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BUILDING TYPES STUDY: LOW-RISE HOUSING  
ARCHITECTURAL ENGINEERING: THE ENERGY STANDARDS DEBATE  
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# ARCHITECTURAL RECORD

MARCH 1980

**3**

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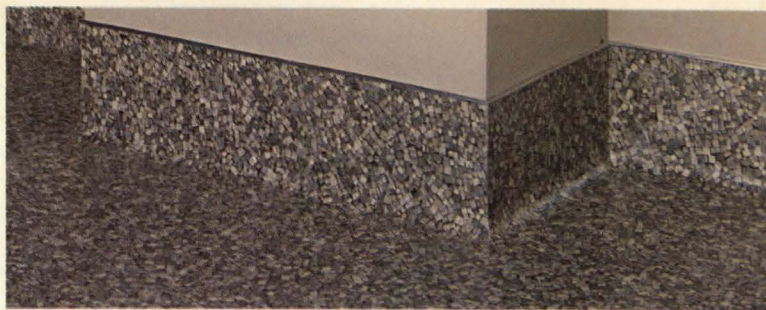
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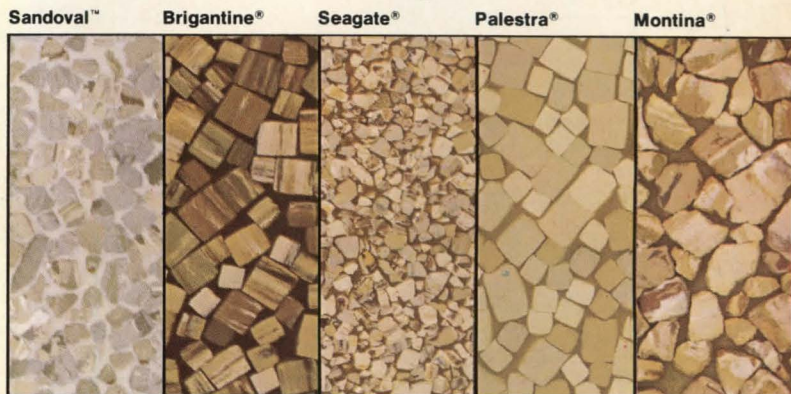


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## Letters to the editor

There seems to be unanimous agreement here at the cathedral that Gavin Macrae-Gibson's story on the Cathedral of St. John the Divine (RECORD, November 1979, pages 119-126), was the most serious treatment from an historical and architectural point of view to appear to date. It is my personal hope that it may stimulate further discussion on the issues surrounding working within an architectural tradition and the possibilities of understanding what can join both Gothic and modern.

We hope your editors will come up one day to see the work in the Stoneyard. It is fascinating: the young apprentices combine medieval-type tools and methods with the most sophisticated technology.

James Parks Morton,  
Dean  
The Cathedral Church of  
St. John the Divine  
New York City

Gavin Macrae-Gibson's article was very helpful in pursuing the questions of how to finish the Cathedral of St. John the Divine. Clearly an eclectic beginning can best be resolved with an eclectic response from the many who will continue to contribute to the completion of the cathedral. A few suggestions may help enrich this process:

This vast building, when finally designed and completed, will have to succeed at some generally recognized level of compositional unity. However, the problem of resolving the interior (now unfinished at the crossing) should, possibly, be separated as an issue from the unity and compositional solution of the exterior of the building. One takes a clue from the fact that above the 125 feet of vaulted nave space that is visible there are 50 more vertical feet of hidden truss space devoted to shaping the roof, which does much more than keep the weather out. In this "zone of adjustment," one would hope convincing solutions to the outside and inside can be resolved each in its own terms.

Ben Weese  
Weese Seegers Hickey Weese  
Architects, Ltd.  
Chicago

Mr. Weese's firm has been retained as Planning Architects to the Cathedral of St. John the Divine.

I am not, of course, the first to bemoan the almost complete lack of people in architectural photographs. The tendency of many designers to treat buildings, both exteriors and interiors, as pieces of abstract sculpture—and to use much the same shapes for something three feet high as for something three stories high, as if NO SCALE were printed in a title block at the base—is only encouraged by

photographing them without a human being (or a dog, cat or horse) in sight.

In the November 1979 RECORD, the article "Opting for the Unconventional Interior" [pages 127-130] continues what seems to me the unfortunate policy. The design work itself is, I think most will agree, ingenious and extremely handsome, the colors and textures muted yet powerful and skillfully juxtaposed. But a sentence on the first page of the article arrests my eye. Of the furniture, we learn "the shapes can be adapted to the human body in various ways. . . ."

It looks quite the other way around to me—the body will have to do the adapting! I have tried, unsuccessfully, to picture a young fellow sitting bolt upright in the tall L, chatting with his girlfriend as she wonders how to be comfortable against the half-circle backrest, while her father, doing his best to absorb himself with the evening paper, curls up (literally) in the "oversized rocker" and risks severe curvature of the spine.

William L. Hall  
Brighton, Massachusetts

Congratulations on the O'Neil Ford article [RECORD, December 1979, pages 126-136]—finally the age is ready for his kind of involvement.

Clovis B. Heimsath  
Clovis Heimsath Associates, AIA  
Fayetteville, Texas

Concerning your article "Celebration of Justice: The Federal Building, Courthouse in Fort Lauderdale, Florida" in the October 1979 issue [pages 81-86], the photographic and editorial presentation was as informative and sensitively conceived as six pages could be.

In the interest of accuracy, however, let the Record show that the dedication ceremony was presided over by the wife of the Vice President, rather than by Vice President Mondale as your text stated on page 85. The speaker shown standing at the podium in Bob Lautman's well-composed photograph is Mrs. Joan Mondale.

William Morgan, FAIA  
William Morgan Architects  
Jacksonville, Florida

## Corrections

The architect of the Hooker Office Building (RECORD, December 1979, page 41) is Cannon Design Inc. of Grand Island, New York; Hellmuth, Obata & Kassabaum served as architectural consultants. The two firms are not, as reported, in joint venture for the project.

Photographers of the Miami University Art Museum, uncredited in RECORD's January 1980 issue (pages 111-120), were Sadin/Karant of Chicago.

## Calendar

## MARCH

**16-18** "Construction Industry National Legislative Conference," co-sponsored by the National Association of Women in Construction; held at the Sheraton-Washington Hotel, Washington, D. C. Contact: Betty Kornegay, Executive Director, 2800 W. Lancaster Ave., Ft. Worth, Texas 76107 (817/355-9711).

**24-27** The 1980 Architects' Workshop, sponsored by the Church Architecture Department, Southern Baptist Sunday School Board; at the Maxwell House Hotel, Nashville. Contact: Howard McAdams, Church Architecture Department, 127 Ninth Ave. N., Nashville, Tenn. 37234.

**27-29** The first annual Monterey/Carmel Design Conference, "California 101," sponsored by the California Council, the American Institute of Architects; to be held at the Doubletree Inn and Monterey Conference Center, Monterey, Calif. Contact: Chris Meyer, Conference Manager, CCAIA, 1736 Stockton St., San Francisco, Calif. 94133.

## APRIL

**11-16** "Clinic for Design Firm Managers," sponsored by the Coxé Group, Inc.; held at the Barclay in Philadelphia. Contact: The Coxé Group, Inc., 1900 Chestnut Building, Philadelphia, Pa. 19103.

**18-19** Technical conference, "Earth Sheltered Design Innovations," sponsored by Oklahoma State University's Architectural Extension; to be held at Skirvin Plaza Hotel, Oklahoma City. Contact: Judith F. Bolar, Staff Conference Coordinator, Office of Architecture Extension, Room 115, Architecture Building, Oklahoma State University, Stillwater, Okla. 74074.

**21** Seminar, "Design Cost Analysis for Architects & Engineers," the Halloran House, New York City. Contact: ARCHITECTURAL RECORD SEMINARS, 1221 Avenue of the Americas, New York, N.Y. 10020 (212/997-3088).

**22** Seminar, "Design/Build and the Law (for Architects, Engineers & Owners)," the Halloran House, New York City. Contact: ARCHITECTURAL RECORD SEMINARS, (see April 21.)

**23-27** The 33rd annual meeting of the Society of Architectural Historians, held at the Concourse Hotel in Madison, Wisconsin. Contact: Mrs. Rosann S. Berry, Executive Secretary, Society of Architectural Historians, 1700 Walnut St., Philadelphia, Pa. 19103.

**26-27** "Acoustics in Restored/Recycled Buildings," held by Technology & Conservation and MIT Historical Collections. Contact: Technology & Conservation (617/227-8581).

**Through May 14** "American Architecture Now," ten classes featuring Barbaralee Diamonstein in conversation with noted American architects; at the New School for Social Research, 66 W. 12th St., New York, N.Y. 10011.

ARCHITECTURAL RECORD (Combined with AMERICAN ARCHITECT, ARCHITECTURE and WESTERN ARCHITECT AND ENGINEER) (USPS 132-650)

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

EXECUTIVE, EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: 1221 Avenue of the Americas, New York, N.Y. 10020.

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SUBSCRIPTIONS: Subscriptions solicited only from architects and engineers. Position, firm connection, and type of firm must be indicated on subscription order. Please allow 4-12 weeks for shipment. Subscription rates for U.S., U.S. Possessions: \$23.00 for architects, engineers and others in the field served; all other: \$33.00. In Canada: \$25.00 for architect, engineers and others in the field served; others \$35.00. In all other countries: \$49.00 for architects and engineers; others \$55.00. Domestic and Canadian single copy price: \$5.50 except the microfilm issue which is \$5.95. Foreign single copy price: \$7.00. "Publisher reserves the right to accept or reject any subscription."

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

CHANGE OF ADDRESS: Forward change of address or service letters to Fulfillment Manager, Group A, ARCHITECTURAL RECORD, P.O. Box 430, Hightstown, N.J. 08520. Provide both old and new address including zip code; if possible attach issue address label.

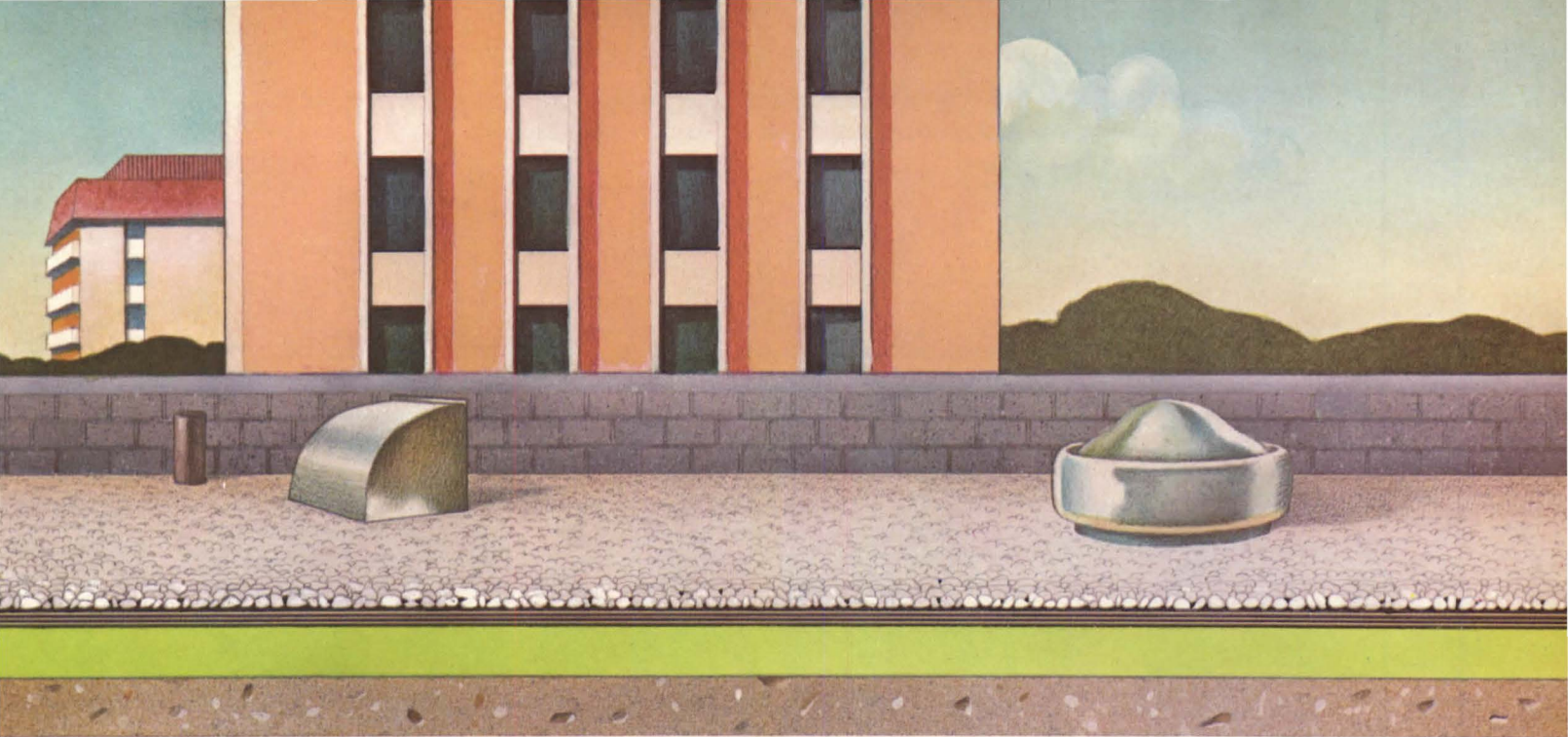
PUBLICATION OFFICE: 1221 Avenue of the Americas, New York, New York 10020. ARCHITECTURAL RECORD (USPS 132-650) published monthly except March, August and October when semi-monthly by McGraw-Hill, Inc. Controlled circulation postage paid at Strasburg, Virginia.

POSTMASTER: PLEASE SEND FORM 35 to Fulfillment Manager, ARCHITECTURAL RECORD, P.O. Box 430, Hightstown, N.J. 08520.

THIS ISSUE is published in national and separate editions. Additional pages in separate editions numbered or allowed for as follows: Western Section 32-1 through 32-8.







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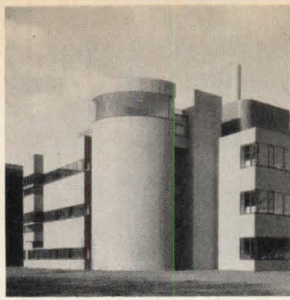
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**89 The revitalization of Chicago's Printing House Row**  
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Tom Crane

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 The Department of Energy has a mandate from Congress to promulgate standards by August, but many building industry organizations, particularly the engineering societies, are worried about technical and economic issues, implementation problems, and the impact on the practices of design professionals.

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**NEXT MONTH IN RECORD**

**Building Types Study: High-rise office buildings**  
 There is a building boom in high-rise office development, both in American cities and abroad. This upsurge has permitted innovative design solutions in all aspects of design and construction, including structural systems, mixed-use designs and treatment of facades and interiors. Next month's Building Types Study will explore these innovations with special examples ranging from New York City, Cincinnati, Portland and Singapore.



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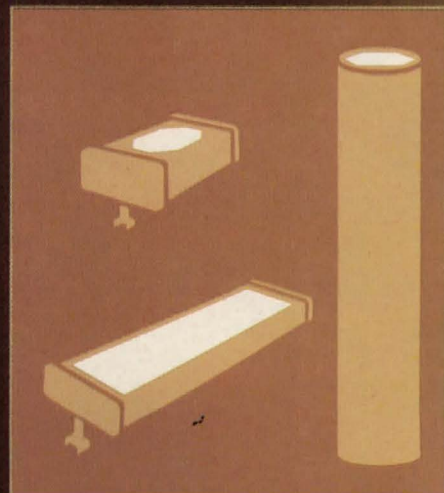
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# HAWORTH

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## Energy conservation: as things get more complex, let's not forget the easy parts

On page 125 of this issue, senior editor Robert Fischer describes the current status of the Department of Energy's fast-emerging Building Energy Performance Standards. The article delves into the complex issues that are causing architects and engineers deep concerns over compliance, over the amount of engineering calculation required (and how it can be paid for within the fee structure), and over the prospects of liability inherent in "certifying" from design calculations what the design energy use of a building will be. The complications involved (and the stringency of the new standards—for they will be tough to meet!) have caused some differences of opinion and judgment among the professional societies involved; and the debate has clearly intensified between the societies and the DOE officials who have the muscle to enforce the new standard and probably will, probably soon.

But at the same time, one is reminded that amidst all the controversy over complex calculations and standards, it makes great good sense to keep trying for energy savings within the framework of every-day good sense and good design practice. For one example; on page 81 of this issue is the handsome new biochemistry laboratory at Princeton University designed by Davis, Brody and Associates—still one of the few prominent buildings with four different elevations. That building, as you will see, has relatively large glass areas on the east and west walls where maximum daylighting is needed, small areas on the south face where the sun loading is greatest, and a relatively blank face to the north. That makes sense, of course, from the point of view of orientation and useful solar gain; and—as good architects tend to be able to do—Davis, Brody has managed to make these energy conservation considerations make good planning sense inside the building.

In a late-January speech to the Engineering Society of Detroit, senior editor Fischer reinforced the "every-day" aspects of energy conservation: "With the problem . . . as serious as it is, many architects and engineers believe that buildings can take their design cues from energy considerations: from skylights, daylighting and sun-control devices, berms, Trombe walls, atriums and courts. We

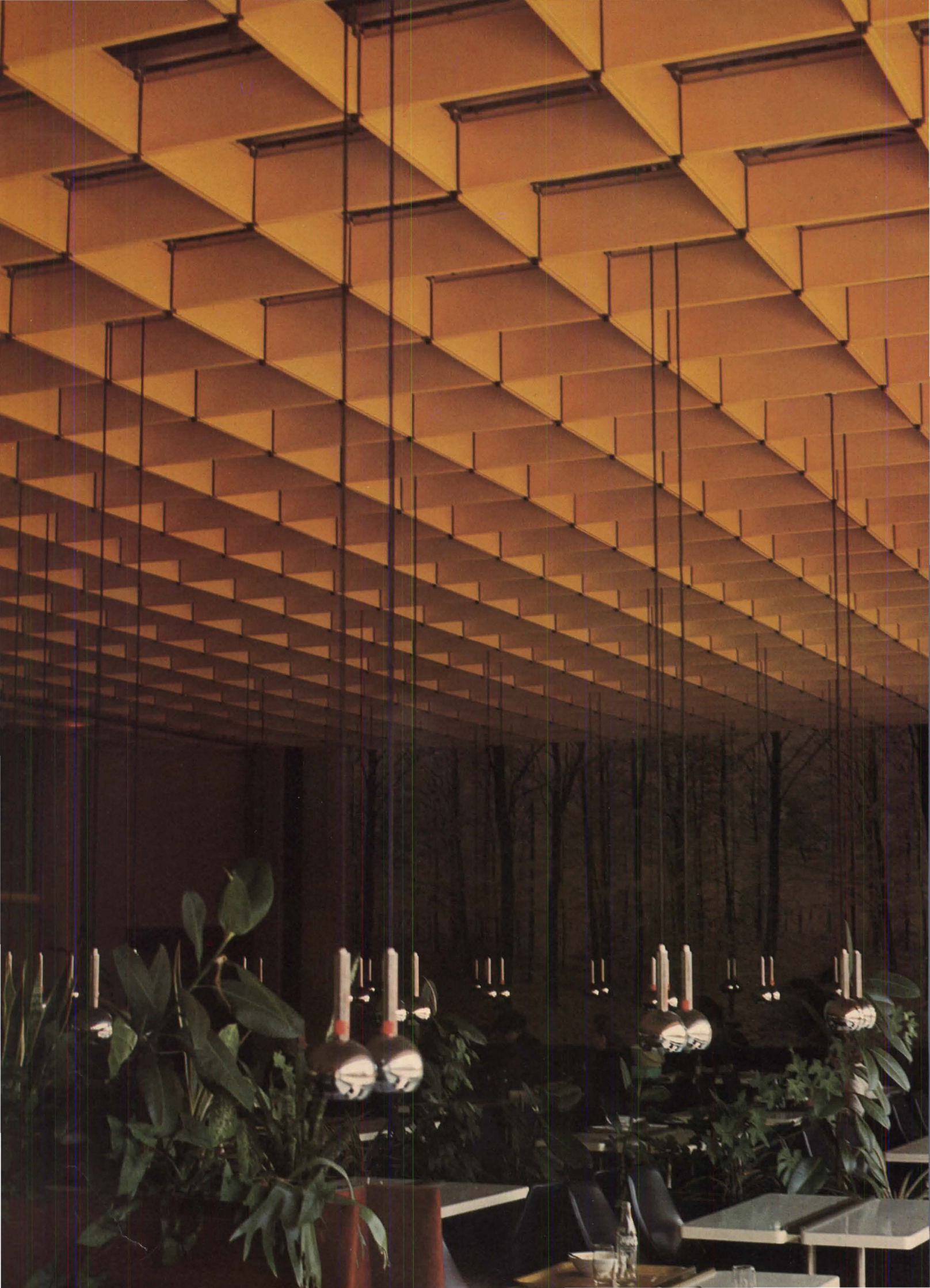
are now seeing for example, buildings with different fenestration and wall materials on each elevation, depending on its orientation. . . . Sun control devices of much greater sophistication are appearing: Gunnar Birkerts' office building for IBM (RECORD, October 1979) has an exterior and an inside reflector to pick up daylight and direct it into the interior space. Other designs use light shelves with reflective surfaces to perform a similar function. Another impressive example is a computer center and office building under design for TVA: it uses louvers on top of an atrium that can be opened on cold sunny days to let in both heat and light but closed to insulate the atrium at night. The building will not have a refrigeration system for cooling, but will have excess heat removed by use of 59-deg ground water. A heat-pump system will pick up waste heat from the computers and other equipment, and from the 59-deg water. Indirect interior ambient fluorescent lighting at the ceiling will be turned on and off depending on the amount of daylight measured by photo-electric cell."

Bob Fischer also emphasized in his speech the scrutiny being given lighting systems, and the development of new systems, "because the lighting component can easily represent 40 per cent of the total energy consumption of a building." The new emphasis: task lighting—"different lighting levels for different tasks, for different degrees of accuracy required for those tasks, and the different amounts of light required by different age groups. . . . This new accent on task lighting has led to the application of non-uniform lighting levels. . . . [Further]The use of new high-efficiency fixtures and ballasts can greatly reduce power consumption. The result is a reduction in power requirements of 50 to 60 per cent of what was being provided 10 years ago. Power densities of around two Watts per square foot are common, and we hear of many buildings at one and a half Watts or less."

The point is this: As government standards become more stringent and complex, there is still much to be done by simple common-sense application of simple common-sense techniques. As things get more complex, let's not forget the easy parts. . . .

—Walter F. Wagner, Jr.







**In December, "a surge of nonresidential projects more than offset the prevailing softness in homebuilding,"** according to chief economist George A. Christie of the F.W. Dodge Division of McGraw-Hill Information Systems Company. Nonresidential contracts were up 18 per cent for the month—16 per cent for commercial and industrial building, 21 per cent for institutional building. A "modest rebound" in housing contracts left this sector 9 per cent behind last December's level. Mr. Christie called this a "technical" rebound, however, and cautioned, "When interest rates come down, the housing market will make a strong recovery—but that's six or more months off."

**A-E organizations vigorously protest a Senate proposal to require design competitions for Federal buildings.** AIA president-elect R. Randall Vosbeck argued before a Senate committee that the law would discriminate against small firms and that "the time and expense involved . . . will be exorbitant." Details on page 36.

**The State of California intends to have its own, non-NCARB architectural examination ready for use by June,** answering pressures from the state administration and the Department of Consumer Affairs. Details on page 39.

**The AIA has honored Lever House with its Twenty-Five Year Award.** The green glass office building, located on Park Avenue in mid-Manhattan, was designed by Skidmore, Owings & Merrill. Lever House received the Institute's First Honor Award for design in 1952, and was cited by ARCHITECTURAL RECORD in 1956 as one of the most significant buildings erected in the preceding century.

**The Carter Administration wants to encourage the use of passive solar energy systems,** and asks Congress to enact tax incentives for its design and construction in residential and nonresidential building. Details on page 39.

**The AIA has elected nine honorary members:** Ise Gropius, author, preservationist and organizer of Walter Gropius's personal archives; Lady Bird Johnson, for her support of conservation and the rehabilitation of historical architecture; Paul Mellon, architectural patron (the East Building of the National Gallery of Art, the Yale Center for British Art, and the Paul Mellon Arts Center at the Choate School); Maria Fay Murray, director of the national AIA awards program; Walter F. Pritchard II, coordinator of environmental affairs at Southern California Edison; Mario G. Salvadori, structural engineer and professor of engineering at Columbia University; Julian B. Serrill, executive director of the Iowa Chapter/AIA; Mary Chapman Smith, executive director of the Arizona Society/AIA; and Mrs. Gerald H. (Katie) Westby, organizer for the arts and humanities in Tulsa and the nation.

**Harvard University, in a major academic change, will consolidate its teaching of city and regional planning.** Gerald M. McCue, dean-designate of the Graduate School of Design, has announced that GSD's program will move to the Kennedy School of Government to eliminate duplication and to encourage cross-fertilization of the design and administrative approaches to planning. While GSD will continue to offer programs in urban design, students seeking graduate degrees in city and regional planning after July 1 will be enrolled in the Kennedy School.

**The AIA has issued a compilation of A-E selection laws in 17 states,** the first time, say the publishers, that this information has appeared in a single document. AIA offers "Compendium: Architect Selection Laws" free to members, for \$5 to nonmembers. For information: AIA Publications Marketing, 1735 New York Avenue, N.W., Washington, D.C. 20006 (Catalog Number 6N509 for members, 4N509 for nonmembers).

**A regional conference and exhibition on architectural preservation will meet at Union Station in Ogden, Utah,** on May 23 to 24. Sponsored by the Utah State Historical Society, the conference will include two days of workshops on renovation and rehabilitation for architects and contractors. For information: Luci Merin, Utah State Historical Society, 307 West 200 South, Salt Lake City, Utah 84101 (801/533-6024).

**The University of Cincinnati seeks teachers for its Department of Architecture and Interior Design.** Apart from design, the school looks for faculty support in such fields as space use and behavioral theory, the landscape context of architecture, the art of drawing architecture and interior design, construction technique and design, design in the historic context, and the designer as a professional in society. Applications and brief résumés should be sent to John Meunier, Director of the School of Architecture and Interior Design, College of Design, Architecture and Art, University of Cincinnati, Cincinnati, Ohio 45221.

**NCARB will mail questionnaires for its year-long practice analysis at the beginning of this month** (not *last* March, as reported here in February 1980). The organization still urges the completion and speedy return of the questionnaires from the 12,000 architects who will receive them so that it can issue a report at its annual meeting in June. The questionnaire, which NCARB says can be completed in an hour, examines the "knowledge, skills, abilities and functions necessary for the practice of architecture in the United States."



# In a World of Ordinary Windows,

**Double Hung.** It's been around long enough to have earned the title "Old Undependable." If you want to heat or cool the great outdoors, double hung should be your first choice. What the Packard was to the car, double hung is to windows. A good idea whose time has passed.

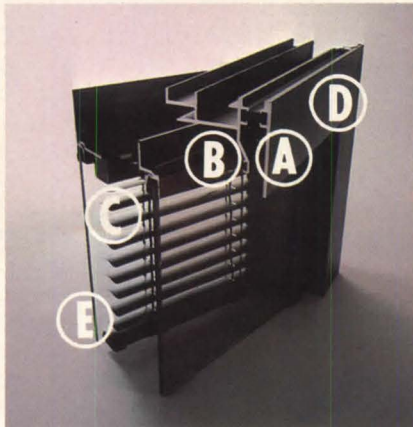
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**C.** Wedge-glazing system provides a high compression seal between glass and aluminum, preventing air and water infiltration.

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## COFPAES testifies against Federal design competitions

Organizations representing architects and engineers have come out in vigorous opposition to a proposal for holding formal architectural competitions for all larger public building designs. Only "unique projects of unusual national significance" ought to be subject to competitions, says Virginia architect R. Randall Vosbeck, president-elect of the American Institute of Architects. He says the government's present architect-selection system—based on the Brooks Act, or P.L. 92-582—is just fine and should go unchanged.

Mr. Vosbeck, testifying before a Senate committee studying a proposal for rewriting the 20-year-old Public Buildings Act, used four pages of his nine-page statement to criticize architectural competitions and praise the Brooks Act. He spoke on behalf of the Committee on Federal Procurement of Architectural/Engineering Services (COFPAES), which includes AIA and four engineering societies.

The legislation under consideration, S. 2080, was written mainly by Senator Daniel Patrick Moynihan (D-N.Y.). Its main thrust is to provide a financing mechanism for new public buildings so the government can

reduce its dependence on leased space for Federal workers.

While Mr. Vosbeck said "we conceptually support" S. 2080, section 602 of the bill drew his opposition on behalf of COFPAES. This section proposes that building and renovation projects expected to cost no less than \$2.5 million shall be placed into a design competition between no fewer than 10 qualified architectural firms. On larger projects—those costing more than \$25 million—the GSA could use any method, including design competition, to select an architect.

"We oppose this section because we know as design professionals that the well-motivated intentions of the sponsors will not be fulfilled. . . . Enactment of this section will work to the detriment of small firms competing for Federal commissions. More importantly, the expense and time involved in such competitions will be exorbitant. The best buildings can only result from complete involvement of the clients in the exchange of ideas between user, architect/engineer, and review boards."

The construction design organizations have traditionally been reluctant to bring up the Brooks Act for discussion in Congress, fearing a

misunderstanding among legislators having only a superficial background in designer selection matters.

But Mr. Vosbeck did not let this concern stop him from giving the Brooks Act a ringing endorsement in discussing S. 2080. "This process was designed to encourage competition among design professionals and to eliminate favoritism from the selection process. The GSA process [Brooks Act] works well and should not be undercut without ample justifications." The design competitions envisioned in the new act, Mr. Vosbeck says, will "emphasize the cosmetics of design, not the full range of review required of a team of architects and engineers."

Another section of the comprehensive legislation was criticized by Mr. Vosbeck. It proposes that at least 25 per cent of the GSA's construction and renovation projects should be handled by the agency's staff designers. The intention of the provision is to attract talented young design professionals into government service and improve design quality.

But, said Mr. Vosbeck, "In our opinion this intent will not be realized. Design vitality comes from the private sector. It is here that new concepts are developed and perfected. It is the private sector where

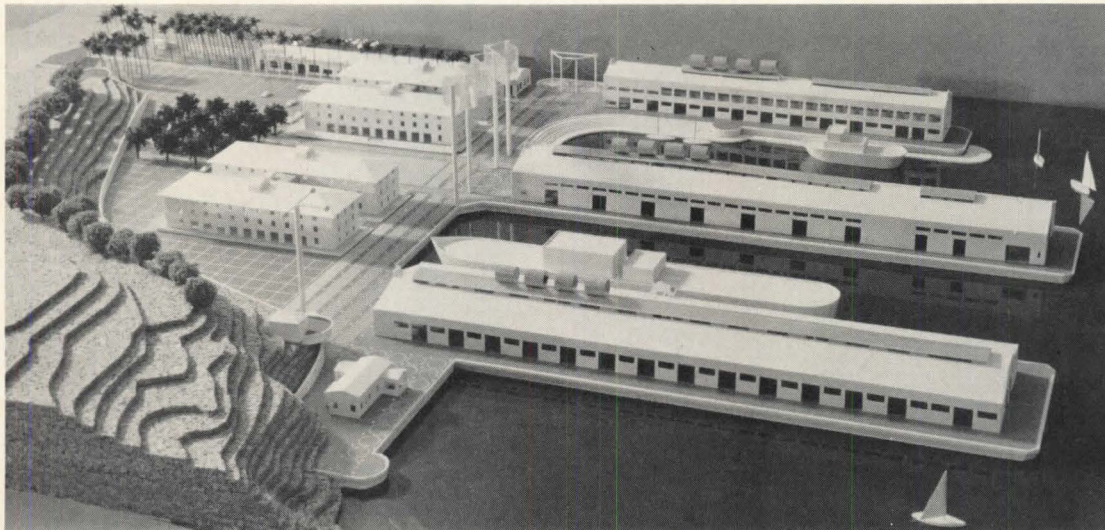
young architects and engineers [get] their training and experience."

Mr. Vosbeck endorsed several other provisions in the bill. He said it was a good idea to establish the Public Building Services as a statutory subdivision within GSA, and that its director ought to serve for six years to minimize political influence. The notion of re-establishing the position of "supervising architect" was also supported, as long as the individual chosen is a licensed architect.

Other interest groups have testified on the bill: the Associated General Contractors is in general support, but asked that GSA be allowed to set up a capital spending budget so it is not short-changed in the budgetary process. And the building trades unions suggested that the GSA building program be used to fine-tune the construction economy—injecting stimulus during lean times and withholding work to dampen over-activity in building.

The Moynihan panel is continuing to meet with various interest groups—a process that will probably continue throughout the winter. The final version of the bill is expected in the spring, and favorable consideration in the Senate would send it to the House. —William Hickman, *World News, Washington*.

## San Francisco holds charette to plan arts center in Fort Mason warehouses



In May 1976, the Fort Mason Foundation, a nonprofit organization working under a cooperative agreement with the National Park Service, began the task of transforming neglected military warehouses on the edge of San Francisco Bay into a community cultural center. Forty of the Bay Area's most active nonprofit organizations (which create programs geared toward community cultural interaction) were housed in the abandoned warehouses, forming the Fort Mason Center.

Even though the warehouses were not properly renovated, the Center has grown and been increasingly popular with the community; more than 400,000 people visited

during 1979. As a result, the Fort Mason Center Architectural Master Plan competition was held in 1979.

Funded by a grant from the National Endowment for the Arts, eight architectural firms were invited to compete in a five-day charette for renovating and improving the existing facilities.

The jury selected Robinson Mills & Williams in conjunction with, as landscape architects, the SWA Group. With a second NEA grant, a master plan will be drawn up.

The winning architects felt that the appropriate solution should be extremely spare visually and maintain the present character and ambience of the site. The historic importance of

the buildings, as well as the character of the nonprofit organizations, mandated a simple, unpretentious and noncommercial design.

In addition to preserving the "working port" atmosphere of the center, the architects felt that it was important to maintain a high degree of flexibility on site. The Center should be perceived as an emerging enterprise, whose future development cannot be predicted with precision. The architects are attempting to provide an "organizational structure" that could respond to a variety of needs.

Fundamental to the design is an over-all organizational grid that establishes major fixed circulation axes and

forms a flexible matrix within which specific areas, activities, circulation and entries can be identified, together with a set of elements that "plug" into the grid to define, enclose, support, light, or announce. The plug-in elements were conceived as a "kit of parts," to be purchased as required, and would normally consist of bollards, light standards, signs, flagpoles, tent supports, and scaffold brackets. These elements can be positioned to establish areas of waiting, construction, viewing, and traffic in an unlimited number of arrangements.

Two main pedestrian "streets" are to be developed linking the main entrance, trolley stop, bus turnaround, and visitors center with the main promenade and ferry landing. Two large wind-driven propeller-type electric generators are proposed. Four large towers will generate holographic images that will be visible from across the Bay and many points in the city.

The existing buildings will be essentially unaltered, though new uses suggest improving internal circulation and providing expanded lobbies and adjacent outdoor areas to promote interaction between the various groups and to provide display space.

The design of the pier buildings and the accompanying plug-in elements aims to offer flexible space for a wide variety of occupancy. The piers and the existing clerestories lend themselves to a solar heating system. —C.K.G.



## MOMA shows the '20s avant-garde work of Eileen Gray

Eileen Gray died in 1976 at the age of 97. She is best remembered in this country for a tubular steel bedside table, which is still in production. But the table is only a small sample of her later work and holds little clue to her early Deco period, when she worked exhaustively with Oriental lacquer, creating furniture and decoration of exceptional beauty and elegance (see screen below).

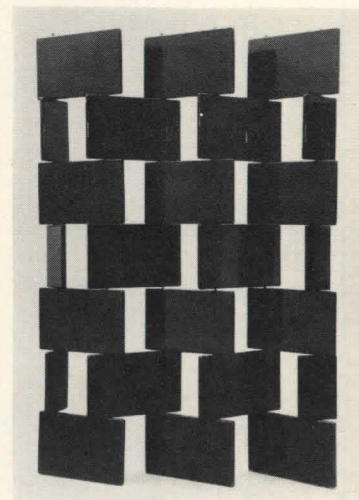
The Museum of Modern Art is holding a major exhibition devoted to rediscovering the impressive and diverse career of Gray. The show contains not only the early work of lacquer, carpets, wallpanels, and furniture that made her reputation in Paris during the '20s, but her more progressive later work. In 1923, she began to use industrial materials—metal, cork, mirror, and rubber—and her revolutionary work was brought to the attention of Le Corbusier. An exhibit of a bedroom-boudoir for Monte Carlo brought savage criticism from Paris and praise from de Stijl architect J.J.P. Oud.

Encouraged by the support of Oud and Le Corbusier, she moved to the south of France and built E-1027, her seaside Riviera house. E-1027 was an impressive display of the best tenets of the modern movement coupled with the decorative elegance of leather and lacquer from her earlier work. The interiors contained multipurpose built-in furniture, including a cantilevered reading table, an aluminum and cork dressing table, and a rubber and metal bathroom system with ingenious track windows, the panes pivoting and sliding to stack at one end of the frame. Unfortunately, her career as a building designer was limited to E-1027 and one other small house.



The MOMA show contains Gray's notebooks and various implements used for lacquering, along with furniture, screens, carpets, mirrors and photographs of her houses and apartments.

A catalog, *Eileen Gray: Designer*, is available from MOMA with a text by J. Stewart Johnson, the museum's curator of design. The show will be up until April 1. —Charles K. Gandee.



## Federal budget contemplates counter-cyclical works

Public works to pump up the economy? Only if things get worse. The Federal budget President Carter proposes to the Congress holds out the possibility of a government-sponsored public works program to be implemented if the national economy falters badly.

The President clearly dislikes the idea of economic stimulus through public-works spending, but he is telling the lawmakers that "if the economy begins to deteriorate significantly, the Administration will consider tax reductions and temporary spending programs, such as those for jobs and public works, targeted toward particular sectors of economic stress."

The Administration will not say now what would trigger counter-cyclical efforts, but there are indications that an unemployment rate in excess of 6.5 per cent—it is now 6.2 per cent—might prompt a call for payroll tax relief, and 7 per cent

might lead to increased manpower-training efforts focusing on inner cities and transit programs. Public works grants would only be sought as a last resort, presumably if unemployment reached the 8 per cent mark. Any such program would probably resemble the local public works programs of the mid-1970s, with construction grants offered to state and local governments for the rehabilitation of public facilities.

Elsewhere, the \$615.8 billion budget for fiscal 1981 reflects the growing international tension and Mr. Carter's call for far more defense spending. He foresees the Federal deficit dropping from about \$40 billion to \$16 billion, and essentially level spending for most domestic programs. The budget proposes only a modest increase in spending for new General Services Administration public buildings, coupled with a large hike in outlays for rental payments on office buildings used by government workers.

The Veterans Administration will

get a large increase in its budget for nursing homes and outpatient clinics. The budget for HUD will accommodate the construction of more subsidized dwelling units, and the Defense Department wants to spend far more for housing military families. Research spending on solar technology and energy conservation would receive healthy increases, but nuclear research spending was cut sharply. —William Hickman, *World News, Washington*.

## Administration economists see economic restraint ahead

The Carter Administration's economic crystal-ball gazers have come up with their 10-year forecasts: in their considered opinion, the decade calls for economic restraint, but they also put some additional emphasis on rebuilding the nation's capital inventory—and that means at least some more building activity.

The Council of Economic Advis-

ers projects the need for a long-term policy of fiscal and monetary restraint as the only permanent cure for inflation, which translates to a period of high interest rates and slow economic growth that will depress commercial, residential and industrial construction. On the other hand, the economists see a need for a large-scale rebuilding of the U.S. capital stock. "To reach a number of our long-term goals," the report says, "the share of our national output devoted to capital formation will have to increase in the 1980s."

Nowhere in the Council's annual report are there specific recommendations to encourage increased savings—but there are general suggestions of ways the tax system could be changed to give new incentives to capital formation. "Considering the need for additional investment incentives, the design of future tax reductions should give high priority to measures which strengthen investment." —Koming Wildstrom, *World News, Washington*.





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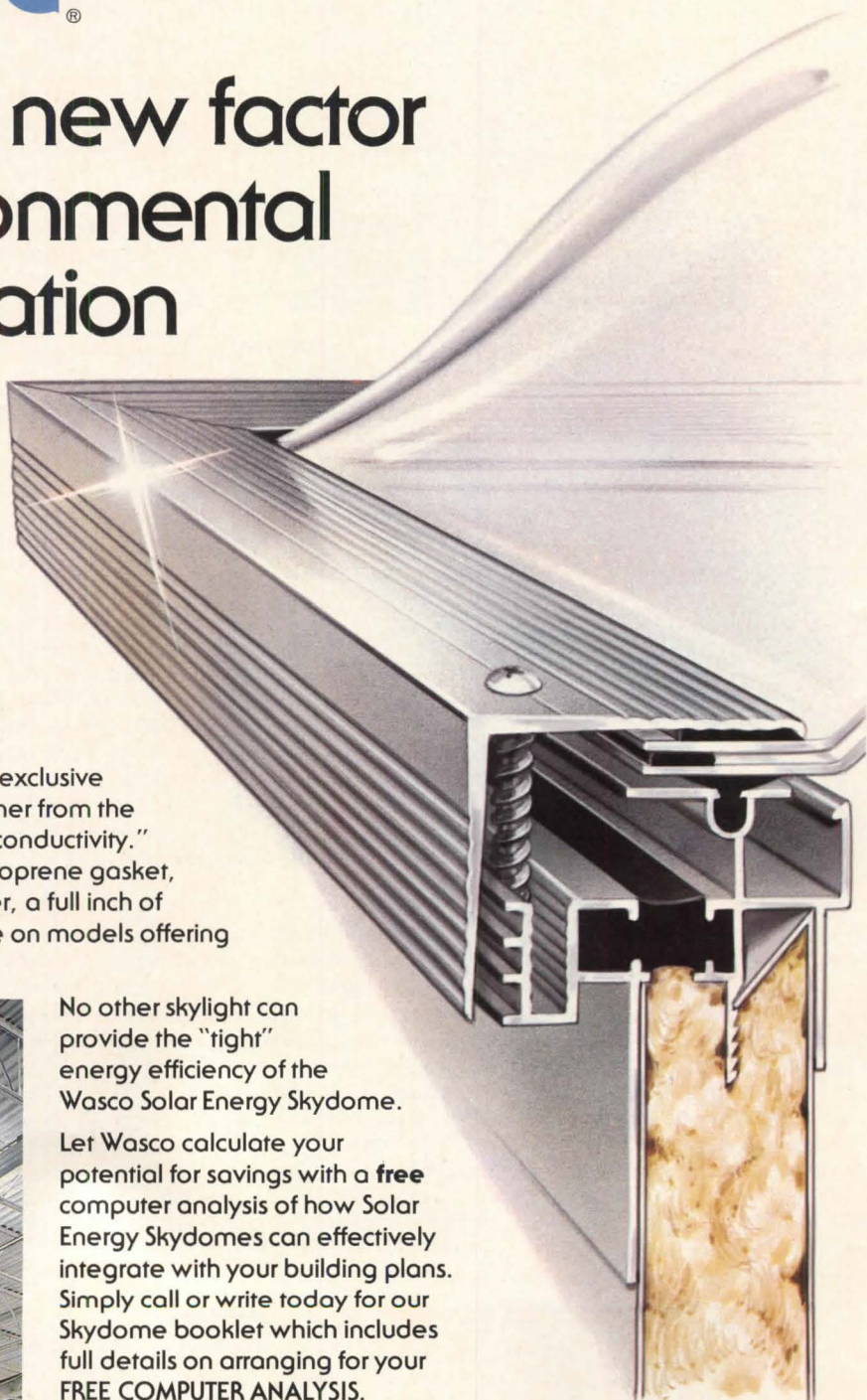
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## Buffalo group seeks to use Wright house as museum

A group of Buffalo architects, builders and businessmen is trying to acquire a "Prairie House" built in that city by Frank Lloyd Wright in 1904, and convert it into a museum and research center for architectural study in western New York.

The group, headed by Buffalo architect Robert T. Coles, hopes that a Federal or state agency—perhaps the Smithsonian or the State Department of Parks and Recreation—will buy the house and work with the local group in its restoration and administration.

Mr. Coles says that the small ad hoc group, which has met informally since last spring, hopes to expand the small museum of American architectural exhibits assembled by John D. Randall and now housed in the Prudential Building, Louis Sullivan's famous skyscraper design built in Buffalo in 1896.

The house, Wright's first in New York State and listed on the National Register of Historic Places, has been owned by the State University of New York at Buffalo since 1966. It was designed by Wright, when he was only 35, for the late Darwin B. Martin. Martin asked Wright to build the house for him after seeing a similar house the architect designed for his brother in Oak Park, Illinois.

The SUNY Board of Trustees voted in October to authorize transfer of the house to a suitable buyer or administrator who could restore the property, which is currently in need of major repairs. —*Matt Gryta, World News, Buffalo.*

## Justice Department probes discriminatory zoning laws

The U.S. Justice Department has raised anew the old question whether local land-use and zoning laws are being used to foster discrimination against minorities in housing.

Attorney General Benjamin R. Civiletti has ordered a survey into zoning practices, with an eye toward assessing whether patterns of discrimination exist and what their impact is, and says that he has "a very strong suspicion" that land-use laws have been unlawfully used for purposes of racial discrimination. The survey he ordered is to concentrate on communities where there are dramatic differences between the minority population of central cities and their surrounding suburbs. In these areas, the investigations are to pay particularly close attention to the history of zoning changes in the suburbs.

Until now, the most dramatic moves forcing municipalities to rezone in order to open up land for housing projects for the poor have been made by state courts, with New Jersey leading the way. That state's

high court ruled in 1975 that each local government must "by its land-use regulations, make realistically possible the opportunity for an appropriate variety and choice of housing for all categories of people who desire to live there, of course including those of low and moderate income." The ruling gave courts the authority to order towns to set land aside for enough multifamily housing to take care of their fair share of those priced out of the market—even if doing so would take all available vacant land.

Now, however, the New Jersey Supreme Court is taking up the question again. The issue: how large an area do you look at to determine how many of the poor must be taken care of? Advocates of more open housing worry that if the high court endorses a lower-court ruling that it is the responsibility of plaintiffs in suits to get rezoning to prove precisely what region is affected, it will be significantly harder for the poor to win their cases. The justices may hear oral arguments in the case this spring, but a decision is not likely before fall. —*Daniel Moskowitz/William Hickman, World News, Washington.*

## Carter asks tax incentives for passive solar installations

The Carter Administration wants to use tax incentives to encourage the design and construction of both nonresidential buildings and houses employing passive solar heating and cooling.

In a proposal sent to Congress along with his suggested Federal budget, President Carter says that builders of commercial buildings using passive solar energy should qualify for a tax credit of up to \$10,000 per building—calculated at \$20 per million Btu that are saved in excess of a specified level above the building energy performance standards (BEPS) base line. Homebuilders using passive solar designs would be eligible for tax credits of up to \$2,000, again based on calculated energy savings.

In another tax proposal, the President asks Congress to extend by one year the present tax-law provisions encouraging the historic preservation of buildings. Under the 1976 law, expenditures for the rehabilitation of structures certified as historic qualify for special accelerated methods of depreciation. This provision is set to expire June 30, 1981. The same law says expenses related to the demolition of historic structures cannot be counted as a tax write-off. This expires December 31, 1980.

Extending the provisions by one year, Mr. Carter says, will permit a study of the "impact, usefulness, and efficiency" of the preservation provisions so recommendations can be made on future treatment of these programs. —*William Hickman, World News, Washington.*

## California examiners plan their own architectural test

The California State Board of Architectural Examiners, often at odds with the National Council of Architectural Registration Boards, is moving out on its own on several fronts, including its announced plan to have its own architectural examination ready to use by June 1980. BAE retained research consultant Joe Ouye, Berkeley, and National Evaluation Systems, Amherst, Massachusetts, to do some fast-track work in developing the basis for the new test, which would replace reliance on the present NCARB uniform examination.

This is only part of a broad program at the state level, which has BAE looking into other areas such as enforcement procedures, consumer outreach programs, and the Architectural Practice Act itself.

The Board is responding to pressure by the state administration and the Department of Consumer Affairs that resulted in an attempt last year by Governor Edmund G. Brown, Jr., to eliminate BAE by December 31, 1979, and turn registration and enforcement over to the profession. The Governor lost his bid to "sunset" BAE and several other professional boards, however. The legislature increased BAE's budget for 1979-80 and included a provision for \$143,000 to review the examination.

BAE has told NCARB that most of its examination is acceptable to California, and that the state would be willing to use the test if NCARB made some changes. But since NCARB—which has a major "task analysis" underway—is unlikely to move by June, BAE will move on its own.

Paul Welch, BAE executive secretary, said, "If NCARB develops a relevant exam, then we will use theirs." He said that the BAE consultant would meet with architects, engineers and consumers to "try to find out what architects are doing and make a determination which test will be the best for the public health and safety mandate under which our board operates."

As it concerns examinations, the board is committed to support New York State's proposal to revise the national examination as follows:

- "to revise each part of the examination to more closely reflect the realities of the general practice of architecture, as determined by careful task analysis;
- "to give a single examination to all candidates, eliminating present distinctions between those who hold degrees and those who do not;
- "to design each part of the examination so that any part which is not passed by a candidate may be retaken separately and so that each part will be graded separately."

One of the major problems with the NCARB exam, says Mr. Welch, is that questions, in many respects, do not adequately test the applicant on

concerns in California about earthquake safety and environmental and energy issues.

On the licensing issue, Dan C. Wooldridge, president of BAE and a public member, said that "California is not committed to leading a division from NCARB. We are going to be making some changes, so at times we will be pushing a little harder than some of the other states around the country."

There is no agreement on what effect new examinations by California or other states would have on reciprocity. BAE is concerned about maintaining reciprocity, which allows architects to move from state to state, and "we have made it very clear all along that we hope to minimize the disruption in that process." Mr. Welch, of BAE, said he believes reciprocity "can be handled administratively." He is confident that "we will have something resolved by the time it becomes an issue." —*Jenness Keene, World News, San Francisco.*

## NCARB conducts analysis of U.S. architectural practice

The executive committee of the board of directors of NCARB in December approved selection of McManis Associates, Inc., Washington, D.C., management research consultants, to conduct an analysis of architectural practice.

"We hope the report will be ready by spring. Then we will go into an evaluation of the current examination against the 'matrix' of what the practice is determined to be," says NCARB President John Ross, AIA, of San Luis Obispo, California.

He said that while NCARB will not be oblivious to California's concerns, "We don't plan to make any major changes in the exam content until we know that we're off-base—if we are off-base."

Mr. Ross, a former member of the California Board of Architectural Examiners, said the national board of directors of NCARB would prefer that California hold off on its new examination until NCARB completes its practice analysis and determines what faults—if any—there might be with existing testing procedures.

He thinks it would be a "reasonable device" for California to "piggy-back" its special requirements on the NCARB exam as a remedial measure, if the state believes that is necessary, while NCARB makes evolutionary changes in its exams.

Urging caution, Mr. Ross noted that in the past "there were several years of some pretty heavy, fast-moving transition, and it was tough on the candidates. I want to see change happen as it's needed, but there are many thousands of young people out there that are affected if we're not careful how we jump around." —*Jenness Keene, World News, San Francisco.*



# We put the finishing touches on Frank Lloyd Wright's masterpiece.

Despite the concerned and diligent efforts of the Western Pennsylvania Conservancy, decades of intense weathering and constant exposure to water had taken a heavy toll on Frank Lloyd Wright's famous "Fallingwater". A five-year-old coat of paint was blistered and peeling, and much of the concrete was pitted and spalled.

Because of its artistic and historic value, restoration architects Curry, Martin and Highberger took the absolute strongest corrective and protective measures possible. They specified that

Thoro System Products be used throughout.

After sandblasting, contractors Mariani and Richards brought the surface back to its original form with Thorite, a non-slumping, quick-setting patching material (mixed with Acryl 60 for enhanced bonding and curing).

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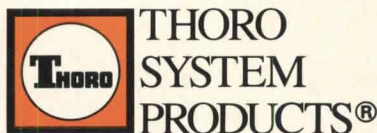
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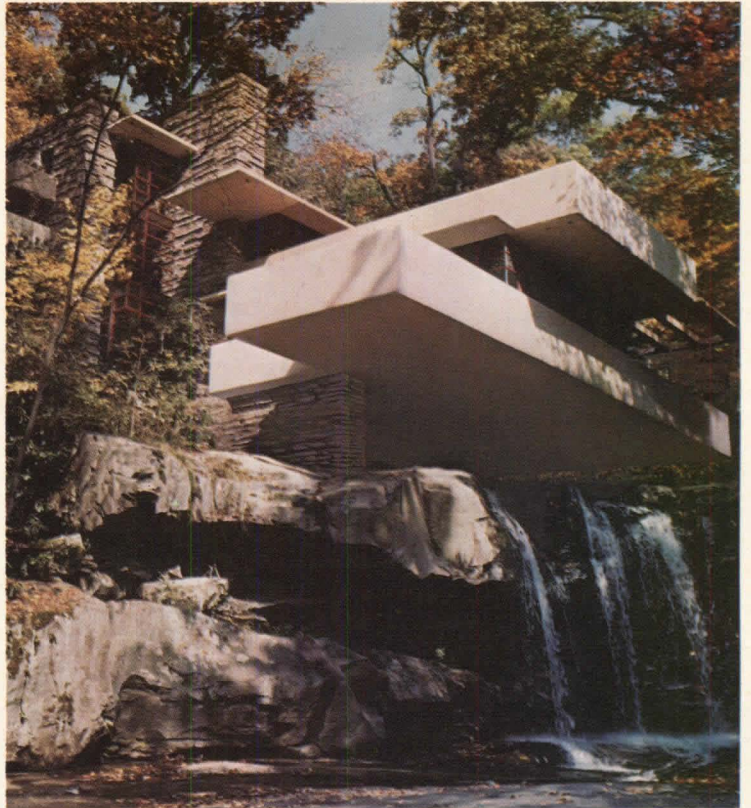
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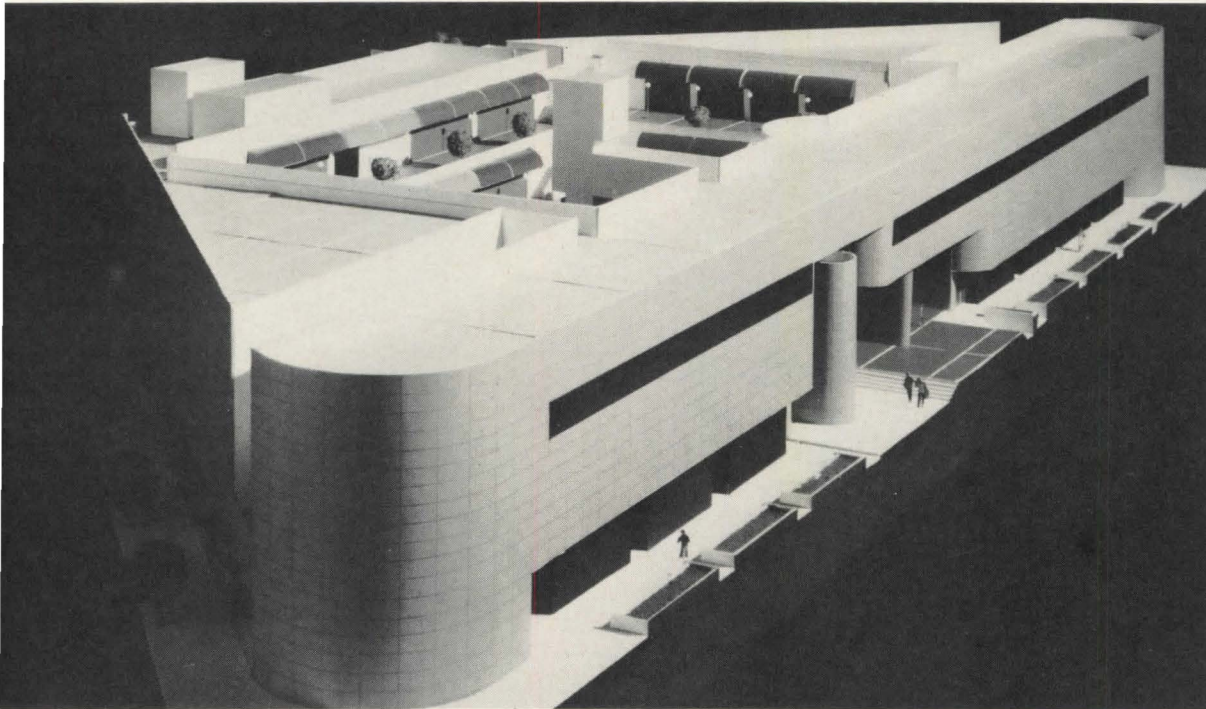
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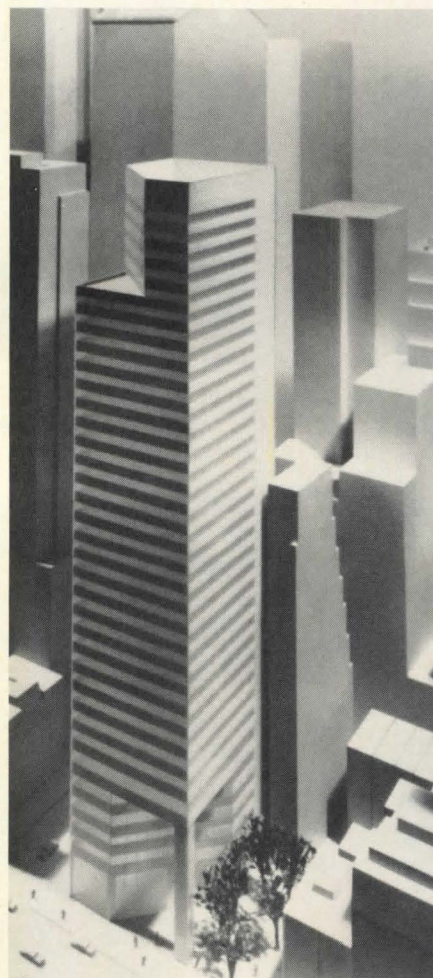
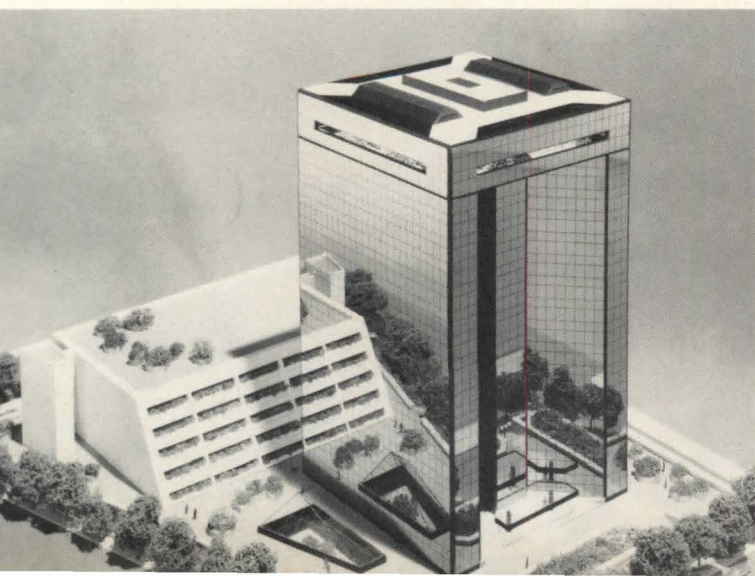
**Weller Court mall  
in Los Angeles  
joins Japanese hotel**

In Los Angeles' Little Tokyo district, Weller Court will occupy a triangular site between the New Otani Hotel and the Sumitomo Bank Building. Designed by Kajima Associates of Los Angeles, the building will face a pedestrian mall on Weller Street and will enclose a three-tiered courtyard for shops and restaurants. Bridges at all three levels will give access to the hotel. Long horizontal windows and a cylindrical stair tower at the entry will break the beige concrete-block facade, which will be further accented by red brick paving at the entrance and by brightly colored metal awnings in the courtyard. Completion of the \$8.5-million project is scheduled for June 1980.

**Miami office tower will have a butterfly shape**

On Brickell Avenue in Miami's financial district, the Interterra Office Building will provide luxury space, seven floors of parking (two below grade) and a retail arcade. The east facade of the 19-story building, which was designed by Donald C. Smith, AIA, of Skidmore, Owings & Merrill's New York office, will have a deep indentation indicating the but-

terfly-shaped floor plan, appreciably increasing the number of perimeter offices and views of the water, and presenting a monumental facade to Brickell Avenue. On the tower's curtain wall, black anodized aluminum will frame silver reflective glass. The garage will have the same glass on its sloping facade, black aluminum on the other sides.



**Manhattan offices  
rise 36 stories  
on Madison Avenue**

A new Manhattan office building designed by Edward Larabee Barnes will occupy a corner of Madison Avenue two blocks south of the architect's IBM tower now under construction. At the base of the building, an 80-ft-high arcade will offer a diagonal pedestrian way from 54th Street to a large urban park behind. At the top of the building, the southwest corner will be sliced away for an irregular pentagonal pinnacle. Developed by George Klein, the \$59-million tower is scheduled for occupancy in 1982.



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**The Prestressed Concrete Institute honors eight buildings in the organization's 1979 design awards program**

The Prestressed Concrete Institute, in its annual Awards Program, recognized eight recent buildings "for their achievements in esthetic expression, function and economy using precast and prestressed concrete."

The honored buildings included: (1) Safeco Insurance Companies of America Divisional Office Building, Spokane; Walker McGough Foltz Oyler, P.S., architect and engineers; (2) Multi-Function Building Two and Central Utilities Building, Florida International University, Miami; Dalton Dalton Newport, architect; (3) Washington Trust Branch Bank, Spokane; Tan/Brook-Kundig, architects;

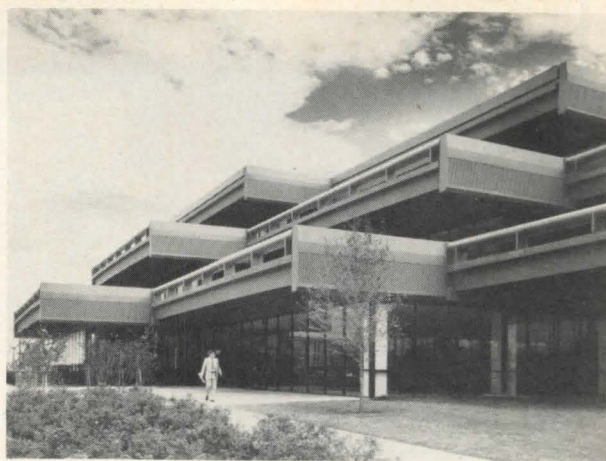
(4) Terminal Two Parking Structure, Toronto (Malton) International Airport; FENCO-Barton, joint-venture design consultants, and Parkin Partnership architectural advisor; (5) Latter Center West, Metairie, Louisiana; Skidmore, Owings & Merrill, architect/engineer; (6) City of Miami Heavy Equipment Service Facility; Morton, Wolfberg, Alvarez, Taracido & Associates, architect/engineer;

(7) Radnor Corporate Center, Buildings Two and Three, Radnor, Pennsylvania; Geddes Brecher Qualls Cunningham: Architects, architect/engineer; and (8) U.S. Postal Service facility, Caguas, Puerto Rico; Jorge Del Rio

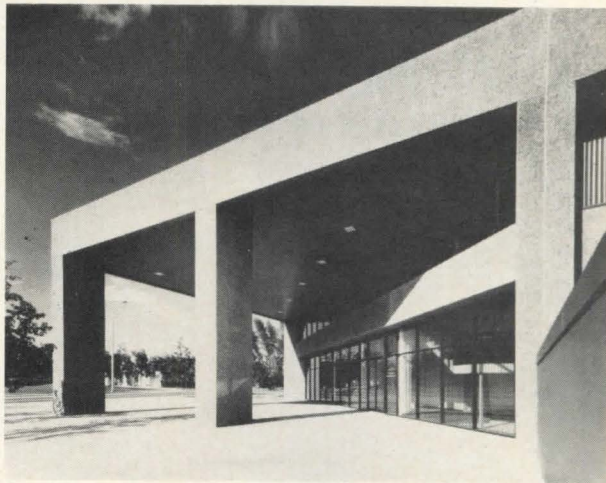
Ala—Architect & Planner, architect.

Members of the jury for the building awards were Ehrman B. Mitchell, FAIA, then president of the American Institute of Architects, as chairman; Walter E. Blessey, president of the American Society of Civil Engineers; Irving Boigon, FRAIC, president of the Royal Architectural Institute of Canada; John A. Martin, president of the Structural Engineers Association of California; and architect William C. Muchow, FAIA.

PCI also gave four awards for bridge design, as well as three special jury awards to a marina, an undercrossing and a ferry bridge.



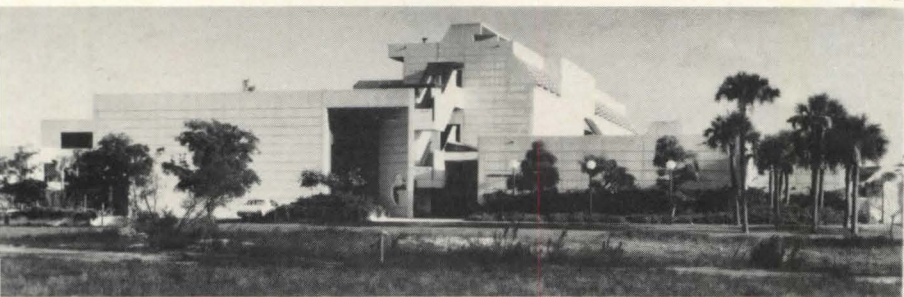
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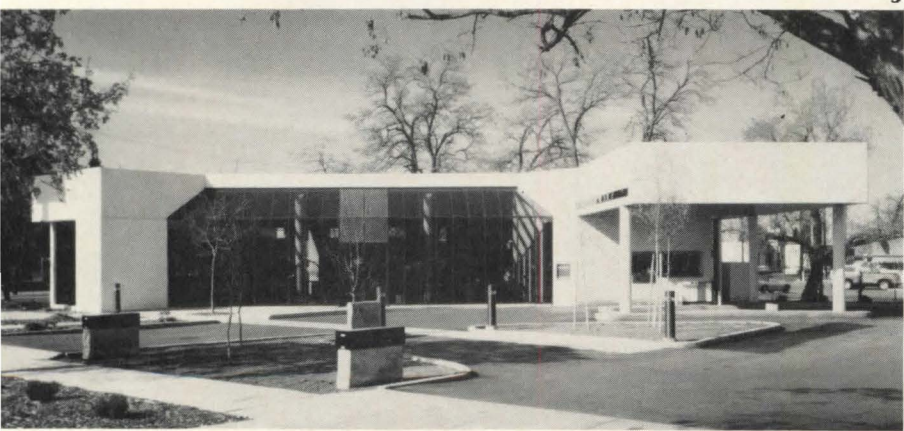
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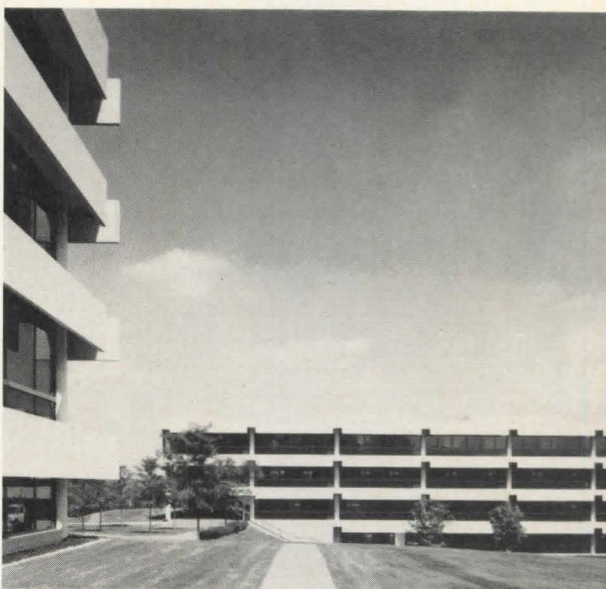
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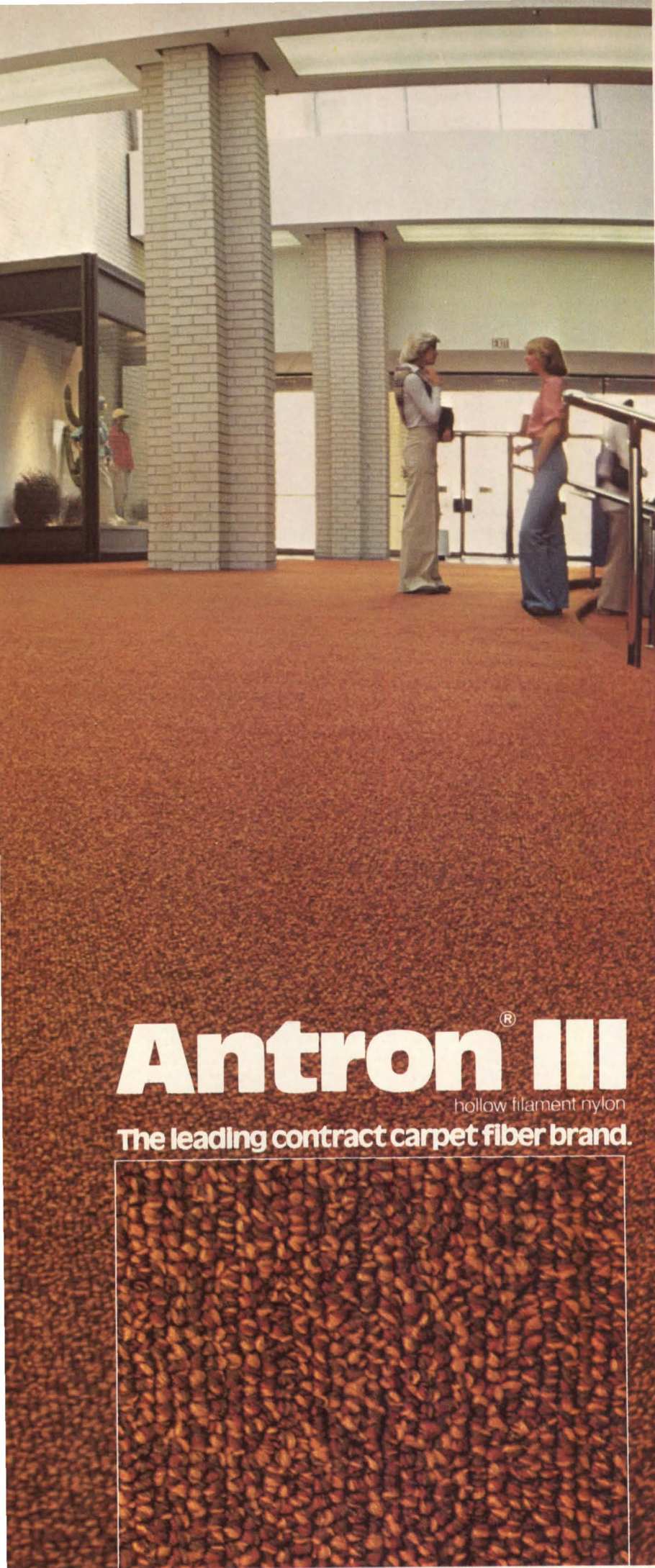
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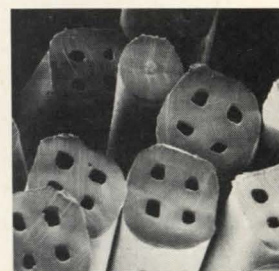


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**"Graves has become a celebrity in the culture industry—and this also helps his reputation in architecture—because the forms he is currently producing—packed with references to the historical past, adorned with old-fashioned colors, but expressed in images that are recognizably 'modern'—somehow speak to the emotional needs of the middle class."**

MICHAEL GRAVES, *edited by David Dunster; Rizzoli New York, \$14.95.*

*Reviewed by Robert Gutman*

Michael Graves receives an enormous amount of attention for an architect with so few built designs. This handsome monograph presents most of the projects he has done from 1967 until recently, including plans, axonometrics, and many full-color photographs of buildings, interiors and elevations. Of the 25 *building* projects that are shown, along with comments by Graves discussing the intentions and concepts on which they are based, only 11 already are built or are in process. The glare of publicity which this volume represents is even more remarkable when one realizes that of the building projects illustrated, 17 are single-family houses or additions to houses. Some critics might argue that this situation is not unusual in the history of architecture, that even the *oeuvre* of the great masters consisted in large part of villas or projects never realized. This is true, of course; still the recognition that came, say, to Corbu for his unbuilt work emerged retrospectively, after several major buildings had been constructed.

There is something else that is significant about the attention accorded to Graves—namely that work like his, the sources of which are recondite and which addresses issues that are best understood if one is familiar with the history of architectural theory, was available in the past only to small audiences. Now it is covered in the daily press and is discussed by writers in the weekly news magazines.

Both these developments can, I think, be attributed to the gradual expansion of interest in cultural subjects that has been going on in Western democratic society for almost two centuries, and which has accelerated rapidly under the influence of widening literacy, a more easily available university education, and the emergence of what has been called the culture industry: the combination of

established organizations, including museums, art galleries, and professional and popular news media which together have created a market for the reproduction and consumption of artifacts and documents created by visual and literary artists. This process of appropriation, by which a once adversary or insular avant-garde culture is swept along by currents in mass society, has long been forecast by sociologists and historians of culture, but it is only recently that it has affected architecture.

Architecture was able to escape the demands of the culture industry more easily than painting or sculpture because of the characteristics of architectural objects. They are big, they are expensive, they take a long time to produce, and most people can afford to own, at the most, one example. It is a sign of a certain kind of genius that Graves has been able to find a way around these constraints by becoming a leader in the movement to develop an audience for architectural drawings. According to a recent article in *The Wall Street Journal*, some Graves drawings now sell for \$4500. Graves also has been able to apply his considerable imaginative gifts and the unique images he has invented to the production of other kinds of designed objects, including furniture and wall sconces. One would not be surprised to hear soon that he has been commissioned to design silverware, stage sets, even clothing!

There is an important characteristic of the culture industry which must be kept in mind in understanding Graves' success in the new market for design. The manufacturers who employ designers to create objects possessing a distinctive style are not taster-makers with the power to impose their esthetic on the consumer. The business is highly competitive and success does not come simply by introducing a new fashion arbitrarily. The innovative style must respond to what people desire, what strikes them as emotionally or symbolically appropriate, even though it awaits the skill of the designer to articulate the specific form it will take. Graves has become a celebrity in the culture industry (and this also helps his reputation in architecture) because the forms he is currently producing—packed with references to the historical past, adorned with old-fashioned colors, but expressed in images that are

recognizably "modern"—somehow speak to the emotional needs of the middle class. No other architect with roots deep in the advanced culture of architecture has displayed such a knack for expressing ideas in a way that is accessible to a general audience.

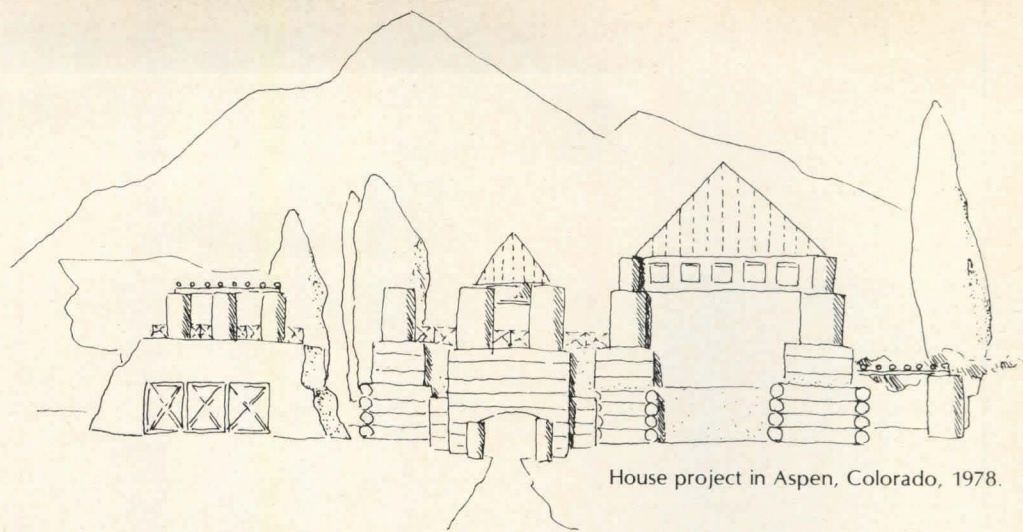
One has only to compare Graves' success in disseminating his style and ideas about architecture to the relative lack of influence of two other architects with ambitions in this direction—Venturi and Eisenman—to get a sense of how truly remarkable his gifts for sensing the requirements of the culture industry are. The Venturis combined their new architectural symbolism with a political doctrine that could hardly please businessmen or other architects, charmed as the latter may have been by the prospect of adopting the new iconography and style for their products. The Venturis also went out of their way to incorporate in their designs references to styles that they argued were indigenous to working class neighborhoods, forgetting apparently two important facts about how taste is transmitted in the U.S. It does not originate in the lower class, but is invented by advanced artists or by artists who serve the industries that produce designs for the middle class. Furthermore, the Venturis seemed unaware that in a nation that cherishes the tradition of upward social mobility, a deliberate move to imitate existing lower class styles would be regarded as patronizing by the ethnics and other groups who inhabit old city neighborhoods.

Eisenman's designs have proven less adaptable than those by Graves, for other reasons. Unlike the work of Graves, whose architecture has become increasingly sensuous and therefore can be enjoyed by almost anyone who responds to colors and forms, the appreciation of Eisenman's work requires a highly sophisticated knowledge of architectural theory and recent movements in art criticism. It is austere and intellectual. In addition, as we know, in developing his ideas, Eisenman often has produced buildings that are uninhabitable, thus defying what the average citizen understands by architecture.

Graves' architecture avoids all these difficulties. It disavows an interest in using architecture as a social instrument, a point of view that Venturi, for all his objections to diagrammatic planning and functionalism, took over from the main stream of the modern movement. As Alan Colquhoun points out in one of the two essays in the monograph (the other is by Peter Carl), Graves insists that architecture communicate with individuals, not with social classes. His use, especially in the recent work, of reconstituted fragments borrowed from

Robert Gutman is professor of Architecture and Urban Planning at Princeton University, professor of Sociology at Rutgers, and an honorary member of the AIA. He is the author of *People and Buildings, The Mark of Oppression, and Neighborhood City and Metropolis: An Integrated Reader in Urban Sociology.*





House project in Aspen, Colorado, 1978.

historical architecture, and its presentation in forms that owe much to recent painting, offers Graves' audience the dual identity of tradition and the new. A headline in a recent issue of *Interior Design* puts it all too well: "History lives in Michael Graves' Merchandise Mart Showroom." The reference to forms that are part of the canonical tradition of classical architecture also suggests an association with elites, with social groups of higher status; and thus Graves does not encounter the problem of invidious comparison that has proven such an obstacle for the Venturis. Colquhoun points out that Graves does not consider issues of building technology or program to be worthy subjects of architectural investigation. In the early work, his interest in structure is in what it can yield for organizing the space of the free plan, but in the more recent projects structure, even for its mythic value, disappears as a subject. So far as the program is concerned, Graves regards it just as a starting point, and then in the manner of Kahn, employs design to develop a set of mythic or ritualized relationships between the user and the form of the building. Despite his lack of interest in technology and program in their ordinary sense, Graves has always recognized the obligation of the architect to design a habitable building.

Graves' practice of architecture is now expanding beyond the projects illustrated in the monograph, which ends with the Kalko and Plocek houses and the dance studio addition to the Abraham house; and he is now also the designer for the Sunar showrooms, also not shown in the volume. The recent projects are an indication of his increasing popularity, but the appeal to a larger public which this signifies obviously does not tell us what his reputation will be within the architectural culture in coming years. On the contrary, as my comments on his connections with the culture industry probably suggested, his very success leads people to question the nature of his dedication to serious architecture. Over the long run, the way he is regarded will depend upon how well he meets the standards set by architects, rather than by the opinion of the public, the art galleries, and firms that sell artifacts and fabrics.

In this connection, it is worth considering another aspect of Graves' work which the comparison I made with the architecture of Venturi and Eisenman did not touch on. This is his apparent lack of interest now in exploring the properties of buildings considered as architectural space and in attending to the organization of the building plan. Instead, the

recent work is concentrated on the positioning of surfaces, such as walls and facades, on ways of decorating them to excite the viewer's interest, and on the display of prominent fragmented and romanticized architectural elements, including portals, windows and fireplaces.

Almost everyone who has seen the recent work or studied the published drawings such as those available in the monograph has commented on the abandonment of the earlier concern for the built object itself. Eisenman, who has written about Graves in *Oppositions 12*, believes it significant enough to justify the conclusion that Graves has renounced modernism and also forsaken the moral content of his former work. *The New York Times* architecture critic Ada Louise Huxtable also is bothered by it, but she thinks that the very original imagery that has been generated by Graves' devotion to decorative forms and classical composition constitutes a new language of architecture and she is willing to wait for its use in larger scale projects before making a final judgment. Several juries that have given design awards to Graves expressed their ambivalence by wondering whether the recent projects are buildable; or they raised questions about whether the esthetic he has invented, which owes so much to earlier experiments by Cubist and Pop Art painters, can be transferred effectively from the plastic arts to architecture. Colquhoun and Carl in their essays in this volume are obviously puzzled by what it means, too. The former describes Graves' architecture as a retreat to "pure visibility"; while, Carl, a former student willing to give his teacher the benefit of the doubt, says that he hopes that Graves will eventually explain his intentions.

I think it is very important to realize that the allusive and unresolved qualities of his building designs that disturb architects are a feature of his work that, when applied as an esthetic to domestic objects, adds to Graves' appeal to many manufacturers. Just as his recent architectural projects avoid an examination of the plan and architectonic space, so his designs for tables, chairs, and lamps seem not to address the internal structure and the function of these objects. For this reason, those who retain Graves' services can put his

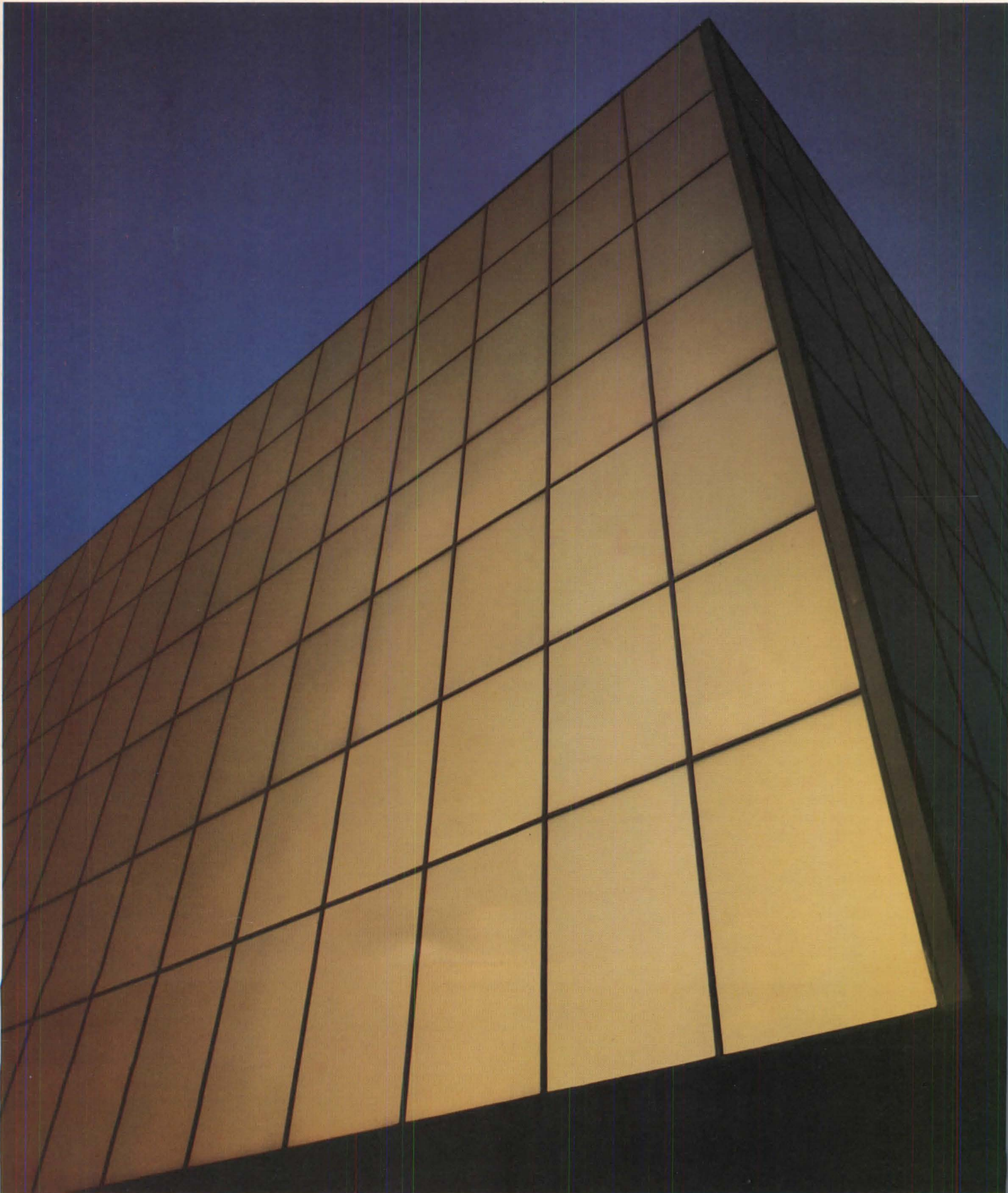
talent to work dealing with the style and decor of their products, and remain confident that he will not threaten the operations of engineers, production supervisors, marketing personnel and cost accountants. What a different view of the design task from the approach that animated the Werkbund and the Bauhaus!

Graves' recent popularity seems to me, therefore, to pose an interesting issue for the architectural culture, and for Graves. Are architects willing to accept the limited role for themselves in the design and building process that they must if Graves' success in the culture industry is taken as the model position in architecture? For example, will architects allow building contractors, developers, material manufacturers and other specialists to usurp the responsibilities of programming, space planning and the determination of the quality of interior space that have traditionally belonged to the profession? There has been considerable complaint within the practicing profession about modernist architects on the grounds that their concentration on so-called design issues, to the exclusion of operational problems, undermines the influence of architecture in our society. The doubts about Graves' work among the critics and jurors I have mentioned would suggest that the model he has proposed for the definition of architecture is perceived as a danger to modernism itself.

What about Graves? Where is he heading? Many of the problems that seem to interest him now undoubtedly can be explored more easily through drawing, mural painting and work on a variety of manufactured objects than in architecture. However, it is evident from the projects displayed in the monograph that his root imagination is architectural rather than decorative, and that what he does in three-dimensions is much more original and interesting than his work as a painter. As time goes on, the nature of his talent and commitment will probably make it more difficult for him to accept the limits imposed by the housewares, furnishings and culture industries. Perhaps the day is not far off when he will get commissions that enable him to put to rest the reservations that are such a conspicuous feature of the contemporary response to his achievement.



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## Designing adaptable housing to meet barrier-free goals

Physically disabled people don't only need accessible places of employment and public buildings—they also need places to live. But they have found it difficult to find suitable housing. The trend toward de-institutionalization of physically and mentally disabled people also has been severely impeded by the shortage of accessible housing.

In response to these needs, several states have included housing within the range of building types covered by their accessibility codes. The two Federal agencies that sponsor construction of civilian housing—the U.S. Department of Housing and Urban Development and the Farmer's Home Administration—are now beginning to follow through on the mandate of program accessibility created by the 1973-74 Rehabilitation Act. Requirements for newly constructed accessible housing are being improved and existing public housing sponsored or financed by HUD now must be retrofitted to provide accessible dwelling units. The new ANSI A117.1 standard also includes specifications for dwelling units.

The various government agencies that sponsor housing construction and management and the ANSI standard have very different design criteria. Moreover, they differ considerably in their policy for supplying accessible housing. Architects should know the difference in design criteria and how they relate to public policy.

by Edward Steinfeld

The conventional policy toward the provision of accessible housing has been to allocate a certain percentage of units within a building or complex to the handicapped, usually 5 to 10 per cent. HUD standards and those of other government agencies require that these units have additional space and design features: larger bathrooms, larger kitchens, wider doorways, grab bars, etc.

### Problems with present policy

Accessible dwelling units have been provided within Federally subsidized housing for many years. In the private sector a few states have required a percentage of accessible units within any rental housing or multi-family housing projects. These units are sometimes reserved for disabled people and held off the market until qualified tenants appear. Although this assures that they will actually be used for their intended purpose, there have been reports that, particularly in market-rate housing, they often remain vacant for a long time. This results in reduced profit for developers or financial liabilities for non-profit sponsors and thus resistance toward broader policies on accessible housing.

If accessible dwelling units are not reserved, they will often be rented to able-bodied people. This leads to no increase in the availability of accessible housing, a poor use of resources and a false perception of

low demand for such units. Many disabled people do not know that this housing exists and thus, without outreach, potential demand does not become effective demand.

Most accessible dwelling units have been built within projects for the elderly. Although there is clearly a need for these units, they do not consider the needs of younger disabled people. Similarly, within the last 10 years, there have been a number of subsidized housing projects built solely for the disabled. However, many disabled people reject such segregated housing because it isolates them. Housing for disabled people is not constructed for families: disabled people who are parents or parents of disabled children want to live among other families.

Two other problems with the conventional policy on accessible housing are that not all people who live in one dwelling may be disabled and not all disabled people have the same needs. The design of dwelling units cannot satisfy the requirements of both non-ambulant and ambulant users adequately without a degree of flexibility. Needs vary even among people with the same disability. The cost of designing for the lowest common denominator can be very high. Developers ask why they have to install features that will not be used and in fact may reduce the unit's marketability.

Finally, in housing for the elderly, research has demonstrated that the incidence of disability is very high—much higher than the usual percentage of accessible units. With advancing age older people in such housing are likely to become more disabled, but the lack of vacant accessible units in their building

can force them to relocate, become institutionalized or be dependent on home-delivered services.

### Adaptable housing: a new approach

The concept behind "adaptable housing" is to build a larger percentage of units in all kinds of housing that are basically accessible in terms of circulation spaces but that can also be easily adapted for use by people with specific disabilities. The new ANSI A117.1 standard has design criteria for adaptable dwelling units. Dwellings designed to the standard would not be any larger than typical dwellings of the same type. The cost of adaptability to 100 per cent of all dwellings in a project, excluding walk-up units, has been estimated to be less than 1 per cent of total construction costs, assuming increased costs could not be made up by reductions in other areas. These units would not look any different than typical dwelling units and would be fully usable by able-bodied people. The adaptable housing approach allows for policies that create a much greater supply and diversity of accessible housing. It could eliminate the need to reserve dwelling units for disabled people and also would eliminate marketability problems. In housing for the elderly, providing 100 per cent adaptable units can decrease the need for relocation and the provision of services to tenants as residents age. The National Association of Home Builders has supported the concept as the most acceptable way to provide accessible housing. Currently, the California State Department of Rehabilitation is proposing state regulations that would mandate adaptability for 100 per cent of multifamily housing units. The proposal has received strong support from disabled people.

The concept of adaptable housing cannot be viewed as a substitute for housing already usable by disabled residents. It is basically a way to provide more accessible housing with little increased costs, more choice in available housing, accessibility for a variety of household types and housing that does not cater to the lowest common denominator, in terms of severity of disability, at the expense of everyone else.

As the concept of adaptability becomes better known and applied, architects will need to have an understanding of the specific design criteria necessary to achieve it. Furthermore, in many states, consumer advocates and government officials may promote

Edward Steinfeld is an architect and Associate Professor of Architecture at the School of Architecture and Environmental Design, State University of New York at Buffalo. He is secretary of the ANSI-117 Committee. This is the fifth article in a series of six by Mr. Steinfeld on barrier-free design. The last appeared in October 1979; pp. 57-59.





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other policies without giving consideration to the adaptable housing idea. Architects can advocate code requirements that reflect the adaptability approach.

**Site development**

For adaptable housing, local requirements for parking are sufficient. Most local building codes require one-and-a-half to two parking spaces per unit in multifamily housing. This allotted space is sufficient to serve a vehicle used by a person with a disability. If there are no specifically assigned handicapped parking places in a lot, then one can be re-striped as a 24-foot-wide space or one-half of a space can be allocated as an access aisle. Signs reserving the assigned space for disabled residents should be added. If the parking spaces are not on the same grade level as walkways leading to the dwelling units, then a curb ramp should be provided. The cost of the curb ramp in initial construction should not increase the over-all site development cost bid by a contractor.

If apartments are specifically designated for handicapped people, then the parking

spaces serving the designated units should be as close as possible to the unit itself.

**Multifamily housing**

When someone rents or buys a unit in a multifamily complex, they are entitled to the full range of opportunities available to all residents. This means that wherever adaptable or adapted dwelling units provided, at least one of each type of site facility available for common use should be accessible to disabled people. This includes swimming pools, playgrounds, picnic areas or other recreation and service facilities.

Children's play areas, for example, provide social interaction both for the children and for parents who accompany their young children while they play. Whenever adaptable or adapted housing is provided in a project, at least one play area should be accessible to the handicapped.

All accessible dwelling units in a housing facility should be connected by at least one accessible walkway to all the accessible facilities on the site. On most sites it is relatively easy to achieve full accessibility to all

common use facilities. On some sites, steep or rugged terrain may make it difficult to provide access to certain buildings and certain site facilities.

Steeply sloping sites are not always impossible to make accessible. In fact, sometimes the topography itself allows a greater degree of accessibility. For instance, walk-up apartments running with the contours can have entries directly on grade on two different levels. If topography does make it difficult to achieve access to all buildings in a complex, the main facilities used by the entire group of residences should be made accessible as well as the pathways leading to them. Other facilities, such as individual tot lots, that serve individual buildings or groups of dwelling units can be made accessible on a selected basis. Accessible dwelling units can be clustered together on those parts of the site to provide more convenient use of central facilities. In some cases, recreation trails are planned that are designed to provide a challenging and physically demanding experience and which inherently will be inaccessible.

*continued on page 63*

**Circulation clearances**

**Design Criteria**

**Parking**

1. Parking ratio of 1.5 - 2.0 spaces per unit.
2. Parking spaces reserved for disabled drivers: 13-ft-wide (accommodates a van with side lift) or 5-ft-wide access aisle next to 8 or 9-ft-wide space.

**Shared spaces**

1. Facilities used by all residents in common: all should be accessible or at least one of each type provided.
2. Facilities serving group of dwelling units: accessible if one or more units is accessible.

**Circulation routes**

1. Exterior: at least one accessible route from each accessible dwelling to each accessible site facility.
2. Interior: at least one accessible route from entry to accessible dwellings to all shared spaces (laundry, mailboxes).
3. Elevators: all accessible.
4. At least one accessible entry to each accessible dwelling unit.

**One method for adjusting counter heights**

**Adaptable kitchen**

**Circulation in dwelling units**

1. No stairs to reach: kitchen, one full bath, living room, dining room, the bedroom in one-bedroom apartments and two bedrooms or sleeping spaces if dwelling units have two or more bedrooms, any equipment necessary for routine maintenance, private outdoor spaces, carports or garages.
2. Doors: 32-in. clear width, lever handle on entry doors; clearances in front to allow wheelchair access, floor surface changes and thresholds less than 1/2 in. high and beveled.
3. Halls: 36-in. width minimum.
4. Room dimensions: enough space for 36-in. clearance at sides of bed and in front of closet, bureau.
5. Kitchen: 42 in. between base cabinets; 60 in. needed in U-shaped kitchens.

**Kitchens**

1. Removable base and cabinet fronts at sink and mix center.



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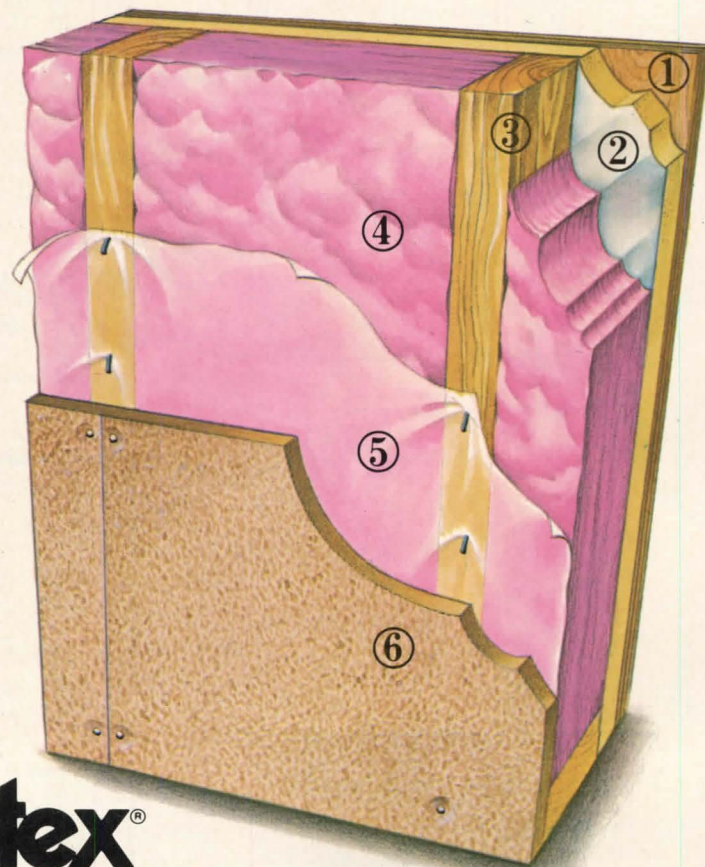
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Source for the above data are ASHRAE 1977 Fundamental Handbook and published literature. At 75° mean temperature.



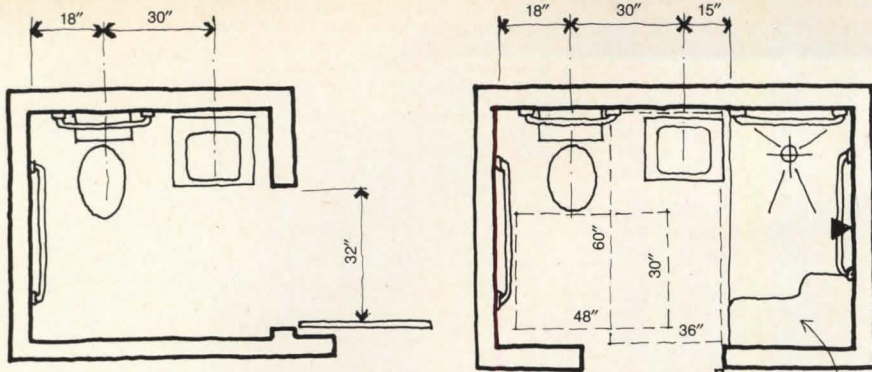
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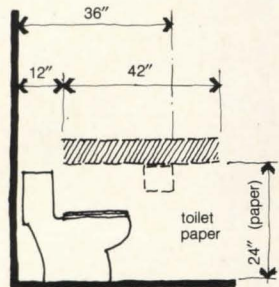


Design criteria *continued from previous page*

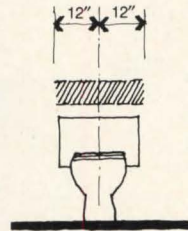


Typical lavatory

Typical bathroom

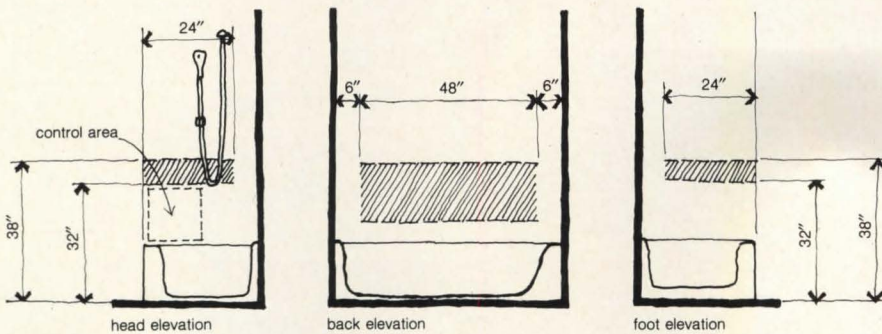


side elevation

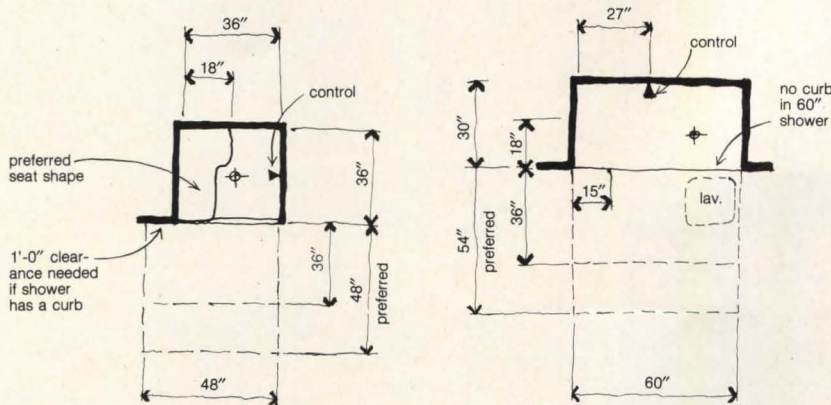


rear elevation

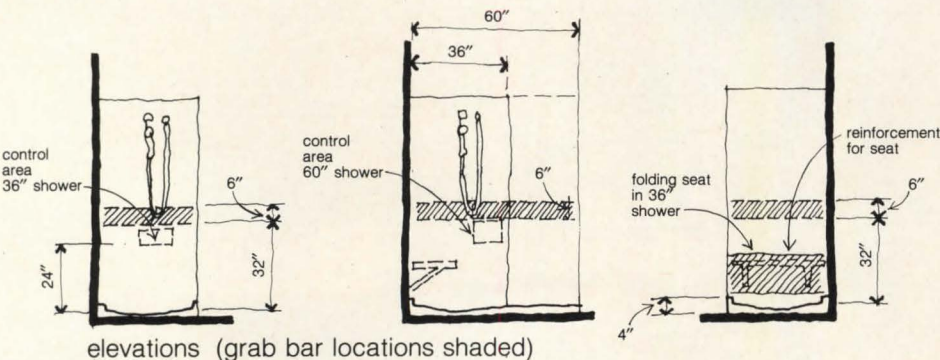
Water closet (grab bar locations shaded)



Tub (grab bar locations shaded)



Plans



elevations (grab bar locations shaded)

Shower stalls

2. Sink and mix center: height of counter adjustable to 36 in., 32 in. and 28 in. from floor to top of counter; 30 in. clearance width under counters.
3. Wall cabinets above counters: mounted at 48 in. high to top of bottom shelf.
4. Plumbing: rough-in for sink low enough to attach drain when sink is mounted at 28 in.
5. Counter: 2-in.-thick maximum, including supporting structure.
6. Ovens: self-cleaning or wall-mounted; if wall-mounted, locate next to mix center.
7. Refrigerator/freezers: self-defrosting or vertical side-by-side type or have 50 per cent of freezer space below 54 in.
8. Cook-tops: if provided, insulate and protect underside to prevent burns or scrapes.
9. Closet or other storage area conveniently located to make up for lost cabinet space if base cabinets are removed.
10. Adapted kitchen: eliminate wall-hung cabinets and base cabinets under sink and mix center and replace with full height cabinet or pantry; provide shelves above counters at 48 in. from floor.

**Bathrooms**

1. Water closets: located at 18 in. on center to side wall; normal height; structural reinforcement at side wall and rear wall (see illustrations); 30-in. by 48-in. minimum clearance in front of fixture.
2. Lavatory: 32 in. high; 30-in. by 48 in. floor clearance (lavatory may project up to 19 inches into clearance); clear space underneath or removable vanity cabinet.
3. Shower stall: preferred over tub; 36-in. by 36-in. or 30-in. by 60 in. size; folding seat in 36 in. size but not necessary in 60-in.-size; hand-held shower spray; structural reinforcement for grab bars (see illustrations); controls mounted on wall opposite seat in 36-in. stall and to one side of back wall in 60-in. stall; 36-in. by 48-in. minimum floor space; 4-in. curb maximum in 36-in. stall; no curb in 60-in. stall.
4. Tub: provide seat; structural reinforcement for grab bars (see illustrations); controls mounted near entry side of head wall; 30-in. by 60 in. minimum clear floor space; hand held shower spray.
5. Mirror: 40-in. maximum from floor to bottom edge.
6. Faucets and other plumbing controls: Single lever type.
7. Adapted bathroom: install grab bars at shower or tub and at water closet; toilet height 17-19 in. to top of seat in housing specifically for disabled or elderly people.

**Electrical System**

1. Outlets: 15-in. high minimum
2. Visual emergency alarm: wiring and connections to install flasher unit; connected to emergency power supply and fire alarm control.
3. Thermostats: 48-in. maximum mounting height.





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Perhaps only a small segment of the trail can be made accessible; at least the disabled residents will be able to use part of it.

To provide full accessibility to housing, interior common spaces that are shared by a number of dwelling units must be accessible. Thus, wherever entries, mail boxes, elevators, halls or corridors serve adaptable or adapted dwelling units they should be made accessible themselves. Entries to building must have no stairs, or ramps as well as stairs. Entrances that are ramped or on grade are convenient for families with young children and people who ride bicycles as well as disabled people who have difficulty on stairs.

Standardization in the design of dwelling units is always an effective way to keep costs low. In walk-up apartments, it may sometimes prove cost effective to make not only ground-level units adaptable but also units that are reached by stairways: then they can be designed identically. There are many disabled people including those who are deaf and blind and others with limitations of walking who can use stairs, so there is no reason to restrict allocation of adaptable dwelling units to only those on the ground level. Adapted units, of course, should only be on accessible floors.

#### **Dwelling units: circulation for wheelchairs**

An accessible dwelling unit must have at least one path of travel without stairs from the main entry of the unit to at least the following rooms or spaces: kitchen, dining, bedroom, bathroom, living room and storage. In housing for families with children, both a bedroom for parents and a bedroom for small children should be accessible. If there is only one accessible bathroom, then that must be a full bathroom. It is preferable that all spaces in the dwelling unit be accessible to handicapped people, but, in the interest of making as many dwelling units accessible as possible, there can be spaces other than those listed above which are not accessible.

In terms of circulation, accessibility (for both adaptable and adapted units) means that halls and doors are wide enough and have enough maneuvering room for passage by a person in a wheelchair and that there are no stairs along the path of travel to required accessible spaces. Clearances in hallways can be provided by careful design without additional space being added to conventional dwelling unit floor plans. Some codes require 48-inch-wide hallways, but if doorway maneuvering clearances are adequate, 36-inch widths are sufficient in most cases. The required clearances in halls often results in a more usable dwelling unit for *all* people.

Where flooring materials change, there is often a change in floor surface height. These changes should not be greater than one-half inch, and the edge should be beveled. Where there are thresholds in doorways, the height of the threshold should be no more than one-half inch and its edges should be beveled. It has been found that most wheelchair users can negotiate abrupt changes in height of one-half inch and sometimes more. However, floor surface changes in dwelling

units are often at doorways where this abrupt change in height can be extremely difficult to manage while manipulating the door.

Because of the generally tight spaces in dwelling unit plans, careful attention must be given to the clearances at doors. Doorways must have at least a 32-inch clear opening. Maneuvering room is necessary in front of doors if wheelchair users are to be able to reach door openers and pass through easily. Entry doors to apartments are sometimes set back in alcoves. Such doors can be extremely difficult for wheelchair users to open unless there is a clearance at the latch side of the door within the alcove.

Often this can be done by changing the swing direction of the door or relocating it in the room plan. Bathroom doors should always open out so that if someone is injured or falls behind the door it is still possible to open the bathroom without hurting the individual. A side benefit of the out-swinging bathroom door is that the space within the bathroom can be kept to a minimum because there is less space needed on the push side of the door than the pull side and the door swing will not intrude upon clearances at bathroom fixtures.

#### **Adaptable kitchens: adjustable cabinets**

The kitchen is one area of the dwelling unit that must be designed for future modification depending on the needs of the individual who moves in. This is true even if it is known that disabled people will be living in the dwelling unit from the start since people with different kinds or levels of disability have different needs.

In adaptable housing, the kitchen cabinets at the sink and the mix center area of the counter should be designed so the cabinet fronts and base can be removed to provide a clear area underneath for access by a person using a wheelchair or someone who sits while working. The countertops of these two areas should be set initially 36 inches high but designed so they can be lowered to at least 32 inches and 28 inches. Although some accessibility codes have established a 34-inch height for kitchens in "wheelchair units," this height is not really appropriate. There is no acceptable compromise height for a person working in a kitchen in a seated position. People standing need a counter height of between 35 and 36 inches. When sitting down, the optimum height for most kitchen work is as close to knee height as possible. A 1½-inch-thick counter positioned at about 28 inches, is about as low as it can be and allow the knees of a tall person to fit underneath. Some wheelchairs have detachable arms, others have a desk-type arm which allows a closer positioning to a low counter, still others have arms that cannot be disattached. When the counter is lowered to a height of 28 inches, wheelchairs with fixed arms must be positioned with the arm rests behind the edge of the counter. Many wheelchair users having chairs with such arms would rather work at a counter height that is higher than optimum for working but high enough so that their wheelchair arms can slip underneath the

counter itself. Thus, the 28-inch height provides a low work surface and clearance for knees, while the 32-inch height provides clearance for the arms of a wheelchair. Ideally, more variability in counter height between 8 and 36 inches should be provided to account for differences in stature.

In adaptable kitchens, the counter fronts of the cabinets at the sink and mix center can look conventional in appearance and simply disattach when accessibility is needed. The counter itself must be seamed so that if it has to be lowered, it can simply be relocated without being cut. Usually the backsplash will have to be deeper than normal to accommodate the lower counter position. Moreover, the base cabinet at either end of the adjustable counter must have enclosed sides. All of these features can be provided using standard kitchen cabinet parts with the exception that the counter top itself may have to be reinforced structurally if it spans 60 inches. There are several methods that can be used successfully to provide adjustable support of the countertop: these include metal L-shaped brackets that are bolted into the back wall, ledger strips at each side of the adjoining cabinet and a back wall (see page 59)

In the kitchens of dwelling units that are initially intended for disabled people, the base cabinets can be omitted and replaced by a full height pantry cabinet. In adaptable dwellings it is preferable to provide a closet or other storage area conveniently located to the kitchen to make up for the cabinet space lost when base cabinets are removed.

#### **Appropriate storage, counters and shelves**

There are many simple ways to improve the accessibility of storage cabinets in kitchens for disabled people. The inside of the cabinet doors can be provided with storage racks so that when the door is opened equipment and supplies are easily accessible without reaching into the cabinet itself. Lazy Susan shelves, sliding shelves in base cabinets, and the addition of extra drawers are also useful.

In adaptable dwelling units, over-the-counter wall cabinets can be used, as in conventional kitchens. The bottom shelf of such cabinets, however, should be mounted no higher than 48 inches from the floor. In dwelling units where it is known that disabled people will live in them from the start, wall cabinets can be omitted in favor of a single shelf within 48 inches of the floor running above the counter area. Again, the space lost from wall cabinets can be made up by the addition of full height storage units.

Conventional ovens and ranges are very difficult for disabled people to clean. Thus, in adaptable dwelling units the ovens should be self-cleaning or a separate cook-top and wall-hung oven should be provided. Self-cleaning ovens are initially more expensive than others but energy savings through the increased insulation provided result in a long-term saving in operation costs.

The conventional minimum clearance of 42 inches between base cabinets is sufficient to provide wheelchair maneuverability in the kitchen, but only when base cabinet fronts



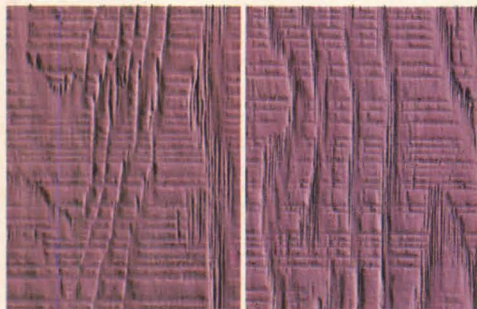
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—results of a three-year weathering test in Black Canyon Stage, Arizona

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New Ruf-Sawn 316

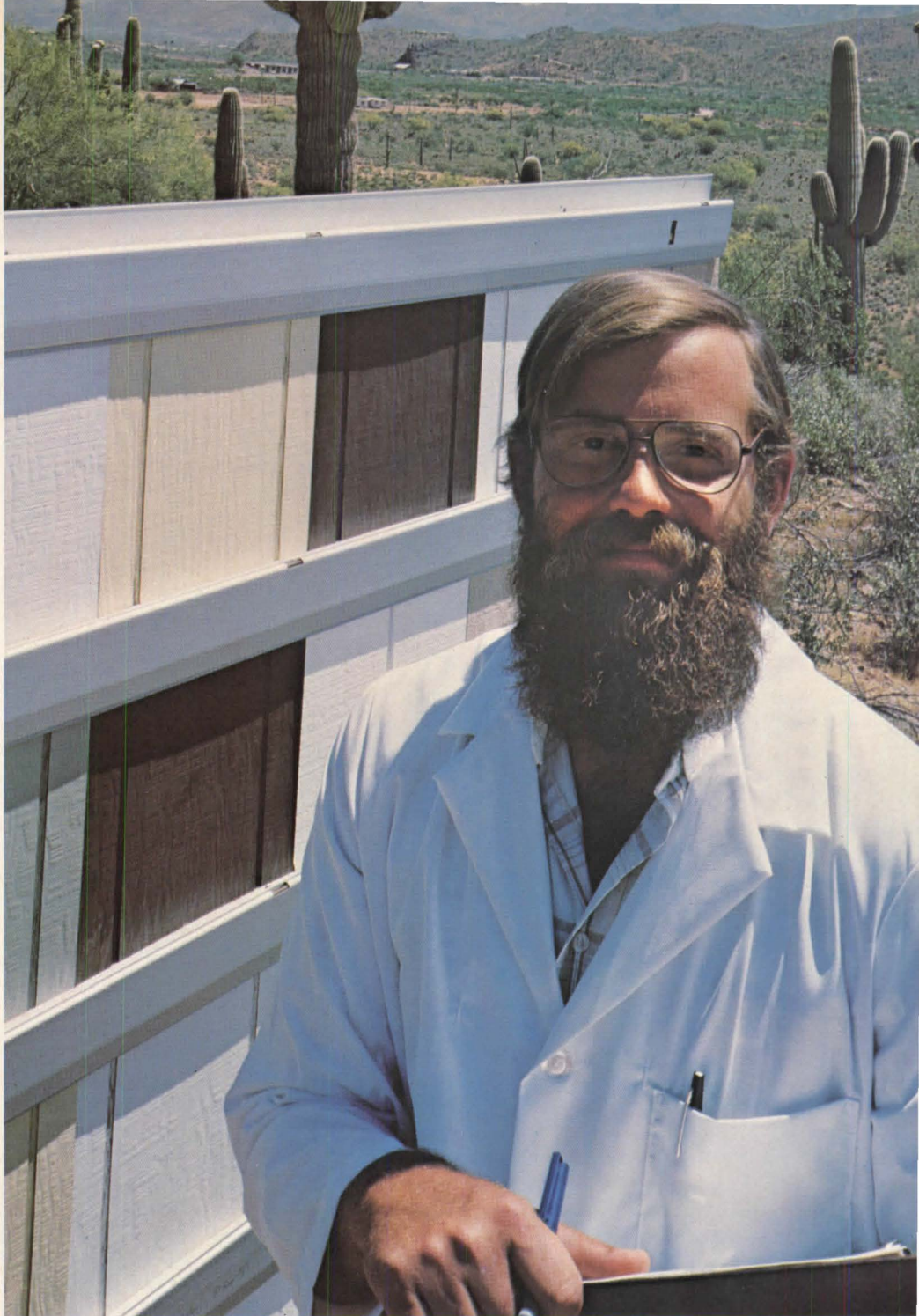
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are removed. Some codes require a 60-inch turning radius in kitchens. While such additional space is helpful, it is not necessary for basic access because the space under the open counters can be used for maneuvering. In a U-shaped kitchen, however, a 6-inch clearance between base cabinets is needed to provide enough space for access to the mix center, sink and refrigerator.

#### **Adaptable bathrooms: grab bars**

Bathrooms are another area of the dwelling unit where adjustability to the specific needs of individuals must be taken into account. Accessible bathrooms can be provided within the constraints of a conventional 5-foot by 8-foot bathroom, but only if the fixtures and doorway are located so that adequate clearances and maneuvering room for wheelchairs are available. The most important consideration in space planning of a minimal size accessible bathroom is that the water closet be located parallel and next to an uninterrupted wall so that a grab bar of adequate length can be installed on it. Since the tub or shower must be located on the opposite wall, the door to such bathrooms must be on the long side. The height of water closets in adaptable dwelling units can be the conventional 15½ or 16 inches to the top of the seat. Where it is known that disabled people will be living in the units and, in housing for the elderly, a 17- to 19-inch height should be used with a wall-hung fixture.

Either tubs or showers can be provided in accessible bathrooms. Where it is known that many severely disabled people will live in a building—for example, in service-supported housing for the elderly—shower stalls should be provided in all units. Although many disabled people can use bathtubs if they have seats, hand-held shower spray units and grab bars, there are quite a few who cannot use the tub at all. Since soaking in a bathtub is a good therapy for many individuals, a tub room should be provided somewhere in the building whenever the dwelling units do not have bathrooms.

There are two types of accessible shower stalls. The small size of 3- by 3-ft stall makes it easy for individuals to maintain their balance and to catch themselves on the opposite side if they start to fall. The other type is a 5-foot-long shower stall that takes the same amount of space as a bathtub. This stall has no advantage over the 3-foot stall unless it has no curb. Without a curb, the area within the stall provides additional maneuvering room for people who use wheelchairs and makes a minimum-size bathroom much easier for them to use. The absence of a curb in a shower stall allows a wheelchair to be pulled into the stall while a person transfers from the wheelchair to a shower seat.

Some accessibility codes require a 4-foot- or 5-foot-square shower stall. These sizes provide no advantage over the stalls described above. Although they may be accessible, they take more room in a bathroom than necessary and require custom-made stalls.

Some accessibility codes require a 5-foot turning radius in the bath. Given adequate clearances, there is no need for a wheelchair user to make a 180 degree turn.

The 3-foot shower stall should have a folding seat installed. A seat that is in a fixed open position is not appropriate because a fixed seat that is adequately sized in a stall as small as this would be a barrier to an ambulant resident using the shower. A 5-foot-long stall has enough space to accommodate a fixed chair or bench.

If bathtubs are provided they should have seats; a ledge at the back of the tub can be used as a seat or portable seats can be used. The seat must be designed and attached so that it will not move as the person transfers into the tub.

Many people cannot use shower stalls or tubs unless they have grab bars. People use grab bars to maintain balance as they step or transfer into the tub and for support as they lower themselves down or pull themselves up. The best location of grab bars varies considerably from person to person. Generally they are needed on each side of tubs or showers. Many people need assistance from grab bars at water closets. Side bars must be located so that a person can pull themselves forward. This means that the bar must project beyond the front of the toilet or the water closet. Other people find a bar at the back of the water closet useful. Adaptable dwelling units do not need grab bars initially: they can be installed according to individual requirements. However, reinforcement in the walls must be provided so that grab bars can be attached securely wherever they might be needed. (The illustrations—see page 61—show where reinforcement is necessary to accommodate the needs of most individuals.)

In adapted dwelling units, horizontal grab bars should be installed initially. Vertical bars and diagonal bars do not provide as much safety if a person should start to fall. A single set of horizontal bars at toilets and shower stalls is sufficient. At bathtubs, however, bars should be provided at both ends and two bars should be provided along the side of the tub. One bar should be about 9 inches from the top of the tub rim and another bar should be directly above that one at 33 inches from the floor surface. Both of these bars should be no less than 24 inches long, starting at about 12 inches from the back wall. Grab bars are not needed at the seat side of a 36-inch shower stall. All bathtubs and shower stalls should be equipped with a hand-held shower spray.

#### **Electrical controls in adaptable units**

If multifamily housing has fire alarms, adaptable dwelling units should be equipped with connections and wiring necessary for the installation of a visual emergency alarm system. Equipment is now available that utilizes any convenience outlet as a connection for a flashing unit. A device attached to the emergency alarm controls activates the flashing units through the regular building electrical circuits. If such a system is not

utilized, the wiring for the emergency visual alarm system must be connected to the emergency power supply. If a deaf person should occupy an adaptable dwelling unit, the emergency light can be connected so that when the fire alarm rings, the light will flash in the individual's apartment. In apartments where it is known that deaf people will live, a visual indicator should also be provided to substitute for doorbells.

In adaptable housing and housing designed specifically for disabled people, electrical switches, controls and thermostats should be located at a height of 48 inches and wall outlets should be located no lower than 15 inches from the floor, on center.

#### **Summary of design criteria**

The features described above for adaptable housing can be summarized as follows:

1. Basic space clearances and doorway design necessary to maneuver a wheelchair through the dwelling unit.
2. Kitchen cabinetry that can be modified to provide space clearances for wheelchair and appropriate counter and shelf heights for people working in a sitting position or who use wheelchairs.
3. Structural reinforcement in bathroom walls for future installation of grab bars.
4. Electrical controls located within reach of people who use wheelchairs.
5. Wiring and necessary connections for future installation of visual emergency alarms for deaf people.

Units adapted fully for disabled people should have the same provisions because there may be a need to adjust and modify the unit to fit specific needs. In addition, they should have grab bars already installed and if a deaf person is to use the unit, have the visual emergency light installed. Base cabinets and wall cabinets above counters can be omitted in fully adapted units but it is necessary to substitute full height cabinets or pantries.

#### **Policy implication**

The policy used to allocate accessible dwelling units is closely related to the design criteria to which they are designed. Many existing accessibility codes have requirements that result in larger, more expensive dwelling units and units that have different features from the other dwellings. Thus, there is an understandable reluctance to require more than a very few accessible dwelling units. But even a few accessible units in a project means that common spaces must be accessible. With adaptable housing, all units can be standardized in construction, no increases in sizes are necessary and increased construction costs are significant. Any costs are more than offset by increased marketability and the potential for more flexible rental policies.

As the new ANSI A117.1 standard is put into use across the country, we will see a shift in code requirements toward the adaptable housing approach. Hopefully this approach will result in increased numbers of accessible dwelling units and more diversity in the types of dwellings available for disabled people.



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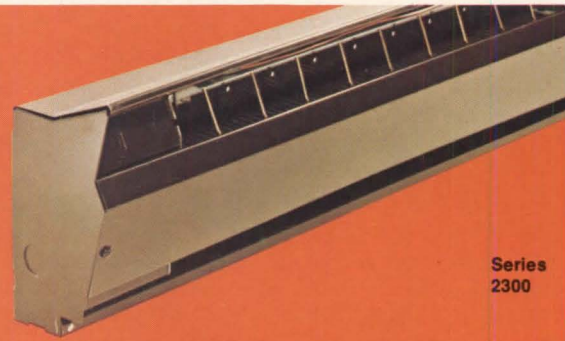
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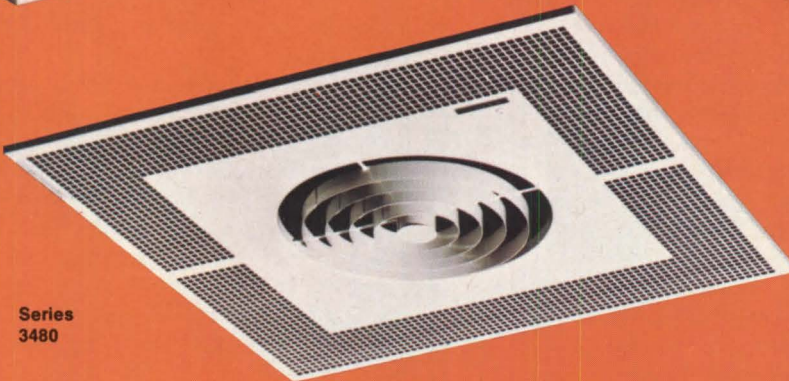
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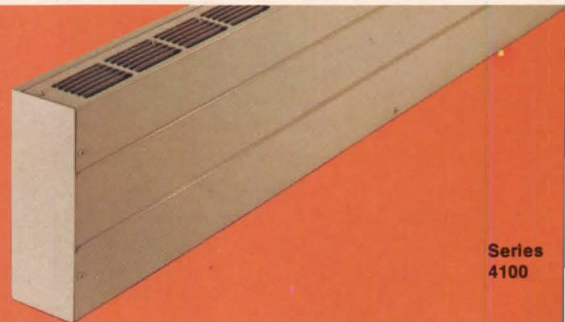
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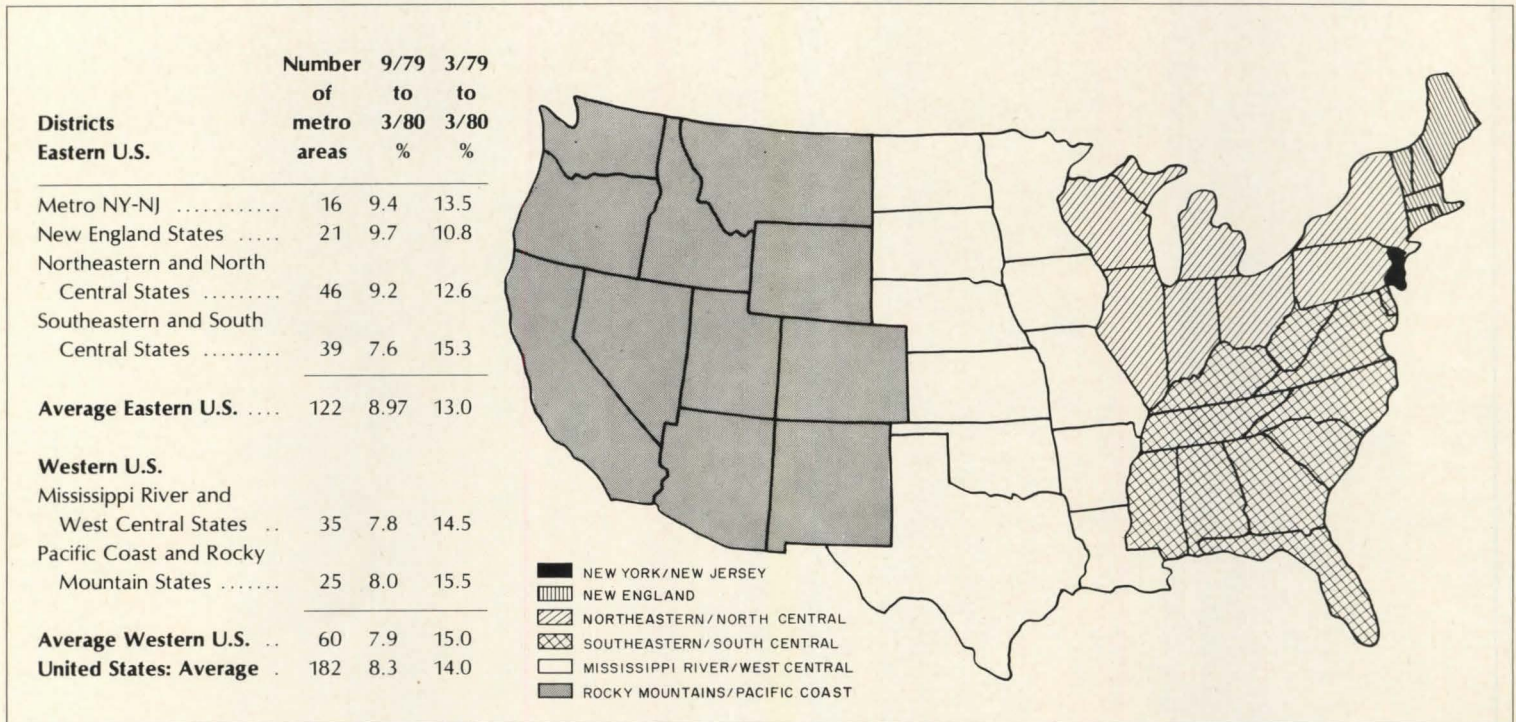
# Energy shortage affects both demand for, and cost of, materials

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the average, 183 metropolitan areas throughout the United States showed concrete prices increased 12 per cent in the last 12 months, while mineral wool insulation soared 27 per cent, lightweight concrete blocks 11.5 per cent, and steel 10.9 per cent. Additionally,

hourly wage rates of building trade craftsmen have increased between 8 and 9 per cent for the year. The increase in labor rates, material prices, fuel and utility costs are expected to cause construction costs to rise at least 1.3 per cent per month nationwide.



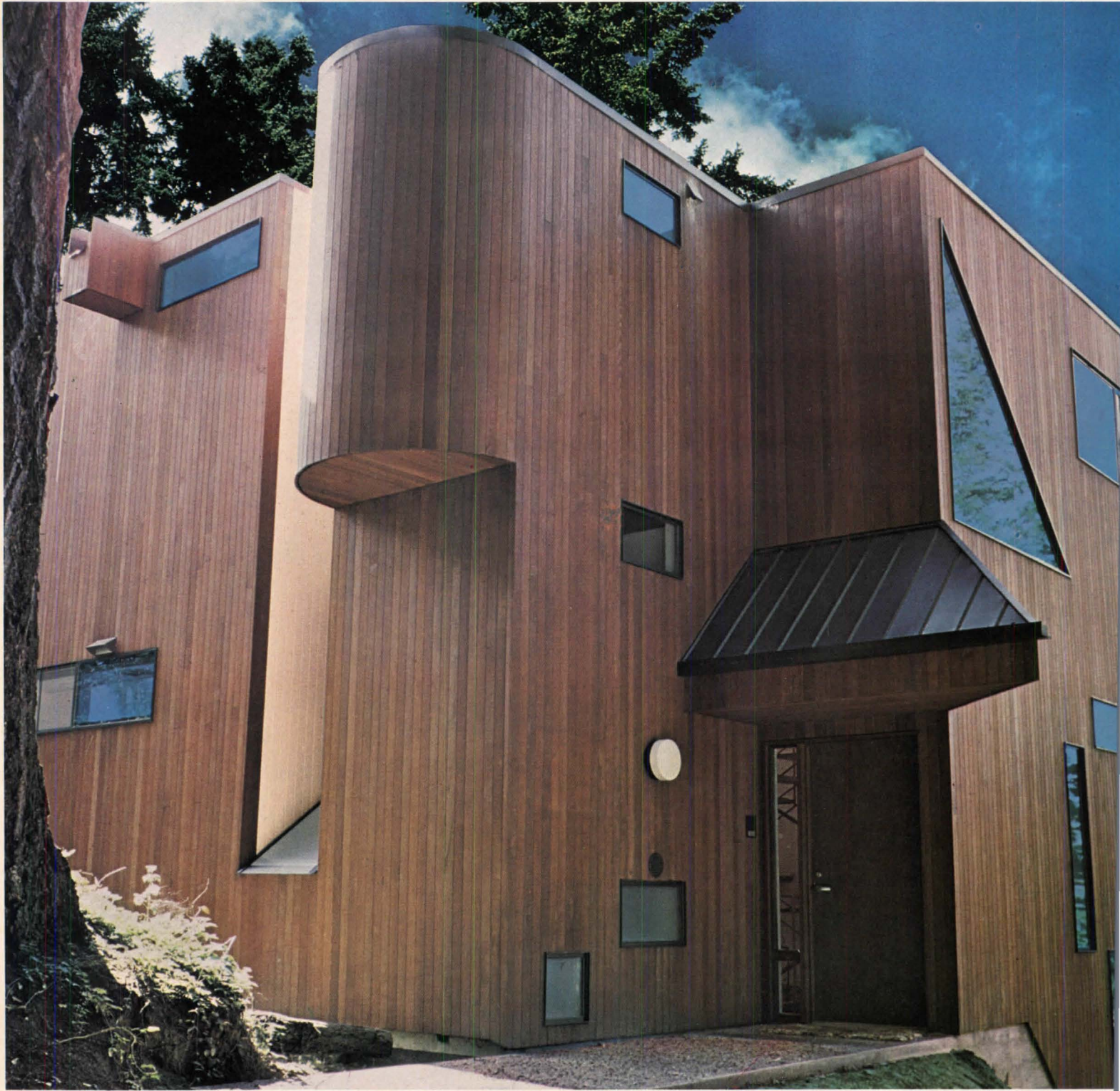
**HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL NON-RESIDENTIAL BUILDING TYPES, 21 CITIES** 1941 average for each city = 100.00

| Metropolitan area | 1969  | 1970  | 1971  | 1972  | 1973  | 1974  | 1975  | 1976  | 1977  | 1st   | 2nd   | 1978  |         | 1979    |         |         |         |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|---------|---------|---------|---------|
|                   |       |       |       |       |       |       |       |       |       |       |       | 3rd   | 4th     | 1st     | 2nd     | 3rd     | 4th     |
| Atlanta           | 384.0 | 422.4 | 459.2 | 497.7 | 544.8 | 575.0 | 598.7 | 657.1 | 714.2 | 724.0 | 746.8 | 769.6 | 783.1   | 819.6   | 836.0   | 872.1   | 904.3   |
| Baltimore         | 322.8 | 348.8 | 381.7 | 420.4 | 475.5 | 534.3 | 581.1 | 585.0 | 635.6 | 643.2 | 656.0 | 668.9 | 680.6   | 729.6   | 744.2   | 773.6   | 802.2   |
| Birmingham        | 303.4 | 309.3 | 331.6 | 358.3 | 402.1 | 421.2 | 448.9 | 551.9 | 585.4 | 594.8 | 603.4 | 613.9 | 624.6   | 704.1   | 718.2   | 724.5   | 751.3   |
| Boston            | 295.0 | 328.6 | 362.0 | 394.4 | 437.8 | 462.5 | 513.2 | 555.9 | 587.7 | 594.1 | 605.4 | 616.7 | 627.5   | 691.9   | 705.7   | 718.9   | 745.4   |
| Chicago           | 356.1 | 386.1 | 418.8 | 444.3 | 508.6 | 529.6 | 560.1 | 635.2 | 689.9 | 696.4 | 711.0 | 725.6 | 738.3   | 805.4   | 821.5   | 885.9   | 918.7   |
| Cincinnati        | 325.8 | 348.5 | 386.1 | 410.7 | 462.4 | 500.1 | 550.6 | 609.8 | 656.6 | 662.4 | 673.6 | 684.9 | 696.9   | 750.7   | 765.7   | 810.0   | 840.0   |
| Cleveland         | 358.3 | 380.1 | 415.6 | 429.3 | 462.2 | 509.5 | 531.0 | 632.9 | 625.2 | 635.4 | 655.6 | 655.7 | 667.2   | 794.7   | 810.6   | 853.6   | 885.1   |
| Dallas            | 308.6 | 327.1 | 357.9 | 386.6 | 436.4 | 477.9 | 499.6 | 538.5 | 615.2 | 618.9 | 631.6 | 644.3 | 655.6   | 739.0   | 753.8   | 873.0   | 905.3   |
| Denver            | 339.0 | 368.1 | 392.9 | 415.4 | 461.0 | 510.0 | 553.6 | 616.0 | 703.8 | 715.9 | 723.0 | 730.2 | 753.0   | 803.2   | 819.3   | 847.4   | 878.8   |
| Detroit           | 352.9 | 377.4 | 409.7 | 433.1 | 501.0 | 538.7 | 597.5 | 617.2 | 664.2 | 679.0 | 738.3 | 797.6 | 811.6   | 840.6   | 857.4   | 865.5   | 897.6   |
| Kansas City       | 295.5 | 315.3 | 344.7 | 367.0 | 405.8 | 444.9 | 509.1 | 547.3 | 603.0 | 614.0 | 626.0 | 637.9 | 649.1   | 657.7   | 670.8   | 711.0   | 737.3   |
| Los Angeles       | 344.1 | 361.9 | 400.9 | 424.5 | 504.2 | 531.8 | 594.1 | 673.1 | 756.8 | 765.4 | 777.6 | 789.9 | 803.7   | 886.3   | 904.0   | 955.4   | 990.8   |
| Miami             | 392.3 | 353.2 | 384.7 | 406.4 | 447.2 | 485.5 | 558.9 | 592.5 | 628.4 | 640.1 | 644.9 | 649.7 | 661.1   | 686.1   | 699.8   | 736.9   | 764.1   |
| Minneapolis       | 331.2 | 361.1 | 417.1 | 412.9 | 456.1 | 488.6 | 538.0 | 564.1 | 629.4 | 640.8 | 646.9 | 653.0 | 664.4   | 793.4   | 809.3   | 824.3   | 854.8   |
| New Orleans       | 297.5 | 318.9 | 341.8 | 369.7 | 420.5 | 442.1 | 494.7 | 534.8 | 614.7 | 620.2 | 631.0 | 641.9 | 653.1   | 697.7   | 711.6   | 734.7   | 761.9   |
| New York          | 344.5 | 366.0 | 395.6 | 423.1 | 485.3 | 515.3 | 533.5 | 580.8 | 619.8 | 632.0 | 641.2 | 650.3 | 661.7   | 666.6   | 679.9   | 778.9   | 807.8   |
| Philadelphia      | 321.0 | 346.5 | 374.9 | 419.5 | 485.1 | 518.5 | 567.5 | 579.2 | 658.8 | 661.7 | 673.6 | 685.5 | 697.5   | 778.0   | 793.5   | 814.6   | 844.8   |
| Pittsburgh        | 311.0 | 327.2 | 362.1 | 380.3 | 424.4 | 465.6 | 509.5 | 526.3 | 589.6 | 599.4 | 608.7 | 618.0 | 628.8   | 692.2   | 706.0   | 736.5   | 763.8   |
| St. Louis         | 324.7 | 344.4 | 375.5 | 402.5 | 444.2 | 476.7 | 528.9 | 537.1 | 617.1 | 622.3 | 632.2 | 642.0 | 653.2   | 752.0   | 767.0   | 782.8   | 811.8   |
| San Francisco     | 441.1 | 465.1 | 512.3 | 561.0 | 632.3 | 672.5 | 753.3 | 820.8 | 963.2 | 972.3 | 983.0 | 993.7 | 1,011.1 | 1,239.0 | 1,263.8 | 1,200.3 | 1,244.8 |
| Seattle           | 317.8 | 341.8 | 358.4 | 371.5 | 424.4 | 450.2 | 515.1 | 570.5 | 629.6 | 638.6 | 656.5 | 674.4 | 706.6   | 700.7   | 714.7   | 761.0   | 789.1   |

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



# Beauty that's more than skin deep.



Architect: Wendell Lovett, FAIA, Seattle, Washir

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## Architects, engineers and builders: get maximum estate benefits

Owners and partners of architectural and engineering firms have several rather special problems to consider in making their estate plans. Architectural and construction firms usually reflect the highly individualistic style of their owners. When the owner sells his business or dies, his talent and creativity are often irreplaceable—or at least prospective clients may feel so. The many variables determining the prosperity of an architectural/engineering firm mean that such estates must be updated on a regular basis—every two years—if they are to prove valuable legacies. Moreover, the impact of inflation, raising simultaneously the value of the estate and the taxes on it, means that it is more than ever necessary for the small business owner to have sufficient liquidity. According to estate planning specialists at Massachusetts Mutual Life Insurance Company, architects and engineers like other small business owners, are increasingly turning to life insurance plans to resolve these estate problems.

by David E. Birkhaeuser

The first question the owner of an architectural or engineering firm must ask himself is whether he has an heir who is willing and competent to manage the business. If he decides, instead, to sell his firm, there are a number of ways to capitalize on it and thus leave a sizable estate to his family. In either case, there are a series of ways in which life insurance can be used to guarantee the firm's well-being during the transition period.

### Profitable disposal: a buy-sell agreement

An owner who wishes that his share in the firm be disposed of upon his decease should consider a buy-sell agreement, an arrangement concluded beforehand whereby somebody else or the company will buy out his interest at a specified price when he dies.

There are two types of buy-sell agreements. The first is a cross-purchase agreement, under which surviving stockholders or partners hold a policy on the life of each of the others. When one dies, the proceeds are used to buy his part of the firm.

The second type of buy-sell agreement is a stock redemption or stock retirement plan. Under this plan, the firm itself agrees to buy the deceased partner's interest. Life insurance also is the principal means of funding a stock retirement plan.

This sort of buy-sell agreement is the most popular because the company, rather than the individuals, pays the premiums. It also has advantages for the firm, which carries the policy on its books as an asset and has the cash value of the policy available.

In general, buy-sell agreements, funded with life insurance, offer several advantages. First, they guarantee the firm will be sold at a fair price and that the estate of the owner will

have cash on hand to pay estate taxes and expenses. A buy-sell agreement also gives the principal or majority owner a dominant voice in deciding who will run the company after his death.

By far the most important advantage of a buy-sell agreement, is that it sets an estate tax value on the business. The price of a publicly traded company easily can be established just by calling a broker or by looking in the newspaper for the stock quote. In the case of a firm that is not publicly traded, a properly drawn buy-sell agreement performs the same function and precludes the Internal Revenue Service from placing a higher value on the company after the owner's death.

### Insure the firm by insuring your partner

If the owner decides to will his share in the firm to his heirs, he must make certain the firm will be able to survive his death. Profits of architectural and construction firms frequently plunge when the owner dies, simply because the individuality and style of the company die with him. Prospective customers often go elsewhere, and suppliers and banks may be reluctant to extend credit.

There are two ways this problem can be faced. Either a sinking fund can be set up or, more commonly, a life insurance policy can be taken out on the firm's most talented and likeliest successor. Either one can be used to cushion the economic blow of the owner's death and keep the business above water until the new man proves himself.

A number of non-cash incentives can serve to discourage him from being hired away by another firm. From the tax point of view, they offer advantages to the key employee, and for the owner they come at a reasonable cost.

Two fringe benefits that have been increasing in popularity are split-dollar insur-

ance and deferred compensation plans. Under split-dollar, the firm and the key employee split the premiums on a life insurance policy. It is usually a no-lose situation.

Under a deferred compensation agreement, the architectural or construction firm agrees to provide additional income to the employee when he retires. Normally that will mean it is taxed in a lower bracket. The safest way to fund a deferred compensation agreement is through a life insurance policy, which will guarantee that the company can meet its commitment to the key man.

### Inflation's impact: liquidity is paramount

For the many architects who are also small businessmen, the rampant inflation of recent years aggravates estate problems. While inflation has appreciated the value of small businesses in a spectacular manner, the added worth means the taxes on these estates will be higher too. If architects, engineers and other small business owners don't have sufficient liquid resources—stocks, bonds, savings or life insurance—on hand to cover their burial costs and estate taxes, their heirs will be forced to sell part of the estate, frequently at fire-sale prices, to cover estate expenses.

With small business owners, most of their estates are tied up in the business. It is common for such a proprietor to have an estate of \$1.5 million, but less than \$50,000, only 5 per cent of the total, in a form readily convertible into cash. Estate costs and burial expenses for an estate of that size can range anywhere from \$200,000 to \$700,000. And estate taxes must be paid within 9 months of death to avoid added interest. This is not a very long time to sell a specialized business.

More and more small business proprietors or partners are turning to life insurance to provide estate liquidity. First, life insurance is as safe as any means of providing estate liquidity. Second, the settlement process after death is fast and simple. Third, and most important, life insurance is getting less expensive. Over the past 18 years, premiums have come down 14 per cent.

None of the estate problems associated with an architectural or construction firm is insurmountable. However, the owner should consider this personal situation and enlist the services of an estate planning team—lawyer, accountant, life insurance agent and banker—so that the retention of the firm or its disposition is properly handled.

David E. Birkhaeuser is estate planning director for Massachusetts Mutual Life Insurance Company.



# When Hewlett-Packard selects you to supply building systems

It started with a building in Cupertino, California. Hewlett-Packard combined Vulcraft's computer designed steel joists and joist girders with a fast-track construction schedule, and helped shave two months off the construction time of the building.

This shaved the costs. Not just because the lightweight nature of steel joists and joists girders makes them easier and faster to erect than other, heavier systems. But also because supporting columns can be placed further apart. And foundation size can be decreased.

All of which makes the Vulcraft system more economical than a traditionally fabricated structural steel system. Simply because it's lighter. And faster. So much faster, that buildings like those constructed for Hewlett-Packard can be delivered to the



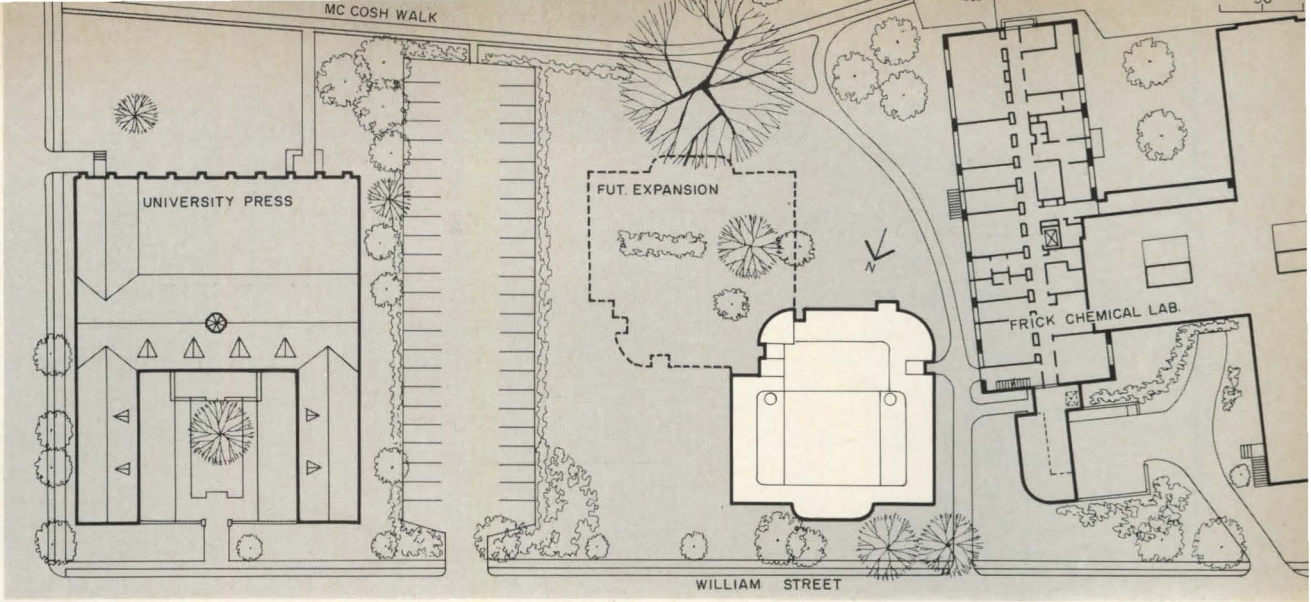
Because electrical and mechanical systems can pass through the open web of the joists and joist girders, installation goes quicker. And changes can be made more easily when needed.

The high strength to weight of steel joists and joist girders can provide increased clear span areas, because supporting columns can be spaced further apart.

Although the Hewlett-Packard buildings using the Vulcraft system have basically the same structural design, the exterior features vary.

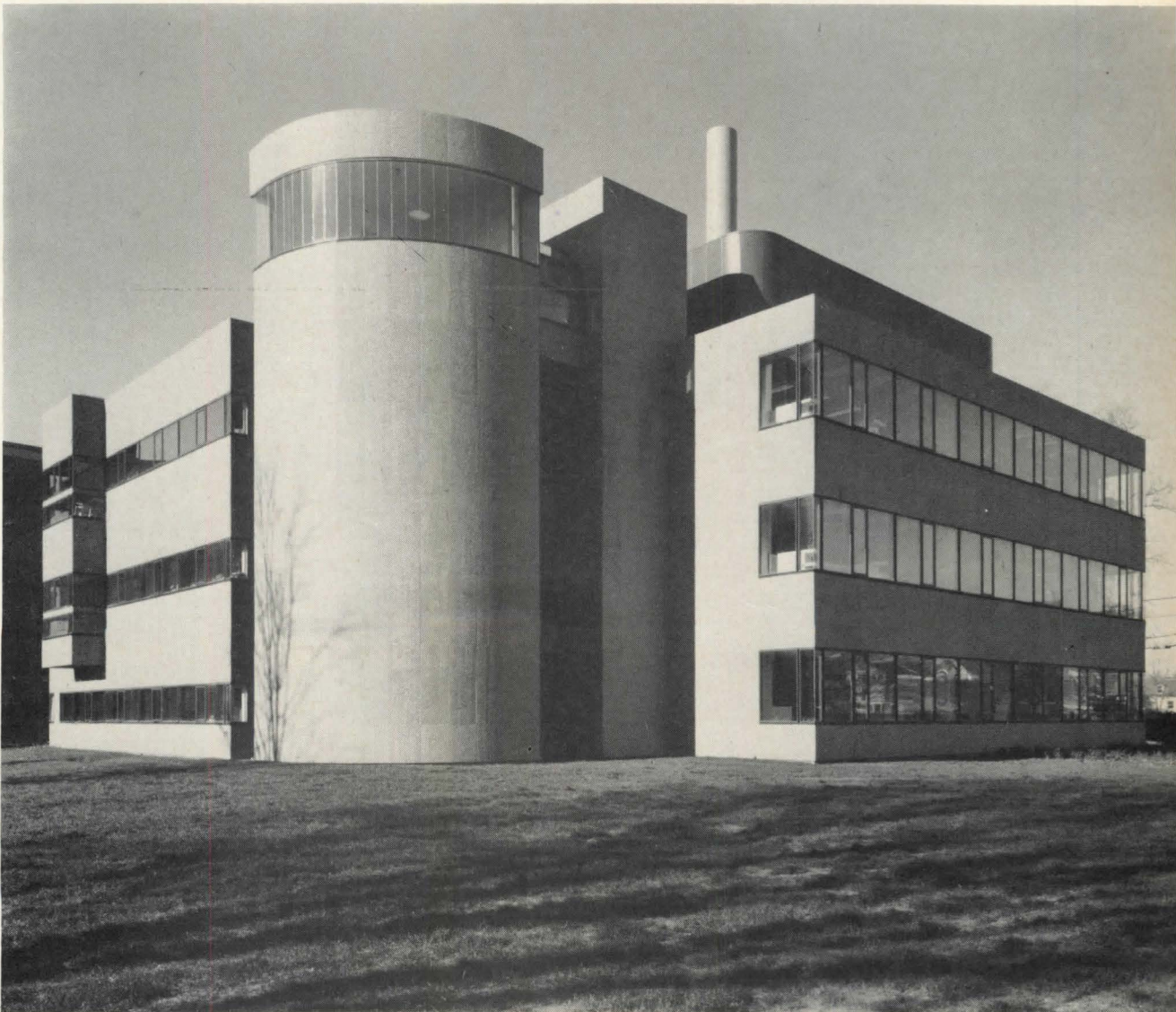
Architects: Ehrlich, Heft & Rominger. Structural Engineers: Rinne & Peterson. General Contractors: Rudolph & Sletten, Inc., Jacobsen Construction Company, Vik Construction Company, E.A. Hathaway, Nielson Construction Company. Steel Contractors: McLean Steel, Inc., Western Steel Mfg., Bannister Steel, Inc.





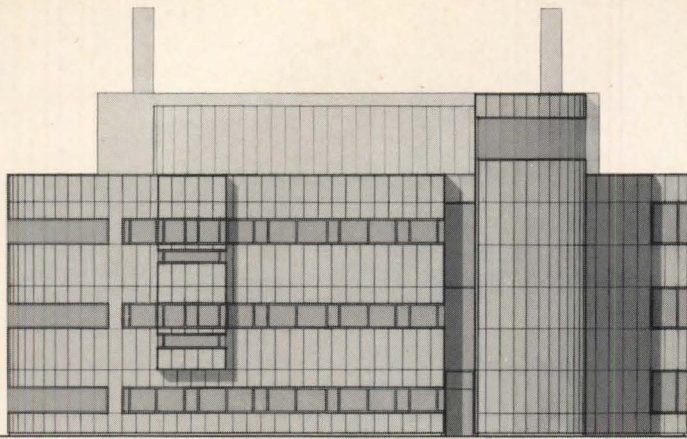
## A NEW FOCUS ON THE PRINCETON CAMPUS

Davis, Brody and Associates' design for this new biochemistry lab responds to a rigid program of research, teaching and office spaces. The spaces are beautifully wrapped in a building that respects in scale and materials its older neighbors and the grand campus, yet makes its own strong, contemporary, and beautifully logical statement.

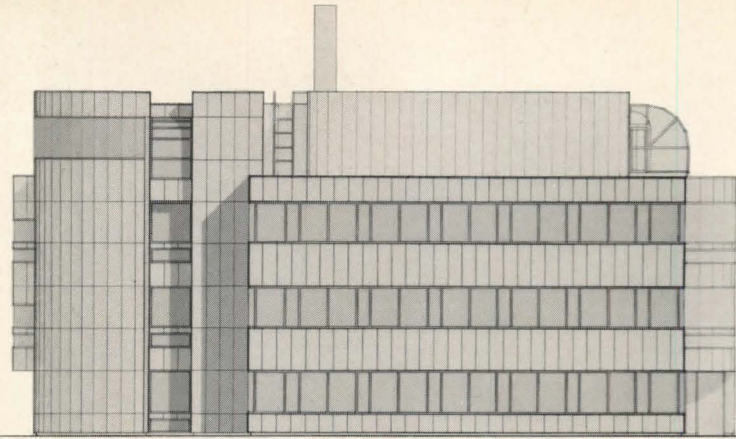


Theo Westenberger photos





SOUTH ELEVATION

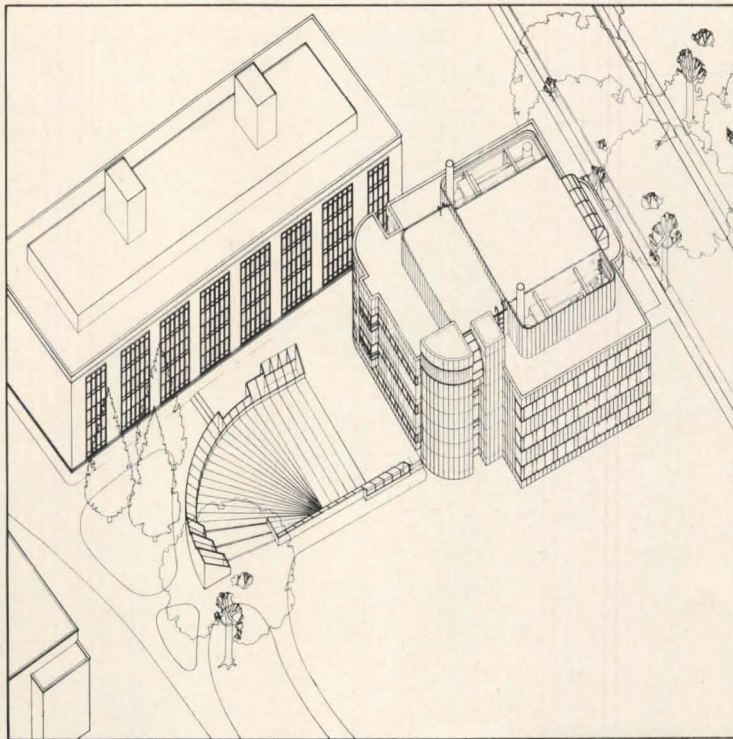


EAST ELEVATION

The Biochemical Sciences Laboratory is a strong new focal point for the eastern half of Princeton's campus, a collection of buildings of disparate style and age some blocks from the university's famed and beautiful old campus with its magnificent trees and Colonial and neo-Gothic buildings dating back as far—with Nassau Hall—as 1756. It is also a strong new magnet along McCosh Walk, a tree-lined way which is the major pedestrian

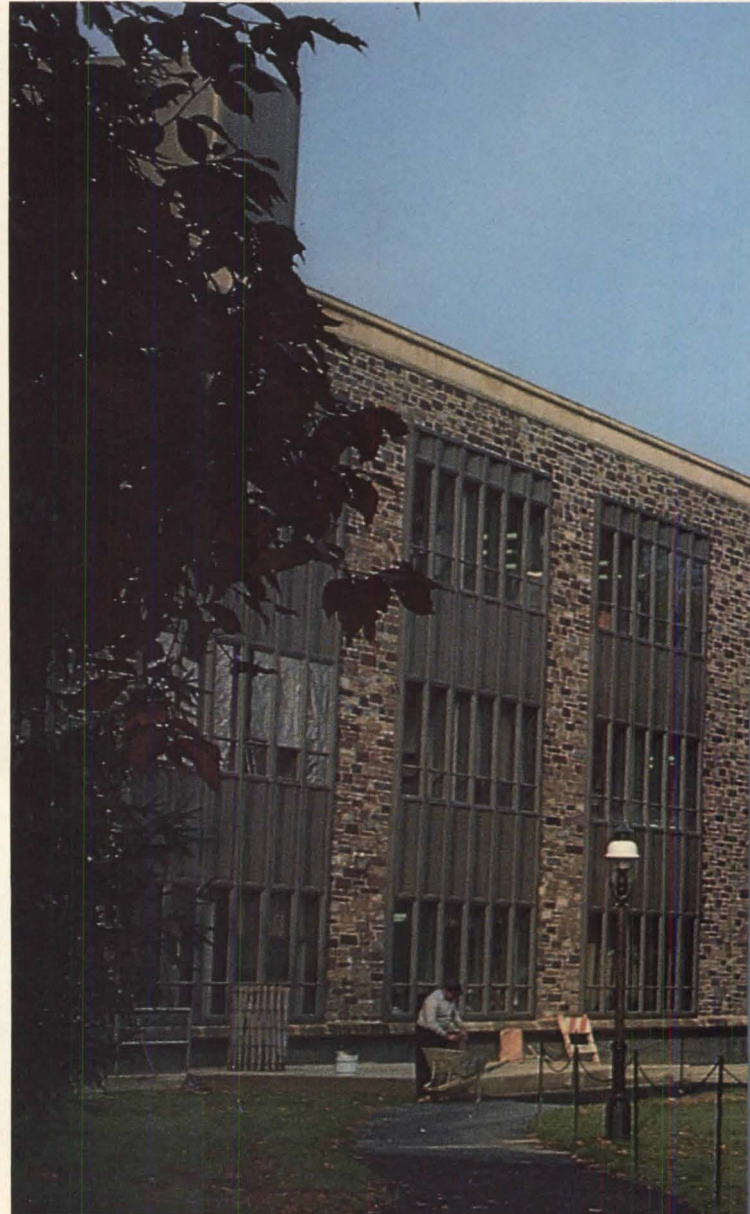
connection through the entire campus. As in the old campus, most of the buildings around the new lab are in brick or in stone of variegated gray, and both of the immediate neighbors of the new building are stone: The Frick Chemistry Laboratory was built in 1929 in the Collegiate Gothic manner, and added to in 1964 in a more industrial style seen in the photo and drawing below. The 1910 Princeton University Press building, on the

other side of the new lab, has a pitched roof, beautiful stone walls, and an open courtyard that conjures images of a medieval barn. The architects clad the new building in a warm gray granite that in color bridges the variegated color of the stone in the older buildings and, like the stone, changes color with the prevailing light. The new building also picks up the cornice line of the Frick and the height of the Press building roof.

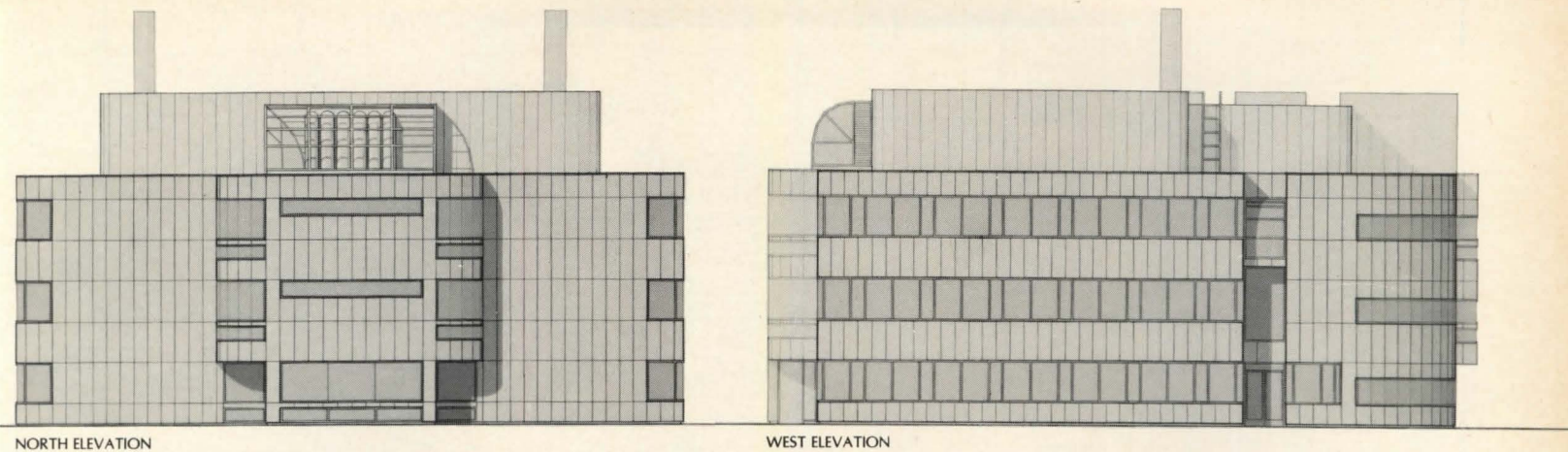


Each of the four elevations of the new laboratory is different — responding to the functions carried out inside and in response to energy-conservation goals. The building is clad in a warm gray granite, so crisply detailed and applied that it suggests a taut metal skin. The penthouse is metal panel in a finish that matches the window walls of the neighboring building. The windows are clear glass

(a given at Princeton) but double-glazed. The drawing above suggests skylights opening to an underground library which is now under consideration by the university. Expansion of the new lab would take place in the area bottom right of the drawing. The building structure is concrete, designed to be vibration-free because of the finely tuned instruments throughout the spaces.







NORTH ELEVATION

WEST ELEVATION

The new building creates its own dominant new element along this edge of the campus—not slick, but precise and crisply detailed; clearly a place for people but—perhaps most clearly expressed by the huge mechanical penthouse and exhaust stacks—suggesting a center of science.

In program, the new building is an extension of the Frick Chemical Laboratory, its special function being highly technical bio-

chemical (and particularly cancer) research. It is in fact connected to the older building by an underground passageway, and a pedestrian bridge may be added.

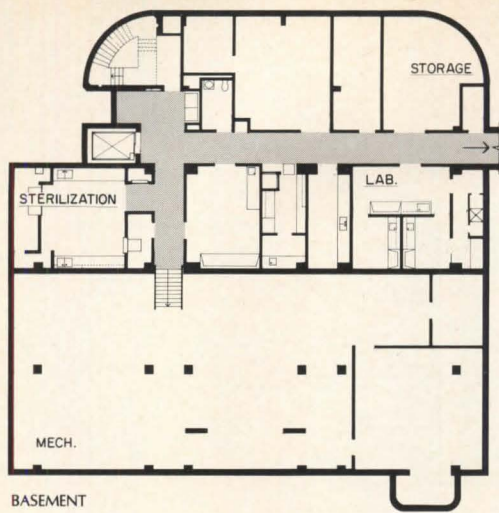
Each of the four elevations is different, and there is a clear logic to the differences. The south elevation (far left above and photo) faces McCosh Walk and the campus green; the spaces inside are given over to seminar rooms and faculty offices. The bands

of windows are relatively narrow in response to the heavy sun load but nonetheless afford a handsome view.

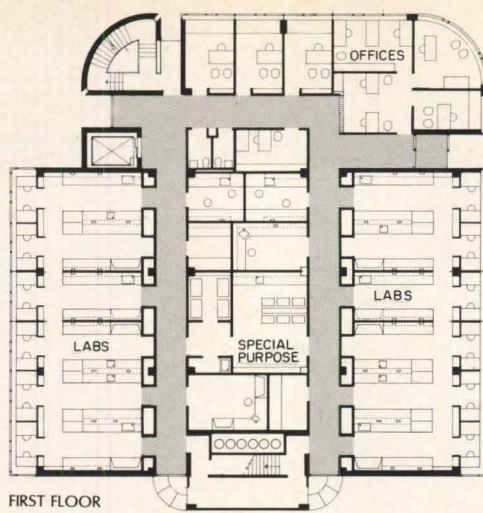
The corner to the east elevation (second drawing) is turned by the prominent quarter-circle stair tower which signals the “back-door” entrance from the Walk. The broad band of windows at the top of the tower offers an extraordinary view out over the campus. The tower is flanked on both eleva-



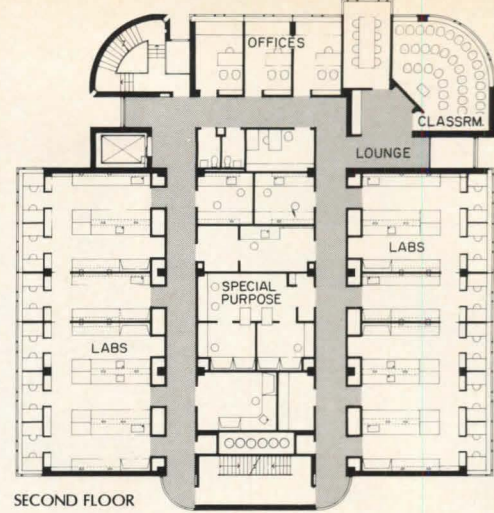




BASEMENT



FIRST FLOOR



SECOND FLOOR

tions by narrow glass areas that light the corridors behind.

The east and essentially similar west elevations have broad bands of windows to give maximum light to the orderly rows of laboratory spaces inside. To passers-by they offer a clear look at the work going on.

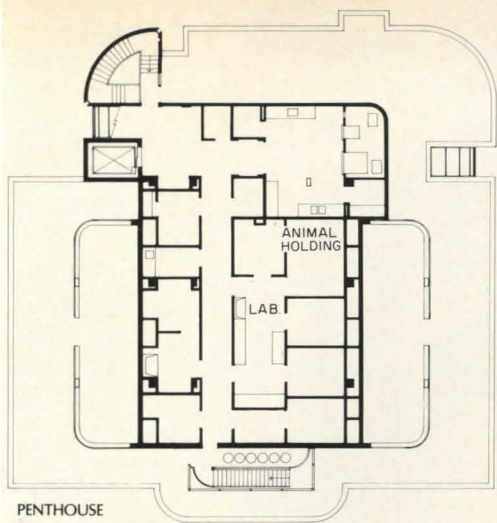
The north elevation (see photos this page) has the least window space, in response to its orientation to weather and the

fact that it faces a busy street and a parking lot opposite. The central entry/stairwell extends forward towards the street, and a large glass panel at the street level (soon to offer a view of sculpture inside) signals the entrance. On the upper levels, the glass switches to the ends of the stairwell, affording views up and down the tree-lined street from the landings. At both ends of the north elevation the windows of the laboratory

spaces wrap around the corner so passers-by on the heavily-trafficked street get a glance at the activities inside. On this face, the building reinforces the street line established by the neighboring buildings. As seen at the right of the larger photo below, a section of wall in the same granite as the new building encloses a new loading dock at the Frick building, permitting trucks to enter directly off the street. This dock was previously on the side







of the Frick building, a space now open for a broad walkway connecting the street and McCosh Walk to the rear.

The client's program requirements—as to the number, area, and organization of laboratory spaces—was well defined and quite inflexible. Davis, Brody's response is simple and logical. On each of the three laboratory floors, a single corridor wraps around a central core of highly specialized

labs requiring special provisions—in surface materials and in the air- and liquid-exhaust systems—to protect against contamination. These core labs have completely separate systems for filtering and neutralizing both air and liquids, designed to a very stringent (so-called P-3) Federal standard. On the east and west walls, the corridor opens to more conventional laboratory spaces, which can be subdivided on a 10-foot module for research

teams of various sizes. A system of open-plan offices along the window walls provides desk space for researchers but does not block light from reaching into the laboratory spaces. On the south wall (at top in plan) are, as noted earlier, offices for faculty and large seminar rooms with curved glass windows overlooking the campus green. The penthouse level, in addition to mechanical equipment, contains animal housing. The basement houses addi-



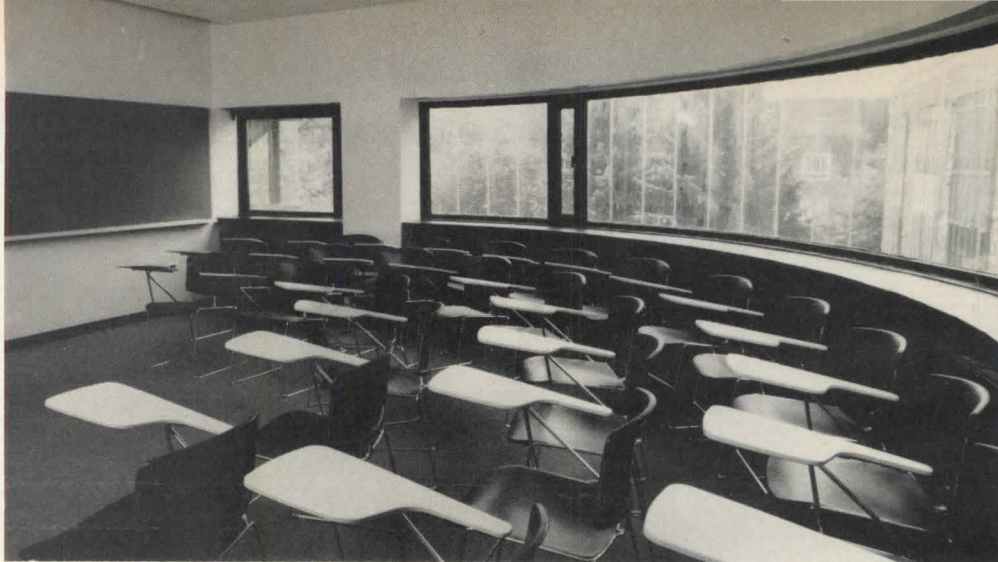
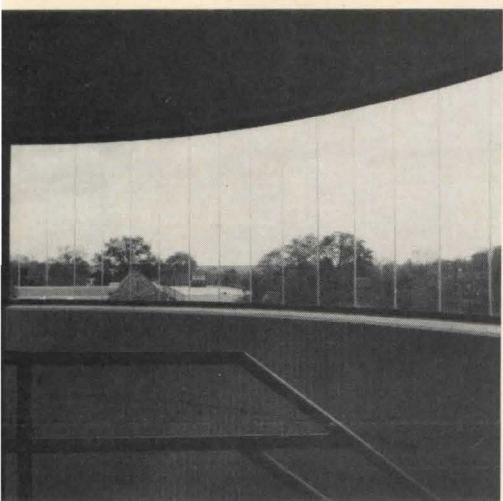
*The plans, described in detail in the text, are tight and highly ordered. A single corridor encircles a core of special-purpose labs; and larger open labs on a flexible 10-foot module line both side walls. Offices and seminar rooms face the campus view (top in plan). This street elevation best shows the building in context with its older neighbors, which it respects in color and in mass while making its own bold presence dominant on the street. Four of six turn-of-the-century wood-frame houses that occupied the site were moved across the street to form faculty housing.*











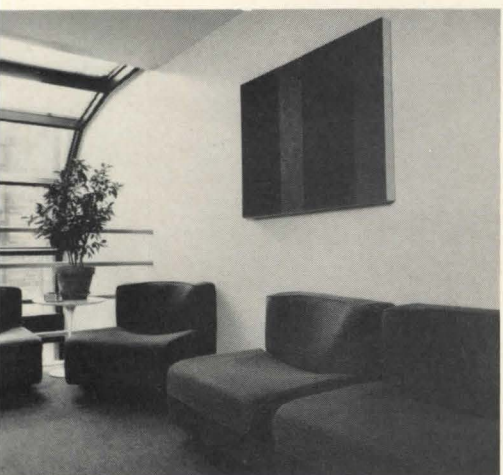
tional research facilities, including isolation rooms for work involving radioactive and carcinogenic substances, a photography lab, and a sterilization room.

This program of heavily equipped laboratories left neither budget nor space for more than one public space—a lounge on level three overlooking the campus. Therefore the architects made every effort to have the circulation spaces count for more than

just movement. There is daylight at the end of every corridor and in every stairwell—and the stairwells themselves (especially the corridor extending across the main, street-side stairwell) are actively used for informal meetings of students and professors. Chalkboards lining corridor walls are constantly in use.

The 38,000-square-foot building was built and equipped, including lab furniture and equipment, for just over \$5 million.

BIOCHEMICAL SCIENCES LABORATORY, PRINCETON UNIVERSITY, Princeton, New Jersey. Architects: *Davis, Brody and Associates—Robert Lubalin, project architect; Maria Twirbutt, Norman Dorf, Ian Ferguson, project team.* Engineers: *Wiesenfeld & Leon (structural); Cosentini Associates (mechanical/electrical).* Landscape architects: *Zion and Breen.* Consultants: *Klepper, Marshal & King (acoustical); Nissim Zelouf (cost).* General contractor: *Humphreys and Harding, Inc.*

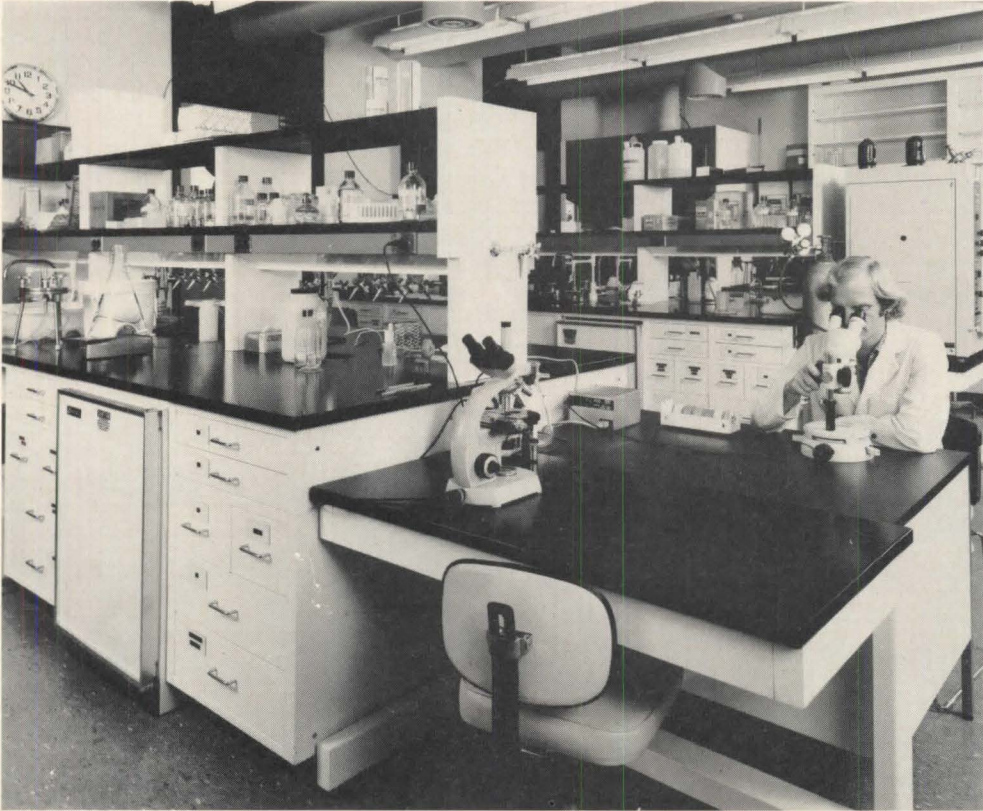


*Beautiful detailing and spots of color and light brighten the public and circulation spaces: the stairwells (left and right); the overlook from the stair tower and the seminar rooms (top); the third floor lounge (just above). The rounded forms are a constant design theme.*





*The corridors are used actively for impromptu teaching sessions between faculty and students—and the chalkboards lining the walls are constantly in use. The sophisticated laboratory spaces have elaborate supply systems for services, and highly refined systems for exhaust of air and wastes. All of the lab spaces and services are on a module permitting a flexible arrangement of equipment for various projects.*





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## Architects spur rebirth of Chicago's historic Printing House Row

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It was on a plane flight home to Chicago from Washington five years ago that architect Laurence Booth suggested to architect Harry Weese that they take a close look at the development potential of a piece of Chicago's South Dearborn Street.

Running south of the Loop, from the Congress Parkway to the old Polk Street station for only a couple of blocks, the piece of Dearborn that Booth was referring to had once seen lively days as the home of Chicago's printing, transportation, and shipping industries following the construction of the station in 1883.

Long in a decrepit state, this stretch, now renamed Printing House Row, is in the process of being transformed into an attractive residential and retail district, reclaimed by and for eager urbanites who have developed, in common with much of the country, a strong nesting instinct. The difference now is that this nesting is occurring in areas, like the Row, that had recently been slated for clearance, not imaginative conversion.

As it happens, Weese was not unaware of the potential of South Dearborn Street or the station. "Fifteen years ago, I got the idea that our city college could be developed in and around the station," he recalls, "and I had gotten this other, related idea that the biggest old building of all down there—the Transportation Building, of 1927—could be filled up with architects, professors, artists, students, some elderly citizens, and young professionals. I had in mind colonizing a lot of those buildings with such people. But it was really the fate of the old station that got me hooked. Why couldn't you have a lot of different, delightful things in there? Not many Chicagoans wanted to know."

Another factor in Weese's active sleuthing around with Booth in subsequent months was the fact that Weese was getting started on a study to show how four major landmark buildings in the southern area of the Loop could be reused. These were the Marquette (which has just undergone a major renovation for offices, though it is still bereft of its glorious cornice), the Monadnock (which is going to be turned into a combination of offices, apartments, and shops), the Old Colony (which is doing pretty well as it is, and it is wonderful), and the Manhattan (which has also recently been renovated). The grid of Chicago's attitude was obviously altering during this period—a far cry from the late 1960s and early 1970s when the city's landmarks people couldn't get anywhere in preserving Adler & Sullivan's





Stock Exchange Building as the historical mainstay of a large new development. By the mid-1970s, however, Carl Sandburg's City of the Big Shoulders, perhaps casting envious glances at all the preservation successes in Boston, San Francisco, and elsewhere, was learning that the past—for economic as well as cultural reasons—cannot be shrugged off.

Harry Weese, it must be said, is also a *bona fide* urban visionary, even as a number of the post-Miesian architectural crowd in Chicago view him as a "traditionalist" if for no other reason that, having been post-Miesian for as long as Mies himself was, he has not seen fit to draft manifestos to declare himself free from any past or to try his hand at post-modern historical allusions. In fact, Weese has quite a strong pragmatic streak and has never eschewed "little plans" that have a chance of being realized while also promoting such extravaganzas as a refurbished "L" around the Loop (which Mayor Jane Byrne says is going to happen) or a 1992 Chicago World's Fair to show the one of 1892 one better (which now is little more than a bread-on-the-waters series of magical sketches). So Booth's gleefully conspiratorial suggestion about that seedy stretch of Dearborn hit Weese right where he lived, and being smart about the dynamics of real estate, Weese got hold of John Baird, the president of the big and successful real estate firm of Baird & Warner, who represents one of the circles that architects should go around in. Baird was definitely taken with the possibility, but with all the bits and pieces of architecture involved he also knew right away that for such a street-saving scheme to get anywhere they would have to work out a sensible plan for getting control of those bits and pieces.

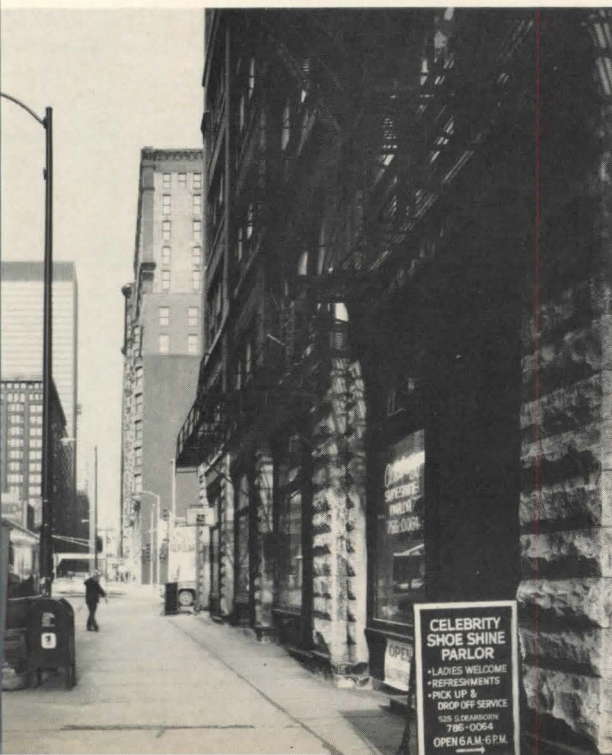
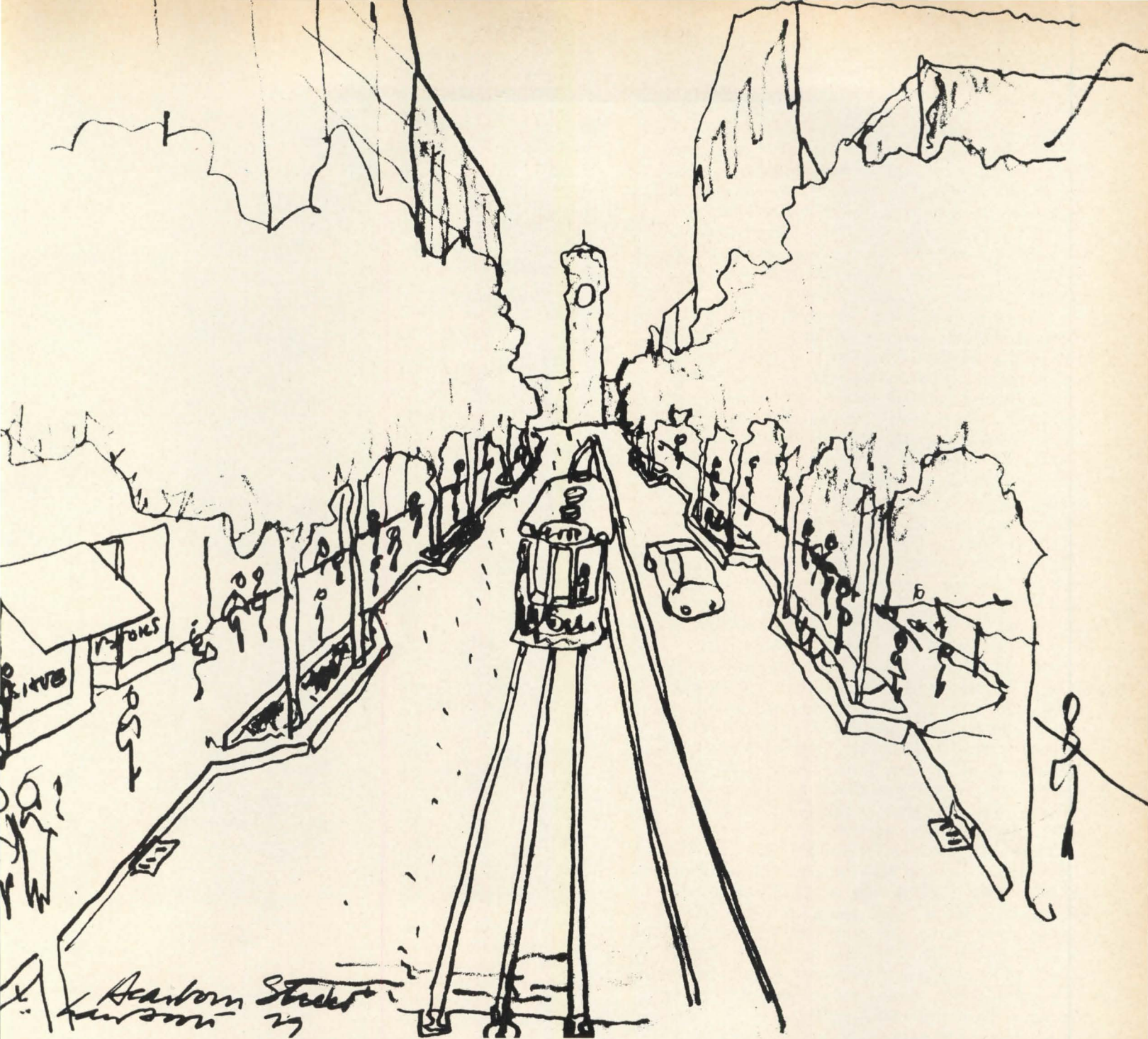
In looking up who owned what along these couple of blocks, the name of Theodore Gaines kept showing up on the parcels along the northwestern edge of the street, on the short block between Congress and Harrison. Gaines is a prominent lawyer who, 20 years ago, decided to bank some of his money in a few of these buildings with an eye to the eventual assembly of his and other parcels for the construction of a convention hotel or some such "old-fashioned" thing.

A broker got hold of Gaines about selling. He took a week to decide whether to do so, considering this was a preservation-bent bunch, and then called the broker back. "I told them I was a seller, but that I wanted to meet face to face to find out more about what they had in mind," says Gaines. "I had my buildings mostly boarded up all those years, and all of a sudden these guys are saying they want to make them into housing. I'd never thought about that, but after discussing the possibility I told them to check me out because I wanted to be their partner." Not only did Gaines bring to the project a magnificent structure, the 14-story, bay-windowed Pontiac Building of 1891 by Holabird & Root, now a national landmark in its own right, but he also brought valuable experience in the legal structuring of real estate ventures, connections with the city's political and business leaders, and an affable, inquisitive personality. Soon thereafter, the "partners" had brought aboard one more powerhouse, Ivan Himmel, the president of LINK Programs, Inc., a syndicator and developer of real estate all over the Midwest. Together—Booth, Weese, Baird, Gaines, and Himmel—they formed South Dearborn Renovations Associates, Ltd., since renamed the Community Resources Corporation.

What an intriguing cast: Baird is low-key—"show me how it can be done"; Himmel is patient but exacting—"show me how it makes economic sense"; Weese and Booth are the dreamers as well as the designers—"look at *this* neat idea"; and Gaines, by his own admission, is the biggest dreamer of all—"I don't know how







Printing House Row, a two-block stretch of Chicago's Dearborn Street running south from Congress Parkway to the old Polk Street railroad station (opposite), will be a residential area of unique character in two years. Thirty million dollars is creating some 500 new apartments and varied retail activity out of a million square feet of former printing, light industrial, transportation, and shipping facilities. The Old Franklin Building at the Row's northeast end (near left) is being converted to apartments, keeping the street-level shops. The New Franklin Building, one of few buildings left under separate ownership but cooperating with the venture, struts its mosaics with a vivacity typical of most of its neighbors, like the Donohue Building (previous page). The restored station will have a new supermarket "hitched" behind it.





we'll do it, but we will!" Indeed, by the summer of 1976, they had gotten control of 60 per cent of the frontage, either in direct ownership or options, and were into negotiations to give them over 75 per cent control.

They succeeded in this last year when conversion began on the huge 22-story Transportation Building, originally designed by Fred V. Prather. With its 290-foot street frontage and 60-foot depth, it is eminently suitable for the 294 rental units, many of them duplexes, that Booth has designed inside, dramatically framed by the building's heavy mill construction. There also will be 12,500 square feet of commercial space.

Several other buildings, ebulliently detailed, also had to be secured, up and beyond the Gaines holdings. While they anchored the northern end of the street as negotiations proceeded for the Transportation Building, it was for Weese and Booth to anchor the southern end. They went and bought the Donahue Building (1883) by architects Speyer and Alschuler. Other historic buildings since taken in tow are the Morton Building (1896), located just north of the Pontiac and designed by Jenney and Mundie; the Duplicator Building (1886), located just north of the Morton and designed by Holabird & Root; the Old Franklin Building (1888), on the northeastern-most end of the Row; the Terminals Building (1892) by J. M. Van Osdel, just south of the Old Franklin; and the Rowe Building (1892), which is located west across the street from the Donahue and was also bought by Weese in partnership with architect George Hinds.

The structure of this initiative, including all the decisions that had to be made, the crucial coordination between the partners, the city, and various sources of funds, the highly agile financial and legal footwork that had to take place, is easily as important and probably as historic as the old building themselves. After all, Daniel Burnham's "make no little plans" became so firmly entrenched an ethic that "a couple of blocks long" didn't count here for a long time.

It was understood by the partners, who have met every Tuesday morning from day one, that two buildings would be the key. Because of its size, visibility, and the volume of units it could contain, the Transportation Building would be the primary residential anchor—and test of the marketplace. The other, with an accompanying saga of its own, was the Polk Street station which would be a primary commercial or cultural anchor in addition to the strong symbolism of its tower.

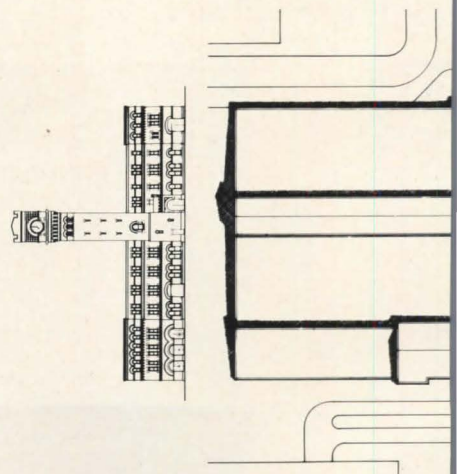
Securing the Transportation Building was difficult. "It was a hopeless mess," says Gaines. "We couldn't even find out who owned it for a long time, besides which it was 12 years in arrears on taxes to the tune of \$3.5 million—and in such a sordid state inside that the city was ready to slate it for demolition as a health hazard. We needed the city, and so I went to Lewis Hill, then the commissioner of city planning; it took me half a dozen meetings with him before he realized that this wasn't some hair-brained scheme, that we were serious about saving this street and helping keep downtown from going to pot."

Ironically, there was one thing in favor of its retention. Estimates to tear it down came in at around three-quarters of a million dollars, whereas the city's annual demolition budget for demolishing dangerous code-violation buildings was only a million and a half. Not only were these architects and developers proposing to put the Transportation Building back on the tax rolls, but in doing so they were also going to save half of the city's demolition budget!

As for financing the conversion, application was made to the FHA, and it took 18 months, to July of 1979, to get the deed to the building. "The FHA rule is that you have to own before you apply, and so we had this

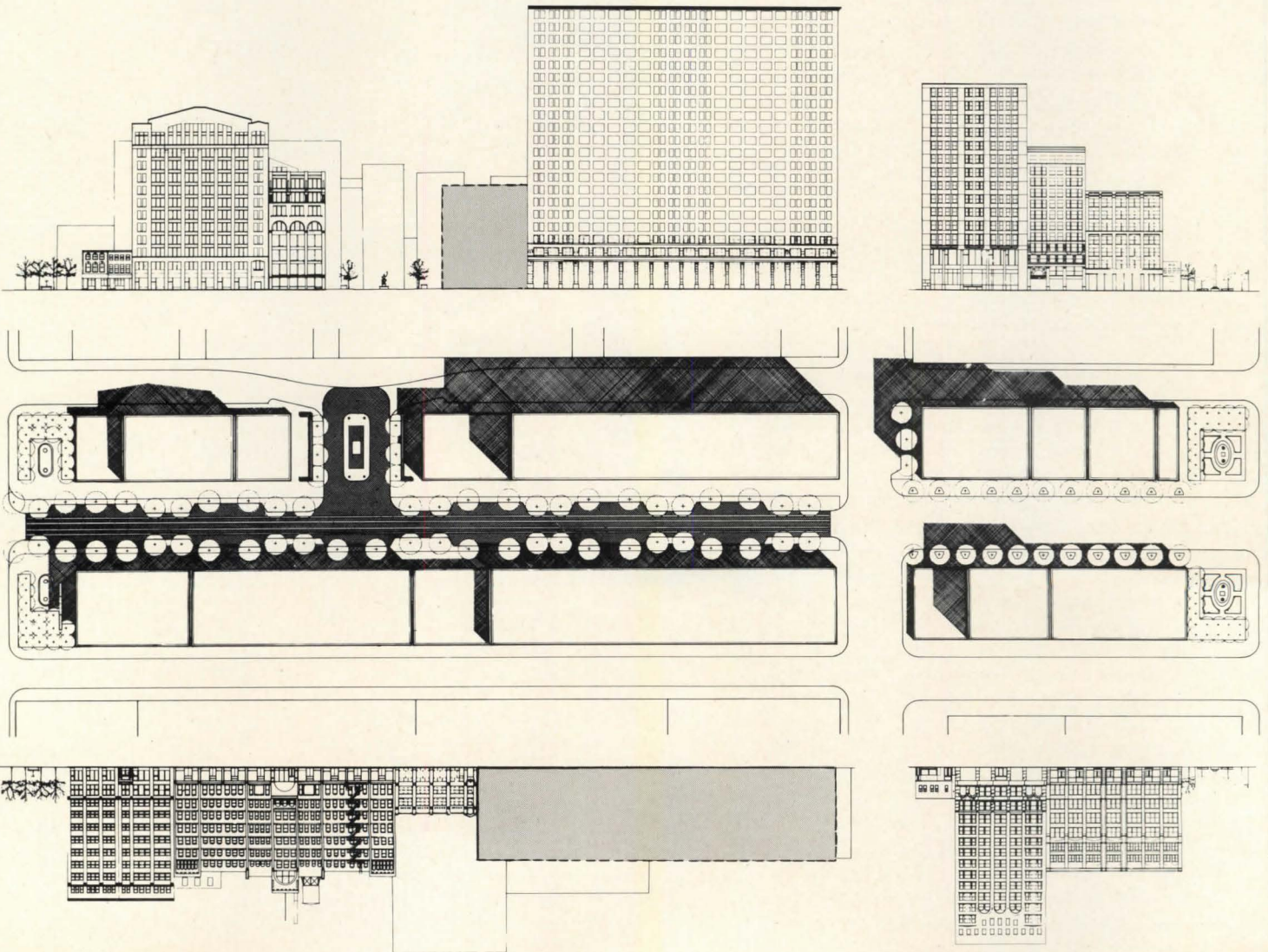
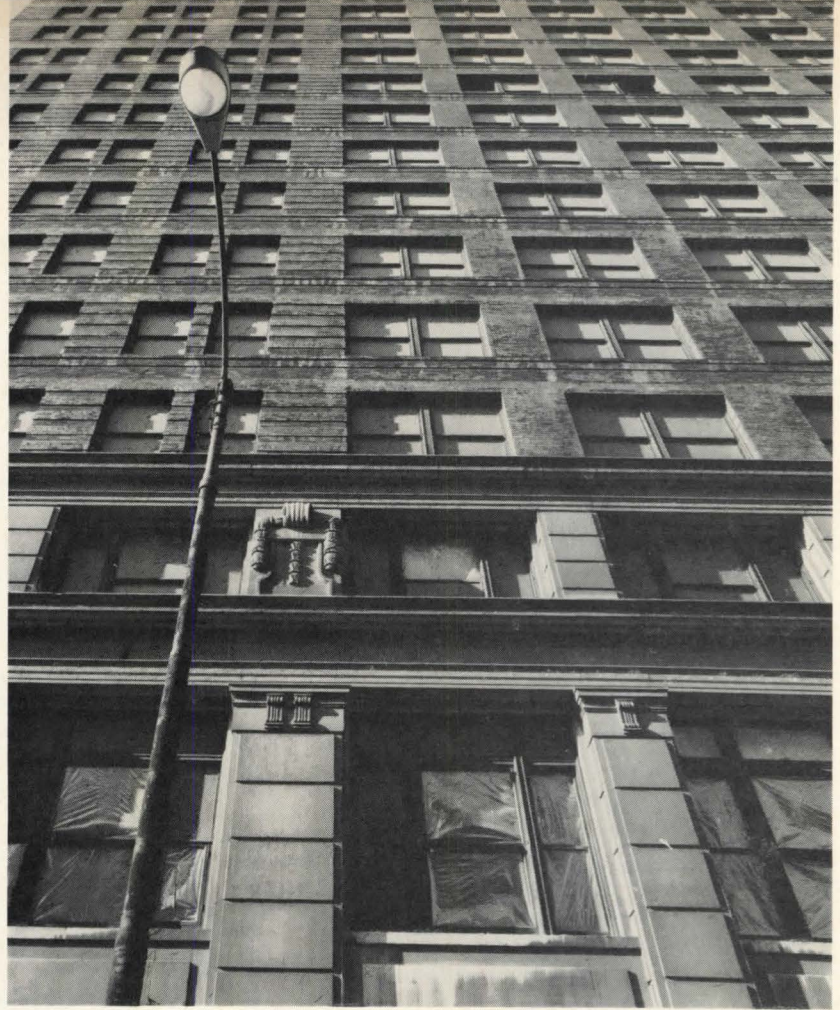


Anchoring the northwest end of Printing House Row is the landmark Pontiac Building (above), which will soon be renovated for continued commercial use with stores and shops in from the sidewalk. These and other buildings of similar vintage, from the 1880s and 1890s, express individuality in the molding of the bays, ornament, and other details but, all along the street, the buildings from this period share comparable height, generous spacing of the bays, large windows, and excellent lighting—making them eminently suitable for the current adaptation to residential. A \$1-million Urban Development Action Grant is financing landscaping of the street, the widening of its sidewalks, and the resurfacing of the old, long-hidden brick paving.





The most recently constructed building on Printing House Row, and the biggest, is the 22-story Transportation Building of 1927 (near right). Running 290 feet, and with a 60-foot depth, it is presently undergoing renovation and will contain 294 rental units with commercial functions along the street. The developers view the rehabilitation potential for commercial space along the Row as comparable to the spirited mix of activity that has been achieved at Ghiradelli Square in San Francisco and Fanueil Hall in Boston. A separate limited partnership of all store owners will control commercial life with a profit- and expense-sharing plan that will make it feasible for small shops to remain or move in.





Gordian Knot to untie," Gaines elaborates. "So while we were working with the city and through the courts to establish a fair market value for the building and thus determine what we had to raise to secure the title to it, we convinced the FHA that a letter of intent to buy would satisfy the rule about ownership. There were times when this seemed like an awfully frustrating waste of time, and yet by the time the construction hoist went up on the building last August, the Transportation Building had proven to be the trigger mechanism for the city's designation of the area as an official urban renewal district—and for its designation as a *national* historic district as well."

These two moves in turn have triggered others. A \$1 million Urban Development Action Grant was secured to convert two filling stations, on each side of the Row at Congress, into vest-pocket parks—a more fitting portal to the street from the Loop; to widen the sidewalks along the Row itself and embellish it with landscaping and trees; and to restore the long-hidden brick paving stones of the street. The designation of the area as a national historic district not only makes possible substantial tax benefits but also requires official scrutiny and approval of any construction, from rehabilitation to new infill buildings.

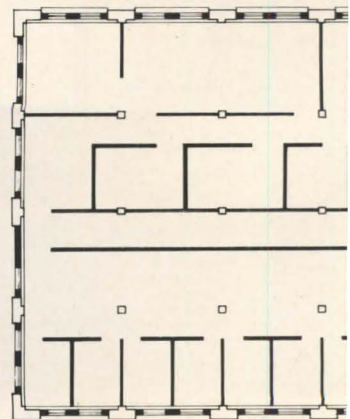
As for the old station at the foot of the Row, it had once been the domain of the Grand Trunk, of the Atchinson, Topeka, Santa Fe, and of the Chicago & Western Indiana Railroads. The saga of the station relative to recent development around it is one of political football involving both the city and the backers of the adjacent Dearborn Park residential development that is to the east and south of the station. The group handling Dearborn Park, which is all-new construction growing out of SOM's master planning of a massive, much-touted new-town-in-town boldly named "Chicago 21," generally had the idea that anything old is no good. Therefore they first heaped scorn on the Printing House Row idea as being economically foolhardy when in fact what probably concerned Dearborn Park most was the Row's strategic position between it and the Loop. "I got the feeling that they were incensed at the thought that our 'little' project, if it ever got off the ground, would act as a front door to or, God forbid, an improvement upon their 'big' project," says Gaines. "When I showed an interest in doing something with the station, I was asked how I was going to handle *another* ball; I told them not to worry, that I'd handle it."

The Dearborn Park group wanted to turn the station into an elementary school—interesting considering its highly competitive disdain for "preservation" as a source of neighborhood amenity—but after thorough study it turned out that a school was not going to be the decisive draw for people into Dearborn Park; indeed, with half of its units spoken for, there are only 12 children of elementary school age living there today. Unhappily, the station had already been pulverized in part in 1976 when its 600-foot-long concourse was torn down. And while the feasibility study for the school was going on, the headhouse was damaged.

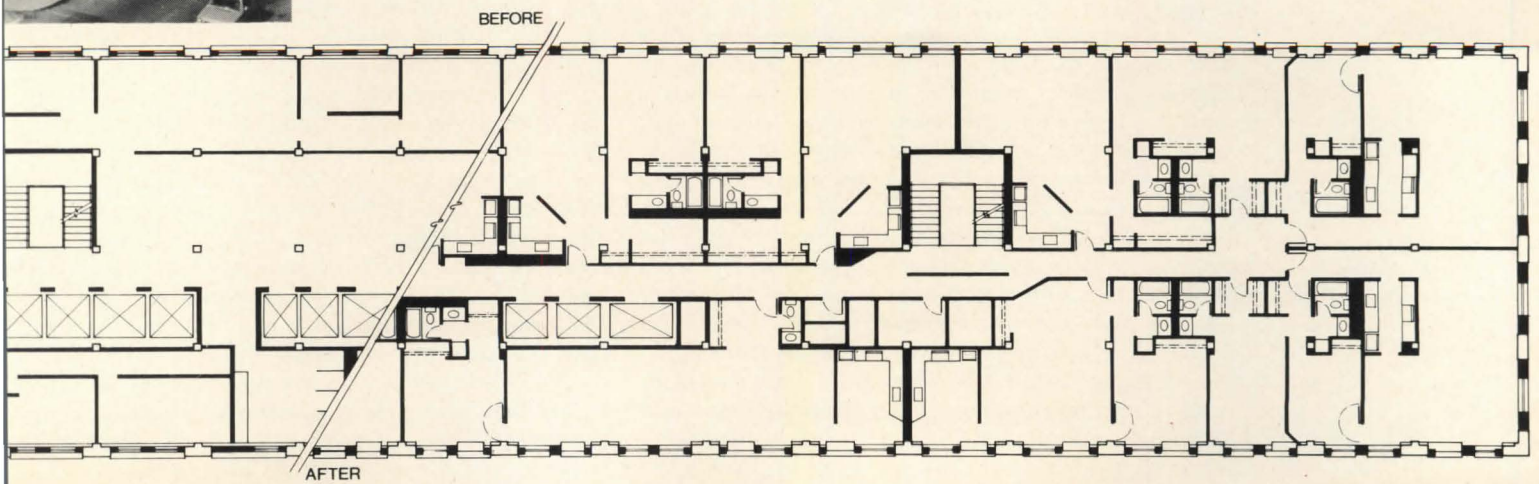
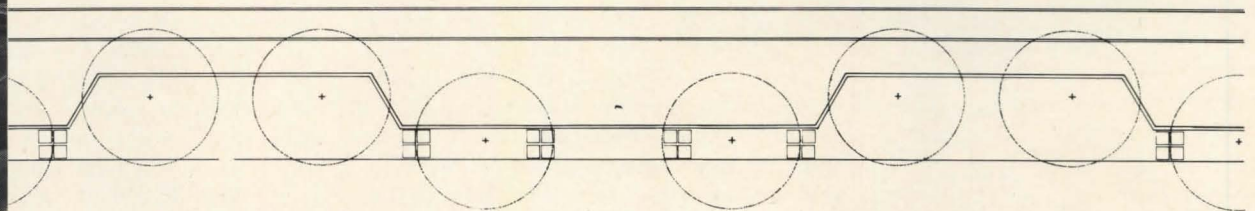
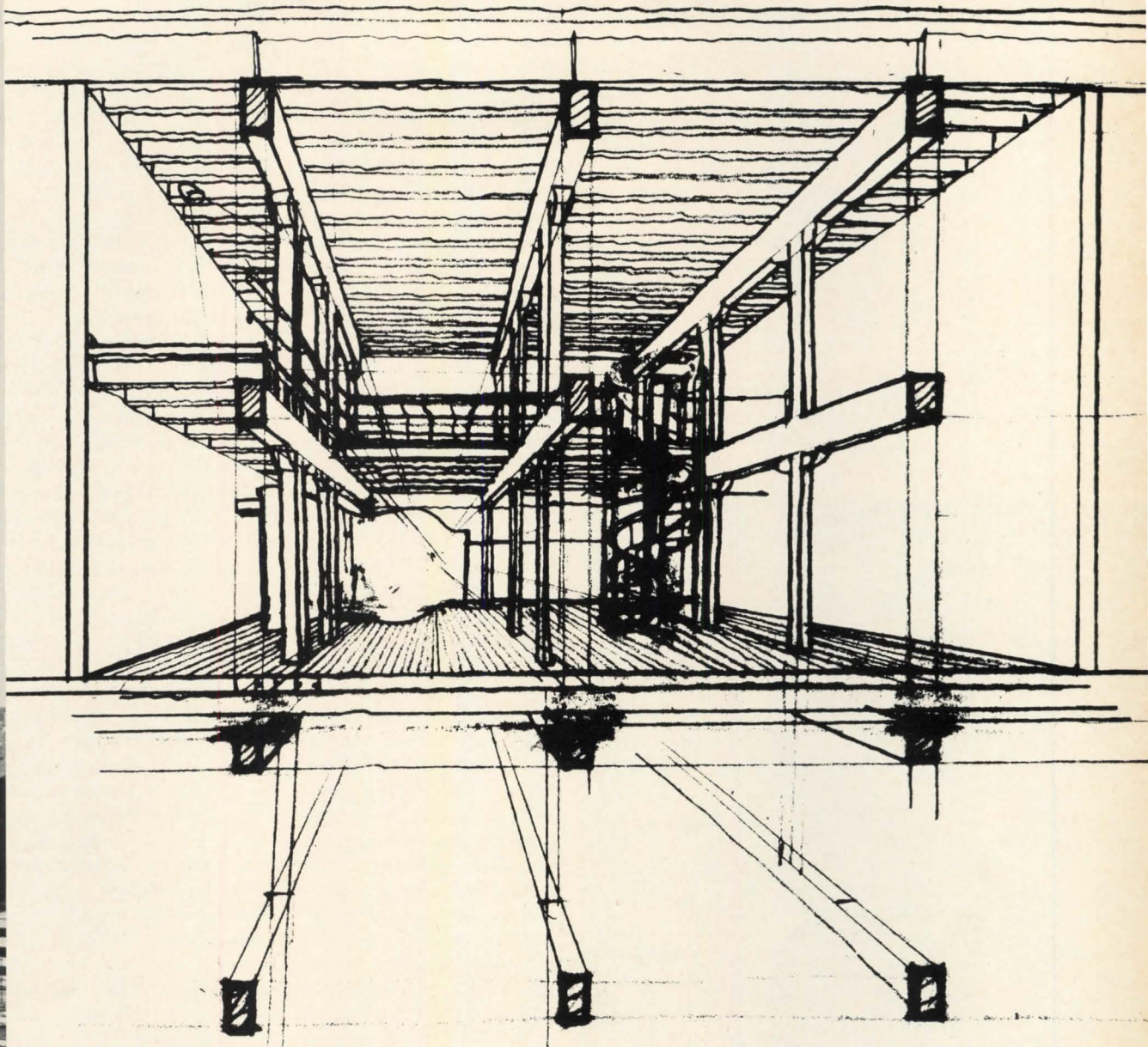
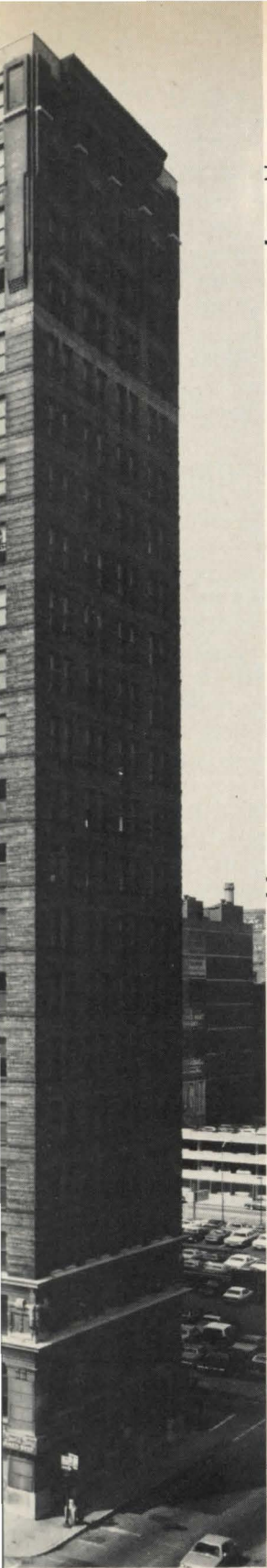
The Printing House Row group got really eager about the station in 1978 when the city powers called Gaines, said that the Dearborn Park group was considering turning it over, and asked what, if anything, they might suggest for its use. They held a four-day *charette*, drawing schematics for adapting the station for many imaginative community programs—"everything but a food store," Gaines recalls. Two weeks after submitting this concept, the city called back, saying thanks but sorry, since Dearborn Park had in short order dreamed up the school concept. It took about a year more, and then in September of 1979, yet another call came from



From the start of planning in 1976, it was understood that the Transportation Building (above) was the key to securing the street and dramatizing its residential potential. When this conversion, designed by Laurence Booth, is complete this fall, 210 one-bedroom apartments (at \$400 a month) and 84 two-bedroom apartments (at \$550 a month) will have been carved out. The section (opposite above) shows the heavy mill construction of the masonry-clad building and the fine flexible spaces made possible by its 60-foot depth.









the city, asking genteelly if the Printing House Row group was still interested. Of course, and the functional and esthetic options were reviewed once again. Following through, they showed up at the office of Mayor Jane Byrne—who has an extraordinarily well-informed interest in architecture, urban design, and neighborhood development, and who is not hesitant to admit that she is just wild about Harry Weese—to get approval on their most recent proposal to secure the station. Whereas the earlier concept included everything but a food store, this one—and Mayor Jane Byrne said “go”—calls for building a brand-new supermarket where the concourse used to be while, at the same time, restoring what is left of the original building for use as offices and community-oriented programs. The *Treasure Island* chain, known around Chicago for its creative merchandising and eager to have its repute and produce associated with such urban pioneering, will be joining in this effort. This cannot help but improve the attractiveness of both Dearborn Park and the Row, and after several years of suspicious sidelong glances between them, the station’s new lease on life is becoming a point of

harmony and collaboration. For example, in agreeing to the supermarket concept, the city has worked out a scheme whereby the parking required for the customers will be included in a larger parking garage that is soon going to be built by Dearborn Park for its tenants, directly east of the station. Little wonder that Gaines, full of glee about the Mayor’s assent, is planning to put chimes up in the old restored tower so that it will perform as a campanile for both communities.

Architecturally, the reuse of the station is a unique opportunity, for it embodies the challenge of hitching a “new” building on to an “old” building without detracting from the contemporary identity of the first or the historical imagery of the second.

When the *Treasure Island* market is established here, it will have created the much-needed tension of commercial activity in the same spirit that the tower of the station, slightly off the center line of Dearborn Street, creates spatial tension as one views it from the north.

This challenge of hitching buildings together will also soon be dealt with on the Row itself where two eight-story “infill” apartment houses are projected—one 120 feet long right next to the Transportation Building, on the west edge, and another 325 feet long right across the street from it, on the east edge. These two parcels are presently vacant but, when they are filled, the full rich frontage of the Row on both sides will have been firmly drawn. “I think we have all learned a great deal about the design of new buildings because of the attention that has been paid to old ones,” says Booth, who is soon to move his newly established partnership of Booth & Hansen into a small two-story building next to the Old Franklin Building. “But I also think that an important thing we have learned from these old buildings, and I have explored the ones along

the Row exhaustively, is a lesson in what you would call *demeanor*. The two new apartment houses we plan here will be plainly contemporary, but because we are keeping them low to fit in with the general run of buildings on the street, and because of simple fenestration, massing, and subtle manipulation of details, they will be considerate additions to the experience.”

When Printing House Row is done—and the matter of looking “done” is something that the architects want to avoid, hoping there will always be an element of rakishness and spontaneity to the life here—it will have put a million square feet of space into residential and retail operation, not including the work to be done on the station, replete with all sorts of restaurants, shops, and such staples of neighborhood retail as tailor shops, shoe repair shops, barber shops, and sweet shops.

To ensure that retail life along the Row itself attains and maintains good standards, John Baird—the real estate management expert of the team—has come up with an idea that is so valid and workable that it could be used along many other streets both in the retail cores of big-city neighborhoods and small towns. Moving smartly with Weese’s and Booth’s lively social perceptions, Baird last year came up with the idea of gathering all the owners and leasees from all of the store front operations under a separate limited partnership, running from head to toe of the Row, and controlling all commercial action. Rents will be kept to the barest possible minimum, with each occupant paying rent proportional to the square footage he actually occupies when taken against the cumulative square footage along the street; on the other hand, his share of the profits of the partnership would be proportional to the gross profitability of all the stores taken together. The result of this unique arrangement will be that the little mom-and-pop-style stores will be able to stay and others move in. So will shops and galleries and other kinds of people-pulling establishments that cannot normally afford to compete with such money mines as peep shows and burlesque houses. That possibility has now been blocked. “We can create even more of a neighborhood this way,” says Gaines. “We can make it affordable for small shops to be here. We can service the area, its very spirit, with real *needs*.”

One glint of this being right around the corner is the result of one of Chicago’s custodians of the Midwest’s architectural heritage, architect and publisher Wilbert R. Hasbrouck, who with his wife moved their Prairie Avenue Bookshop here from, of all places, Prairie Avenue. Located on the street level of the Donahue Building, with Hasbrouck’s architectural office a floor above, it is the place to go when you want to know *anything* about the history of architecture. It would appear that increasing numbers of people *will* have every reason to want to know more as they move in or visit. Said one young lawyer looking around the Row recently, “The units here are going to be so unique, and at prices comparable with those in Dearborn Park. It’s unique that uniqueness is at last becoming competitive.” This is the handle on history and humanness that Printing House Row is forging.

As “Uncle Dan” Burnham (Frank Lloyd Wright’s affectionate reference) wrote a friend who had marveled at Chicago’s irrepressible spirit of change: “Of course, we *do* do things because there is a spirit always working at very high pressure, a spirit that does not exact leisure. I am perhaps a little quicker to run and open the valve than the others . . . That is about it—a door opener—but how proud we should be of such a crowd! Was there ever another like it? It goes on and on and one can see no abatement of enthusiasm or of endeavor. It is *life* to be of it.”—William Marlin





# INTERIORS: KNOLL CENTER BY ROBERT VENTURI



"Second-glance architecture." That's what Robert Venturi calls the new Knoll showroom in New York designed by Venturi, Rauch and Scott Brown. And it is true that after the initial impact of a dramatic elevator lobby, most of the showroom spaces are understated and unassertive in a loose, open-loft kind of way. Of course, all of this is by careful calculation. Much of the design—especially in the relation of its various elements—has to be looked at a second time to be seen as the architects intended, as a carefully composed whole that does its specific job of merchandising with extraordinary skill. Venturi uses the description "ambiguous" to describe this subtleness. One critic has said that the design is "a conglomeration of elements, rather than a unified whole—jarring rather than soothing." To which, Venturi *might* reply: "But we are not here for *Muzak*."

Both Venturi and Knoll vice-president-in-charge-of-design Stuart Silver state that all of the decisions, from the most basic, were the architects'. In initially giving the commission, Silver felt that Knoll had so strong a reputation in design that it could "take a chance" on what might be a controversial result. In retrospect, Venturi, Rauch and Scott Brown's free hands have produced a responsible result in the profession's tradition of working in the best interests of the clients—even at the risk of sublimating a personal design stamp. When questioned on analogies to the design concepts expressed in his and Scott Brown's various writings, Venturi stated: "When we do a job, we just do it. We don't say 'Here is a chance to prove our points'." What this design has done is to recognize first its basic purpose: display. And it is certainly a new display: classic modern furniture covered in revolutionary and unusual materials like silk velvet in muted and secondary colors that form a real break with tradition. "While the basic designs were always meant to be clear and simple, we have opted for an ambiguous *rich mix* in their display." According to Silver, in a constantly repeated phrase: "We like the design a lot. We really like it . . ." And to throw back one of Venturi's favorite words, it is after all far from "ordinary." — Charles K. Hoyt.





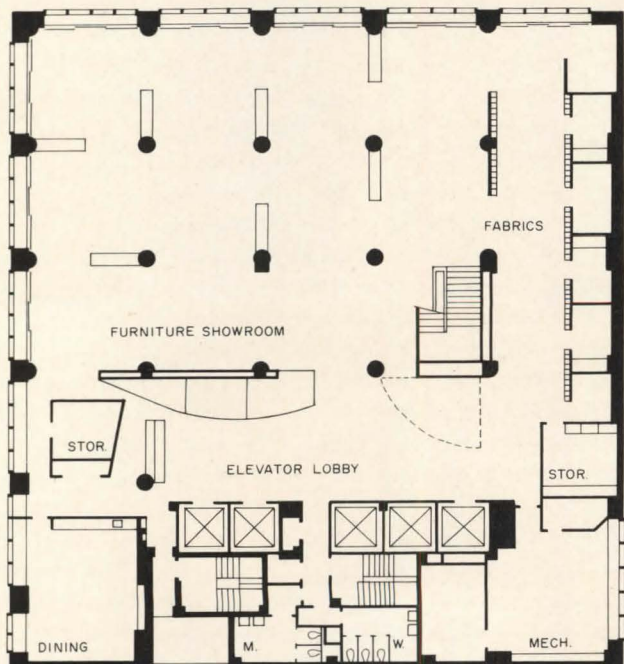
Upon stepping off the elevator on the first of two floors devoted to Knoll's new New York showroom, the visitor is confronted by the dramatic and seductive entrance lobby shown in the photos above. But this space is only one small part of 19,000 square feet that are on the whole much plainer and more relaxed. The lobby can be seen—despite the architects' conscious efforts not to impose preconceived ideas—as being analogous to the famous facade that is used as a sign, here with two groups of enormous letters that spell out the company's name. These are located on opposite walls near brilliantly executed but almost opposing displays of the two main products sold on this floor: furniture and fabric. The furniture display is a grouping of vibrantly colored chairs; the grouping is so tight that it almost forms a hard-edged abstraction. On the other hand, the main display of textiles is a softly draped cascade of velvets that glow with muted colors and sensuous shapes. As a background, panels of samples in bins are repeated in the *trompe l'oeil* wall that bears the company's name.

But all of this drama is clearly an appetizer and it is in sharp contrast to the basic philosophy of the showroom as a whole. In describing his firm's work here, Venturi talks mainly about the character and design process involved in the loft-like spaces beyond the entry and on the floor above, where the Knoll systems furniture

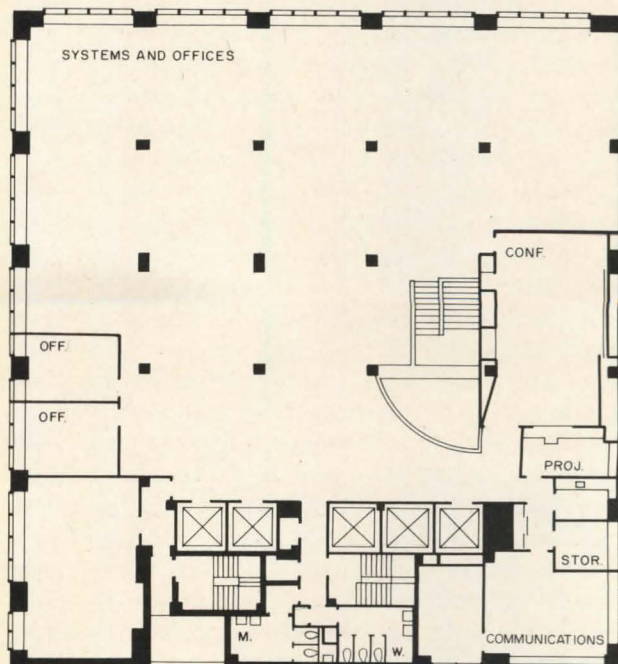
is displayed in active use as offices for the sales staff. He reiterates the two basic ways of displaying objects: "They can be shown in high contrast to their backgrounds, often out of their intended context, like the display against white walls of the Duccio Madonna in the Uffizi." The lobby is of course an example of this contrasting method of display, where familiar objects are seen in new ways. But aside from this method's value for initial impact, it is not performing the real function of a showroom: "to let designers visualize how the furniture will look where it is intended to go. For this purpose, the contrasting method is irritating." Which brings Venturi to the second method of display, the one that predominates the main showrooms: the analogous—"You import a room from Paris to show a Louis XV chair in the setting for which it was designed." For the showrooms, the architects have produced accustomed but neutral surroundings that do not compete with the furniture. "The idea of the large open spaces was to produce both flexibility, and an overview of the plethora of available options."

In describing the execution of these concepts, Venturi speaks first of the limitations imposed by a severe budget and by the speculative, 1950s building. The building's limitations were low ceiling heights, a grid of columns rising in the middle of floors, and window walls that were undistinguished in detail and that offered a





FIRST LEVEL



SECOND LEVEL





bland view of surrounding buildings. "The low ceilings were an especially difficult problem, because of the planned large floor areas." Working with theater and lighting consultant George Izenour, the architects determined that ambient indirect lighting reflected from the ceiling would be the best method of alleviating that surface's visual weight. The method for providing such light grew from another concern of the architects, the need to give the major spaces an ongoing identity among the changing displays. "Like the Art Deco columns in the New York City Macy's that always remind customers of where they are no matter what else is going on," flared round columns in the first-level showroom were constructed of plaster on shaped metal lath around the actual structural columns. These hold the indirect light source at their tops and they establish a somewhat-monumental identity for the space.

To solve the second visual problem of the unsightly window walls, pierced sliding panels that extend from floor to ceiling have been applied as covers. These admit an irregular pattern of light, "a shimmering glitter that adds liveliness." A black horizontal stripe around the walls and columns has been used to "tie the room together." Another problem that these architects perceived—even while many architects might not carry rationalization to such a point—was the discrepancy between the highly precise nature of

the furniture displayed, furniture that had been put together with the costliest of care and with numerous prototypes, and the more casual quality of craftsmanship that can be obtained from construction workers—especially on a low-cost project. "After all, architecture can't cost \$800 a square foot, and you can't throw away the built result if you don't like it. It is not just a prototype." One location where the space does seem to approach the detail refinement of the furniture it contains is the conference room on the second floor (photo right). This is also the location of a second seductive design approach: panels covered in muted colors of silk velvet, and a back-lit, luminous plastic ceiling onto which has been silk-screened an eighteenth-century ceiling design by Robert Adam. (In the photo it is seen reflected in the mirror-like black table top.) Venturi is unconcerned with commercial references, and feels that the ceiling is, after a lot of breath holding by all, just right.

THE KNOLL CENTER, New York, New York. Owners: *Knoll International*. Architects: *Venturi, Rauch and Scott Brown—partner-in-charge—Robert Venturi*; project managers: *Stanford Hughes, John Chase with David Marohn, Mark Hewitt and Missy Maxwell*. Engineers: *Lichtman & Lincer (structural); Flack & Kurtz (mechanical/electrical)*. Lighting consultant: *George Izenour*. General contractor: *All Building Corporation*.



# Two houses with links to the past

## 1. Menashe Cottage

*"It has often been pointed out that all sound art is an expression springing from the nature which environs it. Its principles may have been imported from afar, but the application of those principles must be native. A home, for example, must be adapted to the climate, the landscape and the life in which it is to serve its part."*

*From The Simple Home, by Charles Keeler, dedicated to Bernard Maybeck, 1904.*

Once a building has been destroyed, it can never be re-created—only reproduced. And a reproduction, however faithful, is destined to be but a pale reflection of that which it struggles to emulate. The built landscape is littered with ersatz imitations of Colonial, Tudor, Victorian—easy prey. But the difference between an original and a reproduction is that the former is a specific response to a particular set of circumstances, whereas the latter is merely an appropriation of form.

San Francisco architect Howard Menashe has reconstructed a small guest cottage originally designed by a student of Bernard Maybeck, and last year destroyed by fire. But rather than pull from the ashes a duplicate, Menashe has grafted a sensitive hybrid. His success, perhaps, stems from his intention "to re-create a spiritual likeness of the older cottage by incorporating many of the original spatial and external gestures in the new design . . . but with substantial adjustments."

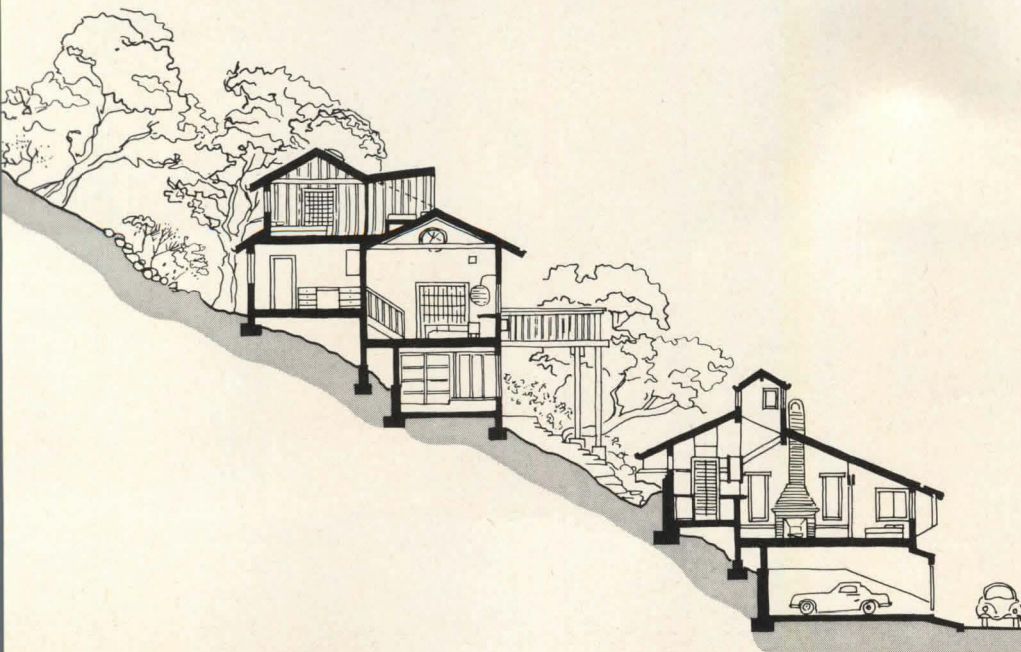
The cottage was first designed as a reduced likeness of a larger, main house sited directly uphill (see section left), and functions as an ancillary space—either guest house or studio. Its neighborhood is densely built in a historically rich vernacular—it was home for Maybeck and the Hillside Club, a small group of naturalists, poets, and artists, headed by Keeler, responsible for promoting the "Bay Region style" in the early Twenties. The exterior is clad in traditional redwood to blend comfortably with the wooded site; stained dark at street level to meld with the hill, and left natural on the top to lighten and define the living spaces. A terne-coated stainless roof, with a new cupola tower over the rear entry, serves as a visual reference point to distinguish the cottage from the main house. The cupola also functions as a light well, to let sun into the hillside interior spaces. Only the fireplace, garage footings, and garage door were salvaged from the fire; but instead of appearing as historical icons, they have been carefully integrated into their new but sympathetic context.

The nexus between the Maybeck-inspired original and the Menashe reconstruction is perhaps a shared appreciation of natural materials, and a sensitivity to the texture of the landscape. —Charles K. Gandee

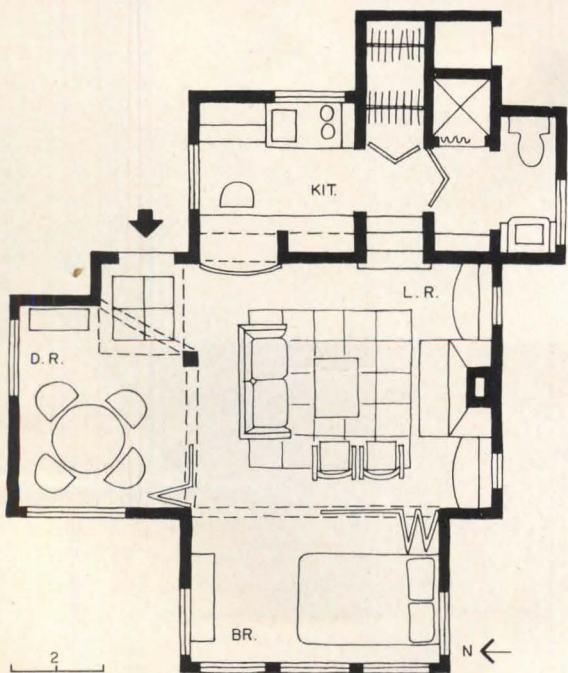
MENASHE COTTAGE, Berkeley, California. Architects: Howard David Menashe—associate architect: Ann Hughes. Engineer: Paul Juilly (structural). Contractor: Howard David Menashe.



Randall Fleming photos

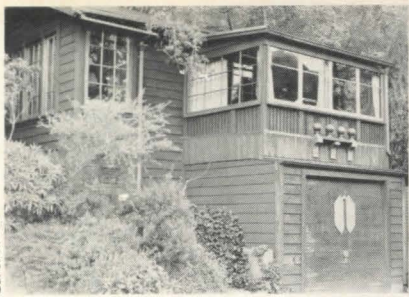




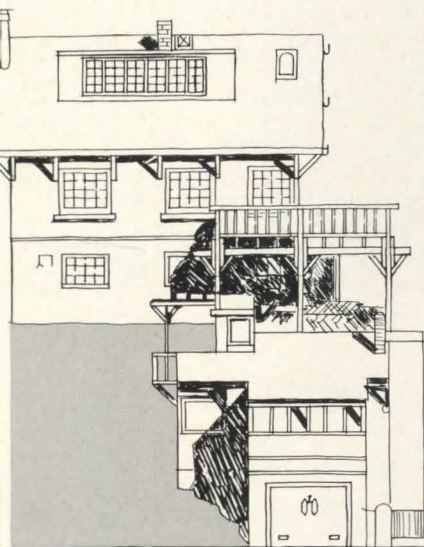




Carol Stout



The cottage features an unusually high standard of craftsmanship. The materials were chosen for their warmth and texture, and have been left unadorned. A massive fireplace serves to focus the open space. A shutter track system, for privacy in the bathroom and sleeping alcove (photo below), is incorporated into a fascia band that coheres the space and unifies the two floor levels. A specially designed and turned fir column gestures toward the light-emitting cupola, and here again, the fascia is worked across to define the dining area and entry.





## 2. Villa Rosselli

"The renovation of an existing building to a private dwelling is a most personal experience for both the client and the architect. The client, able to see the existing structure, walk around it, and imagine its possible transformation, carries to the architect stronger impressions of the nature of the space than if he intended to build an entirely new structure. These impressions take many forms: some of them are very specific concepts of space or appearance; others are vague feelings for how the space should influence him or others." —Mallory Reynolds Warner

Buried in the contours of the Tuscan countryside overlooking Florence, a little used and sorely neglected storage shed, serving a historic family villa, posed an interesting design challenge for an American architecture student. The owner's son, a former race car driver, wanted to convert the shed to living quarters. The problem was one of implicit contradictions: how to make a comfortable built connection between the native stone and timber of the shed, and the more contemporary requisites and predilections of the young client. The renovation was to be an integration of new and old, traditional and contemporary.

The Villa Rosselli, like the Menashe Cottage, is hillside with openings on only two sides. To offset the potential gloominess of a long narrow (15-ft-wide) rectangular box with few windows, new and enlarged openings have been made, using sliding glass doors that open on a gravel courtyard and two garden terraces, and horizontal sliding double-hinged windows. These oversized apertures create an important dialogue between the house and its surroundings; permitting the house to borrow space from its environs.

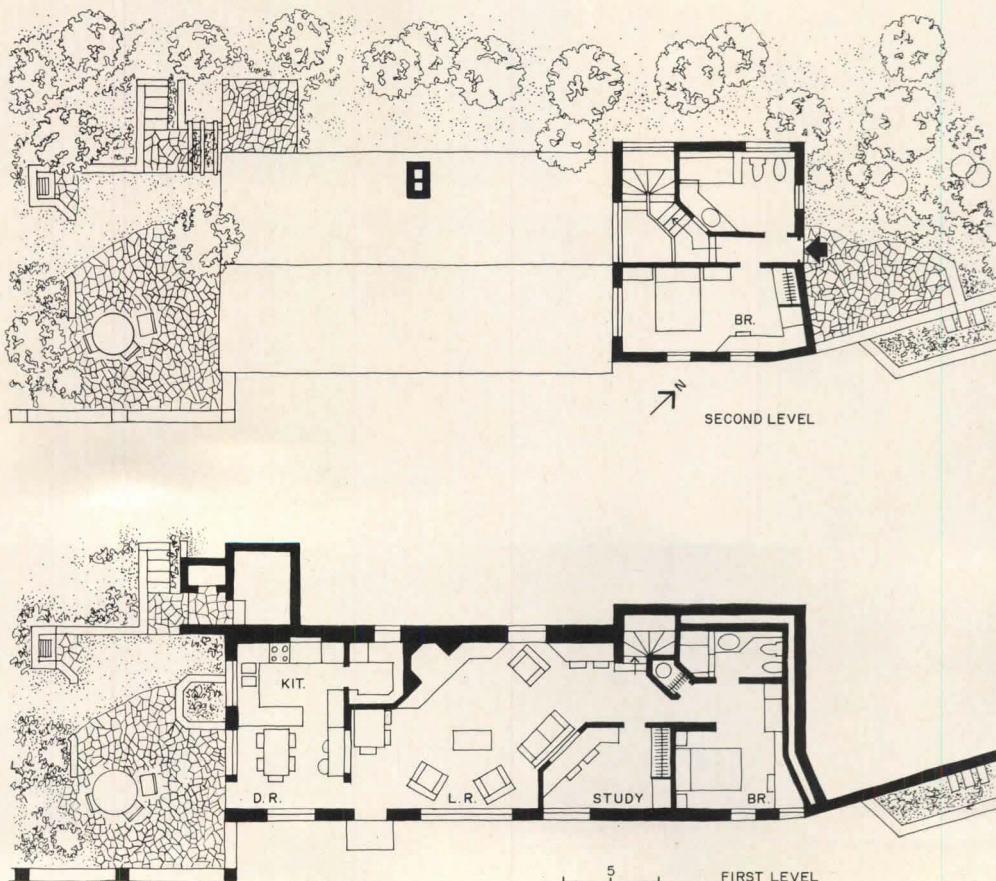
The position, shape, and size of the storage shed were constricting, and the rooms necessarily proceed along a single axis: kitchen/dining, living room, study, bedrooms. But instead of one monotonous line, 45 degree angle walls (for the fireplace and study) break up the box to create spatial interest and definition. Also, interior windows and glass walls serve to *define* space without enclosure. This all creates an open and fluid feeling; from any given point the other rooms can be glimpsed.

The Villa Rosselli has the feeling of a much larger house. The openness of the space, the massive wood beams of the ceiling, and the oversized red clay tile of the floor are fixtures traditionally found in more spacious houses. But these fixtures join with the subtle tactics of the glass partitions to transform this erstwhile shed into a picturesque and appropriately modern residence.

VILLA ROSELLI, Bagno a Ripoli, Italy. Designer: Mallory Reynolds Warner—associate architect; Paolo Fiori. Engineers: Raffaello Masi (structural); Francesco Zambaldi (mechanical/electrical). Consultants: Maurizio Messeri (lighting). Contractor: Amadeo Renzi.



Peter Szmuk photos











The main living spaces are open with glass partitions separating the dining room from the living room, (photo left) and the living room from the study (photo bottom right). Windows have been enlarged and glass doors added, to open the interior to a courtyard and two terraces. The materials are local and left unadorned for compatibility with the native stone and red tile roof. A bedroom wing has been added behind the main living area with the master bedroom raised for privacy and to gain access to an uphill terrace.





# LOW-RISE HOUSING

Changes in American economics, demographics and social modes suggest at least some modest alteration in American housing patterns. While the owner-held single-family house is bound to remain the norm, at least outside of metropolitan city centers, a number of pressures should encourage an increase in multifamily housing and a new variety of approaches to its planning and development. Among the pressures:

- A single person occupied one out of every five households in the United States in 1979, the Census Bureau has reported—a rate that increased 42 per cent in nine years.
- The cost of gasoline can be expected to discourage suburban sprawl and to encourage the development of small downtown sites overlooked in a period of burgeoning subdivisions.
- A back-to-the-city movement has already been observed among middle-class families who have grown unhappy with suburban life and among retired couples.
- Popular resistance has emerged to large-scale urban renewal and to the neighborhood upheaval it entails. (New York's mammoth Co-Op City, in addition to its other problems, has been blamed for drawing the middle class away from the South Bronx and leaving that area prey to the dilapidation and abandonment that have very nearly destroyed it.)

Moreover, a shortage of reasonably priced apartments, especially for rent, persists despite the construction of more than half a million units last year. The Government Accounting Office reported last November that rental housing across the country has the lowest vacancy rate on record.

All of which mandates energy and invention on the part of architects and planners (not to mention developers), as well as a sharpened talent for orchestrating finance—loans, subsidies and outright governmental assistance (local, state or Federal) for acquisition, construction and management costs. And if one thing is clear to the editors researching this study, it is that architects must thoroughly understand, if not actually orchestrate, these multifold financial possibilities.

In this Building Types Study, RECORD attempts to show both invention and thoughtful design: a tightly planned in-fill neighborhood in Minneapolis, prototype housing for migrant farm workers in California, apartments for the elderly both new and in recycled schools (a new idea with broad potential) and housing mixed with offices and shops (an old idea—living over the store—with revived potential). —*Grace M. Anderson*



## IN MINNEAPOLIS, THREE ACRES ACCOMMODATE 89 HOUSES

The small scale of Findley Place Housing in Minneapolis reflects a number of changes in social and political attitudes toward "projects" emergent in the last 10 or 15 years. Not only the scale of the architecture has changed, but also the scale of ownership: Findley Place was built not by a large, remote bureaucracy but by a private nonprofit community corporation comprising neighborhood groups and a local church. The corporation, which acquired from the Minneapolis Housing Authority a site that the city had land-banked some years earlier, required rent subsidization but also received permission to charge some market-rate rents.

For the 330- by 440-ft site bounded by an assortment of neighbors—one- and two-family houses on the west, high-rise housing for the elderly on the south, commercial renewal on the north, and a rapid transit garage on the east—architects Williams/O'Brien established a triple hierarchy of scales to allow residents a range of neighborhood identifications.

At the largest scale, the complex surrounds a community building at the center, and is itself surrounded by parking that creates a quasi-barricade, particularly toward the transit garage. A major pedestrian route leads from the southeast to the

community building, which houses a daycare center as well as common laundry and mail-room (see site plan right).

The secondary scale sets up small identifiable "territories" with clustered units (see cluster plan below). Subordinate pedestrian "streets" connect and define the clusters. At some points, second-floor bedrooms jut over these streets for identification and weather protection (top photo at right).

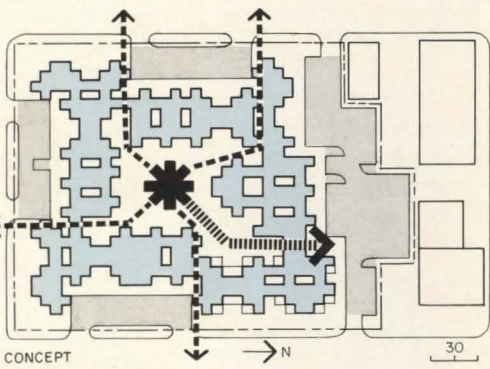
At the smallest scale, the units themselves, the architects aimed to instill the greatest possible degree of individuality and privacy. Floor plans differ more than the typical unit plan shown below would indicate,

*G. Edwards photos*



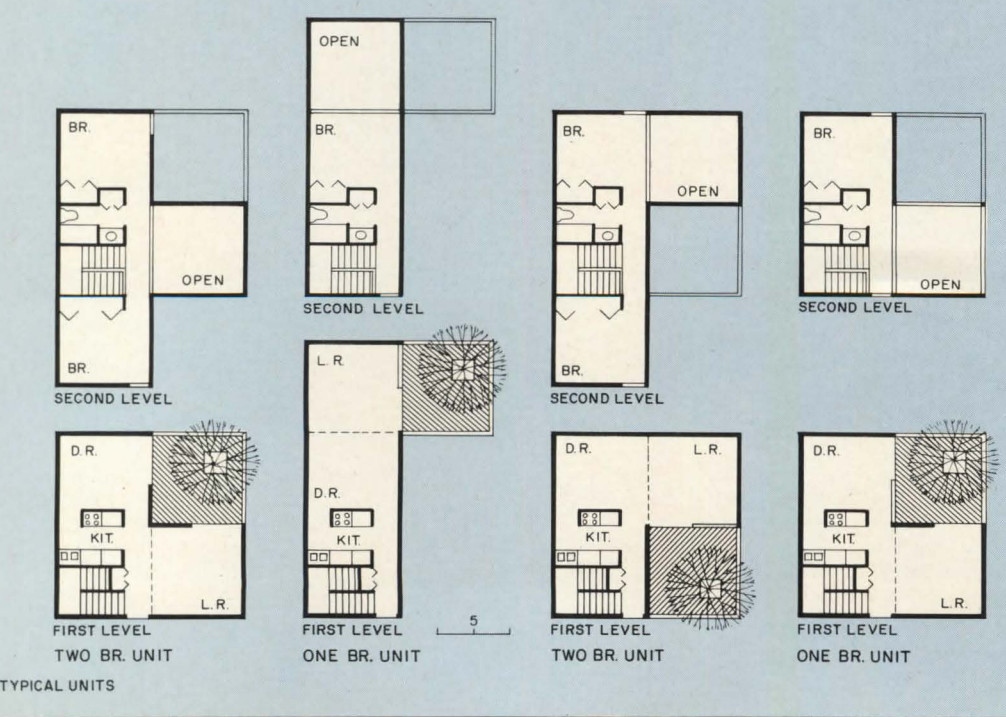
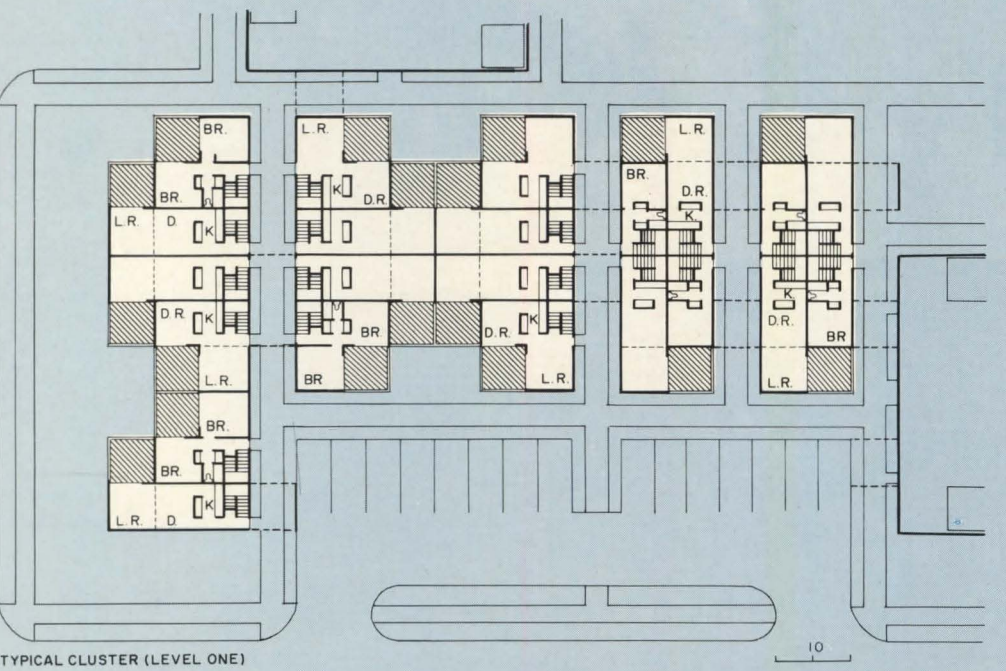


\* COMMUNITY FACILITIES  
 ■■■ MAJOR OPEN SPACE  
 ■ PARKING  
 - - - MAJOR ACCESS



since the placement of 12- by 12-ft modules around the kitchen-bathroom core may vary. All units have private walled 12- by 12-ft gardens accessible from the living rooms. Shed roofs allow still other variations within the units, including two-story living rooms and balconied bedrooms.

**FINDLEY PLACE HOUSING, Minneapolis.** Architects: Williams/O'Brien Associates, Inc.—Lorenzo D. Williams, FAIA, Architect. Engineers: Bakke, Kopp, Ballou & McFarlin (structural); Park Engineers (mechanical); Environmental Engineers (electrical). General contractor: McGough Construction—St. Paul, Minnesota.





## NEAR FRESNO, PARLIER CENTER HOUSES MIGRANT FARM LABOR

Despite slow improvement recently, the wretched housing available to migrant farm workers has remained for a long time a mainstay of angry journalists and novelists, not to mention politicians. Ten years ago, observers believed that agricultural mechanization would eliminate seasonal hand labor and at the same time wipe out the housing problem. But mechanization has not eliminated hand labor, and sober reflection suggests that crop farming will always rely on a certain amount of it.

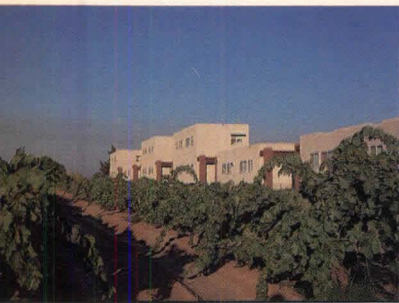
And that leaves the housing problem, which the State of California has determined to deal with—probably as a matter of social

conscience, but certainly as a way of maintaining a needed labor force.

The new Parlier Migrant Center, which replaced demolished plywood migrant housing that the Fresno Housing Authority had operated since 1964, is the state's prototype in a migrant housing program that calls for 25 similar centers, three of them in planning now. The development of permanent, quality, low-cost housing at Parlier was a joint effort of the Fresno Housing Authority, the Office of Migrant Services in the California Department of Health and Welfare, and the U.S. Department of Commerce's Economic Development Administration.

Flexibility of interior uses was a major consideration in designing floor plans, and kitchens and bathrooms. Four to ten occupants may live in each of the 124 units, available as single-story two-bedroom houses or as two-story four-bedroom houses. But the number of residents varies considerably from time to time during the six-month season as late arrivals join their relatives. Group living space, which in any case often gets little use during the day, may double as sleeping space. Bathrooms are partitioned into three areas to permit multiple use.

Common services in the center include laundries built on the outside of buildings



Russell Abraham photos

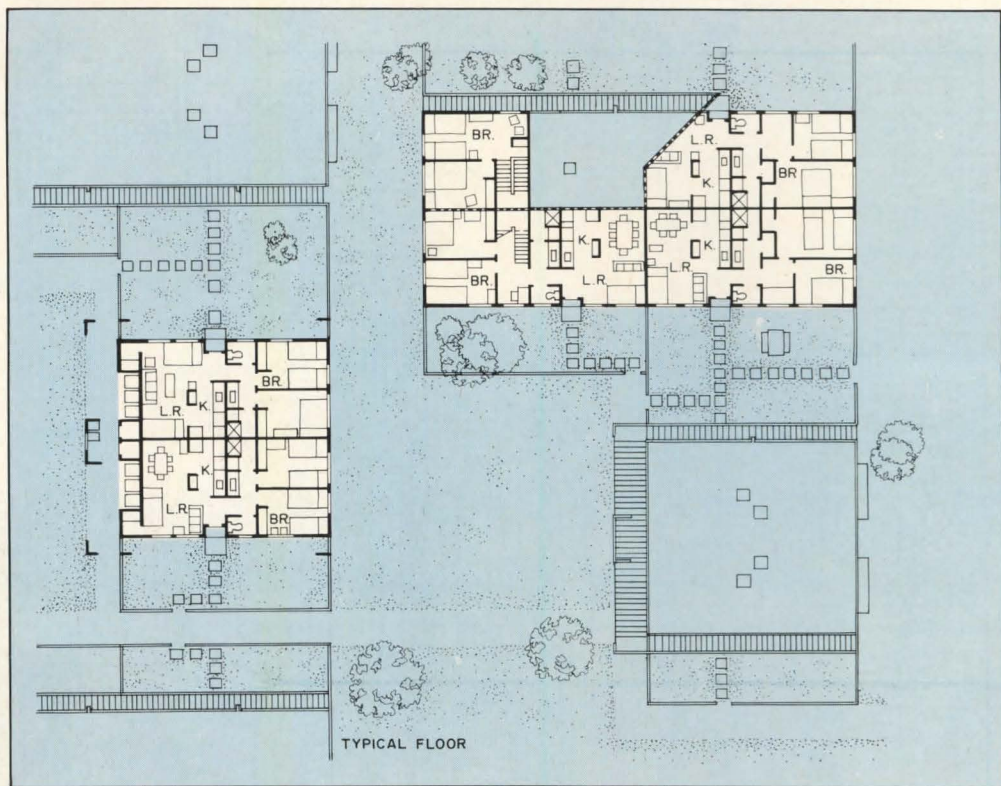




(weather permits this kind of exposure—see photo at bottom left). An existing community hall was incorporated as a daycare center and as meeting space.

The cost of the wood-frame structure with cement plaster exterior walls was \$18/sq ft; site development cost \$5/sq ft.

PARLIER MIGRANT CENTER, Parlier, California. Owner: Fresno Housing Authority. Architects: Efen Gutierrez/Eduardo Martinez—project team: Efen Gutierrez, Eduardo Martinez, Mark Shields. Engineers: Geoffrey Barrett (structural); Chamberlain/Painter (mechanical/electrical); Hanna & Preble (civil).





## COMPLEX FOR THE ELDERLY OPENS TO NEIGHBORHOOD

The Commonwealth of Massachusetts has for many years conducted a vigorous and popular program of housing the low-income elderly. About five years ago, however, it sponsored an architectural competition, partly to attract new blood for the undertaking and partly to stimulate the incorporation in design of recent behavioral thought on the needs of users.

The Boston firm Goody, Clancy & Associates won the competition with the design shown here, and the city of Winthrop executed the competition winner "faithfully and economically—\$17,800 per unit," reports architect Joan Goody.

More important, Mrs. Goody thinks, the project "fulfills behavioral criteria established for this kind of housing by maximizing opportunities for casual social interaction and providing interest-provoking views."

The project provides 100 one-bedroom units ("double" units for couples have larger bedrooms) in two-story buildings. A major opportunity for casual, and inevitable, social encounters occurs at the building entrances, where four units share a common outside door and foyer. This opportunity answers one of the most serious problems faced by the elderly: loneliness, caused by the deaths of spouses and old friends and aggravated by

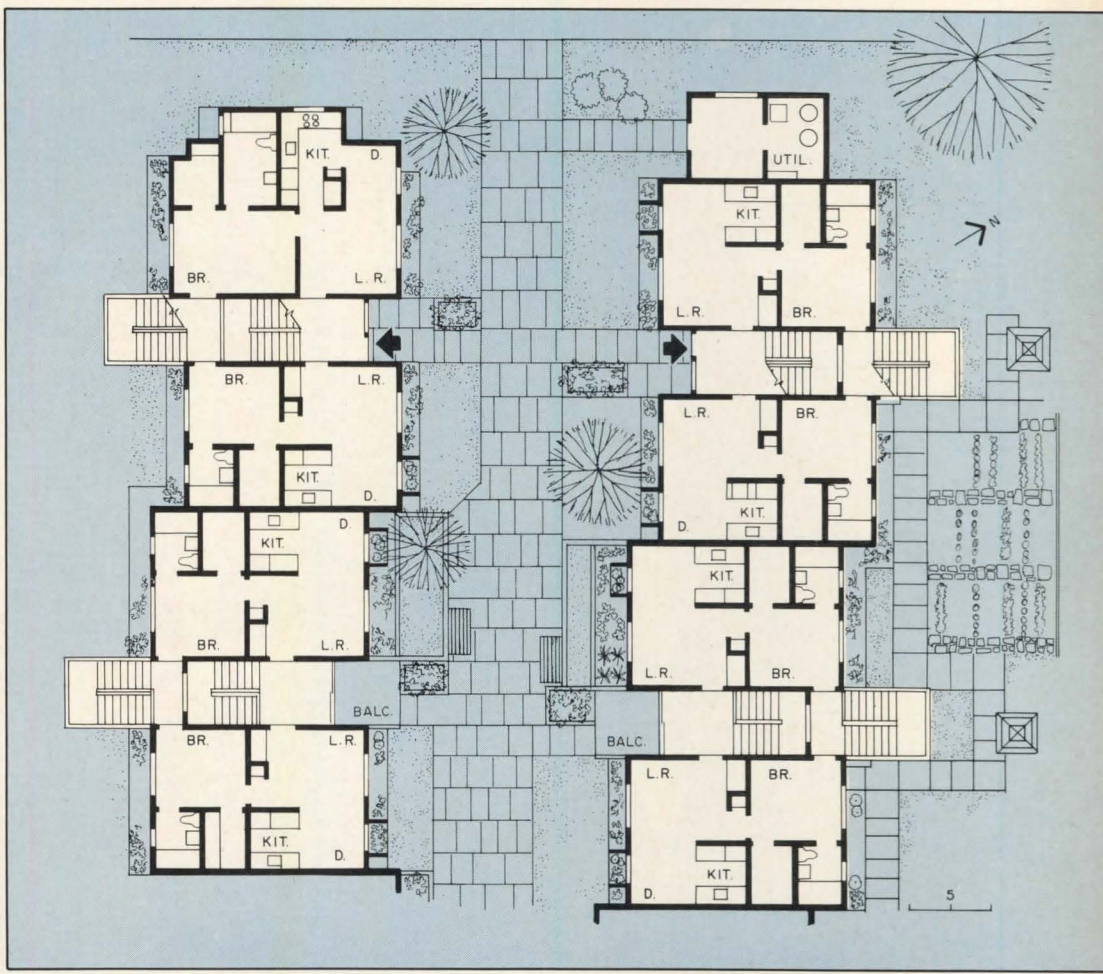
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diminished physical powers and a tendency to withdraw from both social and physical activity.

The floor-through units are separated by halls and stairways or by party walls. The living and dining areas occupy the front of the clustered units, where residents can see activity along the four "malls" that traverse the site and connect the buildings. On the second floor, the stair hall gives onto a shared balcony that overlooks the mall. Bedrooms and bathrooms, on the other hand, are located at the rear, quieter and more private. Units for handicapped tenants—the law requires that five per cent of the space in projects for the





elderly be allocated to the handicapped—have stair-less entries on grade.

In addition to the common entries, the site plan itself was designed to make social meetings easy. The site is located in an area of one- and two-family houses formerly occupied by many Heritage Gardens tenants. The four malls act as streets connecting the housing to the neighborhood. Along them, residents doing errands such as grocery shopping can expect to run into their fellows.

An existing apartment complex for the elderly is adjacent to, but well downhill from, Heritage Gardens. The new design joins the two with a community center that houses

lounges, space for crafts and hobbies, and a laundry (more casual contact).

Because the site is so steep, the three-story building follows the hillside. Residents from Heritage Gardens enter on grade at the third floor, residents from the older development enter on grade at the first level, and visitors from either project can reach the other by elevator within the building. Surrounding terraces joined by steps offer outdoor access to the physically mobile and visual connection for the infirm.

All bathrooms and bedrooms are equipped with an emergency call system: if a tenant throws a switch, a bell rings and a bulb

lights outside to notify neighbors that assistance is needed. Kitchens and baths include safety features—low cabinets, front-control ranges, grab bars—but use traditional materials for comfort of association.

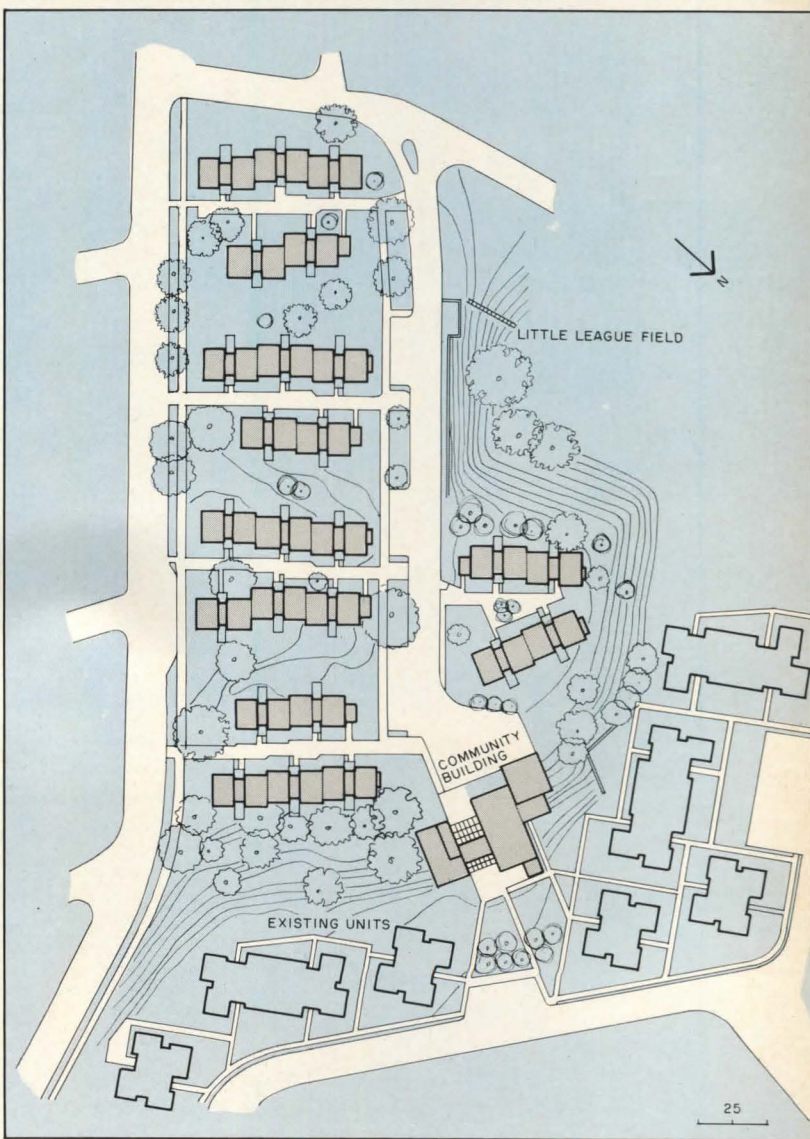
HERITAGE GARDENS, WINTHROP HOUSING FOR THE ELDERLY, Winthrop, Massachusetts. Owner: *Winthrop Housing Authority*. Architects: *Goody, Clancy & Associates, Inc.*—partner-in-charge: *Joan E. Goody*; project architect: *William E. Warren*; architect for community building: *Paul H. Dudek*. Engineers: *Sousa & True* (structural); *Joseph Schneider* (mechanical/electrical). Contractor: *Bick-Com Corporation*.







The Heritage Gardens project includes a new community center that joins an older housing project for the elderly. The three-story center climbs a steep hill between the two, offering access at grade to the older housing at the base (photo at left). Visitors from Heritage Gardens also enter at grade—on the top floor. The main entrance is on the first floor in an alcove behind the central exterior stair. At the lowest level, a large lounge and game room (upper right) faces the older development through a glass wall. The second story contains laundry and television rooms, the top floor rooms for crafts and maintenance, and an elevator provides a protected connection between these floors and between the two complexes.





# MASSACHUSETTS SCHOOLS RECYCLED IN GLOUCESTER . . .

The Boston architectural firm Anderson Notter Finegold has, as both architect and developer, cultivated a trend within the trend of adaptive use—the conversion of surplus schools to housing for the elderly.

The architects point to siting as one of the major advantages to elderly tenants in this kind of re-use. Older schools typically occupy space close to central districts that can provide necessary services, along with the comfort of familiarity to residents.

Another advantage: floor space and volume, which offer amenity to the elderly and their lifetimes' accumulation of belongings and which, in the shape of classrooms,

provide a ready-made area for apartments. Moreover, "hidden" space in the old buildings, such as large attics, gives room for additional units. Indeed, Anderson Notter Finegold emphasize hidden spaces as essential in judging whether adaptive use is financially or architecturally practicable.

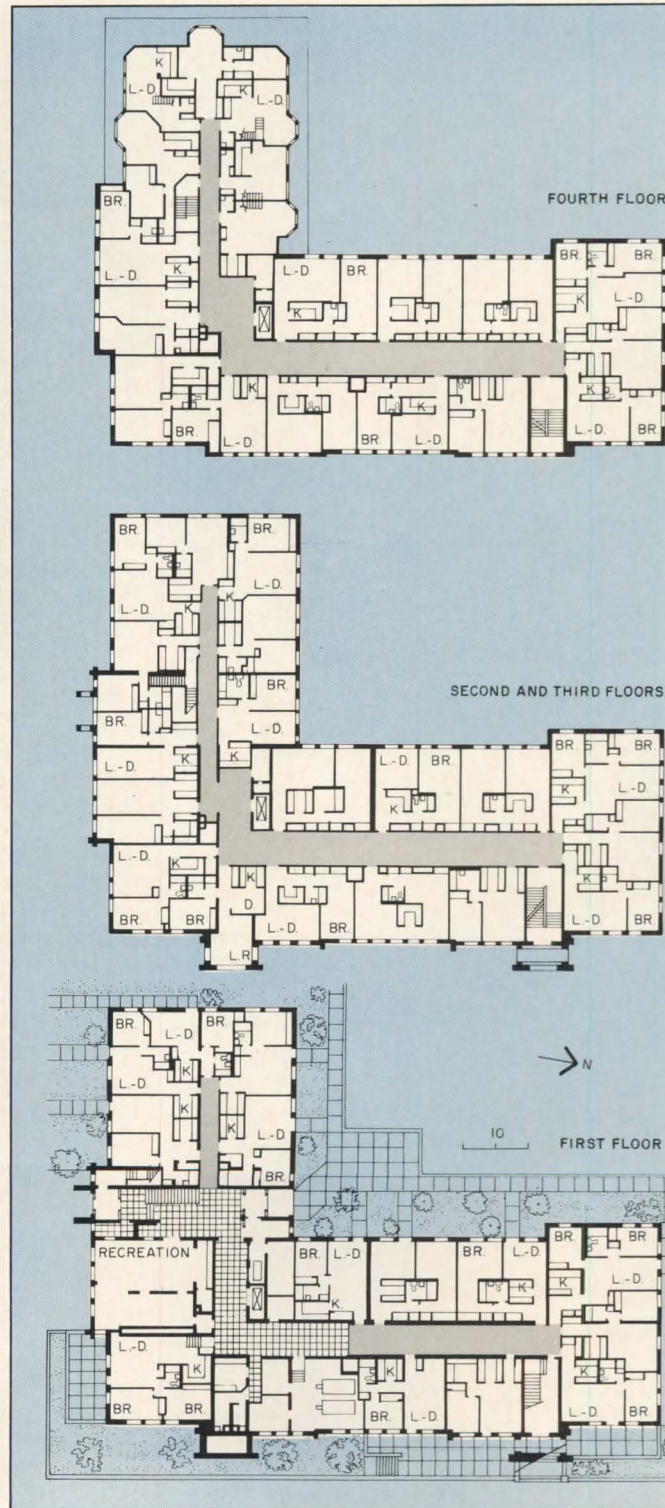
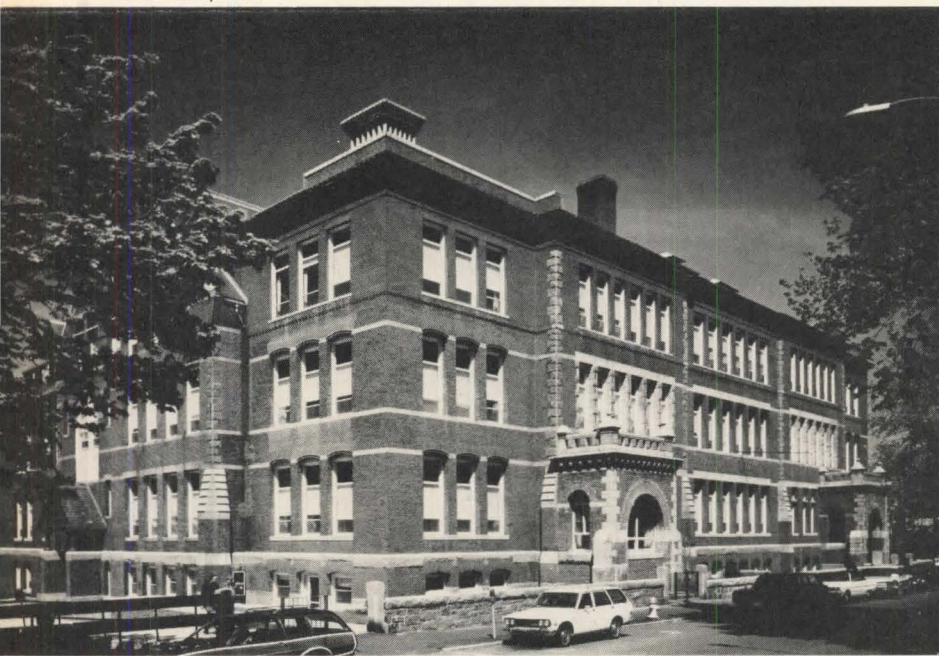
At Central Grammar School (this page), powerful local sentiment militated for adaptive use: hundreds of citizens had studied, and taught, there since its opening in 1889. Its location was a major plus for housing for the elderly—next to the library, across from the post office, within walking distance of shopping, churches and services.

By dropping bathroom/kitchen cores into the middle of 30- by 30-ft classrooms, the architects established ample apartments, with variable planning possible around the cores. Consultants for the design of the core included senior citizens' groups who commented on early mock-ups. (This may have had something to do with the project's complete rental within 12 days of offering.)

Elsewhere in the building, the architects found "hidden" space for new units, notably in the volume that had accommodated the gym and in the attic.

Although the costs of renovation and re-use are tricky to assess, Central Grammar

Phokion Karas photos





# ... AND IN NEEDHAM

has been compared with nearby high-rise housing built new at about the same time (1975): Central Grammar's 80 units cost about \$18,500 each, roughly two-thirds the cost of the new units—and its units, while varying in area, are on the average half again as big.

At the Stephen Palmer Apartments (this page), the attic's ceilings were high enough to admit the addition of bedroom lofts overlooking living rooms (bottom left). And in the cater-cornered area formerly used as a front entrance, space was divided equally between high-ceilinged living and sleeping quarters by a tall plumbing core.

Of the several such projects Anderson

Notter Finegold has already completed or is presently working on, all are intended as housing for the elderly. The Palmer Apartments are unique in the architects' experience because financing was conventional. That is not to say, however, that the project received no encouragement or assistance from the town. Abandoning its early intention to demolish the 63-year-old school, Needham leased the property to the developers for 50 years, with lease payments made in lieu of taxes.

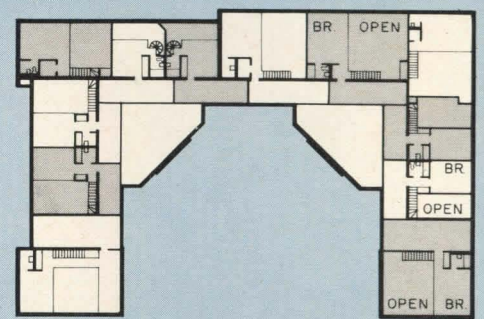
CENTRAL GRAMMAR APARTMENTS, Gloucester, Massachusetts. Owner: Gloucester Development

Team and Associates. Architects: Anderson Notter Finegold Inc. Engineers: Arthur Choo Associates, Inc. (structural); Environmental Design Engineers, Inc. (mechanical/electrical). Consultants: Greater Boston Community Development, Inc.; Community Research Applications, Inc.; New England Non-Profit Housing Development, Inc. Contractor: Gloucester Construction Company, Inc.

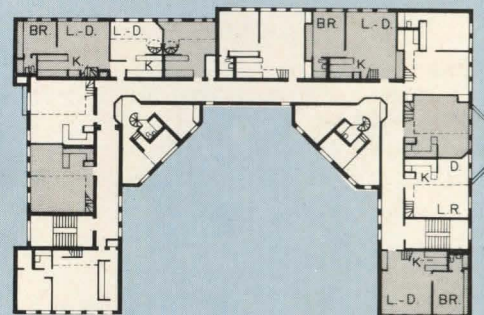
STEPHEN PALMER APARTMENTS, Needham, Massachusetts. Architects: Anderson Notter Finegold Inc. Developer: Stephen Palmer Associates, a partnership of Anderson Notter Finegold. Contractor: Denehy Construction Company, Inc.



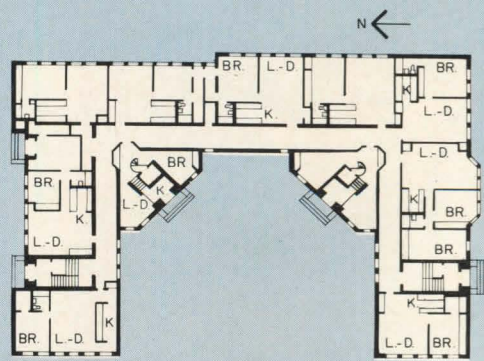
One of the chief amenities offered to housing in recycled schools is space, not only floor space that can be turned to larger-than-normal apartments, but volume—high ceilings and the windows to go with them. Corridors are often of a width to accommodate casual lounge space. Beyond that, the old buildings have detailing not reproducible today and valuable to residents for its familiarity. At Gloucester (across page), the architects incorporated existing oak wainscoting and oak classroom closets in the new units, and preserved the rusticated granite entrance portals.



THIRD FLOOR



SECOND FLOOR



FIRST FLOOR



## PICKERING WHARF MIXES CONDOMINIUMS, OFFICES, SHOPS

There is nothing new about mixed residential and retail spaces in buildings: neighborhood merchants and their families have traditionally lived above the store. But owners and realtors have in recent years paid increasing attention to combining uses in single developments for reasons financial, social and, perhaps, now fashionable.

By including higher-paying commercial tenants in a development, costs to residents may conceivably be eased somewhat. And since some operations in a 9-to-5 office building must in any event go on around the clock, the inclusion of such after-hours functions as residence and dining at least do not impair

efficiency, while they add immeasurably to a neighborhood's social vitality.

At Pickering Wharf in Salem, Massachusetts, uses are mixed with a vengeance—housing, offices, retail space, three restaurants, a museum/theater, a marina, and a waterside public walk.

Salem has engaged in the last several years in major urban revitalization, eager to encourage tourists who come to see the House of Seven Gables, Nathaniel Hawthorne's Custom House and the harbor, but eager at the same time to make sure that tourism does not destroy citizens' enjoyment of their own town. The city therefore, when

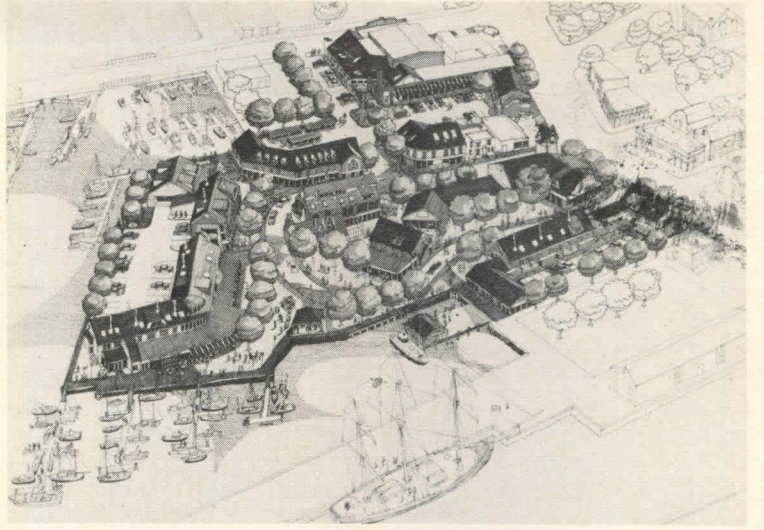
considering suggestions for the development of Pickering Wharf, on the harbor and adjacent to the central business district, was equally concerned about financial success and social impact.

Until Pickering Wharf's latest incarnation, a tank farm and assorted warehouses occupied the site. Apart from the unsightliness of this industrial use, however, the property's location relative to the city made development not only attractive but virtually mandatory. The area lies on the waterfront next to the Salem Maritime National Historic Site, contiguous with downtown, and within five-minutes' walk of major tourist attractions.

©Steve Rosenthal photos









## PICKERING WHARF

Architects ADD Inc. of Cambridge, Massachusetts, were approached initially to recycle a brick warehouse as a museum-cum-theater for a multimedia production on Salem's history. At the time, the most likely use of the site appeared to be a large-scale hotel development, about which the city was not entirely happy. The architects thereupon expanded their vision, and a development group comprising individual investors and the Salem Five Cents Savings Bank won the city's approval of the mixed-use project.

Pickering Wharf was designed essentially as a self-contained neighborhood, its separateness from downtown Salem declared at

the main entrance by a tower bearing the area's identifying logotype. Cobblestone pavement and shops opening directly onto the sidewalks emphasize the district's pedestrian nature, and walkers are further encouraged by a depressed walk that overlooks the national park across the water.

Automobile traffic circles the interior. Parking for residents is provided in two protected parking lots, one along the water at the southern edge, the other concealed by buildings on the west side of the curving main street. Visitors to the museum/theater find an adjacent parking lot, but tourists and daytime workers must find parking space outside.

The ground floors of all buildings in the precinct are allocated to retail activity, chiefly crafts shops and boutiques; retail space does not include service stores such as groceries.

Offices, which according to report are much sought after by lawyers, occupy the second and third floors of buildings along the downtown street that borders the north edge and near the main entrance on either side of the curvilinear street. Condominium housing, on the other hand, gains some distance from business activity and gains waterfront views along the southern edge and in the bulb of the central portion. The three restaurants—a large Victoria Station in the long curved build-



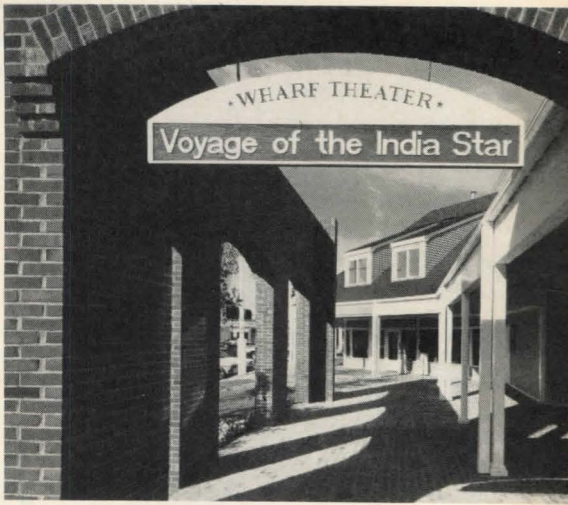


ing at the point, a smaller restaurant at the southwestern corner, and a pub on the east—all command views of the harbor.

Architecturally, the challenge was to suggest the distinctive quality of New England building without falling into the snare of Disneyland mimicry, unfair to the character of Salem and disagreeable to prospective residents and business tenants. The architects refer to historical Salem with steeply pitched roofs, dormer windows, brick and clapboard siding. Plans and elevations, however, except for looking vaguely like added-on-to houses, do not follow 18th-century tradition. Most of the 54 condominiums—one- and two-

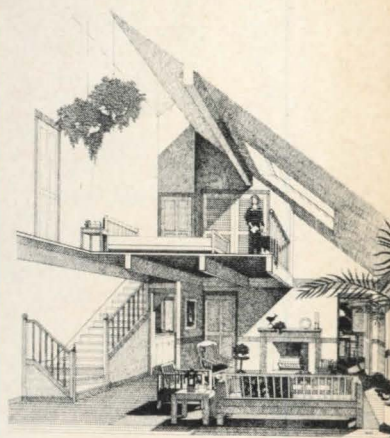
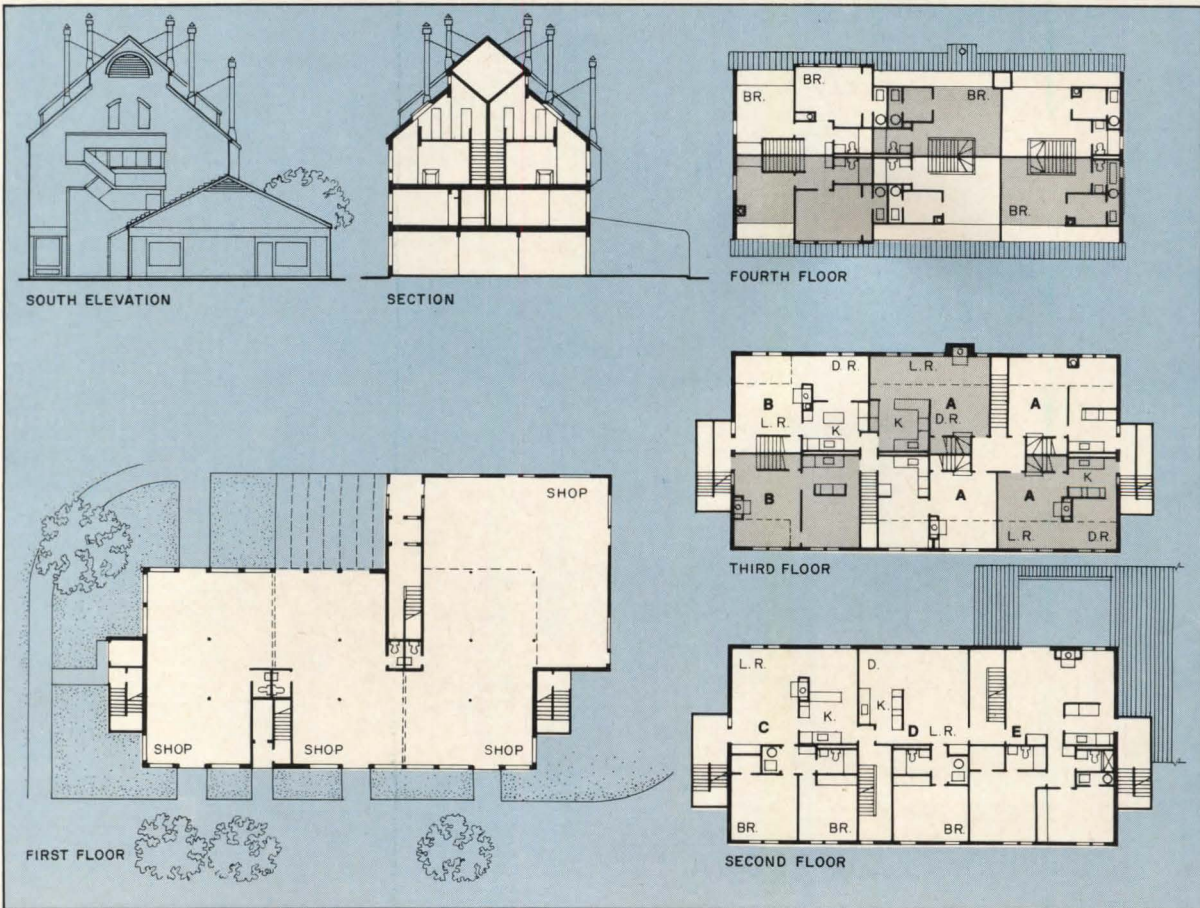
bedroom flats and lofts (taking typical 20th-century advantage of steeped roofs)—have their own entrances via either interior or exterior stairways.

PICKERING WHARF, Salem, Massachusetts. Owner: Heritage Trust. Architects: *ADD Inc.—Philip M. Briggs and Wilson F. Pollock, Jr., principals; Jim Van Sickle, project architect; Michael Hall and Michael Hickok, project team.* Engineers: *Gillum-Colaco Structural Engineers (structural); C.A. Crowley Engineering, Inc. (mechanical).* Consultants: *William Pressley (landscape); Geotechnical Consultants, Inc. (soils); White Oak Design, Inc. (mixed media).* Contractor: *Derby Construction Co.*



The brick arches and corbels of a former warehouse, now the entrance to the new museum/theater (left and above), constitute the only souvenir of the old Pickering Wharf. The new building includes a sizable addition to house a permanent theatrical production that recounts the seafaring history of Salem with film, models and mannequins.

Apartment plans vary considerably from building to building, but the plans shown here (for the building at the far right of the photograph on page 121) are typically atypical: loft apartments (A and the rendering), duplex apartments (B) and floor-through apartments (C, D and E).





# MIXED USE PUTS CONDOMINIUMS ABOVE UNION HEADQUARTERS

The new headquarters of the International Amalgamated Union in Washington, D.C., will be one of the first buildings in the city to take advantage of recent zoning changes designed to re-attract residents to a city whose population has declined 50,000 in 20 years. Among the zoning commission's measures: higher permissible FARs to encourage in-city residential development, mixed use to encourage urban vitality after working hours, and the stimulation of mass transit use to maximize planning benefits of the new Metro system.

The ATU building will occupy 60 per cent of an irregularly shaped site in a neighborhood now predominantly residential. Of-

fices will fill the lower three floors and 14 duplexes the upper two; three levels of parking will be provided below grade, and a recreation deck on the roof.

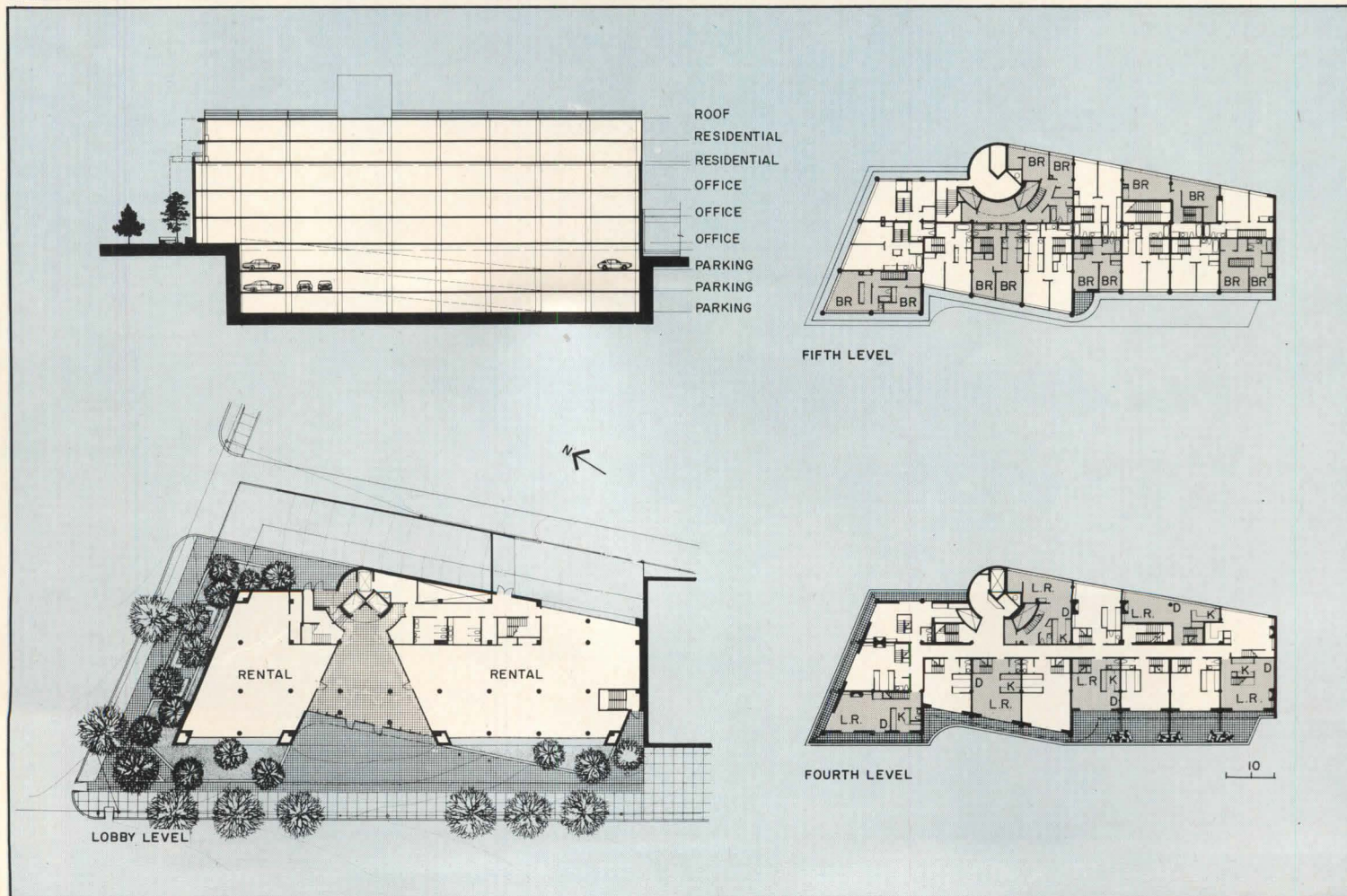
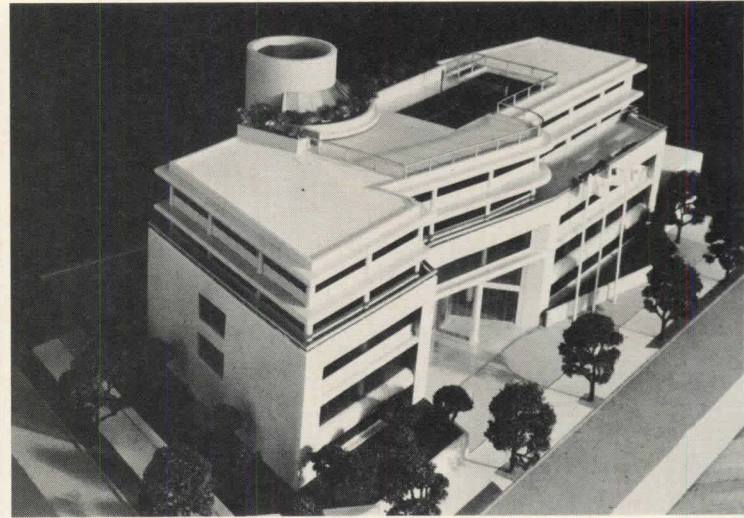
Architects Hellmuth, Obata & Kassabaum see the cylindrical shaft on the rear facade as the organizing element for both mass and plan. Most important, it marks the residential entrance and makes clear the building's dual occupancy; office workers and business visitors will enter a separate lobby at the front of the building. Beyond that declarative function, however, the cylinder also accommodates three elevators—one for apartments, two for offices—and a lobby on

the fourth floor for the apartment entries.

The building's different occupancies are further expressed on the exterior by the opposition of massive horizontality on the lower floors and the lighter scale of revealed columns and rounded slab edges at the residential levels.

INTERNATIONAL HEADQUARTERS OF THE AMALGAMATED TRANSIT UNION, Washington, D.C. Architects: *Hellmuth, Obata & Kassabaum*. Engineers: *Spiegel & Zamecnik* (structural); *Syska & Hennessy, Inc.* (mechanical/electrical). Landscape architects: *Kiley-Tyndall-Walker*. Contractors: *James G. David Construction Co.*

Edward R. Parker photos





## DOE's energy performance standards: the debate intensifies

The energy performance standards for new buildings proposed by the Department of Energy last November put the responsibility, squarely on architects and engineers, either directly or by implication, for designing building envelopes and systems to meet certain design energy budgets, and for attesting that their energy calculations meet these budgets. DOE's legal mandate from Congress is to promulgate these performance standards by August of this year, but there is now a strong plea from a wide variety of building industry organizations, particularly the engineering societies, for the government to proceed more deliberately to allow careful consideration of technical and economic issues involved, concerns about problems of implementation, and the impact of these on the practices of design professionals. Adding to the engineers' fears that the energy standards might be pushed too hastily is their presumption that, with 1980 being an election year, the Administration will want a sign of action on the energy front in the absence of a national energy policy.

The American Institute of Architects has long favored performance standards over

prescriptive ones, though the AIA's energy committee maintains that economic incentives and increased public awareness could be more effective than government regulation. Nonetheless, AIA supports DOE's energy performance standards, and their energy committee argues that performance and prescriptive standards should not be considered equivalent.

The national professional engineering organizations, on the other hand, strongly back the consensus standards approach taken by the American Society of Heating, Refrigerating and Air-Conditioning Engineers in its Standard 90. The American Consulting Engineers Council, for example, has argued for a five-year delay in the promulgation of energy performance standards, and the continued use of the building component performance standards developed by ASHRAE that have been put into code language by the National Conference of States on Building Codes and Standards (NCSBCS).

ACEC sees several negative aspects in DOE's proposed rule on energy standards, and the main ones cited are: 1) the engineer's design time will increase (one engineer inter-

viewed by RECORD feels he would need to increase his fees by one-third), 2) "certifying" compliance to the energy budget numbers, as called for in the proposed standard, would invalidate the engineer's liability insurance, and 3) many consulting engineering firms are not familiar with energy simulation computer programs, and their use to comply with the standards could be very costly.

ASHRAE's board of directors took no action on DOE's proposed energy standards at the society's semi-annual meeting in February in Los Angeles, but Hugh D. McMillan, Jr., ASHRAE's president, will make an official response at the first public hearing on the standards in Washington, D. C. on March 24. McMillan did, however, issue a statement at the end of the meeting in which he said: "We reaffirm our position that, in principle, a performance standard is an acceptable approach to energy conservation in buildings. But developing a performance standard that is usable is quite another matter. We say that:

1) The DOE's data base for its BEPS has not been fully disclosed. What is needed is an adequate opportunity to examine that data base in detail with respect to its accuracy and

| State                | SMSA        | Clinic | Community Center | Gymnasium | Hospital | Hotel/Motel | Multifamily High-Rise | Multifamily Low-Rise | Nursing Home | Office large | Office small | School Elementary | School Secondary | Shopping Center | Store | Theater/Auditorium | Warehouse |
|----------------------|-------------|--------|------------------|-----------|----------|-------------|-----------------------|----------------------|--------------|--------------|--------------|-------------------|------------------|-----------------|-------|--------------------|-----------|
| Minnesota            | Minneapolis | 58     | 45               | 59        | 140      | 74          | 58                    | 45                   | 72           | 51           | 48           | 50                | 57               | 82              | 64    | 65                 | 38        |
|                      |             | 142    | 109              | 144       | 335      | 180         | 140                   | 110                  | 175          | 123          | 117          | 122               | 138              | 198             | 155   | 157                | 93        |
| Missouri             | St. Louis   | 52     | 43               | 53        | 140      | 68          | 50                    | 44                   | 66           | 47           | 43           | 41                | 50               | 75              | 59    | 58                 | 28        |
|                      |             | 133    | 110              | 136       | 353      | 175         | 128                   | 112                  | 163          | 119          | 109          | 105               | 128              | 192             | 150   | 149                | 72        |
| District of Columbia | Washington  | 50     | 42               | 51        | 140      | 66          | 47                    | 43                   | 64           | 45           | 41           | 37                | 47               | 72              | 56    | 56                 | 24        |
|                      |             | 127    | 107              | 129       | 353      | 169         | 120                   | 109                  | 164          | 115          | 104          | 96                | 121              | 185             | 144   | 142                | 63        |
| Florida              | Miami       | 52     | 48               | 55        | 140      | 69          | 45                    | 50                   | 68           | 48           | 43           | 35                | 48               | 74              | 61    | 60                 | 14        |
|                      |             | 152    | 142              | 161       | 406      | 203         | 133                   | 147                  | 201          | 140          | 125          | 103               | 141              | 219             | 179   | 178                | 41        |
| Texas                | Dallas      | 51     | 45               | 52        | 140      | 67          | 46                    | 46                   | 66           | 46           | 41           | 36                | 48               | 73              | 58    | 40                 | 19        |
|                      |             | 131    | 116              | 136       | 358      | 175         | 119                   | 119                  | 171          | 120          | 107          | 94                | 124              | 190             | 152   | 150                | 50        |
| California           | San Diego   | 43     | 39               | 44        | 140      | 60          | 39                    | 40                   | 58           | 41           | 35           | 28                | 41               | 65              | 51    | 49                 | 15        |
|                      |             | 114    | 103              | 117       | 364      | 158         | 104                   | 106                  | 153          | 107          | 92           | 75                | 107              | 172             | 134   | 128                | 40        |
| Oregon               | Portland    | 47     | 38               | 47        | 140      | 63          | 45                    | 39                   | 60           | 42           | 38           | 35                | 45               | 69              | 53    | 51                 | 26        |
|                      |             | 119    | 98               | 120       | 353      | 161         | 116                   | 99                   | 154          | 108          | 97           | 91                | 115              | 176             | 135   | 131                | 66        |
| Massachusetts        | Boston      | 51     | 41               | 52        | 140      | 67          | 50                    | 42                   | 65           | 45           | 42           | 41                | 49               | 74              | 57    | 57                 | 30        |
|                      |             | 125    | 101              | 126       | 338      | 165         | 121                   | 102                  | 159          | 111          | 102          | 99                | 121              | 181             | 140   | 139                | 72        |

The design energy budgets in the current version of DOE's proposed energy standards are more strict than those presented in November 1978 in the Advance Notice. For example, the highest amount allowed for small office buildings in the table at left is for Minneapolis (48,000 Btu/sq ft/yr), whereas 56,000 were allowed in the first version.

The large numbers in the table are the proposed energy budget levels for eight cities. They were obtained by multiplying the building-site design energy budgets (small Roman numerals) by weighting factors that account for the different mixes of fuels. The italicized numbers are the building-site budgets multiplied by the RUF weighting factors used in the Advance Notice.







ings of all types in the AIA/RC sample was 1,661). The new figure is based upon the 30th percentile of the redesigned buildings

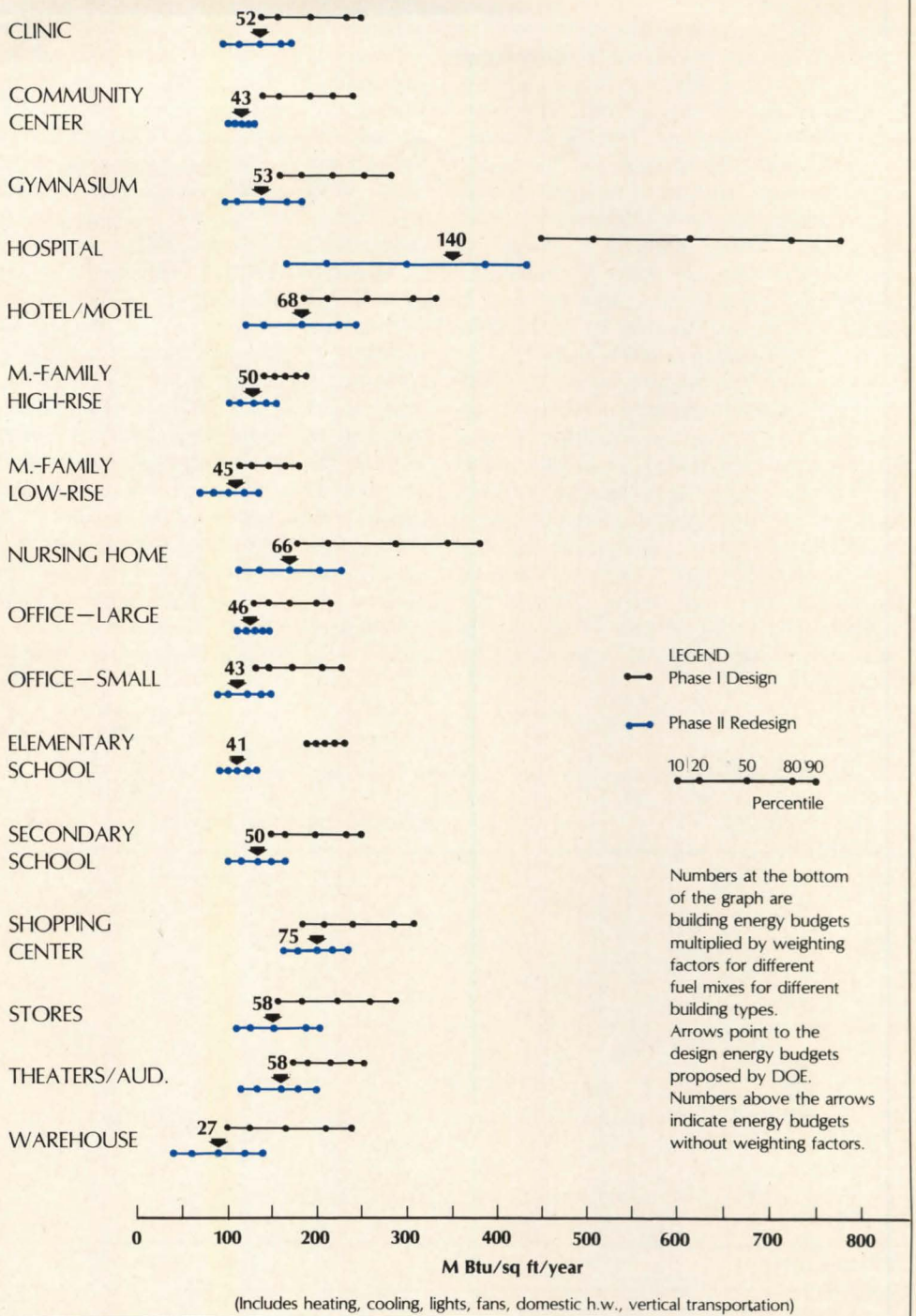
A brief review of the AIA/RC Base Data project for DOE will help explain the significance of the building redesigns: The sample of 1,661 buildings designed after the 1973 oil embargo represented about 80 per cent of commercial-type construction in the United States and included various building types in seven climatic regions. This sample served as a "baseline" of current design practice for buildings constructed in 1975-1976 time period. This step comprised Phase I of the AIA/RC project. Next a subsample of 168 buildings was selected, and the architect/engineer design teams responsible for these buildings were paid to redesign their own buildings so that the redesigns would embrace the "maximum practicable degree of energy conservation." In Phase II the teams had to provide significantly more detailed data on the building designs submitted under Phase I, in addition to being involved in the redesign activity. With the improved base of data and with estimates by researchers on energy performance requirements not obtainable from the Phase I survey, DOE re-estimated the design energy requirements of all of the Phase I buildings. With this "enriched" sample, DOE claims it could estimate the average design energy requirement values by building type for any location in the United States.

DOE selected a "strict" level for office buildings because its life-cycle cost analyses showed that cost-effective design solutions were achievable at energy budget levels significantly below the strict levels of the 30th percentile. To reach this point however, DOE acknowledged that it would be necessary for building designers and energy consultants to spend considerable design-input time and to conduct extensive computer analyses to identify conservation strategies.

What will architects and engineers need to do to demonstrate that their building designs meet the energy budget levels of DOE's energy performance standards? First of all, they will have to follow a Standard Evaluation Technique developed by DOE or an approved alternate that includes: 1) an energy calculation method that approximates the actual operation of a building based upon its design, 2) data for the calculation method that establishes a consistent basis for comparison of the design energy requirement for a building with its design energy budget (i.e., weather data, standard building operating conditions), and 3) procedures for the use of the calculation method.

DOE's Standard Evaluation Technique, which it considers as a bench mark for any alternate techniques, takes for its calculation methods three public domain computer programs—DOE-2, TRNSYS and DEROB. The first, DOE-2, originally known as CAL-ERDA and developed by California and DOE's predecessor, ERDA) is used for conventional systems. DEROB, used for passive solar design, was developed by the School of Architecture at the University of Texas. TRNSYS was developed by the University of Wisconsin to analyze the tran-

## DESIGN ENERGY BUDGET LEVELS—KANSAS CITY



This chart dramatically illustrates the strictness of the design energy budget levels in the current version of DOE's proposed energy standards. The basis for the numbers was a study by the AIA Research Corporation that involved a survey of 1,661 buildings scheduled for construction during 1975-1976 (buildings designed after the 1973 oil embargo). In Phase I of the project, the design energy budgets for these buildings were determined using the ACCESS energy simulation computer program. The range of design energy consumptions for each of the building types within the Phase I analysis is shown in the top line opposite each building type.

In Phase II of the project 168 architect/engineer teams were paid to redesign their buildings that were from the 1,661-building sample. The design energy consumptions of these buildings were determined by a more detailed application of the ACCESS program. The range of "redesign" values is shown in the bottom lines opposite each building type.

The energy budget levels given are not site use, but site use multiplied by weighting factors for the different mixes of fuels used. Thus they are larger, by a factor of 2½ or so. The arrows point to the design energy budget levels selected by DOE. Except for hospitals, office buildings, and

multifamily low-rise, the numbers selected are at the 50th percentile of the "redesign" energy budgets. For hospitals, which have high process loads, the energy budget level was selected at the 70th percentile. This percentile was also used for multifamily low-rise because current design practice would not permit greater savings. For office buildings the 30th percentile was used because life-cycle costs showed that energy-saving measures were cost-effective for budgets even below the 30th percentile.

The numbers over the arrows are building-line (building site use) design energy budgets, with which building designers are more familiar.



sient behavior of active solar heating and cooling systems, and is conveniently used only by a limited number of experts—but DOE states that a simplified version is being developed.

The proposed rule for the energy standards permits approved alternate evaluation techniques including computer programs and manual energy calculation methods (mainly for residential and small commercial buildings.) DOE is still developing a process to approve alternate calculations procedures, and points out that, to date, only the State of California has established a certification procedure for evaluation techniques.

The energy budget levels in DOE's proposed standard are not the design energy requirements (design consumptions), but these numbers multiplied by weighting factors that take into account the type of fuel or energy used. The weighting factors have a similar effect to the RUF's (Resource Utilization Factors) used in DOE's Advance Notice, though DOE states that the weighting factors explicitly account for the cost of fuels and the value to the nation of conserving different

fuels, being based on projected prices for fuels in 1985 and a premium for oil and gas to account for the positive effects on not importing crude oil. The RUF's are multipliers that convert the quantity of energy consumed at the building site to the equivalent amount of energy from its source. Though derived differently, they have essentially the same effect on the design energy budget levels for buildings. The weighting factors developed by DOE in the Notice for commercial buildings are 1.00 for natural gas, 1.20 for oil, and 3.08 for electricity. Considering the relative amounts of these fuels generally used for lighting, air conditioning and heating, a combined weighting factor for small office buildings in Kansas City, Missouri would be on the order of 2.5 for the mix of fuels typically used. With an energy budget level of 108,000 Btu/sq ft/yr in the standards, the allowable design energy consumption is about 43,000 Btu/sq ft/yr. The exact amount of design energy consumption allowed for a particular building would depend upon the combined weighting factor calculated for that building applying the individual weighting factors for

the different fuels that might be utilized.

The electric utility industry is objecting to the new weighting factors, as it did to the RUF's when they were published, both of which they see as prejudicial against electricity as an energy source.

Another major difference in the new proposed standards is the climate classifications which are now based upon 78 Standard Metropolitan Statistical Areas rather than seven climate zones. The major objection to the latter was that different cities in the same zone, though having similar heating degree days and cooling degree days, might have vastly different energy requirements because of different degrees of sunshine available and different humidities.

**DOE examined other alternatives besides performance standards to save energy**

If the performance standards are not implemented, says DOE, improvements in building energy efficiency would have to come from existing standards, from a reaction to rising energy prices, or from state and local government action. DOE estimates that the proposed standards would save 29 quads (a quad is one quadrillion Btu) of energy between 1980 and 2020. More stringent energy budget levels, DOE estimates, would save 44 quads, but would be difficult to achieve in building designs given current knowledge.

Still other alternatives considered included: 1) use of component, rather than whole building performance standards, 2) performance standards based on actual rather than design energy consumption, 3) energy prices set at levels that would result in savings equal to those of the standards, 4) information and education programs only.

Performance standards based on actual, rather than design, energy consumption would require a completely different enforcement approach. This alternative would have the most impact on the manner in which owners use energy.

Setting energy prices so as to produce energy savings equal to those of the proposed standards is possible, says DOE; but it could place a burden on owners of older, less energy-efficient buildings and on low-income citizens.

The information and education alternative would require, on the one hand, that the public exert the demand for efficiency in new buildings, and, on the other, that design professionals be educated in the use of energy efficient design techniques. DOE deems it unlikely that a public education program alone could achieve the same energy savings as the proposed standards.

No matter how the energy standards issue is resolved, it is clear that architects and engineers will need to improve their skills and increase time expenditures for energy-conserving designs if the building sector is to show even better results than it has already. But it is also clear that design professionals need more information on cost-effective technologies. And owners will need to pay for the additional effort since it is they who benefit.

| LARGE OFFICES             | Design Energy Consumption (MBtu/sq ft/yr) |    |    |    |    |    |    |
|---------------------------|---|----|----|----|----|----|----|
|                           | 1   | 2  | 3  | 4  | 5  | 6  | 7  |
| CLIMATIC ZONE             |   |    |    |    |    |    |    |
| 20% Baseline              | 55  | 53 | 53 | 53 | 51 | 57 | 53 |
| 30% Baseline              | 60  | 58 | 58 | 58 | 56 | 62 | 58 |
| 50% Baseline              | 68  | 66 | 66 | 66 | 64 | 70 | 66 |
| 80% Technical Redesign    | 49  | 48 | 48 | 48 | 46 | 51 | 48 |
| Lowest Technical Redesign | 29  | 38 | 26 | 31 | *  | 42 | *  |

\*—Not available

| HOSPITALS                 | Design Energy Consumption (MBtu/sq ft/yr) |     |     |     |     |     |     |
|---------------------------|---|-----|-----|-----|-----|-----|-----|
|                           | 1   | 2   | 3   | 4   | 5   | 6   | 7   |
| CLIMATIC ZONE             |   |     |     |     |     |     |     |
| 20% Baseline              | 109                                       | 120 | 131 | 142 | 142 | 207 | 142 |
| 30% Baseline              | 138                                       | 150 | 160 | 171 | 171 | 225 | 171 |
| 50% Baseline              | 186                                       | 197 | 208 | 219 | 219 | 285 | 219 |
| 80% Technical Redesign    | 111                                       | 117 | 124 | 130 | 130 | 169 | 130 |
| Lowest Technical Redesign | *   | *   | 85  | 53  | *   | 72  | *   |

\*—Not available

Just how much stricter the proposed energy budgets are than those originally published can be seen by comparing the values in these tables with those in the chart on the previous page. Originally the 30th percentile (from a sample of 1,661 buildings) of Phase 1 numbers was chosen both for large office buildings and for hospitals.



For more information, circle item numbers on Reader Service Inquiry Card, pages 201-202



## Special angular design for fabric and wallpaper

Inspired from a dhurrie rug design, this fabric, called "Flaxigi," (above) is made of 49 per cent Belgian linen and 51 per cent cotton. The angular design shown is white on an

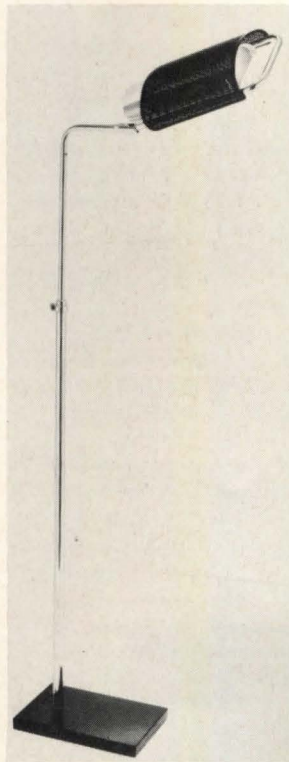
oatmeal-colored background; available on custom colors with coordinated wallcoverings. ■ Belgian Linen Association, New York City.

circle 300 on inquiry card

## Dramatic adjustable floor lamp

As part of this company's "Eyeshade" series, the floor lamp (below) adjusts to stand 34 to 48 in. high. The lamp shade is a black perforated cover, holding a 60-Watt T bulb; the shade is also available in either white or green translucent end panels. The lamp with its chrome base, was designed to stay cool for easy adjustment. ■ Koch + Lowy, Inc., Long Island City, New York.

circle 301 on inquiry card



## Modern laminated wood frame chair shaped for comfort

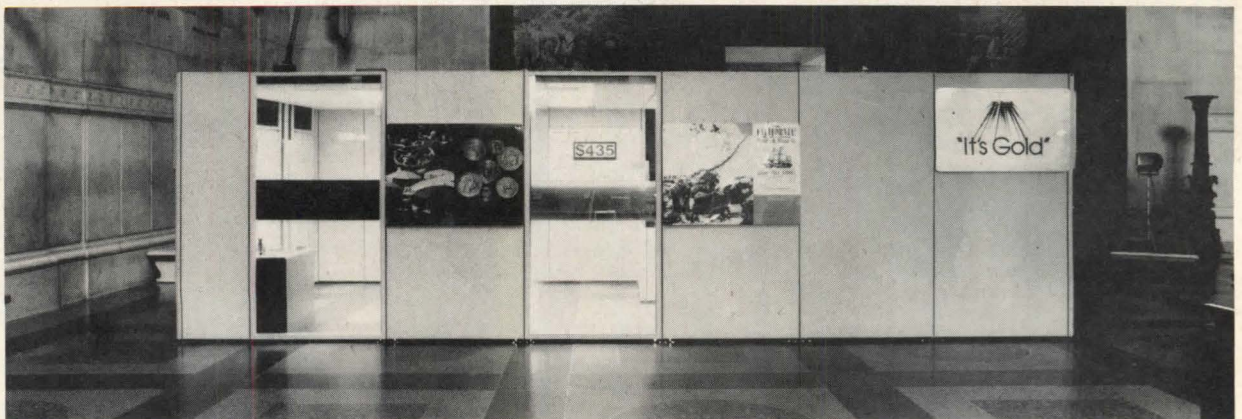
A wood-frame chair (above) laminated and shaped to a modest but stylish curve, is silhouetted here as the newest design from this company. A deep tufted seat and back are offered in leather or a variety of fabrics. Called "Polo," it is designed by Peter Opsvik. ■ Westnofa USA, Chicago.

circle 302 on inquiry card  
more products on page 137

## Portable exhibit space for museum

A departure from exhibition techniques, this "Action Office" demountable, partition system (right) is responsive to flexibility requirements. Shown here in the American Museum of Natural History, New York City, it demonstrates an "extra room" mini-exhibit space with security precautions. In this application, special moldings support a gold-colored glass—color symbolic of the "Gold of El Dorado" exhibit housed inside. ■ Herman Miller, Inc., Zeeland, Mich.

circle 303 on inquiry card





For more information, circle item numbers on Reader Service Inquiry Card, pages 202-202

**WASHROOM ACCESSORIES** / Full-line, 36-page catalog covers wash centers, multi-purpose dispenser units, soap valves, mirrors and shelves, grab bars and corridor rails; other accessories include custodial products and specialties. Products designed to accommodate the physically handicapped are highlighted in the literature. ■ Bradley Corp., Menomonee Falls, Wisc.

circle 400 on inquiry card

**WATERPROOFING MEMBRANE** / A brochure on *Duramem* seamless elastomeric membrane explains how the cold-applied, one-component liquid product cures at ambient temperature to form an impermeable, non-deteriorating rubber membrane that allows expansion and contraction. Offered in two viscosity grades for either vertical or horizontal use, *Duramem* meets or exceeds requirements of ASTM-C836-76, and can be applied by spray, squeegee or trowel. ■ Pecora Corp., Harleysville, Pennsylvania.

circle 401 on inquiry card

**FRP TANK COVERS** / Catalog describes corrosion-resistant domes, covers and custom specialty work for municipal and industrial water and waste facilities, and gives current performance and engineering data for three different types of covers: dome, barrel, and arch. Also shown is a fiberglass reinforced plastic constant pressure digester dome, available in 20- to 100-ft diameters. This dome permits increased storage of usable by-product gas, up to 98 per cent of the dome's volume. ■ Fiberglass Specialty Co., St. Paul.

circle 402 on inquiry card

**RATED SERVICE FITTINGS** / *Fire-Gard* through-floor fittings for combination power and telephone service are UL-listed for fire resistance up to and including a four-hour fire rating. A color product sheet highlights the *Fire-Gard* fitting, which is also listed as an outlet box by UL. An abandoning plate that carries the same resistance rating is also described. ■ Square D Co., Oxford, Ohio.

circle 403 on inquiry card

**INDUSTRIAL ENERGY USAGE** / New techniques and products developed to improve industrial productivity through better use of energy are described in a 26-page color brochure. Fully illustrated with photos and diagrams, the material discusses five ways industry can use energy more efficiently: conservation, substitution, control, services, and research and development. Additional information is offered for each product line shown: fans, lamps, cogeneration systems, arc and electric induction heaters, energy metering equipment, etc. ■ Westinghouse Electric Corp., Pittsburgh.

circle 404 on inquiry card

**WOOL UPHOLSTERY** / A 16-page booklet, written for the design professional, provides detailed information on wool fabric and its applications as an upholstery material. Such physical characteristics as wear- and abrasion-resistance, color depth and permanence, absorption and resilience, and flame resistance are covered; appropriate test proce-

dures are discussed. Various wool and worsted fabric types are illustrated. Other contract applications for wool are covered in additional volumes of "The Wool Library." ■ The Wool Bureau, Inc., New York City.

circle 405 on inquiry card

**LANDSCAPE/TURF IRRIGATION** / Water-saving features are stressed in a full-line color catalog on irrigation equipment for residential, commercial and golf course landscape use. Spray heads and nozzles, impact rotors in plastic or cast iron, traveling and whirling sprinklers, valves and controllers are included. ■ L. R. Nelson Corp., Peoria, Ill.

circle 406 on inquiry card

**PNEUMATIC DOOR CONTROLS** / Short-form catalog illustrates surface applied pneumatic door control products, including new "Access Free" and "Lite Touch" models designed to help make buildings usable by the handicapped. ■ Reading Door Closer Corp., Reamstown, Pa.

circle 407 on inquiry card

**BARRIER FREE DOORS** / A "Guide to Specification of Door Controls for Barrier Free Environments" compares features of *Reading* products for the handicapped to those made by others. The Guide covers hydraulic door closers, automatic door openers, and door assists. ■ Reading Door Closer Corp., Reamstown, Pa.

circle 408 on inquiry card

**CONTRACT CARPETS** / Color brochure shows "Stonemont" and "Stonemont Coordinates" carpeting in actual contract settings; a sample folder provides swatches of all "Stonemont" patterns and solids in all colorations. Constructed of the same *Anso Naturaluster* nylon base, the two heavy-duty coordinated carpet lines are suitable for hotel, store, health care and other commercial use. ■ Magee Div., Shaw Industries, Dalton, Ga.

circle 409 on inquiry card

**WOOD WINDOWS** / Full-color 44-page catalog provides engineering, dimensional and energy performance data on a complete line of aluminum-clad and primed wood windows and patio doors. Solar control double insulating glass is standard on all units; optional triple glazing is available on many *CARclad* double hung, casement/awning and primed casement/awning windows. Standard features and options include concealed hinges, screens, removable grilles, locks and tilt-clean sash. ■ Caradco Corp., Div. Bendix, Rantoul, Ill.

circle 410 on inquiry card

**AIRPLANE HANGARS** / Electric bi-fold door systems in sizes up to 55-ft 6-in. wide by 16-ft high are offered with the "Ranch Hangar" airplane storage building. A data sheet lists the clear-span hangars available in the "Ranch" series, and highlights other products and services provided for general aviation facilities. ■ Erect-A-Tube, Inc., Harvard, Ill.

circle 411 on inquiry card

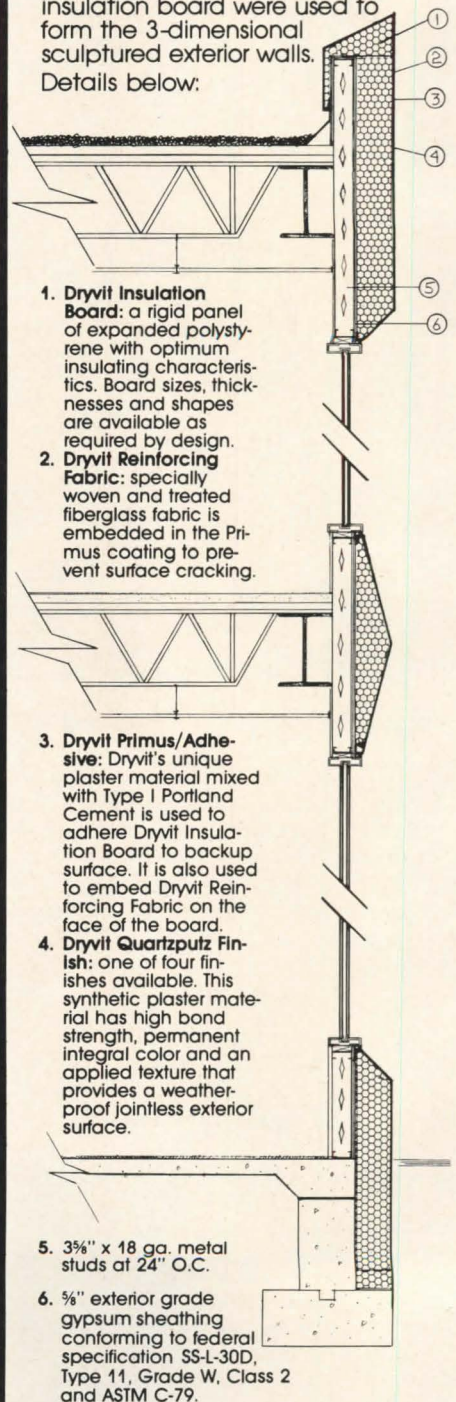
more literature on page 143

**dryvit<sup>®</sup> System Inc.**  
**OUTSULATION<sup>™</sup>**

**A closer look at a successful retrofit.**

The dynamic structural effects achieved in the North Shore Atrium Office Building (shown on facing page) were easily achieved with the Dryvit System.

Pre-formed shapes of Dryvit insulation board were used to form the 3-dimensional sculptured exterior walls. Details below:



**DRYVIT SYSTEM, INC.**

420 Lincoln Avenue, Warwick, RI 02888  
(401) 463-7150  
Plant Locations: Warwick, RI and Tulsa, OK

Circle 57 on inquiry card





**COMPACT REFRIGERATOR** / A 3.3 cu ft appliance, the RF33 refrigerator is a matching companion to this manufacturer's DC33 ice cube maker, by size and exterior finish (both shown in photo). The refrigerator's front ventilation system allows for permanent installation flush with other cabinets. Door panels are walnut woodgrain vinyl; customized panels may be added. A stainless steel door is also available. ■ Scotsman, Albert Lea, Minn.

*circle 304 on inquiry card*

**COMMUNICATION LIGHTS** / Available in 28 different internationally recognizable symbols, these communication lights convey information, directions and locations through the use of graphics. Signs are made of white Lexan with matte black aluminum mounting brackets. Fixtures accept either incandescent or fluorescent light sources. Two square sizes are offered, 7½-in. and 9¼-in., with ceiling, wall or edge mount provisions. Custom graphics may be ordered. ■ Halo Lighting Div., McGraw-Edison Co., Elk Grove Village, Ill.

*circle 305 on inquiry card*

**OUTDOOR DRINKING FOUNTAIN** / This steel pedestal-mounted drinking fountain stands 36 in. from the ground for most convenient access by wheel chair users. Concealed mounting feet that fit inside the base, a 10-gauge cold-rolled steel pedestal, and steel bubbler guard provide maximum vandal-resistance. Finish is bronze-tone or green scratch-resistant epoxy. Two self-closing lever-action valves allow for operation from either side of the drinking fountain. ■ Western Drinking Fountains, San Leandro, Calif.

*circle 306 on inquiry card*

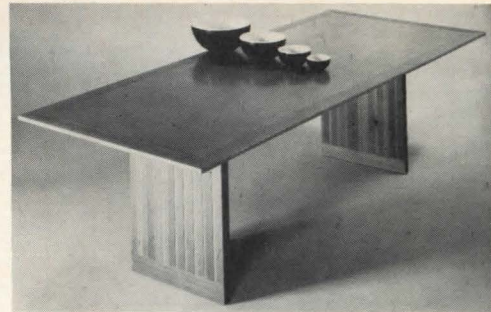
**BATH FIXTURES** / White on white vitreous china fixtures have a graceful fluted design; bright cobalt blue, amethyst, ocher and green colors are also available, all with white interiors. The Italian-made "Serie Pagaso" line includes the pedestal basin and bath shelf shown, as well as water closet, bidet, towel bar brackets, three different soap holders, and other accessories. ■ Hastings Tile & Il Bagno Collection, Lake Success, N.Y.

*circle 307 on inquiry card*



**PHOTOELECTRIC SWITCHES** / UL-listed photoelectric switches monitor movement, continuity, security or traffic. They can be used as a counting mechanism, or to do anything else where the breaking of a light beam can be used to trigger an electrical switch. Both 500- and 1000-ft-range models have a built-in latching circuit. ■ Napco Security Systems, Inc., Copiague, N.Y.

*circle 308 on inquiry card*



**ITALIAN FURNITURE** / This rectangular table has a durable, scratch-resistant plastic varnish finish. Other pieces in the line, designed by architects Roberto Pamio and Renato Toso, include platforms for seating or storage, upholstered elements, and cabinets with glass or tinted poplar doors. ■ Atlair, St. Augustine, Fla.

*circle 309 on inquiry card  
more products on page 139*

## scamp sound masking helps keep your office door closed even if you don't have an office door.

Can improve worker efficiency and executive privacy in open office environments.

The incorporation of an unobtrusive SCAMP sound masking system into open office environments is essential to maintaining speech privacy. It reduces the effects of speech, business machine and other distracting noises exterior to an open office area. The background sound that SCAMP provides is electronically produced and specifically tuned to provide the degree of privacy required. For example, SCAMP units can be adjusted for the normal privacy office workers need to perform their assignments efficiently. And, as well, for the confidential privacy executives may require. SCAMP also provides a medium for voice paging, music or emergency tone bursts.

SCAMP is a lightweight, self-contained solid-state device that uses less than 3 watts of power and requires no maintenance. Available in exposed or plenum models, it's easy to install and its cost is quickly paid for in more productive man-hours. That's why there are more than 10 million square feet of office space covered by SCAMP systems right now and more being installed every day.

Besides individually tunable SCAMP units we also offer centrally controlled systems. The best way to find out about your requirement is to send us a floor plan for a free analysis. We'll examine it and determine the best sound masking plan for you based on both the masking efficiency and cost effectiveness. Write today or call for further details.

The ultimate in speech privacy by the leader in sound masking.

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Sales Reps Wanted: Florida, Wisconsin, Illinois and all territories west of the Mississippi. Write or call Jack Leonard.



*Circle 59 on inquiry card*





Aerial view of the Carlisle roof on the new Milton, Pennsylvania Distribution Center built by Weis Markets, Inc.

## A Carlisle roof is low-cost to put on, no cost to keep on... and on...and on...and...

Imagine three men unrolling big, clean rubber sheets (up to 45' x 125' in one piece) on your roof in the dead of winter, cold-sealing the few seams and around protrusions and perimeter, then spreading ballast—river-washed gravel will do nicely—over it.

That's about all there is to installing the Carlisle Sure-Seal loose-laid roof on all types of commercial and industrial roofs, and there are three other Sure-Seal systems not much more complicated. No wasted motion. No fancy equipment.

The marvel is that Sure-Seal costs less to install than a top quality built-up roof, costs next to nothing to maintain (what's to maintain?), and lasts and lasts and lasts. How long? We honestly don't know yet; earlier Sure-Seal installations are 17 years old

and still going strong. But we back Sure-Seal with a Five-Year *Watertight* Warranty and even that can be extended.

Now mull over this: you can lay Sure-Seal right over a leaky *old* roof. *And*, if you decide later to move, you can move the roof with you! Or raise the roof one day to top the stories you add!

If you want to keep a roof over your head, you can see Sure-Seal does the job beautifully and saves you money from start to finish. And long, long after. Would you like to know more about it? Write us for the name of your nearest contractor; he has to be an approved Sure-Seal applicator, which means he's one of the best in the business. Just like Sure-Seal.

*Carlisle elastomeric roofing system, Design B, is listed by Underwriters' Laboratories Inc. for Class A service.*



Construction Materials Department  
Carlisle Tire & Rubber Company  
Division of Carlisle Corporation  
P.O. Box 99  
Carlisle, PA 17013  
(717) 249-1000; Telex 84-2330 (Carlisle CLSL)

## Carlisle Tire & Rubber

# CARLISLE

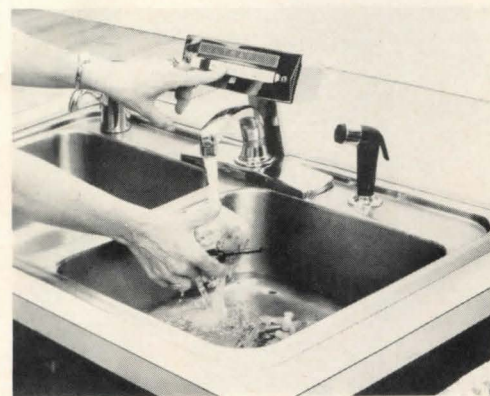
Circle 60 on inquiry card



**BENT PLYWOOD CHAIR** / Constructed with exposed oak plywood frames, the "Lightline" chair, designed by Arthur Umanoff, is offered in three different styles. Features of the chair include sled bases, exposed arm frames and upholstered arm insets. ■ Madison Furniture Industries, Canton, Miss.



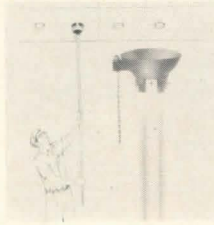
circle 310 on inquiry card



**ONE-LINE PLUMBING** / A centralized water-distribution system that eliminates the use of manual mixing valves (faucets) to control water flow and temperature at the kitchen sink, lavatory, tub and shower in homes and apartments, *Ultraflo* push-button one-line plumbing is said to provide substantial savings in water and fuel costs. Only one small-diameter flexible copper or plastic line is used to run from the solenoid valve console, located near the water heater, to each plumbing fixture. Water temperature and flow rate desired is selected from the eight-button control panel for sinks, shown here, or the four-button unit offered for bath fixtures. ■ Ultraflo Corp., Sandusky, Ohio.

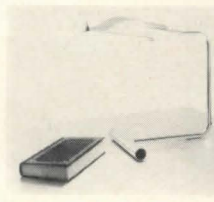
circle 311 on inquiry card

**LAMP CHANGER** / Available with five-ft interchangeable steel pole sections that can be assembled to reach bulbs as high as 30 ft, the "166" lamp changer is designed for removing and replacing R-20, R-30 and ER-30 lamps in recessed fixtures in high and/or hard-to-reach places without climbing. There is no need for ladders or clearing floor space. A compact rubber suction cup grips lamps securely; a pull on the chain breaks the suction after the new lamp has been installed. Pole sections and changer head are insulated to protect the user from electrical shock. ■ McGill Mfg. Co., Inc., Valparaiso, Ind.

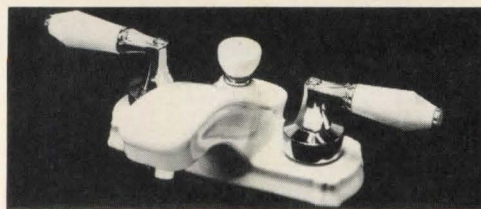


circle 312 on inquiry card

**DESK LAMP** / A solid brass reading light, the "Madeleine II" features a tent-shape shade and enclosed universal swivel, which allows adjusting of the light to any position. The lamp stands 14-in. high, and is available in either polished brass or chrome finish. Suggested list price: \$112. ■ Koch + Lowy, Long Island City, N.Y.



circle 313 on inquiry card



**CHINA FAUCETS** / One of a coordinated line of vitreous china fittings and accessories for the bath, the "Victorian" faucet features a four-in. china center set with polished chrome trim and white handles. Accessories include two towel bars; a towel ring; a soap dish; combination grab bar/soap dish; and a robe holder. ■ Bradley Corp., Menomonee Falls, Wisc.

circle 314 on inquiry card

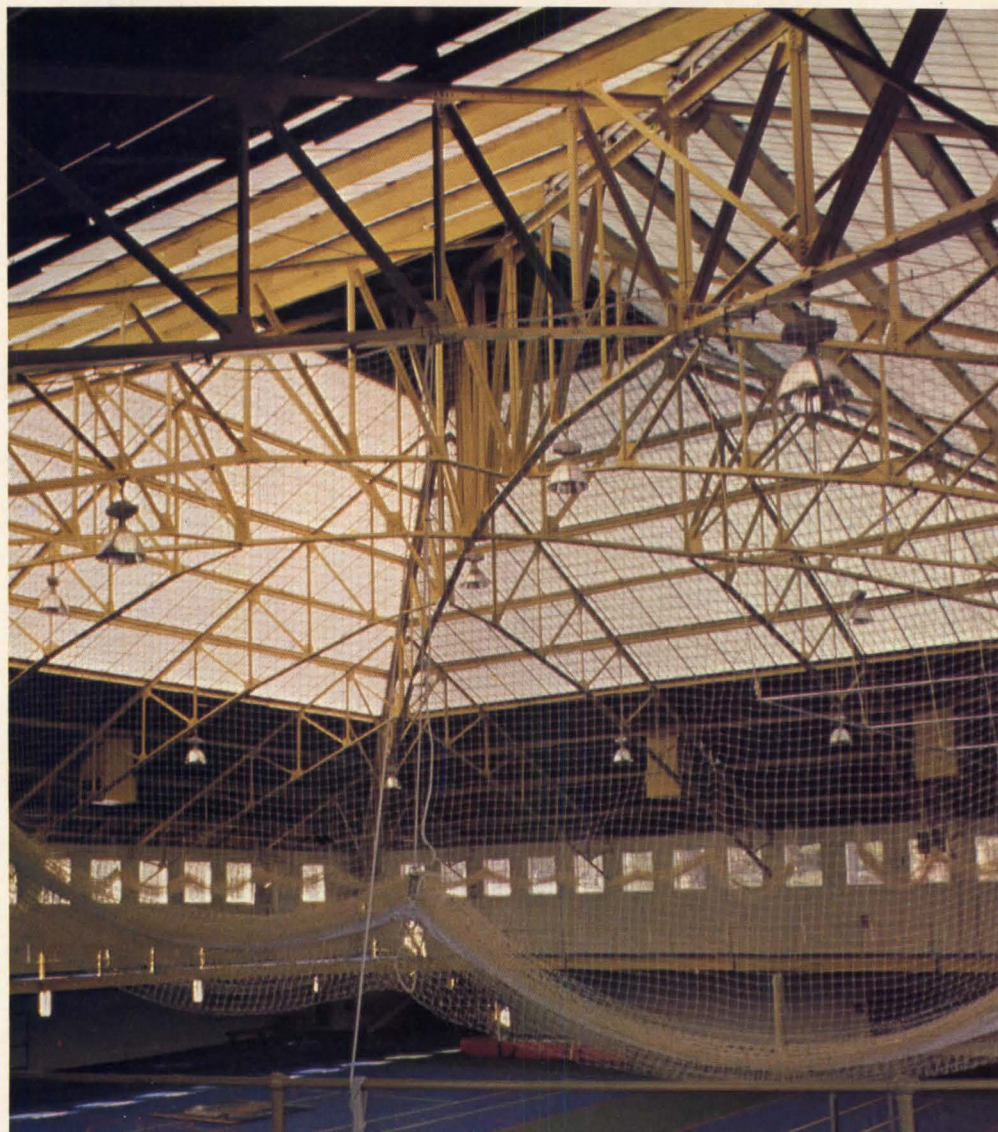
**SELF-WATERING PLANTERS** / *PlanTier* square,



rectangular and cylindrical shape plastic planters maintain live plant arrangements from four to 12 weeks without watering. Soil is placed in a separate planting insert with the water tank underneath it; between these two components there is an air gap, so the plant roots are supplied with necessary air as well as water. There are seven different *PlanTier* models, for use in hotels, offices, malls, etc.; colors are white or brown. ■ Material Handling Div., Midland-Ross Corp., Cincinnati.

circle 315 on inquiry card

more products on page 141



Skyroof Retrofit Johnson Hotvedt Di Nisco & Associates, Architects

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# Timberline



## New from the Raynor Forest... steel that looks like wood!

Timberline is Raynor's new sectional garage door that combines the beauty of wood with the strength, security and durability of steel. And because it's made of steel, Timberline won't rot, warp or shrink, ever. Plus, its deep-ribbed design takes on an attractive wood-plank appearance.

Timberline features a rich wood-grain, baked-on enamel finish offered in both one and two-car sizes. Insulation and other weather-protection materials are



**RAYNOR**  
GARAGE DOORS



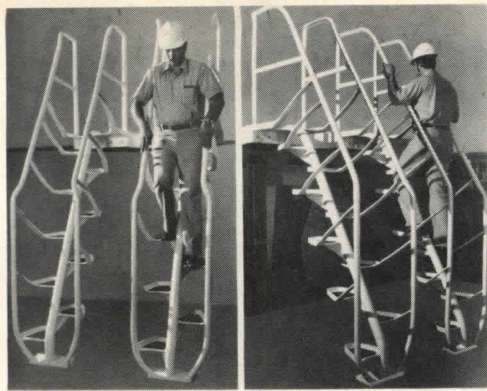
also available for colder climates.

Next time you're selecting a garage door, be sure to ask for the Raynor Timberline. The one door that offers the best of two worlds.

For complete information on the new, beautiful steel Timberline sectional garage door, call your local factory-trained Raynor distributor/installer. You'll find him in the Yellow Pages under "Doors." Or write Raynor Manufacturing Company, Dixon, IL 61021.

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**SAFETY LADDER** / The *Lapeyre Stair* provides the walk up-and-down ease of conventional stairs at a much steeper angle, while providing the user with twice the effective tread depth for a given riser height. The stair uses alternating half treads fastened to a central beam; hand rails fit snugly under the arms for greater security in winds and high seas. Three-point truss-like construction uses less material and occupies half the floor space of regular stairs/ladders. The *Lapeyre Stair* may be manufactured in a variety of materials including wood, steel, aluminum, concrete or fiberglass. ■ Laitram Machinery, Inc., New Orleans.

*circle 316 on inquiry card*

**MULTIPLE DEADBOLT** / A precisely engineered locking network, activated by a specially designed *Medeco* cylinder, controls six steel deadbolts that penetrate deep into the door frame and floor, and all four sides. The 205-D model shown here is recommended for new doors of hollow metal or wood construction, and is available in different finishes with a choice of lever handles. ■ Mul-T-Lock Corp., New York City.

*circle 317 on inquiry card*

**MAR-RESISTANT POLYCARBONATE** / *Margard* silicone hardcoat for extruded polycarbonate substrates offers abrasion resistance approaching glass, with the impact and vandal-resistance of *Lexan* sheet products. *Margard* exceeds the requirements of ANSI Z26.1 for safety glazing materials, and may be used on mass transit and off-the-road vehicles. Its superior abrasion resistance also means longer service life in high traffic architectural glazing areas such as schools, prison and hospital windows, storefronts and display cases. ■ General Electric Co., Plastics Div., Pittsfield, Mass.

*circle 318 on inquiry card*

**ARTIFICIAL TURF CARPETING** / Over 30,000 sq yd of grass carpeting made of *Polyloom* olefin fibers have been installed on the concrete plaza, promenades, pool areas and terraces of this three-tower complex. *Polyloom* carpets carry warranties against failure or fading due to exposure to sunlight. ■ Chevron Chemical Co., New York City.

*circle 319 on inquiry card*

**FABRIC ART** / Pictured here is "Bear Grass" by photographer Ray Atkeson—one of a series of six nature photographs reproduced on fade-resistant woven polyester fabric via a lithographic/heat transfer process. The 26- by 32-in. wall hangings are mounted over wood stretcher bars fit into chrome- or brass-colored frames. The suggested retail price of each is \$39.95. ■ Environmental Graphics, Inc., Minnetonka, Minn.

*circle 320 on inquiry card*

**DIMMING SYSTEMS** / Described by the manufacturer as a cost-effective approach to lighting-energy management with unlimited capability, dimming systems control HID lamps of all types; fluorescent and incandescent dimming may be added to provide a totally integrated system. Control capability includes manual or programmed dimming and automatic energy control, where a photocell monitors average illumination level constant in the area. ■ Wide-Lite Corp., San Marcos, Texas.

*circle 321 on inquiry card*

# Granite.

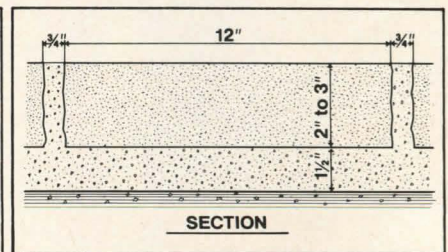
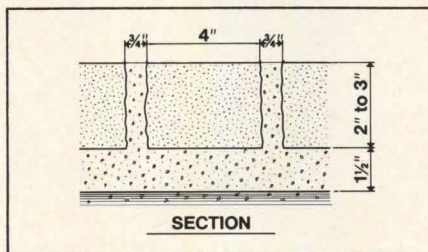
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Architect: Joe Karr & Associates, Chicago, IL



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Innovators, but we won't ever use our customers' buildings as a test tower or let the urge to innovate override our customers' needs for safety, reliability, and performance. For literature write Dover Corporation, Elevator Division, Marketing Services—A665, P.O. Box 2177, Memphis, TN 38101.



**The elevator innovators.**





**METALLIC LAMINATE** / Hand finished, genuine metallic high-pressure laminates finished in brass- and bronze-tones are featured in *Homopal's* "Renaissance" interior panel collection. A product data sheet illustrates the three new patterns, available as 4- by 8-ft panels that cut and glue like standard plastic laminates. ■ The Diller Corp., Morton Grove, Ill.

*circle 412 on inquiry card*

**CONCRETE FORMWORK SAFETY** / Incorporating extensive revisions, a recently published 14-page booklet covers recommended safety requirements for shoring concrete formwork. Shoring methods considered include tubular welded frame, tube and coupler, single post shores, horizontal shoring beams, rolling shore brackets, and flying deck forms. Safety guidelines are also available for other types of scaffolding and shoring used in concrete construction. ■ The Scaffolding & Shoring Institute, Cleveland.

*circle 413 on inquiry card*

**COATED COIL** / The 1980 Product Capability Directory compiled by the National Coil Coaters Association "Looking For Pre-Costed Metals" lists over 40 firms producing coated steel or aluminum coil products used in appliances, buildings, furniture, etc. Various coatings are described, together with their most common construction and industrial applications. ■ National Coil Coaters Association, Philadelphia.

*circle 414 on inquiry card*

**WOOD LIGHTING STANDARDS** / Pressure-treated for long-term protection against termites and decay, laminated wood poles for street, park and walkway lighting are described in a product data sheet. *Light Riser* standards have an interior raceway for wiring and an aluminum top plate; standard models range from 8- to 30-ft mounting height. Natural finish or three colors of factory-applied stain are offered. ■ Koppers Co., Inc., Pittsburgh.

*circle 415 on inquiry card*

**MEDICAL WALLS** / A 24-page color brochure describes modular medical wall systems for intensive and coronary care, general and recovery room patient care. A design guide explains the various power, instrumentation and medical gas options, and shows how the one-, two- or three-section walls provide for future component additions. Installation requires no job-site assembly; medical walls are completely piped and wired at the factory to meet all existing codes. ■ Square D Co., Oshkosh, Wisc.

*circle 416 on inquiry card*

**LAMINATED GLASS** / Color brochure discusses in detail the four primary benefits of laminated architectural glass: safety, sound control, solar control and security, and the combination of these features offered by various glazing products. Laminated glass's ability to dampen the vibration of sound, even that of jet aircraft, is explained. The 20-page booklet is illustrated with photos of significant uses of laminated glass. ■ Monsanto Plastics & Resins Co., St. Louis.

*circle 417 on inquiry card*

**GARAGE DOORS** / Full-line catalog presents industrial and commercial garage doors and electric operators. Doors are constructed of steel, fiberglass, aluminum and wood, in configurations to meet different job requirements. ■ Raynor Mfg. Co., Dixon, Ill.

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vitrified clay body withstands foot-traffic from millions of shoppers; **Economical Maintenance**—non-absorbent body resists acids, oils, chemicals, and other abuses... cleans quickly without heavy scouring or waxing; **Frost-proof**—patterns and colors can be coordinated, indoors and outdoors; **Widest Selection**—a myriad of natural,

earthtone colors and sizes (2½ x 10, 4 5 x 10, 8 x 8). For more than 85 years, Gail Brickplate has proven itself all over the world under the most severe conditions. For additional information of the name of your local distributor contact one of our four regional sales offices. **Gail Ceramics**

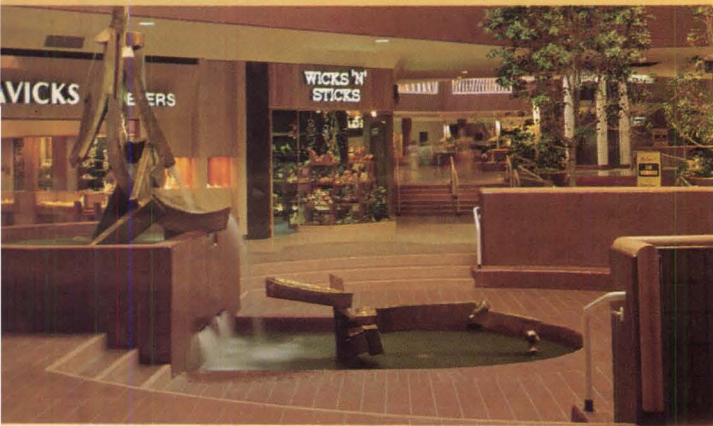
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6265 McDonough Drive  
Norcross, Georgia 30093  
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Cedar Grove, New Jersey 07009  
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Shown above: 1. Greenwood Park, Indianapolis, Ind. Over 93,000 Sq. ft. of Gail Unglazed Brickplate installed; Architects: Charles Kober Associates; Developers: Melvin Simon Associates, Inc. 2. The Meadows Shopping Mall, Las Vegas, Nevada; Over 45,000 sq. ft. of Unglazed Brickplate (English Red and Leather) specified for floors by architects, Charles Kober Associates; General Contractor: Ernest W. Hahn, Inc. 3. Lougheed Mall, Vancouver, B.C., Canada Architects: Dirrassar, James & Jorgensen; Developers: Trizec Corp., Ltd. 4. Woodland Hills Mall, Tulsa, Oklahoma Architect: Charles A. Kober Associates; Developer: Dayton-Hudson Properties. Gail Unglazed Brickplate on floor surfaces. 5. Capitol Mall, Olympia, Washington; Architects: John Graham & Co. Seattle; Developers/General Contractors: Ernest W. Hahn, Inc., El Segundo, California.





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BUILDING TECHNOLOGY  
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HOUSTON, TEXAS 77027**

### Firm changes

Frank L. Hope & Associates announce the appointment of two new associates, Allen F. Flanders and David F. Asano.

Howie and Freireich, Architects announce the appointment of Susan B. Gardner as an associate in the firm.

Irving + Jacob Architects announce the appointment of Mary Stewart as director of I + J Interior Planning Group.

The architectural firm of KWA, Inc. has announced the following principals: William D. Kendall, James E. Heaton, Wayne Shull, Rex Woolridge, J'Neen Bills and Philip Ewald.

Philip M. Chu Associates will continue the architectural practice of Kilham Beder & Chu and will be located at Spring Lane, Chappaqua, New York.

Krommenhoek/McKeown & Associates announce the appointment of Roman E. Beck, Robert J. Bruck, AIA, James W. Cooke, AIA, James L. Meyerhoff, AIA and Robert B. Smith, AIA as associates in the firm.

Leason Pomeroy Associates, has announced the addition of three new associates: Terry Briggs, Philip L. Kroeze and Donald W. Mueller.

Levitt-Turner Inc. announce the promotion of Michael Elkin to associate/office manager and Oscar Galang to associate in the firm.

David Lewis, Raymond Gindroz and James Goldman announce the appointment of their new partner, Donald K. Carter, AIA, CICP.

Lorenzi, Dodds & Gunnill, Inc. announce that James C. Lorenzi has been promoted to vice president of engineering.

Donald C. Axon, AIA has joined the firm of Lyon Associates, Inc. as an associate and senior project architect.

Roger Margerum, Inc. Architects announce the addition of Gordon P. Bugbee, AIA to their staff.

Marquis Associates, architecture, planning and interior design have named two new associates to the firm: P. Steven Perls and Lamberto G. Noris.

Carl Massara and Associates, architects, have appointed Ernest Paul Micciche as the new controller of the firm.

Robin Kipp, AIA has been named a vice president of McGranahan, Messenger Associates, Architects and Planners.

Severud-Perrone-Szegezdy-Sturm announce that John J. Cryan, Ronald C. Denger have become partners of the firm. New associates are: Algis D. Ratas, William F. Tiedge, Robert T. Ratay, Tibor Vari and Calvin Sterling.

Andrew C. Schoerke has joined the firm of Peter Simoncelli & Associates.

Smith, Hinchman & Grylls Associates, Inc. announce the appointment of John E. Rectenwald, AIA as director of the Atlanta office.

Four employees of the Spink Corporation, a full-service engineering/architectural firm, have been promoted to associate. The new associates are: Michael Neils, William Carboni, Don Hess and Hal Wecker. Charles Yarde has been appointed assistant marketing manager.

Stone, Marraccini and Patterson has appointed Charles Edison and Peter Macgowan, AIA to the post of associate director and Michael T. Steele, AIA as vice president/marketing.

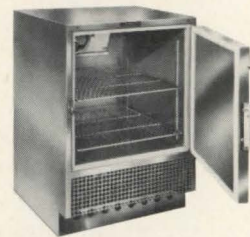
James C. Buzzell, Jr. has been promoted to assistant vice president of Sverdrup & Parcel and Associates, Inc.

Whisler Patri announce four new members to their space planning/tenant development group. They are: Byron Leslie Linford, William X. Fabis, Glen Apgar and Serge Angel.

*continued on page 147*

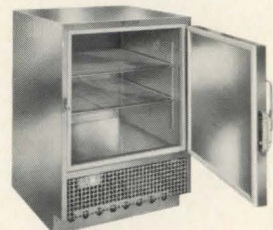
# WE FIT IN

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**UC-5-BC** refrigerator has a blower coil cooling system with automatic off-cycle defrosting and condensate evaporator in condensing unit compartment. Two adjustable stainless steel shelves are provided.

**UC-5-F-BC** freezer is equipped with automatic timer electric defrost. Capacity—5.4 cu. ft. (155 ltr.)

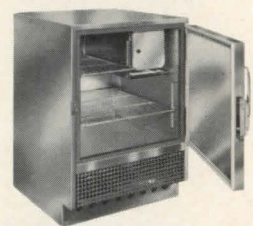


**UC-5-CW\*** refrigerator with cold wall cooling system is equipped with push-button defrost, automatic reset and condensate evaporator. Capacity—5.4 cu. ft. (155 ltr.)

**UC-5-F-CW\*** freezer is equipped with manual hot gas defrost. Capacity—4.6 cu. ft. (130 ltr.)

**UC-5-CW-E** refrigerator has the same interior features as the UC-5-CW but modified to make it *totally explosion-proof*. Capacity—4.9 cu. ft. (140 ltr.)

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**UC-5** features a two-tray ice cube cooling system with manual defrost and stainless steel defrost water tray. The cooler section has two adjustable stainless steel shelves. The entire UC-5 series features polyurethane insulated thin wall construction and air-tight neoprene thermo-break door seals. Capacity—5.4 cu. ft. (155 ltr.)

Jewett also manufactures a complete line of blood bank, biological, and pharmaceutical refrigerators and freezers as well as morgue refrigerators and autopsy equipment for world wide distribution through its sales and service organizations in over 100 countries.



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Refer to Sweet's Catalog 11.20/Je for quick reference.





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## Firm changes

Stan Kulesa has joined Geotactics, Inc. an architectural and planning firm as senior architect.

Geren Associates, Architects-Engineers-Planners has named Walter A. Smith III to the newly created position of controller. The firm promoted three staff members to associates. They are: James E. Burckhard, PE; Jeffery C. Kalista, AIA and Randall M. Loftis, Jr., AIA.

Giffels Associates, Inc. has promoted four officers and expanded its management group. Appointed as executive vice presidents: Arthur O. Moran, Jr., AIA and Vural Uygur, PE. Senior vice president and director of engineering: Victor F. Leabu, PE. Daniel J. Bohn, Jr., PE has been promoted to senior vice president. Newly appointed vice presidents are: Donald J. Giffels, PE, James P. Mason, PE, Takayuki Maeda, PE and Harutun Vaporciyan, AIA. Board member John E. McFall, PE has been promoted to manager of domestic office operations.

David R. Smith has been named manager of Gilbert/Commonwealth's Reading, Pennsylvania transmission-distribution-substation department. Robert I. Furst has been named director, regional marketing, for the company's utilities group and James R. Itin has been named vice-president-Finance.

H2L2 Architects/Planners has appointed Charles M. Matsinger, RA as an associate of the firm.

HTB, Inc. announce that Paul R. Loughlin, Jr., AIA has joined the firm as director of architecture.

Theodore S. Hammer has been appointed director of design and named a senior associate of Haines Lundberg Waehler.

Hammel Green and Abrahamson, Inc. Architects/Engineers has announced the promotion of two principal architects to partners and shareholders in the firm. They are: C. Michael Niemeyer and Daniel Swedberg.

Curtis Snyder and Wayne Holland have joined Hawley & Peterson-Architects.

Design Tex Fabrics West announce that the Design Tex collection of drapery, upholstery and wallcovering fabrics is now available on the West Coast exclusively through the offices and showrooms which were previously occupied by Design Tex West, Inc.

Hellmuth, Obata & Kassabaum, Inc. announce that Richard J. Coronato has been named a senior associate.

The architectural firm of Edward Durell Stone, Inc. has recently changed its name to Hill-Adams, Inc. Newly elected directors of the board are John Adams, president; John Hill, Jr., executive vice president; Stanley Glidden, vice president; Terry Beaubois, secretary; and Steve Barrick.

The architectural firm of Hill, Danielson & Associates has named four employees as associates. The four are Kenneth L. Paddock, Larry A. Frapwell, A. John Low and Ronald S. Briggs.

Hoad Engineers, Inc. announce the promotion of O. S. DeLancy to manager of specifications and codes.

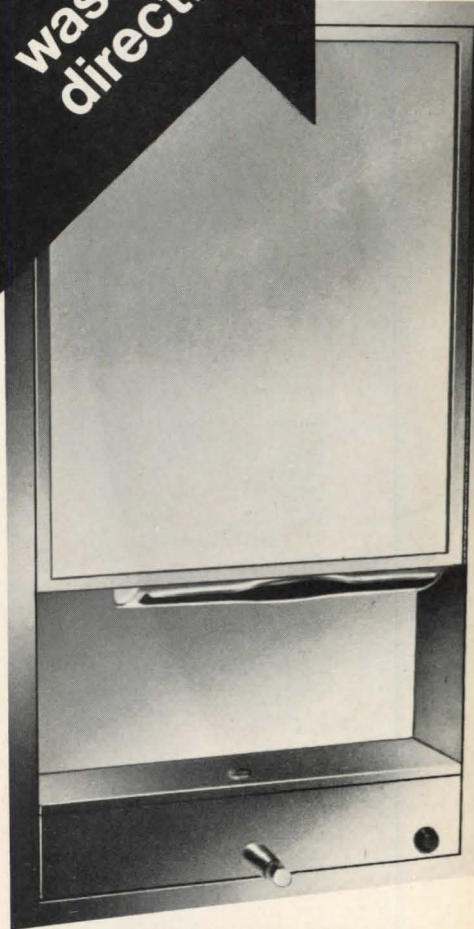
Holabird & Root announce the addition of Gerald Horn and Roy Solisburg as partners in the firm. Thomas Welch, Nicholas Bilandic and Anton Neu have been named senior associates.

Hoyem-Basso Associates, Inc. Engineers, Architects and Land Surveyors, has promoted Kenneth E. Pawlowski, AIA to the position of vice president and director of operations for the architectural department. He has also been elected to the board of directors.

continued on page 197

# Designing a washroom was never easier.

Washroom directions



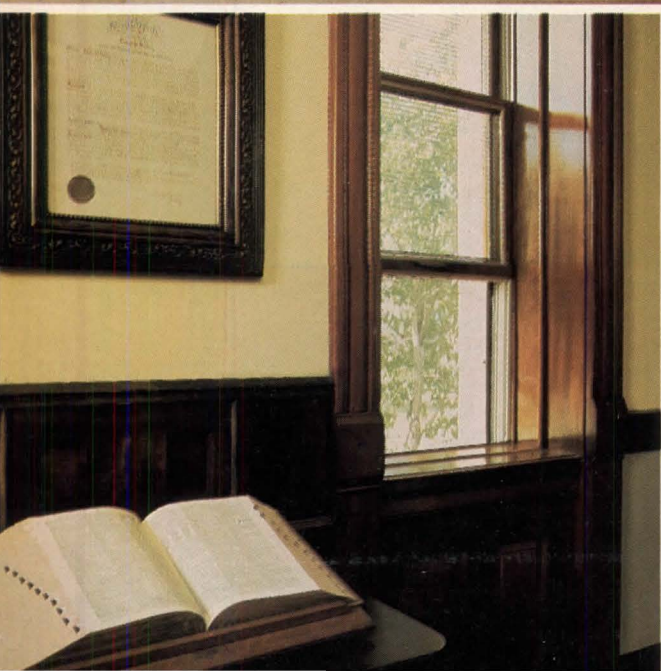
**WASHROOM DIRECTIONS** are reference manuals designed to guide specifiers in the right direction when selecting Parker washroom equipment. First in this series is the **WASHROOM DIRECTIONS for Public Buildings**, which recommends essential and optional Parker units for use in the various types of washrooms and service areas found in these buildings. For each location given, it provides checklists in each of five design categories — recessed, surface mounted, space-saving, barrier-free and concealall. With a **WASHROOM DIRECTIONS**, you'll find it's easy to provide Parker convenience for whatever type of washroom you design. Send for yours now.

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Construction Assistant—Liberty Mutual Insurance Company is looking for a person to work in the Boston MA area. Candidate should have architectural and/or engineering training with 5 years experience. This individual will work with architects and engineers on new construction and alteration projects of company owned buildings. Duties will include needs analysis, cost studies, land surveys, development of plans and specifications, property purchase and will assist architects and engineers throughout construction projects. This person will also assist in developing energy conservation programs and assist field personnel in maintenance and operation of company owned facilities. Some travel is required. Send resume to: James Morrow, Jr., Assistant Director-Education, Liberty Mutual Insurance Company, 175 Berkeley St., Boston, MA 02117. An equal opportunity employer. M/F.

Landscape Architect: Opportunity for experienced landscape architect to work on large scale prestigious projects with prominent architectural firm. Send resume and references to Fred Warnecke, John Carl Warnecke & Associates, One Farragut Square South, N.W., Washington, D.C. 20006. An EOE.

Project Designer—Award winning medium size midwest architectural firm seeks imaginative design architect to join its design group. Applicant must have 7+ years experience in design of governmental, institutional and corporate projects; be able to provide key design input while working directly with principals and clients. Position open due to firm's expansion. Send resume and other data with sufficient information to substantiate design contribution to P-2013, Architectural Record.

Chief Code Enforcement Officer—DeKalb, Illinois. A department head position responsible for the enforcement of the building, housing, building and housing maintenance, plumbing, electrical and rooming house code requirements. Serve as secretary to the Board of Appeals. Selection based upon combination of education, skills, experience and training. Salary negotiable. Send resumes to City Manager, 200 South Fourth Street, DeKalb, IL 60115. Closing date March 21, 1980. An Equal Opportunity/Affirmative Action Employer.

Senior Architect/Project Manager—Position open for experienced project manager in medium size design oriented firm. Must be graduate architect with at least 10+ years experience. Will assume management responsibility for several major projects proceeding concurrently. Midwest practice serves governmental, institutional and corporate clients. Must have experience in time and budget control and be able to coordinate work of consulting engineers. Competitive compensation and benefits with potential for associate status. Qualified applicants should submit detailed resume and salary history in confidence to P-2014, Architectural Record.

Project Architect—Expanding medium size design oriented architectural firm located in the Midwest has opening for experienced project architect. Applicant must have a degree with at least 6 to 7+ years experience as PA. Will have complete responsibility for developing working drawing package on multi-million dollar governmental, institutional and corporate projects. Must have experience in time and budget control and be able to coordinate work of consulting engineers. Qualified applicants should submit detailed resume and salary history in confidence to P-2015, Architectural Record.



## POSITIONS VACANT

**Architectural Draftsperson—Small Wyoming** firm has opening for drafter with approximately 2 years architectural drafting experience. Salary and benefits commensurate with experience. Send resume, example of drafting and salary requirements to: ARCOM, P.O. Box 43, Lander, Wyoming 82520, 307-332-3655.

**Senior Specification Writer—Architectural and Structural** . . . Preparation of specifications and other Contract Documents for building construction. Minimum of 5 years experience. Degree or equivalent. Attractive salary and benefits. Send detailed resume under reference No. 806 to: Walter T. Oerlemans, Personnel Manager, TAMS Tippetts-Abbott-McCarthy-Stratton, The TAMS Building, 655 Third Avenue, New York, N.Y. 10017. An Equal Opportunity Employer. M/F/H.

**Senior Designer, We have an opportunity for you** with the nation's leading hospital company if you are an experienced Senior Designer. This position requires a degree in architecture, plus 4 or 5 years background in hospital planning and design. Registration preferred. Responsibilities will include a wide range of architectural involvement. Relocation package plus outstanding benefit program. Send resume and salary requirements to Pam Catlett, Humana, Inc. P.O. Box 1438, Louisville, Ky. 40201. We are an equal opportunity employer, M/F/H.

**Vice President of Design/Development—A** major Dallas based hotel development company has position for Senior Design Architect to head in-house architectural design team working on luxury hotels. Company just completed 900 room hotel, has another hotel under construction and 4 under design. Lead design experience in major hotels and high-rise commercial building essential. Salary and opportunity commensurate with very substantial responsibility. P.O. Box 58600, Dallas, TX 75258.

**Project Architect—ENR Top 400 Construction Firm**, building in the Upper Midwest, is looking for an imaginative design architect who enjoys challenge of design/build projects. This is a new position with a construction firm which has demonstrated a commitment to keep design in design/build projects. Top salary for qualified person. Excellent opportunity for growth with firm. Must be registered in Wisconsin. Replies will be handled confidentially and must contain sufficient information to establish basis for further discussion. Send resume and other data to P-2062, Architectural Record.

## FACULTY POSITIONS VACANT

**Faculty in Architecture—to teach in all ranks at** university in Jeddah, Saudi Arabia. Language of instruction is English. Minimum of one year contract renewable by mutual agreement. M Arch. required. Positions are available starting September 1980. Faculty qualified in structures, environmental control systems, and construction technology especially needed. Interviews this spring. Total Monthly Salary: Professor—\$2,500-\$3,210; Associate Professor—\$2,236-\$2,854; Assistant Professor—\$1,820-\$2,375; Lecturer—\$1,382-\$1,824. Other Benefits: Free furnished accommodation; education subsidy; 60 days annual leave; air fare to and from Saudi Arabia once a year for husband, wife and up to two children; no Saudi income tax. Send curriculum vitae at earliest convenience to: Dean Maurice Kilbridge, Harvard Design School, Cambridge, Massachusetts 92138.

## FACULTY POSITIONS VACANT

**College of Engineering, University of Riyadh, Riyadh, Saudi Arabia, Department of Architecture—The Department of Architecture, College of Engineering, University of Riyadh, Riyadh, Saudi Arabia, will have faculty positions open for the academic year 1980-81 starting September 01, 1980. Candidates with Academic Positions or Ph.D. or Master in Architecture are invited. Preferred areas of specialization are: (1) Architectural Design (2) Urban Design (3) Urban Planning (4) History and Theory & Criticism of Architecture (5) Architectural Construction and Building Science (6) Basic Design and Architecture Graphics (7) Housing. Duties will include undergraduate and graduate teaching and research. Generous grants for research are available. Salary and rank commensurate with qualifications. Free air transportation to and from Riyadh each year. Ten months duty and two months paid vacation. Educational assistance to school age children. Initial contract for a minimum of one year, renewable and extendable to five year contract. Interested applicants should send their resume (including experience, references, list of publications, research work) to: Dean, College of Engineering, P.O. Box 800, Riyadh, Saudi Arabia.**

**The Department of Architecture, University of Florida, Gainesville, Florida 32611, seeks candidate for one position at Assistant Professor level in addition to the three previously advertised. The responsibilities: teach architectural structures as well as design. Registration and teaching experience are desirable. Salary commensurate with qualifications. Send resumes before April 15, 1980 to Professor Brock Hamacher, Chairman of Faculty Search Committee. UF is an equal opportunity employer.**

**Faculty Positions—The Department of Architecture and Planning, University of Miami, Coral Gables, Florida, invites applications for faculty in design, technology and history. Assistant Professor(s) of Architecture will teach architectural design. Design ability, secondary capacity in an allied area, commitment to an academic career, and a master's degree in architecture are required. Architectural design teaching, research and practice experience as well as publications, awards, registration, etc., will be considered in the selection process. Assistant Professor of Architecture will teach materials and methods of construction, and building and environmental systems (and their uses and applications, with concern for energy conservation, to a variety of building types) and assist in the direction and development of the technology/construction area of the curriculum. Master's degree in architecture or building construction and field supervision experience are required. Office practice, teaching experience, research capacity and professional registration are considered in the selection process. Instructor or Assistant Professor of Architecture will teach history of architecture (North and South American colonial architecture) and architectural preservation. A master's degree in architecture with additional qualifications in architectural history is required, and applicants should have study travel experience in North and South America. Architectural teaching, research and practice as well as publications, awards, registration, etc. will be considered in the selection process. These positions are tentatively available in August 1980. Salary and other matters are subject to negotiation. Application closing date: March 15, 1980. Submit resume to: Professor Ralph Warburton, AIA, AICP, PE, Chairman, Faculty Search Committee, Department of Architecture and Planning, University of Miami, Coral Gables, FL 33124. The University of Miami is a private, independent, international university and an equal opportunity/affirmative action employer.**

## FACULTY POSITIONS VACANT

**Educator—University of Michigan. Teaching position in architecture—thermal/energy/equipment aspects of environmental technology; start 9/80. Opportunity to develop new energy-conscious design approaches at undergrad and grad levels, participate in research program, and utilize excellent computer and bldg. tech lab facilities. Qualifications: M.Arch or M.Arch.Eng. degree, practice and/or teaching experience, creative interest in envir. tech. Send resume by May 15 to Dean Robert Metcalf, Coll. of Arch. & Urb. Plann., University of Michigan, Ann Arbor, MI 48109. A non-discriminatory, affirmative action employers.**

**Assistant Professor: A designer in area of shelter for human habitation. Design and/or architectural background required. Emphasis in engineering helpful. Ph.D. desirable; Master's degree and professional experience required. Position involves housing design, building technology and materials. Research and cooperative extension responsibilities. Position available May 1, 1980. Submit complete resume by April 15, 1980 to Dr. Christopher Williams, Design & Environmental Analysis, Box #E, Van Rensselaer Hall, N.Y.S. College of Human Ecology, Cornell University, Ithaca, N.Y. 14853. An Equal Opportunity Employer;**

## POSITIONS WANTED

**English Architecture student seeks job: May to October. Washington, D.C. preferred; anywhere considered. R.I.B.A. Part 1 and two years office experience. Please contact for further details and resume. Michael Irwin, 52, Rockcliffe Road, Bath, Avon, England.**

**Environmental Systems Professor: Professional Engineer. Presently Visiting Lecturer at Architectural School. Interested in developing curriculum and/or teaching energy technology to architects. Reply PW-2038, Architectural Record.**

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**BUSINESS OPPORTUNITIES**

**Recognized design consultant based in Atlanta, GA** with leading local and national credentials wishes to discuss possibility of formulating venture with local or nationally based architectural firm to combine and/or expand credentials and services, both design and marketing. If interested in adding corporate identity program design, architectural signage and graphics, exhibit and print media design capabilities and credentials to your firm, please write: BO-1911, Architectural Record. All inquiries held in confidence by both parties.

**Firm changes**

Albert Swanke, Richard Hayden, Edward Connell and Der Scutt announce the continuation of Poor, Swanke, Hayden & Connell under the name of Swanke Hayden Connell & Partners Architects. William G. Brown, Daniel N. Bruno, Howard T. Morgan have become associates of the firm.

TMHI announce three recent additions. Karunamoy Bose and Suzanne Simmons have joined TMHI's architectural design staff. Lorraine Wheeler has also joined as an assistant to the president in an administrative and office management capacity.

The Eggers Group P.C., Architects and Planners announce the election of Nelson T. Nordquist to the office of vice president.

Eugene E. Alberson, Ph.D., Arlen J. Packard, David C. Sweet and James B. Tatsch, have joined The Interdesign Group, Incorporated.

The SWA Group announce that Lori Hjort, Roy Imamura have been elected as principals of the firm and that Muriel Fitzgerald and James Lee have been elected associates.

The VVKR Partnership, Architecture/Engineering/Planning announce that Bruce Harold Schafer has joined the firm and will be working in energy program development and Federal agency liaison.

Thompson, Ventulett, Stainback & Associates, Inc. have named five new associates. The new associates are: David Cameron, Paul H. Duckwall and Jere Williams, associates in architecture and Sharon K. Mount and Sheri Story Raiford, associates in interior design.

Tillitt & Associates, Inc. is the new name of the Minneapolis-based consulting engineering firm formerly known as Wheeler Tillitt, Inc.

3D/International announce the following appointments within its architectural division: Gilbert W. Thweatt has been appointed director of the architecture division, L. Herbert Rather, director of the architectural production department, Marcus R. Tucker, director of the architectural design department, George R. Thompson, Charles E. Burgess and Stanley S. Smith principals-in-charge, project directors. The following appointments in its structural engineering department have been made: Gabriel A. Carillo, PE has been named manager of structural engineering. Joseph H. Yeh PE and Jehangir K. Shroff PE have joined the department as associates, and senior structural engineers.

Robin A. Bugbee has joined the Walker/Group, Inc. as director of graphic design.

Eugene Nelson and Thomas Lynch have been named vice presidents for Winsor/Faricy Architects, Inc.

Winston W. Roberts has been named an associate of Symonds & Feola, Architects/Planners.

The Design Company, Architects and Planners announce that they have changed their name to Zambrano Brewer & Associates, Architects/Planners, and that Don Holland has been made an associate in the firm.

**New addresses**

William E. Brazley & Associates Ltd. announce the relocation of their offices to the Lincoln Governors Plaza located at 21141 Governors Highway, Suite 111, Matteson, Illinois.

William N. Breger Associates' new address is 21 West Street, New York, New York.

Ewing Cole Rizzio Cherry Parsky announce that they are moving to the Federal Reserve Bank Building, 100 North 6th Street, Independence Mall West, Philadelphia, Pennsylvania.

## FOR INFORMATION REGARDING THIS SECTION

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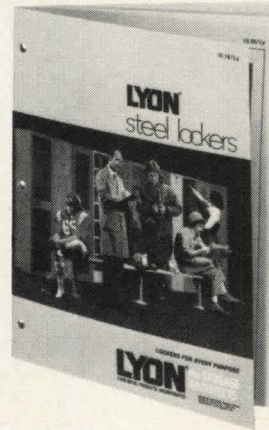
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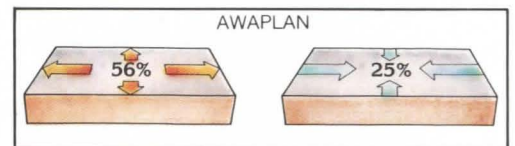
TAMKO AWAPLAN is a modified asphalt roll roofing product — compatible with all other asphalt built-up roofing systems. Because of its extra-strong TREVIRA® polyester base with patented criss-cross fiber construction, AWAPLAN gives you tremendous tensile, tear, and lap strength in all directions.



TAMKO AWAPLAN—  
Multi-Directional  
Strength

Conventional BUR  
Systems—Limited  
Transverse Strength

In combination with TAMKO's own formulation of plasticized asphalt, AWAPLAN's polyester mat yields a product with 56% elasticity — well in excess of any structural movement ever encountered. In addition, AWAPLAN will fully recover its original dimensions after being stretched up to 25% — unlike conventional and certain elastomeric materials.



Elasticity

Reversibility

This unequalled strength and resiliency equip AWAPLAN to win the battle against ThermoShock — the major cause of roofing splits and leaks. AWAPLAN is ideal for field roofing, re-roofing without tear-off, flashings, expansion joints, walkways, machinery pads, and for spot repair of conventional materials.

Call or write for your free brochure. Or consult Sweet's Catalog File 7.1/TAM.



Free color brochure explains it all. Send today.



**TAMKO Asphalt Products, Inc.** P.O. Box 1404, Joplin, Missouri 64801, 417 624-6644, TWX 910-774-4521  
Since 1944. The nation's only manufacturer of organic, glass, and polyester base roofing products.

\*ThermoShock is TAMKO's term for thermal shock — the severe stresses placed on a roofing membrane due to extreme temperature fluctuations.  
® TREVIRA is a registered trademark for Hoechst AG, for polyester fibers. Licensed to Hoechst Fiber Industries for marketing in U.S.A.



# It knows how to save water. Because it "sees" when to flush.



## The Sloan OPTIMA™ **sensor-operated** Automatic Flushing System. No handles. No timer. Flushed by an invisible beam of light.

It's Sloan's great idea for cutting water consumption, while increasing sanitary protection. And the key to it all is the Sloan OPTIMA Electronic Sensor.

It "sees" when to flush with an invisible, continuous light beam. When a user approaches the fixture, he reflects the beam back into the OPTIMA's scanner. The electronics take over and when the user steps away, the flush valve is tripped by a solenoid.

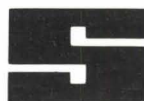
The OPTIMA offers the ultimate in sanitation because the user can't "forget" to flush. And since fixtures flush only when they

are used, precious water is conserved.

The OPTIMA is designed for easy, attractive installation. It works with the Sloan Solenoid-Operated Flush Valve that matches your application. This advanced Sloan OPTIMA System gives you a trouble-free, water-wise answer to high-volume flushing problems in hospitals, sport complexes, municipal and office buildings, and transportation terminals.

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**Sloan Flush Valves. Anything else is a waste of money.**



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