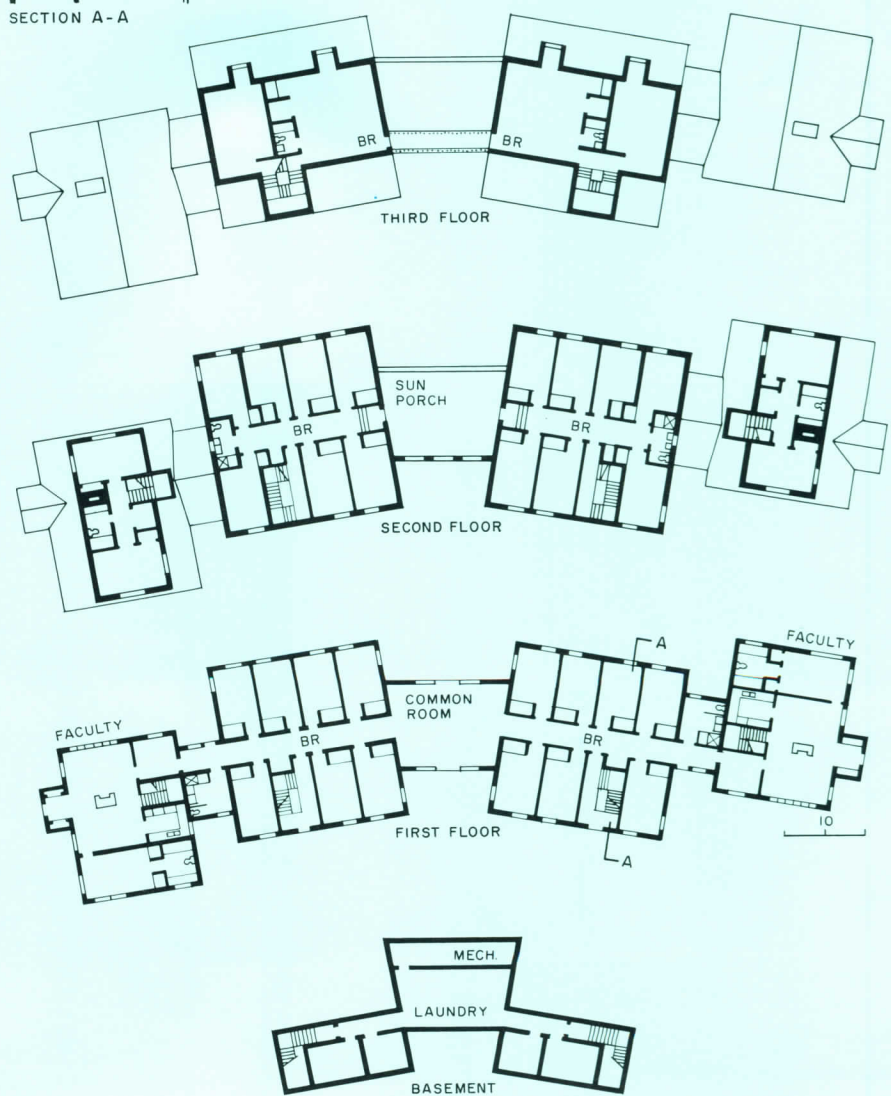
Evans Woollen bowed his plan in response to an entrance quad to the east and a panorama of Lake Wononskopomuc and the Berkshires to the west. Following the contour of the site, the building steps down on three levels from north to south. Views from the common room (above right) are framed by arches whose mullion patterns recall a window in the school library, designed by Delano & Aldrich. Circular windows in the double attic room of the south building (right) and the adjacent faculty cottage resemble similar openings on an 1894 dormitory by Loring & Phipps. Diamond-shaped windows on the north wing were adapted from tilted sashes set into the gables of old New England farmhouses.



Robert Perron photos



SECTION A-A



PORTSMOUTH ABBEY SCHOOL

Benedictine monasteries have been assiduous patrons of architecture since the Middle Ages, and the tradition remains strong among the monks of Portsmouth Abbey, who maintain a boys' school in Rhode Island on the shore of Narragansett Bay. With rare commitment to a single-minded artistic vision, extending over nearly 30 years, the Abbey has commissioned a series of 11 buildings from Pietro Belluschi, former dean of MIT's School of Design. The focus of Belluschi's master plan is a large quadrangle (known on campus as "the sacred lawn") dominated by an octagonal chapel (photo below right; see

RECORD, July 1959, pages 147-153, and June 1961, pages 116-121).

With the completion last winter of the \$1,150,000 Flobelle Fairbanks Burden Classroom Building, the fourth side of the quad is finally in place. The copper-roofed frame structure, clad with redwood plywood boards and solid redwood battens and surrounded by garden walls of native fieldstone, repeats the materials, subtle texture, and somber palette of Belluschi's earlier work at Portsmouth. Facing south into the quadrangle, a balcony-like sun screen relieves the building's plain rectangular mass.

The architect admits that there is more than a hint here of the Northwestern churches and houses with which he first established his reputation. "My roots from 1925 were in the West Coast, so I brought some of that with me," he says. "If I had been in New England for 30 years I might have looked more sympathetically to white-painted buildings." In any case, the monks of Portsmouth did not want to erect a museum piece or a replica of conventional prep schools. They are convinced that Belluschi's continuing dedication to simplicity, human scale, and the "poetic potential in understatement"

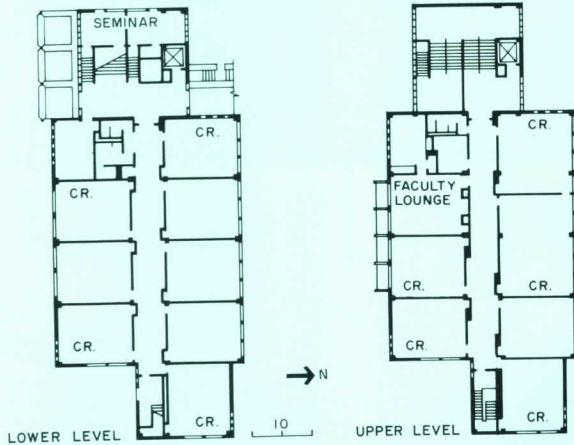


ment" has served the Abbey well, harmoniously echoing the spirit of a monastic life. Future plans for the school include construction of a new gymnasium and a library, also to be designed by Belluschi.

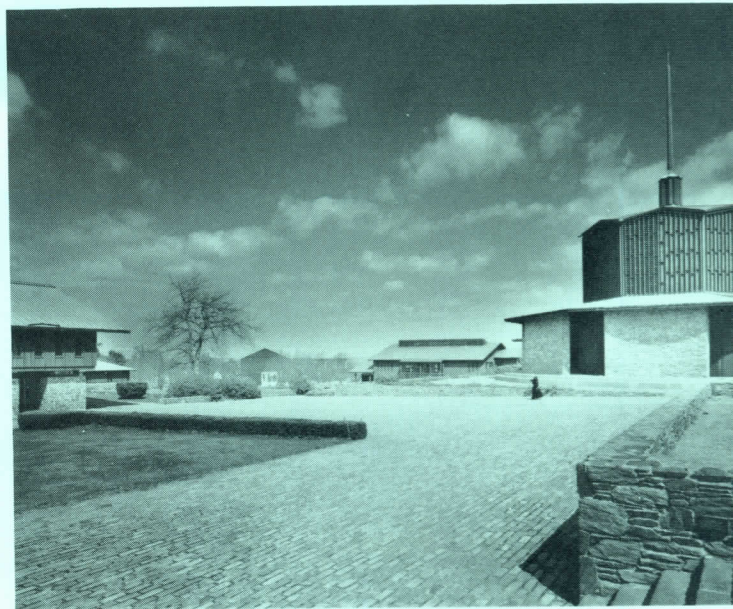
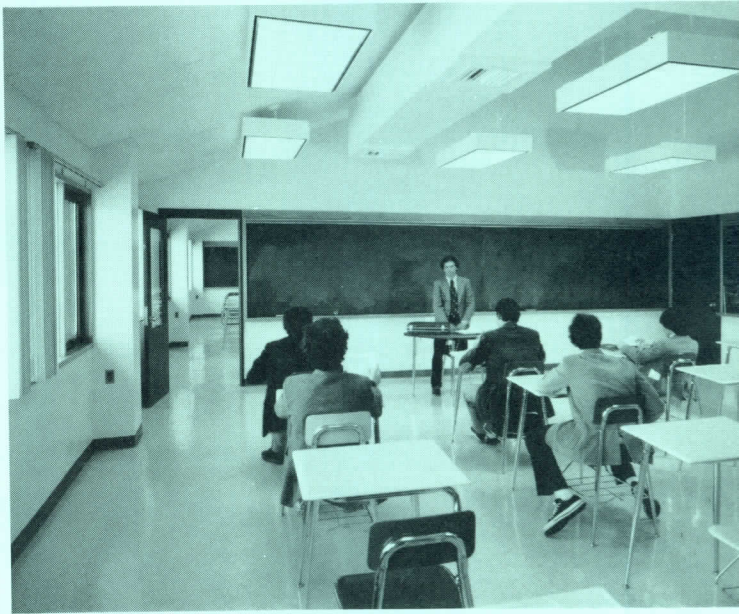
FLOBELLE FAIRBANKS BURDEN CLASSROOM BUILDING, Portsmouth Abbey School, Portsmouth, Rhode Island. Architects: *Pietro Belluschi Inc. and Jung/Brannen Associates Inc.*—*Pietro Belluschi and Robert Brannen, design; Ray C. Bump, Jr., project architect/construction administrator.* Engineers: *Lev Zetlin* (mechanical/electrical), *Weidlinger* (structural). General contractor: *F.L. Collins & Sons.*

Pietro Belluschi's new classroom building stands to the right of the central quadrangle in the aerial view. An octagonal chapel and adjoining monastery occupy the foreground of a complex of buildings designed by Belluschi over the past three decades: (clockwise from the chapel) a dining hall, an administration and auditorium block, dormitories, and a science building. This new campus center has shifted the focus of the school several hundred feet away from its original quarters in a mansion designed by Richard Upjohn (aerial, upper right).

Andrew Barada



The campus is unified by consistent handling of wood and stone, and landscaping by Dom Hilary Martin, a monk who practiced architecture before taking vows. Hallways in the new building are paneled in red oak (top right), and windows, doors, and blackboards are trimmed to match. The front walk and retaining wall were laid with old pavers and capstones from Newport, salvaged by Dom Peter Sidler, the Abbey treasurer.



CONNECTICUT JUNIOR REPUBLIC SCHOOL

One of the nation's oldest residential treatment centers for troubled youths, the Connecticut Junior Republic School, was founded in 1904 as a rural haven where boys could learn good citizenship through self-government. The school's philosophy of juvenile care has changed radically since its idealistic beginnings, and it now offers a practical curriculum of special education and work experience for 80 students, some 70 per cent of whom are referred by Connecticut courts.

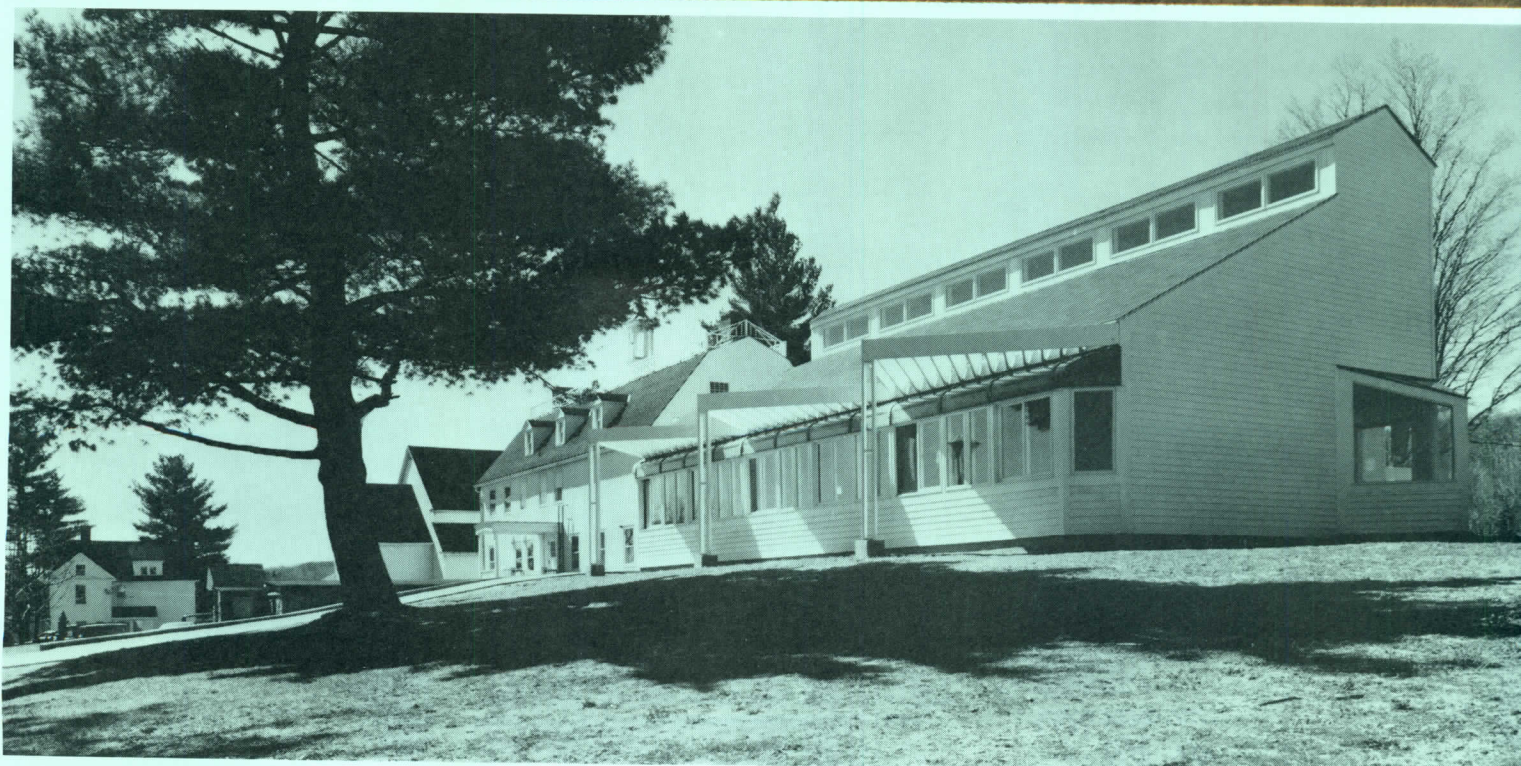
Architects Herbert S. Newman & Associates were hired immediately after a fire destroyed the school dining hall, one of two

low structures (its counterpart is a former gymnasium) symmetrically flanking a 1917 neo-Colonial administration building (below). Newman designed a new 5,000-square-foot dining hall to stand on the foundations of the old one, installed a new conference room and offices in the vacant gym (overleaf), and remodeled existing office space in the administration building. The \$600,000 project also included new connecting links between the three units.

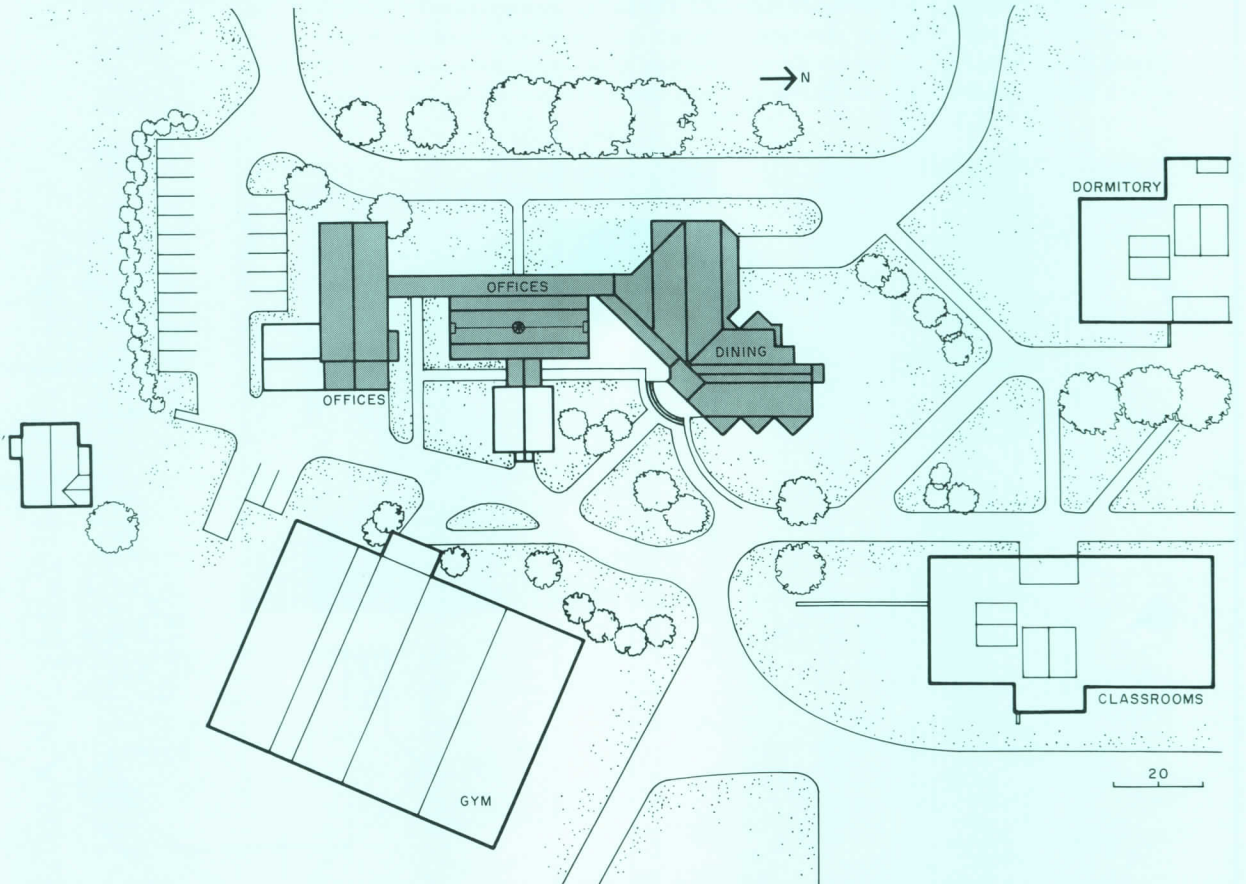
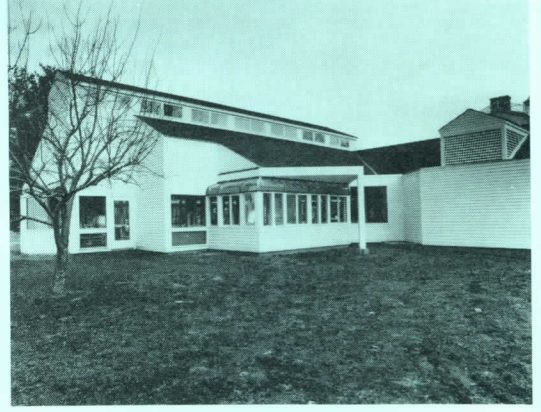
Although Newman was determined to preserve the over-all symmetry of the main entrance (west) facade, he also delighted in

the irregular cluster of buildings to the rear (lower photo below). By laying down a series of paths and curved steps that radiate from the dining room entrance, and a diagonal porticoed "street" leading to the offices (above right), Newman has shaped this area into an outdoor gathering place with the character of a village crossroads. Several generations of architecture are related by the consistent use of white clapboard siding, porches, gables, and dormers.

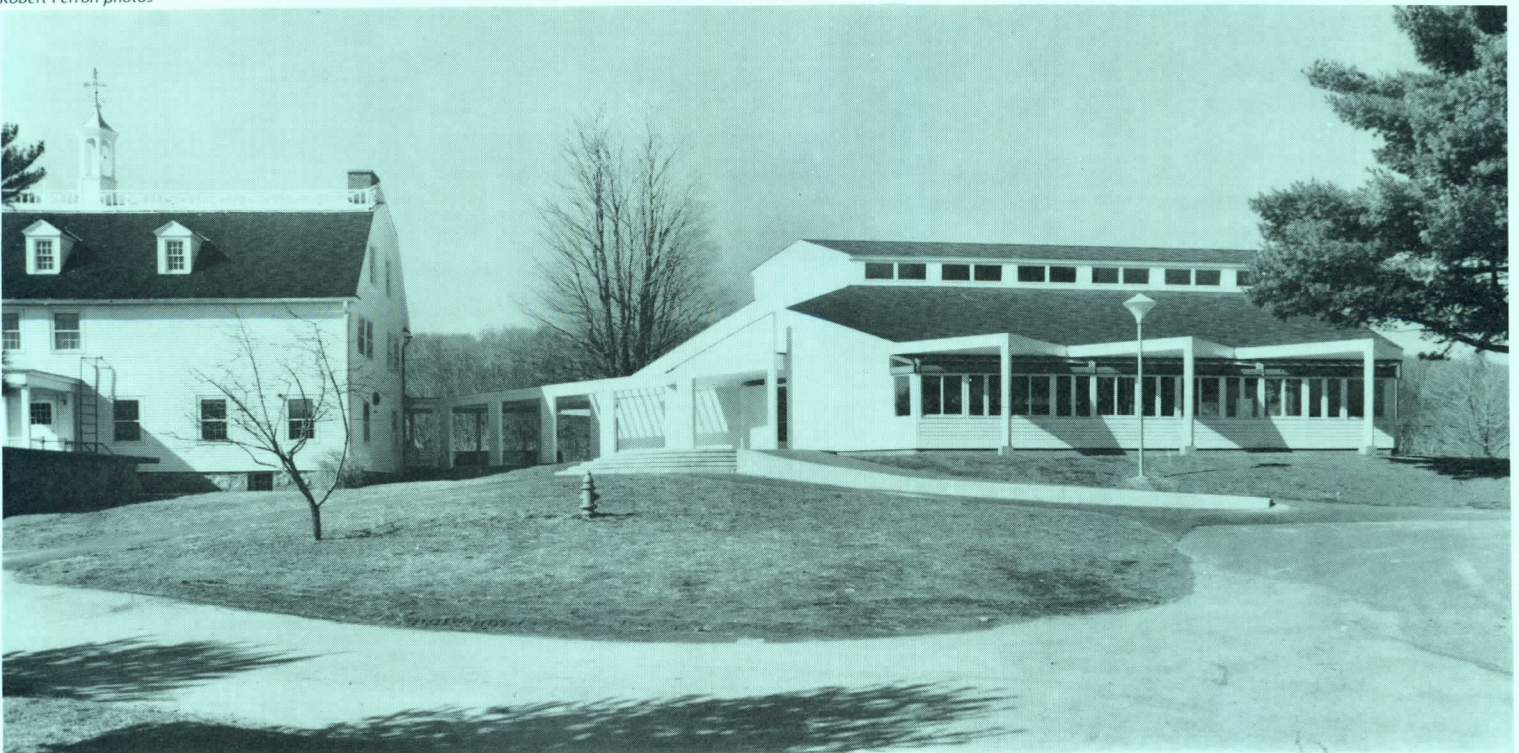
The school hoped that the new dining hall would become a strong community center where all 80 boys and 50 staff mem-



the general perimeter and location of Herbert Newman's dining hall wing were determined by the requirement that he reuse the foundations of a demolished building. Seen from the road to Litchfield (opposite above) the west-facing ell of the dining hall forms one wing of a symmetrical Palladian plan, balanced to the south by an old gymnasium, now remodeled for offices. Newman chamfered the southwest corner of the new wing in order to lend visual interest to the blank exterior walls of storage and kitchen areas, and direct visitors toward the principal entrance of the central administration building. The contrasting informality of the east front (below left and right) frames a lively campus common. Formerly a paved lot, this area was reorganized with landscaped pathways to direct circulation into the dining hall from a gymnasium, classrooms, and dormitories (lower left and right in the site plan), designed during the 1950s and '60s by Marcel Breuer Associates. Projecting triangular trellises, which will be planted with wisteria, cast a delicate hatching of shadow across white clapboard walls.



Robert Perron photos

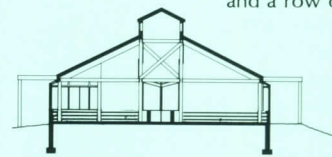


bers could eat lunch together at one sitting. The exposed timber frame interior, reminiscent of a barn, furnishes a warm rustic setting. In daily use the dining room gets plenty of wear and tear. Fir slats protect entry walls and low brick barriers along the central aisle direct mealtime traffic. Vertical supports for the diagonally braced roof structure are hefty eight-by-eights: "You can carve into them and it won't matter," the architect observes. "It will only form a patina." Vandalism has not been a problem, though. On the contrary, Connecticut Junior Republic's program director Herbert Barnes asserts that the building

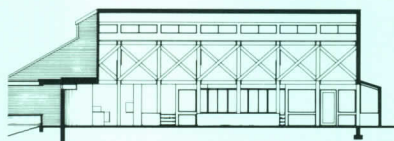
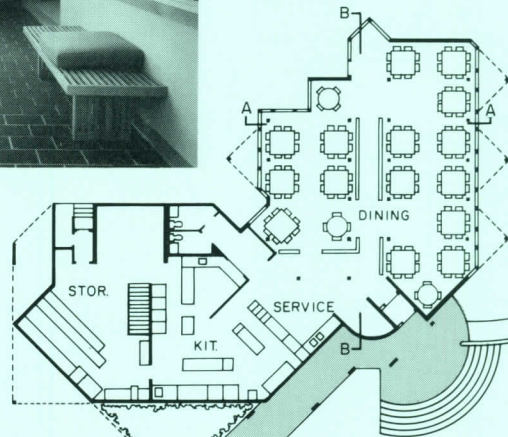
"exemplifies the salutary effects of good architecture. It has both encouraged respect and commanded it."

DINING HALL AND OFFICES, Connecticut Junior Republic School, Litchfield, Connecticut. Architects: *Herbert S. Newman Associates, AIA, P.C.*—*Herbert S. Newman, FAIA, partner-in-charge; Barry Svigals, project manager; Mark Schlenker, Marsden Moran, Michael Raso, designers.* Engineers: *John C. Martin, P.E. Consulting Engineers (structural); Helenski-Zimmerer, Inc. (mechanical/electrical).* Interior design: *Herbert S. Newman, Barry Svigals, Edna L. Newman.* General contractor: *Burlington Construction.*

A glass-walled corridor (near left) opens into lofty office spaces in the old gym (above left), where curved walls repeat similar forms in the dining hall entry and coat room (below left). Faculty asked that the coat room be conspicuous for easy supervision (closets in the former dining hall had been trouble spots). Fir slats make a decorative—and protective—wall covering. In section, the clerestory-lit center-aisle building resembles a basilican church, although most visitors compare its timber structure to the inside of a barn. An axial vista through a triangular bay window extends northward along a well-traveled walkway, bordered by dormitories and a row of shade trees.



SECTION A-A



SECTION B-B







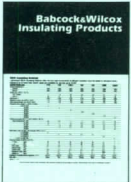
APARTMENT LAUNDRY / A color brochure explains the central *Maytag*-equipped home style laundry concept, stressing its advantages over multiple small laundry rooms in apartment or dormitory buildings. Space- and energy-saving *Maytag* gas dryers and washers are featured.

■ The Maytag Co., Newton, Iowa.
circle 400 on inquiry card



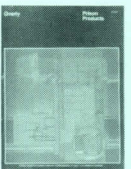
EXPANSION ANCHOR / The "Pron-to" aluminum expansion anchor, for medium-load fastening applications in hollow block, can be inserted and tightened in one minute. A data sheet illustrates installation steps and lists shear and pullout strengths in various types of masonry. ■ ITT Philips Drill Div., Michigan City, Ind.

circle 401 on inquiry card



HIGH-TEMPERATURE INSULATION / An eight-page brochure details temperature-use limits, composition, application, strength, density, size, shape and handling characteristics of products suitable for high-temperature environments, such as firebrick, fiber insulation, refractory shapes and castables, etc. ■ Babcock & Wilcox, Augusta, Ga.

circle 402 on inquiry card



DETENTION EQUIPMENT / Prison products catalog features Overly's prefabricated cell system, which includes ceilings as well as doors and walls. Text, drawings and photos illustrate lines of detention doors and frames, pass-throughs, gun and evidence lockers, etc. ■ Overly Mfg. Co., Greensburg, Pa.

circle 403 on inquiry card



METAL ROOF SYSTEMS / An updated technical data catalog from H. H. Robertson now includes a color section highlighting product installations, revised load and span data tables for all available deck sections, and current information and specifications on ADC air distribution and diffusion ceiling products. ■ H. H. Robertson Co., Pittsburgh.

circle 404 on inquiry card



HEATING CONTROLS / A pocket-sized leaflet describes a line of non-electric thermostatic heating controls and related valves for use in either hot water or low-pressure steam systems. ■ Ammark Corp., Fair Lawn, N.Y.

circle 405 on inquiry card



CERAMIC TILE PRODUCTS / A 36-page trade catalog illustrates American Olean's entire glazed, quarry and ceramic mosaic tile product lines. New items include eight "Siena" colors and "Primitive Encore Glacier." Color photos show tiles in various unusual and creative applications in homes, schools, restaurants, malls, etc. Sales service centers and distributors are listed. ■ American Olean Tile Co., Lansdale, Pa.

circle 406 on inquiry card



PANIC DOORS / Safety and security features of the *Nightwatch* concealed rotary astragal panic door line are covered in a color brochure. The doors are available as a standard door with a choice of narrow, medium or wide stiles, and the flush panel door is offered with or without vision lites. ■ Howmet Aluminum, Terrell, Texas.

circle 407 on inquiry card



OPEN PLAN OFFICE / A design catalog shows many ways of using *Pleion* open space panel systems, components and freestanding furniture, and illustrates several office design layouts. ■ Pleion Corp., Santa Ana, Calif.

circle 408 on inquiry card



IN-STOCK FURNITURE / An eight-page catalog contains contract furniture available for quick delivery from stock. Included are office machine tables, plastic and upholstered stack chairs, pedestal tables, folding tables and chairs. ■ Virco Mfg. Corp., Torrance, Calif.

circle 409 on inquiry card



EMERGENCY POWER / Literature describes modular AC emergency power systems in 1 kVA-15 kVA capacity which feature independent 1 KVA modules for reliability. Detailed graphics explain the operation of the three available models—standard, HID, and UPS. ■ Yorklite Electronic Products, San Marcos, Texas.

circle 410 on inquiry card



BUILDING PANELS / An illustrated brochure covers a complete line of architectural building panels in steel, aluminum and mineral fiber. Included are exterior and interior panels, insulated and veneer panels for curtain walls, store fronts, partitions, canopies and fascias. A chart shows all color and finish options. ■ Indasco, Inc., Santa Fe Springs, Calif.

circle 411 on inquiry card



WATER COOLERS / A revised and greatly expanded cooler and fountain line is presented in a 20-page color catalog. There are 28 wall-mounted, freestanding, and recessed coolers, as well as special-purpose units such as wheelchair, remote, explosion-proof and water-cooled fountains. ■ White-Westinghouse, Columbus, Ohio.

circle 412 on inquiry card



PERIOD LIGHT FIXTURES / Authentic lighting fixtures and poles, duplicating or adapted from the 19th century originals, are shown in a 28-page catalog. Accessories include brackets for wall mounting and landscape appointments. Photometric data, dimensions, and specifications for light sources, ballasts, reflectors and diffuser systems are given. ■ Welsbach Lighting, Inc., New Haven, Conn.

circle 413 on inquiry card



ROOF TREATMENT / An ecologically-clean treatment for preserving built-up roof membranes is detailed in a data page from Tremco. Compatible with both tar and asphalt-based roofing, cold-applied *ECOLastic* has a UL Class A rating. ■ Tremco, Cleveland.

circle 414 on inquiry card



TRACK LIGHTING / Five new series of 12- and 5.5-V lampholders, said to provide superior accent lighting at reduced energy costs, are illustrated in a color brochure. Complete photometric and design data on these track lighting fixtures is included. ■ Progress Lighting, Philadelphia.

circle 415 on inquiry card



SAFETY SYSTEMS / The recently revised "Fall-Protection Handbook" assists construction superintendents in selecting, rigging, and installing complete safety systems for various projects. ■ Sinco Products Inc., East Hampton, Conn.

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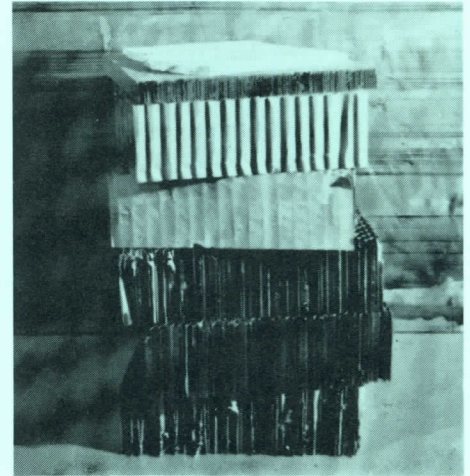
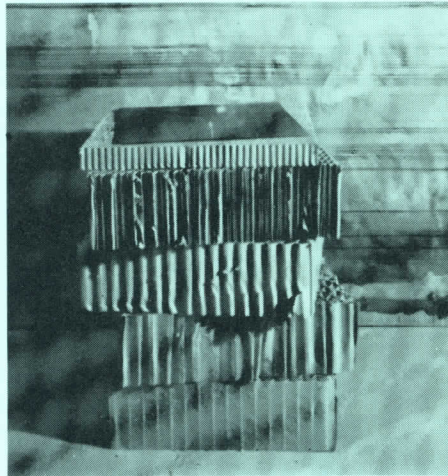
For more information, circle item numbers on Reader Service Inquiry Card, pages 205-206

Geometric objects set unusual base for table

The "Euclid" table, designed by Lella and Massimo Vignelli, depends on four distinctive geometric objects as a base supporting a 3/4-in.-thick glass top (available in a variety of sizes from 42- to 60-in. square). These base elements are not fixed, but are free to be rearranged by the user. As Massimo Vignelli elaborates on the design theory, the table is "an interaction among the elements of Euclidean geometry.

Some are standing and propping, like the pyramid; some are potentially rolling free, like the sphere; but the cube represents stability forever; while the cylinder, in that position, symbolizes the ruins of our past civilization." The cube is made of Negro Marquina marble, the cylinder of travertine, the pyramid is White Carrara, and the sphere is of Mondragone marble. ■ ICF, New York

circle 301 on inquiry card



Tables by the Slice designed by Gehry and Wurman

Architects Frank Gehry and Richard Saul Wurman have teamed-up to form a new furniture design and manufacturing operation called The Furniture Brothers, and their first design has been introduced this month in Los Angeles.

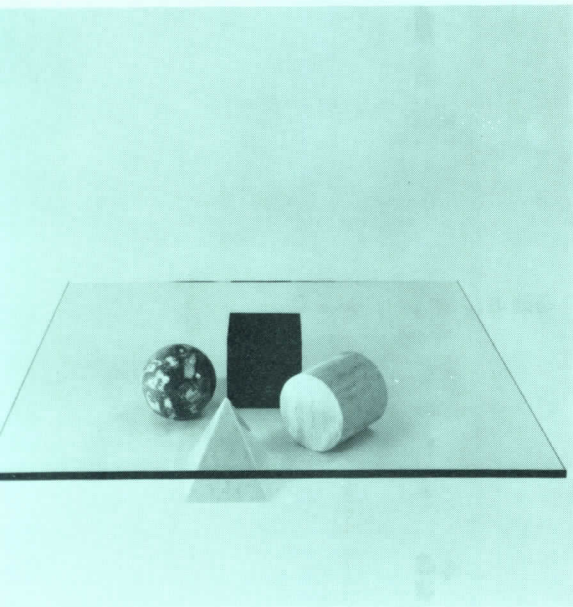
This table design, called "Tables by the Slice," is made of stacked "slices" of cellular corrugated cardboard, topped with thin slabs of marble or pieces of metal. The lower sections are 6-in. high of 1/2-in. cellular cardboard; the top layer is only 1 1/4-in. high of 1/2-in. cellular cardboard, topped

with irregularly-cut Italian marble or metal surfaces. These sections are simply stacked in various ways to produce the tables shown. According to Wurman, the furniture is meant to be an "unusual combination of materials and shapes, intended to make one look twice." The cardboard is strong but lightweight, and the cellular nature, with sections set in askewed stacking patterns, create craggy slots for holding items. The marble and metal pieces (the most highly polished material set at the top of the pyramid of finishes) can

be removed for cleaning.

This design is a departure from the "Easy Edges" cardboard furniture designed earlier by Gehry. As "Easy Edges" was a solid piece of cardboard with whimsical shapes sawed-out, and structurally strengthened where necessary, the "Tables by the Slice" are of a different kind of cellular cardboard that is cut first and then set into a pattern. Eventually, The Furniture Brothers will produce a seating line using the same concept. ■ The Furniture Brothers, Los Angeles.

circle 302 on inquiry card



Cage II table highlighted by base design

In creating a functional but distinctive table with unusual materials, this "Cage II" pedestal table (right) designed by Jimmy Potucek has a unique base design of exposed 27-in. high members of antique steel set into an iron ring with 29-in. diameter. The table top is mahogany with a polished brass bullnosed edge. ■ LCS, Incorporated, New York City.

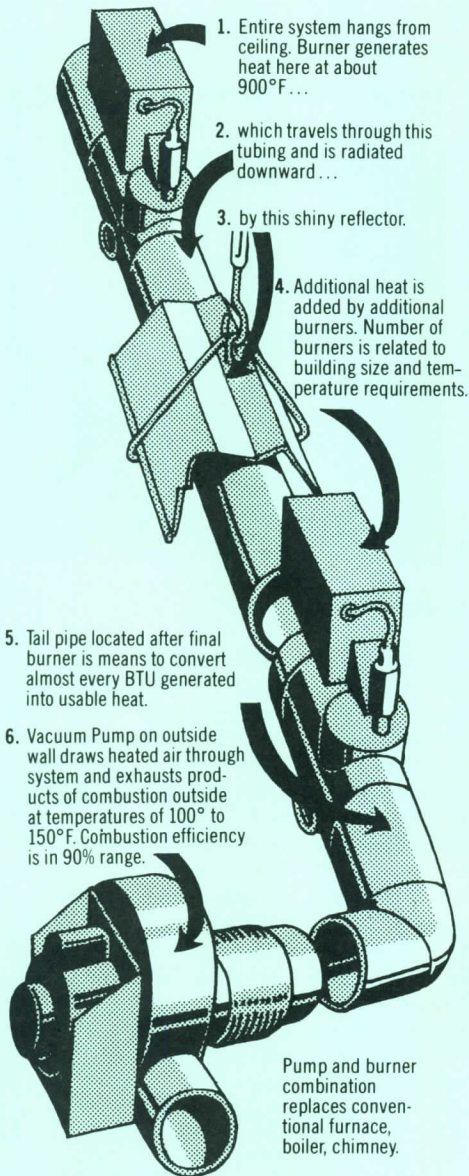
circle 303 on inquiry card

more products on page 134



THE CO-RAY-VAC[®] HEATING SYSTEM

So energy efficient it cuts fuel usage up to 50% and more!



1. Entire system hangs from ceiling. Burner generates heat here at about 900°F...
2. which travels through this tubing and is radiated downward...
3. by this shiny reflector.
4. Additional heat is added by additional burners. Number of burners is related to building size and temperature requirements.

5. Tail pipe located after final burner is means to convert almost every BTU generated into usable heat.
6. Vacuum Pump on outside wall draws heated air through system and exhausts products of combustion outside at temperatures of 100° to 150°F. Combustion efficiency is in 90% range.

Pump and burner combination replaces conventional furnace, boiler, chimney.

Designed for use in industrial and commercial buildings. People and objects at floor level are bathed in even, draftless warmth. Warm floors mean warm feet, warm feet mean happy employees. Fast heat recovery after opened doors are closed. Minimal maintenance.

MOST IMPORTANT OF ALL: Fuel consumption is reduced. Users report fuel reductions up to 65%. Savings of about 50% are most common. Building survey and life cycle cost analysis lets you and your client know exactly what original cost and **operating costs** will be before you start.

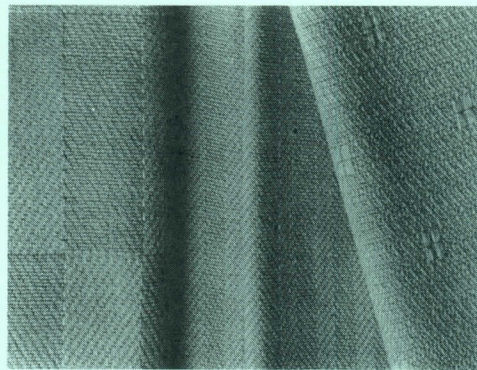
CO-RAY-VAC... The original radiant infrared heating system proved in thousands of buildings since 1962.



Roberts-Gordon

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Subsidiary of A.J. Industries, Inc.
44 Central Ave., Buffalo, N.Y. 14206
Phone 716/892-8400

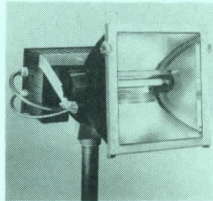
Circle 64 on inquiry card



WOVEN WOOLS / Three of Joyce Vagasy's newest all-wool upholstery fabrics are shown here: textured weaves with an over-all motif of rectangular blocks, stripes, and counterpane checks. All are available in 22 colors; 54-in.-wide fabric passes the State of California requirements for flame resistance of upholstered furniture. ■ Amicale Fabrics, New York City.

circle 304 on inquiry card

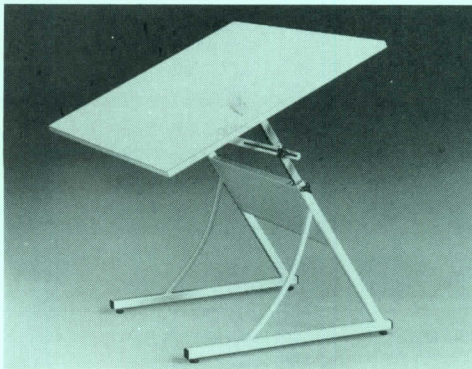
AREA LIGHTING / Asymmetric *Metaline* fixtures



are offered in both wide- and narrow-beam models, for glare-free, efficient lighting of stadiums, parking lots, tennis courts, flood lighting, etc. *Metaline* lights use a small diameter (3/4-in.) 1500-

Watt T-line metal halide lamp, and are available with 120-, 208-, 240-, or 277-Volt ballast. ■ Thorn Lighting Inc., Whippany, N.J.

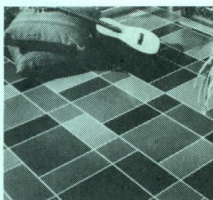
circle 305 on inquiry card



ART TABLE / The "DesignerPLUS" table has a flat white laminate drawing surface to minimize glare and reduce eye strain, set on a two-tone metal base offered in a choice of seven colors. The base adjusts in height from 30- to 40-in., while the top angles from flat to vertical. Table is available in three sizes, up to 36- by 48-in. Optional accessories include a pencil trough, tool tray and a reference bookcase. ■ Plan Hold Corp., Irvine, Calif.

circle 306 on inquiry card

VINYL COMPOSITION TILES / *Flex-Slate* textured



tiles are offered in a "Design Pack": a mixture of 1/8-in. gauge tiles in three different shapes and five colors. Standard 12-in. sq *Flex-Slate* tiles come in black, terra cotta and gray. Vinyl composition tiles and mortar strips are suitable for both commercial and residential interiors. ■ Azrock Floor Products, San Antonio.

circle 307 on inquiry card

more products on page 137

dryvit[®] SYSTEM, INC. OUTSULATION[®]

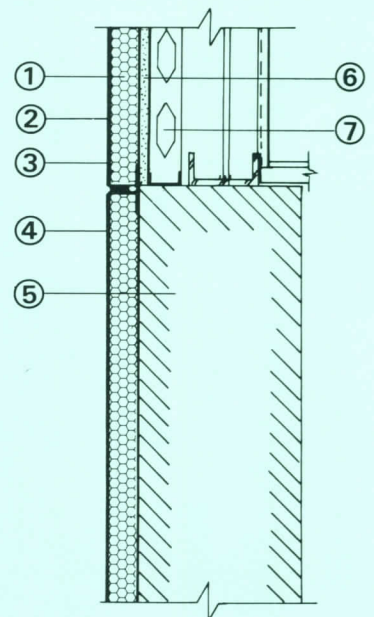
Retrofit over a brick substrate.

In the First Alabama Bank retrofit (facing page), the problem of a crumbling brick facade presented itself. After the brick was given a thorough chemical cleaning, the Dryvit Insulation Board was affixed directly to the brick substrate.

This application has been used successfully in many retrofits with Dryvit Outsulation.

Look for Dryvit in the General Building File of Sweets Catalog under Section 7.13/Dr.

Wall section detail below:

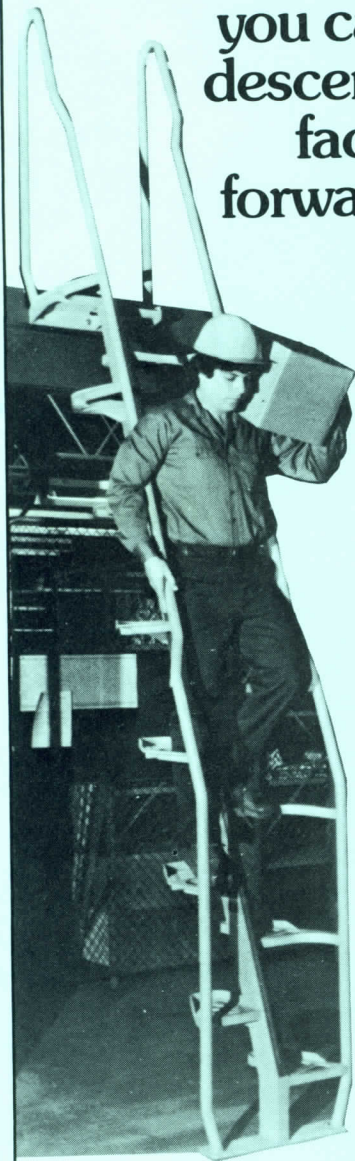


1. **Dryvit Insulation Board:** expanded polystyrene with optimum insulating characteristics. Board sizes, thicknesses and shapes are available as required by design.
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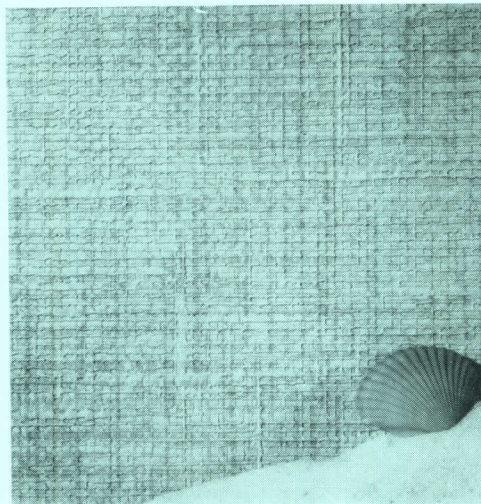
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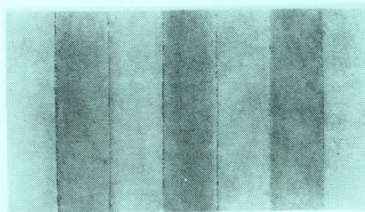
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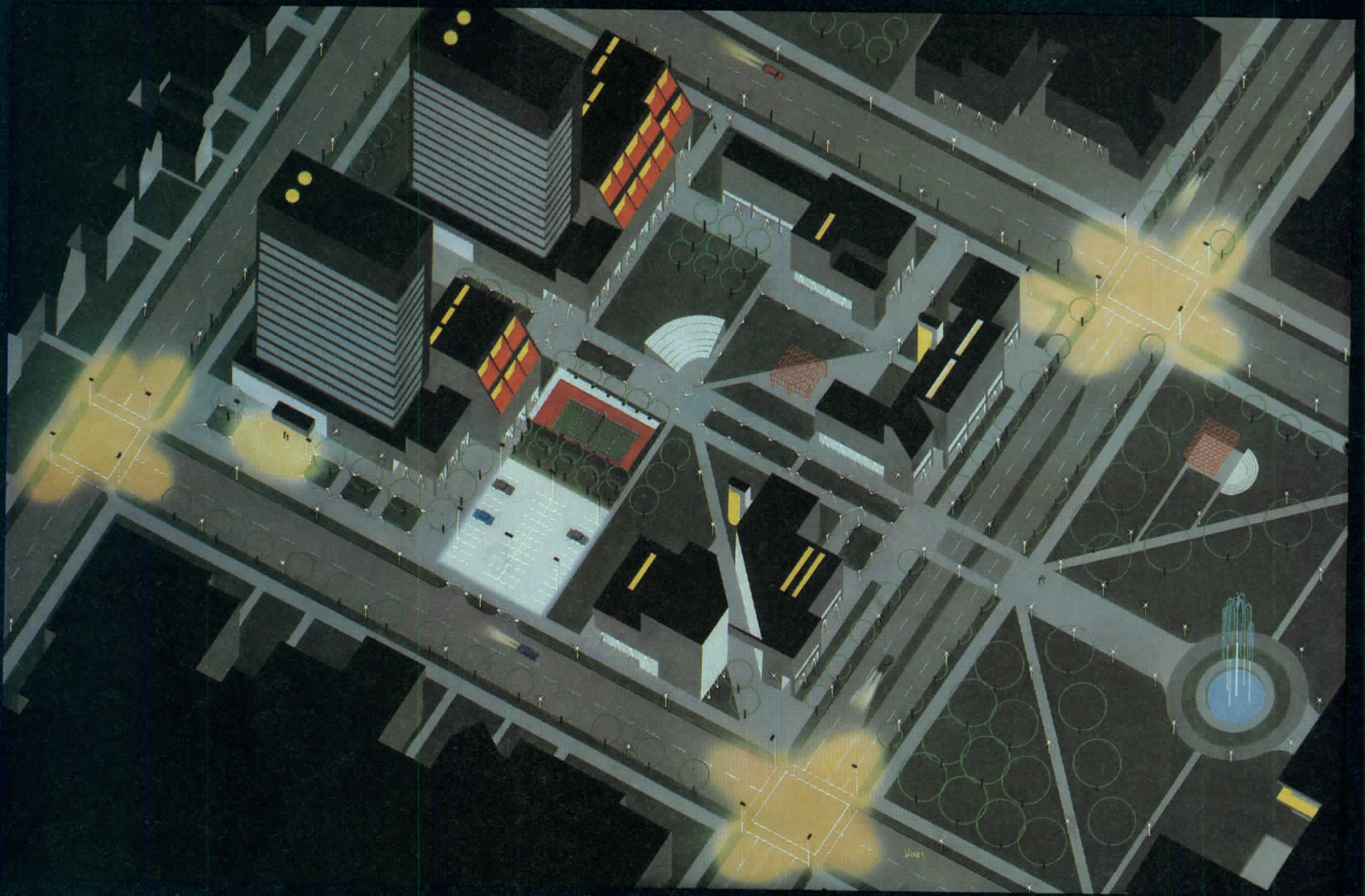
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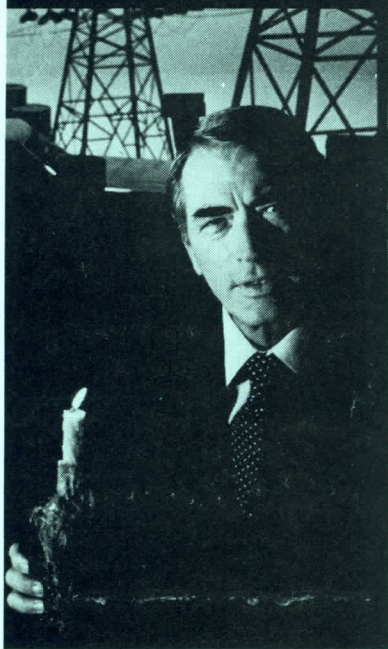


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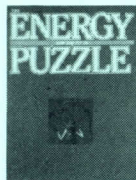
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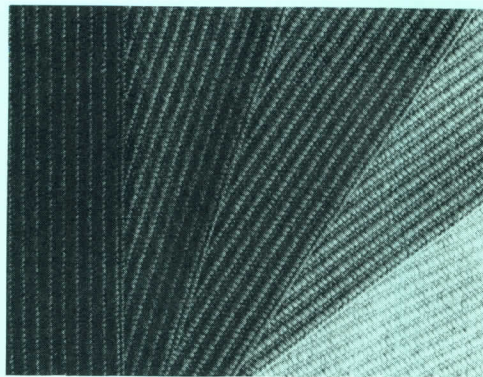
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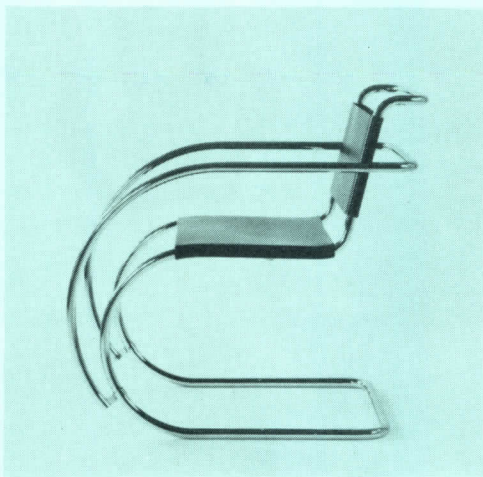
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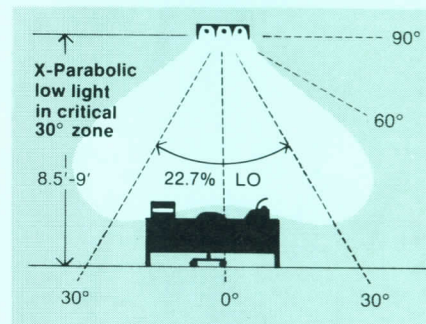
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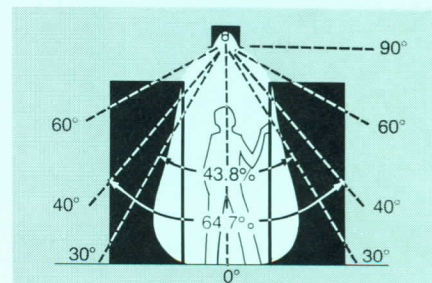
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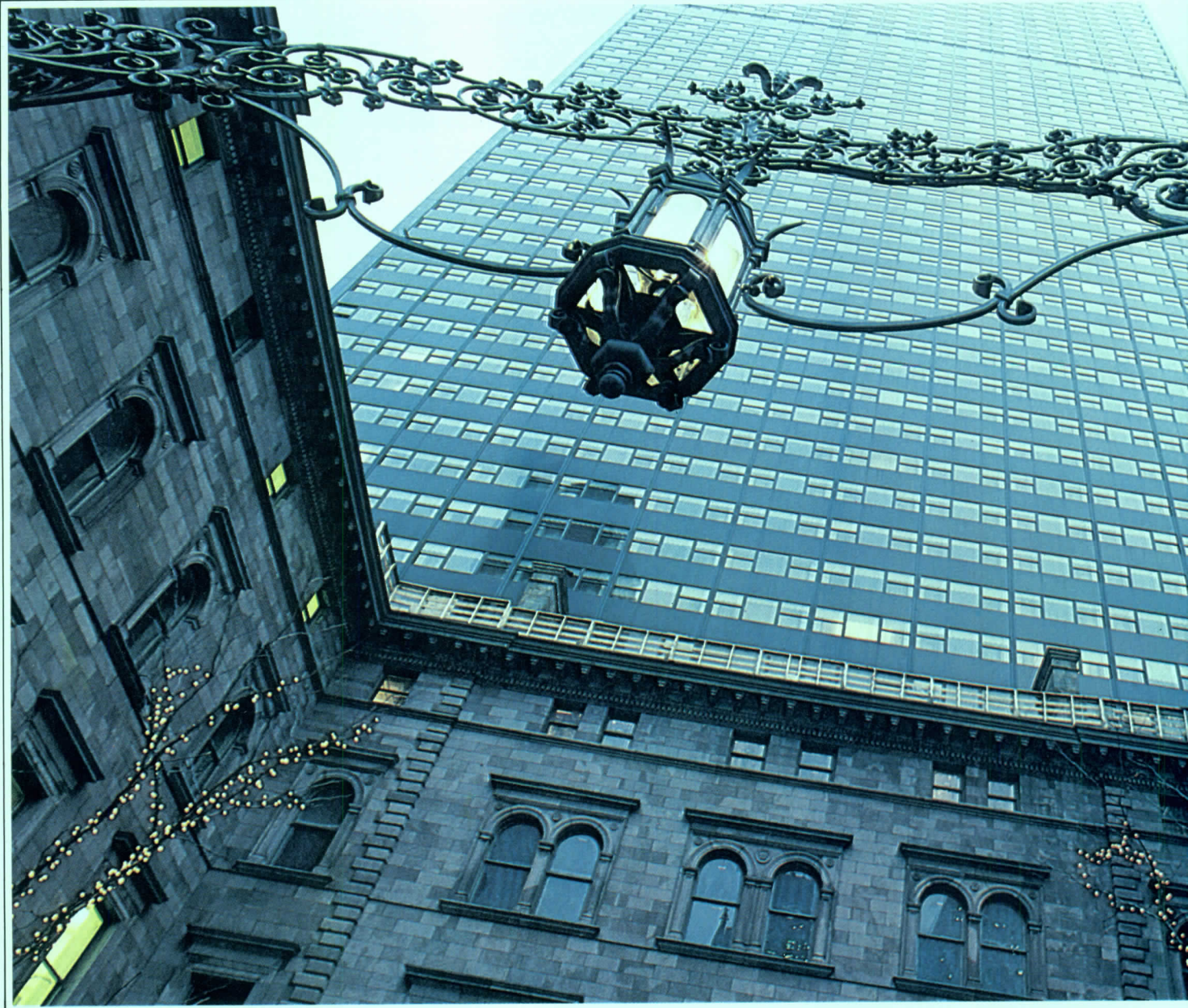
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ing type (banks, hospitals, schools, etc.) Other categories cover subjects in the engineering section (concrete, lighting, prefabrication, etc.). ABBREVIATIONS: AB—Architectural Business; AE—Architectural Engineering; BA—Building Activity; BTS—Building Types Study; LP—Legal Perspectives.

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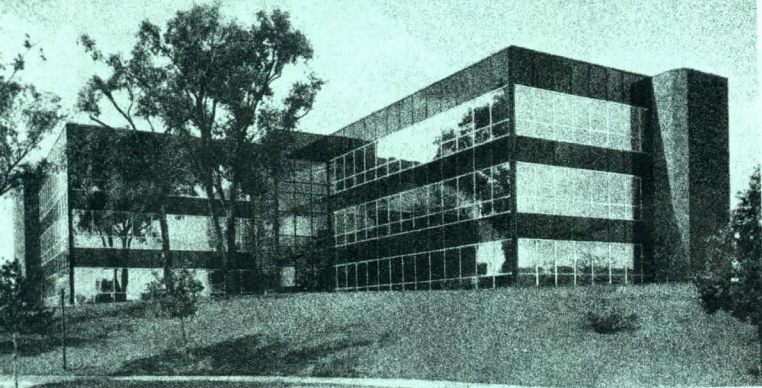
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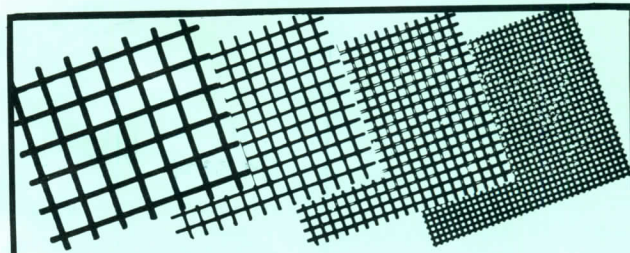
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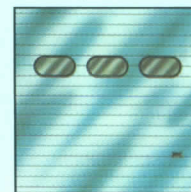
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