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A CHARENTE-STYLED COMPETITION FOR A NEW PROVINCETOWN PLAYHOUSE ON CAPE COD

BUILDING TYPES STUDY: OFFICE BUILDINGS

FULL CONTENTS ON PAGES 10 AND 11

# ARCHITECTURAL RECORD

MARCH 1979

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## Letters to the editor

I was quite impressed with the December issue of ARCHITECTURAL RECORD (*Federal architecture: an agenda for quality*). Your articles were well received at the AIA and among our friends in Federal service.

I believe that your analysis of the major problems was an accurate assessment of the state of Federal architecture. Unfortunately, we in Washington tend to clutter the issue of design quality with inflated and bewildering policy statements.

Steven L. Biegel, Director  
Federal Agency Liaison Program  
The American Institute of Architects  
Washington, D.C.

The editorial in the September 1978 ARCHITECTURAL RECORD, "Too many troubles in too many buildings," is most timely and provocative. The issue is too involved to answer with a letter and would be an excellent subject for a seminar. I would question the attendance at the seminar, inasmuch as the ancient tradition of "disposing of the bearer of bad tidings" is alive and well throughout the construction industry.

In the list of those responsible for the quality of construction, the architect (?), the engineer (?), the contractor (?), the cost consultant (?), the client (?), you do not include the long-term lender, the one party who often has the most at stake in a building.

The following comments indicate a basic dollar problem that applies to everyone involved in building construction:

- The architect: "We have a structural engineer on the job and hence do not have to conform to the code."
- The engineer: "Frankly, I didn't make any calculations. I knew intuitively that it was all right."
- The contractor: "If the piles go any deeper, who will pay for them?"
- The client: "Anyone can design a building. You just pick the beams out of a handbook."
- The lender: "I don't give a hoot what happens to the building so long as we have a letter in the files from someone approving of it."

The client or building owner must surely bear some of the responsibility for the quality of speculative buildings. He knows that frequently he can get a better loan by putting money in the finish rather than in the foundation or building frame.

On the other hand, we, the professionals—the architects and the engineers—are the ones who should and, one hopes, will upgrade both the buildings and our professions.

Some time ago an interested party told me what the Golden Rule of construction is: "He that has the gold makes the rules." This may

appear crass, but it does pack a lot of weight.

The problem lies in our basic system of values and in our human nature. They're both great, but they certainly are not perfect.

Herbert W. von Colditz  
Consulting Engineer  
San Francisco

In reference to your September 1978 editorial, "Too many troubles in too many buildings: Why don't we start talking about what to do?" I believe that the architect should be restored to the position of master builder. Also that extraneous sub-professionals brought into the design and construction of a building should be subject to the control of the architect, who has been trained and licensed to design buildings.

I also believe that the commonly accepted 20 lb/sq ft designed live load for roofs is much too low. The roofs of today's buildings are loaded with equipment and foot traffic. Standing water can also exert tremendous loads on a roof.

Charles Brock Turner  
Architect  
Warner Robins, Georgia

Richard Oliver comments in his article on Bertram Grosvenor Goodhue in the September 1978 issue of RECORD that Goodhue, Sir Edwin Lutyens and Frank Lloyd Wright share the same birth year of 1869. This may be true of Goodhue and Lutyens, but it does not hold true for Wright. Thomas Hines, the biographer of *Burnham of Chicago*, writing in the *Journal of the Society of Architectural Historians* some years ago, proved that Wright was born in 1867. His sources included census records, circa 1870, for MacGregor, Iowa, where the William Wright family resided briefly, Madison, Wisconsin, school records, and records concerning the divorce of Wright's parents about 1880. The latter specifically named Frank, who could only have been born in 1867 to be the age given under oath during the court proceedings deciding the divorce. An incorrect birth date for Mr. Wright has been perpetuated needlessly. Can we not now put 1869 to rest and use the date 1867, now accepted by most scholars?

I did enjoy Mr. Oliver's article very much. I attended the University of Nebraska and know the State Capitol Building in Lincoln very well.

Richard Twiss  
Chicago

## Calendar

### MARCH

**12-16** Three ARCHITECTURAL RECORD SEMINARS: "Preparing for the Solar Era in Building Design" (two days), "Proven Design Technologies for Energy-Efficient: Building Envelopes Lighting

HVAC" (two days) and "Using Architect/Engineer Teamwork to Sell the Billion Dollar Waste Water Treatment Market" (one day); Los Angeles. Programs, available separately or as a package, will be repeated April 23-30 in New York City. For information: Charles E. Hamlin, ARCHITECTURAL RECORD SEMINARS, 1221 Avenue of the Americas, New York, N.Y. 10020. (212/997-3088.)

**14-17** National Land Use Conference on Growth Management, sponsored by the Golden Gate University School of Law; at 536 Mission St., San Francisco, Calif. 94105. Contact: Prof. Daniel W. O'Connell at 415/391-7800 Ext. 357.

**19-23** Value Engineering Workshops, sponsored by the American Consulting Engineers Council; to be held in Denver, Colo. Contact: Connie Neuman, ACEC, 1155 15th St., N.W., Washington, D.C. 20005.

**19-23** Materials Handling Analysis course, sponsored by The University of Kansas Division of Continuing Education; instructed by Richard Muther & Associates. Contact: Larry Vujnovich, The University of Kansas, Continuing Education, Kansas City Office of Conferences and Centers, 9900 Mission Rd., Shawnee Mission, Kansas 66206.

**20-21** Energy Management in Buildings, sponsored by New York University School of Continuing Education; to be held in New York City. Contact: Information Services Manager, New York University Conference Center, 360 Lexington Ave., New York, N.Y. 10017.

**20-21** New Directions in Visual Marketing, Hyatt Regency, Dallas; this two-day seminar, directed to the design professions, will be repeated in eight other U.S. cities through June. For information: Ernest Burden Associates, 20 Waterside Plaza, New York, N.Y. 10010.

### APRIL

**2-7** American Society of Civil Engineers 1979 Spring Convention & Exposition, at the Sheraton Boston Hotel. Contact: Patricia Irman, Asst. Mgr., Continuing Education Services, ASCE, 345 E. 47th St., New York, N.Y. 10017.

**2-5** First Annual Architectural Acoustics Exposition and Seminar, sponsored by the Architectural Acoustics Society; held in conjunction with NOISEXPO in Chicago at the Hyatt Regency O'Hare. Contact: Wayne V. Montone, Executive Director, Architectural Acoustics Society, 464 Armour Circle, N.E., Atlanta, Ga. 30324.

**4-8** The 32nd annual meeting of the Society of Architectural Historians, held at the DeSoto Hilton Hotel in Savannah, Ga. Contact: Mrs. Rosann S. Berry, Society of Architectural Historians, 1700 Walnut St., Philadelphia, Pa. 19103.

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

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Architects: Hardy Holzman Pfeiffer Associates  
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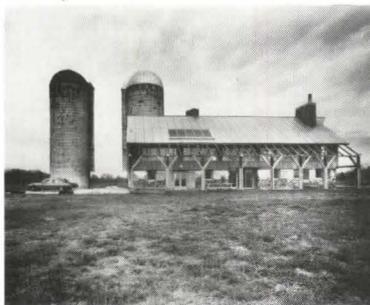
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President Carter's 1980 budget promises little extra money to states and localities. DOE may relax its insistence on performance standards for building energy design to allow for ASHRAE 90-75. California's Governor would like to abolish the State Board of Architectural Examiners.

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Norman McGrath

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**Barrier-free design begins to react to legislation, research**

Architect and teacher Edward Steinfeld comments on current trends in barrier-free design, based on recent legislation and ANSI activities.

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**Some tips on evaluating renovation projects for office use**

Architect Herbert McLaughlin cautions that not every warehouse can be successfully reincarnated as an office building, and he tells how to assess potential—or lack of it.

**FEATURES**

**99 Boettcher Concert Hall at the Denver Center for the Performing Arts**  
 Designed by architects Hardy Holzman Pfeiffer Associates with acoustics by Christopher Jaffe, it is the first 360-degree "surround hall" in the United States. It is highly original in concept and has been executed with great style.

**111 The Ojai Valley Inn Ojai, California**  
 The Ojai Valley Inn has a new building that seems hardly to be there at all. On a site with both space and contextual limitations, architects Peter Gluck and Associates have produced a wonderful addition to the hotel that nestles under a hill, and belies its strong physical presence.



Carlos von Frankenberg

**117 Design in the Spirit of Islam: The Aga Khan Award for Architecture**  
 The Aga Khan has established an award program designed to encourage Muslim leaders and their architects and planners to begin to pay more attention to Islamic beliefs and traditions as they design new environments in response to change.

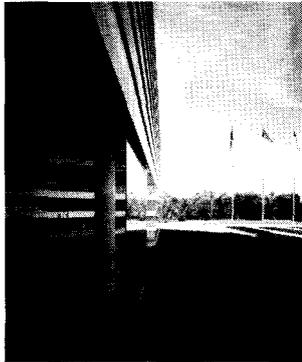
**125 Quiet please!**  
 House projects are open invitations to architects to try out their formal and theoretical ideas and then announce them with bated breath to a waiting world. By contrast, James Coote, who is an architect and a teacher in Austin, has made a place for himself that addresses the equally taxing problem of being not a "statement" but merely a house.

**129 A cast of characterizations for a playhouse on Cape Cod**  
 A charette-style design competition for the Provincetown Playhouse-On-The-Wharf and Eugene O'Neill Archival Center breaks ground for a closer relationship between architectural values and community concerns.

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**139 Three office buildings**  
 Office building will be one of the most active areas for design and construction this year. A boom in this area is predicted, now that an earlier surplus of office space has become a shortage. Three outstanding examples of office buildings are shown.

**140 Equitable Life Assurance Society Southern Service Center Charlotte, North Carolina**  
 Wolf Associates, architects



ESTO

**144 Sun Company, Inc. Corporate Headquarters Radnor, Pennsylvania**  
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**ARCHITECTURAL ENGINEERING**

**106 In a surround-type concert hall, the atypical shape raised a host of atypical engineering problems.**  
 Acoustician Christopher Jaffe developed special ceiling reflectors and called for close-in balconies to get a "classic" sound in non-traditional Boettcher Hall. Lighting/stage consultants Jules Fisher and Paul Marantz had to consider the flexible-use requirements of the hall, and design the lighting to display the room or focus the audience's attention on the stage. And because tiers of seats are totally asymmetrical (laid out on eight different arcs), engineers KKBNA had to develop a radial column plan with eight different centers.

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**NEXT MONTH IN RECORD**

**Building Types Study: Theaters**

New theatrical uses are being found for old theaters these days and three of the four buildings to be shown in the April study are excellent examples of recycling for re-use. Two of these theaters will be analyzed by the noted theater designer George C. Izenour who was the consultant for their remodelings. He will contrast the two theaters in terms of their visual and acoustic environments and styles of theatrical performance. The fourth theater to be included has been selected for its use of the most advanced building technology to meet its acoustic and functional needs.

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## Why the changing housing market means marketing opportunities for architects

Faithful readers will know that I've always thought that architects ought to interest themselves more in the housing market and make the effort to get involved with good homebuilders.

Not just from an idealistic point of view—serving the public good—though a look at most single-family and higher-density projects in the suburbs would affirm that the design skill of good architects could do a lot to serve the public good.

I'm talking about market—about business. For one thing, the residential market is, at about \$75 billion, much, much larger than the entire nonresidential market. It is, mind you, a tough market, with a very strong cyclical pattern which seems difficult to predict and is subject to all kinds of fast-changing pressures. It is also a very local market—national statistics dealing with 1.7 million starts are far less important to a builder (or to you if you're working with a builder) than what's happening in *your* city. For example, in Las Vegas, where the National Association of Home Builders held its annual, huge (70,000) convention in late January, the market for single-family houses has gone from an annual rate of 4,000 units per year just 18 months ago to a present rate of 10,000 units per year.

But in addition to being a big market and a local market, it is (and this is where, it seems to me, architects come in) a fast- and fundamentally-changing market. The market is demanding *different kinds* of housing, different kinds of housing that require good design skills. For example:

At a breakfast marketing meeting held by our sister publication *Housing* during the NAHB convention, top housing-market researcher Alfred Gobar said: "There should be a very large number of people forming separate households. Household size is decreasing very rapidly because people are getting married later and keeping smaller families and getting divorced earlier. . . . Thus we should absorb relatively more housing per thousand population. . . . because we have more households per thousand population. . . ."

At the *Housing* breakfast, George Fulton of Walker & Lee, the huge West Coast real-estate firm, reported that while the percentage of their buyers who are married has remained constant at 85 per cent, in 1975 92 per cent had children in the home but in 1978 only 65 per cent had children. He reported that his buyers were spending 26 per cent of

their *gross* income on house payments—and while their space requirements are less, "these buyers want quality. . . . This quality appearance will be achieved primarily with *design innovations* providing the greatest *illusions* of space. Vaulted ceilings, skylights, clerestories, lofts and greenhouse windows have proven popular in our surveys as well as in the market. . . ."

And the final *Housing* panelist, apartment expert Edward Kelley, made the point that while multi-family housing has been on "a kind of downer," the pent-up demand makes this a very important market. His argument: "The number of single adults living alone has gone from 10.8 million in 1970 to almost 16 million today. By 1985 it is expected that 25 per cent of the total households in the U.S. will be single-person households." What kinds of apartments? "In 1972 the average apartment built was 832 square feet. In 1977 it was 790 square feet, by July of 1978 it was 770, and this year it will fall to 750. . . . You'll see almost no three-bedroom apartments, very few two-bedrooms, but a lot of tiny efficiencies of 400 to 375 square feet." These smaller apartments, Mr. Kelley says, "will have more built-ins, and other functional uses of space. We're going to have to create the illusion of space—with corner windows. . . greenhouses. . . by borrowing space back and forth. . . . We'll see smaller projects—of six, eight, ten units—because people want a sense of identity they can't get in huge projects. . . . Landscaping will become more and more important—the projects we're working on now have landscape budgets of over \$4000 per unit. We're going to have to ask first-class prices, so we're going to have to offer first-class housing."

My point is this: These top housing experts—all speaking of the future housing market—were talking *design* talk. (Mind you, they didn't use the word architect—but they were talking design.) The people who know how to build the kind of housing we *have* been building are homebuilders; the people who know about the kind of housing that we *will* be building—smaller, more efficient, with "illusions of greater space" and with higher quality—are architects. And today, remember, you have two options: you can take a builder out to lunch and try to get involved in housing that way or—quite ethically—you can do a little *designing and building* for your own account. It sounds like a good time to think about it—seriously. —Walter F. Wagner



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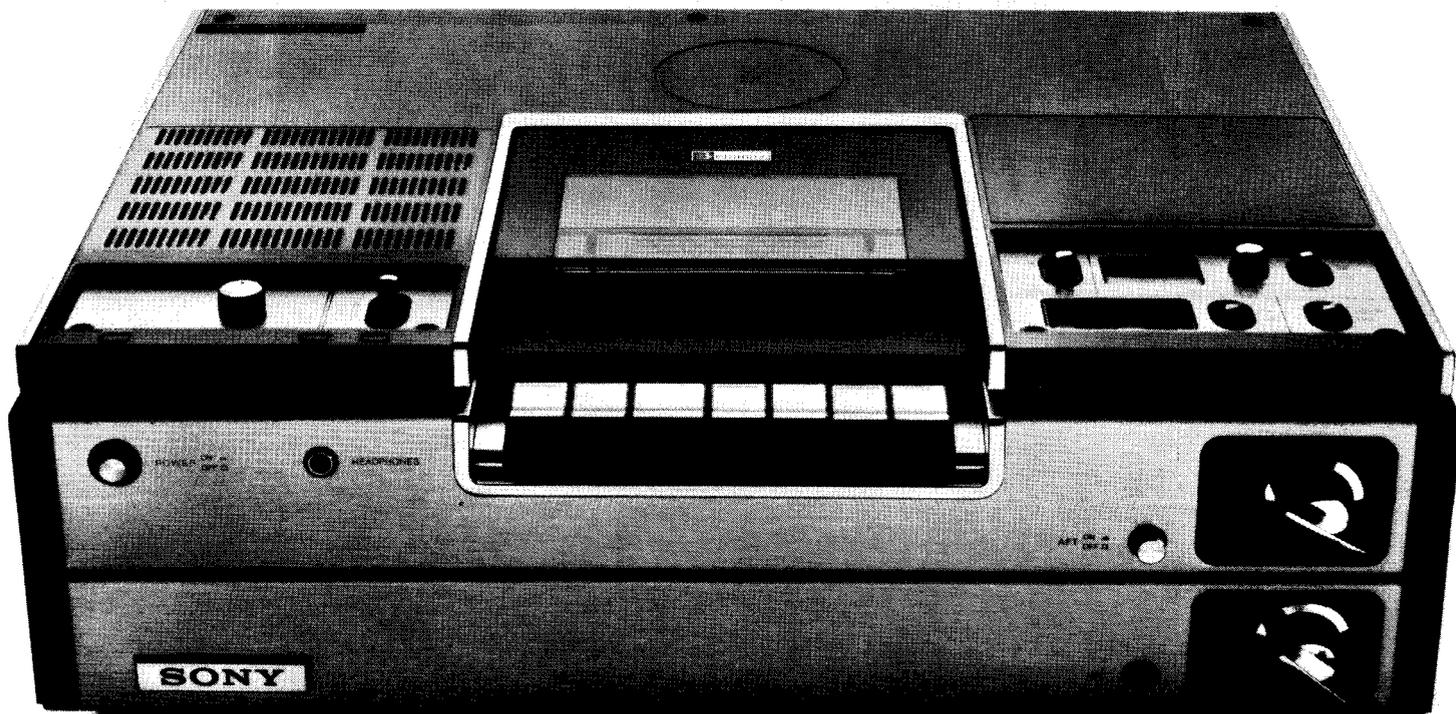
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frame building arranged around horizontal and vertical circulation spines. The spines run from the basement to the penthouse and east-west through the center of the building. The conventionally framed portion of the structure is located north of two large 56-ft x 120-ft skylighted courtyards. This portion, fed vertically from the mechanical penthouse, contains all bedrooms and physicians' offices.

The interstitial section extends the length of the site on the south side of the spine. Odd-numbered floors contain diagnostic and therapeutic facilities; even-numbered floors include interstitial space framed with steel trusses 84 ft 5 in. long. The interstitial spaces house mechanical services for the intervening floors and are flanked by additional spaces for physicians' offices.



## Economy points to steel

"Steel was the outright winner in cost savings against other structural systems," reports Charles C. Ang, chief structural engineer, D'Ambly, Inc., consulting engineers. "Considering material costs, fabrication, erection, and engineering time, we estimated that steel could save between 15 to 20 percent over other framing systems on this project." Beyond this several other reasons for selecting steel were cited:

(1) "Rapid erection of the structural frame was critical to the building's fast-track construction schedule.

(2) "The program requirement for flexible space arrangement on the ancillary floors involved long, clear spans suitable only for steel trusses.

(3) "Longer than average spans and minimal ceiling cavity space required that deflection control be achieved with minimum-depth members. This was dictated by the mechanical services required in the patient care and physicians' offices."

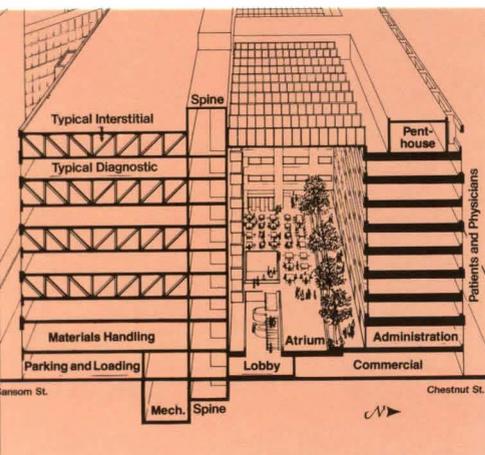
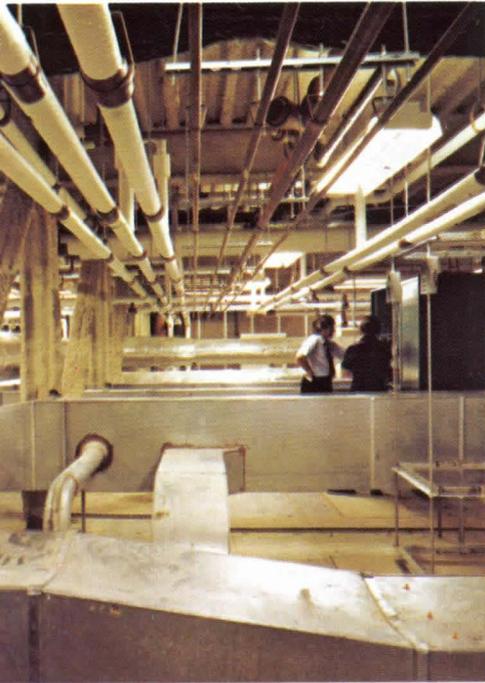
## Story-high trusses

Much of the steel frame is conventionally designed using steel columns, beams, and girders with

spandrel trusses supporting the architectural curtain wall.

The interstitial service area utilizes story-high trusses which support a 3-in. composite steel floor deck topped with 2½ in. of concrete. An inverted cellular steel floor deck is installed in the interstitial areas.

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(ABOVE CENTER) The 750,000-sq-ft Clinical Teaching Facility is essentially a series of smaller, administratively autonomous hospitals stacked vertically within one building.

(ABOVE LEFT) All ductwork, plumbing, electrical distribution, and large pieces of equipment are arranged within the interstitial spaces to permit future revisions to rooms without disrupting adjacent spaces.

(LEFT) A building-high atrium separates the patient care areas from the diagnostic and treatment areas. A dining area, located on the deck of the atrium, serves visitors, students, and staff. Glass-enclosed elevator lobbies overlook the center court.

(ABOVE RIGHT) A steel-framed bridge, utilizing curved beams to accommodate differences in floor levels, connects the new building with the existing hospital.

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Cross-sectional view shows how patient rooms are separated from diagnostic areas by a building-high atrium.

**Owners:** Thomas Jefferson University, Philadelphia, Pa.

**Architect:** H2/L2 Architects/Planners, Philadelphia, Pa.

**Consulting Engineers:** D'Ambly Inc., Philadelphia, Pa.

**Prime Contractor for Structural Steel:** Lehigh Structural Steel Co., Allentown, Pa.

**Sub-Contractor for Erection:** Cornell & Company, Philadelphia, Pa.

**General Contractor:** Hospital Constructors, A Joint Venture of R. M. Shoemaker Co. and Irwin & Leighton, Inc., Philadelphia, Pa.

# YOU'RE



**The construction industry, with contracts up 13 per cent over 1977, finished 1978 "strong and steady,"** according to the F. W. Dodge Division of McGraw-Hill Information Systems Company. After adjustment for "double-digit" inflation, however, the physical volume of construction reflected by those contracts increased only 2 or 3 per cent. Dodge chief economist George A. Christie, looking forward to 1979, thinks that construction employment and output will remain strong as contracts are brought to completion, but "contracting for new work is bound to weaken in this year's restrictive [fiscal and monetary] environment." Nonetheless, he says, "The chances that we'll avoid a recession in 1979 are now improving and this can still be a good year for commercial and industrial building." (See "Dodge/Sweet's construction outlook, 1979 first update," page 65.)

**The Commerce Department predicts that spending for new construction will fall 6 per cent this year** because of tight fiscal and monetary policies. Commerce reports that construction spending in 1978 increased by an inflation-adjusted 4.2 per cent over 1977, though 1978's rate of increase lagged 6.5 per cent behind 1977's.

**President Carter's 1980 budget offers next to no increase in Federal money for states and localities,** to the vocal dismay of governors and mayors, who particularly regret cuts in HUD's subsidized housing programs and in "soft" public works. The President does propose increases in the Community Block Grant program and the establishment of a national development bank to encourage private investment in redevelopment. Details on page 35.

**DOE appears to be relaxing its insistence on a performance energy standard for building design,** the Department's Maxine Savitz indicated in a recent interview. Details on page 35.

**California's Governor Brown proposes to abolish the State Board of Architectural Examiners** and to eliminate or reduce funding for other professional regulatory boards. Details on page 35.

**GAO says GSA is overzealous to preserve historic buildings when no need for Federal office space exists.** GAO has nothing against historic preservation, but feels the law should "clarify" priorities. Details on page 35.

**Major mass transit projects engage the efforts of architects in Boston and in Chicago.** For the Red Line Extension in Cambridge, Massachusetts, four architectural firms hold primary design contracts for a new subway. And in Chicago, Harry Weese renews his fight to save the Loop El. Details on page 34.

**The AIA will award ten medals at its June convention** to Bernard Rudofsky, "illustrator and recorder of architectural accomplishments"; the sculptor Christo, "first known for wrapping public structures"; Douglas Haskell, FAIA, a former editor of *ARCHITECTURAL RECORD* and chief editor of *Architectural Forum*; ecologist/author/lecturer Barry Commoner "for his influence on the architectural profession"; Danish architect Steen Eiler Rasmussen for his book *Experiencing Architecture*; the late Arthur S. Siegel, "a fine photographer . . . and a pioneer in the documentation of architecture"; Charles E. Peterson, FAIA, formerly of the National Park Service, for his role in the Historic American Buildings Survey; John Entenza, Hon. AIA, former editor of the magazine *Arts and Architecture*; Brooklyn's Bedford-Stuyvesant Corporation for integrating "several disciplines related to architecture"; and the Architecture, Planning and Design Program of the National Endowment for the Arts for "public support of the arts."

**The Construction Research Council offers "The Integrated Ceiling Subsystem Performance Specification,"** the first in a series of similar documents for office space. CRC also seeks comment and review on two interim documents, "Illumination/Ceiling Subsystems" and "Finished Ceiling Subsystem Performance Specification." For information: Construction Research Council, 1000 Vermont Avenue, N.W., Washington, D.C. 20005.

**The National Catalog of American Architectural Records seeks additions.** The Committee for the Preservation of Architectural Records compiles the catalog, which includes material ranging from photographs and drawings to contracts and change orders, with the help of a grant from the National Endowment for the Arts. For information: Committee for the Preservation of Architectural Records, 15 Gramercy Park South, New York, New York 10003.

**The first *Compendium of Registration Laws for the Design Professions* has been published cooperatively** by the National Council of Engineering Examiners and the National Council of Architectural Registration Boards. The loose-leaf compendium, which includes registration laws for architects, engineers, land surveyors, landscape architects and planners, will be updated periodically. It is available, for \$90, from NCEE, Box 5000, Seneca, South Carolina 29678.

**The University of Illinois offers the \$6,000 Francis J. Plym Traveling Fellowship in Architecture** to graduates of its Department of Architecture at the Urbana-Champaign campus. Candidates must be U. S. citizens and less than 35 years of age, and must submit a record of their professional experience. For information: G. Day Ding, Head, Department of Architecture, 106 Architecture Building, University of Illinois, Urbana, Illinois 61801.

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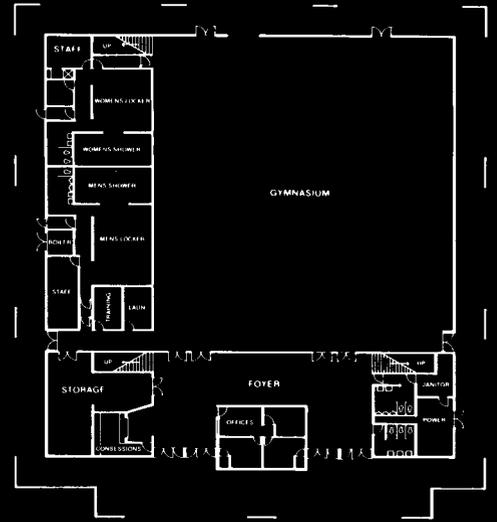
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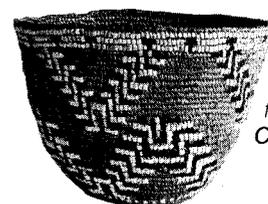
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## Metropolitan Boston extends its Red Line subway 3½ miles past Harvard Square

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1

Some years ago, Boston, in civic reaction to a contemplated automobile expressway that would cut through the city, undertook a study of mass transportation alternatives and elected to expand its rail transit system. One of these extensions, the so-called Red Line Extension in Cambridge, will add more than three miles and four new stations to the subway that now terminates at Harvard Square.

To design the new stations, the Massachusetts Bay Transportation Authority—the “T” to Bostonians—selected four architectural firms as prime design contractors. This position meant that architectural decisions went far beyond the mere prettification of headhouses and change booths, encompassing basic decisions about tunnel placement as well as surface traffic circulation.

The four stations, each with its own complications, were none of them simple design problems.

At Harvard Square, where the existing line must change direction for the new route, the Boston office of Skidmore, Owings & Merrill had to contend with a number of constraints, not only in design but in the ordering of construction—among them, a tightly constricted site, uninterrupted train service, heavy bus service, and extremely heavy automobile and pedestrian traffic, not to mention a dozen or so landmark

buildings in adjacent Harvard Yard and around the square.

The complex phasing of underground work will include cutting a new tunnel between supporting slurry walls, building two temporary entrances, and renovating an existing bus tunnel, which will overlook the new subway mezzanine through a glass wall.

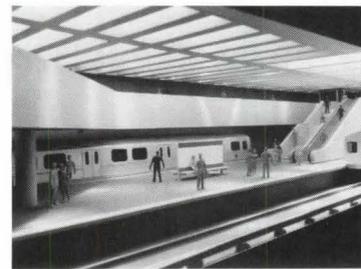
SOM’s design for surface facilities (1) includes a skylighted entrance building and a cylinder for the elevator that connects surface and mezzanine. The present entrance building will be restored to rehouse Harvard Square’s popular international newsstand. New paving and landscaping will define and tidy up pedestrian and vehicular circulation patterns in and around the square.

At Porter Square, designed by Cambridge Seven Associates, the station platforms will lie 110 ft below the street to serve the deep tunnel that will stretch more than a mile under Massachusetts Avenue from Harvard Square. The deep tunnel, which will be bored through bedrock, was decided upon to minimize underground support structure (deep boring proved less costly than cut-and-cover construction) and to spare the motorists, residents and businesses along the Massachusetts Avenue route the prolonged upheaval of digging near the surface.

Passengers at Porter Square will

enter through two headhouses and cross a mezzanine to reach a very long escalator that will descend 70 ft. To allay claustrophobia, the architects have designed generous skylights to carry natural illumination deep into the station. At the platform levels, exposed ventilation ducts will be painted bright blue, the pipe railings white, to foster a maritime atmosphere and thus to counteract possible feelings of unease at this depth.

After it leaves Porter Square, the Red Line will cross the boundary of Cambridge to enter the city of Somerville. The Davis Square station, designed by Goody Clancy Asso-



2

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ciates, occupies a congested urban area that spans the intersection of six streets and a railroad freight cut-off, and that serves a full complement of existing buildings (more slurry walls).

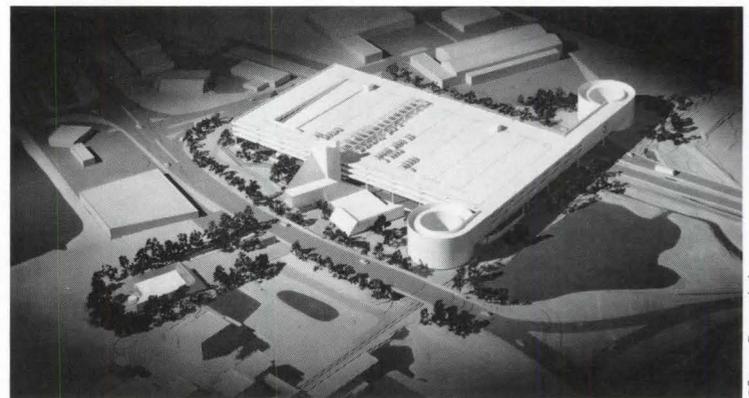
Passengers using the station at Davis Square will enter either of two headhouses located across streets bounding the triangular park. A central mezzanine for fare collection

(2) lies 50 ft directly below the park and a 40-ft-long glass barrel vault for skylighting.

After Davis Square, the subway will turn to the southwest, re-entering Cambridge and terminating at Alewife, a residential and industrial district in North Cambridge. The station, designed by Wallace, Floyd, Ellenzweig, Moore, is an “intermodal” facility that MBTA hopes will provide an alternative to downtown traffic for drivers on two major arteries from the suburbs. The station (3) will incorporate a 2,000-car garage, short-term parking for 60 cars, an automobile drop-off area, a 14-berth bus platform and pedestrian ways, as well as the Red Line platforms.

The multiplicity of circulation problems at Alewife is aggravated by the fact that most passengers will converge on the station during the 90-minute morning and evening rushes. Automobiles will enter the garage via one of the double-helix ramps and leave by the other; each level of the garage will have its own escalator connection to the station. The bus platform will also have its own escalator to the central mezzanine, while pedestrians will enter via a headhouse on the other side of a parkway east of the garage.

The Red Line extension, scheduled for completion in five years, will cost an estimated \$480 million, much of it provided by the Federal Urban Mass Transportation Administration.



3

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## Harry Weese renews his campaign against a Chicago subway with a \$400-million proposal to save the Loop El

Chicago architect Harry Weese has revived his fight to save Chicago’s downtown elevated transit track.

City officials want to build a \$490.3-million Franklin Street subway, a 4.65-mile line that would replace two legs of the El. In January, Mr. Weese announced a \$400-million counterproposal to renovate the Loop El and add more service than would the city’s plan.

Mr. Weese first fought the idea of tearing down the Loop El nearly two years ago, when he helped lead the Chicago chapter, AIA, against a \$1.43-billion subway project proposed by the Chicago Urban Transportation District. He believes now,

as he did then, that city subways are too expensive: “Three miles of subway in Boston are approaching \$200 million a mile. In New York, it’s \$165 million a mile. And we’re in a crunch. The Chicago El reborn would be better than ever.”

Naturally, Chicago officials, who first applied for Federal funds for their subway in 1971 and who still do not have Federal construction money, disagree with Mr. Weese. Hugh R. Short, executive director of CUTD, says, “Chicago’s needs would be better met with the Franklin Street subway. It seems almost impossible for Weese to do what he says with that much money.”

Mr. Weese is not the only fly in CUTD’s ointment. Last fall, the Chicago regional office of the U. S. Environmental Protection Agency issued an almost scornful analysis of the Franklin Street project. EPA echoed a favorite Weese charge about the CUTD plan—that it fails to evaluate alternatives fully. And, the analysis said, the project “fails to demonstrate any improvement in the metro-Chicago air-quality situation.” EPA says Chicago has serious carbon monoxide, particulate and ozone air-pollution problems. The regional EPA office criticized the Franklin Street project in a letter to Peter Benjamin, director of the office of program

analysis at the Federal Urban Mass Transportation Administration.

Now Mr. Weese’s plan, which is an updated version of the one put forth by the Chicago AIA two years ago (RECORD, May 1976, page 34), calls for two new transit lines that would rely heavily on an existing railroad right-of-way. His so-called Riverbank line, he estimates, would cost \$100 million and stretch 11 miles from Navy Pier to Midway airport. For \$285 million, Mr. Weese proposes four miles of cut-and-cover tunnel and a subway along the lake shoreline. The remaining \$15 million would go for station renovation. —Dan Brown, *World News, Chicago*.

## Carter's 1980 budget proposes cuts in aid for cities and states, for "soft" public works and for subsidized housing

President Carter proposes to reverse the long-time trend of annual increases in Federal aid to state and local governments.

The budget he presented to Congress January 22 for the fiscal year beginning October 1 suggests curbs in funding growth for most Federal grant-in-aid categories and outright slashes in others.

A disappointed John J. Gunther, executive director of the U.S. Conference of Mayors, says the Carter spending plan will fall \$12.5 billion short of the level needed simply to keep Federal aid to local governments even with inflation.

The White House uses a different set of figures, but does note that Federal aid to states and localities grew at an annual rate of 14.5 per cent over the past two decades. Mr. Carter's plan for fiscal 1980 proposes an increase of less than 1 per cent.

This restraint, the White House says, reflects Federal recognition that fiscal pressures on the Federal government have become more acute

relative to the squeeze on state and local government treasuries.

Organizations representing mayors and governors are sure to ask Congress to restore some of the funds cut by the Administration. Mr. Gunther is already building the case, complaining that the cuts "are concentrated in programs that serve the poor, the elderly, the unemployed and the young."

Particular targets for restoration will include the Department of Housing and Urban Development's subsidized housing program. Mr. Carter proposes to reduce the Department's authority to commit funds from this year's \$30.8 billion to \$27 billion next year. Also, training funds under the Comprehensive Employment and Training Act are set at a far lower figure in the coming year.

The Administration has, moreover, withdrawn support for the labor-intensive public works program—the so-called "soft" public-works program to aid in the rehabilitation of local public facilities.

Only partially offsetting these spending losses is a \$150-million increase in HUD's Community Development Block Grant program to a new level of \$3.9 billion. The Action Grant program is to continue receiving about \$400 million annually.

In a move that suggests that President Carter prefers redevelopment through private channels rather than public ones, the budget proposes the creation of a national development bank with \$3.5 billion for use in stimulating private investment in urban and rural areas suffering lagging growth and persistent or increasing unemployment.

Elsewhere in the budget, the President proposes spending \$650 million for solar research. The Department of Energy had sought a White House okay for \$750 million, but this was trimmed back, forcing the suspension of programs for solar commercialization.

The General Services Administration's increasing tendency to favor building restoration over new con-

struction will accelerate under the new budget. The agency's spending plan calls for \$80.9 million for new construction, up some \$10 million from this year's level. But its alterations and repairs budget is set to rise about 10 per cent to \$125 million.

New spending authority for hospital construction by the Veterans Administration is down considerably, from \$92.9 million in fiscal 1979 to \$57.9 million in the coming year. But that figure includes only a small amount—in first-year progress payments—of the expected cost of two major new hospitals: one costing \$75.1 million in Baltimore and another estimated at \$67.8 million in Camden, New Jersey.

The proposed 1980 budgets for the National Endowments for the Arts and for the Humanities are \$154 million and \$150 million, respectively. The Federal funds for the Endowments are partially matched by contributions from non-Federal sources.—*William Hickman, World News, Washington.*

## DOE standard may accommodate 90-75

As it prepared to unveil its proposed energy standards for buildings last month, the Department of Energy seemed to be backing away from its earlier rigid insistence on a purely performance-oriented standard.

Maxine Savitz, the DOE official masterminding development of the standard, indicated that states might adopt a modified form of the largely prescriptive American Society of Heating, Refrigerating and Air-Conditioning Engineers standards, known as 90-75, and be considered in compliance with the Federal rules.

Two important caveats would be attached to this ruling, however: Dr. Savitz said the ASHRAE standard would have to be subject to an energy budget management, and its values would have to be tightened.

The Advance Notice of Proposed Rulemaking published by DOE in November would not seem to permit the use of the ASHRAE standard. But Dr. Savitz says the department's consideration of 90-75 does not represent a dramatic shift in its approach to the standards.

She points out that, while the 1976 law calls for performance standards, it also says that the state codes should "meet or exceed" the Federally developed standard. The ASHRAE performance standard would have to satisfy this requirement.

If the ASHRAE standard is adopted, Dr. Savitz says, it will only be a stopgap, and she expects states to move eventually to a purer form of performance standard.

More than 40 states have adopted some form of the ASHRAE standard, and most of those did so because the Federal government en-

couraged them to. This, no doubt, was a factor in DOE's decision to look more favorably on 90-75.

Another factor is the comment the department has received on the standards proposed in November's Advanced Notice, most of which has been critical—most of it centering on the proposal to employ resource impact factors (RIFs) and resource utilization factors (RUFs).

In an ARCHITECTURAL RECORD interview prior to last month's release of the proposal in its final form, Dr. Savitz also reported that the number of building-type categories—17 in the Advance Notice—might be increased substantially. But she indicated that the seven climatic zones originally proposed would be retained and not expanded, as some have urged.

She also suggested that the "floating" energy budget curve originally proposed for single-family housing might be dropped and these structures subjected to the same baseline measure as other buildings.

Dr. Savitz expressed surprise that the Advance Notice resulted in so little comment from the building industries and building owners; most of the comments received so far, she said, have come from architects and engineers.

She expects, however, that the Notice of Proposed Rules, which was due out in late February, will generate more interest. The department plans a 60-day comment period with hearings in cities across the country before it sets final standards, probably in August. These standards are scheduled to take effect in February 1980.—*William Hickman, World News, Washington.*

## California seeks to abolish licensing of design professions

California Governor Edmund G. Brown, Jr., has proposed a cutback in funds for the state's Board of Regulation for Professional Engineers and complete abolition of the state's regulation of other professions, including architecture.

Robert J. Kuntz, executive director of the California Society of Professional Engineers, said that a recommendation by the Governor to the state legislature slashing \$261,000 from the registration board's 1979-80 budget, which takes effect July 1, was "a step leading to elimination of licensing entirely."

The staff of the board would be reduced from the 51 employees in the 1977-78 fiscal year to 32 in the next fiscal year. The Governor's budget would cut off the board's administration of the so-called Title Act program, which regulates engineering titles of more than 15 "technical disciplines."

Left intact are the licensing and regulation of mechanical, electrical and civil engineering, including land surveying, but Mr. Kuntz believes it will be just a matter of time before they, too, are deregulated.

Governor Brown's proposal to abolish the State Board of Architectural Examiners, which has a current fiscal-year budget of \$392,000 and 10 employees, was criticized by Dean Unger, Sacramento architect and immediate past president of the board, who calls the suggestion "a terrible mistake and a great disservice to the consumer." The board licenses and regulates nearly 10,000 architects and building designers.

The Governor also recommends the phasing out of various other regulatory boards for a total saving of about \$2.2 million.

Mr. Kuntz says that the "savings" claimed by the Brown administration are "simply window dressing," since the boards are supported by registration fees, not by general funds collected from taxpayers.

An administration spokesman said that it is the Governor's intention to get "government out of people's lives." The deregulation of the design professions, he said, would reduce "the pervasive nature of government as it gets involved in business."

—*Tom Arden, World News, Sacramento.*

## GAO queries legality of GSA's preservation activities

So seriously does the General Services Administration take its responsibility for preserving historically and architecturally significant structures that it is acquiring and renovating buildings in cities with no need for Federal office space. Or so the General Accounting Office charges.

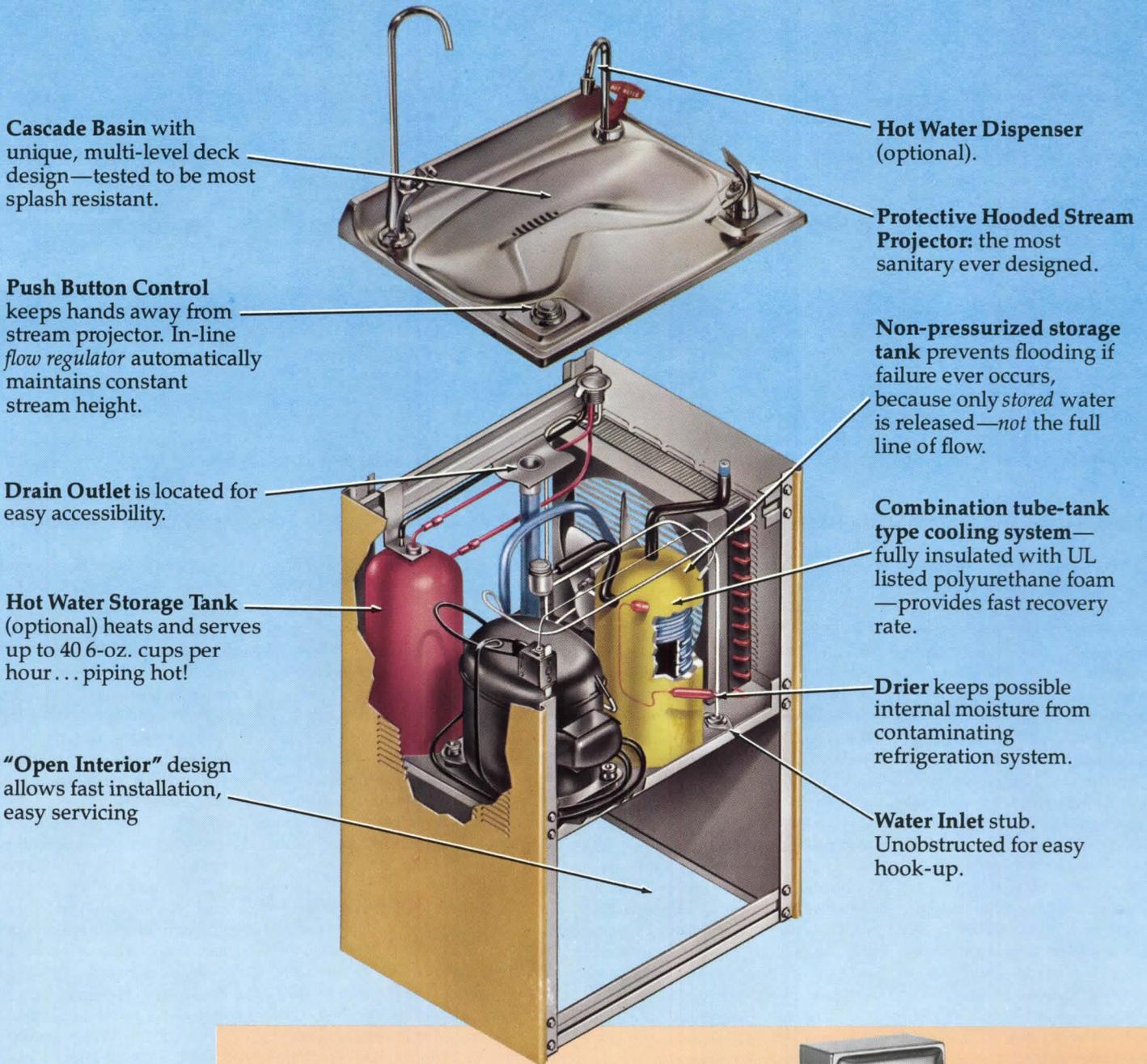
In a just-released report, the auditors say the building agency is

operating "on the assumption that acquisition of historical structures takes precedence over the need for additional Federally owned space in areas where the structures are located."

The 1976 Public Buildings Cooperative Use Act instructs GSA, when arranging for space for Federal agen-

*continued on page 39*

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cies, to "acquire and utilize space in suitable buildings of historic, architectural or cultural significance, unless use of such space would not prove feasible and prudent compared with available alternatives."

The GSA, under ardent preservationist Jay Solomon, seems to the GAO to read too much into the law and to have started favoring preservation responsibilities over space needs. Union Station in Nashville is cited as an example where GSA decided to acquire and renovate the facility despite the fact that Federal agencies had not sought additional office space.

GAO also says GSA seems to have a particular hang-up about train stations and reports that the agency has renovation plans for historic railroad structures in Kansas City, Missouri; Montgomery, Alabama; Macon, Georgia; and Minneapolis-St. Paul, in addition to Nashville.

If GAO has its way, the Congress will look into the "aggressive" preservation program and, if necessary, "clarify" the law. GAO says it does not oppose a program of historic

preservation, but suggests that if such a program is not related to Federal space needs, the law should say so.

Mr. Solomon, shown a copy of the report, did not take serious issue with the findings and said he would welcome an opportunity to discuss his understanding of the law with Congress.

A week following release of the GAO study, Dennis Keilman, acting commissioner of GSA's Public Buildings Service, issued a statement saying that the need for more Federally owned space in Nashville was based on the fact that there are now 44 Federal agencies in 22 different leased buildings in the city. He said seven of the agencies could be consolidated in the restored station.

Mr. Keilman also said that Union Station's restoration would cost \$6 million. And while it would cost somewhat more to house the agencies in Union Station than in an equivalent leased building, construction of a new building would cost significantly more than the Union Station project.—*William Hickman, World News, Washington.*

## New architectural foundation opens offices in Washington

The new International Institute for Architecture has announced its incorporation in Washington, D.C., as a nonprofit organization to initiate, fund and undertake research and evaluation projects to promote a better physical environment for the urban poor in developing countries.

Blake Hughes, president of the IIA, says that the foundation will carry on the work begun by the International Architectural Foundation, which was established for the sole purpose of conducting the International Design Competition for the Urban Environment for Developing Countries.

The IIA, says Mr. Hughes, views with the greatest concern the continuing deterioration of housing and community facilities in the cities of the developing world, a deterioration resulting primarily from rapid population growth and emigration to the cities from rural areas.

Though the IIA concedes that the problem is not susceptible to satisfac-

tory solution in the foreseeable future, it nonetheless observes a growing consciousness in recent years of the dangers of delay in addressing it.

The IIA intends to undertake projects of benefit to national and international funding agencies engaged in improving the condition of the urban poor living in the developing countries.

Officers of the Institute are: president—Mr. Hughes, publisher of ARCHITECTURAL RECORD; vice president—Lewis Davis, principal of Davis, Brody & Associates, Architects; secretary—Professor Thomas Reiner, Regional Science Department, University of Pennsylvania; treasurer—Edwin H. Seeger, Esq., principal in Prather, Seeger, Doolittle & Farmer. The officers are joined on the Board of Trustees by Beverly Willis of Willis and Associates, Architects.

IIA headquarters are at 1101 16th Street, N.W., Suite 500, Washington, D.C., 20036.

## Architecture is *le dernier cri* in Washington

Washington, D. C., is going bananas over architecture. Here's evidence:

■ I. M. Pei's National Gallery of Art attracted its first million visitors in only 51 days.

■ The Design House, designed by Hugh Newell Jacobsen and built 30 miles out of the city in the new town of Reston, logged nearly 28,000 visitors in little more than three months.

■ The Barbara Fiedler Gallery, a minuscule showhouse near downtown, attracted a record-setting 750 people for a preview showing of an architec-

tural exhibit called "The Federal City in Transition," with portfolios contributed by five architects: Frank Schlesinger, Joseph Boggs/Studio of Dewberry, Nealon and Davis, Richard Ridley & Associates, George Patton, Inc., in association with Venturi and Rauch, and Hardy Holzman Pfeiffer Associates.

In all cases, sponsors attribute greater-than-expected attendance to the heightened interest in architecture manifested by residents in the Washington area.—*W.H.*

## Regional Habitat sessions face issues raised in Vancouver

The UN Habitat and Human Settlements Foundation, now incorporated into the UN Center for Human Settlements (Habitat) in Nairobi, has launched a series of regional meetings on human settlements' finance and management, focusing attention on specific issues left untouched by the 1976 Habitat Conference in Vancouver.

The first such meeting, attended by representatives of 27 governments, was held in Nairobi, October 10-13, 1978, for the Africa region. The second convened in Mexico—for the countries of Latin America and the Caribbean—November 27 to December 1. In 1979, meetings will be held in Kuwait, for the countries of West Asia, and in Manila, for the Asia and Pacific region. These will be followed by a global meeting, tentatively scheduled to be held in Washington, D.C. The results of the regional and global meetings will be forwarded through the appropriate UN bodies, including the UN Commission on Human Settlements, for final consideration by the UN General Assembly.

The Nairobi meeting sparked a new spirit and interest in follow-up of the Habitat Conference recommendations, at both national and regional levels. The dimensions of the shelter problem in Africa were described and discussed, and it was recognized that formidable new efforts must be made to mobilize resources at all levels to confront the situation.

Among the leading recommendations were the following:

■ Governments should, in their developing planning, consider more favorably the case for increased allocation of funds from public sources for investment in human settlements, and for the channeling of private and household funds to meet the needs of human settlements.

■ In order to generate additional resources, as well as to mobilize existing resources (human, material, technical and financial) to meet shelter needs, governments should, where necessary, with assistance from the Foundation, establish the necessary

human settlements policy, establish national financing facilities and mechanisms, and strengthen local institutions for program and project implementations.

■ Governments should urge housing finance institutions to make credit facilities more easily accessible to borrowers, with emphasis on low-income groups, and the Foundation should provide technical assistance to achieve this goal.

■ Governments should avail themselves of the accumulated experience of nongovernmental organizations, such as the Africa Cooperative Savings and Credit Association, the International Union of Building Societies and Savings Associations, trade unions, industrial enterprises, commercial enterprises and agricultural organizations for increasing the level of savings mobilization for the development and improvement of human settlements.

■ The Foundation should investigate the feasibility of establishing an information clearing-house for home financing institutions in Africa, which should meet periodically to exchange and disseminate successful innovative techniques.

■ Statutory bodies—e.g., development banks, social security schemes and insurance companies—should be encouraged to invest a proportion of their funds in human settlements projects, either through housing finance institutions or through local authorities.

■ Governments and the private sector should explore the possibility of establishing secondary mortgage systems that might be placed under the general direction of the national housing banks.

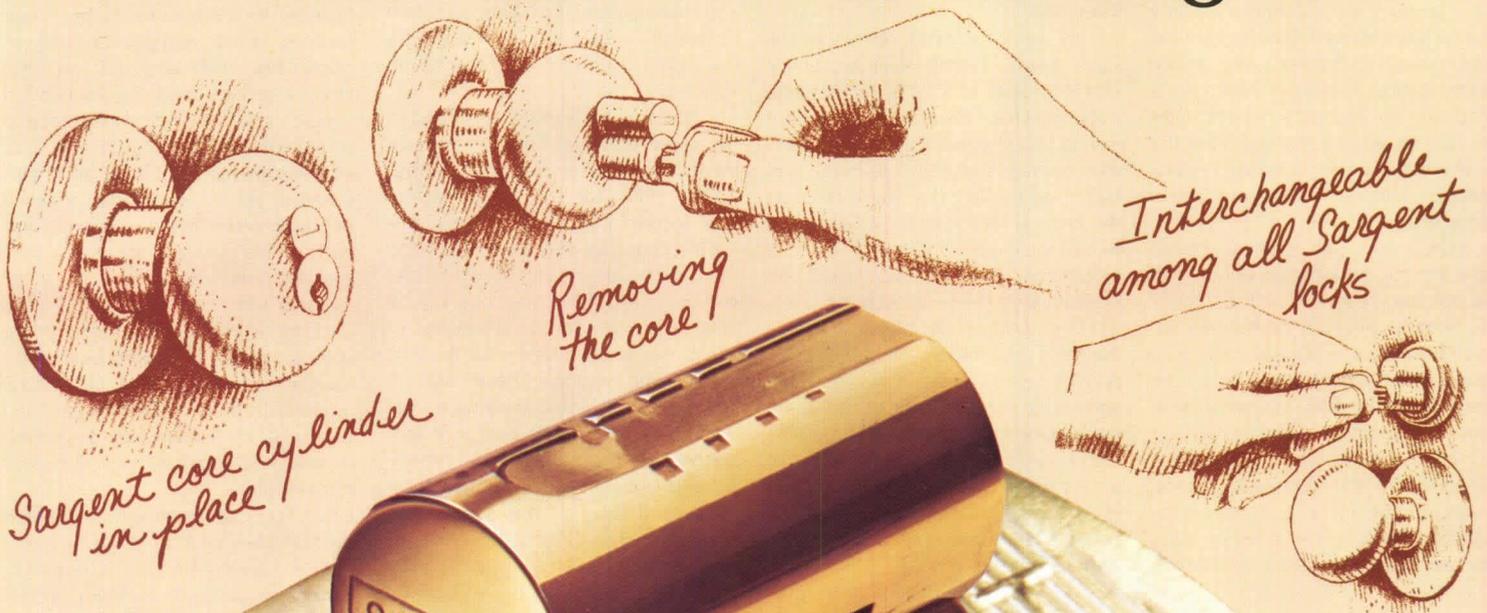
■ For the benefit of their people and to ensure continuity of programs in the implementation of national housing and human settlements policies, governments should declare their aims and objectives in this sphere. The Habitat Conference recommendations should be evaluated and adapted to national conditions and to priority needs, and governments

*continued on page 41*



In Mexico City, housing and human settlements officials from Latin America and the Caribbean met at one of the regional meetings convened by the UN Habitat and Human Settlements Foundation to explore local issues not covered at the international Habitat held in British Columbia in 1976.

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should avail themselves of the services of the Habitat Center in their efforts to meet these needs.

- The gap between the urban and rural settlements' conditions (infrastructure, services, employment opportunities, rate of development, etc.) should be bridged through the decentralization of development activities and the devolution of decision-making, and an urban-rural balance achieved in order to discourage the undesirable effects of rural-urban migration and its consequences. Appropriate powers and resources should be delegated to the local authorities responsible for housing and human settlements programs, with adequate support from multidisciplinary training programs.

- Governments should review their building codes and standards to ensure that they are consonant with the actual needs of the people, with due emphasis on the special needs and purchasing power of low-income groups, to avoid such standards being either too high or too low.

- Governments should identify long-term national manpower requirements, strengthen existing training institutions, and develop innovative training programs, including refresher courses, suited to national conditions and needs for housing and human settlement managers as well as for policy-makers.

- Governments should keep under continual review their housing and human settlement plans and programs to see what benefits they are yielding or are likely to yield and at what cost, and, with the participation of local communities, look into management of inputs with a view to evolving better management systems. The Habitat Center and UNHHSF have an important role to play in these matters by offering guidance and advice and by establishing an information pool.

- Governments should consider establishing at the highest possible level, where it does not exist, a national body responsible for housing and human settlement matters that would narrow the gap in policy implementation between central government and authorities and local institutions, and thus make for greater effectiveness in financial and management matters.

- Governments should request the United Nations system to place more consistent emphasis on housing and human settlements, and should provide the UNHHSF and the Habitat Center with adequate resources on a stable basis.

- Governments should request the African Development Bank, the Commission of European Communities, the Arab Bank for Economic Development in Africa, the Organization of Petroleum Exporting Countries and similar organizations to establish professional exchange and technical assistance programs with UNHHSF to ensure adequate liaison and involve-

ment in project planning, evaluation and implementation.

- Donor agencies should make grant assistance available to the countries of Africa, in collaboration with the specialized agencies of the United Nations, to develop appropriate technology and improved techniques of housing development, local building materials, designs, structures and construction methods. Emphasis should also be placed on environmentally sound methods of managing waste, the use of renewable sources of energy, the provision of water and sanitation through low-cost infrastructure systems, and transportation systems that reduce the excessive demand on land and energy. Governments should, with the assistance of UNHHSF, promote the establishment of local construction and building materials industries, thus reducing the cost of housing, and they should also provide standard plans to beneficiaries at a nominal price.

- UNHHSF should assist governments in strengthening or establishing national housing banks or financial institutions to mobilize external funds that can be channeled to bodies capable of implementing meaningful land development and housing corporations and even private developers.

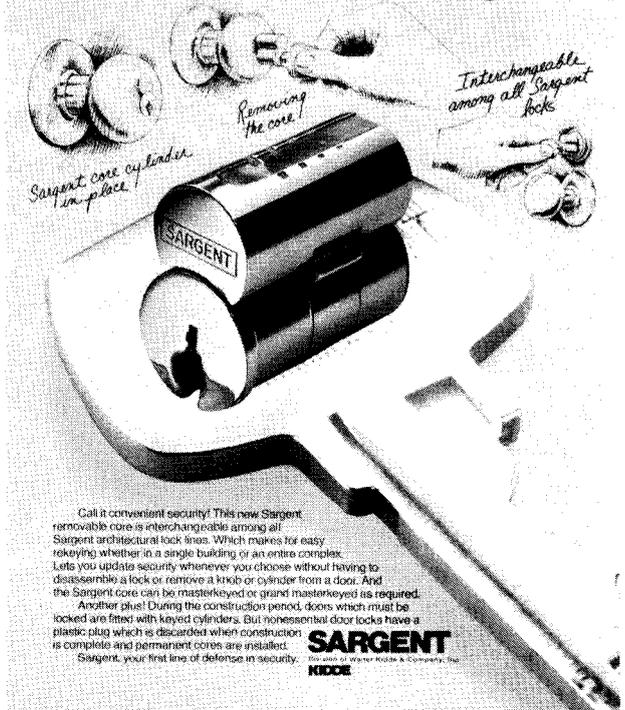
- The African Development Bank, in collaboration with UNHHSF, should undertake a feasibility study on the establishment of an African housing finance institution. Such an institution, if established, should provide financial, technical and managerial assistance in the implementation of the human settlements programs of member states.

The Mexico meeting, inaugurated by President José Lopez Portillo and the Executive Director of the UN Center for Human Settlements, Arcot Ramachandran, included high-level discussion and the formulation of recommendations on the financing aspects, problems and resource requirements for human settlements, on the subjects of land, urban infrastructure and community facilities, on housing and basic shelter, and on urban ecology and management, along with a general session that would be devoted to questions of resource mobilization.

Both the Kenya and Mexico meetings have exposed the fact that, since the Vancouver Habitat Conference, the investment of international and national resources for human settlements improvement in all regions has, paradoxically, tended to decline. The trend is especially noted in the studies conducted on the work and activities of the multilateral financial institutions. The work of the UN system in this area has to date been seriously disrupted by the years of discussion preceding the decision to transfer all Habitat-related activities to Nairobi, and currently by the problems of implementing this decision. — *Eric Carlson, UN Habitat and Human Settlements Foundation, Nairobi.*

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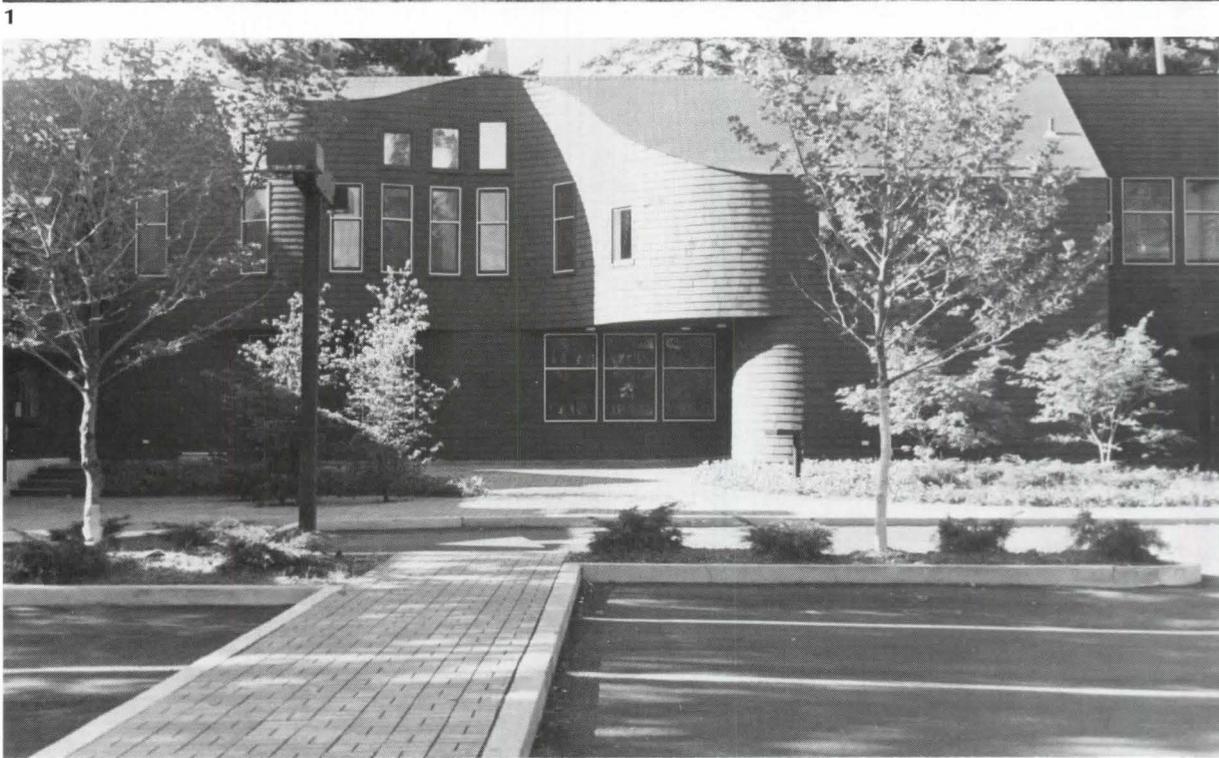
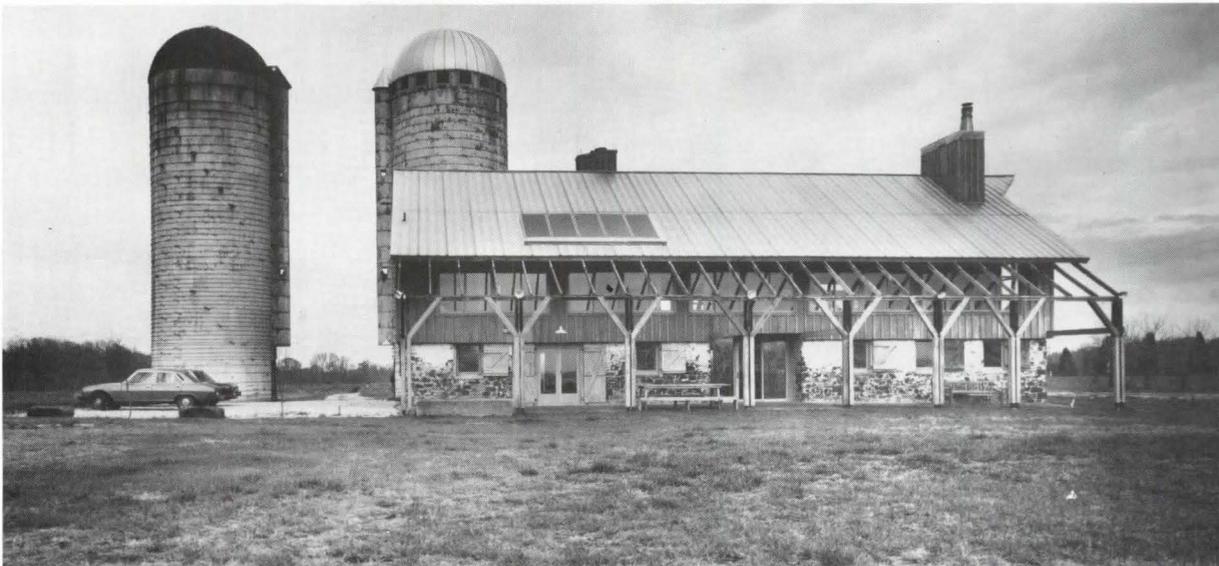
ADDRESS \_\_\_\_\_

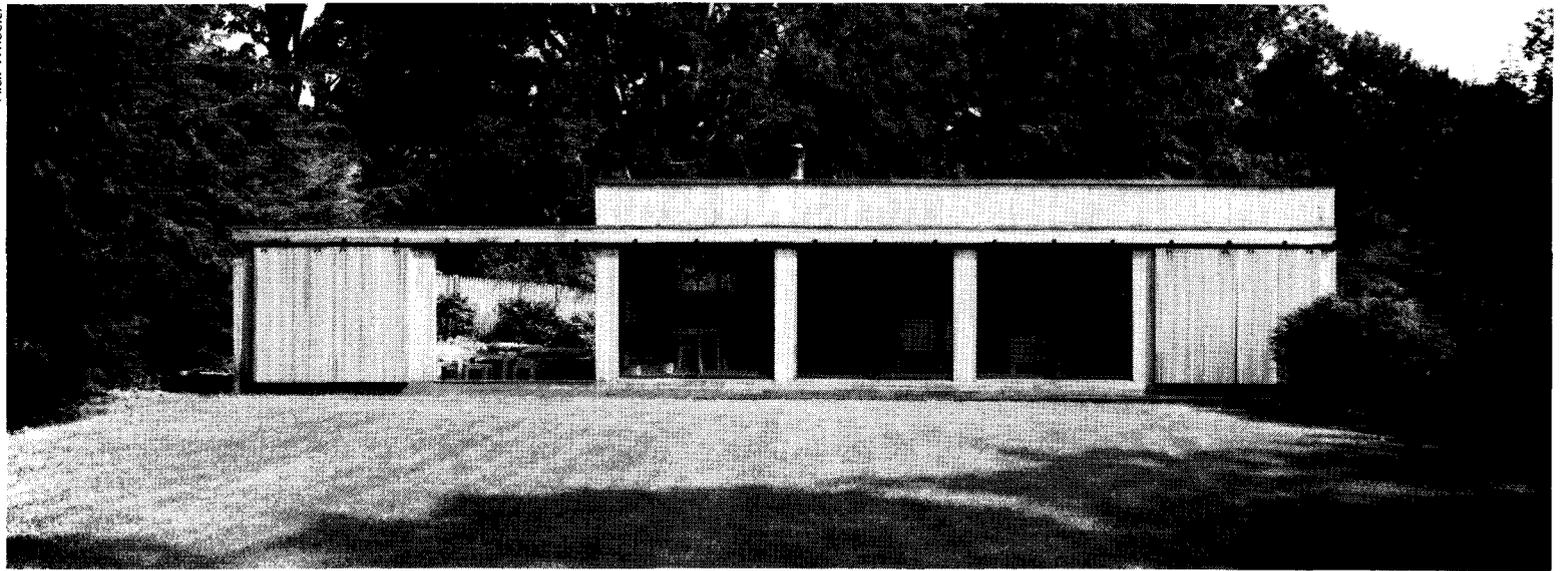
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

1. Basin Electric Cooperative, Bismarck, N.D.  
Architect: Ritterbush Associates
2. Zora Neale Hurston Building, Orlando, Fla.  
Architect: Lewis and Burke Associates, Inc.
3. Terraset Elementary School, Reston, Va.  
Architect: Davis, Smith and Carter
4. Arizona Bank Building, Phoenix  
Architect: Kelley-Marshall Associates
5. Lincoln Library, Springfield, Ill.  
Graham, O'Shea and Wisnosky, Architects & Planners, Inc.

## Connecticut architects receive honor awards

Eight projects were cited for excellence in the 1978 Honor Award Program of the Connecticut Society of Architects. The three-man jury selected these buildings from categories encompassing housing, commercial structures, and adaptive-use projects. **(1)** Rubenstein Barn, Maryland; Moore Grover Harper, architect. The historic character of this converted barn was retained while increasing energy efficiency through the use of both active and passive solar heating systems. "The design respects the materials used, landscape and siting," said the jury. **(2)** South Central Connecticut Headquarters, Connecticut; Gilbert Switzer & Associates, architect. The joining of a large former residence with its carriage house to expand facilities for the current owner was seen by the jury as "a sensitive marriage... that provided some delightful interior spaces." **(3)** Miller Memorial Community for the Elderly, Connecticut; Jeter Cook and Jepson Architects. Grouped to create a village atmosphere, this project was cited for a high level of resolution in the interior and excellent design details. **(4)** Tai Soo Kim House, Connecticut; Tai Soo Kim, architect. This small home was considered by the jury to be "a very good use of a difficult site. The architecture has simplicity and clarity and shows an economy of means." **(5)** Duke Mansion, New York City; Richard Foster Associates, architect. The interior of this landmark building was restored and library space increased by the insertion of a balcony within the high ceilings. **(6)** Summer House, New York; James V. Righter, architect. Raised three feet above ground and turned on the diagonal so that a majority of rooms overlook the coastline, this house was praised for being "an appropriate response in the tradition of seaside architecture." **(7)** Visitors' Pavilion, U.S. Coast Guard Academy, Connecticut; *Sturges Daughn Salisbury, Inc.*, architect. The jury deemed this effort "well achieved with a festive character and completely appropriate to... a maritime institution." **(8)** Church of the Redeemer Parish House, Connecticut; Roth and Moore Architects. This renovation resulted in facilities to meet the church's diverse needs with little change to its traditional facade.

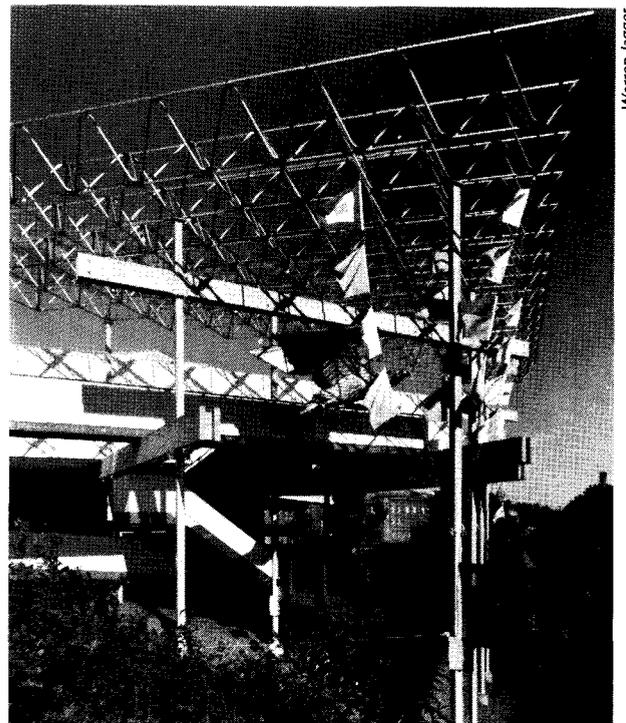




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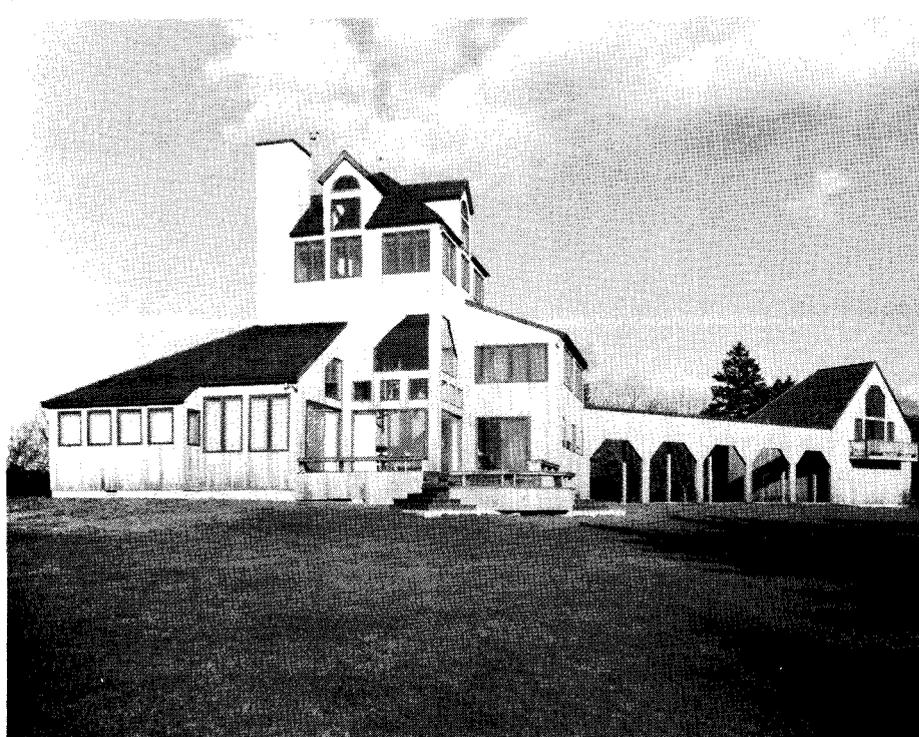


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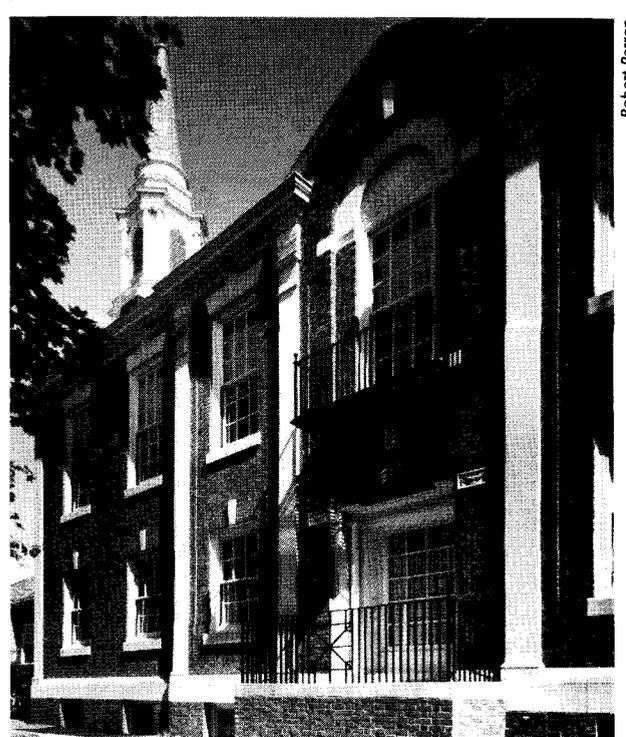


Warren Jagger

7



6



Robert Perron

8

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## Exhibitionism

THE ARCHITECTURE OF THE ECOLE DES BEAUX ARTS, edited by Arthur Drexler; *The Museum of Modern Art* (distributed by the MIT Press), \$45.

Reviewed by Jean Paul Carlhian

A page-one acknowledgement of this lavish and sumptuous publication states that "the exhibition on which the book has been based, 'The Architecture of the Ecole des Beaux Arts,' was shown at the Museum of Modern Art, New York," and it thus clearly establishes the origin of this book as an exhibition catalog. But nowhere among its 523 pages is to be found any explanation of why the exhibition was organized in the first place and upon what principles the selection was made. Nor is there any definition of the reasons which guided the choice of the authors of its text.

One can only surmise that someone, upon discovering a treasure of unknown drawings in the dusty attic of the Ecole des Beaux Arts' Bibliothèque, thought they would make a stunning show. And they did, as anyone who saw the MOMA's exhibit back in 1975 can testify. With financial help from the Graham Foundation and from the National Endowment for the Arts, splendid photographic reproductions were secured from documents which had been preserved over the years (more than a century for some) under the most primitive conditions exposed to the accumulation of dust and the vagaries of climate in an unlighted, unheated attic. The far-reaching and still reverberating repercussions of the show upon architects and in particular students will attest to the importance and significance of the whole venture, including the book which resulted from it.

For this, we should all be thankful. But it is indeed a pity that what could have been either a scholarly piece of pure research, or a documental inventory, or a truly comprehensive presentation of the Ecole's history, or a documented analysis of its educational methods, or a critical evaluation of its influence on the design of buildings, is, in the end, a little of all and none of each, being a hastily put together, superficial exploration of a timely and crucial subject in the form of an expensive and superbly presented catalog of a lavish show.

This book, which should be more appropriately entitled *Catalogue of Prix de Rome and Other Drawings by French Student Architects of the Ecole des Beaux Arts, 1756-1900*,

with *Special Emphasis on the Executed Works of Henri Labrouste and Charles Garnier*, consists of 405 illustrations, 22 in color.

Following a short preface, the body of the book is divided into five essays, by Arthur Drexler, Richard Chafee, David Van Zanten, Neil Levine and an anonymous photographic essay "Beaux Arts Buildings in France and America." Captions accompany each illustration, with texts ranging from pure and simple information to interpretative judgment and arbitrary statement. Their reading is often more revealing than that of the essays. Notes at the end of the volume accompany each essay. They too, in many instances, make for very interesting perusal. A three-page tabulation entitled "Lists of Architects and Their Works" might be construed as taking the place of a list of illustrations, which it unfortunately does not, as these are unnumbered. There is also no glossary of French terms used extensively throughout the text, no bibliography, and no index, even in its simplest form, making it frustrating for anyone interested in Charles Garnier, for example, not only to gather together references spread about the essays but to relate these to the illustrations of his works dispersed in different sections of the book. It is truly impossible for any reader wishing to differentiate one type of drawing from another—like ordinary or "envois de Rome" projects from Grand Prix de Rome projects—without considerable effort. Many statements in the essays and the captions are undocumented or, when they are, remain unconvincing or incomplete. More serious and misleading is the fact that no actual dimensions of the drawings reproduced are even given—an inexcusable omission when one realized that these may vary from a few inches to 10 or 20 feet.

Arthur Drexler's somewhat disconnected introductory essay revolving around the notion of freedom consists of three basic parts. The first, and most fascinating, offers penetrating thoughts upon the relationship between the individual architect's chosen mode of representation, whether it be a simple drawing, a more elaborate perspective or a model, and his intended product: the building. As the author puts it, "It must be asked in each case whether a model or a drawing is meant to describe a building as it actually will be, as it will be perceived, or as it ought to be perceived." His illustration of such a preoccupation through examples borrowed from Mies van der Rohe and Le Corbusier is revealing and fascinating.

The second section is devoted to the analysis of five Beaux Arts Grand Prix Ecole projects. Without any explanation for their selection, Drexler undertakes a lengthy expla-

nation of what he assumes to be the author's intention through the examination of his surviving drawings. The total absence of any mention of original programmatic requirements, and of any reference to the candidate's initial statement, or "esquisse," confers considerable doubt upon the validity of Drexler's interpretation. Many of the untruths he dwells upon might very well have been the result of the student's efforts, in the course of several months of development studies, to redress or camouflage a mistake initially embodied in his hastily conceived original esquisse under the dictates of later reflection or of a persuasive teacher.

The last part deals with the notion of value, with a revealing exploration of the problem of scale and a profound analysis of the issue of symmetry. Stating that, "The history of modern architecture is the history of the architect's attitude toward freedom and necessity," Drexler proceeds to demonstrate through the work of Wright, Le Corbusier, Mies van der Rohe, Philip Johnson, and Louis Kahn (none of whom went to the Ecole des Beaux Arts, incidentally) the validity of such an assertion. After noting that, "Drawing as scenography is an art that would have to be learned again, bringing with it the desire to design something that can in fact be drawn," he hazily concludes: "Introspection and a little good humor could lead modern architecture out of its resentment and allow us to continue the exploration of freedom."

Richard Chafee's clear and concise essay is entitled "The Teaching of Architecture at the Ecole des Beaux Arts." But those expecting from such a title to be given insight into the Ecole's methods of teaching and its effect on students and the architecture they eventually produced will be disappointed, for Mr. Chafee indulges in no such speculations. His essay embodies all the best qualities of pure scholarly research. With a highly readable style, he effortlessly guides the reader through the maze of administrative changes and curriculum complexities marking the history of development of this educational institution from its origins in 1671, through its formal creation in 1819, to its establishment in its definitive form in 1863, all the way up to its dissolution, in the hands of Mr. Malraux, following its students' revolt in 1968. Mr. Chafee's understanding of the school, his grasp of its spirit, his perception of its essence, are truly remarkable, not only in the accuracy of his findings but also in his insight into their relative importance.

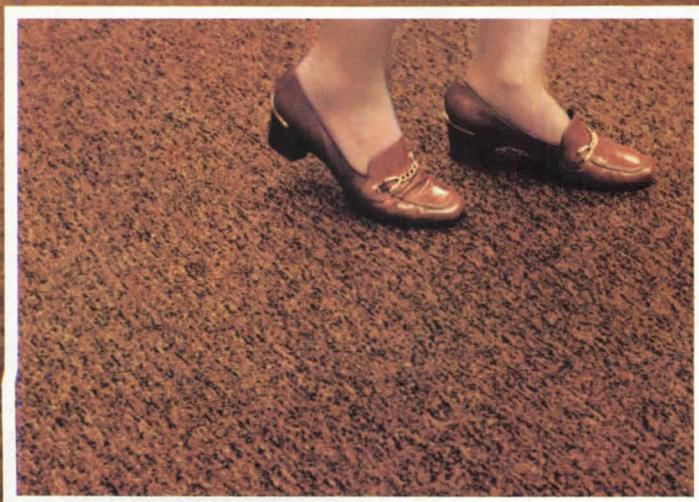
Nowhere else is to be found, in the English language, so detailed and so accurate a description of the Ecole's pyramidal organi-

continued on page 49

Jean Paul Carlhian is a practicing architect in Boston and a graduate of the Ecole des Beaux Arts.

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zation. His use of footnotes, as to be expected from such a scholar, is exemplary. Among them is to be found a comprehensive list of all Beaux Arts Paris ateliers from 1789 to 1968—a most important teaching tool of the Ecole. To whomever may be desirous of knowing the intricacies of the Ecole's administration, this essay is a must.

Neil Levine's 65-page essay deals mainly with Henri Labrouste (1801-1875), the subject of a forthcoming treatise upon which he is working. Save for intermittent reiterations of the architect's influence upon the Ecole's students, the paper concentrates upon demonstrating how much of an innovator Labrouste was. For this Mr. Levine relies heavily on an essay published in 1861 by Henry Van Brunt in the *Atlantic Monthly*. Mr. Levine's thesis is divided into three sections. The first is devoted to a perspicacious, original, and most revealing analytical description of the Bibliothèque Ste. Geneviève (1838-1850). The second section deals entirely with Labrouste's fourth-year envoi de Rome and to the scandal it brought to the Academy. The final part devotes itself to a comparison between Labrouste's 1829 fifth-year envoi and a student's Ecole project on the same subject submitted 18 years later.

From these examples, accompanied by multiple references and innumerable quotes, Mr. Levine seeks to establish Henri Labrouste as the originator of "le Neo-Grec:" "a new way of thinking about architectural form and content," with Neo-Grec architects seeing "the process of design as the decoration of construction." Mr. Levine's ideas are indeed fascinating, but they would greatly benefit from being expressed in a simpler style, using fewer words like "syncretism," "revetting," "ventriloquistic," "concatenation," "chthonic," etc. Once having found one's way through Mr. Levine's esoteric philosophical peregrinations, one cannot help wondering what place such excursions have among the pages of an exhibition catalog devoted to the "architecture of the Ecole des Beaux Arts," save, of course, that Labrouste was indeed a student and a "patron" of the Ecole, and that the Bibliothèque Ste. Geneviève was, with Garnier's Opera, the only executed work given special status in the MOMA show.

A final section of the book is devoted to a 75-page photographic essay entitled "Beaux Arts Buildings in France and America," illustrating 19 buildings in all, 15 French and 14 American. There is no attempt to explain what specific characteristics are necessary for any building to be qualified as a Beaux Arts building, nor is there any explanation for the choices made. Choices such as Daumet's Chateau de Chantilly and Vaudremer's Lycée Buffon would indeed astonish the French. As for Dutet's great Galerie des Machines, can it actually be labeled "Beaux Arts" in the same breath as Ginain's modest Musée Galliera? More understandable is the selection of Garnier's Opera and Labrouste's Bibliothèque Nationale, since one whole room of the

MOMA exhibit was devoted to the works of these two masters. One would have expected to find among such distinguished company such luminaries as André, Ballu, Hitorff, Lefuel, and Nenot,—and Hector Horeau in particular. Similarly perplexing are the reasons for the American selections, which range from Richard Morris Hunt to Eggers and Higgins. The inclusion of Hunt's Lenox Library, now demolished, over the still standing Biltmore House, so Blondel-like in its plan, may be explained by an apparent preoccupation in identifying Beaux Arts with symmetry. The choice of Flagg's Singer Building over Van Alen's Chrysler Building is inexplicable. So is the Jefferson Memorial in preference to Pope's own and far more significant National Gallery, which would

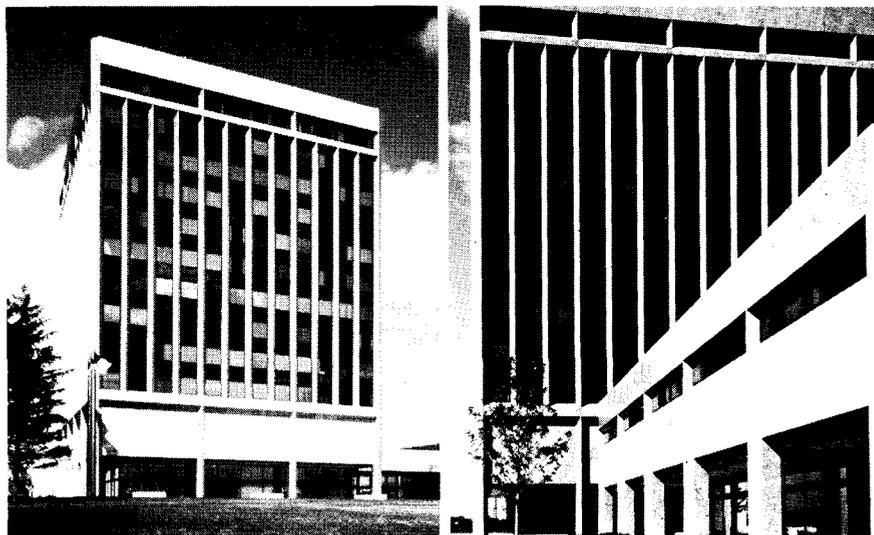
have been a reminder of the numerous American Beaux Arts museums still standing. And what is the idea behind not including a single State Capitol? When one realizes that between 1886 and 1936 over two dozen such capitols were built in this country, most of them in the Beaux Arts style (whatever that may be), the omission of even one example of such a Grand Prix de Rome programmatic subject par excellence is unforgivable in the catalog of an exhibition so totally devoted to this form of student exercise.

The essay entitled "Architectural Composition at the Ecole des Beaux Arts from Charles Percier to Charles Garnier," deserves special mention. For Mr. Van Zanten to have selected such time limits for his study is not

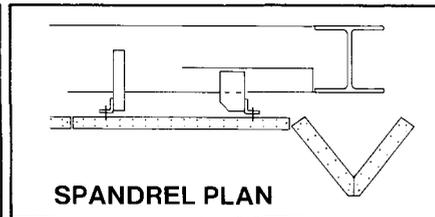
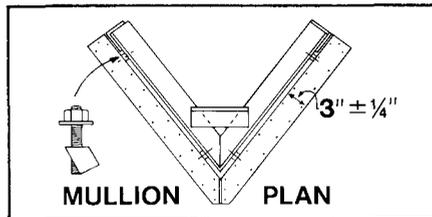
*continued on page 51*

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Architect: Graham Anderson Probst & White, Chicago, IL



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# Spacesaver

high-density mobile filing & storage systems

The right way to design a high-density storage & filing system is to begin with this book.

### The Modules

Activity level (i.e. number of retrieval) per day per person or mobile tray of one retrieval system, which make of cartons would be most appropriate.

Our Space Engineer will deliver a full design report (including all drawings and specifications) for any size and depth.

Typical module sizes are shown below. They are the minimum or maximum size indicated here for maximum space utilization.

Systems are designed for maximum retrieval depth with quick access to any shelf depth and linear development.

Module	Length	Depth	Height
Module A	12 ft	24 in	84 in
Module B	12 ft	24 in	72 in
Module C	12 ft	24 in	60 in
Module D	12 ft	24 in	48 in
Module E	12 ft	24 in	36 in
Module F	12 ft	24 in	24 in

### The Housing

Shelving type varies significantly over the range of planning conditions commonly encountered for filing and storage in office buildings.

At low height, the Spacesaver offers a little alternative. The design is more in accordance with a higher level of storage. Spacesaver shelving also enables the designer to vary unit width within a housing module for multiple tray storage. (This allows additional shelving modules from an existing housing compartment, at some stage.)

### Planning & Arrangement

The number of lines of the housing modules (i.e. activity-retrieval units), Spacesaver Space Engineers can advise the designer on the most appropriate arrangement for a given space. Illustrations below are typical planning arrangements for different space utilizing various module sizes.

### End Panels Design

Limitless variations in design response to end panels are possible. Fully solid colored and wood grained panels, laminated and perforated, are available for your requirements. Typical materials include acrylic, plywood, cork, metal, hardwoods, veneer, laminated plywood, metal mesh, perforated metal, etc. The material selected by the Designer.

Any hardware & finish of your selection may be applied to end panels. Full size and partial height panels are available.

Range of panel heights identified. Any number of panels may be used in combination.

Full cork material laminated to wood panel.

Panel edge finish for end panels.

### Architectural Constraints

Flexibility of such placement and line choice of storage dimension allows the system to work around existing conditions. Details and use of the system are shown below.

Range heights may be adjusted to avoid ceiling heights and existing ceiling and ceiling lights.

Reduced height.

Architectural Ceiling Line.

Dimensions for ceiling height range.

### Design Details

Spacesaver mobile storage ranges from a simple design for compatibility with any existing or new office furniture. Space and safety requirements for added design options are detailed. Engineering will be provided for a complete design system. Load and force data for added security or fire rating are available from our design department.

For additional and further information, please contact our sales department.

Well-detailed information is mandatory for your product evaluations. The typical pages shown here from our new 36 pp. planning guide book, presents data on Spacesaver high-density storage & filing systems with clear and concise graphics created specifically for architects. The piece is loaded with planning criteria, systems details, design ideas and case studies in a full spectrum of architectural applications. A provocative and comprehensive resource guide for professional use. Yours for the asking.

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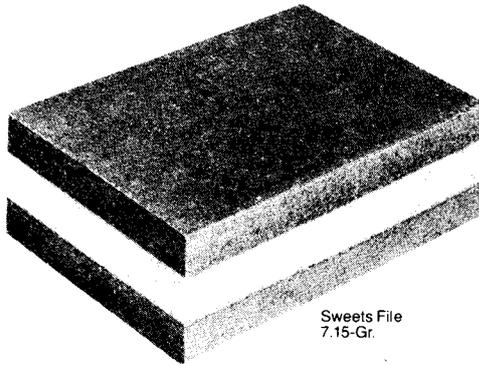
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REQUIRED READING *continued from page 49*

merely arbitrary but inexcusable in an essay bearing such a title.

In some 55 pages of text, Mr. Van Zanten seeks to demonstrate the evolution of "Architectural Composition" in French academic circles by a survey of contemporary writings and an analysis of students' works. By referring to works written in the mid-1850s as well as the early 1940s, he starts on the wrong track in failing to recognize the dual meaning of the French word "composition" as describing the act of an artist putting elements together in a certain order, as distinct from the description of the completed work thus achieved. By opting for the second, Mr. Van Zanten deprives his reader of the chance of participating in the very process of this creative act.

His case is further aggravated by his very selection of the works upon which to construct his theories. By deciding to deal practically exclusively with "Grand Prix de Rome" efforts (the only way, incidentally, for him to cover the centuries of continuity he imposed upon himself in the first place), he finds himself forceably limited in the field of his gleanings to that one yearly exercise, with the work of the only one or two winners as a source. The "Grand Prix Concours," riddled as it always was with politics, involving the judgment of painters, sculptors, musicians and engravers as well as architects, did not always produce the best choice of programs, nor did it necessarily represent the best results upon which to test the validity of "composition" theories. Neither did it, by any means, in spite of its severe selection process, guarantee the participation of the best students that very year when a challenging and taxing program was actually given.

Mr. Van Zanten makes the most of his examination, among the archives of the Institut de France, of a series of reports describing the reasons recorded each year for the award of the "Grand Prix" and his "discovery" of the use of the word "marche" in four instances within the 1828-1838 decade (this reviewer actually found five such instances). Mr. Van Zanten reads in this term a significance of his own. The work "seems to have designated...the sequence of fictive spaces represented," he says. "It must have denoted the experience of the building under analysis imagined as if one were walking and looking down the principal enfilade." He goes on to state, "Beaux Arts composition at the outset was concerned with masses rather than detailing, with those masses as containers of space as experienced when walked through," and he concludes that, "Projects were always analyzed in terms of a sort of ambulatory perspective" [page 185].

That it was not so, and never was so, is confirmed by any and all French texts dealing with the Ecole's working methods, which always stressed the sequential process of plan, section, elevation. Beaux Arts students proceeded first with the plan, then with the section, which defined space, the elevation being only the conclusion of the process.

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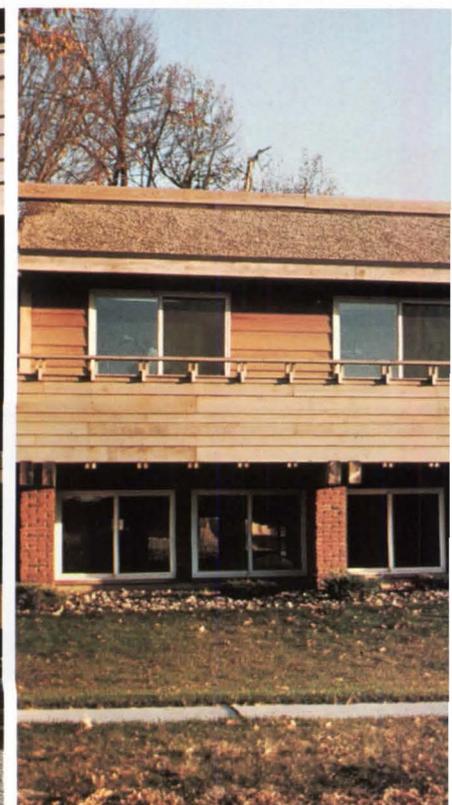


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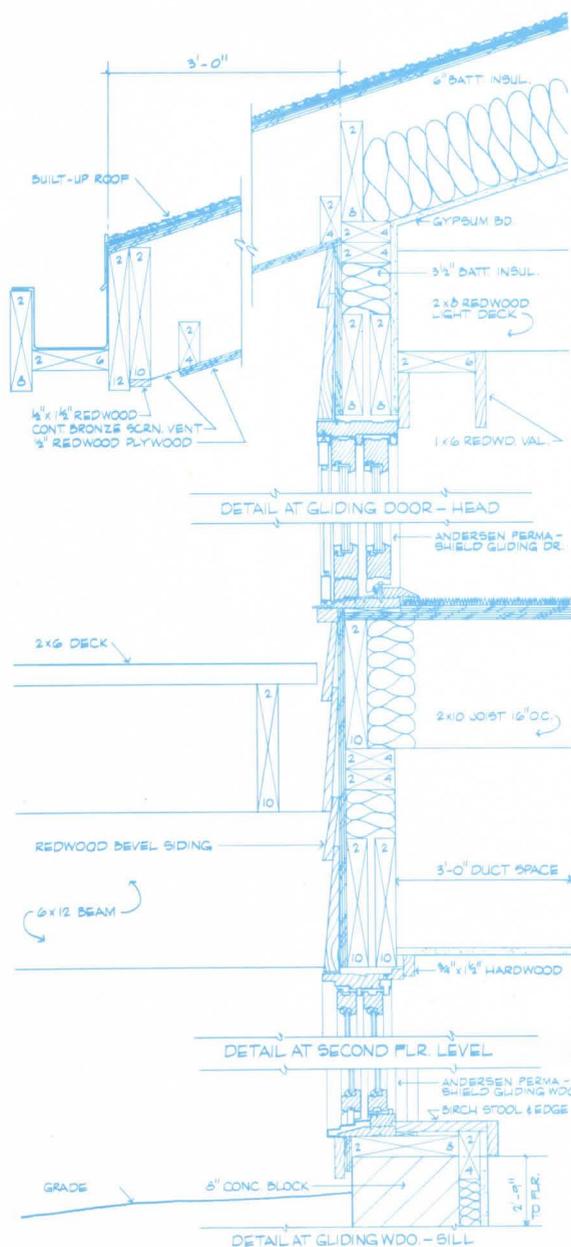
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Southill Square Office Building.  
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Architect: Michael McGuire,  
Stillwater, Minnesota

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## Dodge/Sweet's construction outlook, 1979: first update

There's no escaping the conclusion that Mr. Carter's determination to "build a new foundation" for the economy of the 1980s means that the construction industry will be building fewer foundations in 1979. The President's program to reduce inflation—which depends initially on monetary restraint and a "lean and austere" budget to hold the line while wage/price guidelines gradually do their work of de-escalation—has obvious implications for construction. Most vulnerable under these conditions are housing and public works. Commercial and industrial building—currently the construction industry's hottest market—is in no immediate danger of collapse, but will be indirectly inhibited to the extent that anti-inflationary restraint slows the economy's growth later in the year.

In this first update of the Dodge/Sweet's Construction Outlook for 1979 we re-emphasize the three main points of last November's analysis:

- The upper turning point of the construction cycle is very near, and may even have been reached in the final quarter of 1978.
- A downturn in construction contracting is anticipated because of external constraints on credit and public spending, not because there is any lack of basic demand.
- This expected decline will be a mild one.

### 1979 National Estimates of Dodge Construction Potentials

Construction Contract Value (millions of dollars)		1978 Actual	1979 Forecast	Percent Change
<b>Nonresidential Buildings</b>	Office Buildings	\$ 9,085	\$ 10,100	+11
	Stores & Other Commercial	11,403	11,200	- 2
	Manufacturing Buildings	8,703	7,500	-14
	<b>Total Commercial &amp; Manufacturing</b>	\$ 29,191	\$ 28,800	- 1
	Educational	\$ 5,725	\$ 6,000	+ 5
	Hospital & Health	3,720	3,800	+ 2
	Other Nonresidential Buildings	5,737	6,400	+12
	<b>Total Institutional &amp; Other</b>	\$ 15,182	\$ 16,200	+ 7
	<b>Total Nonresidential Buildings</b>	\$ 44,373	\$ 45,000	+ 1
<b>Residential Buildings</b>	One-Family Houses	\$ 59,790	\$ 53,500	-11
	Multi-Family Housing	12,942	12,100	- 7
	<b>Total Housekeeping</b>	\$ 72,732	\$ 65,600	-10
	<b>Total Nonhousekeeping</b>	\$ 1,799	\$ 1,900	+ 6
	<b>Total Residential Buildings</b>	\$ 74,531	\$ 67,500	- 9
<b>Nonbuilding Construction</b>	Highways & Bridges	\$ 11,078	\$ 11,300	+ 2
	Utilities	12,336	14,500	+18
	Sewer & Water	8,608	9,200	+ 7
	Other Nonbuilding Construction	7,512	6,500	-13
	<b>Total Nonbuilding Construction</b>	\$ 39,534	\$ 41,500	+ 5
<b>Total Construction</b>	\$158,438	\$154,000	- 3	
<b>Dodge Index</b> (1972 = 100)	174	169		

Floor Area of New Buildings (millions of square feet)		1978 Actual	1979 Forecast	Percent Change
<b>Nonresidential Buildings</b>	Office Buildings	207	215	+ 4
	Stores & Other Commercial	548	485	-11
	Manufacturing Buildings	209	225	+ 8
	<b>Total Commercial &amp; Manufacturing</b>	964	925	- 4
	Educational	105	102	- 3
	Hospital & Health	52	50	- 4
	Other Nonresidential Buildings	153	168	+10
	<b>Total Institutional &amp; Other</b>	310	320	+ 3
	<b>Total Nonresidential Buildings</b>	1,274	1,245	- 2
<b>Residential Buildings</b>	One-Family Houses	2,246	1,850	-18
	Multi-Family Housing	512	450	-12
	<b>Total Housekeeping</b>	2,758	2,300	-17
	<b>Total Nonhousekeeping</b>	41	40	- 2
	<b>Total Residential Buildings</b>	2,799	2,340	-16
<b>Total Buildings</b>	4,073	3,585	-12	

### Construction contracts set a record in 1978, but inflation took its toll

As with the rest of the economy, fourth-quarter strength in contracting for new construction surpassed all expectations. Despite 10 per cent mortgages, the housing market refused to quit. And while housing starts held steady at a two million rate through the end of 1978, commercial and industrial building took over as the building market's dynamic element with a gain of better than 50 per cent for the year.

The final outcome of construction contracting in 1978—a gain of 13 per cent to a record \$158 billion of newly started projects—virtually assures that employment and output in the construction and building materials industries will remain strong in 1979.

Two qualifications diminish last year's otherwise glowing results. As in most other industries, inflation eroded most of the dollar gain in construction contract value, leaving only between 2 and 3 per cent growth in physical volume, and, after more than three years of expansion, the industry now faces the prospect of a cyclical decline in contracting for new construction.

### Housing will decline this year, but recovery will begin in the fourth quarter

*Housing:* So much has already been said about the durability of the housing market under 1978's tight credit conditions that only a few key points need to be cited concerning the 1979 outlook:

- Because of favorable demographic trends, the demand for housing—especially one-family homes—has never been stronger.
- Despite double-digit inflation in housing prices, cost has not deterred sales.
- Money market certificates have been highly successful in sustaining the liquidity of S & L's since their introduction in mid-1978. Along with secondary mortgage support, they will

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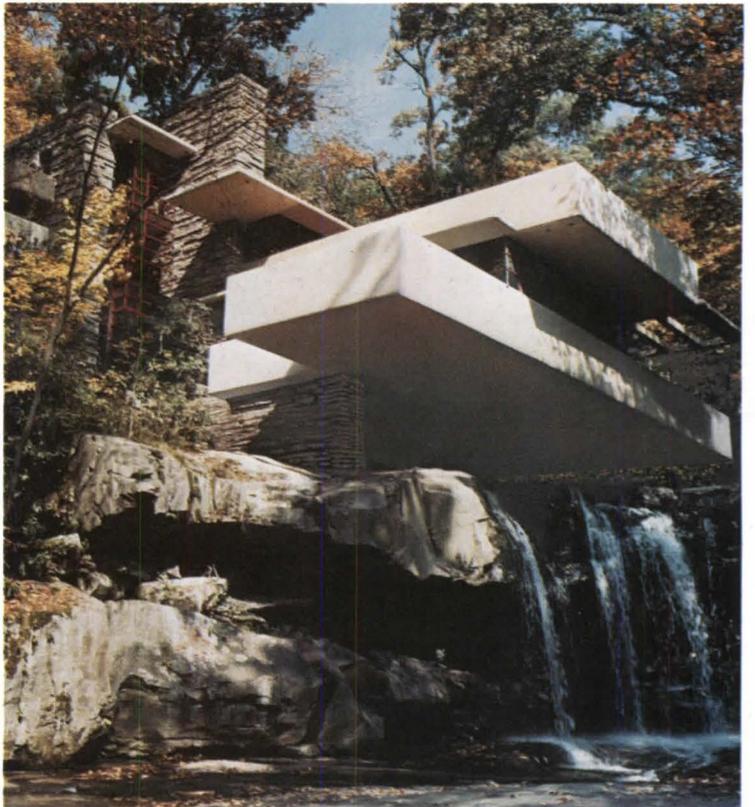
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continue to attract a substantial (though diminishing) flow of very expensive money for use as mortgages in 1979.

■ It will be high interest rates along with a shrinking supply of mortgage funds—but not overbuilding or widespread disintermediation—that will reduce the volume of housing starts this year. This implies a smaller decline than would occur if funds were to dry up as in similar situations in the past. It also offers the prospect for a faster recovery of homebuilding once interest rates begin to retreat toward more normal levels.

The 1979 outlook: Dwelling units down 16 per cent; contract value down 9 per cent; decline concentrated in one-family housing; recovery beginning in the fourth quarter.

### Total 1979 nonresidential building will approach 1978's peak volume

*Nonresidential building:* Although housing will soon be leading the construction cycle into its downward phase, the normally lagging non-

residential cycle still has a couple of quarters of reasonably strong contracting ahead. Two circumstances will support nonresidential building through the first half of 1979.

■ The first is a technicality, which can only be described as "LPWA Backlash." The heaviest surge of contracting for the more than 10,000 projects initiated by the Local Public Works Act was heavily concentrated in the second half of 1977. Eligibility for this program required that projects be ready to start in six months or less, motivating communities to accelerate the start of construction that had been planned for the near future. In so doing, they temporarily depleted their backlogs of planned construction.

Even if 1979 brings something less than the pre-LPWA volume of such building—and the clamor for budgetary restraint at all levels of government indicates that this is what the future holds—there is still room for a modest gain over 1978's artificially depressed volume of contracting for public, nonresidential build-

ings during the post-LPWA void.

■ The second is a reality: the economy's momentum going into 1979. More strength than expected in many of the broad-gauge measures of economic activity (employment, personal income, consumer spending, and, of course, housing) hasn't quite changed the "standard" forecast of slowdown in 1979, but it has pushed the timing of the expected slowdown further into the future. It's anything but clear at this point whether the economy's current vigor means that we just might avoid recession altogether or that we're just heading for a harder fall when it finally comes. What is reasonably clear, though, is that the first half of 1979 now looks a good deal more promising than it did only last fall.

Because homebuilding held up longer and stronger through the second half of 1978, the outlook for retail building (most of which derives from housing) in the first half of 1979 is somewhat improved. For the year as a whole, however, contracting for stores and warehouses is still expected to fall short of the 1978 peak volume (in line with homebuilding), but with both years at a higher level than previously indicated.

Contracting for factories and office buildings ended 1978 at rates slightly above our high expectations for these categories, requiring only minor revisions of 1979's outlook. The modest improved general economic prospect for the year ahead reinforces our earlier forecast of another year of high-level contracting for these facilities.

The 1979 outlook: Total 1979 nonresidential building square footage very close (-2 per cent) to 1978's peak volume, but slipping noticeably in the second half. Contract value up 7 per cent—all of it due to inflation.

### Nonbuilding construction will gain nominally, led by electric utilities

*Nonbuilding Construction:* On balance, contracting for public works construction appears slated for only nominal gains in 1979. The category with the biggest potential for gain in 1979 is electric utilities—mostly because the 1978 total was abnormally low.

The 1979 outlook: Constraints on public funding and a lack of direction in the electric utility industry will hold 1979's gain in nonbuilding construction contract value to 5 per cent—leaving the 1979 total still short of the 1977 peak of \$43 billion.

### Summing up: a small decline for 1979, almost all of it in housing

Another good year for nonresidential building will not be enough to offset the expected weakening in housing markets in 1979, leaving this year's total construction contract value of \$154 billion, 3 per cent short of the 1978 cyclical peak. After adjustment for inflation, the 1979 decline in physical volume of total new construction will be about 10 per cent—almost all of it concentrated in residential building.

George A. Christie  
Vice president and chief economist  
McGraw-Hill Information Systems Company

## 1979 Regional Estimates of Dodge Construction Potentials

### Construction Contract Value (millions of dollars)

	Northeast Conn., D.C., Del., Mass., Md., Maine, N.H., N.J., N.Y., Eastern Pa., R.I., Va., Vt.			Midwest Northern Ill., Ind., Iowa, Ky., Mich., Minn., N. Dak., Ohio, Western Pa., S. Dak., Wis., W. Va.		
	1978 Actual	1979 Forecast	Percent Change	1978 Actual	1979 Forecast	Percent Change
<b>Nonresidential Buildings</b>						
Commercial & Manufacturing	\$ 4,527	\$ 4,625	+ 2	\$ 6,878	\$ 7,150	+ 4
Institutional & Other	3,114	3,375	+ 8	3,995	4,250	+ 6
<b>Total</b>	<b>\$ 7,641</b>	<b>\$ 8,000</b>	<b>+ 5</b>	<b>\$10,873</b>	<b>\$11,400</b>	<b>+ 5</b>
<b>Residential Buildings</b>						
One-Family Houses	\$ 7,556	\$ 6,950	- 8	\$13,565	\$12,525	- 8
Multi-Family Housing	2,208	2,175	- 1	2,973	2,900	- 2
Nonhousekeeping	461	475	+ 3	371	375	+ 1
<b>Total</b>	<b>\$10,225</b>	<b>\$ 9,600</b>	<b>- 6</b>	<b>\$16,909</b>	<b>\$15,800</b>	<b>- 7</b>
<b>Nonbuilding Construction</b>						
Highways & Bridges	\$ 2,160	\$ 2,250	+ 4	\$ 2,997	\$ 3,000	—
Utilities	2,830	2,500	-12	5,676	4,500	-21
Other Nonbuilding Construction	4,206	4,200	—	4,346	4,000	- 8
<b>Total</b>	<b>\$ 9,196</b>	<b>\$ 8,950</b>	<b>- 3</b>	<b>\$13,019</b>	<b>\$11,500</b>	<b>-12</b>
<b>Total Construction</b>	<b>\$27,062</b>	<b>\$26,550</b>	<b>- 2</b>	<b>\$40,801</b>	<b>\$38,700</b>	<b>- 5</b>

### Construction Contract Value (millions of dollars)

	South Ala., Ark., Fla., Ga., Southern Ill., Kans., La., Miss., Mo., N.C., Nebr., Okla., S.C., Tenn., Tex.			West Alaska, Ariz., Calif., Colo., Hawaii, Idaho, Mont., Nev., N. Mex., Ore., Utah, Wash., Wyo.		
	1978 Actual	1979 Forecast	Percent Change	1978 Actual	Forecast 1979	Percent Change
<b>Nonresidential Buildings</b>						
Commercial & Manufacturing	\$11,280	\$10,225	- 9	\$ 6,506	\$ 6,800	+ 5
Institutional & Other	4,962	5,275	+ 5	3,112	3,300	+ 6
<b>Total</b>	<b>\$16,242</b>	<b>\$15,500</b>	<b>- 5</b>	<b>\$ 9,618</b>	<b>\$10,100</b>	<b>+ 5</b>
<b>Residential Buildings</b>						
One-Family Houses	\$23,513	\$20,600	-12	\$15,156	\$13,425	-11
Multi-Family Housing	3,846	3,500	- 9	3,916	3,525	-10
Nonhousekeeping	580	575	- 1	386	475	+23
<b>Total</b>	<b>\$27,939</b>	<b>\$24,675</b>	<b>-12</b>	<b>\$19,458</b>	<b>\$17,425</b>	<b>-10</b>
<b>Nonbuilding Construction</b>						
Highways & Bridges	\$ 3,973	\$ 4,125	+ 4	\$ 1,948	\$ 1,925	- 1
Utilities	3,098	6,000	+94	732	1,500	+105
Other Nonbuilding Construction	4,396	4,500	+ 2	3,172	3,000	- 5
<b>Total</b>	<b>\$11,467</b>	<b>\$14,625</b>	<b>+28</b>	<b>\$ 5,852</b>	<b>\$ 6,425</b>	<b>+10</b>
<b>Total Construction</b>	<b>\$55,648</b>	<b>\$54,800</b>	<b>- 2</b>	<b>\$34,928</b>	<b>\$33,950</b>	<b>- 3</b>

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## Barrier-free design begins to react to legislation, research

The accessibility of buildings to handicapped people has been making news headlines across the country for several years. But for the practicing architect, designing accessible buildings is more than a human interest story; it's a professional responsibility. In the sixties and early seventies, most of what architects had to know about the subject was contained in the American National Standards Institute's *ANSI A117.1, Making Buildings Accessible to and Usable by the Handicapped*. But since 1961, when the standard was written, many Federal, state and local government agencies have adopted a bewildering array of new requirements that are far more comprehensive in scope and specific in detail.

by Edward Steinfeld

Faced with diversity in regulations, application of barrier-free design requirements to a wider number of buildings, stricter compliance procedures, consumer activism, and rising construction costs, architects now need more knowledge of barrier-free design to meet their professional responsibility, both to the public and to their clients. This knowledge should first include an understanding of the purpose of barrier-free design, whom it serves, developments in the laws and regulations, and the state of technical knowledge on the subject.

### Barrier-free design puts the blame for inability on the building

What would you think about a public building in which the doors were all 16 inches wide. . . ladders were the only way to reach upper floors. . . pay telephones were mounted with their coin slots 84 inches off the floor. . . and counters were a minimum of 48 inches high? People using the building would be so restricted in their activities that they would probably give up going into it. Of course, there would be a few tall, thin people with great agility who would be comfortable in such a place.

The basic objective of barrier-free design is to provide the same opportunities for handicapped people as are available to every citizen. The underlying purpose is to *shift the "blame" for inability from the person to the environment*. Barrier-free design allows disabled people to demonstrate that they have abilities—they can work, keep house, marry and raise children; they can be good friends and neighbors. Not only does this help disabled people themselves, it helps to change social stereotypes.

Some people argue that barrier-free

design benefits only a small number of people. Yet statistical estimates of the beneficiary population in the United States vary from a conservative estimate of 2 per cent of the non-institutionalized population to a moderate estimate of 5 per cent to a liberal estimate of 12 per cent. This variation is due largely to the definition of disability used by the estimators. For example, three possible definitions include: 1) having a chronic condition or impairment; 2) being unable to do specific physical activities, e.g. use hands, walk; and 3) being limited in ability to do work or housework. Each one can result in different estimates using the same data.

From the viewpoint of building design, the ability to do specific physical activities is the most appropriate definition for identifying the beneficiary population, but adequate data is not yet available to make estimates. Using this definition, the beneficiary population would be quite different depending on the part of a building being designed. For example, people with low stamina and those who use wheelchairs and walking aids—perhaps 12 million people—would all benefit from low gradients on walks and ramps. However, raised numerals on elevator panels would only benefit people with severe loss of sight—perhaps 1.7 million people.

There are other demographic considerations that also have direct bearing, but have not yet been studied adequately. For example, many people have temporary disabilities and almost half of all able-bodied people now living will become disabled to some extent in old age. Thus, accessibility will benefit people who are now able-bodied but may be disabled at some future date. Also, building utilization rates are different among disabled people than among the able-bodied population; there are different patterns of participation in certain activities, either because of the limitations of specific disabilities, motivational factors, or both. Utilization

rates are complicated further by sex, race, occupation, marital status and educational level of the users. Finally, it is clear that the proportion of disabled people in the population varies from locality to locality based on the degree of urbanization and region of the country. Thus, the population that benefits from barrier-free design could be considerably different depending on what kind of building is being considered, what type of people are likely to use it, and where the building is located.

The incidence of a specific disability is not always a good basis for establishing priorities. Although there are only about one half million people in the U.S. who use wheelchairs, their requirements often are the lowest common denominator in meeting the needs of a much larger group, including people who use crutches, canes, and leg braces and people with limitations of stamina, such as those who have heart ailments.

In many cases, it has been found that accessibility modifications improve the convenience of using a building for the general public; for example, doors will be easier for everyone to open and there will be fewer tripping and falling hazards. The added safety provided indirectly through accessibility features, such as visual warning signals, slip-resistant surfaces and elimination of stairs, is well recognized and may even help to reduce insurance costs.

Given this complexity, how can priorities for making a building accessible be established? Clearly, priorities should vary from project to project. In new construction, the increased cost of meeting reasonable regulations is usually very low—less than 1 per cent of total construction costs, sometimes even as low as .1 or .2 per cent. In such projects, priorities are not an issue. In retrofit, however, costs can be significant; in these projects, a careful analysis of the building and its potential users must be made.

### Although Federal requirements have increased, compliance has been lax

Although there have been efforts to encourage voluntary barrier-free design of Federal buildings since 1959, these efforts have had little impact. In 1968, the Barrier-Free Design Act (PL-90-480) was passed, requiring new buildings financed in whole or in part with Federal funds to be accessible. The ANSI A117.1 standard was adopted as the design

Edward Steinfeld is an architect and an 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 A117 Committee.



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criteria. Strict compliance with the Act was not generally found until the last few years. In fact, a General Accounting Office study in 1975 found that out of 314 Federal buildings surveyed, all built after 1968, not one fully met the ANSI A117.1 standard.

The various Federal agencies that sponsor building construction have issued numerous regulations and standards for barrier-free design. Some of these have been in response to the 1968 Act and others have been in response to specific programmatic needs. Within the last five years, however, there has been a dramatic increase in both the number of regulations and also in the degree to which they are enforced.

The change is due to the enactment of the Rehabilitation Act of 1973-74 (PL-93-112). This law has become the most important item of Federal legislation on barrier-free design. Section 503 of the act specifies that employers of 15 or more people who hold Federal contracts in excess of \$2500 cannot deny employment solely on the basis of disability. Section 504 specifies that programs supported by Federal funds providing services to the public (including schools and hospitals) cannot exclude people from participation solely on the basis of disability. The act also set up the Architectural and Transportation Barriers Compliance Board, and gave it power to review and coordinate the regulatory activities of the Federal agencies.

Sections 503 and 504 of the act were not really implemented until 1977 when HEW issued regulations. These regulations prohibited discrimination in employment or services based on inaccessible facilities. The regulations for Section 504 required service providers to develop transition plans for making their programs accessible within three years. The existing ANSI A117.1 standard was again referenced as the design criteria. The concept of program accessibility allows service providers to make enough of their physical plant accessible so that disabled people can receive services on an equal basis with other participants. HEW's Office of Civil Rights has issued interpretations of their Section 503-504 regulations. These interpretations give more specificity to the rather general concept of program accessibility and describe actions that are allowed and not allowed under the regulations. Compliance actions take place as a response to complaints lodged by employees and service recipients.

#### **Fully accessible programs will be legally required by the end of 1980**

Thus, the impact of complaints probably won't be known until 1981. In fact, some Federal agencies have only recently issued regulations and guidelines for their funding programs.

All states have laws on barrier-free design. Most of these laws are similar to the Architectural Barriers Act of 1968, but the design standards are treated in different ways. Some states include the actual design standards in the law. Other states have sections of their state building codes on accessibility. Still others have special barrier-

free design codes. A growing number of states have established barrier-free design boards that have power to issue standards, hold hearings and enforce compliance. The building types covered by state regulations vary greatly but there is a definite trend toward more inclusiveness. Whereas early state laws covered only publicly owned buildings, many of the newer and newly revised state laws cover privately owned but publicly used buildings and rental housing as well.

A few municipalities and counties also have barrier-free design laws or regulations incorporated in local building codes or other ordinances. There may be a trend developing toward such local initiatives in major cities where consumer groups are active and where they have had no success in modifying what they consider to be inadequate state laws or regulations.

#### **More specific, consensus-based design criteria are in the offing**

Although there are numerous laws requiring barrier-free design, there is no single, generally accepted set of design criteria on the subject. The closest thing to it is the ANSI A117.1 standard. However, in the 17 years since its development, the information needs have expanded far beyond those that generated the original standard. States, Federal agencies and model building code groups have filled the gap with their own technical criteria. For the most part, these criteria were based on the opinion of individual consumer advocates or practitioners, and reflect the specific needs of the building types to which the criteria would be applied. It is no wonder that the technical criteria used in current regulations vary considerably from one another. Some are in direct contradiction.

This state of affairs led the sponsors of ANSI A117.1 to revise the standard. After two years of writing and revision, the document is now very close to approval. It will be the most carefully developed set of design criteria available on the subject. It relies on research to establish design criteria wherever possible. There has also been a great deal of input from practicing professionals, consumers and industry groups.

The widespread adoption and use of such a consensus-based document will depend, to a great extent, on regulatory processes in Federal, state and local agencies. As each agency has in the past, they will continue to consult with their own experts and constituencies as regulations are issued and revised. Although practical experience and consumer advocacy both have their place in the development of regulations, research on basic "human factors" requirements (e.g., counter heights, maneuvering clearances, etc.) and on the social and economic impact of regulations can provide a more reliable knowledge base.

Some early research on human factors requirements did not fully document who the participants were, research methods used, or results. Many design recommendations were derived from experiments using a small group of individuals selected from clients of a reha-

ilitation center with little consideration given to how they compared to the broader population of disabled people. Most of the early research took place in other countries where construction methods, rehabilitation techniques and equipment differ from those in the United States. Early research on the economic impact of regulations was limited to "ball park" estimates of the cost to meet the ANSI A117.1 standard in new construction. There was no research at all on the social impact of regulations.

#### **Opinion-based regulatory decisions continue in spite of new research data**

Since 1974, there has been a significant increase in research on human factors requirements and economic impact. Most of this work has been well documented and carefully designed to produce reliable data. Although much research is still under way, there has been a substantial improvement in our knowledge. One exception is in the area of social impact. Here, there are many gaps. For example, we have no research-based data to prove how effective accessible mass transit facilities are in increasing mobility among disabled people, and we have no data to demonstrate how many accessible dwelling units are necessary to meet the need or demand for such units. Thus, while our knowledge is increasing, many regulatory decisions are still being based more on opinion than on fact. Improving our knowledge base can help to establish a common source for basic information, hopefully leading to more consistency, less controversy and more reliability in decisions. The need for improvement will soon become even more evident, as implementation of Section 503 and 504 progresses further.

#### **Summing up . . .**

Determining who benefits from barrier-free design is not an easy task. The incidence of disability can be a misleading simplification. On the whole, improving the general usability and safety of a building will usually have benefits to all building users. But, when priorities have to be established, such as in retrofit work, they should be based on the specific conditions of the project—building type, likely users and location.

After years of little action, implementation of Federal legislation is now beginning to have an impact. Mechanisms are in place to improve the regulatory process through planning, coordination and interpretation. All the states have also developed regulatory mechanisms although they differ considerably from one another.

On the whole, the trends in barrier-free design over the last ten years have been toward more laws and regulations, diversity in design criteria and controversy over the impact on society in general. The number of laws and regulations will probably not be reduced in the future, but experience in implementing the laws and better knowledge about the subject should lead toward more consensus, less controversy, and thus, more effective barrier-free design.

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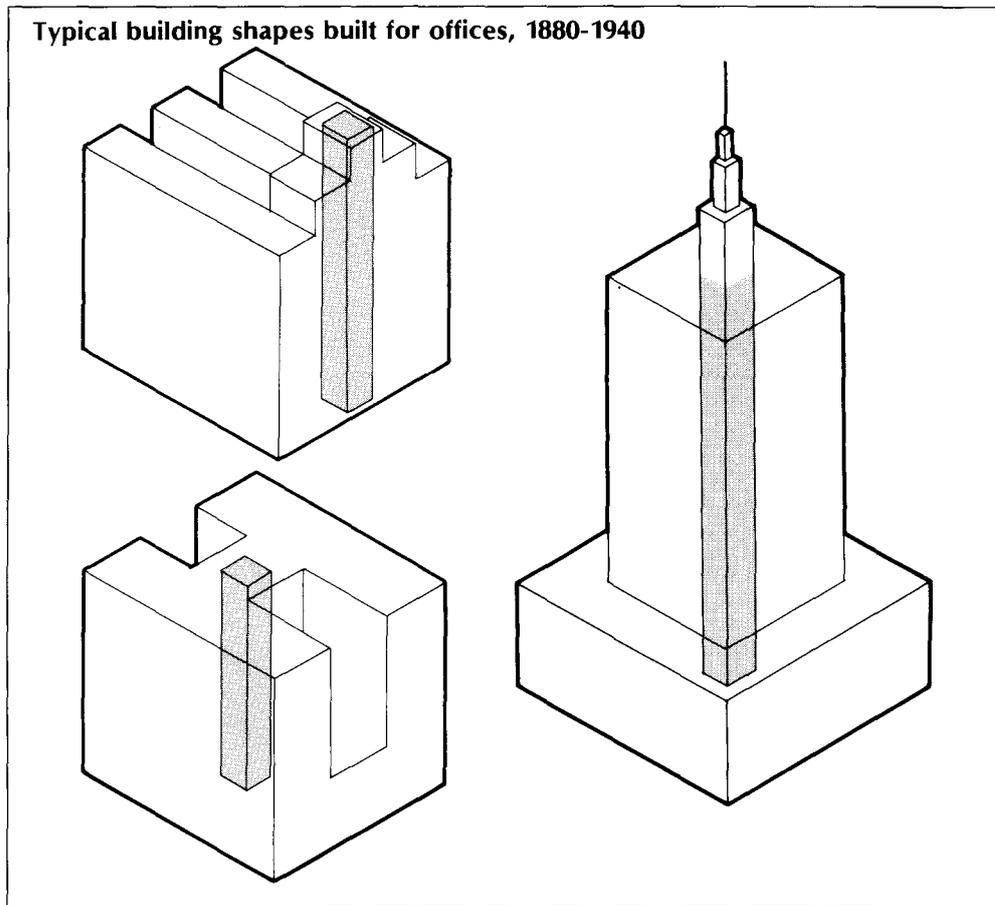
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## Some tips on evaluating renovation projects for office use

Shape is a major factor in determining the feasibility of renovating older structures for office use. It plays an important role in attracting different types of tenants, and when tenants for renovated space are limited, the shape of the offices can be critical to the success or failure of the project.

by Herbert McLaughlin



On a normal basis, office renovation deals with two general types of buildings: those that were originally constructed for use as office space, generally speaking in the era of 1860 to 1930, before air conditioning became common; and those buildings that were built for use as warehouses or manufacturing in any era.

### "Pre-air conditioning era" buildings are typically suited for small tenants

Office buildings constructed prior to the advent of air conditioning provided natural

ventilation to virtually every space in the building. Very few offices were more than a few hundred or thousand square feet in size. The modern corporation with its many employees and penchant for open planning had not evolved. The characteristic office plan was in the form of an "E," an "H," or an "L," sometimes rising from a larger base block housing retail space on the first and possibly the second floor. The typical layout of a floor in these shapes is one in which the wings are approximately 30 to 40 feet wide, and consist of a five-foot-wide corridor flanked on either side by 15- to 20-foot-deep office space with windows.

This type of floor plan is quite usable for many smaller businesses today. Tenants

requiring from 200 to 2000 square feet are usually very well accommodated, and this remains a very common size. Law offices, even large ones which generally require a very high ratio of exterior wall to interior space to be utilized for secretaries, etc., fit into this type of building very well.

However, these shapes are extremely difficult to renovate for contemporary large-scale office usage. They also present real difficulties in terms of current fire exiting requirements. These problems usually can be overcome, but only at considerable expense, or with a lenient attitude on the part of code officials, or in most instances, both. The size of floors generated in these typical building layouts is also a problem. It is seldom that one deals with a floor in excess of 12,000 net square feet.

Another shape built for office use in the pre-air conditioning era is the pointed tower; the most dramatic example of this type is the Chrysler or Empire State building in New York City. (The profile of the building conforms to the successive diminution of the elevator core as the building grows taller and banks of elevators are dropped off.)

This type is very limited in conversion possibilities. Since the form is so dominant and unalterable either through addition or the implanting of courtyards, it works well only for smaller offices.

### Warehouses, industrial buildings and department stores can suit large tenants

The other basic building type available for renovation is the loft with a rectangular, large floor plan from 12,000 to 40,000 square feet in size. The department stores are of course usually very well located, close to the heart of downtown. Surprisingly, in many instances, factory and warehouse buildings also can be found in the heart of downtown, built for light industry such as garment manufacturing or similar semi-skilled piecemeal operations. These warehouse/industrial buildings fall into several categories.

The first is characteristically 30 to 40 feet wide, three to four stories high, and located in the center of a block, the type most frequently found in Jackson Square in San Francisco. These buildings are seldom in the heart of downtown since they were too small to be built there in the first place, or if they were built there, were supplanted by larger

continued on page 75

Mr. McLaughlin is a principal in the San Francisco firm of Kaplan/McLaughlin/Diaz Architects/Planners. He is a visiting lecturer and critic at Harvard, the Universities of Illinois and California (Berkeley), and Stanford Business School.



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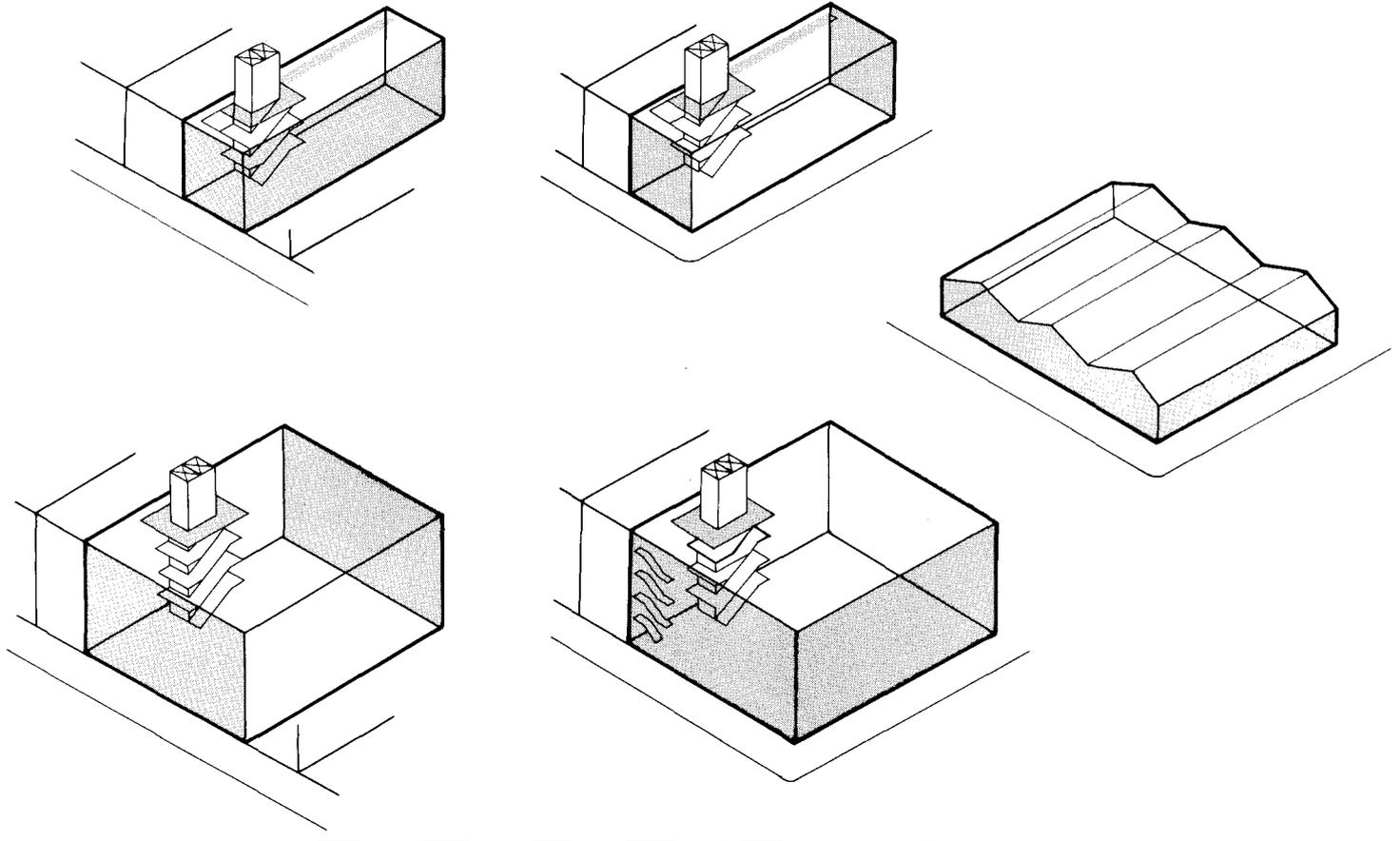
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### Typical building shapes originally for factory and warehouse uses



loft buildings or office buildings after 1880.

This building type is difficult to renovate for the small-scale tenant which is the characteristic tenant in renovation. This difficulty is due to the small amount of exterior window wall available. The floors are usually so small that the option of dropping a light well into the interior space does not work particularly well or efficiently. The same building type located on a corner is, however, very desirable. The size and shape of spaces, the amount of window and the general ambience are very attractive to the smaller tenant.

The second major type of industrial building is the larger warehouse/factory building whose floor area may be as large as 150 by 150 square feet. This type of building is often located downtown; however, even larger buildings are found on the outskirts of downtown. The basic building plan is usually square. This building type lays out extremely well for the larger tenant, but poorly for the small tenant. Usually, on an interior lot, the building has relatively little window wall, and even on a corner, the ratio of window to floor area is poor. This problem can be alleviated by inserting a light well, but this may be difficult since it leads to long corridors around the light well or atrium. But the atrium itself can be an asset in leasing, since in many instances offices facing the atrium can be rented at a premium, and can work very well for the larger, full-floor, or multi-floor modern corporate tenant.

In this type, the existing elevator core is generally located to one side of the building,

so that a clear loft-type space could be provided for the manufacturing operation. This loft space works very well for companies with large clerical operations. The same shape and general layout are characteristic of larger department stores.

The industrial open floor is in clear contrast to the typical modern high-rise office building floor plan, which is designed to accommodate the smaller tenant. Due to the fact that in modern office buildings the elevator core runs through the center of the full-floor space, the modern precedent does not work well for the large full-floor user who wishes large-scale pool spaces.

The modern high-rise office building floor plan is in many ways a compromise; typical exterior wall to central elevator core depths are 35 to 40 feet. This dimension is meant to deal with what is felt to be a typical office layout situation in which the exterior office is 12 to 15 feet deep; a secretarial and corridor space of 10 feet occurs; then in some instances, another 10 feet can be allocated to serve a function such as storage, interior offices or photocopier and support space; and then 5 feet for the corridor surrounding the elevator core.

This basic layout necessitates offices without exterior windows for many users since the ratio of exterior wall needed for senior executives to interior support space is such that the support and secretarial space does not fill the area between the exterior offices and the elevator core. This then creates a quite undesirable situation in the

case of some users such as law firms who prefer to have all the lawyers on a window wall. The best of all possible worlds for the larger user occurs when a loft building with an off-center elevator core occurs on a corner. Windows are then readily available for offices and open space.

#### **"Modern" warehouses, factories can provide dramatic re-use potential**

The final type for consideration is the "modern" (1930 on) one- or two-story warehouse/factory building. These are seldom located in the central city, but are found either on the fringes or in suburban settings. With many corporate and professional firms moving to the outskirts, the time may be right for looking into the re-use potential found in these structures.

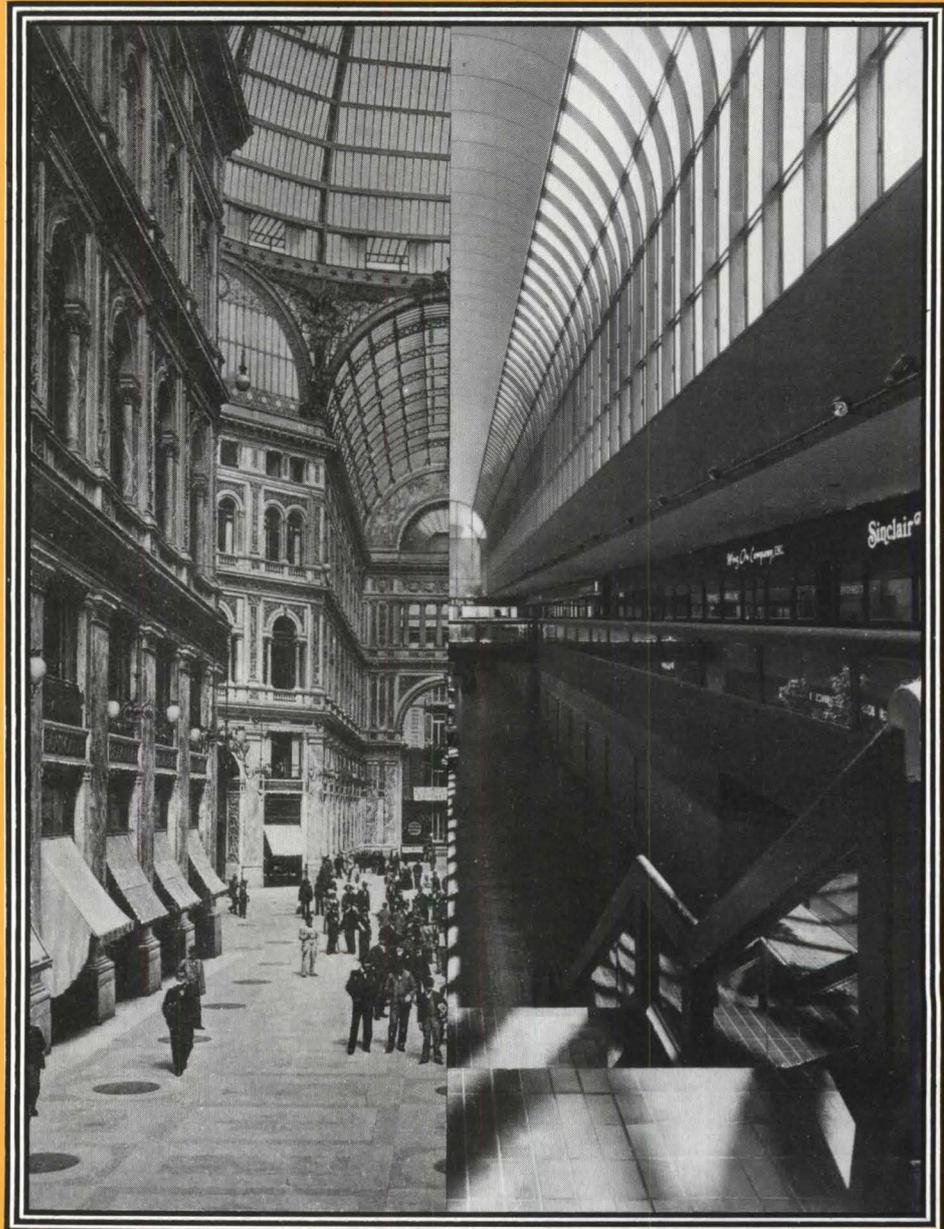
They are easily and dramatically converted to office space. Generally a central courtyard should be added, whether the building is to be for large or small tenants. The courtyard allows a sense of the outdoors and if necessary, the opportunity to place some offices on the new window walls provided. In the case of a single user, a skylit garden can be substituted for a full courtyard. The typical high ceiling can be used to vary levels within the space and to provide mezzanines. Blank exterior walls can be retained to accent the interior focus of the building, particularly in an industrial neighborhood. If they are desirable, windows usually can be added with very little trouble or expense.

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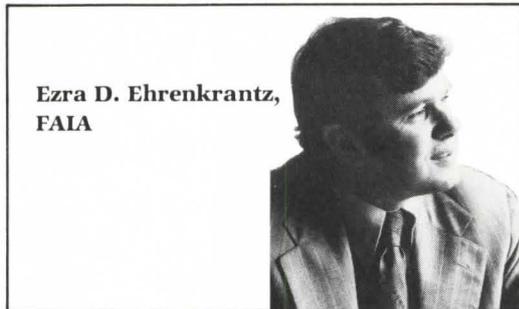
Energy Secretary James R. Schlesinger declares that solar "may soon be the fastest growing part of our energy supply." He shortly will ask the Office of Management & Budget to nearly double for fiscal 1980 the \$500 million that his agency will spend on solar research and development in fiscal 1979. —*Business Week*, October 9, 1978

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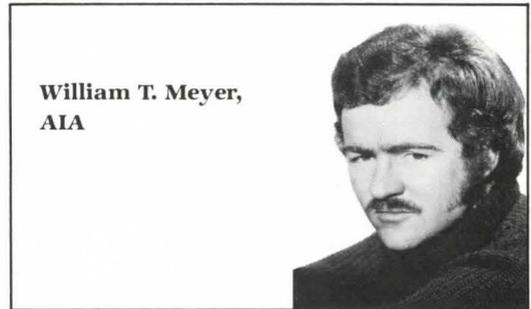
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**Ezra D. Ehrenkrantz,**  
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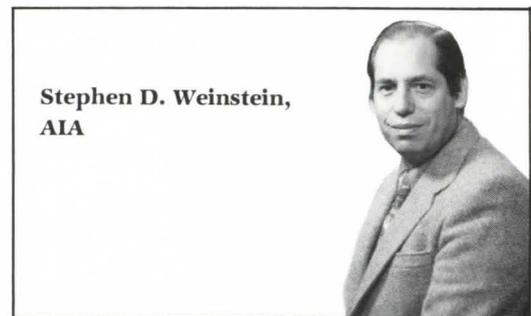
Mr. Ehrenkrantz is president of The Ehrenkrantz Group in New York City. In private practice since 1959, Mr. Ehrenkrantz has considerable experience in passive heating and cooling systems. For two years during the mid-fifties, he worked with the British Building Research Station developing low-technology techniques for accommodating the climate requirements for building construction. These principles and techniques have been applied in the design of many buildings here and overseas. In 1965, Mr. Ehrenkrantz led in the organization of Building Systems Development (BSD) and pioneered the first United States building systems program, School Construction Systems Development (SCSD) in California. He is an author, and lecturer at Yale University and MIT. Mr. Ehrenkrantz was *Engineering News Record's* "Construction Man of the Year" in 1968. He is registered in nine states. In 1977, The Building Research Advisory Board of the National Research Council gave Mr. Ehrenkrantz its Quarter Century Citation for his "significant and lasting contribution to the state of the art and construction

technology" during the period between 1950 and 1975. Mr. Ehrenkrantz is one of only seven architects to be so honored, among whom are Walter Gropius, Eero Saarinen and R. Buckminster Fuller.



**William T. Meyer,**  
**AIA**

Mr. Meyer, vice president, joined The Ehrenkrantz Group in 1968, and heads all research undertaken by the firm, including work in energy conservation and solar heating of buildings. Mr. Meyer's skills focus on building technology, design and economics. His professional experience includes the management of a solar heating demonstration program for the Department of Defense; the analysis of solar energy for housing uses for the AIA Research Corporation; and design and cost-benefit analysis of energy conscious model houses for Exxon Enterprises, Inc. Mr. Meyer teaches at Pratt Institute and Columbia University, and is the author of numerous articles, including the building system section of the *Fifth Edition of Timesaver Standards*. He has been a speaker at many conferences and seminars on the subject of energy conservation. He is registered in New York and California.



**Stephen D. Weinstein,**  
**AIA**

Mr. Weinstein is a vice president of The Ehrenkrantz Group, and serves as Director of Technical and Production Services. He is currently providing technical consultation to the Department of Energy in the management of the grant program for the placement of solar systems. He is reviewing and making recommendations on the plans and specifications of all non-residential facilities applying for DOE Demonstration Program funding. Under the auspices of the Department of Energy, Mr. Weinstein and The Ehrenkrantz Group have been preparing a comprehensive design guide for active solar heated buildings.



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- Luminaire selection and surface finishes
- Luminaire layout
- Operation of lighting systems
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“

*I obtained both a general and specific grasp of upcoming regulatory requirements and design trends. Highly useful for our anticipated office review discussion.*

*Robert Belcher, Architect/Broome, Oringdolph, O'Toole, Rudolf, Portland, Ore.*

”

“

*I thank you for a very good seminar. It was one of the best I have attended. The slides and examples used... have been excellent. Your overall knowledge of this subject was put across to us in a very successful manner.*

*Raymond M. Knowles, Architect, Vista, Calif.*

”

“

*Subject matter was very timely. Speakers well qualified and communicable. Broad spectrum of problem areas discussed.*

*Noray Sarkisian, Vice President and Chief Electrical Engineer/Cunningham Engineers, Birmingham, Mich.*

”

“

*Good exposure to some of the latest (current) thinking in the energy area.*

*Voy Madeyski, Principal Designer/Perkins & Will, Chicago, Ill.*

”

“

*Very informative and has satisfied expectations. Information should be made available to other design architects.*

*Moises A. Cordovi, Construction Manager/Lester B. Knight & Associates, Chicago, Ill.*

”

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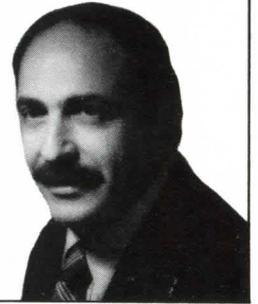
*I felt that the program and the staff selection was excellent. My time was well spent as I took many good ideas back with me.*

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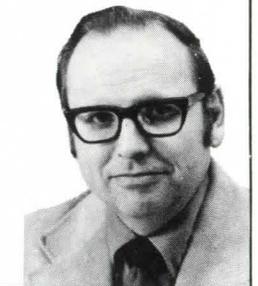
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**Jack Beech, PE**



Jack Beech, PE is vice president and chief mechanical engineer for Joseph R. Loring & Associates, Inc., New York. Mr. Beech's 25 years' experience includes all facets of hvac system design, with a special emphasis in recent years on energy conservation. Among his latest projects are the Citicorp Center in New York and the South Terminal at Logan Airport in Boston. Mr. Beech holds a degree in mechanical engineering from City College of New York, and a Bachelor of Science degree (physics) from Brooklyn College. He is a registered Professional Engineer in New York, Massachusetts and Connecticut.

**John E. Flynn, AIA**



John E. Flynn, AIA is a registered architect and professor of architectural engineering at The Pennsylvania State University, University Park, Pa. His experience includes nine years as resident architect for research and application at the General Electric Laboratories at Nela Park in Cleveland. He has been a visiting lecturer at Yale University and currently lectures at the University of Pennsylvania. Mr. Flynn is the co-author of two books, "Architectural Lighting Graphics" and "Architectural Interior Systems" (Van Nostrand Reinhold, New York). He is a Fellow in the Illuminating Engineering Society, and a member of the U.S. National Committee of the International Commission on Illumination, Paris.

# 3

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- Noise control
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- Building design
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- Construction documents
- Construction management

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\* The key to above-average growth in waste water treatment projects is continuing support from the Federal trust fund established to meet long-term national goals for clean water. The EPA fund (originally \$18 billion, and recently supplemented by another \$24 billion) has reasonably well insulated this construction market from severe cyclical swings while financing its continued growth. Treatment plant construction is expected to jump 46 per cent in 1979. In addition, the "Proposition 13 effect" will not be much of a deterrent to waste water treatment projects at the local level since local dollars have very high leverage when combined with Federal funds. In short, this is a nearly recession-proof market likely to continue for many years.

—1979 Dodge/Sweet's Construction Outlook

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- Audit access to your records
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- Municipal and regional agencies
- Industrial clients
- International clients

**YOU'LL LEARN HOW PROJECTS ARE CARRIED OUT:**

- The role of the engineer
- The role of the architect

**YOU'LL LEARN WHAT THE ENGINEER AS A CLIENT LOOKS FOR IN AN ARCHITECT:**

- How does the architect sell the engineer
- Methods of compensation

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- Services required by public agencies
- Innovative services

**YOU'LL LEARN HOW YOU CAN SELL THIS MARKET:**

- Locating the work
- Direct selling techniques and methods
- Indirect selling

**YOU'LL LEARN THROUGH CASE HISTORIES HOW SUCCESSFUL SALES CAN BE ACHIEVED WITH:**

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- International clients
- Engineers

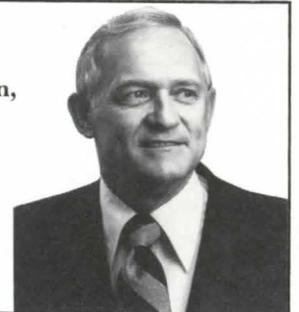
**YOUR INSTRUCTORS ARE DESIGN SERVICES MARKETING EXPERTS**

**David R. Miller,  
F.ASCE**



David R. Miller is senior vice president and manager of corporate development for Daniel, Mann, Johnson, & Mendenhall, architect-engineers, in Los Angeles. With more than 30 years of diversified engineering, business development and management experience, Mr. Miller has 27 years of service with DMJM where he directs all business development (international and domestic) of the firm, with annual sales in excess of \$35 million. A registered engineer in seven states and the District of Columbia, Mr. Miller is a member of numerous professional organizations including the American Society of Civil Engineers, American Academy of Environmental Engineers, and the Academy for the Advancement of Engineering. He is also a member of the Water Pollution Control Federation. Mr. Miller has worked on many key DMJM sanitary and water supply projects, including: Sepulveda water reclamation plant and Terminal Island AWT plant, City of Los Angeles.

**Jack E. Washburn,  
PE**



Jack E. Washburn is director of professional services for Boyle Engineering Corporation, engineers, architects, planners and environmental scientists located in Newport Beach, California. Mr. Washburn recently came to this position from the U.S. Environmental Protection Agency headquarters where he served as Chief of Construction Operations for the waste water treatment construction grant program under PL 92-500. Mr. Washburn is a professional engineer, a member of the American Society of Civil Engineers, and a member of the Civil Works Committee of the American Consulting Engineers Council. He also serves on the Government Affairs Committee of the Water Pollution Control Federation.

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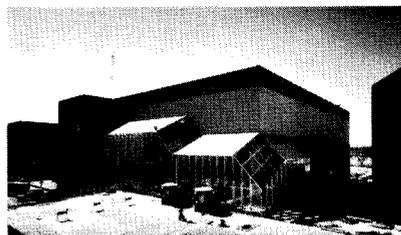
An income tax deduction is allowed for expenses of education (includes registration fees, travel, meals and lodging) undertaken to maintain and improve professional skill. See Treasury Regulation 1.162-5 (Coughlin vs. Commissioner 203 F.2d 307).





The Boettcher Concert Hall, designed by Hardy Holzman Pfeiffer Associates, is the first in the United States in which the audience is seated *around* the orchestra to bring it as close to the performance as possible—the so-called 360-degree surround hall. The client, the Denver Center for the Performing Arts; the former conductor of the Denver Symphony Orchestra Brian Priestman; the acoustician Christopher Jaffe; and the architects were all seeking an intimate and informal concert atmosphere that would provide the best possible vantage points acoustically and visually. The new hall is highly original in concept and has been executed with great style. Each architectural discipline applied to the design of this hall appears to have acted as a catalyst for every one of the others. Acoustical requirements generated an inspired esthetic response. Esthetic demands, in turn, were brilliantly met by the lighting and stage mechanics consultants as well as by the structural engineers. Hardy Holzman Pfeiffer Associates' partner Norman Pfeiffer coordinated all the design and technical disciplines for this extremely complex building. This report includes an interview with Hugh Hardy and articles by Jaffe; lighting and stage consultants Jules Fisher and Paul Marantz; and the structural engineers Charles D. Keyes and William B. O'Neal of KKBNA.

—Mildred F. Schmertz  
Robert E. Fischer



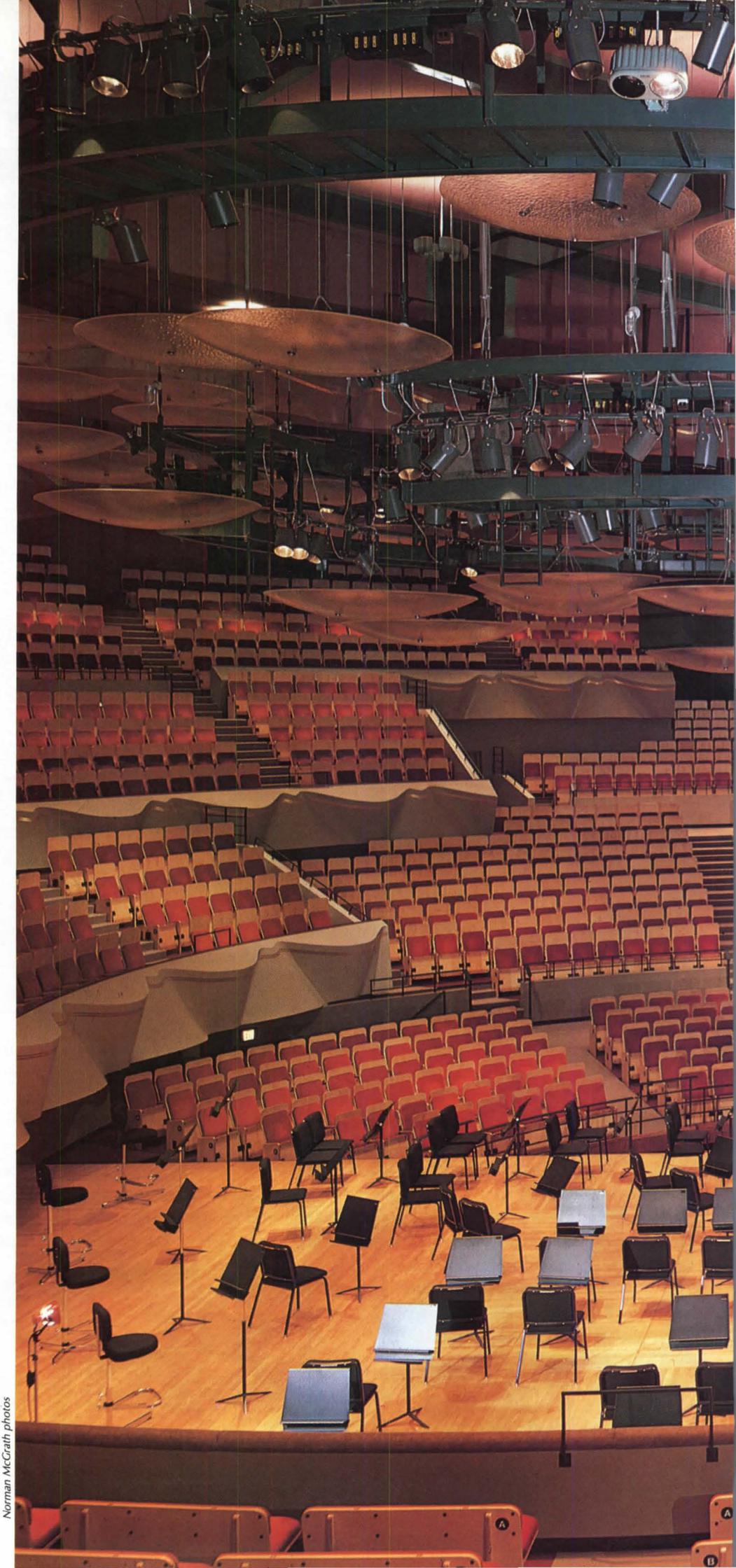
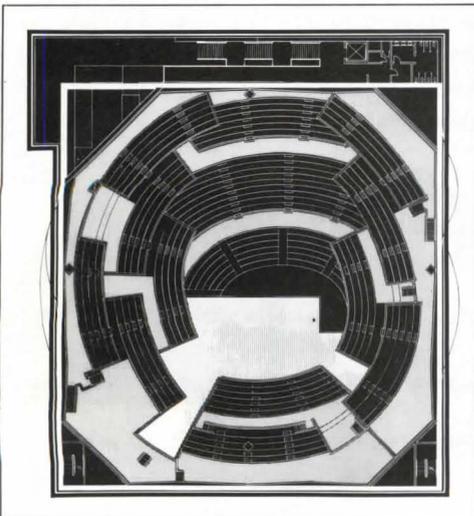
# Denver's Boettcher Concert Hall

The Boettcher Concert Hall, a \$13-million facility, is part of a larger complex—the Denver Center for the Performing Arts—which comprises four square blocks in downtown Denver. It is a 360-degree surround concert hall designed to place the audience as close to the performers as possible. No member of the audience is more than 85 feet from the stage.

"Everything from opera to prize fights is going to happen in Boettcher, but it is primarily a concert hall," said architect Hugh Hardy replying to the question: "Why make it round?" The former conductor of the Denver Symphony Orchestra, Brian Priestman, has for years conducted out-of-doors in the great desert amphitheater outside the city. "The design started with him. He was used to having people everywhere. He wanted his orchestra surrounded. He had created the audience for symphonic music in Denver and they were used to seeing and hearing the orchestra from various rocky perches under the desert sky." Priestman wanted a concert hall that would be informal and democratic, encouraging the audience to bring indoors the playful relaxed spirit which music under the stars creates.

Boettcher Hall was to be as big as all outdoors as well, with seating capacity of 2,750. "We didn't want to make a simple bowl shape of the seating and volume which this hall required," said Hardy. "It is even bigger than the one we did in Minneapolis. Our problem was to make this big room intimate—to bring each member of the audience into the best possible visual and acoustical relationship to the performance. When I go to the theater or to a concert I want to sit in the first row of the mezzanine—those are my favorite seats. So for Boettcher we broke the audience seating into terraced, staggered, shallow segments offering more of those great first row mezzanine seats. Nobody is in the twenty-sixth row looking over all those heads. By breaking up

**Eighty per cent of the audience is within 65 feet of the stage and no member of the audience is more than 85 feet from the stage. The stage itself is 2,400 square feet and can accommodate up to 120 musicians for large symphonic performances.**



Norman McGrath photos

the tiers of seats we created intimacy."

Because the banks of seating at Boettcher are arranged asymmetrically, the radii of each arc of seats have different focal points. Thus all eyes are not focused on a soloist standing at a single point at the center of a bowl. Seen obliquely he doesn't look so forlorn. The traditional hall is symmetrical about an axis which bisects the royal box. It was designed for kings. But an orchestra is not inherently symmetrical. Orchestra musicians are asymmetrically arranged by instrument within a controlled acoustical environment. All halls sound different from different listening points depending upon which instruments are closest, and Boettcher is no exception. Halls look different too from different viewing points, but Boettcher—because it is asymmetrical in both plan and section—changes form in an intricate and engaging way from every vantage point within the hall. The experience of hearing and seeing is thus subtly altered from one terrace of seats to another. Each place in the hall is "some place" to be.

Since the shape of Boettcher was devised in response to the conductor's long experience in an outdoor amphitheater, it could be assumed that the new hall, as a matter of course, would have sound amplification, as outdoor musical centers generally do. Boettcher, however, was to have natural sound, because, according to Hardy, for traditional critics there is no other measure. "Christopher Jaffe would have loved to show what he can do with amplification, but Boettcher would not have received the certification of the East Coast music critics if he had—an imprimatur that Denver knew it could not do without."

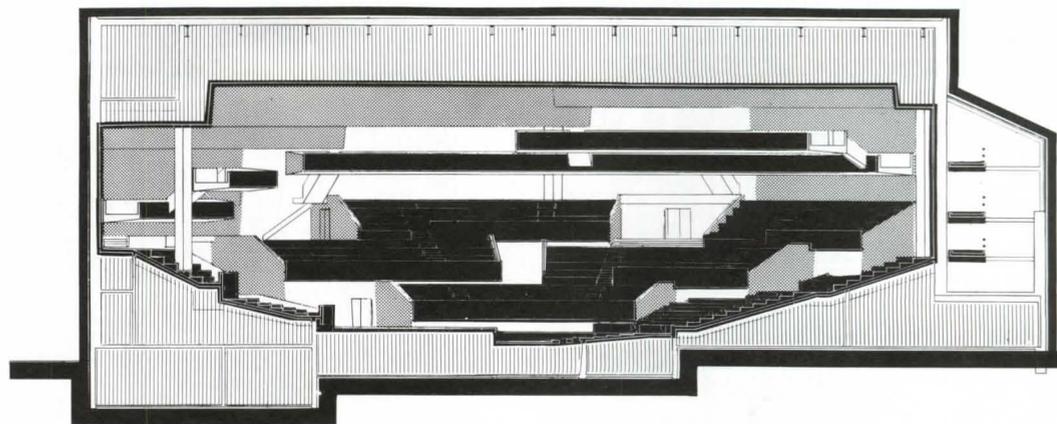
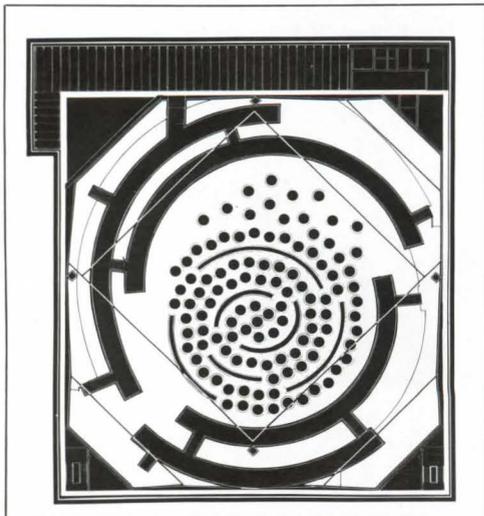
Although Hardy Holzman Pfeiffer and their acoustician had to defer to tradition with regard to natural sound, their client encouraged and accepted most of their unprecedented concepts. "We could not have built a concert hall as advanced as this in New York

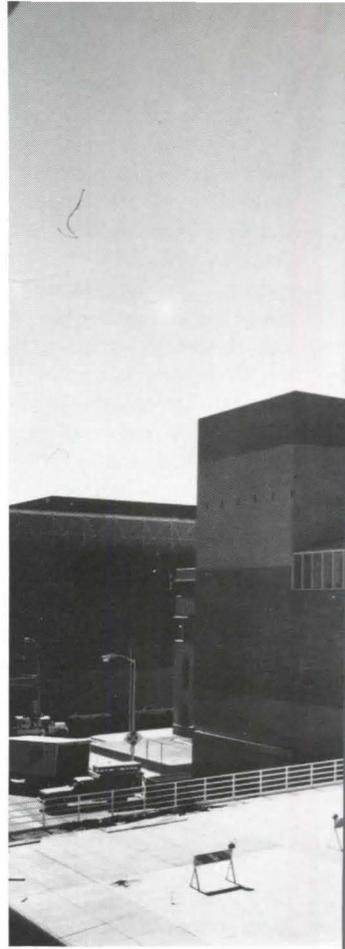


The hall seats over 2,750 in five kinds of seating areas: the dress circles projecting out an either side of the stage; the orchestra seats sloping gently back from the stage; the mezzanine seats which are divided into eight terraces; the parquet section adjoining the stage which can also be used for

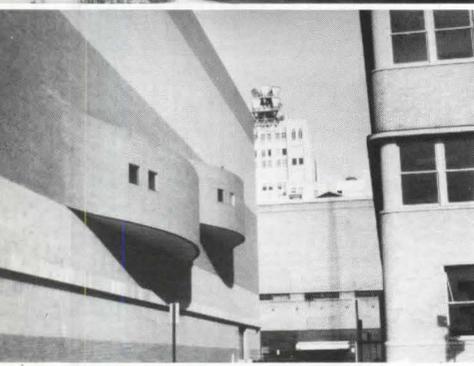
choral presentations; and overhead seating in four semi-circular rings which "float" over the lower seats. The color palette used throughout the hall evokes the thirties, colors in the nearby environment and the paintings of Georgia O'Keefe. The architects thought of the ceiling as "the blanket" with

stripes intersecting at right angles. Visible mechanical and electrical outlets were organized into the blanket design. The acoustical canopy consists of 106 circular acrylic plastic discs. A number of these clouds can be raised or lowered to provide the best possible sound reflection for the type of event on stage.

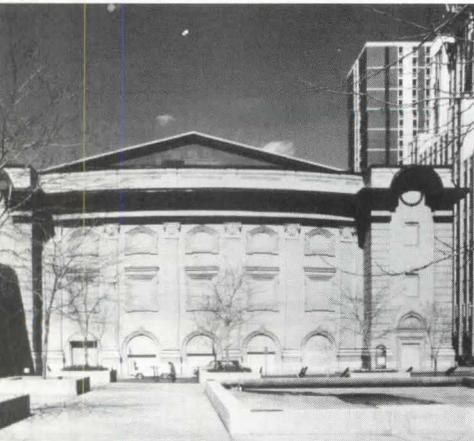




Matthew Farmer



Matthew Farmer



Matthew Farmer





The Boettcher Concert Hall (above) as part of the Denver Center for the Performing Arts, occupies a quadrant of a four-square-block complex in downtown Denver (site plans opposite page, top). The Center will ultimately include seven facilities: Boettcher, a theater complex by Roche, Dinkeloo & Associates now nearing completion, an amphitheater, an auditorium theater and arena, an office building and a now completed parking garage. These facilities are joined together by a cross-shaped, glass-roofed galleria (opposite page, top left) which is an elevated walkway 60 feet wide and 76 feet high. The relationship of the concert hall to its immediate surroundings can be seen in the three small photos on the opposite page. The exterior brick colors of the new building match the tans and browns of the surrounding structures. The undulating walls in the small center photo define two arcs of seats which swell beyond the rectangular building envelope—a clue that the inside of the hall is anything but rectilinear. The lobbies of the concert hall (left) have the look for which Hardy Holzman Pfeiffer Associates are famous. Apart from their color palette, they give no hint of the richness of the room to which they lead, nor to the new style which these remarkable architects have simultaneously invented and mastered.

City," Hardy thinks. Innovation is nourished in the West. This is why good architects like Charles Moore play their verbal games in the East, but build their buildings in the West."

The architects' most startling innovation was their decision to spend most of the budget on the hall itself, keeping the public lobbies and the building shell as simple and inexpensive as possible. "We wanted to make a glorious, memorable room. The idea that it's okay to do this again is an exciting contemporary notion—making such rooms was not important to the Modern Movement. A lot of architects still want to make only *things*—buildings in space—not wonderful, magical rooms."

Many theaters with great interiors are not important on the outside. Hardy cites New York City's legitimate theaters and in particular the New Amsterdam Theater on 42nd Street. "Look at the outside. It is nothing. But the inside is one of the better rooms, and now it is coming up for landmark designation."

The exterior of Boettcher had to be a simple box, not only for economic reasons but because it was designated in the master plan to occupy a rather tight quadrant. "We had to be in a quadrant and we had to provide access from a corner and that was that," said Hardy. So the architects gave everything to the hall itself.

The room is banded by ribbon-like balcony fascias that undulate to serve the acoustic function of increasing the percentage of sound reflective area and to diffuse the sound. But these fascias also help enclose the room visually. They each have a stripe in gold leaf which illuminates the fascia surface by reflecting light from the stage floor, thus enlivening the room when the house lights are down. These fascias are painted in three subtly different values of beige to heighten the degree to which they appear to advance and recede. The ribbon forms, although shaped in response to the science of acoustics, have a remarkable esthetic effect. Undulating ribbons are to be found everywhere in classical ornament, entwining nymphs and cherubs or rippling along for the sake of their own loveliness. By keeping the ribbon motif while dispensing with the rest, the architects quietly remind us of the great concert halls of the past—distinguished company in which this most contemporary of halls belongs.

—Mildred F. Schmertz

BOETTCHER CONCERT HALL, Denver, Colorado. Owner: City and County of Denver. Client: Denver Center for the Performing Arts. Architects: Hardy Holzman Pfeiffer Associates—project manager: Alec W. Gibson; field architect: Jerry McDonnell; geometric coordinator: Kurt Kucsma; construction coordinator: Hilda Lowenberg; project architect: Peter Wilson; construction document manager: Michael B. Gordon; production team: William Jordan and Perry Hall. Consultants: Ketchum Konkel Barrett Nickel Austin (structural); Cosentini Associates (mechanical/electrical); Jules Fisher & Paul Marantz, Inc. (lighting); Jules Fisher Associates (theater); Morrison & Hannah (seating); General Contractor: Turner Construction Company.

**Though Boettcher Hall breaks with tradition in its surround design— which draws audience and performers closer together in a more informal atmosphere—acoustician Christopher Jaffe was able to replicate, and even enhance, traditional sound quality.**

*The following discussion of the acoustics design was prepared by Christopher Jaffe:*

Though the Denver Symphony wanted a new hall flexible enough for both music of today and of years into the future, the idea of music-in-the-round at first struck Boettcher Hall's sponsors as a pretty radical idea. They were reassured, however, by a trip to Europe where they saw three semi-surround halls, including the Concertgebouw in Amsterdam, and the full-surround hall in Berlin.

Nonetheless, the concept of a 360-degree symphonic facility would be greeted with skepticism by the musical communities of many cities. Why spend millions of dollars on a facility whose physical characteristics are so very different from those of the rectangular European concert hall whose acoustic qualities have received such glowing acclaim? Why take the chance?

Those holding this point of view have been misled by two popular acoustic myths. The first is that there is only one traditional European concert-hall environment: a narrow, rectangular box with an average length-to-width ratio (measured from the rear of the stage platform) of at least two to one, a reflective end stage, and narrow side balconies extending to the apron of the platform. Representative halls of this type are Boston Symphony Hall, the Vienna Grosser Musikvereinsaal and the Leipzig Neues Gewandhaus (see drawings labeled "A").

Actually, these "shoebox" halls are representative of only one school of design in Europe. There is another traditional concert-hall form that is square or modified-fan-shaped, having an average length-to-width ratio (measured from the rear of the stage platform) of one-and-one-half to one or less, and with "soft" choral seats mounted on tiered risers behind the orchestra, or, in some instances, with horseshoe balconies similar to those in opera houses. The Amsterdam Concertgebouw and Edinburgh's Usher Hall are typical of this school of concert-hall design (see drawings labeled "B").

The second myth is that concert-going is by nature a very formal and cerebral event; and that, therefore, people must have extensive training in the rituals of the listening experience before they can be expected to appreciate a concert. This point of view is of course open to challenge. Musicologists tell us that early public concerts were informal, wild and woolly affairs with a potpourri program that might include an aria from an opera, a piano concerto, and one or two movements of a symphony.

Recent studies and program evaluations tell us that a large number of contemporary American audiences would prefer to hear music in less formal environments. The results of the National Endowment for the Arts' research project, "Environments and the Concert Experience," the success of the New

York Philharmonic Rug Concerts, and Erik Marden's report for the Ford Foundation on audience attitudes, all support these findings.

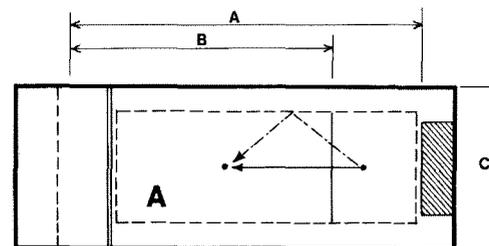
In its simplest sense, a satisfactory musical experience for the audience depends upon it receiving a series of reflected sounds of different frequencies in particular relationships to the initial orchestral sound source. For example, it is very important for listeners to receive early high-frequency reflections within 20 milliseconds of the arrival of the direct orchestral sound for them to experience optimum musical presence and definition. The difference in time between the arrival of the direct sound and the first reflection is called the initial time-delay gap (ITDG). The first reflections from the walls and balcony fronts of a narrow rectangular hall automatically occur within the proper range. For example, the average ITDG of three well-respected rectangular concert halls is 15 milliseconds (see Table I).

In the square or surround hall, on the other hand, the wall surfaces are too far away for listeners to receive these early reflections within the required time period, and special suspended reflecting surfaces must be introduced at proper heights for audiences to experience comparable presence and definition. The average wall reflection ITDG of two renowned traditional square halls is 36 milliseconds (ms), and of two new surround halls is 36.5 ms (see Table I). In the older halls, center-area listening locations suffer from lack of optimum presence and definition. In the new halls, however, this potential deficiency is avoided through the use of overhead reflectors that are sized and shaped to reflect sound from the canopy systems for the new surround halls in Mexico City and Denver is 16.5 ms—only 1.5 ms higher than the average ITDG for "shoebox" designs, and well within the design criterion of 20 ms.

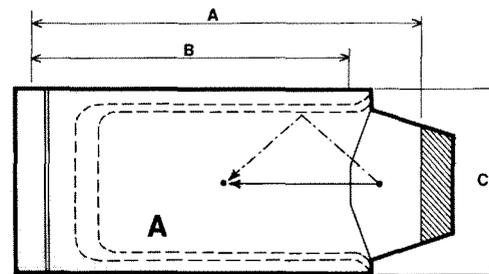
Just as important as presence and definition in a hall are the acoustical qualities of fullness, liveness, and warmth, which result from mid- and low-frequency reflections as sound energy decays in a hall. For a hall to have these qualities, it must have the right reverberation time, which is a measure of these decays. The better halls have reverberation times of between 1.8 and 2.2 seconds at mid-frequencies (i.e., 500-1000 cps) when occupied.

In an end-stage rectangular hall, the sound energy at these frequencies is prevented from being absorbed too rapidly by the hard reflecting surfaces of the orchestra chamber, and the cap of the ceiling and upper walls over the audience (see overleaf). In a rectangular hall built with proper materials, a volume of 300 cu ft per person will provide the desired RT's.

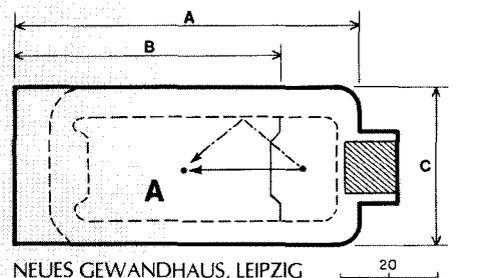
In a surround hall, however, there is no



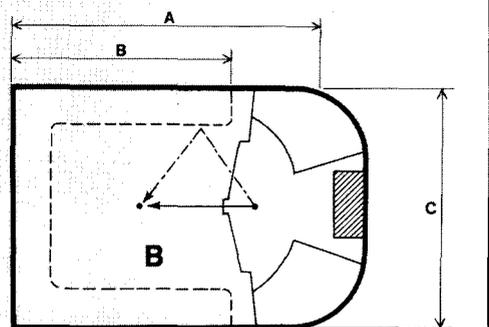
GROSSER MUSIKVEREINSSAAL, VIENNA



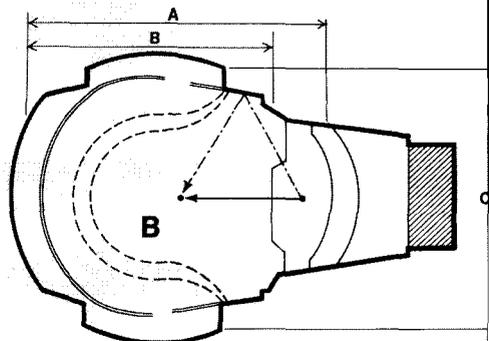
SYMPHONY HALL, BOSTON



NEUES GEWANDHAUS, LEIPZIG



CONCERTGEBOUW, AMSTERDAM



USHER HALL, EDINBURGH

**Table I, Hall Characteristics**

	Length A feet (1)	Length B feet (2)	Width C feet (3)	A/C	B/C	ITDG milli- seconds (4) (5)	ITDG milli- seconds (4) (6)
Vienna	142	105	66	2.2	1.6	15	
Boston	157	128	75	2.1	1.7	18	
Leipzig	138	108	62	2.2	1.7	12	
Average	145	113	67	2.16	1.66	15	
Amsterdam	125	88	94	1.3	.9	27	
Edinburgh	122	100	108	1.1	.9	46*	
Average	123	94	86	1.2	.9	36	
Mexico	155	102	172	0.9	0.6	32	16
Denver	140	90	190	0.7	0.6	41	17
Average	147	96	181	0.8	0.6	36.5	16.5

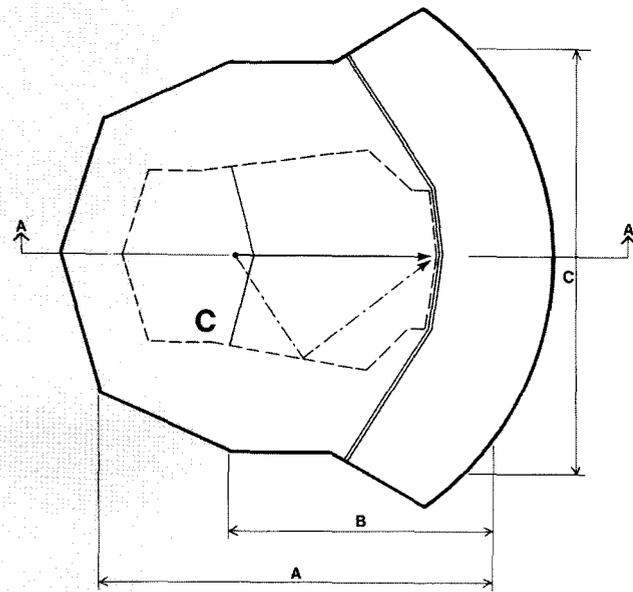
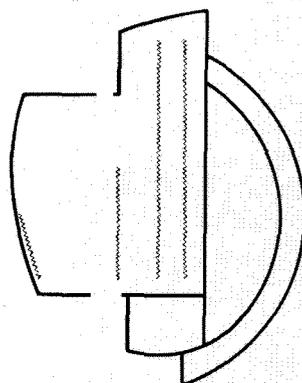
- (1) Average length of hall from rear of orchestral stage platform.
- (2) Average length of hall from front of orchestral stage platform.
- (3) Average width of hall.
- (4) Initial Time Delay Gap. The time is ms between arrival of direct sound from stage platform and first binaural reflection.
- (5) Measured from side balcony front/or wall. \*Measured from wall.
- (6) Measured from canopy.

**Table II, Measured Reverberation Times**

Occupied	Average at		Frequency in cps							
	500-1000 cps	67	125	250	500	1000	2000	4000	6000	8000
Vienna	2.05	2.4	2.4	2.2	2.1	2.0	1.9	1.6	1.3	
Denver	2.0	2.8	2.6	2.4	2.0	2.0	1.9	1.5		.9

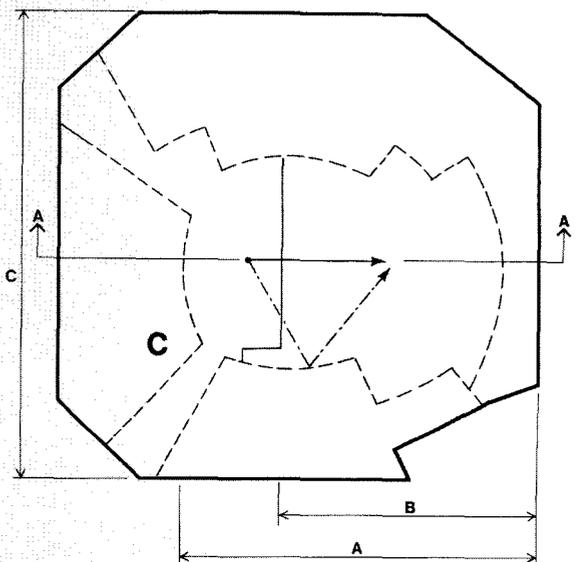
Many symphony-concert fans presume that the best shape for a concert hall is the "shoe-box" version exemplified by the renowned Boston Symphony Hall and some of the great halls of Europe (across page, top). But in form and audience involvement to some extent, the "surround" hall has some precedence in the Concertgebouw of Amsterdam and Usher Hall of Edinburgh (across page). The acoustic-design challenge in the new surround halls, of which Sala Nezahualcoyotl in Mexico City (RECORD, January, 1978) is the first in North America, and Boettcher Hall in Denver is the first in the U.S., to achieve the classic sound in halls of much different physical form. The two acoustical phenomena most critical to good sound for symphony orchestra are: 1)

initial time-delay gap (ITDG) between direct orchestral sound and first reflections, and 2) reverberation time of low- and mid-frequency sound energy. Comparisons of ITDG's for famous concert halls in Europe and the new surround halls are given in Table I. Comparisons of reverberation times for Vienna's Grosser Musikvereinssaal and Denver's Boettcher Hall are given in Table II. More low-frequency sound energy is absorbed by audiences closer to the orchestra in surround halls. To compensate for this, Boettcher Hall has a reverberant chamber under the orchestra platform and the first few rows of the audience, with openings to the hall, which is "tunable" by means of draperies on tracks within the chamber (drawing, right).

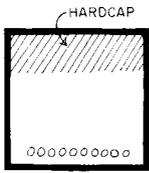
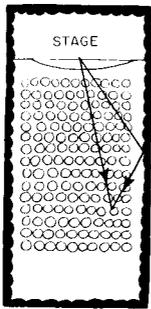


SALA NEZAHUALCOYOTL, MEXICO CITY

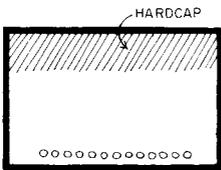
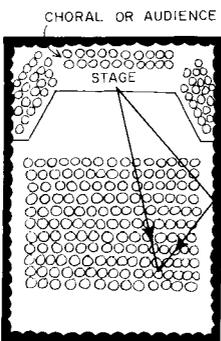
KEY: ————— DIRECT SOUND  
 - - - - - FIRST REFLECTION



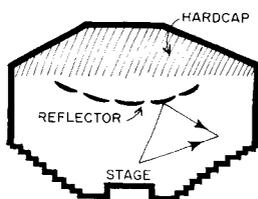
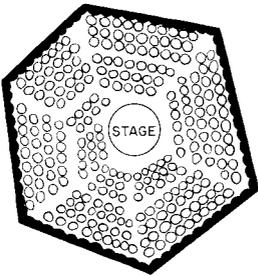
BOETTCHER HALL, DENVER



Grosser Musikvereinssaal, VIENNA



Concertgebouw, AMSTERDAM



Boettcher Hall, DENVER

reflecting orchestra chamber, so more volume must be added to the upper portion of the room to create a "hard cap" that enables the hall to achieve decay times comparable to those of the rectangular hall. For Boettcher Hall we set the criterion for room volume at 450 cu ft per person. Furthermore, because there are more people closer to the orchestra in the surround hall (the "soft" bowl), more of the late-arriving low-frequency energy is absorbed in this region. To compensate for this in Denver, we built a four-second low-frequency reverberation chamber, or moat, under the wooden platform stage and part of the seating area. This chamber is energized by the vibrations of the stage floor, and is tuned with a series of variable drapery panels extended on tracks under the stage. A comparison of the RT's of Boettcher and Vienna's Grosser Musikvereinsaal are given in Table II, showing that both halls have very similar characteristics.

In sum, then, here are the major design techniques used in Denver to provide the familiar symphonic listening experience:

1. Distribution of the audience in terrace blocks rather than in a single circular amphitheater pattern. The terrace blocks increase the percentage of reflective areas in the vicinity of the audience, creating an increased ratio of reflected to direct sound;

2. Raking the terraces at a steep angle in order to reduce the effect of incident audience sound absorption, which also allowed the designers to incorporate high, sound-reflective seat backs;

3. Use of a 360-degree onstage overhead reflector canopy that distributes the harmonic structure of each instrument throughout the hall and improves onstage and cross-stage hearing for the orchestra;

4. Design of a forestage canopy of sufficient radius to enable early reflected energy patterns to reach the audience within 20 ms of the arrival of the direct sound;

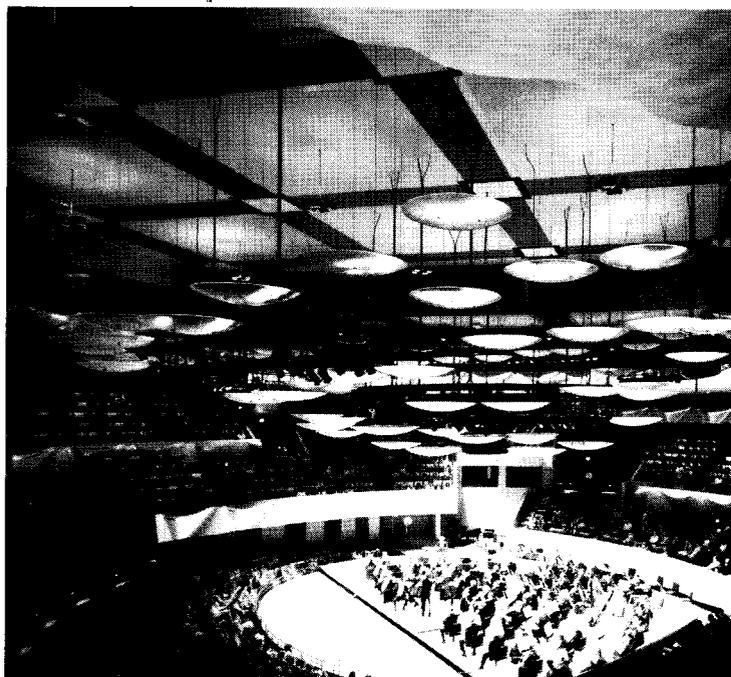
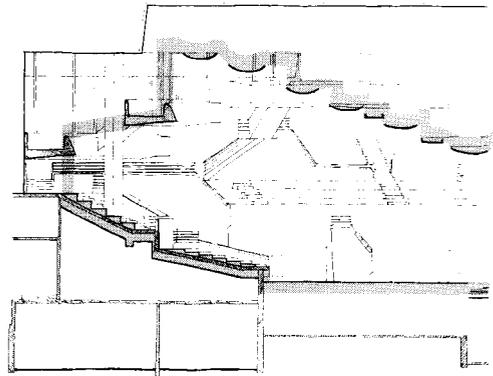
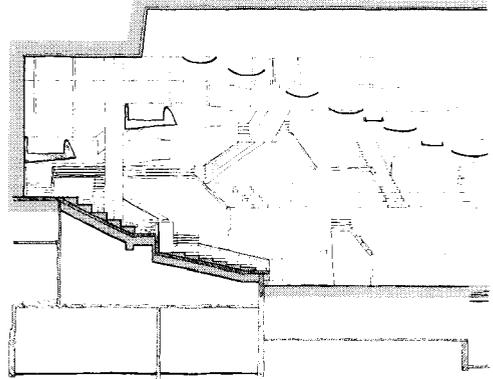
5. Increasing the volume/seating area ratio to 450 cu ft per person so that sufficient reflective surfaces are introduced into the "hard cap" of the ceiling to provide desired reverberation times in the mid- and low frequencies;

6. Design of an acoustic coupling chamber with a reverberation time of four seconds under the stage platform to further enhance late-arriving, lower-frequency energy.

Boettcher Hall was well received not only by the national and local press, but by guest conductors, as well—testimony to the fact that acoustic restrictions endemic to the classic concert hall environment need no longer apply. The symphonic environment can be changed without harming the traditional classic sound. In fact, these new intimate environments have a "traditional" sound of their own, and are not so radical as popularly believed. More importantly, these spaces will provide a stimulant for the creation of new musical compositions, and increase audience involvement in the concert experience. The degree to which these events occur will be the true measure of the success of Boettcher Concert Hall.



Norman McGrath photos



**Lighting and subtle color effects, developed by the architects and lighting/stage consultants Jules Fisher and Paul Marantz, let the audience experience the hall totally or focus their interest on the stage, which can be configured to suit the event.**

*The following discussion was developed by the firms of Jules Fisher & Paul Marantz, Inc., Lighting Consultants, and Jules Fisher Associates, Inc., Theatre Consultants:*

The objectives of the lighting system for the auditorium of Boettcher Hall were twofold: 1) to light the room prior to the performance so that the concertgoer senses the large community of the audience and feels he is in a special place, 2) to compress the room during the performance to bring the concertgoer into direct and intimate contact with the stage. (See sketches and photos, left.)

The lighting design was organized around the concept of scale manipulation, and the key to this is found in the plan itself. The room is a dialogue between an orthogonal envelope and radial contents. With the surfaces of the orthogonal container lighted, the eye is drawn outward and upward toward the boundaries, and the perceived space is large. Before the performance begins, these surfaces are darkened, and the visible boundaries are drawn inward—limited horizontally by the undulating front surfaces of the seating rings, and vertically by the convex acoustical reflectors.

Oftentimes in concert halls, the perimeter of the performing space is defined by lights in the fascias of balconies and terraces. But this was not possible in Boettcher Hall because of the undulating surfaces of the boxes; furthermore, the sleekness of the boxes made such lights undesirable. Instead, an eye-stopping sparkle was provided on the ring fronts by means of a double stripe of gold leaf. The acrylic acoustical reflectors also provide a visual boundary since they bounce diffused light images from the stage to the viewer along the same paths as the sound waves. In this way the working surfaces are given additional life, while physical light sources are suppressed. The lighting fixtures for the auditorium were specially developed for the building, providing indirect illumination, and satisfying acoustical requirements. The basic element is a molded-fiberglass housing that is used both singly and in clusters as the visible lighting element.

A similar need to alter scale was a primary design problem for the theater consultant. While principally a concert hall, Boettcher will also be used for such events as modern dance, semi-staged and concert opera, and other non-traditional uses. In an arena or "in-the-round" theater, the size and form of the stage floor has a critical effect on the theater's success. To provide the requisite flexibility in Boettcher Hall, the stage comprises a series of hydraulic-lift platforms and a series of traps, as illustrated in the drawings.

The reduction in size and shaping of the stage was approached in three ways. First, large areas at the front and stage-right sides are hydraulic lifts, controlled individually or linked together. These lifts can be lowered to pit level to accommodate an orchestra, or lowered to the basement. Secondly, removable traps were located along the perimeter of the stage to isolate the stage platform visually from the fixed seating so as to provide some "esthetic distance" for dramatic performance modes. Thirdly, a central trapped section was provided in the center stage area to permit manipulation of the stage plan and to provide additional entrances from within.

Boettcher Hall is not lavishly equipped as a theater. Rather, a great effort was made to create a facility that would not inhibit theatrical functioning (with the clear understanding that flown scenery was impossible because of the acoustical canopy). Ample electric power and a flexible-circuit distribution system allow the use of sophisticated portable dimming equipment as needed. Provisions for mounting stage lighting are included, and the lights are brought in as required. Doors and loading dock were carefully sized to permit the free movement of materials.

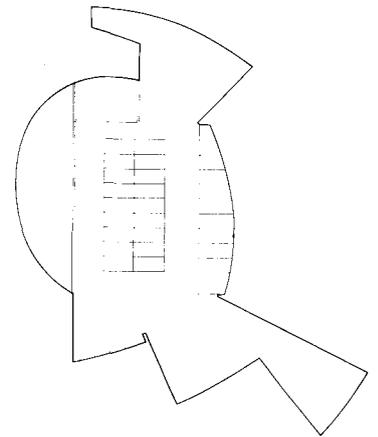
Thus, Boettcher Hall was designed to satisfy its concert-hall program fully, but also to permit alternate uses with some ease.

**For both acoustical and design reasons, the tiers of seats are asymmetrical. With eight centers for seating arcs, engineers KKBNA had an interesting exercise in geometry.**

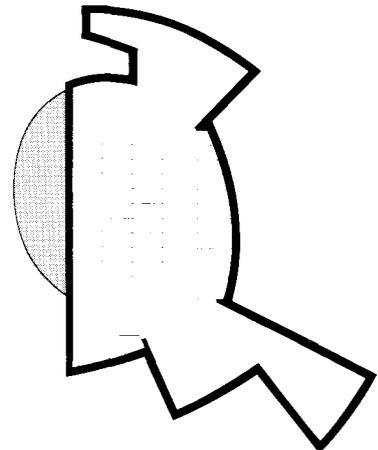
*The following discussion is by Charles D. Keyes and William B. O'Neal of KKBNA, the consulting structural engineers:*

Functional requirements of the "surround" hall dictated radial geometry within the hall for the structural framing, while the shape of the building envelope itself suggested orthogonal geometry on a grid parallel to the exterior walls. The radial geometry was further complicated by the acoustical requirements of breaking the radial geometry so that the semi-circular seating segments would be offset asymmetrically from one another. This meant that eight radius points had to be used to define the hall geometry from which the column locations could be laid out (see top drawing). In addition, the levels of seating are offset asymmetrically by use of steps and overhanging cantilevers.

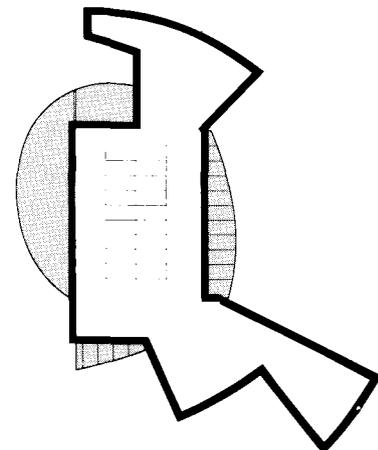
To bring order to the confusing geometry of the hall, the architects elected to express a change in structural systems between the hall and the lobby and ancillary areas surrounding it. Within the hall, the framing comprises beams and pipe columns, finished round, on radial lines. Four-inch cellular metal deck with an exposed flat soffit spans between the radial beams and is topped with 4½ in. of normal-weight concrete (for acoustical purposes). In the areas surrounding the hall, the framing



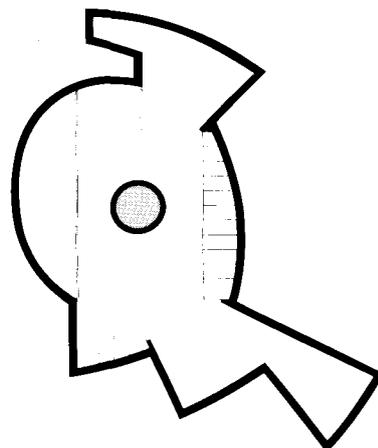
1. Basic stage configuration with elevators up and traps closed.



2. Stage configuration with front elevator down.



3. Stage configuration with elevators down and perimeter traps open.



4. Stage configuration with center traps open.

changes to an orthogonal-grid system with girders, beams and wide-flange columns finished square. The result of this expressed system change is definition of space and purpose: standing in the lobby and looking up or down through one of the several floor openings provided in the interface area, one is able to perceive both the location and extent of the hall space.

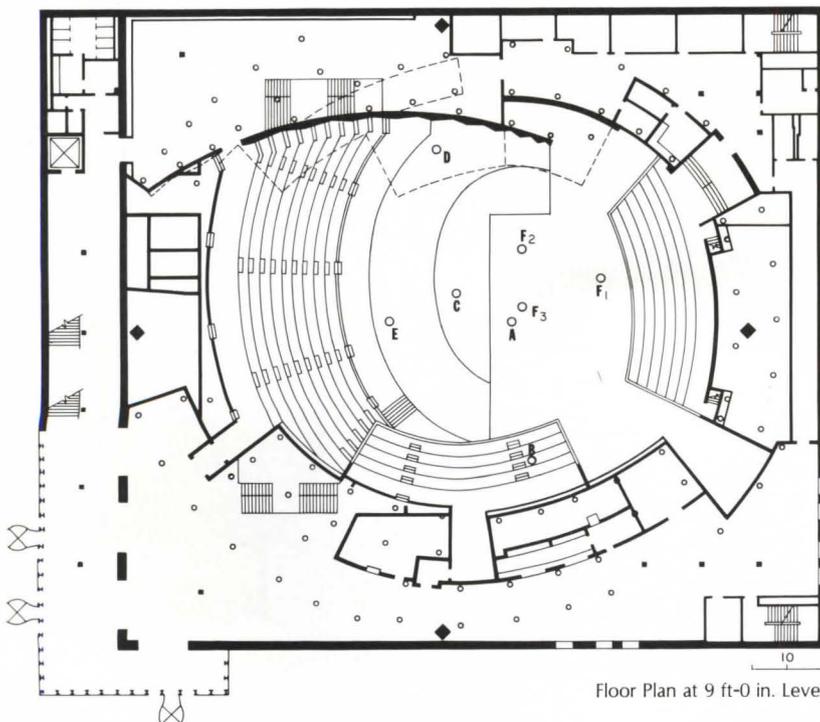
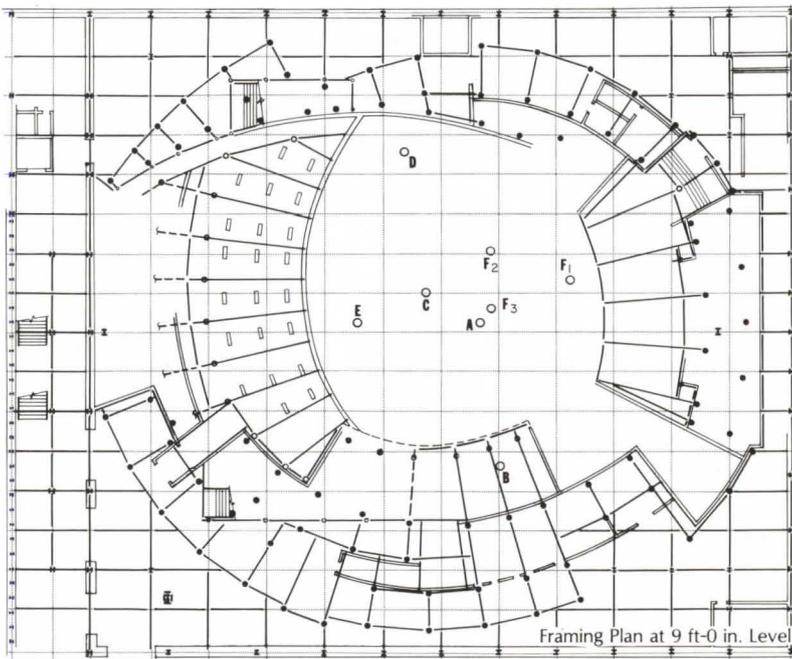
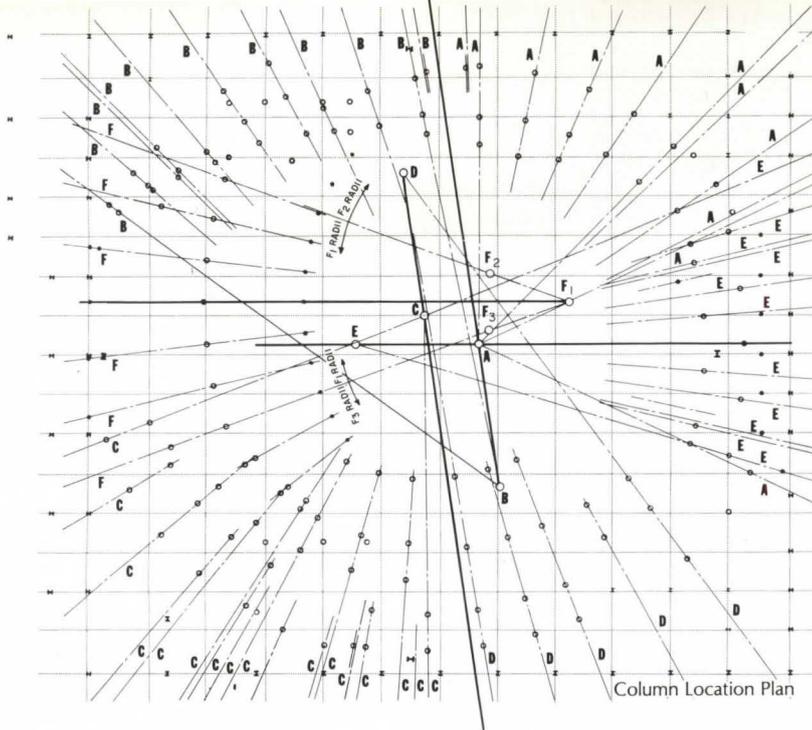
The two framing geometries, the multiple level changes, and cantilevers and sight-line requirements have resulted in unusually complicated framing (see center drawing). There are approximately 200 column and support locations in the building. In contrast, with more conventional framing, say with 30-by 30-ft bay sizes, there might be only 60 column and support points.

All floors are exceptionally heavy and stiff to minimize vibration and sound transmission, and to control deflection. Deflection in the floor system, which supports many heavy, non-structural acoustical masonry walls, was limited to prevent cracking and consequent sound leakage.

Sound isolation from outdoor noise was provided by a single cavity wall at the exterior comprising a 4-in. brick wythe, 13-in. cavity (to allow for steel framing), and 8-in. concrete-block wythe. This is in contrast to a common acoustical design of exterior wall, public corridor and interior solid wall, referred to as "box within a box." The design chosen offered both more design flexibility and lower cost. The 72-ft-high brick wall is tied to the floor beams (9 ft on center) for lateral support, but for acoustical reasons there are no ties to the interior block or steel framing within the cavity. The solid-brick wall is reinforced both horizontally and vertically, and special caulking was used to maintain the acoustical integrity of the wall. The 8-in. concrete block is grouted solid and has bond beams at 4 ft on center. Vertical joints are provided in the brick at approximately 60 ft on center to satisfy the acoustical requirements. Control joints in the concrete block are 30 ft on center, and also received high-density caulking.

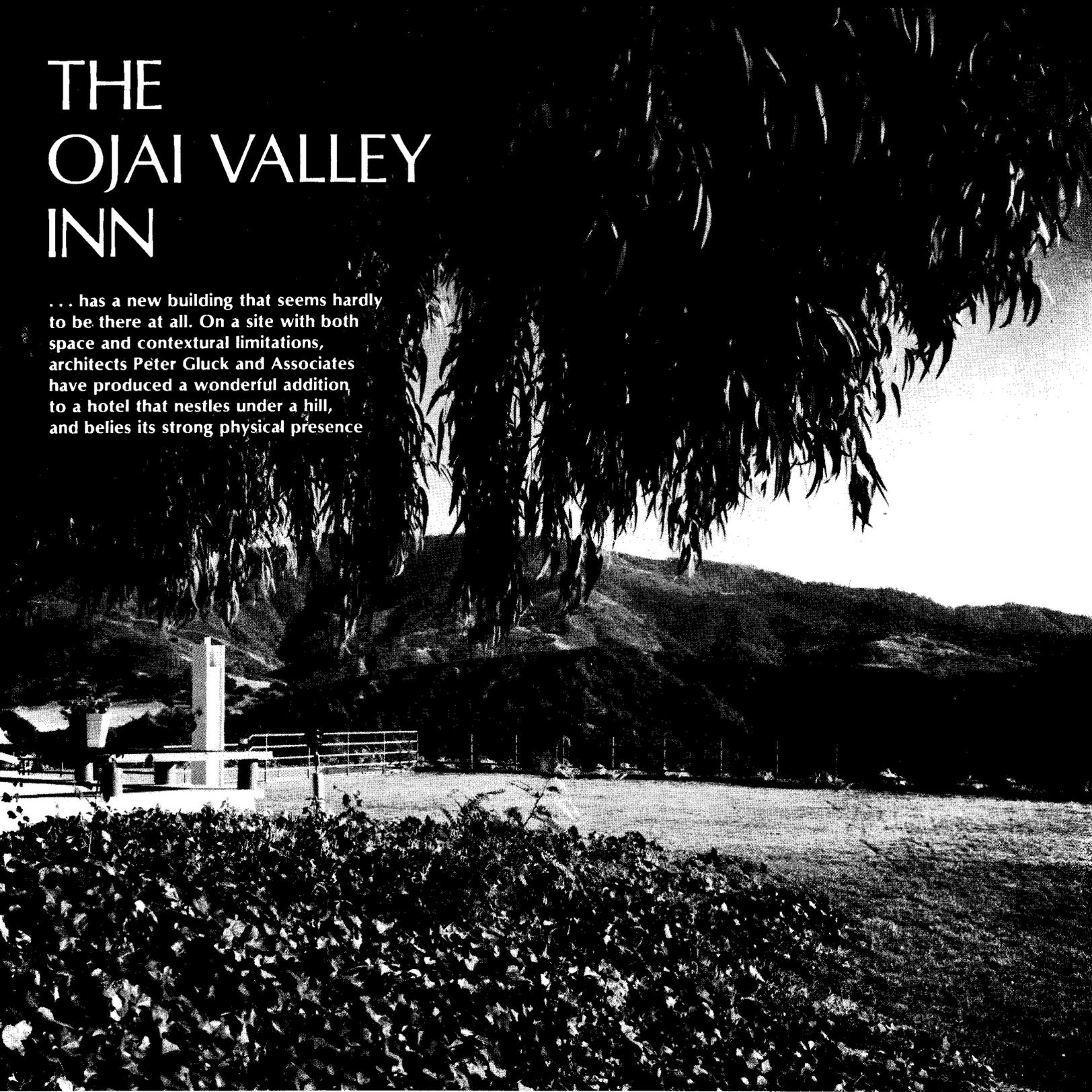
The exterior wall is complicated by projections required for passageways around the circular seating (see small photo on page 104). These passageways, occurring at two seating levels, begin tangent to the exterior wall, curve out a distance of approximately 14 ft beyond the main wall, and then return to intersect the main wall again.

The roof system has 120-ft-long trusses with steel beams between to support metal deck and concrete topping. From the roof structure a number of building elements are suspended: 1) the hall ceiling, 2) the acoustical reflectors and the light bridge and catwalk, 3) four mechanical rooms, one in each corner of the building, 4) the uppermost tier of seats. These rings of seats are supported by pipe hangers without X-bracing. As was the case for the floor design, these rings were designed based on a stiffness that would satisfy both vertical and horizontal vibration criteria and deflection requirements.



# THE OJAI VALLEY INN

... has a new building that seems hardly to be there at all. On a site with both space and contextual limitations, architects Peter Gluck and Associates have produced a wonderful addition to a hotel that nestles under a hill, and belies its strong physical presence



Julius Shulman photos

The photo above is of the lawn outside the original building of the Ojai Valley Inn, a romantic sort-of-Spanish-colonial building, located out of view to the right, and seen in the section, overleaf. That lawn, open to its splendid southern California views, is also the roof of the first phase of a 175-room addition to the Inn, let into the hillside below. And by its location, the new building preserves the view, and exists where no new construction had been thought desirable—or even possible on its specific site. The partially-hidden location also accomplishes something else: a building that can be both a straightforward modern statement and considerate of its romantic surroundings—including the adjacent town of Ojai. (As seen in the photo at left, the town was carefully nurtured to its current well-protected and picturesque guise by developer Edward Liddy back in the 1920s.) But the new addition is not just interesting for its consideration. It also has an interesting structure that is—thanks to engineers Spiegel & Zamecnik—both innovative and economical enough to make the project possible in the first place. —C.K.H.



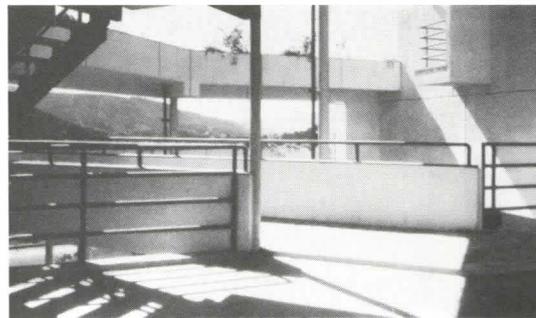
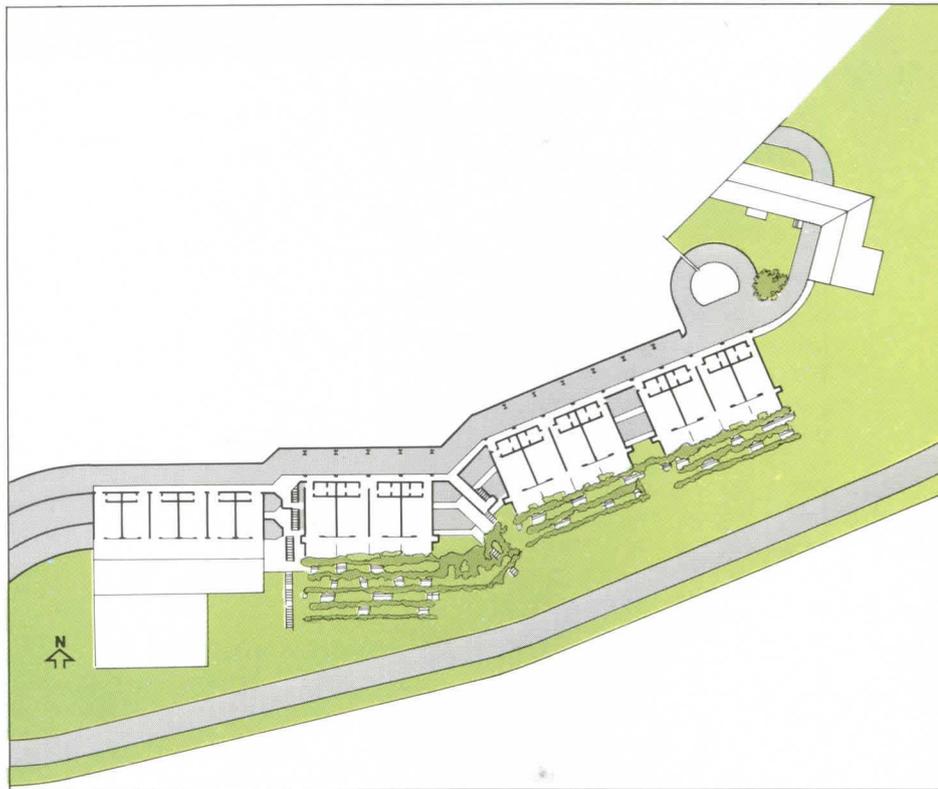


**The planning allows the new construction to have both its own forceful character and an admirable lack of assertion**

The complete addition of 175 rooms is to be built in two stages, and the current construction is shown in the left half of the plan. The rooms are stepped down the side of the hill so that each room has spectacular views and a terrace partially sheltered by wood trellises. Access to the new rooms is from "corridors" against the retaining walls at each level (to the right in the section). These passages are designed for transportation directly to the doors of rooms by golf carts, and this mode of access overcomes any walking-distance problems that might arise from the plan's extreme linearity. Frequent light wells avoid any sense of being in a tunnel.

Gluck's successful intentions have produced a building that is both a straightforward contemporary design (or—as the architect states—"hard edge") and considerate of its romantic environment. And the result is to be softened even more than by its discreet placement. The stuccoed plywood walls are topped by a series of planters at each floor level. And in time, these are to produce a camouflage of vegetation that will spread over wire nets and the wood trellises above the decks outside of each room (see rendering below and bottom photo overleaf). Eventually, the new construction will be perceived not as a new building, but as a series of new spaces, such as the outdoor stair "hall" in the photograph on the opposite page. (The containment of this space will be completed by the second phase of construction.)

The versatility of the architects' efforts to respect context is displayed by an entirely separate structure, a new gatehouse at the hotel entrance. This takes the form of a pierced wall with a cornice, and this wall conceals a functional gatehouse, which stands free behind it. Accompanied by an industrial-type lighting fixture on a stand, this composition is an exercise in historical recall, and forms an interesting contrast to the straightforward hotel addition.



*Planter boxes extend across the length of each floor, and also beyond the building in a series of bridges built with plywood box beams (photo opposite). As visualized by the architects in the rendering below, growth from the planters is intended to form an eventual camouflage over the entire building, and to contain the outdoor spaces.*



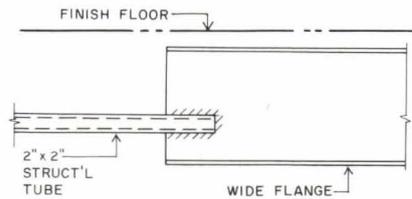
**The innovative and economical structure is primarily of interest because it permits a complex building profile designed to withstand heavy seismic loads**

Because the building is set into a hillside in a series of stepped floors, and because the area is particularly subject to earthquakes, the feasibility of the project might have been in severe question if standard (and more expensive) structural techniques were used. The problem was accentuated by the single-loaded corridors and by the weight of 18 inches of earth on the uppermost roof.

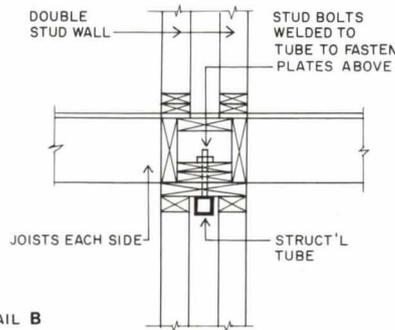
Working with engineers Spiegel & Zamecnik, Gluck developed a composite system of plywood, steel and concrete—all of which work together to obtain the required rigidity at considerable cost savings over more normal construction. As explained in the diagram overleaf, both the horizontal forces of wind and possible earthquake are resisted in the direction perpendicular to the hill by plywood and wood-stud shear walls between each room. These walls are given rigidity by careful attention to nailed connections between the wood members and by two-inch-square steel tubes which connect the walls where they overlap (see section opposite and bottom detail at right) to the steel and concrete structure of the golf-cart passages nearest the hill.

Horizontal forces parallel with the hill are primarily resisted by the reinforced-masonry walls against the hill, to which the forces are transmitted by plywood and wood joist floor diaphragms. Rotation is resisted by the shear walls. Buttresses (as shown in the section) provide stability for the retaining walls against earth forces above and below.

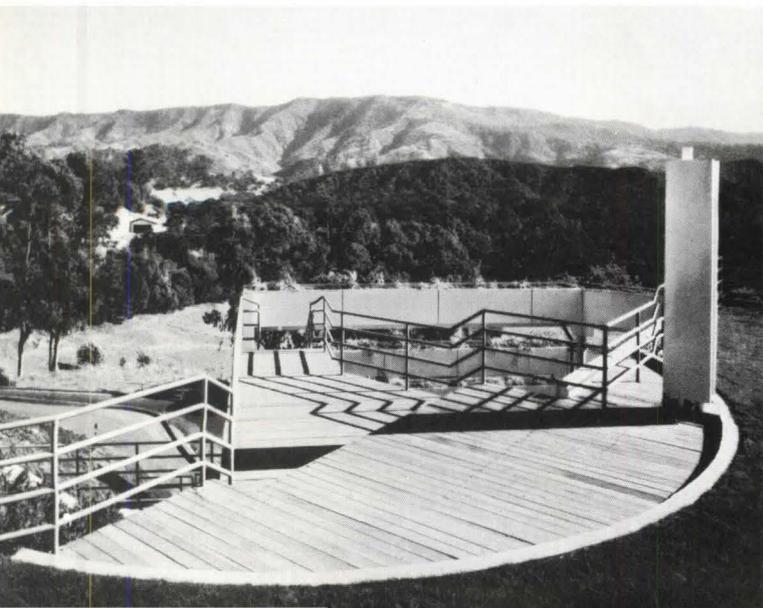
OJAI VALLEY INN, Ojai, California. Owner: *Ojai Hotel Company*. Architects: *Peter L. Gluck and Associates—project team: Timothy Wood and Geoffrey Koper (job captain)*. Structural engineers: *Spiegel & Zamecnik Consulting Engineers*. Lighting consultant: *Sylvan R. Shemitz & Associates*. General contractor: *Macleod Construction Company*.



DETAIL A

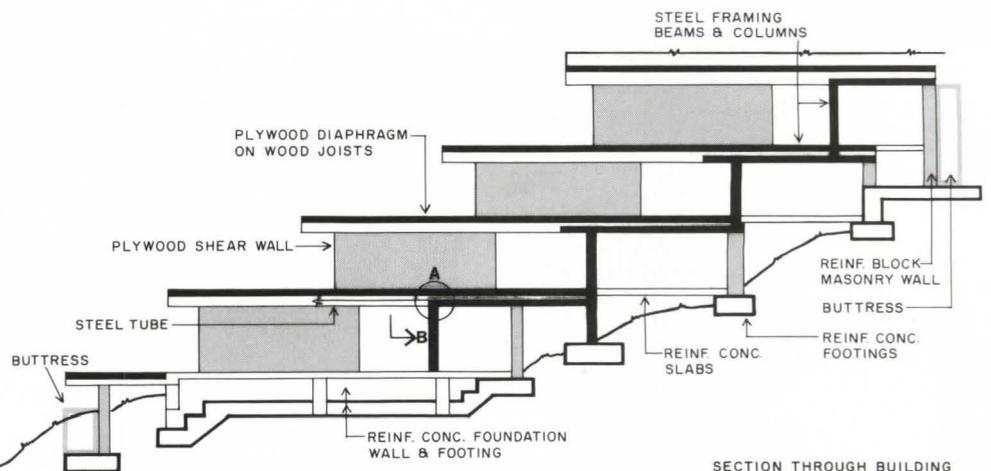


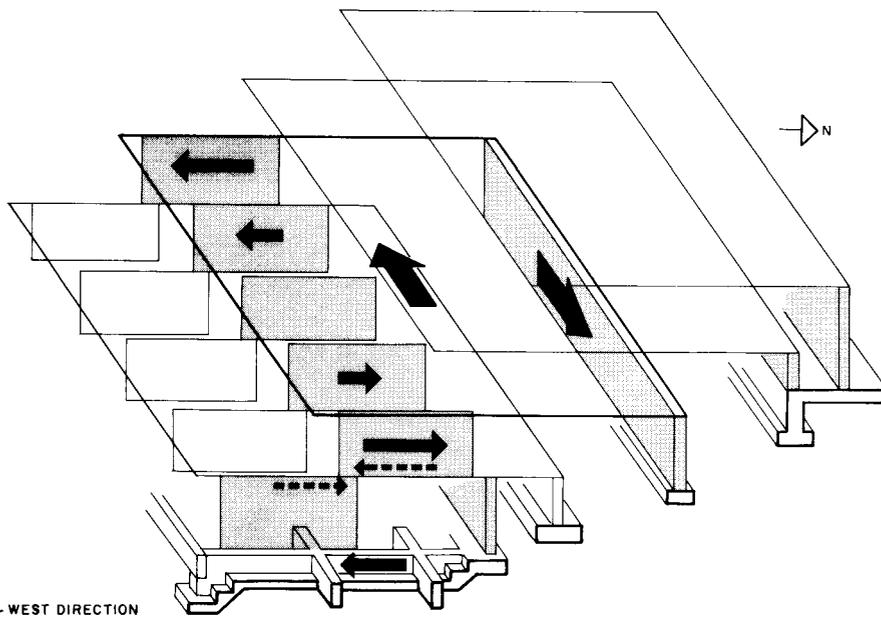
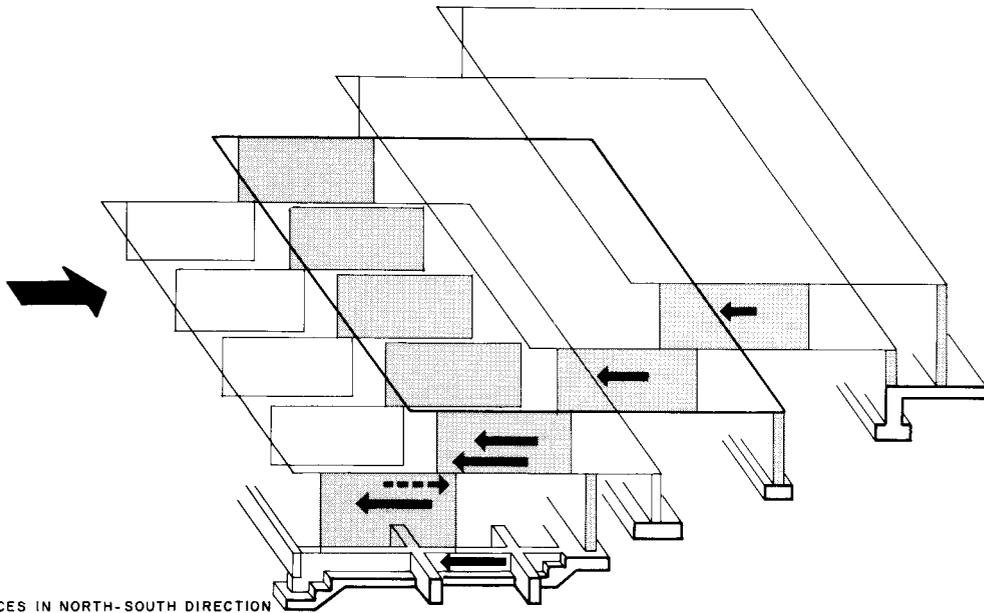
DETAIL B



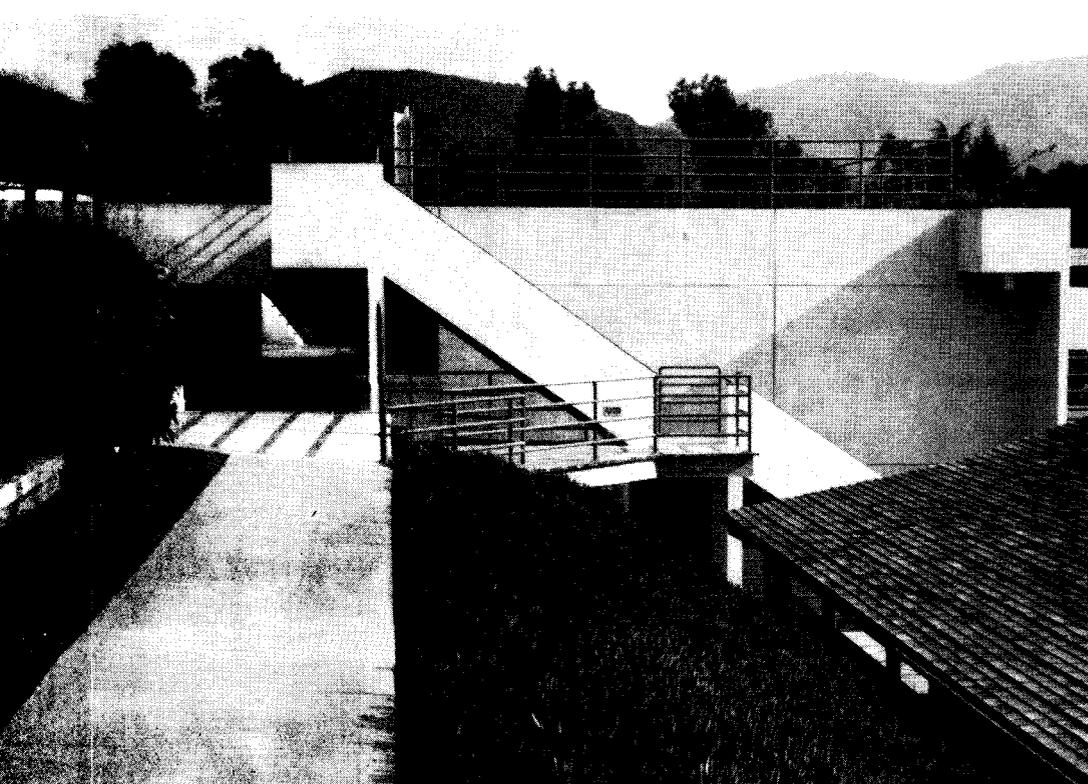


The walls on the exposed part of the building are plywood diaphragms sheathed in stucco. The architects cite, as part of the substantial savings, the surprisingly light weight of timber and plywood that would—with proper care with connections—support required resistances to strong seismic forces. Structural details of the composite system are shown opposite and explain various parts of the section on this page and the diagrams overleaf. Twenty-inch-deep timber trusses supported by the stud walls carry the weight of the soil required for the lawn on the roof.





Guests riding golf carts enter the new building from the older parts of the hotel through passages like that shown in the photo below. Resistance to horizontal forces is demonstrated in the diagrams and explained in the text on the previous pages. In the top diagram, the main external force is indicated by the large arrow, and resisting forces—as they are transmitted to the foundations—are indicated by the smaller arrows. The broken arrows indicate the shear forces at each level, which are transmitted by plywood floor diaphragms. In the lower diagram, the main external force is indicated by the large arrow on the floor, and the main resistance is shown by the arrow on the masonry shear wall. Smaller arrows indicate the resistance to torsion, and dotted arrows indicate shear. Projecting sections or "lugs" on the foundations are designed to keep the building from sliding in the event of an earthquake.



# DESIGN IN THE SPIRIT OF ISLAM:

Dr. Engin Yenil photos



*Ishak Pasha Serai, an Ottoman palace at Dogu Beyazit in Eastern Anatolia built in 1784*

## The Aga Khan Award for Architecture

The Muslim countries stretch east to west from Indonesia to Morocco and north to south from Turkey to Sudan. Although no longer contiguous, they share a common culture based upon the religion of Islam. In Alexander Solzhenitsyn's famous Harvard commencement address, he said: "Every ancient and deeply rooted self-contained culture, especially if it is spread over a wide part of the earth's surface, constitutes a self-contained world, full of riddles and surprises to Western thinking." One of the more interesting recent surprises to Western architects among the world's thinkers is the discovery that some Muslim leaders, most notably the Aga Khan, believe that the uncritical acceptance by Islamic countries of Western architectural styles, planning ideas and building technologies is destroying their physical and cultural environment. In March 1978, the Aga Khan established an award program designed to encourage Muslim leaders and their architects and planners to begin to pay attention to Muslim beliefs and traditions as they devise the new environments in which an ancient way of life will persist. The Aga Khan Award for Architecture recently sponsored a seminar held in Istanbul on conservation and adaptive re-use. Another, on housing will take place in Jakarta this month. A description of the structure and goals of the award and a report on the Istanbul seminar follows.

—Mildred F. Schmertz

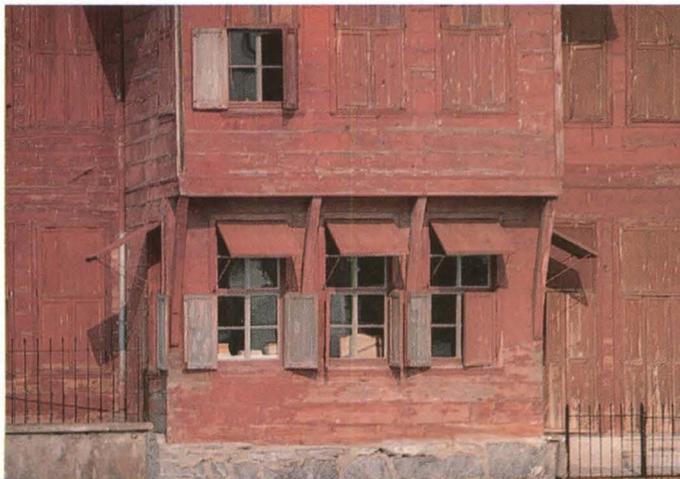
The seminar on conservation was held in Turkey because by comparison to



the rest of Islam, she cherishes her architectural heritage.



Mardin (left) a hilltown in southeast Turkey near Syria and Iraq has the tightly woven pattern of streets, squares and houses of the traditional Islamic city. A once-elegant early twentieth-century wooden mansion on the Bosphorus near Istanbul (above) —a Turkish version of Art Nouveau— and another Bosphorus house (below) built in the second half of the eighteenth-century are among dozens of fine but deteriorating buildings in once proud neighborhoods. Safranbolu (bottom) is one of the best preserved towns in Turkey, its vernacular architecture almost intact.



### Architecture and the Aga Khan

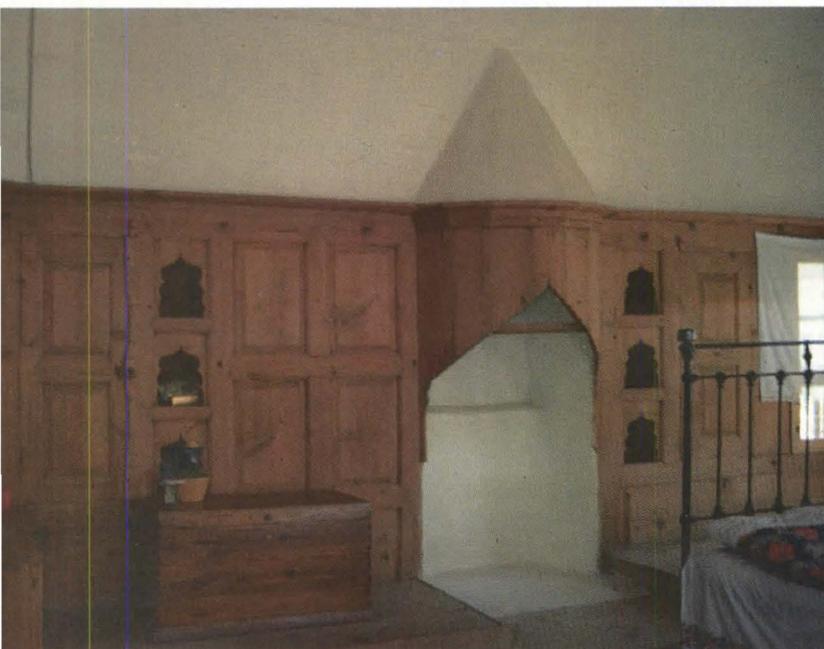
In a speech to the National Council of Culture and Arts given in Pakistan three years ago, the Aga Khan asked the question which he hopes the award program will help answer: "No art form in the Muslim world has suffered from the insidious influence of alien cultures as much as architecture. Yet it was only a few hundred years ago—a fragment of time in the great span of human history—that architecture became the greatest of Islamic cultural art forms.

"I fear the day when Islam will be our faith yet its outward manifestation in the buildings we work and live in, the works of art we behold and the music we listen to will be dominated by foreign cultures which have their roots neither in our spiritual beliefs nor in our great artistic heritage. In saying this, I am not advocating a narrow or chauvinistic approach to a nation's artistic development, nor is this a question of simply copying the forms of the past. Islamic art has always thrived on a liberal adaptation of contemporary influences and, at its greatest, was neither restrictive nor insular.

"How then are we to answer the future generations who will grow up in this great Muslim country asking themselves why it is that the genius of Islamic architecture has left behind only time-worn historical monuments, monuments to a past that is gone forever and without relation to the living present?"

His Highness the Aga Khan is the head of the Ismaili Community, a small Muslim sect with followers in a large number of countries in both the East and West. The Ismailis are active builders in the countries in which they live—constructing schools, medical complexes, and housing. The Aga Khan, therefore, has been directly concerned with the process of building at a scale which has ranged from a nursery school for a small town in northern Tanzania to a 680-bed hospital now under construction in Karachi. "Every time we have had to conceive of a new building, small or large, social or commercial in purpose, the same question recurs to us," said the Aga Khan in his opening speech to the Istanbul seminar. "What is the impact that the building should have on the eyes, minds and thoughts of those who will see and use it? . . . I remain unclear as to the means by which a modern building constructed by Muslims primarily for the use of Muslims should incorporate design disciplines and esthetic considerations which are specifically Islamic. . . . We are not looking for a facade of Islamic architecture, hiding the new behind a shallow imitation of the old. Nor are we looking for an Islamic city which conforms to an outdated and unrealistic

**“We are not looking for a facade of Islamic architecture, hiding the new be**



*A traditional Turkish early nineteenth-century wooden house in Tire, near Izmir has an inward-oriented upper-floor loggia (above) as does a house in Kula (below right). The interior*

*of a house in Safranbolu (left) is modestly scaled for domestic comfort. The fireplace and its niches are Muslim in design. Similarly shaped arrangements are also to be found in palaces.*



system of organization and human relations. We must acknowledge that the world is changing around us, but in doing so we must realize that there are still many lessons to be drawn from the past and whatever solutions we choose should, I believe, be conceived in such a manner as to allow time, evolution and progress to orient us toward the future. . . In establishing the Aga Khan Award for Architecture I am not attempting simply to bring about the survival of the Islamic heritage in building forms. I am hoping to stimulate in the architectural profession and among its teachers, a new thought process which will develop a momentum of its own and become an almost instinctive manner of expression for any architect designing anywhere in the Islamic world."

In March 1978, the Aga Khan established the Aga Khan Award Foundation. The aim of the Foundation is to promote, encourage and recognize work and projects of exceptional quality and interest on an international scale. The prizes are for works in the spirit of Islam in the fields of architecture, literature, arts, medicine, education, science and technology. The Aga Khan Award in Architecture is the first award to be organized.

The Aga Khan's advisors are a distinguished group of scholars in Islamic art and architecture joining architects and planners in the process of developing the policies and programs of the Award for Architecture. The executive arm of this steering committee is the Office of the Convener headed by Professor Renata Holod, of the History of Art Department at the University of Pennsylvania, a specialist on Islamic art and architecture. The Assistant Convener is Hasan-Uddin Khan, an architect and planner from Pakistan. The steering committee is chaired by the Aga Khan and currently includes seven other members: Nader Ardalan, an architect practicing in Teheran and Boston and teaching at Harvard University; Mr. Garr Campbell, a landscape architect and planning consultant to the Aga Khan Foundation, who is in charge of Foundation projects in several Muslim countries; Sir Hugh Casson, an architect and President of the Royal Academy of Arts in Great Britain; Charles Correa, who practices in Bombay and is one of the leading architects in India; Hassan Fathy, the world-renowned Egyptian architect, author of "Housing for the Poor" and champion of indigenous and Islamic architecture; Professor Oleg Grabar, chairman of the Department of Fine Arts at Harvard University and a specialist in Islamic art and architecture; and Professor William Porter, architect, planner and Dean of the School of Architecture and Planning at the Massachusetts Institute of Technology.

### **The awards for architecture may total a half million dollars distributed every three years**

The Foundation may award as many as five prizes of one hundred thousand dollars (US \$100,000) each, every three years beginning in 1980. Since the Foundation seeks to honor those projects which use local initiatives and resources creatively, and which meet both the functional and cultural needs of their users, the performance of such projects over a span of time must be assessed. Completed projects to be eligible must have been finished for at least three years.

The master jury (not yet selected by the steering committee) will apportion prizes among those contributors—architects, other design and building professionals, craftsmen, clients and patrons—whom it deems most responsible for each project's particular success. The jury may divide each of the prizes among two or more projects and participants.

Housing, public buildings and spaces, community planning and restoration and reuse are the principal areas in which awards will be given. In focusing on completed projects which meet their criteria, the jury will also consider the processes of design, research and evaluation responsible for the excellence of the result. Because the quality of research is fundamental to the success of any architectural project, the jury will also consider research projects which look for answers to the problems posed within these areas of special interest.

The procedure for nominating works for the Award is still being refined. It has been conceived by the steering committee as a region-by-region research project conducted by the Office of the Convener and aided by appointed nominators from each Muslim country. It is hoped that no good project will be overlooked and to this end, the steering committee will assemble initially, a large number of projects. Careful screening of the nominated projects combined with site visits and interviews will narrow the choices presented to the master jury.

In addition to developing the criteria for the Awards program, the steering committee concerns itself with the scholarly activities and publications related to the Award. Among the planned activities are a series of seminars now being held in different cities in the Muslim world. There will have been six before the first award announcements in 1980. The purpose of these meetings is to help clarify objectives and explore issues as part of the continuing process of study, research, discussion and dissemination which must accompany the identification and grant-

### **From a speech to the Istanbul seminar by Said Zulficar, UNESCO, Division of Cultural Heritage:**

*"It is the very continued existence of the Islamic cultural heritage, as portrayed by the historical monuments and sites constructed during that civilization, which today is at stake. This heritage is now seriously threatened with disfigurement and destruction by a variety of factors both psychological and economic. From the psychological standpoint, the Islamic countries suffer from some form of inferiority complex with regard to Western standards and values, and they thereby tend to downgrade, disregard, and even in some extreme cases be ashamed of their past heritage.*

*"Added to this negative attitude, factors such as economic development and growing prosperity, which encourage land speculation, different living styles and the excessive use of the motor car further disrupt the harmonious organization of the Islamic cities. New and mostly unimaginative architectural styles and urban patterns have invaded the Islamic countries without the slightest attention being paid to the specific character, customs and habits of their people. The structure and life styles of many of the historic cities have been destroyed in the name of progress and modernization, slum clearance, traffic improvement, and most of all to maximize financial gains from rising land values. The role of the city has now been relegated to that of a fixed-term investment which, in the same way as an economic investment, must produce quick financial returns. The governments themselves, in their quest to modernize through rapid industrialization have encouraged the intrusion of these new values and have hitherto given but scant interest to the conservation of cultural heritage. . . .*

*"The historic towns, sites and buildings stand out as striking examples of authenticity at a time when new urban development is increasingly depersonalized and unimaginative, and their disfigurement or demolition through neglect, ignorance, deliberate indifference, shortsighted policies or individual vandalism implies the eradication of whole chapters of a nation's history. This trend means that we have no confidence left in our values, our history or our culture, and no respect for the cultural heritage of our fathers. If this cultural capital is mutilated or annihilated we shall impoverish coming generations and be responsible for having done nothing to prevent a cultural suicide inflicted knowingly upon ourselves."*

**"It is the very continued existence of the Islamic cultural heritage, as portrayed**



*The architectural system of Islam can be recognized wherever it appears—in a Safavid bridge in Isfahan (above), or in a Pakistani city (below). It is uniform in its use of basic motifs—high vaulted halls, domes, minarets, surfaces of patterned tile, Islamic calligraphy as ornament and geometrically*

*ordered gardens. Islamic architecture, nonetheless, has many styles within its universal order. It carries the imprint of the culture of the region in which it is found and of the ethnic group which built it—Arab, Iranian, Berber, Turkish or Indian. The bridge is unmistakably Iranian, the Pakistani city, Indian.*



*Rene Burri, Magnum Photos, Inc.*

*Inge Morath, Magnum Photos, Inc.*

ing of the awards. An introductory seminar was held in France in April 1978 at the Secretariat of the Aga Khan. It was followed by the Istanbul conference on restoration and re-use held in September 1978, which is the subject of this report. A third seminar is being held this month in Jakarta, Indonesia, to discuss housing in the Islamic world.

**Istanbul was selected as the site for the seminar on restoration and re-use because Turkey, of all Muslim countries, has had the most contact with the modern West and has been exposed to the greatest potential for change in its physical environment**

Turkey, because of this contact, was the first Islamic country to accept the ideas of modern architecture and establish them in its schools. A large number of modern buildings throughout Islam have been designed by Turkish architects. Further, in comparison to other Islamic countries, Turkey has taken better care of its great monuments and has done more to conserve entire habitats.

Those present at the Istanbul seminar—in addition to the Aga Khan, Her Highness the Begum Aga Khan and His Highness Prince Ayn Khan—were the steering committee, the two conveners, thirteen architects, six art or architecture historians, two archaeologists, three journalists including myself, one preservationist from UNESCO, one municipal administrator, one economist, and one banker. There were 21 Turks, two Pakistanis, three Egyptians, five representatives from England, four from the United States, and one each from Canada, Sudan/Iraq, Malaysia, Indonesia, Iraq/Bahrain, Saudi Arabia, Iran, Morocco, and India.

The geographical reach of the seminar discussions revealed to anyone who may not have known it that the world of Islam is by no means contained within the countries of the Arab Middle East (see box). The discussants presented case studies of conservation efforts in such cities as Lahore, Jakarta, and Fez, as well as in the Arab countries of Oman and Yemen. Dr. Sami Mohsen Angawi of Saudi Arabia, an historian/restorer from the Hajj Research Institute, reported that 75 per cent of the Holy City of Medina has been destroyed by development and warned of the impending ruin of all that is old and beautiful in Mecca. Both Holy Cities have been damaged by the construction of highways which connect them to the airport near Riyadh. These appear to have more lanes than ten U. S. expressways laid side by side. From Islamic countries as close as the African continent and as far away as Indonesia the first leg of the religious pilgrimage to the Holy

Cities (the hajj) is now accomplished by jet. (Until the jet age, the faithful Muslim managed to get to Mecca once before he died. Today, the Saudi Arabian airline companies urge him to come as often as he can, and he does.) Millions more are coming and oftener. From the airport, cars, buses and trucks filled and covered with the faithful creep down the expressway lanes to vast assembly areas in the Holy Cities, raw space where beautiful, tightly knit neighborhoods once stood. Gone are the richly ornamented vernacular housing, the neighborly squares, gardens, mosques and courtyards—the setting for the Muslim way of life.

Tragically, the Muslim faithful who consider themselves within walking distance of Mecca (for the poor, a year-long trek from Africa is walking distance) find on nearing the Holy City that the footpaths used for almost a millenium and a half have been obliterated by the expressways. Many die from lack of water or shade and others are killed by cars and trucks.

The Hajj Research Institute in behalf of which Dr. Angawi spoke is concerned with the conservation and development of Mecca and Medina. He made it clear that his Institute, so far, has been unable to slow down or divert the impending destruction of the pasts of these cities by a swollen pilgrimage which has become a strange form of squalid tourism, abetted by technology and fostered by the Saudi-Arabian government.

There was better news from Lahore. The architect Kamil Khan Mumtaz from Pakistan described an important revitalization project with which he is currently involved: the upgrading of the thousand-year-old walled city of Lahore, a project financed by a World Bank loan and being carried out for the Lahore Development Authority. He pointed out that the old city still functions as a pre-industrial or traditional Islamic city. The mode of production and social organization which shaped its physical form not only survives with some modifications, but continues to dominate economic and social life. Nonetheless the city is rapidly decaying and dying. Mumtaz believes that it is the very survival of its pre-industrial economy in a post-industrial world which has caused its impoverishment. "It must consume a host of post-industrial goods and services, from transistors to World Bank projects but must pay for them while employing pre-industrial modes of production. Lahore can be compared to a man in an iron lung who must pedal to keep it going. We are hooked onto a space-age technology, but the color TV's are delivered on bullock carts."

But Mumtaz has noted a form of sponta-

***Today's Islamic country or city is one in which the Muslim culture and religion established during periods of Muslim rule, remains dominant. The world of Islam, therefore, extends far beyond the Middle East***

*The world of Islam began with the birth of the Prophet Muhammad in Mecca in A.D. 570. Muslim history begins from the year in which Muhammad moved from Mecca to Medina in 622. This was the Hegira or emigration that freed him to begin his own community. The early Muslim State was established by conquests which gathered momentum from 625. By 656, the Arab Muslims, pushing out of Arabia to the northwest, had driven the Byzantines out of part of their Eastern Roman Empire—lands which today belong to Soviet Armenia, Syria, Jordan, Israel and Egypt. Surging northeast they had conquered about half of the Sasanian Empire, including what is now Iran and Iraq. Muslim power then extended from the Nile to the Oxus Rivers and included the west Mediterranean basin.*

*By 808, during the height of the Classical Age of Islam, the Muslims reached across Africa to the west of Egypt to include the northern portion of lands, which are now known as Libya, Tunisia, and Algeria. Almost all of present-day Morocco was under Islamic domination by that time, as was most of Spain. Muhammad's followers also ventured northeastward, beyond Iran, to what is now Soviet Uzbekistan and eastward to conquer lands which today comprise Afghanistan and most of Pakistan.*

*By 1250, the Muslims dominated almost all of what is now eastern Turkey and all of northern India. By 1500, although they had lost Spain, they gained the rest of Turkey and conquered Greece, what is today Bulgaria and most of Yugoslavia. The northern half of Africa now belonged to Muhammad's followers, all but the tip of India, what is now Malaysia and parts of Indonesia. The Islamized Mongols extended the civilization northward close to Kiev and as far as Moscow.*

*Taking Mecca as a compass point, during one period or another, Islam reached as far to the west as Marrakech in Morocco, to the north as Moscow, to the east as Jakarta, and to the south as Tananarive in the Malagasy Republic in the Indian Ocean.*

*As Islam ventured across space and time it slowly imprinted a new pattern on the ancient cities and villages it conquered. It was the Muslim texture of religious belief and way of life which shaped their buildings: mosques, madrasas, tombs and places of pilgrimage; palaces, courtyards and gardens; citadels and fortifications; and the covered markets*

*known as souks, with their caravansaries and warehouses nearby. Christian basilicas in the great Byzantine cities of Constantinople, Smyrna, Jerusalem and Damascus became mosques. Humble Sasanian villages grew into such matchless centers of Islamic culture as Isfahan and Shiraz. And the Muslims built entire new cities where none had existed before.*

*The nineteenth-century European expansion greatly reduced the geographical and political reach of Islam. By 1920, after the Versailles Conference, few Islamic regions officially existed as political units. Turkey, Persia, Afghanistan and Arabia were designated as Independent Muslim States. Syria, Palestine, Trans-Jordan, Iraq as well as several African states became League of Nations Mandated Territories.*

*To return to the definition of today's Islamic city: the Muslim religion and way of life must remain dominant in the culture to which the city belongs. It follows, therefore, that new construction or restoration sensitive to the Muslim spirit in great Islamic places belonging to Spain—Seville, Cordoba, and Granada; to the U.S.S.R.—Bukhara and Samarkand; or to India—Delhi and Agra, would not be eligible for an Aga Khan award. The countries in which Islamic culture still dominates are those in which the Muslims remain a majority and whose leaders are Muslim. About one-fifth of all the world's Muslims live in Saudi Arabia, Syria, Jordan, Egypt, the Nile Sudan and the Maghrib (from Libya to Morocco). Sub-Saharan Africa including the east coast, western and central Sudan, is almost entirely Muslim. In India, the Muslims were redistributed by religion to Pakistan. Only a minority remain in India and in Ceylon among Hindus, Christians and Sikhs. Malaysia and Indochina have a Muslim majority. In southeast Europe, only Turkey remains predominantly Muslim.*

*These then are the countries in which the spirit of Islam still lives. Most of them look to the West to help spur their economic and technological development. Because they overvalue the West's achievements and undervalue their own heritage, distorting its image to conform to Western ideas, they are rapidly destroying the physical environment in which their religion is rooted. The Aga Khan, by establishing an award for architectural projects in Islamic countries which best reflect and reinforce Islamic culture is trying to show the Muslim world that the Western way is neither the only, nor always the best way for an 1,410-year-old civilization to make the most of late 20th-century technological and economic opportunities.*

**“Lahore is like a man in an iron lung who must pedal to keep it going.”**

**—Kamil Khan Mumtaz**

neous conservation to which he is paying attention. “There exists in the popular mind,” he said, “a vocabulary of architectural forms which it identifies with and reproduces spontaneously, even when employing new means and catering to new requirements. Thus, while new techniques and new materials are molded in the dyes and patterns of a previous generation, the forms themselves evolve and adapt, however imperceptibly at the time, in response to new conditions. Successive generations carry the imprint of the past. A formal tradition is inherited as a continuity established by the very process of regenerative growth and change.”

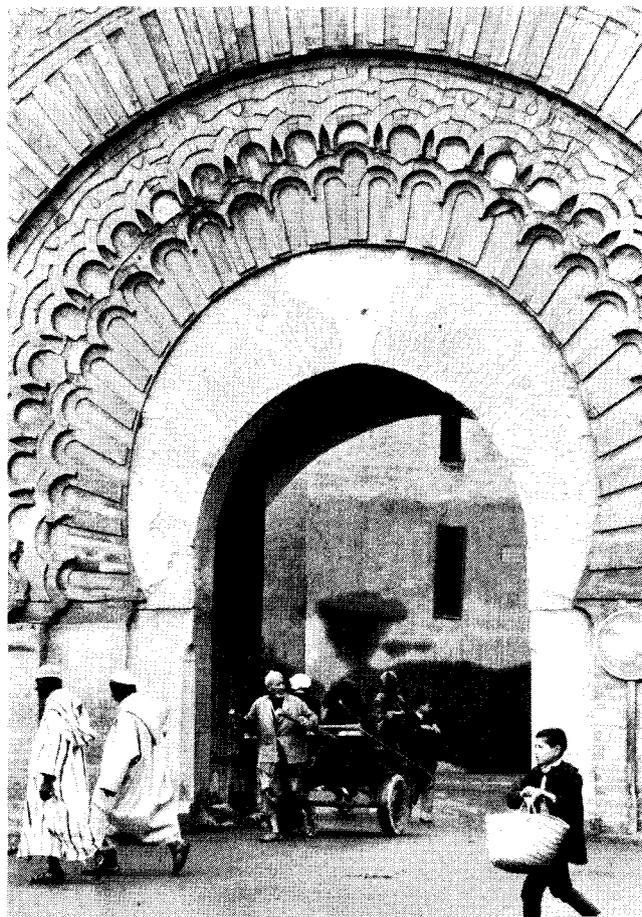
Dogan Kuban, architect, historian and professor at the Department of Restoration and Preservation at Istanbul Technical University asked the basic question to which the remarks of Mumtaz indirectly referred and which indeed haunted the seminar: “Will any historic culture, be it Islamic, Indian, Chinese or other, manage to survive as a distinct entity, without being incorporated into the fabric of a single modern civilization, or being consumed by the monopolizing pressure of modern industry and mass media? Is it conceivable to have Turkish houses, Muslim towns, and at the same time drive automobiles, have bridges built over the Bosphorus by foreigners, construct according to universal standards, utilize universal electrical devices, broadcast and receive worldwide television programs, and promote tourism? How may one serenely propose that the maintenance of cultural symbols can withstand the onslaught of cost accounting and efficiency standards and yet not be keenly aware of the fact that all nations are being used as arenas for opposing ideologies, that all markets are under the strangling influence of international corporations and that all developing countries are familiar with the arm-twisting methods of international politics?”

Professor Kuban then answered this question on a note of dogged hope: “Support, however, is forthcoming in the endearing and enduring opposition of another group of universal, even eternal factors which also determine the behavior of men and societies. They are intrinsic to the human situation: language, religion or the religious attitude, geographical environment, race, and perhaps most important, the inertia of cultural behavior. This last fact, which accounts for a great part of real cultural differences, has amazing staying power. This inertia is the eternal embryo of future diversities. Against the inertia of cultural behavior, the homogenizing effects of industrial civilization may quite possibly be superficial and temporary.”

**—Mildred F. Schmertz**



Elliot Erwitt, Magnum Photos, Inc.



Burt Clinn, Magnum Photos, Inc.

*The low relief stucco work on the minarets of the al-Azhar Mosque in Cairo (top), are distinctly Egyptian in style, although the ornamental motifs belong to the universal Islamic vocabulary. The ornament on the gate in Marrakesh, Morocco (left) is also particular to its time and place, yet is part of an architectural order which prevailed in almost half the world for more than one thousand years.*

# Quiet please!

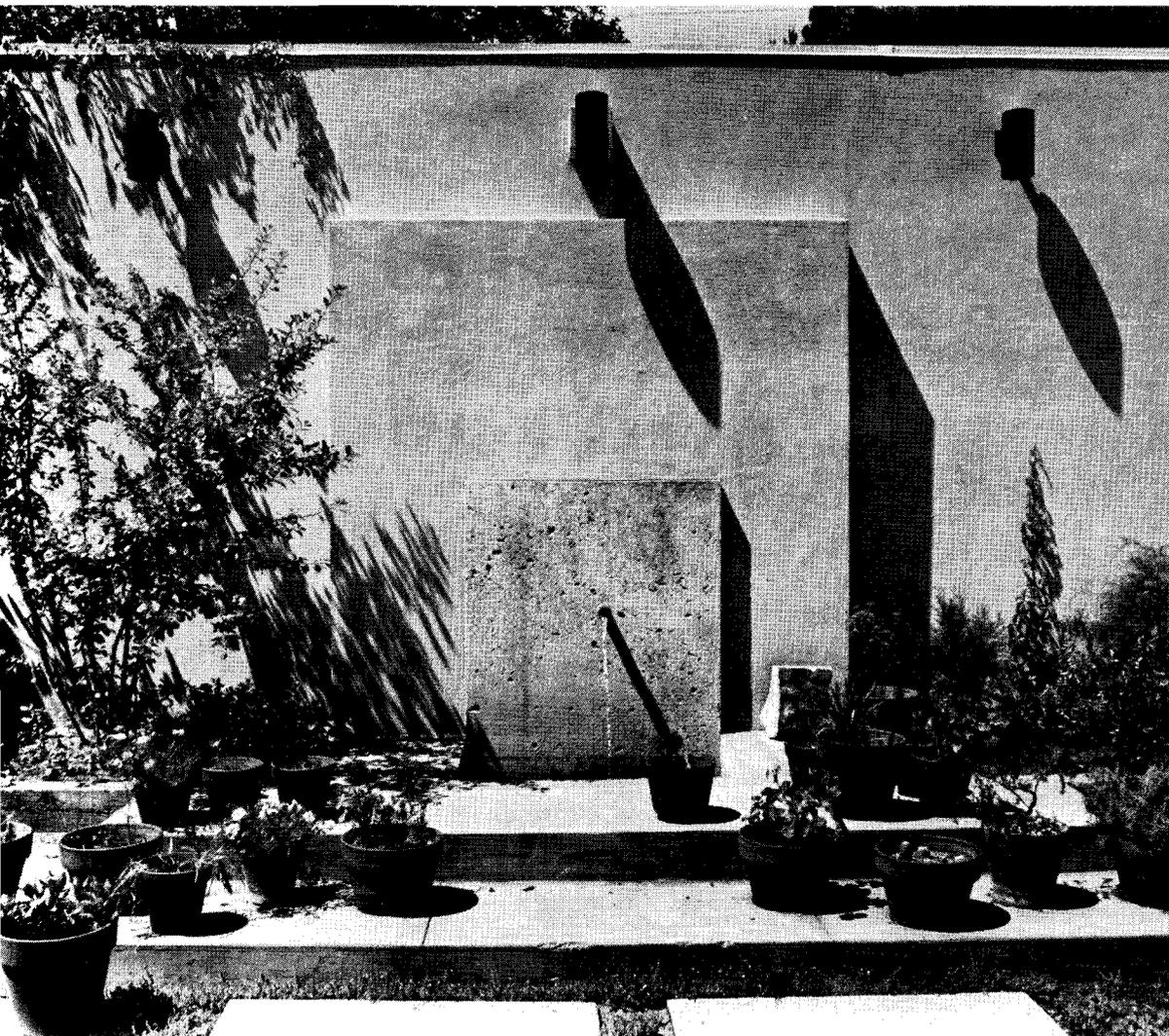


Nan Blake

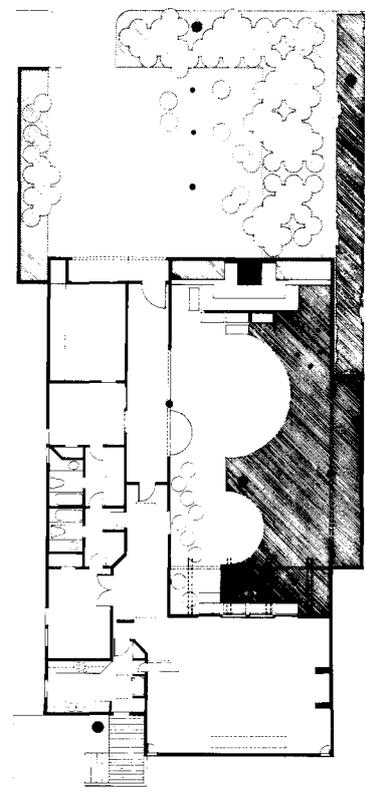
**H**ouse projects too often provide open invitations to architects to try out their latest formal and theoretical ideas, then extravagantly proclaim them to the waiting world of critics and journalists. By contrast, James Coote, who is an architect and a teacher in Austin, Texas, has made a place for himself that addresses the equally taxing problem of being not a media statement but merely a house—albeit a very good one. Ignoring thus the invitation to be strikingly spectacular is not as easy as it may at first seem, nor does it at all mean that the result will be devoid of the formal and theoretical ideas which architects rightly prize. It simply means that the frenetic energies that frequently go into getting noticed are harnessed, calmed, and directed towards the perhaps more noble (and certainly more obvious) point of making a house that is good to be in, filled with the shapes and images that have meaning for the owner.

Coote's house, which sits on a tree-lined road among other houses laid out in the traditional suburban manner, gives the impression of everywhere being comfortable, benign, and sane. Since it is organized around an interior courtyard, the format is Latin—what will the neighbors think?—but here modified by sliding the front wall back far enough from the street to allow space for a parking area and, not incidentally, to obscure it behind clumps of trees and thus dull its differences with the houses around it. The style of the building is "free," in that it alludes both to some of the vocabulary of Modern architecture and also, with considerable selectivity, to certain forms and elements of the historical past. The *initial* effect is a almost unprepossessing—but not at all the goals, or the lasting impressions. Thus, in its own way, this house becomes a very special, strong, and sophisticated "statement" after all.

The plan below shows the basically straightforward organization of the house. A vehicular entrance court is at the top. Running down one side is a file of particular spaces for particular purposes: a garage, bedrooms, baths, and a kitchen. The rest of the house consists of two major "rooms"—the large outdoor court, which is shown here, and the one large "living" room, which is shown on the following page. The otherwise strict limits of the courtyard are made indistinct by having its walls break away in three places, to be replaced by light, deep stucco beams supported on concrete columns. A gravel-covered pathway, which bulges out to form two half circles provides a compositional element at the ground. A small and elegant fountain at one end gives a focal point to the whole space, and it can be lit at night for viewing from the living room at the opposite end. All of the plant materials—both here and around the parking area, are indigenous to Austin.

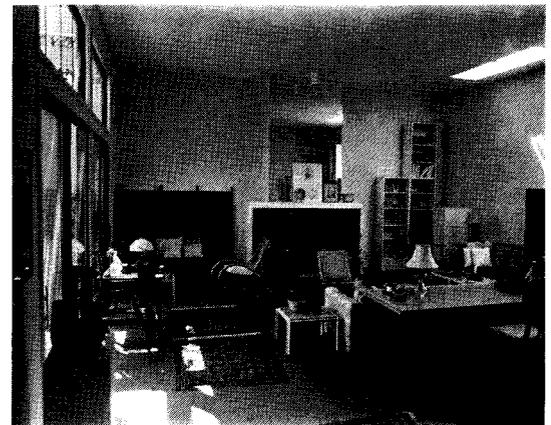


*Nan Blake photos*





Shown last—and arrived at last in the sequence from the main entrance—the living room is the heart of the house. Some 32 feet long, 25 feet wide, and 13 feet high, its proportions are copied approximately from a room added by Stanford White to the back of the Colonnade Club at the University of Virginia. It is meant to feel balanced and modestly monumental, and to be comfortable for one or two or fifty people as circumstances may require. One way this is achieved is by the dimensions themselves, which, in addition to being generous, are also fairly similar to each other, resulting in a space that is high and nearly square. Another way is by limiting the number of fixed pieces of furniture: a piano, two sofas, and a sofa-like bed. Everything else is easily movable, and is often moved—a plan, incidentally, that is typical of many great rooms in great houses of the past. The room is nobly lit by sunlight filtered through the trees, entering through high windows on the courtyard side and, opposite them, by strips of skylights which wash the wall below. — *Gerald Allen*



PRIVATE HOUSE, Austin; Texas.  
Architect: *James Cooté*. Engineer:  
*George Maxwell*  
(structural/mechanical). Consultant:  
*James deGrey David* (landscape).  
Builder: *C. T. Schneider*.



## A cast of characterizations for a playhouse on Cape Cod

Provincetown, Massachusetts, on the outermost reach of Cape Cod, is one of the most historical places in the country, with about 5,000 year-round residents, and come summertime, it is one of the most hysterical—what with a tangle of tourists and traffic inundating its otherwise serene, compact scale. Last November, however, the people of Provincetown, its rope-ladder-style street layout enlivened by the crisp sunny atmosphere on one day, laid in by dense rolling fog the next, experienced itself in a way that it hadn't experienced itself in some years.

The occasion for this was an experiment of sorts—a design competition to rebuild the famous Provincetown Playhouse-On-The-Wharf, which a couple of teenage arsonists burned down two years ago. Not only was it to be a new theater worthy of a great and expanding tradition, but it was also to include a Eugene O'Neill Archival Center. O'Neill had performed his first plays here, back in 1916, beginning with *Bound East for Cardiff*. And ever since, both the Playhouse and the town have been thought of as the cradle of modern American drama.

Adele and Lester Heller, having taken over the Playhouse in the early 1970s, and stretching to make it financially despite the artistic merit of their productions and increasing critical acclaim, were determined to turn the crisis into an opportunity—and not just a theatrical one, either. "This cradle is going to rock in more than just a performing arts sense," Adele Heller asserted. "The very rebuilding of it should be a performance that people can associate with as a telling, inspiring time in *their* lives as well as ours."

With a \$20,000 grant from the National Endowment for the Arts' Department of Architecture, Planning and Design, and \$2,000 from the Massachusetts Foundation for the Humanities and Public Policy, the Hellers, advised by William Marlin, a *RECORD* associate editor and a critic for *The Christian Science Monitor*, set about staging a design competition like no design competition ever held—one that would do two things, essen-

tially: immerse the invited architects in the townscape, and not so incidentally, immerse the townspeople in the architectural adventure. The basis for this was the Heller's and Marlin's conviction that there should be a working relationship between esthetic pioneering and public understanding of what is at stake when a new building, especially one oriented toward enhancing a community's cultural and historical sensibilities, is being projected. There was also a belief that any "new" building—and this one was going to be on the existing tight harborside site, measuring just 47 by 266 feet—should evoke the town's scale and spirit, in much the same sense that a fine actor stewes with the character that he or she has been given to play until, out of that intense, emotional affinity, an engaging characterization emerges.

Setting such an example in Provincetown was especially important because the community, in recent years, has been hotly debating whether or not to accept status as a National Historic District and (the crucial corollary) what kinds of new development should be encouraged or discouraged. The town, however, with a government that revolves around a Board of Selectmen, a Town Manager, and many special boards and committees, has been frequently at odds with itself about how it can have its culture and eat it. Unsightly, and just plain ugly, motels and condominiums and sleazy lean-to-style additions have been permitted, with a few owners having blatantly undertaken construction without approval or, even with approval, with inconsistent review procedures. A new Provincetown Playhouse, the Hellers believed, should not just be a great place to see plays but a tactful reminder that new buildings can be good neighbors in the decency of their design, the durability of their construction, the serenity of their attitude in the general environment, and their human safety.

Some local officials say they don't care half as much about what a building "looks like" as they do about its being fireproof and having a sewage-disposal system that can't

John Gregory photos

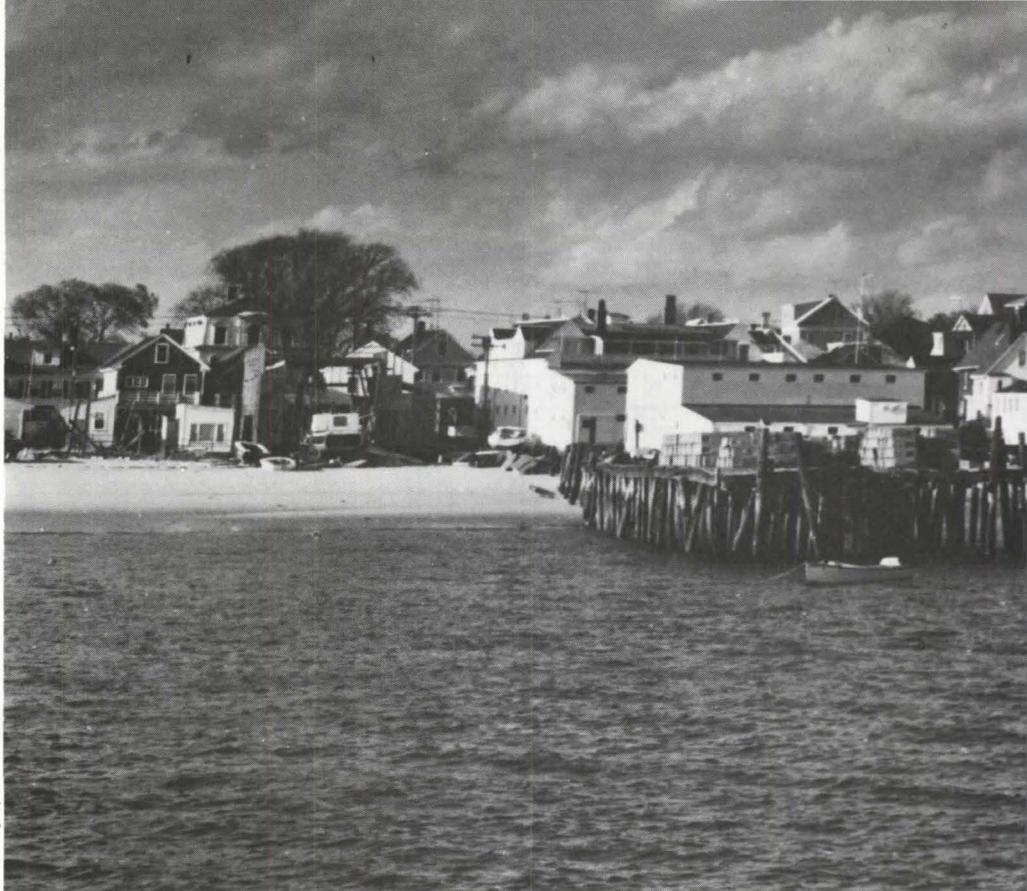


muck up the water supply. But that isn't the whole story. Physical scale *does* matter. The proximity of buildings to the harbor shoreline does matter. It's all there in the bylaws. While variances can be applied for, townspeople generally are against new buildings that try to shout down old ones by way of sheer size and showy effects—this being the case, even though many old, unquestionably worthy buildings have been subjected to corny cosmetic treatments on the apparent assumption that bad taste, if blaring enough, will bring in the thrill- or frill-seeking tourist. As Mrs. Heller put it, "This building, whoever ends up with the job to design it, will stand out only to the extent that it stands in."

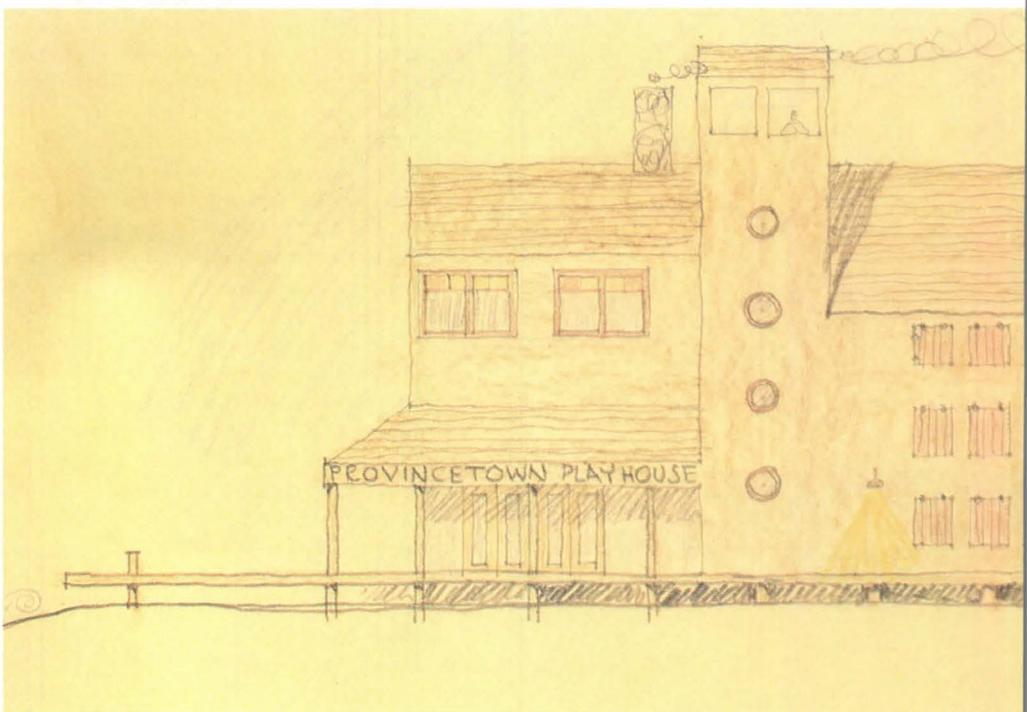
This was quite a tall order, for what was going to be a low-slung building. As the architectural program had it, it would have to include a theater housing about 400 people, a mini-theater, also usable for rehearsals, housing about 100 people, areas for the preparation and storage of costumes and scenery, dressing rooms, a living-room-style "lobby" with at least one fireplace that would also be usable for various community and cultural groups year-round, space for the O'Neill Archival Center, and optionally, quarters for the 20 apprentice actors who have been accepted every summer from various university programs around the country.

The first notion of the competition, to involve New England firms, was far more conventional than the design competition that finally took place. The idea had been to choose half a dozen or so firms, have them to Provincetown for a briefing, and then sending them home to work out a scheme. There seemed to be a number of things wrong about this. First, many public groups, hearing that something was up, wanted to know more about what was being planned and what was going to be in it—in the case of several other arts groups, about whether there would be any room in it for them. Second, too many recent "buildings" had been designed in isolation from the community and its officials, then sprung as complete surprises before an often bewildered zoning board of appeals. It was time to take the wraps off the architectural process, taking the public into account and hopefully into confidence. Third, the character, personality, and heritage of the town is so encompassing and even magical, much of it deriving from the town's intimate and historic association with the sea and fishing, that the Hellers wondered, and rightly, whether even the most sensitive architects could fully respond to this uniqueness, back in their offices, after just a couple of days visit. If the preliminary schemes coming out of a competition were to embrace the circumstances, reflecting them organically, shouldn't the architects work right in town, and in touch with a variety of personalities and inspirations?

And so the competition, taking on a life of its own, turned into an on-site charette-style affair. The public would be invited to come by the architects' workshop for a couple of hours every day—to pick apart, praise, encourage—and just as many people

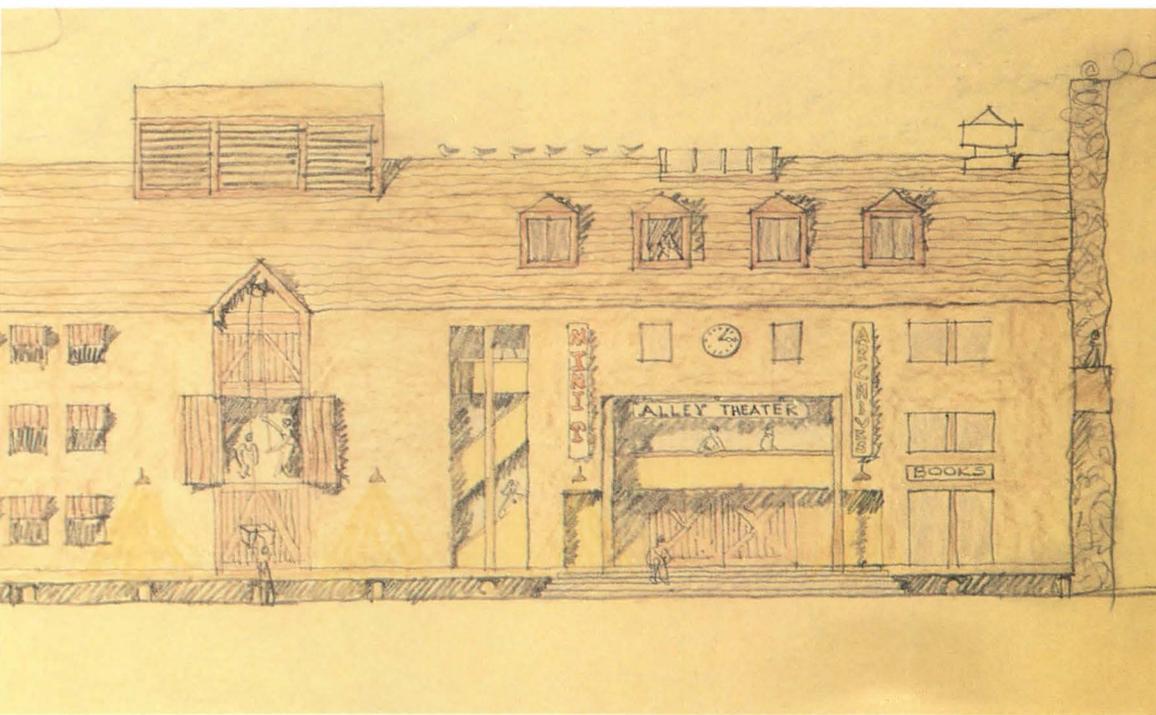
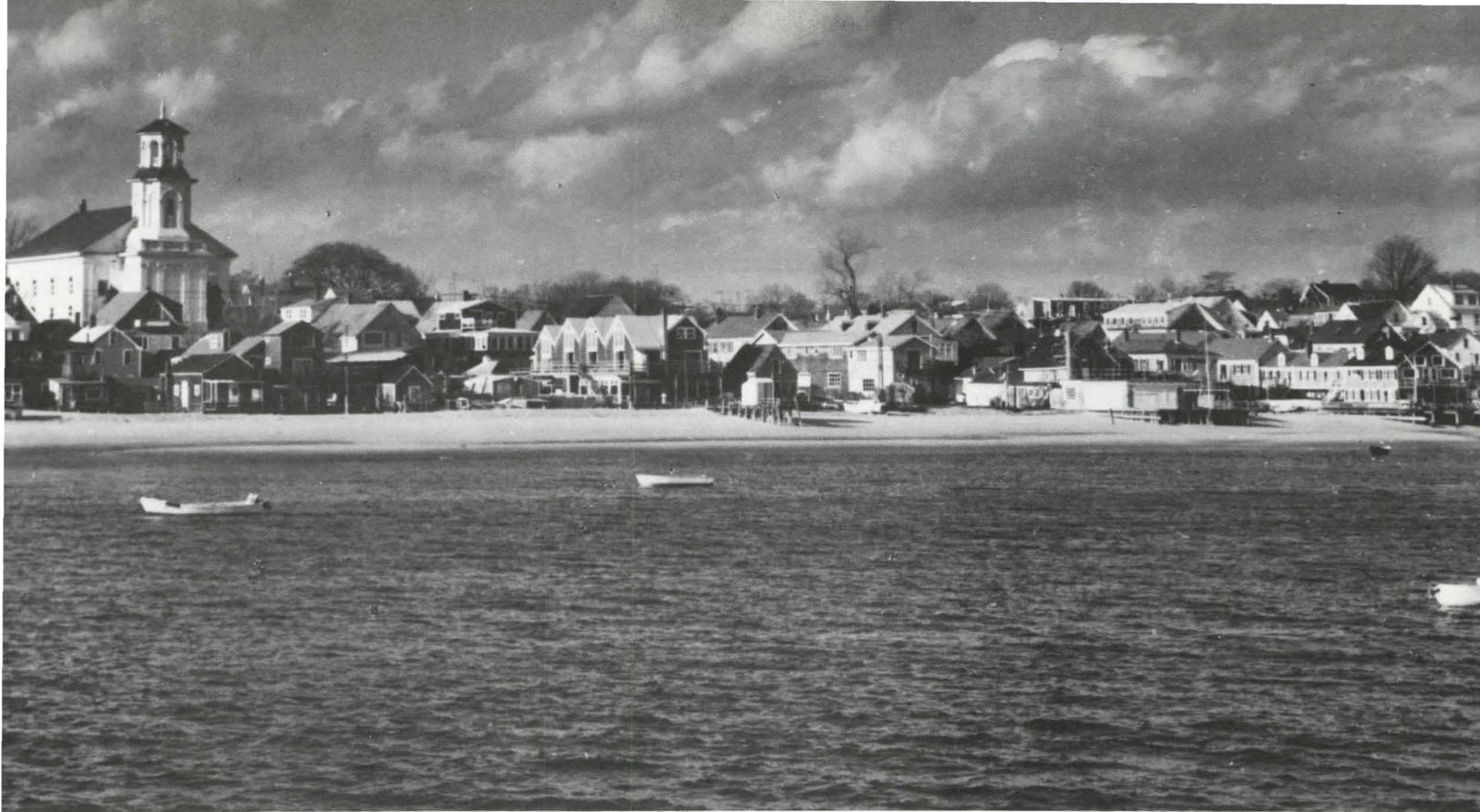


John Gregory



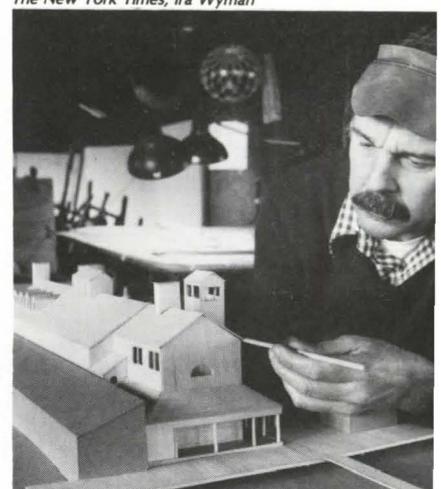
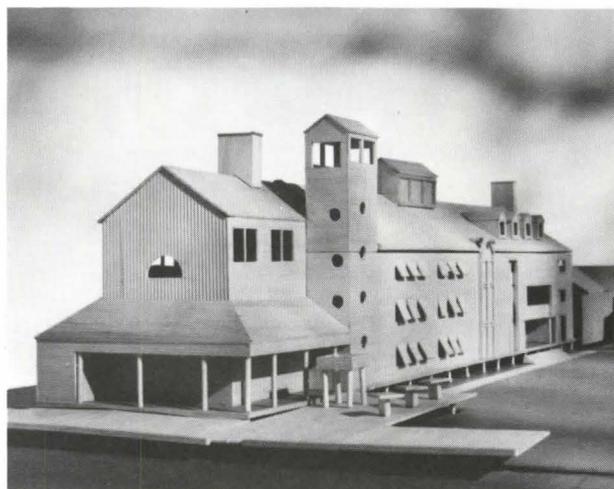
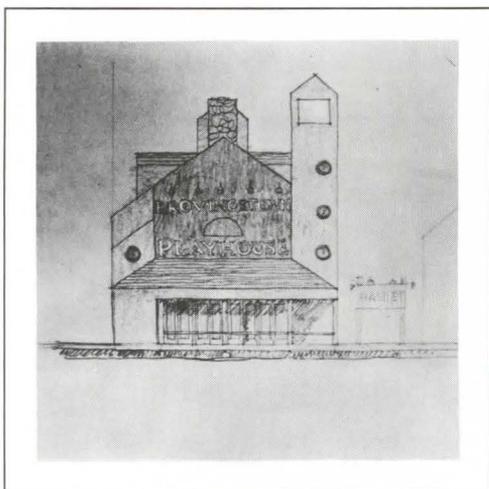
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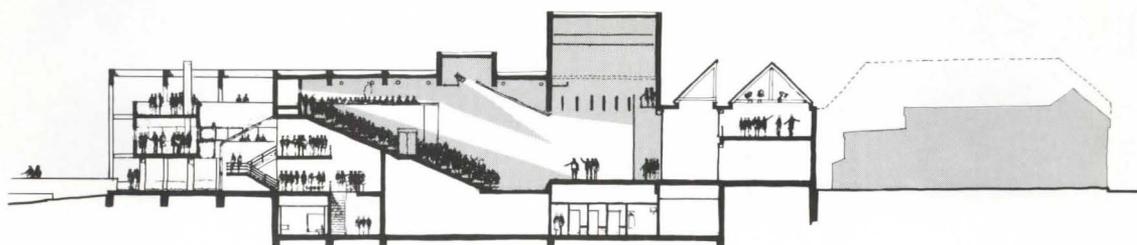
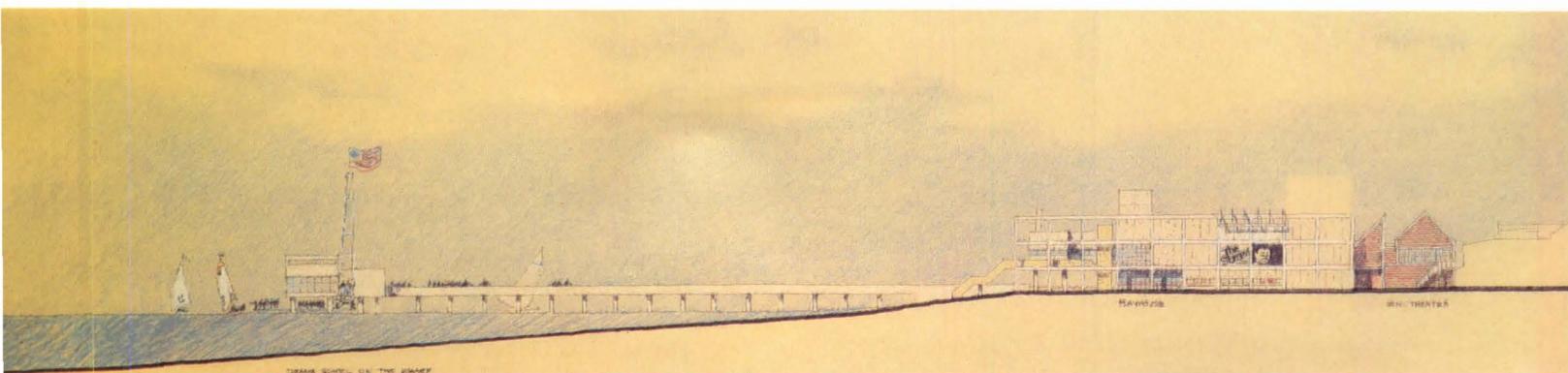
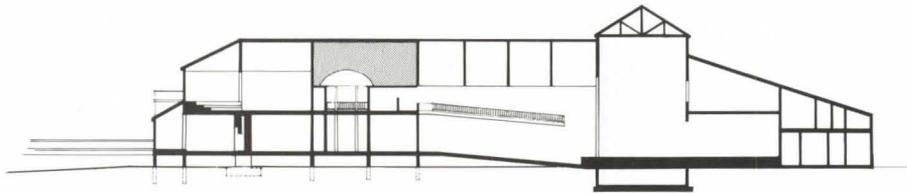
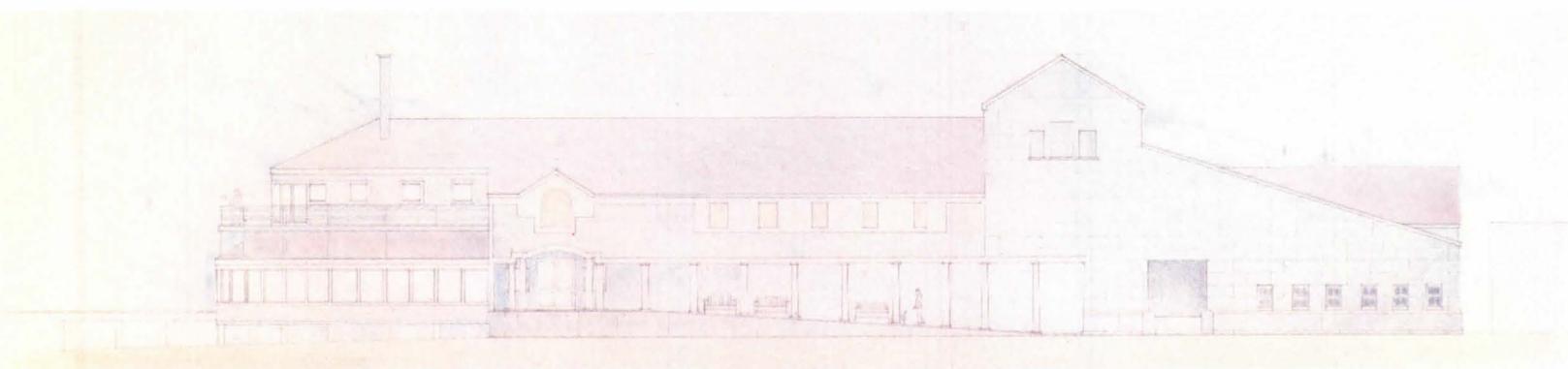
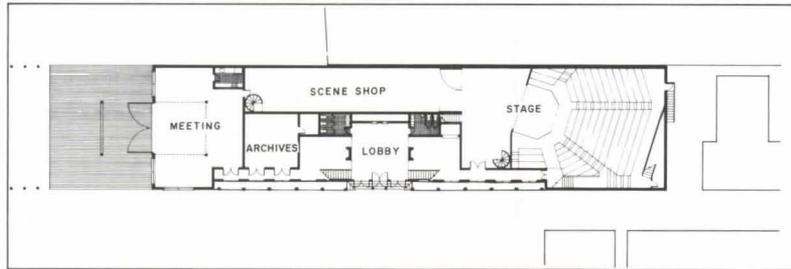
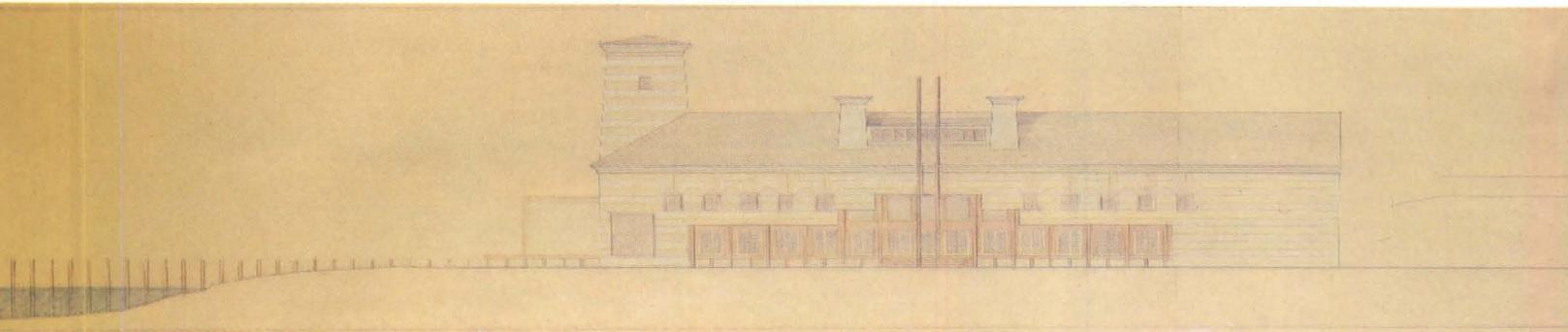




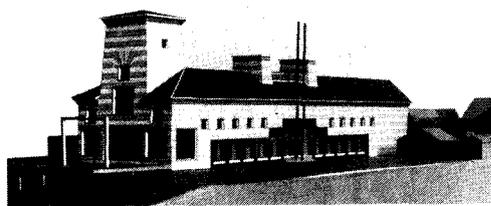
The winner of the competition for the Provincetown Playhouse was William Warner. Inspired by the texture and compactness of the town's form (above), and by its seafaring history, his "living warehouse" befits the over-all context, recalling the long wharf sheds that used to stick out into the harbor. Like all those invited, Warner took daily walks down the three-mile-long Commercial Street (opposite), which runs parallel to the shore, and down the lanes connecting it, like ladder rungs, to the secondary artery, Bradford. Townspeople became ad hoc "advisors." Selectman George Bryant, owner of Bryant's Market—and of many old books, photos, and prints—further acquainted Warner with cultural and nautical imagery. His design is an apt recollection, deliberately calm in massing and scale—and a painstakingly practical place for theater. The model shot here, like all shown, is taken from a southeast harborside vantage point.

*The New York Times, Ira Wyman*





James Righter (right, below) and Andy Burr, taking a "post-modern tack," took off on the tight site—and on the town's exotic stylistic variations in its monuments, museums, churches, and bigger houses—with an architectural aria from Aida. Dashing toward the 19th Century as fast as their contextual sea legs could carry them, their proposal was a disciplined proposition about the uses of precedent. And though finally Egyptoid, it was first inspired by basic lighthouse forms, emboldened by batters.

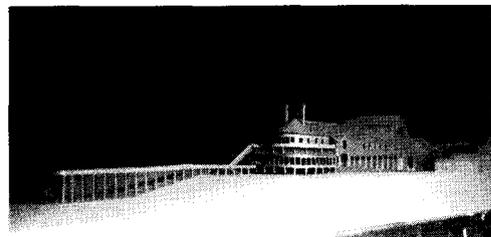


Norma Holt photos

had suggested, the national jury that was being asked to review the architects' designs would include local representatives. Just so there would be no elaborate lead-time preparations back at their respective offices, the invited architects were not shown the architectural program until just before visiting the site and, to maintain a more-or-less equal match among the competitors, each was limited to two people, with a third or fourth person allowed should one or the other have to head home on business.

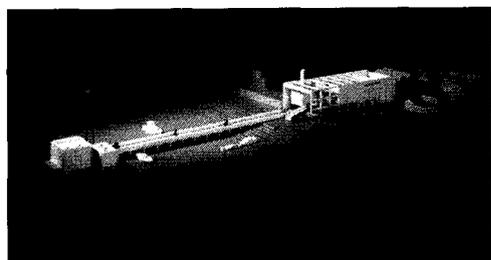
In selecting the architects, the temptation to ask just "famous" ones was avoided. Established firms were not exactly ignored, but there was a concern about giving a chance and (win or lose) exposure to fresh talents who had a demonstrated interest in contextual design values, and a good track-record in technical matters, and a concern for community-development issues. In consultation with the editors of RECORD, the Hellers decided on teams: that of Paul H. Krueger, of Watertown, Massachusetts, who brought along William Bricken and Shun Kanda; that of William Morrish and William Fleissig, of Cambridge, Massachusetts, who brought along their recently named partner, Michael Robinson; that of Robert Kennedy and Ralph Montgomery, of Boston; Perry Dean Stahl & Rogers, also of Boston, represented by Charles Rogers, Frederick Stahl, and Steven Foote; the team of Turner Brooks and Ross Anderson, of Starksboro, Vermont; William Warner, of Exeter, Rhode Island; and the team of James Righter and Andy Burr, of New Haven, Connecticut, who had their frequent collaborator, Carl Pucci, come by for a day's advice. Of these, only Perry Dean Stahl & Rogers and William Warner could be called "established"—and Warner is little known outside his region.

Turner Brooks (right, standing) and Ross Anderson evoked something other than structural or stylistic context—the image of a vessel, a showboat with promenades, welling up out of the environment and headed to sea. In the belief that one can validly find an image within the cumulative character of a place and then make it work, as opposed to finding a functional format and then applying "image," this team dramatized the movement and emotions of people, their "context" being sensory.

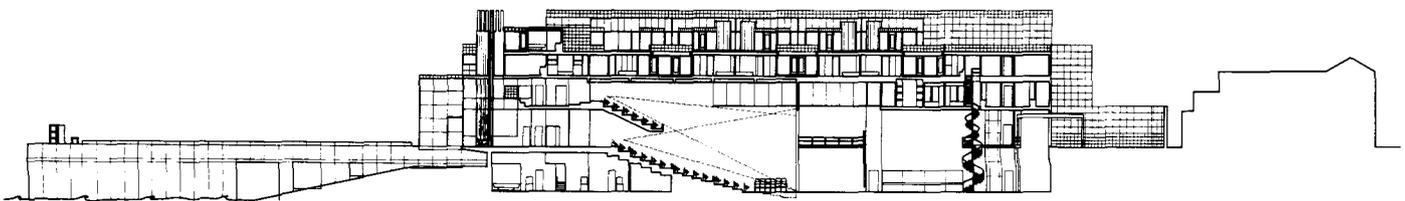
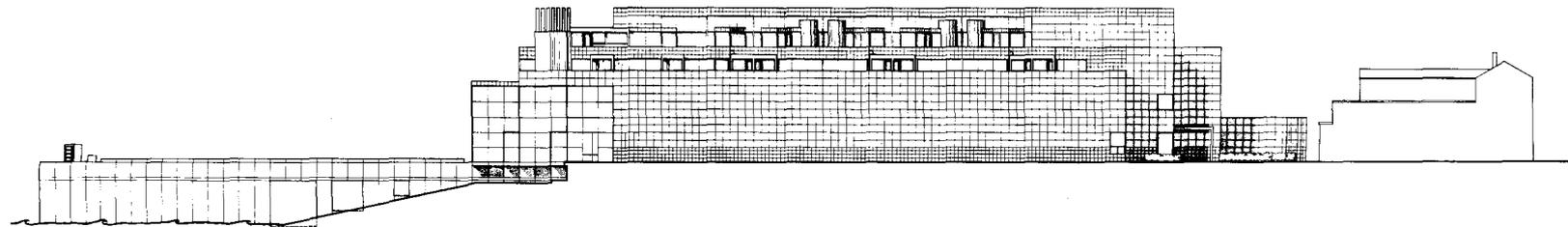
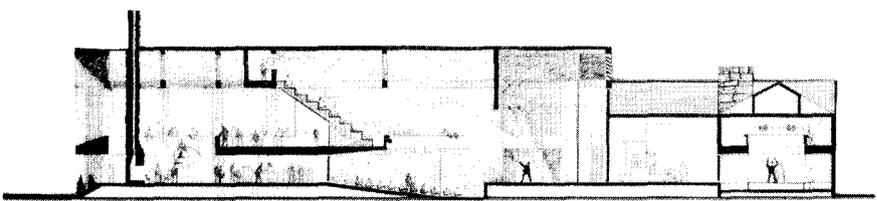
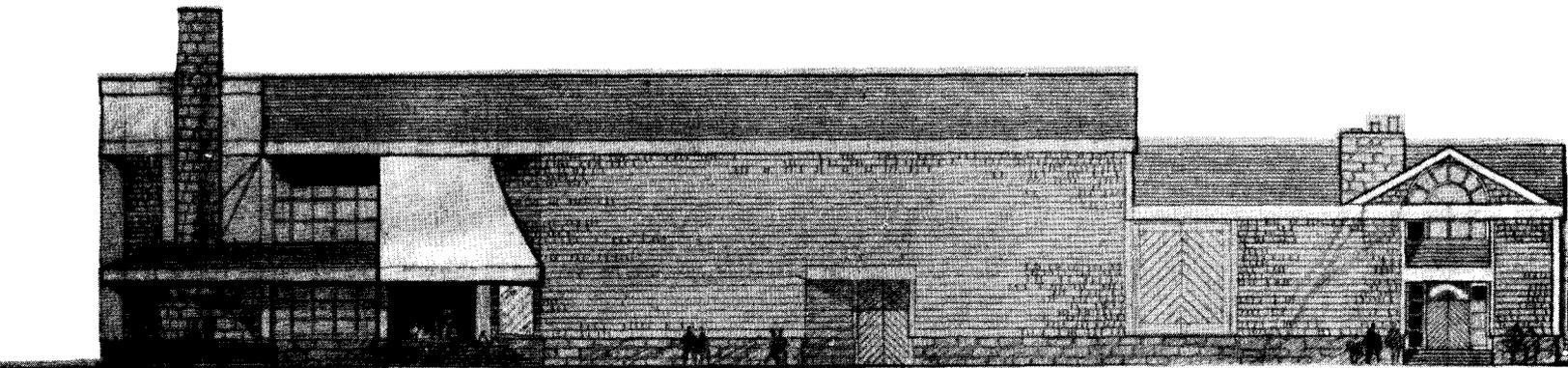
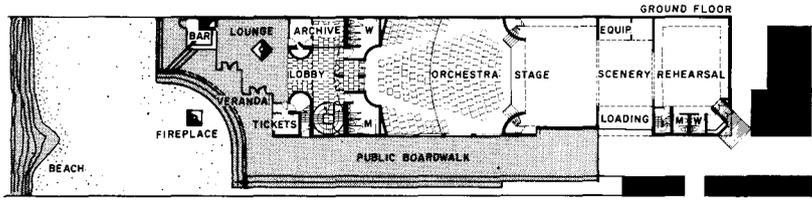
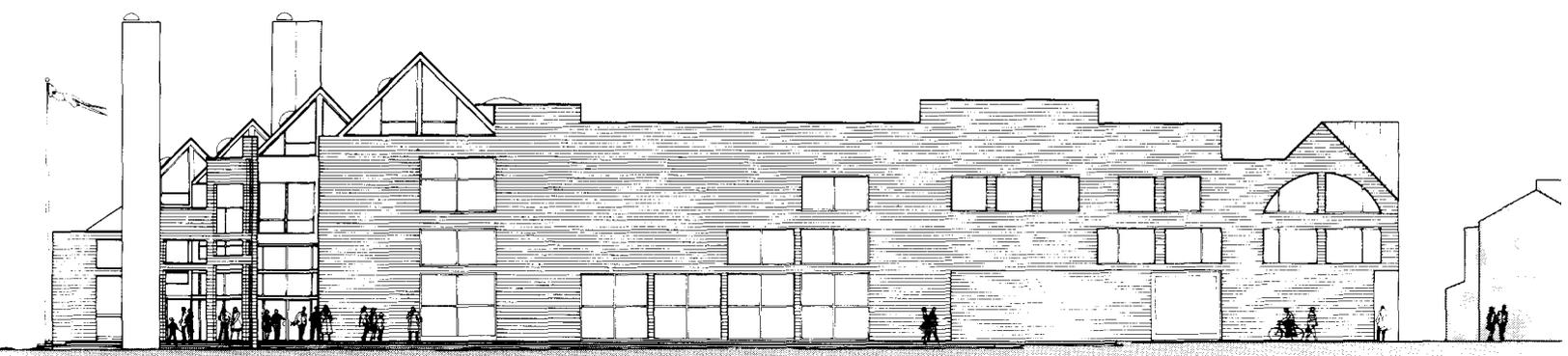


While the competitors were being decided on, Marlin was deciding on the jury. Ieoh Ming Pei, who believes that little buildings should be done very well, even if he doesn't happen to be designing them himself, agreed to serve as the chairman. Other members included Arthur Cotton Moore, of Washington, D.C.; Raquel Ramati, director of the Urban Design Group of the New York City Planning Department; Laurence Booth, of the firm of Booth, Nagle & Hartray, of Chicago; Walter Wagner, the RECORD's editor-in-chief, and Herbert McLaughlin, of the firm of Kaplan/McLaughlin/Diaz, of San Francisco. Three residents of Provincetown rounded out the jury—Sal Del Deo, a painter and restaurateur; his wife, Josephine Del Deo, a writer, historian, poet, and civic leader; and Frederick Barker, also a restaurateur.

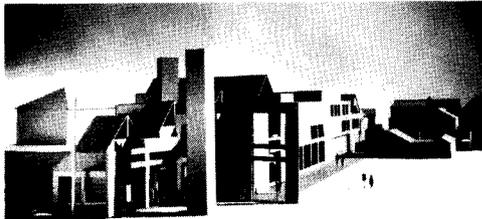
Paul Krueger (right, above) and William Bricken developed a crisp, festive concrete frame, dovetailing it with landside context by way of a gabled, wood-clad mini-theater, and with the harborside by way of a long pier and promenade culminating in a flourish of a facility containing a drama school. The Playhouse proper, with its support spaces, would have been cubistically ensconced within the enfolding frame, its infill panels and playbills gradually dropping away, opening the interior.



The seven teams arrived toward the end of the afternoon on Wednesday, the 8th of November. After settling in at the White Dory Inn, sweaters thrown on against the autumn briskness, they assembled at the Hellers' home for their first full briefing about the functional and philosophical points of the program—followed by dinner next door at juror Frederick Barker's restaurant, The Red Inn. It was the last fully relaxed evening they would have for over a week.



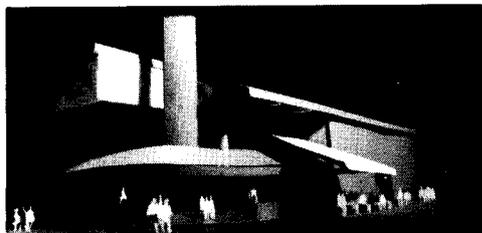
William Morrish (right, above), William Fleissig (right, below), and Michael Robinson brought an urban-design bent to their building. The townscape steps down toward the shore, its strata showing both the diversity of their architectural components and the continuous, layered edges that these components create. So they simulated this context—steps-as-experiences, from the theater out to a “living room by the sea.” O’Neill’s own scenic imagery is recalled.



The New York Times, Ira Wyman



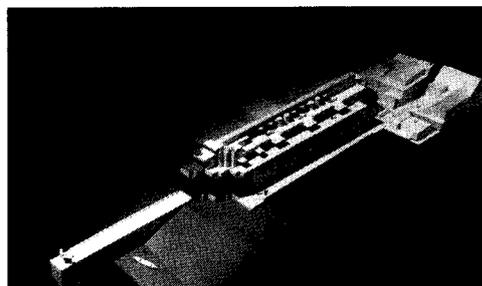
Robert Kennedy (right, foreground) and Ralph Montgomery saw that the town has outwardly kept a timeless, unified form, even with some garish or ungainly newcomers, but many of the interiors have been successively remodeled. Their outwardly simple loft form, recalling many old ones (except this was to be shingled-covered concrete), sheltered such a “remodeling” which, out toward the water, would have confided its social essence in the form of a glassed-in multilevel lobby.



The New York Times, Ira Wyman



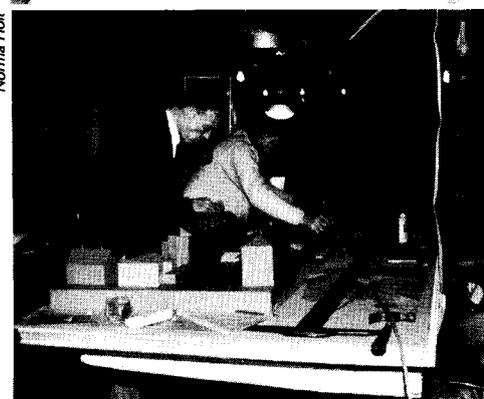
Charles Rogers, Steven Foote, and Frederick Stahl (left to right) boned up on the psychology of O’Neill, as much as on the town’s physical features. They concluded that the Playhouse, the cradle of modern drama, should have the strength of a national symbol, even as its character should speak of local strengths. Their gray granite breakwater offshore—an elemental presence in a timeless land-and-sea tension; and like the young O’Neill—brooding.



The New York Times, Ira Wyman



Norma Holt



The next morning, up early, they did camera-ready reconnaissance of the town, and, with much shuffling of tables and chairs, set up shop at the Flagship Restaurant, which was given over for the purpose by Ciro Cozzi, a painter and architecture buff who also owns another nice eaterie, Ciro and Sal’s, across the street. The Flagship, extending out over the water on piers, its beamed ceiling hung with harpoons, buoys, lobster pots, fishing nets, and oars, looks out on the harbor and the town. There couldn’t have been a more perfect place to soak up the atmosphere—and it was also the perfect place to watch the dynamics of the group’s interaction develop. In close quarters, each team had to work out its own territorial imperatives, not only physically but also psychologically. One team chose the one quiet, and comparatively removed, alcove in the place, the others staking out space in the main dining room. Paranoia was remarkably low, though a couple of the teams took to draping their work with big sheets of paper when they left to eat or sleep. Finally, no one was able to hide anything from anybody. What few signs there were at the very beginning of secretiveness, suspicion, or sanctimony were blown away by the salty air (and joking). The extraordinary variation in the designs that unfolded shows that there were no midnight small-stores in ideas and details. It all resembled a classroom situation back in school—a cross between a thesis and M\*A\*S\*H, as Charles Rogers put it.

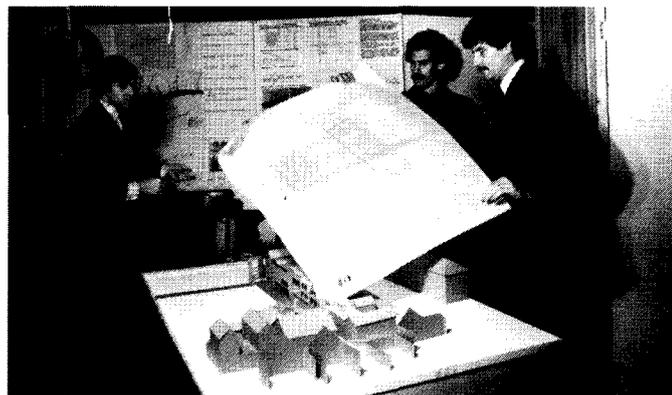
After that first full day, Thursday, with trips to the site and briefings with local officials about local zoning bylaws, state coastal zoning measures, and water and sewage regulations, the real hard slogging started. The teams began to realize that this “problem” was not going to be a breeze at all. To underscore the point, the surf began pounding hard on the wooden planking beneath their feet. The candles began burning late. There was a clock or two around, but gradually the time was being told by the tides, the brightness or dimness of the sun, and the return of the fishing fleet in the afternoon.

This was somewhat softened by the levity, especially during those late-night and early-morning spells. Amid the heaps of discarded paper, cardboard, matt knives, pencils, pencil sharpeners, tables and lamps, the teams managed to get off the usual (actually, better than usual) bull-session barbs. Townspeople came in, often quite late, with coffee, brandy, snacks—a couple of them even serenading the group with guitar music. A coterie of divorcées, who must have been miffed at so many married men politely maintaining their distance, continually showed up because, as one put it, “This many heterosexuals haven’t hit town all at once in over 30 years.” (It should be pointed out that Provincetown’s reputation as a summertime haven for people with other “affectional preferences” is, if accurate, often grossly blown beyond proportion.)

What the teams were romancin’, to a man, was the seriousness of the design problem, and the constraints on the site. Heading



In moods ranging from panic to punchiness, the teams did a month's work in a week at The Flagship Restaurant. For a couple of hours a day, anyone who wanted could come by to discuss the projects and the town; hundreds did so, including Town Manager Charles Cobb (top photo, below). The strengths of the on-site, charette-style approach included close daily contact with the client, a flexible program that could be reprogrammed, and immersion in the town.



At an emotion-packed ceremony at the First Universalist Church, the winner was announced by jury chairman I.M. Pei, with Helen Hayes on hand to share her memories and emotions with the audience of 500. The jury had stayed up until three in the morning, making the decision. Earlier, on a trip about town, they posed at Race Point. Left to right: Herbert McLaughlin, Arthur Cotton Moore, Walter Wagner, Sal and Josephine Del Deo, Raquel Ramati, client Lester Heller, I.M. Pei, client Adele Heller, advisor William Marlin, Laurence Booth, and Frederick Barker.

Michael Robinson, William Fleissig, and William Morrish (left to right, top photo, above) set up for presentation to the jury. In a calmer moment, a few days before, Ralph Montgomery humors up a sheaf of notes (middle photo). Soup and sandwiches were brought in for lunch when the competitors discussed the collegial yet keenly competitive atmosphere.



off to dinner alone, or in groups (they took lunch brought in by *Ciro Cozzi's* crew), their thoughts were never far away from the drawings and models back at the restaurant and, with recurrent flashes of insight, table cloths and napkins, from many another restaurant, were often deployed for doodling. Every time someone said, "Ah, I think I have a scheme," a walk farther into town, along Commercial Street, or scouting the back lanes or beach frontage, would yield new images for assimilation and interpretation. The result was that, by the next Friday, the 17th, an astonishing assortment of characterizations had been produced—no less so in their conceptual completeness and technical competence. As the architects put the finishing touches on their drawings, models, and presentations—these ranging from lush, lavish boards, as though a corporate chieftain were being courted, to those of disarming simplicity, as though a bunch of booted Portuguese fishermen were being courted, the jury was flying in from various points tossed about by an ominous, stormy, rainy sky. Was Eugene O'Neill getting even?

In his own way, apparently, because by Saturday the weather was windy but clear. The jury trekked about town, in their turn, being briefed about the site, the community generally, and its rich architectural heritage—also driving way out amid the sand dunes of the National Seashore to Race Point. That afternoon, each team, given 45 minutes, made its presentation, and, after a break for dinner, the jury began deliberating, often hotly. This was to last until nearly three o'clock Sunday morning, with the formal announcement ceremony scheduled for eleven. All night, small groups of passers-by kept coming by the Flagship, peering in the windows, to see if the jury was still up. As it happened, a few of the architects were still up, too.

The jury's decision made, the Hellers and Marlin sped off toward the White Dory in hopes of kidnapping winner William Warner before anyone else could see, and tell him that his scheme, by far the most conservative, had won—even though the jury, before hitting the hay, had to agree that all the designs had been clearly a cut above. It was enough to make some wonder why many competitions allow eight weeks or eight months—in contrast to the short time allowed here—to produce a comparable array of artistic and technical evidence.

The Provincetown charette was not dreamed up as a template for every project and every place, but in principle it asked, answered, and admittedly left some questions hanging about competitions generally. Most of the architects seemed to thrive, working together in one place; yet a couple, while praising the on-site, public open-house approach, since say they would have felt more comfortable going back to a room of their own to do their designing and drawing. The open-house itself remains a question in the minds of the organizers. Was two hours a day of give-and-take with townspeople enough, or too much, or distracting? Over





John Gregory



Norma Holt



800 had shown up over the week. For their part, the architects listened intently to suggestions and recollections and opinions, and the spontaneous absorption was, most agree, as instructive as their immersion in the physical and natural surroundings.

Playing Monday-morning quarterback, one recognizes that certain preparations for the charette could have been handled better. While supplying site plans and copies of local and state statutes, it would have helped had a base model also been supplied for common reference, especially from the standpoint of dimensioning the surrounding streets and buildings. Also, the briefings about the town's laws and lore, though informative and entertaining, could have used a more formal, pointed format. Yet the casualness had its constructive aspects, too. The program, with its rhapsodic references to fireplaces as symbolic "anchors of fire," and to the lobby as "a commodious but cozy living room," set a flexible, affable relationship with the client, the program being progressively reprogrammed.

Finally, there is the question of *paying* architects; in this case, the budget allowed only for expenses, and one team, figuring up all the time spent, reported that it had "gotten paid" about \$3.33 an hour—hardly a fact, even in jest, that one would want a present or future client to know. Fact is, of course, that most competitions, whether conducted by government agencies or major corporations, don't begin to cover the time, talent, and material effort that go into them. It is not far off the mark to say that so-called stipends cover barely half of what a competing firm really expends. To be sure, stipends should be paid in proportion to the means of the organization tapping architectural talent and in proportion to the effort that organization is presuming of the talent it invites. The Playhouse, at this stage of its regeneration, had the means, and barely, to make an important point, to both this town and the country as a whole, about the dividends of selecting architectural designs that reflect locational charac-

ter and inspire public awareness of both a building's and a community's potential. And the case can be made that this "competition" really was a special case—setting a larger cause in motion.

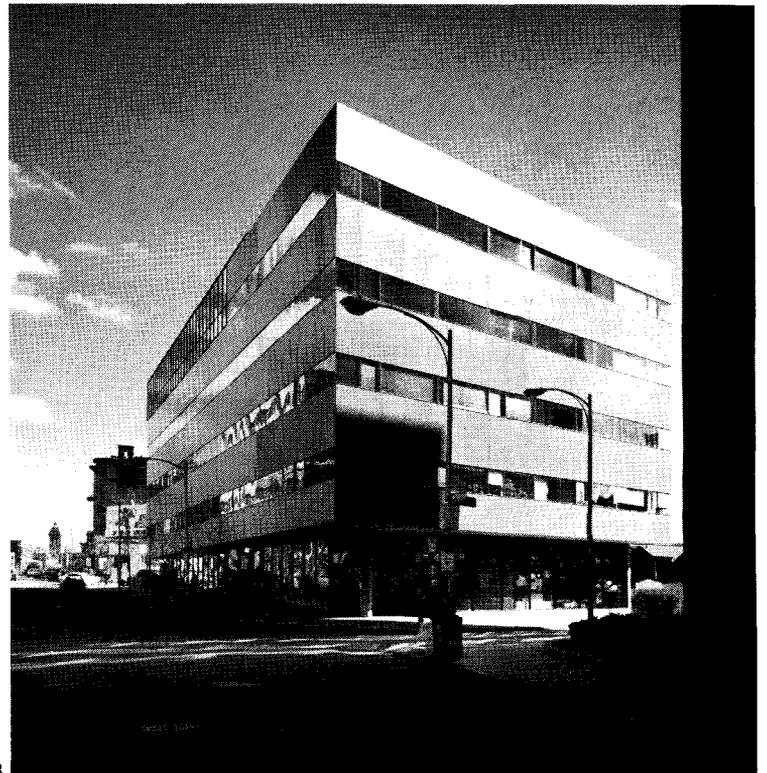
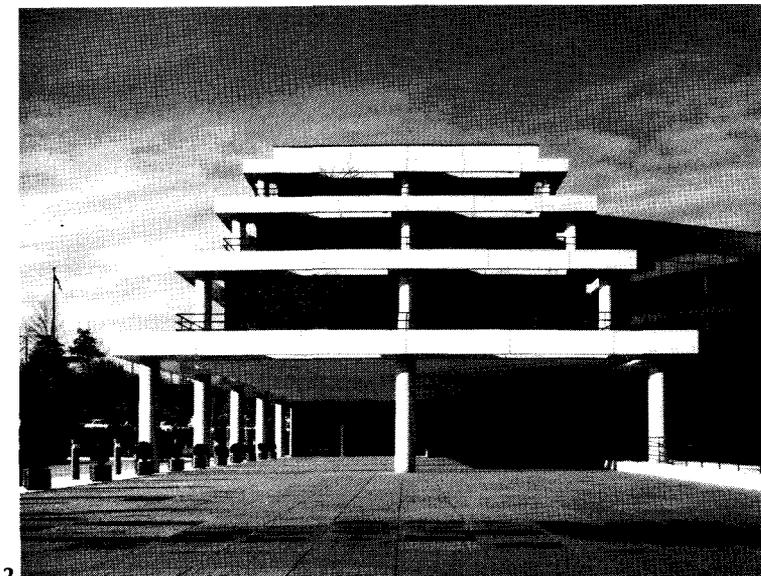
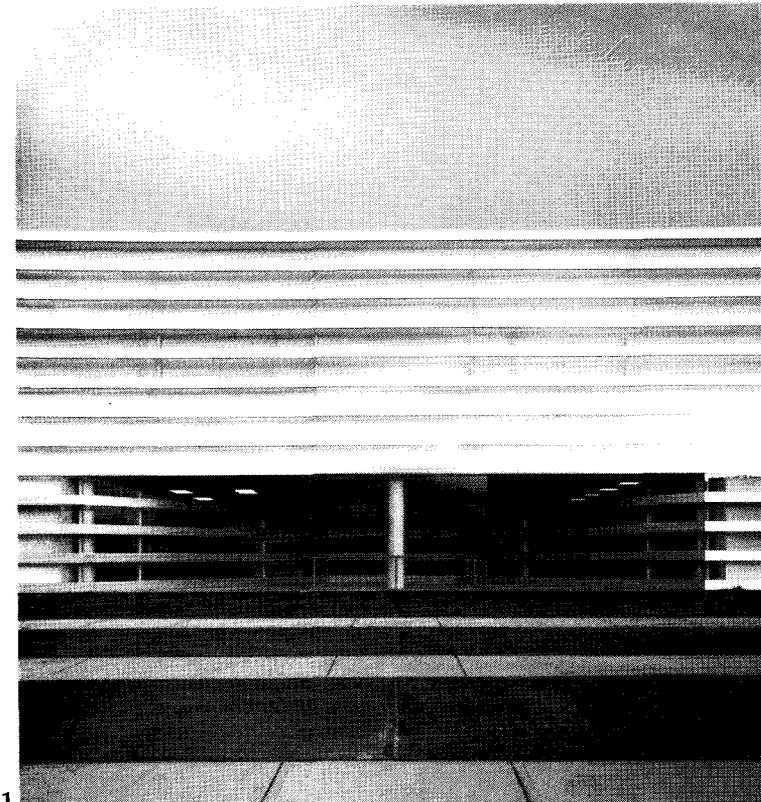
Over 500 people showed up that Sunday morning, at The First Universalist Church, to hear the announcement about William Warner and to hear Helen Hayes call the effort "an exercise in grace reborn. History, drama, architecture, and Provincetown will all be enriched by your venture here." I.M. Pei said the charette approach would "set a standard for selecting the design of community, cultural, and other publicly oriented facilities." Roy Knight, who, until just recently, headed the National Endowment's Department of Architecture, Planning and Design, said that the event had demonstrated how architecture can be public property in the fullest sense, and his successor, Michael Pittas, having driven down from Boston out of curiosity, privately allowed as how the experience might strike more chords with respect to the Department's future attitude toward assisting feasibility and schematic studies for facilities of this sort. Barbara Gelb, who, with her husband Arthur Gelb, the managing editor of *The New York Times*, brought out a biography of Eugene O'Neill, recounted how Provincetown had been the birthplace of his art, what he and the original Provincetown Players had gone through and been moved by. Finally, though, it was the teams as a whole, sitting there surrounded by the Church's spectacular *trompe l'oeil* columns, alcoves, and dome, who got the longest, strongest, and most even applause—for having had confidence in a principle, the revitalization of a cultural resource, and the invigoration of a community's human spirit. As Tennessee Williams said, when the Playhouse burned, "Hundreds of theater people have lost their roots." Not for much longer, but as important, because of the tack taken in Provincetown, hundreds of architecture people have learned something about where their own roots really are.

Office buildings will be one of the most active areas for design and construction this year. The Dodge/Sweet's Construction Outlook predicts a 1979 increase in contract value of 16 per cent to a new high of 215 million square feet, and reports that, "No other construction market has changed over the past few years as this one. The office building boom of the early 1970s reached its peak in 1973, leaving a glut of empty office space. . . . By early 1978 the surplus office space became a shortage. A new boom is now underway. . . matching the record output of 1973, but this time with less risk of overreaching demand."

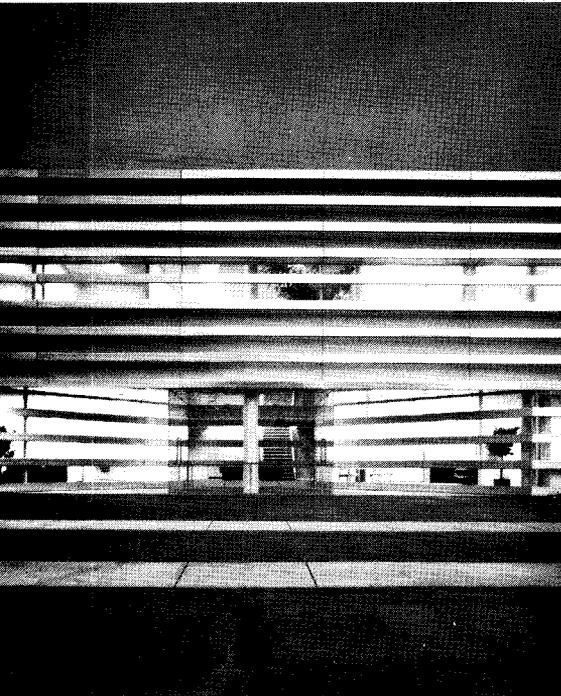
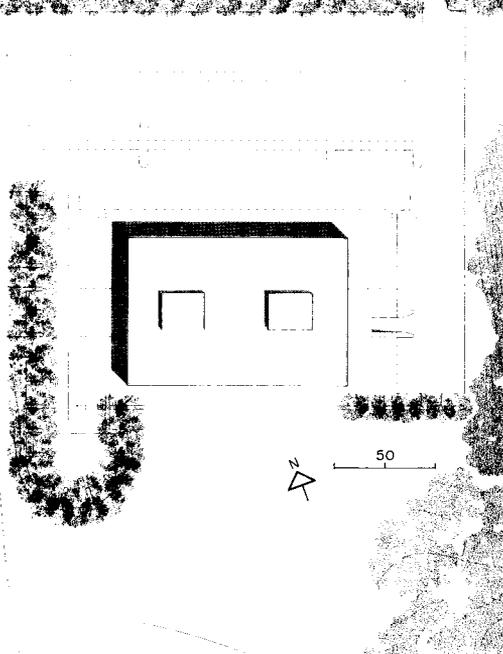
So the matter of quantity is no longer a question. The question that remains: What about quality? In the hustle and bustle of the 1973 office-building boom, a lot of dubious design was dropped into the suburbs outside almost every city and along the city streets outside the high-rise core.

This Building Types Study is intended as a reminder that these modest buildings deserve the same design effort and quality as the most prestigious corporate headquarters. Each of the three office buildings chosen for this Study are Capital-A Architecture—not just functional, not just efficient, not just budget-conscious—but strikingly handsome, fresh and innovative, offering that "something extra" that makes a fine building. Each architect has mastered complex contemporary problems in a very special way—special in concern for energy conservation, appropriate imagery, artful land planning, and suitable materials. Each appears to be a simple and direct solution—but that, of course, is the hardest kind of design. —Janet Nairn

### 3 OFFICE BUILDINGS



1 Equitable Life Assurance Society  
 2 Sun Company, Inc.  
 3 Office at 1050 Massachusetts Avenue, Cambridge



**EQUITABLE LIFE  
ASSURANCE COMPANY  
SOUTHERN SERVICE  
CENTER, CHARLOTTE**

This very sophisticated, crisply disciplined design—with its abstract and scaleless imagery—has that look of a corporate headquarters. But it isn't. It's a spec office building—designed, built and open for business in an incredible seven months.

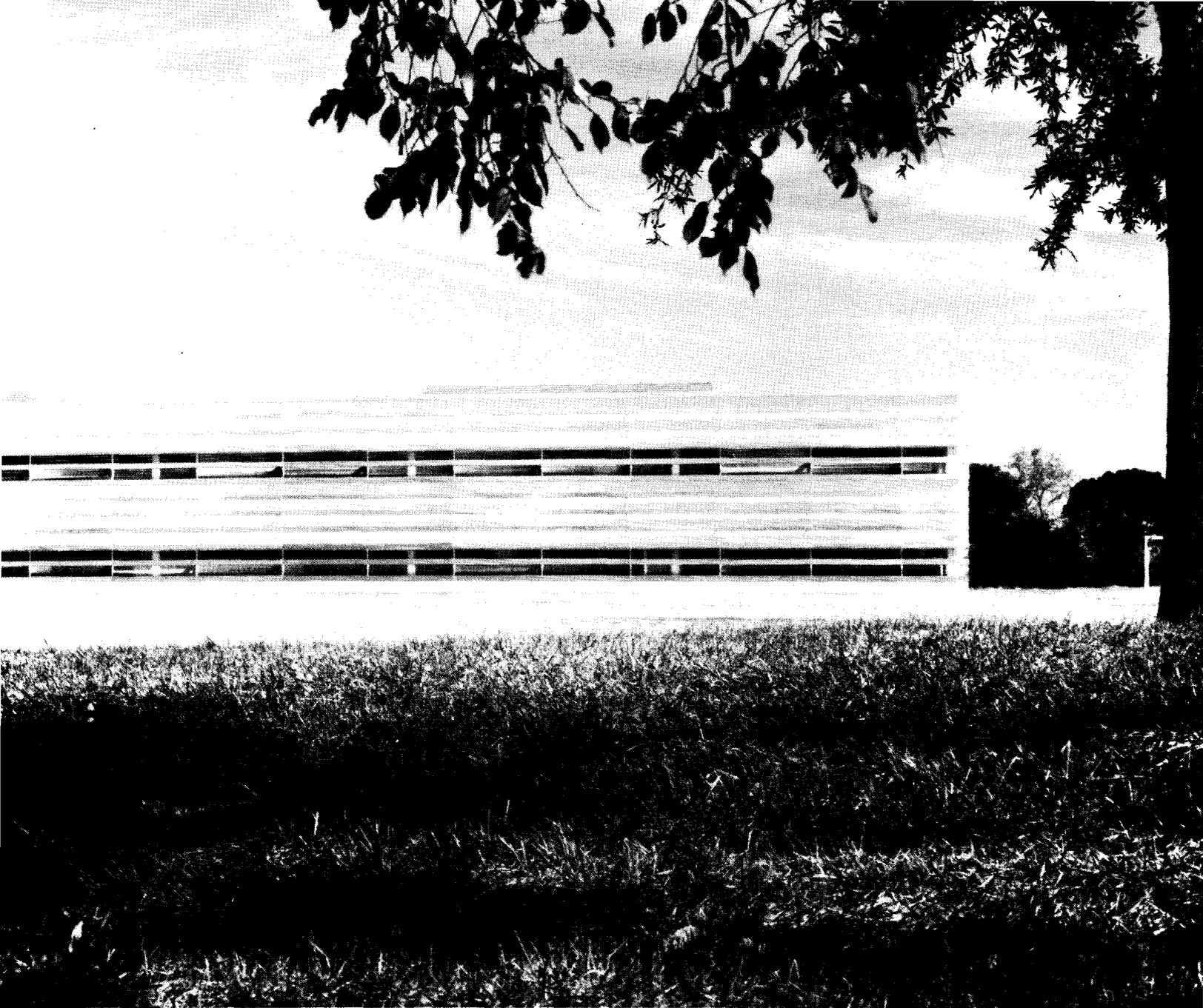
The developer approached architect Harry Wolf with a proposal that they work together to develop a design for an office building to be presented to an unknown client. Few programmatic criteria had been established: 65,000 square feet on two levels; parking for 350 cars; large open office areas; two entrances to allow for the possibility of two major tenants; and the need for an extensive communication network to accommodate heavy office-machine use. After a five-hour session with the developer, Wolf Associates produced, within 24 hours, a conceptual proposal. That proposal was selected from among several other architect-developer proposals, and the client was revealed as Equitable Life Assurance Society.

"The severity of time and budget

restraints required an absolute commitment to the consistent and efficient application of building systems," explains Wolf. Using the fast-track method, standard and available materials were specified, and simultaneous construction of different systems was set up. The building is a steel-frame structure with a slab-on-grade foundation and a composite second floor slab, both containing integral power and telephone line distribution. The mechanical system is a variable air volume with multi-zone rooftop units. The edge of the slab on grade was designed as an extension of the perimeter bands to help tie the curtain wall to the ground.

"Since the program was so abstract," continues Wolf, "we decided that the building should express this abstraction, purposely disguise the necessary regularity of elements inside." Part of the abstraction was the site itself—once a farmland estate, open and flat, with trees only at the perimeter.

The building's linearity is reinforced by an emphasis of alternating horizontal bands.



©David Franzen/ESTO photos

Vision glass was specified and set flush with the brushed aluminum to create some sparkle and reflectivity and add to the illuiveness of floor levels. By shifting the spandrels back and cantilevering the curtain wall a three-foot-deep air space is trapped around the building between the inner core and the curtain wall. This space is an insulation and the curtain wall acts as a weather screen.

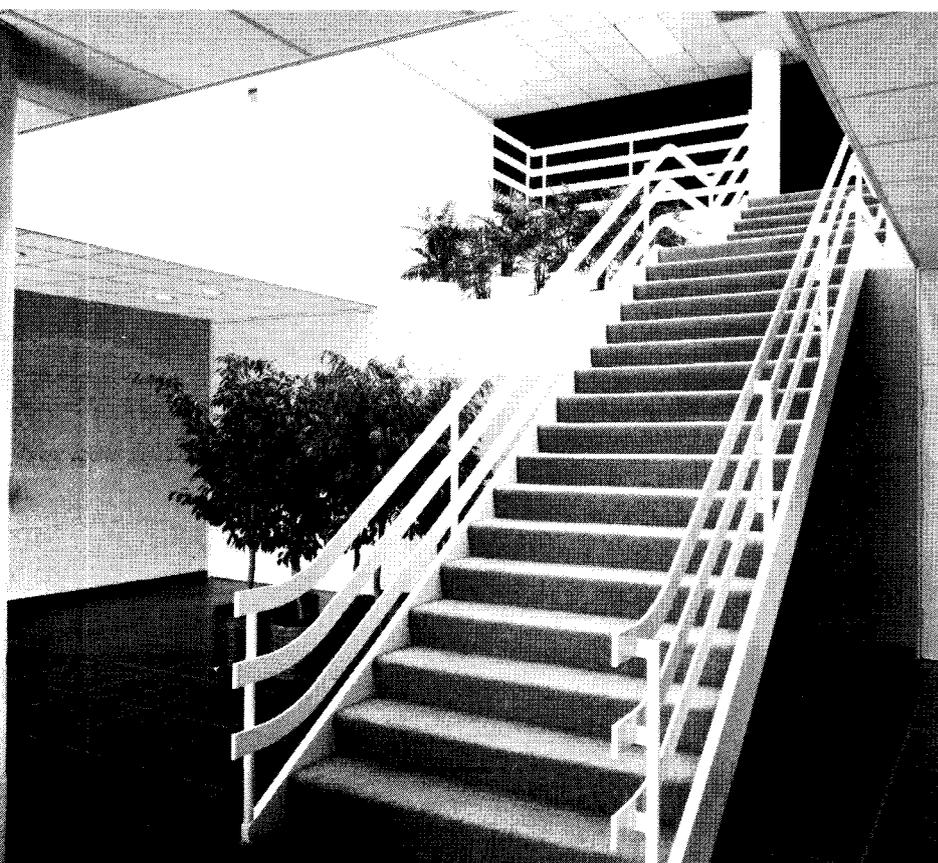
The intent of this perimeter zone (the "solar belts" as they are called by the architect) is to maintain either warmth or coolness as a jacket around the core area, so the mechanical systems can maintain a comfortable temperature range in the interior spaces, thus using less energy. In the winter, heat from sunlight entering the south and west walls and "trapped" in the solar belts is circulated by a fan around to the north and east sides. In the summer, cooled air (from air-conditioned interior spaces), prior to being exhausted from the building, is circulated through the solar belts, primarily on the south and west sides. Sun-warmed hot air in the

perimeter zone is immediately exhausted. The system was designed to conserve considerable energy as well as provide significantly greater comfort at the perimeter of the building—and it works. Projected energy consumption data indicates a maximum four-year payback, based on energy costs when the building was first occupied in late 1977.

The banding of glass and aluminum is continued around the building, creating the sleek, hard-edged exterior. The banding is unbroken even at the entrance (detail upper left) to maintain a visual continuity on this elevation—though the doors are set back. The entryway is notched out, exposing the concrete column at that point. Even it is "abstracted" by a glass panel positioned in front creating some reflective qualities during the day. At night the column appears superimposed over the bands. Paving on this elevation is comprised of three linear paths parallel to the building in a light color. A broad swath of darker-colored concrete leads to the entrance and parking area.

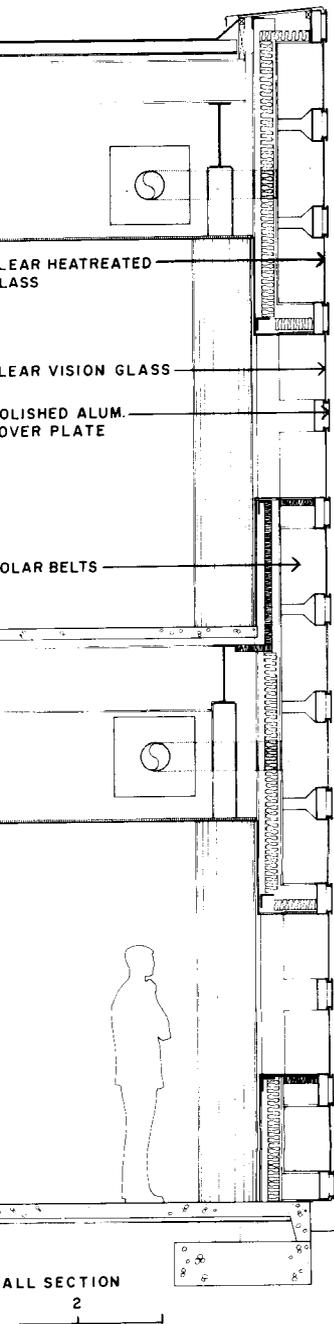
Harry Wolf's design philosophy is one of achieving a sophisticated design through the creation of abstract imagery—through a reductive process. The comment of the South Atlantic Region Jury, which gave this building a Merit Award: "This building accepts all the ground rules for speculative development—simplicity, economy, parking and siting—while boldly asserting the architect's role as one of giving distinction to a kind of building that is often banal or vainly bombastic. A horizontally-banded curtain wall adroitly confounds conventions of scale and figure/ground achieving thereby an appearance both sleek and memorable."

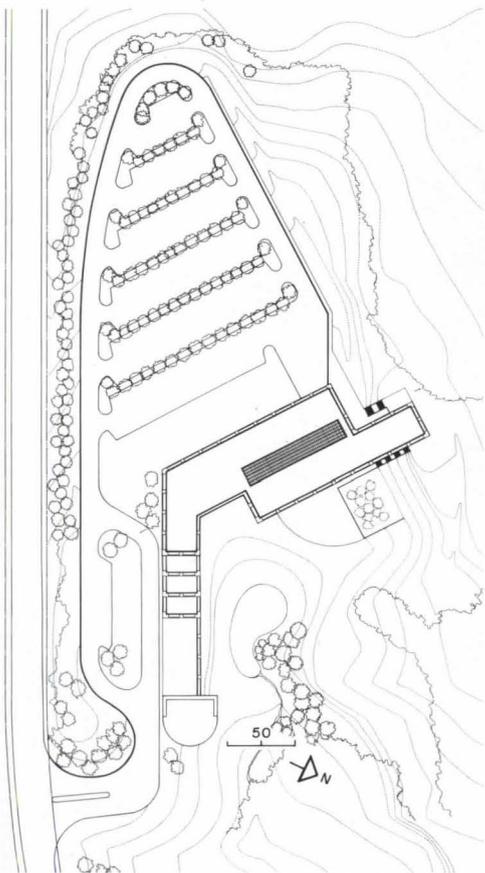
EQUITABLE LIFE ASSURANCE SOCIETY/SOUTHERN SERVICE CENTER, Charlotte, North Carolina. Owner/developer: *Bissell and Associates*. Architects: *Wolf Associates—Philip Scive, project architect*. Engineers: *King-Hudson Associates* (structural); *James A. Story Associates* (mechanical); *Bullard Associates* (electrical). General contractor: *F. N. Thompson, Inc.*



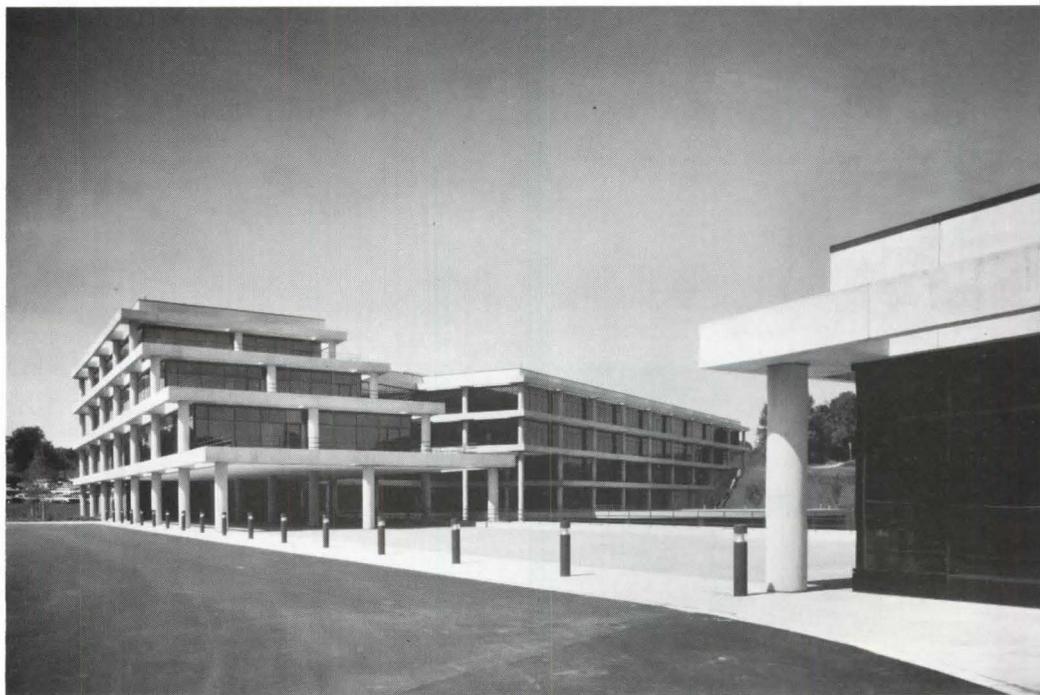
The design thrust of the building was to create a successful abstract imagery through the use of a layering of spaces and form that could be depicted from both the exterior and interior. The outer layer is a custom curtain wall of alternating horizontal bands of vision glass (18 inches wide) and brushed aluminum (9 inches wide). Another layer is the wall of the inner core of the building—set back three feet to permit circulated air to insulate the core from extreme cold and heat and to hide vertical structural elements that would detract from the

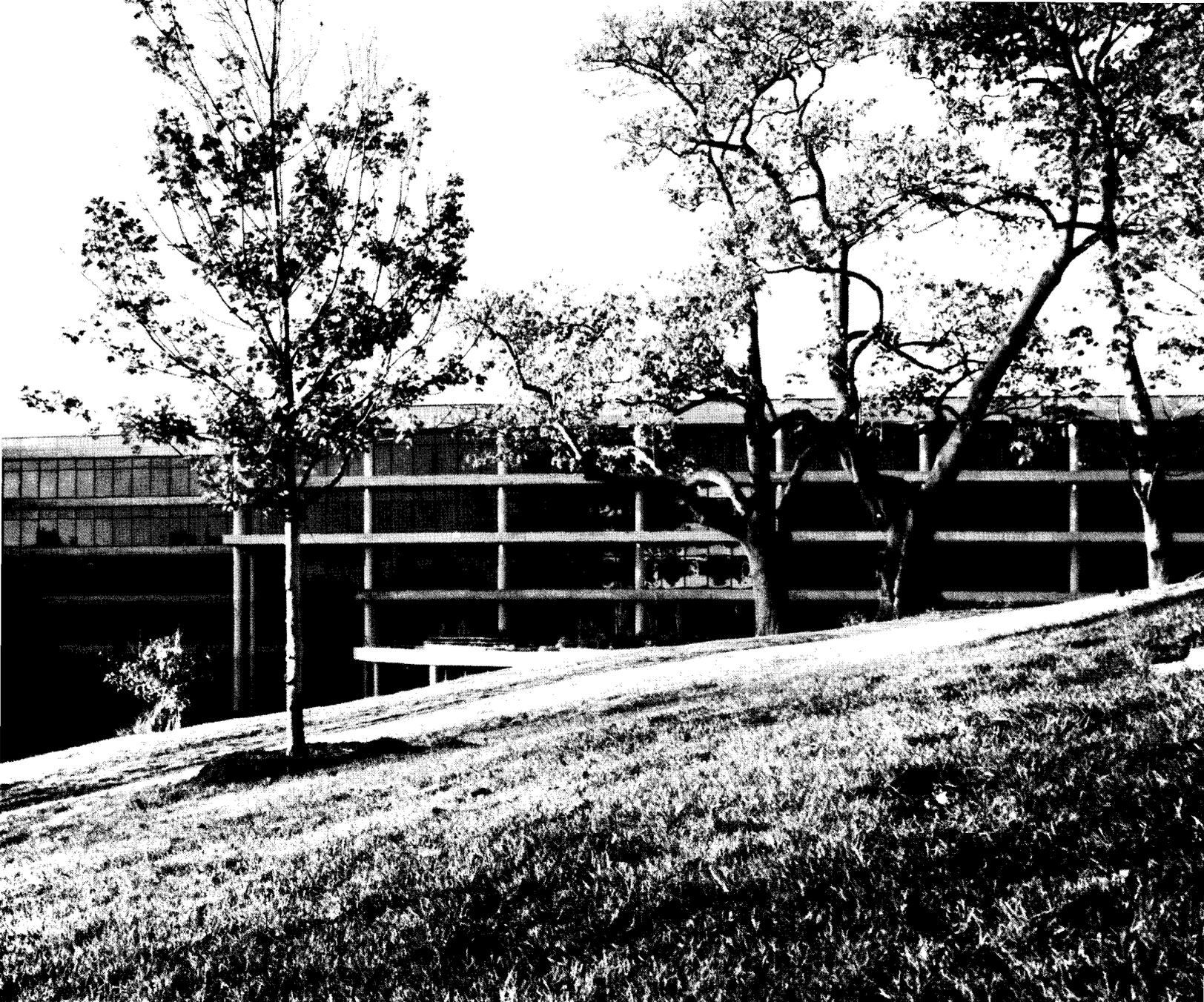
visual linearity. A further visual layer is the white color of the painted wallboard used in the interiors. The interiors, (above) designed by the client, do maintain a perimeter corridor to reinforce this layering principle. The stairs (left), the only interior aspect designed by the architect, recall the banding of the exterior. Horizontal blinds control the natural light. There is a duality of an inside-outside dimension to the wall: while a person is standing along the perimeter looking outward, there is both a transparency and a conflicting reflectivity to the glass.





**SUN COMPANY, INC.  
CORPORATE  
HEADQUARTERS  
PENNSYLVANIA**





exterior photos by Lawrence Williams

This intricately shaped building is the result of inventive site planning based on varying client criteria and unusual site requirements: the owner wanted a strong corporate image and an elegant environment for this headquarters building—but the building was to have a low profile physically and psychologically to the neighbors of the lush 72-acre site in Radnor, Pennsylvania—very much a “Philadelphia Main Line” community.

After extensive geologic and natural site studies, the architect decided to locate the structure on the most difficult portion of the site—a valley that has a 40-foot change in grade with poor soil conditions. Other sections of the site would have been far more suitable for construction, but these are left in a natural state for possible future office expansion. A five-story-high building was laced into this valley and the full height can be seen only from the lowest point in the valley and site.

The corporate headquarters is limited to only the executives and their support staff;

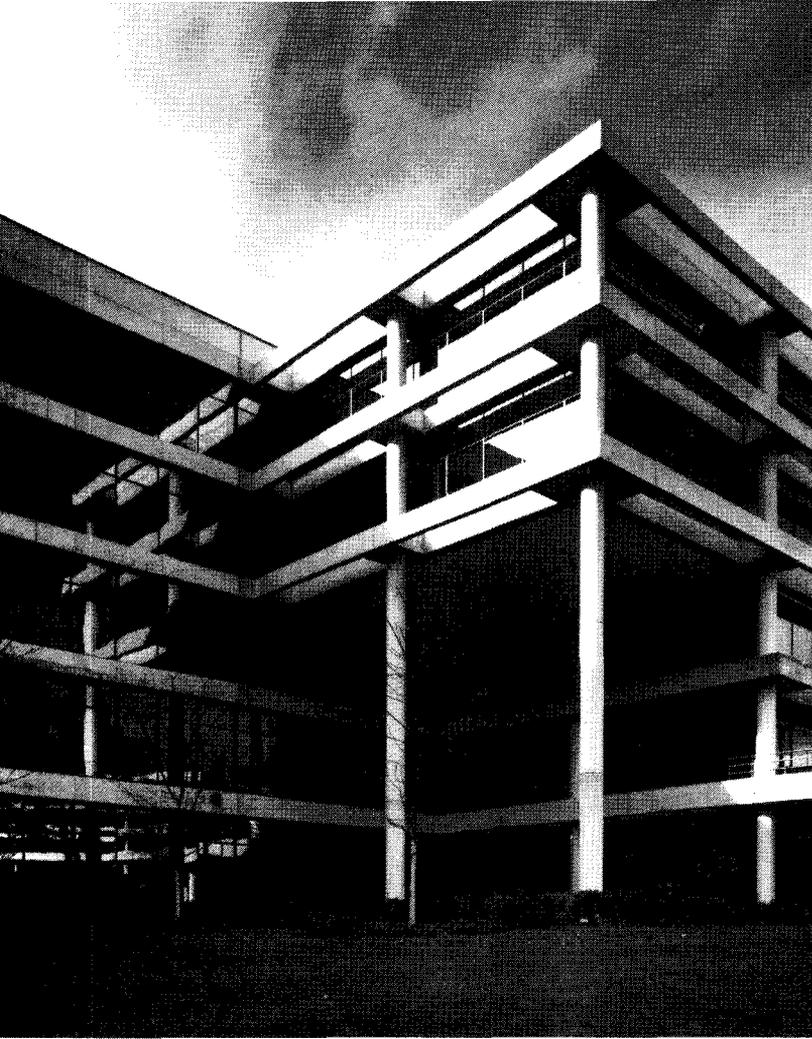
private windowed offices for the executives were requested thus dictating a linear design approach to facilitate many perimeter private offices. In order to bring light and life to the interiors, a central skylighted galleria was created to admit natural light and provide open space. The galleria is a highly formal space, which sets the tone throughout the building.

The configuration of the building is a direct result of the shape of the valley. A management training center fits into an angled extension (an arm from the main body of the building) and the cooling tower was located in the end of this section (the “fist”). The training center is therefore separated from the day-to-day operations and can handle a maximum of 250 persons without any intrusion or interruption of the executives. From an access road near the building, this section cannot be seen.

Community interaction was particularly encouraged by the client so many meetings were held with citizens and community lead-

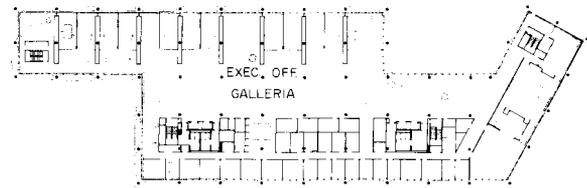
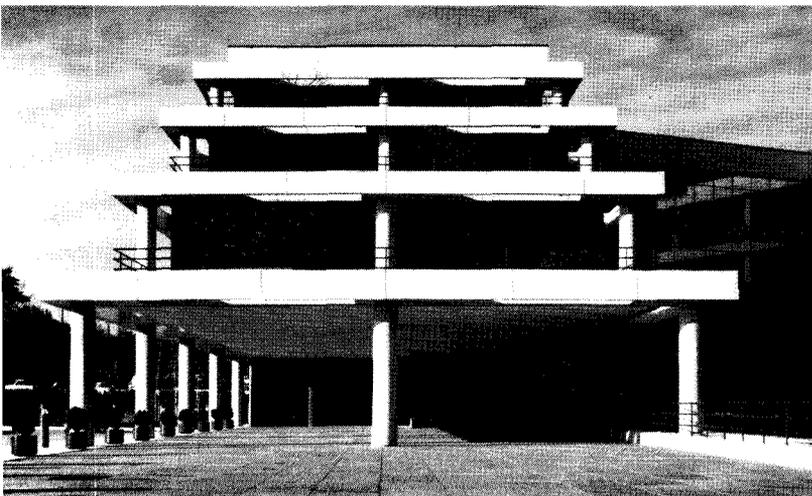
ers. Extensive studies were done for the environmental planning report and the Department of Environmental Resources. In agreement with the latter department, three water retention basins were constructed to prevent flooding and thus improve the protection of previously designated historic areas downstream. A hundred-year storm analysis was also made; extensive circulation patterns were studied in regard to vehicular traffic near a local railroad station.

The exterior design is the most intricate aspect with the deft handling by the architects of exposed concrete structural elements versus hidden forms. Exposed concrete spandrel beams tie the perimeter columns and the remainder of the exoskeleton together. Reflective glass was specified, which aids in concealing the structure from afar, but also creates interesting patterns of light and shadow close-up, during all times of the day. At sunset the whole facade becomes even more reflective, with a duality of columns becoming dominant.

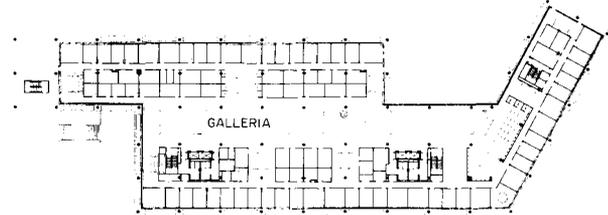


The scale of the building is easily perceived because of the direct expression of the exposed exterior columns and spandrel beams, and the form is strengthened by the reflective glass. A cafeteria, with a view to an open natural area, is set back under the upper stories at one corner of the

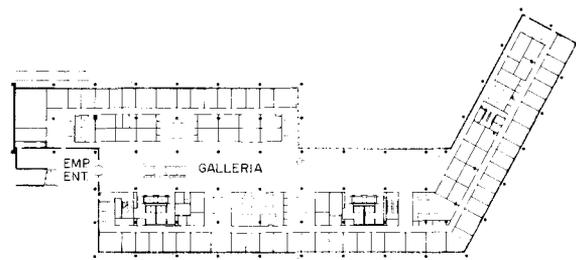
building (above). The Corporate Executive Officer's office (see overleaf for interior) is located on the top floor at this corner. The entrance (below) is open on the sides; each upper level is stepped back, highlighted by a regulation in columns creating an exciting, processional entrance.



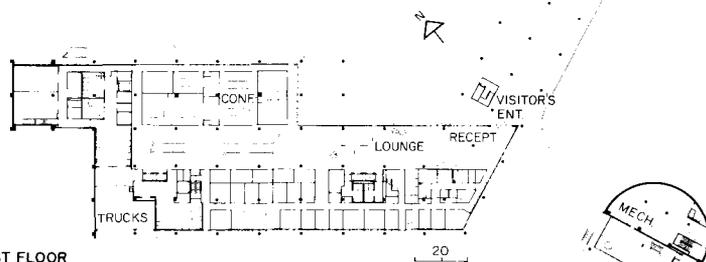
FOURTH FLOOR



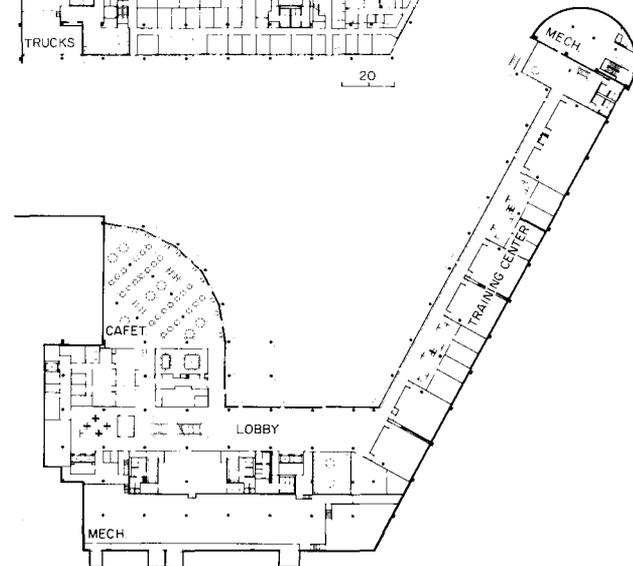
THIRD FLOOR



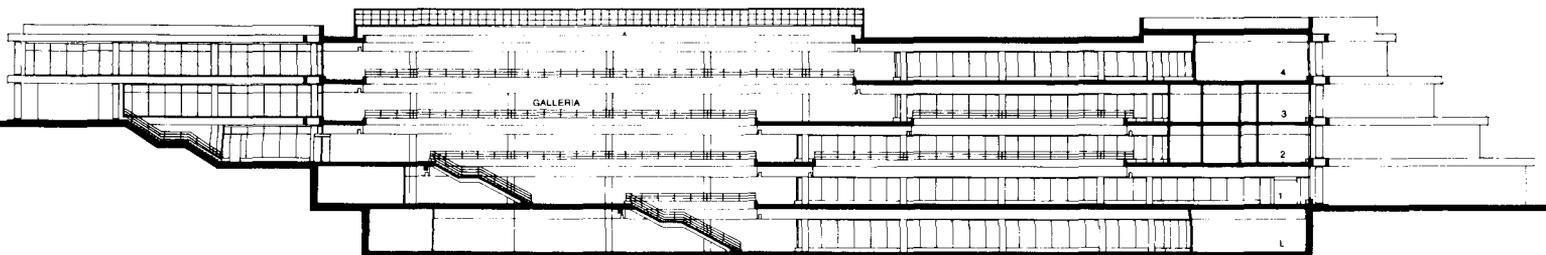
SECOND FLOOR



FIRST FLOOR



LOWER FLOOR





While the exposure of these structural elements diversify the linear design approach, they are most importantly an expression of scale and proportion giving the appearance that the building is lightly settling on the site. In developing an "activity" on the facade, there is now a distinctive nature to the whole exterior.

Because of substantial grade changes around the building perimeter, reinforced poured-in-place concrete (with local aggregate) was used. The hvac system is computerized and operated from a management computer console. A variable air volume system is used; and the lighting measures two watts per square foot, mostly from parabolic illuminators used throughout.

The lower level contains a physical fitness area, record storage, executive dining rooms, the management training center and a cafeteria. The cafeteria was positioned near the inner corner angle and looks out onto a pool and natural area. Parking is on the high side of the site, but is terraced and land-

scaped to minimize its intrusion. The main level (called first floor on the plans) contains the main entrance and reception area and a cluster of conference areas. The second floor has the employee entrance (opening off the parking lot for convenience)—the first view for the employee upon entering through this entrance is the grand galleria space. This floor is filled-out with perimeter private offices.

The third floor continues the typical configuration of outside offices but also includes a library, one portion of which overlooks the main reception area near the visitor's entrance. The office space changes on the fourth level, with the Corporate Executive Officer's office located at the most dominant corner of the building on the northeastern elevation. Positions for support staff throughout these floors receive natural light through the skylight as well as some light filtering from the perimeter window wall. There is a simple, direct circulation flow through the center of the building so no person is isolated by office location.

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SUN COMPANY, INC., CORPORATE HEADQUARTERS, Radnor, Pennsylvania. Owner: *Radnor Corporation* (a real estate development subsidiary of Sun Company, Inc.). Architects: *John Carl Warnecke, FAIA*, Architects and Planning Consultants New York office—*Roger Lang*, project director; *Michael Koenen*, director of planning and community relations; design team: *Sudhir Jambhekar*, *Tom Lahmers* and *Demetrios Pantazis* (job captain). Engineers: *Lev Zetlin & Associates* (New York office)—*Donald Griff*, partner-in-charge (structural); *Meyer, Strong & Jones*—*Frank Nekola*, project engineer (mechanical), *James Kaloudis* (lighting design). Consultants: *Eberlin & Eberlin* (site engineering and landscape architecture); *Robert A. Hansen Associates* (acoustics); *Sarstedt Associates* (food service); *Betty Bowes* (art). Interior design: *John Carl Warnecke, FAIA*, Architects—design team: *Nancy Hertzfeld*, *Sylvia Owen*, *Sina Pearson*. General contractor: *Turner Construction Company* (Philadelphia office)—*Donald Kerstetter*, project executive; *Eric Goldman*, project engineer; *William Rantanen*, project superintendent.



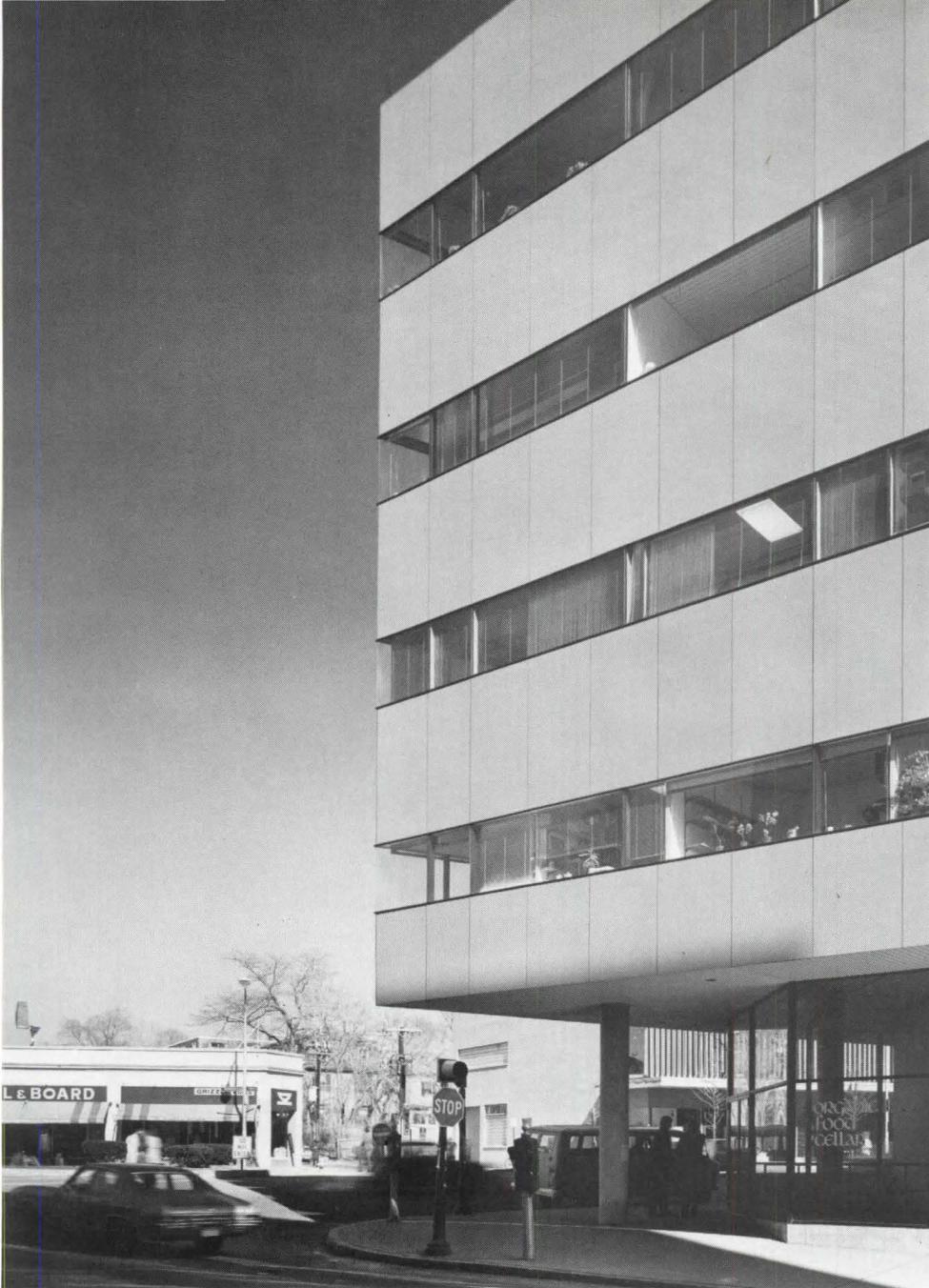
A five-story-high open area is underneath an enormous skylight (opposite page) called the galleria. In a similar kind of space, the main reception area (right), is highlighted by a Harry Bertoia sculpture called "Sunburst." On the third level and overlooking this seating area is a portion of the glass-enclosed library. The prime client criterion was to have perimeter offices for all executives and a typical configuration of this (below) shows a glass wall on the perimeter and along the

inner corridor with solid walls between the offices. Three levels of offices exist—executives on the perimeter, executive assistants in inner offices and support staff in moderately high custom-designed work areas (below left). The Corporate Executive Officer's office is on the fourth level (above), with a view over the partially surrounded courtyard. Because the building is occupied by only the company's executives, there is a low density in number of people.

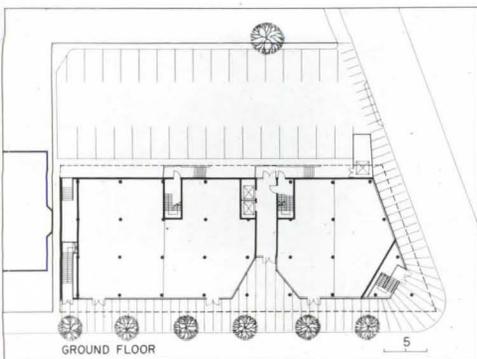
interior photos by Norman McGrath







**OFFICE BUILDING  
IN CAMBRIDGE AT  
1050 MASSACHUSETTS  
AVENUE**





©Steve Rosenthal photos

This exceedingly handsome though modest office building was designed as the first thrust in an effort to renew a portion of a run-down neighborhood. Massachusetts Avenue between Harvard and Central Squares is a collage of buildings of different eras, in different materials and styles, and in different stages of deterioration. The new bright spot in the neighborhood in this five-story-high 60,000-square-foot structure.

The architects were forced to leave old established quarters—and in the process decided to team up with a developer to own and design a new office building into which they would move their own offices. After studying various neighborhoods and sites and delineating what would be necessary to have a successful venture, they decided to lease land on a long-term basis on a prominent corner of Putnam Square, and demolish several old buildings that were beyond repair. The rentable office space had to be competitive in rent with Cambridge and Boston; this was managed by designing a building shell

that cost \$25 per square foot. Quality retail space was seen as both desirable and necessary to the venture—particularly in this area that has a hodgepodge of retail outlets. The retail space is all glass-enclosed, with the store fronts recessed to gain shade from the building's overhang and to protect window-shoppers from rain.

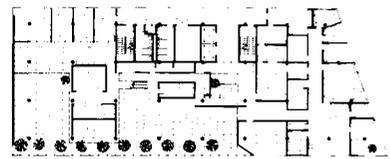
There are three layers to the structure—the glass-enclosed street level, the rental office space on the middle three floors clad in bands of glass and panels, and the architect's office on the top level—with its special treatment of the facade. The most striking visual element is the studio window running half the length of the top floor, admitting a tremendous amount of light into the architect's drafting room. At night the interior lights serve to highlight the three different layers, showing up the street level and top floor to their best visual advantage.

The skin of the building is composed of flush-mounted horizontal bands of windows and panels. The architectural panels are ½-

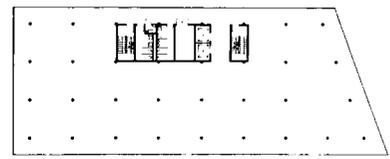
in.-thick mineral fiber reinforced cement board, self-cleaning and resistant to chemicals in the air, imported from a Belgium manufacturer. The color is a soft warm brown. All panels are fastened from behind to maintain an uninterrupted exterior image.

Cambridge Seven Architects needed flexibility in their space, for they build large models and often test products in-house—and therefore they wanted loft space. A 19-foot floor-to-ceiling height was designed for the top floor. The important building elevation is that which faces the street, the northern, and it was here the studio window was positioned.

OFFICE BUILDING AT 1050 MASSACHUSETTS AVENUE, CAMBRIDGE, MASSACHUSETTS. Owner: Putnam Circle Associates. Architects: Cambridge Seven Associates, Inc. Engineers: LeMessurier Associates/SCI (structural); Symmes Maini & McKee, Inc. (mechanical/electrical). Landscape architects: Carol R. Johnson & Associates. General contractor: John B. Deary, Inc.

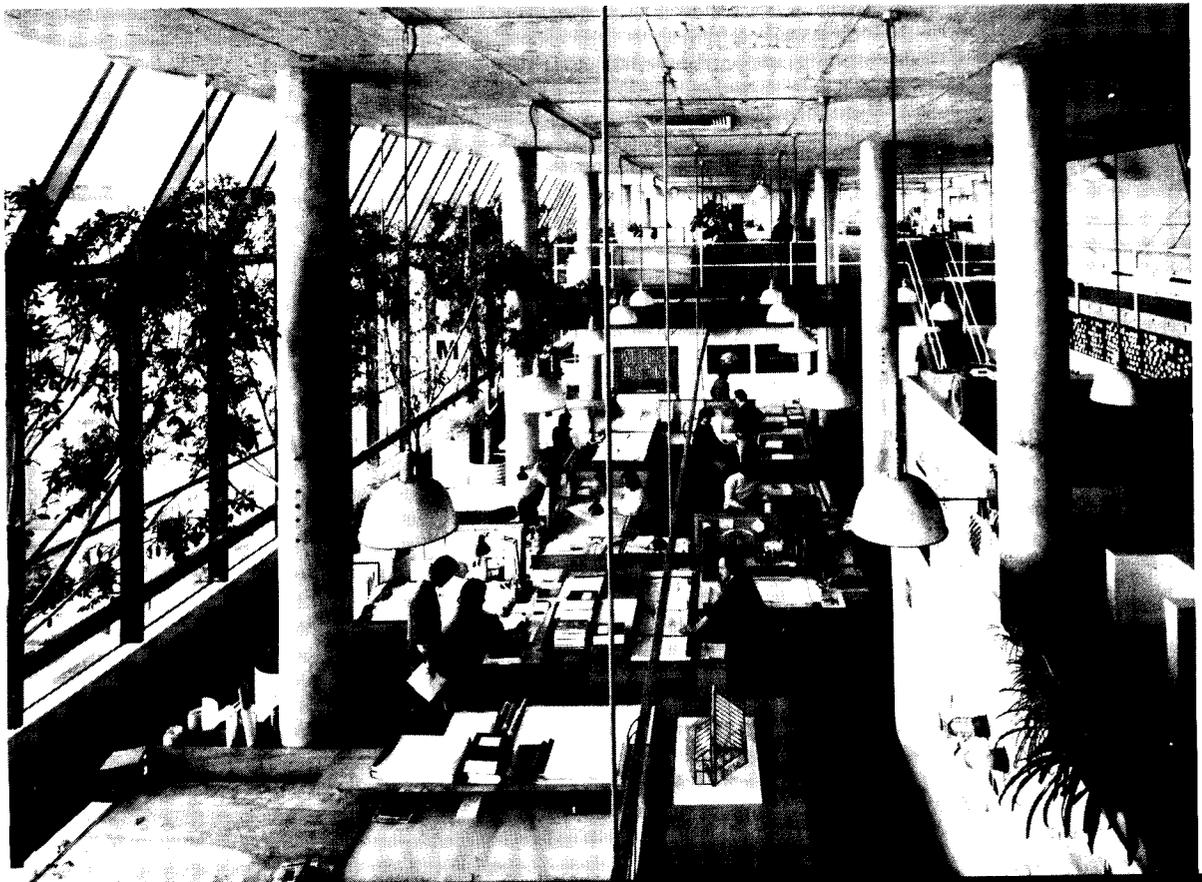


FIFTH FLOOR



TYPICAL FLOOR

The fifth floor of this office building in Cambridge, designed by Cambridge Seven Associates, Inc., houses the architects. A high studio window that runs half the length of the building admits abundant light into the drafting room. A mezzanine level can be added or rearranged for huge timber girders can be attached to any column by screws; pre-drilled holes are found in each column (below). Glare can be a problem with light streaming in through the studio window, but it has been reduced by the introduction of trees. Electrical wires for industrial lights and telephone lines run in raceways, painted green (above), that crisscross above the working areas.

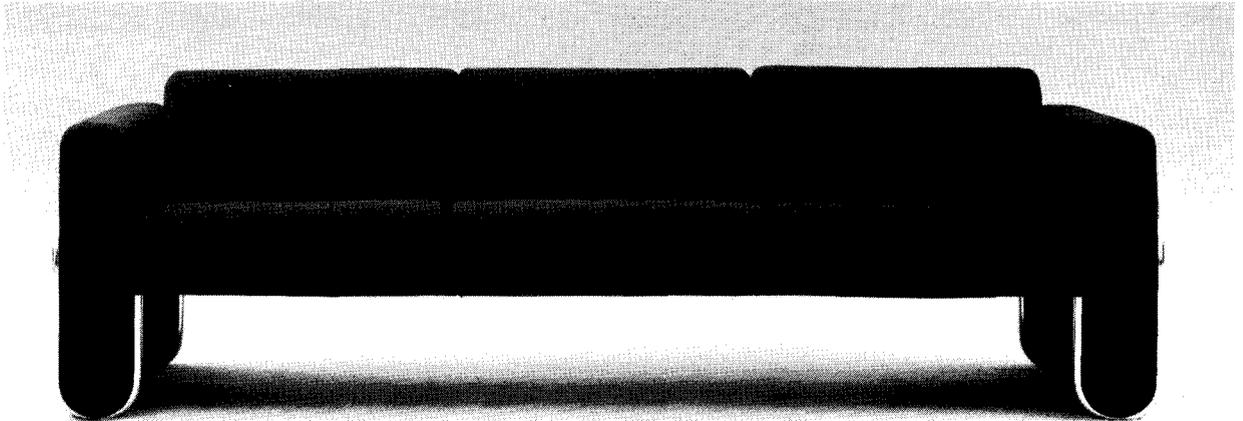


For more information, circle item numbers on Reader Service Inquiry Card, pages 237-238

## Classic lines highlight new modular furniture design

A clean, crisp, contemporary design for a modular furniture system has been introduced as the Robin Series. Designed by Dave Woods, the sofa (right) is only one configuration of one- to four-seat versions. Arm cushions are interchangeable from the inside to the outside, and back and seat cushions are identical and interchangeable. A steel tube frame supports the cushions, which come in a variety of materials. ■ JG Furniture, a division of Burlington Industries, Quakertown, Pa.

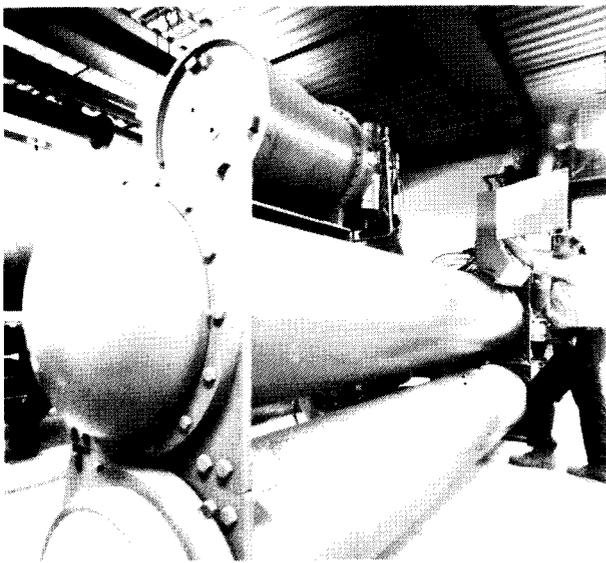
circle 300 on inquiry card



## New vertical fire escape chute tested in the United States

A unique fire escape chute for vertical descent from a burning building may be the newest safety device to be approved for use in the U.S. Manufactured by the Japanese firm of Uyeda Escape Chute Construction Co., Ltd., the chute was recently demonstrated to American officials in New York City, having already been approved by 28 countries as a secondary means of escape. Called the Super Ace S-5, it is designed for use on the third through twentieth floors, allowing for a descent speed of between 2.18 to 5.91 yds per second. The chute has a frame of stainless steel springs and fiber synthetic rope, enclosed by a nylon cover. The landing point is shaped like a capsule and is cushioned. The chute is fire resistant and is claimed not to be affected by winds. ■ Information from Sumitomo Corp of America, New York City.

circle 302 on inquiry card  
more products on page 161



## Heat pump salvages and reuses waste heat

The Templifier is an industrial-type heat pump that can be used in factories to recover low-grade waste heat and boost it to temperatures as high as 230 F for process use. It also is being used to boost the temperature of water from flat-plate solar collectors from 100F to 190F, and for producing domestic hot water for hotels and other commercial buildings at 125 to 140 F. The name Templifier is an abbreviation for "temperature amplifier." The Templifier heat pump, which comes in production-line models up to 80-100 hp, can lift the temperature of recovered heat from

80 to 90 F, with a co-efficient of performance (COP) of 4 to 4½. While the upper limit of the lift now is 230 F, as new refrigerants are developed it is expected to reach as high as 400 F. The Templifier can be used wherever there is free waste heat in the form of water, or some similar fluid. At present, the major uses for the Templifier appear to be for industrial and commercial space heating, for heating boiler feed water, and for food-processing, metal-cleaning, and petrochemical industries.

■ Westinghouse Electric Corp., Pittsburgh, Pa.

circle 301 on inquiry card



## OUR FURNITURE LIGHTS UP THE ROOM. LITERALLY.



In case you're puzzled about *which* piece of furniture provides *smooth* indirect lighting to this room, it's the tall, handsome structure in the foreground. One of the many versions of Torchier, the exceptional new task/ambient

lighting system from Wide-Lite.

Naturally, Torchier gives you all the advantages you expect from a task/ambient lighting system. Flexibility of luminaire location. Easy installation. An uncluttered ceiling. No visible light source. Tax advantages. And impressive energy savings.

But Torchier also offers some remarkable advantages no other does. Unparalleled visual comfort and visibility, with a choice of three distribution patterns. Ultra-Quiet operation. Our exclusive HID Dimming and LiteMatic Standby features. Sculptured design with rounded corners. Thirty standard laminate colors and a broad range of custom wood fin-

ishes. And our three-year limited warranty.

Now you can have both. The obvious advantages of task/ambient lighting, and the superior quality you expect from Wide-Lite.

With Torchier. Great-looking furniture that doubles as an energy-saving luminaire.

See your Wide-Lite representative for more information. Or write for our free brochure.

**TORCHIER.  
TASK-AMBIENT HID  
LIGHTING FROM**

**WideLite**

P.O. Box 606, San Marcos, Texas 78666. Wide-Lite® products also manufactured in Australia, Belgium (for Europe), Canada, Mexico, Great Britain, Venezuela and South Africa.  
A company of the  Esquire Lighting Group

For more information, circle item numbers on Reader Service Inquiry Card, pages 237-238

**ARCHITECTURAL CERAMICS** / High-fired ceramic panels up to 2 ft by 10 ft by 3/4-in.-thick, produced by Otsuka Ceramics, may be used for special architectural applications such as large-scale murals, table tops, etc. A color brochure illustrates several traditional Japanese and contemporary designs, executed on the panels by silk screening, hand-painting and low relief before firing at a temperature of 1,300 C. An almost limitless range of glaze colors and qualities may be used. ■ Design Technics, New York City.

circle 400 on inquiry card

**HAND-THROWN CERAMICS** / Stoneware ceramics and architectural site furnishings such as planters, signage and sand urns are formed by hand throwing or jiggering, then fired to 2,350 F to produce a subtle range of natural colors. Nine planter styles are available in sizes up to 30-in. in diameter and 25-in. high. A color folder shows these and other ceramics in smooth or textured decorative finishes. ■ Earthgender, Inc., El Segundo, Calif.

circle 401 on inquiry card

**WOOD DOORS** / An eight-page brochure, "The Facts about Energy and Wood Doors," stresses the importance of weatherstripping and efficient design in improving the insulating value of residential entrance systems. The natural insulating qualities of wood, a comparison of the insulating abilities of wood with other materials, and the value of using insulated glass in a door unit are also covered in the booklet. ■ Fir & Hemlock Door Assn., Portland, Ore.

circle 402 on inquiry card

**EXTENDED SURFACE AIR FILTERS** / An illustrated product brochure contains construction features, performance information and operating data on UL Class *Varicel* high- and medium-efficiency extended surface air filters. Sized to fit all hvac systems, these steel and glass fiber filters are recommended for variable air volume installations, among other types. ■ American Air Filter Co., Louisville, Ky.

circle 403 on inquiry card

**SOLAR ENERGY COST ANALYSIS** / An "Investment Benefit Analysis" form includes a series of computer-developed look-up tables to help the specifier determine the impact of tax credits and incentives on the real cost of solar systems. Commercial/industrial and residential life cycle cost analysis forms calculate the economics of *Solaron* systems in typical applications such as domestic water heating, space heating and process drying. ■ Solaron Corp., Denver, Colo.

circle 404 on inquiry card

**REPLACEMENT WINDOWS** / A 16-page color catalog explains the installation economy of custom-fit replacement windows, defines the causes of window energy problems, and explains the specific solution to each. A complete line of more than 30 commercial models of *NuPrime* windows is presented with detailed cross-sectional drawings, specifications, and product features. ■ Season-all Industries, Inc., Indiana, Pa.

circle 405 on inquiry card

**LABORATORY EQUIPMENT** / Custom-selected wash and/or rinse sequences and coordinated drying cycles are features of the *Jet Clean* and *Jet Dri* units for scientific and laboratory glassware. The all-stainless-steel washers and dryers are insulated for quiet, low-temperature operation. A 16-page color brochure includes dimensional data and power requirements, extra storage options, and accessories. ■ Fisher Scientific Co., Pittsburgh, Pa.

circle 406 on inquiry card

**REFLECTIVE GLAZING** / Full color photographs illustrate a number of recent architectural applications of reflective coated, tinted and clear vision glass in a 32-page product catalog. Included are single- and double-glazing, spandrel glasses, structural silicone glazing systems, high-strength glass and wind load design guidelines. Suggestions for architectural glass care are also given. ■ PPG Industries, Inc., Pittsburgh, Pa.

circle 407 on inquiry card

**ENERGY EFFICIENT FENESTRATION** / The proper design and use of window areas can save substantial amounts of electrical energy used for lighting, and fossil fuels needed for heat, according to a detailed brochure on the use of the solar daylight and heat. Photometric data contrasts daylight, fluorescent and incandescent light sources; charts show the range of available glass performance as to shading coefficients and U-values. Independent computer studies and analyses by the National Bureau of Standards and others are used to demonstrate the effectiveness of direct solar daylight and heat through windows of different sizes and exposures. ■ PPG Industries, Inc., Pittsburgh, Pa.

circle 408 on inquiry card

**HARDWOOD PLYWOOD** / Recently published, the "Where to Buy Hardwood Plywood and Veneer Directory" lists manufacturers nationwide, with information on who can provide species from ash to zebrawood, or speciality items from banded panels to water skis, provided in easy-to-read tables. The 48-page booklet discusses the Association's ASTM testing facilities, including a Flooring Radiant Panel apparatus for testing carpet and loose-fill insulation. ■ Hardwood Plywood Manufacturers Assn., Reston, Va.

circle 409 on inquiry card

**LIGHT POLES** / In-stock models of spun aluminum poles from 10- to 45-ft-high are shown in a full-color product brochure. Included are lighting supports for parks, malls, public and private areas, as well as roadway lighting poles with single-member or truss-arm configurations. Dimensional and light spread data are given for each pole. ■ The Union Metal Mfg. Co., Canton, Ohio.

circle 410 on inquiry card

**OVERHEAD CRANES** / Built in 5 to 30 ton sizes, with spans up to 100 feet, the "NC Series" top-riding cranes described in a color brochure offer as much as 20 per cent less weight for a given load-carrying capacity. Among the features described are computer-selected girders, individual end truck drives, and two-speed hoisting. ■ Crane Hoist Engineering Corp., Downey, Calif.

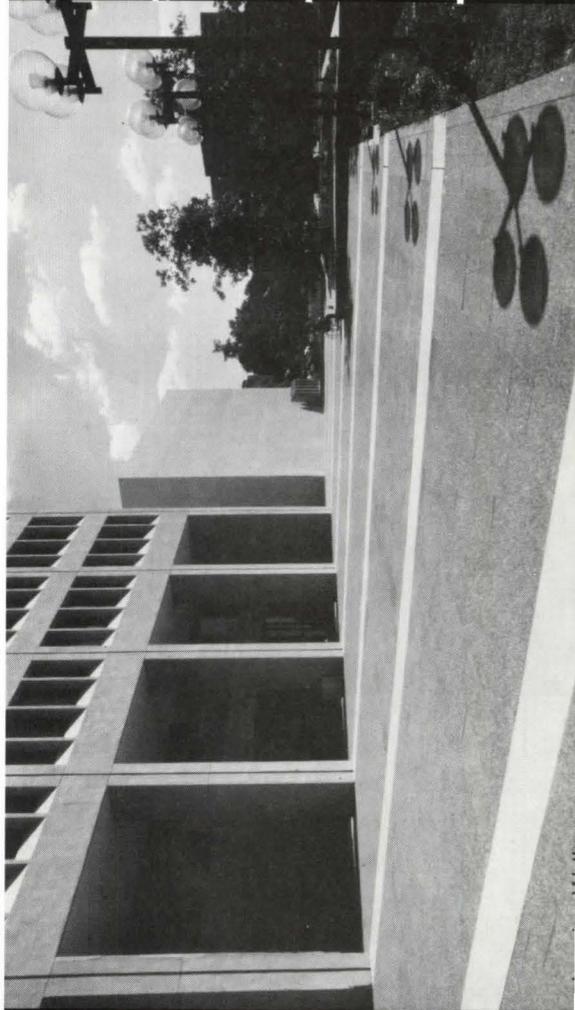
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ping malls, plazas, walkways, promenade roofs and parking decks. Choose from Hastings wide variety of pavers: Asphalt Block, London Walks, Checker Block and Brick Pavers. Hastings manufactures pavers in many shapes, sizes, colors and textures. Hastings is available to aid you with the preparation of specifications and construction recommendations for special situations. Budget estimates are freely given by our contract department. For further information and color brochures contact:

HASTINGS PAVEMENT CO., INC., 410 Lakeville Road,

# The first place to look for the last word in garage doors...

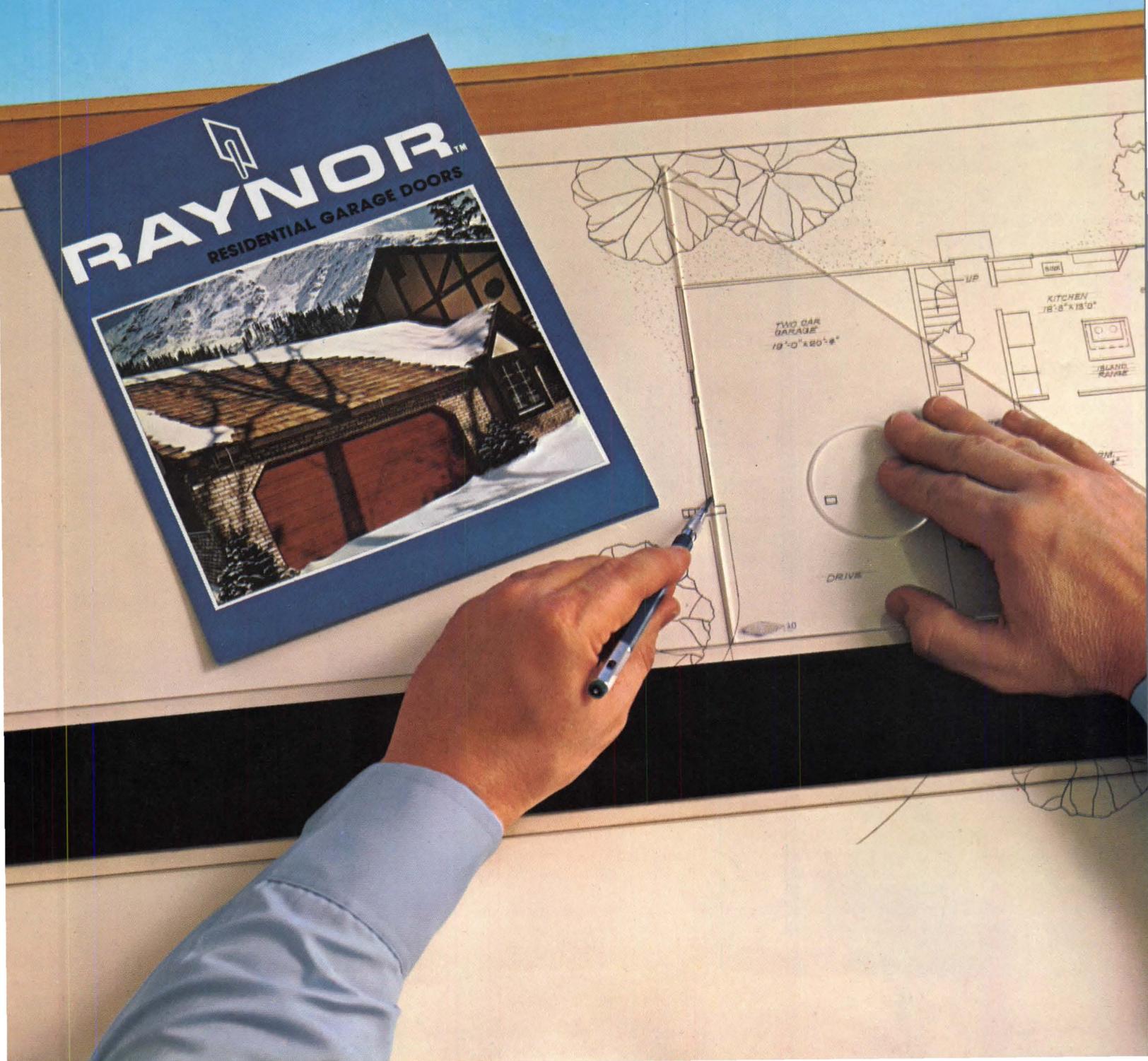
Raynor gives you choices only a full-line garage door manufacturer can offer. Over one hundred styles, types and sizes to fit any decor and most any special requirement. When you do select a Raynor door, there are certain things that don't require a choice. Like Quality... in design and construction. Raynor uses only the best material for springs, rollers, hinges, locks and other hardware. And the best grade lumber available. All put together by dedicated people... not machines. And



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Service...like undamaged delivery by our own truck fleet. Plus professional installation by our factory-trained distributors located throughout the country. They pledge prompt follow-up service for parts and repairs if ever needed. In the end, the last word you get from us is—satisfaction! For a copy of our catalog write Raynor Manufacturing Company, Dixon, IL 61021. Or call a Raynor Distributor near you. You'll find his number in the Yellow Pages under "Doors".

Circle 59 on inquiry card

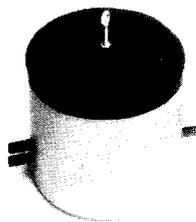




**OFFICE SEATING** / Pictured are the seven basic models offered in the "570 Series" of chairs designed to work with both contemporary and open office environments. Included are a five-adjustment secretarial, arm and armless versions of swiveltilt, fixed-base, and revolving swivel-return chairs. The "570 Series" self-skinned urethane arm and side-frame construction provides soft lines and resilient surfaces that will not damage surrounding furniture; the chair bases have additional bumpers on each leg. ■ GF Business Equipment, Inc., Youngstown, Ohio.

*circle 303 on inquiry card*

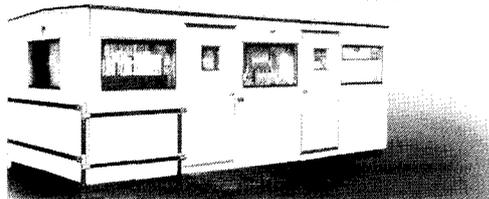
**NOISE-MASKING** / The *Scamp* system uses self-



contained 3 3/4-lb ceiling-mounted units to provide a simple method for noise-masking, music, paging, and emergency tone bursts in large open office areas. No large amplifiers, zone volume controls, generator

equipment racks or interfaces at various locations are needed. Each aluminum-housed unit contains a solid-state masking spectrum, digital non-directional, noise generator, solid-state amplifier and high compliance, wide dispersion 8-Oph loudspeaker with 10-oz ceramic magnet. A three-ft mounting chain and eye hook are provided; models are available for both mineral-fiber and glass-fiber ceiling tile installations. Suggested retail for each *Scamp* device is about \$111. ■ Control Electronics Co., Inc., Farmingdale, N.Y.

*circle 304 on inquiry card*



**PORTABLE IN-PLANT OFFICES** / Custom built and delivered preassembled and pre-wired, this in-plant office building is part of a line ranging in size from 5- by 5-ft up to 12- by 60-ft. Lighting, plumbing, heating, air conditioning, furniture and carpet options are offered for individual industrial requirements. Construction includes insulation, floor and ceiling joists and wood or steel stud framing; the in-plant office or lab can be anchored in position or left freestanding for later moves. Exterior finishes can be matched to plant surroundings. ■ Crown Inc., Bristol, Conn.

*circle 305 on inquiry card*

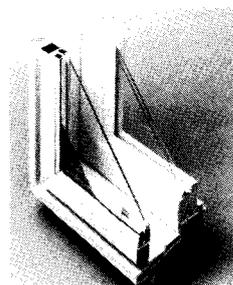
**SPIRAL STAIRWAY** / Designed by W. J. Hughes,



AIA, this freestanding all-wood structure has code approval for use as a primary stair in residences and commercial buildings. The segmented solid hardwood rail adapts to all conditions of curvature; there are two handrails. Stair diameters range from 6 ft to 7 ft 6 in., with a tread width of from 30 to 39 in.; heights accommodate almost any requirement. The "Hughes Spiral Stairway" is precut; it may be assembled and post-tensioned on the job in less than two days. ■ Spiral Mfg., Inc., Baton Rouge, La.

*circle 306 on inquiry card*

**TRIPLE-GLAZED WINDOW** / A triple-glaze option



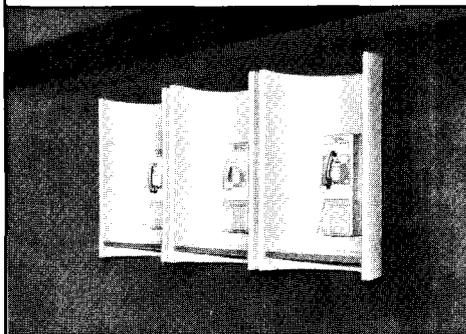
is now offered on the *Perma-Shield* gliding window unit for new construction or remodeling applications. The combination window includes a removable storm panel over double-pane 1/8-in.-thick insulating glass; glass fiber screening; vinyl tracks; and a white vinyl sheath over preservative-treated wood core sash and frame. The addition of the triple-glazing panel helps reduce heat loss through the glass by 36 per cent compared with double-pane insulating glass.

■ Andersen Corp., Bayport, Minn.

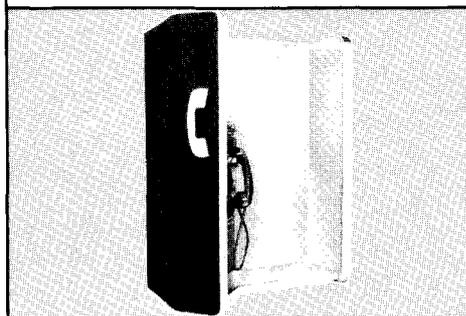
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*more products on page 163*

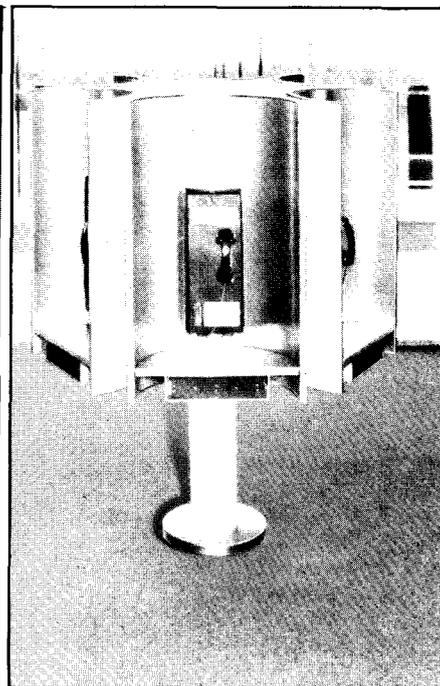
# Quiet beauties



ADCO 90-L—Three stations, wall mounted



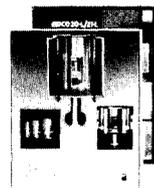
ADCO 20-L—Wall mounted.



ADCO 90-L—Six stations, on pedestal

The contemporary design of ADCO Acousti-Call<sup>®</sup> telephone booths enhances their surroundings—colors to match almost any decor are available. Sound-absorbing booth interiors provide quiet, private telephoning with airy comfort.

ADCO 90-L is a three-quarter length booth—mounts as either a single or multiple station unit on walls or pedestals with two, four or six stations. ADCO 20-L mounts on pedestal (single or back-to-back) or on walls, in corners, in corridors.



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## Owens-Corning sound dividers. Designed so your design gets noticed. Not ours.

We don't expect people at work to appreciate the classic lines of our sound divider system.

They may not notice the handsome fabric covering. Or how beautifully the dividers fit together.

They may never see the electrical raceway hidden in the base or the shelf-hanging capability.

And they can't possibly know that their privacy comes from our special sound-absorbent Fiberglas\* core inside each panel.

What they will notice is what really matters: the total landscape you've created.

For a free sound divider catalog, color selector, and booklet, "Speech Privacy in the Open Office," write Q.T. Meeks, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.

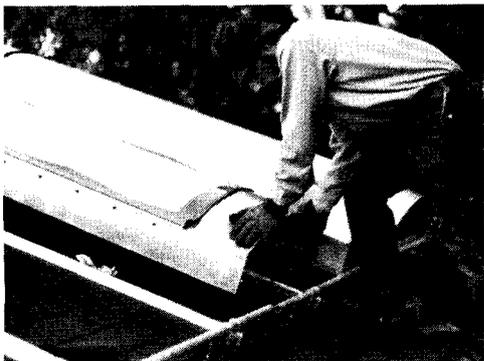
\*T.M. Reg. O.-C.F. © O.-C.F. Corp. 1978

OWENS/CORNING  
**FIBERGLAS**  
TRADEMARK

Circle 61 on inquiry card

**CLOTHING CLEANER** / The "Industrial Vac" is a self-contained unit, mounted in a wall recess and powered by a 2 hp motor. Included are a 15-ft hose assembly, a fabric tool, and disposable, 3-gal-capacity filter bags. The "Industrial Vac" simply cleans debris, including caustic materials from clothing. It was developed to meet cleaning system OSHA requirements without the potential eye and lung hazards associated with the use or misuse of compressed air. ■ Wal-Vac, Inc., Grand Rapids, Mich.

*circle 308 on inquiry card*



**SOLAR COLLECTOR** / The *Thermo-Spray* collector provides for full contact of the absorber plate with the heat transfer fluid, eliminating inefficient hot or cold "spots." The standard *Thermo-Spray* collector has a series of spraying nozzles, cooling the entire absorber plate at once; the heated spray water then runs down a gravity-drained channel into the storage tank. The spray water only comes up to the collector when a thermal sensor tells the system there is heat to collect, and no water is ever left in the collector to freeze or corrode. The *Thermo-Spray* collector is offered as part of a complete solar space heating and cooling and hot water recovery system, said to be priced for efficient, economical installation in new or existing homes in most climates. ■ Solar Energy Research Corp., Longmont, Colo.

*circle 309 on inquiry card*

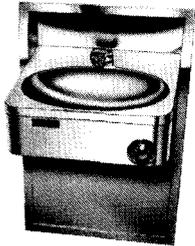


**INSTITUTIONAL FURNITURE** / A line of hard maple butcherblock products, including table tops, bases and chairs, is now offered for school, restaurant and other high-traffic institutional use. A variety of table top sizes in the standard 1 3/4-in. thickness are available, including rectangular, square and round, in a choice of clear sealer or natural oil finish. Three styles of 32-in.-high, vinyl-cushioned oak chairs coordinate with the table series. ■ John Boos & Co., Effingham, Ill.

*circle 310 on inquiry card*

**WASH BASIN** / Designed for convenient use, the wash center extends 18-in. from the finished wall. The stainless steel unit comes complete with faucet; an optional metering valve provides pushbutton control of water flow for a preadjusted period—from 10 seconds to two minutes—with automatic turn off. "Model 1123" recesses into a 4-in.-deep wall; height from floor to bowl rim is 34 1/2-in. A modified wash center design is also available for mounting in a 5- by 5-ft handicapped toilet stall; this version extends 11 3/4-in. from the wall. ■ Bradley Corp., Washroom Accessories Div., Menomonee Falls, Wisc.

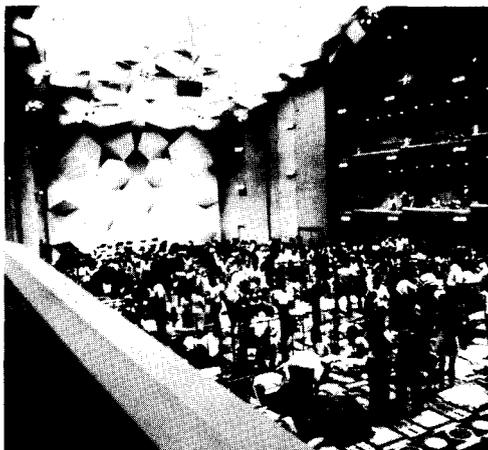
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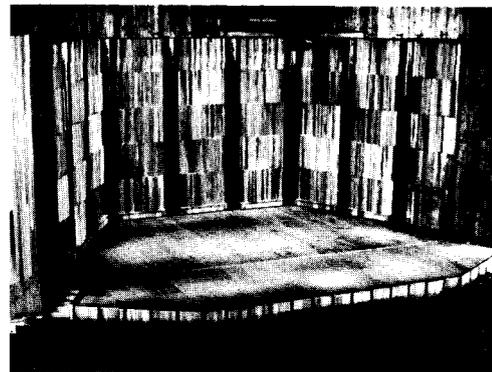
**OFFICE GRAPHICS** / "Bare Tree" is a four-panel wall mural offered in three earth-toned colorways. Suitable for offices, reception rooms, lobbies and other commercial areas, each complete design measures 8-ft 8-ins. by 6-ft 10-in. ■ Environmental Graphics, Wayzata, Minn.

*circle 312 on inquiry card  
more products on page 165*

Special performance needs (platform covers seats in traditional concert hall)



Custom shell and pit filler



Outdoor presentation system



Sound controlled rooms for music practice and other uses.

# Performance Environment Specialists

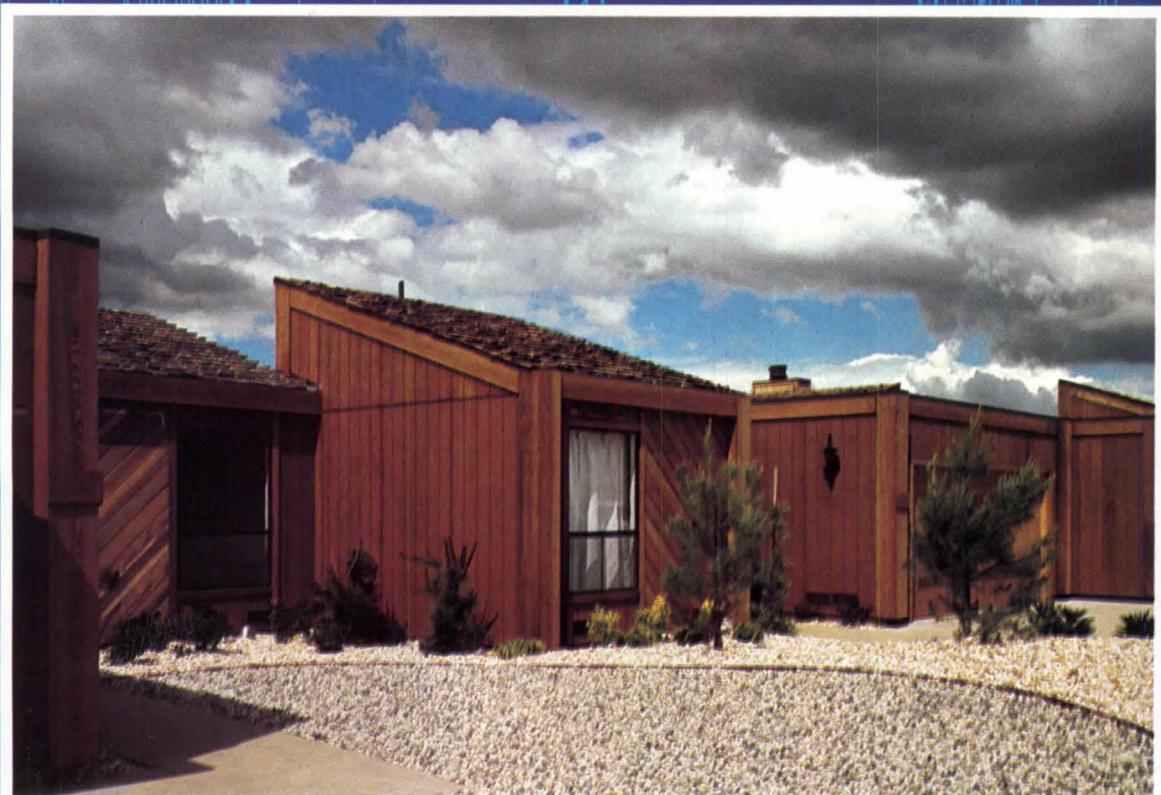
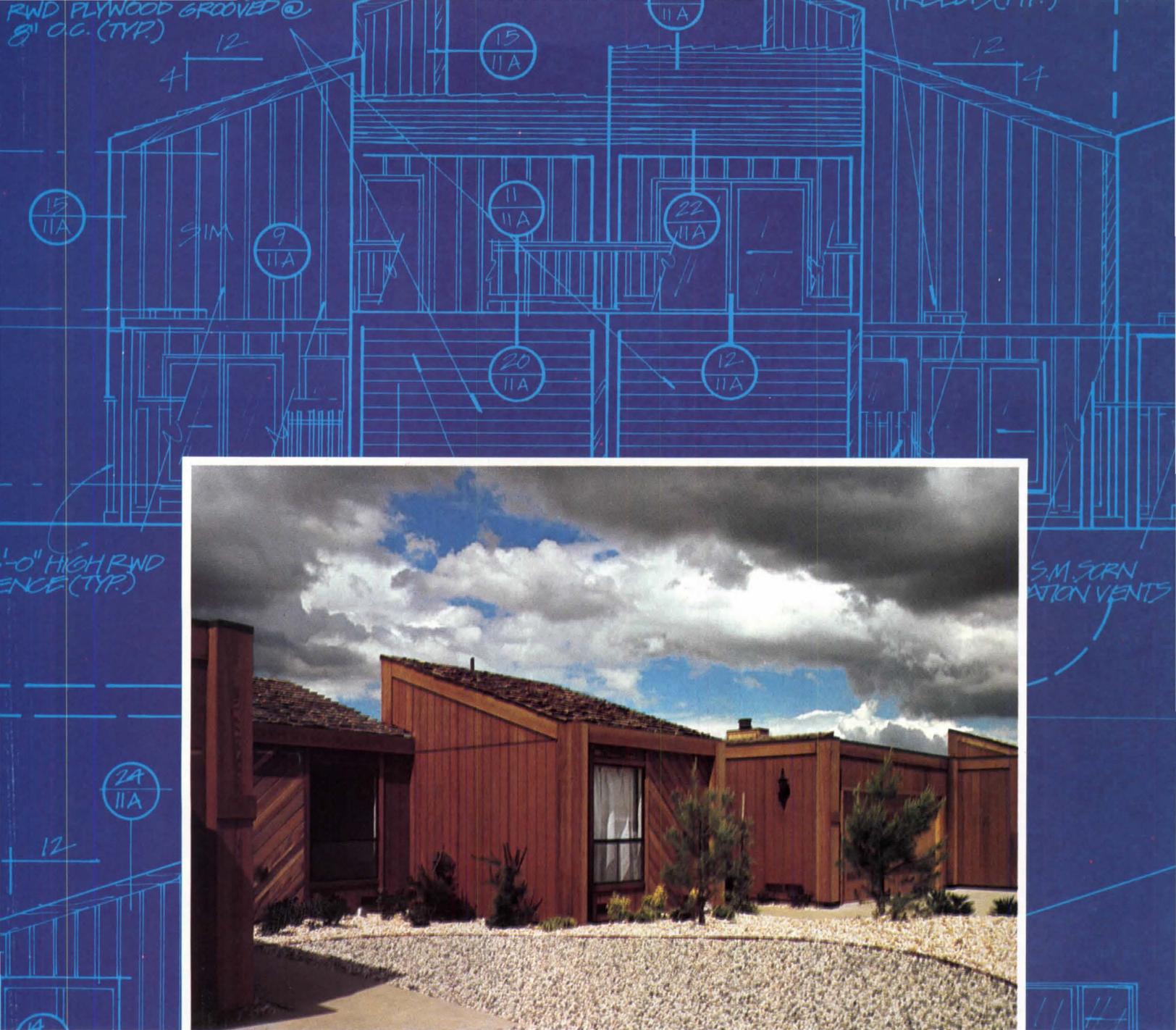
... for colleges, universities, auditoriums, arenas — wherever people perform.

Sound Module rooms • Custom and standard staging and shells

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Architect: Albert R. Seyranian, A.I.A., Architect & Associates.

# Simpson Redwood Plywood turns a blueprint into a landmark.

Unique and beautiful buildings start out differently from other buildings.

Not only in design. But in the materials you choose to make them a reality.

Simpson Ruf-Sawn Redwood Plywood provides that kind of inspiration. For all kinds of jobs, in all kinds of situations.

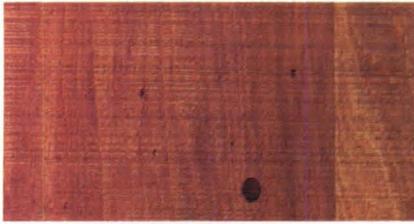
Part of it is because of redwood's special mystique. Whether you're designing for homebuyers or commercial clients, people respond to redwood as they do to no other material.

There's just no other wood with the same combination of warmth, distinction and natural insulating abilities. Or its remarkable ability to resist weathering.

And consider all the structural advantages. Redwood plywood gives you both the strength and the convenience of plywood. It's easy to handle. It's lightweight, with no need for additional sheathing. And compared to solid redwood, it's extremely economical.

Beautiful buildings start at the blueprint. Specify Ruf-Sawn Redwood Plywood.

For more information about Ruf-Sawn Redwood Plywood and other fine exterior sidings, write Simpson Timber Company, 900 Fourth Avenue, Seattle, WA 98164.



Custom Redwood Plywood  
**Simpson**

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# ABOUT MAILING LISTS...

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**FLEXIBLE DUCTING** / A pre-insulated 10-ft product designed for low-pressure heating, ventilating and air-conditioning applications, "Type NT-181" is a UL-181 Class 1 air duct with a polyethylene jacket perm rated at 0.1. A continuous full liner over a zinc-coated steel helix provides a smooth interior surface and allows a working velocity of 4000 fpm with no fiberglass erosion. The duct is available in 5- through 16-in. diameters and is highly compressible for easy handling. ■ Norflex, General Environment Corp., Sherman Oaks, Calif.



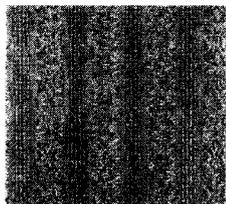
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**ACOUSTICAL CEILING** / Recommended for commercial and office applications, fire resistant "Soft Look" ceiling panels have a non-glare fabric surface over a mineral fiberboard substrate. The 2- by 2-ft panels have regular edges for design interest, and to facilitate installation and removal. The porous modacrylic fabric covering is offered in six natural and six accent colors; the exposed grid is also available in various colors and finishes. ■ Armstrong Cork Co., Lancaster, Pa.

*circle 314 on inquiry card*

**WOVEN-LOOK WALL COVERING** / Available in 12 natural colors, "Toyama" is a 15-oz embossed lightweight vinyl wall covering for contract applications. UL-listed, "Toyama" has a Class A flame rating; flame spread is 15, fuel contributed is 0, and smoke developed is 10. One of the recently introduced "Lynlite Collection" wallcoverings, the vinyl fabric has a sheet backing, and is available in 54-in. widths. ■ J. M. Lynne, Westbury, N.Y.



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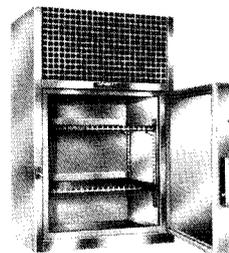
**CONFERENCE CHAIR** / The "Oakwal" chair is constructed with walnut arm rests and tenons and a natural finish oak frame. "Model C25E05" shown here has upholstered seat and back. All chairs measure 33-in. high by 23-in. wide by 21¼-in. deep, and are offered in dark oak and natural walnut finishes. ■ Madison Furniture Industries, Canton, Miss.



*circle 316 on inquiry card  
more products on page 167*

# WE FIT IN

## STAINLESS STEEL WALL MOUNTED REFRIGERATORS, FREEZERS



**WM-CW\*** series eye-level, wall mounted refrigerators are offered in 4 sizes featuring cold wall cooling systems with push-button defrost and automatic reset. Two removable, adjustable stainless steel shelves are provided. Front mounted grille removes easily for servicing.

**WM-1-CW** Capacity—1.5 cu. ft. (45 ltr.)

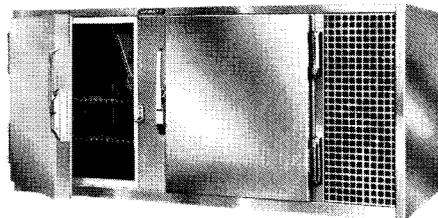
**WM-2-CW** Capacity—2.3 cu. ft. (65 ltr.)

**WM-3-CW** Capacity—3.2 cu. ft. (95 ltr.)

**WM-4-CW** Capacity—4.3 cu. ft. (125 ltr.)

**WM-3-F-CW** freezer is available only in a 3 cu. ft. (85 ltr.) capacity and has a manual hot gas defrost.

Capacity—3.0 cu. ft. (85 ltr.)



**WM-BC** series space saving, double-door, wall-mounted refrigerators are available in 2 sizes. Furnished with 4 stainless steel shelves, they have a blower-coil cooling system with automatic off-cycle defrost and a condensate evaporator. Condensing unit is easily serviced by removing front mounted clip-on grille.

**WM-7-BC** Capacity—6.6 cu. ft. (190 ltr.)

**WM-10-BC** Capacity—9.6 cu. ft. (275 ltr.)

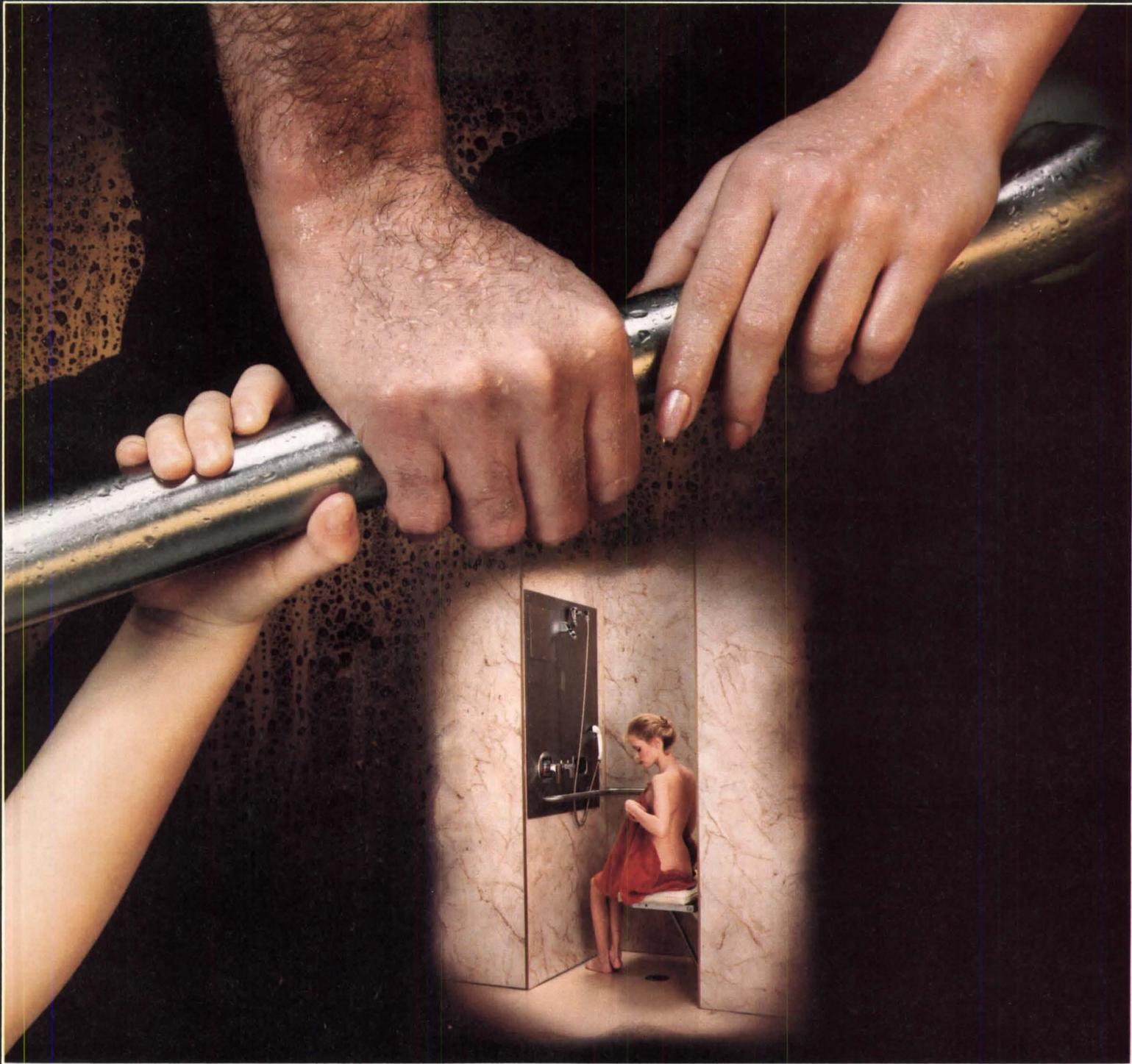
\*With explosion proof interior.

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 organization in over 100 countries.



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

**Circle 64 on inquiry card**



## Our shower is designed to be within everyone's reach.

Barrier-free showers by Bradley are designed to be used by everyone, including the disabled. Completely preassembled, the HN-200 barrier-free shower takes the guesswork out of meeting accessibility codes. All shower components (including panel-mounted grab bar, anti-scald valve and hand-held spray) have been carefully built right into the module according to barrier-free design specifications, so job site installation errors are minimized.

There are other Bradley barrier-free showers —all designed to meet the needs of the disabled. When you add vandal resistance, space saving design and economical operation, Bradley barrier-free showers are built to be within your reach, too.

Get your free copy of our new barrier-free products catalog. Bradley Corporation, 9101 Fountain Blvd., Menomonee Falls, WI 53051. (414) 251-6000. TELEX: 26-751.



Another  
right idea  
from



# Bradley

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**METAL SURFACE FINISH** / Very rapid tooling is an advantage of two new metal finishing processes developed for use on plates, plaques, and interior and exterior panels. The "Swedish Gloss" method finishes items in a brilliant gloss, semi-matte or matte finish in almost any color. "Micro Emboss" reproduces any pattern that can be photographed on panels up to a maximum size of 18- by 44-in. Embossed plaques can be anodized, silk-screened and/or "Swedish Glossed" for added color and durability. ■ Keeler Brass Co., Grandville, Mich.

circle 317 on inquiry card

**BARRIER-FREE EXIT SIGNS** / "Series HC117.1" emergency exit signs are designed to meet ANSI requirements for displaying the International Symbol of Access and for providing audible and visual signaling capabilities. Exit faces include red or green letters on a white background, with the access symbol featured in blue. Models are available in self-contained, battery-operated versions, or with internal emergency sockets for operation from remote 6-volt units. A kit is also offered that permits easy field conversion of existing "EXquisite" signs. ■ Dual-Lite, Inc., Emergency Lighting Div., Newtown, Conn.

circle 318 on inquiry card

**CONTRACT WALL COVERINGS** / Pictured here is "Hopsacking," one of four new textures added to the *Guard* line of fabric-backed vinyl wall coverings for contract applications. Available in 30 colors, including more than a dozen different varieties of grain, sand, hemp and other neutral shades, it duplicates not only the weave but the fibers of actual fabric. Other new textures include "Classic Moire," "Sand Pebbles," and "LaPaz," a heavyweight, 33-oz leather-look wall covering for such special uses as hospital corridors where durability requirements are high. ■ Columbus Coated Fabrics, Columbus, Ohio.

circle 319 on inquiry card



**CONTRACT FURNITURE** / Available as a single seating unit, a two- and three-seat sofa, or a tandem of infinite length, this upholstered piece features a curved back design, which allows units to be placed back-to-back for use in open plan areas. The basic module is 34-in. wide, with a 27-in. back height; upholstery options include leather, suede or fabric. ■ Intrex, Inc., New York City.

circle 320 on inquiry card

more products on page 225



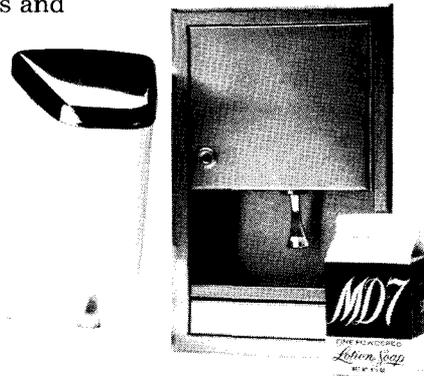
## "I went for design. He went for cost. We both went for powder dispensers."

As the designer of this building, I had two things to consider when I chose the soap dispensers for the washrooms. Cost and design. The building owner asked if there wasn't an alternative to liquid soap. He said the dispensers always clogged or leaked. He also mentioned there was more waste with liquid soap—and the dispensers always seemed to need refilling.

I suggested we try a fine-powdered soap. Specifically MD\*7. It's not gritty like an industrial powdered soap, so it is perfect for the washrooms in an office building. Still MD\*7 gets hands really clean, is gentle, and won't irritate normal skin. We decided to go with powdered soap. And with all the different styles in soap dispensers I found one that was perfect for the design of the washrooms.

I'll be installing powder dispensers and MD\*7 in all the buildings I design. And for good reasons. They please my eye, the tenant's hands, and my client's budget. Who says you can't please everyone?

For further information see Sweet's Catalog 10.16 Un.



**U.S. BORAX**  
A MEMBER OF THE RTZ GROUP  
3075 Wilshire Blvd., Los Angeles, CA 90010.

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## **Task/Ambient lighting by Keene. Furniture by you.**

*Keene, one of the largest suppliers of commercial lighting fixtures in the world, would like to send you more information on their Taskmaster® task/ambient lighting systems. Please write: Keene Lighting, 2345 Vauxhall Road, Union, N.J. 07083.*

**KEENE**  
CORPORATION  
LIGHTING DIVISION

Circle 67 on inquiry card

**How is our future shaping up? Here at our headquarters in Williamsburg, Virginia, Badische Corporation, now a member of the BASF Group, is firmly committed to a policy of plant expansions and new fibers development in the contract commercial area.**

We are just as firmly committed to serving you in the same personal way that we always have—through an extensive program which offers free technical and specifying assistance. The only thing that's changed is our name.

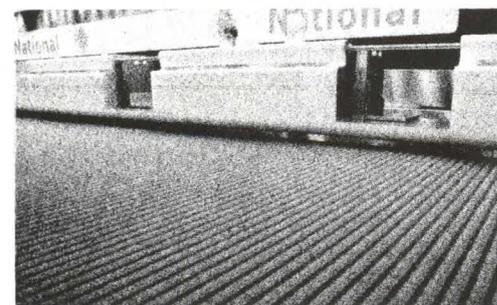
Carpet specifying, as you well know, is a highly technical job; especially with the plethora of fibers and constructions to choose from in carpet lines today.

All of our carpet fibers and yarns are specially engineered for specific contract commercial end uses to assure proper performance. You'll find them in a rich variety of carpet styles.



**Zeflon™ nylon**

Zeflon™ nylons from Badische Corporation are widely represented throughout the carpet market. Most prominent is our new advanced-performance fiber—Zeflon 500™ Solution Dyed Nylon that creates luxurious wool-like carpets with long-lasting durability.

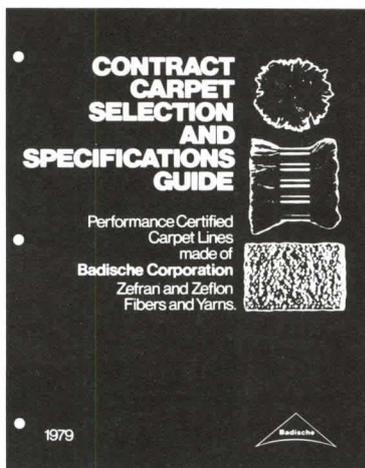


**Zefran® Blend CR-4**

Our acrylic line ranges from the versatile 100% Zefran® Acrylic and 100% Zefran Acrylic Berber to three outstanding acrylic blends: Zefran Blend

CR-4, an acrylic/nylon; Zefran Blend ZK-3, an acrylic/modacrylic; and Zefran Blend H-52, an acrylic/modacrylic/nylon with a rich homespun look.

We also offer the widest color choice. Our Yarn Bank inventories have more than 23 million yarn colors and color combinations for a virtually unlimited selection of carpet colors.



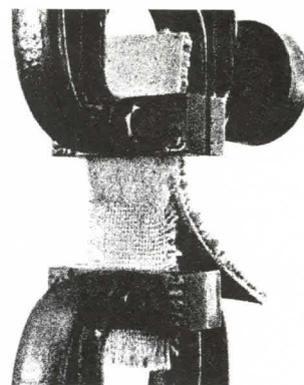
Another unique feature is our CREATE® program, a free service that helps eliminate many of the risks in carpet specifying.



**Contract Carpet Consultants**

Our Contract Carpet Consultants, a group of trained carpet specialists, will continue to aid you in finding the proper carpet for a certain end use and traffic class based on fiber and yarn, carpet construction, color guidance, installation and maintenance information.

CREATE also provides you with many invaluable aids: our illustrated Contract Carpet Selection and Specifications Guide, job bid assistance such as yarn pom chains, and special carpet samples, as well as seminars dealing with all aspects of contract carpet specifying.



**PERFORMANCE CERTIFICATION**

Years ago, we set up our Performance Certification labelling program to ensure that carpets made of our branded products perform properly throughout their installation life.

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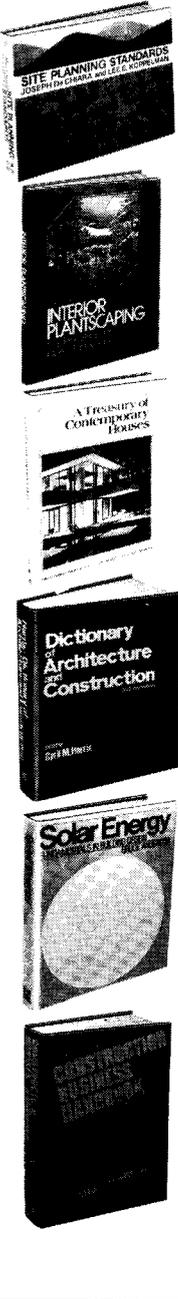
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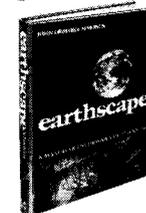
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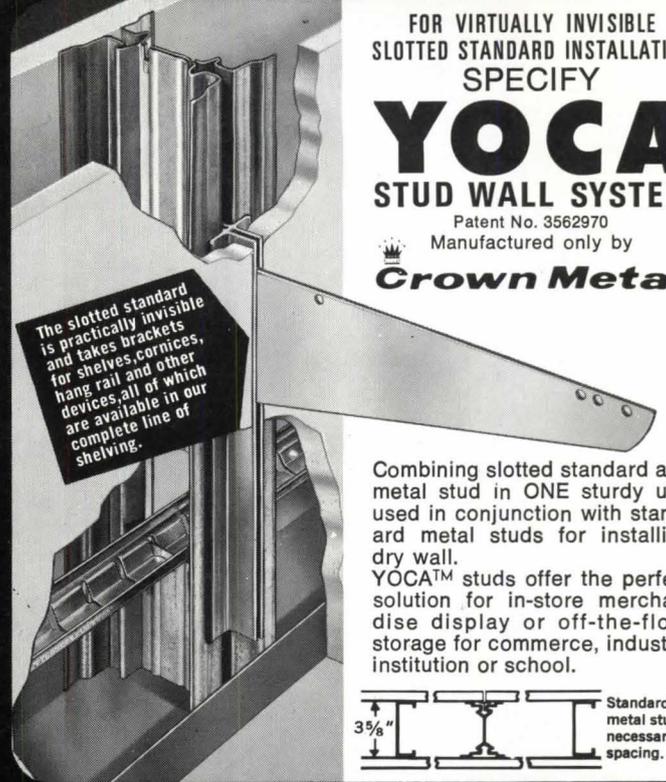
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## Offices opened

William J. Burkavage, George H. Evans and William J. Burkavage, Jr. announce the formation of Burkavage-Evans Associates Architects and Engineers, a successor to Von Storch and Burkavage Architects and Engineers located at 709 North State Street, Clarks Summit, Pennsylvania.

Dewberry, Nealon and Davis has formed the Joseph Boggs/Studio at 3 Church Circle, Annapolis, Maryland, providing architectural/engineering services.

Ira Grandberg and Lawrence Marek are pleased to announce the merging of their two firms, and are now called Grandberg/Marek Associated Architects with offices located at 200 West 72nd Street, New York, New York.

Interspace Incorporated is pleased to announce the formation of a new company called InterData.

Edward L. Jenkins, Jr. and Gerard W. Peer are pleased to announce the formation of their architectural practice located at 109 West 3rd Street, Charlotte, North Carolina.

Jeffrey W. Kline, AIA, recently announced the opening of his Oakmont, Pennsylvania office for the practice of architecture.

Marks, Lewis, Torre Associates, New Orleans consulting firm, and EDAW, Inc., an established national and international design and planning firm, have announced that they have joined forces to form a new company. MLTA-EDAW, as the new firm is named, will enlarge its practice of environmental planning, urban design and landscape architecture in the Southeastern and South Central

United States, as well as the international markets of Central and South America.

SCR Design Organization, Inc. with offices at 300 East 59th Street, New York, New York, has opened its second facility at 30 West Street, Danbury, Connecticut.

SLS Environetics, the space planning/interior design firm, has announced the formation of a new architectural firm, Environetics Architects, Inc., with dual headquarters in Los Angeles and New York. Stephen M. Albert, AIA, will head the new organization as president, based in Los Angeles, and Richard Korchien, NCARB, will be executive vice president, officiating in New York.

## Firm changes

Beyer, Blinder, Belle announce the appointment of their new partner, Frederick A. Bland, AIA.

Bovay Engineers, Inc. announces the promotions of two executives. Robert G. MacLennan, P.E., vice president and present manager of the Houston office, will become corporate manager of operations. Jack H. Clabaugh, P.E., vice president and currently manager of Bovay's Baton Rouge office, will assume the Houston office managerial post. John S. Matherne, P.E. has been appointed vice president and manager of the Baton Rouge office.

Prescott W. Coleman has joined the architectural firm of Broome, Oringdulph, O'Toole, Rudolf & Associates. Mr. Coleman has been named project manager.

Dalton, van Dijk, Johnson & Partners announce the appointment of Richard S. Gates,

AIA, to full partnership in the firm. In addition, the following have been selected as associate partners: Richard B. Bauschard AIA, Donald A. Heckaman, AIA, Fred H. Holman, Jr., AIA, Stephen Rajki, Jr., AIA, and Donald J. Smith. Richard B. Bauschard has been appointed director of business development.

Richard G. Conklin, AIA, Gerd H. Ernst, AIA, and William F. Ropp, FASCE, have been elected vice presidents in the firm of Daniel, Mann, Johnson, & Mendenhall, and William K. Hodson has been elected to the board of directors.

Flack + Kurtz Consulting Engineers have appointed George Rainer as partner, Donald Riegel, Alan Zlotkowski, Kenneth L. Schmieder, Michael Ambrosino as senior associates, and Van Blerkom as associate.

James A. Jensen has recently joined Fischer/Schutte, Inc., an architectural, engineering, planning and development firm. His varied responsibilities with the firm will include design, contract administration and field supervision.

George H. Bail, AIA, has been elected president of W. R. Frizzell Architects, Inc. Other officers chosen include Charles E. Smith, AIA, executive vice president; Ray K. Jensen, vice president/secretary; T. Jack Williams, vice president/treasurer; Roger Pierce, vice president of Winter Park and Daytona offices; Holger Smitt, vice president, engineering services; and Kish Tolia, vice president, structural engineering.

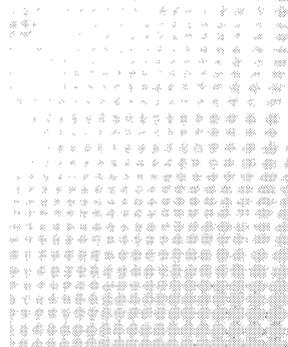
Herbert W. Levy, AIA has joined Geddes Brecher Qualls Cunningham: Architects, and Steven Gatschet, AIA and Ronald P. Kobelin, R.A. have been named associates.

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Charles T. Harris has joined Giffels Associates, Inc. as director of architectural design.

Robert J. Gough, AIA has joined Donald R. Goldman & Associates, Architects AIA as project architect.

H2L2 Design, Inc. has appointed three new vice presidents. They are Jerry W. Kreider, Frances P. Gardiner and Nancy L. Rathfon.

Hellmuth, Obata & Kassabaum, Inc. (HOK), announce that Robert F. Messmer, AIA, has joined the firm as director of criminal justice planning.

Huygens and Tappé, Inc., Architects and Planners, take pleasure in announcing that Francis L. Dimella, AIA, has become a principal of the firm. Stuart L. Carter, AIA, John H. Cunningham III, Henry C. Heaney, AIA, Peter L. Shaffer, Edward D. Snow and Paul R. Yager have joined the firm as associates.

Florinda Doelp, former president of Interspace/Philadelphia has been elected president of InterData. Serving with Mrs. Doelp as vice president will be Les Cranmer, previously an associate of Interspace/Philadelphia. William Krebs, formerly the executive vice president of Interspace/Washington, will succeed Mrs. Doelp as president of the Philadelphia office.

Johnson, Johnson & Roy, Inc., landscape architects and environmental planners, has announced the appointment of three new associates of the firm. They are: Ann Clipson, John Krueger and Richard Rigterink.

Joseph R. Loring & Associates, Inc. announce the following appointments as senior associates: Lawrence S. Feldman, Joseph Felner, Marvin Lipshonsky, John O. Samuel, John A. Van Deusen;

as associates: Edward McCune, Francis F. Palacios, Anilkumar V. Patel and John S. Ryan.

William R. McClarty, president and Ben H. Johnson, AIA, secretary/treasurer, announce the restructuring of their Bellevue-based architecture and planning firm, McClarty & Johnson, P.S., Inc. The firm became McClarty, Johnson, Depner, & Milbrandt, P.S., Inc. with the addition of Robert K. Depner and Leonard J. Milbrandt as stockholders and members of the board of directors. Both will continue in their current positions as vice presidents of the firm.

Perry, Dean, Stahl & Rogers, Inc. Architects, are pleased to announce that Peter L. Hornbeck, ASLA has been elected to the board of directors and as vice president for landscape architecture.

Mark F. Pfaller Associates, Inc., is pleased to announce the addition of Kathleen E. Kelley to its architectural staff.

RNL Inc. announce the election of two new members to the firm's board of directors: Philip H. Goedert and Roger K. Crosby as vice presidents.

Ben F. McMurry, Jr., AIA has joined the marketing staff of Reynolds, Smith and Hills Architects-Engineers-Planners, Incorporated.

Smith, Hinchman & Grylls Associates, Inc. architects/engineers/planners, has announced the appointment of ten new associates in the firm. They are: James Benya, senior electrical engineer; Inderpal S. Bhatia, project manager; Paul Engle, project manager; Robert B. Malcolm, value management specialist; Michael McGunn, senior architect/project manager; Gerald Sienkiewicz, senior architect; Theodore W. Sutherland, senior designer; John E. Rectenwald, senior architect; Zeyn N.

Uzman, senior civil engineer; and John P. Yorke, senior mechanical engineer. Also appointed were Henry J. Guthard and John E. Rodger as vice presidents.

Edward E. Gilvey, P.E. has been named senior vice president of STV, Inc., consulting engineers, architects and planners.

**New addresses**

Kennedy/Montgomery Associates, Architects is pleased to announce relocation to new offices at 88 Broad Street, Suite 904, Boston, Massachusetts.

Gensler and Associates/Architects have moved to new and expanded facilities in downtown Houston's Well-Tech Building, 700 Rusk Street, Houston, Texas.

Robinson and Mills Architecture and Planning has moved to 153 Kearny Street, San Francisco, California.

S & T Western, Inc., architects and engineers, have moved to new offices at 1400 North Bristol, Newport Beach, California.

Schuman Lichtenstein Claman Efron/Architects announce the relocation of their offices to 227 East 45th Street, New York, New York.

Donald R. Goldman & Associates, Architects, AIA, announces the relocation of their offices to 3604 4th Avenue, San Diego, California.

Frank Folsom Smith & Associates Architects/Planners are pleased to announce the relocation of their office at 109 3rd Street, Southeast, On the Mall, Charlottesville, Virginia. They have changed their mailing address to P. O. Box 78, Charlottesville, Virginia.

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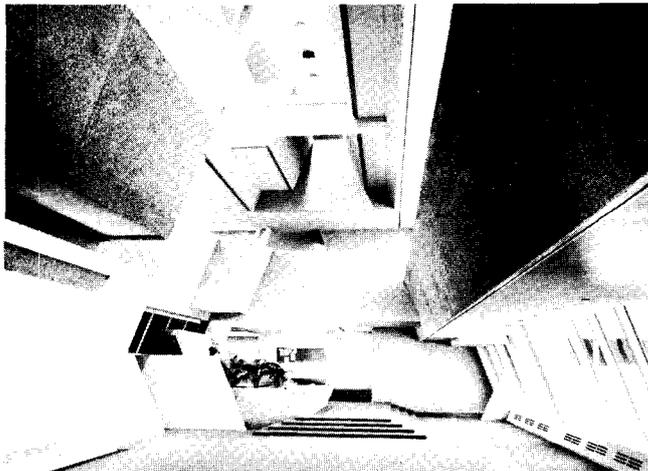
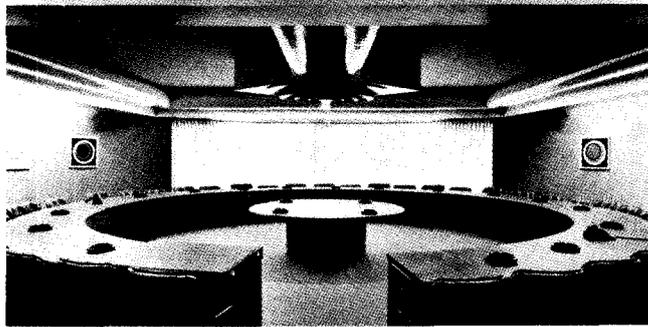
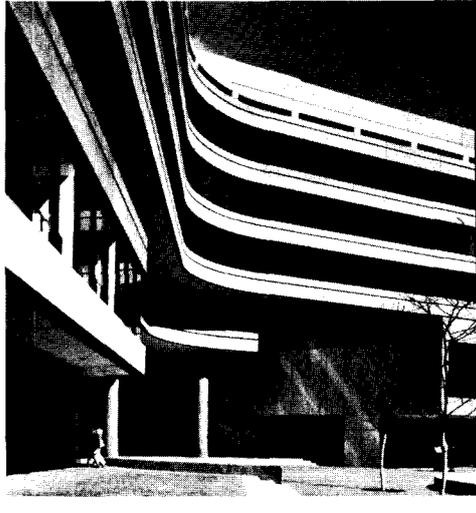
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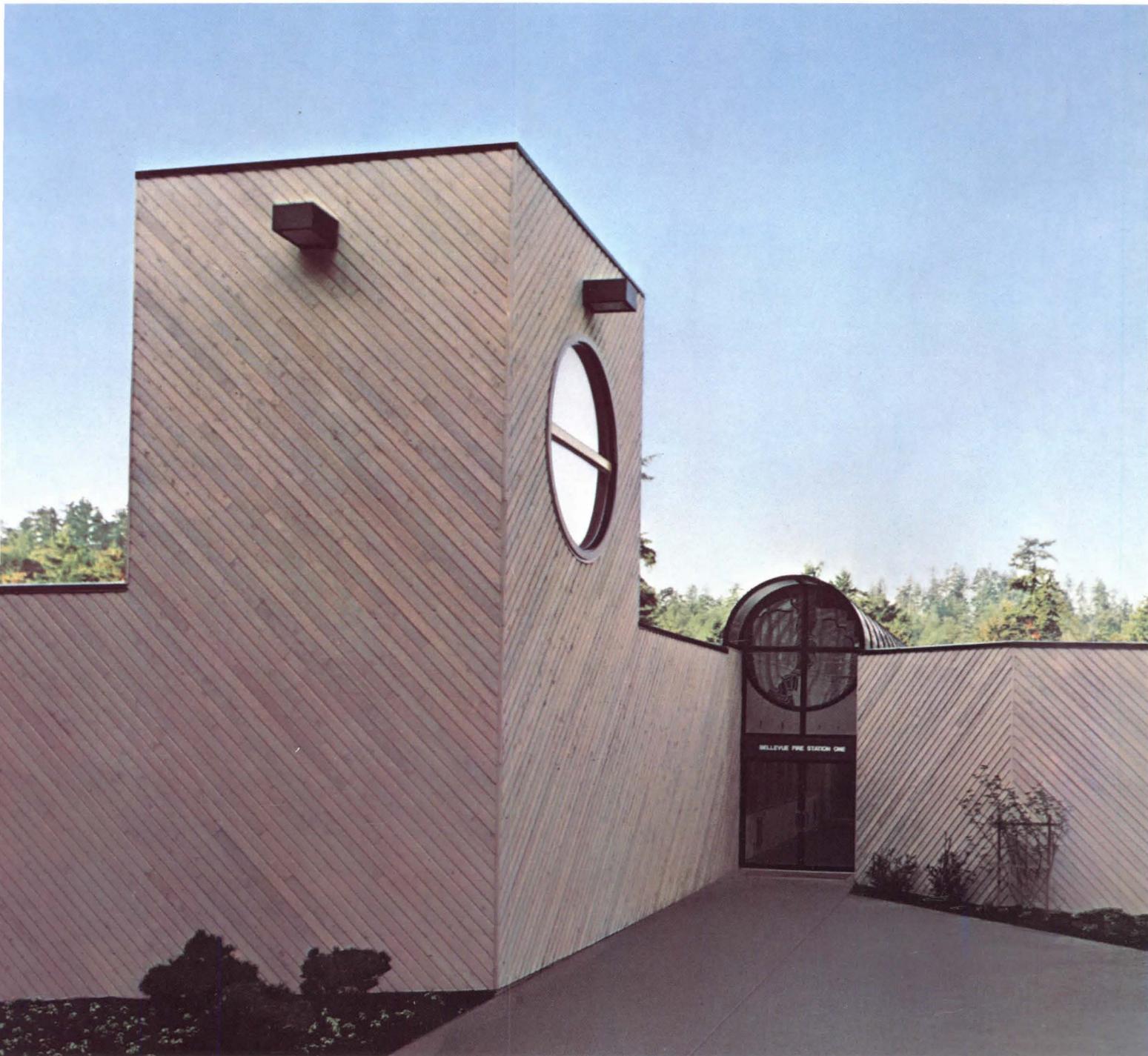
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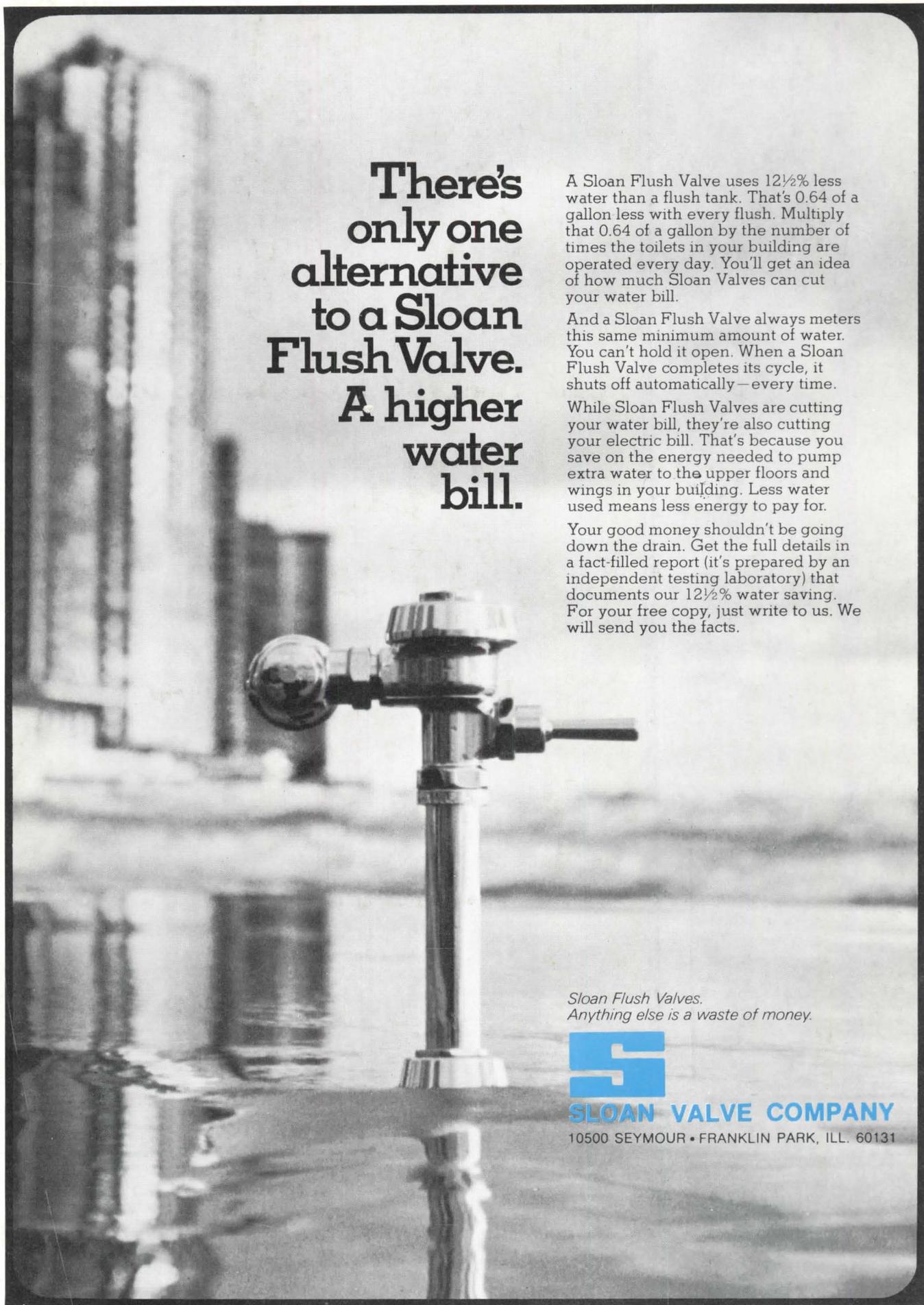
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