THE AMERICAN ACADEMY OF ARTS AND SCIENCES, BY KALLMANN, McKINNELL & WOOD

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BUILDING TYPES STUDY: RECREATION BUILDINGS

ATRIUM-TYPE OFFICE BUILDINGS BY SOM SAVE ENERGY

FULL CONTENTS ON PAGES 10 AND 11

ARCHITECTURAL RECORD

NOVEMBER 1981 11 A McGRAW-HILL PUBLICATION SIX DOLLARS PER COPY

The Armstrong Commercial Corlon® Flooring System. A new concept that's been proved in use for over 20 years

Although Federal budget cuts and tight monetary policies, are hardly calculated to boost construction in 1982 "there is reason to expect that much of the deferred construction potential of the early 1980s can eventually be realized," according to economist George A. Christie of McGraw-Hill Information Systems Company. Mr. Christie's *1982 Dodge/Sweet's Construction Outlook* indicates that commercial and industrial building are likely to remain the strongest markets, although even a modest reduction in interest rates could raise the total of all construction by as much as five per cent. For details, see page 61.

Congress is shown a new master plan for Capitol Hill for the first time in 80 years and the second time in history. If adopted, it will become a blueprint for growth for the next 50-to-75 years. For details see page 36.

The Reagan Administration may dismantle DOE. If it does, HUD would assume responsibility for research in energy conservation and solar energy. For details, see page 36.

Sweet's Catalog Files, a reference tool for architects, celebrates its 75th anniversary. For details, see page 37.

New York Landmarks Conservancy asks that a Brooklyn stained glass window design be on a Christmas stamp. Use of this design on the Christmas stamp would symbolize America's artistic heritage and draw attention to the windows of a landmark church that is badly in need of restoration. "The Church of St. Ann and the Holy Trinity in Brooklyn Heights . . . contains 60 stained glass windows executed by Jay Bolton between 1844 and 1847. They are considered by experts to be the first and finest stained glass windows produced in the United States," said Brendan Gill, chairman of the Conservancy. Restoration of the windows, which are in the Gothic Revival style, would cost an estimated $1 million, according to Laurie Beckelman, executive director of the Conservancy. The Vincent Astor foundation has already given $100,000.

Marcel Breuer's friends and associates met at the Whitney Museum in New York City for a memorial service in honor of the late architect, who designed that museum, and who helped introduce the United States to the Bauhaus School of Architecture. Rufus Stillman, I. M. Pei, Richard Stein, Hamilton Smith and Gyorgy Kepes spoke at the memorial service. Breuer came to the United States in the 1930s, and died in New York City on July 1, 1981.

Architectural drawings of P. B. Wight's work are on exhibit at the National Academy of Design in New York, from September 24 through December 6. The exhibit, entitled P. B. Wight: Architect, Contractor and Critic, 1838-1925, will contain 46 original architectural drawings from the permanent collection of the Art Institute of Chicago, watercolors and gouaches, some reminiscent of medieval manuscript illumination. The exhibit will be open from noon to five, Tuesday through Sunday, at the National Academy of Design, 1083 Fifth Ave, New York City.

The University of Illinois announces its annual Kate Neal Kinley Memorial Fellowship for fine arts study. The fellowship will award $4,000 to one graduate of the College of Fine and Applied Arts at the University of Illinois at Urbana-Champaign, or to graduates of similar institutions of equal educational standing, to defray the expenses of advanced study in fine arts in America or abroad. Competitors must have majored in architecture, art or music in order to be considered for the fellowship. For information, contact Dean Jack H. McKenzie, c/o Kinley Fellowship Committee, College of Fine and Applied Arts, 110 Architecture Building, University of Illinois, 608 E. Lorado Taft Drive, Champaign, Illinois 61820.

An interdisciplinary lecture-symposium series on post-modernism will be held at the University of Illinois at Chicago's Circle campus (UICC), October 1 through December 3, every Thursday. Lecturers from universities around the country will explore post modernism from dance to the sciences, art and architecture, literature and philosophy. The series is funded by the University of Illinois and the Art Institute of Chicago. For information, contact Dr. Bradford Collins or Dr. Peter Hales, History of Architecture and Art Department at UICC, 312/966 3342.

CRS Group, Inc (CRS) has been chosen to build more housing in Abu Dhabi. CRS heads a consulting team that won a $3-million design contract for the second phase of the Ruwais housing complex, near Abu Dhabi City. CRS also helped design the first phase of the complex for 5,000 residents, which is nearing completion. The second phase includes housing, schools, police and fire facilities, clinic, recreational facilities, landscaping and infrastructure for a community of 2,800 people. The second phase is scheduled for completion in June, 1983.

Contracting for new construction in August brought no significant improvement over July's bleak conditions in the nation's depressed building markets, according to George A. Christie, vice president and chief economist for F.W. Dodge Division of McGraw-Hill Information Systems Company. The value of newly started construction projects in August totaled $12.3 billion, representing a seasonally adjusted annual rate of $142 billion. "The best that can be said about August's level is that it indicates a period of stability after a nine-month decline from November's 205 level," said Christie. "However, the conditions responsible for that decline, high interest rates and budget restraint on public works programs, remain as oppressive as before."

In this museum, the elevators are works of art.

The architects who converted the old Lone Star Brewery into the new San Antonio Museum of Art envisioned the elevators that serve its two towers as dazzling kinetic sculptures.

The glass-walled cabs move through hoistways of glass and mirror-finished steel. The clearly visible counterweights, sheaves and pit buffers are chrome plated to celebrate their functions and to produce elegant reflections of their form and movement. Rows of tiny lights are mounted on the tops and bottoms of the cabs to further delight the eye.

At Dover Elevator, we were proud to be selected to build and install these distinctive elevators. And our Dover craftsmen were pleased to have the opportunity to display their skills in an art museum context.

Although every Dover Elevator installation may not be as spectacular as the San Antonio Museum of Art, each receives the same meticulous attention to detail. For more information on the complete Dover line of Oildraulic® and traction elevators for low-, mid-, and high-rise buildings, write Dover Corporation, Elevator Division, Dept. 683, P.O. Box 2177, Memphis, Tennessee 38101.

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Associate Architects:
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Contractor:
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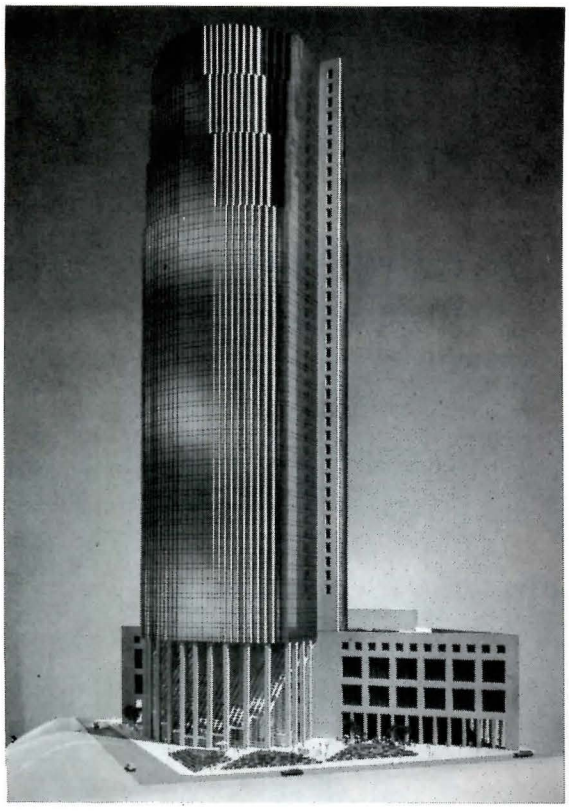
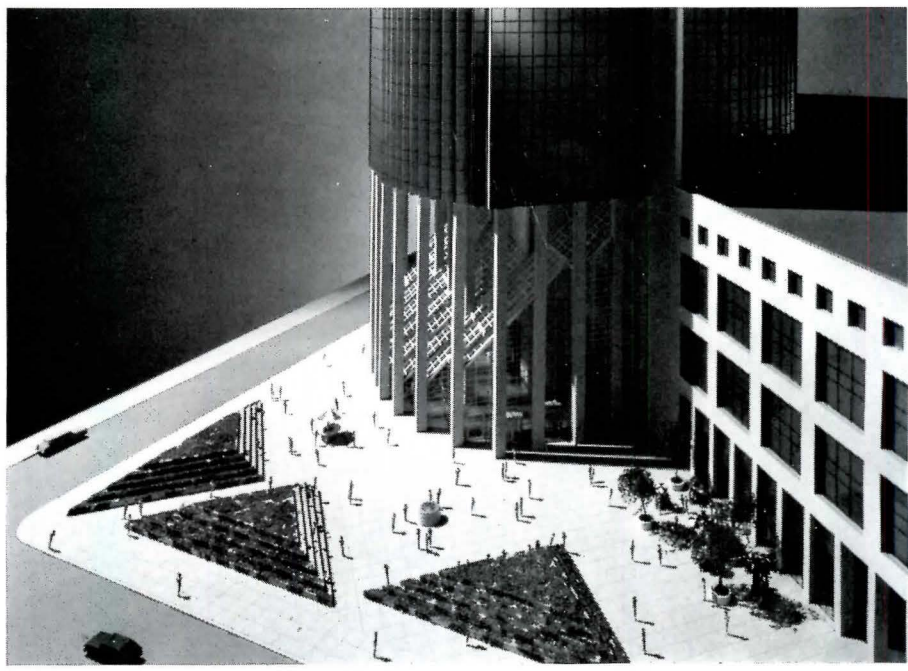
ELEVATORS BY DOVER



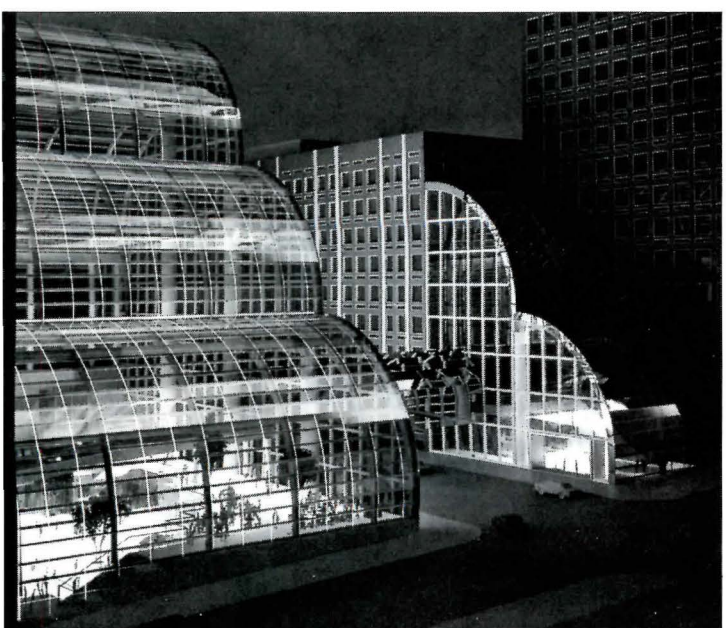
Houston tower may be largest outside any central business district

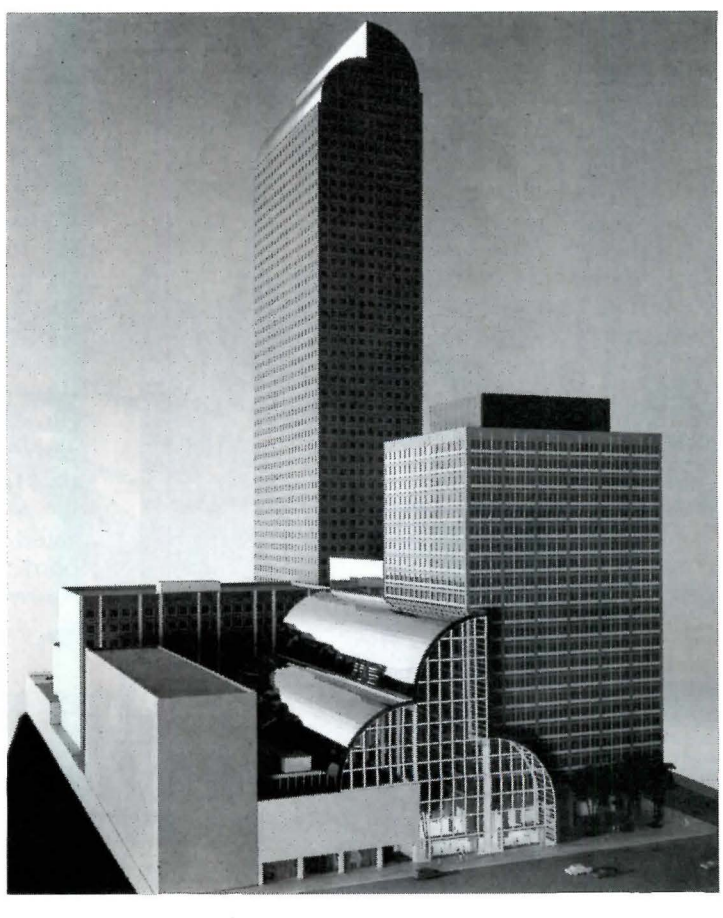
Transco Tower in Houston was designed by Johnson/Burgee Architects in association with Morris Aubry Architects, and developed by Gerald D. Hines Interests. The building, believed to be the largest outside a central business district, will serve as the corporate headquarters of Gerald Hines and the Transco Companies. The 68-story tower is being built adjacent to the development's three-acre, fully landscaped park. "No other 64-story building stands alone in a park," said Philip Johnson "The park is enormous compared with most areas in a cityscape." The tower rises from a five-story base, and its exterior is of gray glass set in frames of anodized aluminum. All-weather skywalks connect the tower with parking facilities and the neighboring Galleria, another Gerald Hines development. Construction on the building has already commenced, and it is scheduled for completion in the fall of 1982.

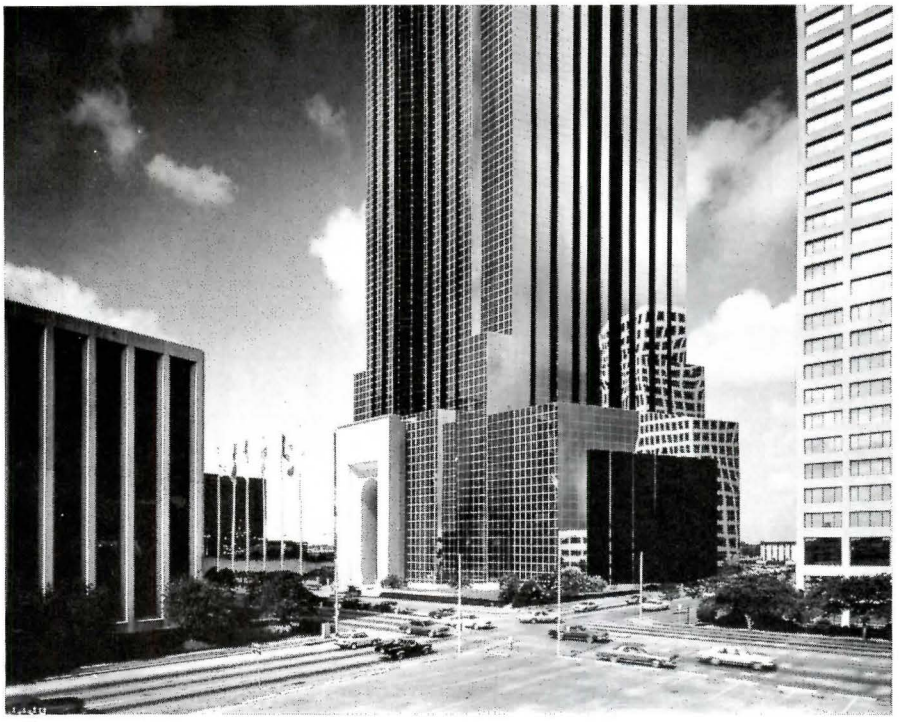


Denver's new tower contains bank, office space and commercial pavilion

The United Bank Center in Denver was designed by Johnson/Burgee Architects and Morris Aubry Architects, and developed by Gerald D. Hines Interests. The building combines office space, a bank and two pavilions. The first glass-enclosed pavilion serves as the tower's entry. A glass-enclosed bridge connects the tower and entry pavilion to a second pavilion, which contains shops, cafes and space for civic events, sponsored by the United Bank. The 50-story building is of pink granite and glass. The scheduled completion date is the beginning of 1984.







San Francisco's new office tower rises 48 stories over Bay Area

San Francisco's newest office tower, developed by Gerald D. Hines Interests, rests on a filled portion of what was once San Francisco Bay. To provide a stable foundation, 1,300 prestressed, precast concrete piles are driven to a depth of 95 to 185 feet. The building, designed by Johnson/Burgee Architects in association with Kendal Heaton Associates, rises 48 stories above California, Front, Pine and Davis Streets in the financial district. 101 California's large triangular plaza will contain seasonal flowers, seating and a foundation. A seven-story granite building rises out of the court, creating a base for the granite and glass cylindrical tower. The tower top is tiered in a series of three setbacks. The office tower has already begun construction, and is scheduled for completion in the fall of 1982.

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Many high-rise apartments and hotel-type structures have been built with the Staggered Truss steel framing system. It allows efficient and economical use of structural steel, with great flexibility and erection speed.

The planners of the 13-story, $9,000,000 Holiday Inn in Bloomington, Minnesota, wanted the most economical system, and selected three framing methods for study: a cast-in-place, post-tensioned concrete system, a conventional steel-framed system with beams, girders and columns, and a conventional steel system for the lower two stories combined with a Staggered Truss system for the upper 11 stories.

The Staggered Truss system was chosen because it offered so many planning advantages. Most important of all, it would result in fast erection—a major consideration since most of the steel was erected during Minnesota's severe winter months. In fact, steel erection was completed in just fifteen weeks and one day—January 24 to May 9, 1980—which includes 9½ working days lost due to inclement weather!

In the upper 11 stories of the 13-story tower, staggered trusses span the 60 feet between exterior columns—spaced at 25′-8″. The project required a total of 488 tons of ASTM A36 and 416 tons of ASTM A572 Grade 50 steels.

Like the planners of the new Bloomington Holiday Inn, you'll find Staggered Truss easy to work with. When evaluated against other systems it will often prove to be the fastest, the most practical and the most economical. It's worth looking into.

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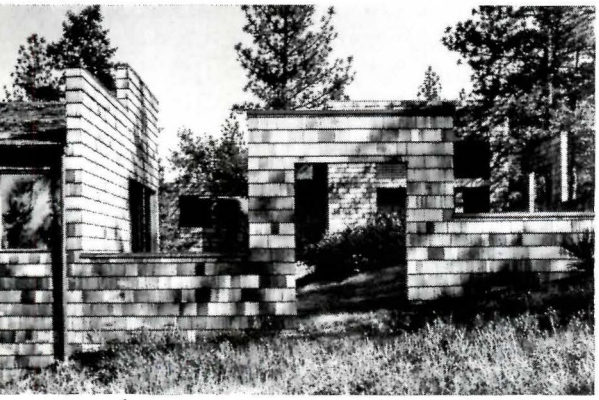
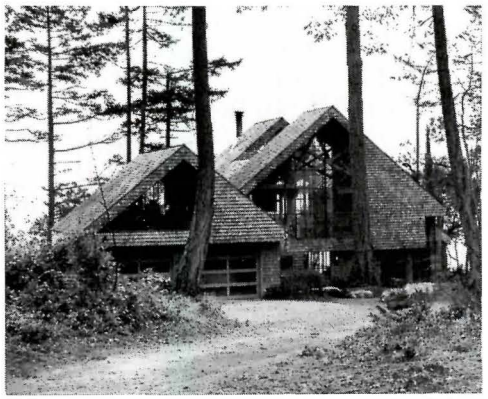
ARCHITECT/STRUCTURAL ENGINEER: Ellerbe Associates, Inc., Bloomington, Minnesota.
STEEL FABRICATOR: L. L. Le Jeune Co., Minneapolis, Minnesota.
STEEL ERECTOR: Vickerman Construction Co., Long Lake, Minnesota.

DESIGN AWARDS/COMPETITIONS

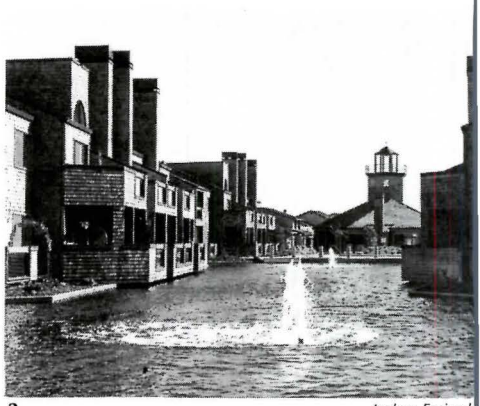
A record 288 entries, designed by architects in 36 states and Canada, were submitted for the 1981 Red Cedar Shingle & Handspli Shake Bureau/AIA Architectural Awards Program. The judges for this year's program—the fifth biennial event sponsored by th Bureau—were Henrik Bull, FAIA, of Bull Field Volkmann Stockwell in San Francisco; Thomas M. Payette, FAIA, of Payett Associates in Boston; and Fred Repass, AIA, of Repass & Fulton Architects in Seattle. Although disappointed by the scarcity o notable remodeling projects, the jurors were "immensely impressed" with the representation of new multifamily dwellings. Mr Bull, the jury chairman, pointed out that the 26 winning designs (shown below and overleaf) "really did not use a larg vocabulary, but employed the repetition of just a few elements. There were a number of 'fashionable' elements, such a rounded window tops, which the jury tended to ignore if the designer resolved the factors of siting, space, and livability."



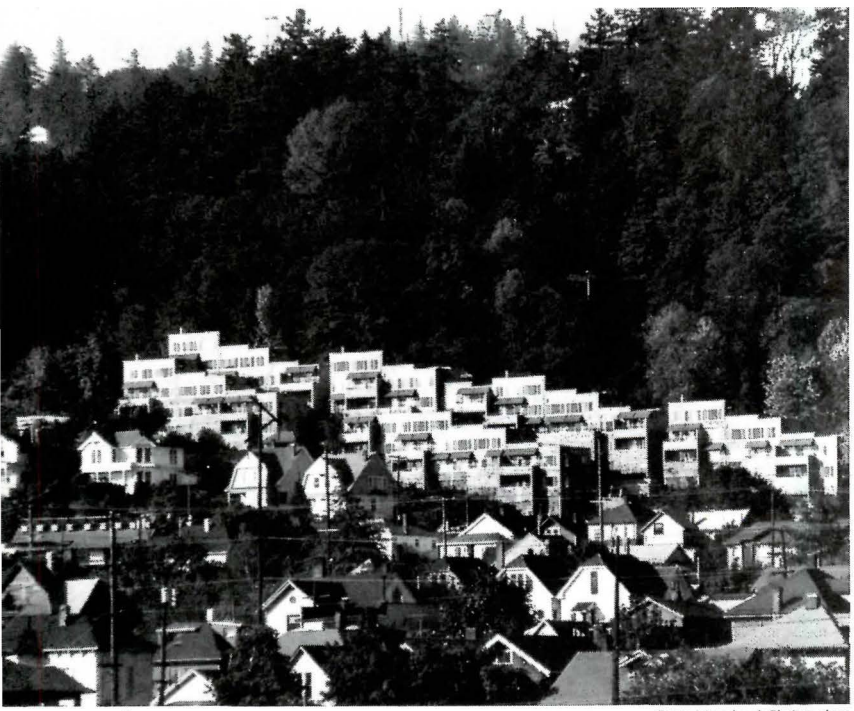
1 *Marc and Eric Hefty*



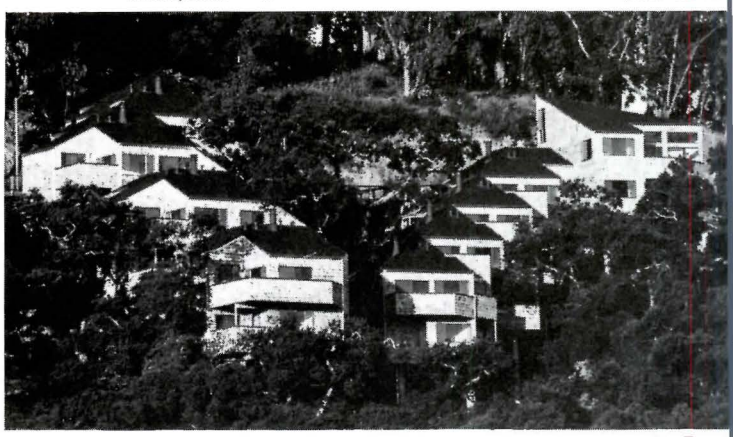
2 *Arne Bystrom*



3 *Joshua Freiwal*



4 *Brun Moreland Christopher*



5 *Kaz Tsurut*

6 *Richard Bergmann*

RED CEDAR SHINGLE & HANDSPLIT SHAKE BUREAU AWARDS

1. Hefty Residence, Missoula, Montana; Eric Hefty & Associates, P.C., architects (First Award). The cedar-shingled house is laid out as a series of rectangular pavilions that respond to the slope of the wooded site. The jury praised the "exceptionally controlled yet very free design."

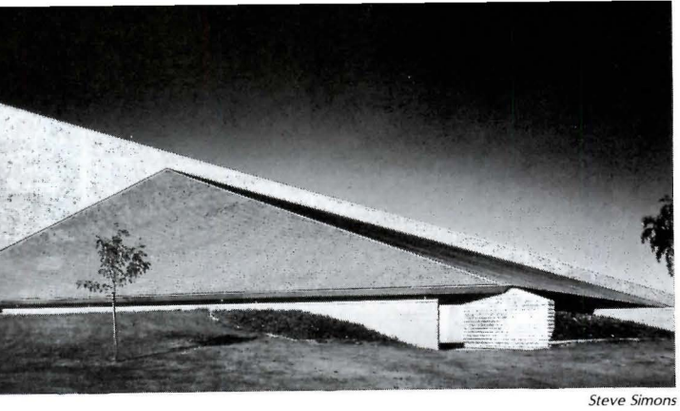
2. Moore Residence, Freeland, Washington; Arne Bystrom, architect (First Award; see RECORD, mid-May 1980, pages 102-105). A structure of log poles permitted exterior walls facing Puget Sound to be treated as transparent screens. "The strong form, having internal rhythm like the ribs of a body [gives] organization to the space as well as drama."

3. Lighthouse Cove, Redwood City, California; Fisher-Friedman Associates, architects (First Award). Interconnecting waterways provide a picturesque setting for town houses and apartments. The panel commended the project's "fine restraint, with good presentation of vertical elements in the form of chimneys and the focal lighthouse."

4. Abitare Condominiums, Portland, Oregon; Brun Moreland Christopher Architects, P.C. (First Award). The stacking of 25- by 27-foot structural modules—wood-frame with a stretched plywood composite floor system—takes full advantage of a steep incline, while recalling the scale of older houses nearby.

5. Albany Oaks Condominiums, Albany, California; Edmund Burger, architect (First Award). In order to preserve old oak trees on a 45-degree slope, the nine two-bedroom units were mounted on tall concrete columns. A network of wooden bridges connects the dwellings.

6. Shore Complex, Connecticut Richard Bergmann Architects (First Award). A disparate group of frame

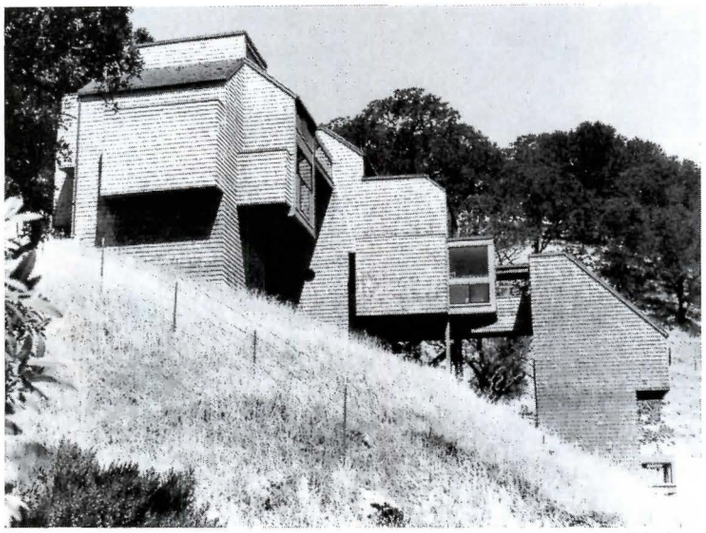


Steve Simons

8

Curtis Finch

Richard Bergmann



11

Jack Jamieson

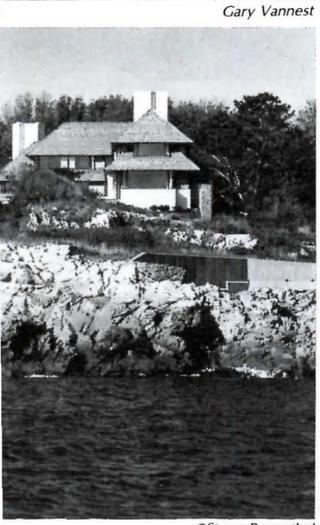
12

Kristen Brochmann

Gary Vannest

15

Peter M. Hartley



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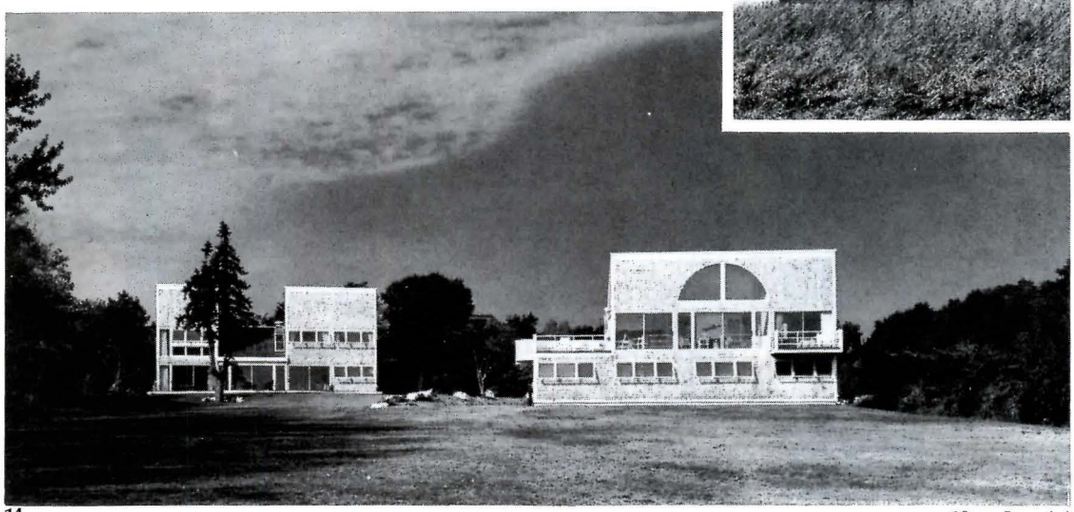

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uctures ranging from a 147-year-l saltbox to a 1950s "flat-top" has en renovated and enlarged to use a single-family residence and a sign studio. "A finely crafted nodeling increases the inner spaces h dormers and roof forms, cre-ıg open flowing areas in lieu of destrian compartments."

Saint Anthony's Church, Sacra-nto, California; Angello-Vitiello-/a, architects (First Award). The amidal structure seats approxi-tely 700 worshippers. Its simple ometry is dramatized by illumina-ı from skylights and a stained-glass sanctuary window.

8. William Temple House, Portland, Oregon; Fletcher/Finch/Farr Associates, architects (First Award). A new addition (left in photo) to an historic Victorian mansion houses staff offices for a social and psychological counseling agency. The jury found that "The new building borrows many design elements from the old, but does not attempt to compete."

9. Hilltop Residence, Connecticut; Richard Bergmann Architects (Merit Award). "A most elegant site plan on a clear knoll. A simple, large roof form under which the entire activity of a luxurious residence functions without disturbing the site."

10. Lagerquist Residence, Friday Harbor, Washington; Larsen Lagerquist Morris, architects (Merit Award). Materials salvaged from old buildings were pieced together in this vacation home. Basically a one-room structure, the house opens onto a deck through a large barn door.

11. Jamieson Residence, Alamo, California; Confer & Nance, architects (Merit Award). The client's desire to save an old barn and mature trees necessitated building on a steep incline. Construction of the three-bedroom house is conventional wood-frame with a plywood skin for adequate bracing.

12. Custom Family House, Piedmont, California; George & Mieko Winnacker, architects (Merit Award). "After analyzing a very complex plan, it was agreed that what seemed arbitrary at first had good reason . . . a strong solar solution and a strong solution for the site."

13. Massachusetts Residence; Huygens and DiMella, architects (Merit Award). "Traditional forms are used in a fresh manner, with roof shapes dominating and contrasting nicely

rounding neighborhood.

22. Pacifica Townhouses, Pacifica, California; Fisher-Friedman Associates, architects (Merit Award). Glass-enclosed patios allow ocean vistas to be enjoyed all year. All units have low roofs to avoid obstructing the view from older houses nearby. The jury was struck with "the care of ecological diversity of a nature preserve and the architectural quality of existing landmark buildings designed by Julia Morgan. The two-story housing units and meeting buildings are wood-frame, plywood shear-wall structures, clad with a local stone veneer, red cedar shingles, and redwood trim.

facilitates multi-purpose use of the open interior and maximizes solar gain. A juror who had once attended a one-room school remarked that this one seemed to be "a lot more fun."

25. Waste Water Treatment Plant, Cold Spring Harbor, New York; Moore Grover, Harper, architects (Merit Award). The reinforced con-

California; Treffinger, Walz & MacLeod, architects (Merit Award). The 6,554-square-foot clubhouse overlooking San Francisco Bay is wood-frame with laminated beams. The jury observed that "The strength of the building derives from the simple and almost traditional forms and from superb detailing."



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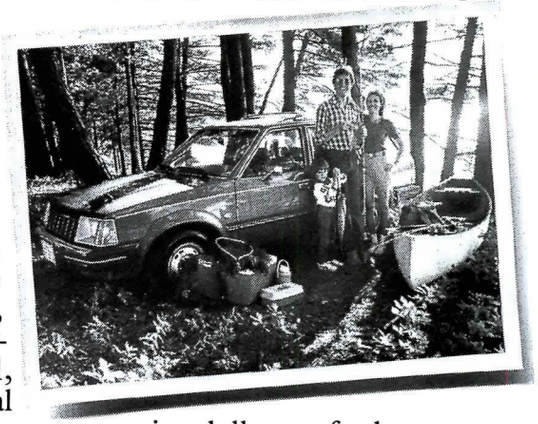

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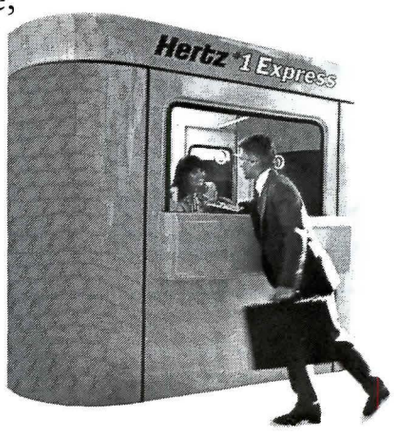

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Offices opened

Emilio Arechaederra, AIA, Roger Hong, AIA and Donald Treiman, AIA have established a new architectural practice, Arechaederra/Hong/Treiman/Architects, located at 3216 Nebraska Avenue, Santa Monica, California.

The principals of Fujikawa Conterato Lohan and Associates, Inc. (FCL), announce the opening of a regional office in Dallas for the practice of architecture, planning and interior design. Dirk Lohan is principal-in-charge.

Ben H. Johnson, AIA announces the formation of his own firm, for the practice of architecture, planning and interior design, to be known as Ben H. Johnson & Associates, located at Suite 211, Executive Plaza, 12835 Bellevue-Redmond Road, Bellevue, Washington.

Maddalena Associates, Inc. is a newly formed firm of architects, engineers and planners located at 220 East 42nd Street, New York, New York.

Ronald H. Schmidt AIA announces the opening of his architectural and interior design office located at 527 Madison Avenue, New York, New York.

Der Scutt, architect, has just opened his own firm, Der Scutt & Associates, 330 East 69th Street, New York, New York.

The Balsamo/Olson Group, Inc. architects and engineers, have opened a Palm Beach, Florida office.

Firm changes

Macdonald Becket, FAIA, chairman, and the board of directors of Welton Becket Associates announce the appointment of N. David O'Malley, AIA as president and chief executive officer of Welton Becket Associates.

Principals of Campbell-Yost-Grube, PC have announced that the firm will change its name to Yost-Grube-Hall, PC.

Vito Cetta, AIA & Associates announce the addition of Douglas A. Lowe, AIA to their staff.

Leo A. Daly, III has been named president of Leo A. Daly, international planning, architectural and engineering firm.

Deems/Lewis & Partners announce the appointment of A. Lewis Dominy, AIA as an associate partner.

De Leuw, Cather & Company, Engineers and planners, announce the appointment of Robert L. Shipley as manager of the Washington, DC office.

ELS announces that Carol Shen Glass has been named vice president and managing associate of the firm.

John Cutler Kelly, AIA has been promoted to director of architecture at Environmental Associates, Inc., Tampa, Florida. Paul J. Tripodi, Jr. has joined the firm as senior project architect.

Roland P. Taylor, AIA has been made a partner in the firm of Gassner Nathan & Partners, Architects Planners, Inc.

The New York office of M. Arthur Gensler, Jr., PC announces Jane E. Gustafson as senior associate, Riddell Chancellor, Renee Charles, Alfonso S. D'Elia, Dina Frank, Ted Y. Jung, Theodore A. Maziejka, Christopher C. Murray and Deborah F. Taylor as associates.

James E. Rappoport has joined the New York based architectural, engineering and planning firm of Haines Lundberg Waehler as director of interior design.

Hobbs Fukui Associates, PS, Seattle architecture and planning firm, has announced the promotion of Richard L. Wilson to the position of associate.

Keyes Condon Florance Architects announce that Thomas N. Eichbaum, AIA has been made an associate partner and that M. Josefina Burgos and Philip A. Esocoff have been made associates in the firm.

Langdon & Wilson Architects announce the appointment of Terry G. Hoffman, AIA to associate partner in the Los Angeles office and Donald R. Lee to associate partner in the Newport Beach, California office.

Passantino/JRB Architects, Inc. announce the appointment of Albert H. McCoubrey, III, AIA to associate in the firm.

Pearce Corporation promoted John R. Bird to the position of associate vice president.

more office notes on page 157

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he architecture of houses

5 YEARS OF RECORD HOUSES, *by Herbert L. nith Jr., AIA, and the Editors of* ARCHITECTURAL CORD; *Architectural Record Books (McGraw-Hill ook Company), $29.95.*

eviewed by Jeanne M. Davern

CORD HOUSES was initiated in 1956 as a 13th sue of ARCHITECTURAL RECORD, to be sent to all ubscribers as the Mid-May issue but to be stributed also to a Sweet's-qualified list of 0,000 homebuilders and sold through book- ores to the general public.

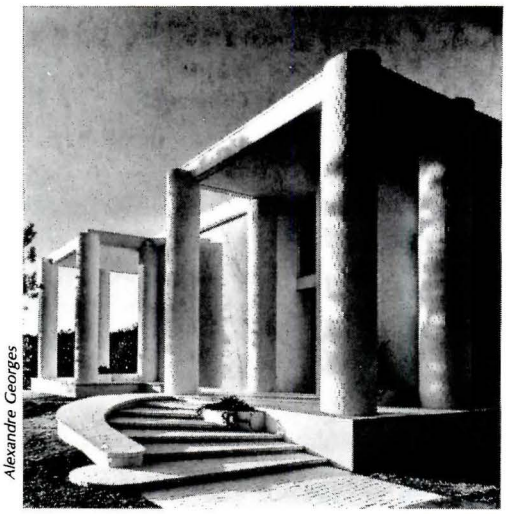
The editorial intent was to focus archi- ct, homebuilder and public attention on rchitectural innovation—esthetic, functional nd technological; to identify and recognize gnificant work by younger architects; and to ommunicate the seminal importance to arch- ectural development of the house as archi- ecture.

From the beginning, a vast amount of me and effort was invested in casting the idest possible net for content, so that the ouses published in each of the annual sues—approximately 20 each year—were lected from literally hundreds considered y the editors.

Now, from the 514 houses published uring the first 25 years of RECORD HOUSES, 57 ouses have been selected by the editor of is book to represent "major contributions nd thematic developments in contemporary ouse design" over the period. The result is a eautiful book which makes the architecture houses into a highly sophisticated visual story of a much-misunderstood era of mod- rn architecture.

As editor of RECORD HOUSES from its incep- on in 1956 until 1973, and deeply involved it since, Herbert L. Smith Jr. brings a unique erspective to the editing of this book. obody has been a more attentive, percep- ve and continuous observer over more than 5 years of contemporary house design as it as evolving; and it seems unlikely that *any- ody* has *seen* so many newly designed ouses (published AND unpublished), year by ear, over so many years. An architect before e became an editor, Mr. Smith has been on e staff of ARCHITECTURAL RECORD since 1949.

The book is organized into six chapters, ach with a brief text introduction by the ditor which relates the thematic content of he chapter to the evolution of house design uring the period. Chapter headings an- ounce the themes—the quest for space, xperiments with structure and form, initia- ves for making life easier, the thrusts of onservation, "there's nothing new about story" and "ever-changing, ever-conflicting sthetics." Arrangement of the houses in hese chapters, as the editor notes in his



Alexandre Georges

A Record House of 1965 designed by Paul Rudolph

preface, "has been purely to emphasize the topics—all of the houses are very sensitively designed for their clients, and each might have been included in any chapter."

Unlike some who lament the "limitations" of modern architecture, the architects of these houses were not engaged in purely esthetic exercises, nor were they overly concerned with inventing "styles." They were absorbed in responding to specific requirements of client, site, climate and economic circumstance, and in exploring new materials and technology.

One result was a revolution in spatial concepts which is recalled both in a quite spectacular collection of architectural examples and in a cogent essay written with sympathy as well as wit ("New requirements have had to be adapted to changing lifestyles—or is it vice versa?").

No less notable was the effort to design houses which would be easier to care for and simply more convenient to live in for owners who were increasingly assuming all or most household chores themselves in an era when domestic help became largely an anachronism. "The absolute 'machine for living' has not been built," Mr. Smith dryly notes, but the houses shown as examples of this kind of effort "reveal the outpouring of handsome, livable variations that thoughtful architects have painstakingly designed for the individual preferences and comfort of the owner."

Two of the most provocative sections deal with conservation and history. Though it has "become somewhat fashionable to condemn contemporary houses as profligate in all areas," Mr. Smith observes, "with a few, rare exceptions, the converse has been true. Since World War II, there has been great architectural concentration and effort spent on designing houses that would truly conserve—and wisely use—nature, energy resources, money, and, often, existing structures." Thirty-six pages of examples support this thesis. As for learning from history, "the cold fact is that historicism and eclecticism in houses never really died in the U.S.—or anywhere else, for that matter." (Twenty-eight pages of examples follow.) And Mr. Smith asks: "Does the reality lie in the fact that, as eclectic houses became more modern and modern houses became more eclectic, there is a real rapprochement of design rationale to (and into) history? That modern is not dead but has finally synthesized into general public taste?"

Unprecedented opportunities for building in the post-World War II years provided unprecedented opportunities for experimentation in domestic (as in all) architecture, and the diversity of architectural results reflected in this book should give pause to any who may be inclined to believe that modern architecture has been a straitjacket.

"The pressing need for new houses in the late 1940s brought a building boom that helped re-kindle an adventurous spirit," as Mr. Smith sees it. "In the midst of the ubiquitous 'accepted' styles, houses were being built by adventurous architects across the U.S. that didn't necessarily look like a house in common parlance, but used all kinds of structural materials, finishes and methods to open the horizon of what a livable, contemporary house *could* look like.

"There was the added impetus of the move to the U.S. by many of Europe's most talented architects: Walter Gropius, Mies van der Rohe, Marcel Breuer, Richard Neutra, Serge Chermayeff, Eliel Saarinen, Josep Lluis Sert among them. The admix of their varied visions and those of native American architects brought about a creative era that has focused the world's attention on houses in the U.S. for three decades. In time, it will, without doubt, be regarded as one of the truly great periods in the history of residential architecture. Yet it represents no single, concise 'international' or 'modern' style, but many fresh contemporary styles—from many roots, with many flowerings."

As for the present and the future, Mr. Smith says in his preface that he "can't help but note a lot of pessimism and rejection of the recent past brewing in the current, widespread architectural soul-searching." But he also says: "I'm neither pessimistic nor do I reject the modern movement—especially in houses. . . . I'm not pessimistic because I believe that we're simply back where we recurrently are—questioning, proposing, and refining fresh (or rediscovered) ideas—and experimenting." As Mr. Smith observes elsewhere, "Architecture is not a self-satisfied profession: The studying, searching, inventing goes on."

This is a book not to be missed by any who care about architecture.

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Dodge/Sweet's Construction Outlook: New priorities for construction

ke the year before it, 1981 began with great expectations for the construction and building naterials industries. The 1980s, after all, are the years when big things are supposed to be appening in the construction sector. Highly favorable demographic trends were to have nally helped this industry break out of a decade of sluggishness. Yet, the high hopes for 981—like those for 1980 before them—quickly faded. Whether or not the Reagan program the best solution for the nation's economic problems is the subject for debate in another lace. The issue here is: What does this program of tax reduction, budget cuts, investment ubsidies, monetary restraint, and military escalation mean for the construction industry in 982 and beyond? Will it eliminate, or at least reduce, the extraordinary volatility that has been ne dominant pattern of building markets for the past two years? Is there room in this new set f priorities for the construction industry to begin to realize its long-awaited potential?

s interest rates soared during the years 1980 nd 1981, the Dodge index of construction ontracting plummeted. As contracting for ew projects nosedived, work in progress windled, materials shipments declined, con- actor failures rose, and unemployment in ne building trades soared. A dramatic switch om credit restraint to ease brought interest ates down sharply in 1980's second half, restoring vigorous expansion of construction activity. However, that favorable monetary environment—the basis for an optimistic 1981 forecast—lasted only until the end of the year, when another 180-degree turn of monetary policy set up 1981's "double dip." This time around the Fed seems determined to hang tough until it is convinced that the underlying causes of chronic inflation have been subdued. Taming inflation and restoring the economy's growth without renewed inflation are now the challenges to the Reagan Administration.

A few generalities concerning the Reagan Program for Economic Development, as it will affect construction, are immediately apparent:

- Budget cuts will severely restrict the availability of *public* funds for construction. At least 25 per cent of all construction is publicly financed.
- Accelerated depreciation and deregulation are powerful incentives for *private* business capital spending, making commercial and industrial building obvious choices as the construction industry's best markets for the next few years.
- The Federal Reserve's restrictive monetary growth targets—endorsed by the Reagan Administration—remain a formidable barrier

1982 National Estimates
Dodge Construction Potentials

Nonresidential Buildings		1980 Actual	1981 Preliminary*	1982 Forecast	Percent Change 1982/81
Floor Area (millions of square feet)	Office Buildings	244	300	240	−20
	Stores & Other Commercial	441	385	370	− 4
	Manufacturing Buildings	213	195	215	+10
	Total Commercial & Manufacturing	898	880	825	− 6
	Educational	95	75	75	—
	Hospital & Health	56	60	56	− 7
	Other Nonresidential Buildings	146	124	112	−10
	Total Institutional & Other	297	259	243	− 6
	Total Nonresidential Buildings	**1,195**	**1,139**	**1,068**	− 6
Contract Value (millions of dollars)	Office Buildings	$ 13,466	$ 18,450	$ 16,375	−11
	Stores & Other Commercial	11,336	10,800	11,500	+ 6
	Manufacturing Buildings	8,239	7,725	9,250	+20
	Total Commercial & Manufacturing	$ 33,041	$ 36,975	$ 37,125	—
	Educational	$ 6,766	$ 5,850	$ 6,375	+ 9
	Hospital & Health	5,396	6,175	6,150	—
	Other Nonresidential Buildings	7,142	7,325	7,425	+ 1
	Total Institutional & Other	$ 19,304	$ 19,350	$ 19,950	+ 3
	Total Nonresidential Buildings	**$ 52,345**	**$ 56,325**	**$ 57,075**	**+ 1**

*Eight months actual; four months estimated.

Residential Buildings		1980 Actual	1981 Preliminary*	1982 Forecast	Percent Change 1982/81
Dwelling Units (thousands of units**)	One-Family Houses	809	725	925	+28
	Multifamily Housing	519	425	475	+12
	Total Housekeeping Residential	**1,328**	**1,150**	**1,400**	**+22**
Floor Area (millions of square feet)	One-Family Houses	1,284	1,150	1,480	+29
	Multifamily Housing	545	475	525	+11
	Nonhousekeeping Residential	57	55	50	− 9
	Total Residential Buildings	**1,886**	**1,680**	**2,055**	**+22**
Contract Value (millions of dollars)	One-Family Houses	$ 41,474	$ 40,825	$ 57,725	+41
	Multifamily Housing	18,519	17,700	21,525	+22
	Nonhousekeeping Residential	3,213	3,575	3,575	—
	Total Residential Buildings	**$ 63,206**	**$ 62,100**	**$ 82,825**	**+33**

Nonbuilding Construction

Contract Value (millions of dollars)	Highways & Bridges	$ 12,282	$ 9,825	$ 8,500	−13
	Sewer & Water	7,591	7,275	6,550	−10
	Other Public Works	7,156	5,750	5,450	− 5
	Total Public Works	**$ 27,029**	**$ 22,850**	**$ 20,500**	**−10**
	Utilities	$ 4,584	$ 6,500	$ 9,000	+38
	Total Nonbuilding Construction	**$ 31,613**	**$ 29,350**	**$ 29,500**	**+ 1**

All Construction

Contract Value (millions of dollars)	**Total Construction**	**$147,164**	**$147,775**	**$169,400**	**+15**
	Dodge Index (1972 = 100)	162	162	186	

*Eight months actual; four months estimated. **F. W. Dodge basis.

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to the full recovery of the housing market.

▪ The coming military buildup is the other side of the budget cuts for construction and other non-defense programs—the recurring guns-and-butter conflict set in a 1982 context.

These issues, and a few others, are explored in greater depth in the appropriate sections of the *1982 Outlook*, which follows. For the technically oriented reader, a listing of assumptions about the expected behavior of the most critical economic variables affecting construction is provided in the insets.

NONRESIDENTIAL BUILDING

On a reduced scale, the construction industry illustrates the general process, dubbed "reprivatization" by Administration officials, of reducing the economy's public-sector activities while expanding the role of private enterprise. Applied to construction, this redirection of resources means cutting budgets to reduce Federal funds available for highways, wastewater-treatment facilities, and other public-works projects, while providing tax subsidies and promoting deregulation to create greater incentive for business and capital spending. Investment in plants and equipment is, of course, the medium through which supply-side economics is expected to exert its leverage ("The trickle starts here"). Clearly, then, the first place to look for the positive effects of the Reagan program on construction markets is in private nonresidential building—or, more specifically, commercial and industrial building.

Commercial/industrial construction

Alone among the several types of commercial and industrial construction, *office building* is doing exceedingly well in 1981 without any special help. As the sole survivor of the construction industry's "double-dip" recession, the booming office-building market is lending welcome support in an otherwise dismal year. Without this surge in office construction, nonresidential building would be nearly 10 per cent behind last year's none-too-robust volume. As it is, square footage of total nonresidential contracting was slightly better than even with 1980 through the third quarter.

The office boom of 1980/81 has been gestating since the mid-1970s. Demographically based, it was a predictable event, much like the educational building boom of the 1960s. In fact, the very same people are responsible for both occurrences—previously as students, and more recently as employees. Although record annual growth of the labor force in the second half of the 1970s was, by itself, reason enough for a boom in office building, there's more to it than that. The continuing trend toward employment in services (especially in the fast-gaining information industry), and a sharp rise in female participation in the labor force (from 43 per cent in 1970 to 52 per cent by 1980), meant that the growth in white-collar jobs outstripped the growth of the labor force in total. Relocation during the Southwestern migration of the 1970s added another dimension to the need for office space.

As these several forces converged in the marketplace, they triggered a building boom of heroic proportions. As early as 1978, contracting topped 200 million square feet, equaling the previous high for official building (1972). But that was only the beginning. In 1980, contracting rose to 244 million square feet. By mid-1981, a *further* 40 per cent increase in contracting—to an annual rate in excess of 300 million square feet—gave reason to doubt the durability of the boom.

Soon, office building must settle back to a rate that is more appropriate to the slower growth of the white-collar labor force in the 1980s. For the past few years, only about two-thirds of the huge volume of newly started office construction has been in response to current demand. The balance was needed to reduce a large backlog of pre-existing need—especially in the burgeoning Southwest. By the end of 1981, the demand back-

1982 Regional Estimates
Dodge Construction Potentials

Northeast — Connecticut, District of Columbia, Delaware, Massachusetts, Maryland, Maine, New Hampshire, New Jersey, New York, Eastern Pennsylvania, Rhode Island, Virginia, Vermont

Contract Value (millions of dollars)

	1980 Actual	1981 Preliminary*	1982 Forecast	Percent Change 1982/81
Nonresidential Buildings				
Commercial and Manufacturing	$ 5,634	$ 7,000	$ 6,850	− 2
Institutional & Other	$ 3,993	$ 4,250	$ 4,300	+ 1
Total	$ 9,627	$11,250	$11,150	− 1
Residential Buildings				
One-Family Houses	$ 5,752	$ 5,875	$ 8,550	+46
Multifamily Housing	3,124	3,125	3,675	+18
Nonhousekeeping Residential	517	775	650	−16
Total	$ 9,393	$ 9,775	$12,875	+32
Nonbuilding Construction				
Highways and Bridges	$ 2,712	$ 1,675	$ 1,525	− 9
Other Public Works	3,726	2,700	2,450	− 9
Utilities	281	500	600	+20
Total	$ 6,719	$ 4,875	$ 4,575	− 6
Total Construction	**$25,739**	**$25,900**	**$28,600**	**+10**

Midwest — Northern Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, North Dakota, Ohio, Western Pennsylvania, South Dakota, Wisconsin, West Virginia

Contract Value (millions of dollars)

	1980 Actual	1981 Preliminary*	1982 Forecast	Percent Change 1982/81
Nonresidential Buildings				
Commercial and Manufacturing	$ 7,045	$ 6,825	$ 7,150	+ 5
Institutional & Other	4,658	4,375	4,425	+ 1
Total	$11,703	$11,200	$11,575	+ 3
Residential Buildings				
One-Family Houses	$ 6,897	$ 6,050	$ 8,775	+45
Multifamily Housing	3,059	2,850	3,350	+18
Nonhousekeeping Residential	443	550	500	− 9
Total	$10,399	$ 9,450	$12,625	+34
Nonbuilding Construction				
Highways and Bridges	$ 2,893	$ 2,675	$ 2,350	−12
Other Public Works	3,054	2,650	2,475	− 7
Utilities	490	2,550	2,850	+12
Total	$ 6,437	$ 7,875	$ 7,675	− 3
Total Construction	**$28,539**	**$28,525**	**$31,875**	**+12**

*Eight months actual; four months estimated.

South — Alabama, Arkansas, Florida, Georgia, Southern Illinois, Kansas, Louisiana, Mississippi, Missouri, North Carolina, Nebraska, Oklahoma, South Carolina, Tennessee, Texas

Contract Value (millions of dollars)

	1980 Actual	1981 Preliminary*	1982 Forecast	Percent Change 1982/81
Nonresidential Buildings				
Commercial and Manufacturing	$11,759	$13,550	$13,575	—
Institutional & Other	6,512	6,700	7,000	+ 4
Total	$18,271	$20,250	$20,575	+ 2
Residential Buildings				
One-Family Houses	$17,854	$18,825	$26,400	+40
Multifamily Housing	7,010	7,175	8,675	+21
Nonhousekeeping Residential	1,276	1,325	1,375	+ 4
Total	$26,140	$27,325	$36,450	+33
Nonbuilding Construction				
Highways and Bridges	$ 4,431	$ 3,650	$ 3,100	−15
Other Public Works	4,899	4,350	4,025	− 7
Utilities	2,237	1,700	2,200	+29
Total	$11,567	$ 9,700	$ 9,325	− 4
Total Construction	**$55,978**	**$57,275**	**$66,350**	**+16**

West — Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

Contract Value (millions of dollars)

	1980 Actual	1981 Preliminary*	1982 Forecast	Percent Change 1982/81
Nonresidential Buildings				
Commercial and Manufacturing	$ 8,603	$ 9,600	$ 9,550	—
Institutional & Other	4,141	4,025	4,225	+ 5
Total	$12,744	$13,625	$13,775	+ 1
Residential Buildings				
One-Family Houses	$10,971	$10,075	$14,000	+39
Multifamily Housing	5,326	4,550	5,825	+28
Nonhousekeeping Residential	977	925	1,050	+14
Total	$17,274	$15,550	$20,875	+34
Nonbuilding Construction				
Highways and Bridges	$ 2,246	$ 1,825	$ 1,525	−16
Other Public Works	3,068	3,325	3,050	− 8
Utilities	1,576	1,750	3,350	+91
Total	$ 6,890	$ 6,900	$ 7,925	+15
Total Construction	**$36,908**	**$36,075**	**$42,575**	**+18**

*Eight months actual; four months estimated.

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og—to the extent that it can be measured—will have been reduced to less than 100 million square feet.

The estimated 1982 total of 240 million square feet of contracting for offices, a 20 per cent reduction from 1981's all-time peak, will consist of approximately 150 million square feet to satisfy newly created need, 75 million square feet to eliminate the remaining backlog of demand, and perhaps 15 million square feet of excess construction—the typical conclusion to office building cycles.

The probability that the office building boom has reached its peak in 1981 sets a low limit on the potential for expansion of *total* nonresidential building, even though improvement is expected in many other markets. The gap left by offices next year will be filled mainly by the recovery of retail building and industrial construction.

In its typical fashion, contracting for stores and warehouses has been mirroring the ups and downs of the housing market through 1980 and 1981: down in the first half of 1980, up in the second half, and down again in 1981's first half. During this period of high volatility, the lead/lag relationship between housing and retail building seems to have shortened to something closer to three months than the customary six.

On an annual basis, the 1980/81 "double dip," which brought housing starts down 42 per cent from a 1978 peak volume of two million units was almost equally damaging to retail building. Contracting for stores and warehouses, which crested in 1979 at 510 million square feet, declined 37 per cent by 1981 to an estimated 320 million square feet. The recovery of homebuilding in 1982 will be the catalyst for an upturn in store and warehouse contracting. If 1981's third quarter was the bottom of the current housing cycle (at a seasonally adjusted annual rate of 975,000 dwelling units), contracting for stores and warehouses ought to be leveling off toward year-end in the range of 250 million to 260 million square feet; then, following housing, volume should climb again through 1982. A partial housing recovery in 1982 (details are given in the later section on residential building) will pull store/warehouse contracting upward through 1981. Owing to the lagging response of retail building, 1980's total square footage will be little different from the 1981 total. However, the gain from fourth quarter to fourth quarter is likely to be a strong 35-to-40 per cent.

Industrial building offers the construction industry's best opportunity for expansion—if not in 1982, then *starting* in 1982 and developing more fully in 1983. As the Reagan Administration strives to create a favorable environment for business capital spending (a rerun of the 1960s?), manufacturing facilities could become for the construction industry for the next two years what office building has been for the past two.

The incentives for investment—accelerated depreciation and deregulation—are already in place, but so are a couple of obstacles. After two quarters of declining real GNP (the inevitable consequence of 1981's exquisitely tight money), manufacturers are currently operating at less than 80 per cent of capacity. At least one more quarter (1981-IV) of stagnation, and more likely two, lie ahead before the stimulus of tax reduction begins to revive the economy.

With this kind of slack in the manufacturing sector, 1982 capital spending is bound to be weighted heavily in favor of machinery and equipment rather than buildings. Early emphasis on improving productivity and reducing unit costs is obviously what the framers of the 1981 tax legislation had in mind when they offered more liberal write-offs for machinery than for structures.

Late in 1982, but more so in 1983, as the present slack in manufacturing is taken up by rising economic activity, efforts to produce at capacity limits could begin to add new inflationary pressures (through bottlenecks, overtime, etc.). Before this point is reached, the mix of investment must begin to shift to a higher proportion of buildings in order to provide the means for further expansion.

As capacity utilization in the manufacturing sector crosses over to the high side of 80 per cent next year, contracting for industrial construction is expected to advance 10 per cent, from 1981's total of 195 million square feet to 215 million. However, the gain between 1981's fourth-quarter low point to the final quarter of 1982 will be much larger. In 1983, more vigorous economic expansion and the new depreciation schedules are likely to encourage up to 250 million square feet of building, surpassing the previous 1979 peak.

A special note on synfuel plants: A few very large synthetic fuel projects are creating the same uncertainty in the forecasting of industrial building that nuclear power plants do in utility construction. These synfuel projects have been under negotiation for years, they cost in the billions, and their timing is anybody's guess. Like that of nuclear power plants, the fate of these major synfuel projects (two in Colorado; one in North Dakota) is at least as much a matter of politics as economics. In the interest of minimizing their distorting effects, these projects have been excluded from our 1982 estimates of construction contracting.

INSTITUTIONAL BUILDING

In the 1980s, the Institutional building market—schools, hospitals, public buildings, etc.—faces a new impediment to growth: reduced funding.

Contracting for institutional buildings has been on a steadily descending course over the past decade, due mostly to non-financial reasons: unfavorable demographics (schools), or prior overbuilding (hospitals). However, toward the end of the 1970s, after 25 per cent shrinkage from 400 million square feet in 1970 to 300 million in 1978, it began to look as if the necessary adjustments to current needs for these institutional facilities had finally been completed. Evidence of this was three years of stability, since 1978, at close to 300 million square feet per year.

In 1981, contracting for institutional building has fallen off its three-year plateau to an estimated 275 million square feet and is not likely to stabilize again until some new developments sort themselves out. This building market, which is *not* heavily dependent on the Federal government for construction financing, will nevertheless be experiencing Federal budget backlash.

Deep cuts in Federal support for social programs are putting a severe squeeze on state and local government finances. Analysis by the Joint Economic Committee of Congress indicates that Federal grants to cities and states, which account for less than 20 percent of the Federal budget, are absorbing two-thirds of the budget cuts. Block grants will restore some support in fiscal year 1982, but on balance, these programs will be left with about 30 per cent less Federal funding. As this void develops, the urgency of social needs is bound to receive a higher priority than local building programs. With health care, school lunches, and student loans competing for scarce state and municipal dollars, some marginal building projects are certain to be displaced.

RESIDENTIAL BUILDING

The Reagan Administration's *non*-policy on housing has been articulated frequently by its top officials. The best way, they say, to solve the nation's housing problems is to restore general economic health and vitality and to reduce inflation. This is, of course, a corollary to the axiom which forms the foundation of Reaganomics: All segments of the economy will have the opportunity to advance once the Program for Economic Recovery takes effect.

History shows, however, that for housing, the "magic of the marketplace" is an illusion. Housing needs are usually among the last to be served by a fully competitive market. Oftentimes, satisfaction of housing demand must be deferred until periods of general slack when other claims on the economy's resources and credit have temporarily diminished.

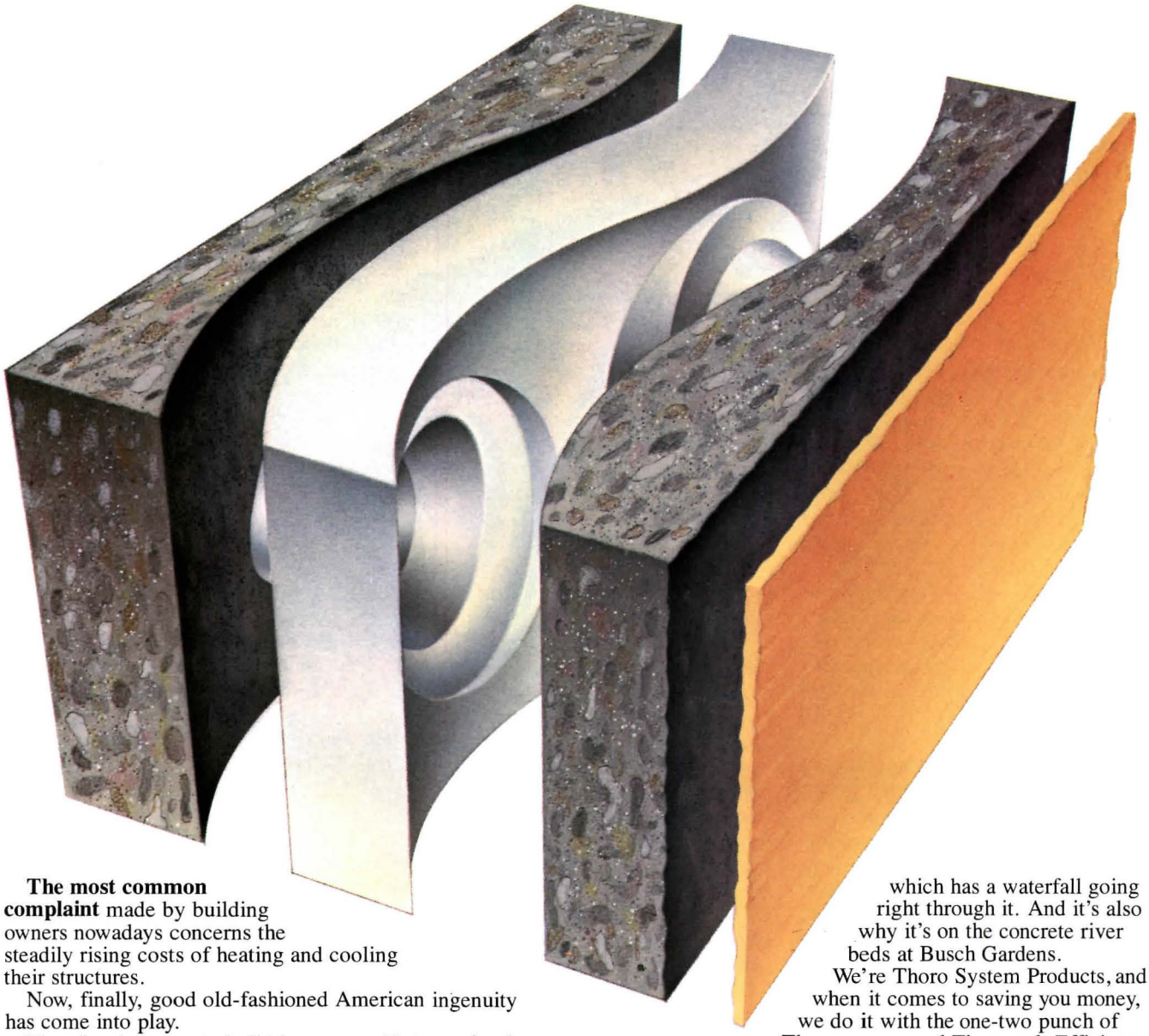
For the housing industry, the Administration's commitment to a "trickle down" theory of economics means operating at a disadvantage. Coupled with an equally firm commitment to monetarism, Reaganomics adds handicap to disadvantage. It assumes that the housing market will eventually realize its two-million-unit annual potential, but requires that it be done the hard way—without subsidy, and in an environment of credit restraint.

For the second time in as many years, overzealous credit restraint has reduced the rate of housing starts to only one million units. Under such circumstances, the two most urgent issues for 1982 are (1) interest rates and (2) interest rates.

A general decline of interest rates is essential to a recovery of homebuilding, and there are several ways it could come about.

- Because inflation establishes the "floor" under long-term interest rates, the ideal way to bring interest rates down to stay would be by means of a several-percentage-point decline in the rate of inflation.
- An effective, but hardly desirable way to

The Wall For All Seasons.



The most common complaint made by building owners nowadays concerns the steadily rising costs of heating and cooling their structures.

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pull interest rates down is to create a recession. Extreme monetary restraint, applied long enough, is capable of achieving this questionable goal.

- Reduced Federal government borrowing would relieve a significant amount of pressure on interest rates. To finance its $57-billion deficit in 1981, the Federal government syphoned off one-third of the scarce supply of loanable funds.
- Still another route to lower interest rates in 1982 is the most obvious of all—a relaxation of monetary restraint by the Federal Reserve. Administration pressure for more accommodation by the Fed is mounting now that the Reaganauts have begun to shift the blame for high interest rates from Wall Street to Constitution Avenue. But is the "independent" Fed listening?

The best chance for a decline of interest rates in 1982 would develop out of a combination of all these influences on the money markets. A breakthough in inflation is unrealistic, but with most interest rates so far above the inflation "floor," there is room for them to decline significantly without endangering the so-called *real* rate of interest. A sluggish economy through mid-1982 should limit business demand for credit in the short run. Federal borrowing needs could be significantly reduced if the Defense Department were not sheltered from budgetary restraint. The Federal Reserve could relax the *degree* of its restraint—without compromising its basic monetarist stand—simply by aiming for the top (or even the middle) of its monetary growth range, instead of the bottom.

Even if one or another of these downward forces on interest rates should fizzle, there are enough of them to justify an expectation of moderately lower rates in 1982. The key assumptions underlying next year's housing forecast are that short-term interest rates will average about 200 basic points below the 1981 level. Mortgages, which have averaged 16.5 per cent in 1981 (and briefly flirted with 18 per cent), will ease to an average of 14.75 per cent in the year ahead. It must be recognized, however, that the money markets are highly vulnerable to external shocks. A surging Federal budget deficit, a sharp jump in inflation due to a boost of oil prices, or even a capital-goods boom could prompt action by the Fed that would send rates soaring again.

Experience with housing activity when mortgages are in the lofty range between 14 per cent and 17 per cent is exceedingly limited. In fact, all that is known is what happened when rates went *up* from 14 per cent past 17 per cent in 1981. What happens when they go in the other direction remains to be seen. After two full years of very low-volume building, a decline to 14 per cent could conceivably bring forth as many housing starts as a 12 per cent mortgage did in 1979. Before that happens, however, the thrift institutions will need a period in which to repair their balance sheets before embarking on a new round of lending. (This may be the major benefit from All Savers deposits in the closing months of 1981.) Although 1981's fourth quarter is not likely to show much improvement over the badly depressed third, a modest recovery should take hold in the first quarter of next year. With acceleration in the second half of 1982, the final quarter's rate of housing starts may be as high as 1.6 million, bringing the year's total to 1,400,000 dwelling units. Of this amount 925,000 are estimated to be one-family houses, and 475,000 will be apartments or condominiums. At 1982 prices, the contract value of all residential building, including nonhousekeeping residential structures (hotels, motels, dormitories) is estimated to be $82.8 billion, up 33 per cent from 1981's deeply depressed total.

Little help from All Savers

The closest thing to a safety net for the home-building industry is the All Savers Certificate. The Economic Recovery Tax Act of 1981 allows banks and savings institutions to issue one-year certificates that will earn tax-free interest at 70 per cent of the Treasury bill rate. It requires that 75 per cent of the net new deposits attracted by these certificates be targeted into housing-related investments (or agriculture loans). This experiment in credit allocation is likely to be an effective safety net for the thrift institutions, but there's a hole in it big enough for a four-bedroom colonial to fall through.

More than anything else right now, the thrifts need liquidity. As the chairman of a large Western lender put it, "Obviously, it would be ludicrous for us to take the one-year money and put it out in 30-year mortgages. We've done that in the past, and we're still suffering."

The secondary mortgage market was quick to come up with just what the thrift institutions need—a specially designed one-year security that qualifies as a housing-related investment.

A survey of the McGraw-Hill panel of construction market analysts early in October showed almost unanimous agreement that the secondary mortgage market would short-circuit most of the All Savers deposits. As for any residual benefit for housing, the panel's estimate clustered around a maximum net gain of 100,000 housing starts in 1982.

CONSTRUCTION AND REAGANOMICS

In 1982, as gains in private nonresidential building and declines in publicly financed construction pretty much cancel one another out, the one part of the construction market that has no assigned place in Reaganomics—housing—will play a pivotal role.

It is unlikely that the excessively high interest rates that have been so damaging to the housing market in 1981 will prevail much longer. The Fed's latest round of ultra-restraint of the money supply, which made conditions all but unworkable for the housing market, is also making things uncomfortable for the Administration. The government's cost of borrowing soared along with everyone else's, while its revenue projections—based on meager prospects for the economy's near-term growth—diminished. Responsibility for a substantial deficit overrun in fiscal year 1982, which threatens to undermine the Administration's economic program in its early stages, is being laid at the doorstep of the Federal Reserve.

In 1982, a partial accommodation by the Fed to the Administration's budgetary squeeze would—quite unintentionally—allow a partial recovery of housing as interest rates recede from their lofty peaks. The strength of housing's response is something of a guessing game at this point, but a modest decline of mortgage rates should bring next year's housing starts within the range of 1.4 million to 1.5 million dwelling units. Although the lower end of this range is the safer choice, even that small an advance would be enough to raise the total of all construction in 1982 by five per cent in real terms. In 1982 prices, next year's contract value of $169.4 billion would be a 15 per-cent improvement over 1981's depressed $147.8 billion total.

The revival of residential building will dominate the construction sector through much of 1982. However, housing's expansion will stall long before reaching full recovery, since the Reagan Administration is only a little less committed to monetarism than the Federal Reserve is. Sustained monetary restraint—but short of the Fed's hard-line position—is as much a part of the Administration's economic program as are tax cuts and budget cuts, which means that interest rates will not fall far. Once the housing market settles on a higher plateau that is consistent with moderately lower interest rates, the fuller consequences of the Reagan program on construction will become more apparent.

The priorities of Reaganomics are, on balance, more suppressive than supportive of construction. Militarization and industrialization—the Administration's foremost objectives—simply do not involve much in the way of construction. Less than five per cent of the Department of Defense budget is construction; the overwhelming balance is military hardware and payrolls. Only 20 per cent, at best, of business capital spending is construction; the rest is equipment and vehicles. The potential for growth of construction through militarization and industrialization is limited and narrow compared with the potential it displaces in public works (through non-DOD budget cuts) and in housing (through sustained monetary restraint). These are some of the trade-offs that the Reagan program requires.

Beyond the several-year period of transition that this program will require to accomplish its goals, there is reason to expect that much of the deferred construction potential of the early 1980s can eventually be realized. But it will only happen if two critical conditions are met: local governments must assume responsibility for the programs that the Federal government is abandoning, and inflation must subside enough to permit interest rates to return to a workable level. Unlike tax cuts and budget cuts, these changes cannot be legislated. When—and *only* when—they finally happen can the construction and building-materials industries again approach full-scale operation.

Prepared October 1981 by the Economics Department, McGraw-Hill Information Systems Company; George A. Christie, vice president and chief economist.

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Mechanic's liens for unpaid architectural fees

One of the symptoms of an economic downturn is a noticeable upturn in the number of architects having problems collecting fees for professional services. In order to guarantee security for unpaid fees, architects might consider filing mechanic's liens against their clients' property. This protective device, which has long been available to contractors and subcontractors, is being used with increasing frequency by design professionals. The filing of a mechanic's lien, however, requires careful legal guidance—both to comply with the precise requirements of the lien statute and to avoid a countersuit for disparagement or slander of title because of an improperly placed lien.

by Arthur Kornblut, Esq.

Every state has enacted a mechanic's lien statute to provide security to persons who expend labor or material to improve someone else's property. These laws recognize that it would be difficult or impossible to reclaim the labor or material after they become part of the improvement. Therefore, the provider is entitled by law to place a lien (or claim) against the property as security for his efforts. If he does not get paid, the lienholder can foreclose on the lien and have the property sold to satisfy the debt.

It is impossible to generalize about an architect's right to file a mechanic's lien against the property of a client who fails to pay for professional services. Mechanic's lien statutes vary considerably from state to state, and they were not drafted with architects in mind. Rather, they were originally developed to protect contractors and laborers.

The application of these statutes to architectural services is a fairly recent development. The law must be studied in each state to determine if architects are specifically mentioned in the statute, or if design professionals have been given lien rights through case law developments. If architects have lien rights, the specific requirements of the law must be determined to enable the proper filing and enforcement of a lien. The courts interpret these statutes very strictly because of their effect on the owner's property. If a lien is improperly filed, the owner could have a cause of action for disparagement or slander of title against the lienor.

Two recent studies may be of interest in regard to this subject. One, published by the American Institute of Architects, is entitled "Lien Laws for Design Professionals: A Survey and Analysis"; the other is "Mechanic's Liens for Professional Services" published by the Office for Professional Liability Research of Victor O. Schinnerer & Company as part of its *Guidelines for Improving Practice* series. These studies surveyed the law in each state to determine if and how architects and engineers might be entitled to mechanic's liens. Although they should not be relied on in lieu of specific legal advice, these studies are handy references that enable the design professional to assess whether to investigate liens further in the event of a fee collection problem.

As evidence of the diversity of treatment given to architects by the mechanic's lien laws, 11 states and the District of Columbia do not allow design professionals a lien either by statute or case law. In another 11 states, liens are allowed for architectural or engineering services if there has been a visible improvement or actual construction on the property. California falls in this category, and a recent case denied a lien to an engineer who merely surveyed the owner's property. The placing of the survey stakes was not deemed to be a visible improvement; thus, no lien. Twelve states allow architects a lien for design services with "supervision" of construction. (The term "supervision" is contained in the statute or the case law in many of these states, and its use could create some problems. Architects have been cautioned for several years not to describe their construction phase services as "supervision" because of liability problems associated with that term. Yet, its use may be necessary to preserve lien rights in those states.)

In only seven states (Alaska, Colorado, Florida, Indiana, Minnesota, New York, and Utah) do architects clearly have a right to a mechanic's lien for design services alone. In the nine remaining states, the law is either indefinite or contains a peculiar twist. Kentucky, for example, has a lien statute that specifically provides for licensed engineers and land surveyors—but not for architects!

Recent case law illustrates some problems encountered by architects and engineers who attempted to use mechanic's liens to protect their right to payment for professional services.

In a 1979 Wisconsin case, an architect was denied a lien because there had been no visible commencement of an improvement to the property. The project had been abandoned after bids came in substantially higher than the architect's estimates. Although the architect could sue to collect for unpaid fees, no lien could be filed to provide security for payment. A similar result occurred in a 1980 Hawaii case when a second developer took over a project after the first developer with whom the architect had contracted let the lease expire. No provisions were made to pay the architect for a feasibility study. The study and some survey staking were insufficient to create lien rights.

In Missouri, an engineering corporation was denied a lien because it had not been authorized to practice in that state. Although the corporation employed engineers licensed in Missouri, this was insufficient to meet the legal requirement that the corporation itself be authorized to practice.

Finally, in a 1979 Michigan case, two architects were sued for disparagement of title because they filed an invalid mechanic's lien. The architects had placed an earnest money deposit on some real estate they intended to buy, contingent on receiving permit approval from the city for their plans. The city neither issued nor declined the permit, but instead requested further information. The architects sued to recover their earnest money and placed a mechanic's lien on the property. The court ruled under Michigan law that an architect has no right to a lien for un-implemented plans and that the owner could proceed with a disparagement of title action. The owner could recover from the architects if the architects had acted maliciously; namely, by knowingly filing an invalid lien with the intent to cause injury to the vendors by making the title to the property unmarketable.

Because of the intricacies and the idiosyncrasies of mechanic's lien laws when applied to architectural services, the use of this device to secure payment should be viewed as a last resort rather than as a first line of attack.

Mr. Kornblut is a registered architect and practicing attorney in Washington, D.C.

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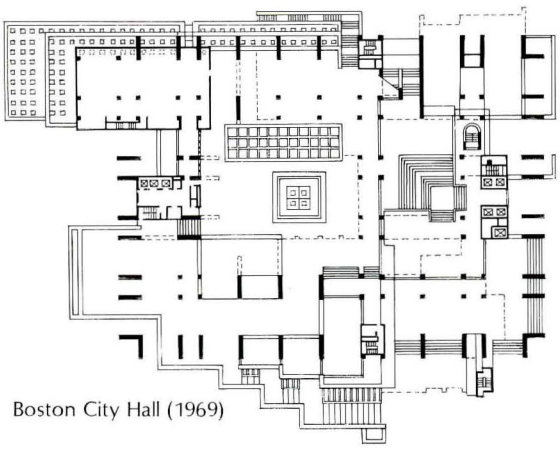
A NEW "HOUSE" FOR THE AMERICAN ACADEMY OF ARTS AND SCIENCES DESIGNED BY KALLMANN, McKINNELL & WOOD

Many architect watchers like to think that, over the years, their subjects progress and evolve as they recant and reform. One look at the new American Academy of Arts and Sciences, designed as a gathering place for 2300 Fellows and 400 Honorary Members—scholars, scientists and artists who have arrived—has made architecture buffs ask what in the world Gerhard Kallmann and Noel McKinnell are up to. It appears to some skeptics that the distinguished pair have disavowed their own masterpiece, the Boston City Hall, along with Le Corbusier and all his works and have become post-modernists. Or worse, that Kallmann and McKinnell have disavowed nothing but were persuaded by the ever so civilized Academy to build a quiet country house instead of the brutalist celebration of structure they would prefer—a variant upon Boston City Hall, the Boston Five Cents Savings Bank and the Phillips Exeter gym. Some who admire their work, so accomplished at each stage, are loathe to praise what seem to be new beginnings, wanting more of what they had earlier learned to like.

The latter should be reassured to learn, however, that in fact the spaces within the Academy, although much smaller, fewer and less complex than the vast ceremonial and bureaucratic areas of the Boston City Hall, are organized in a pattern which is quite similar. Each building has at its center an atrium which in both structures occupies an unusually large portion of the total floor area. Both atriums open to the roof, are rimmed by stately arcades and complicated by multiple floor levels in a variety of rectangular shapes, interconnected by broad and handsomely designed flights of stairs and landings. The main floors of both structures are largely given over to ceremonial functions with the offices upstairs and out of the way. The perimeters of the two buildings as seen in plan look alike—irregular, colonnaded, terraced and stepped.



Boston City Hall (1969)

Once such similarities in plan and sectional configuration are acknowledged, the differences in architectural expression become all the more striking. Noel McKinnell in his notes and drawings (overleaf) describes the Academy building as a resolution of Attican and Arcadian themes. It is also the first masterful contemporary use of the vocabulary of the Arts and Crafts Movement. For going back further in time than Le Corbusier for their inspiration, Kallmann and McKinnell have justly or unjustly been labeled post-modern.

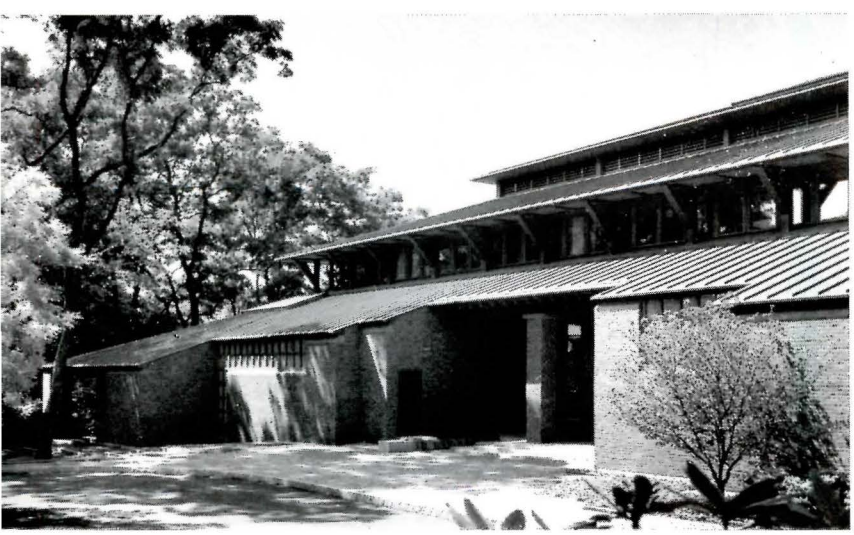
Both architects have long admired such great Victorian architects as Pugin. According to Kallmann, the Victorians—exuberantly borrowing or recombining earlier or native styles wherever they found them, were the last great eclectics. By selecting the immensely diverse Arts and Crafts Movement as their own treasure trove, Kallmann and McKinnell gave themselves a palette as yet almost untouched—the immediate precursor of modernism in architecture, and as varied, layered and rich as the more distant past which the Victorian architects embraced.

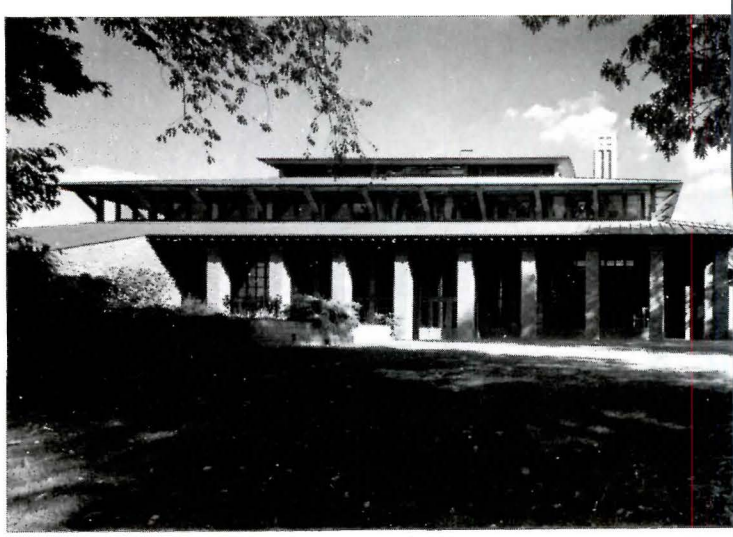
The Arts and Crafts Movement was a turn-of-the-century revolt against convention in the arts in defiance of all academies. Its forerunners, in addition to the Pre-Raphaelites, were Aubrey Beardsley, John McNeill Whistler and other painters who had recently discovered the arts of Japan. The Movement found its greatest impetus in the work of the Glasgow architect Charles Rennie Mackintosh and the Viennese Secessionists. Because the Movement was also influential in the United States—touching among many others, Frank Lloyd Wright in his Prairie School period, Harvey Ellis's furniture for Gustav Stickley, and the houses of the Greene brothers in California, it would seem to offer an appropriate design source for a distinguished American Academy. There may be some gentle irony, however, in the architects' choice of an esthetic with a bygone anti-establishment charge to house today's quintessential academy. It would be nice to think that this was intentional. If so, it is a very polite joke, since the original symbolic content of the Arts and Crafts Movement has been generally forgotten. It connotes quiet luxury and elegance today.

Whatever the symbolism, we are on slippery ground if we look for direct quotations from Mackintosh, Josef Hoffman or Wright. Architect and critic Robert Campbell, who served with Lawrence B. Anderson as an advisor to the client, points out that Kallmann and McKinnell "don't want to be associated with cut-and-paste historicism." Like the Victorian eclectics they have hoped to emulate, the architects have drawn upon memory and recollection not in the post-modern spirit of recondite codes and pedantic one-upmanship, but joyfully, in response to a great chance. They have done this before, from their beginnings as a firm. The American Academy of Arts and Sciences is really not all that different from the Boston City Hall.

—Mildred F. Schmertz

AMERICAN ACADEMY OF ARTS AND SCIENCES, Cambridge, Massachusetts. Architects: *Kallmann, McKinnell & Wood—Hans Huber, job captain; Peter Bacot, Emily Kuo, Kevin Triplett, project team.* Engineers: *Le Messurier Associates* (structural); *Robert W. Sullivan, Inc.* (plumbing); *Thompson Consultants, Inc.* (mechanical/electrical). Landscape architect: *Carol Johnson & Associates.* Consultants: *Cambridge Acoustical Associates; ISD Inc.* (interiors); *Michaels & Colburn* (food service equipment). General contractor: *Walsh Brothers, Inc.*





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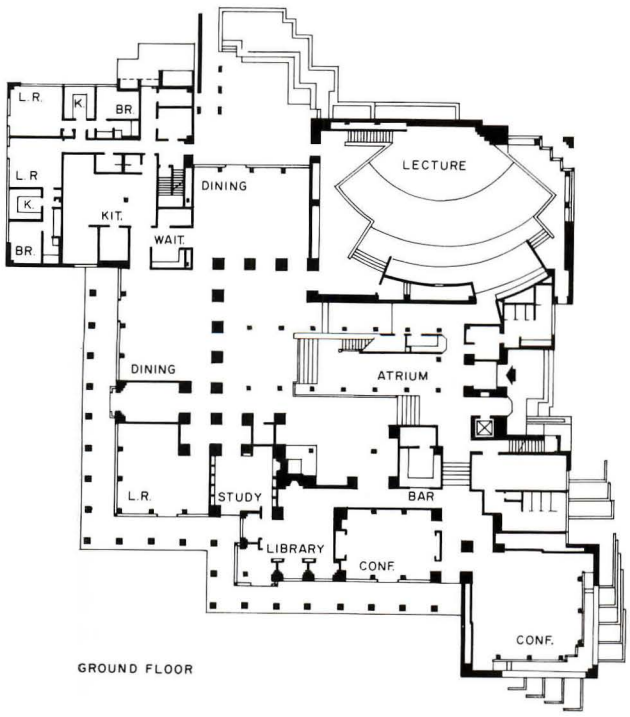
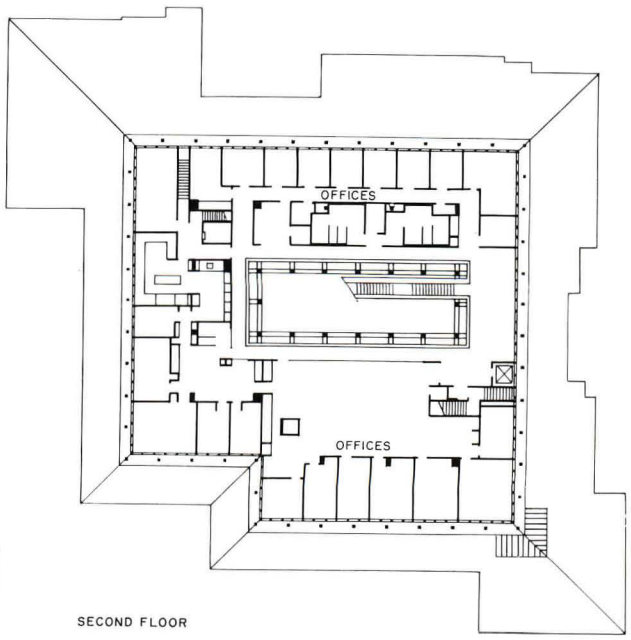
Edwin Land, past president of the Academy and founder of the Polaroid Corporation, was the first among equals in a client group advised by architects Robert Campbell and Lawrence B. Anderson. He had asked for a large, comfortable house which would be a "refuge from the unstructured intensity of the surrounding world." Now that the building is complete "it looks the way we hoped it would. How the architect makes a building speak is a mystery to the non-architect, but our desire for an intimate, informal and friendly place where creative and talented minds will share ideas was communicated to the architects, who heard what we said." There are spaces for large public gatherings, and intimate spaces which allow the Fellows to relax. Office functions are relegated to the second floor.

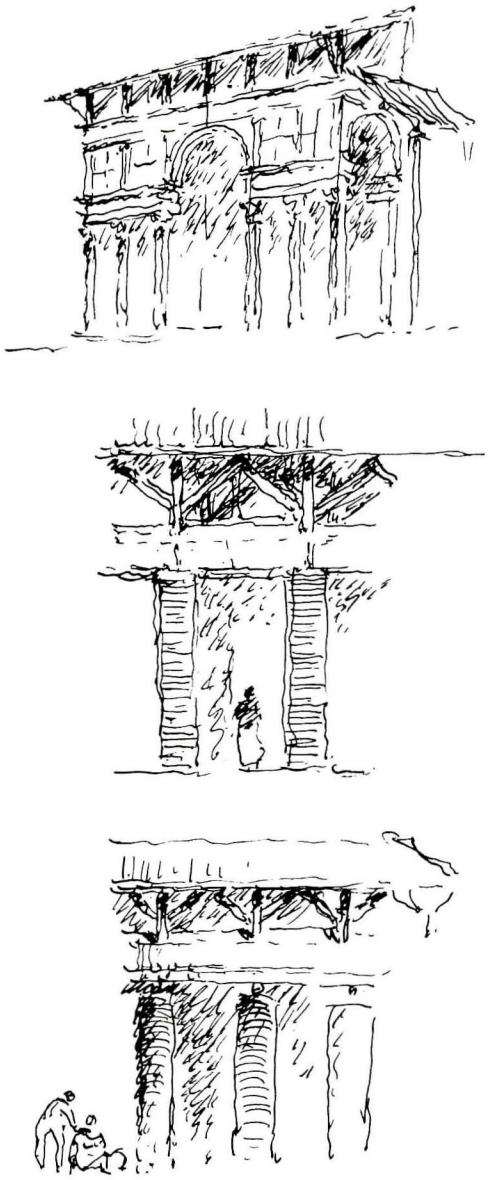


GROUND FLOOR

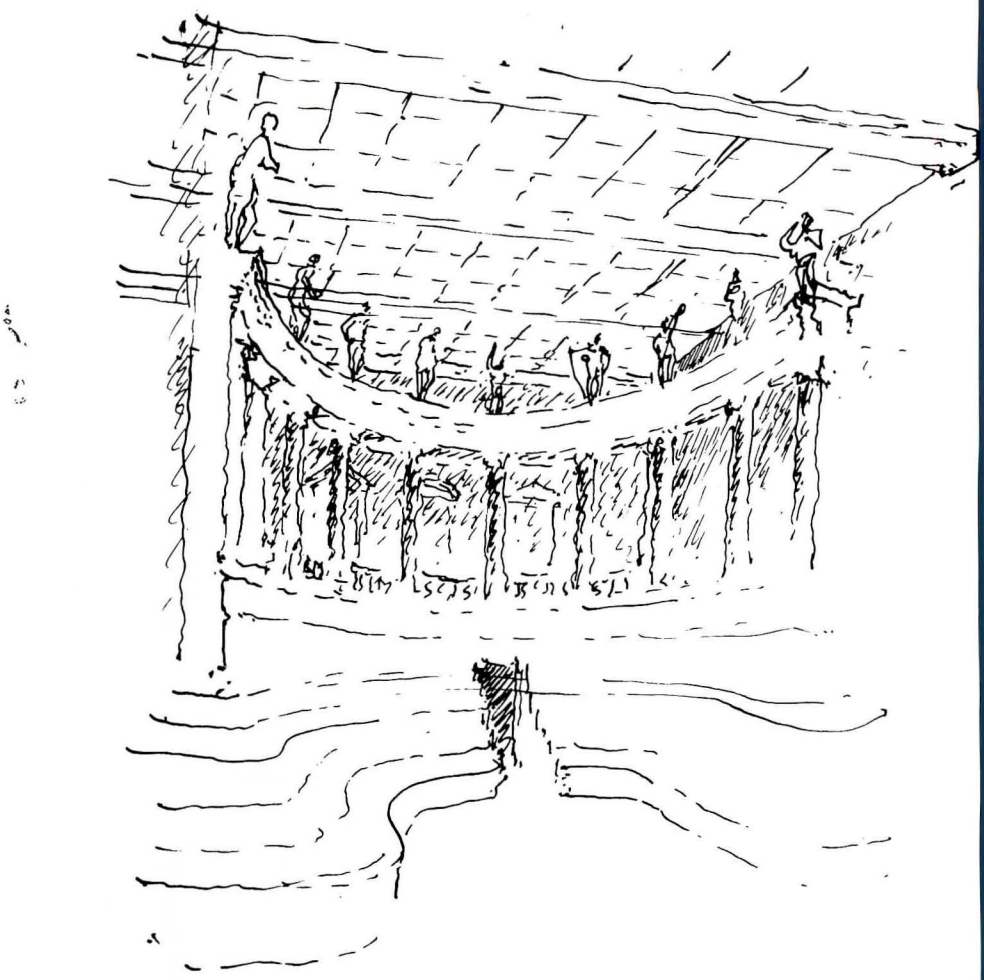


SECOND FLOOR

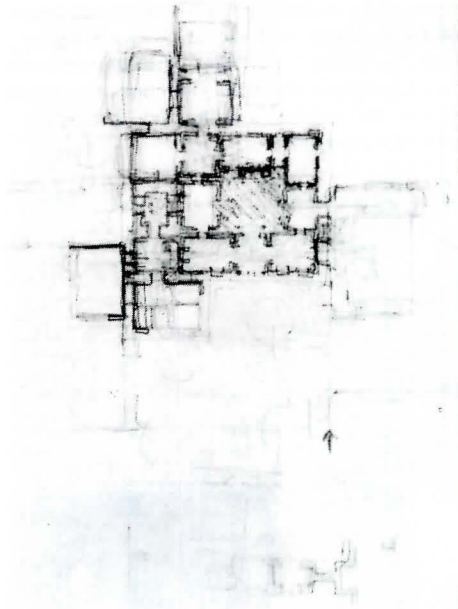
ARCHITECTURAL RECORD *November 1981* 83



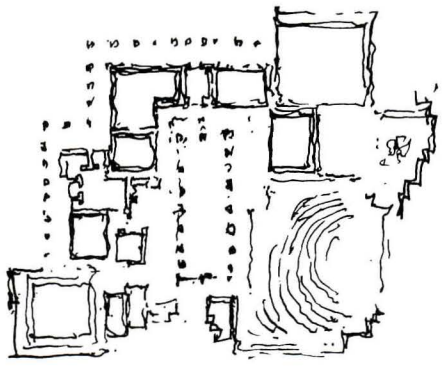
10. The Pazzi Chapel. One is reminded of the primitive, almost rustic sheltering roof over the Pazzi Chapel or those temporary structures that protect archaeological remains.

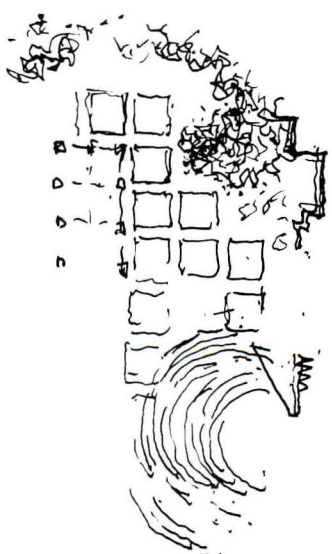


11. The amphitheater in a room. The single-focused, didactic, pupil-teacher, performer-audience relationship suggested by the conventional lecture hall or auditorium is quite inappropriate to the scholarly interchange among intellectual peers that occurs in an academy. The meeting hall is, therefore, a room reminiscent of the orthogonal geometry of the rest of the house, lit like the other rooms by square-paned windows. Into the floor of this room is carved a fragmentary amphitheater and our model was the Teatro Olympico—a space which is both room and theater.



12. The plan. The first drawing for the buildin illustrates ideogrammatically the clustering o square chambers around a court or atrium.





13. The house as city. The plan of the Academy demonstrates the same dialogue between order and circumstance as the elevation. In an Albertian sense it is city-like and resembles Miletus: the same four elements are present—the imposed Cartesian grid; the found, circumstantial boundary; the agora, court or atrium; and the unique, circular geometry of the amphitheater.

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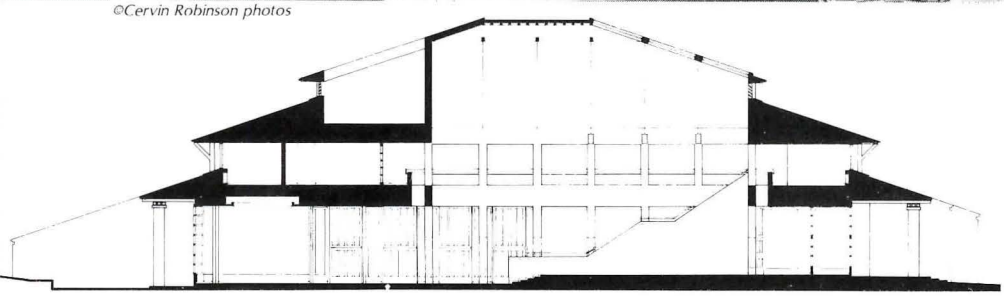
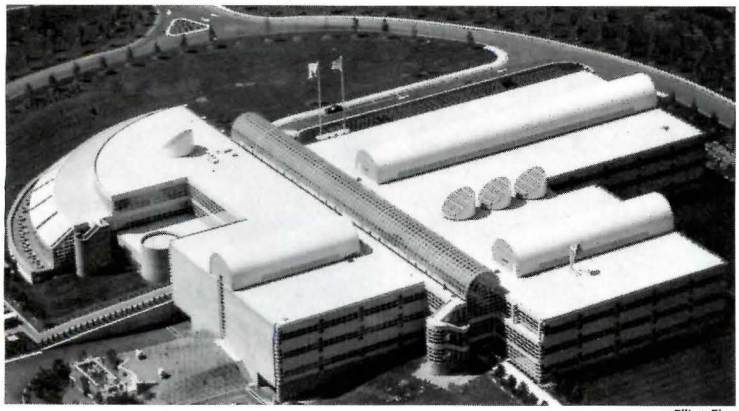


Designer Louis Beal of ISD, Inc. advised Kallmann and McKinnell in their choice of furniture and fabrics, leading them to appropriate sources. Apart from the formal atrium (above), with its Viennese Secessionist overtones, English club or country house comfort determined furniture choices. Beal, who was also interior consultant on Boston City hopes that the Academy eventually acquire more tiques, paintings and sculp and proposes that some f ture of the American Arts Crafts Movement (the wo Gustav Stickley for exar be acquired. Shown belov the meeting room (left) the lecture hall (right).

A LOFTY GALLERIA SKYLIGHTS SUBURBAN OFFICES



Elliot Fine

The majesty of the employees' entrance at AT&T Long Lines Headquarters in Virginia is not empty rhetoric. The company and architect William Pedersen shared a conviction that the building should dignify workers who spend a third of their waking hours inside it. So visitors, though they are made welcome, enter modestly at one side of the building, while employees make a grand progress up a broad axial allée to what anyone can recognize as the main entrance, even though it is at the back of the building and flanked by the employees' parking lot.

Located on a 34-acre site in suburban Fairfax County, the Long Lines Eastern headquarters exemplifies Pedersen's theories about "internal forces" as they mold a rural building's shape. Internal forces, encompassing program and user needs, push and shove both plan and enclosing walls from the inside out, while the external forces imposed by a citified context push and shove from the outside in. The Long Lines building, because it sits among small-scale houses, was subject to some external forces. But its spreading form and the sculptural curves that push upward and outward evolve from both functional needs and a respect for the inhabitants.

Chief among the internal forces was the need to accommodate 1,600 workers in 400,000 square feet. Most of these people came from scattered offices in downtown Washington, where they had

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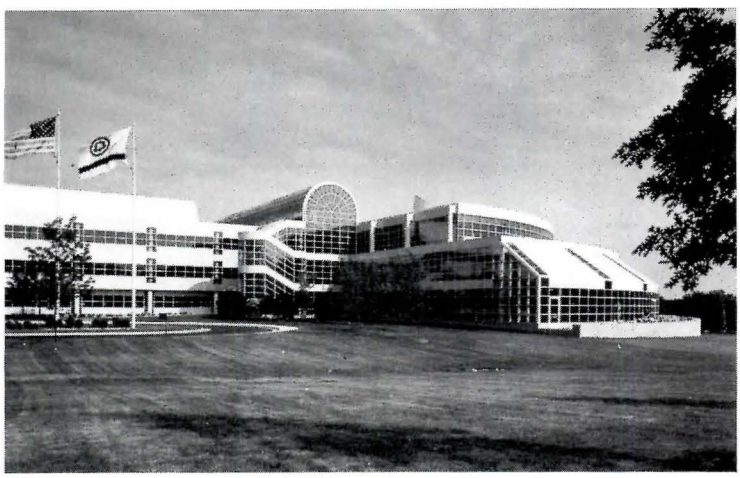
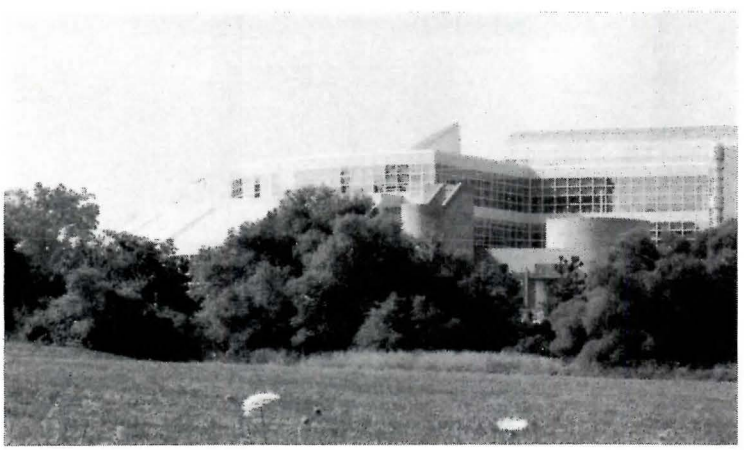
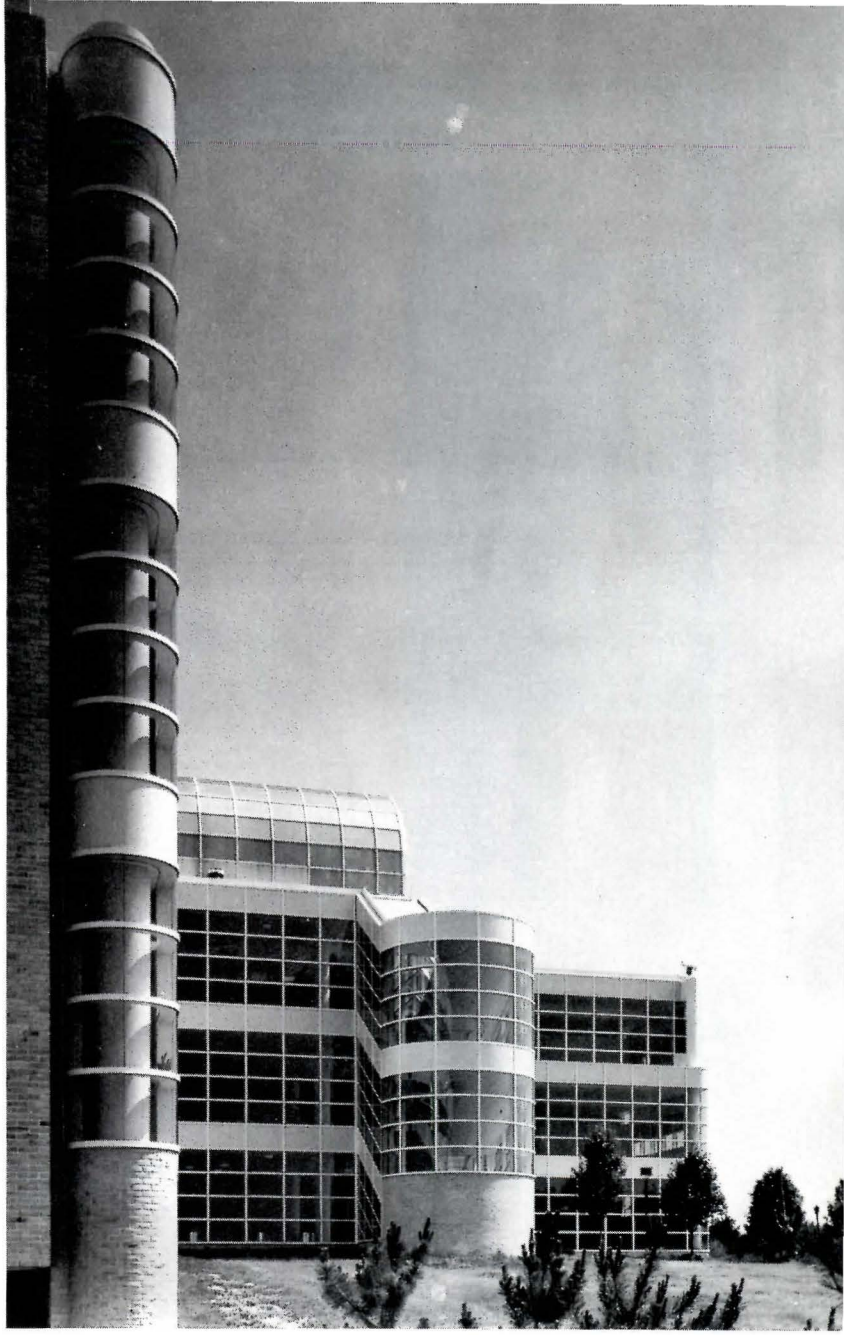
The visitors' carriage sweep (opposite and directly below) passes the high rounded vault at one end of the Long Lines Galleria and one of the building's three glass-enclosed curving stairways. The curving glass wall and slanted roof of the cafeteria and the executive suite above it (below) define the building's only fixed space; the more forthrightly functional office space, designed for flexibility, has a denser wall surface, though it is punctuated by vertical windows revealing the columns. Exterior walls are beige aluminum panels and green tinted glass, with bases and end walls of local brownish brick, a familiar material in the neighborhood.







grown accustomed to a greater variety of lunchtime and after-work possibilities than suburbia generally offers. Thus the desire for spatial quality became a compelling force, even if luxury were sacrificed. Pedersen would rather have "drywall with lively space" than frippery extravagance. He could also remember some moves taken to combat feelings of isolation in his design for the Aid Association for Lutherans in rural Wisconsin (RECORD, February 1978).

The low height of the Long Lines Building—three floors of office space and a basement for telecommunications equipment and such support services as mail, medical offices and parking—answers the scale of the neighborhood as well as the impediments to communication that tend to alienate workers in stratified high-rise offices.

Further, the building was divided into four pods—three office blocks for flexible space and a quarter circle for executive suite, cafeteria, auditorium and other fixed spaces. This step yielded several advantages. For one thing, it created office areas that users can perceive as manageable territory, in contrast to the vast flat beehives that too often attend repetitive office needs. For another thing, it broke up the building block to proportion exterior scale in keeping with the neighborhood.

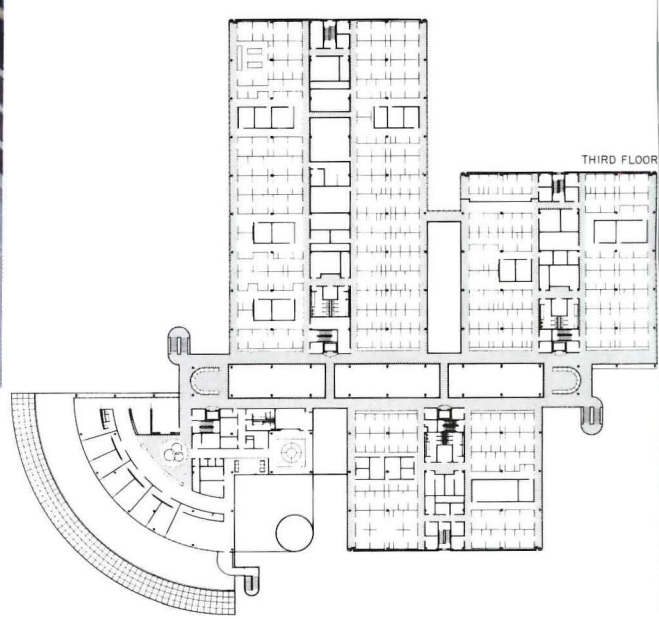
Most important for the comfort and enjoyment of the people working inside, however, the division gave Pedersen a wide spine down the length of the building—the Galleria—as well as a shorter axis running off at a right angle—the Atrium (see plan overleaf).

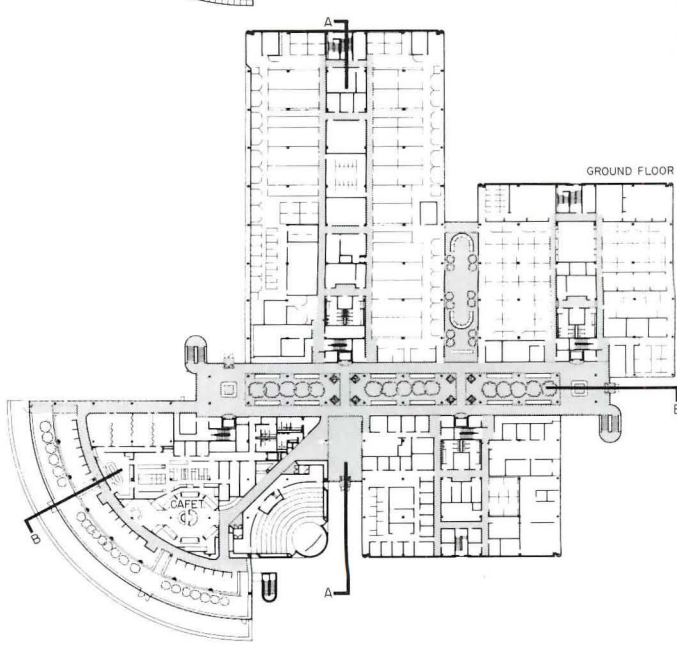
The long Galleria with its vaulting skylight serves as a city street, connecting the different "office buildings" on either side. It serves also as the major circulation route: employees and visitors enter at opposite ends, but both sets of users walk along the street to find the stair or elevator for their respective destinations. Bridges across the Galleria connect office pods at each floor and add the spectacle of constant purposeful motion.

The smaller Atrium, in the right-angled branch under three circular skylights, does not have major circulation functions, although there is an entrance door at one end. Instead, it serves as informal lounging and activity space and provides light and an internal view for offices on either side.

The Galleria assumes an essential sculptural importance for the exterior building form. The high glass vault, arching a story higher than the roof, clearly identifies the building from major roads on two sides of the site. Moreover, it orients visitors and regular users both inside and out. At the roof line, the building acquires still further sculptural interest as opaque vaults, which house fan rooms and mark the core of each office pod, intersect the transparent vault of the Galleria.

To achieve "textural density" in the large Galleria—four stories high and over 300 feet long—Pedersen exposed the mullion grid on the vault and interrupted the volume with four bridges. Further, he drew the columns into the space to place a screen in front of offices. Sculptor Karl Rosenberg designed "kinetic sails" of georgette as "flourishes." Hoops under the Atrium skylights (below) carry layers o lime- and lemon-colored fabri for a shimmery lightweigh mass. The blue banners in the Galleria (opposite) mirror the curve above with their lowe mast and parallel the angles o the mullions behind with thei silken drapery.



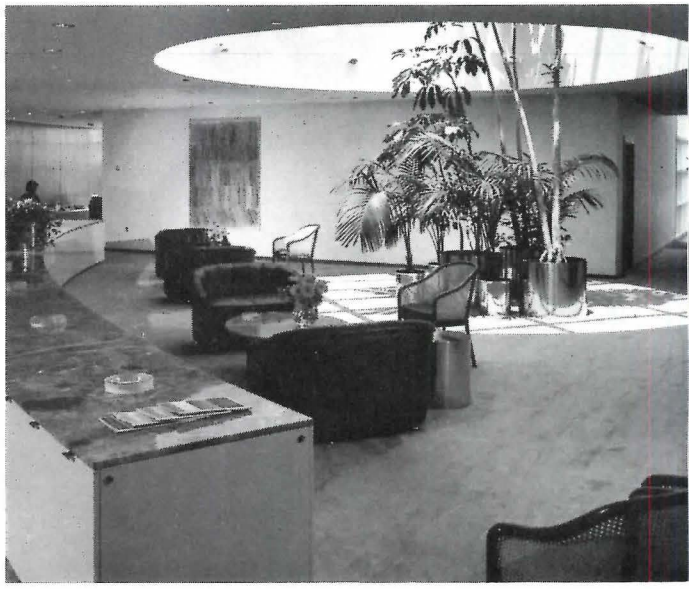


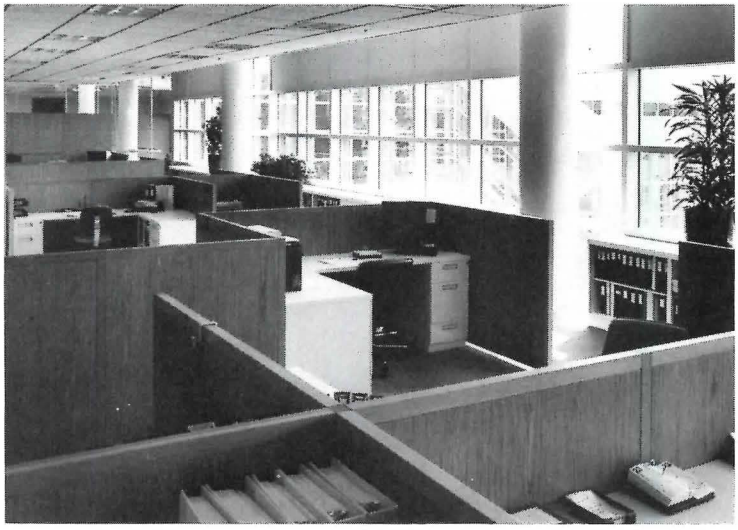
The spinal vaults are not merely formal devices. Rather, they evolved from the owner's requirement for expansion possibilities. Three areas were penciled in on the plan (and received prior zoning approval) for the extension of the spines—one to lengthen the block housing the Atrium, two others for new pods on either side of an elongated Galleria, which may be extended beyond the employees' entrance toward the parking lot. These options may be taken up soon—already, within two years of its occupation, the building is filled nearly to capacity.

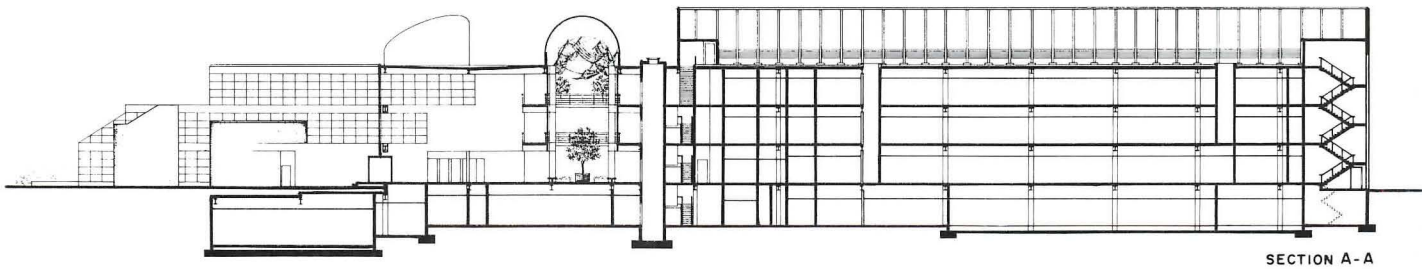
The monumentality of circulation spaces—the Galleria, the bridges, and the corridors that connect different office areas along the Galleria on each floor—offers essential physical and visual "relief from the office environment," in Pedersen's words. The ground floor of the Galleria possesses not only the functions but the scale and the ambiance of a city street, furnished with heavy wood benches and tall ficus trees. ("Paris kept coming up," recalls interior designer Jack Dunbar, although the hoped-for kiosks have yet to appear.) In addition, large lounges on the upper floors at the ends of the Galleria have found increasing work use as informal conference space and for undisturbed reading.

The planning of office areas presented knotty problems of its own. The owner required a degree of flexibility beyond the ordi-

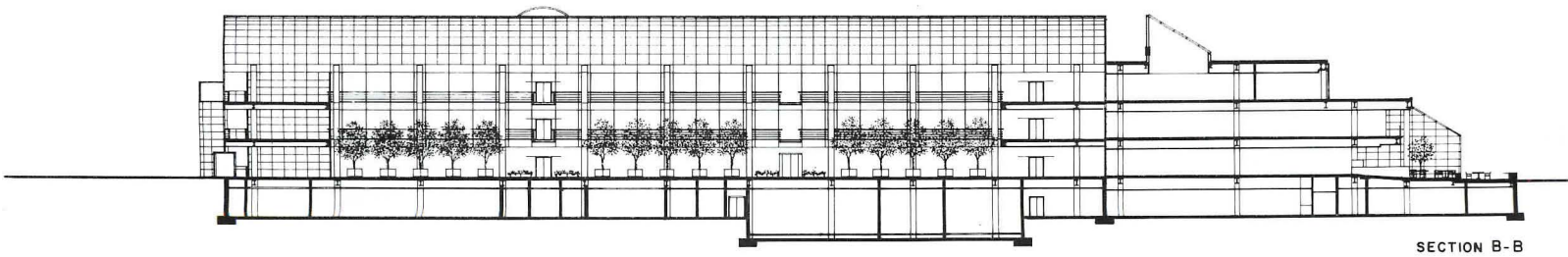
The partitions around work stations (below) are high enough to allow concentration on the desk surface but low enough to allow eye contact with colleagues. Openings from office space into the Galleria and the Atrium provide views of activity at the desks opposite and on interior bridges, as well as daylight and a view of the weather. More daylight pours through the glass housing for staircases (above right) and the circular skylight in the executive reception area (below right). The cafeteria (opposite) offers a variety of seating choices, from quiet banquettes on the top tier to active companionship below.







SECTION A-A



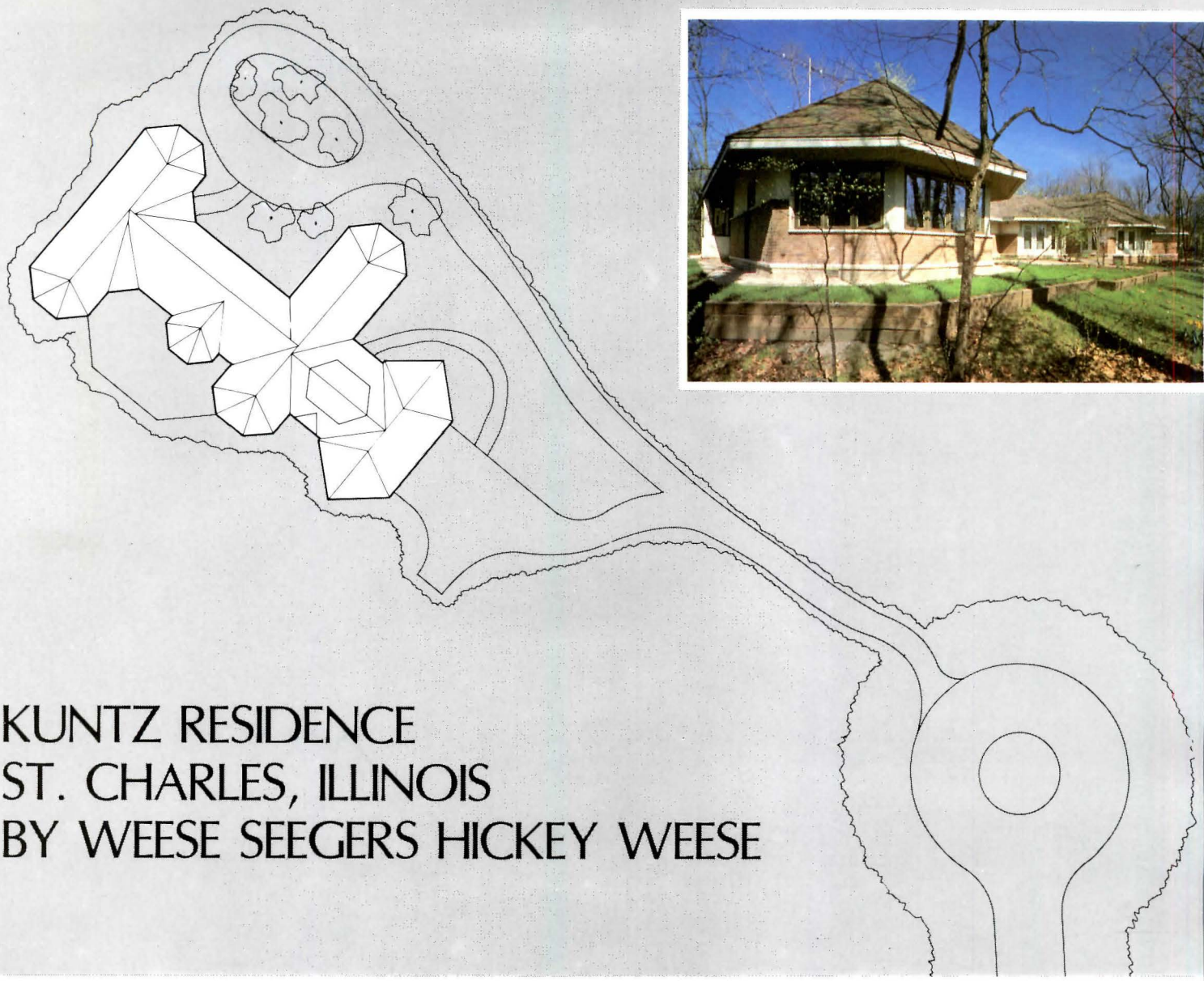
SECTION B-B

ary—and has taken full advantage of the gift to move departments round and into the facility. Beyond that, the company's space llowance for each office worker is unusually small. Still further, most mployees require desk space for advanced, and constantly pgraded, electronic gear: the building is a showcase for AT&T Long ines' sophisticated telecommunications systems.

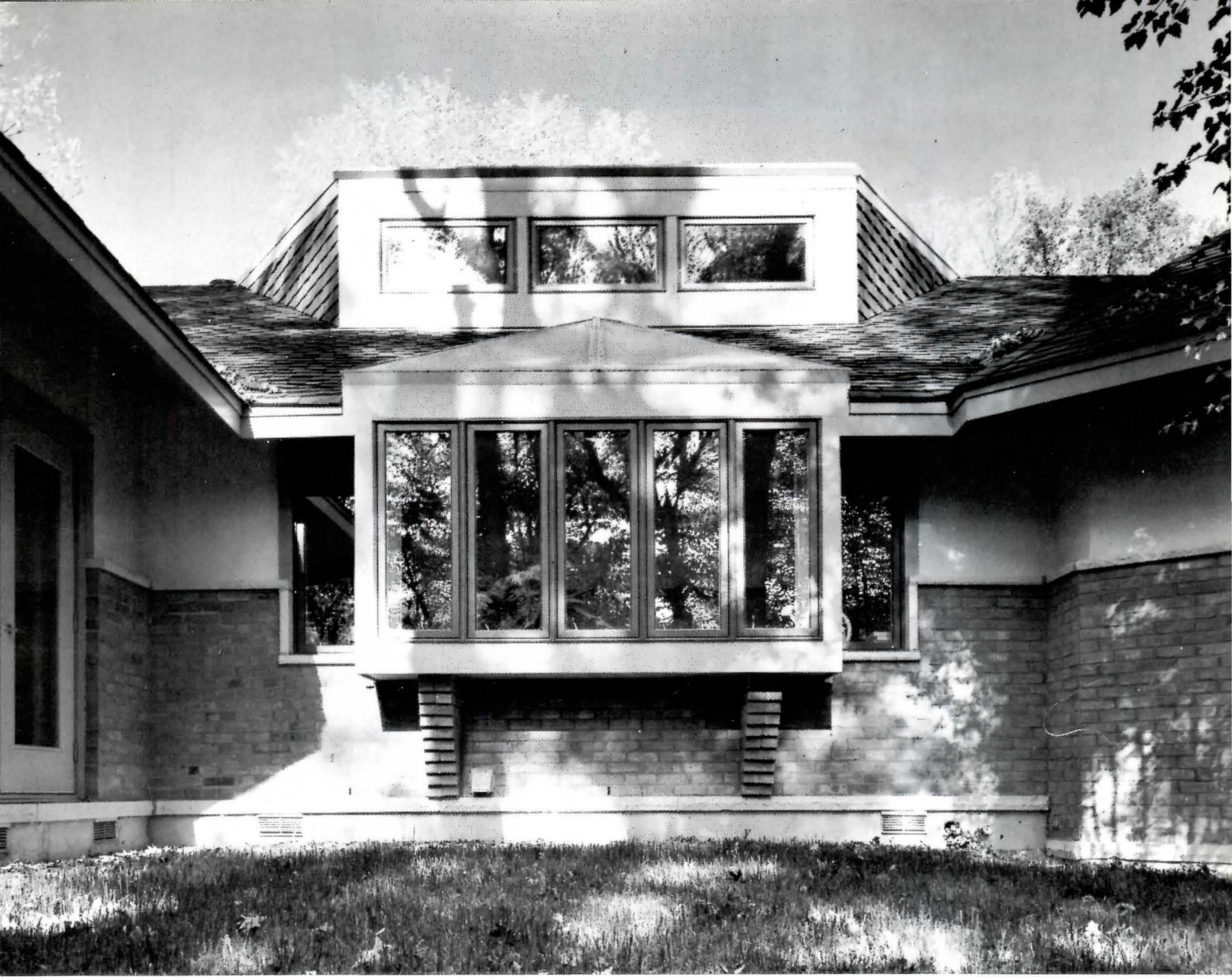
To accommodate these requirements, Dunbar devised a cus-om system—11 pieces including desks, shelves and cabinets—of nusual proportions. Desk surfaces are 5 feet long but only 2 feet eep, a long narrow surface suitable for reading computer printouts. he elements that discipline the system are easily moved low artitions that define each work station. The partitions come in ½-foot and 5-foot modules, joined at right angles and offering nultiple arrangements within the 28-foot grid. While the designers vanted warmth and texture for the partitions, the cost of a onventional wood veneer was outside of budgetary bounds. nstead, the partitions are faced with "reconstituted veneer," a naterial produced by Italians from what Dunbar calls "quick-rowing African super-pine." The variegated striations provide both varmth and texture, as well as an illusion of luxury.

Because most employees in the suburbs must spend their lunch ours in the building, the designers took special care to provide as much variety as possible in the cafeteria. Though the budget did not run to decorative indulgence, the terraced room does offer four different dining areas—banquettes near the core, tables looking over the terrace railing, other tables looking through the windows, and a terrace. And though the room seats more than 500 diners, each table gains a feeling of intimacy from the curving plan, which limits any single diner's view.—*Grace Anderson*

AT&T LONG LINES EASTERN REGIONAL HEADQUARTERS, Oakton, Virginia. Architects: *Kohn Pedersen Fox Associates, P.C.—A. Eugene Kohn, partner-in-charge; William Pedersen, partner-in-charge of design and project designer; Robert Evans, senior designer; Charles Schmitt, project manager.* Planners and interior designers: *Kohn Pedersen Fox Conway Associates, Inc., and dePolo/Dunbar—Patricia Conway, partner-in-charge, planning; Jack Dunbar, partner-in-charge, interiors; Judy Swanson* (KPFC), *interior designer.* Engineers: *Weiskopf & Pickworth* (structural); *Cosentini Associates* (mechanical/electrical); *Dewberry, Nealon & Davis* (civil). Consultants: *Jason M. Cortell & Associates, Inc.,* (environmental); *BKI Associates* (traffic); *Cini-Grissom Associates, Inc.* (food service); *Hubert Wilke Inc.* (audiovisual); *Fenvessy Associates* (materials handling); *Robert A. Hansen Associates* (acoustics). Landscape architect: *Gangemi and DeBellis, P. C.* Sculptor: *Karl Rosenberg.* General contractor: *Gilbane Building Company.*



KUNTZ RESIDENCE
ST. CHARLES, ILLINOIS
BY WEESE SEEGERS HICKEY WEESE



Howard N. Kaplan exterior photos

The Kuntz house is a strong, ample, timeless design for a Midwestern family. The plan spills out generously in several directions, thrusting itself into the forest of oaks and maples that cover this three-acre site in northern Illinois. At one end of the plan is a garage with work/storage space at either side. At the other end is a wing containing master bedroom, bath, dressing room and den. In between is a long axis of major and minor spaces that is itself intersected by a secondary axis that includes guest bedrooms and a sun room. The dining area is a bay that projects off the living room. Strong roof forms were required to unify these spaces and to provide the heightened sense of shelter that was one of the client's first requests. But to keep the roof forms from seeming to press down too heavily, the architects created exterior walls that are expressed as horizontal bands of masonry. The largest band is tan colored brick—the same brick that Eliel Saarinen used at Cranbrook. Above and below the brick are stone sills. The upper band is cream-colored stucco that sets off the shingle roof and visually diminishes its weight. The result is a house of strongly horizontal development, of faceted, angular roof massing, and of extensive perimeter walls.

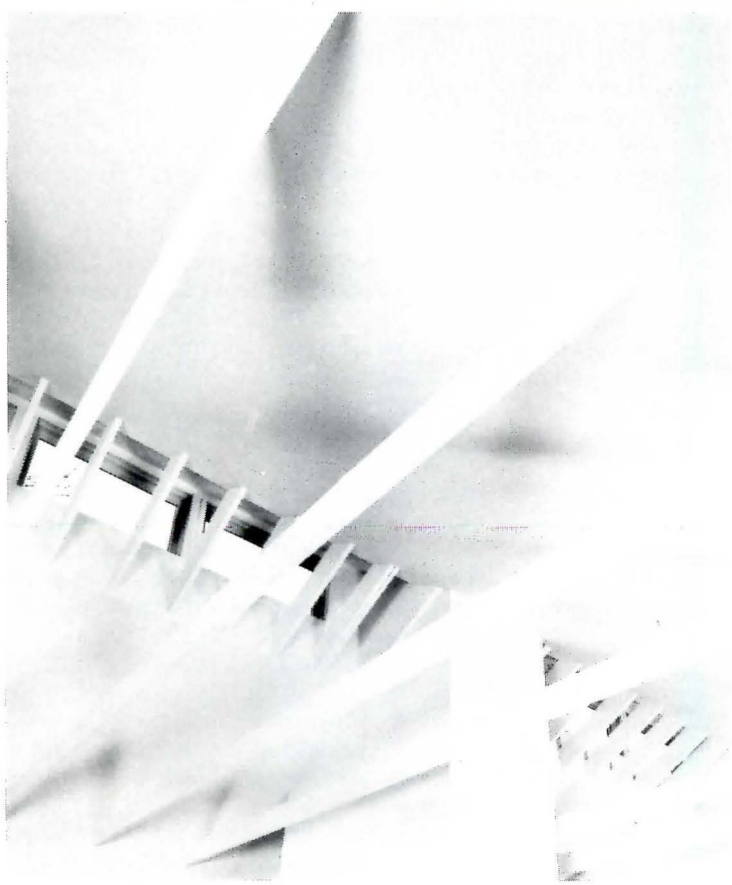
The interiors have been just as carefully developed. The large volume that is the main living area is subtly shaped by exposed tie beams that create what is almost a textured plane overhead. It contrasts effectively with the quarry tile of the floors and the gypsum board of the walls, gypsum board that has been trimmed with an oak strip to mark the head height of windows and sliding glass doors. Most of these openings face southwest across a terrace and frame fine views of the heavily wooded site. Fenestration on the north side is spare.

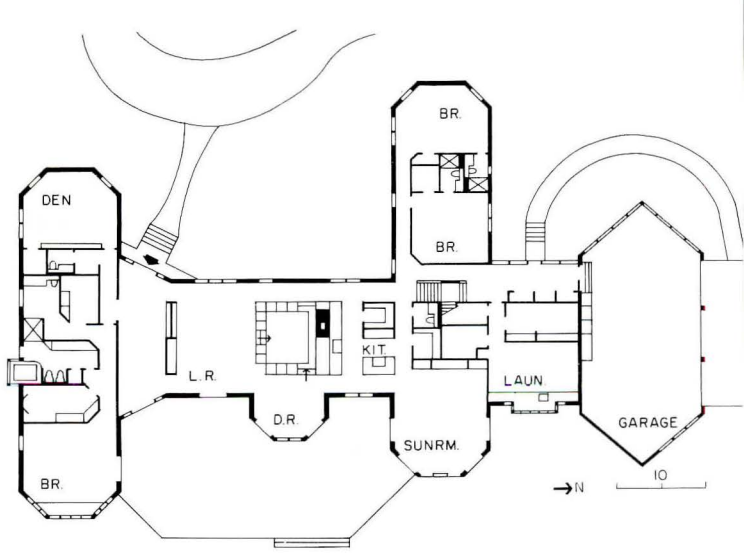
The quality of daylight in these spaces is unusually pleasant. Overhangs are sufficiently broad to protect against the high summer sun, but in winter sunlight penetrates nearly the full depth of the house. At all seasons, light from the perimeter is augmented by north-facing clerestories that animate the high sloping ceiling areas with softly modulated daylight. —*Barclay Gordon*

KUNTZ RESIDENCE, St. Charles, Illinois. Architect: *Weese Seegers Hickey Weese Architects Ltd.—Cynthia Weese, partner; assisted by Dennis Langley.* Engineer: *The Engineers Collaborative* (structural). Interiors: *Margaret I. McCurry, Ltd.* General contractor: *Wesley Peterson.*

Sadin Kurant interior photos

The living spaces are subdivided in a way that offers variety and choice. The sunken seating area is oriented to the hearth (photo right) while the seating area (photo above), if less intimate, is designed for view and light. Muted upholstery colors throughout are made to seem saturated by the whiteness of wall and ceiling planes.

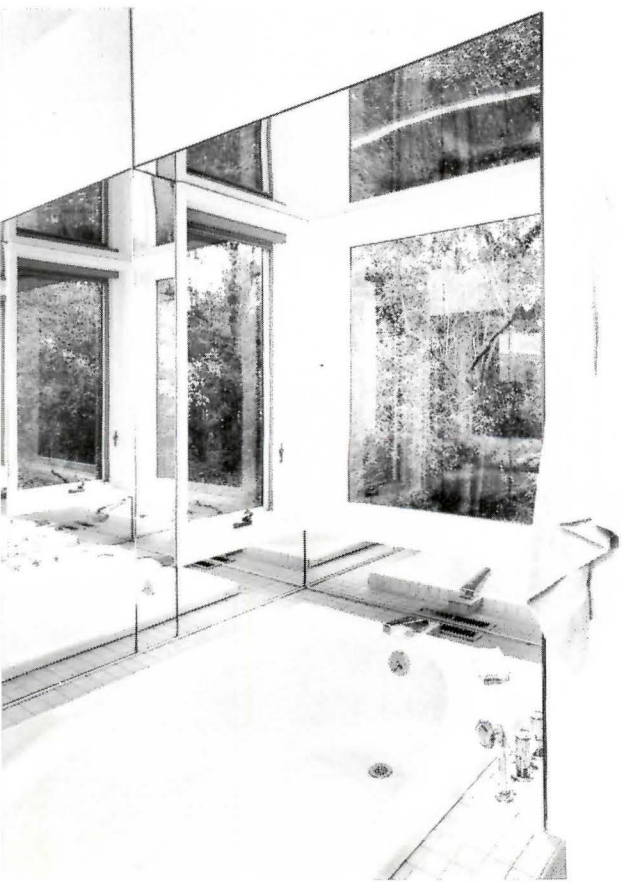





Interiors
LIFE

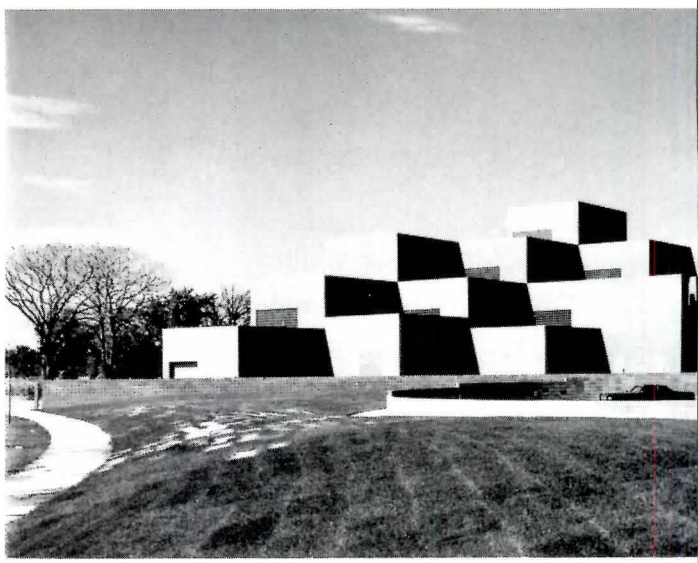
KUNTZ RESIDENCE

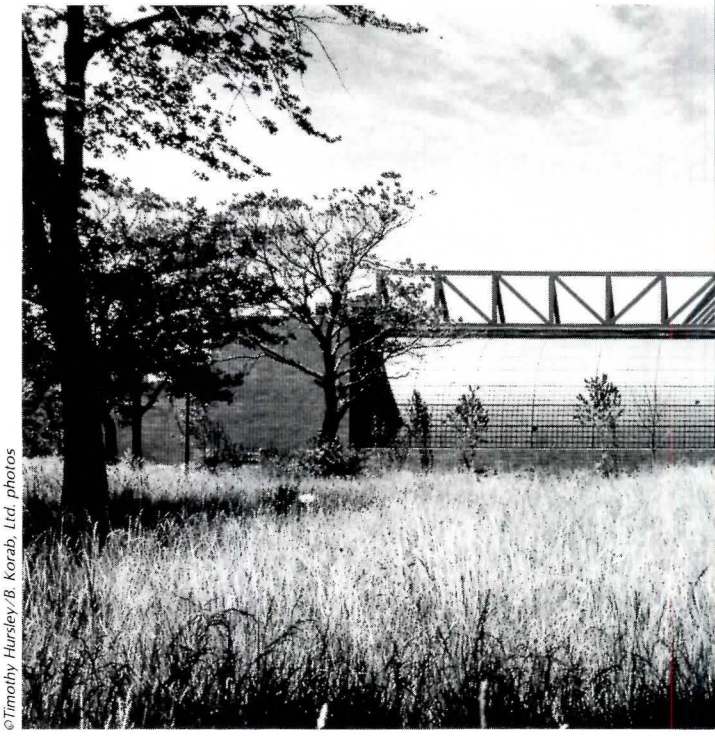
The kitchen (photo above) i screened from the main living space only by the low mass of the fireplace which is sufficient to establish the necessary spatial punctuation without interrupting the volume's flow. The master bedroom (photo above right) opens out through generously scaled bay windows to the richly wooded site. The soffit over these windows supports a wood cabinet that houses a television set.



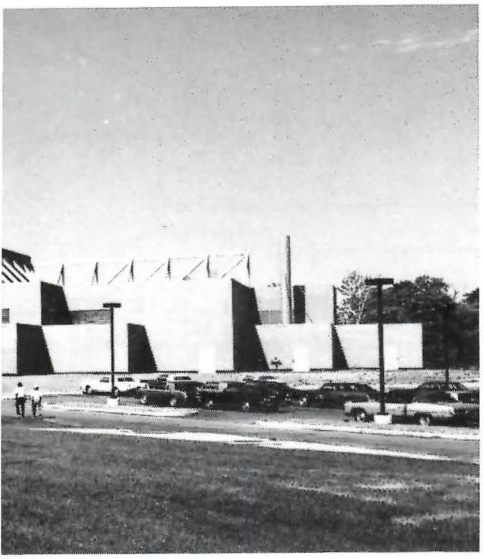
In the eyes of some social critics, America's dedication to physical well-being and self-fulfillment reached new heights of narcissism during the "Me Decade" of the 1970s. The pursuit of health and happiness shows no sign of lagging in the 1980s, but a look at recently constructed recreational facilities indicates that the quest is anything but lonely, escapist, or vain. For many of us, the gym, the tennis court, the campground, and the arts and crafts studio have gained new importance as centers for community life. At the same time that people of all ages are increasingly eager to participate in sports, nature programs, and cultural activities, the boundaries of recreation have expanded. The six projects illustrated on the following pages were designed to provide a variety of physical and intellectual challenges, as well as a lift to the spirit. Our examples come from both urban and rural contexts, ranging from a municipal recreation center in Detroit, conceived as a catalyst for community pride, to the secluded retreat of a church-run camp in East Texas. Together, these buildings demonstrate that serious architectural and environmental concerns—recycling, energy conservation, phased planning, flexible programming—can all enhance the enjoyment of creative play. —*Douglas Brenner*

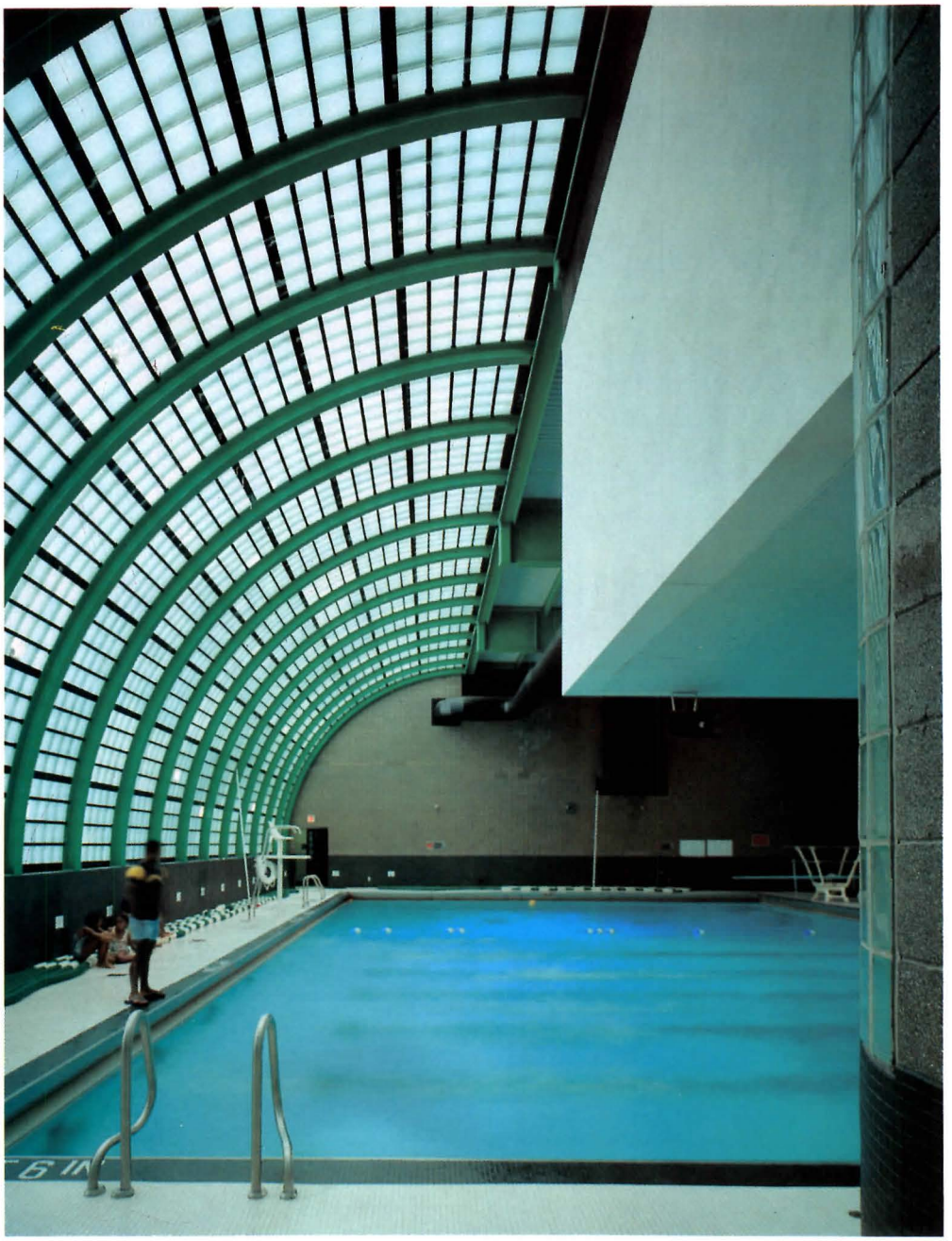
RECREATION BUILDINGS WITH TEAM SPIRIT



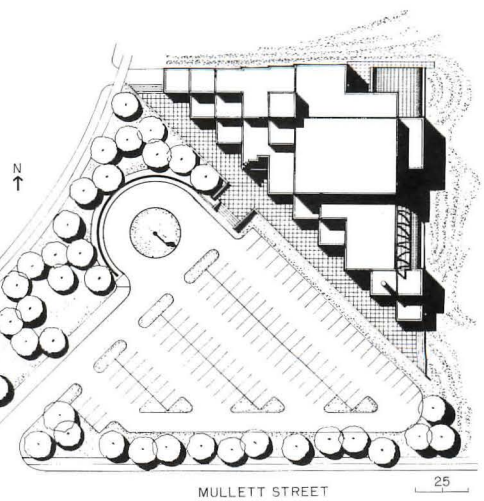


©Timothy Hursley/B. Korab, Ltd. photos



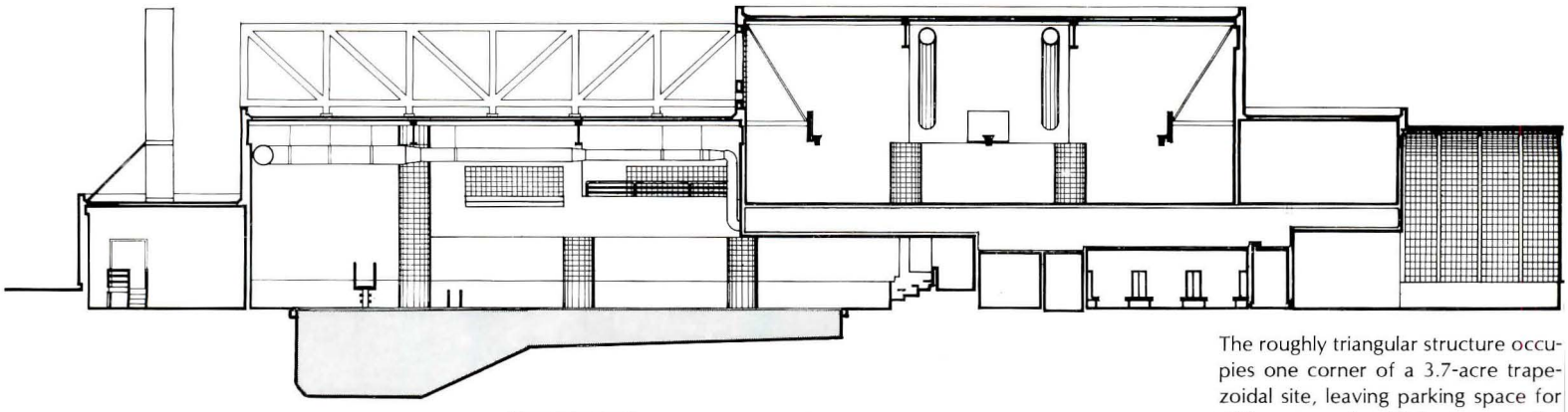


Recreation provides a lively focus for an inner-city neighborhood

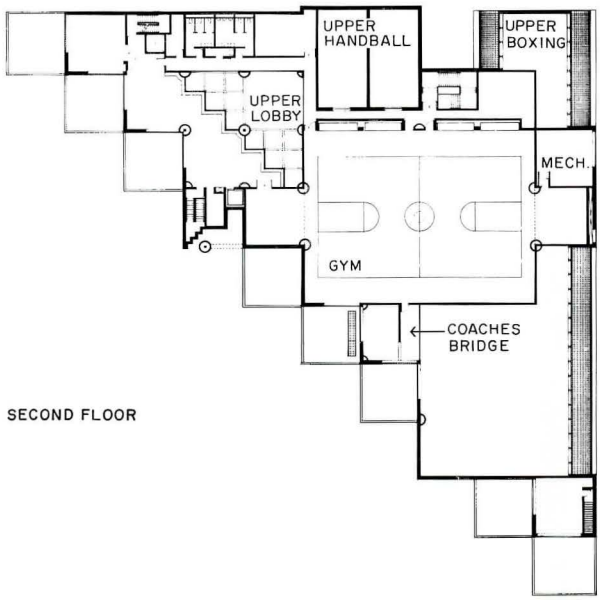


The completion of Detroit's $4-million Coleman A. Young Recreation Center marks one of the last phases of a sweeping urban renewal program that began in 1954 when the city bulldozed 129 acres of slums known as the Black Bottom. Rechristened Elmwood, this area has become a patchwork of parks and mixed-income housing. The recreation center, which is named after the city's incumbent mayor, was designed to give Elmwood a much-needed focus for community life. Architects William Kessler & Associates have created a durable, low-maintenance structure with a distinctly urban blend of toughness and glamour. The stepped geometry of the entrance facade expresses a modular composition that governs every element of the building, from the eight-inch blocks of glass and ground-face concrete that clad both exterior and interior to the 24-foot grid of the triangular plan. Two stories are organized compactly into three principal zones of activity: senior citizens' arts and crafts workshops, multi-use community areas, and athletic facilities. For the most part, materials and colors form a quiet backdrop to human activity, although there is unrestrained drama in the virtuoso display of glass block in columns softly lit from within, shimmering screen walls, and translucent vaults over the boxing ring and swimming pool. As a precaution against vandalism, exterior glazing is generally confined to upper portions of the building. Of course, the best protection is the enthusiastic involvement of Elmwood residents, whose District Council maintains offices just off the lobby. Mayor Young could not have asked for a better namesake, or more tangible evidence that Detroit's long-promised renaissance is still within reach.

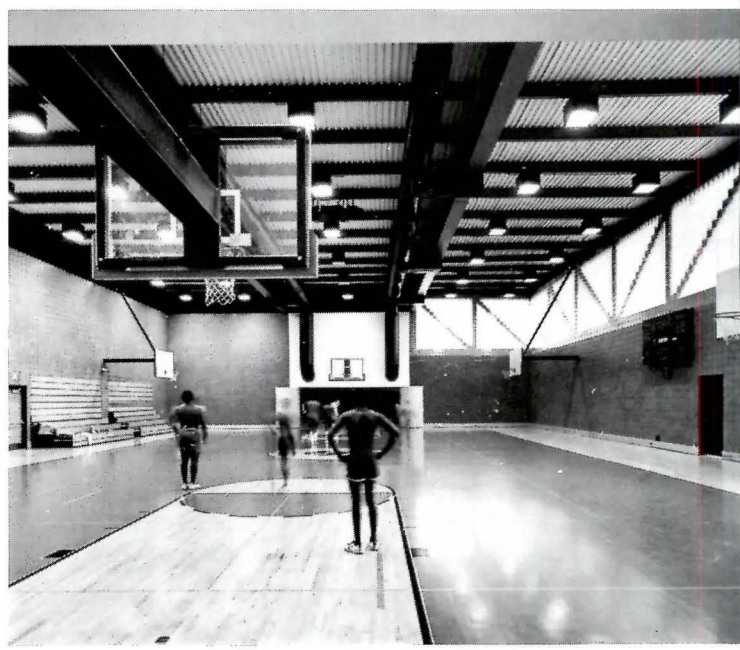
COLEMAN A. YOUNG RECREATION CENTER, Detroit, Michigan. Owner: *City of Detroit.* Architects: *William Kessler and Associates, Inc.—Edward Francis, FAIA, principal-in-charge; James Cardoza, AIA, Michael Patten, AIA, project design; Richard Adelson, Tom Paczkowski, AIA, Eugene DiLaura, FAIA, project execution.* Engineers: *McClurg Associates* (structural), *Hoyem-Basso* (mechanical, electrical, civil). General contractor: *J.A. Ferguson.*

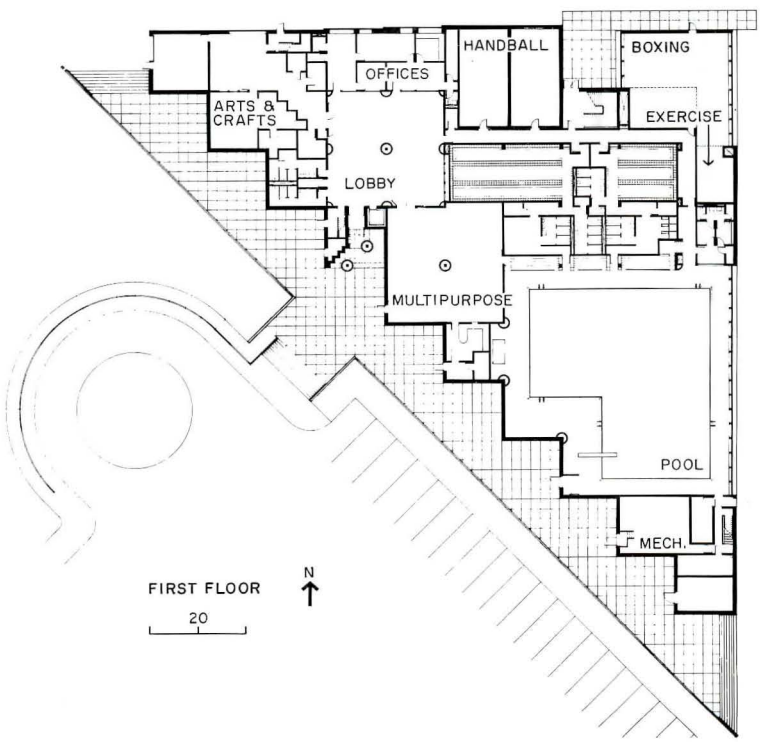


The roughly triangular structure occupies one corner of a 3.7-acre trapezoidal site, leaving parking space for 100 cars and sufficient room for future expansion. The sawtooth profile of the southwest facade—an outgrowth of the strictly modular cubic plan—helps to reduce its apparent bulk to the scale of neighboring residences. Similar zigzag patterns recur as a dominant motif in every part of the design.



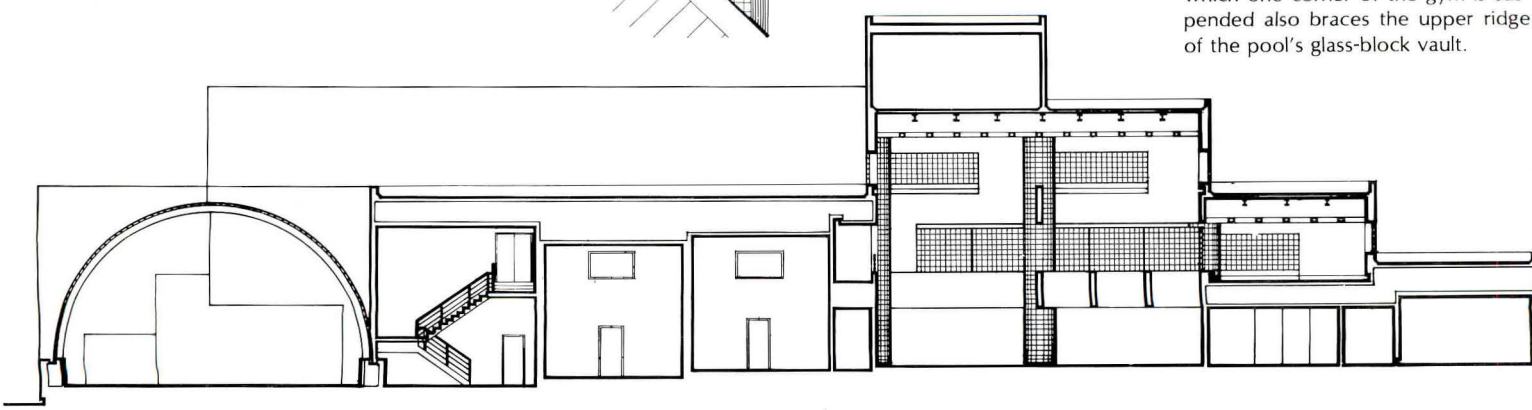
SECOND FLOOR

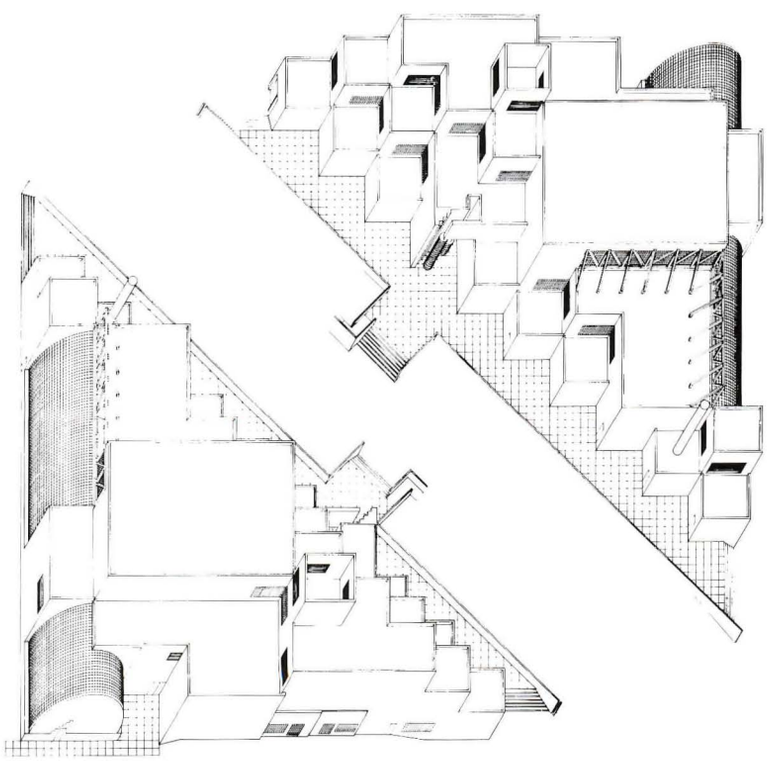


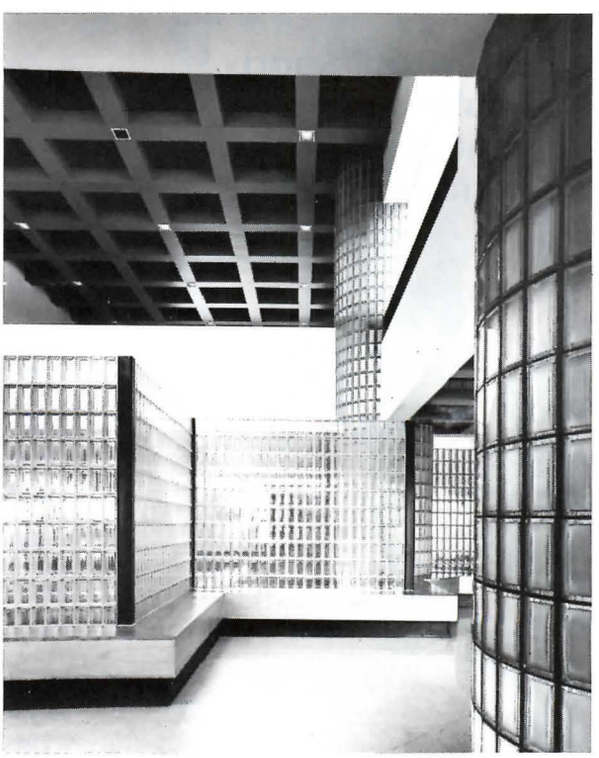


FIRST FLOOR

Elmwood residents have compared the lobby (right) to ancient temples, Art Deco movie palaces, and discotheques. The two-story hall is suffused with radiance from glass-block columns (illuminated by built-in mercury lights) and balcony screen walls. Corridors were avoided, except in locker room areas, to facilitate the circulation of crowds. In order to make the most of limited space, the gymnasium (above) was partially cantilevered over the swimming pool. The prominent truss system from which one corner of the gym is suspended also braces the upper ridge of the pool's glass-block vault.

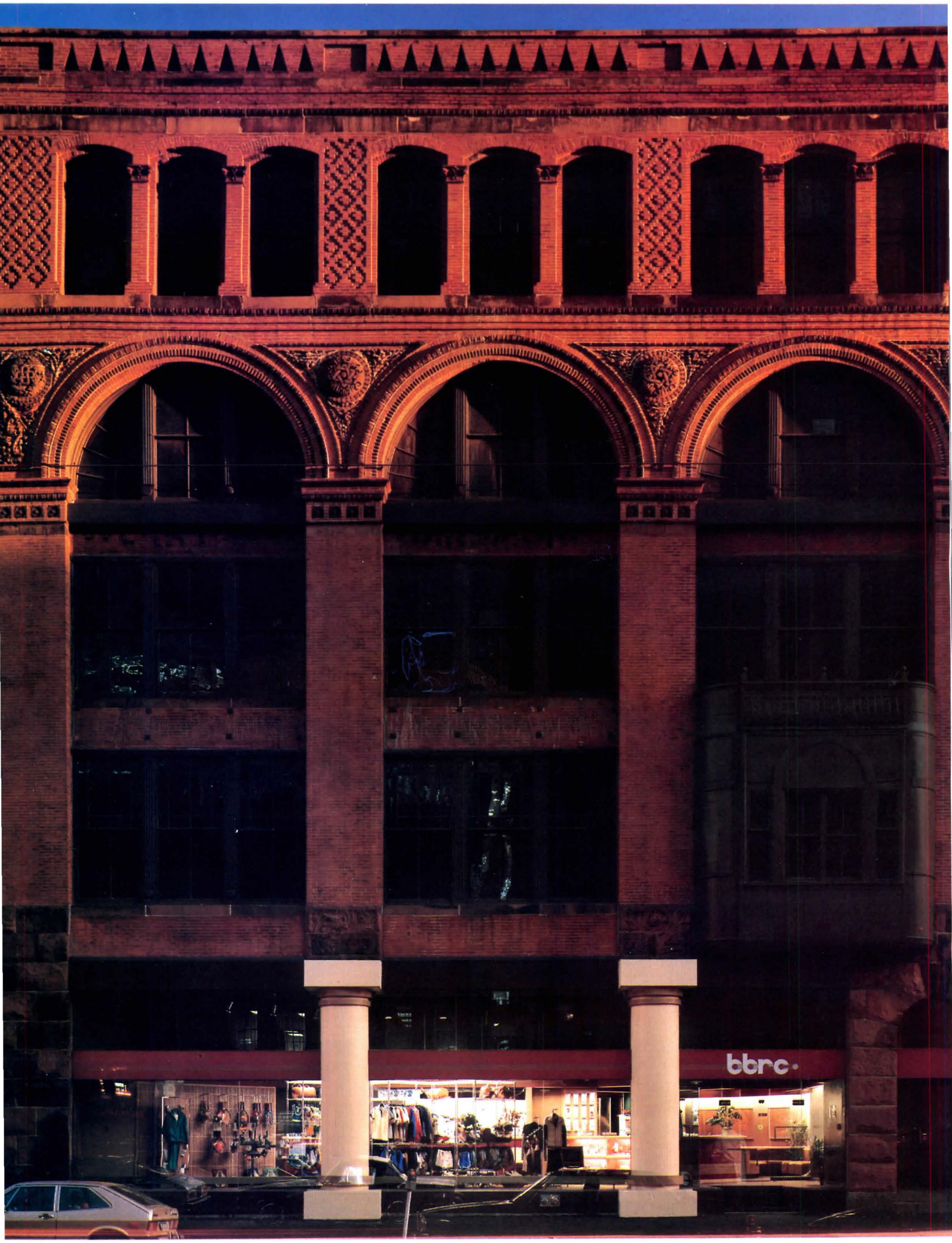






(The curved roof, vents, and smokestack sis). Contractor: *Series Contracting Corp.*

Manhattan schoolchildren come from

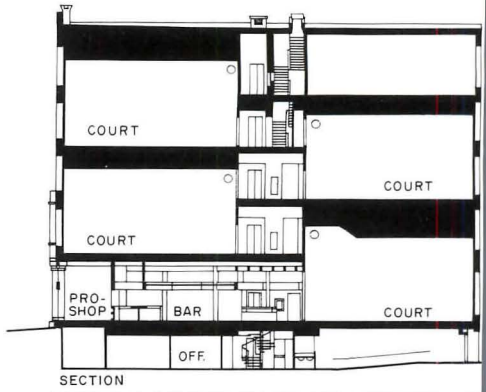


Paul Ferrino photos

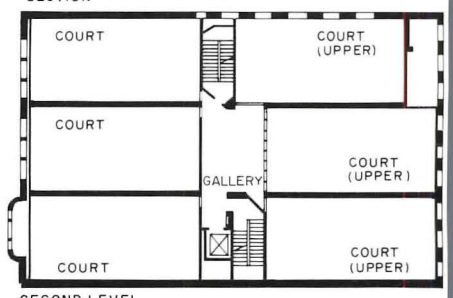
Recycling introduces a new game to an old building

Racquetball, the upstart of American racquet sports, has found a proper Bostonian home in a converted ink factory. Ideally situated in the city's affluent Back Bay, the 90-year-old building was nearly vacant when architect and racquetball enthusiast Gary Graham perceived its hidden potential: the bay spacing of the five-story cast-iron and timber frame structure was exactly the right gauge to accommodate twelve 20- by 40-foot regulation-size courts. Market analysis convinced a group of developers that Boston's first racquetball installation would turn a handsome profit, especially if its appeal were broadened with full health-center facilities. The completed project is a joint-venture design by Payette Associates and Graham/Meus. Every detail of the vintage facade has been preserved except for a wooden storefront (see "before" photo, near left), which the architects considered awkwardly underscaled. Robust new columns frame butt-glazed windows that give passers-by a look into the pro shop (open to the public) and beyond to a glass-walled racquetball court. "Since this is an unabashedly commercial venture, we felt we ought to put the game itself on display," says Gary Graham. Inside the entrance, the transformation of the factory is declared no less emphatically by angled walls that slice through the regular grid of cast-iron columns. Racquetball is played in courts with back walls of clear tempered glass. Because the factory lofts were too low to house these 20-foot-high cubicals, original floors were removed. By staggering new split-level tiers on either side of central galleries (section overleaf), the architects have given spectators a choice of vantage points from which to follow the fast-paced action.

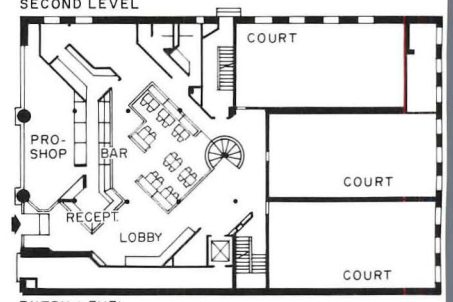
BACK BAY RACQUET CLUB, Boston, Massachusetts. Owner: *Boston Racquetball Associates.* Architects: *Payette Associates, Inc.-Graham/Meus Inc. — Gary Graham and Daniel Meus, architects-in-charge; Robert Quijano, James Pierce, designers-draftsmen.* Engineers: *Simpson Gumpertz & Heger* (structural), *Shooshanian Engineering* (mechanical). Graphics consultants: *Coco Raynes/Graphics Inc.* Contractor: *Henry E. Wile Corp.*



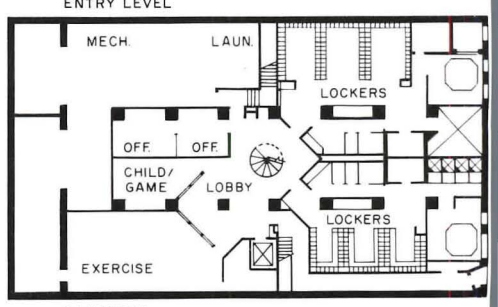
SECTION



SECOND LEVEL



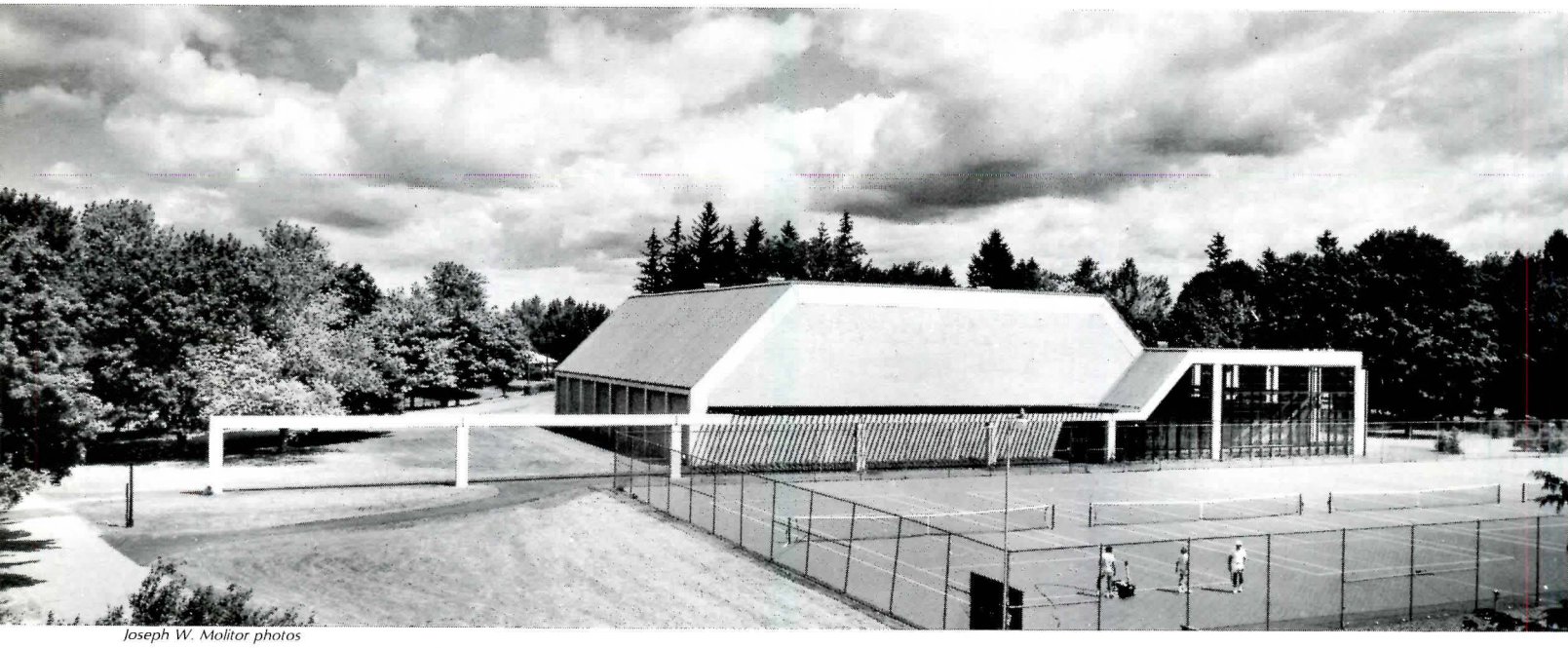
ENTRY LEVEL



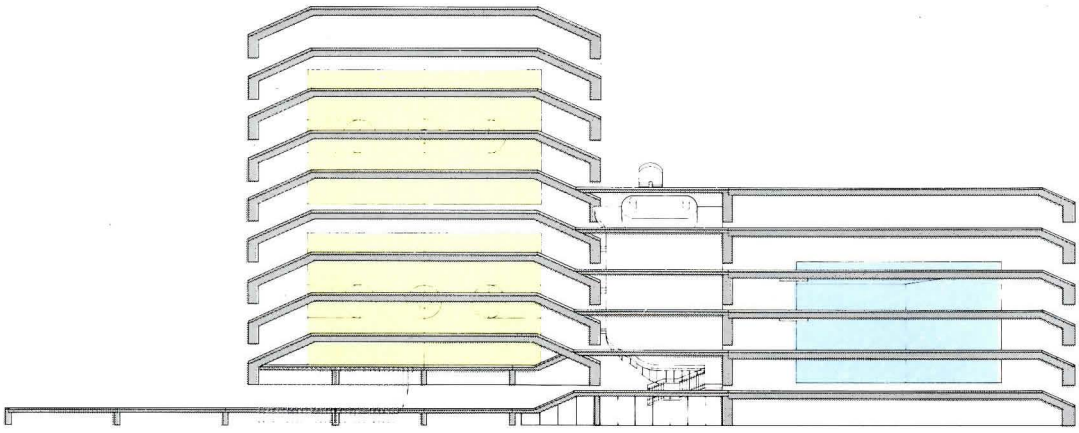
BASEMENT

hrough a stroke of serendipity, the riginal cast-iron and timber supports f an old Carter's Ink factory were ound to have the right dimensions—n plan—for standard racquetball ourts. These white cubicles—20 feet vide, 40 feet long, and 20 feet igh—were constructed of particle oard faced with plastic laminate, lipped to light steel studs. Unfortuately, extant ceilings were too low, nd the necessary removal of floors hreatened the stability of columnar in connections. In order to stiffen he connections without extending einforcement beyond court walls, he architects placed steel plates on ither side of the joints, capped them it bottom and sides, and poured conrete between them.

n the lobby and lounge (right), the grid imposed by this post-and-beam tructure is dramatically twisted 45 degrees. Besides focusing one's view oward a showcase racquetball ourt—and the restaurant bar—these diagonal planes channel circulation down a winding stair to the basement ockers, exercise room, and children's lay area. The architects describe heir dynamic shift of geometry as "a ot-so-subtle analogy to the movement of the game itself," a theme hat is echoed in the horizontal lines f street-level graphics and interior rim. Visible woodwork is maple, the referred material for racquetball ourt floors.



Joseph W. Molitor photos

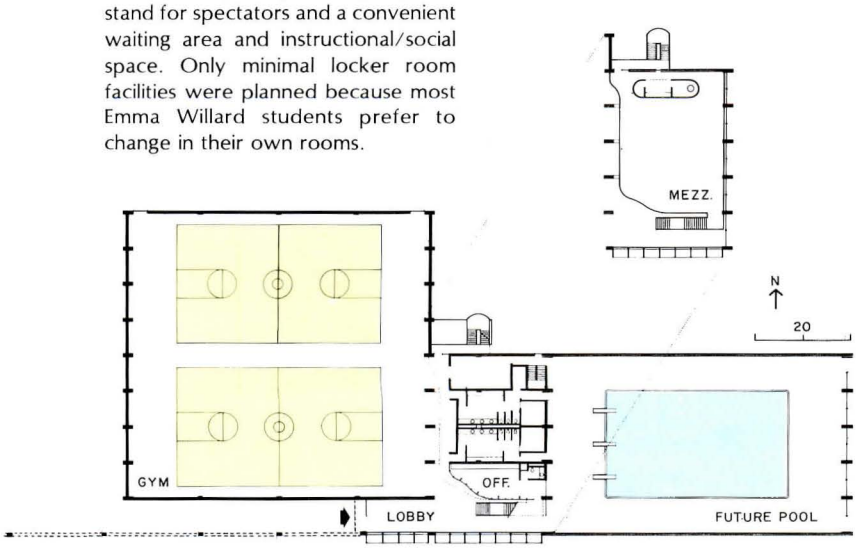


A girls' school gym wins points for playing by the rules

Ivy-covered halls built in the early years of this century border the playing fields and tennis courts of the Emma Willard School, a private academy for girls in Troy, New York. In designing a new multi-purpose gymnasium next to the school's main quadrangle, architects Bohlin Powell Larkin Cywinski took pains to honor campus traditions while allowing for future growth. The structure shown above represents the initial phase of a two-stage project which will ultimately include an indoor swimming pool (see axonometric above). A tight budget necessitated simple forms and materials throughout. The gym is essentially a large shed, spanned by precast concrete beams. Notched piers at the eastern end (opposite above) indicate where roof members for the projected pool will rest. Although varsity competitions and community events are held here occasionally, the building is primarily devoted to intramural athletics and physical education. The gym can be subdivided into two tennis courts, two basketball courts, two volleyball courts, or any desired combination of playing areas. It is also an ideal setting for gymnastics. Daylight enters through insulated fiberglass panels set into the north wall. Faculty offices and a mezzanine receive natural illumination from a glazed two-story lobby, which will be shaded during the warm months by a red steel trellis planted with vines. A pergola relieves the blank expanse of the southern gable wall whose subtly varied concrete surfaces echo the texture and color of ashlar masonry in the old quad and in a library and arts building designed by Edward Larrabee Barnes. Roofs are covered with zinc-alloy that will weather to the tone of slate. Ivy, the sine qua non for campus landmarks, has already begun to climb the south facade.

CHARLES STEWART MOTT GYMNASIUM, The Emma Willard School, Troy, New York. Owner: *The Emma Willard School.* Architects: *Bohlin Powell Larkin Cywinski—Peter Q. Bohlin, FAIA, partner in-charge; Jon C. Jackson, AIA, project architect* Engineers: *Josep Firnkas* (structural), *Frederick Sheldon* (mechanical), *Gordon Wimmer* (electrical) General contractor: *Cassabone Brothers, Inc.*

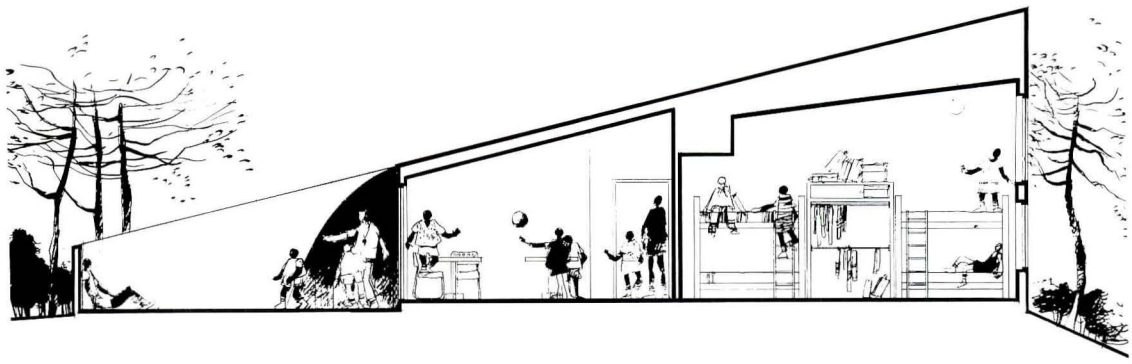
As the plan and axonometric indicate, the precast concrete structure of the gymnasium will eventually be extended to enclose a swimming pool. The mezzanine (lower right) that overlooks the gym will also have a view of the pool, providing a grandstand for spectators and a convenient waiting area and instructional/social space. Only minimal locker room facilities were planned because most Emma Willard students prefer to change in their own rooms.

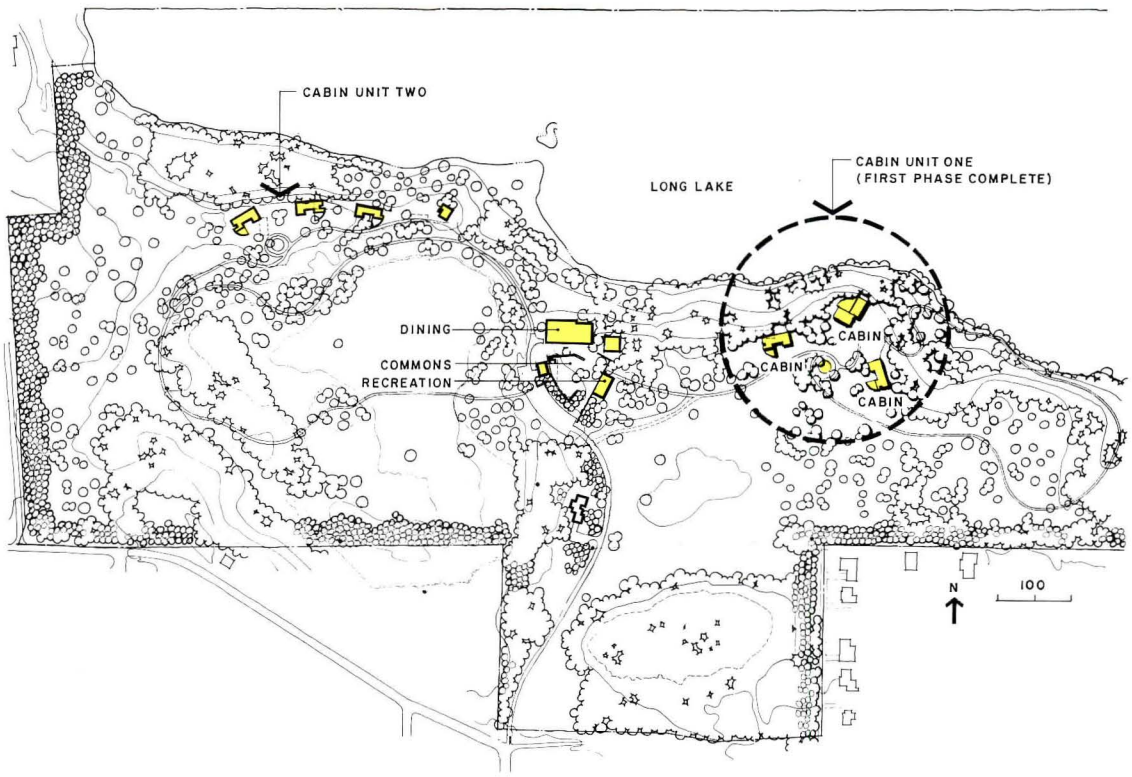


Campers of all ages gather round an open hearth

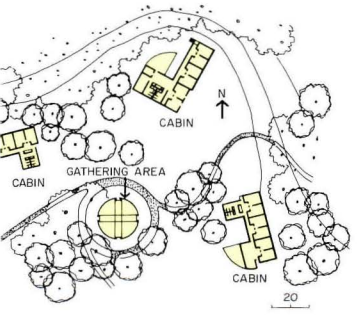
After six decades of rough-and-tumble summertime wear had taken their toll on the Franklin-Wright Settlements Camp, a nonprofit facility in Michigan for underprivileged children, the camp administrators decided that periodic "Band-Aid" repairs were no longer adequate. They turned to Rossen/Neumann Associates for master planning of low-cost renovations and new buildings on the 82-acre lakeside site. The architects advised that the first priority for economic survival should be a reorientation of the camp towards rental use by other groups from autumn to spring. Construction began with housing, the camp's most pressing need. Each of the first three cottages built comprises six bunk rooms grouped in pairs, with dividing doors for flexibility and interconnecting lavatories adaptable for use by one or both sexes. Windows at child-height and adult eye-level let campers of any age enjoy the view (upper right). Adjoining common rooms are a place to meet on rainy days or between scheduled activities. Owing to stringent state fire codes, the architects had to specify a higher degree of interior finish than they originally desired. Since rustic paneling was unfeasible, lively supergraphics were painted on tough plywood walls. Outside, the frame structures were clad with cedar shakes, stained gray and bleached to an appropriately weathered shade. In order to reinforce a sense of community, the cabins face into a central gathering place, an open hearth surrounded by raised platforms, with plenty of room for marshmallow roasts, skits, and sing-alongs. Counselors have nicknamed this structure "the pagoda" because its four gateways remind them of oriental temple portals. The analogy is curiously apt, befitting a place reserved for rituals of fellowship.

FRANKLIN-WRIGHT SETTLEMENTS CAMP, Orion Township, Michigan. Owner: *Franklin-Wright Settlements, Inc.* Architects: *Rossen/Neumann Associates—David F. Dombroski, AIA, project designer; J. Victor Muñoz, AIA, project manager.* Engineers: *Sheppard Engineering* (structural), *Fuerstenberg Crompton & Associates, Inc.* (mechanical/electrical). General contractor: *Roberts & Dudlar, Inc.*

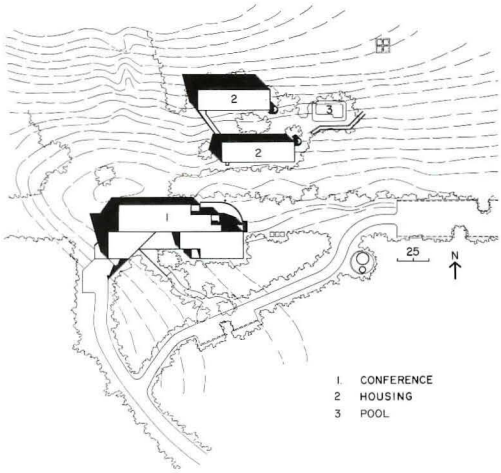




The three cottages completed in the first phase of construction house 90 campers. Interconnecting rooms can be combined into suites to accommodate the needs of families and organizations who rent the camp before and after the summer session. A common room and sheltered terrace in each cottage furnish intermediate social areas between the relative privacy of bunkhouses and the central "public" platform where camp assemblies are held (left and below right). The master plan conceived by Rossen/Neumann Associates recommends later construction of a second cluster of cabins, permitting the separation of boys' and girls' campsites. When funding is available, a 15-year-old lodge will be remodeled as a dining hall and focus for an outdoor commons and recreation ground.

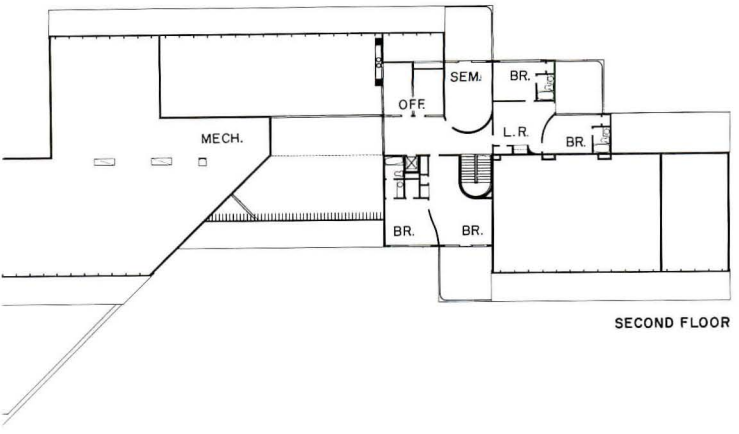


Natural harmony reigns at a church retreat in the woods

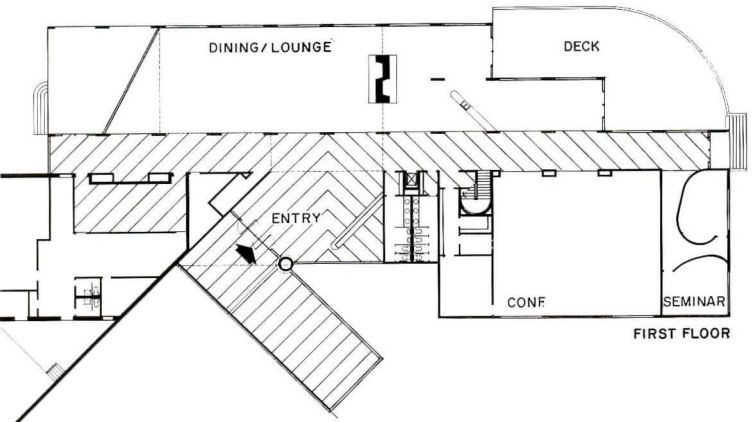


About 65 miles northwest of Houston, in one of the last pockets of wilderness in East Texas, the Episcopal Diocese of Texas recently acquired over 700 acres of virgin forest for a camp and conference center. Thorough analysis of environmental conditions revealed that much of the terrain is covered with fragile bank sand that would wash away if trees and undergrowth were removed. Architects Charles Tapley Associates consequently sited buildings in natural clearings and, wherever possible, raised foundations above the ground. The two main campsites are located within walking distance of a lake, bathhouse, and pool. Each camp is virtually a self-contained unit, comprising a ring of cabins and an assembly building, which houses a dining room, lavatories, and activity areas (overleaf). Structure is simple and inexpensive, in the tradition of Texas barns and sheds: wood frames, with cedar shingles inside and out, and galvanized metal roofs. The more elaborate amenities of the 16,000-square-foot conference center (above) ensure all-season viability for the camp as a retreat for parish groups and a forum for secular gatherings. Exposed wood trusses in the large conference room and dining/lounge area were modeled on the framing of French medieval halls and Pennsylvania barns. Upstairs are full-time administration offices, a guest suite for visiting dignitaries, and an apartment permanently reserved for the bishop. Long-range plans call for the construction of a director's residence and an octagonal chapel that would transpose the form of an Early Christian church into down-home Shingle Style vernacular.

CAMP ALLEN EPISCOPAL CAMPS AND CONFERENCE CENTER, Navasota, Texas. Owner: *Episcopal Diocese of Texas.* Architects: *Charles Tapley Associates, Inc.—Charles Tapley, partner-in-charge; Spencer Parsons, project manager; Gerald Moorhead, project architect.* Engineers: *Krahl & Gaddy* (structural), *Ralph Speich & Associates* (mechanical), *S&B Engineers* (civil). Environmental consultants: *Endeavor.* Contractors: *Jack Raus Inc.* (cabins), *Sentry Construction* (assembly buildings), *Brook Construction* (conference center).



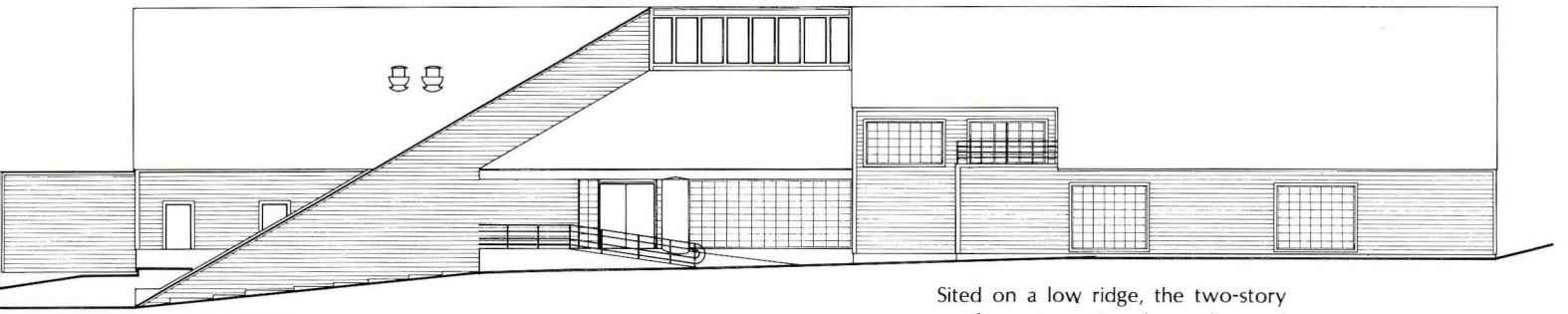
SECOND FLOOR



FIRST FLOOR

CONFERENCE CENTER

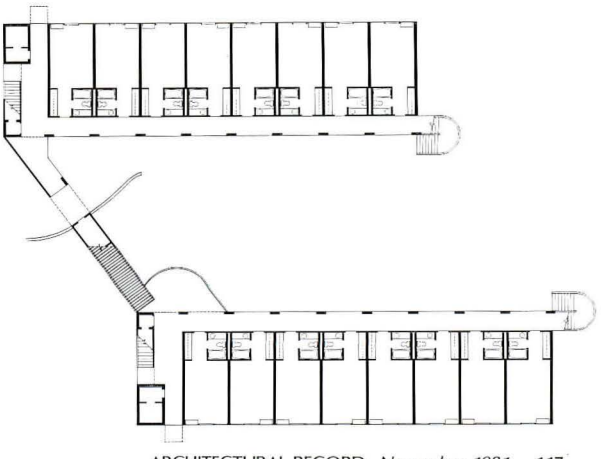
Richard Payne, AIA, photos except where noted

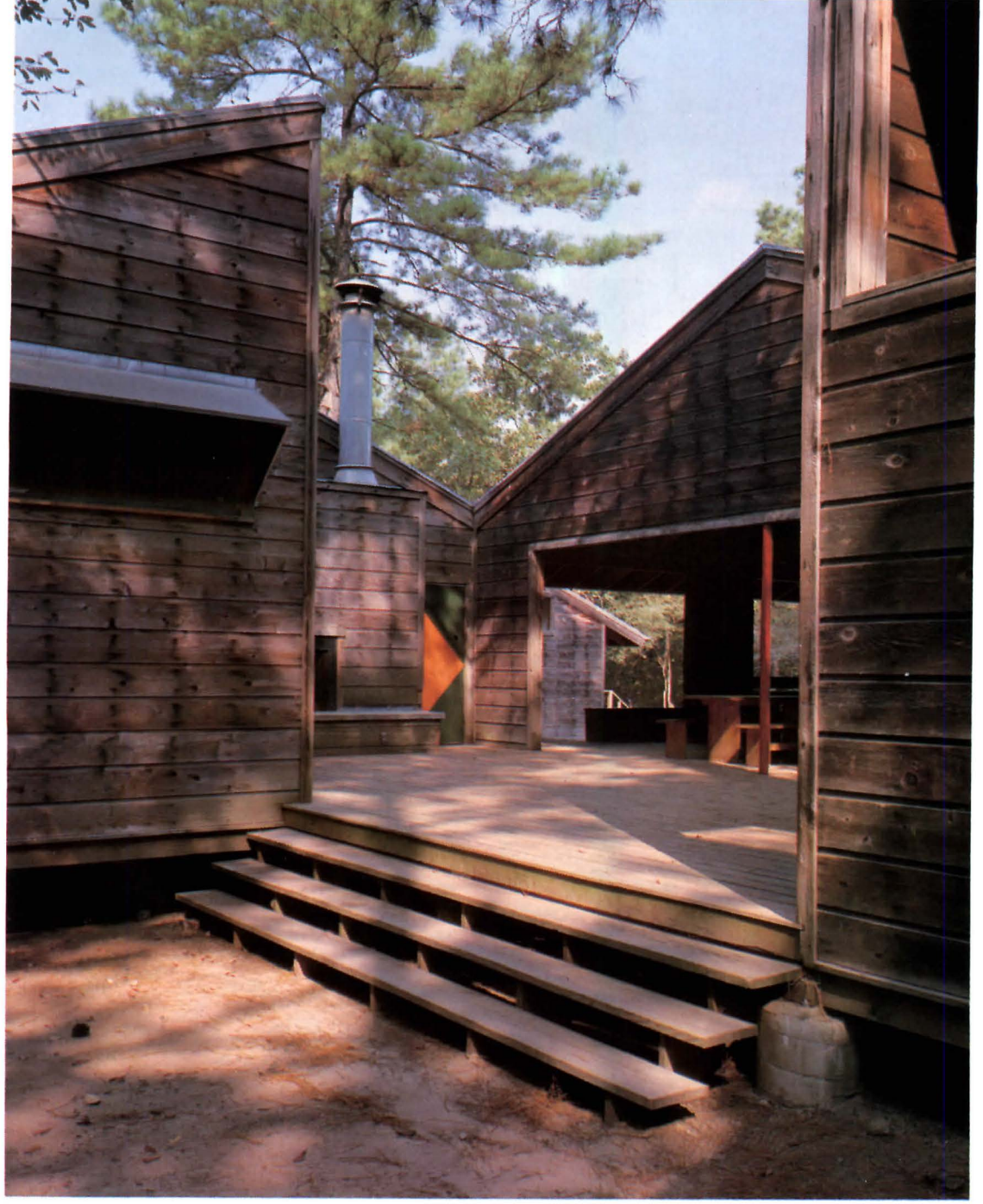


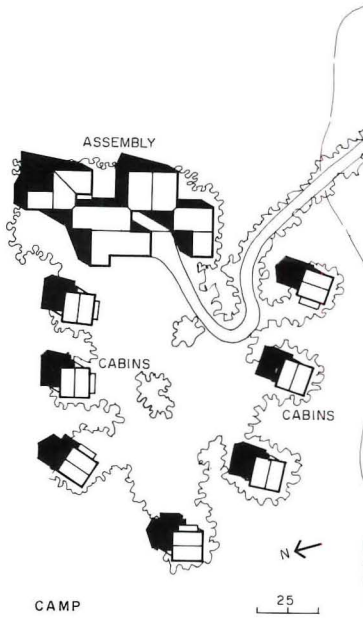
SOUTH ELEVATION

Gerald Moorhead

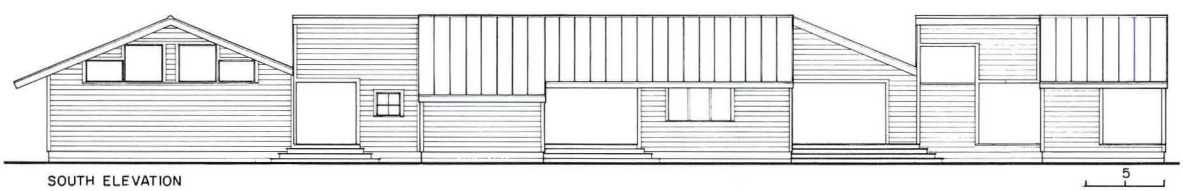
Sited on a low ridge, the two-story conference center (opposite and above) commands a panoramic view of distant hills. The building relies on exposed barnlike structure for its esthetic impact. Facilities range from a large dining hall and lounge (above right) to small meeting rooms for no more than 10 people. Cedar siding and trim were employed throughout; cabinetwork is lacquered oak. A 13,000-square-foot housing annex nearby (below left) accommodates up to 200 visitors.

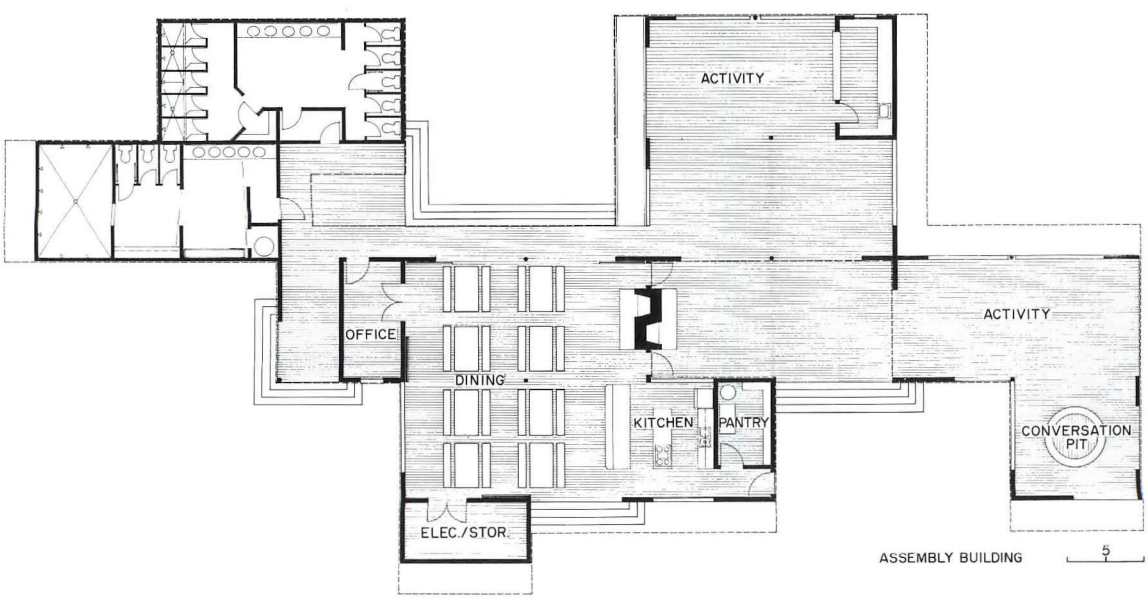


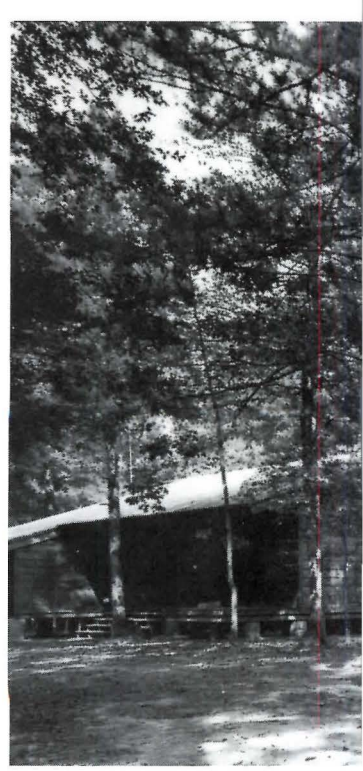


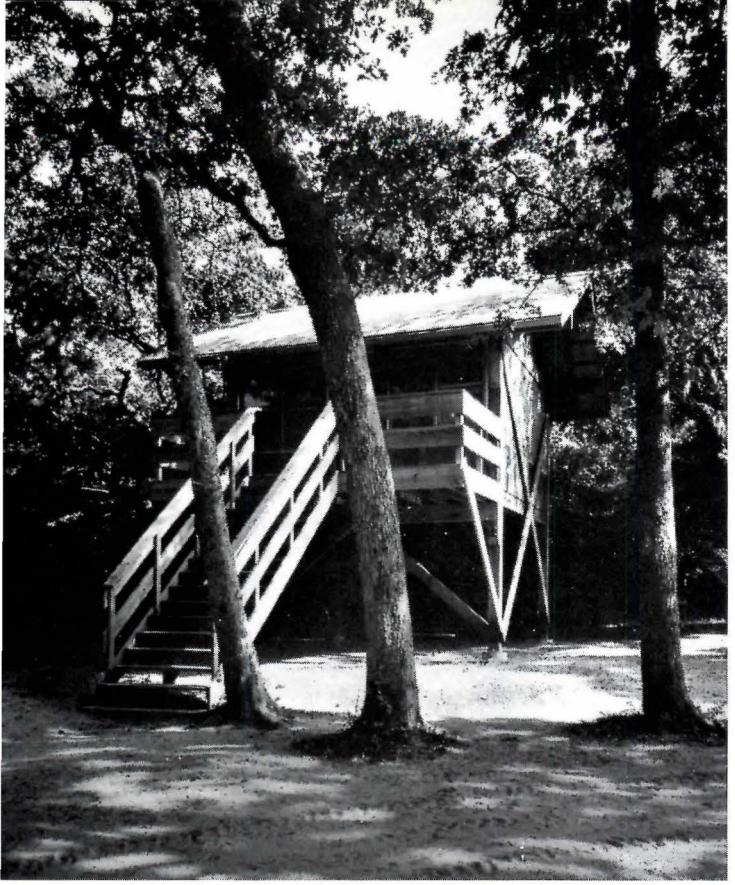


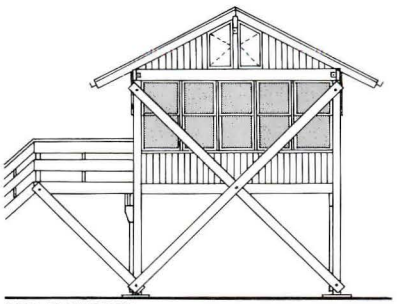
The two principal campsites are accessible only by jeep trails through the woods. Each compound consists of a horseshoe arrangement of cabins (plan above) oriented toward a 4,700-square-foot assembly building (left and below). In order to protect natural drainage systems, trees were cut selectively, exposing only a small area of the sandy forest floor. Except for lavatories, offices, and utility rooms, the assembly building interiors were left as open as possible for daylight, ventilation, and views. The conversation pit, a fashionable component of domestic design in the 1950s, has been revived as a simple way to encourage intimate gatherings without erecting partitions (opposite, lower right).



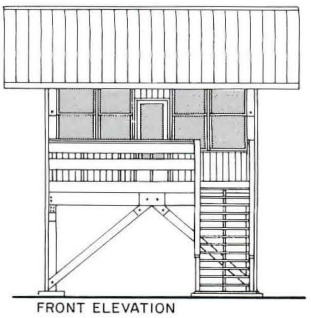






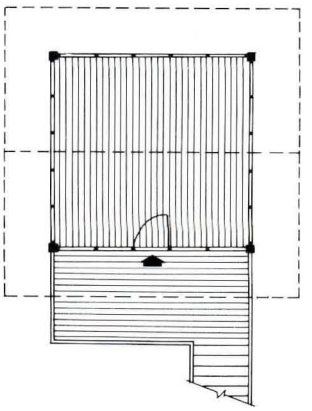


SIDE ELEVATION

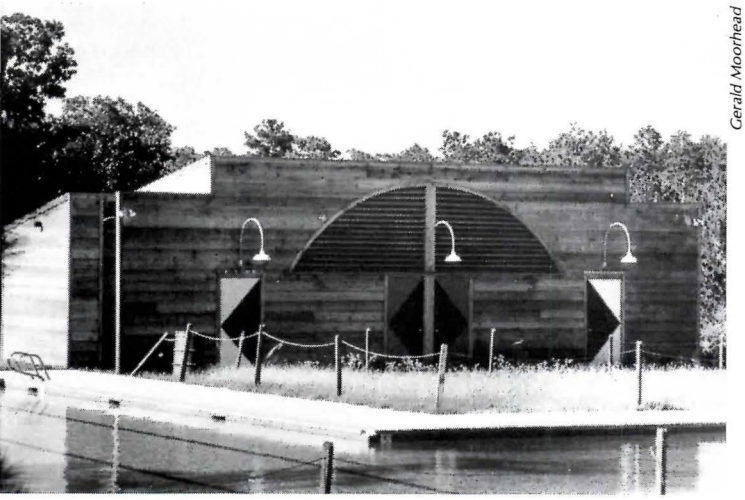


FRONT ELEVATION

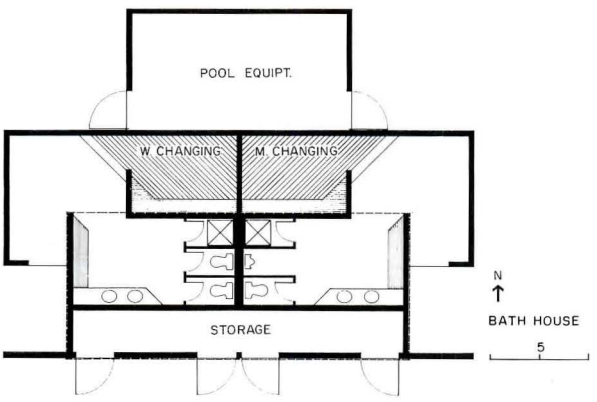
The cross-braced cedar-frame cabins are elevated on stilts to place them among the treetops and avoid extensive grading. Each hut sleeps as many as 16 campers, and the space under the raised platform is a dry play area in inclement weather. Winding trails lead to athletic fields, a lake, and a swimming pool. The bathhouse (below) provides poolside changing rooms. The architects specified unfinished wood surfaces everywhere for durability. "These aren't low maintenance buildings," says project architect Gerald Moorhead. "They're *no* maintenance."



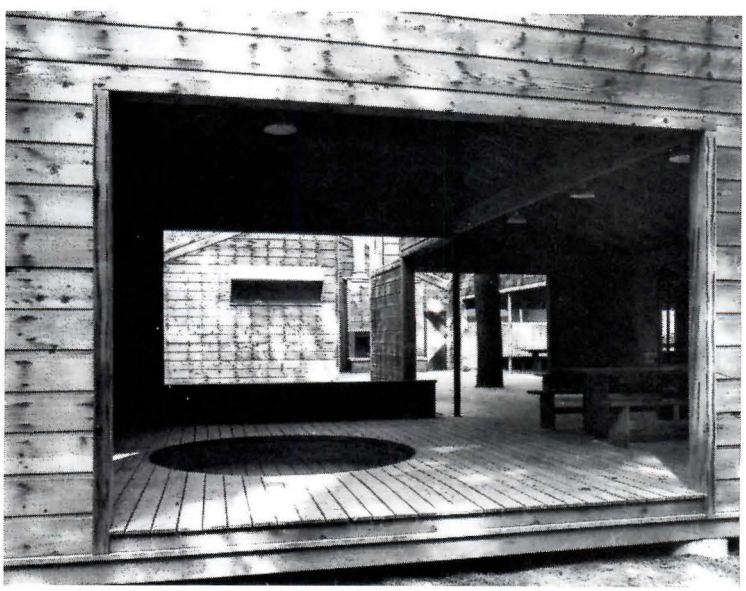
CABIN PLAN 3



Gerald Moorhead

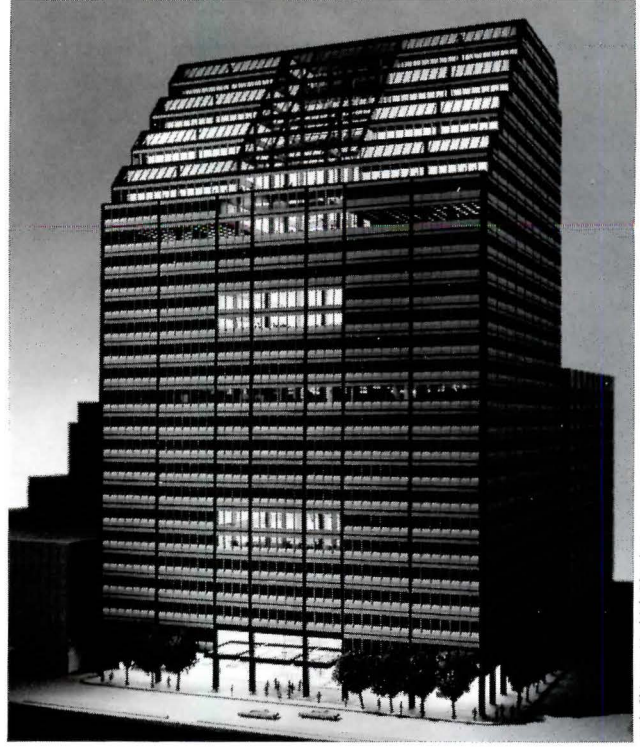


BATH HOUSE 5



OFFICE BLOCKS WITH STACKED ATRIUMS SAVE OWNERS CONSTRUCTION AND ENERGY COSTS

Designers know that opportunities for energy conservation are better for cube-shaped buildings. Engineers know that lower buildings with large-area floors save money on systems. Both cost and functional benefits resulted when SOM's Chicago office developed a system of carving out the interiors with multiple atriums that, in effect, make several buildings out of one.



Bob Shimer, Hedrich-Blessing

Howard N. Kaplan ©HNK Architectural Photography

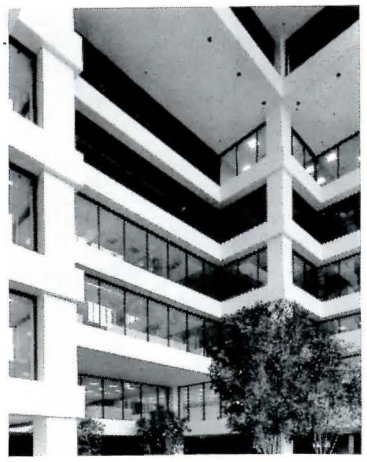
Bill Hedrich, Hedrich-Blessing

Top: 33 West Monroe, Chicago
Center: Pan-American Life Insurance Company, New Orleans
Bottom: Atrium One, Cincinnati.

High-rise office buildings are a lot more interesting to do these days, say their designers. No longer repetitive, cereal-box shapes, these buildings take on a variety of configurations to meet new market conditions and new tenant preferences. Aside from the inventiveness of architects designing high-rise buildings, the driving force behind the new look of the high-rise is economics. Responding to the new market imperatives in a fresh way in both the architecture and the engineering of the high-rise is the Chicago office of Skidmore, Owings & Merrill. Much of their new work is buildings in the 20- to 30-story range with large-area floors, typified by the three buildings shown in this article: 1) 33 West Monroe in Chicago, 2) Pan American Life Insurance Company in New Orleans, and 3) Atrium One in Cincinnati.

Because of the high cost of construction, land and money, developer-owners are putting up corporate-quality buildings for multi-tenant occupancies to attract higher-rental tenants. Since these buildings have to be economically sound in a speculative market, architects and their engineers must be more creative in keeping down construction costs so that money is available for features that give the buildings individuality, and for amenities that make them more pleasant.

SOM has achieved remarkable cost savings by applying its creativity to the systems that comprise 85 per cent of the cost of an office building—foundations, superstructure, mechanical and electrical, elevators, and exterior wall. Because structural, mechanical and elevator costs are higher in tall buildings, SOM, reversing earlier trends, cut costs by filling the site with large-area-floor-plan, shorter-height buildings. They have exchanged the classic 100-ft-wide high-rise for lower buildings with floors on the order of 180- by 210-ft, as in Chicago's 33 West Monroe. They have made these buildings not just acceptable, but highly



Atrium at the 12th-floor level in the Pan American Life Insurance building.

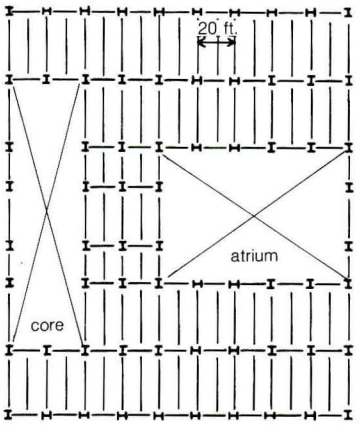
desirable, by providing them with stacked atriums so that both outside and inside offices have views. The atriums are, in fact, the design feature that attracts major tenants. SOM found, for example, in an earlier single-atrium building in Wichita, that many executives prefer the atrium view which has the activity of people rather than the changing scene of weather.

Though these atrium buildings cost less by being shorter, they are also bulkier. But the architects have lessened the visual effect of size by a series of setbacks in plan (which gives numerous corner offices); by horizontal stepping at the top (which provides skylighted areas or terraces); or, in the case of Atrium One, by cutting out a corner of the building.

In addition to their functional attributes, the atrium designs save energy and construction costs. First, energy costs are substantially less because there are no energy losses to the atriums as there are to the outdoors. Secondly, these buildings are more efficiently shaped from an energy standpoint, since they have a smaller surface/volume ratio than narrower buildings of the same floor area but twice the height. The atrium designs save construction money because curtain walls facing the atriums don't have to withstand wind, rain, and temperature differentials.

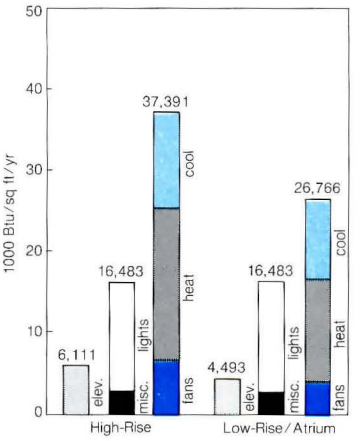
SOM's engineers achieved major cost reductions in structural costs by virtue of the lower, more-spread-out design. Foundations cost less because the weight is distributed over a larger area. For Chicago's 33 West Monroe building, 80 hard-pan foundation caissons were installed in clay strata in 17 days. (Hard pan allows about 30 floors of supported floor slabs.) In contrast, the foundation contractor would have needed about nine months to drill caissons into rock for a 50-story structure.

The shorter building height also let the engineers make even greater savings in the steel superstructure. They could use a simple framing system that saved money because all steel members could be less costly rolled sections. At 33 West Monroe, the 28-story structure receives much less wind load than a 50-story building of comparable floor area, so wind bracing could be much simpler. It was confined to moment-connected girders and columns at the exterior column lines—only simple shear connections were needed for interior framing. The floor system is composite steel beams and girders with a "blended" metal deck system (i.e., part with electrical cells, and part without).



Frame for 33 West Monroe is simple, requiring only standard rolled shapes.

The lesser loads on the structure let the engineers pare the steel poundage to just 14 lb of steel per sq ft of floor area. This contrasts with 22 lb per sq ft required for a 50-story building—half again as much. SOM calculates the cost savings on the structural frame at between $2½ and $3 million, and on the foundations at between $1 and $1½ million.



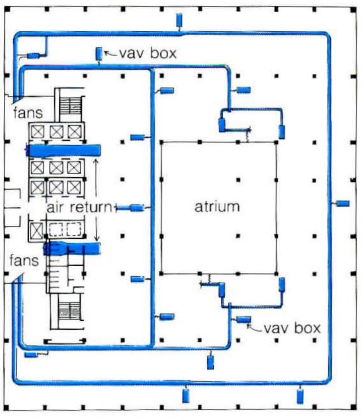
Substantial energy savings result from a cube shape (33 West Monroe).

When tall, large-area atriums are carved out of these 20- to 30-story buildings, the question arises, says SOM partner Fazlur Khan, as to whether it is desirable from a design standpoint to display a cage of columns and beams throughout the atrium, as was done in the lower atrium at 33 West Monroe. Such design, on the one hand, implies for the layman what the rest of the structure is like. Since there are no floors within the atrium, however, the only structural function of the beams is to brace the columns. But, Khan points out, columns need be braced only in two directions in the horizontal plane. So if the designer prefers, some beams can be eliminated, freeing the space visually, as long at the columns are tied back in two directions. By applying a little ingenuity, the architect can develop a large number of design possibilities for atrium volumes.

Since they are lower in height, atrium-type buildings also reduce elevator costs because each of the elevator zones into which the building is divided serves fewer floors than in a tall high-rise; so slower, less-costly (geared instead of gearless) elevators can be used. At 33 West Monroe, sky lobbies (elevator-passenger transfer points) are provided at the bottom levels of the two atriums on the 12th and 19th floors. Zone 1 serves from ground- and second-floor lobbies to the 12th floor. Zone 2 serves from the 12th to the 19th. Zone 3 serves from the 19th to 28th.

SOM mechanical engineers have further enhanced the rentability of atrium-type office buildings, as at 33 West Monroe, by providing each floor with individual cooling units. This means tenants can have cooling in their offices nights and week-ends without incurring exorbitant costs that owners must pass along for cooling from large central air-handling systems. These systems are controlled by the building owner who keeps the systems running at night or turns them on weekends when tenants request they be operated. Lighting systems, however, are metered separately for each tenant who can control his own use for energy savings.

The hvac system for each floor comprises two variable-air-volume supply-air fans with cool-

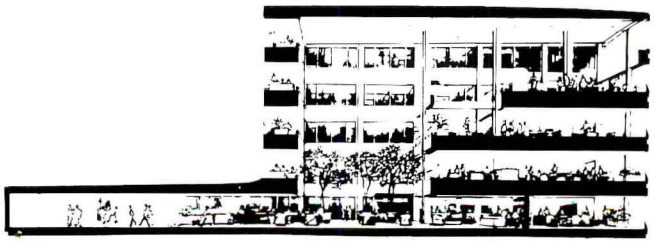


Individual-tenant air conditioning is possible with units on every floor.

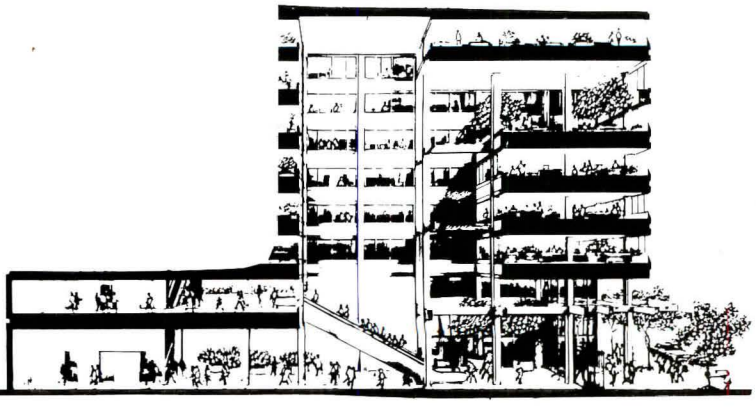
Robert E. Fischer photos

The north-facing top atrium, with its large area of sloped glazing, is flooded with light from the sky during daylight hours. The glazing system stops short of the exterior wall of the building to preclude snow or ice from dropping onto the sidewalk. Photo across page is of the topmost portion of the upper atrium.

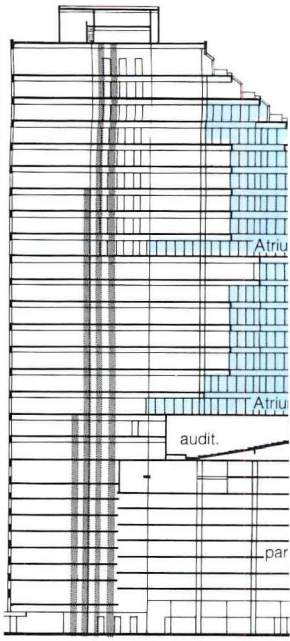
Though the building is multi-tenanted, Arthur Andersen & Company leased sufficient floors so that the middle atrium is their own—in a sense they have a building within a building. Offices facing the atrium are enclosed with glass, but library shelves and lounge areas have been placed on open balconies.

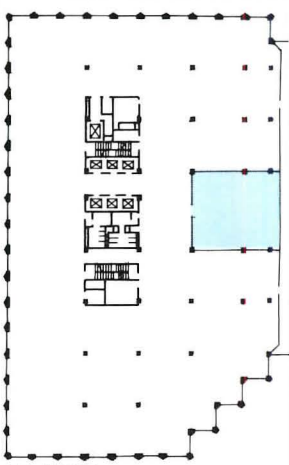


The building entrance opens into an eight-story atrium encircled mainly with closed offices, though there is a balcony area across the front at the top. Passengers for express elevators proceed straight ahead on the ground floor level, while passengers for the first zone of the building take escalators to the second floor for local elevators.

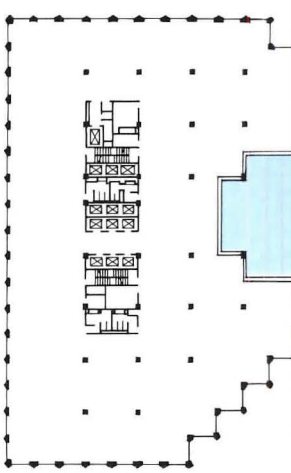


Sadin/Karant Photography, Inc.

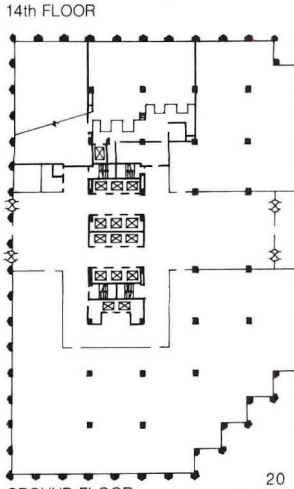




24th FLOOR



14th FLOOR



GROUND FLOOR

PLEATED FACADE WRAPS A CONCRETE TUBE

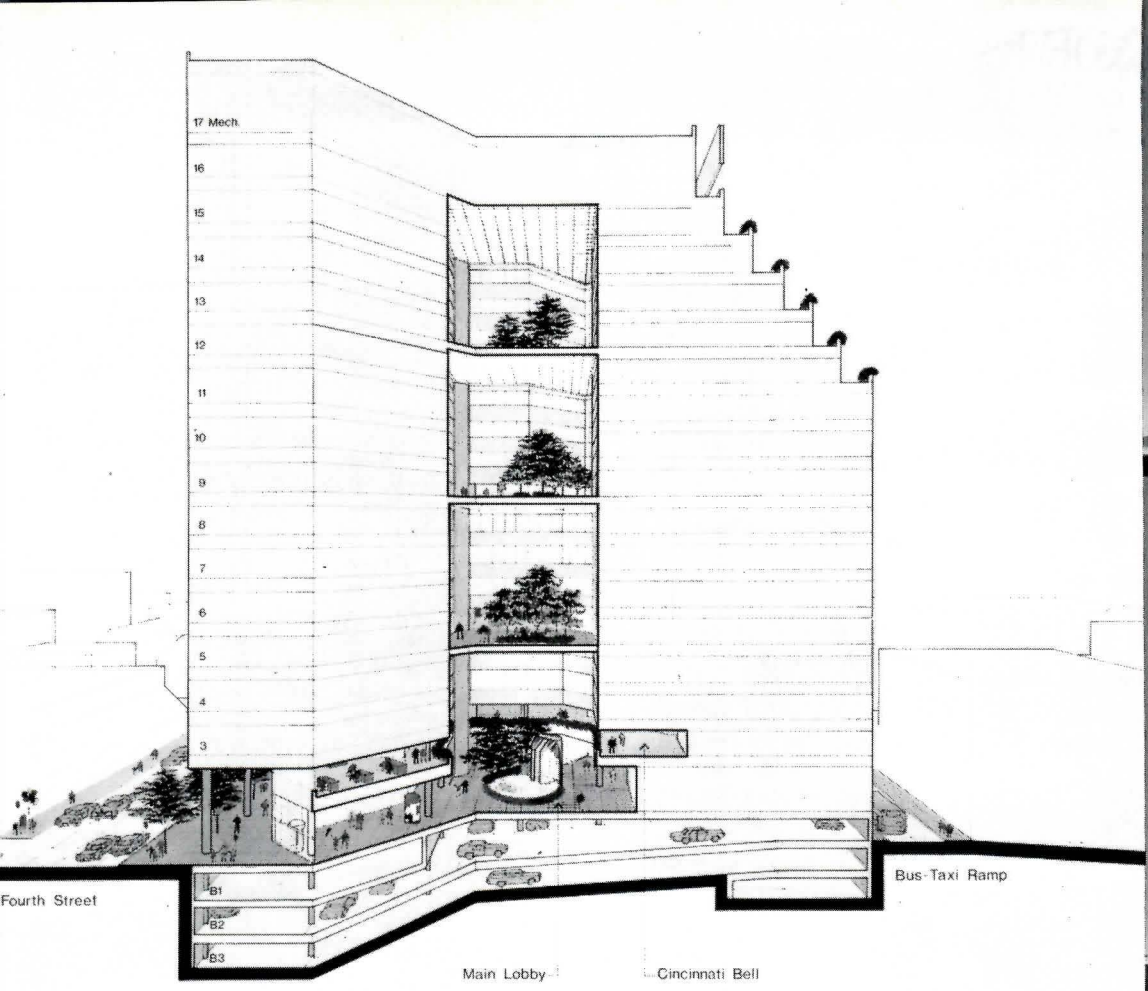
The 27-story Pan-American Life Insurance Company building in the heart of New Orleans's central business district occupies about two-thirds of a 113,000-sq-ft site, and provides up to 40,000 sq ft of usable area on each floor. The long axis of the building is 255 ft and the short axis is 190 ft. The building's first eight levels are used for parking. From the 12th floor upwards are two seven-story atriums, one directly above the other.

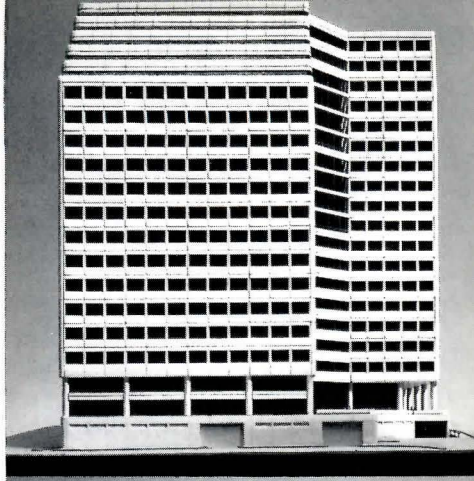
Because the atriums do not have to function as office space, the pedestrian levels will be kept at a constant temperature, but the upper levels will be unregulated.

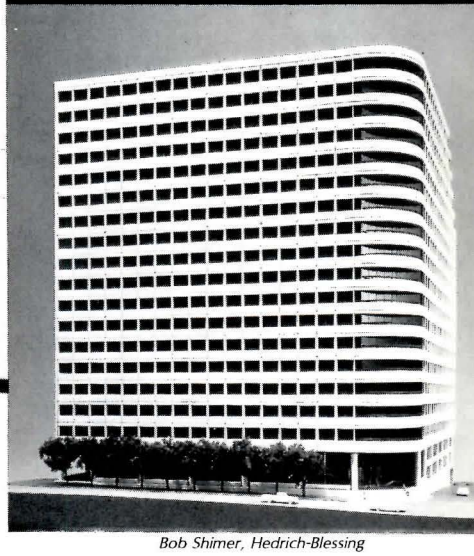
The frame of the building is a concrete "tube" formed by 58 columns around the building perimeter and by 48-in.-deep spandrel beams. This obviated the need for shear walls, and gave the designers latitude in laying out the interior column system. Column module for exterior bays is 30 by 45 ft and for interior bays, 30 by 30 ft. The floor system consists of post-tensioned concrete one-way slabs and two-way flat slabs. The south facade of the building has an asymmetrical series of setbacks, five on the west end and two on the east that give the building a special character and provide a number of "corner" offices.

The building has a computer-controlled building automation system that has energy management capabilities including equipment cycling, load shedding and lighting on-off control.

Howard N. Kaplan ©HNK Architectural Photography

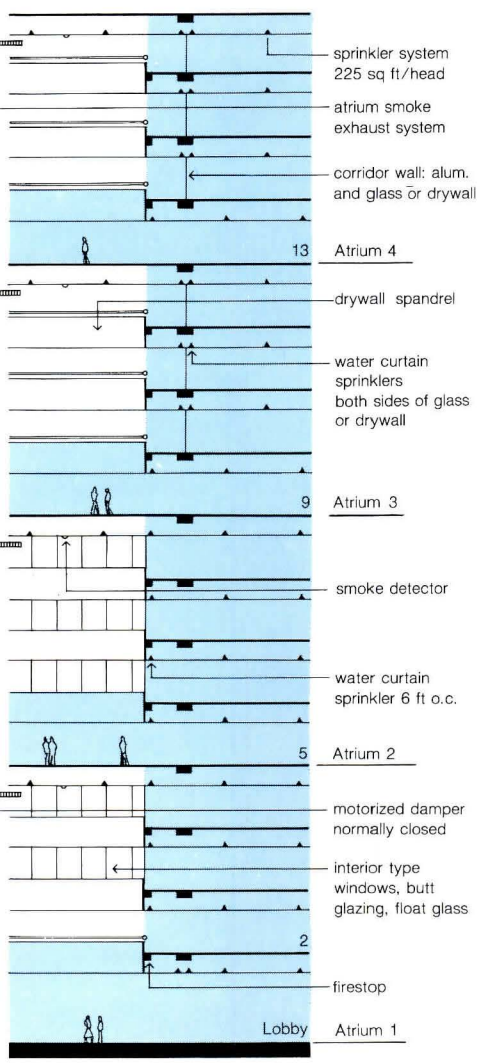






Bob Shimer, Hedrich-Blessing

FIRE-SAFE DESIGN FOR FOUR STACKED ATRIUMS



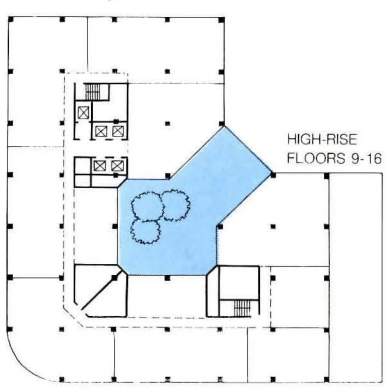
Atrium One is a 675,000-sq-ft, 17-story office building in downtown Cincinnati with four stacked atriums for which carefully studied fire-safety measures have been developed. By means of the methods described below, the atriums will be able to retain their open quality while safety of building occupants will be ensured through alternative designs, materials and systems that satisfy the intent of the building code.

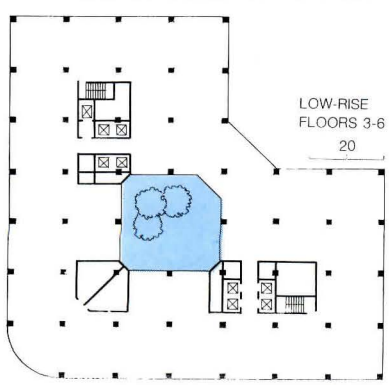
To ensure vertical fire separation between floors, a 5½-ft-deep spandrel consisting of drywall and an approved firestop between the spandrel and the edge of the floor will be constructed at each atrium floor level.

Atriums will be separated from adjoining office floors by one of the following three methods: 1) Where the lobby level, the atrium floor levels and any office floors open to the atrium, a water curtain comprising sprinklers on 6-ft centers will be provided at the edge of the atrium opening; 2) where the office areas are separated from the atrium by glazing at the atrium edge, glass and a water curtain will be provided on the office side of the glass; 3) where tenant partitions are set back from the edge of the atrium to create a balcony-type corridor, a water curtain will be provided on both sides of partitions separating the corridor from tenant spaces.

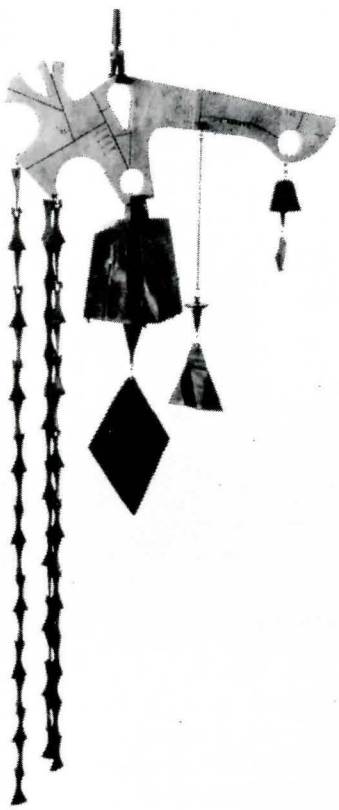
Glass used to separate the atrium and offices will be mounted in frames in such a way as to avoid breaking glass while permitting thermal movement of the frame during initial moments of a fire.

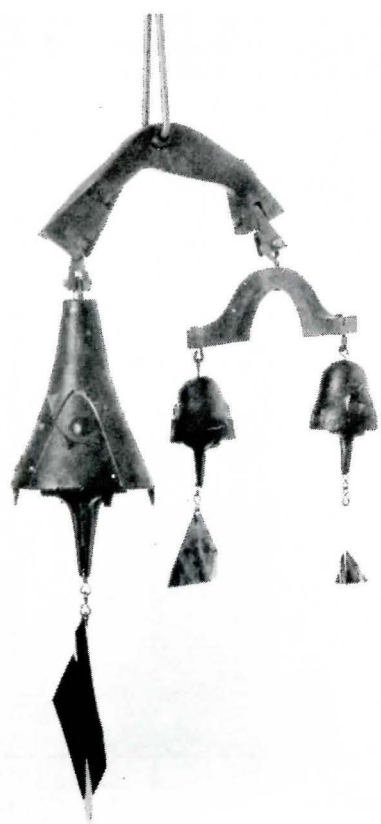
Smoke evacuation systems for the atriums will be activated by smoke detectors and will provide six air changes per hour for all spaces open to the atriums. The system consists of two separate air risers and fan units. The central air handling systems will provide 100 per cent fresh air make-up and 100 per cent exhaust upon receiving a signal from the fire alarm panel.





For more information, circle item numbers on Reader Service Inquiry Card, pages 193-194





Commission service set-up for Paolo Soleri-designed mobiles

Original designs for bells and mobiles by architect Paolo Soleri are now being offered through a special commission service, through which architects and designers can commission Soleri to produce hanging artwork for corporate and residential spaces. Suggested large-scale spaces include lobbies, reception areas and landscaped gardens. This service is available through ZONA, a new gallery and showroom in New York City established by Arcosanti and the Cosanti Foundation. These unique assemblies include sculptured bells with sections of aluminum and sand-cast bronze, accented with relief designs, hanging chain linkages, and varied-shaped clappers and fins. While Soleri continually designs new windbells, there are other stock pieces crafted at Arcosanti near Phoenix, which can be ordered by mail or at the New York City gallery. ▪ ZONA, New York City.

circle 300 on inquiry card

more products on page 137

Important Architecture Books from Rizzoli Publications

OLF LOOS
oduction by Aldo Rossi. Essay by Benedetto vagnuolo. The first book to present the nplete works of this "pioneer of modern ar- ecture." 224 pp. 150 illus., 48 color pages. .00. Available Dec. 1981.

TER MODERN ARCHITECTURE
olo Portoghesi. The renowned Italian ar- ect examines "Post-Modernism." 160 pp. illus., 30 in color. Paper: $17.50 Available c. 1981.

ICAGO ARCHITECTURAL JOURNAL
ed by Anders Nereim. An important new ual journal on architecture in Chicago and rnationally with essays by Alan Greenberg, nley Tigerman, Judith Wolin, and others. 80 93 b&w illus. Paper: $15.00

RNELL ARCHITECTURE JOURNAL
ed by Michael Markovitz. Auspicious new rnal with articles by Colin Rowe, Ungers on hinkel, and Mike Dennis. Paper: $17.50

NIEL LIBESKIND:
ween Zero and Infinity
iel Libeskind. A study of the art, theory and ic of architecture, challenging "post- dernist" trends. Author is head of Depart- nt of Architecture at Cranbrook Academy. pp. 200 illus., 30 in color. Paper: $19.95

SIGN BY CHOICE
yner Banham. A collection of fascinating and ely diversified essays representing the sem- thought of one of the foremost contempor- design historians during the last 20 years. pp. 150 illus., 8 color pages. $27.50

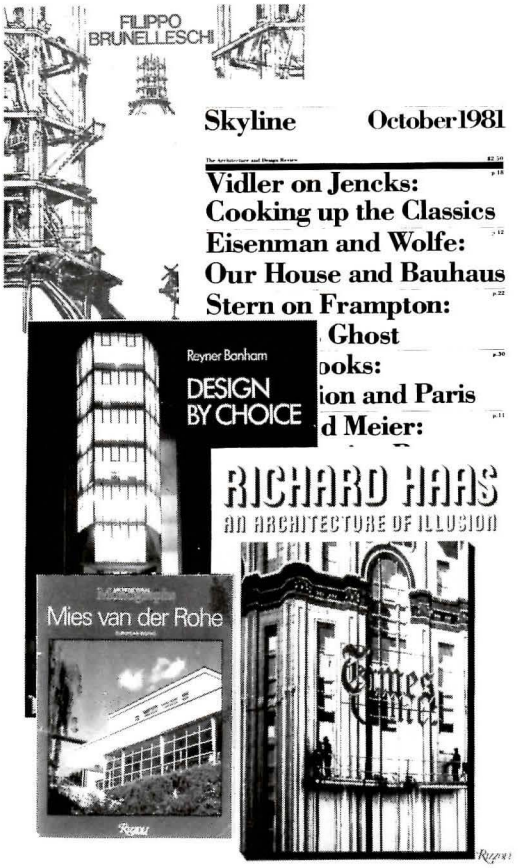
IPPO BRUNELLESCHI
enio Battisti. A massive and definitive study he creator of the architectural style of the naissance, written by one of Italy's best- wn art historians. 412 pp. 358 illus. $75.00

ASSHOUSES AND WINTERGARDENS OF E NINETEENTH CENTURY
fan Koppelkamm. A unique and superbly tographed book tracing the development of se exquisite architectural "follies." 112 pp. illus., 6 in color. $29.95

E HEROIC PERIOD OF MODERN CHITECTURE
on and Peter Smithson. Invaluable record of extraordinary period in architecture: just be- and after World War I. 90 pp. 294 illus., 24 olor. Paper: $12.50

USE X
er Eisenman. Introduction by Mario Gandel- as. The first complete documentation of one Eisenman's experimental houses. 176 pp. line drawings, 43 photos. Hardcover: .00. Paper: $19.95. Available Dec. 1981.

EA AS MODEL
hard Pommer and Christian Hubert. Twenty or architects who submitted models for the 6 Institute for Architecture and Urban Stud- exhibition now submit 1980 models for inclu- and comparison with the original material. pp. 150 illus., 12 in color. Paper: $17.50



LATE MODERN ARCHITECTURE
Charles Jencks. Jencks defines Late Modern architecture, analyzing major works and protagonists. 192 pp. 300 illus., 32 pages in color. Hardcover: $32.50. Paper: $22.50

LE CORBUSIER'S FIRMINY CHURCH
Essays by Anthony Eardley, et al. The first monograph on Le Corbusier's last project, including drawings, original handwritten notes, sketches and models. 120 pp. 150 illus., 20 in color. Paper: $17.50

LE CORBUSIER: Selected Drawings
Introduction by Michael Graves. The great architect's drawings of more than 20 of his major buildings. 176 pp., 150 illus. 16 color pages. Paper: $15.95

THE MAKING OF AN ARCHITECT 1881-1981
Edited by Richard Oliver. Essays by prominent architects celebrating the centennial of the Columbia School of Architecture. 224 pp. 175 illus., 24 in color. $30.00. Available Dec. 1981.

MICHAEL GRAVES 1966-1980
Introduction by Michael Graves. Edited by Karen Wheeler, Peter Arnell. Essay by Vincent Scully. Major monograph on the American architect of international reputation, winner of numerous awards. 304 pp. Over 600 illus., over 150 pages color. Paper: $25.00. March 1982.

MIES VAN DER ROHE
Sandra Honey, Adrian Gale, James Gowan. Documents the output of one of the greatest architects of our century. Each building fully illustrated, many new drawings and photographs. 112 pp. 200 illus., 8 pages color. Paper: $19.95

THE NECESSITY OF ARTIFICE
Joseph Rykwert. Currently Slade Professor of Fine Arts at Cambridge University, this eminent critic examines basic issues of modern architecture. 152 pp. Over 160 illus. $25.00

NEW CHICAGO ARCHITECTURE
Recent work of 15 renowned architects, with essays by Charles Jencks, Christian Norberg-Schulz, Nory Miller, Heinrich Klotz, John Zukowsky. 192 pp. 125 illus., 20 pages in color. Text in Italian and English. Paper: $14.95

RICHARD HAAS:
An Architecture of Illusion
Richard Haas. Introductory Appreciation by Paul Goldberger. A fascinating overview of how Haas transforms boring blank walls into marvelous *trompe l'oeil* murals. 160 pp. 180 illus., 40 in color. $35.00

ROBERT A.M. STERN 1965-1980:
Towards a Modern Architecture After Modernism.
Robert A.M. Stern. Edited by Peter Arnell. First comprehensive and copiously illustrated survey of this leading Post-Modern architect's work. 256 pp. 525 illus., 250 in color. Paper: $25.00. Available Dec. 1981.

SKYLINE
Edited by Suzanne Stephens. Monthly news magazine exploring architecture as a subject of general cultural interest. 32 pp. Many illus. Subscriptions $20 a year (10 issues). Single copy: $2.50.

URBAN OPEN SPACES
Edited by Lisa Taylor. Cooper Hewitt Museum's collection of more than 60 articles by urban planning experts. 128 pp. 330 black & white illus. Paper: $9.95

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LIGHTING ANALYSIS / A series of 13 data sheets analyze the lighting quality of various *Holophane* fluorescent interior luminaires. Technical information includes fixture illuminance based on type of module, lens, number of lamps, fixture spacing, etc. Results are summarized in footcandle values for ESI, classical illuminance, and visual comfort. ▪ Johns-Manville, Denver, Colo.

circle 400 on inquiry card

CERAMIC TILE / A 14-page color brochure shows unusual applications of ceramic tile on wood stove and fireplace hearths, kitchen and bath niches, seating areas and planter boxes. Detail drawings suggest installation guidelines for the applications shown. ▪ American Olean Tile Co., Lansdale, Pa.

circle 401 on inquiry card

WINDOW TREATMENT / A pocket-size selector provides samples of all *Flexalum* Verticals: aluminum, flat pvc, and *Flex-A-Vane* vanes. All colors and textures in each category are included. ▪ Hunter Douglas Window Products Division, Totowa, N.J.

circle 402 on inquiry card

INFRARED SYSTEMS / A catalog/specification guide features SECO infrared imaging systems for energy management, CCTV and security devices. Products include a direct-reading R/U value meter for checking the condition of insulation and seals in buildings, and a non-contact infrared thermometer. ▪ Standard Equipment Co., Milwaukee, Wisc.

circle 403 on inquiry card

AIR HANDLING UNIT / Product brochure explains how a new *Acousti-Temp* central station air handling unit, designed for both variable air volume and constant air volume systems, is 6 to 12 dB quieter than conventional air handlers. ▪ Tempmaster Corp., North Kansas City, Mo.

circle 404 on inquiry card

AC DRIVES / AC Adjustable frequency drives in ratings from 7½- through 100-hp are highlighted in a 12-page catalog. The drives, engineered for a variety of air conditioning and industrial applications, are compatible with any standard three-phase AC motor. Simple to operate, the drives offer a 94 per cent efficiency rating. ▪ Graham Co., Stowell Industries, Menomee Falls, Wisc.

circle 405 on inquiry card

METAL BUILDINGS / A color booklet, "Imagination in Construction" describes the design flexibility, energy efficiency, reduced operating expenses, speed of erection, ease of expansion and low initial costs claimed for metal building systems. The literature details Soule's engineering and construction services and worldwide capabilities. ▪ Soule Building Systems, Los Angeles, Calif.

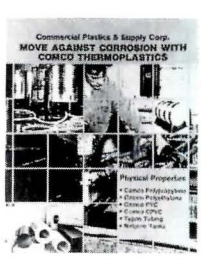
circle 406 on inquiry card

TAPERED STEEL FRAMES / Fifteen years of industry-sponsored research went into the preparation of "Design of Single Story Rigid Frames," a 267-page book that provides criteria for complete rigid frame design, including many special design conditions. ▪ Single copies are $15, from the Metal Building Mfgrs. Assn., 1230 Keith Bldg., Cleveland, Ohio, 44115

circle 407 on inquiry card

RADIUS CORNER TILE / Two "V-Series" tiles—vitreous unglazed pavers and glazed ceramic tiles—are introduced in two technical brochures. For indoor or outdoor commercial and residential floors, the tiles feature radius corners; standard size for both tile series is 6- by 6-in. ▪ Forms & Surfaces, Santa Barbara, Calif.

circle 408 on inquiry card



THERMOPLASTICS / A two-part selector guide provides complete physical property and chemical resistance data for four corrosion resistant thermoplastics. The plastic materials are available in standard industrial shapes, and as finished tank and tubing products. ▪ Commercial Plastics & Supply Corp., Cornwells Heights, Pa.

circle 409 on inquiry card

INDUSTRIAL MEZZANINES Custom storage or product mezzanines can double ava ble space at one-third the c of add-on construction, acc ing to a 12-page brochure fr Rite-Hite. Four case histories detailed, with space and do savings indicated. Steps in m zanine installation, from e mates to erection, are plained. ▪ Rite-Hite Corp., waukee, Wisc.

circle 410 on inquiry

MUNICIPAL BUILDINGS / engineered buildings desig for municipal use are shown color brochure. Integrated c ponents include UL-rated C 90 wide uplift metal roof tems with double-locked sta ing seams, fascia and wall pa options. ▪ Butler Mfg. Co., K sas City, Mo.

circle 411 on inquiry

SCISSORS LIFTS / In-plant draulic scissors lifts—from 2,000-lb capacity "Space Sav to giant "Super Titans" wh can lift 150,000 lbs—are sho in an Autoquip catalog. Appl tion photos illustrate each lif use in a variety of indus functions. ▪ Autoquip Co Guthrie, Okla.

circle 412 on inquiry

FURNITURE / A 40-page s plementary catalog include complete presentation of new pieces in the "Chal-A collection of 17th- and 18 century French-style furnit Additions to the existing line also shown in the black white brochure. A price lis attached. ▪ IPF International, terson, N.J.

circle 413 on inquiry

PLASTIC PIPING / Advanta of plumbing pipe made fr *Duraflex* polybutylene resins hot- and cold-water systems discussed in a color brochure technical section describes p identification and stora freeze-thaw resistance, w hammer, pipe support, benc radius and connections. ▪ S Chemical Co. Houston, Texa

circle 414 on inquiry

HIGH MAST LIGHTING / A *Holophane* fact sheet offers information on weight, height, shaft size, and other data on round, tapered 30- through 60-ft steel poles for use with "High Mast System 1100" series luminaires. A performance chart outlines the wind velocity that each pole supporting a given number of luminaires can sustain. Diagrams show mounting details. ▪ Johns-Manville, Denver, Colo.

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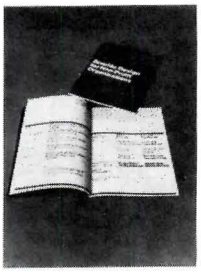
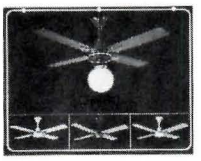


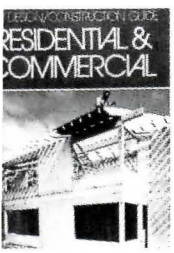
GRAPHICS MANUAL / "Graphic Design for Non-Profit Organizations" is a manual developed by Massimo Vignelli and Peter Laundy to help institutions improve the efficiency and economy of their communications. It explains the use of design elements, such as grids and typefaces, and defines production terms and methodology. ▪ The American Institute of Graphic Arts, New York City.

circle 420 on inquiry card



CEILING FANS / A four-color product bulletin introduces a new decorator line of ceiling fans. The bulletin describes how the Chateau line of *Decorafans* brings energy savings to stores, restaurants, offices and public buildings. A description of their 3-year warranty is included. ▪ Envirofan Systems Inc., Buffalo, N.Y.

circle 425 on inquiry card

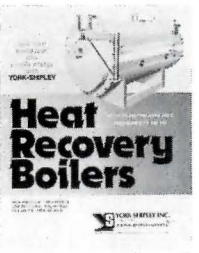


PLYWOOD GUIDE / A comprehensive, 60-page publication, "APA Design/Construction Guide: Residential & Commercial" includes information about new performance-rated panels, as well as design and installation data for major construction systems—floors, walls and roofs. Finishing suggestions are given. ▪ American Plywood Assn., Tacoma, Wash.

circle 416 on inquiry card

THIRTEEN STOOLS / This 2-page catalog sheet from InterRoyal Corp, depicts the *Uni-Stool* collection of 13 stools. New enamel colors, chrome and bright fabrics are now available for both residential and contract use. ▪ InterRoyal Corp., New York City.

circle 421 on inquiry card

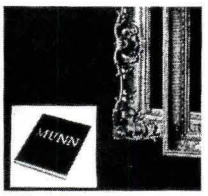


HEAT-RECOVERY BOILERS / An 8-page bulletin gives technical specifications for heat-recovery boilers producing up to 34,500 pounds of steam per hour at pressures up to 250 psi. These boilers are designed to produce either steam or hot water from hot waste gases. ▪ York-Shipley, Inc., York, Pa.

circle 426 on inquiry card

FIRE SAFETY / Product bulletin features fire prevention equipment designed to help laboratories meet OSHA fire safety requirements. Items include standard and under-counter cabinets and a refrigerator for the safe storage of combustibles, safety cans for use with flammable liquids, smoke detectors, fire blanket and all types of extinguishers. ▪ Fisher Scientific Co., Pittsburgh, Pa.

circle 417 on inquiry card

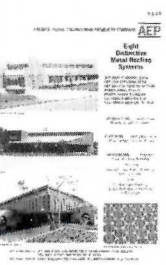


PICTURE FRAME CATALOG / A 100-page book-bound catalog contains reproductions of over 500 frames and moldings representing a complete range of styles from early antique to contemporary. It is intended to serve as a reference guide to frame styles currently available. Cost is $25. ▪ Abe Munn Picture Frames, New York City.

circle 422 on inquiry card

TELEPHONE HANDBOOK / This 120-page book is intended as a guideline for maximizing communications efficiency through the design of service entrances, equipment rooms, power and lighting service, riser systems, telephone installations, etc. Cost is $15 plus tax and handling. ▪ GTE Automatic Electric Inc., Northlake, Ill.

circle 427 on inquiry card

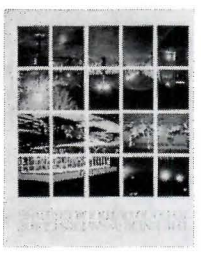


METAL ROOFING / Eight roofing systems are shown in a color catalog. New products include AEP's "Structural Batten System," a 22-gauge metal roofing system with 1½- by 2-in.-high battens located 18 in. on center, and Integrated Solar Roofing, which combines solar collectors with batten systems. ▪ Architectural Engineering Products Co., San Diego, Calif.

circle 418 on inquiry card

AIR SYSTEMS / A 6-page color bulletin describes Kathabar *Twin-Cel* air-to-air energy recovery systems for air-conditioning and ventilating systems. Information covers operating specifications, performance ratings, typical recovered energy examples and space conditions under many climatic conditions. ▪ Midland Ross Corp., New Brunswick, N.J.

circle 423 on inquiry card

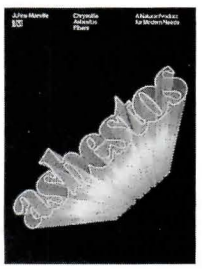


OUTDOOR LIGHTING / A new 24-page color handbook, called "The Energy-Saver's Guide To Good Outdoor Lighting," it includes data on the amount of energy consumed by outdoor lighting on a nationwide basis, and a glossary of terms. ▪ Available at $3 from the National Lighting Bureau, 2101 L Street N.W., Suite 300, Washington, D.C. 20037.

circle 428 on inquiry card

LIGHT TRANSMITTING / Color brochures describe Kalwall insulated, light transmitting wall and roof systems, consisting of a structural aluminum grid bonded to two fiberglass reinforced face sheets. Roofing and curtain wall catalogs provide design details, application photos and test data. ▪ Kalwall Corp., Manchester, N.H.

circle 419 on inquiry card



ASBESTOS BROCHURE / Details on asbestos—ranging from composition and properties to mining, milling and applications—are provided in a new 20-page brochure from Johns-Manville. Data on the mineral are arranged in seven sections. Among the areas covered are origin, properties, location, mining and milling. ▪ Johns-Manville, Denver.

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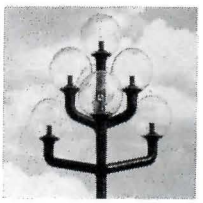

MODULAR LIGHTING / A 50-page color catalog illustrates the potential of this company's Modular Outdoor Lighting System. This publication covers design, assembly, configurations and sizes of globes and poles. Also included is a table of photometric data values. ▪ Staff Lighting, Highland, N.Y.

circle 429 on inquiry card

Kimball XO Chair
wood and stainless steel combined into a sculpture...frozen in space

Designer Leif Blodee

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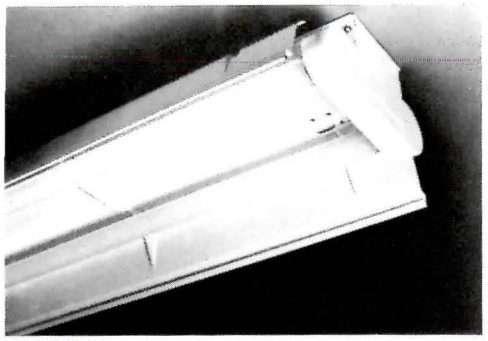


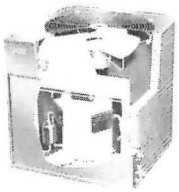
TURRET FIXTURES / From Keene Lighting, *Industri-aline/SFT* fluorescent turret industrial fixtures have an open-reflector design with 12 per cent up-light for optimum visibility and eye comfort. A rigid, ribbed reflector provides structural strength for use in factories, warehouses and other industrial locations. ▪ Keene Corp., Lighting Div., Wilmington, Mass.

circle 301 on inquiry card

TILE TRIM / The *Lavdek* trim line comes in both "Classic Series" and contemporary "Ceramic à la mode" color patterns, in sizes for either 18-in.-round or 19-in.-oval basins. The trim package gives bathroom counters a clean, custom look without time-consuming tile cutting. ▪ Huntington/Pacific Ceramics, Inc., Corona, Calif.

circle 302 on inquiry card

TWO-SPEED CONDENSER / Said to be the most highly efficient residential condensing unit rated in the A.R.I. directory, the "HS14" *Landmark IV* achieves a Seasonal Energy Efficiency Ratio of up to 14.0. The two-speed unit is available in 3-, 4- and 5-ton capacities for residential, apartment or light commercial applications. Up, down and horizontal air flow, and a range of cooling capacities can be obtained by matching the "HS14" with one of several Lennox evaporator units. ▪ Lennox Industries, Inc., Dallas, Texas.



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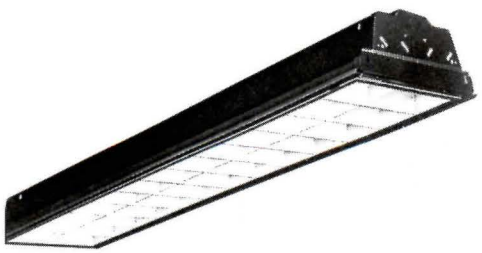
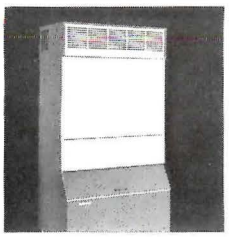


RECESSED TROFFER / Three sizes of *Parabaffle* recessed parabolic aluminum louvered lighting troffers are available with a very shallow, 4¾-in. trough. The line consists of static air handling and heat-removal designs in 1- by 4-, 2- by 4-, and 2- by 2-ft sizes. ▪ Keene Corp., Union, N.J.

circle 304 on inquiry card

ICE MACHINE / The "CH-CH8" commercial ice machine produces up to 835 lb of hard, clear cube ice every 24 hours. Cabinets are galvanized steel insulated with foamed-in-place urethane; finish options include beige baked acrylic enamel or stainless steel. The commercial ice line also includes a selection of air- and water-cooled products, including self-contained cubers, cuber heads, automatic ice dispensers and storage bins. ▪ Whirlpool Corp., Benton Harbor, Mich.



circle 305 on inquiry card

LIFE SAFETY/SECURITY / The self-contained *CentraScan 1* system is said to be the simplest and least-expensive model in this maker's computer-based life safety and security monitoring line. The compact unit features a sequential display format CRT which tells the security operator the status of a series of continually monitored points. The keyboard has individual function keys which simplify operator response. ▪ ADT, New York City.

circle 306 on inquiry card

more products on page 139

Mutschler cabinetry. For clients who insist the best things in life are a necessity.

Mutschler has the thoroughly proven ability to meet an architect's most imaginative design requirements. In fact, over half of all Mutschler cabinetry is custom designed specifically to an architect's specifications. Mutschler's carefully crafted and engineered cabinetry can meet any room's requirements.

For 88 years, Mutschler has anticipated storage needs — and then met those needs with imaginative solutions. Because what cabinets accomplish counts as much as appearance. Today, Mutschler storage features — many of them exclusive — represent cabinetry's highest standards in usefulness and practicality.

The people who make Mutschler cabinetry in the small town of Nappanee, Indiana, have steadfastly held out against the assembly line philosophy. Craftsmen who care, the best materials, design ingenuity — these are Mutschler's secrets.

For detailed information about the versatility of Mutschler cabinetry and our special Architect Direct Sales program, please contact:

Ron Ringenberg
Mutschler
302 S. Madison St.
Nappanee, Indiana 46550
219/773-3111

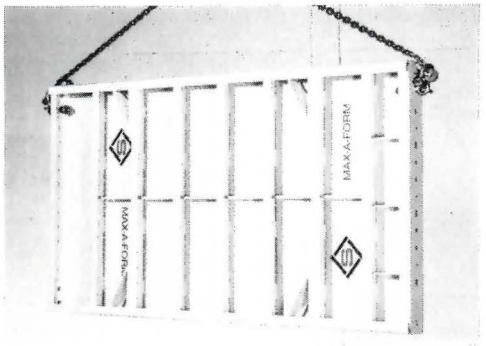
Mutschler's new Spectra design in a kitchen by Charles Mount.

Mutschler

In cabinetry it's Mutschler, and it always will be.

Mutschler Cabinetry and Bruce Hardwood Floors are Triangle Pacific companies.

Circle 43 on inquiry card



GIRDER FORM / A new design in the *Max-A-Form* plate girder concrete forming product line offers greater strength, efficiency and flexibility for side by side, face to face use with other systems. The new 1,500 psf form reduces the need for job-built connections in forming pilasters, core forms, radii, odd dimensions and angles. Design changes include a repositioned tie-hole; a Z-stiffener to provide more support to the skin; and more holes/slots in end and side members to facilitate connection of accessories. ▪ Symons Corp., Des Plaines, Ill.

circle 307 on inquiry card

INTERIOR SIGNAGE / This company's Directory system provides for quick and easy in-house name-strip changes. The white Helvetica lettering comes on a transfer type sheet, and is positioned on individual name strips using a lettering guide supplied with the Directory. Signs are available in dark bronze, black and natural anodizing; 24¼-in.-high units can be joined to accommodate any number of tenants. ▪ I.D. Graphics Inc., Seattle.

circle 308 on inquiry card

FIRE RETARDANT SEAL / "Fire Barrier Caulk CP 25" is an intumescent one-part material which expands when heated to seal cable and mechanical floor and wall penetrations to block the spread of smoke, flames and toxic gas. Applied with a standard caulking gun, "CP 25" will bond to concrete, metals, wood, plastic and cable jackets. A "Fire Barrier Putty" is also available in one-qt one-gal. and five-gal. cans. Like the caulk, it cures to a firm, rubbery solid. ▪ 3M, St. Paul, Minn.

circle 309 on inquiry card

KITCHEN SINK / The "Capacity Plus" stainless steel residential sink is now offered in two versions: with the small disposer compartment on either the left or to the right of the large basin as shown. This option provides greater flexibility in sink/dishwasher placement. ▪ Elkay Mfg. Co., Oak Brook, Ill.

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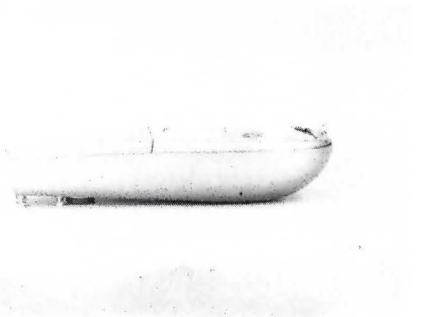
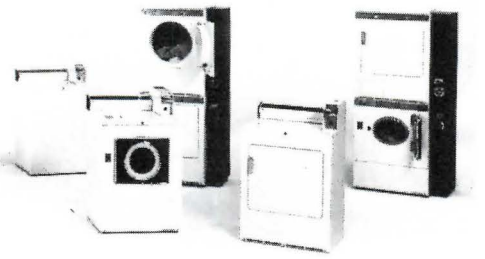


ROADWAY FIXTURE / A low profile fixture with improved lighting efficiency and reduced over-all silhouette, the "LP-15" has a die cast aluminum housing, door-mounted ballast, and a spring-loaded, floating reflector. High-pressure sodium or mercury lamps may be used in the "LP-15." ▪ Westinghouse Electric Corp., Pittsburgh.

circle 310 on inquiry card



COIN-OP WASHERS / The *Laundromat* "Profit Pair" stacks a front-loading dryer on top of a front-loading washer, providing a complete coin-operated laundry system in less than 6 sq ft. Front-loading washers require less water; installed side-by-side, the units can be conveniently operated by wheelchair-restricted persons. ▪ White-Westinghouse Appliance Co., Pittsburgh.

circle 311 on inquiry card

more products on page 145

VICRTEX®

presents

"SANIBEL"

a new, vinyl wallcovering inspired by sand and sea

A subtly sculptured design in a large range of natural colors, with superior resistance to soiling, staining, tearing and scuffing . . .
a 5-year guarantee against mildew . . . a Class A Fire-safety rating.
Swatches of Sanibel's 20 colors available.

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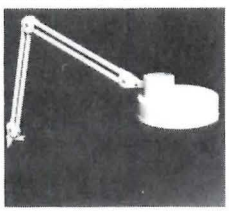
Minneapolis, Toronto, Montreal. HOWELLS, INC., Salt Lake City / PAUL RASMUSSEN, INC., Honolulu

Circle 45 on inquiry card

GRAPHICS STORAGE / The *UnitSystem* file is a series of 5-drawer and 10-drawer flat files, and 2-drawer and 3-drawer vertical files which interlock with each other to meet a number of filing requirements. A tracking lifter device in the 10-drawer flat file allows the user to remove the weight of all the sheets above the sheet which has to be removed or replaced. ▪ American Hamilton, Two Rivers, Wisc.

circle 312 on inquiry card

SPECIAL TASK LAMP / Designed to relieve the visual and muscular complaints of VDT operators, the "Asymmetric" reflector throws the light down obliquely while the shade remains in a horizontal position, out of the way. The shade reflector may be turned 360 degrees on its own vertical axis, directing the beam as required. A 40- or 60-W bulb supplies sufficient illumination and visual comfort. ▪ Luxo Lamp Corp., Port Chester, N.Y.



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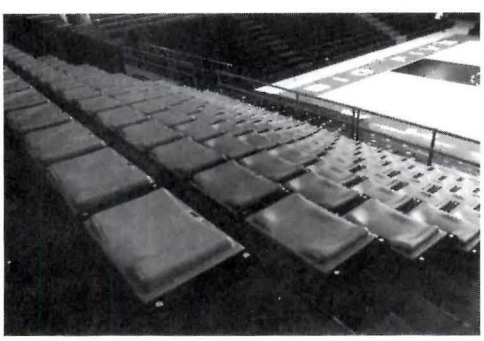

STADIUM SEATING / Competitively-priced polyethylene and aluminum seating units eliminate spectator crowding at sporting events. The seats feature a mounting system that enables them to be adapted to virtually any existing surface and stadium configuration. A two-degree slope to the back prevents the seat from collecting water. ▪ Sport Seating Co., Inc., Emmaus, Pa.

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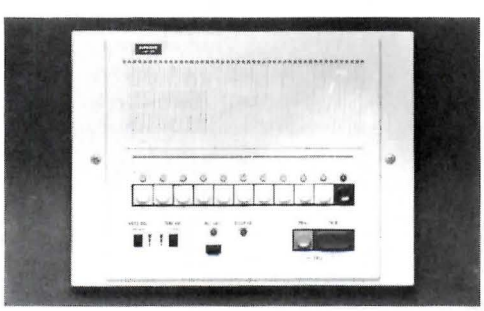


INTERCOM SYSTEM / The Aiphone LAF-10B intercom is an 11-station all-master system for homes and small offices. The flush wall-mounted units provide hands-free reply, as well as background or home stereo music. Separate speakers and ECM microphones in each master unit ensure superior voice and music fidelity. Other features include a privacy button to prevent monitoring; separate volume controls for communication, call tones, and background music; and an "in use" light indicator. ▪ Aiphone, Seattle.

circle 315 on inquiry card

more products on page 147

If there were a better way to build an industrial door, we would be doing it.

Twenty years of constant research and development have resulted in the final process to produce the strongest, most durable, lightweight industrial door on the market today.

In striving for the perfect door, the process which evolved just happened to also produce a thermally efficient door. Logically, a polyurethane core, besides adding lightweight strength, is also an excellent insulator.

But, while simply placing foam between metal sheets may produce an "insulated" door, it does not produce a door which utilizes the other qualities of polyurethane. Only THERMACORE's™ unique lamination process takes full advantage of the combined qualities of Galvalume and polyurethane.

THE PROCESS IS THE KEY.

The THERMACORE™ process begins with two sheets of embossed Galvalume steel which are fed through deadening dyes to completely flatten them before roll forming. The roll forming produces the skins of THERMACORE™ doors. During this phase, two one-inch-wide steel reinforcement strips are incorporated onto the inside skin using a hot melt process. These metal strips serve as the bases for hardware attachments.

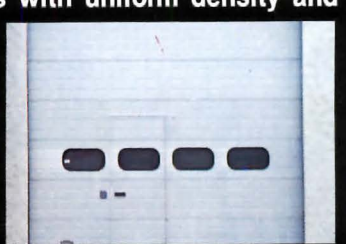
From the roll former, the steel moves into a temperature-controlled oven set between 104° and 108°F. Two heat sensors provide a continuous temperature readout in the control room. As the inside skin rolls through, a chemical spreader applies the polyurethane foam. This phase, as is the entire process, is monitored by television cameras to ensure even application with no air pockets and to check for any dirt or excess lubricants left from the roll former which would prevent uniform adhesion between foam and metal.

Strict quality control is an integral part of THERMACORE's™ process. Since the foam expands and becomes adhesive for only a matter of seconds, it must be in contact with the metal at this critical time before it hardens. Before each run of the line, the foam is mixed and lab-tested right in our own plant to ensure a density of 3.24 lb/ft².

After the foam is applied, the inner and outer skins enter a 90'-long double band conveyor. This phase is set at a constant 104°F so that the foam expands to a uniform density between the metal skins. Four heat sensors measure the temperature of the conveyor plates during this critical phase. If the thermostat rises above 104°F, air conditioning units immediately bring the temperature back to the correct level.

THERMACORE's™ unique process can be monitored by one man at the control panel while six inspectors also perform manual checks along the production line. The production is run by computer, programmed for each individual customer order.

This process has been shown to be the only method to produce door panels with uniform density and adhesion. Every panel can be visually checked to determine quality without destroying the metal sheathing. That's why we're so proud of our door and the process which produces it!



THE DOOR OF THE FUTURE IS NOW!

THERMACORE™

Manufactured by Insoport Industries, Inc. For more information, call our toll-free number: 1-800-233-8992.

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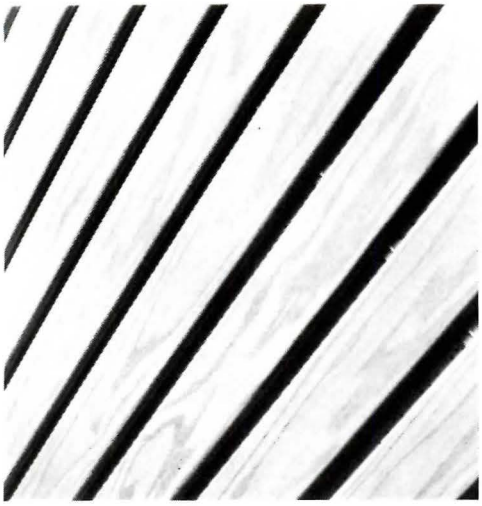

ALUMINUM CEILING PANELS / Wood grain vinyls have been laminated to roll-formed "84R" and box "4/6/8" aluminum ceiling panels, creating a linear wood-look for office ceilings. Panels can be installed on *Hunter Douglas'* renovation ceiling system carrier, or on the universal "Luxalon" carrier for new construction. Ceiling panels are available in oak, as shown, or in two shades of walnut. ▪ Hunter Douglas Inc., Roxboro, N.C.

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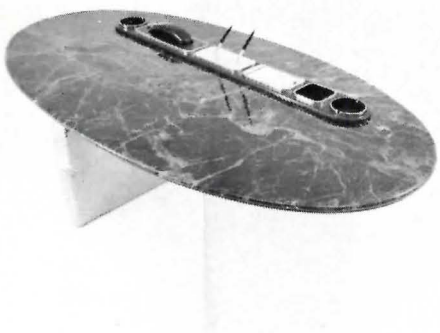


EXECUTIVE DESKS / Two desks by Bert England, an oval of verdi green marble or a parabolic shape of rosatica brown marble, feature telephone and clock with a band of coordinated accessory drop-ins. Both are available in steel, bronze, or leather-clad oval plinth bases. ▪ Dunbar, Berne, Ind.

circle 317 on inquiry card

TABLE ADDITION / As Hans Wegner had designed the classic China Chair in 1944, he has now designed a matching table. The China extension table, which varies from round to oval shape, is in the same hand-sculpted cherry wood as the original chair, and also carries forth the detailing of the chair. ▪ ICF, Inc., New York City.

circle 318 on inquiry card

more products on page 149

Plan Your Grand Opening With a Whole New CECO Door

the high performance door people

Ceco has the doors you need to make grand openings out of your light commercial entrances. Our new Versadoor™ light commercial steel doors come in attractive embossed, flush, and flush-with-raised-plant designs which can add the charm that's missing in so many multi-unit housing and business doorways.

But Versadoor offers more than good looks. It's constructed with 24 gauge galvanized steel face sheets for extra durability and security. A foamed-in-place polyurethane core helps provide an energy efficient R-12.86 insulation rating. And the energy-saving design is made complete by our thermal-barrier edge seams.

The Versadoor is also nonhanded and uses standard Ceco frames—so you have no handing mix-ups at the jobsite. And we can keep more types and sizes in stock. Whether you need left or right handed doors—swing in or out—you can get fast delivery from Ceco's 18 warehouses and over 300 distributors nationwide.

Introduce yourself to Versadoor. Contact: The Ceco Corporation, 1400 Kensington Road, Oak Brook, Illinois 60521.

CECO™

"The door people"

Circle 51 on inquiry card

ENCAUSTIC FLOOR TILE / The Encaustic and Special Projects Department at this British ceramic tile works is now able to assist architects with the restoration and repair of the encaustic and geometric tile floors found in so many public buildings of the Victorian period. Recent commissions, using modern improvements on the original manufacturing methods, have included the Pugin floors in the Palace of Westminster, and the Arts & Industry Building of the Smithsonian Institute. ▪ H&R Johnson Tiles Ltd., Stoke-On-Trent, England.

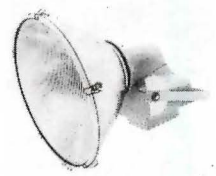
circle 319 on inquiry card

FOLDING CHAIR / This folding chair, designed by Michael Kirkpatrick, features a patented hinge that automatically locks in place when the seat is lowered. The frame is of solid ash, and the seat is available in either natural cane or in C.I. Designs collection of wool fabrics. ▪ C.I. Designs, Medford, Massachusetts.

circle 320 on inquiry card

more products on page 150

HID FLOODLIGHTS / An integrally ballasted series of HID floodlights for sports areas, parking lots, school yards and various industrial and commercial outdoor areas, *Prismbeam* luminaires obtain maximum lumen utilization by combining one of three different glass lenses with an aluminum reflector with a specific specularity. *Prismbeam* units have a vertical aiming mechanism for on-the-ground pre-aiming; floodlights can be wall-mounted, or installed on wood, steel or aluminum poles. ▪ Johns-Manville, Holophane Div., Denver, Colo radio.



circle 321 on inquiry card

FUME HOOD / The redesigned "Fiberglass 28" laboratory hood is sized to save space and to minimize the volume of tempered air exhausted from the lab. Interior surfaces are a seamless, easy-to-clean polyester that meets all industry fire standards; hood exterior is vinyl-clad steel. The removable front panel is offered in six colors; sash is clear tempered glass. A line of blowers, base cabinets and accessories is available for use with the compact "28" hood. ▪ Labconco Corp., Kansas City, Mo.

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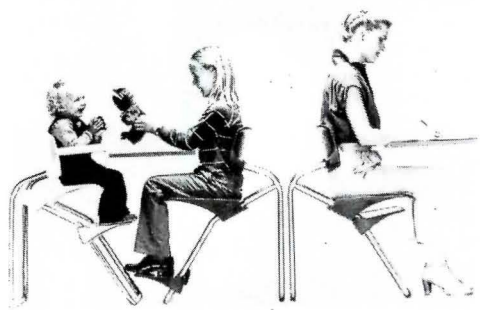


ADAPTABLE CHAIR / Developed in Norway, the *Unisit* chair is made of chromed steel and polypropylene in a range of colors. The seat and footrest easily adjust to the required height by pushing into position, and comfortably seat toddler, child or adult at any standard height table. ▪ The Export Council of Norway, New York City.

circle 323 on inquiry card

TABLES / The Summit table series features a segmented base system for tables to accommodate a variety of needs. ▪ Castelli Furniture, Inc., New York City.

circle 324 on inquiry card

OFFICE NOTES *continued from page 57*

Cesar Pelli & Associates has announced that Diana Balmori and Fred W. Clarke have joined the firm as partners.

Pickering, Wooten, Smith, Weiss, Inc. announce that Jimmy W. Eldridge has joined the firm's Huntsville, Alabama office.

RTKL Associates, Inc. announce the promotion of Bernard J. Wulff, AIA, Dennis H. Still, AIA, Leonard S. Kagan, AIA, Thomas C. Gruber, AIA and Thomas R. Witt to principals in the firm.

Rasmussen Ingle Anderson Architecture Engineering Planning announce that Povl Rasmussen has become chairman of the board of directors, Roger D. Anderson has been named president, John Ingle is secretary-treasurer and Bryan B. Brauer is chief mechanical engineer.

Robinson Mills & Williams announce that Robert Calderwood, CSI, AIA and Beverly Thome have been promoted to senior associates, and that Thomas B. Gerfen has been named associate of the firm.

Russell Gibson von Dohlen announces the addition of John William Juros to their project management group.

Kenneth Bassett and Peter Thomas have been named principals of Sasaki Associates, Inc.

Michael Lane has joined Schal Associates as a principal and executive vice president.

Starnes Group Inc. architects and planners announce that John R. McCarnes has joined the firm.

Talbot & Associates, Ltd., architects, engineers, planners, surveyors, announce the promotion of Richard E. Rogers, AIA to associate.

Paul W. Stevens has been named vice president of the Palm Beach, Florida office of the Balsamo/Olson Group, Inc.

John F. Benham has been elected corporate president of the Benham Group, architects, engineers, planners, consultants, and Allen G. Poppino was promoted to co-vice chairman of the board of directors and president of The Benham Group Transportation Systems.

The Ritchie Organization (TRO), Architects and Planners announce the following vice presidents: Robert W. Hoye, AIA, Alfred Luoni, AIA, Martha Bil Manevich, AIA, William J. Mello, Jr., AIA, Brendan Morrisroe, Albert J. Platt, ACA and John Regan, AIA.

Heather H. Cundiff has joined 3D/International as an associate and project director in the interior architecture division.

Way Engineering Company has named Reginald S. Smith as a project manager.

New addresses

ADD Inc has moved to 80 Prospect Street, Cambridge, Massachusetts.

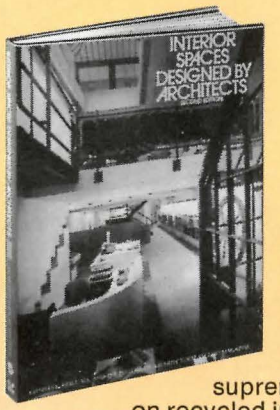
Kajima Corporation announces the relocation of its New York office to Park Avenue Plaza, 55 East 52nd Street, New York, New York.

Abraham D. Levitt Associates, Architects are now located at 13 North Franklin Street, Hempstead, New York.

Kenneth Neumann & Associates Architects Planners have moved to 26877 Northwestern Highway, Southfield, Michigan.

From one best selle

Interiors

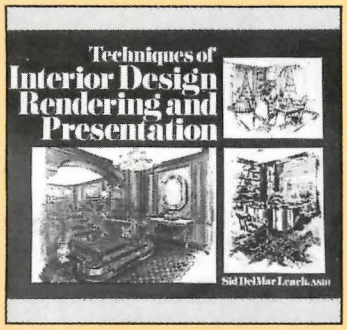


INTERIOR SPACES DESIGNED BY ARCHITECTS, 2nd Edition

edited by Charles K. Hoyt, AIA, and the editors of Architectural Record

More than 85 projects, accompanied by floor plans and schematics, illustrate the competency and style that architects are bringing to the design of interior spaces. Originally published in *Architectural Record*, these projects highlight outstanding elements of interiors that are not only good looking, but supremely workable. There is an emphasis on recycled interior spaces and on contextual design. Residences, offices, retail stores, and restaurants —even an assembly line and subway stations—are featured to show how architects have solved design problems while creating exciting and ingenious spaces.

1981. 213 pages with over 350 illustrations and 32 pages in color. 9 x 12. $32.50.

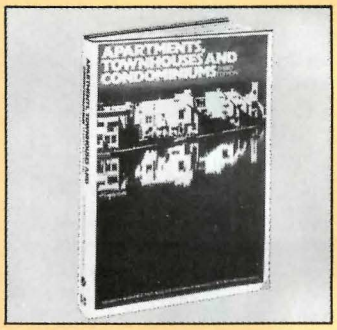


TECHNIQUES OF INTERIOR DESIGN RENDERING AND PRESENTATION

by Sid Del Mar Leach, ASID

A how-to guide to all the techniques, methods and materials for interior design presentation. Step-by-step instructions for sales oriented drawings and renderings. Ranges from one-point perspective drawings to completely furnished interiors . . . from pencil sketches to water-color renderings.

1978. 224 pages. 300 illustrations, 24 in color. $32.50.



APARTMENTS, TOWNHOUSES, AND CONDOMINIUMS, 3rd Edition

edited by Mildred F. Schmertz, FAIA and the editors of Architectural Record

A collection of housing types: high-rise apartment buildings; low-rise urban and suburban condominiums and apartments; housing for the elderly; adaptive re-use. Selections emphasize design quality rather than lavish outlays of space and material.

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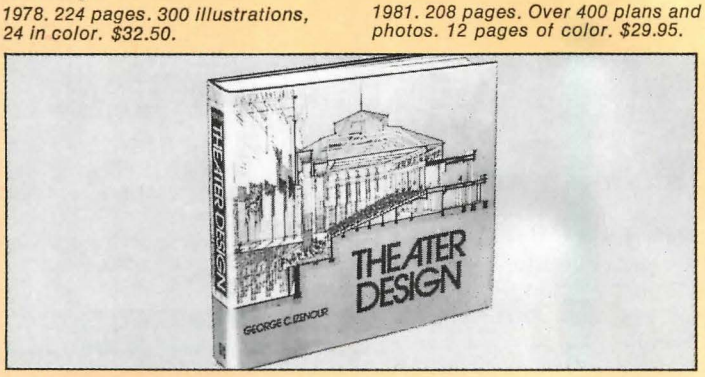

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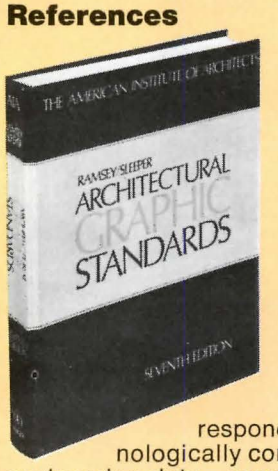

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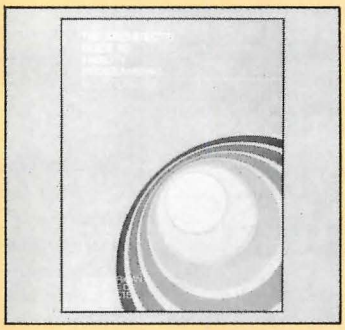

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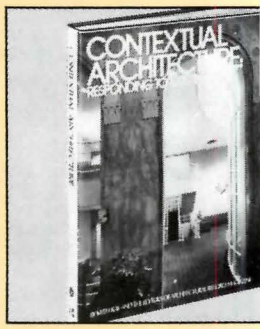

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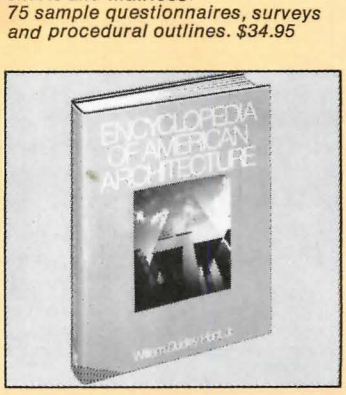

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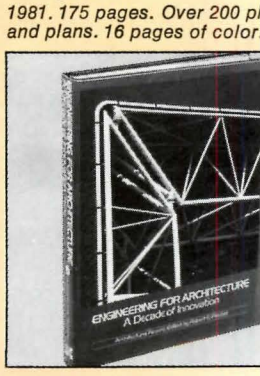

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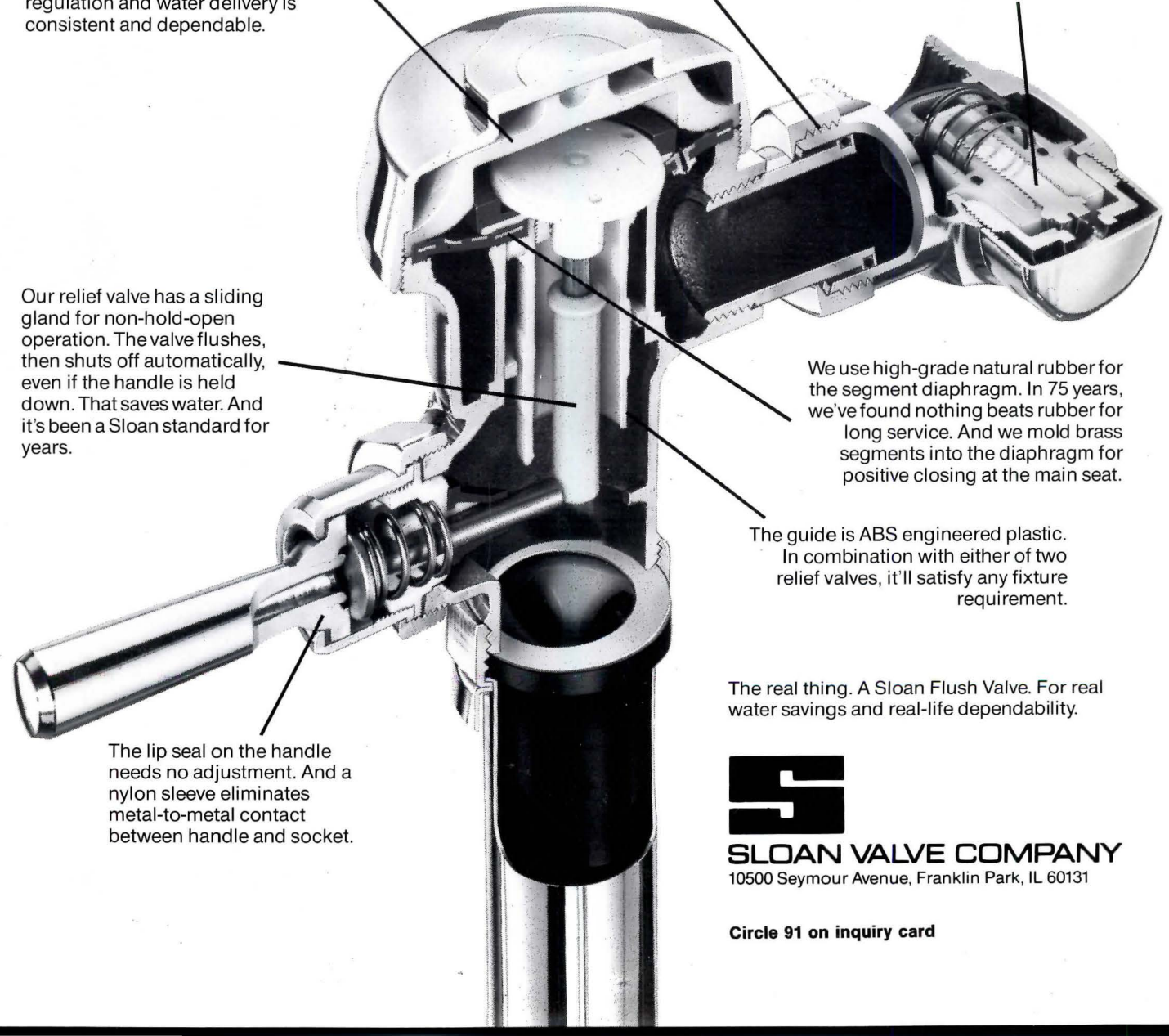

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