

HAWAII STATE CAPITOL: NEW FORMS FOR THE NEWEST STATE

MICHIGAN STATE CAPITOL: SYMBOLIC SEPARATISM, PRACTICAL UNITY

EDMUND N. BACON ON "URBAN PROCESS: PLANNING WITH AND FOR THE COMMUNITY"

BUILDING TYPES STUDY: COLLEGE BUILDINGS

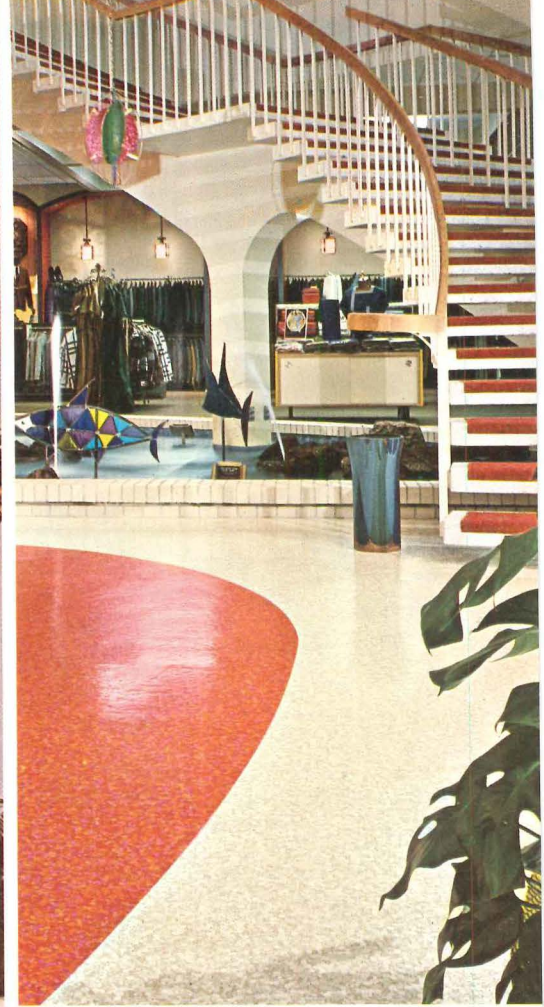
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# ARCHITECTURAL RECORD

MAY 1969

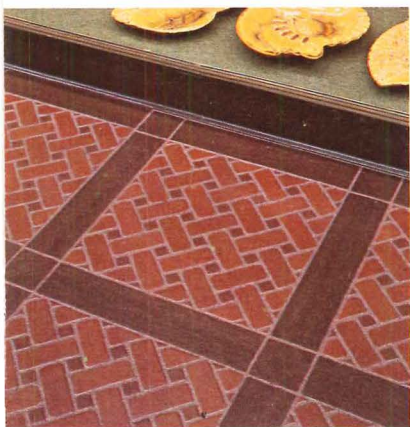
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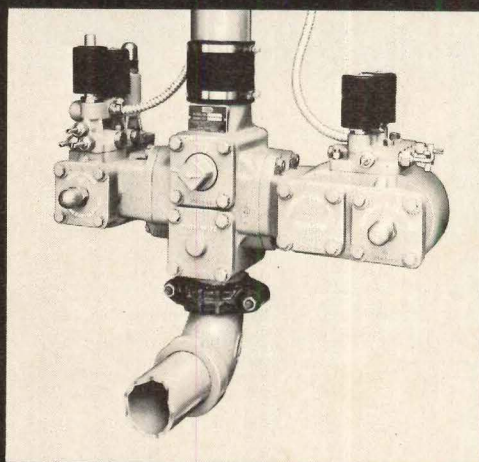
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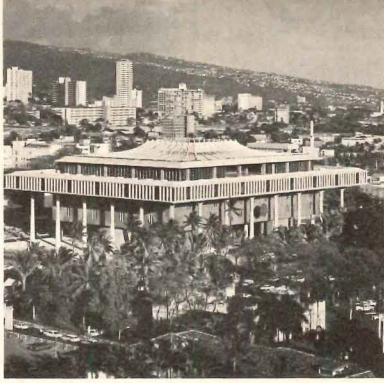
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 John Carl Warnecke & Associates  
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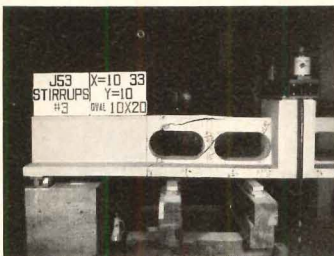
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### THE DESIGN OF INTERIORS: A 16-PAGE SPECIAL REPORT

New patterns of practice and design are emerging in the design of interior spaces and the furniture and fittings that fill them. This special report will give a picture of today's practice, a study of the cooperation (and conflict) between architects and interior designers, a look at the changing patterns of practice, and include—in black-and-white and four-color photographs—examples of some of today's finest interior design. This report signals the beginning of a new editorial effort to report on a continuing basis developments in the design of interiors—at a time when A.I.A. and NEOCON signal the beginning of a new relationship between architects and interior designers by holding their conventions concurrently—in Chicago in June.

### BUILDING TYPES STUDY: MUSEUMS

Reverberations of the so-called "cultural explosion" are bringing to museums both a proliferation in their numbers and a rethinking of their functions. The June study will feature four museums in Mexico City's Chapultepec Park—including the distinguished Museum of Anthropology and two smaller museums by Pedro Ramirez-Vásquez—which serve as cultural foci not only for the park but, in broader context, for the city itself. Current U.S. examples that similarly provide recreational and educational as well as cultural enrichment for the community at large will also be included.



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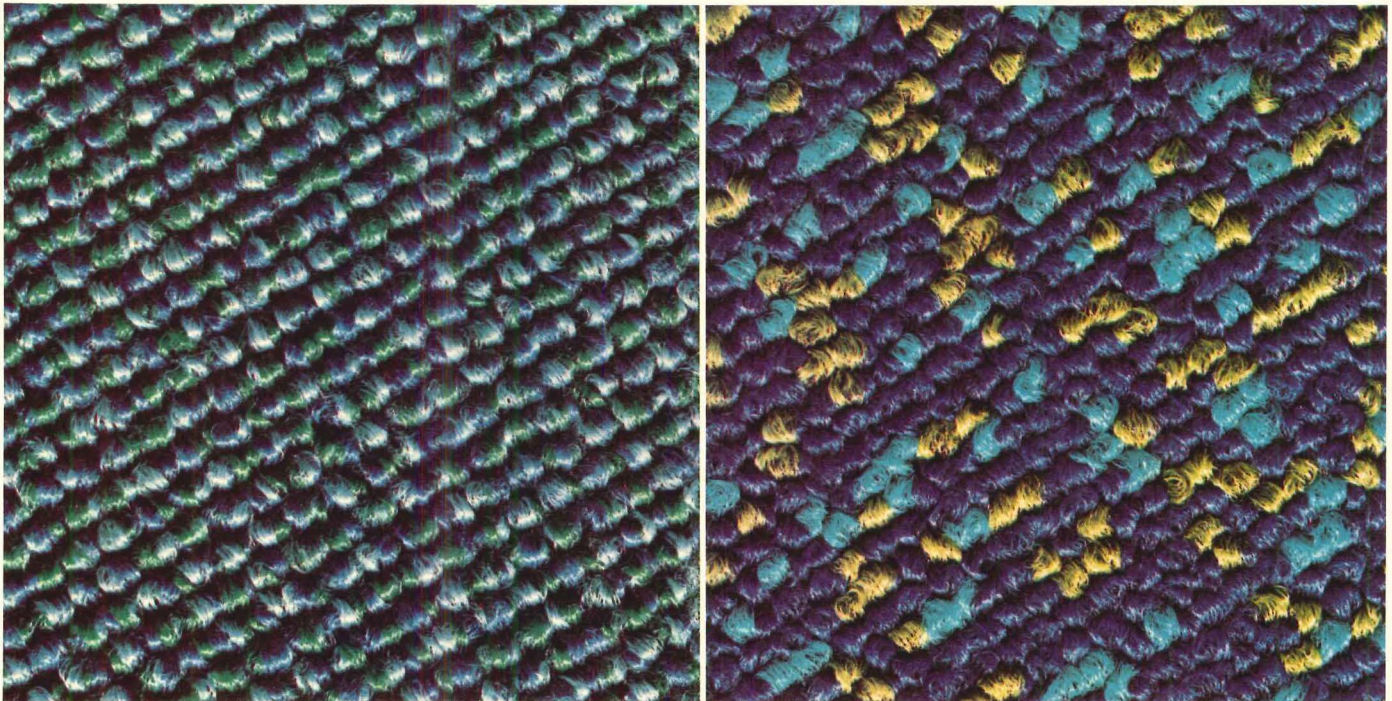
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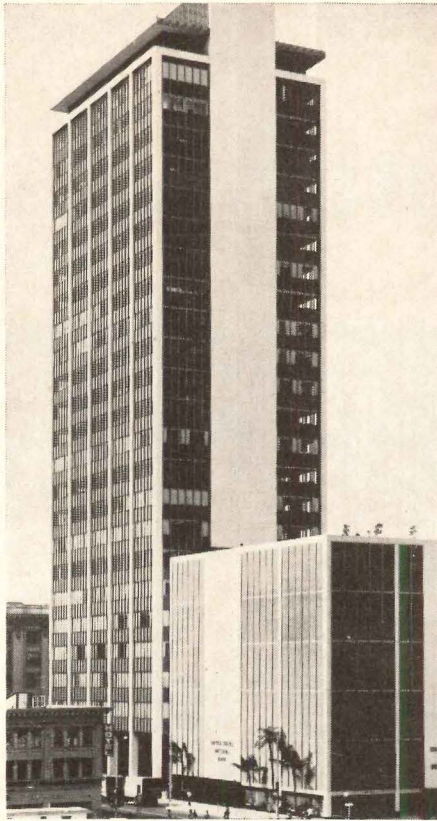
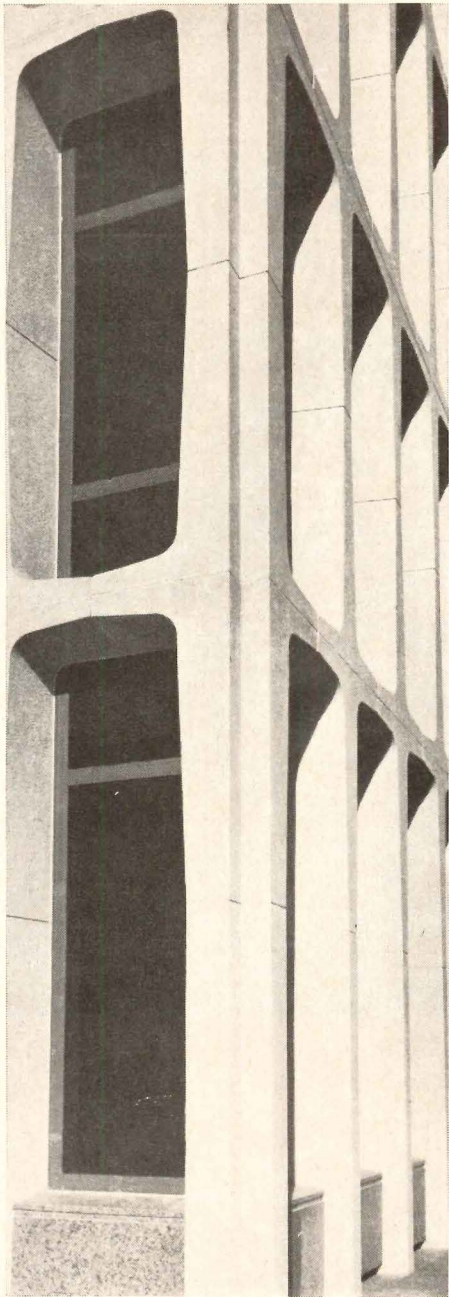
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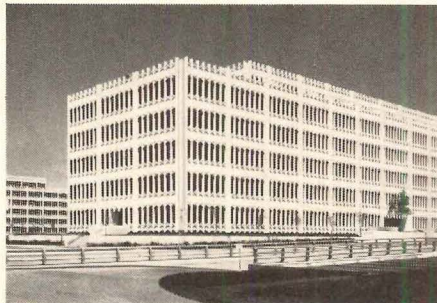


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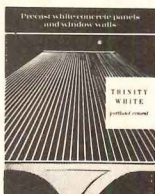
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## Are highways seven times more important than cities?

President Nixon, in a speech to HUD staffers, said firmly that "We need, of course, to rebuild America's cities. We are going to have to put billions of dollars into this rebuilding program in the years ahead, looking down to the end of the century when the cities of America will be rebuilt . . ."

Secretary Romney has told HUD that "the design and planning activities under the Department's programs must result in environments which have an uplifting effect on people's lives."

Secretary Volpe clearly understands, because he has said so in speeches, that "lack of proper public transportation has been a contributing factor to the dilemma of our cities today." And he has made some other encouraging opening moves:

Item: His appointment of a big-city mayor (Dorm Braman of Seattle) as an Assistant Secretary for Urban Systems and Environment.

Item: His suggestion of a mass transit "trust fund" to finance new and expanded subways, buslines, railroads, and perhaps "totally new systems of urban mass transit." He suggests, as indeed it might, that such a trust fund might "do for mass transportation what the Interstate Highway Act of 1956 did for highways." (That act earmarked huge chunks of Federal taxes on gasoline, tires, and other commodities exclusively for highway construction. What it has so far "done for highways" is build \$36-billion worth.

But while all that sounds great, what actually seems to be happening doesn't sound so good:

For instance, the Nixon budget cuts what one might guess was an arbitrary 10 per cent from the budget for Model Cities,

which both the President and Secretary Romney seem to feel is an important tool and which clearly involves the kind of "grass roots involvement" both seem to be relying on very heavily. This cut from an already fraction-of-minimal Johnson budget does not seem like a particularly aggressive start.

One could also hope that not too much of that limited budget goes into Secretary Romney's scheme to get "giant corporations" to solve the "low-cost housing problem." "If we bring together sufficient volume of demand" (which it appears one could readily assume), the Secretary proposes to "go to the national corporations and say: 'What can you produce for this market?'" The idea, of course, is to bring the same kind of "assembly-line efficiency" to housing that has made the American automobile industry (and Mr. Romney) famous. The Secretary allows as how the first housing might not roll off the line for two or three years—after all, "you don't design an automobile in a few months." On this score most architects might agree that he is pessimistic. But it seems optimistic to hope that "grass roots involvement" will move many local zoning boards and building-code officials to permit the assembly line to reach into their community; or to hope that the construction trade unions will, in the spirit of "voluntarism," relax their traditional reluctance to encourage such schemes. It also seems optimistic to hope that many corporations (especially those who have been involved in the building industry for long) will want to put too many of their eggs in this new technological basket. Finally, the new scheme assumes once again that "technology"—not a reduction in financing costs or

an end to land speculation or the beginning of good planning, for example—will solve everything. I persist (see RECORD, April 1968, this page) in thinking that "in the face of the enormous volume of new housing and other new construction that is needed . . . we should face the fact that housing costs more than the people who need it can afford to pay, set up programs to fill that gap, attract the money needed to finance the construction into the capital pool, unwind the red tape, and start building the best we already know how."

What is needed now is money—budgeted and appropriated.

And one could argue that there must be enough money to bolster (instead of cut) the HUD budget when one gets to the Department of Transportation budget. It calls for \$4.6 billion for highways. That's almost seven times as much as Model Cities.

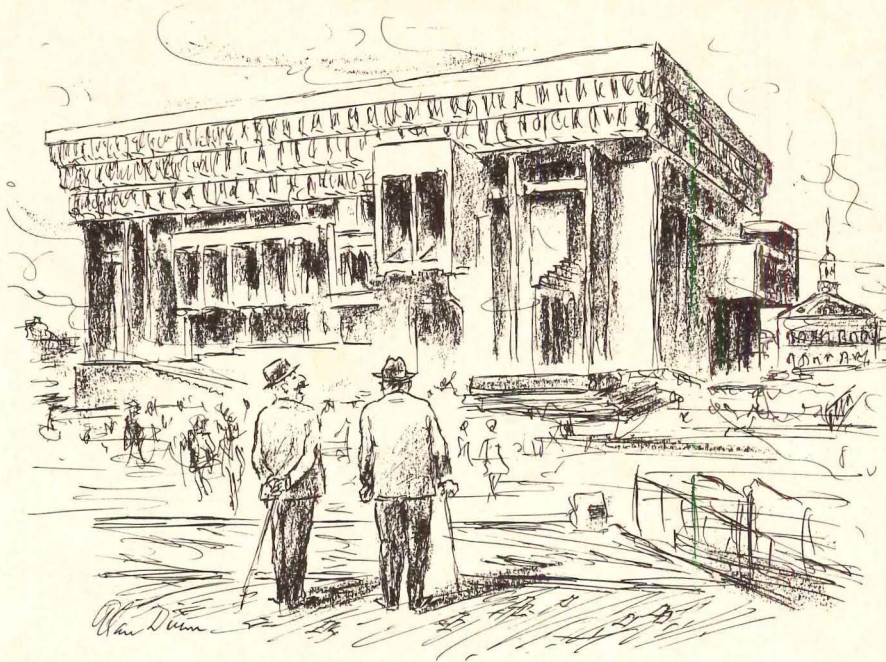
\$4.6 billion is also 26 times as much as the proposed budget for transit systems. Which brings us to Secretary Volpe's early "happenings." While, as noted, Mr. Volpe clearly understands the urban transit problem, he doesn't seem to be putting much effort there. His pettest project seems to be constructing a series of inner-city expressways (presumably connected to the inter-city expressways) for the reason that "you just can't dump traffic into crowded city streets." His response to protesting citizens groups, conservationists, and planners is to call for "common sense."

He has also assured the assembled members of the Associated General Contractors of America that "we can accomplish . . . sound, continuing programs for financing new airports to relieve air traffic congestion, and for new mass transit facilities, and do this while leaving *the highway trust funds untouched.*" (Italics Mr. Volpe's.)

Least reassuring note of all: target date for submission of a comprehensive transit plan to Congress: "Next year."

Which seems, like Secretary Romney's housing program development, like a pretty relaxed attack on some very pressing problems.

Walter F. Wagner, Jr.



*"To be fair, I have to admit Boston Baked Beans aren't what they used to be, either."*

**Good architects can "maintain some character"**

In the speech to HUD staffers referred to on the previous page, President Nixon not only said that "We are going to have to put billions of dollars in the city rebuilding program. . . ." He added, most encouragingly, that "The question is not whether we do it and not how many units we are going to build. That will be done. The question is, can we do it and still maintain some character? Can we still maintain, for the individuals that will live in this housing, a sense of identity, a sense of dignity? Which does not come when they are just numbers in a huge, big block. . . ."

" . . . more important than what we think of as the housing, the housing and urban development . . . is the human factor that is involved."

The President reminded his housing people that "Designers acting through single consulting firms or inter-disciplinary teams . . . are effectively discharging these responsibilities."

But it is rather sad that the matter of providing a "sense of dignity" and a "sense of identity" for dwellers in urban housing is still a question. "That will be done" too, if HUD will make it possible for more skilled architects to operate effectively in the urban housing field—and then listen to their suggestions even if "its never been done that way before."

**A tree is saved in Brooklyn**

In the kind of college protest that there should be more of, the students and administration of Brooklyn College banded together to revise the design of their new \$2 million addition to the student center. Easiest solution was to build on grade—which would have sounded the knell for a handsome copper-beech tree. The solution

adopted: add two floors to an existing building and save the tree. The photos accompanying this piece of news make it clear that the tree in question is not that spectacular a tree. But it's one of the few that part of Brooklyn still has. And we salute what seems to be one of the increasingly rare triumphs of the value of beauty over the value of a buck.

**A new venture in interdisciplinary intelligence**

"The quality of life itself from this point forward will be governed almost entirely by how well our professionals mesh their efforts, not only as specialists but also as concerned environmentalists. . . . The fragmentation [among professionals] is real; but so is the will to close ranks."

So writes Bill Houseman, long-time executive editor of *House & Garden*, who has just set out on his own to establish "The Environment Monthly," a new publication intended to "close the ranks."

Bill's letter, which I guess he won't mind me quoting further, says that the very serious aim of his new eight-page monthly "will be to function as a journalistic broker for those who make measurable and essential contributions to the man-made environment, but who don't relate across professional and disciplinary barriers."

He expects to report "on what is happening in housing and in land use and community planning, both in crumbling cities and rising new towns; to keep an eye on the important legislative fronts where conservation and open space issues are contested and also on parks and recreation, transportation and roadside esthetics; not to overlook the dawning concern over waste disposal and the fights against all pollutants."

The first issue will be out in June, and I'm prepared to guess (knowing Houseman's work) that it will be thoughtfully and professionally done. He is (no doubt nervously or

at least anxiously) awaiting offers to subscribe (at \$35 a year) at *The Environment Monthly*, 420 Lexington Avenue, New York, New York 10017.

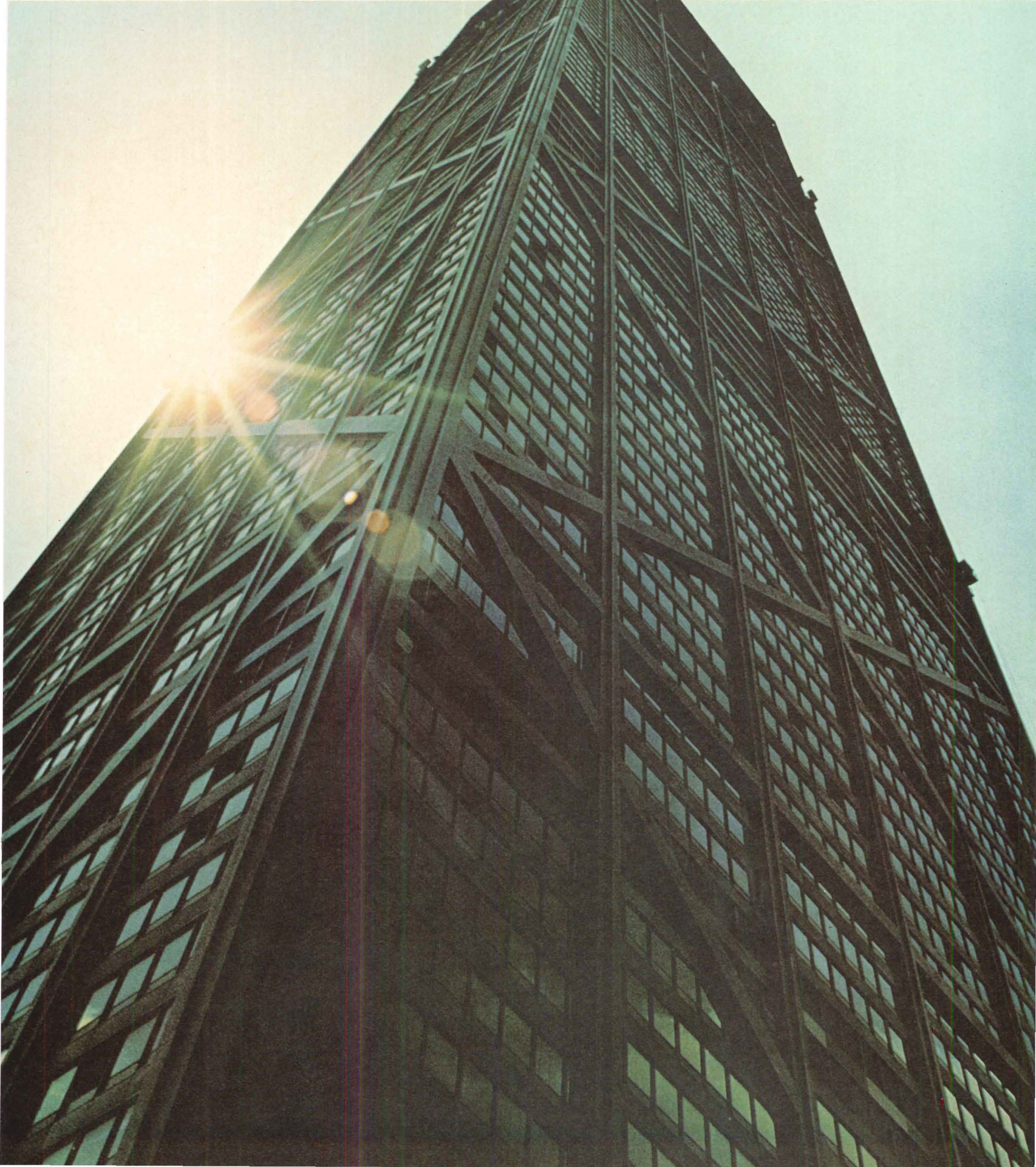
**Should home town boys make good by law?**

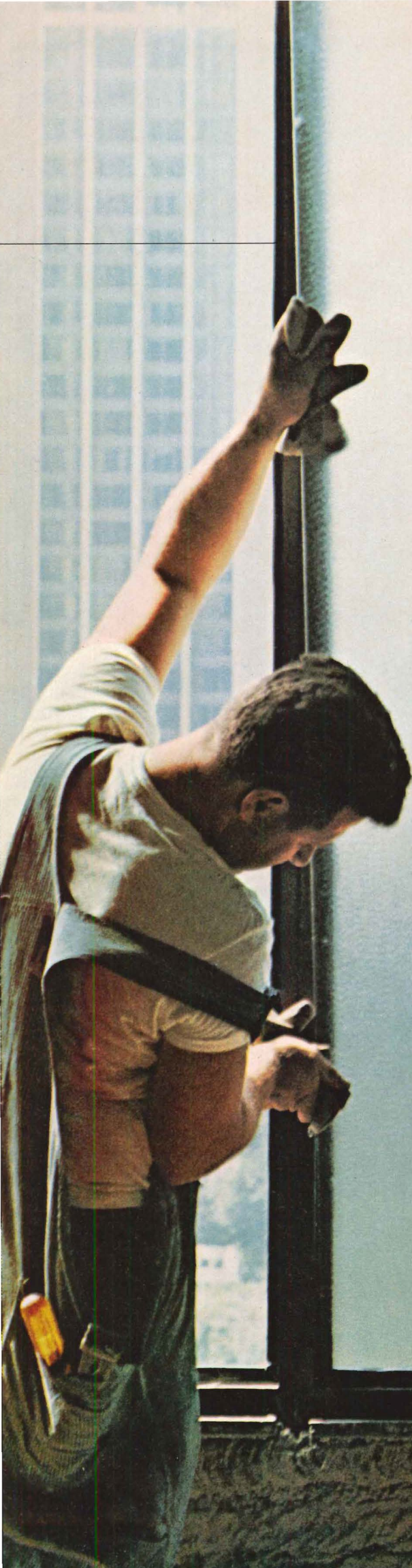
Happily, there seems to be less and less sentiment for the grand old idea that local architects ought to get all the local jobs. Two more nails have been driven by:

1) The Southern California Chapter of the A.I.A., which endorsed a watchdog committee's proposal to eliminate any political patronage in county architectural contracts. The Citizens Economy and Efficiency Committee has proposed establishment of an architectural evaluation board to review qualifications of architects seeking county commissions.

2) Architect David L. Williams, editor of the *Monthly Bulletin of the Michigan Society of Architects*, who noted in his February editorial that some thought has been given in Lansing recently to the possible enactment of a law that would require Michigan-made products to be used on state government-sponsored projects. In the discussions of this possibility the further opinion has been advanced that such a law should also cover professional services such as those rendered by architects and engineers. Mr. Williams' sensible and straightforward comment to that: "Although government requirements for 'equal consideration' are used frequently to ensure a fair shake for everyone, since there is more and more to spend our time on in our ever-broadening scene, it would seem to be yet another redundancy to add such a law to the vast catalogue of those we have now and ask papa to look out for our interests. Architects are appointed for the quality of their services and the capability they can show to get the job done—not for their geographic credentials." Amen to that. —W.W.

Elastomers in Industry/Engineered Construction





## Butyl tape seals every pane of glass in new 100-story Chicago landmark

When the John Hancock Center is completed this year, this unusual structure, combining both residential and commercial space, will be the world's second tallest building.

Every one of its 11,459 panes of bronze-tinted glass will be installed with glazing tape made of Enjay Butyl rubber.

The tape is easily and safely applied around the window frame, from the inside. The window is pressed against the tape and inside channels are snapped into place.

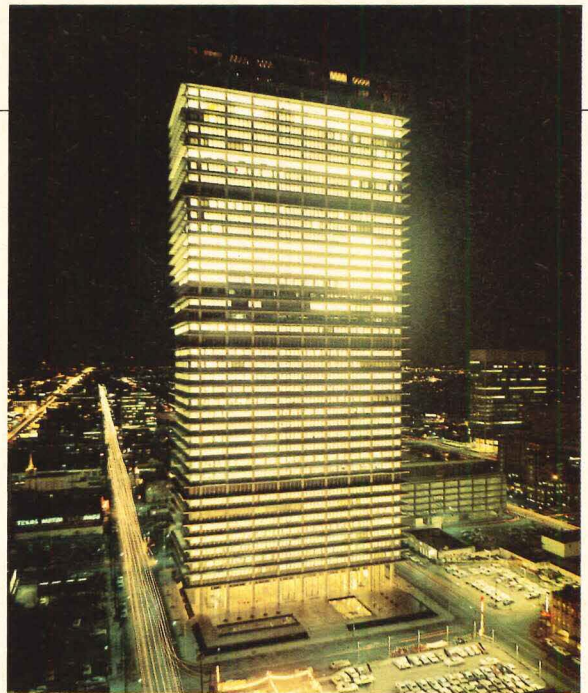
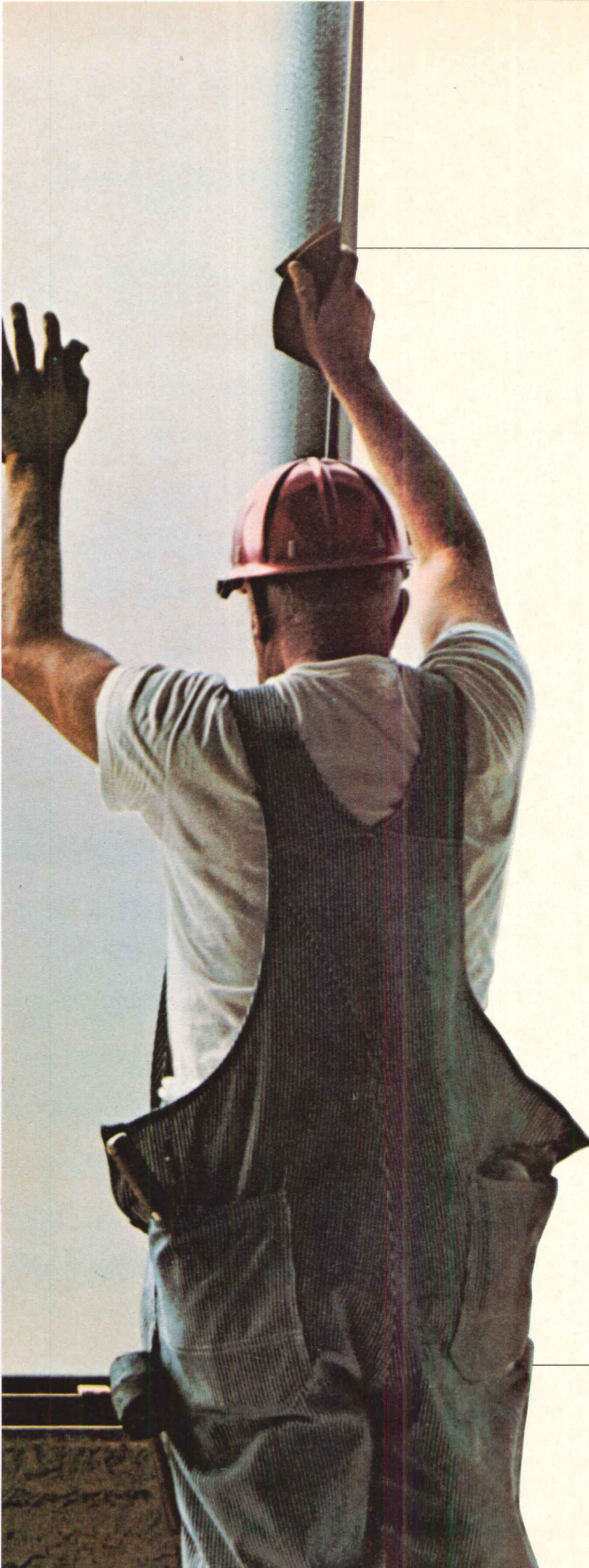
The result is a permanently weatherproof seal that shuts out the coldest blasts the Windy City can produce.

Use of this one-step Butyl tape glazing system eliminates back-up sealants and clean-up time, cuts the cost of window glazing for large buildings by 50-60%.

Owner/Developer: John Hancock Mutual Life Insurance Co.  
Architect: Skidmore Owings and Merrill.  
Glass and Glazing: National-Hamilton, Division of Bienenfeld Glass Corp.  
Tape Manufacturer: Protective Treatments, Inc. Dayton, Ohio



Butyl tape easily unrolls from roll, adheres quickly to window frame. Workers set large pane in place over tape for quick, weathertight seal.



## After 8 years, Butyl rubber membrane still provides perfect water seal for foundation

The entire foundation and subsurface portion of the Humble Oil & Refining Company building in Houston, Texas is encased in a one-eighth inch thick sack made of Enjay Butyl rubber. Approximately 230,000 sq. ft. of Butyl sheeting was needed for the job.

Installed in 1960 when the building was erected, this waterproof boot of Butyl still keeps the three-level basement of the building dry and leak-free.

The water table at the building site is 35 feet above the bottom of the Butyl membrane, so the lower 35-foot portion of the building is normally completely surrounded by water.



Workmen installing 20' x 90' Butyl sheets to form watertight sack before foundation was poured. Butyl sheeting material manufactured by Carlisle Corporation, Carlisle, Pennsylvania.

Enjoy Chemical Company  
Synthetic Rubber Division  
Adhesives Intermediate Dept.  
60 West 49th Street  
New York, New York 10020



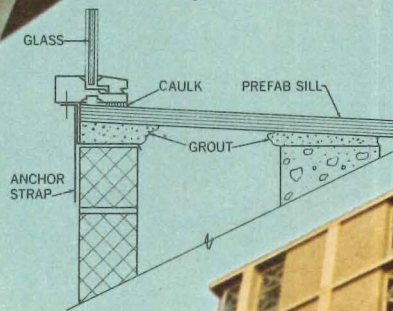
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## Butyl rubber caulk used throughout large new apartment complex

Valley View at King of Prussia, Pennsylvania—a five building, moderate rental apartment complex now building 25 minutes from downtown Philadelphia—is completely caulked with Butyl caulking.

Over 320 gallons of caulk was used for glazing the windows and sealing the door perimeters as well as the brick panel perimeters.

Caulk made with Enjoy Butyl was used because of its excellent weatherability and permanent flexibility. It lasts up to 5 times longer than conventional oil based caulks over a wide range of temperatures. It is simple to apply with ordinary tools, and needs no special joint preparation.



Owner:  
Field Construction Associates.  
Architect: Milton Schwartz  
and Associates, Philadelphia, Pa.  
Caulking Contractor:  
Crawford Caulking, South  
Hampton, Pa.  
Caulk: Pecora Chemical Corp.,  
Philadelphia, Pa.



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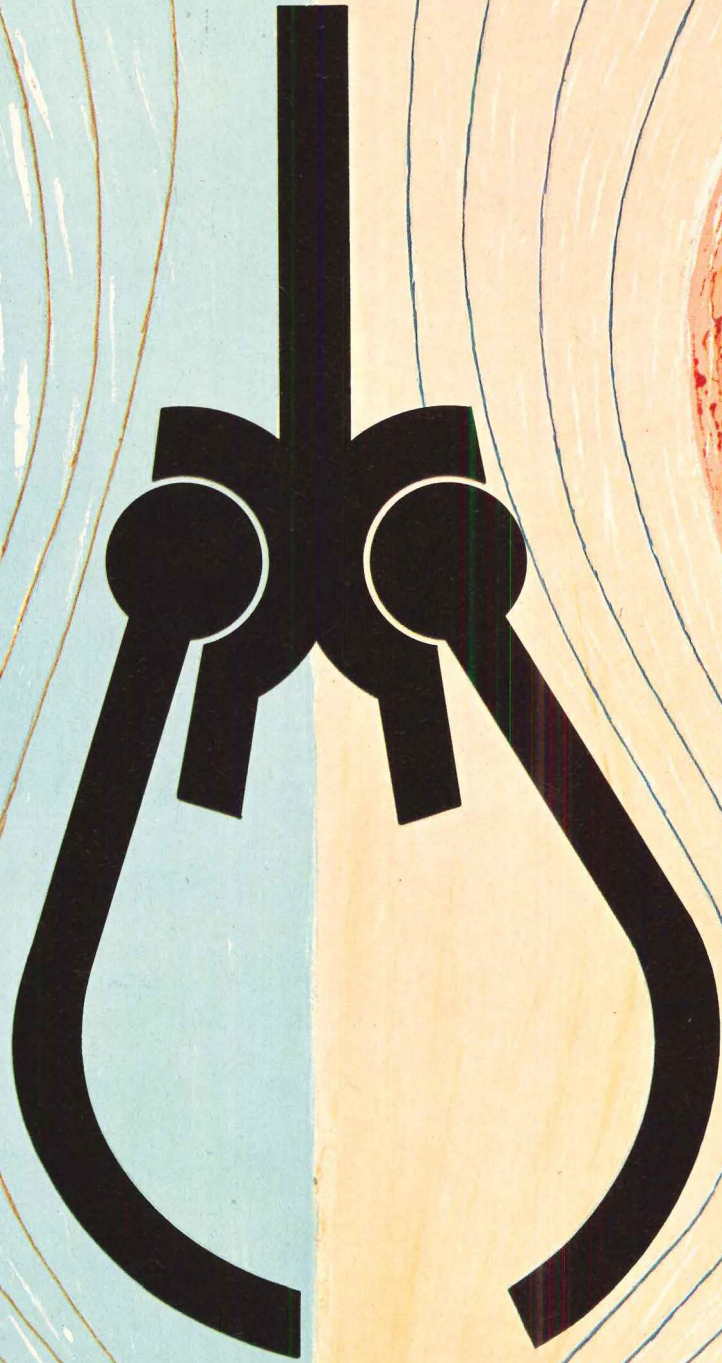


Showrooms: New York, Los Angeles, Boston, Aurora, Ill.

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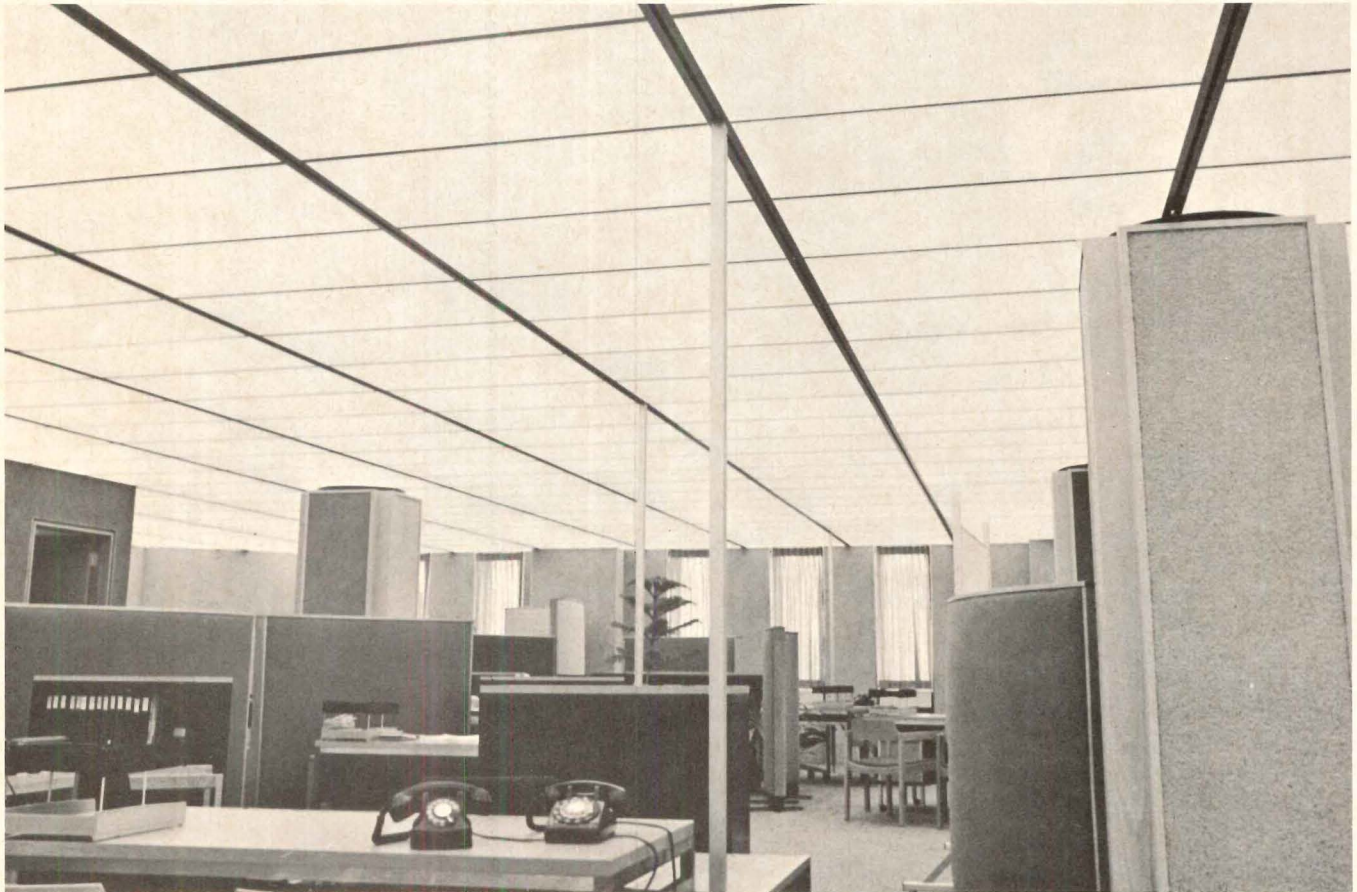
*This means T-Line can provide each modular unit of "Landscaped" office space with the exact, individualized air distribution needed to meet its requirements.* And when offices must be rearranged, T-Line can provide the changed air distribution necessary to fully meet the new requirements, without disturbing the ceiling in any way.

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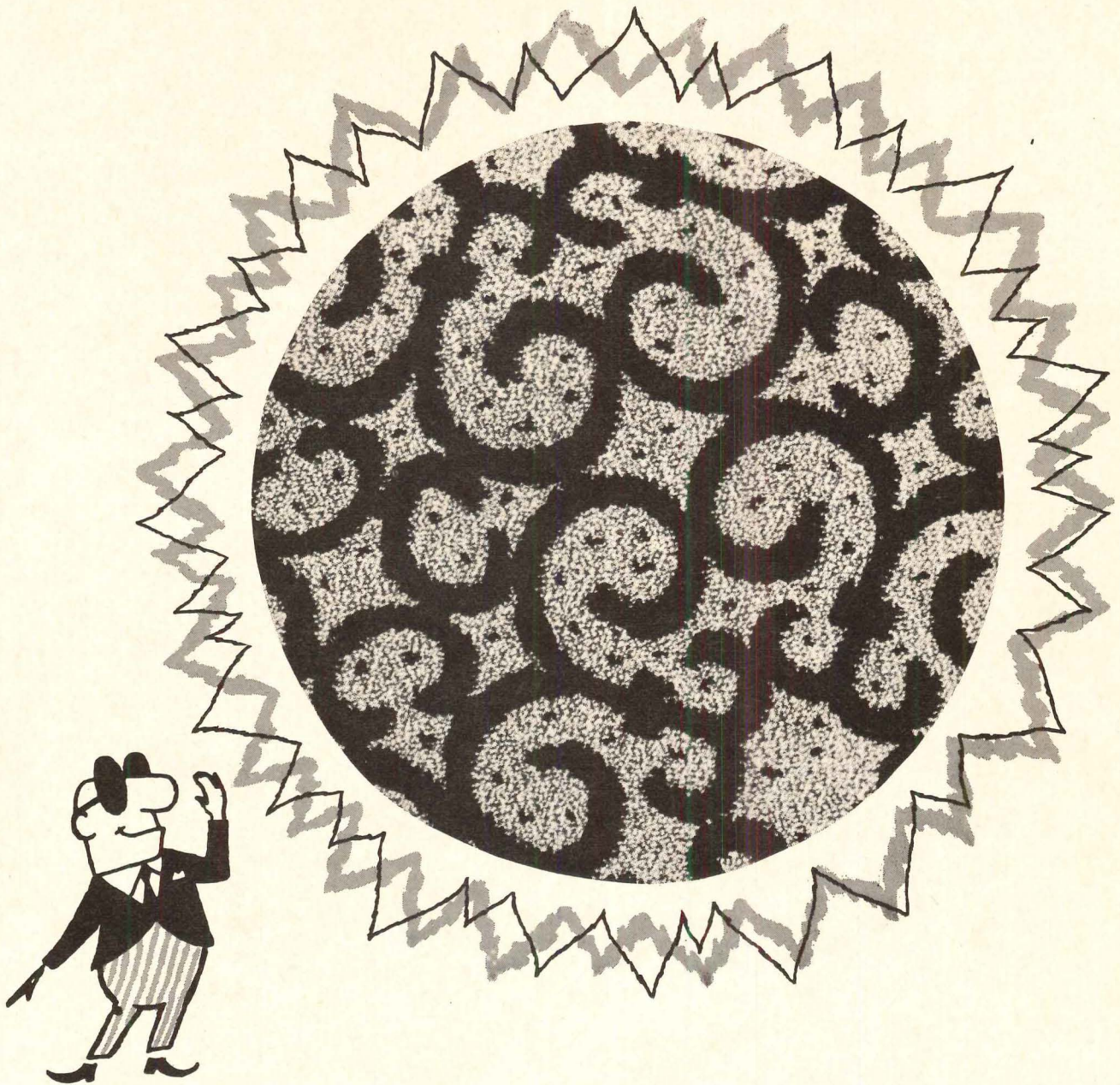
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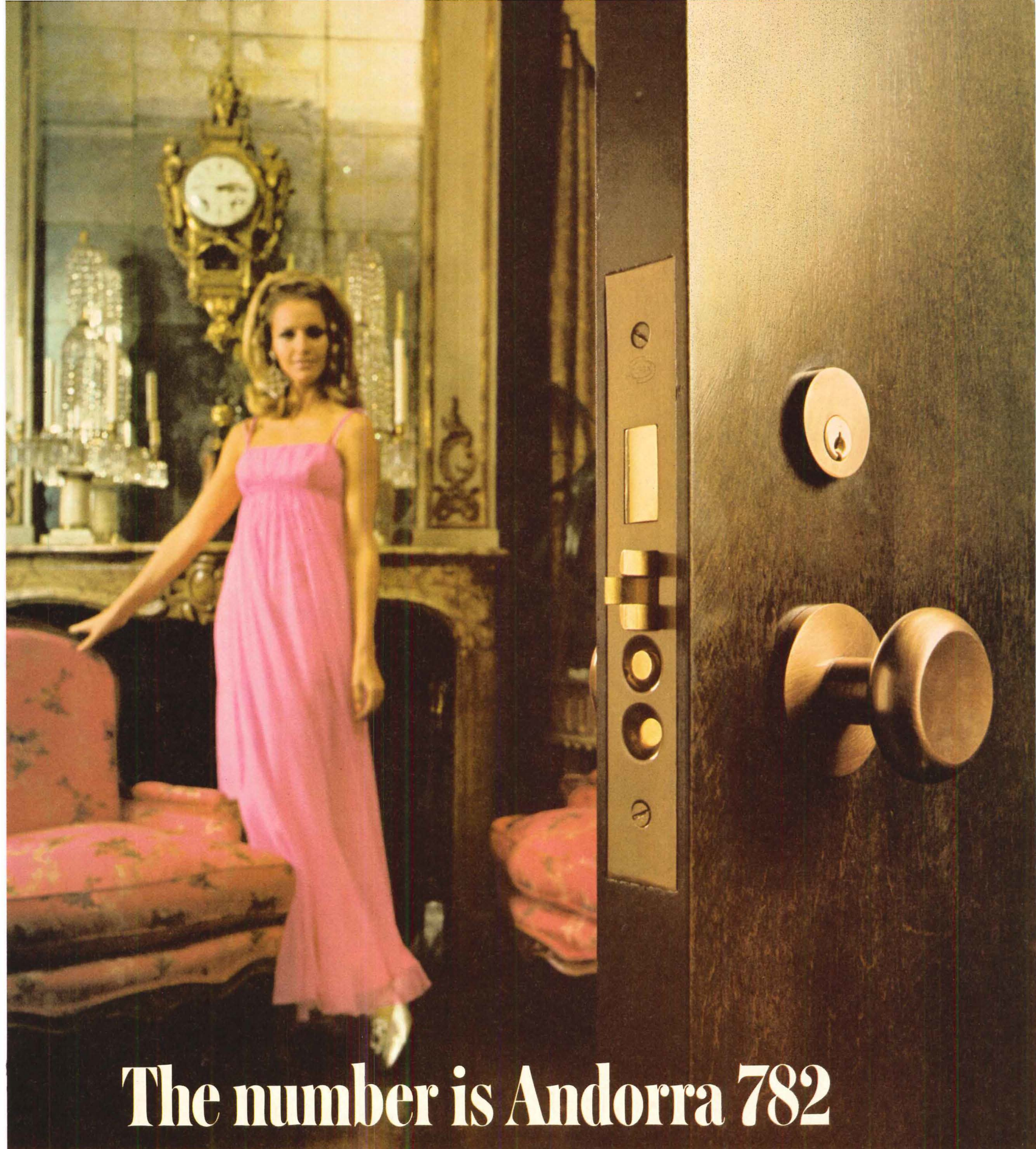
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# The number is Andorra 782

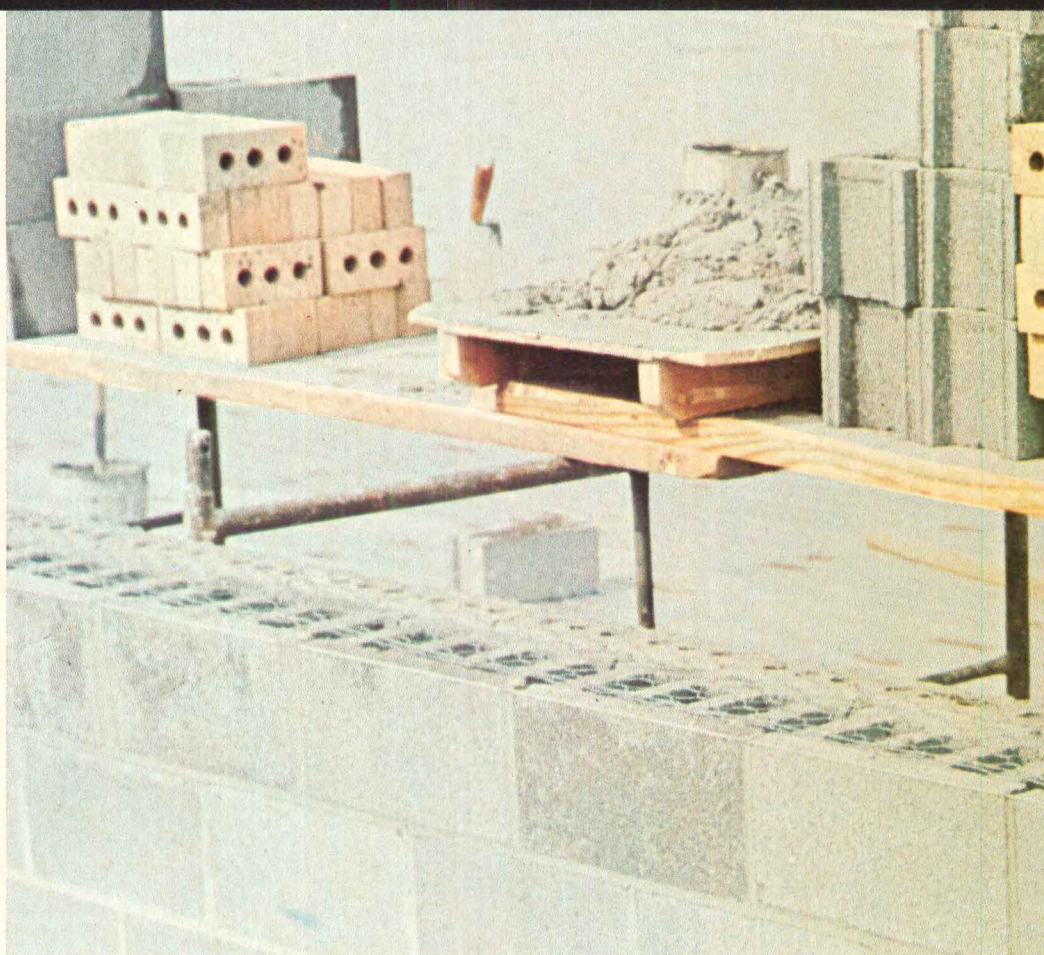
Your number for elegance. And only one of many stylish Mortise Locksets. Andorra, expressing the beauty, quality and security built into the complete Corbin line of door closers, exit devices, and many types of locksets.

Your Corbin distributor can furnish you with complete data on this design, or write P. & F. Corbin Division, Emhart Corporation, New Britain, Connecticut 06050. In Canada—Corbin Lock Division.



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# Only Keywall<sup>®</sup> Reinforcement is made to match the mortar strength

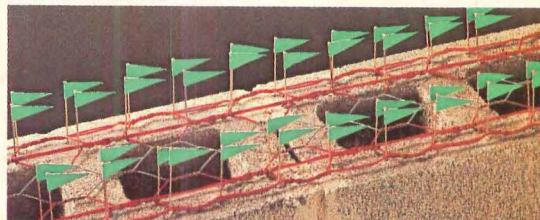


## Use Truss-Type Keywall with high strength mortar

In walls subject to high stress, it is good practice to specify high strength mortar and our Keywall Truss-Type Reinforcement every other course. The tremendous bonding power of high strength mortar makes excellent use of the extra steel in our truss-type reinforcement, as shown by lateral pressure tests conducted at the University of Toledo. Tests also showed that reinforcing every *other* course is as effective as reinforcing each course.



Keywall Multibond comes in rolls that are easy to hand carry, roll, convey, or wheel. One roll reinforces 200 ft.



Toledo University tests show that Keywall Multibond is unsurpassed when used with regular mortar. Multibond gives you 96% more bonding surface than 9 gauge truss, 55% more than 3/16" truss. Plus 28 mortar locks per 8" block.



### **Use Keywall Multibond with conventional types of mortar**

Easily cut to fit any building situation with just a pair of tinsnips. Snip to make cut-outs for structural framing. Snip to make pieces exactly the right length for corners and pilasters.

Conventional mortars need the extra bonding surface, mortar locks and mechanical anchors provided only by Keywall Multibond. Together they work to better control thermal movement and resist cracks.

For specific answers to any reinforcement problem, call your Keystone man or write Keystone Steel & Wire Company, Peoria, Illinois 61607.



from Keystone Steel & Wire Company  
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**Discover steel load bearing architectural wall framing.  
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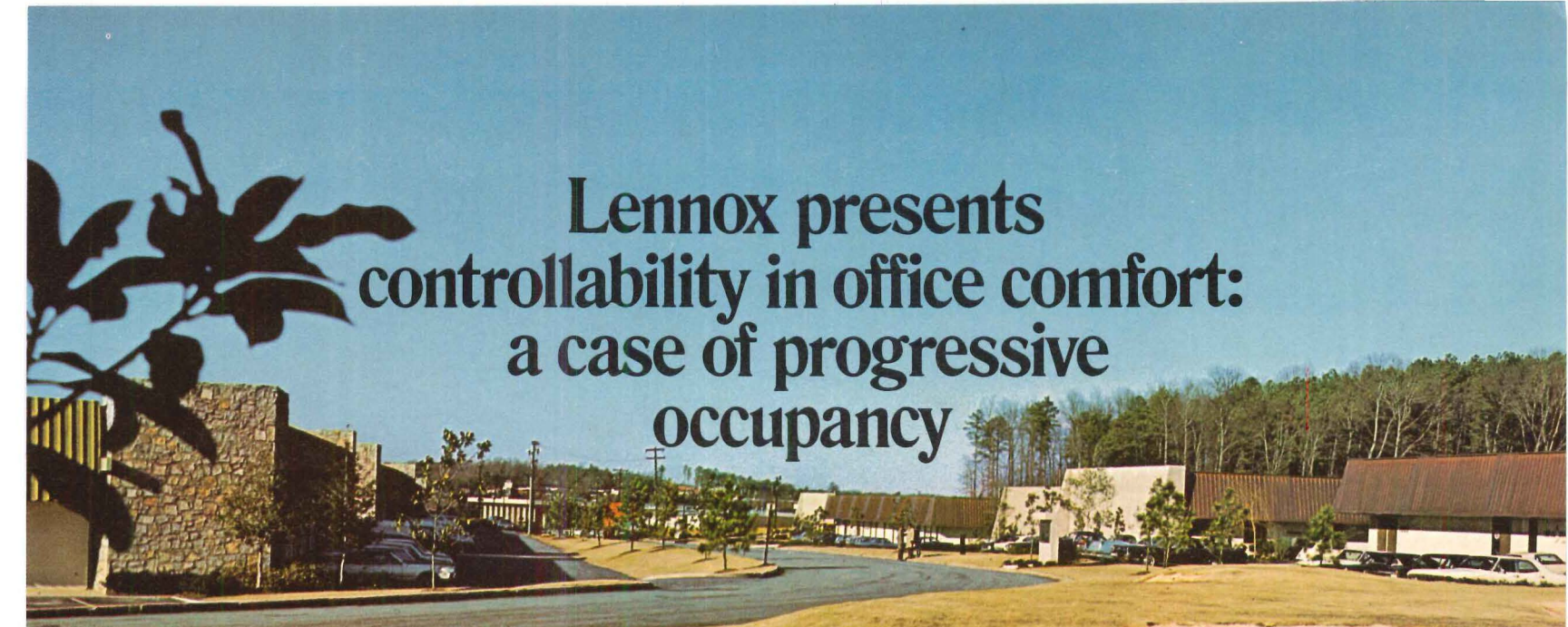
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A Design Manual containing complete and comprehensive data on "sticks" is available to architects. Write Steelcraft, 9017 Blue Ash Road, Cincinnati, Ohio 45242 U.S.A.

 **Steelcraft**  
*finest name in metal doors and frames*

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# Lennox presents controllability in office comfort: a case of progressive occupancy

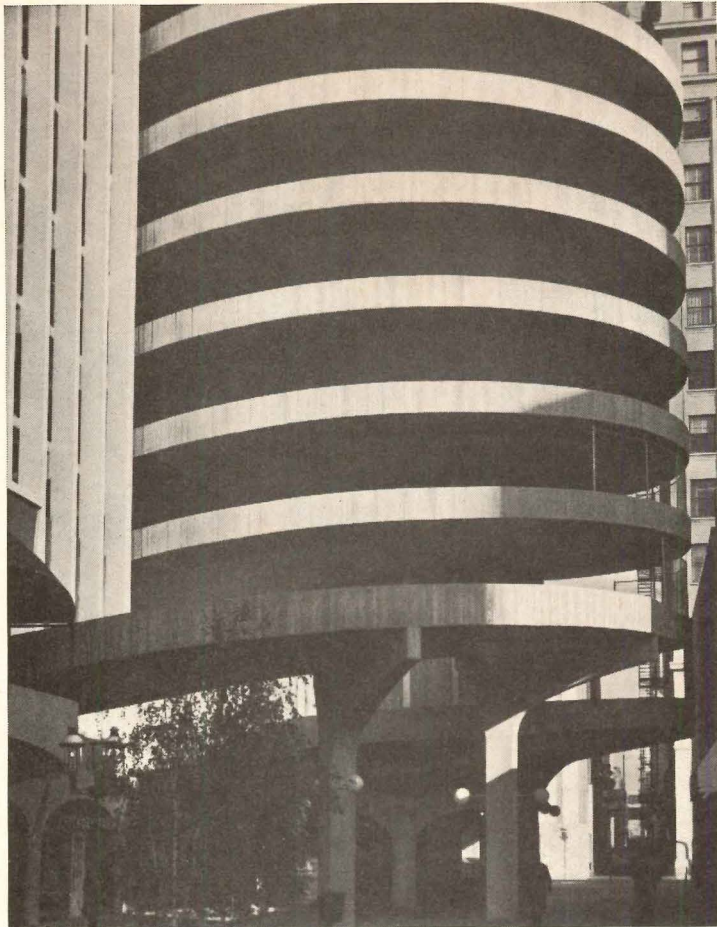
Ever-rising office building costs dictate early and progressive occupancy, pacing the construction. This demands that physical facilities—including heating and air conditioning—be able to meet the same pace.

The central, ducted “micro-climates” of Lennox modular systems provide the necessary flexibility for step-by-step occupancy through the individual controllability of office comfort.

*continued . . .*

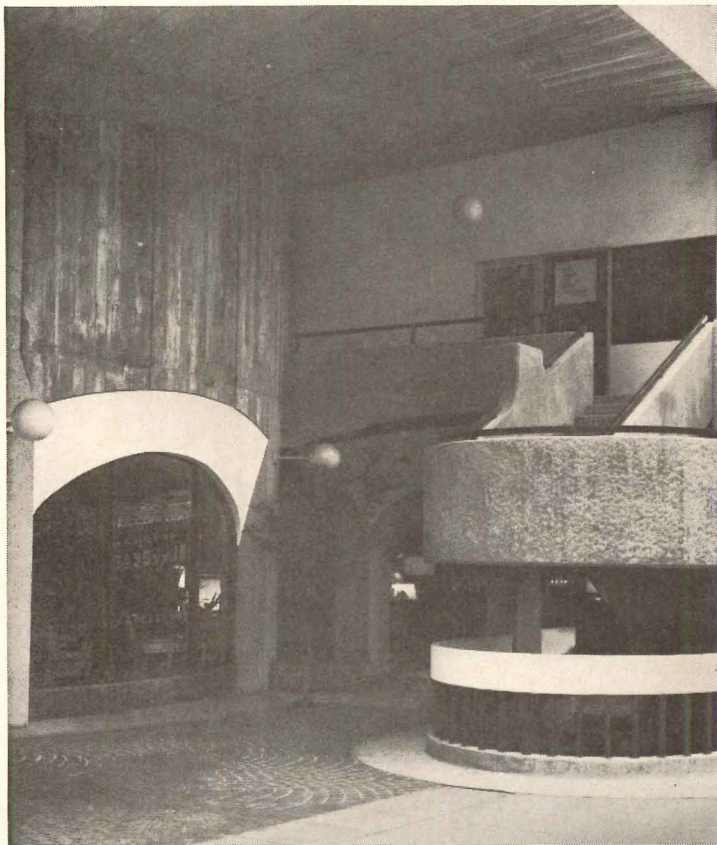
Freeway Office Park, outside Atlanta, Georgia, is an exciting example of the suburban office complex. Ten buildings and 145,000 sq. ft. are heated, cooled and ventilated by hidden Lennox rooftop equipment. Architects: Heery & Heery. Engineers: Frank M. Brewer and Associates. Developer and general contractor: Newman & Associates.





The spiral exit ramp features a rough-board textured railing and inner core. Its curves provide a pleasing contrast to the rectangular lines of the main structure.

Ground level of spiral ramp section shows the blending of concrete finishes that lend interest and variety to the design.



# Parkade.

## Washington's prize-winning concrete design.

Parkade Parking Garage in Spokane was selected as the outstanding concrete design in the State of Washington by the Washington Aggregate and Concrete Association. The interesting structure consists of two floors of shopping and office area topped with an eight-floor parking facility. Built almost entirely of reinforced cast-in-place concrete, a variety of finishes are employed for accent: exposed rough-form texture, bushhammered surfaces and both rough-board and dimpled surfaces on the precast units. Lehigh Cements were used for the majority of the concrete supplied including precast units. Lehigh Portland Cement Company, Allentown, Pa.



This beautiful facility provides off-the-street parking for 936 cars in the heart of downtown Spokane. Dimpled, textured precast fascia panels were used on the second floor of the structure as well as on the skywalk leading to an adjacent store.

*Owner:* Parkade, Inc., Spokane

*Architect:* Warren Cummings Heylman and Associates, Spokane

*Structural Engineer:* Esvelt and Saxton, Consulting Engineers, Spokane

*General Contractor:* Sceva Construction Co., Spokane

*Ready-Mixed Concrete:* Acme Concrete Co., Spokane

*Precast Concrete On Parkade:* Ace Concrete Company, Spokane

*Precast Concrete On Skywalk:* Central PreMix Concrete Co., Spokane

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The flexibility of today's architecture has been captured with the dramatic styling of General Electric SPACE-LITE luminaires. Circles and squares become your tools to make every lighting installation unique.

SPACE-LITE luminaires combine flexible modular mounting arrangements and bold geometric shapes to give you exciting design possibilities. Six decorator colors, a variety of mounting hubs and arms, and today's most efficient light sources are available to further increase application flexibility and efficiency.

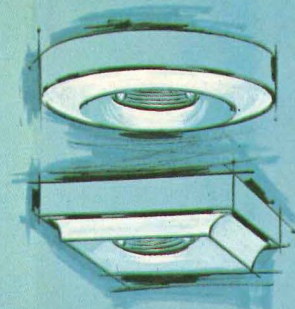
High-quality GE features make SPACE-LITE luminaires your best lighting buy. You get excellent control of light through the use of GE's time-proven optical assembly used in conventional lumi-

naires. Available in two proportionate sizes of 1000 and 250 watts, SPACE-LITE luminaires provide family appearance to parks, walkways, and parking areas and even downtown whiteways.

For additional information and a "Build An Installation Designer's Kit", see your General Electric Sales Engineer or write to: Section 460-27A, General Electric Co., Schenectady, N. Y. 12305. **Lighting Systems Dept., Hendersonville, N.C.**

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## GENERAL ELECTRIC LIGHTING

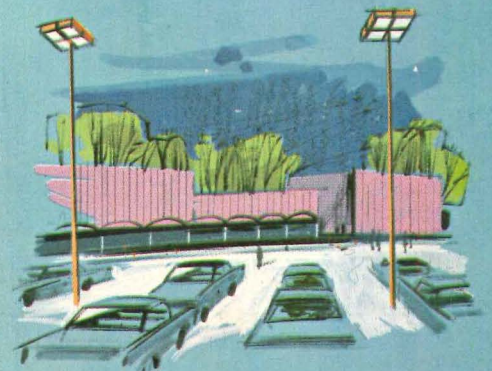
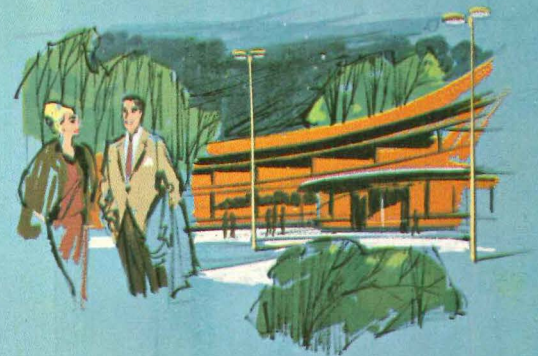
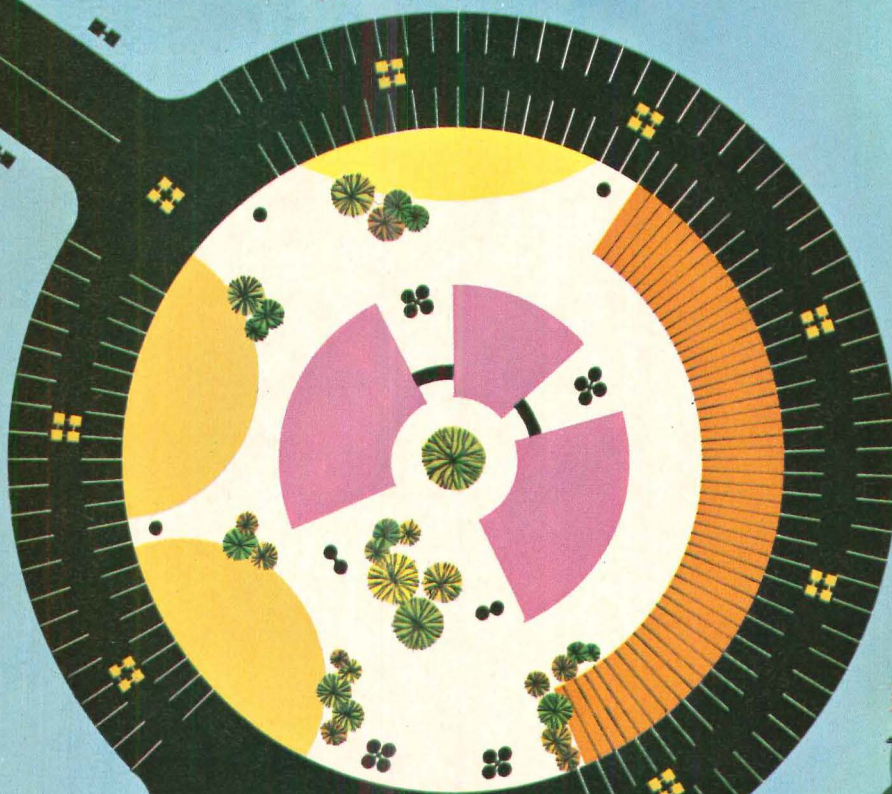


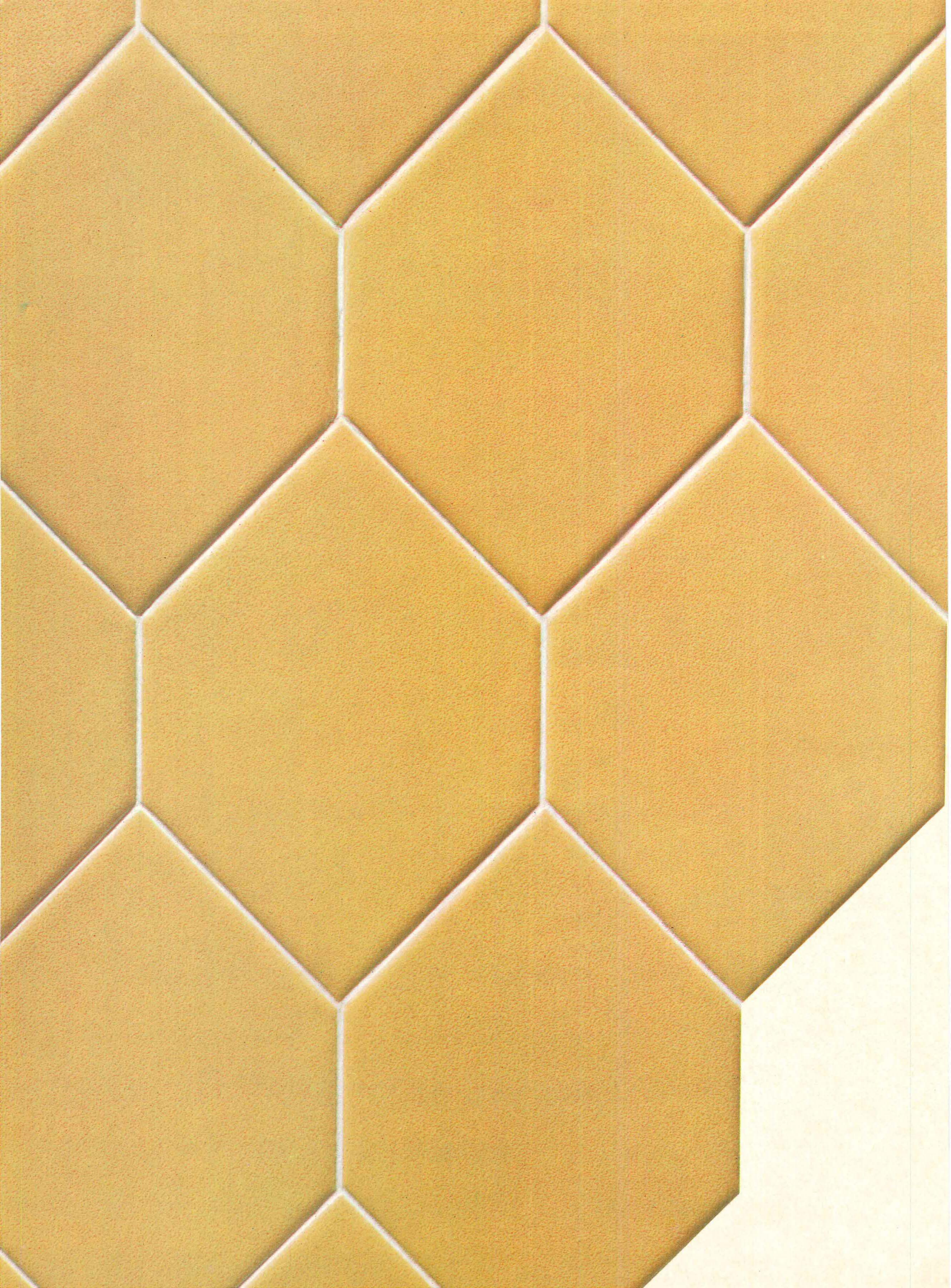
inside-out

outside-in

**GENERAL ELECTRIC**

West Hills Mall





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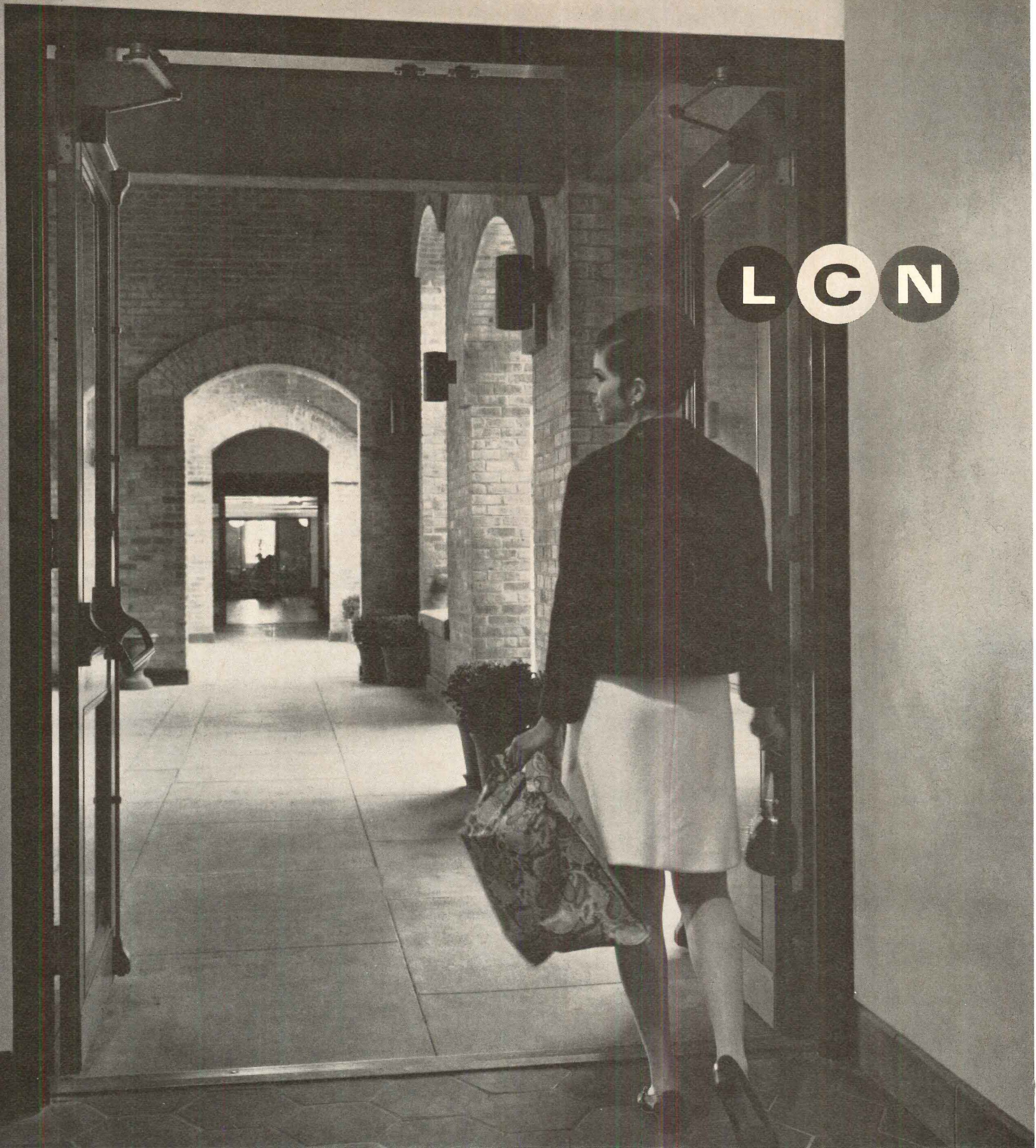
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Here we give Harvest Gold tile full run of a room and spread it clear across the page. For more on what Mosaic tiles can do for you and your work, write: The Mosaic Tile Company, Box 999, Florence, Alabama 35630. We'll send you our complete Architect's Guide. Or if you'd like, a Mosaic representative will deliver it.

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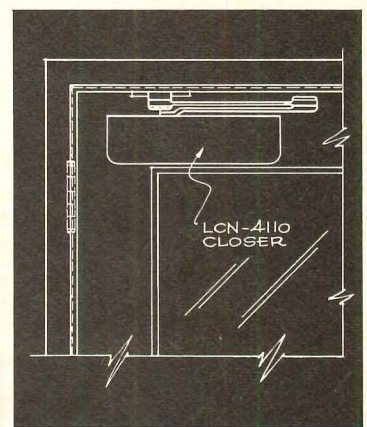
LCN

The Cannery, San Francisco, California. Joseph Esherick and Associates, Architects, San Francisco.

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Dimensionaire was recently installed in the two-story Hecht Company department store in the Tysons Corner shopping center, Tysons Corner, Virginia. The interior architect for the building, George Fry of Loewy/Snaith, New York, states:

"The Dimensionaire system

greatly improves the appearance of the store by giving a cleaner look and pleasing light patterns. Linear air bars eliminate the clutter of conventional diffusers. Some ceilings I've seen have so many bars, diffusers, ducts and lights they look like someone has hit the ceiling with buckshot!"

Sidney Kallet, chief engineer at Sidney Barbanel, Inc., Long Island City, is impressed with the way the 160,000 sq. ft. Dimensionaire installation gives the Hecht building the proper air distribution and achieves comfortable conditions so important in a sizable building. "The Dimensionaire system helps keep background noise levels in the shopping center at a minimum, too," Mr. Kallet adds. "And it has a better acoustical value than

sheet metal systems, and eliminates the cost of insulating conventional duct work."

That's Dimensionaire—one system from one company—Owens-Corning Fiberglas. The Hecht Company improved their working environment with Dimensionaire: An environmental system by Owens-Corning Fiberglas. Shouldn't you?

Write for detailed case histories and cost analyses on the Dimensionaire Ceiling System to: Owens-Corning Fiberglas Corp., 717 Fifth Avenue, New York, N.Y. 10022.

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Model S-2253

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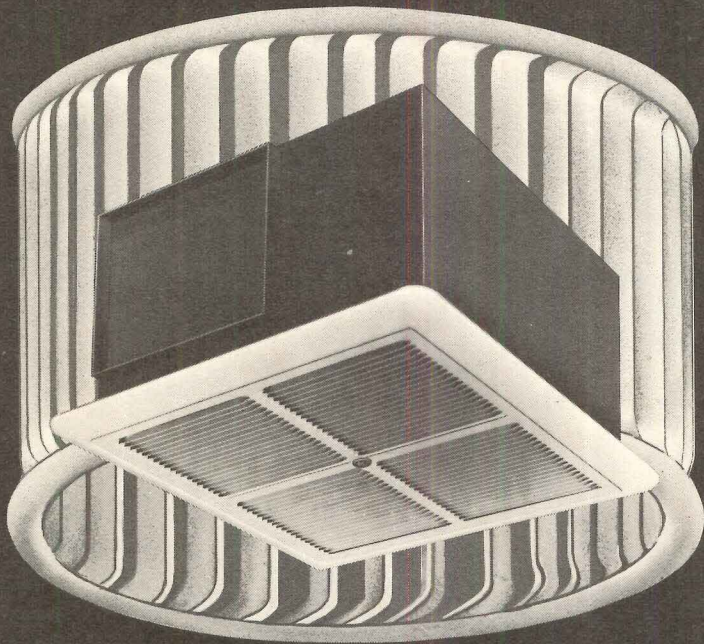
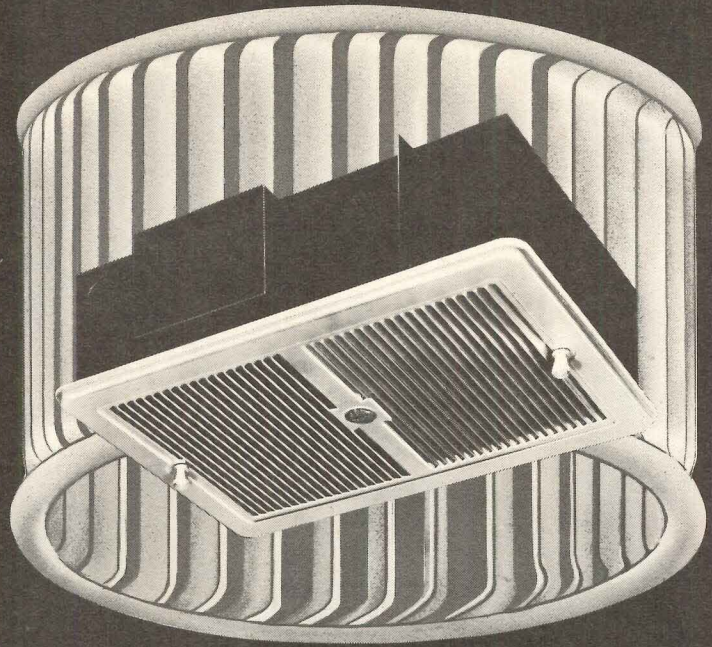
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## News in brief

**"Radical re-direction" of the Hill-Burton hospital construction and modernization program** was urged by HEW Secretary Robert H. Finch. To replace the categorical grants of the present program, the Administration proposes (page 81) a \$500-million guaranteed loan program to modernize or replace acute-care facilities in the hospitals, and a \$150-million program of block grants to the states to expand outpatient clinics, neighborhood health centers, skilled nursing homes and structures designed to share hospital manpower and equipment.

**Environmental problems did not make the priority list in President Nixon's 10-point domestic program**, outlined in a five-page statement to Congress last month (page 36), except for the promise of "a far-reaching new program for development of our airways and airports and our mass transit systems."

**President Nixon's budget proposed reductions from the Johnson budget in construction programs** ranging from military construction, public works, reclamation and power projects to Model Cities, schools and hospitals (page 36). And the construction industry awaited the outcome of the "serious study" Budget Director Mayo said the Administration was giving to a "temporary freeze" on public works projects as one more anti-inflation move.

**N.C.A.R.B. in Response to a Changing Profession—Motion for Change** is the theme of this year's national convention of the National Council of Architectural Registration Boards, to be held June 19-21 at the Palmer House in Chicago. The N.C.A.R.B. sessions immediately precede the annual convention of the American Institute of Architects June 22-26, also at the Palmer House, this year a joint convention with the Royal Architectural Institute of Canada.

**New director of the University of Oklahoma School of Architecture will be Dr. Murlin R. Hodgell**, who has been since 1964 director of the School of Architecture and consulting architect-planner of the University of Nebraska. Dr. Hodgell, who succeeds John G. York, is a registered architect, a registered engineer and a registered planner, with degrees from Kansas State (B.Sc. Arch., 1949); University of Illinois (M.Sc. Arch., 1952); and Cornell (Master of Regional Planning, 1956, and Ph.D., 1956). Dr. Hodgell taught architecture at Kansas State from 1957 to 1963, and in 1963-64 was chairman of the Department of City and Regional Planning at Rutgers University.

**The First National Exposition of Contract Interior Furnishings** will be held at the Merchandise Mart in Chicago June 22-27 (page 36) and special programs for architects are being developed for June 22 and June 27, just preceding and just following the A.I.A.-R.A.I.C. convention.

**John Ely Burchard has received the Thomas Jefferson Memorial Foundation medal in architecture**, established in 1966 by the University of Virginia to recognize "persons who have distinguished themselves in architecture." The medal, which carries a \$5000 prize, was first awarded last year, to Marcel Breuer. Dean Burchard has been educator, author, critic and consultant in the fields of architecture and urban affairs. He was the first dean (1948-1964) of the School of Humanities and Social Studies at the Massachusetts Institute of Technology; and after his retirement in 1964 spent three years at the College of Environmental Design of the University of California at Berkeley, for a time as acting dean. He has been serving this term at the University of Virginia as Thomas Jefferson Memorial Foundation Professor of Architecture.

**Six foreign architects have been elected Honorary Fellows of the A.I.A.** and will be formally invested at the A.I.A. convention next month. They are: Sir Hugh Casson, England; William Dunkel, Switzerland; Werner Duttman, Germany; Preben Hansen, Denmark; Norman H. McMurrich, Canada; and Joachin Ordonez Alvarez, Mexico. Like their 141 predecessors, they are honored at "architects of esteemed character and distinguished achievement who are not citizens or residents of the United States and do not practice within the domain" of the A.I.A.

**The Flying Architects Association will hold its spring "fly-in"** and meeting in conjunction with the A.I.A.'s Chicago convention. For information write: Charles A. Pearson, Jr., 3636 King Street, Alexandria, Virginia.

**Six architects are among new associate members of the National Academy of Design** whose election was reported last month by the Academy president, Architect Alfred Easton Poor. The architects are: Max Abramovitz, Edward Larrabee Barnes, John M. Johansen and Albert Homer Swanke, all of New York; Richard Winston Ayers of Baltimore; and Walter A. Netsch of Chicago.

## Nixon budget cuts construction funds

There was no good news for the construction industry in the Administration's proposed revisions of the Johnson budget which were disclosed last month. A net reduction of \$2.9-billion in proposed non-defense expenditures for the fiscal year beginning June 30 would include a reduction of more than \$1-billion in construction funds.

More than half of that figure is the proposed \$639-million cut in military construction funds for the Sentinel Antiballistic-Missile System program. Another \$142-million would come out of Corps of Engineers Civil Works funds, and only "emergency work" would be permitted starts before fiscal 1971.

In the programs of more direct concern to architects, Office of Education construction funds would be cut by \$128-million to \$100-million; Public Health Service funds by \$104-million to \$154-million; Model Cities by \$75-million to \$675-million; General Services Administration by \$4-million to

\$54-million. GSA new projects would be reduced 60 per cent to \$5-million.

Also dropped from the Nixon budget were Johnson requests for \$1.25-billion for Model Cities and \$1.25-billion for urban renewal for fiscal 1971 expenditure. Authorization had been requested to facilitate the cities' planning, and was eliminated, HUD officials said, to "preserve flexibility" for the new Administration in next year's budgeting.

Highway construction expenditures would be reduced by \$65-million, but the \$4.53-billion now requested is still something more than seven times the level of proposed Model Cities expenditures (see page 9).

Other proposed reductions in construction expenditures would cut Bureau of Reclamation funds by \$38-million to \$160-million and the Soil Conservation Service watershed program by \$9-million to \$55-million.

### Nixon's 10-point message: talk of cities and housing, moves on other issues

The five-page statement President Nixon sent to Congress last month to outline some of his "principal forthcoming legislative proposals" on domestic matters listed specifically 10 areas in which action would be requested; only one directly related to environment.

That one was a promised recommendation for "a far-reaching new program for development of our airways and airports and our mass-transit systems." No detail was given.

Two of the other promised recommendations would relate to an Administration approach to urban problems as suggested by the President in his campaign, though the relationship was not made explicit in last month's statement. These are: "a program of tax credits, designed to provide new incentives for the enlistment of additional private resources in meeting our urgent social needs"; and "a start on sharing the revenues of the Federal government, so that other

levels of government where revenue increases lag behind will not be caught in a constant fiscal crisis."

The cities and their problems got their attention in the President's philosophical discussion of the thinking that led to the establishment of his domestic priorities: first among them to halt inflation. "Unless we save the dollar," the President said, "we will have nothing left with which to save our cities—or anything else."

Next among the priorities: crime control, and then:

"An equally pressing priority is the entire complex of needs that we commonly group under the heading 'the problems of the cities'—but which in fact reach beyond the cities, and include the distresses of rural America as well.

"Our policy review has strengthened my conviction that in approaching these problems, America needs a new direction—not a turning away from past goals, but a clear and determined turn toward new means of achieving these goals."

No specifics were given.

## Computer will aid architects selecting building materials

A computerized information system that will allow architects to retrieve data on building products and materials meeting specified performance criteria will be developed for the New York State University Construction Fund by McGraw-Hill Information Systems Company. The new system will permit the architect to establish the performance characteristics required of the materials, and, with the aid of the computer system, quickly extract detailed information on just those products that satisfy his needs. Development of the system, expected to take about a year, is structured around several phases. The first phase deals with interior finishes, with subsequent phases including exterior finishes, structural materials and mechanicals.

Prior to the first phase of actual system development, the Construction Fund and McGraw-Hill will work closely with architects, manufacturers and contractors to determine the critical requirements of the information system users.

"The research effort," Dr. Adinolfi, Construction Fund general manager, said, "represents another significant step in the Fund's drive to enlist the private sector to collaborate with government in the development of meaningful tools and processes that will increase the productivity of the building industry."

### Design a kite and enter the Great Boston Kite Festival!

There will be kite design and kite flying competitions, there will be marching bands and a grand march of kite entrants, there will be over 30 prizes, there will be hot dogs, cotton candy, balloons—all part of the Festival in Boston's Franklin Park May 17.

It has been invented "for children of all ages" by a group of young architects, designers and "just plain kite enthusiasts" organized as "The Committee for the Better Use of Air, Inc." (65 Commercial Wharf, Boston 02110). The whole world is welcome!

## Merchandise Mart's NEOCON plans to honor architects

The First National Exposition of Contract Interior Furnishings sponsored by the Merchandise Mart in Chicago June 22-27 will open with a special "Architect's Day" program honoring the members of the American Institute of Architects and the Royal Architectural Institute of Canada, whose joint annual convention will be held June 22-26 in Chicago.

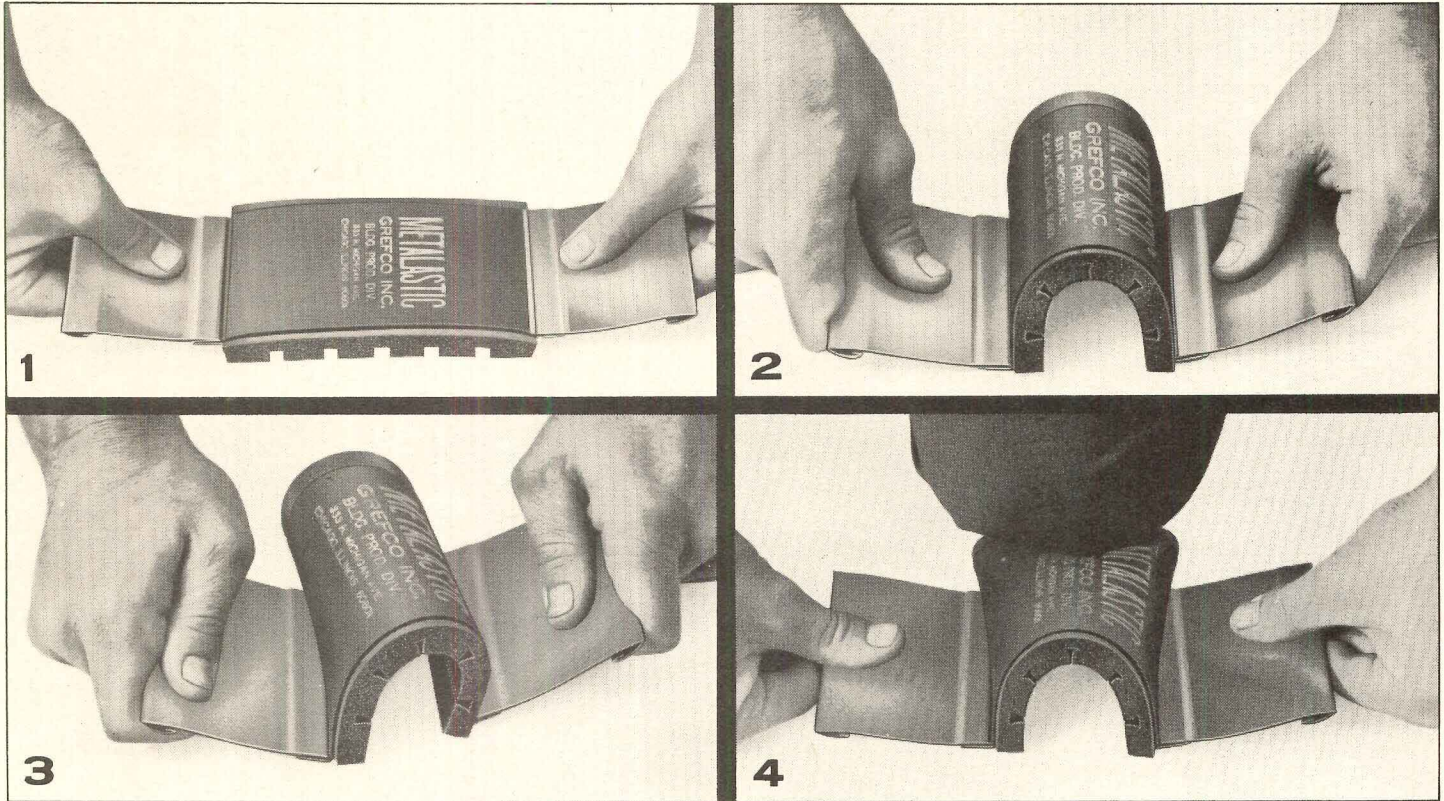
Thirty program sessions on a wide range of interior design topics, with distinguished professionals as speakers, have been organized for all NEOCON registrants June 23-26; but a special program, following a Sunday brunch at 11:30 A.M., has been developed for the afternoon of June 22 under the sponsorship of the Illinois Chapter, American Institute of Interior Designers, and the Midwest Chapter, National Society of Interior Designers.

Dr. Bruno Bettelheim of the University of Chicago will be the featured speaker on the subject "How Interior Environment Affects People," focusing specifically on public housing, public schools and the home.

### Obituary

**William Lescaze**, architect, city planner and industrial designer, died February 9 of a heart attack. His age was 72. Mr. Lescaze, head of the architectural firm of William Lescaze & Associates, designed many notable public and office buildings, residences and schools. His formula for the modern architect was to be functional and organic, using plastics, glass and other modern materials. He studied architecture at the Ecole Polytechnique Federale in Zurich, under Karl Moser. In 1920 he came to the United States, where George Howe invited him to form a partnership. The young firm of Howe & Lescaze was chosen by the Philadelphia Savings Fund Society to design its 33-story skyscraper, said to be the first such building in the United States to be fully air conditioned. In 1951 he was named a Fellow of the American Institute of Architects.

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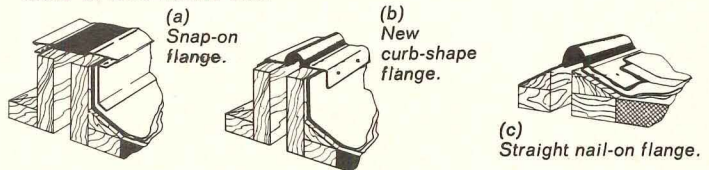


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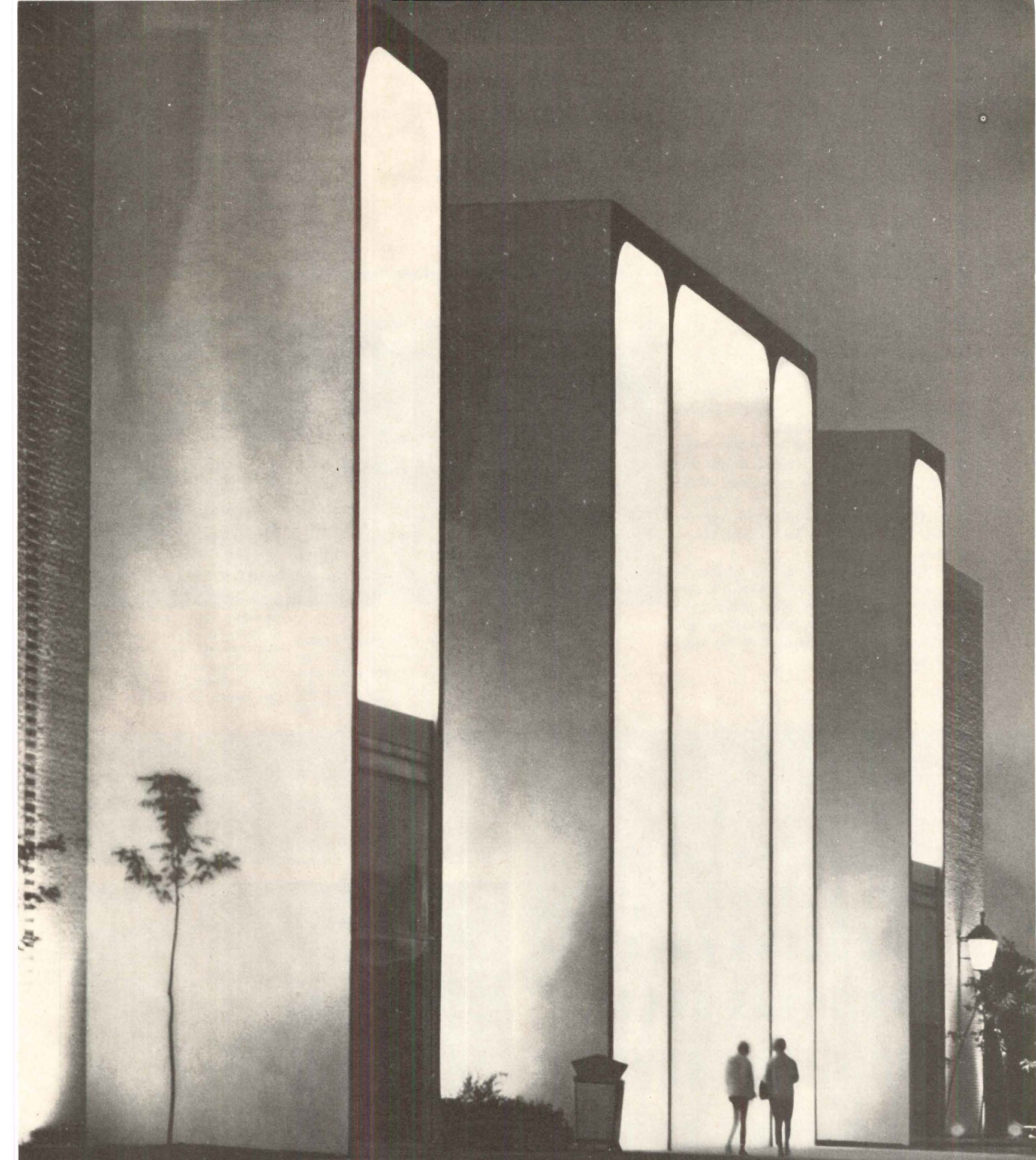
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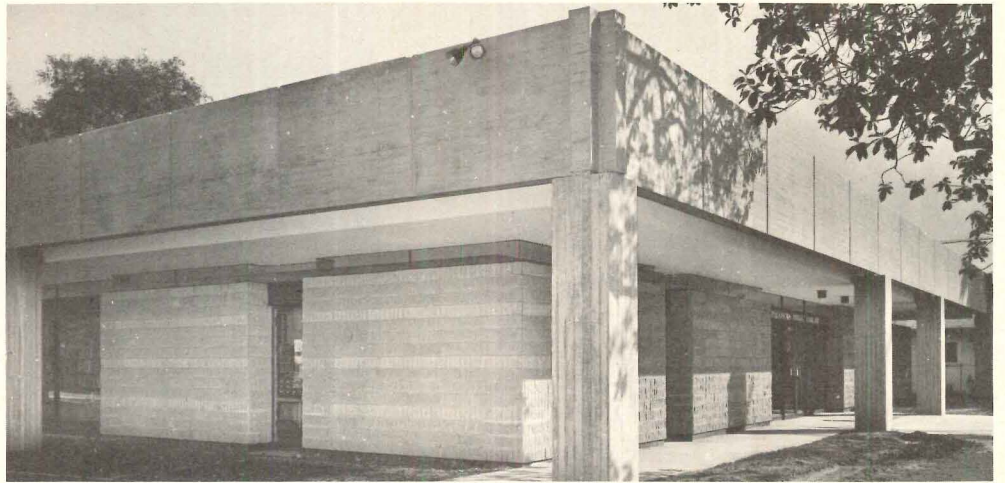
**For climate control,  
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## Concrete industry cites ten Southern California buildings for their "creative use of concrete"

Ten Los Angeles County buildings have been selected to receive awards as part of the Building Awards Program initiated in southern California in 1965 by the Portland Cement Association and co-sponsored this year by the Southern California Ready-Mixed Concrete Association.

Four of the buildings are shown here. Other architects who received awards are as follows: Kurt Meyer & Associates; Langdon & Wilson; Albert C. Martin & Associates; The O. K. Earl Corporation; Welton Becket and Associates; and Heusel, Homolka & Associates.

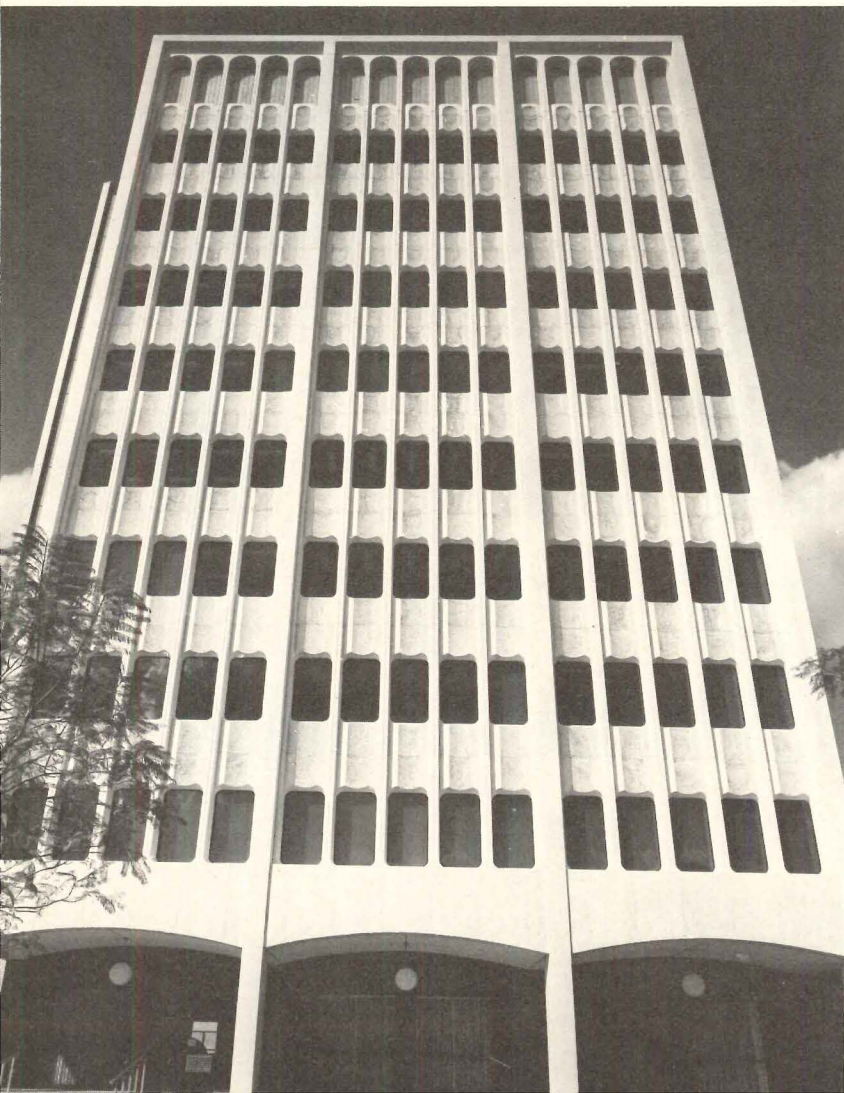
The 13-man jury included: architects James Klein, A.I.A. and John Bayer, A.I.A.; engineers Joseph Dobrowolski, Jack Nicoll, Leo P. Nicholson, Stanley Scholl and Vernon F. Malley; and representatives of the concrete industry.



**Lamanda Park Library, Pasadena.** Pulliam, Zimmerman & Matthews. The building "expresses simplicity and permanency through cast-in-place concrete as an architectural and structural material."

**Ben F. Smith Company, El Monte.** Neptune & Thomas Associates. "An excellent use of many textures by a concrete contracting firm that wanted to show off their product—concrete."

*Robert C. Cleveland photos*



**The Del Amo Financial Center, Torrance.** Victor Gruen Associates. The project "contains the first modified ductile frame, reinforced concrete high-rise building designed to meet the new seismic code requirements of the City and County of Los Angeles."

**Robert A. Millikan Memorial Library, Pasadena.** Flewelling & Moody. "White architectural concrete is used for cast-in-place sections and precast window panels sculptured by Malcolm Leland."



## San Juan architects find four Michigan projects worthy of an award of excellence in 1969 competition

The 1969 Honor Awards Competition of the Michigan Society of Architects was judged by three architects from San Juan, Puerto Rico, in keeping with the principle that having judges from a different part of the country "not only establishes a highly impartial climate of judgment, but also provides for a continued cross-pollination of architectural appreciation throughout."

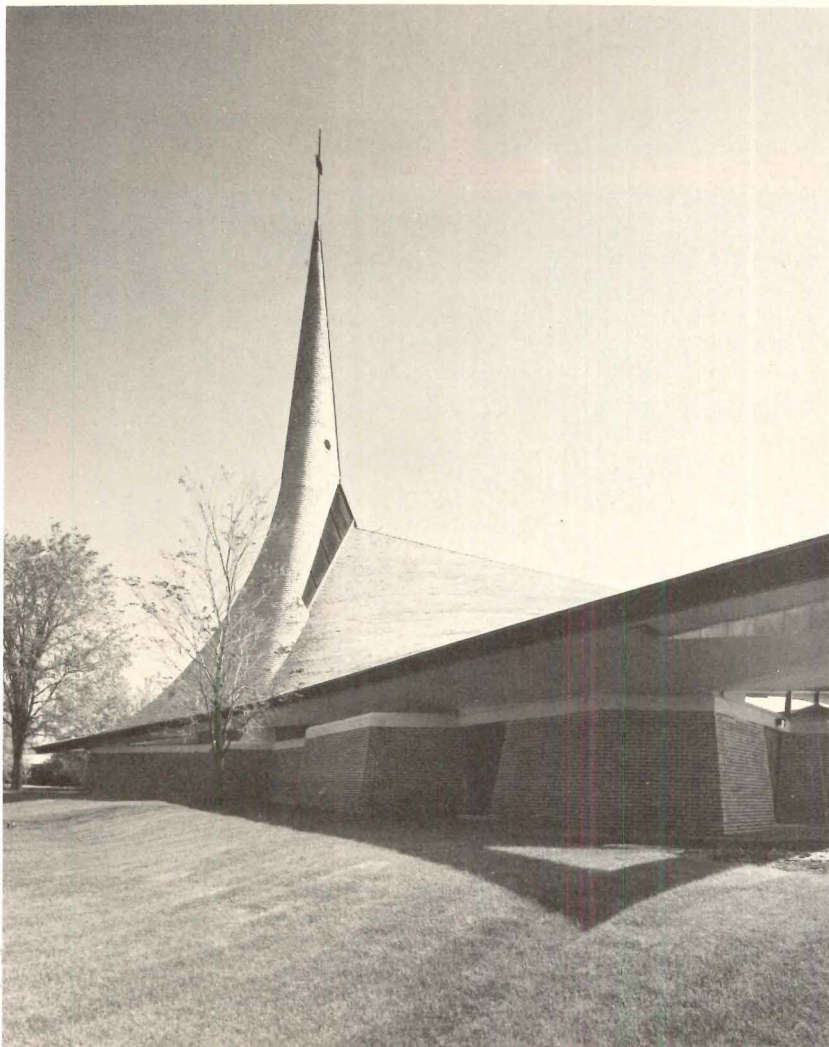
While "the jury was highly impressed with the over-all quality of the entries . . . after exhaustive analysis and careful consideration, four presentations were found to fulfill the program's objectives."

The judges: Carlos R. Sanz, A.I.A., chairman; Augusto Gautier, A.I.A.; and Enrique Soler, A.I.A.



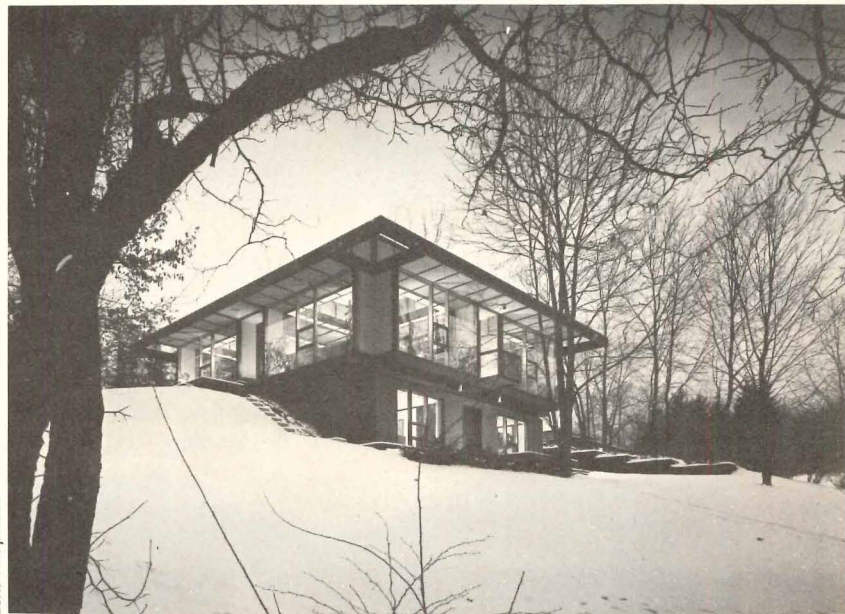
Richard Clapp

Daniel Bartush



Richard Clapp

**Timber Shores Travel Trailer Resort**, Northport. Meathe, Kessler and Associates, Inc. (now William Kessler and Associates, Inc.). Shown is one of 50 sprockets "cut into the near-virgin timberland," the centers of which contain cooking facilities and play equipment. The activities building (left) has 30 identical hexagonal units that include lounge, nursery, grocery, snack bar and kitchen facilities.



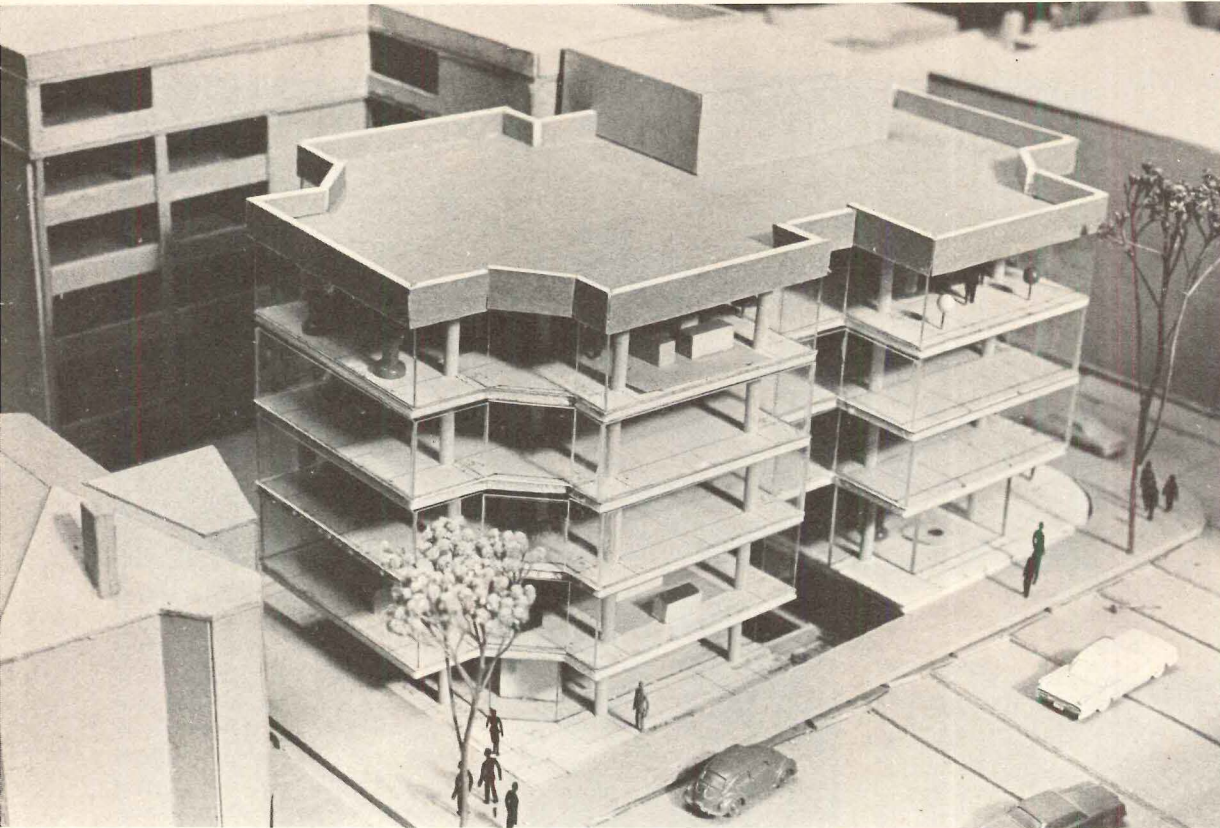
Lens-Art photo

**St. Regis Catholic Church**, Birmingham. Begrow & Brown Architects, Inc. Identifying tower and plan based on new liturgy (intimate relationship between worshipers and altar) were requested.

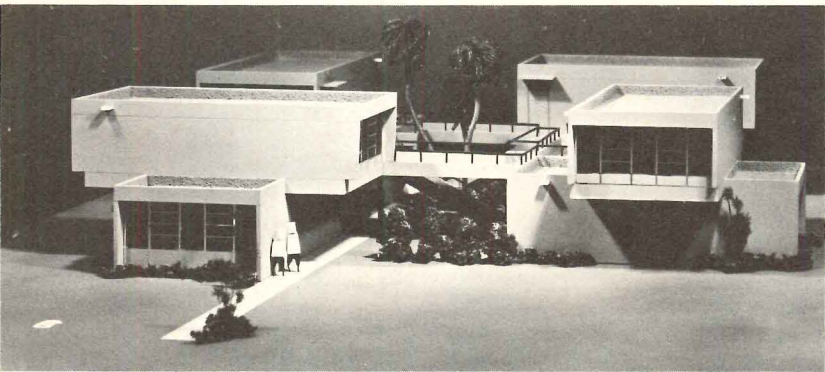
**Schmiedeke Residence**, Ypsilanti. Denis Charles Schmiedeke. A lower level is set into the hill, while the upper level, sheathed in floor-to-ceiling glass, relates interior spaces to landscape.



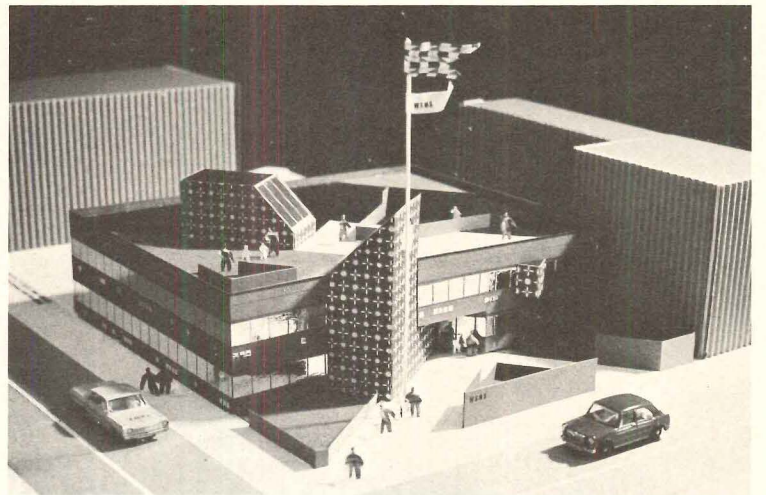
**Mackinac Hall and Manitou Hall**, Grand Valley State College, Allendale. Tarapata-MacMahon-Paulsen Associates, Inc. Two liberal arts buildings, with facilities for 1500 students, are grouped around a landscaped court.



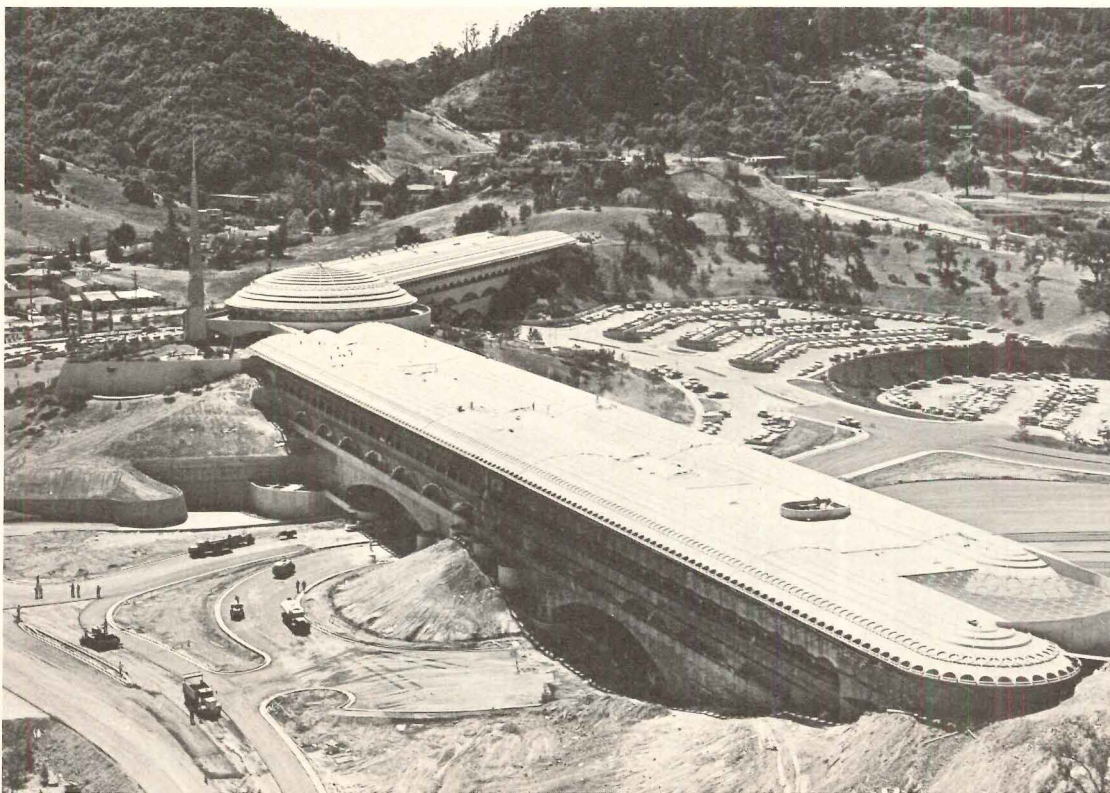
A glass prism, which will reflect the light, color and activity of the street by day and will be a giant showcase by night, will be the new headquarters for Design Research, Inc. of Cambridge, Massachusetts. The internationally known store for contemporary furnishings, accessories and fashions was founded by Benjamin Thompson of Benjamin Thompson and Associates, architects of the \$790,000 structure. The building shown in the rear is headquarters for The Architects Collaborative.



Housing for the elderly in St. Petersburg, Florida, makes use of large precast components that will reduce costs. Government-sponsored Heatherwood, designed by C. Randolph Wedding, will include 100 units based on clusters of eight units around a patio and garden. Each unit will have two 30-foot by 10-foot wall sections.

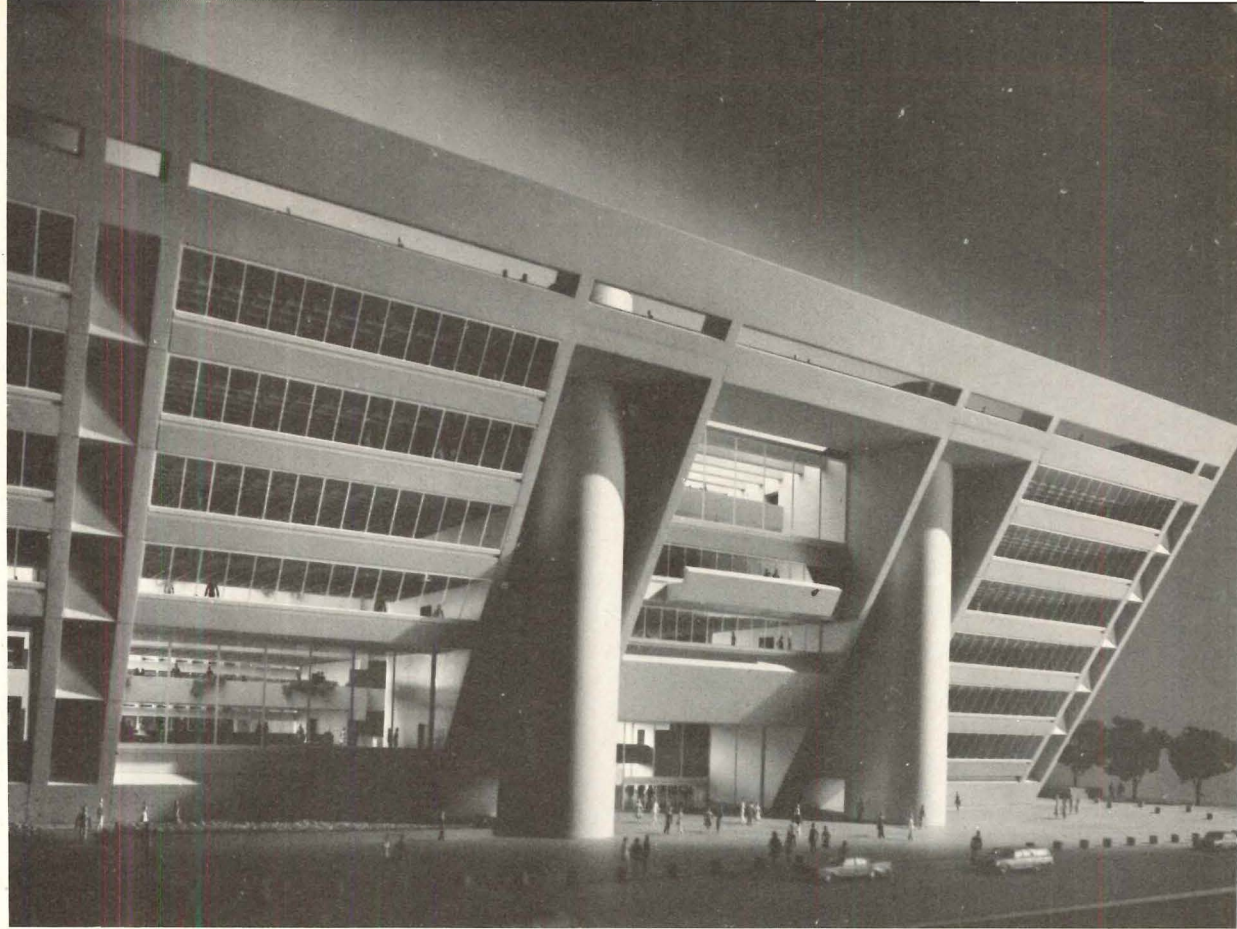


West Side Montessori School, New York City, will have a translucent patterned clock tower, mounted with a large skylight, and windows of mirrored glass with base ports for random views of the street. Designed by Hardy Holzman Pfeiffer Associates to accommodate a progressive educational philosophy, the school will have no confining interior walls, so that teacher and students can shape areas.

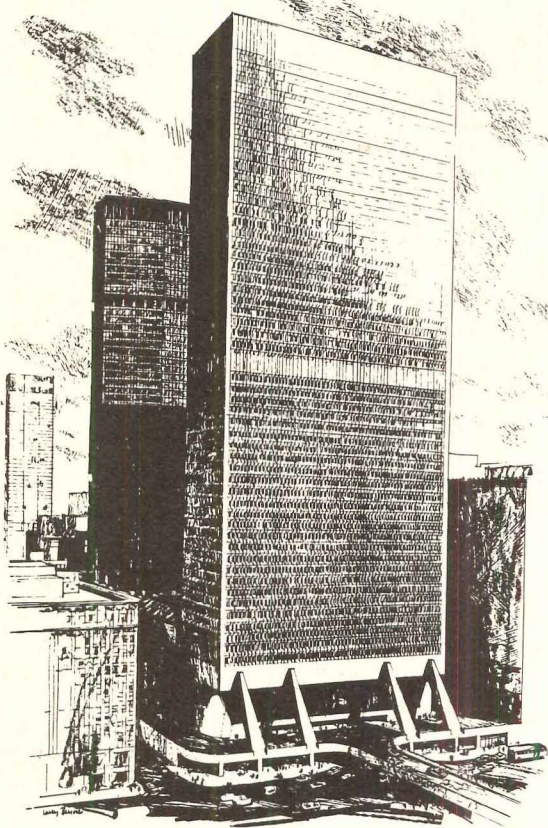


The Hall of Justice for the Marin County Civic Center, San Rafael, California (RECORD, November 1962, page 12), has been completed ten years after the death of its architect, Frank Lloyd Wright. This second phase of the architect's last major work joins the previously completed rotunda and Administration Building. Working drawings were completed by Taliesin Associated Architects under the direction of William Wesley Peters, with Aaron Green Architect Associated.

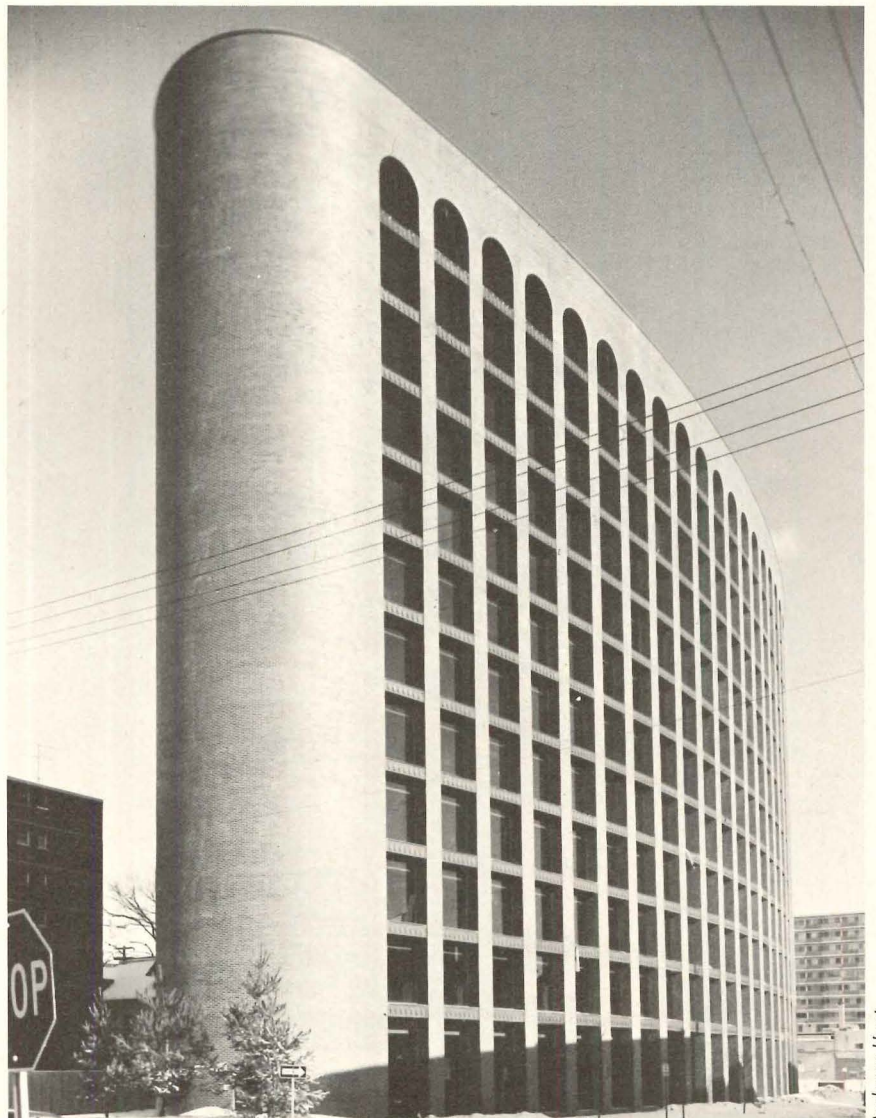
Dallas' new city hall, The Dallas Municipal Administration Center, will be a monumental concrete structure with a tilted facade that relates to the large park fronting it. The 560-foot-long building will have more than 900,000 square feet of floor area, with an additional 1.1 million square feet of parking under a seven-acre plaza. Three massive "cores"—the building's only vertical lines—will house stairs, elevators and service facilities. Associated architects: I. M. Pei & Partners and Harper & Kemp.



Lionel Freedman



Scheme II for Grand Central site, by Marcel Breuer and Herbert Beckhard, includes demolishing the terminal (except for the main concourse and galleries) and erecting a 59-story office building. The first plan (RECORD, July 1968, page 36), which was rejected by the Landmarks Preservation Commission, cantilevered a 55-story structure (right) above the roof of Grand Central Station. This scheme was re-submitted to the Commission with the above proposal on April 10, 1969, and awaits decision.



Andrews-Hunt

The unusual shape of the headquarters for Public Service Alliance of Canada, Ottawa, fulfills the requirement for "something unusual at average commercial building

cost," while providing exactly the total space allowed by zoning laws and occupying less than 1/3 of the site. Architects: Schoeler, Heaton, Harvor and Menendez.



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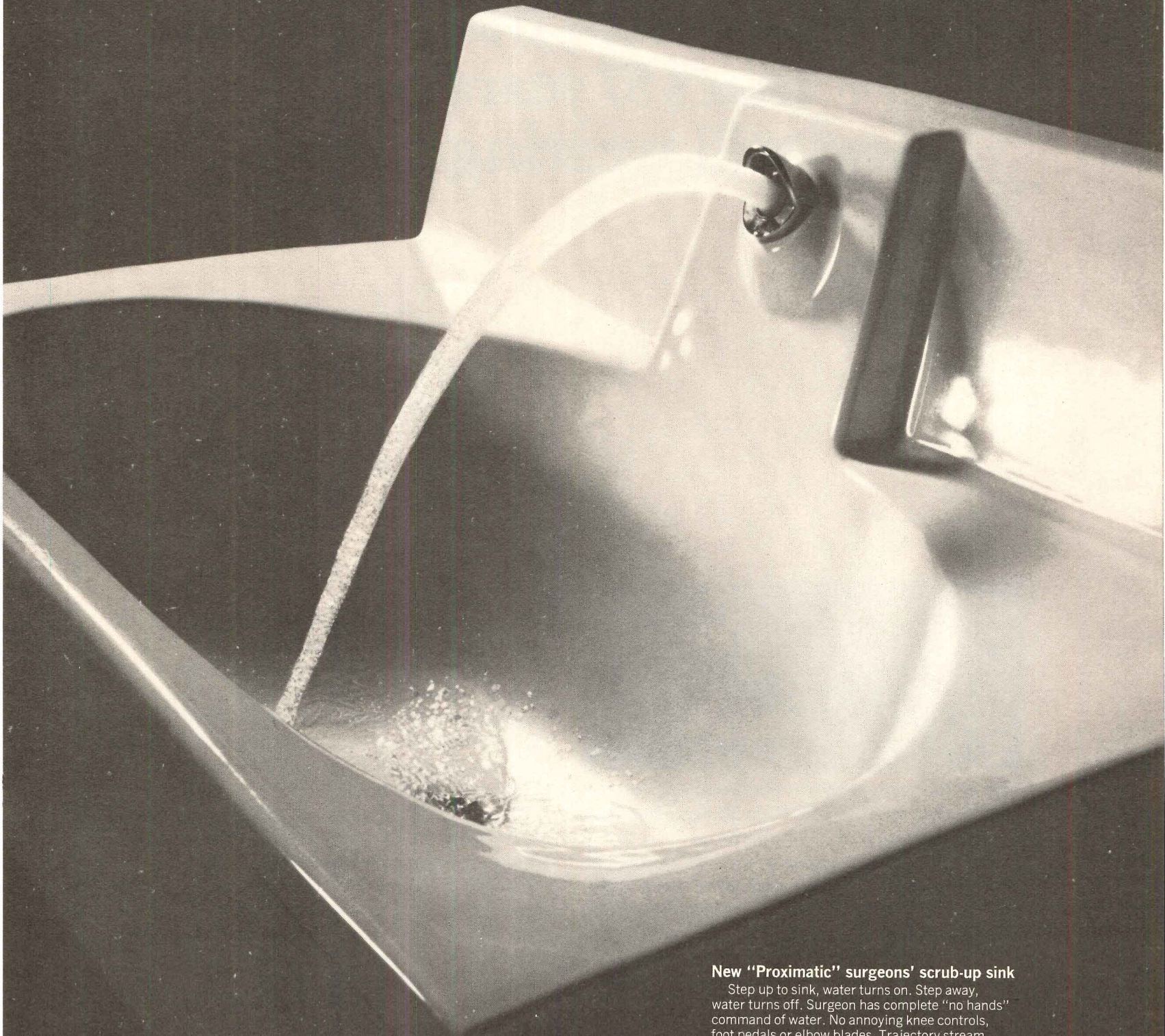
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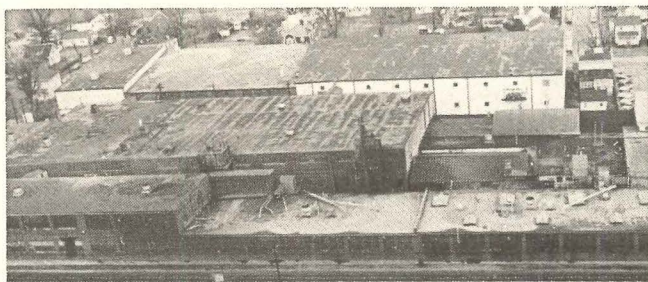
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ARCHITECTURAL RECORD May 1969 51

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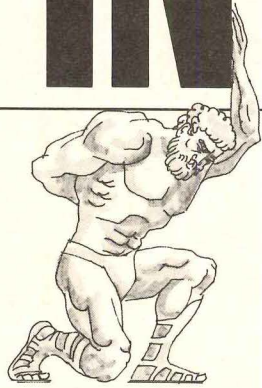
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## The Designing Ones...by Glaverbel

Mod Patterns, Glaverbel's exciting new line of figured rolled glass that says NOW in every elegant line. TWIST (upper right) ... a weave as fresh as today's fabrics. BOTTLE (lower left) ... fluid full relief for complete privacy. MANHATTAN (upper left) ... light and rhythmic sophistication. Like all Glaverbel glass, Mod Patterns come in a wide range of decorative colors, and...an exclusive with Glaverbel...in widths up to 57 inches.

Mod Patterns by Glaverbel combine practicality and beauty to give any room—in home or office—the look of TODAY. Create a new dimension in all surroundings...with glass by Glaverbel.

Ask your distributor for TWIST, BOTTLE, or MANHATTAN...or any of the other sixty distinctive patterns...by Glaverbel.

# Glaverbel

*For further information, contact:*

GLAVERBEL (USA) INC., EMPIRE STATE BUILDING  
350 FIFTH AVENUE, NEW YORK, N. Y. 10001

DRAWN SHEET GLASS / TINTED GLASS / FIGURED ROLLED GLASS  
STOPRAY SOLAR GLASS / FLOATED PLATE GLASS / ENAMELLED GLASS  
DIFFUSE GLASS / DIFFUSE NON-REFLECTION GLASS

See Sweet's Architectural File 4a/GL

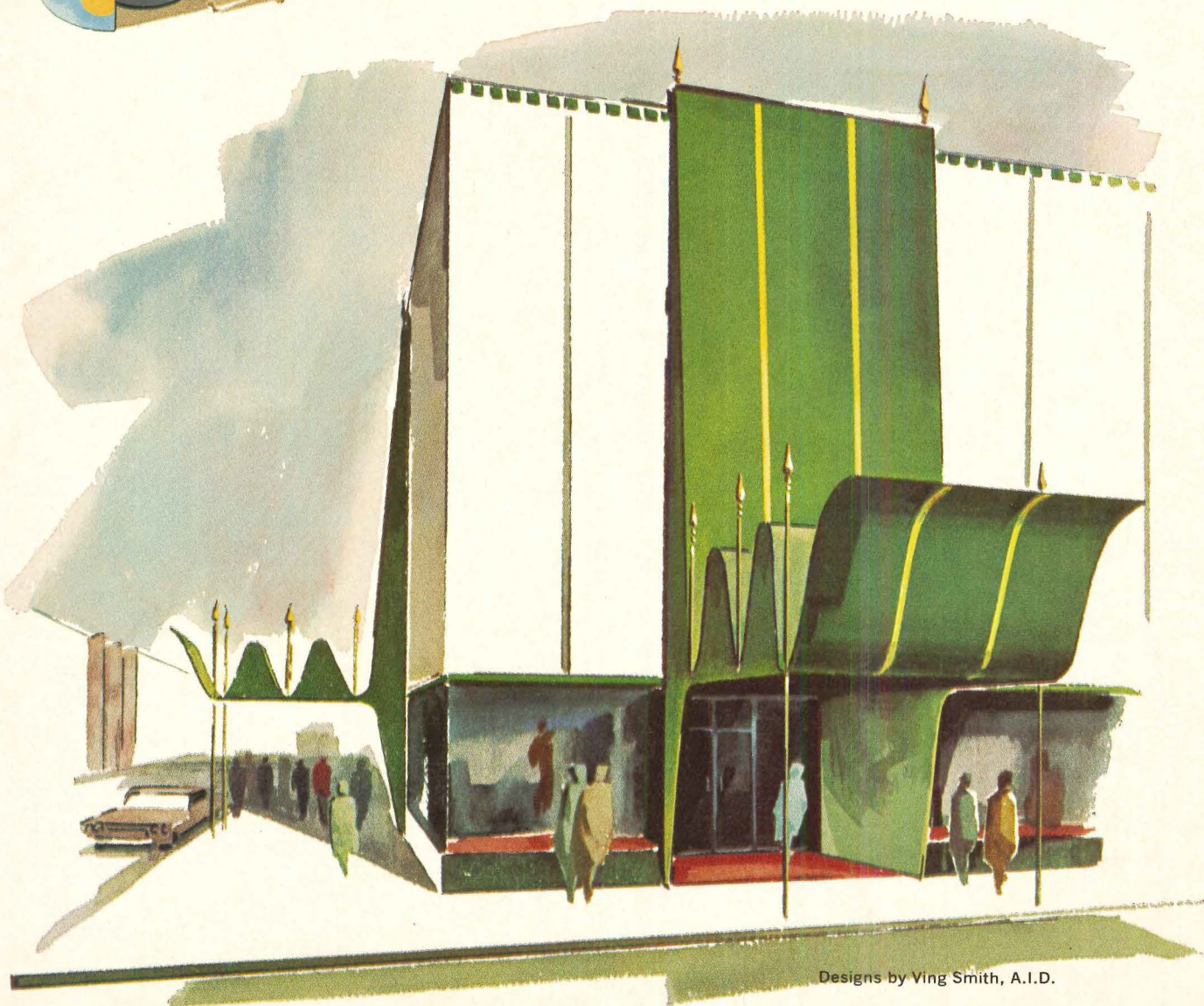
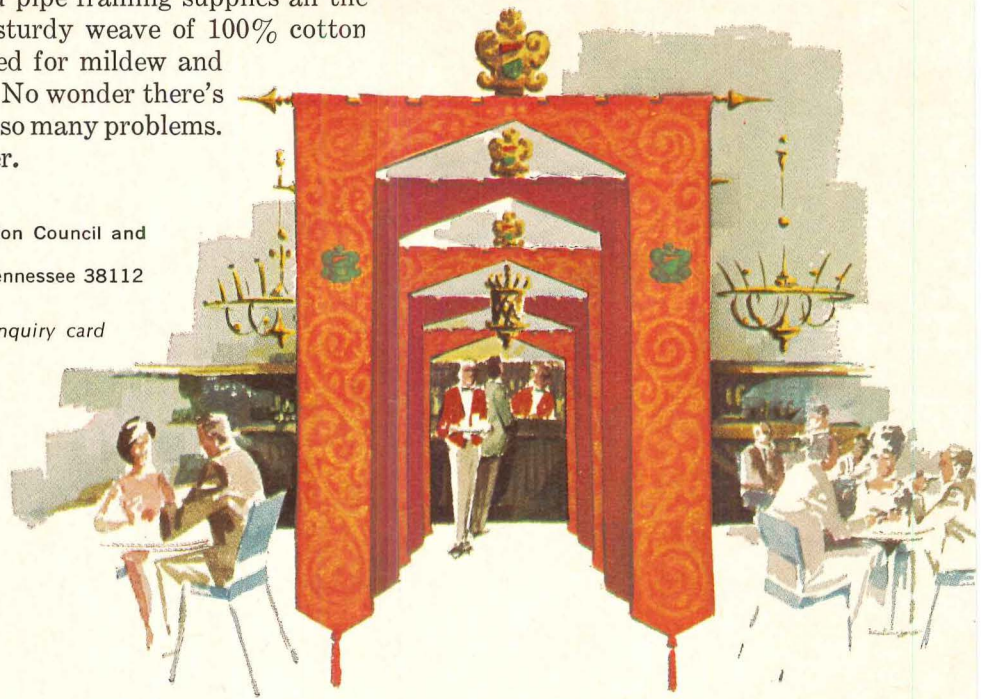
# Have a wild idea in canvas!

Design with canvas and your imagination takes wing, while the cost stays happily down to earth.

That's because standard hardware or welded pipe framing supplies all the structural support needed. The fabric is a sturdy weave of 100% cotton (8 to 15 ounces per yd. of 31" width) treated for mildew and water resistance to weather any outdoor job. No wonder there's so much happening in canvas. Canvas solves so many problems. Ask your local canvas products manufacturer.

CANVAS AWNING INSTITUTE  
(in cooperation with National Cotton Council and  
Cotton Producers Institute)  
P.O. Box 12287-d Memphis, Tennessee 38112

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Designs by Ving Smith, A.I.D.



# This is how most sound systems sound.

Have you ever wondered why, in this day and age, so many sound systems sound so distorted?

The reason is that every sound system should be engineered specifically for the job you want it to do. If it isn't (and most aren't) you probably won't like the sounds that come out of it.

This is why Executone engineers are so concerned about the environment in which an Executone Sound System operates. They apply principles of "sound contouring" to bring sound to each listener at the right level and clarity.

Executone engineers are specialists in sound reinforcement as well as sound distribution. And they are experts in designing a single sound system for paging, music, security and alarm signals—at far less cost than separate systems.

If your clients are looking for smooth sound throughout a school, auditorium, stadium, office or plant, call your Executone representative. He has the answer to every kind of communications problem—whether sound or two-way intercom.

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Austell Place, Long Island City, N. Y. 11101

- Have your representative phone for an appointment.
- Please send me free portfolio, "Executone's Approach to Sound and Intercom Systems."

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## *Executone Sound Systems*

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# THE UNITED NATIONS

**...where ZERO weather stripping  
has earned international acceptance.**

Weather stripping, sound proofing, light proofing,  
thresholds . . .

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*Prefab*

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There's an  
evolution in the  
kitchen



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***THE PROBLEM SOLVER...***

**...IN THE LIBRARY  
WHERE THE NEWEST WORD IN THE DICTIONARY  
IS "HEUGATILE"!**

## HEUGATILE LOOSE-LAID CARPET SQUARES... TOTALLY NEW CONCEPT IN CONTRACT CARPETING!

Revolutionary new Heugatile carpet squares are loose-laid... remain securely in place without adhesive, tack-strip, or underpad. Thus, long-wearing Heugatile carpet squares can be rotated—as required—to equalize wear, retard the development of wear patterns, and keep the entire carpet young-looking longer. Heugatile... the world's only totally-interchangeable, "rotatable" carpet squares.

### At Fairfax Elementary School in Cincinnati...

Heugatile loose-laid carpet squares replaced vinyl asbestos tile. Vinyl tile was cold, noisy, dangerously slippery, and costly to maintain (required sweeping, mopping, waxing, and buffing!). But Heugatile solves these problems. And more...

- Long-wearing Heugatile carpet squares can be rotated to extend the life of the carpet.

- Most stains are easily washed off with warm water and mild detergent.

- *And*, Heugatile drives maintenance costs down! A recent test installation of 108 square yards in a busy school hallway reduced maintenance time from 12 hours per week (vinyl tile) to 2 hours per week (Heugatile carpet squares)—a saving of \$29.75 per week *in the test area alone!*

- Heugafelt—one of four Heugatile carpet-square products — shrugs off cigarette burns.

Mr. Harold Theiss, Principal of Fairfax Elementary School, now agrees that Heugatile is "The Problem Solver." Even the name is tough. Heugatile. ("You-Ga-Tile").

See Heugatile "specs" in Sweet's 1969 A. & I.D. Files.

### Tell the Problem Solver your floor-covering problem!

In 100 words or less, describe a floor-covering problem that could not be solved by ordinary carpeting. If selected to be featured in future advertising, the area described will be carpeted with Heugatile free of charge. Address: The Problem Solver, Van Heugten U.S.A. Inc., 185 Sumner Ave., Kenilworth, N.J. 07033.

*Heugatile carpet squares are unconditionally guaranteed to remain in place. Will not shift under foot, wheel, vacuum or cleaning machinery when installed according to manufacturer's recommendations.*



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 Van Heugten Canada Ltd., 107 Orfus Rd., Toronto 19, Ontario, Canada • (416) 789-7546

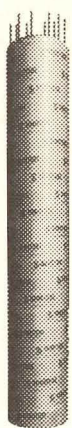
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For one thing, the Parthenon would have gone up a lot faster.

Look at your own design.

You know the columns should be round.

Look at the budget and you know the columns shouldn't be expensive.

And you specify Sonotube Fibre Forms.

Sonotube forms are easier to place, brace, pour and strip than conventional forms.

Sonotube seamless forms produce columns with smooth surfaces; little or no finishing is required.

Sonotube forms give you freedom. Freedom to make things beautiful. Freedom from excessive column-forming costs.

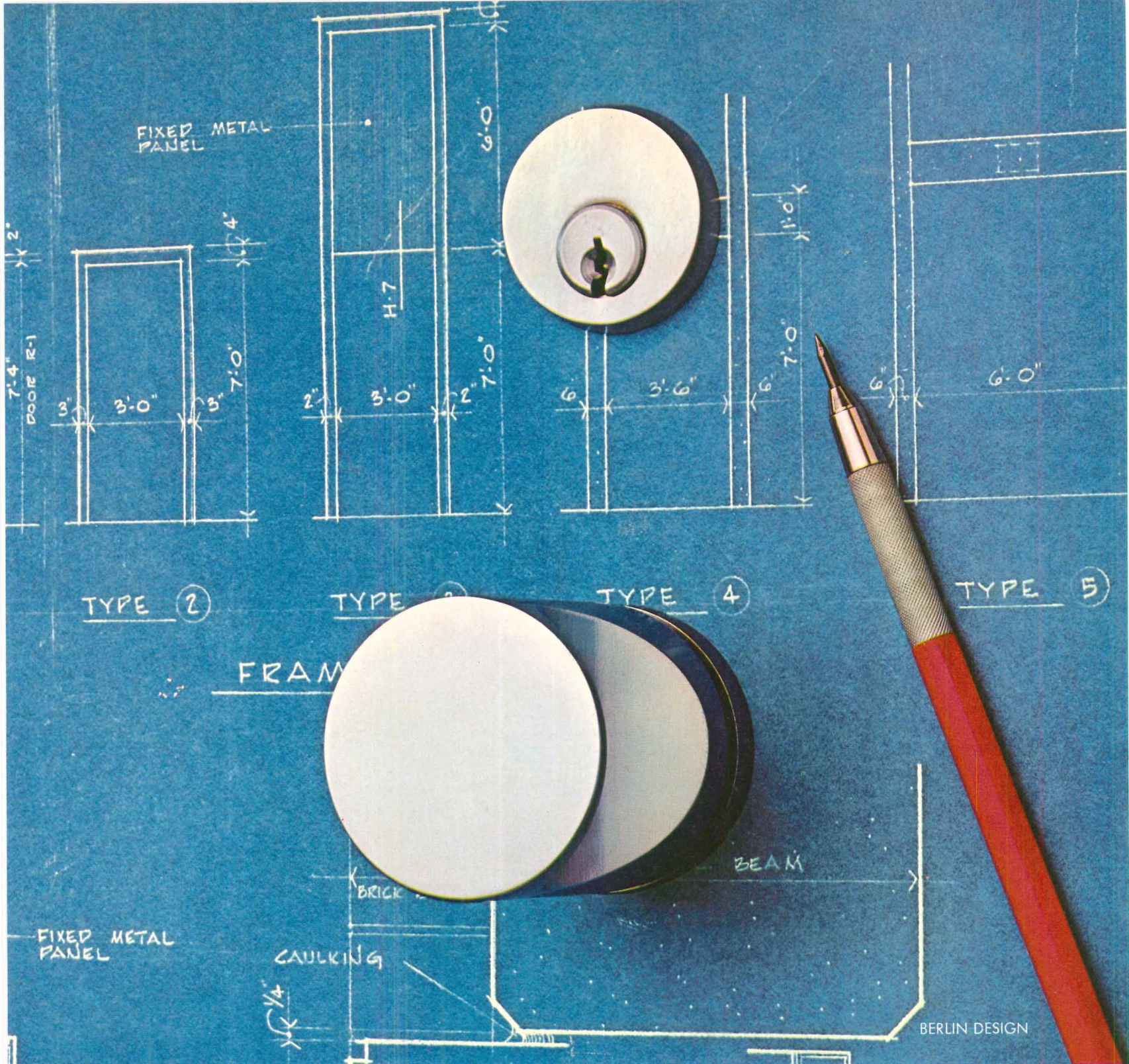
You'll want more information. And if you write to us at Hartsville, South Carolina 29550, you'll have it.

Sonoco Products Company.  
They do incredible things  
with paper.



*For more data, circle 42 on inquiry card*

SO 344



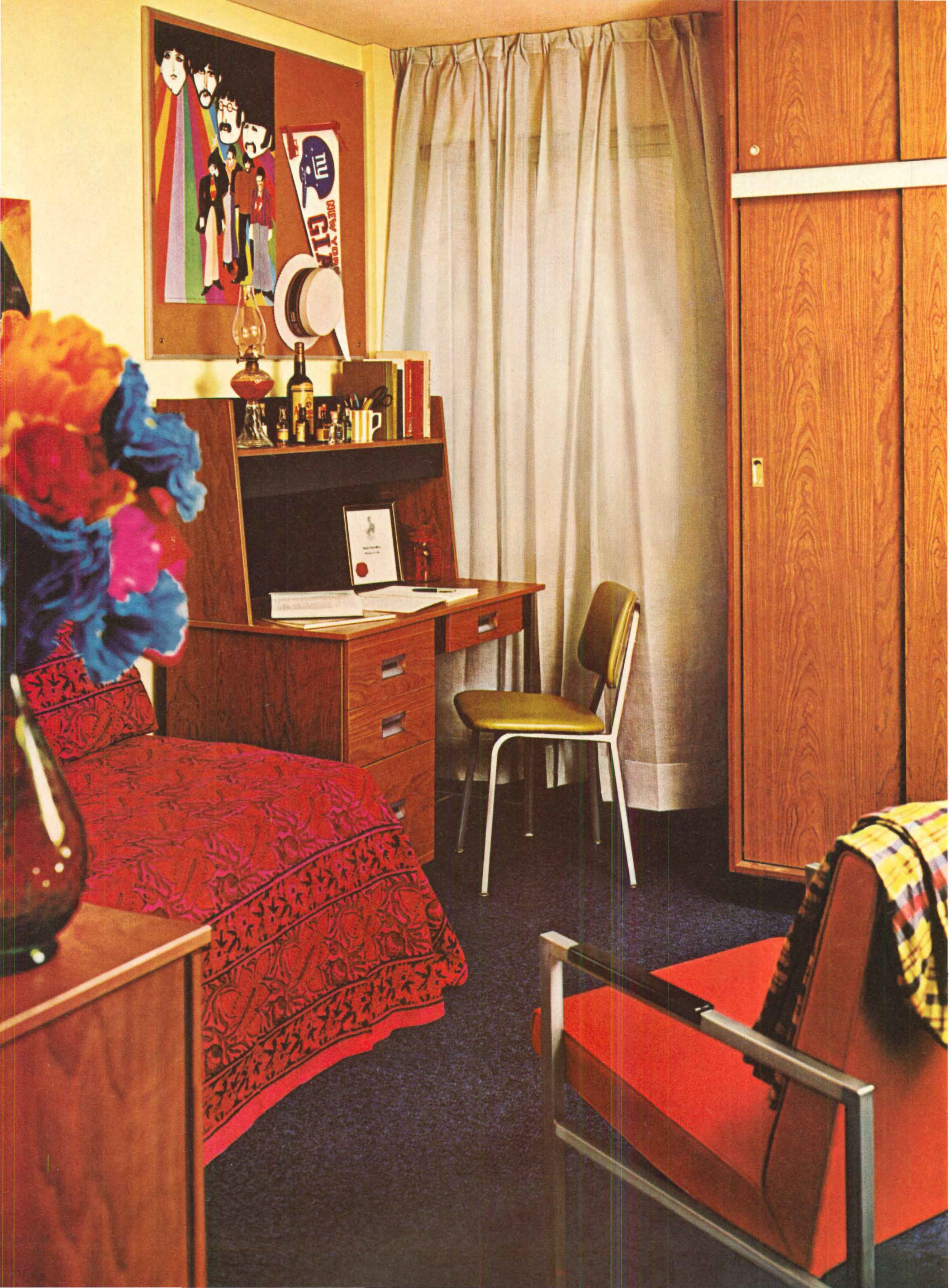
## For security's sake, plan ahead with Russwin Ten Strike Mortise Locksets

Help stamp out dull door decor!  
Design the bold beauty of Russwin's  
new Berlin design into all your buildings.  
It's decidedly different . . .  
an exciting excursion from the everyday.  
And there's more to it than meets the eye.  
When you turn it, you'll know you've come  
to grips with truly great knob design!  
Created to cradle the hand comfortably, yet firmly,  
it gives you action you'd expect only with a lever.

What's more, Universal mounting puts  
the "concave cradle" in any desired position.  
Another top-scoring "Ten Strike" Lockset.  
Available in a wide choice of metals,  
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Contact your Russwin distributor or write for  
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Stotz, Hess, & MacLachlan



# 'We pledged ten fraternities to on-campus residences - with functional furniture by Royalmetal.'

—Harold J. Hess, Business Manager  
Washington & Jefferson College, Penna.

Handsome new residences at Washington & Jefferson College are designed for fraternity life. The comfortable atmosphere starts with Royalmetal desks, matching storage units, and Royalmetal chairs. All Royalmetal pieces have durable Fiber-x® paneling. Royalmetal makes seating, tables, desks and case goods for dormitories, lounges, offices and specialty classrooms. See them at your nearest Royalmetal showroom. Or write Royalmetal Corporation, Education Division, One Park Avenue, New York 10016.

## Royalmetal®

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**All T-12 fluorescents  
are not the same.  
Ours stays brighter.  
It doesn't "solarize."**

Westinghouse has improved the 40 watt T-12 fluorescent lamp again. We did it with a new glass additive called titanium which cuts down "solarization" or blackening of the glass tube by ultraviolet rays. Thus, titanium enables our fluorescent lamps to maintain higher light output throughout life than any other 40 watt fluorescent. And you'll find this Westinghouse exclusive in all our fluorescent lamps. You buy more usable light for your money, yet you don't pay any more for our lamp than for ordinary fluorescents. We're pleased that this achievement has been recognized with an award from *Industrial Research* magazine. It's constant research that has made us the leader in fluorescent lamps.

Specify the Westinghouse 40 watt T-12 fluorescent—the lamp designed to give you the most light for your dollar. For information or the name of the nearest Westinghouse agent-distributor, contact: Westinghouse Lamp Division, Bloomfield, New Jersey 07003. You can be sure...if it's Westinghouse.

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**Westinghouse 40 watt T-12 fluorescent.  
Your agent-distributor has it.**



To help you build it better...superior fluorescent lighting.



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Specify FORMICA® laminate for any scheme your imagination creates . . . in any interior that calls for design to defy wear.

Time saving Spec-Data® forms give accurate fingertip information for many FORMICA® brand products and applications, technical back-up and qualified sources of supply for all types of product uses.

More patterns and woodgrains give you virtually unlimited design versatility. Sixty-eight solid colors are new, coordinated to mix, match or blend.

Want to discuss surfacing? See the man with this case. Your Formica man. He can give you fast, accurate information about FORMICA® brand product uses and reliable sources of supply. Call him soon. He'll be there promptly with a case full of answers and idea-starters.

There are other brands of laminate but only one

**Leadership by design**



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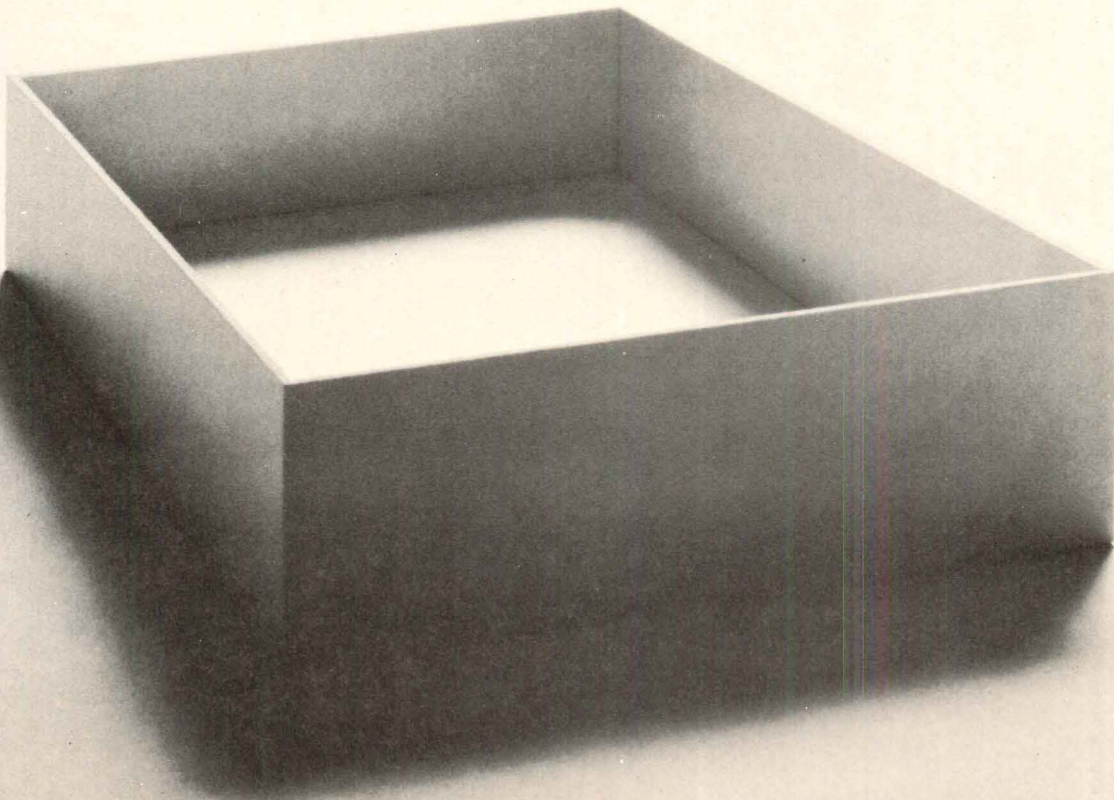
# Add sprinklers, and add extra stories.

Most building codes permit the addition of extra stories (or heights) if "Automatic" sprinklers are installed.

This alternative may be the answer when you are confronted with a limitation of land area, and when you want to reduce "per square foot" construction cost.

And there's more. By designing-in an "Automatic" Sprinkler system, you can get:

1. Increased building area.
2. Increased exit distance.
3. Wider range of interior finishing materials.
4. Savings with light roof framing.
5. Savings with metal roof decking.
6. Savings with fewer fire walls.
7. Increased fire wall openings.
8. Decreased exit widths.



Check your local building codes for the many specific advantages you can gain for various types of structures when you design-in an "Automatic" Sprinkler system. To help, we have compiled some of the permissive clauses from the

**Here are quotations from the four major building codes regarding "increased building height":**

**The Uniform Building Code:** (SEC. 507) "The limits set forth in Table No. 5-D may be increased by one story if the building is provided with an automatic fire extinguishing system throughout . . ."

**The National Building Code:** (SEC. 812.2) "Approved automatic sprinkler

four major building codes, and put them into a booklet called, "The Code Book."

For a copy, simply mail your request to Mr. R. L. Pardee, Manager of Marketing Services, "Automatic" Sprinkler Division,

systems shall be installed in buildings that are: (1) Occupied as bowling lanes, restaurants, or for the manufacture, sale or storage of combustible goods or merchandise, and exceeding the areas (and heights) in Table 812.2."

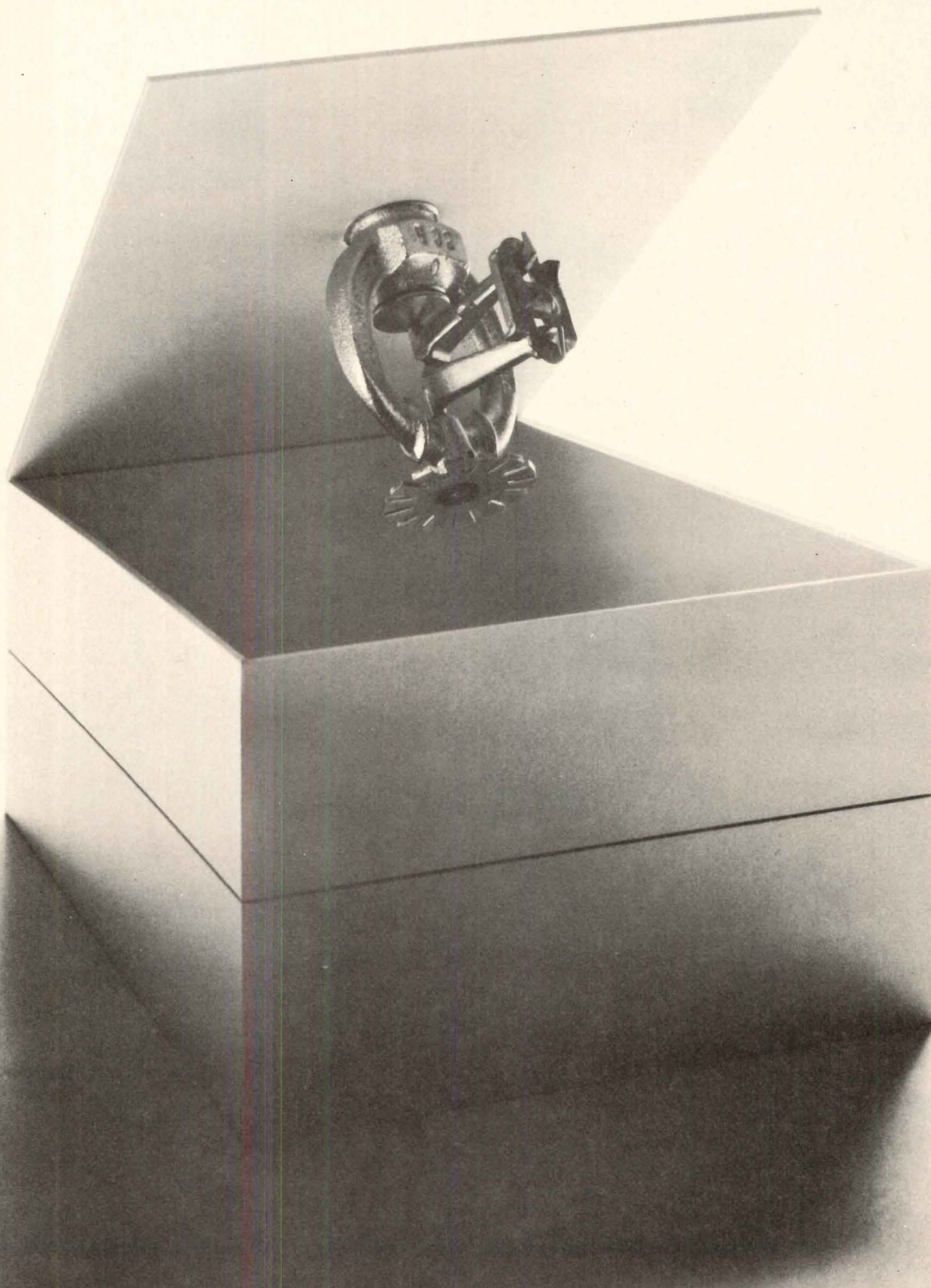
**The Southern Standard Building Code:** (SEC. 402.6) "The maximum allowable number of stories may be increased by one story if the building is provided with automatic sprinklers throughout."

Dept. E-569, Box, 180,  
Cleveland, Ohio 44141.

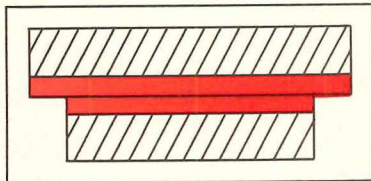


*For more data, circle 47 on inquiry card*

**The Basic Building Code: (SEC. 310.2)** "Except in buildings where automatic sprinkler equipment is a requirement of article 4 or article 12 for special uses or occupancies, all structures of fireproof, non-combustible, and exterior masonry wall construction, designed for business, industrial, mercantile, low or moderate hazard storage uses may be erected one (1) story or twenty (20) feet higher than specified in table 6 when equipped with an approved one-source automatic sprinkler system."

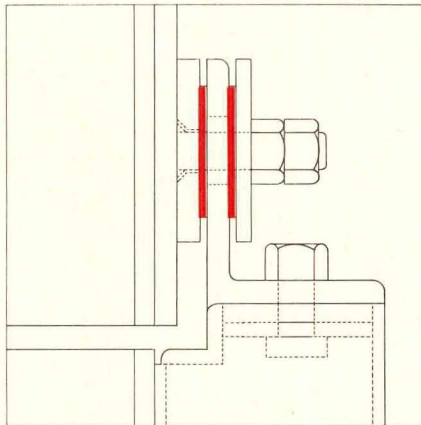
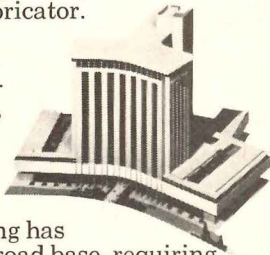


# Expansion bearings of TEFLON: here are three types used to solve varied architectural problems.

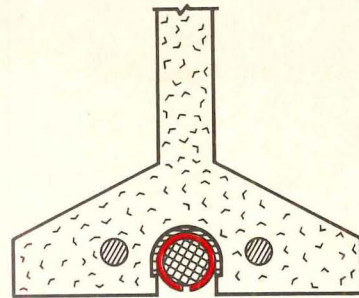
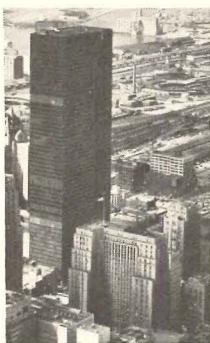


Case 1: Horizontal sliding bearing pads are the most common construction used in architectural applications. Shown above is a typical construction of sheets of Du Pont TEFLON fluorocarbon resin bonded to steel plates by an experienced bearing-pad fabricator.

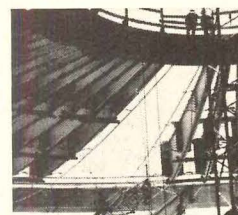
Forty of these pads were used in the Meadowbrook Hospital, Long Island, New York (illustrated at right). This 18-story building has an extremely broad base, requiring expansion joints designed into the basic structural framework. Where the expansion joints cross a load-bearing beam, bearing pads of TEFLON, of various sizes, were installed. In addition, bearing pads of TEFLON utilizing an extra layer of neoprene to allow for deflection were used in an entry bridge for this hospital building.



Case 2: Curtain walls in Canada's twin-tower Toronto-Dominion Center use vertical expansion bearing pads made with TEFLON to compensate for temperature changes. Room for  $\frac{3}{8}$ " vertical expansion in each section is provided by expansion joints in the mullions at alternate floor levels. A total of 38,000 bearing pads of TEFLON, each only  $2\frac{1}{4}$ " in diameter, assures easy, smooth—and, above all, quiet—movement of the curtain walls. And TEFLON, being resistant to weathering and corrosion, will retain its slippery qualities indefinitely.



Case 3: Sleeve bearings of filled TEFLON are used in the arena of the Oakland-Alameda (Calif.) Coliseum Complex. The



bearings played an important part in the construction of one of the world's largest cable-supported roofs. Cables

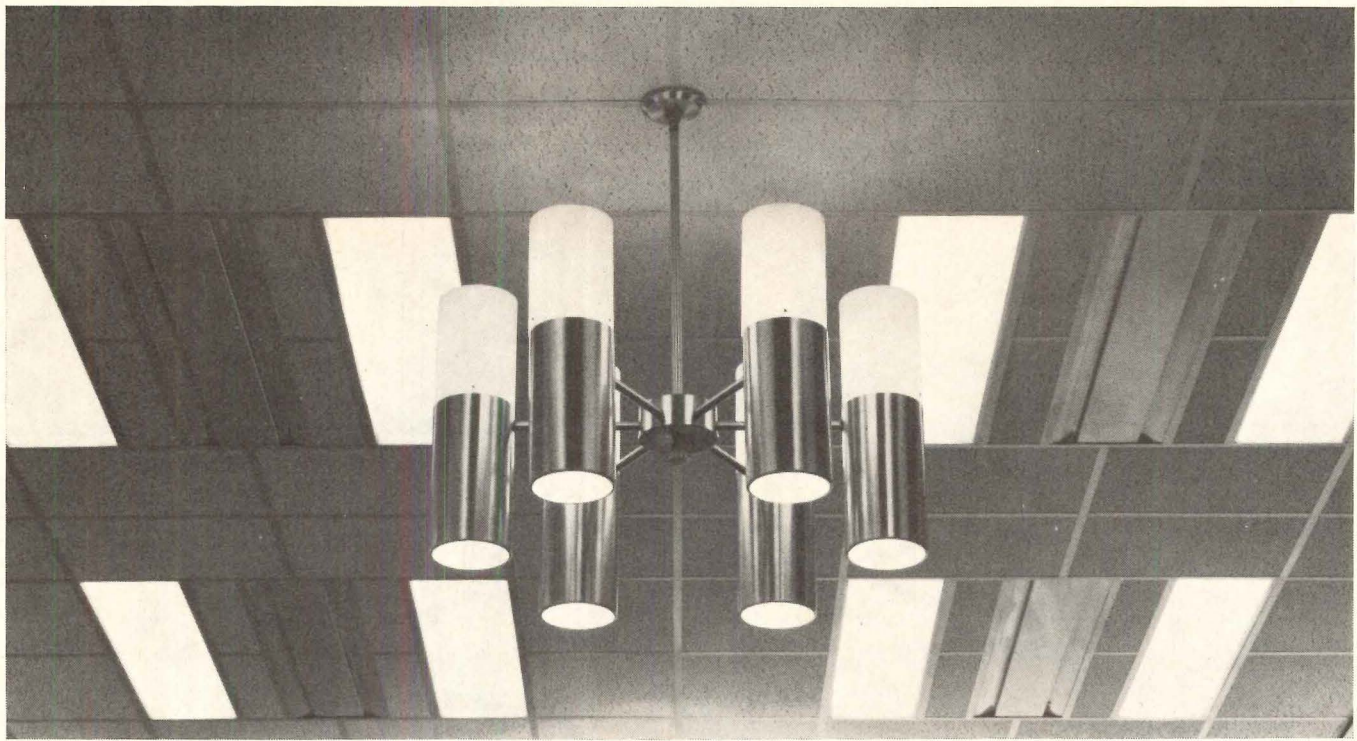
were stretched between an inner and outer ring and 12- to 14-ton concrete I-beams were then hoisted into place. Each beam has steel cable shoes imbedded on 9' centers along a longitudinal slot in the bottom flange. The cable shoes ride on 6" lengths of filled tubing of TEFLON. (See illustration above.) The low-friction bearing of TEFLON permits smooth placement of I-beams on cables before the final tightening in place.

These are just three examples of the ways that many different types of bearing pads made with TEFLON are now being used to cope with problems of expansion and contraction in architectural applications. The design of these pads, tailored to the individual needs of the application, is best accomplished with the help of experienced bearing-pad manufacturers. For further information, write to Du Pont Company, Room 7645, Wilmington, Delaware 19898.

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**TEFLON**  
fluorocarbon resins

See Research Recommendation No. 2186.3 of the International Conference of Building Officials.

For more data, circle 48 on inquiry card



## Air conditioning that lets you do your own thing.

### Example: Coatesville, Pa., High School

Carrier's Moduline® variable volume air terminals are designed to enhance rather than hinder your design freedom—your personal hallmark. The Moduline comes close to invisibility.

The ceilings at the new Coatesville, Pa., High School make the point. Design did *not* have to be modified or compromised because of air conditioning requirements. Yet the Carrier Moduline system is superbly functional; it provides air flow control as individual as the students and their classrooms. And its unique flexibility makes it ideal for future expansion plans.

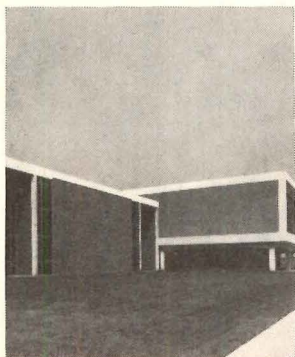
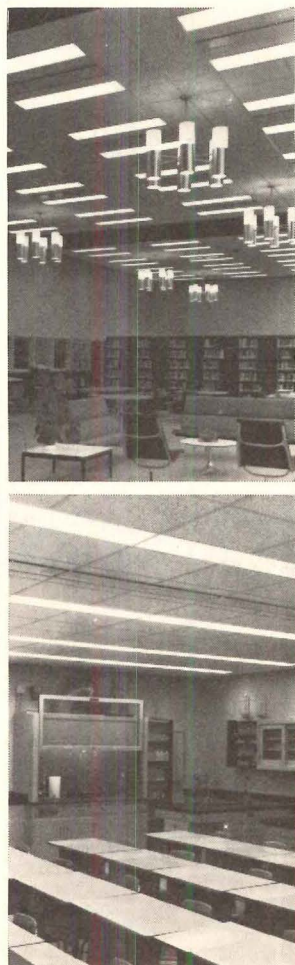
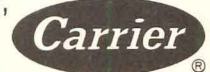
A showcase of what architects have accomplished in ceiling design with the Carrier Moduline is now available in a new portfolio entitled "Great Ceilings."

This handsomely bound reference book includes a variety of installations such as a school, hospital, industrial data center, municipal and office buildings.

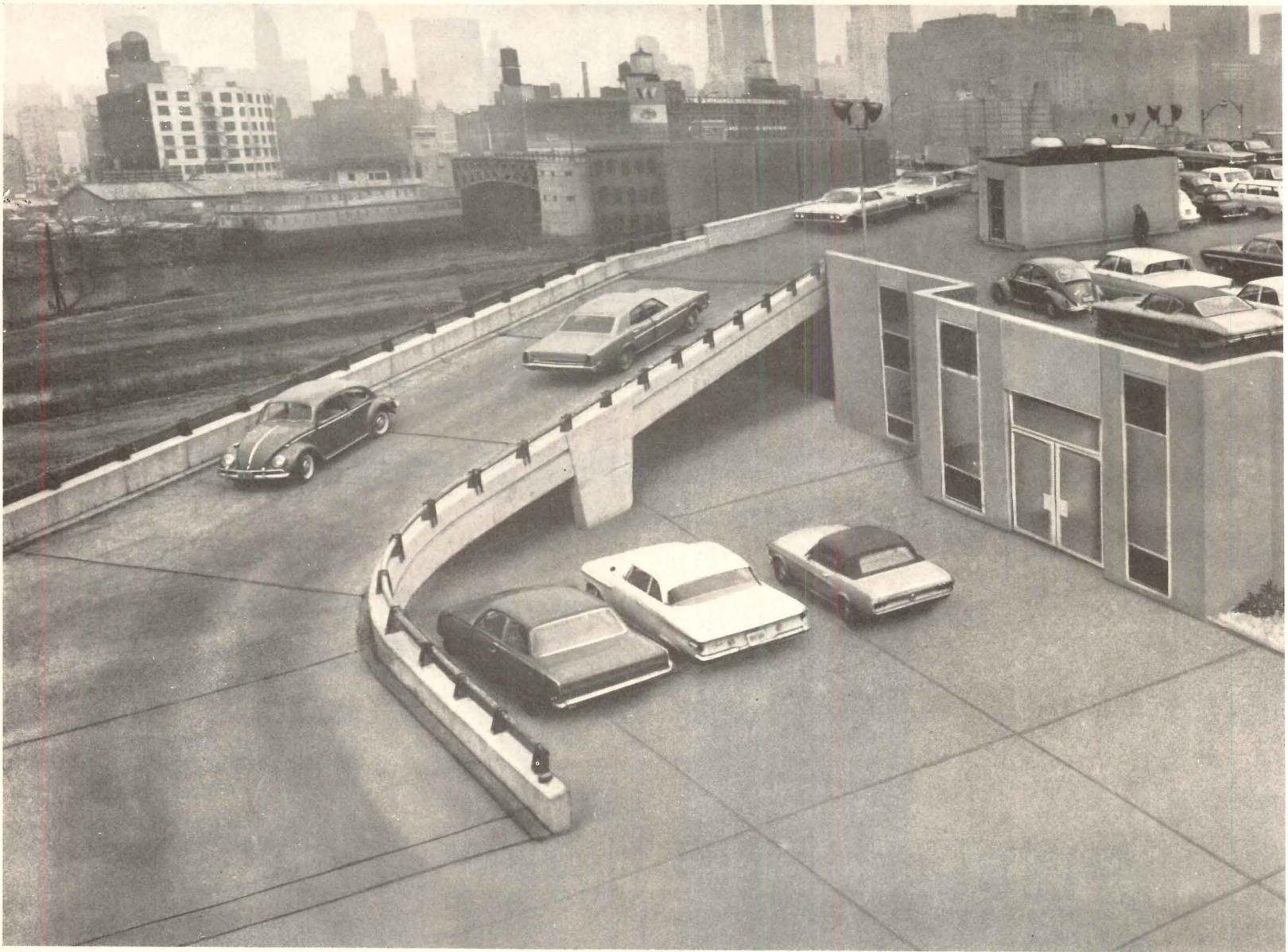
A new 7-minute companion film on the Carrier Moduline system is also available for private showings. It clearly describes the unique features of this new unit and illustrates a variety of design-provoking ceilings. The name is the same, "Great Ceilings."

Registered architects in the U.S. and Canada who write in on their letterheads will receive a copy of the "Great Ceilings" portfolio. A viewing of the film may be scheduled through your local Carrier office.

Write to William Heck, Product Manager, Carrier Air Conditioning Company, Carrier Parkway, Syracuse, N.Y. 13201.



# Concrete is good for you



## Cars up. Costs down.





**Construction costs: rising. Land costs: rising.  
Real estate taxes: rising. The inevitable answer: roof deck parking.**

The logic of this simple concept is overpowering.

Less land is needed. Therefore land costs are cut.

The need to build large parking areas is eliminated.

Therefore total construction costs are cut.

There is less improved land. Therefore taxes are cut.

There are other advantages as well.

Greater employee and customer convenience.

Lower fire insurance rates. A stronger, sturdier building  
in which concrete is the basic material.

You see, concrete is good for you.

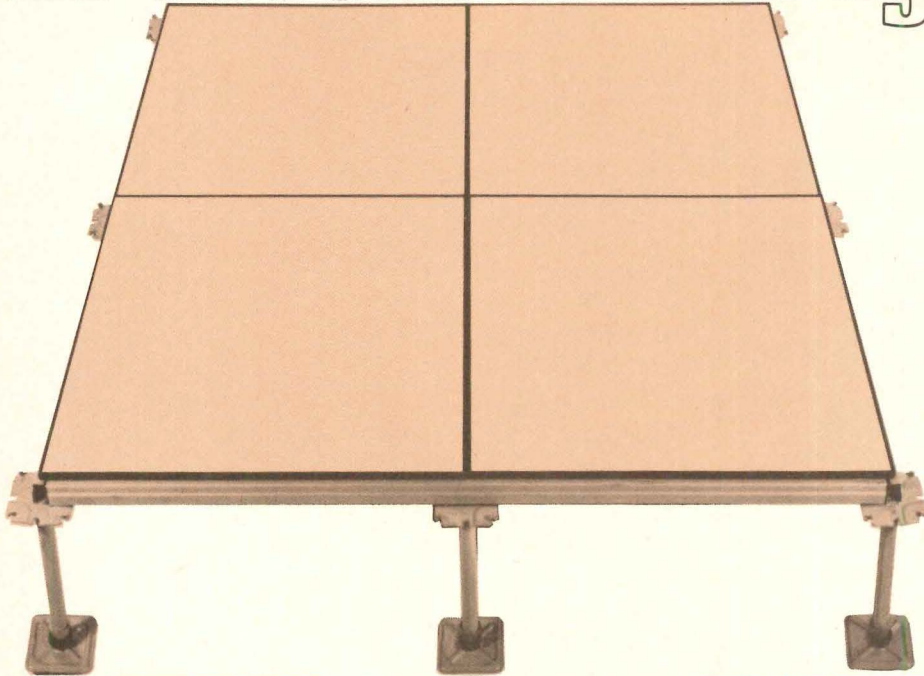
For complete information on the roof parking concept,  
write us. Portland Cement Association, Dept. A5-8  
Old Orchard Road, Skokie, Ill. 60076.

PCA—IMPROVING AND EXTENDING THE USES OF CONCRETE

PORTLAND CEMENT  ASSOCIATION

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# in access flooring



## the SEVERN difference is QUALITY

When you specify or buy an access floor from Severn Products you get quality—First, Last and Foremost. Here are some of the Severn QUALITY features:

### Panels—

*Squareness assured* through die shearing to a diagonal tolerance of .015 in. *Dimensional accuracy maintained* to  $-0 +.005$  inches. Transverse full beam design for *maximum structural integrity*.

### Stringers—

Stringers are "pre-stressed" for *maximum rigidity*, roll-formed and die-cut for *finite tolerance control*.

### Pedestal—

Pedestal cap and underside of panel mate at any given point to *provide design flexibility*.

The plated, threaded rod and positive locking/leveling assembly assures *fine adjustment*—and prevents *vibration-oriented realignment problems*.

Dimensional accuracy maintained in all components to assure *perfect fit*.

Nest and lock true rigid-grid system provides *maximum lateral stability*.

All Severn panels mate with all Severn understructures—*cut costs, confusion and installation headaches*.

Write for free specification folder and new technical information to: Severn Products, Inc., P.O. Box 912, Severna Park, Md. 21146 or phone (301) 647-7300.



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## Pyramids are out

My partners and I were delighted by the coverage given the work of our firm in the March issue. However, I am distressed by the misrepresentation of the title page which implies that I am the sole author of all the designs which follow. In fact, with the exception of the Darrow School auditorium and the Festival Unit Stage for McCarter Theater, all of the projects illustrated were developed jointly among Malcolm Holzman, Norman Pfeiffer and me.

This is especially true of the Playhouse in the Park, the best possible representation of the collaborative spirit in our firm.

My remarks were written in an attempt to clarify and summarize our work from my point of view—everyone here is entitled to his own opinion—but it is erroneous to assume that I sit on top of some organizational pyramid supported by subordinates. That sort of structure is as obsolete as the architecture it produces.

Hugh Hardy  
Hardy Holzman Pfeiffer Associates  
New York City

## Art in architecture

It has recently come to my attention that one of my paintings has been reproduced on the cover of your March issue. It also appears (along with other paintings of mine) in the body of the article "Cincinnati's Playhouse in the Park." The paintings do add a certain interest to the article; however, I find that my name is nowhere mentioned. I should be most appreciative of having that oversight corrected.

Richard J. Boyle  
Curator of Painting  
Cincinnati Art Museum

## Strivers Row

Reference is made to your Urban Housing Study as contained in the January issue. Please be advised that the Landmarks area that is situated within the St. Nicholas Parks area should at all times be known as "Strivers Row." "Strummers Row" is totally incorrect and in fact does not exist anywhere within the St. Nicholas Park Urban Renewal area.

Jason R. Nathan, Administrator  
Housing and Development Administration  
The City of New York

It is indeed "Strivers Row," a fine example of 19th-century urban design, influenced by English antecedents.

## The Princeton Report

I find it necessary to enter the discussion of the Princeton Report and to register agreement generally with the sentiments of Mr. Izumi (February, page 46). Out of all the implications inherent in the Geddes document, and from long practice with the architectural profession, it is clear to me that the handwriting is on the wall. The age

more letters on page 102

For more data, circle 52 on inquiry card

# You just can't floor indoor/outdoor carpet made with Marvess® CG, The Big Fiber.

## We guarantee it.

### The No-Strings 2 Year Guarantee

Phillips Fibers guarantees this carpet made with MARVESS® OLEFIN CG against rotting, wearing out or the effects of weather. For commercial and institutional use indoors or outdoors. Or we will replace this carpet. Free. Exclusive of installation. Consult your carpet resource for details.



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Because Marvess CG, The Big Fiber, is the toughest, thickest olefin fiber made.

That's why you get this exclusive pledge of performance with every approved carpet made with The Big Fiber. And with no others.

No other needlepunched olefin carpeting can stand up so well to traffic. It withstands wear. Resists staining, soiling and pilling. Offers easier maintenance.

Carpets that are made with face of Marvess olefin CG, a Phillips 66 fiber, are weather-resistant. Put them anywhere. Inside. Outside. They resist rot, mildew and insects.

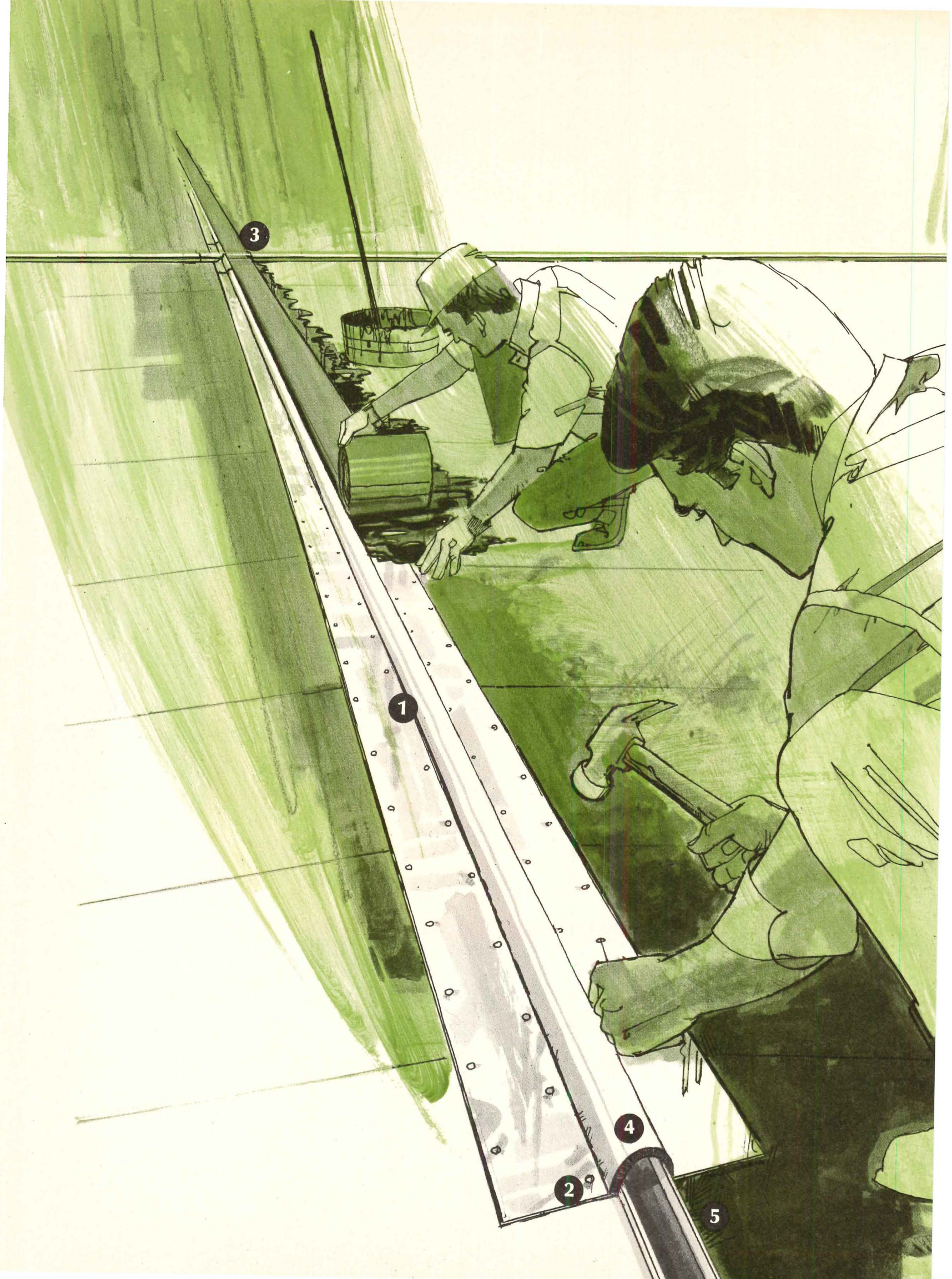
Carpets made with The Big Fiber are safer, as well. They help avoid nasty slips. And carpeting made with The Big Fiber has beauty to match its ruggedness. It comes in an array of warm, rich colors that always keep their vitality.

Specify indoor / outdoor carpet made with Marvess CG, The Big Fiber. You'll find it's really built to stand up. We guarantee it. For further information, write: Phillips Fibers Corporation, Home Furnishings Product Marketing Department, 1120 Ave. of Americas, N.Y. 10036

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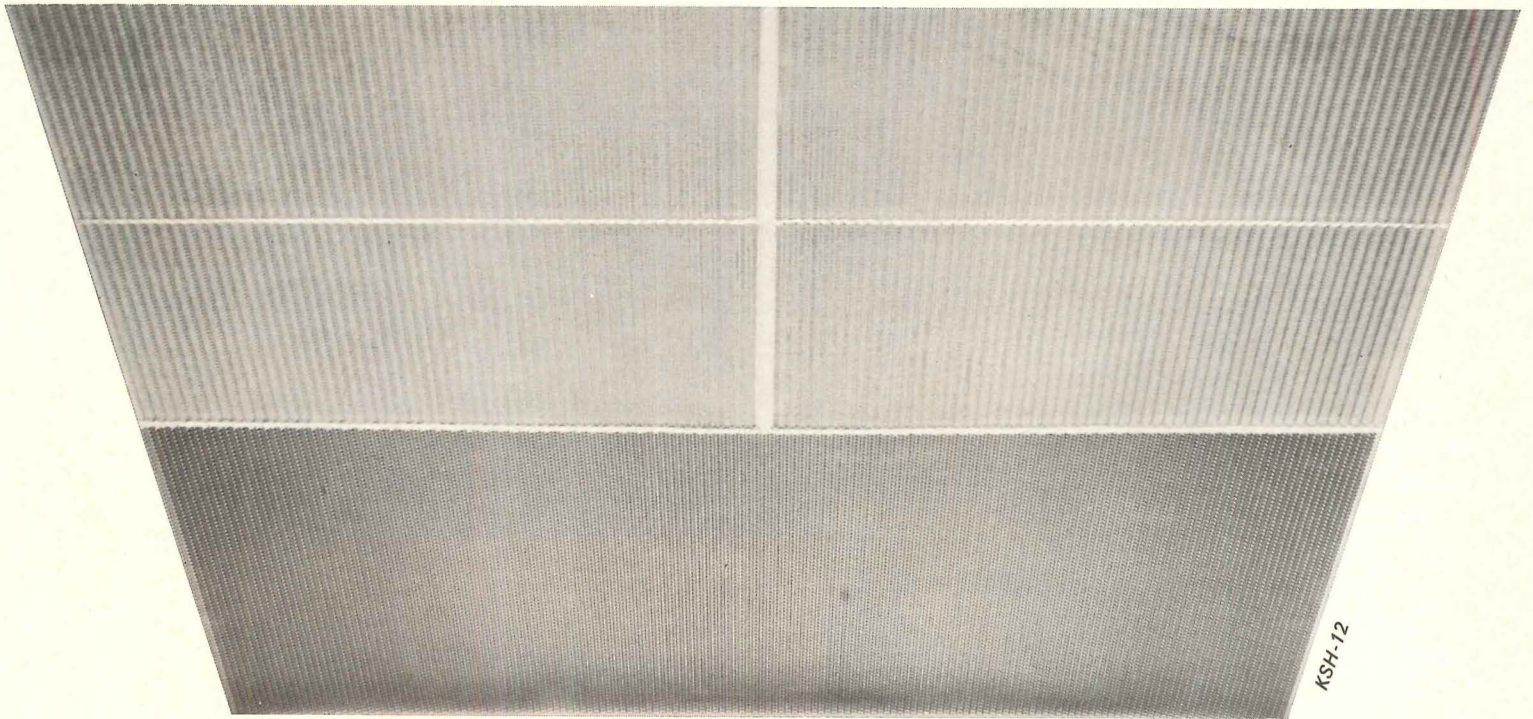
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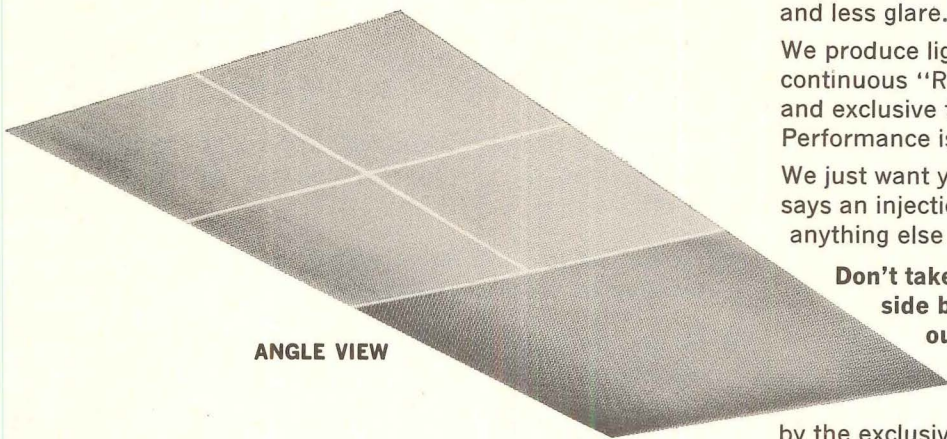
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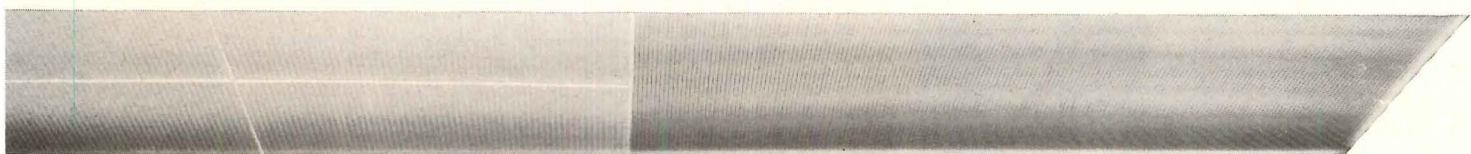
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## Finch urges new modes of hospital financing

The Nixon administration has urged a "radical redirection" of the Hill-Burton hospital construction and modernization program which may mean more work—and certainly more homework—for architects. At House Commerce Subcommittee hearings on extending and amending the present program, HEW Secretary Robert H. Finch urged, in prepared testimony read by Under Secretary John G. Venaman:

■ A \$500-million guaranteed-loan program to modernize or replace existing and obsolete acute-care facilities (an attempt to stimulate private capital investment in lieu of the one-third matching grant program now in effect).

■ A \$150-million program of block grants to the states to expand out-patient clinics, neighborhood health centers, skilled nursing homes and structures designed to share hospital manpower and equipment.

Mr. Finch objects to the two bills currently before the house—H.R. 6797 and H.R. 7059—because they would continue the categorical grant support under the existing Hill-Burton act another three years. "We have serious doubt that such a continuation would assure the construction, replacement or modernization of other health facilities which are more urgently needed than general hospital beds," he said in his statement.

The guaranteed-loan program would stimulate private capital to modernize the nation's estimated \$11-billion backlog of acute-care facilities, Mr. Finch said.

Within each state, the annual total of guaranteed loans would be determined in the same manner as the allotment of grant funds. All privately-owned, non-profit health-facility modernization or construction projects would be eligible for loans up to 90 per cent of total cost.

### Implications for architects:

#### more variety; perhaps more money

Spokesmen for those in the Hill-Burton program who have concerned themselves for many years with design and construction criteria see no alarming impairment of the basic intent of the original legislation—the provision of needed health care facilities. On the contrary, they point out, the very success of the program has brought it to an evolutionary phase which may indeed call for new and more diffuse modes of support.

Block grants to states, for example,

may involve architects in a wider variety of facilities with new sets of criteria, since those funds will respond directly to local and regional requirements with all the new surveillance those conditions imply.

Further, the guaranteed loan program will extend FHA-type financing support with substantial influx of private capital (so it is hoped) into a variety of hospital facilities over which PHS will retain some control as to economic feasibility.

With hospital needs thus met with private capital, block grants could be given to states to expand other facilities. The \$150 million recommended would be allotted 80

per cent to the states on the basis of population, per-capita income and need; and 20 per cent reserved for "direct project grants . . . for projects reflecting critical needs of national significance."

Although the current Hill-Burton authorization does not expire until June 30, 1970, Finch said, the critical shortage of health facilities is "too compelling—especially in urban areas—to warrant delay in obtaining a better health return on the dollars we are spending." He also pointed out that new funds for medical care (insurance, Medicare, Medicaid) now help make profitable capital investment possible.

## A look at pending legislation

The A.I.A.-C.E.C. Public Affairs Conference reported last month (RECORD, page 36) underscored the growing importance of Federal action in matters bearing upon the operating climate of all branches of the construction industries—professional and otherwise. The following is a sampling of the current status of pending legislation.

■ Situs picketing (H.R. 100: Rep. Thompson, D-N.J.): This bill, which would permit unions to picket construction sites in such a way as to block the work of several contractors regardless of the scope of the particular problem of the protesting union, has been opposed by all the design and construction professional societies. Although it is still the subject of various hearings, likelihood of its passage this year is small.

■ Union control (S 1532: Sen. Gurney, R-Fla.): This bill would prohibit labor unions from boycotting prefabricated building components. A direct attempt to curb abuses arising from the 1967 Philadelphia Door Decision of the Supreme Court which makes it lawful for unions to restrict the use of prefabricated products, this bill simply intends to clarify the intent of Congress as opposing restrictive practices against new

products and innovations. The bill has been referred to the Senate Labor and Public Welfare Committee, but is meeting opposition from labor organizations.

■ Architectural excellence (S 1457: Sen. Muskie, D-Me.): This is a bill to foster high standards in the design of public buildings including post offices, and to provide for the acquisition of works of art for such buildings. It is known as the Federal Fine Arts and Architecture Act, and establishes a public advisory panel on architectural services to which the GSA administrator shall appoint "12 distinguished architects from among persons in private life." The bill has been referred to the Committee on Public Works.

■ Planning consultation (H.R. 399: Rep. Bennett, D-Fla.): This bill requires consultation with local planning agencies for all proposed Federal construction projects other than military. It has been referred to the Committee on Public Works.

■ Airport development (S. 1637): Sen. Magnuson, D-Wash.): This bill creates an airport trust fund operating similar to the Highway Trust Fund, to be financed by aviation user taxes. Parallel bills in the House are H.R. 1064: Dingell, D-Mich.; H.R. 1362: Slach, D-W.Va.; H.R. 3668: Friedel, D-Md. All of these bills, under the heading Airport and Airways Development Act, provide for Federal assistance in the construction and improvement of airports. The Secretary of Transportation would be authorized to guarantee development loans with the guidance of allocation methods to be studied by the Secretary of the Treasury.

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Robert M. Young  
Senior Economist  
McGraw-Hill Information Systems Company

## School building follows enrollment trends

1969 marks a turning point in the American educational scene. Following almost three decades of rapidly increasing enrollments, spurred by the post-war baby boom, the number of students in elementary schools will reach its peak this year. The slowdown in the birth rate during the 1960's will be reflected in a steady decline during the next decade that will reduce elementary school enrollments more than ten per cent by 1979. Unless there is a dramatic shift in family planning patterns, the current level won't be achieved again until the late 1980's.

Meanwhile, high schools are feeling the effects of the second wave of the baby boom in which births increased by almost a half million a year in the mid-fifties. Secondary school enrollments are growing each year by just about that number, and they won't begin to slow down until the early seventies, with the peak at about 1977.

Finally, college enrollments are picking up—from an annual average gain of about 250,000 in the early sixties to increases in the 400,000 to 500,000 range now and for the next several years.

All of these trends are being reflected in the pattern of new educational construction. During the five-year period between 1963 and 1968, outlays for elementary schools rose less than 20 per cent—with most of the gain coming in the first two years. The square footage of elementary

school construction has actually declined since 1965 while contracts for new secondary schools have jumped more than 50 per cent during the same period.

The real growth, as enrollment trends would indicate, has been at the college level and in vocational schools. The value of contracts for college and university construction—exclusive of dormitories—has tripled since 1963, and will probably pass the billion dollar mark in 1969, equalling the volume of elementary school building. Furthermore, the trend in college construction has shifted in favor of classrooms, libraries and laboratories rather than dormitories.

The champion in terms of growth—though still relatively small in dollar volume—has been vocational school building. Outlays rose from only \$30 million in 1963 to almost a quarter of a billion dollars in 1968. This gain was largely motivated by the growing emphasis on vocational training.

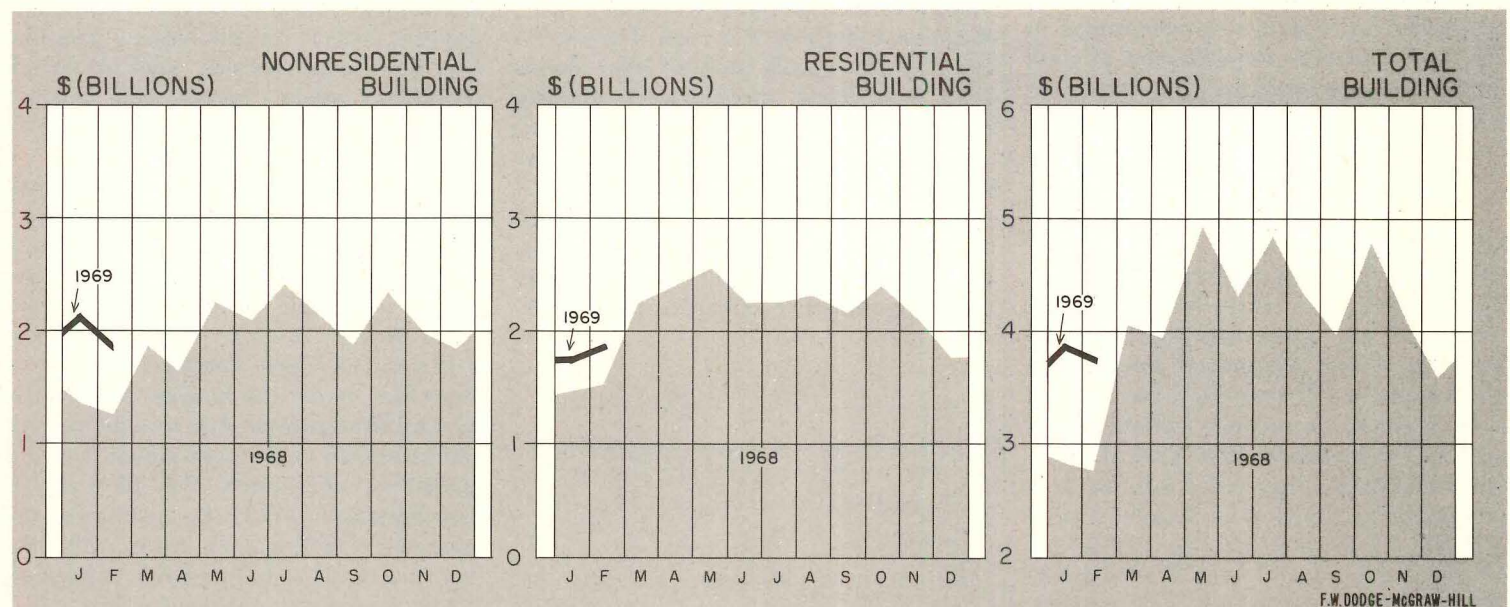
Enrollment trends aren't the only causes of the shifts taking place in the construction of education facilities. The high-cost money market that has emerged since 1966 has impaired the ability of many state and local governments to borrow for school building, and rapidly increasing construction costs have caused the postponement of other projects. On the other hand, stabilized enrollments in some parts of the country have enabled school systems to concentrate

available funds on the replacement of outmoded or dilapidated facilities. The Higher Education Facilities Act of 1963 provided a shot in the arm to college and university classroom construction, and Federal programs have assisted dormitory construction for a number of years and provided the spark to vocational school building.

Regional building activity highlights a number of these factors. For example, elementary school construction in New England has outpaced that in the rest of the nation as stabilized enrollments and high per capita incomes have permitted the area to concentrate on replacing old buildings. The South, which has lagged the rest of the nation in higher education facilities, has benefitted most from Federal support. Outlays for college and university construction in that region have increased almost six times in the past five years. In the West, a sharp drop in migration and strained financial resources of many communities have resulted in a steadily declining trend in both elementary and secondary school construction since 1963—a situation that is expected to be reversed in the near future.

Most of the national trends are expected to continue. Dollar volume of elementary school construction will probably fall below current levels, while college level building should take the top spot by the mid-1970's.

### Building activity: monthly contract tabulations



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Ten stories of dramatic architecture and a complex of satellite buildings house the Allstate Insurance Companies in Northbrook, Illinois. Under roof are 722,783 square feet of functionally attractive work areas such as this computer center.

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7,000 troffer lights equipped with Multi-Vent slot type air diffusers provide the heating, cooling and lighting environmental control in Allstate Insurance Companies' modern home office in Northbrook, Illinois.

**Price was not the sole reason for selecting Multi-Vent. Installed cost and lasting performance were important.**

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**Minimal job-site handling.**

Multi-Vent "SES" slot type air diffusers come to the job site completely assembled as a ready-to-install unit. There is no on-the-job snap-together, crimping or screwing of crossovers to ends. Minutes are saved per unit. This, times 7,000 units and the savings become quite handsome.

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Air volume adjustment is easily accomplished with built-in volume control valves which are completely accessible from room-side. Directional control, from horizontal to vertical, is also accomplished from roomside.

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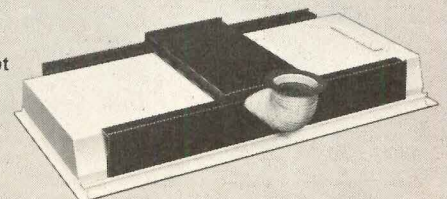
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Part of every troffer light is a Multi-Vent slot type air diffuser. Functional to the Nth degree, yet completely unseen from roomside.





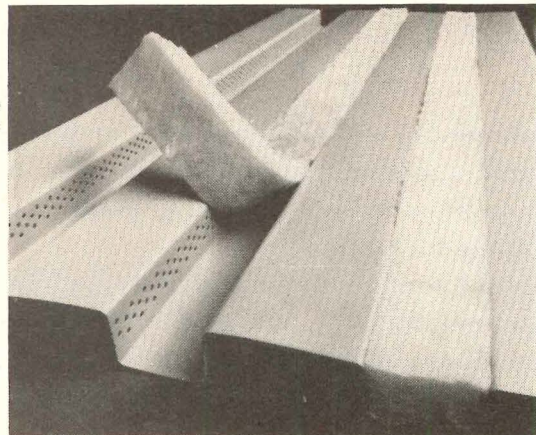


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Not only 75% of all the music but 75% of all the shouting and banging around that goes with it.

In fact, Wheeling Sound Asorb Type B roof deck cuts out up to 75% of all school noise.

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The best air handling system in the world can't purify polluted air. Purafil® can!

Never before has the atmosphere been so laden, so contaminated with pollutants. No matter how fine your air-handling system performs, polluted air ultimately gets inside buildings and plants.

Sometimes you can see the polluted air as smog. Worse, sometimes you can't see it, just smell it. Nearly every situation presents a different problem: the odors and the contaminants are different; and the air moving methods differ as well.

## ventilation

Ventilation used to be the most efficient way to control odors in a building and it would still be if it were not for outside air pollution. Good ventilation air can dilute odors but it cannot remove gaseous pollutants from the air.

In order for the system to operate with any effectiveness at all, it must constantly maintain a continuous flow of good clean air, and this is getting harder and harder to find.

The result, ventilation only serves to move polluted outside air inside. Today this does not answer the problem in most areas. Today's air problem requires a better solution.

The better solution is an air purification system capable of cleaning contaminated air while reducing equipment and operating costs. By recirculating the inside air, an air purification system reduces the amount of outside air needed to maintain a comfortable level. Most important, it offers economical, clean air, free of uncomfortable odors and irritants.

## conditioned outside air

Conditioning air means bringing in outside air and heating or cooling it. But does not mean removing gaseous and odorous pollutants from the air.

The addition of an air purification system can significantly reduce the outside air requirements for the a/c system. With the addition of an air purification system, you use a higher percentage of recirculated air, so smaller heating and cooling units can be utilized to condition the same amount of air. Experience has shown that a reduction of up to 20% in equipment costs can be realized.

You spend less money on equipment, reduce operating cost by utilizing air recirculation, and achieve odor and contaminant-free air in the bargain.

## common methods of air filtration

There are several different air purification methods used to remove odors and gaseous pollutants in conjunction with air handling systems.

## activated charcoal

Charcoal is expensive. True, it can reduce capital equipment cost by allowing maximum air recirculation. But any

# AIR BATTLE

savings incurred are soon offset by the high cost of maintenance. It is short-lived, and it has poor effectiveness at normal odor levels. Upon saturation it desorbs, dumping the contaminants back into the air. It requires expensive removal, regeneration and reinstallation.

In order to regenerate charcoal after it becomes saturated, it is necessary to have a spare supply on hand, or shut down the system while the material is being returned to the factory for regeneration. Besides, charcoal cannot remove certain pollutants from the air.

## scrubbers and washers

This method of air purification is very expensive and is only practical where extremely high corrosive concentrations are prevalent, much higher than normal odor loads.

## electrostatic precipitators

Electrostatic precipitators are designed to remove only particulate pollutants from the air, and they will not remove gaseous or corrosive pollutant odors after one or two days operation. They are expensive and must be cleaned often.

## masking agents

Masking agents are not a method of air purification, but they are employed frequently.

They merely compound the problem by perfuming an offensive atmosphere instead of eliminating the source of the trouble.

## purafil environmental control systems

Oxidation is the best way to eliminate odors and air pollutants. Purafil is the best air purification system utilizing this method. The system is composed of cells filled with pellets of activated alumina impregnated with potassium permanganate. As air passes through the bed of pellets, each odor-carrying molecule is adsorbed, absorbed, oxidized and destroyed. *Therefore, air can be recirculated repeatedly: outside air requirements can be reduced up to 85%.* Operational costs of heating, cooling, cleaning and/or dehumidification are greatly reduced. Purafil has double the service life of charcoal and unlike charcoal, does not desorb upon saturation. *Purafil also offers protection from corrosion for electrical and electronic equipment throughout an installation. In short, it's the most efficient, economical air filtration method on the market.*

It fills the void in air handling technology by solving the often unrecognized problem of gaseous contamination and extends the efficiency of today's equipment.

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For more information, including a free copy of our booklet, "Purafil; The Product and Its Applications," write Purafil Environmental Control Systems, Borg-Warner Corporation, Washington, West Virginia 26181.

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## Practice abroad: a rewarding study in comprehensive frustrations

by Robert S. McMillan, Robert S. McMillan Associates, New York

There is excellent opportunity for architects with American know-how and technique in the field of international practice, especially as it pertains to the emerging nations of Africa and the Middle East. Despite the abundance of work, however—and fewer building restraints—the American architect practicing abroad can expect to meet with a battery of peculiar and often amusing problems arising out of differences in custom, religion, climate and geography. The new nations are expanding rapidly, and nationalistic pride demands that conditions be improved and facilities created to enhance each country's "new image." They want change and want it fast. There is money to be spent, but there are few local planners, architects and builders.

I became involved with the special problems of international practice in 1957 when, as a partner in The Architects Collaborative, I went to Baghdad with Walter Gropius to negotiate a contract to design a new university. In 1960, I moved to Rome to conduct other TAC projects in the Middle East. But it was in 1963, when I set up my own Rome-based practice and tackled projects in Africa and Europe as well, that the full scope of diversification, excitement

—and often enough frustration—became a way of life. I found myself filling the role of diplomat, public relations expert, artist and politician. I sat out revolutions in both Iraq and Nigeria, and had to begin the same negotiations many times over, since the people I had been negotiating with had suddenly been jailed (or worse). Often, I had to establish a completely new set of contacts with new ideas—not necessarily better, but necessarily different.

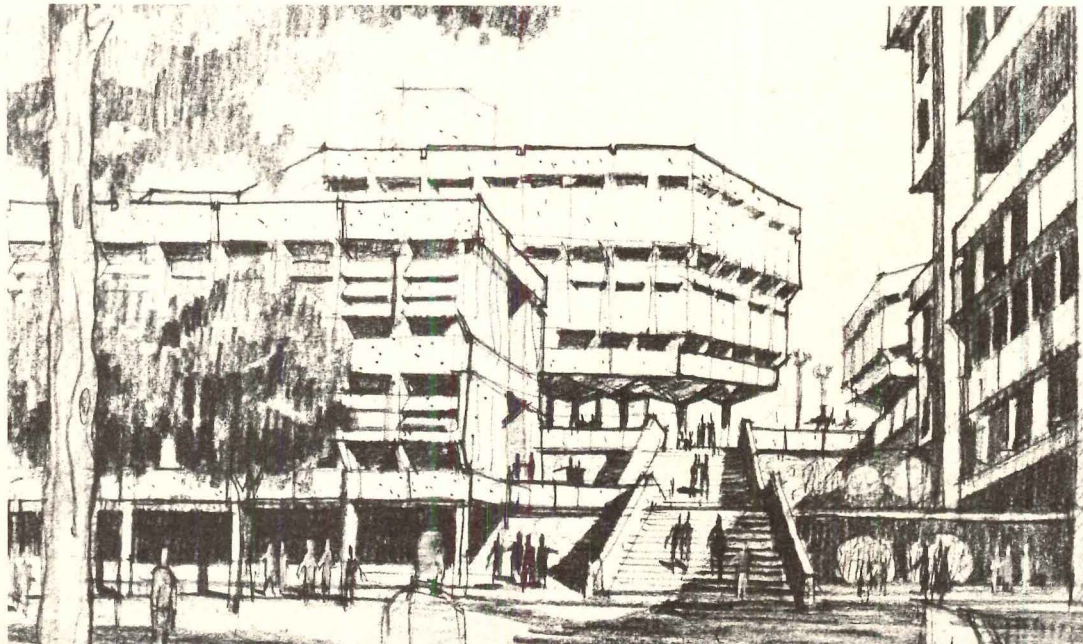
I located my office in Rome where, aside from the obvious advantages of physical beauty and ease of life, there are many Italian architectural assistants who have had years of experience with successive waves of Rome-based American architectural firms. Rome's airport is almost completely "weather-free" and offers a multiplicity of flights to all points from Aden to Zanzibar. This is an important consideration since travel is a necessity. Foreign dignitaries consider the ability to travel a status symbol, and promoting a project often involves a great deal of travel and entertaining. For weeks on end I would only touch base in Rome between trips to Lagos, Nigeria (five hours by jet), where we had an office and were building the University of Lagos as

well as three military installations for the Government of Nigeria; to Nairobi (eight hours by jet), where we were constructing an office building for the East African Moslem Welfare Society (the Aga Khan's group); to Iran (five hours by jet), where we were designing Pahlavi University in Shiraz; and to Libya (only two hours by jet—when the planes were flying), where we had been commissioned to build two hospitals, two office buildings and 18 clinics. I encountered different languages, different religions and customs, and different monetary systems. My passport became a dog-eared tome of visas—so full and fat that occasionally I had trouble finding the pertinent visa for inspection at customs.

### Negotiations call for endless patience

Appointments hardly exist except on the highest level. One just drops by the Ministry in the morning, and waits with all the others, drinking endless cups of tea. This may well occur in the Minister's own office, where everyone's problems are given public hearing. Secretaries are almost nonexistent, and if you want your "hard-bargained-for" agreement typed up and trans-

Photo left is Industrial Promotion Service Building, Nairobi, Kenya designed for Aga Khan's group; right is a sketch for Pahlavi University, Shiraz, Iran.





lated into Arabic, you had better do it yourself. Government offices, in general, only work until lunch time, and one has to be aware of the different national and religious holidays in setting up a schedule.

Negotiations that are started at a lower level and apparently successfully concluded are often just the beginning. Usually, you have to start all over again higher up. In one memorable deal with an "emerging nation," I spent weeks negotiating with a special committee set up specifically for dealing with my particular problem, only to repeat my efforts when the prime minister decided he wished to conduct the negotiations personally for political effect. He then called his whole cabinet together with a dozen assorted generals and bodyguards, and we negotiated for two hours in front of television cameras with many official references to the love of our two great countries for each other declared against an obligation of constant clicking of the guards' nervous Sten guns in the background. Having reached a well-publicized agreement, another three to five months went by while the agreement was moved through ministry offices. This is not just bureaucratic slowness. Often there are pro-American and anti-American factions in the government, and one has to be very nimble to keep the agreement from being "lost" in some "anti's" office.

#### **Money and politics color exotic practice conditions**

The major sources of work in Africa and the Middle East are governments, oil companies, U.S. Government agencies such as AID and the Corps of Engineers, and occasionally a private client. Generally, U.S. agencies will be smaller in the countries where the governments and/or the oil companies have the money to give out work.

Competitors run the gamut from the British (who have been working overseas

for generations and have the full backing of their commercial attaches), to other nationalities whose concepts of architectural practice may be considerably different from ours. One well-known practitioner in the Middle East was rumored to have accepted his fees in camels when hard currency was scarce. Often governments reflect their "middle line" foreign policy by trying to select a mixture of architects—one from one of the Iron Curtain countries, one from Scandinavia, and one from the U.S., for instance. This is to "bring more ideas to a project."

The American practice of complete working drawings and specifications as a basis for contract documents is seldom adhered to abroad. The form of contract documents perfected by the British, with the addition of a quantity surveyor and bills of quantity, is the more normal method used for tendering. Drawings may be dimensioned in feet or meters, and serve mainly as a guide to the building process. The bids are usually based on the bills of quantity, which accurately describe the amounts of all the diverse pieces which go into making up the building. Architectural details follow normally during the construction phase.

#### **Construction techniques may be ancient and immutable**

Generally, one or more resident engineers hired and supervised by the architect will be stationed on the site throughout the job to handle the daily problems that come up for their distant offices. Construction problems can keep one's sense of humor alive in the 104 degree tropical heat. Most countries use massive untrained labor forces and relatively few mechanical devices. Concrete is placed by laborers carrying about three shovelfull of concrete in headpans.

At one point, we suggested to our contractor that he would have a better chance of meeting his daily pouring schedule if

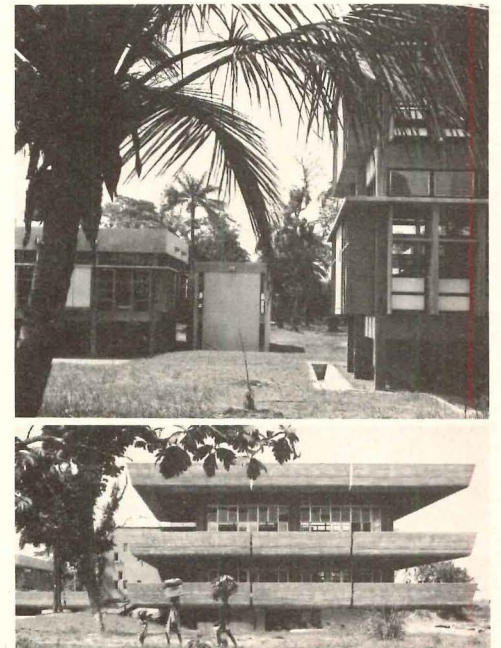
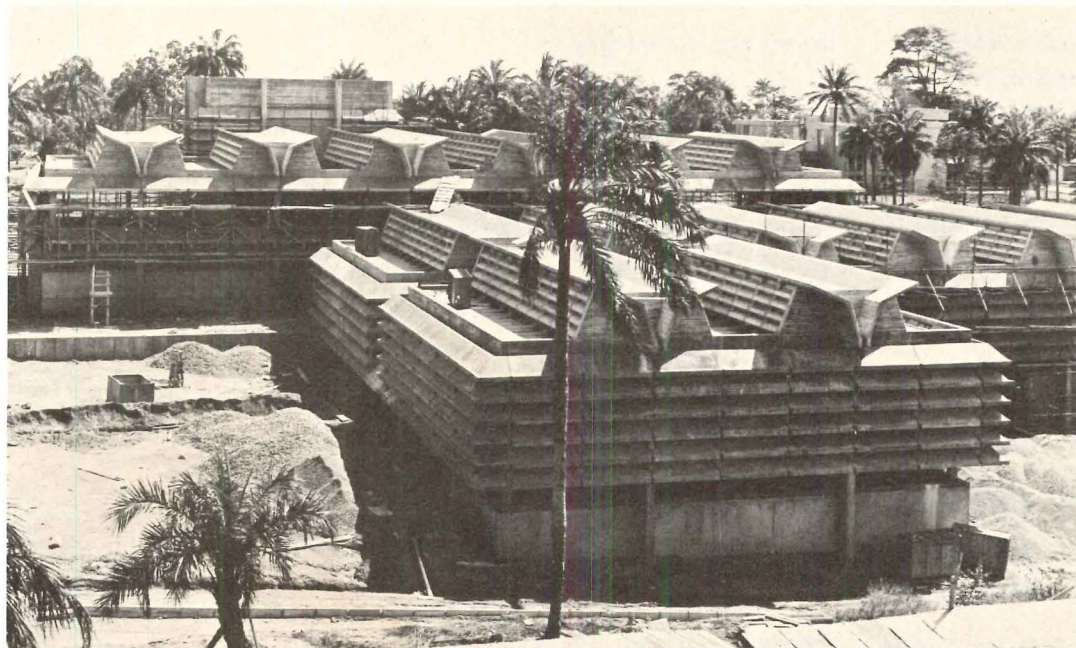
he used wheelbarrows or dollies instead of headpans. He agreed, and the next week there were eight or ten wheelbarrows at the site. But by the next day, all the wheels were missing. The fellows had substituted the barrow for the headpans, and the work progressed apace. Clearing a site for one of the jobs also turned up some unexpected difficulties when we learned that there was a religious shrine in the area. The native priests kept darting in and out of the bush to put a hex on the machine.

#### **Programing abroad can be a most demanding art**

The client usually does not have the experience to develop a program and expects the architect to be the expert. This means that the architect must correctly judge the client's wishes and present these completely and expertly or not get another chance. While working on Pahlavi University in Shiraz, Iran, the effective client was the Chancellor of the University and former Prime Minister. Since the Shah was the sponsor of the University, however, it was to him that the project had to be presented for approval. This took place in the garden of the Shah's palace. Both he and the Shahrina (who had studied architecture at the Beaux Arts in Paris) reviewed the project, quietly asking questions for about an hour and a half and only relieved the suspense at the end by saying how pleased they were. During our long wait to see the Shah, the Chancellor had seemed especially nervous. It was only after the presentation that I realized his concern had been because he had recommended us, and he was anxious for approval of his choice.

All-in-all, practice abroad can be rewarding and—to say the least—interesting. Diversity, however, can be wearing over the long pull, and one may yearn (as this practitioner has done) for the regenerating challenges of more purely architectural pursuits in the U.S.A.

Three buildings for the University of Lagos, Lagos, Nigeria are the engineering school (left), classrooms (top right), and dining hall (bottom right).





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## COMMENTARY

William H. Edgerton  
 Manager, Dodge Building Cost Services  
 McGraw-Hill Information Systems Company

## Understanding cost trends, prelude to estimating

This is the first article in a continuing series that will provide timely information on building costs and the reasons why costs are changing. William H. Edgerton, who has for many years provided the Indexes and Indicators (next page) as one of the resources in background of the *Dodge Building Cost and Specification Digest* and a series of *Pricing and Scheduling Manuals*, will comment, interpret and predict in this field on which he keeps a professional eye.

The last time the cost-to-build ever went down was in 1949; then an upward trend began that has continued to the present. From 1951 to 1967 average increases were limited to approximately two per cent annually, and many architects accepted this seemingly inevitable and steady increase in costs as a daily problem. That predictable period is over, and there appears to be no end in sight for the recent erratic surges of four to eight per cent annual increase in construction labor costs.

In some areas, framing lumber and plywood costs have increased over 40 per cent during the past several months. In fact, our sources indicate that increases during only three months ending last November equal or exceed the increases in the preceding 12 months. In addition, construction labor is in short supply, and premiums and travel-time are the rule rather than the exception. One Cleveland contractor estimates his costs are increasing at a rate of one per cent per month, and he bids accordingly.

There seems to be plenty of work around, and contractors are not bidding as competitively as in prior years, thus in-the-bid allowances for profit and overhead are higher. This is reflected in Dun and Bradstreet's analysis of contractor failures. Their comments about 1968 indicated that the number of contractor failures was markedly lower than in preceding years.

### National survey shows costs up four per cent in a year

A recent survey of costs in 188 U.S. metropolitan areas indicates that the national average cost to build increased four per cent in the past 12 months, with larger metropolitan areas reporting generally bigger increases. Some cities reported increases

significantly above the national average: Providence, Akron, Cincinnati, Cleveland, and Detroit reported six per cent, and Dayton, Toledo, and Burlington, N.C., reported eight per cent. The obvious conclusion for the architect is that not only must he be more concerned with costs on a day-to-day basis than in the recent past, but that any major delay in preparation of plans and specifications will significantly affect bids. This is apt to cause a spread between preliminary estimates and the low bid, leading to a potential deterioration of the architect-client relationship.

### Wage rates increase faster than productivity

Historically, increases in labor rates have given the cost-to-build its major upward push, and 1969 will be no exception to this rule. Union negotiators in the construction industry will push for increases that equal or exceed the gains won by industrial unions. Seasonality will continue to be a major point of argument when the union insists on increases in excess of those in industry. Productivity, however, remains an enigmatic factor: although labor rate increases will be in the four-to-eight per cent range, the most optimistic prediction of productivity increases is about two per cent. And it is a measurable fact that productivity of construction labor can actually decrease as wages increase.

### Housing recession set stage for lumber cost increase

In 1967, when the high cost and general unavailability of mortgage money forced the home building industry into a recession, domestic demand for plywood and other lumber products decreased markedly. As

demand decreased, lumber and forest product producers and manufacturers were left with excess capacity. As sensible businessmen, they turned to other markets to sell their products, and to export to Japan and other Eastern countries was a natural choice. When domestic demand recovered last summer, there wasn't enough plywood and lumber to go around, and the inevitable increase in prices occurred. Log exports to Japan alone have risen from 100 million board feet in 1960 to two billion board feet estimated for 1968; an increase is expected this year. With government intervention more than likely, lumber prices eased in March and April, but prices will remain erratic well into 1970.

Price increases for materials other than lumber are modest by comparison, but summer wage negotiations in industry could force price increases for building materials up three or four per cent.

### For the next few years: four to 12 per cent increases

We project that the average total increase in the cost-to-build will be in the four-to-five per cent range for 1969, with individual cities experiencing increases from a low of two per cent to a high of 12 per cent.

Unless the country experiences a major recession, it would appear that cost increases in the four per cent range will represent the lowest we can expect during the next few years, and if the Vietnam situation should ease materially, the lowest increase could go to eight per cent annually.

The obvious conclusion to all this is that the architect *must* establish a system in his office for close observation and control of costs. It could be fatal to his practice not to do so.

# INDEXES AND INDICATORS

Dodge Building Cost Services  
McGraw-Hill Information Systems Company

## BUILDING COST INDEXES

The information presented here indicates trends of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). Information is included on past and present costs, and future costs can be projected by analysis of cost trends.

The indexes are computed on a basis of 40 per cent labor rate and 60 per cent materials price. Wage rates for nine skilled trades, together with common labor, are used. Prices of four common building materials are included for each listed city.

Metropolitan area	Cost differential	Current Index		% change year ago res. & non-res.
		residential	non-res.	
<b>MAY 1969</b>				
U.S. Average	8.6	301.0	320.7	+4.58
Atlanta	7.4	348.7	369.8	+5.52
Baltimore	7.9	298.9	317.9	+2.97
Birmingham	7.4	272.7	293.2	+3.73
Boston	8.4	267.1	282.7	+3.37
Chicago	8.9	329.2	346.3	+3.49
Cincinnati	9.1	296.4	315.0	+6.51
Cleveland	9.8	320.7	340.8	+5.96
Dallas	7.7	281.7	290.9	+5.65
Denver	8.2	302.5	321.6	+4.09
Detroit	9.4	315.8	331.5	+5.81
Kansas City	8.3	269.9	285.6	+5.19
Los Angeles	8.4	303.4	332.0	+3.87
Miami	8.5	299.5	314.4	+5.76
Minneapolis	8.7	296.4	315.1	+3.66
New Orleans	8.0	274.0	290.3	+5.64
New York	10.0	310.1	333.5	+2.97
Philadelphia	8.6	294.4	309.1	+3.98
Pittsburgh	9.2	283.5	301.4	+5.08
St. Louis	9.1	294.3	311.8	+4.52
San Francisco	8.7	389.5	426.2	+4.91
Seattle	8.5	272.7	304.8	+3.59

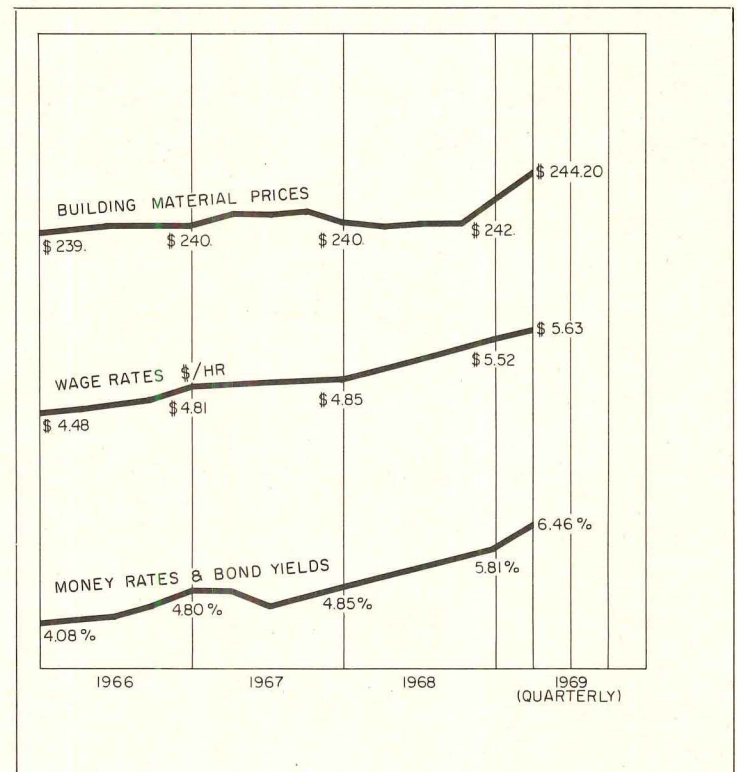
Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in the first city are 25% higher than costs in the second. Also, costs in the second city are 80% of those in the first (8.0 ÷ 10.0 = 80%) or they are 20% lower in the second city.

## ECONOMIC INDICATORS

Indicators are intended to show only general direction of changes. BUILDING MATERIALS—The U.S. average price of a "package" of common materials.

WAGE RATES—The U.S. average wages of nine skilled trades and common labor. Fringe benefits are included.

MONEY RATES AND BOND YIELDS—An arithmetic average of the latest prime rate, short term prime commercial paper rates, and state and local government AAA bond rates.



## HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

Metropolitan area	1961-1967							1968 (Quarterly)				1969 (Quarterly)			
	1961	1962	1963	1964	1965	1966	1967	1st	2nd	3rd	4th	1st	2nd	3rd	4th
	1941 average for each city = 100.00														
U.S. Average	264.6	266.8	273.4	279.3	284.9	286.6	297.5	301.5	302.6	309.3	314.9	314.9			
Atlanta	294.7	298.2	305.7	313.7	321.5	329.8	335.7	345.6	346.7	352.3	364.2	364.2			
Baltimore	269.9	271.8	275.5	280.6	285.7	290.9	295.8	302.9	304.1	307.9	311.4	311.4			
Birmingham	249.9	250.0	256.3	260.9	265.6	270.7	274.7	278.5	279.5	283.6	288.4	288.4			
Boston	237.5	239.8	244.1	252.1	257.8	262.0	265.7	269.3	270.3	276.3	278.2	278.2			
Chicago	289.9	292.0	301.0	306.6	311.7	320.4	328.4	329.4	330.0	338.7	340.4	340.4			
Cincinnati	257.6	258.8	263.9	269.5	274.0	278.3	288.2	291.4	292.5	301.8	309.8	309.8			
Cleveland	265.7	268.5	275.8	283.0	292.3	300.7	303.7	316.5	318.3	330.7	334.9	334.9			
Dallas	244.7	246.9	253.0	256.4	260.8	266.9	270.4	272.3	273.4	281.0	287.2	287.2			
Denver	270.9	274.9	282.5	287.3	294.0	297.5	305.1	304.9	306.0	311.7	317.0	317.0			
Detroit	264.7	265.9	272.2	277.7	284.7	296.9	301.2	309.2	310.4	315.5	326.8	326.8			
Kansas City	237.1	240.1	247.8	250.5	256.4	261.0	264.3	267.5	268.5	277.2	281.0	281.0			
Los Angeles	274.3	276.3	282.5	288.2	297.1	302.7	310.1	312.0	313.1	319.3	323.7	323.7			
Miami	259.1	260.3	269.3	274.4	277.5	284.0	286.1	293.1	294.3	304.5	309.6	309.6			
Minneapolis	267.9	269.0	275.3	282.4	285.0	289.4	300.2	300.0	301.0	309.0	310.6	310.6			
New Orleans	244.7	245.1	248.3	249.9	256.3	259.8	267.6	270.6	271.6	273.9	285.5	285.5			
New York	270.8	276.0	282.3	289.4	297.1	304.0	313.6	315.9	317.0	320.6	324.9	324.9			
Philadelphia	265.4	265.2	271.2	275.2	280.8	286.6	293.7	293.3	294.2	300.9	304.6	304.6			
Pittsburgh	250.9	251.8	258.2	263.8	267.0	271.7	275.0	293.0	284.2	291.3	297.0	297.0			
St. Louis	256.9	255.4	263.4	272.1	280.9	288.3	293.2	293.7	294.7	303.6	306.8	306.8			
San Francisco	337.4	343.3	352.4	365.4	368.6	386.0	390.8	396.4	398.0	401.9	415.6	415.6			
Seattle	247.0	252.5	260.6	266.6	268.9	275.0	283.5	286.2	287.2	291.6	296.1	296.1			

Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) divided by the index for a second period (150.0) equals 133%, the costs in

the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0 ÷ 200.0 = 75%) or they are 25% lower in the second period.

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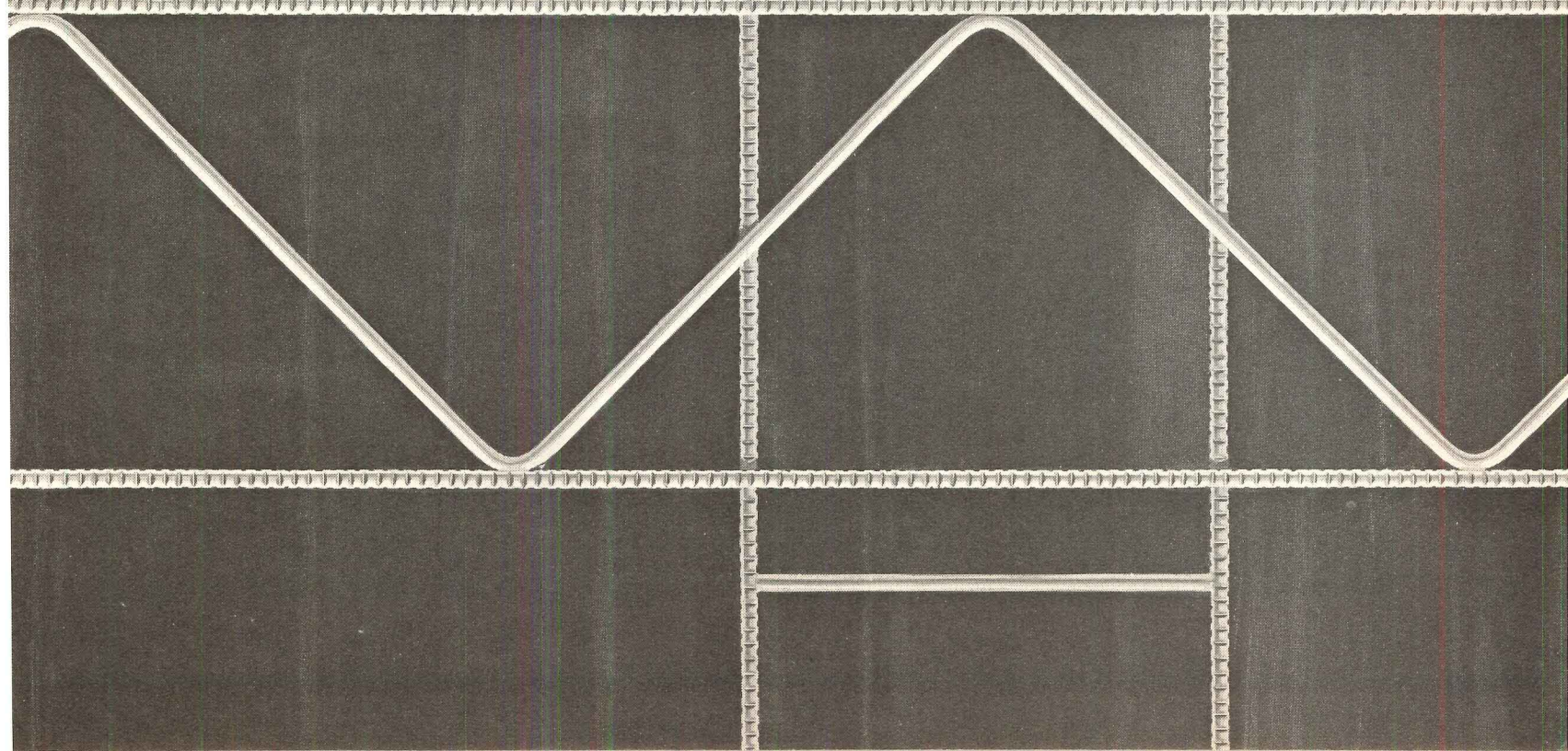
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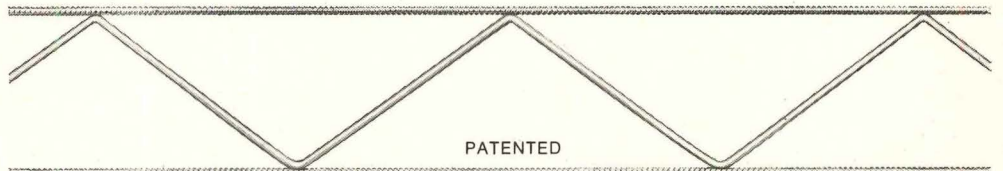
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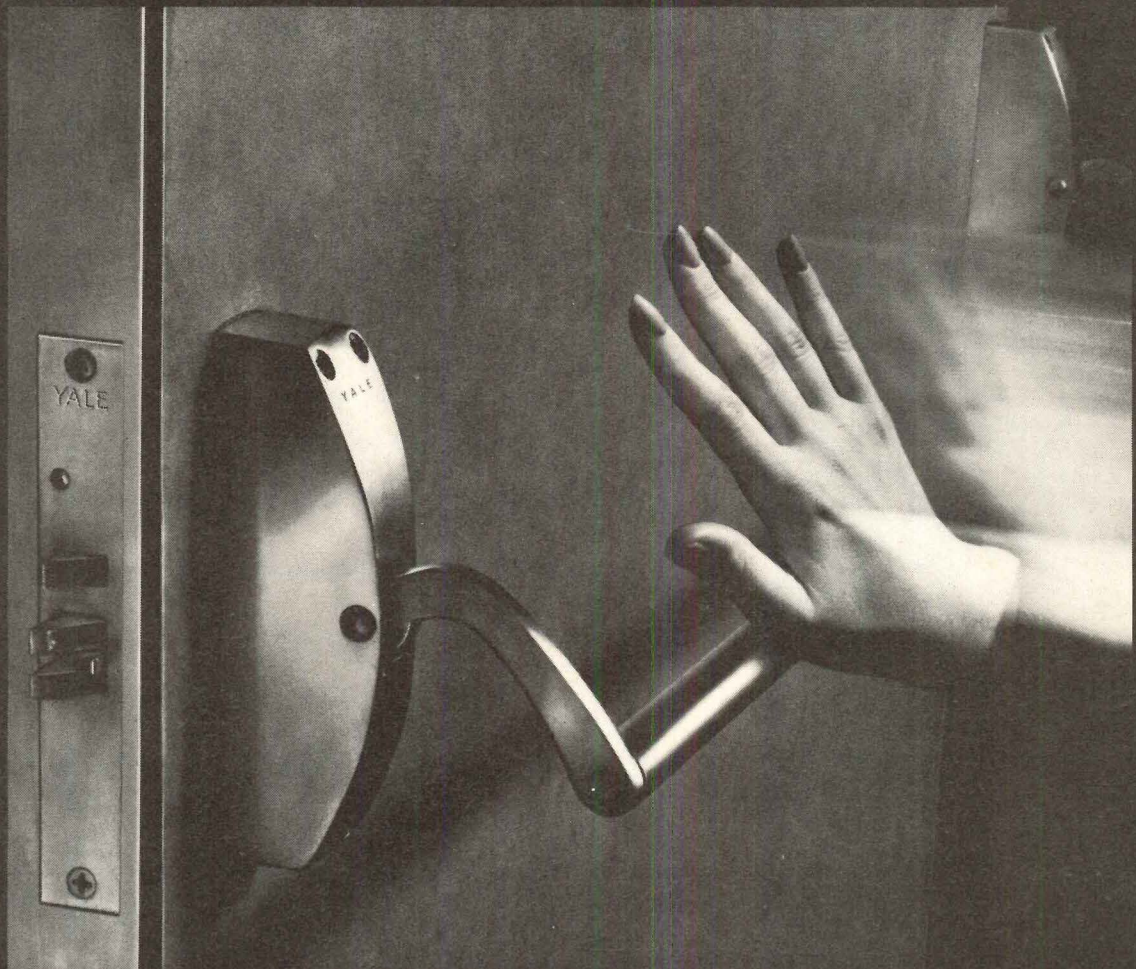
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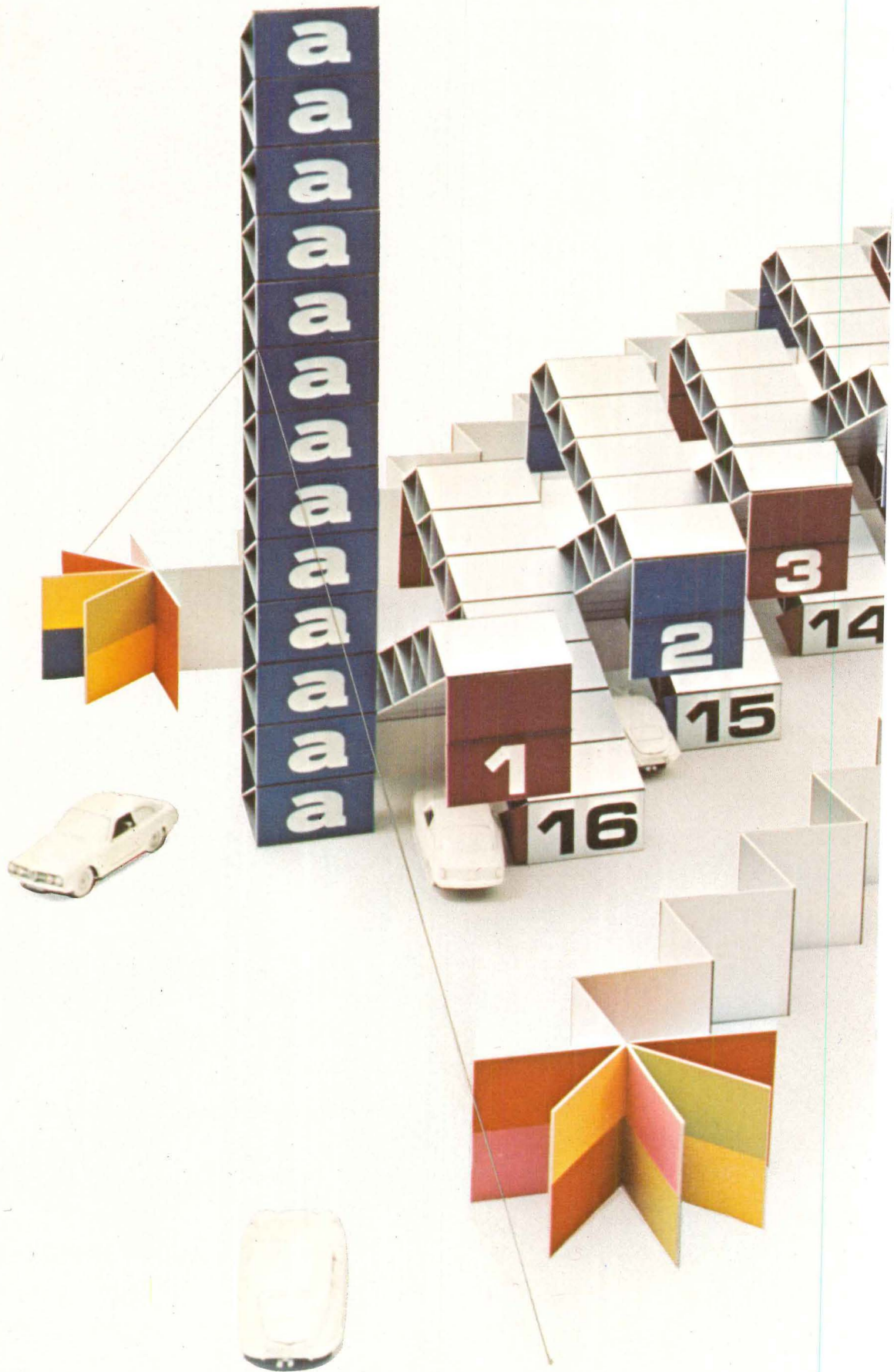




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Or, if it's a newer establishment, the design resembles a shake-shingled parody of a suburban cottage, hidden by its assertive partner, the great and gaudy sign.

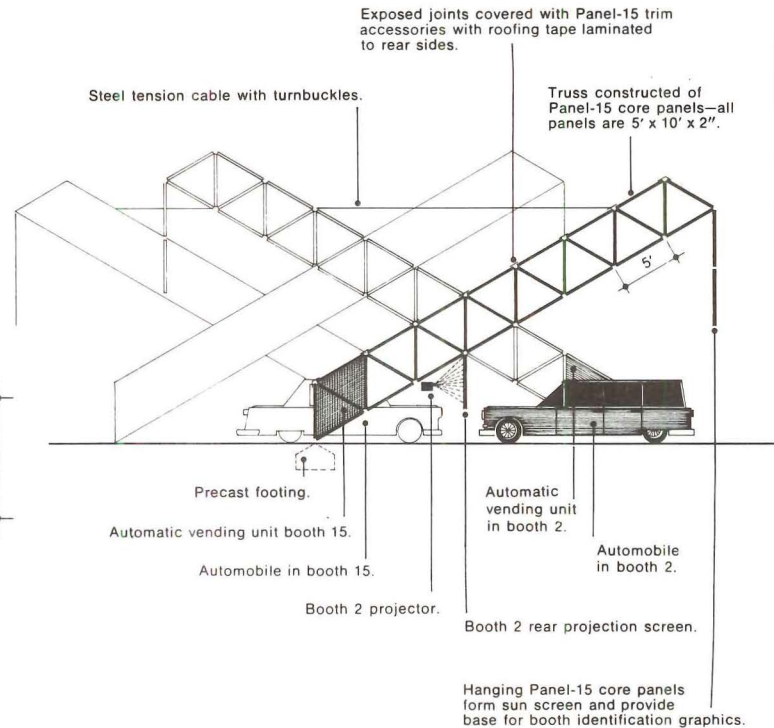
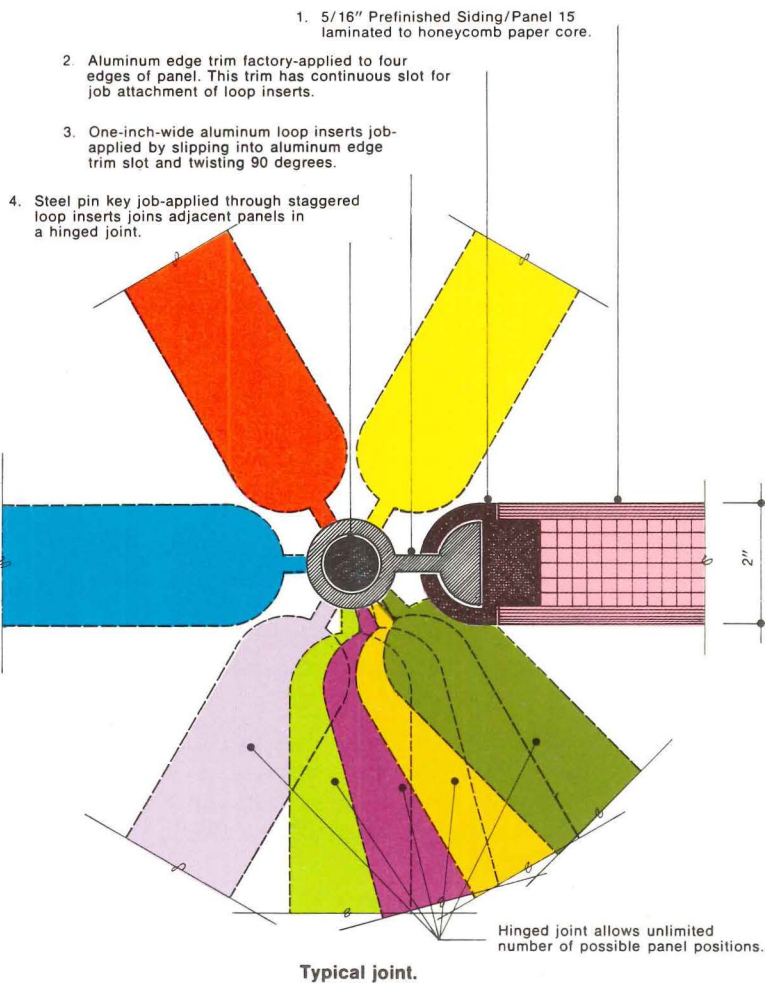
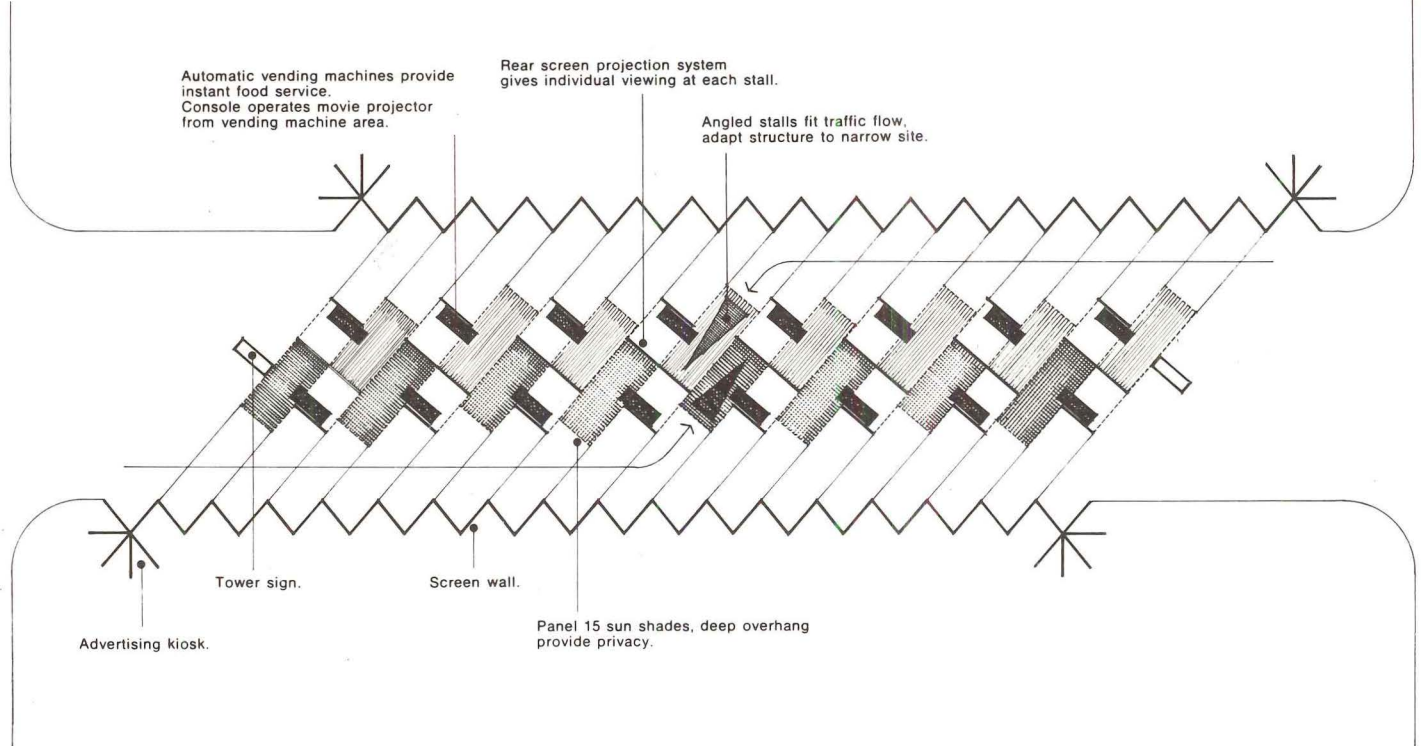
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*W. C. Muchow*



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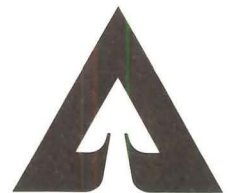
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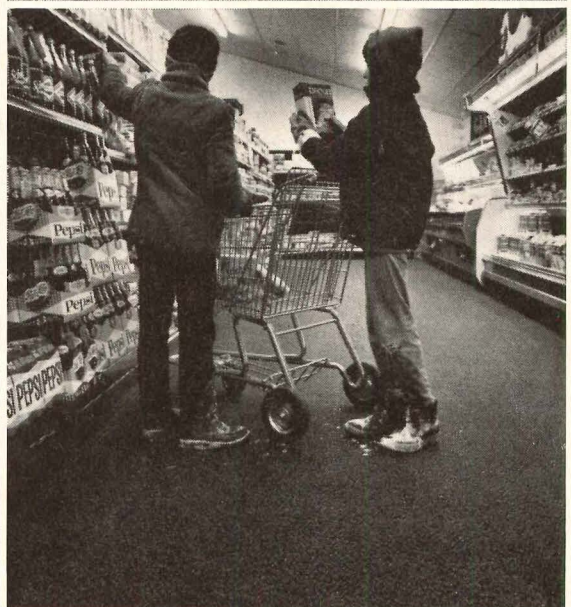
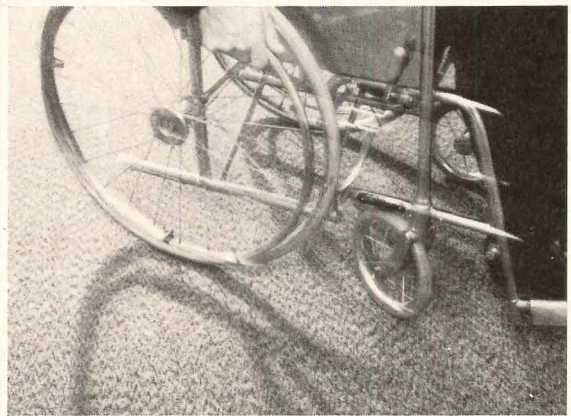
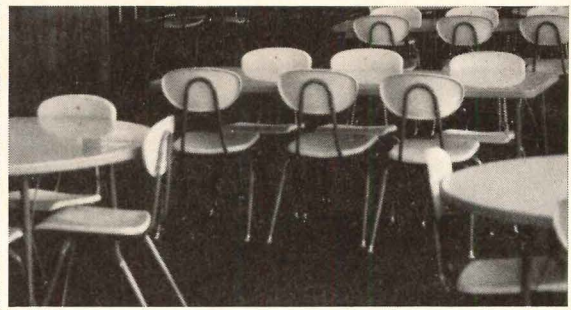
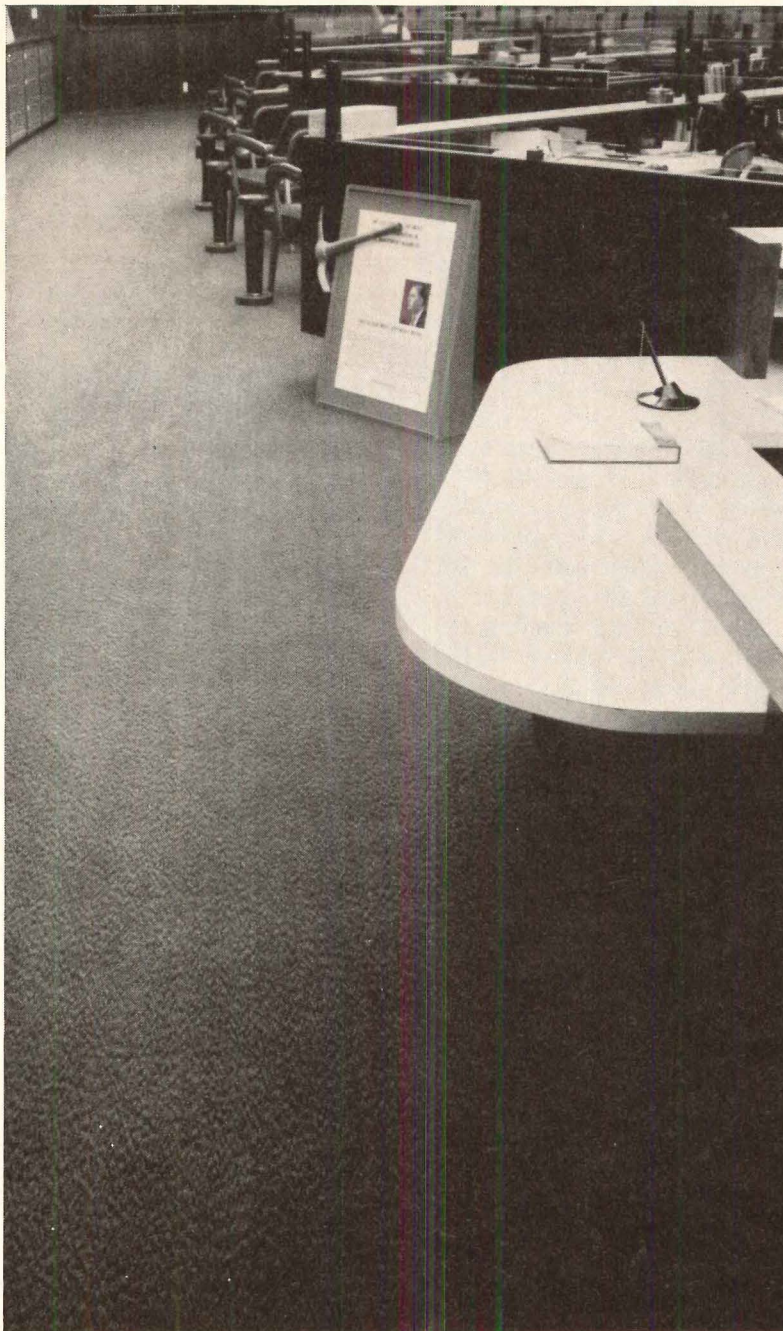
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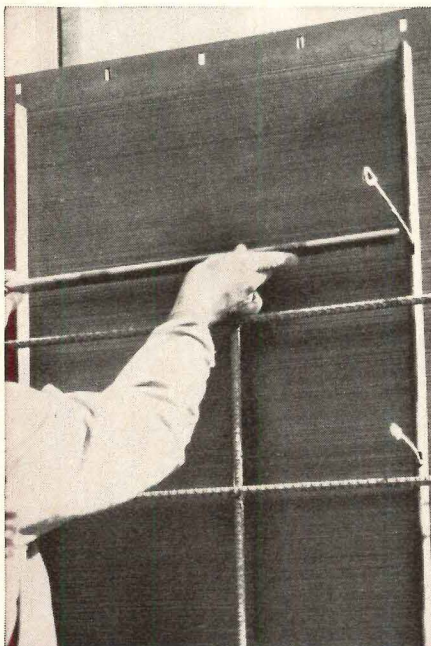
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of the individual structure is over and the present period is witness to a grand polarization of multiple efforts toward the goal of environmental design. That the architectural profession is significant to this task is unquestioned, but that it occupies the keystone location is quite improbable. If there is one single fault to find with architecture's recent past and present, it is in its myopia wherein architecture stagnates and environmental design is frustrated. The typical reflex extrapolation by the Barnetts and others that "society requires of the architect. . . (the) ability to design the physical environment" is tragic when viewed against realities of environmental complexity. No one profession ever has, should or will be charged with this degree of responsibility. It is all we can collectively do to even define, much less singlehandedly command, the design of an environment.

Let me agree that the architect is not known, nor should he be, for any "special talent for solving social problems." He is not either known, but should be, to possess any special talents, intentions or background to compose environmental compositions. At best, he performs competently within the too-narrow confines of a particular commission. This he must continue to do, even as he learns to see himself and his commission in the context of the larger visible, biotic, ecologic, and operational environments. To attempt command over what he cannot see nor understand is absurd.

As an architectural apologist, I would strongly urge that architecture is not served as it is typically practiced. It is not served by looking for "new worlds to conquer" unilaterally. The problem of architectural education is not to "give the student the opportunity to acquire expert knowledge in a far wider field," but to give him a far wider knowledge of his own field, its strengths, limitations, and place in the environmental association.

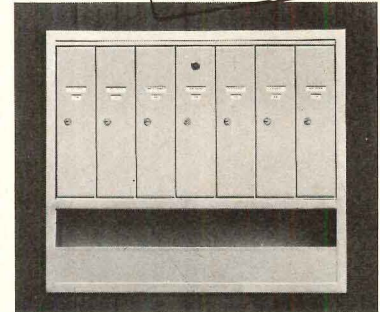
Several trends are involved here which are informative and directional in themselves. The ethic of the "now" future is certainly an inclusively environmental one. Anything less will not serve. Even as this is seen, each part in this environmental collective unfolds as an interconnected group of more and more complex areas within themselves. Architecture is itself proof of this as its technology explodes and strains the capacity of a single individual to give it purposeful form amid the larger community form, and then to get it built.

If the A.I.A. Princeton Report does anything, it brings this message to architecture and requests of it sufficient ego to be humble.

Robert G. Reimann  
 Associate Professor of  
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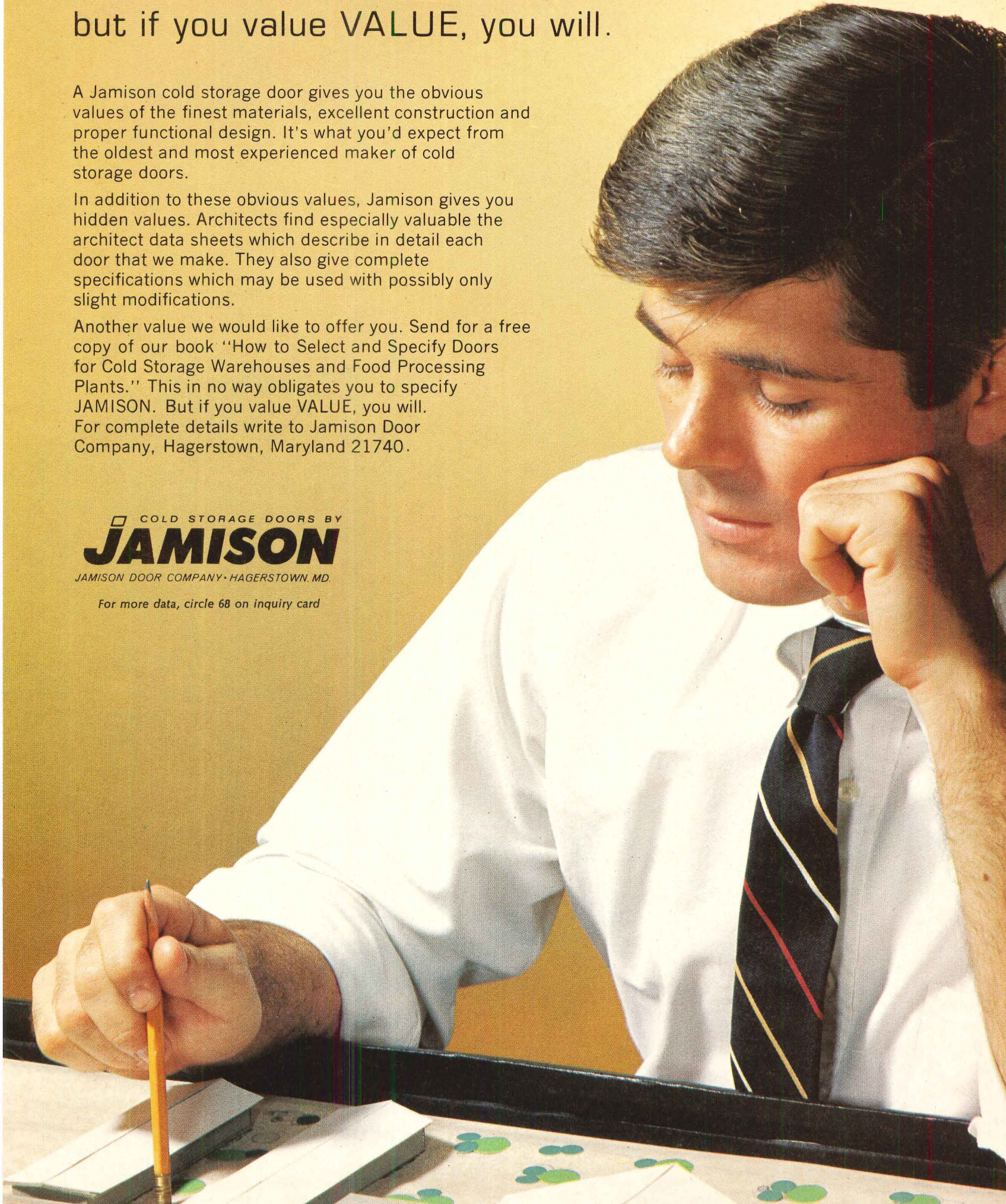
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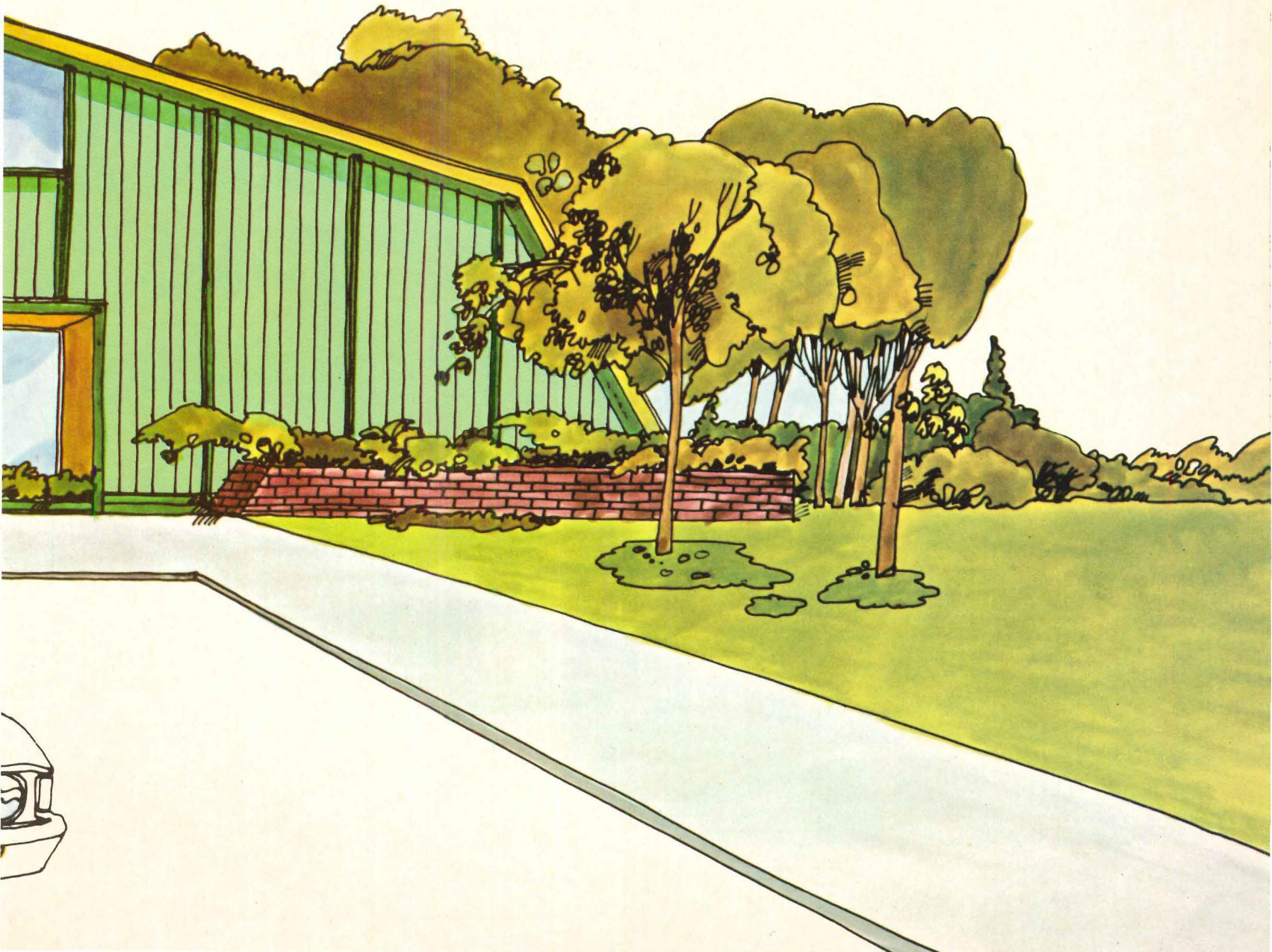
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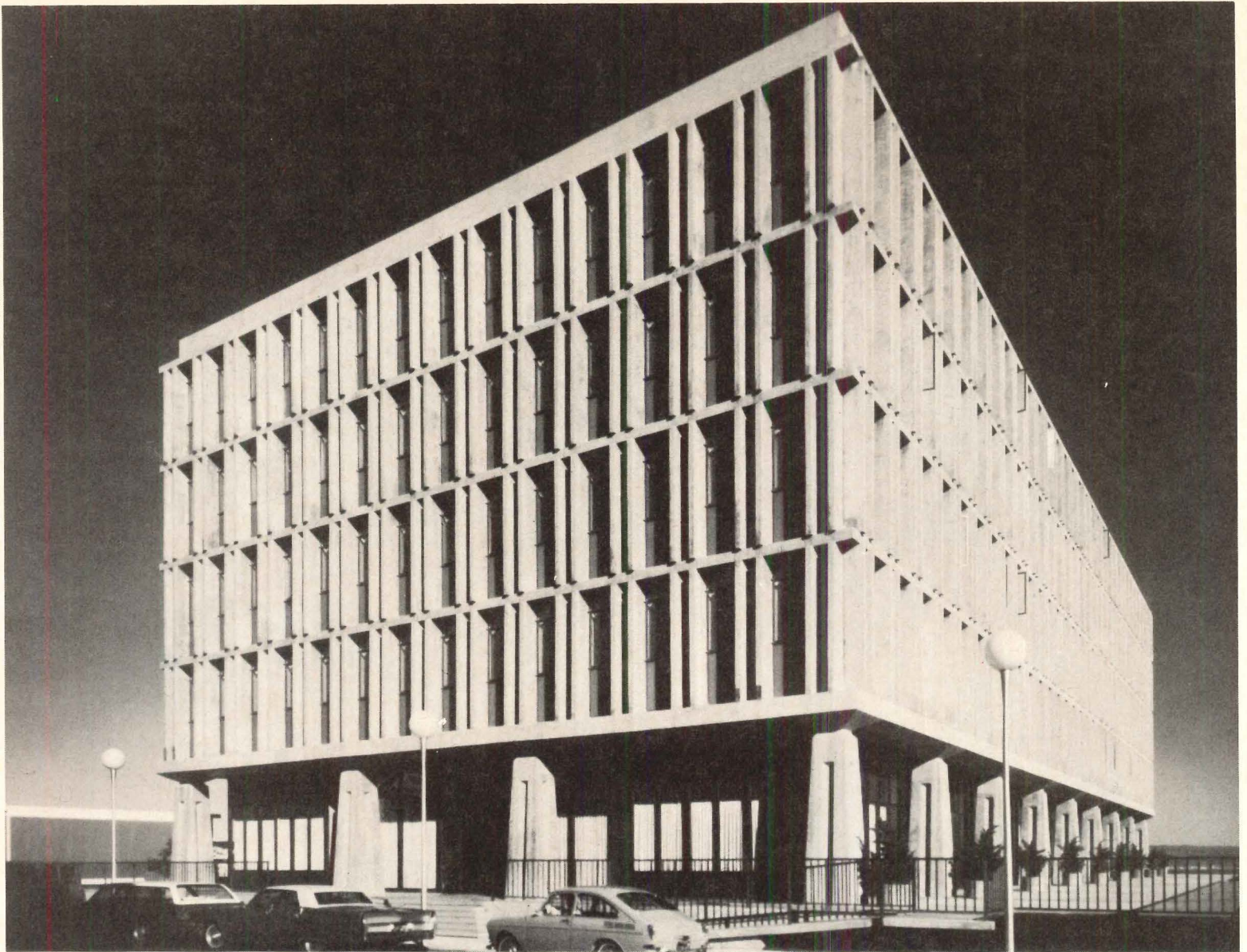
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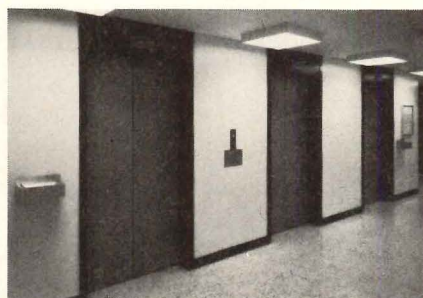
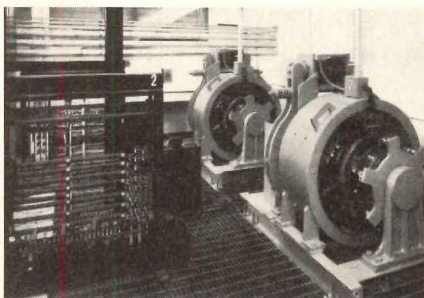
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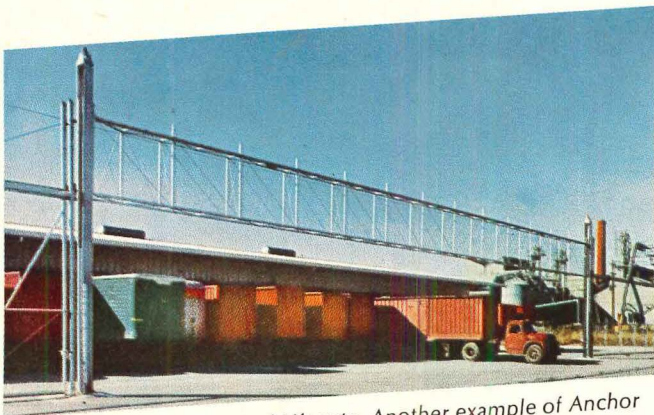
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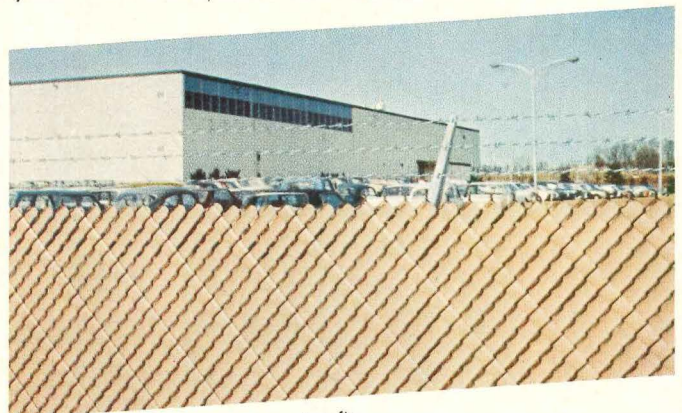


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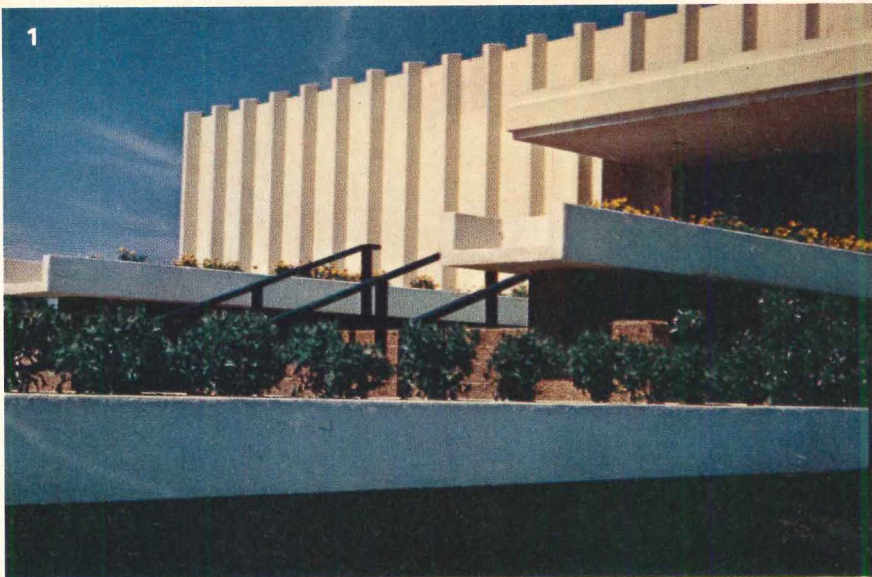
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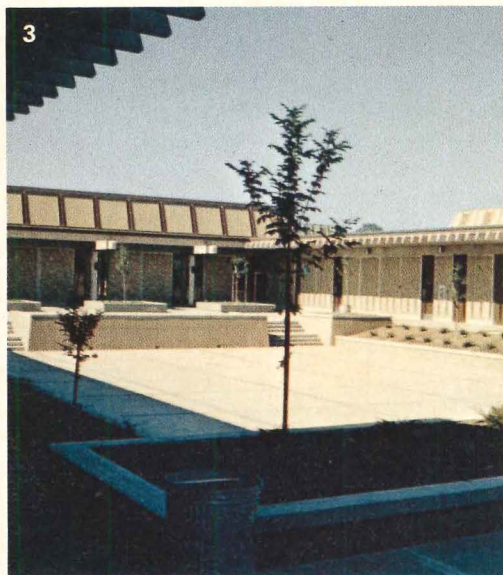


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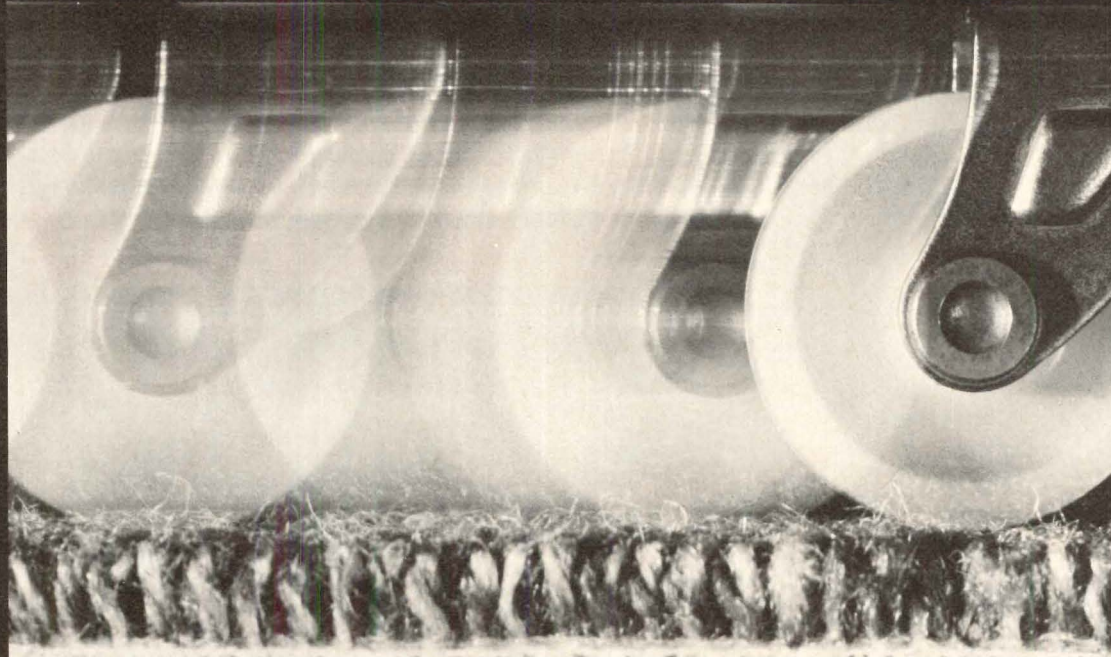
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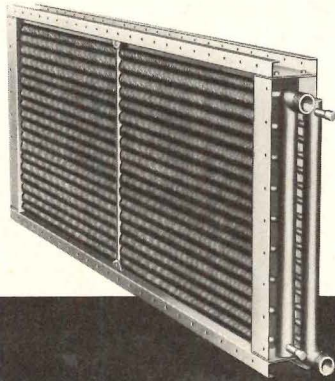
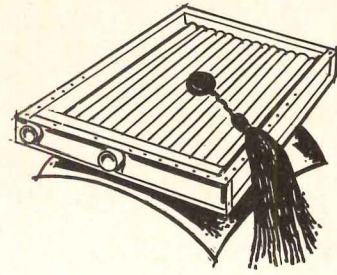
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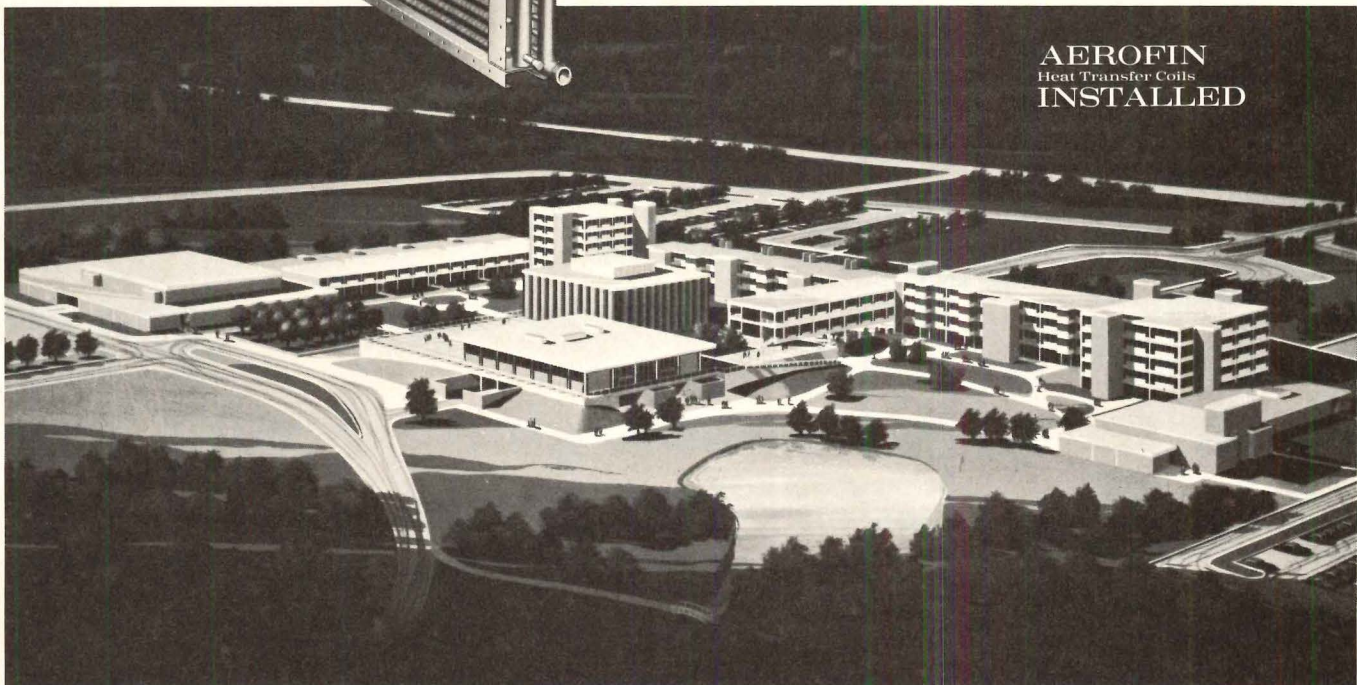
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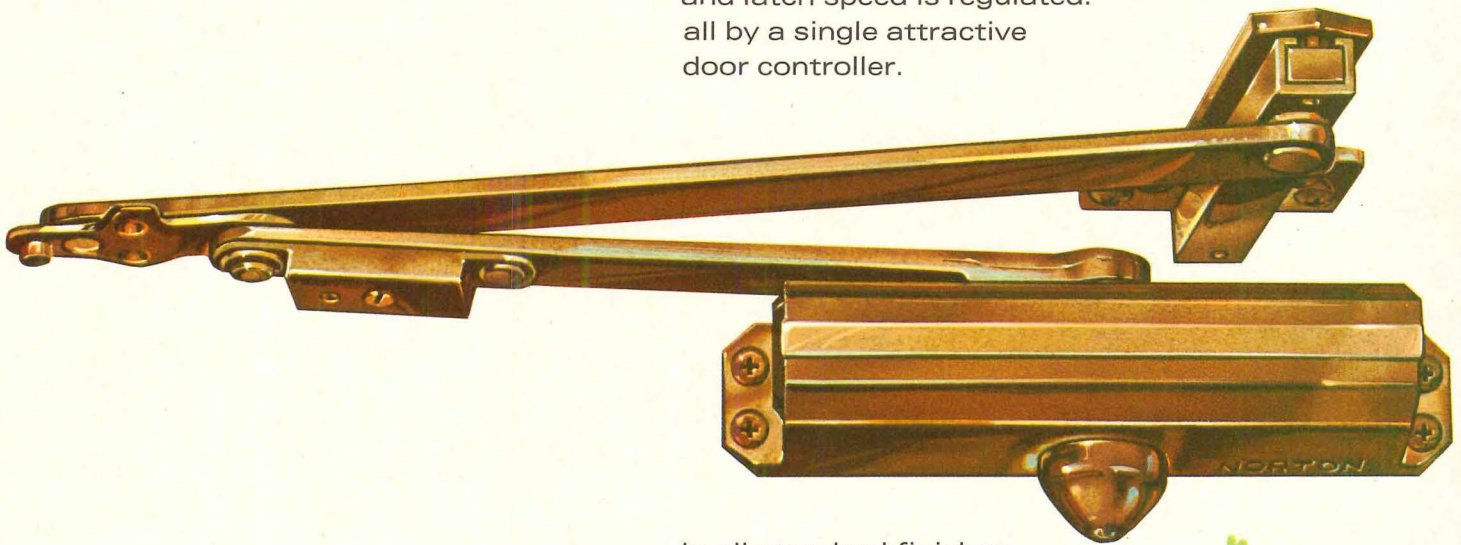
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# "Capitol" need not be synonymous with "dome"

**A study of the just-dedicated Hawaii State Capitol  
and the just-announced design for a Michigan State Capitol—  
two totally different and innovative approaches  
to a design problem with strong roots in tradition.**

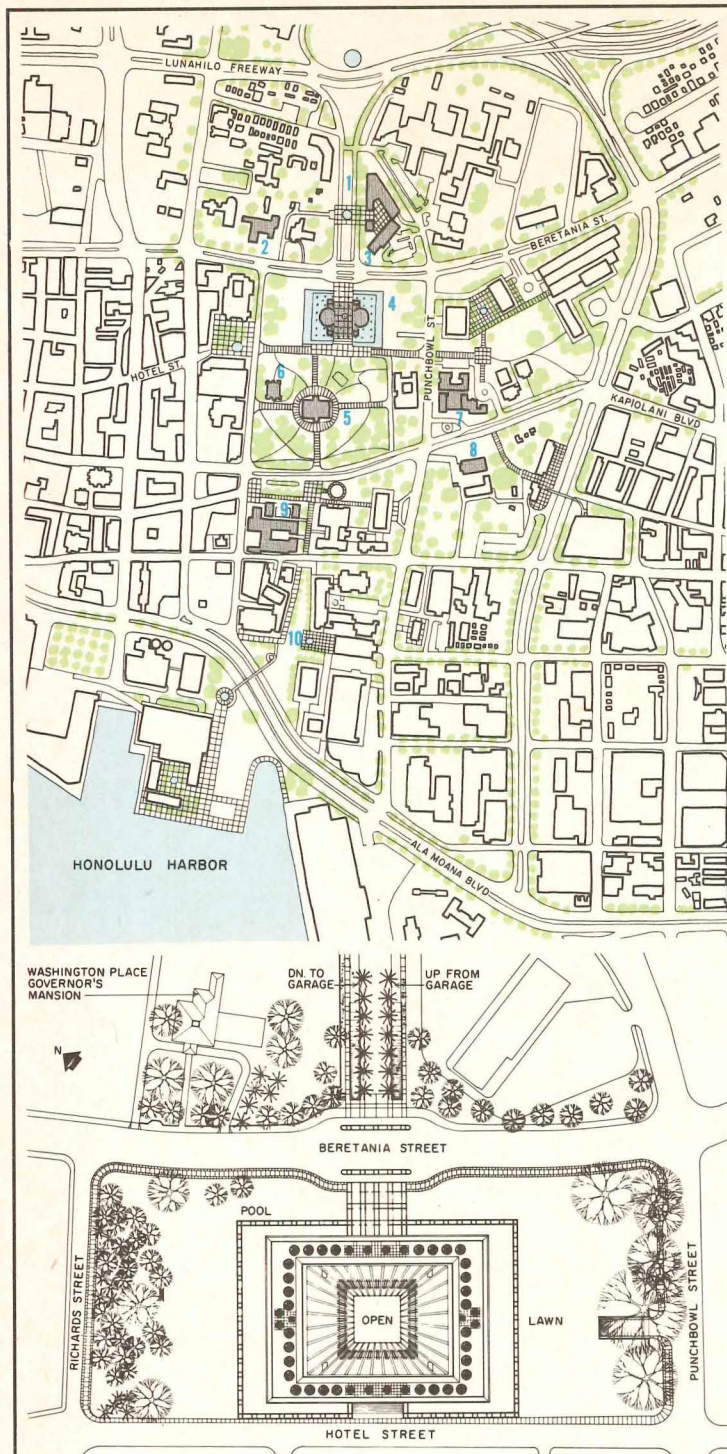
**N**ew State Capitol buildings are rare—only three have been built in this country in the last fifty years. But there is perhaps no public building quite so public as a State Capitol, and design solutions for both Hawaii and Michigan explore common problems of monumentality, function, programing, urban planning, cost, and political process in public architecture.

In cultural background and history, Hawaii and Michigan are far apart, and appropriately the designs of their new Capitols are very different—as the following pages will show. But in the break that both designs make with traditional forms, they are on common ground. The new forms that they suggest, and the new approaches to the design of government buildings that they explore, are likely to encourage more exploration in the design of institutional buildings—governmental or not.

Dignity and symbolism, size and monumentality are attributes of major government buildings—and in traditional exam-

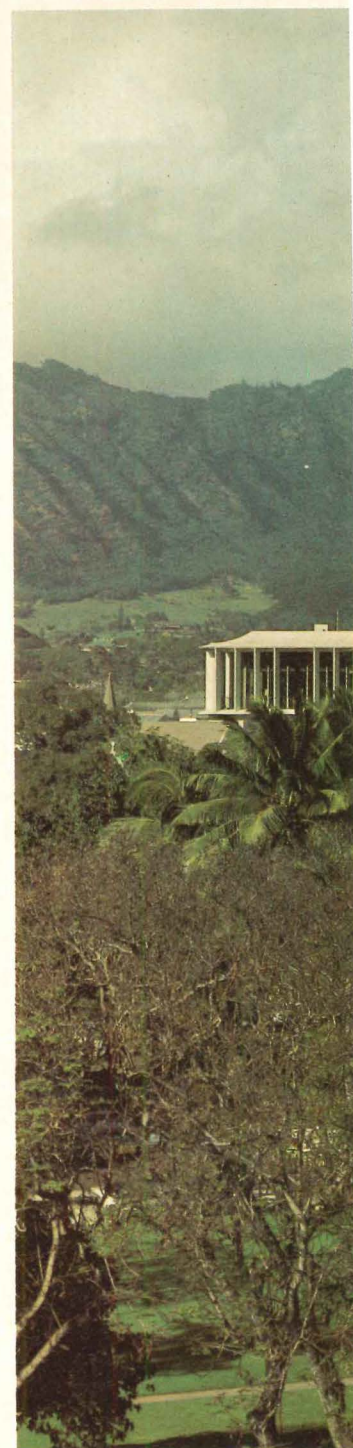
ples, these attributes have been achieved in traditional ways. But traditional ways no longer express the community and no longer express the relationship of the people to government.

In these two new buildings, dignity derives from qualities other than monumentality. Both buildings are big because they have to be—but their size sacrifices no human relationships. Symbolism is apt and designed in, not applied. Both buildings respect where they are, what they are, and the people for whom they are designed. Both have been shaped in part by the people, through the intricate politics of design for government buildings. And both are thoughtful and innovative attempts to solve a problem that is becoming increasingly common and more important—fitting the ever more complex requirements of modern government into a framework that respects the traditional role of the government building as a public symbol and a source of public pride.



1. Capitol Mall
2. Washington Place (Governor's mansion)
3. State Offices
4. State Capitol
5. Iolani Palace
6. Iolani Barracks
7. City Hall and County Office building
8. Kawaiahao Church and Mission houses (historic buildings)
9. Federal Building
10. Mililani Mall

A master plan for the civic center was an obvious necessity to give the Capitol the setting it deserved, but it came late, after the site had been determined and the building designed. Conceived as a great park in which are located city, state and Federal office buildings, and where historic buildings (2, 5, 6, 7, 8) can be preserved and displayed, the plan is actually a series of open spaces connected by tree-lined streets and terminated at both ends by pedestrian malls. The civic center runs from the mountains to the sea—an ancient Hawaiian tradition for land division. The Capitol and Iolani Palace form the focus for the plan. The plan, prepared by John Carl Warnecke & Associates, was evolved by a remarkable combination of architects, official policy committee and a citizens' committee made up of delegates from a broad spectrum of organizations, and including leading design professionals, who studied architectural, historical and traffic problems and recommended criteria for their harmonious resolution.



Morley Baer photos

## Hawaii State Capitol: beautiful and unique and fitting

Hawaii's new Capitol—its first: the seat of government since 1895 has been a royal palace—is an exceptionally handsome building and a most unusual capitol. And since Hawaii is both the newest and the only island state among the United States, a unique design seems right and fitting for so unique a place. Designed in 1960, presented to the Legislature and enthusiastically approved in 1961, the building's construction did not begin until November 1965. A few weeks ago, in celebration of Hawaii's tenth anniversary of statehood, the new Capitol was dedicated. Not all of its offices were furnished, and none of its almost half-million-dollars of art works was in place, but the legislative chambers were in use and the building was, to all intents and purposes, completed.

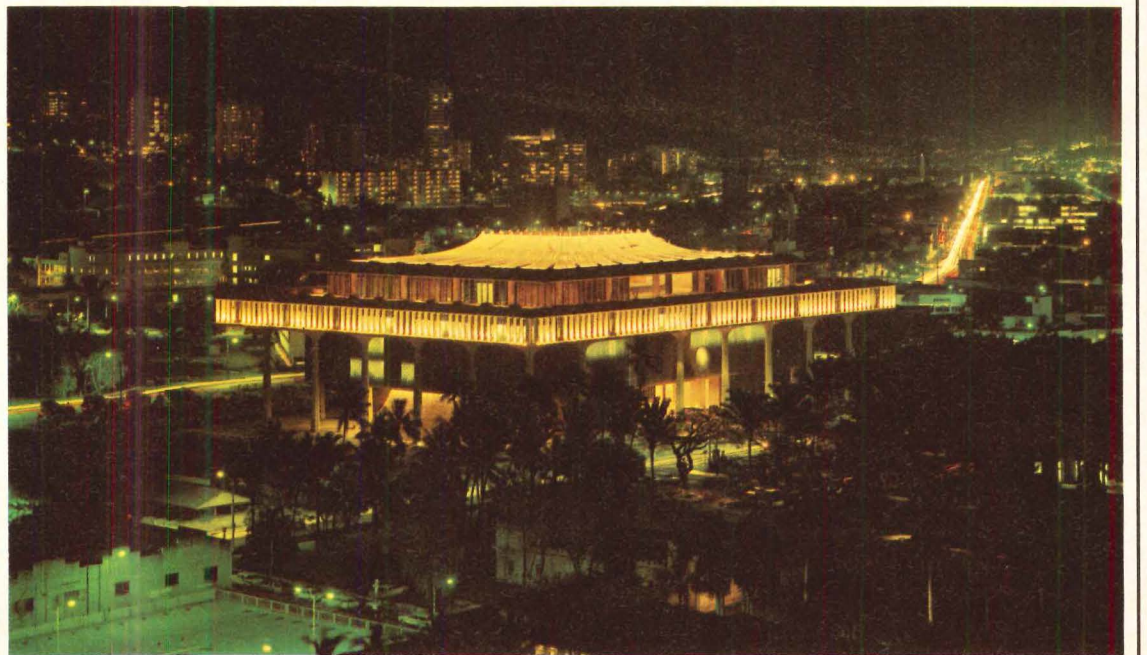
The most unusual feature of the building is its openness, a quality it derives as much or more from the open character of Hawaiian society as from the tropical climate and the particular conditions of the building's site. At the heart of the building is a great

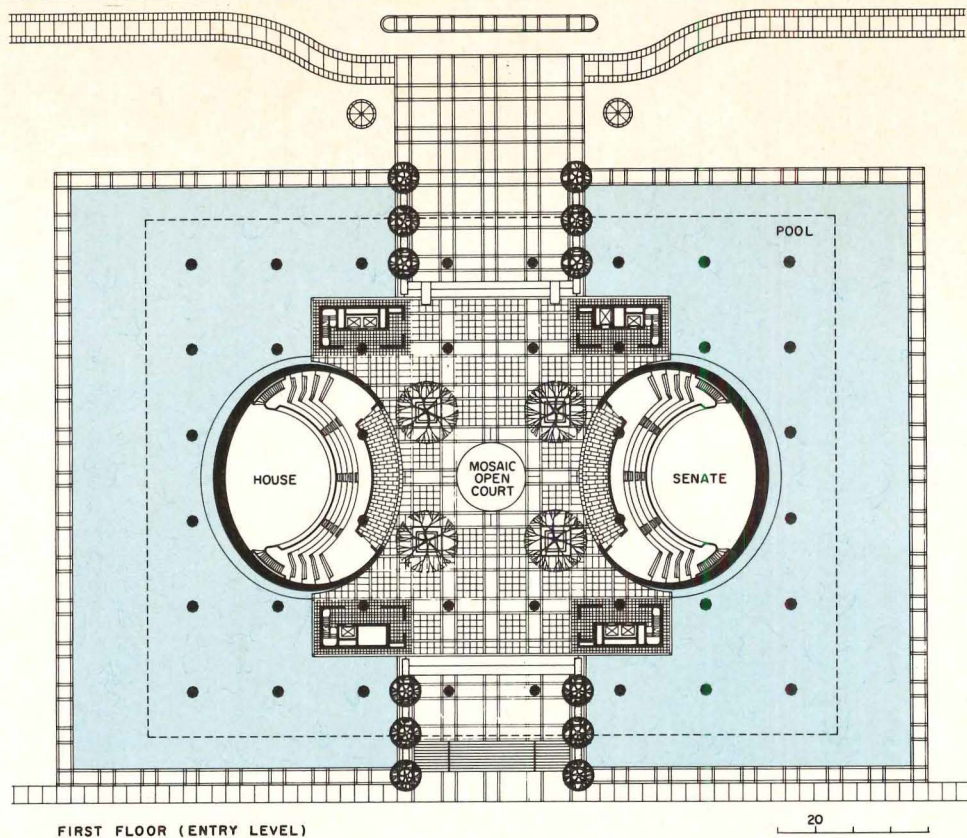
central court five stories high and open on two sides to the park that surrounds the building. Winds blow through the court, sun floods it, rain falls into it, but it was not for these purposes that the court is open both at its crown and at ground level. In a rare way (even in Hawaii) the Capitol recognizes the Hawaiian cultural and historic traditions and the people's easy relationship with their legislators.

The Capitol stands in the civic center in what will some day be a great park (if the master plan is fully implemented) where it shares the focal point with nearby Iolani Palace, the only royal palace in the United States, built in 1882 by Kalakaua, last of the Hawaiian kings. The palace is but one of a number of historic buildings (Kawaiahao Church, built in 1842; the Mission buildings dating from 1821; Washington Place, once the home of Queen Liliuokalani of Aloha Oe fame and now the governor's mansion; Iolani Barracks; the Judiciary and City Hall are others) which make



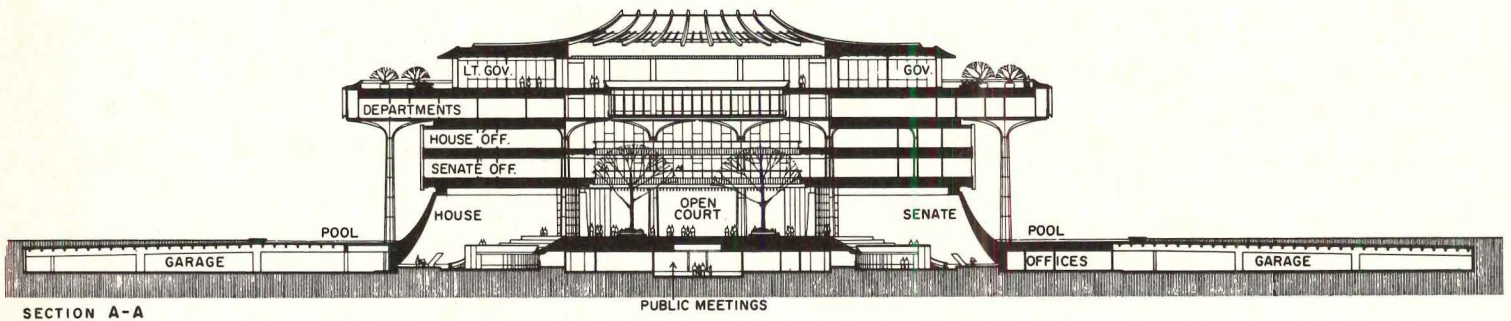
Behind the Capitol rises the always green and frequently cloud-obscured Koolau Range, with Punchbowl crater, an extinct volcano, nearest to the civic center. In the foreground are the tropical trees and shrubs—among them an enormous banyan tree—of Iolani Park. But the site of the Capitol building itself is less open than the greenery suggests: all around are evidences of Honolulu's current building boom in high-rise office and apartment buildings. Brilliantly lighted, the Capitol is a focus of interest in Honolulu's night skyline. Original design of building showed the executive floor (penthouse) as low element on roof, but the governor's order raised it five feet, with some alteration in appearance.





FIRST FLOOR (ENTRY LEVEL)

20



SECTION A-A

PUBLIC MEETINGS

this an unusually rich and varied civic center. The new Capitol relates to these old buildings more by subtle handling of scale than by style or detail. By being individual and contemporary, the new Capitol gives Hawaii something that its old buildings in their borrowed styles did not offer: a building inspired by and in response to the Islands themselves.

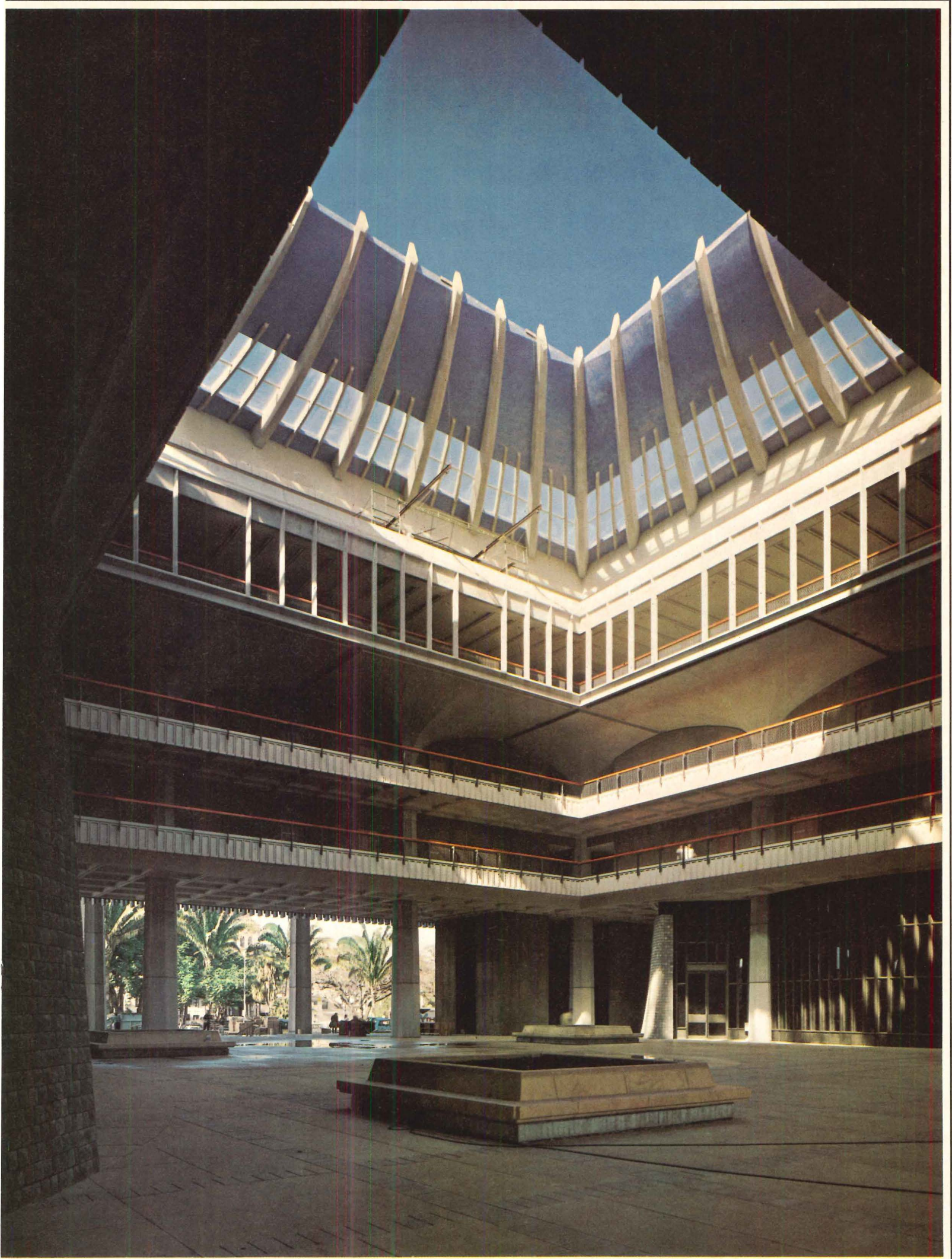
The great banyan tree near Iolani Palace fixed the axis for the Capitol building, and it also suggested the form of the columns that surround the building and support the actual roof—the fourth floor—which cantilevers out from the flat vaults at the tops of the columns. Other design elements also derive from nature: the columns rising from the two large pools on either side of the building suggest the island state; the truncated cones at each end suggest the mountains that rise from the sea; and the fluted crown of the open court echoes the undulating sides of a crater, recalling the volcanic origin of the Hawaiian Islands.

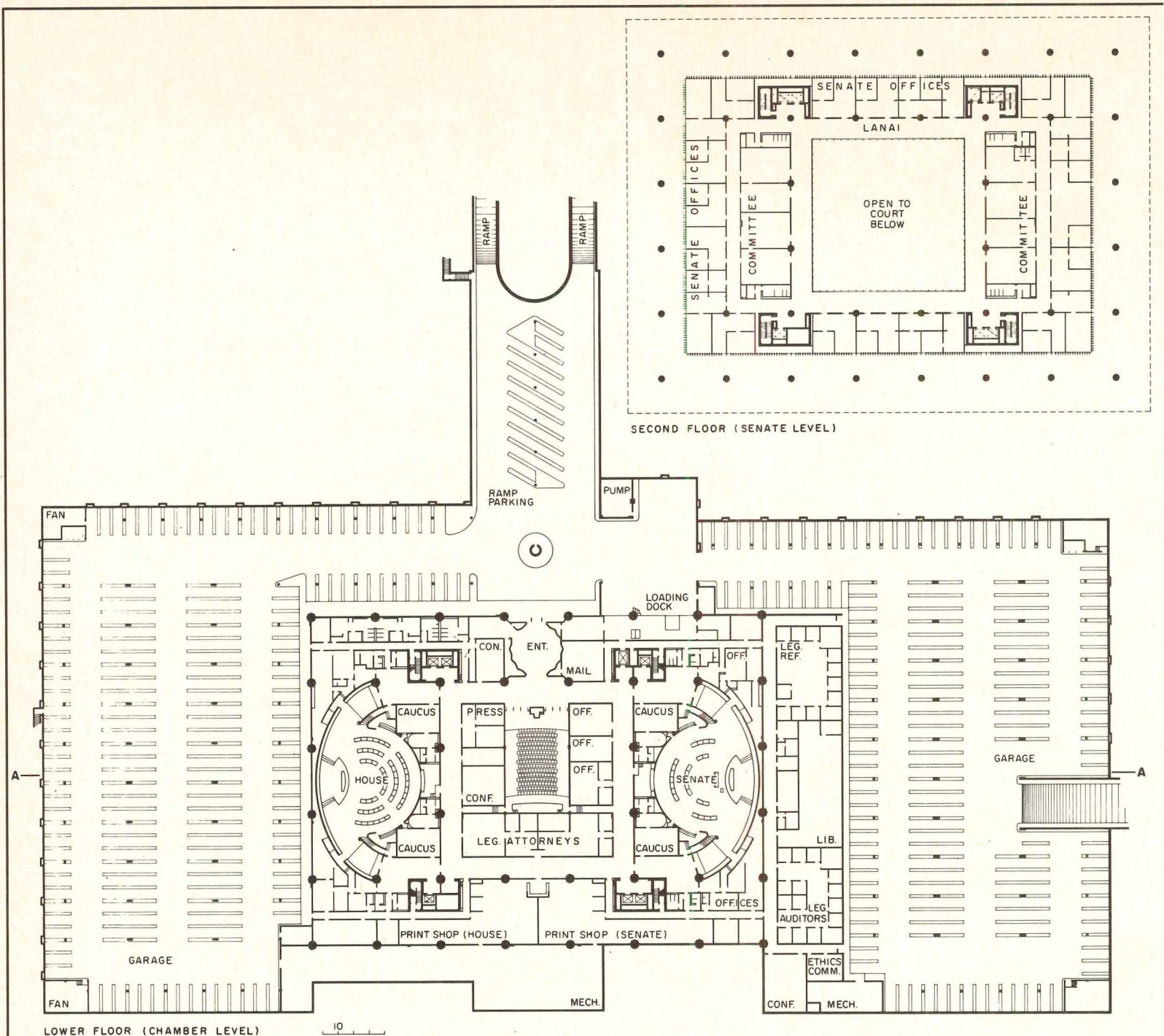
From the great court, the public has easy access to the legislative chambers, entering the spectator galleries for both houses at court level. By stair and elevator (located in corners of the court)

it also has access to the upper floors, where offices for legislators and departments directly related to the chief executives are located. Public circulation on these upper floors is through lanais (corridors or porches open at one side) that overlook the court and receive from it both light and air. The chambers and all offices are air conditioned, but public spaces are open to the tradewinds. The executive offices are on the top level, in what is actually a penthouse.

Building a capitol is, or should be, a democratic enterprise, and in Hawaii democracy is taken with considerable literalness. Consequently the processes through which the Capitol passed in becoming an actuality are of more than usual interest. Citizen representation was a part of the architect selection and of the design study. The governor appointed a Capitol Architect Selection Committee in 1959 when statehood became a fact, requesting it to interview and recommend architects for the Capitol. The committee selected the Honolulu firm of Belt, Lemmon & Lo and the San Francisco firm of John Carl Warnecke & Associates (all but one of the joint venture groups were combinations of local and mainland





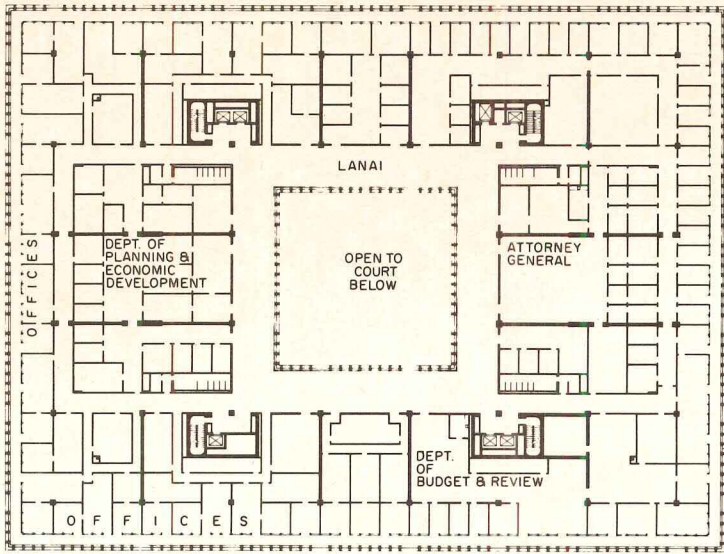


firms). The governor then named an Architects Advisory Committee, made up of members from the earlier committee, to act as liaison to the architects for the state. Although not broadly representative, the committee had a special virtue: it knew its deficiencies, and to make up for them appointed an architectural advisory committee—Pietro Belluschi of Boston, Leonard Hunter of the General Services Administration, and Honolulu architect George J. Wimberly. The advisors' unanimous endorsement of the design (presented in February 1961, five months after selection of the architects) spearheaded the enthusiastic approval of the governor and legislators. Funds for construction were not appropriated until 1964, however, and in the intervening period there was time to determine that a master plan for the civic center was vitally needed.

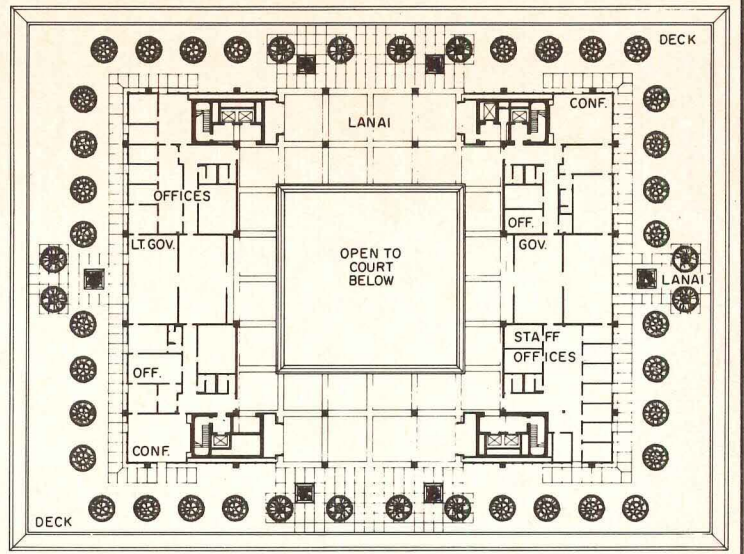
It was increasingly clear that the site chosen in 1959 for the Capitol building (at the insistence of downtown business interests who could see the advantage of having the Capitol nearby) was too small for so important a building, and that a master plan, although late and coming in reverse order from the usual, was es-

sential to assure harmony among the many elements of the center and unity in its over-all development. Because the site selection had been controversial and because the Capitol committee had not been broadly representative, the governor this time appointed a Citizens Advisory Committee on the Civic Center, with members representing over 40 organizations, and paralleled it with a Policy Committee made up of Federal, state and city officials, since all three levels of government would be included in the center. Thanks to the master plan, and to those who made it and approved it, the Capitol and Iolani Palace will eventually have the setting they deserve.

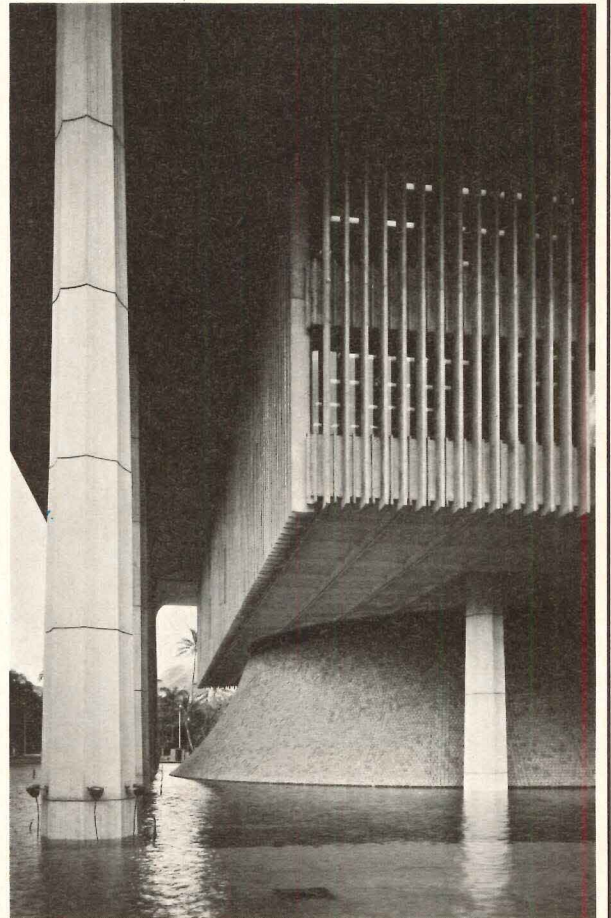
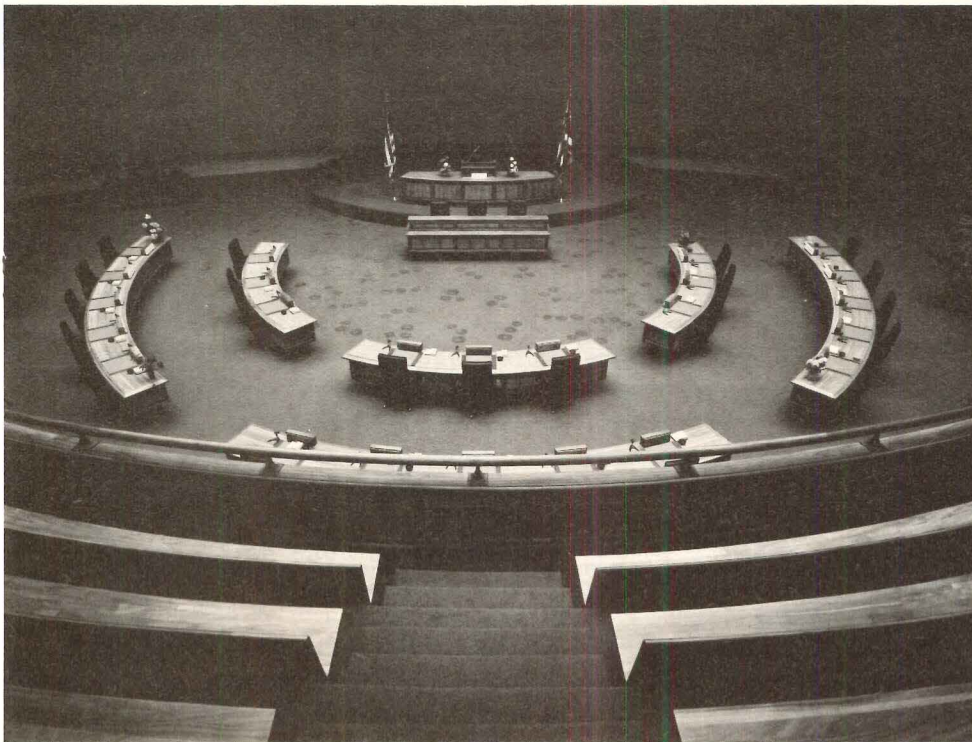
HAWAII STATE CAPITOL BUILDING, Honolulu. Architects: Joint venture of *Belt, Lemmon & Lo* and *John Carl Warnecke & Associates*—*John Carl Warnecke*, architect in charge of design; *Cyril W. Lemmon*, architect in charge of project development; *Donald Fairweather*, project manager (*John Carl Warnecke & Associates*); structural engineer: *Donald T. Lo*; mechanical engineers: *Soderholm, Sorensen & Associates*; electrical engineers: *Nakamura, Kawabata & Associates*; civil engineers: *Belt, Collins & Associates*; landscape architect: *Richard Tongg*; general contractor: *Reed & Martin, Inc.*



FOURTH FLOOR (DEPARTMENT LEVEL)



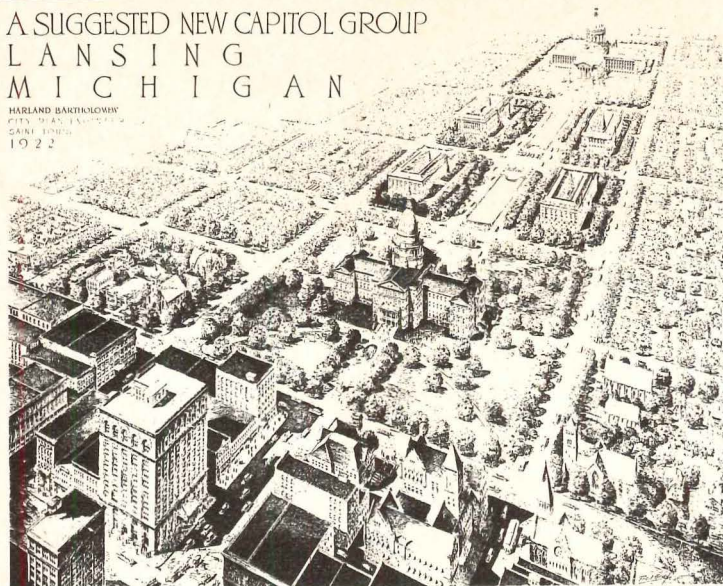
FIFTH FLOOR (EXECUTIVE LEVEL)



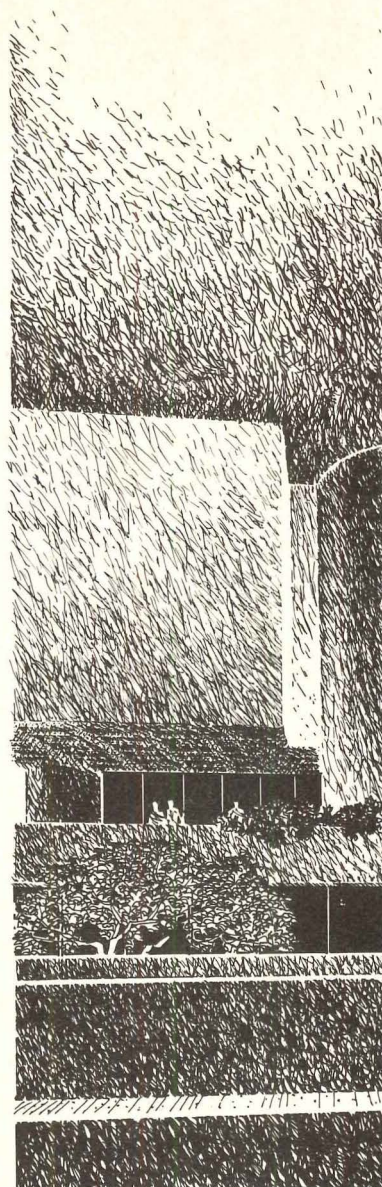
Although the floor level of the two chambers is below ground, most of the volume of these great rooms is not. The curved outer walls rise from the pools in conical form (above) which is truncated by the two legislative floors suspended from the fourth (departmental) floor. Tapestries are to be hung on the curved wall of each chamber, and chandeliers are being commissioned as works of art. Colors in the Senate are blues and greens; in the House, earth tones are used. Panelling is Hawaiian koa wood. Columns are spaced 45 feet o.c. and are 6½ feet in diameter at base, 4½ feet at top. The building cost \$21,103,724, including underground garages and landscaping.

A SUGGESTED NEW CAPITOL GROUP  
LANSING  
MICHIGAN

HARLAND BARTHOLOMEW  
CITY OF LANSING  
SAINT JOHN  
1922



Balthazar Korab photos



Though determined by analysis of the state government's projected expansion needs, location of the new Capitol, at the end of an office mall extending west of the existing Capitol, harks back to a similar scheme (above left) developed as part of Lansing's first master plan. The rendering at right shows the entrance to plaza level between the buildings housing, respectively, the Supreme Court and the governor's executive offices.

## Michigan State Capitol: symbolic separatism, practical unity

"I believe the Capitol, the area and other facilities required for the operation of the principal functions of the three constituted branches of Michigan's government—legislative, executive and judicial—have had more constructive attention over a longer period of time by state officers, legislators, state committees and commissions and by citizens, both as individuals and groups, than any other state project."

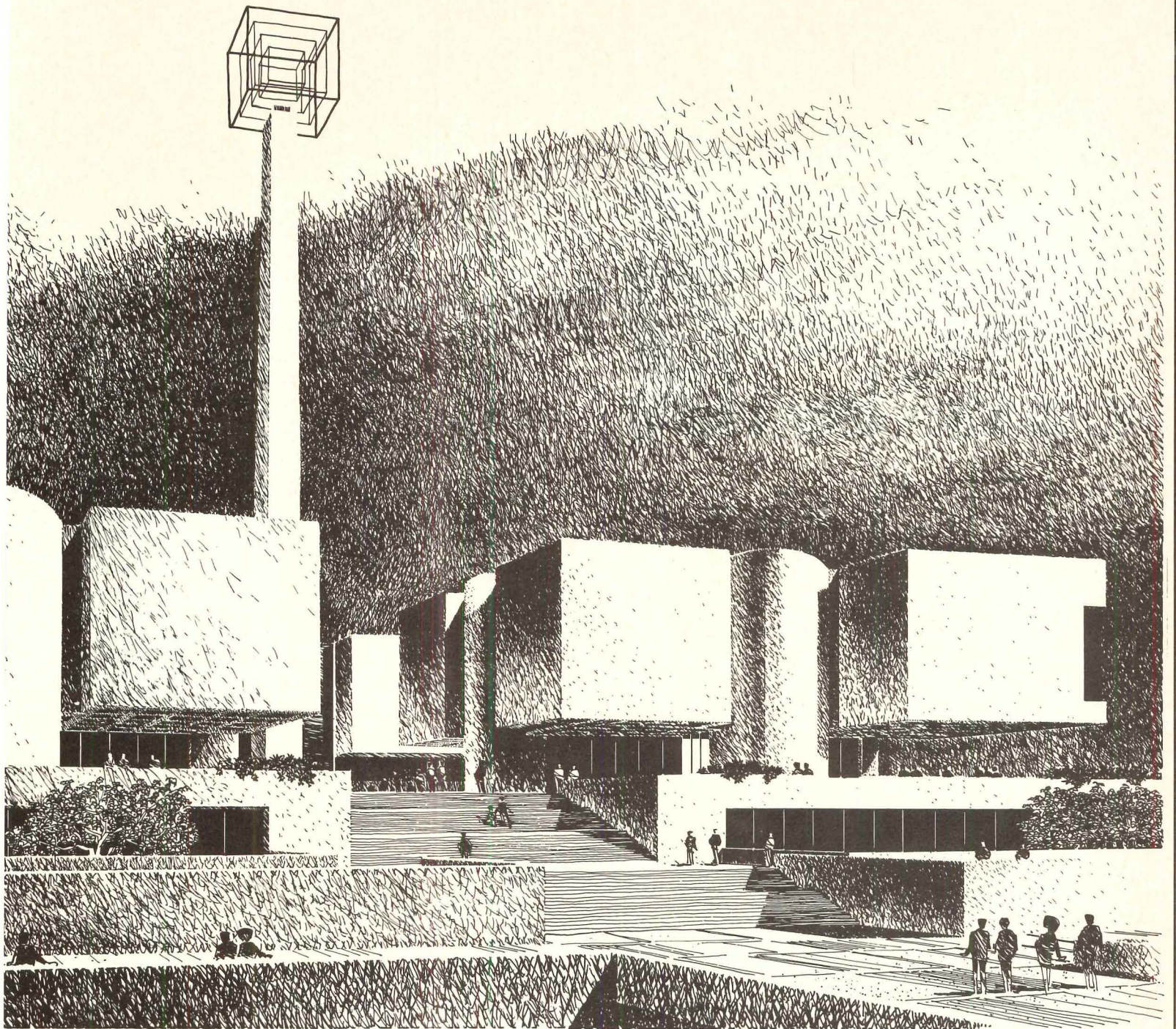
*A. N. Langius, Director, Building Division, State of Michigan*

There is perhaps no public building quite so public as a State Capitol, which, like Michigan's, must at the same time meet the direct requirements of 3,000 immediate users, serve as capstone and focal point for a government office complex master-planned to house a projected 15,000 state employees—and nourish the public pride of some 8.63 million private citizens.

Nor, as State Architect Langius indicates, is such a building

easy aborning. Appropriation by the State Legislature of the \$5 million requested by Governor William G. Milliken to move the proposed \$50-million scheme through detailed planning to construction start would mark the end of the beginning of a process of study and planning, review and revision, which has spanned—albeit with lengthy intermissions—almost half a century.

The earliest scheme for the so-called Capitol Development Area, recently unearthed and strikingly similar to the present one, reaches back to 1922, when urban planner Harland Bartholomew prepared for the city of Lansing an over-all master plan, including the capitol vicinity. Predicting the eventual need for a new State Capitol, Bartholomew recommended that, when the time came, it be located—as the proposed Capitol is—several blocks west of the old Capitol, with "the intervening blocks . . . developed as a mall, with subsidiary state buildings ranged on either side"—as called for in the current master plan by Smith, Hinchman & Grylls.

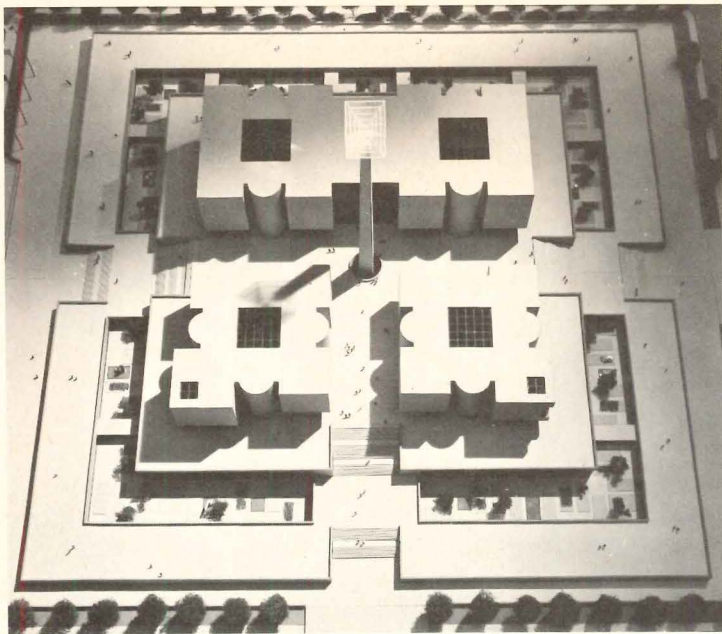


At a time when the Legislature was able to conduct its business in leisurely 60-day sessions every other year, and the burdens of other branches of government weighed accordingly, the suggestion that the affairs of state might require physical expansion on so grand a scale perhaps seemed less farsighted than far-fetched. But by 1937, the state government's growing pains were severe enough to prompt the establishment of a special State Capitol Building and Grounds Commission to study impending expansion needs. Working closely with Harland Bartholomew, who had concurrently been ressumoned to update the city's master plan, the Commission recommended the development of a state office complex immediately adjacent to the Capitol building, on the east-west axis originally envisioned by Bartholomew, but no action was taken to implement the Commission report.

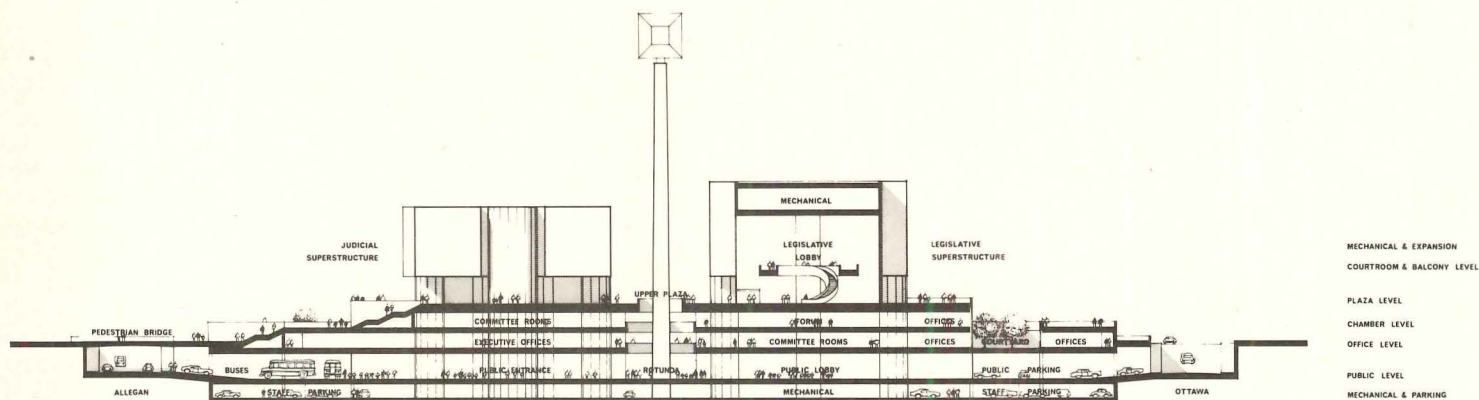
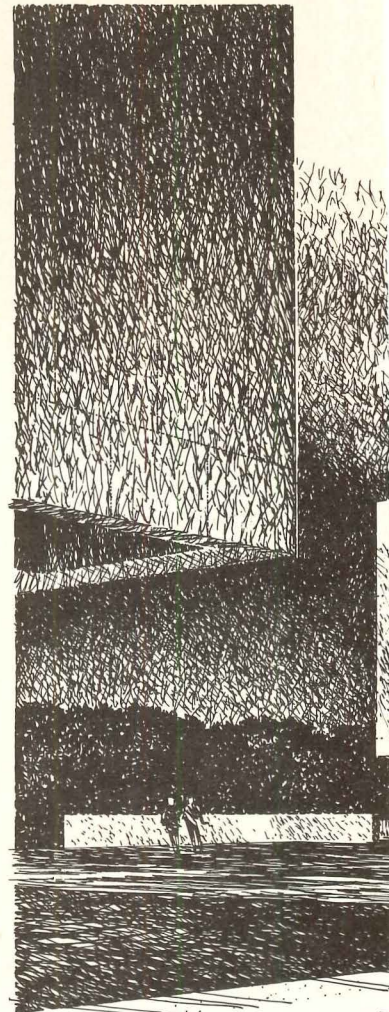
Meanwhile, the state grew and prospered; the demand for state services proliferated; and the corollary need for increased governmental space became acute. Thus, in 1943, the state called on the Detroit firm of Smith, Hinchman & Grylls to carry out the first of a series of studies that evolved over the next 25 years into

the current master plan calling for a greatly enlarged Capitol Development Area and construction of a new Capitol building. The initial commission entailed an inventory of the state government's existing facilities and a projection of future needs, plus the devising of a scheme that would consolidate all state functions in the Capitol complex. SHG's proposal for concentrating necessary expansion in a four-square-block area directly behind the existing Capitol was accepted. Land acquisition was begun, and elaboration of the basic scheme moved forward until 1952 when, with one of four buildings in the proposed complex completed and three others ready for bid, the project ran aground on financial shoals.

In 1963 it was refloated. But by then almost ten years had elapsed and prudence suggested a rechecking if not a recharting of the project's course. So at the request of then-Governor George Romney and the Legislature's Joint Capital Outlay Subcommittee, chaired by State Senator Garland Lane, Smith, Hinchman & Grylls undertook the re-evaluation of the earlier Capitol Area master plan and, later, the development of a new and more comprehen-



In essence, the over-all Capitol scheme (model photo, left) consists of three separate structures—a legislative building with House and Senate chambers flanking a central lobby, and smaller buildings for the judiciary and executive—superimposed on a four-block-square edifice roofed by a granite-paved plaza (drawing right). As the sections below show, the complexities of a program calling for offices and related facilities, plus off-street parking, in an almost three-to-one ratio to ceremonial and public spaces, were resolved largely by concentrating the working areas of the building in the four levels below the plaza—a solution that also allows convenient functional relationships between governmental branches at the same time it preserves their autonomy.

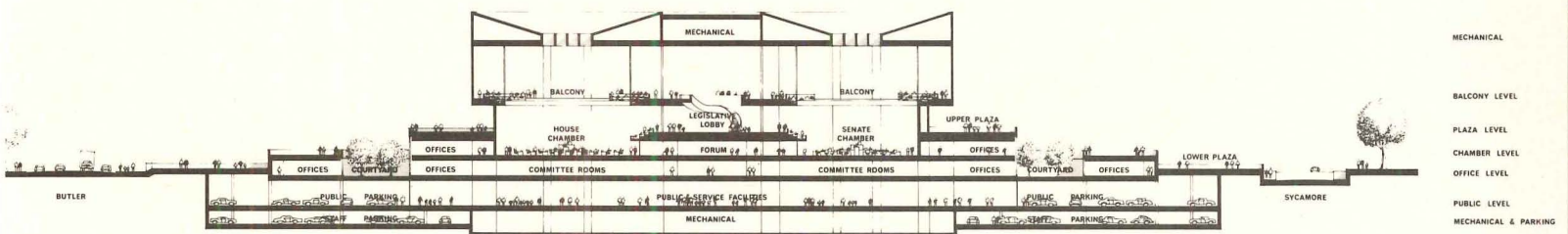
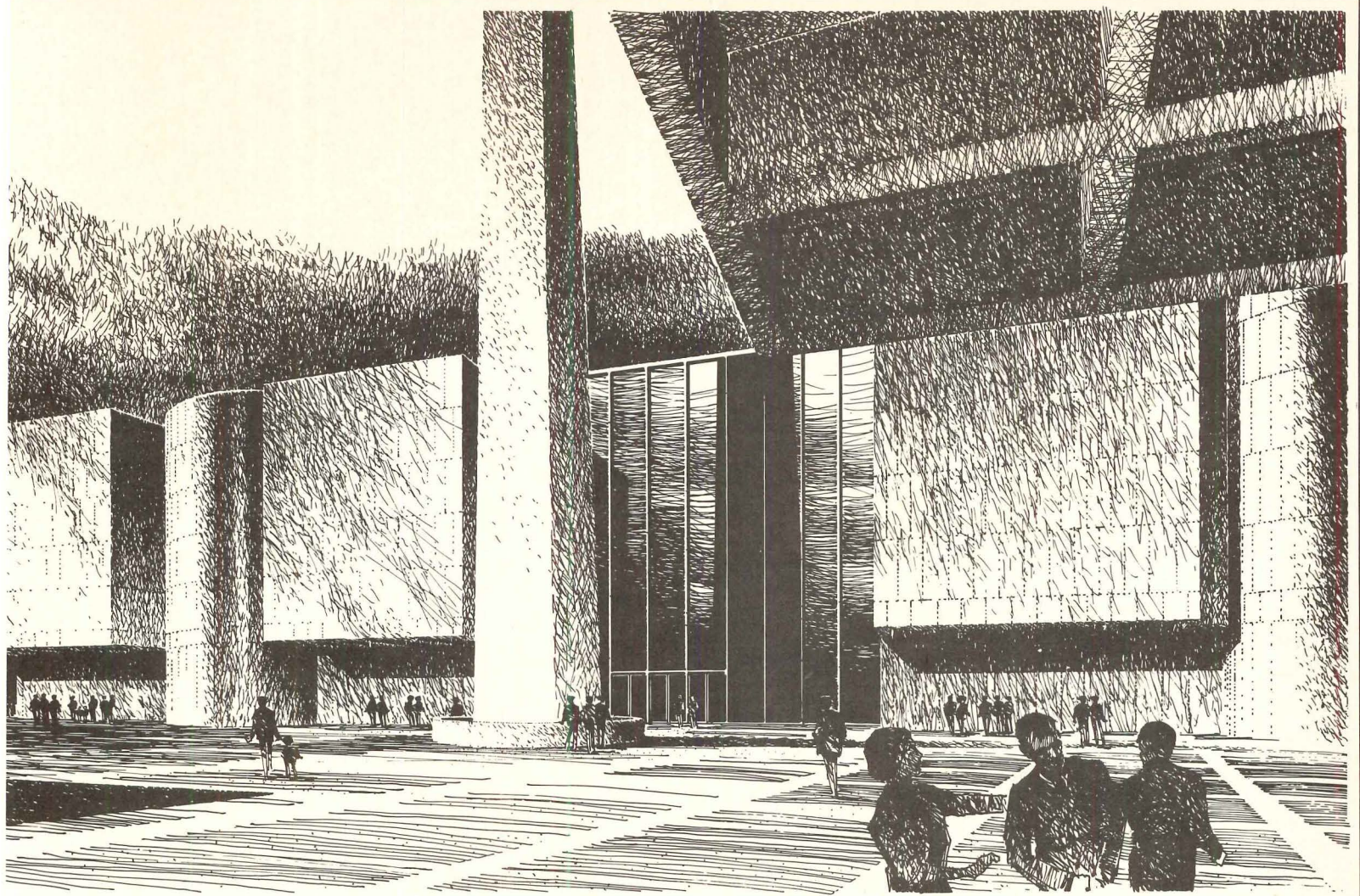


sive one, from the standpoint of two fundamental concepts. First, to prevent the Capitol area's becoming an automobile dumping ground, parking was to be provided within the complex, even though this entailed the scrapping of completed drawings for several buildings already planned for the area and their replacement by a similar grouping underpinned by below-ground parking. Second, to realize the goal of concentrating the primary functions of state government in a central area in the central city, the previously-allotted 10½-acre site was to be expanded to some 75 acres, even though this entailed a long, and still incomplete process of assembling the required land.

Then as the new master plan and first-stage construction got underway, the long-simmering question of What To Do About The Capitol was brought to a boil by the long-suffering occupants of an 1878 building, which by 1966 was not only dowdy but dangerous, and SHG was asked to investigate possible alternatives. Initially, it was assumed that if other occupants vacated, the building could be rehabilitated to accommodate the Legislature and the Governor. Preliminary estimates of space requirements, how-

ever, soon proved this optimistic: to meet projected uses adequately, the Capitol would have to be extended or added to, as well as renovated. According to the architects' studies, renovation and remodeling alone would cost up to \$10 or \$12 million; additional space requirements would swell the total bill to some \$35 million. Further, it would obviously be necessary for the Legislature and Governor to shift operations to temporary quarters for the three years or more required to complete work on the Capitol, at substantial cost in cash as well as inconvenience.

In view of these considerations, Smith, Hinchman & Grylls were asked to shift their investigations to the cost and feasibility of housing the Governor and Legislature in a new Capitol on a new site, instead of tinkering with the old one or replacing it with a new building on the same site, and they duly proceeded to produce what designer Sigmund Blum wearily refers to as "endless" schemes in differing degrees of refinement. Of these, five principal schemes were developed in sufficient detail (and with variant treatments) for careful scrutiny by the Governor and the Legislature's Capital Outlay Subcommittee.



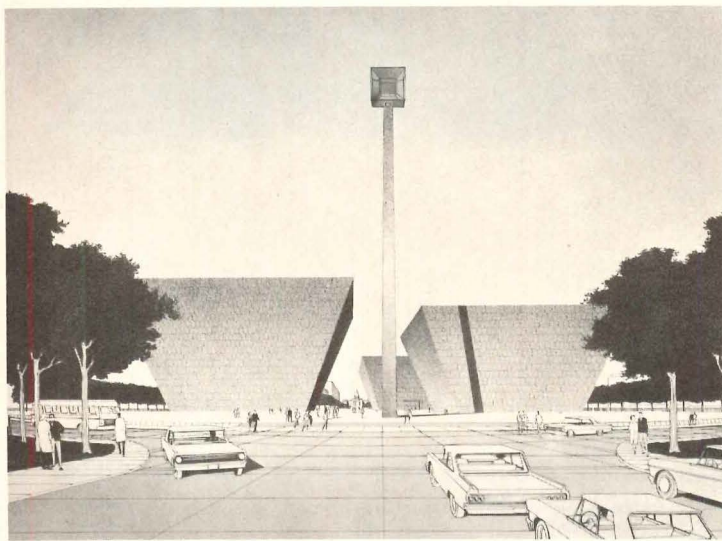
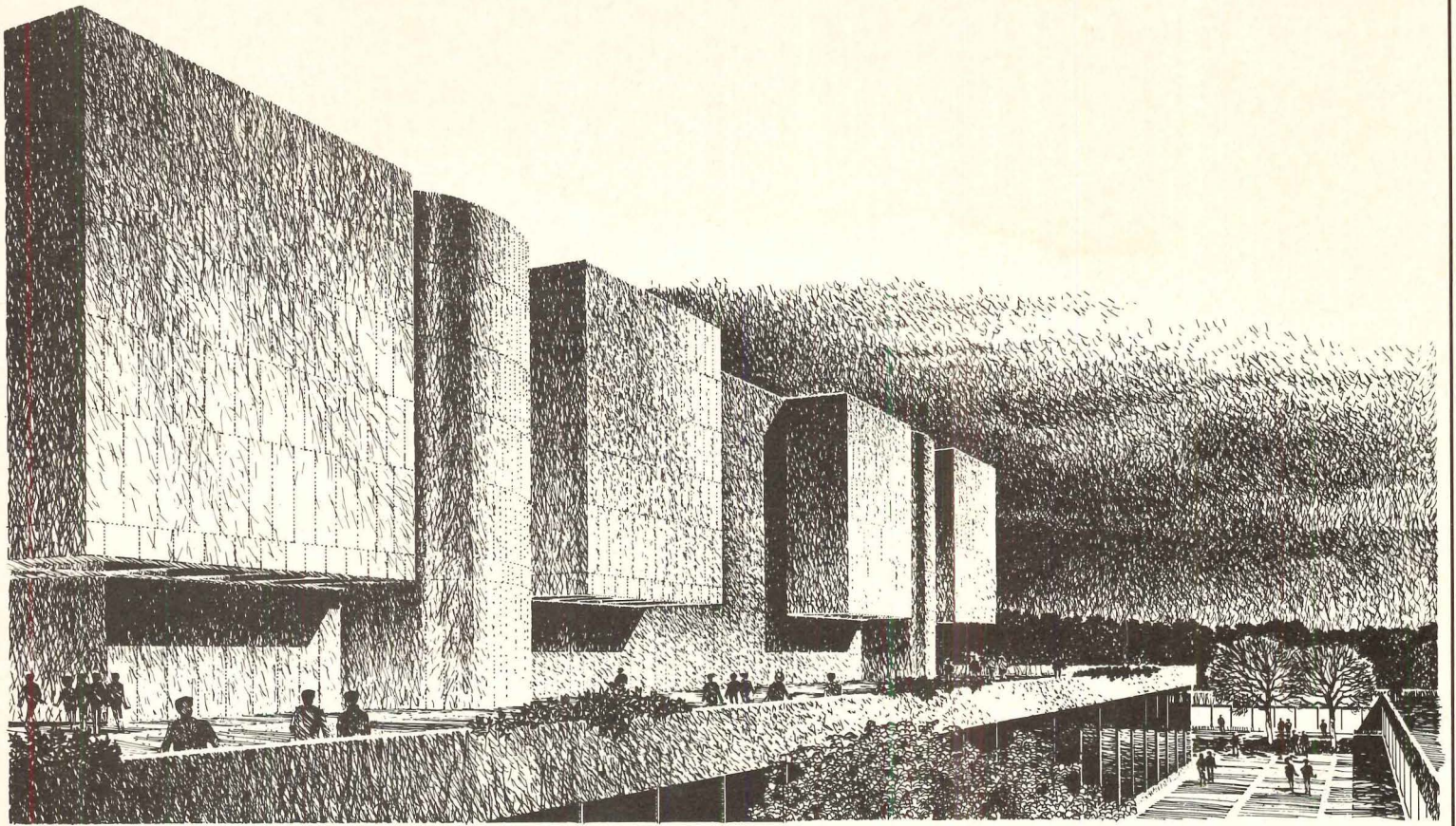
None won unanimous acceptance. Discussion of the schemes—and particularly of one in which House, Senate, and Governor were each to be housed in separate inverted pyramidal structures on a common plaza—did, however, spark the evolution of a quite different functional concept. And the architects found themselves, almost two years after beginning studies for the new Capitol, with a quite different program.

The new concept, on which the current scheme is based, retains the basic principle underlying the earlier "inverted pyramid" scheme: the direct physical expression through three separate structures of the differing primary and ceremonial functions of the governmental bodies housed within. But instead of the two chambers of the Legislature plus the Executive, the new tripartite scheme reflects the more fundamental division of government into its three constituted branches—legislative, executive, and judicial—a change which required, among other complications, the accommodation of over 100,000 square feet of additional building space on the same four-square-block site.

The architects' response to the new brief is a seven-layered

structure that consists essentially of three buildings—a doubled cube for the legislature and two single cubes for the Supreme Court and the Governor's executive offices—rising above a plaza which roofs a fourth. The base of the edifice is two subsurface layers providing parking for 1275 cars, mechanical and electrical space, and, on the upper of the two, public hearing rooms, the state law library, a cafeteria, and other auxiliary and service facilities. Above this, two additional levels contain legislative offices ringing a perimeter court, meeting rooms and allied working areas, and the House and Senate chambers.

The plaza level, reached from the street by sweeping stairs on all four sides of the complex, provides formal access to each of the three buildings superimposed on it, the upper portions of the buildings themselves being cantilevered from semi-cylindrical support towers which double as vertical circulation space. In the case of the legislative superstructure, the only "working" elements are the central legislative lobby and the public galleries circling the two chambers: the bulk of the enclosed space simply soars upward from each chamber's sub-plaza floor to a skylight four



Drawing of street facade of legislative building (above) includes view of interior court which opens to glass-walled legislator's offices around the perimeter of the base structure. Semi-cylindrical elements rising from plaza contain elevators and stairs, and support the cantilevered superstructures.

Genesis of the current tripartite scheme was the grouping of three inverted pyramids at left, though in conformance to the original program, which omitted Supreme Court facilities, individual structures in this early concept were to accommodate only the executive and the two houses of the legislature.

stories overhead. In the other two buildings, however, ceremonial space is limited to the skylit main lobbies, and the Governor's office and reception room and the Supreme Court courtroom respectively, with the rest of the superstructures devoted to offices and related facilities.

Apart from the guiding theme of making visually explicit the functional elements composing the Capitol building, the architect's principal design concern was to reveal to the public not only the ceremonial, but so far as practicable, the everyday aspects of the democratic process. The former goal is clearly stated by the individual structures housing governmental branches; the latter is expressed more subtly in the public facilities provided, in the attention given to patterns of public access and circulation, in the arrangement of the legislative chambers to make activities within readily visible (without allowing public entry to the floor), and in the opening of legislative offices to an interior court.

Thus there is a certain irony in the public and press reaction which politely dubs the building "monumental," and, more pungently, "fortress-like." And the irony is increased by the fact

that while the building is indeed monumental, it is by no means as overpoweringly massive as its vital statistics would suggest. Any building containing 1,374,000 square feet of space (including 550,000 square feet of parking) is big. Yet by tucking away much of its bulk below the plaza level and spreading it out over the whole of the four-block site, and by carefully grading the transitions from street to plaza, the architects have managed to keep its superimposed portions to a scale that is both humanly comprehensible and in keeping with the over-all scale of the area.

In the long run, the significance of the concept may prove to lie in its thoughtful and conscientious attempt to solve a problem becoming increasingly common as governmental functions burgeon on all levels: that is, the reconciliation of the ever more complex practical requirements of modern government with the equally valid requirement of preserving the traditional role of the seat of government as a public symbol—but one looking to the future rather than appealing to a nostalgic past.

MICHIGAN STATE CAPITOL, Lansing. Architects and engineers: *Smith, Hinchman & Grylls Associates, Inc.*—director of design: *Sigmund F. Blum*



# URBAN PROCESS: PLANNING WITH AND FOR THE COMMUNITY

by Edmund N. Bacon

*An architect who has spent  
all his professional life in city planning  
argues for "the community value review"  
as an essential ingredient in  
the process of effective planning*

Architect Edmund Norwood Bacon has been executive director of the Philadelphia City Planning Commission since 1949, a period of internationally-recognized accomplishment in the redevelopment of Philadelphia. Mr. Bacon's strongly-architectural philosophy of planning as urban design (and vice versa) has been extensively described in his book "Design of Cities" (Viking, 1967) and in articles in ARCHITECTURAL RECORD ("Downtown Philadelphia: A Lesson in Design for Urban Growth"—May 1961; and, from the book, "The City as an Act of Will"—January 1967) among other publications. Mr. Bacon was educated at Cornell University (B.Arch. 1932) and (under Eliel Saarinen) at the Cranbrook Academy of Art. He is a Fellow of the American Institute of Architects and a member of the American Institute of Planners. This article was first published in the Fall 1968 issue of Daedalus, the Journal of the American Academy of Arts and Sciences, and is reprinted here by permission.

The failure of cities is an intellectual one. It is brought about by the failure of the intellectuals to generate a viable concept of a modern city and a modern region. Attempts are made to deflect attention from this bald fact by laying the blame on politics, on lack of money, on any cause but the root one. Of course, all these things play their role in the total process, but until there is generated a vivid and impelling concept of what we are fundamentally driving at, the other factors cannot play their role in the total process.

In the present atmosphere, not only is the root issue—basic concepts and ways of thinking—not discussed, but it is considered slightly disreputable even to bring up the subject. The happy assumption is made that we already know how to think, and that all would be solved if only someone would listen to us. I maintain that the great majority of our discussions of the urban problem deal with secondary manifestations rather than root causes. Current teaching in the universities has much to do with this. Until we get over our insistence that everything be reduced to the comforting specificity of manageable numbers before we even consider it, until we stop using the term "intuitive" as a means to kill in the bud any creative thinking, we will not get very far along the road to dealing with the basic issues implicit in the urban crisis.

The basic structure of assumption used by the liberal intellectual today as the springboard for his actions is largely dominated by concepts inherited from the revolutionary days of the New Deal (the middle 1930's). Circumstances have changed so much since then that these concepts are not only no longer relevant, but inhibitory to clear thinking.

It was natural and inevitable that at the very spear point of the effort to overthrow the accumulation of deeply embedded and widely held reactionary concepts, the basic issues would be reduced to crude slogans capable of seizing the rather torpid public mind, and so generate action. Unfortunately, many of these slogans have hardened into concepts that have become working tools of minds trying to deal with the highly involved processes of contemporary life.

**"The failure of cities is an intellectual one... brought about by the failure of the intellectuals to generate a viable concept of a modern city and a modern region..."**

Key among these slogans was the categorization of vast numbers of human beings into one clearly identified class, marked with a pungent label for easy handling.

"One third of a nation, ill housed, ill clothed, ill fed," was the kind of shocking revelation that was needed by the American people in the thirties, but the by-product has been the establishment of an intellectual model in which people disappear as individuals and become members of a vast, statistically quantifiable, but faceless uniform group. This model is all too prevalent in the background of the discussion of social problems today, even on the part of intellectuals. The restructuring of thought and the restructuring of social programs so that each person and each family group are seen and treated as individual identities with their own special characteristics and needs are painful and revolutionary, but must be accomplished if we are to get on with solutions to the problems of cities.

One concrete expression of the categorization of the "ill-housed, low-income group," both as an intellectual model and a legal entity, has been the construction of vast, institutionalized public housing projects to replace the "slums." Individual families are uprooted from the individual and unique positions that they occupy in the complex of their social community, however undesirable some of these positions may be. They become one of a series of families on an essentially uniform basis. It is very much easier intellectually to categorize areas as "unsafe and unsanitary," to recommend their destruction and replacement by "safe and sanitary dwelling units," than it is to deal with the reality of the problem on an individual basis for each individual family where it exists. It requires a far more rigorous intellectual discipline to think of solutions on the latter basis and a much more vast and skilled administrative arrangement to bring them about. Yet, curiously, that approach, if it could be clarified, would probably elicit a more sympathetic political reception than does the present one. The elected representative, the politician, the community leader, indeed the Black Power advocate, is denied the opportunity to champion such an approach to the problem of cities because the intellectual has failed both to structure it into a viable and communicable conceptual model and to suggest possible action programs geared to its basic tenets.

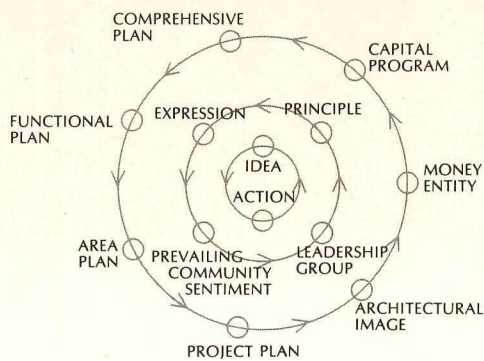
Another manifestation of the New Deal is the "demonstration project"—witness the Greenbelt towns, the slum clearance projects, the rural resettlements. This was not only a pardonable, but a relevant and desirable concept in the 1930's. To accept this as the basis for vast public programs in the 1960's is officially to acknowledge that we still are incapable intellectually

of coming to grips with the totality of the problem, an admission that is not appropriate for the present day.

Virtually the entire legal, intellectual, and administrative base of the redevelopment and urban renewal programs throughout the United States is based on the intensive treatment of a fragment of the problem. Any attempt to recast thinking about the program so that it deals with the universe of the problem runs counter to the interests of both the administrative and intellectual adherents of the program and meets massive resistance. Again, the intellectual strain required to conceive, define, and plan the "completely renewed" community is far less than that incurred in the line of thinking contending that fragmented demonstration projects simply prove we are spending more and more money in less and less area, and that from such an approach we will never get on to dealing with the total environmental problems of those who live in deteriorated areas. Thus, we should undergo the intellectual wrench of abandoning old, comforting, but outworn models of the familiar "good neighborhood" and create entirely new ones of environment and process in which every individual benefits from our efforts to do something about blight. Here, again, such basic intellectual restructuring and restatement of the nature of the problem and its possible solutions are the necessary precursors to effective political action.

A third, unfortunate, surviving result of the 1930's "liberalism" is the stereotype of private enterprise as the enemy. This has so soaked into the thinking of many who are working on the urban problem that it acts as an insulator, inhibiting a valid interlock between the intellectual and technological insights that private industry and its research arms could bring to understanding the problem of slums and the energy and action that the great corporations are capable of in the solution of these problems. Again, we face an inadequate, but prevalent stereotype that the technicians and the public administrators should write the specifications for what should be done in an atmosphere untainted by any vestige of vested interests, and that these should then be put out for competitive bids by private enterprise. This approach has already been proved to be unworkable in the development of space programs. In the case of cities, it must be replaced by a process in which government officials and private enterprise explore the nature of the problems together. Out of the combined structuring of the problems can come tremendous new energies, financing, research, construction, and deepened insights into new ways in which elements of the private enterprise sector can interrelate with one another and connect with the real problems in the field in their total extent, as revealed by a working association with the people

**"Virtually the entire legal, intellectual and administrative base of the redevelopment and urban renewal programs... is based on the intensive treatment of a fragment of the problem..."**



who have them.

The problem of the American ghetto can be solved only when the resources of the private enterprise system are redirected back into these areas. The time is ripe for a massive overture from government to the private enterprise system for help in the problem of cities. The corporations are now receptive to such an overture and are prepared to respond. But the value will lie in a new kind of association, and this also, at its root, must grow out of a new intellectual concept.

It is usual to stop at this point, and it is much more pleasant to do so because so far there is little that can be attacked. I shall go on, however, to state three basic principles that I think to be important, thereby providing ample material for others to tear apart. By this very act, the process of assertion, controversy, and feedback may be helped to move a little closer to the core issues.

Despite protestation to the contrary, most planning and urban development thinking is based on the linear notion of a sequential progression from goal formation to getting the facts, to analyzing the facts, to the formation of alternative plans, to the selection of a plan, to implementation. This has as much connection with the total process of city dwellings as did the geographical comprehension of the persons in the fifteenth century, whose limited experience led them to the conclusion that the world was flat, has to the real circular world.

*Until there is general understanding of the process of hypothesis formation, its injection into the tumult of democratic dispute, the generation of feedback, and the restructuring of the hypothesis in the light of that feedback, in an ever recurring cyclical interaction, little progress will be made in achieving a viable relationship between the intellectual and actual decision-making, and indeed, in the very formation of viable concepts.*

Under this system the planner views himself as the source of idea formation. The ideas are then injected into the field of action where they are acted upon by the people affected through democratic institutions. Parts of the original concept are rejected by the people, parts are accepted. The product of this process is a series of fragmented elements to which new elements must be added and the whole restructured into a new hypothesis for a next go-round of democratic feedback. After the fourth or fifth trip around the cycle the elements that pass through the screen of democratic approval accord more and more closely with the value system of the people in the community. In the process, the idea-formulator himself has been tempered by the heat of his confrontation with his peers, and he himself, perhaps unwittingly, has become a more sensitive instrument more closely attuned to community values.

This process, indicated in the chart, can be further refined by distinguishing, both in idea formation and in the field of action, the general and the specific. In idea formation there are the basic principle or root idea and its expression in specific proposals or projects. The development of the expression and its testing in the field of action expose the strengths and weaknesses of the broad principle, which must then be reconsidered in the light of the experience gained with the specific application. So in the field of action there is the identifiable leadership group, an ever-changing but nevertheless finite collection of people who make key decisions. In addition, there is the great mass of the people of the city, each an individual, yet each contributing to a collective state of mind, a general attitude, a prevailing community sentiment. Here again, each of these influences the other. Neither is captive of the other, and the viewing of these two in constant cyclical interaction is helpful in overcoming many of the rigid sequential concepts we have inherited in this area.

When viewed in this light, the process is not that of preparing a series of different alternatives, which relieve the planner of the necessity of thinking through the hard issues and making firm decisions, thereby escaping the most essential and disciplinary stress of the planning act. Rather, the process is seen in the binary system of the computer. The exposure of the ordered hypothesis to public attack paves the way for the division of it by the public into a series of aspects, according to the public value system. The public systematically accepts or rejects each of these separate aspects as it sees fit. *It is then the task of the planner to pick up those aspects that survive the community value review, to restructure a hypothesis using these aspects and adding such additional elements as are necessary to create a new and enlarged system of order.* So the process is repeated on and on. If done with technical competence each time, a larger proportion of the facets of the hypothesis go through the feedback filter, until finally a system of order is developed not by the planner nor by the community, but as a product of the interaction between each that is sufficiently attuned to prevailing community values (as affected by the confrontation with the planner) that it becomes the basic directive for action on a large scale.

Under this approach sequence is irrelevant, just as irrelevant as the sequence in which the light beams pass through the various points on a television screen. Everything is seen as virtually simultaneous cyclical interaction, the process of idea formation with community feedback. So also, the idea formulator sees himself and his role very differently than he does under the linear approach.

First, he recognizes that a tremendous deepening and enlarging of the original hypothesis will

**"Until there is general understanding of the process of hypothesis formation, its injection into the tumult of democratic dispute, the generation of feedback, and the restructuring of hypothesis in the light of that feedback, little progress will be made..."**

**"...a system of order is developed not by the planner or the community, but as a product of the interaction between each that is sufficiently attuned to prevailing community values ... that it becomes the basic directive for action on a large scale..."**

**"The key issue is to see cities and regions in terms of growth process, ... and to see the planner as one participant in a total cyclical process of democratic interaction rather than as the manipulator of absolutes ..."**

occur as a result of the feedback. Therefore, he recognizes at the outset that his hypothesis will be incomplete. Rather than spending huge sums of money and time on feeding every possible factor into the hypothesis before it is tested, he tries to make a powerful structure of the most essential ideas with the full confidence that enrichment and extension will occur in the restructuring process as a product of feedback.

Also, instead of attempting to determine before hypothesis formation the full range of community values by such artificial techniques as opinion polls, he respects the capacity of the community to accept and to reject those parts of his hypothesis that do or do not correspond with their value system. Thus, he sees his role as that of presenting the community with the finest and most complete hypothesis he can create for a better environment. Under this approach, many of the questions that plague academic discussions of planning issues disappear, and *the issue of viable hypothesis formation emerges as the dominant one for the intellectual.*

Unfortunately, the university, where most planners are trained, is the institution that has most systematically rejected the feedback principle and is most likely to continue to do so. The teaching profession in general has become removed from the field of action and, indeed, has tended to distrust it. This is not a question of "being practical"; it invokes the most essential part of idea formation. One consequence is a tremendous stress in education on the act of quantifying everything in a sterile pursuit of absolutes.

An illustration of this was the work on a new city in a foreign country supervised by one of our most distinguished educational institutions. In this case the economists projected the population of the city at half a million, and the computers determined the amount of land needed for shopping, housing, industry, schools, and so forth. The plan was drawn in precise accord with the quantities derived. When the economists changed their estimate of the future population, the plan had to be done over. Any kindergarten child could have told the planners that any city with a population of five hundred thousand started out much smaller and, having arrived at that point, would continue to grow to be somewhat larger.

**T**he key issue is to see cities and regions in terms of growth process, including expansion and decay down to the individual units, and to see the planner as one participant in a total cyclical process of democratic interaction rather than as the manipulator of absolutes. If this can be accomplished, it will represent a great revolution in educational thinking.

The time has come for universities to re-examine their relationships with the students in the light of these new forces. Key to the whole is

the development within the faculty of a respect for and confidence in the political process. The malaise that most faculties feel about politics reflects itself in such extremes as presenting advocacy planning as only a way of contributing to society's contempt for anyone who succeeds within the realities of the political process. This is partly engendered by the habit of enlisting graduate students for teaching jobs, thereby denying them successful experience in actual planning, an experience that would have supplied an essential ingredient for the formulation of their intellectual theories.

Somehow each university faculty should contain at least one person who has had a significantly successful experience in the administration of a planning program, preferably as a responsible governmental official rather than as a consultant (who by the nature of his relationship with the process is spared the ultimate accountability for his recommendations). If this cannot be done full time, the gap might be filled by getting such persons to participate in faculty discussion and to engage in part-time teaching.

Providing a real environment for student problems is most essential, but this should be connected with a public planning program so that the student sees a relationship between the field problems that he experiences and the government processes designed to correct them. This works best when there is an intimate relationship between the university and the local planning commission.

In Philadelphia, the Planning Commission, aided by a grant from the Smith, Kline & French Foundation, has established a program for hiring Master's candidates in city planning, urban design and architecture over the summer between their first and second year, and then keeping them on part-time over the last year with the idea of their taking a full-time job upon receiving their Master's degree if the association has proved to be rewarding to both the agency and the student. A valuable by-product of this program is the experience the student brings to the discussion with his fellow students over the second year. It tends to dispel the sense of unreality and even fear of reality that engulf so many educational institutions.

Particularly successful was a studio project in the second year of the Master's course where the subject was the renewal of a section of North Philadelphia which became a Model City area. Five of the students who worked on this academic project moved over into the City Planning Commission staff and continued their work on this area. The kind of involvement with the residents of the area which they had had as students was continued and intensified as they assumed the position of speaking for the government. If they are able or are asked to share their experience with the graduate students at the university now, they cannot help but give a sense of direction and an image of purposeful

**"The time has come for universities to re-examine their relationships with the students.... Key to the whole is the development within the faculty of a respect for and confidence in the political process..."**

action with which the students can identify.

The students recently graduated and those now in the universities have, in my opinion, a much higher motivation for social involvement and a much clearer picture of their purpose in the pursuit of their professional career than did their predecessors. It is critically important that the university and the operating planning agencies re-think and re-structure their programs and especially their interrelationships so that this new thrust on the part of the students is not frustrated, but provided with channels for its exercise. Insofar as possible, it should be directed toward the central points of decision-making and not dissipated in peripheral byways.

**A**nother inhibition to clear thinking about the plight of cities is the habit of thinking of "housing" in discrete quantitative terms as though "dwelling units" have their existence as manipulatable numbers rather than simply as fragments of an environment. This has led to many studies of numbers, based on "housing starts," "units to be demolished," and so forth, as though the individual structure could be shifted about as easily as the numbers used to represent it.

This type of thinking has led to the absurd situation where we think of family problems in terms of buildings, and we demolish the building and move the families to suit the convenience of the social and financial programs, rather than moving the abstract financial and social programs to accord with logical treatment of buildings and a rational and humane treatment of the individual families. Thus, instead of bringing the rent subsidy available under existing housing legislation to the people who need it where they already are (as integral parts of a complex community), we rip them out of their present environment and herd them all together in one great institution, the "public housing project." Then we throw them out bodily, children and all, if they succeed in bettering themselves and becoming a part of the American enterprise system. This is in contrast to *the simple idea of adjusting aid programs to the needs of the people where they are, rather than moving people to the convenience of bureaucratic programs*. Indeed, much of the basis of the entire national urban renewal and housing program is based on the convenience of the Washington file clerk.

By the same token, our thinking of structures purely in terms of numbers, as abstract, placeless entities, has led to an absurd situation in many cities. Thousands of vacant lots and derelict abandoned houses spread through hundreds of blocks of residential areas, crying out for new structures that would eliminate ghastly neighborhood hazards, that would infuse new life into neighborhood after neighborhood. Yet the public housing authority, following traditional molds of thinking, ignores

these immediately available open sites whose use would avoid relocation, and looks for project sites that mean political upheavals, physical demolition, and social and economic disruption because of the forcible uprooting of families involved.

The claim that negative "environmental factors" prevent our building new houses in these areas is totally untenable. In democratic America we cannot afford to delimit areas occupied by thousands of families as areas to stay out of. We must see the public housing program not narrowly from the viewpoint of the minority of the ill housed, who are its tenants, but rather as an instrument for getting at the root of the housing problem of everyone. This purpose can be furthered and strengthened by a shift from thinking based on housing units as abstract, placeless, mathematic entities to that concerned about the real and total environment of every underprivileged citizen in the entire city. This change of thinking perforce acts as a great catalyst, involving vast areas of social and economic programs in a systematic interrelation with the purely housing aspect of the problem. Given an underbase of a deep concern and understanding of the human need of the family not as a unit of an abstract category, but as a very real and individual entity, great energy will be released, and we will get on with the job in terms not of demonstration projects, but of an attack on the total situation.

**I**t has been amazing to observe the response of the various institutions and of the government to these basic concepts in Philadelphia. Mayor James H. J. Tate set forth in 1967 the fundamental principle of eliminating, essentially by rehabilitation or rebuilding for low-income occupancy (except where the land is needed for community facilities), all of the fifteen thousand or so vacant and open structures and the five thousand scattered vacant lots spread through some two thousand blocks in Philadelphia. Mayor Tate vigorously followed through with conferences with the Council in Philadelphia, with Congressmen in Washington, and with Federal administrators. Within the city government machinery, a process was set in motion to bid in tax-delinquent properties on a large scale, and even to have the city accept as a gift tax-delinquent properties on which it would write off the back taxes. The city obtained approval from the Department of Housing and Urban Development for a five thousand-unit \$70-million public housing program consisting of the rehabilitation of vacant and derelict scattered structures in North Philadelphia.

The city set up the nonprofit Philadelphia Housing Development Corporation and provided it with a \$2-million revolving fund to enable it to build and rehabilitate housing for low- and moderate-income families. This agency also facilitates property transfer to developers of rehabilitated

**"Another inhibition to clear thinking about the plight of cities is the habit of thinking of 'housing' in discrete quantitative terms as though 'dwelling units' have their existence as manipulatable numbers rather than simply as fragments of an environment..."**

**"... the simple idea of adjusting aid programs to the needs of people where they are, rather than moving people to the convenience of bureaucratic programs..."**

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housing for the Housing Authority. A number of local groups were formed by people in the areas, often centering in churches, to act as developers of rehabilitated housing under a variety of programs. The Smith, Kline & French Foundation provided the seed money and drive for the rehabilitation of some seventy derelict dwellings in the vicinity of their building, thereby supplying homes for two hundred low-income families.

Already several hundred vacant structures have been rehabilitated throughout a large area, giving positive demonstration to the possibility of achieving Mayor Tate's vision of the complete elimination of the cancerous sores that derelict structures represent. Within the framework of this new trust can be developed a wide range of different programs skillfully intermixed to get away from the institutionalism previously associated with public housing, to provide a variety of income groups and family structure in the same neighborhood, and to give a vehicle for rich participation to the people who live in the neighborhoods.

**A** mother with, say, three children under four, living in a blighted area and receiving welfare assistance in the form of aid to dependent children, may function in her own world with almost no ordering of time or space in the customary sense. Much of the family life will take place in a single room. There is no requirement to get up or go to bed at any particular time. It is likely that meals, in the sense of systematic punctuation of a time sequence, do not exist.

Along comes the Head Start Program. The mother must rise at a definite time, get the child dressed, feed him, and take him on a definite route through space to the focal point of the activity, the school or another institution. The mother identifies with this point in space outside her own home—as a meeting ground with others in the community.

The mothers learn that Head Start funds are exhausted and the program is about to be terminated. Together with mothers from other areas, they go to city hall to protest, thus identifying with another point in space, relating to another hierarchical level of community involvement. They learn in city hall that the trouble is in Washington; so the system of order with which they now identify is raised one notch in the systems level. When they learn that the cause of the curtailment of funds is the Vietnam war, they become, indeed, members of the world community.

This elementary review of the process of relating to an ever-enlarging system of order provides a microcosmic model for one of the most fundamental principles that should guide the planning of the physical environment. It is a primary responsibility of the planner of the environment to provide *focal points of identification, placed in sig-*

*nificant relationship to valid principles of social groupings and articulated architecturally so that they draw people to them, speak to the people in terms of their pre-conditioned sensory emotional and cultural responses, and engender a sense of pride in the community, a loyalty to the social entity which is the community, a feeling of identification with its purposes, a basic involvement.*

The process of articulation of the environment proceeds with the interconnection of these firmly established focal points in space by structured lines of movement—garden footpaths, greenways, parkways, malls, boulevards, or expressways. It includes the establishment of new points in space based on networks of enlarged systems of order: perhaps the district center that binds together a series of neighborhood centers, the city center, the metropolitan center, regional centers, national centers, and so forth. The function of design is to touch these articulated points in space with the quality of life, thereby engaging the emotions and loyalties of the people and setting into motion the process of identification with an ever enlarging system of order. In order for a planner or designer of the environment to do this, he must be engaged in his work and in his own life in a process of enlarging his own vision and the range of his capacities.

**O**nly at this point, after all these processes have been set into motion, is it possible to talk about elegance and beauty in the environment. Only as the designer himself—the architect, the landscape architect, the sculptor, the industrial designer, the graphic artist—is involved in these processes with his whole being will he be able to reflect and express the feelings and aspirations of the people whose environment he is building; with equal force let it be said that it is only as the designer, the artist, is involved in environment-building in a valid way will the environment he builds be a proper expression of the hopes of the people, be they of the very poorest.

And the final and most important element of all is the simple requirement that *the people who live there must, themselves, have a hand in shaping their own environment.* So foreign is this to our traditional ways of thinking that its carrying out will, indeed, require drastic changes in our customary way of doing things.

So, in my view, it is possible to create a noble and beautiful environment in cities that extends to all its parts, that engages the loyalty and pride of its citizens, that leads toward a greater sense of involvement than we have ever known. But in order to accomplish this, we must abandon many traditional ways of thinking. We must establish and nurture new kinds of concepts, and we must set in motion processes and systems of interaction out of which such an environment may, quite naturally, grow.

**“... Only as the designer, the artist, is involved in environment-building in a valid way will the environment he builds be a proper expression of the hopes of the people...”**



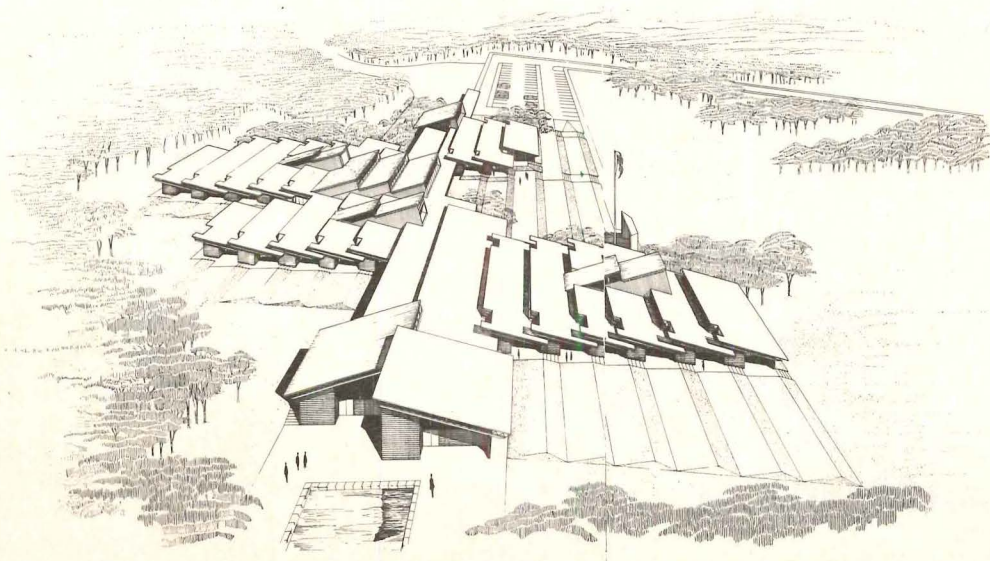
Joseph W. Molitor photos

## Site and program generate a new school shape

The program given architect Paul Rudolph for the John W. Chorley Elementary School required spaces adaptable not just to team teaching, but to a "continuous progress plan" that abolishes grade levels and separates children only by age. Within these groups, each child moves almost independently towards standards in each subject established by his own potential.

Rudolph's design reflects this program precisely. Three wings or houses (for age groups paralleling grades K-2, 3 and 4, and 5 and 6) step up or down the sloping site from a strong central spine. Other main blocks, shown in the perspective, are the gymnasium complex (foreground) and a fourth wing (right rear) for educable and trainable children. The stepped design relates not just to the program and the site, but to the teaching methods used (page 138) and the simple and low-cost construction system (next page).

Inside and out, the school demonstrates the sense of surprise, the seeming complexity but essential simplicity, and the three-dimensionality that mark so much of Rudolph's work.



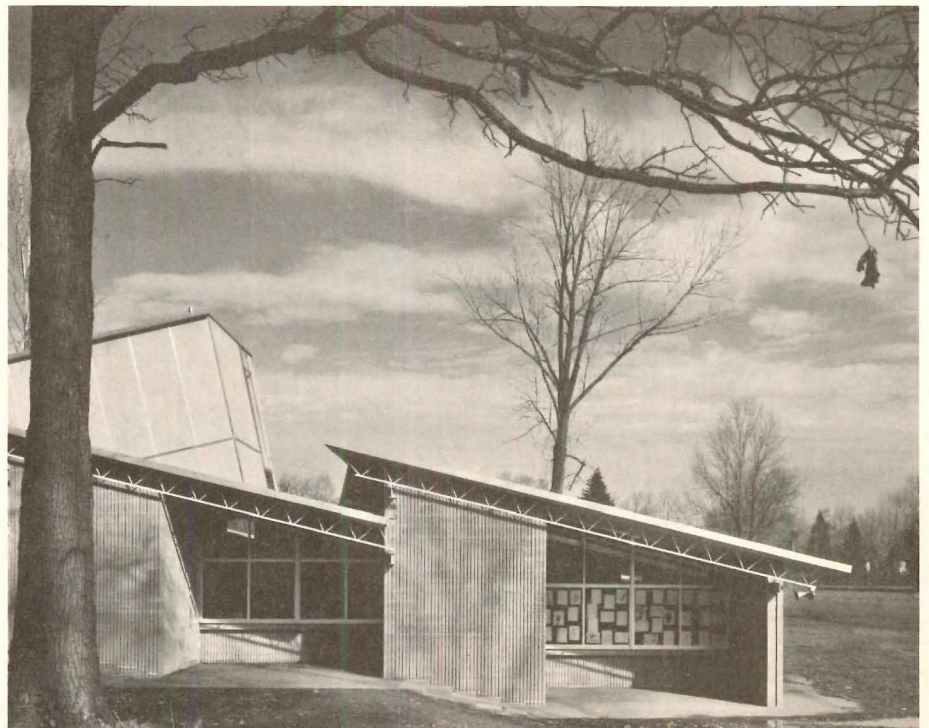


### A simple construction system suits the building's shape and the sloping site

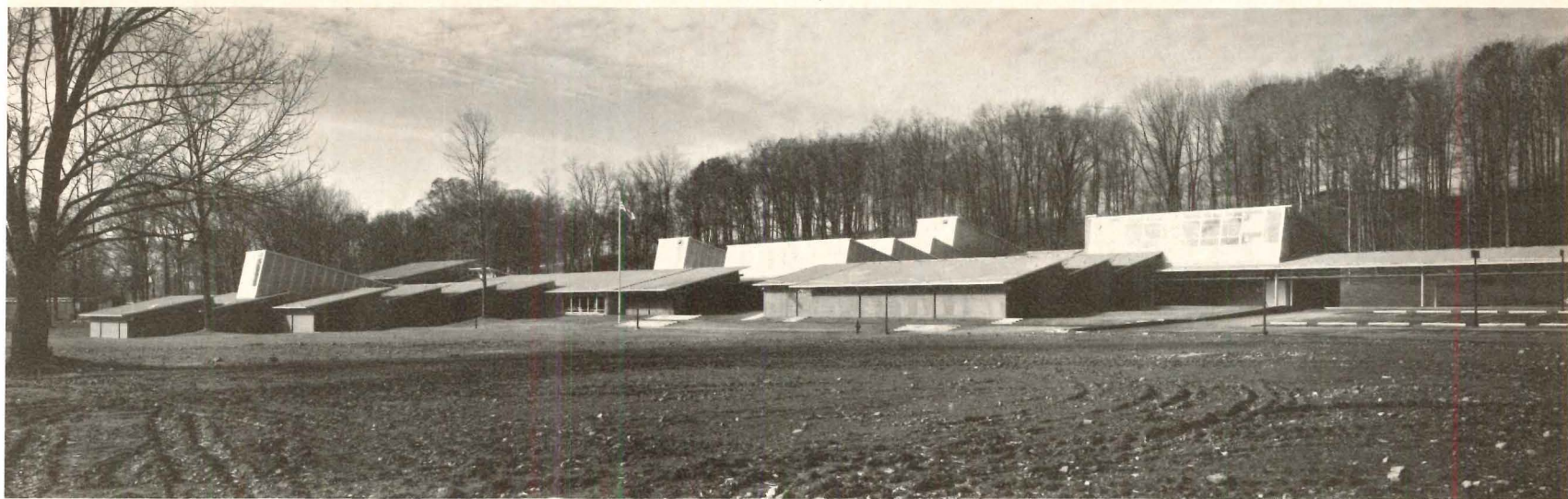
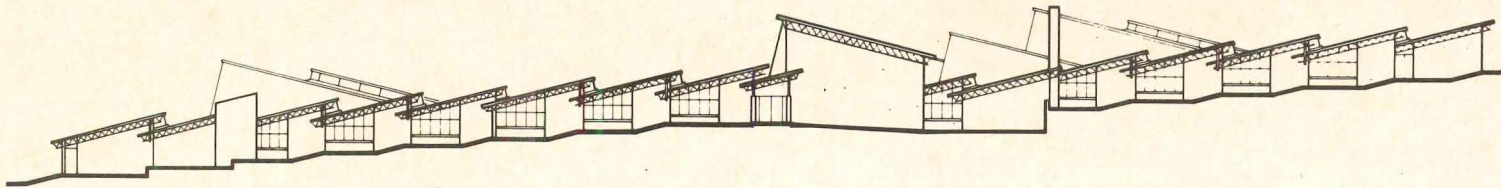
The building moves up the gently sloping site in steps of paired classrooms with a broad traffic area between. The bearing walls at each step (like the side walls) are concrete block, fluted to eliminate the block "feel" as the grooves darken and establish a strong striated pattern. Spanning the rooms are standard bar joists 8 feet o.c., with cement-wood fiber panels and a standard built-up roof above. The rooms are heated by unit ventilators under the windows, supplemented by ceiling-hung units in the multi-purpose cafeteria and other large spaces.

The monitors opening in the downhill direction house supervisory and teachers' preparation areas overlooking the open classroom spaces. They are sided with unpainted cement-asbestos panels. The only outside maintenance required is the painting of steel.

Except for a brief glimpse from the approach road, this rather large school (900 students, 95,000 square feet) is never seen as a unit. Its basic shape, its division into houses off the spine, and its stepped design all contrive to give the building a scale comfortable to the children.

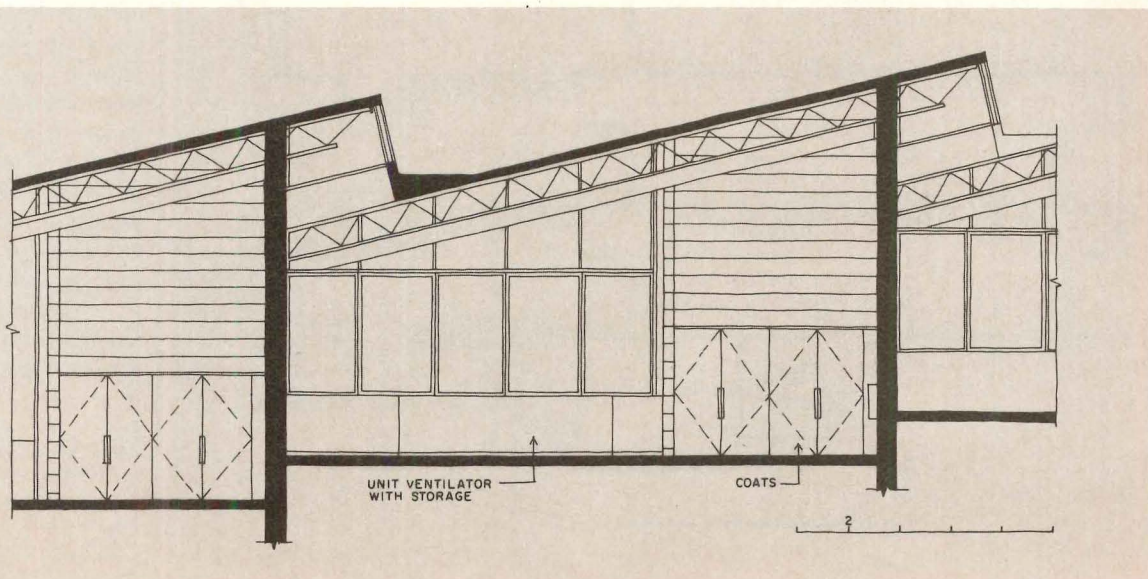
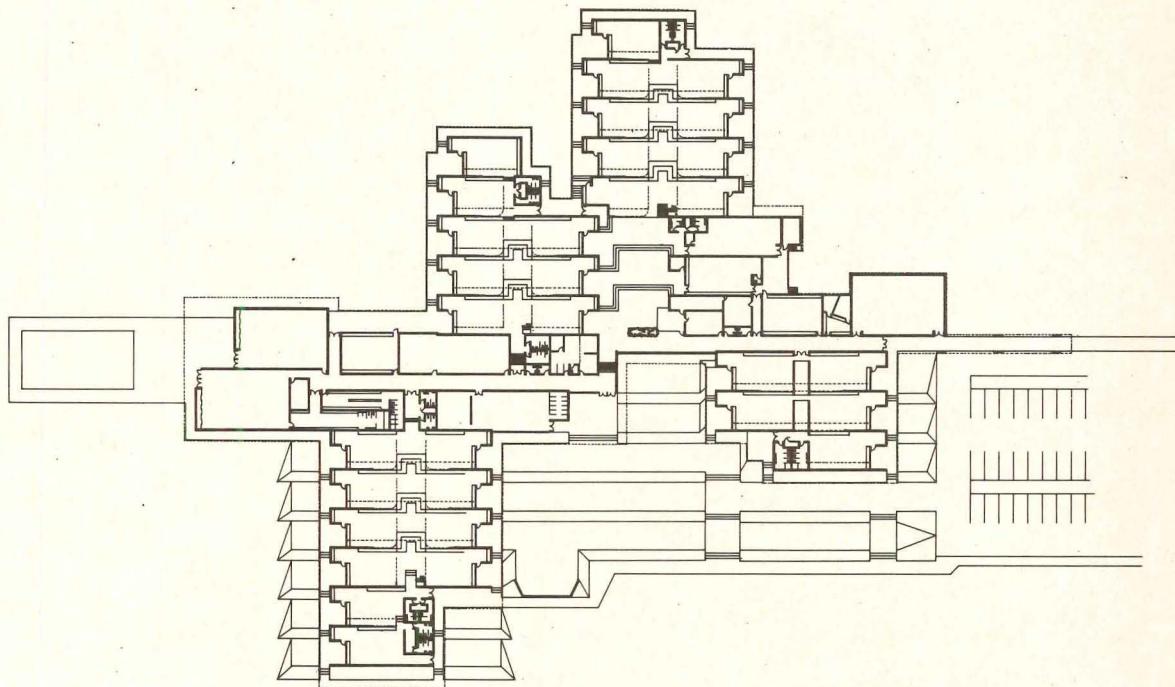






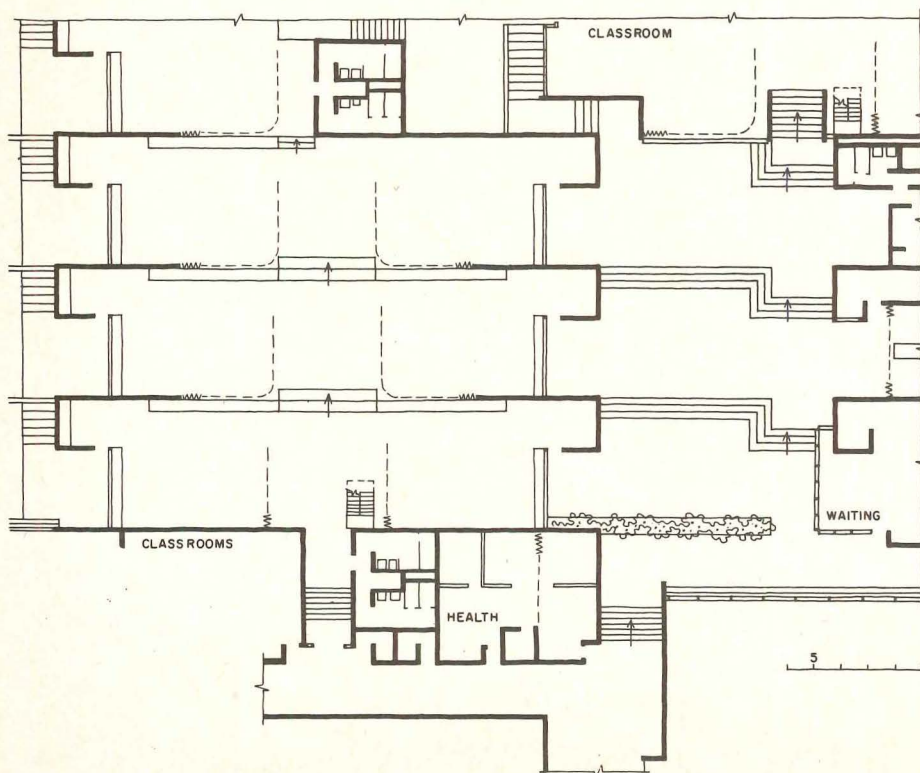
Section and plan show how the basic scheme fits the sloping site, and how the three major houses work off the central circulation spine. At left in plan are the two gymnasiums. Other special spaces include a music room, music practice rooms, learning adjustment rooms, audio-visual rooms, administrative offices, medical-dental, guidance and speech correction rooms, and the multi-purpose cafeteria. The house for educable and trainable children is equipped with a complete housekeeping unit. A covered walkway (right in photo above) separates bus traffic from auto traffic and parking areas.

The building is on a 27-acre site. Its construction cost—including site work, general construction, mechanicals, carpeting, and all furnishings and equipment—was about \$1.9 million.





**In classroom areas, spaces flow freely and flexibly—with spirited color everywhere**



Inside each of the three houses the space can be opened wide, or subdivided as needed, by accordion partitions. Even the broad traffic areas between pairs of rooms are used during classroom periods as spaces where children can retreat from the general classroom activity. With the partitions thrown back, the stepped-down spaces offer excellent sight-lines, functioning much as a conventional auditorium does for group instruction. The carpeting, the porous ceiling material, and the "steps" of both floor and ceiling keep noise and clatter to a level acceptable within this teaching framework. In the left rear of the photo above (see also plan) is a "mud alcove," which provides coat-hanging space and "a place to push things out of the way."

The clerestories at each step in the building (i.e., at each classroom) deliver natural light throughout the space.

JOHN W. CHORLEY ELEMENTARY SCHOOL, Middletown, New York. Architects: Paul Rudolph and Peter Barbone, associated architects—job captain: Jonathan Hall; structural engineer: Associated Engineering; mechanical engineers: van Zelm, Heywood & Shadford; site engineer: Chumard & Erikson; contractor: Warwick Construction Inc.



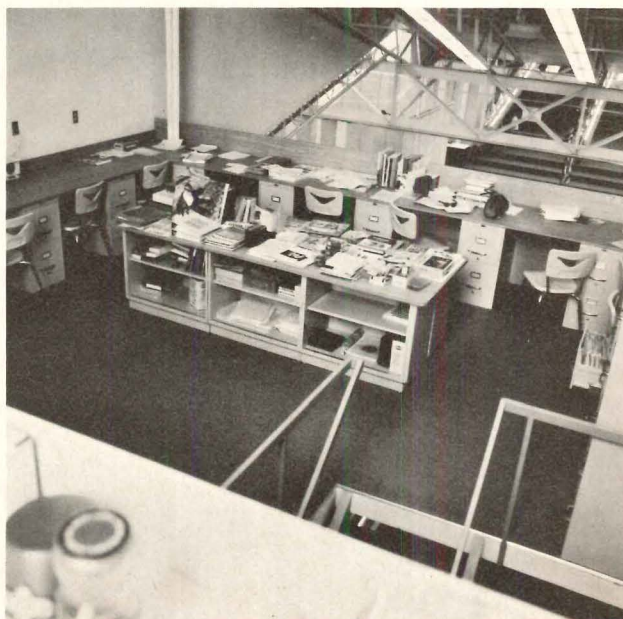
Color, in felt pennants, kites and mobiles hung from the ceiling, in children's art on windows (see right), in plants and in other kinds of small spots everywhere, gives "a sense of joyfulness" to what is essentially very plainly finished space. The steelwork, the roof deck, the service lines, and the block walls are frankly exposed and handled in neutral greys and white. The photo above shows the main open space—used not just as cafeteria, but as auditorium, music and lecture room, and for PTA meetings. The trafficway is typical of the "step-up" arrangement throughout the building. Photo at right shows the wall at the lowest level of the big space, complete with one of the school's continuously changing and colorful art exhibits.





The library is centrally located just off the main circulation spine and convenient to all three houses. It is partitioned from the corridor by a low wall with glass above, so that light from beyond the corridor can flood in. The space is readily changed into classroom space should program requirements change. The photos below show one of the several supervisory alcoves perched above the classroom spaces and reached by a stair off the traffic area. Each teacher within the house has a work space for lesson preparation. These monitor spaces are lighted by large glass areas that spill light onto the traffic areas below.

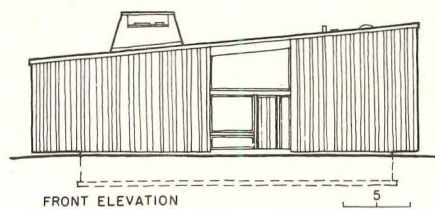
JOHN W. CHORLEY ELEMENTARY SCHOOL



# A VERMONT SKI HOUSE UNITES LARGE SPACES IN A SIMPLE FORM

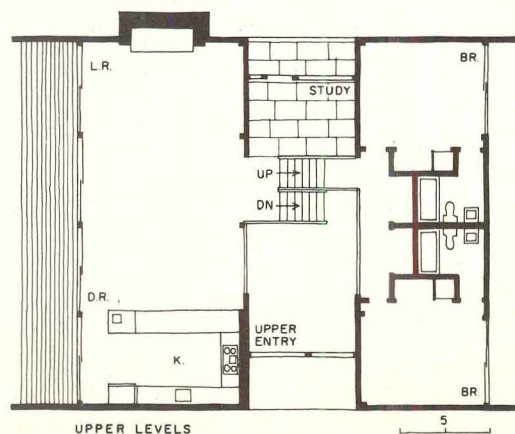
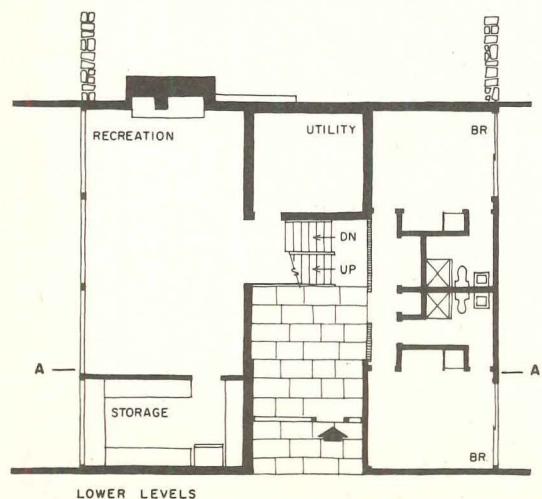
Located on a hillside in the snow country of Vermont, this large vacation house was designed to accommodate with equal ease both large-scale parties and quiet family living—and to function as well as a summer retreat as for ski weekends. The solution could have been a rambling, overwhelming affair; instead, the seemingly conflicting requirements have been unified under an elegantly simple and beautifully crafted shed roof form. The house seems relatively small, until one enters to see the great spaciousness which makes it work—and which compounds the pleasure of the hillside site.

VACATION HOUSE, Stratton, Vermont. Architect: *Eliot Noyes & Associates*; mechanical engineers: *Dimartino Associates*; interiors: *Eliot Noyes & Associates*; contractor: *R. T. Arnold Lumber Company*.



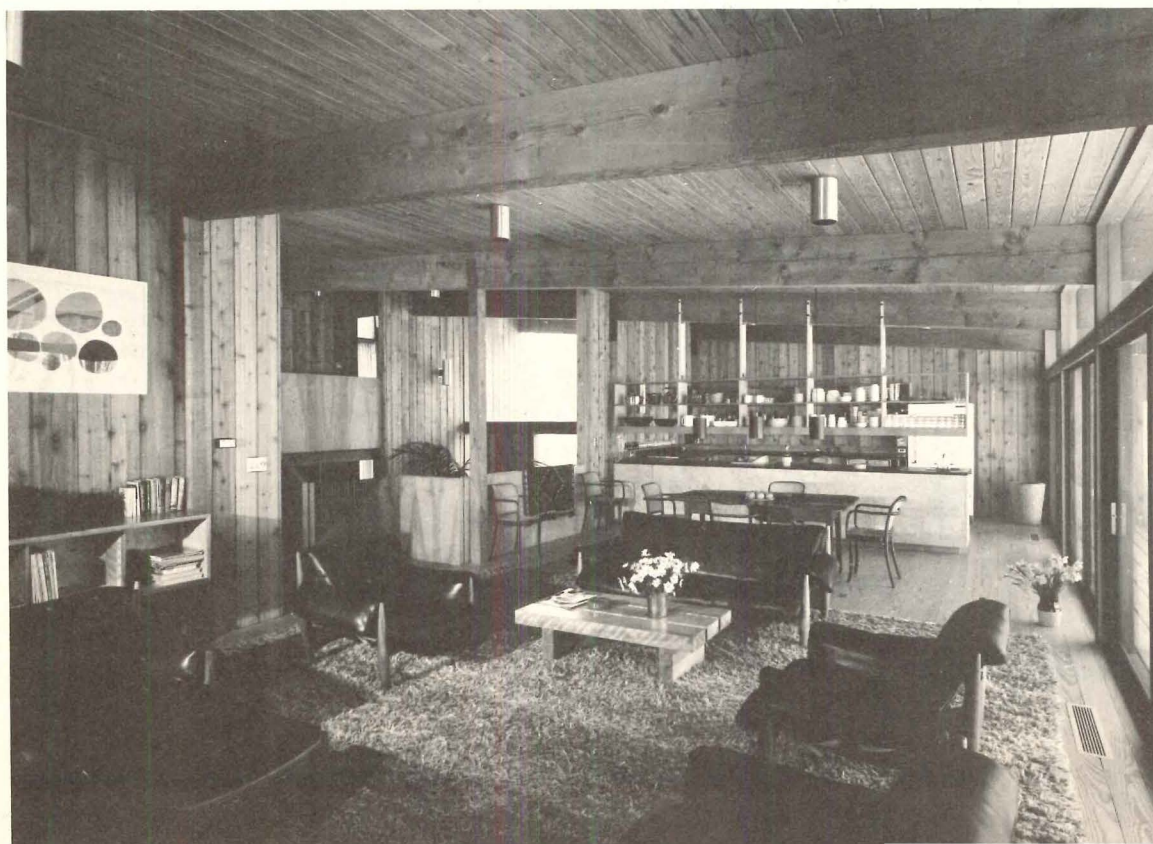


Hans Namuth photos



The architect's solution for the large house divides space while interlocking it, and the structure is rugged and secure against the elements but lets summer breezes penetrate throughout. Four levels are staggered off a central stair, and open into each other at the two-story entry hall to provide efficient zoning—and a dramatic spatial interest.

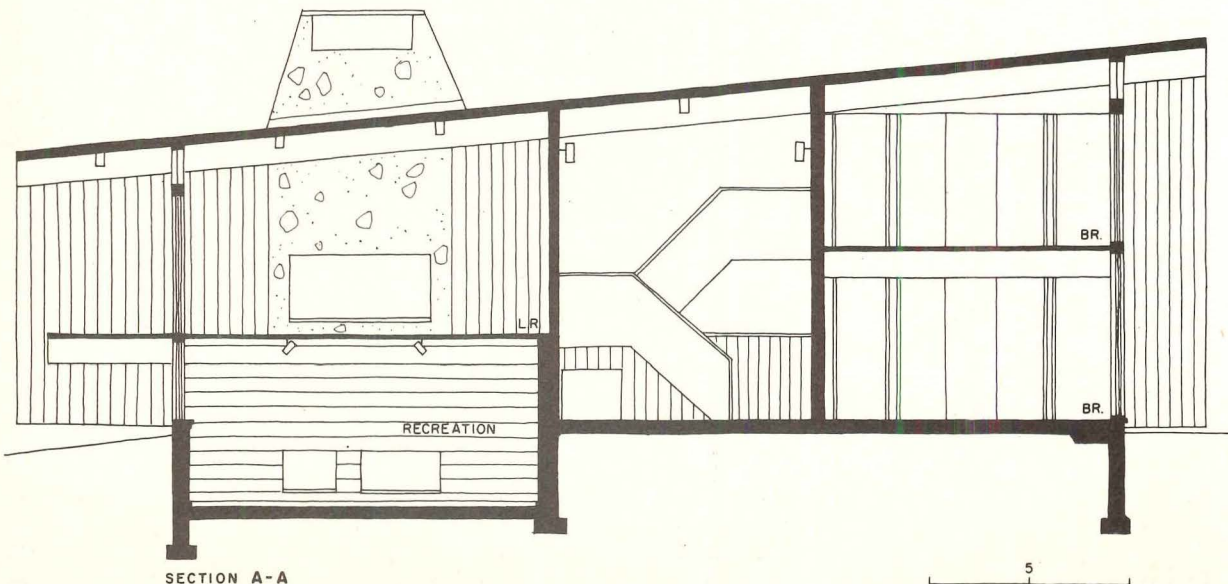
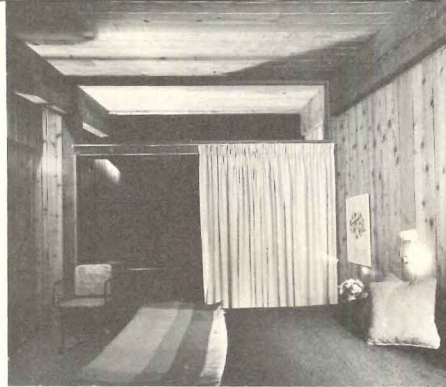
The skillfully executed scheme unifies interiors and structure in the over-all, plastic flow of space: warm textures and colors enhance the natural wood structural members; sleek built-ins and relaxed furniture groupings define uncluttered space usage within the open living scheme. Deeply recessed floor-to-ceiling glass lets most areas share light from different sources, and visually extends rooms onto the slopes.



A third-level living-dining space includes the fireplace grouping at one end (photo above left) and the kitchen (photo above) in a clearly defined but open plan. Comfortable furnishings include black leather upholstery, a Moroccan rug and natural woods. Kitchen activities are only partially screened, in keeping with an all-pervading air of informality. The stair landing opening onto the second-level entry can be seen in the photo at left, with the fourth level visible beyond. Living areas open onto a full-width deck for southern exposure and a hillside view.



All levels of the house open into the entry hall, shown in the photo, left. Living areas are on levels to the left, with bedrooms to the right. A small study can be glimpsed behind the stairs. In the master bedroom, lower left, white curtains, a dark brown spread and orange and yellow pillows complement the natural wood and complete the uncluttered scheme. The glass wall incorporates sliding doors, and is neatly framed between the joists for a dramatic indoor-outdoor sense of space. The structure of the house is wood frame with rough-sawn cedar siding and built-up roof. Floors are yellow pine except for vinyl asbestos in the game room and the flagstone entry hall. Deep overhangs provide weather protection. Sliding glass doors are recessed 7 feet 8 inches on the south to give a deck on the third level for added summer living space.



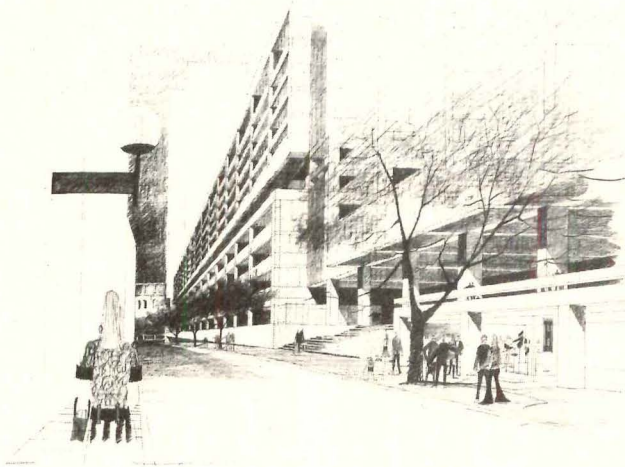
SECTION A-A



# College buildings and planning

BUILDING TYPES STUDY 396

©



TEACHERS COLLEGE, COLUMBIA UNIVERSITY  
Hugh Stubbins and Associates, architects

When even the most spacious of college campuses finds that it must increase the density of its land use, and when the urban university must expand but can do so only on city blocks already filled with buildings, it is obvious that new thinking on campus planning is necessary.

A first step will certainly be the discarding of the word *campus* (literally field) to describe the academic complex. *Campus* less and less describes the physical plant of the American college or university in this last part of the 20th century. There is good evidence that the college will increasingly have its location in the city—whether by moving into the city or by causing urban growth around the “Learning Complex”—and that to meet the increasing demand for college-level education, expansion of existing facilities will have to take place, even where the circumstances are difficult.

What form these future places of higher learning will take is not easy to foresee. Perhaps the unusual proposal of a “Linear College” for the Bedford-Stuyvesant area of Brooklyn, to operate in renovated buildings scattered throughout the city and retaining the human scale and essential character of the area, will be one of the prototypes. Perhaps the city itself will become the campus, its cultural and scientific institutions replacing the conventional classrooms of classic colleges, as is suggested in a remarkably revealing series of essays by educators, edited by Alvin C. Eurich, *Campus 1980, The Shape of the Future in American Higher Education* (Delacorte Press, 1968). The undercurrent through all predictions indicates, however, that the impact of land-use pressure and the availability of new and advanced forms of technological equipment for communication of knowledge are inescapable in the college of the future. The examples shown on the following pages explore these impacts of land-use pressure and new equipment:

The two newly-completed colleges at the University of California at Santa Cruz—Crown College (page 146) and Merrill College (page 151)—are both more densely planned than the first college completed just a few years ago; and the fifth and sixth colleges will be denser still.

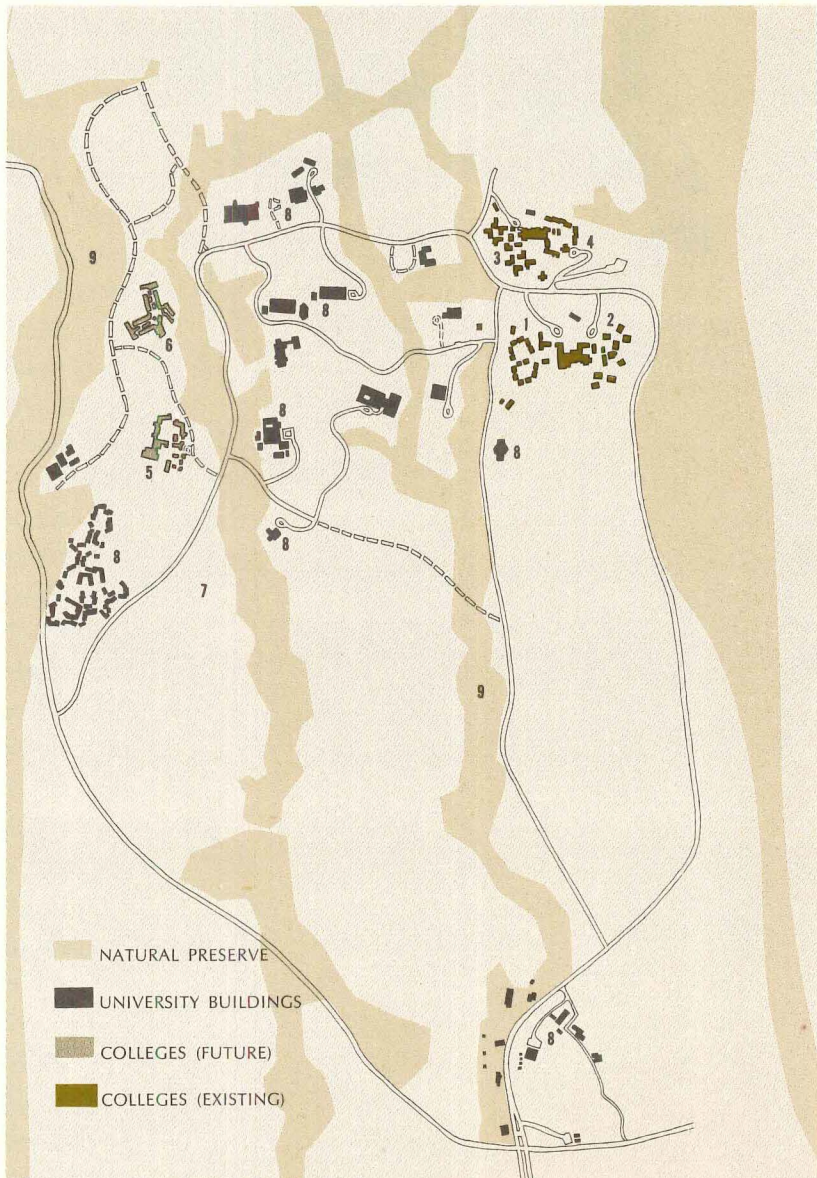
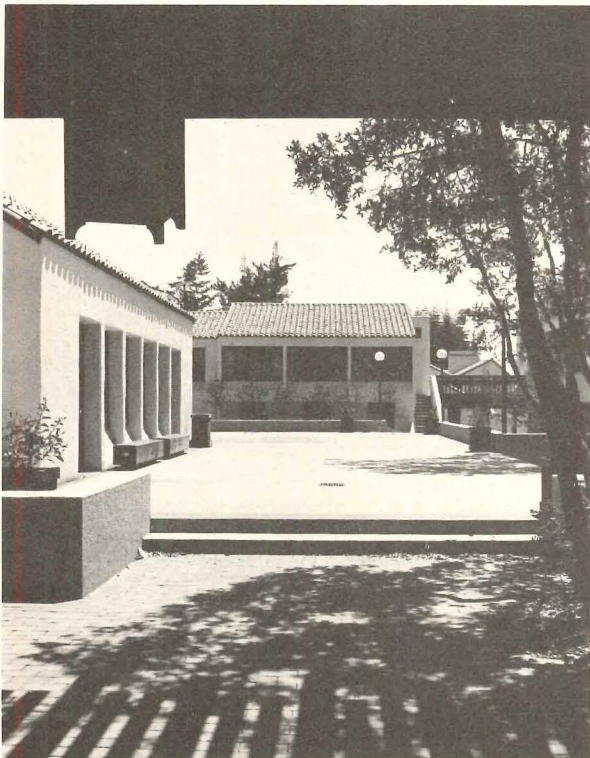
Teachers College at Columbia (page 156 and drawing left) is taking a high-rise form under the pressures on one side for needed expansion and the pressures on the other of limited space and community resistance to any land use outside the present campus.

And the new center at the State University of New York at Buffalo (page 158) is an example of the new design concepts generated by the use of advanced communications technology. —*Elisabeth K. Thompson*

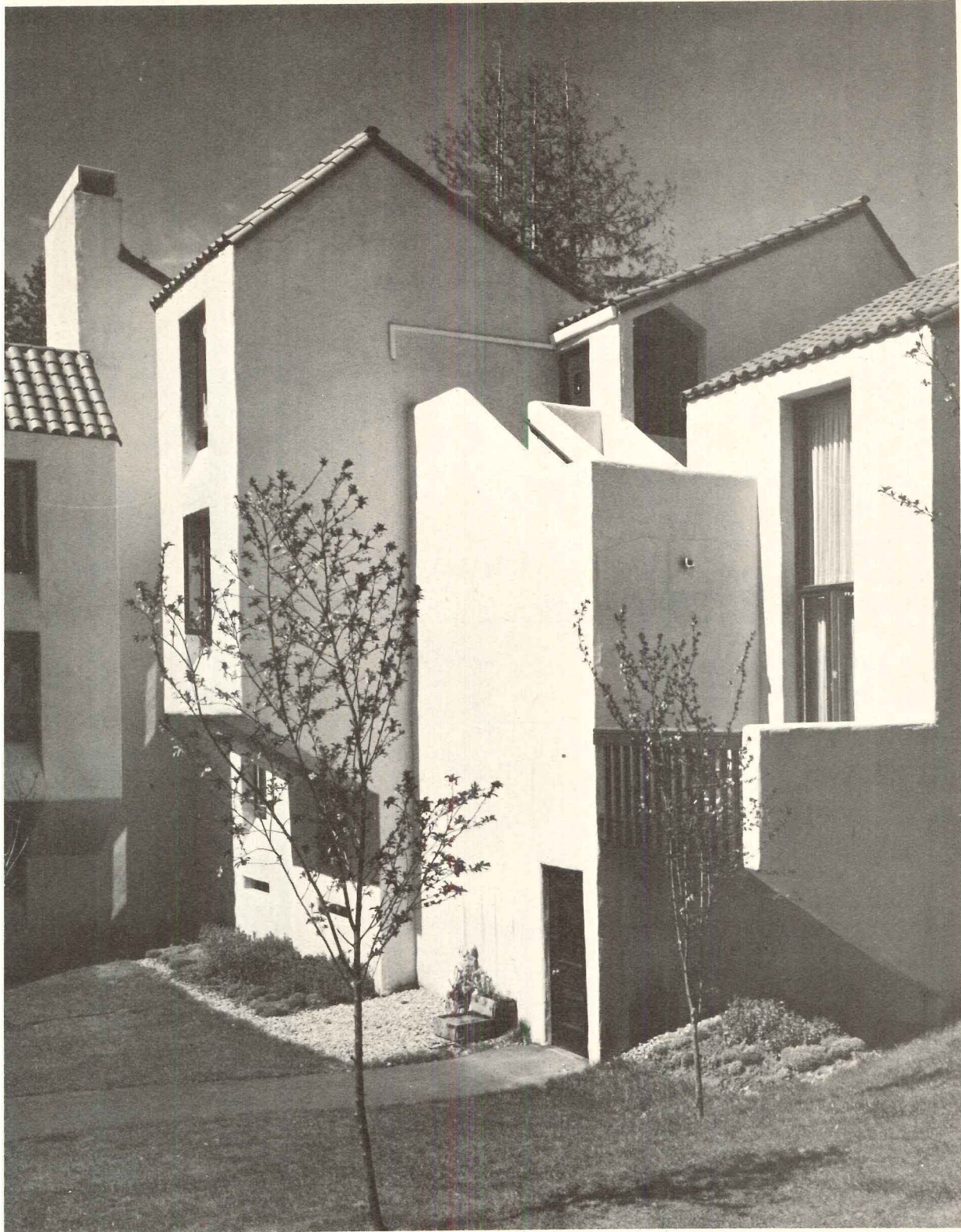
**Crown College's compact planning and its varied forms and spaces give it the charm and scale of a Mediterranean hill village**

By the time that planning of Crown College, third in the University of California's Santa Cruz Colleges, got under way, it was clear that a greater economy in use of the campus land—so apparently spacious at first glance—would have to be instituted. Not only was some of the land not usable for building because of steep grades, but a precious ecology would be lost forever unless careful husbanding of available building sites was built into future planning. This restraint on land use was, however, anything but limiting, actually aiding in the evolution of special qualities of scale and character particularly suited to the college. As campus consulting architect Ernest J. Kump (also architect for Crown College) says, "Architecture is a problem of social organization: size of site and number of students have nothing to do with the pleasantness of university environment. You could have 100,000 students and the environment would be pleasant—if it's planned right." In the case of Crown and Merrill Colleges (pages 151-156), the first two colleges to be completed after instituting the new approach, the environment is distinctive as well as pleasant, its compactness contributing to the much-sought interaction basic to the curricula of these colleges. Crown's 535 resident students and its 35 Faculty Fellows work primarily in the natural sciences but have access to the disciplines of the other colleges and to all campus resources (library, labs, etc.). Each college thus remains within the advantageous context of a large university.

CROWN COLLEGE, University of California, Santa Cruz, California. Architects: Ernest J. Kump Associates; structural engineer: Clarence E. Rinne; mechanical and electrical engineers: Yanow and Bauer; landscape architects: Lawrence Halprin & Associates; interiors: Maurice Sands; general contractor: Williams & Burrows, Inc.



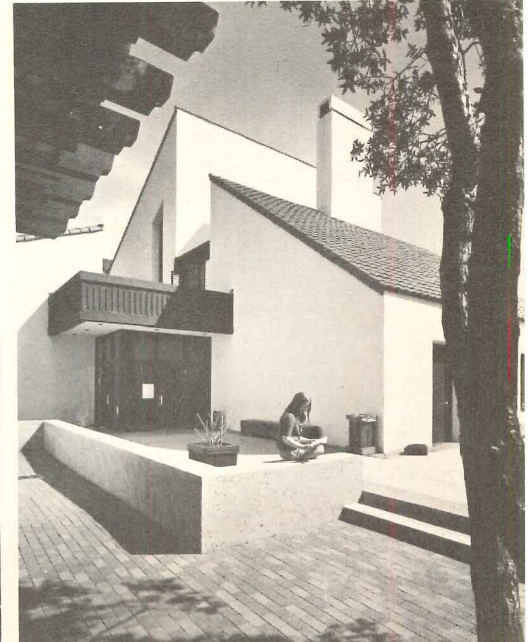
MASTER PLAN, UNIVERSITY OF CALIFORNIA, Santa Cruz, California. Architects for Long Range Development Plan: John Carl Warnecke & Associates, Anshen & Allen, Theodore C. Bernardi, Ernest J. Kump; landscape architect: Thomas D. Church. Consulting architect, Santa Cruz campus: Ernest J. Kump; consulting landscape architect: Thomas D. Church.



Crown College's design and planning are based on a philosophy of social organization brought into human proportions. It is, as the Chancellor of the Santa Cruz Campus of the University of California says, "more than a collection of dormitories attached to dining halls and libraries and classrooms." In effect, the college is a community, with students' loyalty going first to the college, second to the University. The compactness of plan generated by the ecological needs of the beautiful and, in some areas, unique environment is important for what it does for intimacy and human scale. All the buildings are of wood frame, stuccoed; roofs are red tile. Although economics determined that inexpensive materials must be used, the familiar materials and forms provide, says the architect, "roots, a sense of security." Across page is the academic court with the dining hall at left, classroom building at center; above, dining room. Below left, entrance to college; right, dining hall entrance. At left, entrance to one of the residence units.

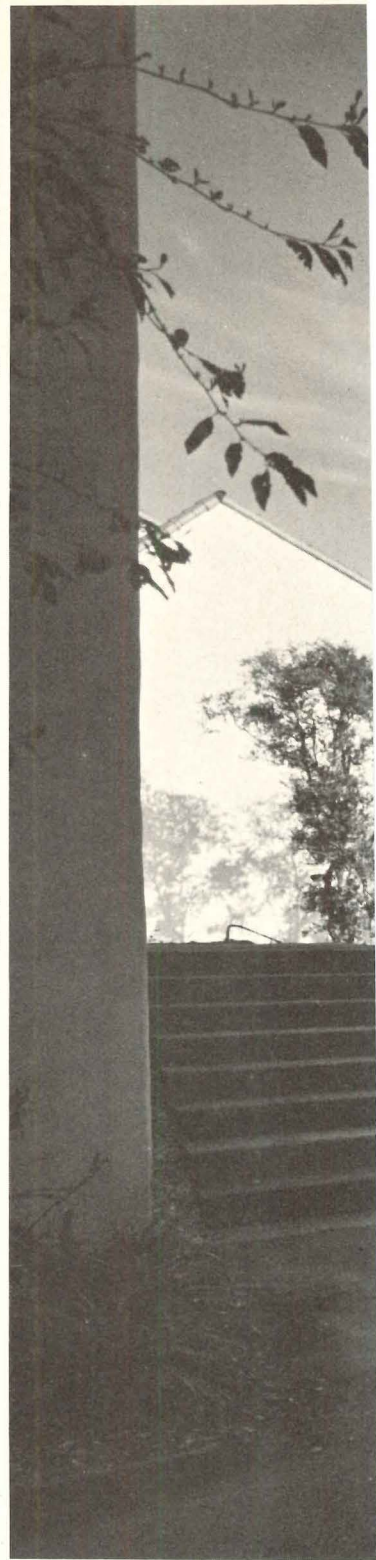
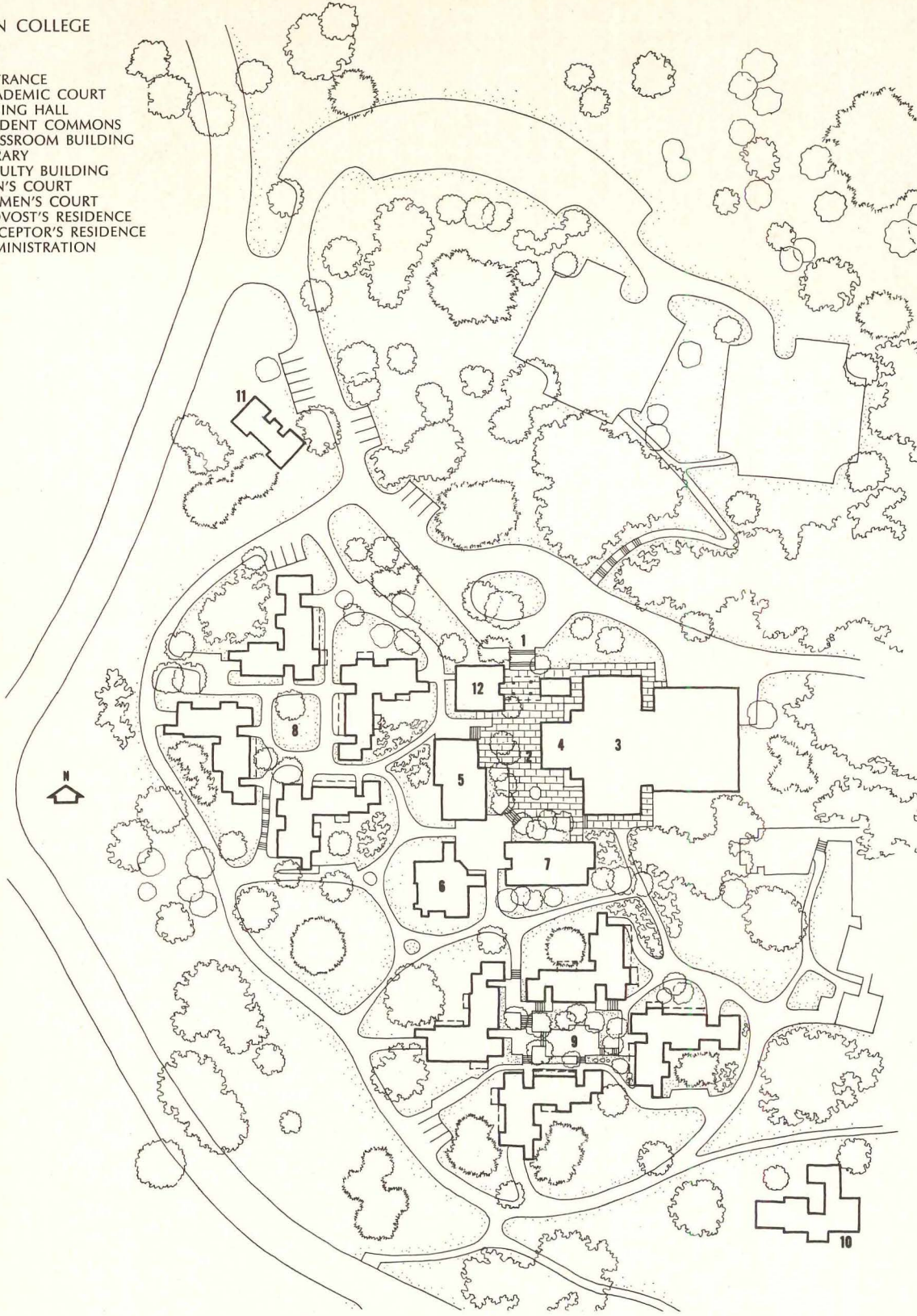
- Key to site plan opposite page
- 1 COWELL COLLEGE
  - 2 STEVENSON COLLEGE
  - 3 CROWN COLLEGE
  - 4 MERRILL COLLEGE
  - 5 COLLEGE #5
  - 6 COLLEGE #6
  - 7 FUTURE COLLEGES
  - 8 UNIVERSITY (ALL CAMPUS) BUILDINGS
  - 9 NATURAL PRESERVE

Karl Reik photos

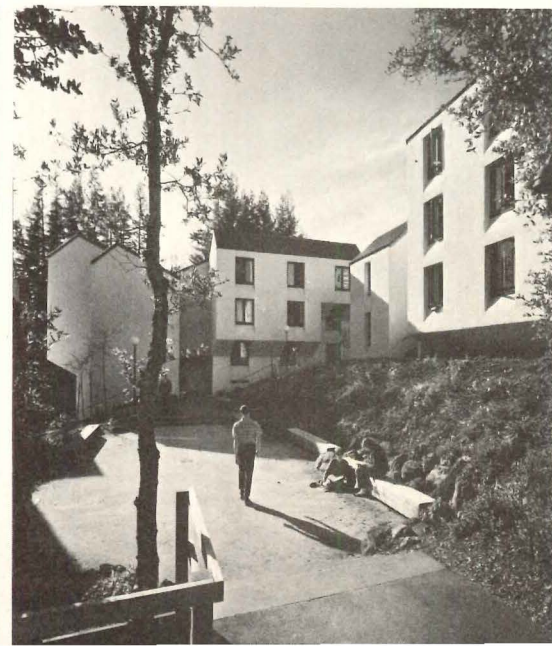
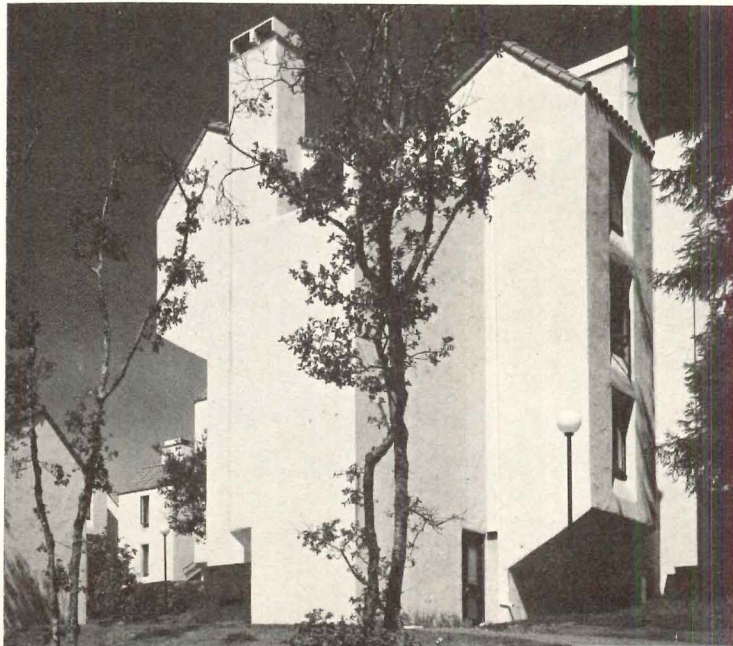


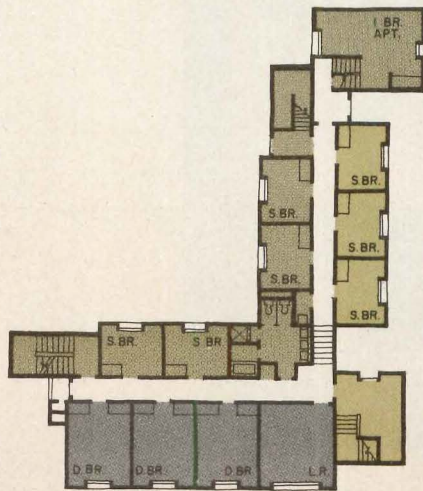
CROWN COLLEGE

- 1 ENTRANCE
- 2 ACADEMIC COURT
- 3 DINING HALL
- 4 STUDENT COMMONS
- 5 CLASSROOM BUILDING
- 6 LIBRARY
- 7 FACULTY BUILDING
- 8 MEN'S COURT
- 9 WOMEN'S COURT
- 10 PROVOST'S RESIDENCE
- 11 PRECEPTOR'S RESIDENCE
- 12 ADMINISTRATION

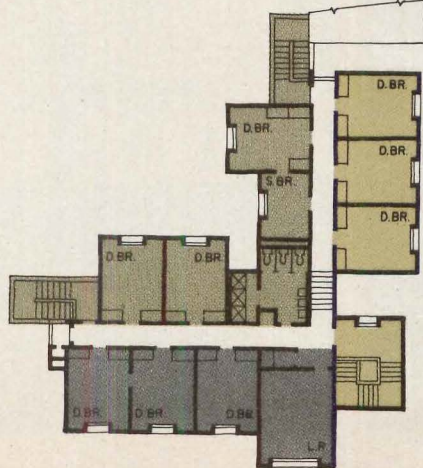


The college is organized around a number of courts, some formal, some casual, but all with a quality of intimacy that immediately relates them to human dimensions. Meandering paths connect the courts and the buildings, producing the effect of an idyllic village on a Mediterranean hillside. Although the buildings are four—sometimes five—stories high, the human scale is retained throughout and is enhanced through the variety of the spatial experiences created by the building forms and the different levels of the site.





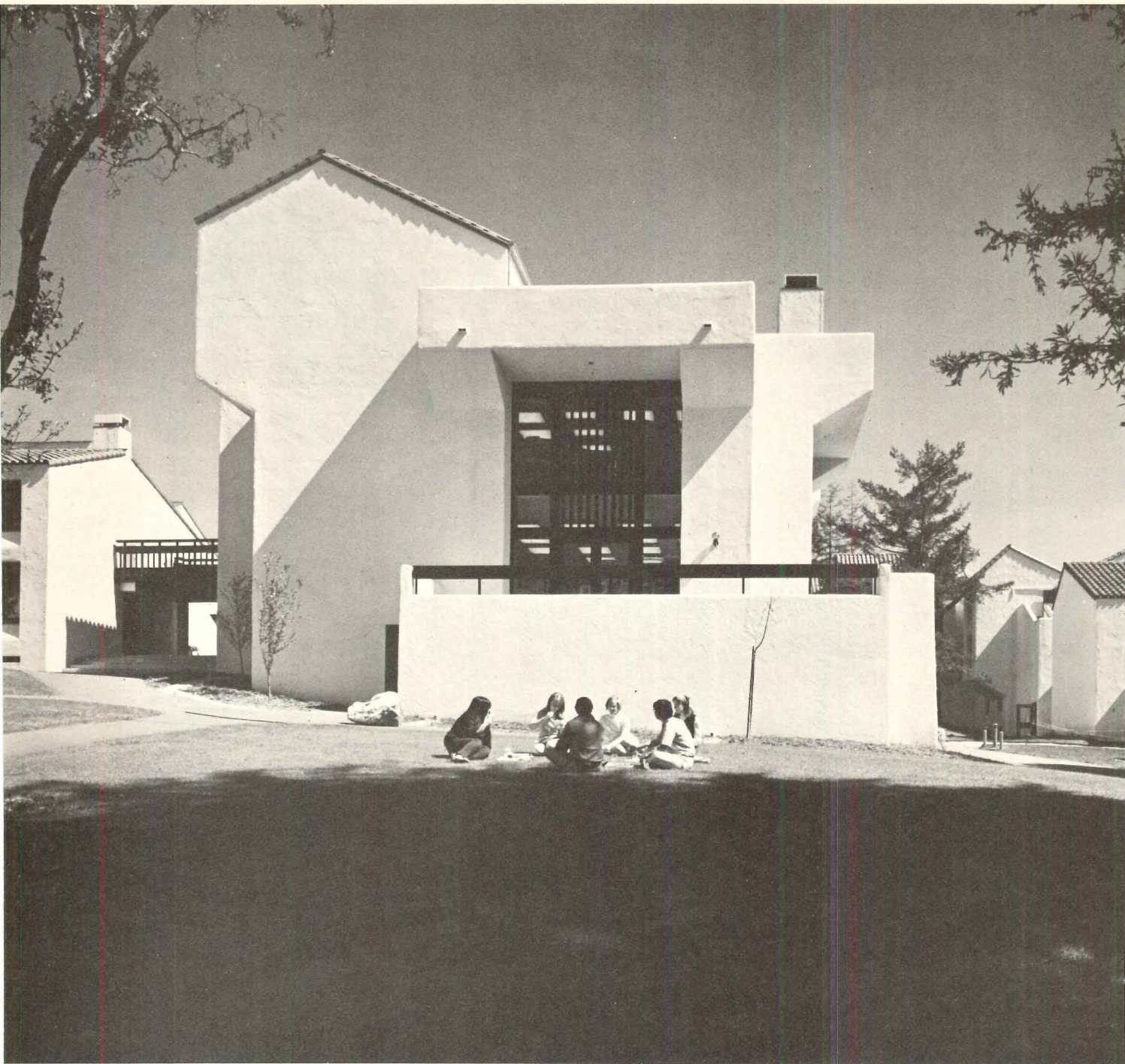
FIRST FLOOR



THIRD FLOOR

The exterior appearance of the residence halls shows great variety within simple order: staggered floor plans give outside identity to each unit, and produce different types of interior spaces. Only three types of modules—groups of rooms—are used to obtain this variety. (Shaded modules on plans at left show how variations are achieved.) By varying the combinations of these modules, the location of exterior projections is varied, and so are the interior spaces with their nooks and crannies, which, the architect says, are part of the individuality students seek. Since a goal of the design was a casual envi-

ronment—monumentality has no part in the college concept of small units where the individual is the primary unit of measurement—the architectural character of the buildings, inside and out, assumed special importance. Originally designed as separate groups of men's and women's dormitories, the residence halls can be organized to fit any college program and need: each building could house men and women on separate floors, or each could be used separately by men or women. The aim was to avoid fragmentation and separation of the various activities that are part of college life.



Each college has its own library. Crown's has its main entrance off the academic court which its belltower, integral with the facade, dominates. Wood balconies connect second level with classroom and office buildings.



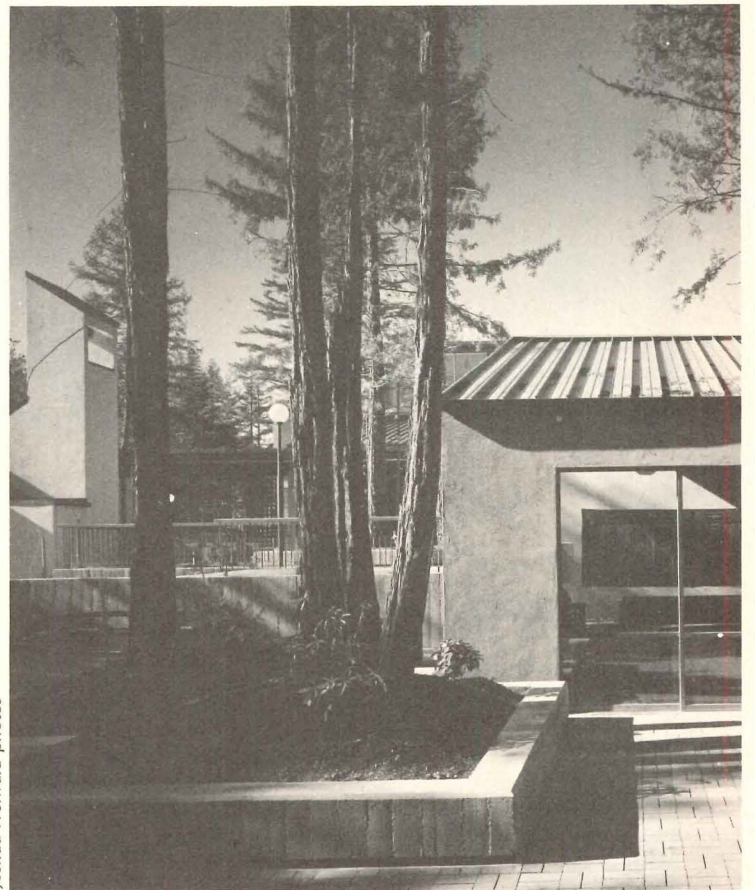
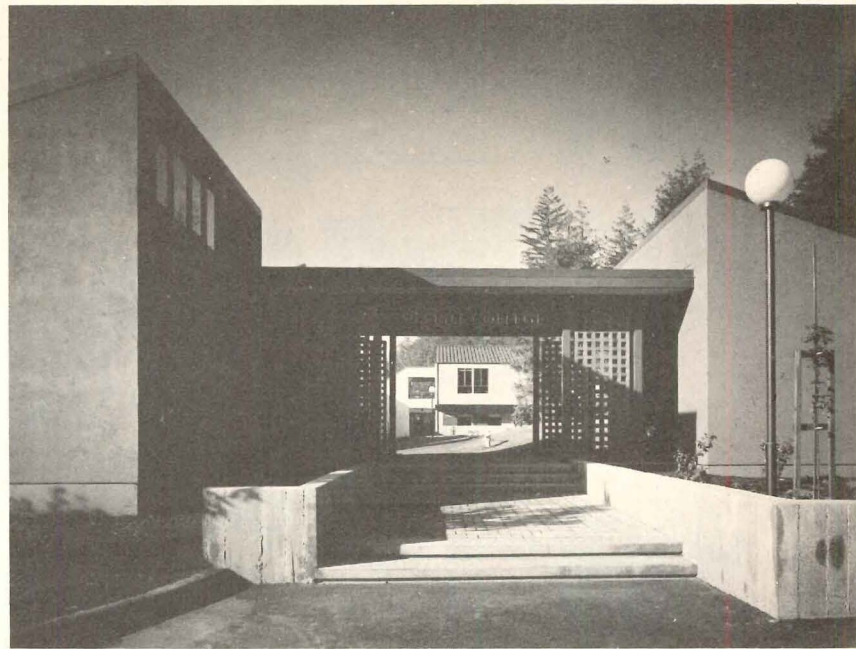
**Merrill College's small site  
and its closely clustered buildings  
preserve natural qualities  
by increasing land-use density**

Merrill College is the fourth college on the University of California's campus at Santa Cruz, and the most recently completed and occupied. Even more than Crown, and considerably more than the first two colleges, Merrill has a tight site on which to provide an inclusive college community for 550 students (350 resident) and 35 Faculty Fellows (some resident). The environment created is distinctive, as is its curriculum emphasis: poverty, its history and causes in developing and "third world" counties.

Unlike the curricula of earlier colleges, Merrill's curriculum is changed from the original, and came after the college had been designed around the first emphasis, language study. The unique "language lounges" evolved for the first curriculum have become an integral part of the second curriculum, with strong practical reasons for their use by students. Architecturally they are a focal point in the campus, not only by their location at the very center of the campus, but by their use of color, unusual on the Santa Cruz campus, which has an "earth-tone" palette for its buildings. The architects say that they felt "compelled" to use color on the exteriors as accents and also to "relate to the excitement of this generation." These accents are, they say, "as natural as the wildflowers in the area."

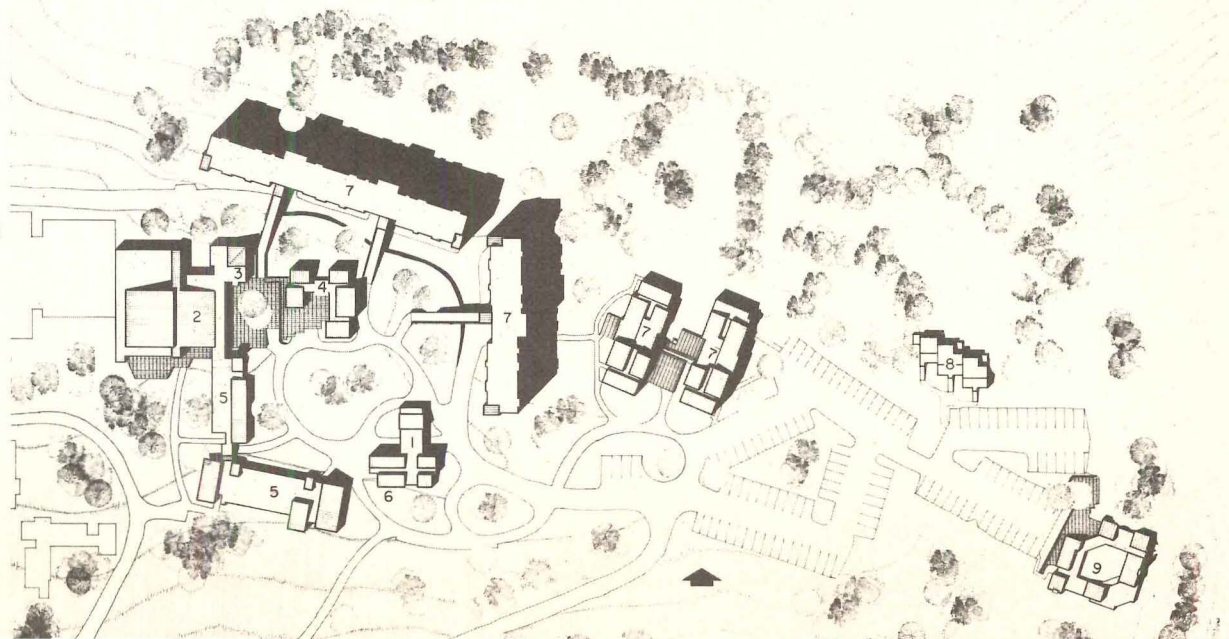
The elegantly simple interiors lend themselves to easy re-orientation to other cultures, since furnishings are basic and only cultural objects need be changed to identify the lounges with different non-western societies. Because the site is thickly covered with redwoods, shed roofs were used on many of the buildings to permit taller windows and to admit more daylight. The trees filter light onto the open areas—a variety of these are designed into the plan—to make them pleasant places on warm days.

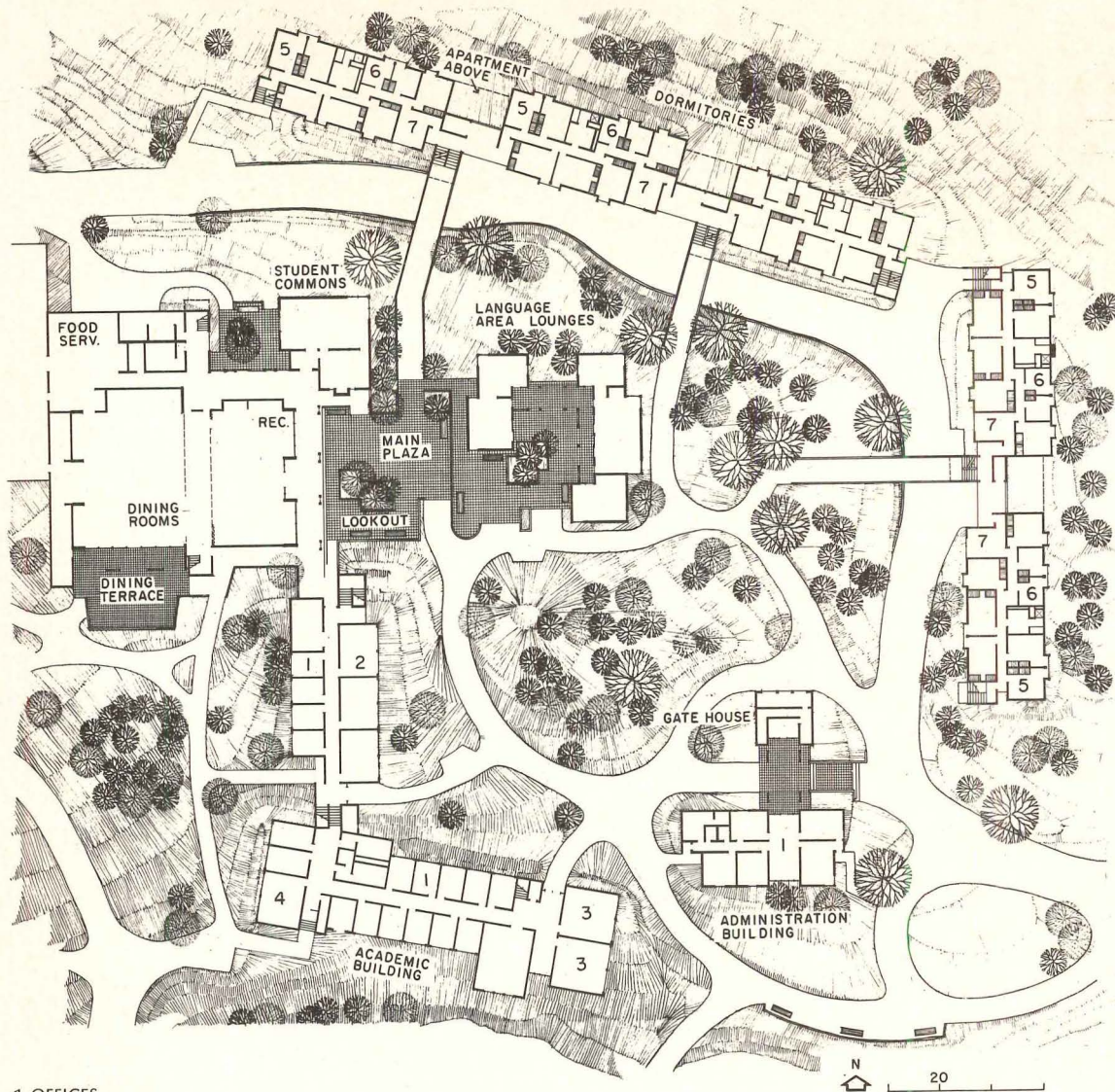
MERRILL COLLEGE, University of California, Santa Cruz, California. Architects: *Campbell & Wong & Associates—Worley K. Wong*, architect and *John Carden Campbell*; structural engineer: *Eric Elsesser*; electrical and mechanical engineers: *Ralston & Dwyer*; landscape architects: *Royston, Hanamoto, Beck & Abey*; general contractor: *Williams & Burrows, Inc.*



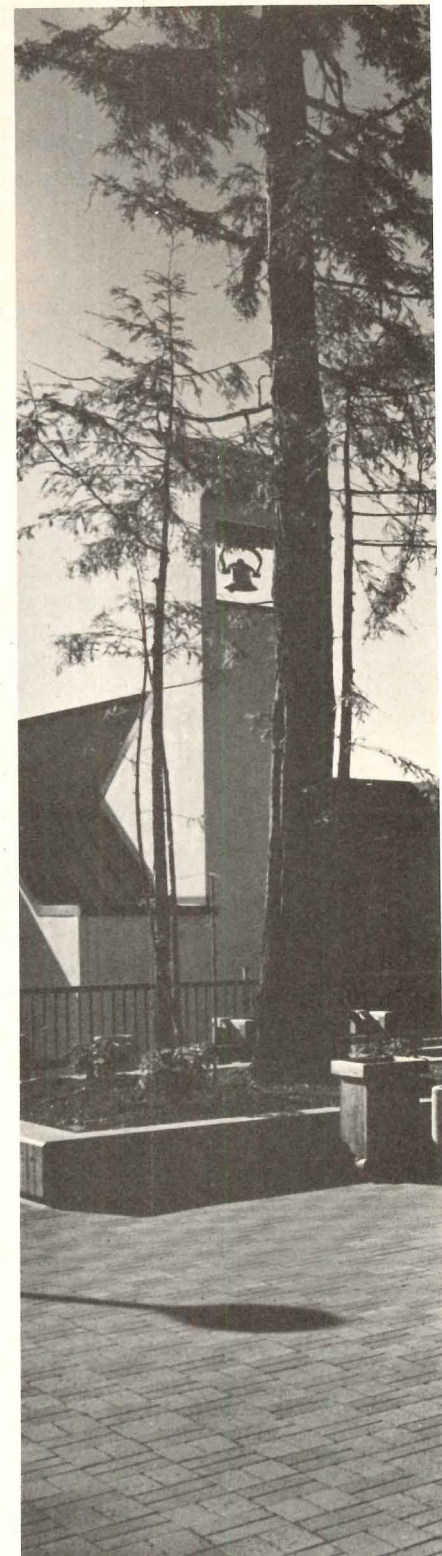
Joshua Freiwald photos

- 1 ENTRANCE
- 2 DINING COMMONS
- 3 STUDENT COMMONS
- 4 LANGUAGE LOUNGES
- 5 CLASSROOMS
- 6 ADMINISTRATION
- 7 RESIDENCE HALLS
- 8 VISITOR APARTMENTS
- 9 PROVOST'S RESIDENCE





- 1 OFFICES
- 2 SEMINAR
- 3 CLASSROOM
- 4 LANGUAGE LAB
- 5 SINGLE BEDROOM
- 6 DOUBLE BEDROOM
- 7 SITTING ROOM



"A place of many places"—in many sizes, varieties and locations, inside and out, could well describe Merrill College. Purposely designed to both promote interchange and to give variety to college life, these places provide for group or individual activities, and include the main plaza (above, right with dining commons and terrace at right of bell-tower), small casual open courts (right), two viewpoints to Monterey Bay, sundecks, student lounge, sitting rooms in the residence halls, balconies and the "language lounges" (right). College buildings had to be carefully sited to preserve as many trees as possible and retain the view.

The site plan (above) evolved from this requirement and from the fact that the college was to use the food preparation facilities of Crown College, immediately adjacent. At the crest of the knoll are the commons buildings: student commons, the dining hall, the language lounges, and the main plaza, which acts as a college crossroads. On the slopes from the crest are classroom, office and administration buildings. The steepest slopes of the site, to the north, are used for the residence halls that define two sides of the site. All buildings except the dormitories are of wood frame and stucco; roofs are aluminum. Cost was \$3,100,000.

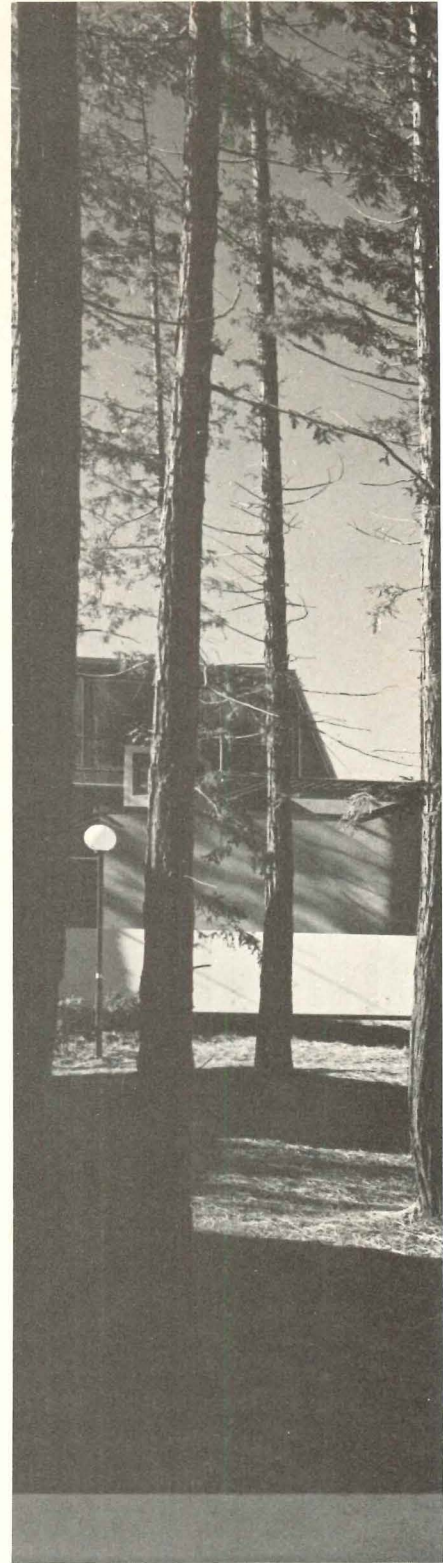






At the center of the site are the "language lounges" (right and near left), each dedicated to a non-western region (currently Africa, Islam, India, the Orient, Latin America). These lounges are one of the special features of Merrill College, designed to attract students from their dormitory rooms for foreign language conversations. The change in college curriculum emphasis did not change the use of the lounges; they became, in fact, an even more important part of the study of "Poverty—Its History and Causes." Bright colors are used as accents in the campus: lounge roofs are "blueprint blue"; buildings are white, beige-gold or orange-red.

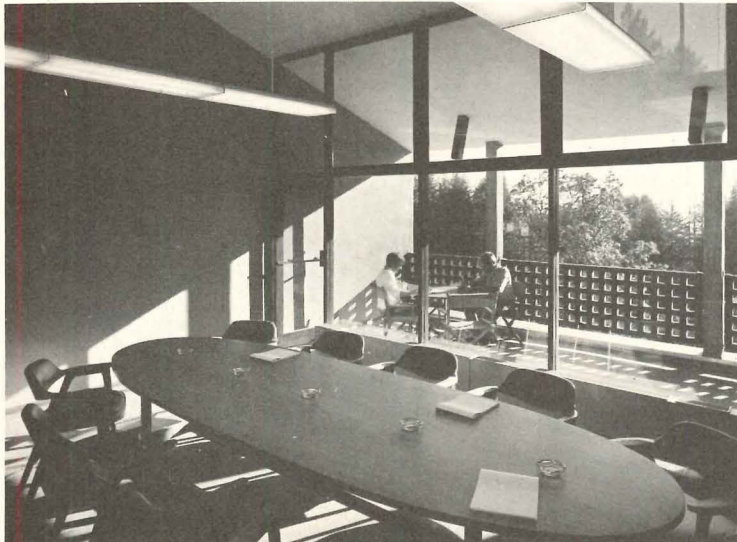




The five-story residence halls reflect the denser use of land that was necessary to satisfy the requirements of the program and the limitations of the site. The program had stipulated—in addition to preservation of trees and open space—that there be a maximum height limit of four stories. On the architect's recommendation, the height was increased to five stories, and this not only satisfied the program but gave the

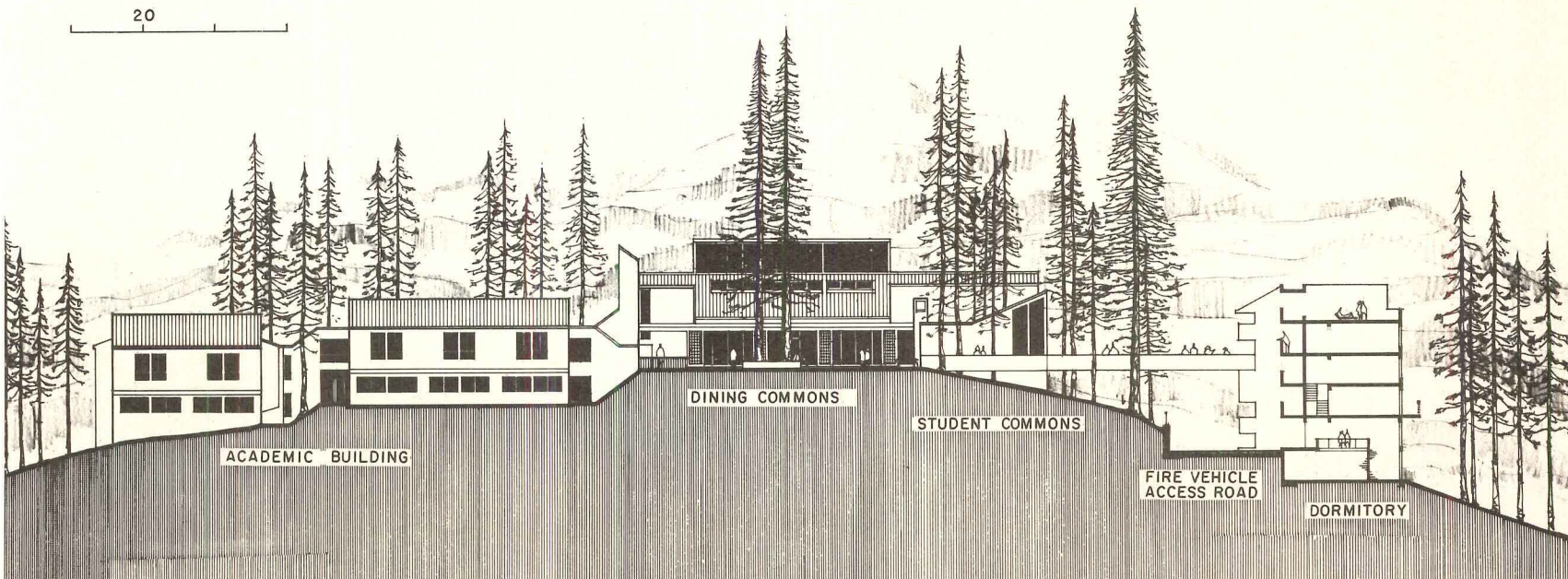
college a distinctive feature: the bridge that connects the main plaza and the halls. By bringing the bridge into the middle floor of the halls, no one walks up or down more than two floors. The halls are designed for complete flexibility of use. Currently they are being used coeducationally, with men and women separated by floors. Each living group consists of 14 students: 12 in double rooms, two in sin-

gles. Balconies, each shared by two rooms, and sitting rooms, one for each living group, are pleasant amenities. Redwood grilles are used for balcony rails, the only use of wood trim in the college. The residence halls are of concrete, used elsewhere only for shear walls in the dining commons. Windows and daylight, of special importance in wooded areas, were located for best views and maximum openness.





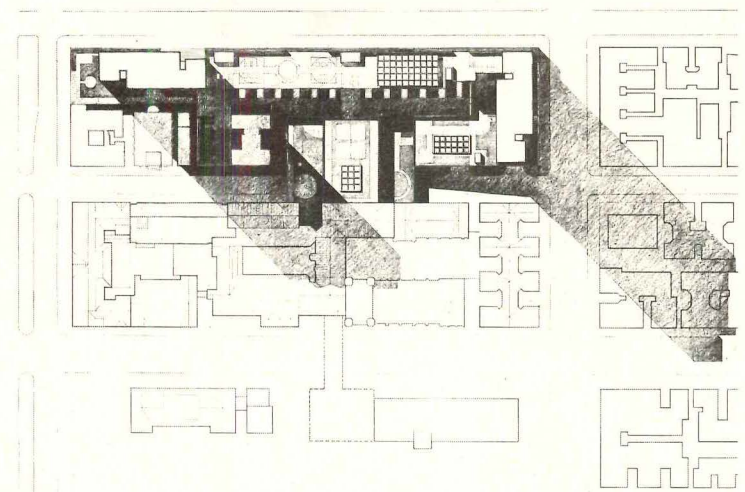
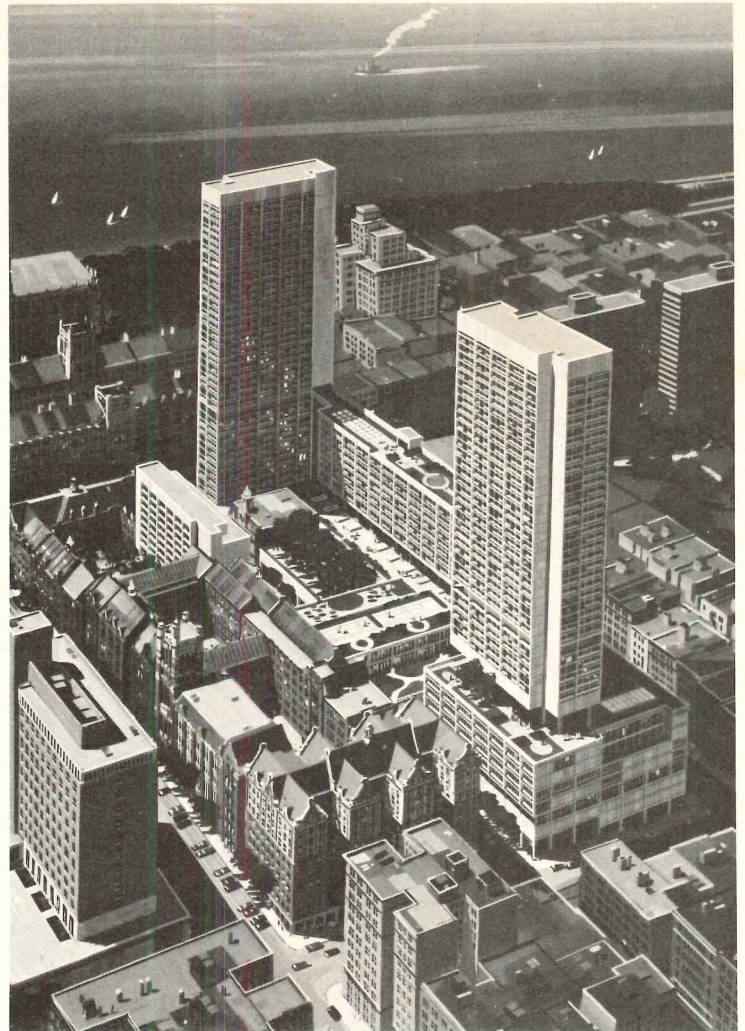
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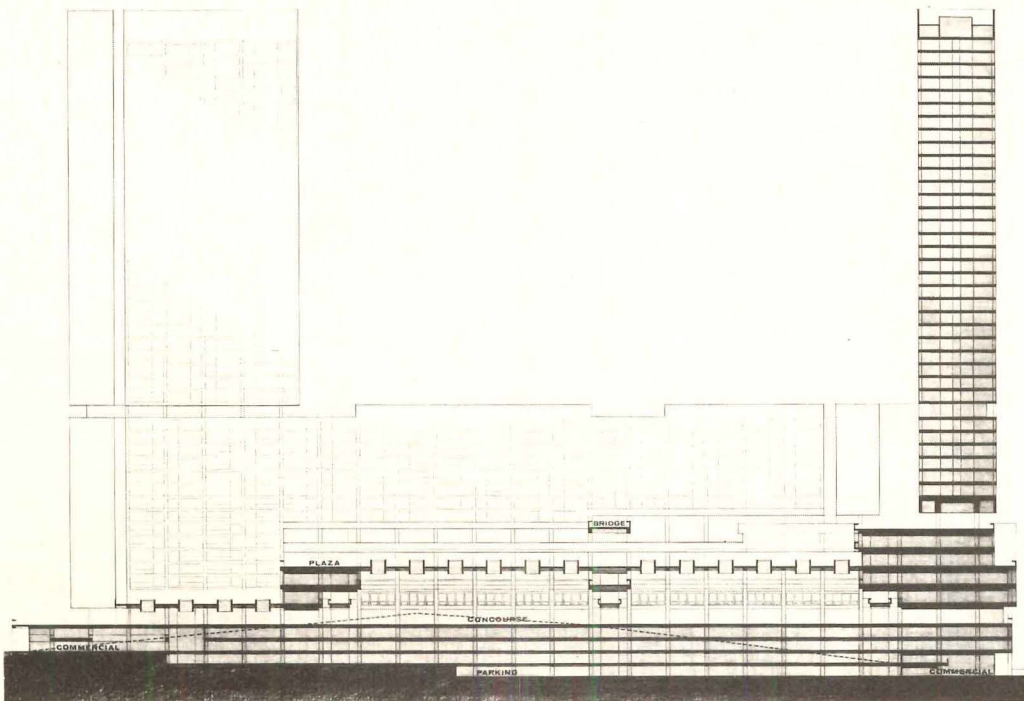


**Teachers College, Columbia, will expand academic facilities on tight urban site and will include housing for neighbors as well as faculty and students**

Expanding an urban campus such as that of Columbia University is difficult in more ways than land acquisition and cost, as Columbia has recently learned. Teachers College—largest of all graduate schools of education, an affiliate of Columbia but separately chartered and financed—needs expanded facilities for its academic program, and over the past three years has planned an unusual approach to getting them. The land it will use adjoins existing college buildings and is presently occupied by low-income housing of uncertain age. Discussion of the expansion program with residents of the neighborhood has been an integral part of planning, and construction has been phased to permit rehousing of the community in new high-rise residential towers. This approach to expansion of an urban college's physical plant, apparently the first aimed at providing public housing on a privately-owned campus, recognizes in surprisingly clear and strong proposals the responsibility of an urban institution to its environment. No residents will be displaced by First Phase construction, which will replace an existing two-story classroom building with a nine-story academic and research building. Phase II will temporarily rehouse neighborhood residents in nearby buildings until they can move into the first completed residential tower. Phase III will complete academic expansion and provide the second residential tower. The intense use of the 3.5-acre site is an example of future urban campus expansion, but the architectural considerations designed into this project suggest the means to the quality which must be provided along with density. This "micro-city" uses architecture in an exhilarating way to accomplish some important aims: it unifies architecturally the old and new buildings; it separates vehicular and pedestrian traffic by levels of academic and residential use; and, most important, it is designed to provide an environment that will "increase the individual's potential for learning, living, interchange and recreation."

TEACHERS COLLEGE, COLUMBIA UNIVERSITY, New York City. Architects: *Hugh Stubbins and Associates—Merle Westlake*, project director; *Hugh Stubbins and Peter Woytuk*, project designers; structural engineers: *LeMessurier Associates, Inc.*; mechanical engineers: *Jaros, Baum and Bolles*; parking and traffic consultants: *Wilbur Smith and Associates*.



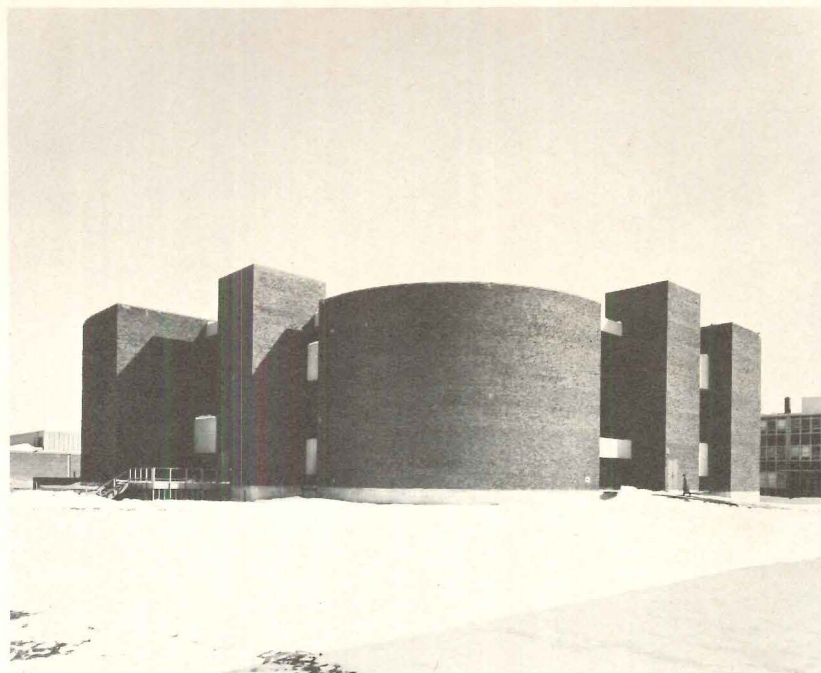
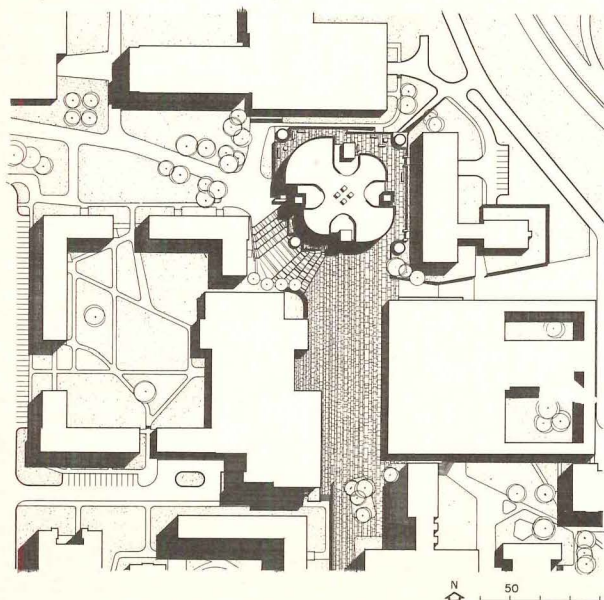


Linking the existing campus with the new, Millbank Memorial Library—world's largest collection of materials on education—will bridge 121st Street and open onto a landscaped plaza. Rising above the library will be one of two residential towers containing apartments for faculty, students and persons from the immediate area. Residential towers will have retail shops at their base, as in European cities. A two-block-long four-level mall or "inner street," where activity is to be concentrated, is a special feature of the plan. Community facilities will be provided at fifth, fifteenth and forty-fifth levels. Roof areas will be landscaped gardens or outdoor play courts. Phase I construction includes the West Tower and shops. Phase II will not begin until all tenants of the block are relocated in West Tower.

**Communications center supplies facilities for sophisticated use of audio-visual materials**

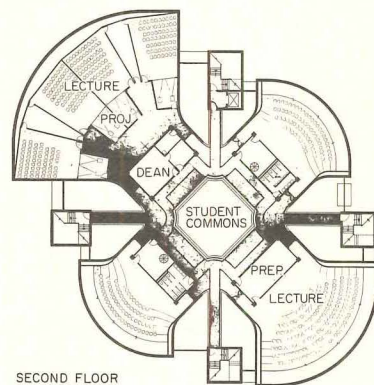
The new Communications Center at the State University of New York at Buffalo is a highly sophisticated instrument for the preparation, distribution and use of multi-media instructional materials. Within its curving walls are concentrated communications facilities that serve all departments of the campus. For development of courses to be given effectively to groups of students ranging in number from 50 to 400, there are facilities for programing extensive use of films, slides, tapes and other audio-visual materials, and consultants with whom to discuss such programing. For televising (live or taped) programs to lecture halls in the building or to classrooms elsewhere on campus, there are three professionally-equipped television studios. For instruction, there are 11 lecture halls of various sizes and types, some tiered, some level-floored, currently serving some 1300 students per day. Although the plans suggest a building of high specificity, the spaces originally intended for one use have been adapted to other uses without disruption either to themselves or to the rest of the building. The flexibility of the lobby and of the student lounge areas also make the building usable for an even broader program of communications. Because the multi-media approach to instruction is a relatively new field, and because the need for effective means of handling large numbers of students is increasingly important, one of the 185-seat halls has been equipped as an experiment in student response to presentations. Among questions to which answers are sought are these: how many visuals can be assimilated at one time? How long should each visual be displayed for maximum retention of information? How large should a visual be for effective impact? Does placement on the screen affect the learning process? The Communications Center was built at a cost of \$2,157,000, or \$27.09 per square foot.

LECTURE HALL CENTER, STATE UNIVERSITY OF NEW YORK, Buffalo, New York. Architects: *The Perkins & Will Partnership—Wesley V. Pipher, partner-in-charge; Richard Maitland, designer;* mechanical consultants: *Syska & Hennesey;* structural consultants: *Garfinkel & Marenberg;* general contractor: *John W. Cowper Co.*



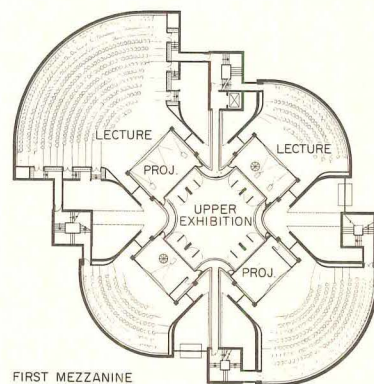
Bethlehem Steel Corporation

The second floor—actually fourth level above grade—groups instructional areas of various types around the central student lounge (see page 160). Two of the three tiered halls seat 50, one seats 185 students. The fourth space has a level floor and is divided into four 50-seat rooms now being used as a media-methods-materials complex. Preparation rooms have been converted to self-instruction labs in audio-visual equipment use, a change from the original intent.



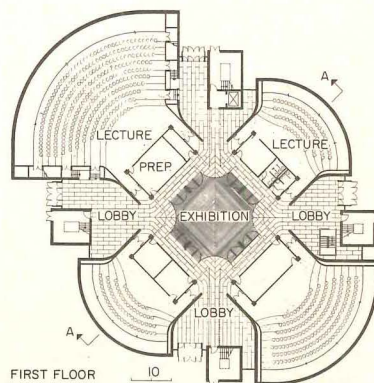
SECOND FLOOR

Both mezzanine floors are restricted areas for use by staff and technicians who load rear-screen projectors for presentation in lecture halls below. Plan at right shows how mezzanine works with circulation system to handle student traffic circulation expeditiously: lecture hall entrance is at lower level of tiered hall, exit is at upper level. Stairs are at side of each hall, connecting directly with entrances to building at grade level. Preparation rooms next to each hall were originally intended for use by faculty in setting up demonstrations and exhibits, but sophistication of building and equipment requires earlier and more intricate planning, now done in "nerve center" in basement. Prep rooms are used now on assignment for design and planning of courses.



FIRST MEZZANINE

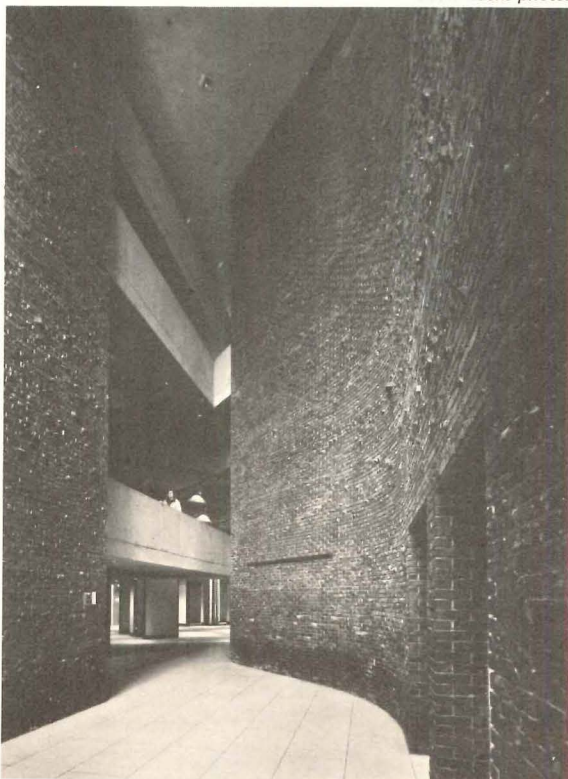
Oval shape of building is broken at four points for entrances and stair towers (which serve as bearing walls). Below grade is "nerve center" for campus communication by television and audio signal. Here also are library, resource center, workshops and consultation rooms. Entrance level has four of building's 11 lecture halls.



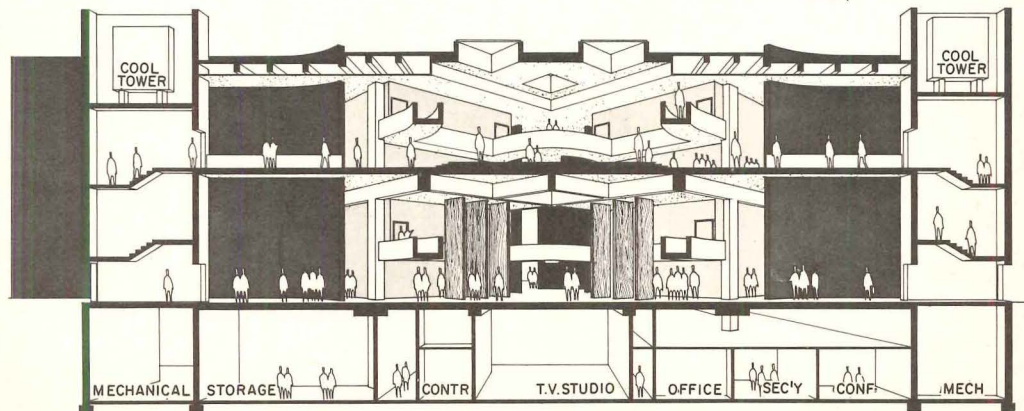
FIRST FLOOR



Louis Reens photos

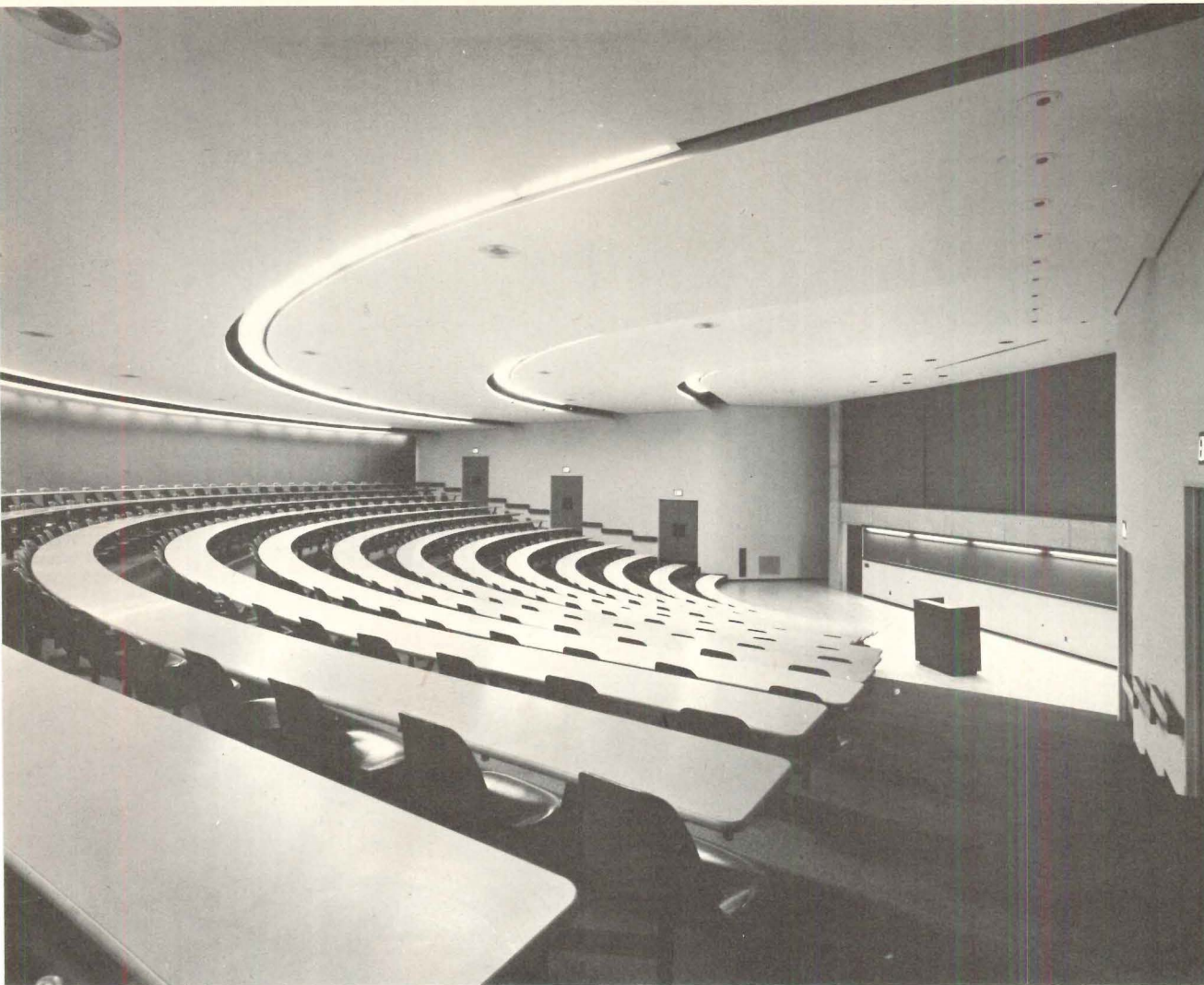


Dramatic two-story entrance lobby serves also as down-lighted exhibit area or, partitioned, can become from one to four seminar rooms. Concrete bridges at mezzanine connect rear-projection equipment rooms. Clinker brick, used for exterior, is carried inside to lobby.



SECTION A-A

10



Louis Reens photos

Large lecture halls seat up to 400; are equipped for rear and overhead projection with all controls at instructor's lectern in front. Screens are 30-feet wide, 10-feet high. Ceiling spots highlight special exhibits. Student lounge (right) is raised platform in center of top floor. Platform has also been successfully used as arena theater.

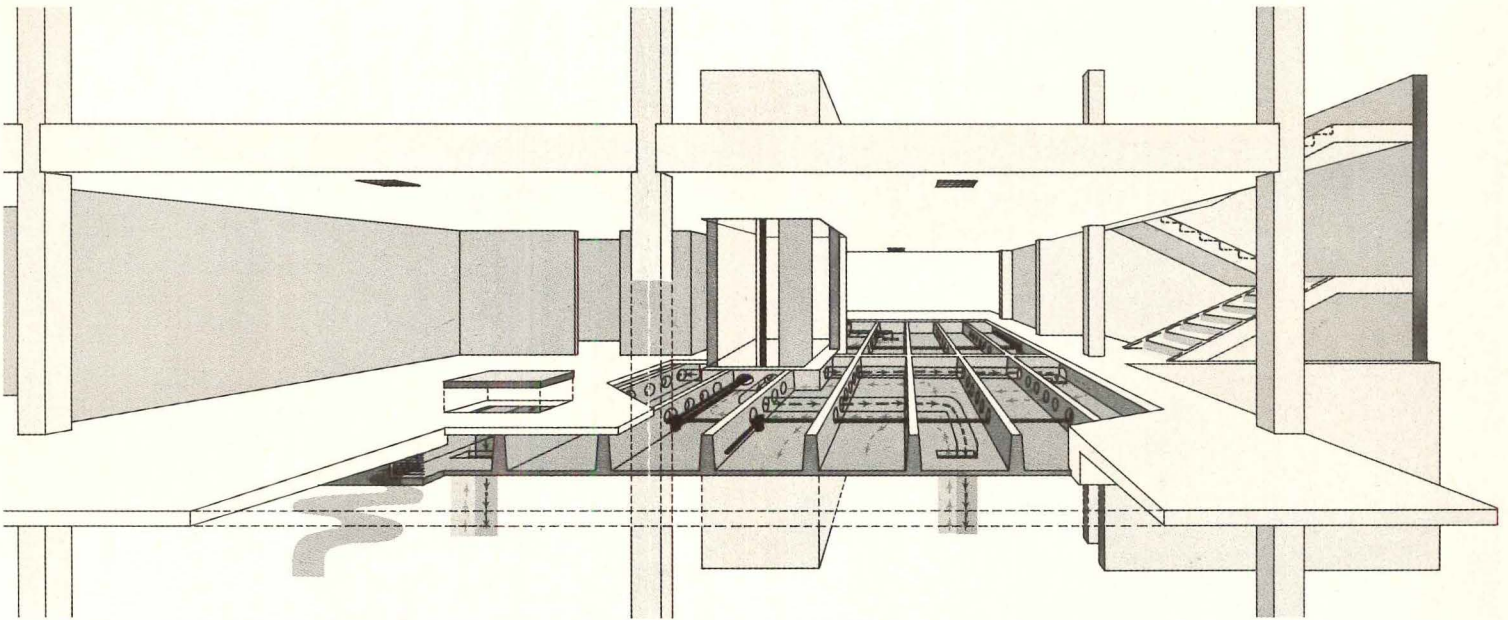


William Doran photo





## Integrating ducts with concrete floor structures



As mechanical services continue to grow more complex and extensive, the problem of finding space for them in the floor-ceiling sandwich becomes more acute. Thus, there are many instances where the architect finds it desirable to penetrate the spanning structural elements in order to minimize the floor-ceiling depth.

The question, however, is how to do it without adding undue cost to the structure itself. For this reason it is significant that recent tests by the Portland Cement Association show numerous penetrations can be

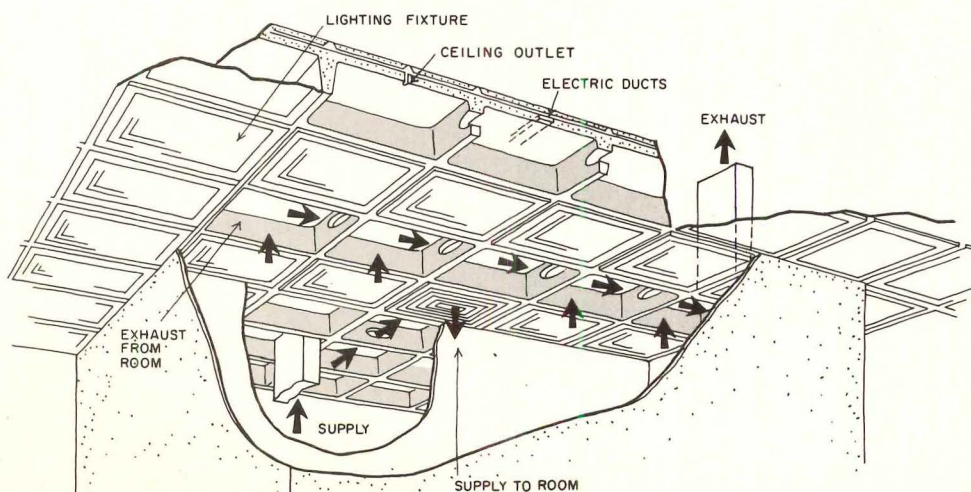
provided in the webs of one-way joist floor systems and the joists of waffle slab structures, with only nominal additional reinforcement required. The results of these tests were used for design guidance in two recent projects: 1) the \$18.6-million worth of dormitories in the University Residential Building System project set to be built by the University of California, and 2) a new headquarters building for the East Kentucky Rural Electric Cooperative Corporation now under construction in Winchester, Kentucky.

In the URBS project, legs of inverted tees will have 8 in. by 10 in. elliptical holes for the passage of supply air ducts and to provide openings for free air return. In the RECC project, waffle slab joists have oval holes so that the joists, when closed at the bottom, can serve as supply or return ducts.

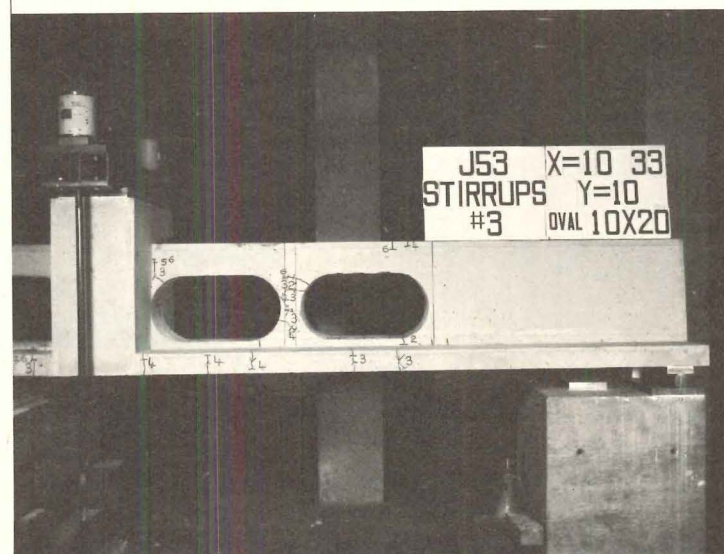
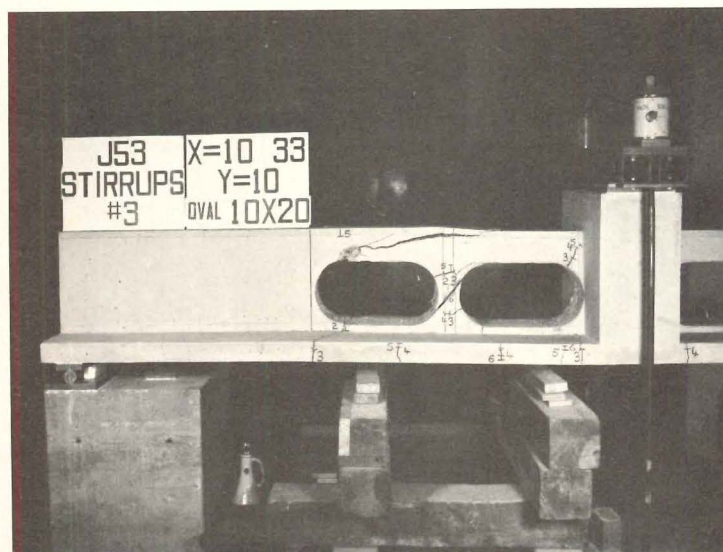
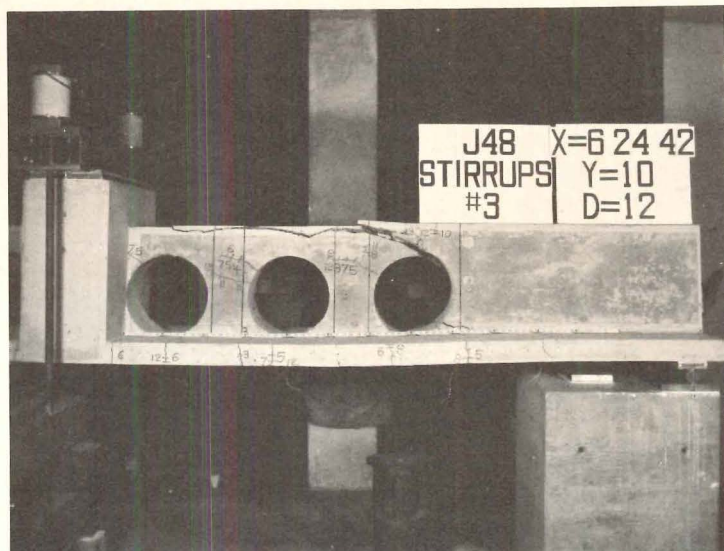
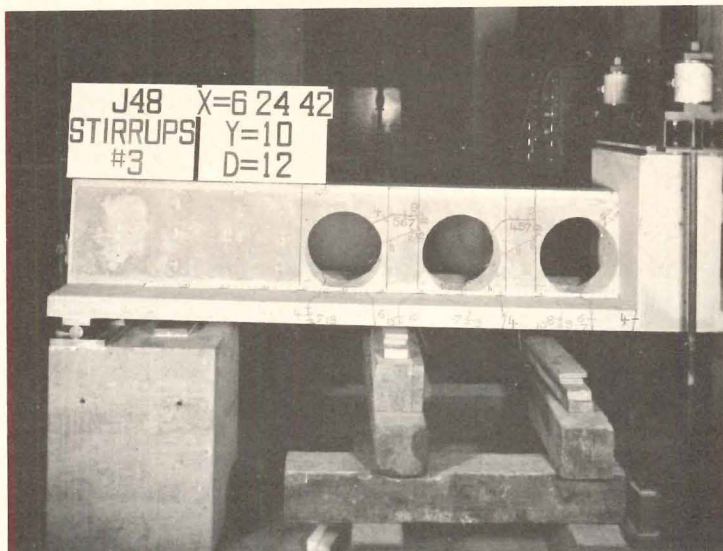
This integration of the mechanical system into the structure resulted in a reduction in depth of the floor-ceiling sandwich to 18 in. in the URBS project and to 21 in. in the RECC building. When the ducting system is integrated in the structure, as in these two examples, the need for a separate hung ceiling is eliminated. With URBS, the double tee itself forms the finished ceiling, and with RECC the waffle openings are closed with lighting fixtures, air diffusers or acoustical panels.

Further, when there are numerous openings through the load-carrying floor members, there is a significant saving in dead weight.

Providing openings in concrete floor beams and girders is, of course, not a new idea. Much of the time, however, these openings are restricted either in size or number. On the other hand, some of the industrialized building systems in Europe have used such pierced beams for the passage of ducts for a number of years. But for systems such as these, load tests would normally be conducted to refine the design of a series of modular elements,



In the University of California's URBS project (top) ducts are run through the holes in the floor's upside-down double tees. Ductwork and piping can be installed from the floor above. Waffle slab structure is used for both air supply and return in the RECC building, Winchester, Kentucky (bottom). Coffers are filled in by either lighting fixtures or acoustic panels as required.



Over 60 specimens of reinforced concrete tee-beams with different hole shapes and sizes have been tested by the Portland Cement Association's structural research laboratory. Specimens were loaded in increments to failure and cracks formed in various stages were marked on the specimens. The speci-

mens each contained a stub in the center simulating girder support. Photo legends give the specimen designation, size of stirrups; X is the distance from the side of the stub to the center of the holes; Y, the distance from the bottom of the web (top in photo) to the center of the holes; and D, the diameter.

since it is intended that these would be repeated over and over again in building after building. Thus, design know-how regarding the effect of such openings would be limited to the elements used.

#### PCA's tests of pierced beams to provide guidance for design

To investigate the effect of piercing holes in concrete joists, PCA's structural research section has tested over 60 specimens, including beams both with and without stirrup reinforcement. What they wanted to find out was the influence of the holes' size, shape and horizontal and vertical location on strength. Tests of circular, rectangular, oval, elliptical, and diamond shaped openings have been made. Test specimens with multiple openings included oval and circular shapes, with spacing as the variable.

Results indicate that openings large enough to be useful can be accommodated with no reduction in strength if small amounts of stirrup reinforcement are placed at the sides of the holes. When investigations are completed, it is anticipated

that complete design recommendations can be made. In making these tests, PCA hopes to provide information that will let architects and engineers know what the effect is of varying hole shape, size, placement and number. Purpose is to permit practically complete design freedom in the penetration of concrete beams for the passage of air ducts and pipes.

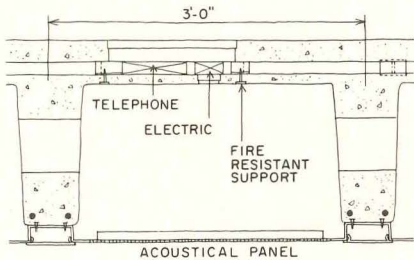
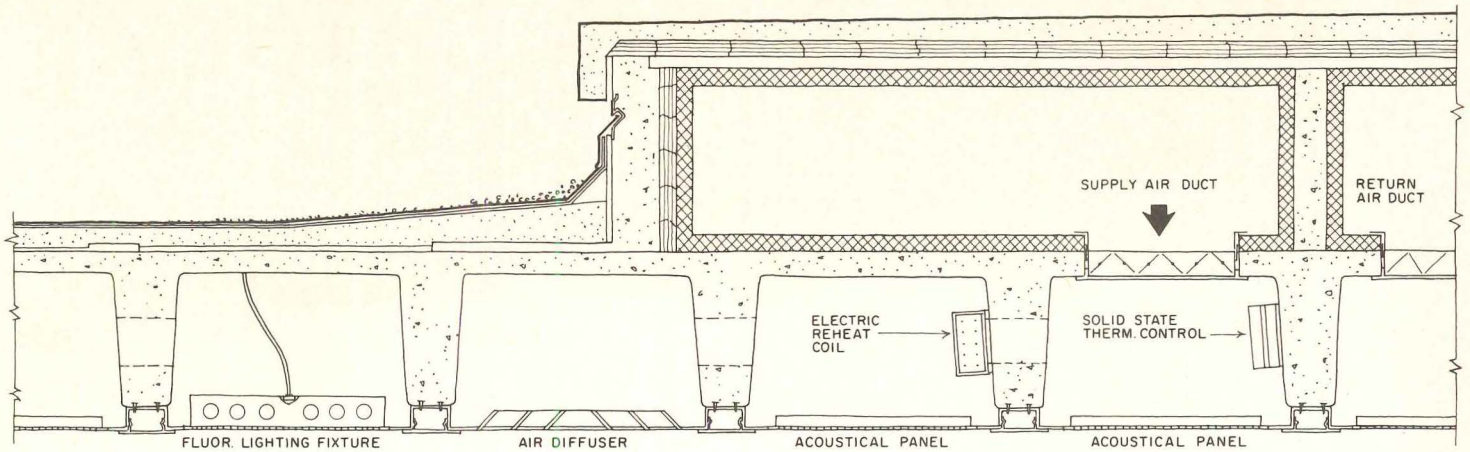
In general, the holes have little or no effect on flexural capacity. Since pan joist structures are usually designed without stirrup reinforcement, holes in the webs will reduce shear strength. Although some small holes can be accommodated without a significant effect on shear strength, holes of the size necessary to accommodate mechanical and electrical systems may significantly reduce the capacity of a member. However, properly designed stirrup reinforcement has been found to be effective in bringing the strength back up to that of a member without a hole.

The shape of the opening has an important influence on shear strength of a beam. Hole shapes that provide additional

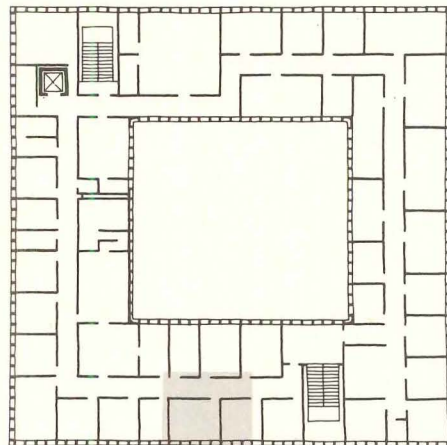
section at points of high secondary moment have a smaller effect than holes that provide prismatic sections above and below the opening. For example, as would be expected, a circular hole will have much smaller effect than a similar square hole.

PCA's tests show that pan joist floors can accommodate holes up to twice as long as they are deep. Depth of the hole is limited primarily by geometry of the web. With properly designed stirrup reinforcement these holes can be placed anywhere along the span of a beam. When multiple openings are required, posts between the holes with a width one-half the effective depth of the beam have been successfully used. In the test specimens, oval holes 10-in. deep and 20-in. long have been placed through joists with a web depth of 16 in. PCA reports that strength of these specimens was at least equal to that of the specimen containing no holes and no web reinforcement.

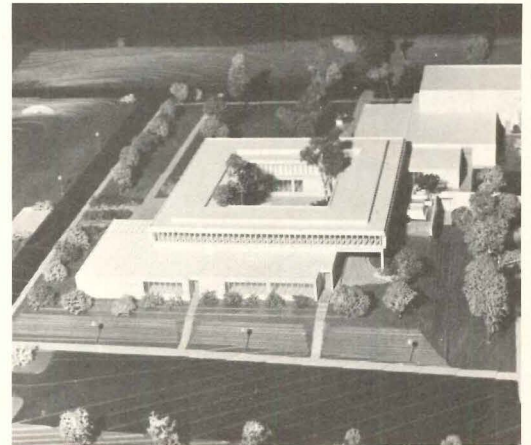
It should be emphasized that whenever a hole must be placed through the web of a member, its effect should be con-



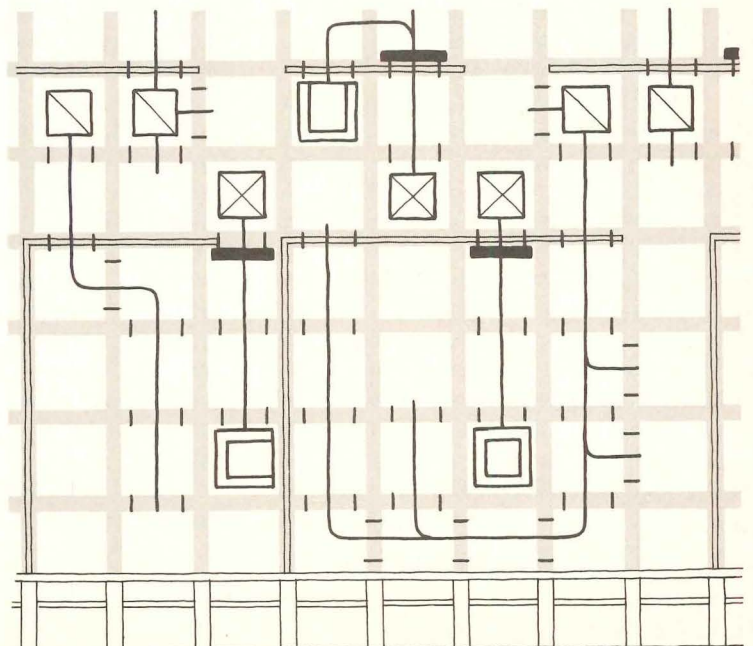
RECC building's second-floor air distribution system is supplied from ducts on the roof (above). Coffers in the waffle slab are closed by air diffusers, acoustic panels, or lighting fixtures. Return air is exhausted through the slots at the perimeter of the lighting panels. Raceways are embedded in the floor for electrical and telephone wires. An inverted insert technique was developed in which ellipsoid ducts are inserted at intervals of 12 ft in the run and turned upside down within  $\frac{1}{8}$  in. of the pan. After the pans are stripped, the cap is removed and fish tapes fed into the raceway for pulling the wires.



SECOND FLOOR



How channels are formed for air supply and return distribution is shown in the sketch below. It represents the shaded portion from the second-floor plan above. Rectangles containing an X designate supply ducts, and those with diagonal lines, return ducts. The black rectangles are electric reheat coils.

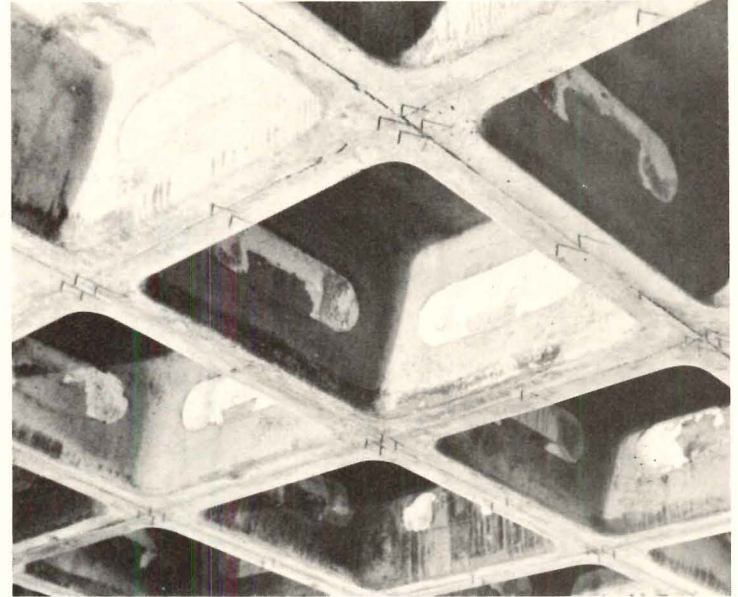
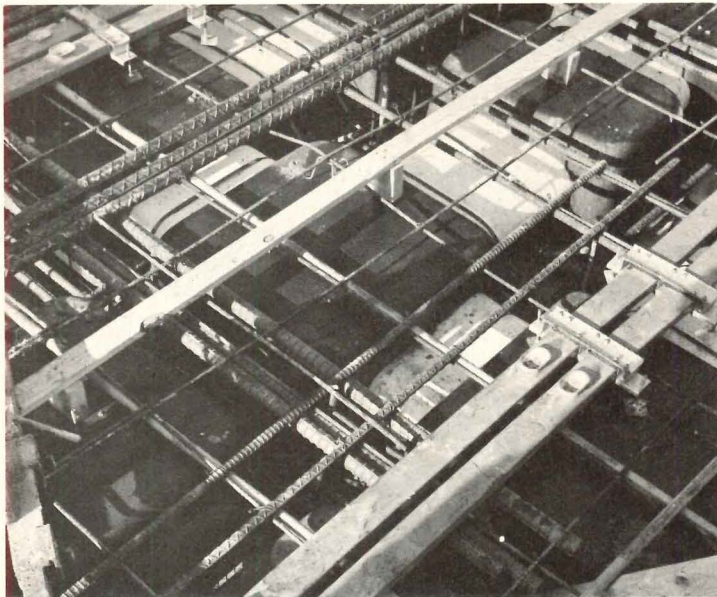


sidered in design. The laboratory investigation is intended to develop the design procedures necessary to economically accommodate holes large enough to pass service systems through joists.

PCA's test program expects to include prestressed concrete beams. PCA engineers anticipate that they will be able to accommodate quite large holes. However, the generally higher web shear stresses in prestressed beams may provide some additional design problems.

**Holes in RECC's waffle slab create channels for air flow**

Perforation of the webs of the waffle slab in the RECC building came about because of architect John S. Morgan's interest in keeping the depth of the floor-ceiling sandwich to a minimum, as well as minimizing noise that might be induced from the vibration of metal ducting. Unsatisfied with existing hardware and systems, he consulted various manufacturers to seek new solutions for his design problems. One of the manufacturers, Construction



Polyurethane wedges were strapped in place between the waffle pans (upper left) during construction of the RECC building. The straps keep the wedges from floating during placement of the concrete and while it sets. Steel reinforcement and electric raceways were then put in place (above right) ready to receive the concrete. A vibrator was used (below left) to avoid honey-

combing around the wedges. In the photo below right, the pans have been stripped; wedges can be seen as well as the nails that held the pans in place and anchored the bottom reinforcement. The nails were left in for attachment of steel channels, which can either receive a closure piece or a partition. The nails also secure the lighting fixtures or acoustical panels.

Systems, Inc., introduced the idea of creating voids in the webs of waffle slab joints by means of horizontal plastic foam wedges to displace concrete in the mid-depth of the joist that did little work.

Construction Systems, Inc. tested both polystyrene and polyurethane wedges for compressibility, adhesion with concrete, release characteristics, dimensional stability, ease of removal and other properties. During construction, normal vibration would help the flow of the concrete under wedges to avoid honeycombing.

After the concrete had set, the wedges could be knocked out, leaving holes in the webs. By arranging the holes in prescribed patterns and closing the bottom of the waffles with closure panels, channels could be formed that would serve as ducts. Although engineers were uncertain at first about effect of the openings upon air flow, tests conducted by Professor Orville W. Stewart of the University of Kentucky revealed that while the concrete channels

were somewhat less efficient than metal ducts, this reduction was found to be fairly nominal. Smoke tests showed, for example, that passage of supply air flowed evenly through the holes without any turbulence to speak of.

In order to test the wedges, the effectiveness of the holes as ducts, and the placement of raceways in the waffle slab, a construction simulator was built. PCA, Square D Company and Ceko Steel Corporation sponsored this simulator—a full scale “mock-up” which was used as a design model. Thus, all of the components were tried out in full scale application, which gave an opportunity to test and evaluate them before they were applied in actual building.

Interchangeable closure panels were designed to receive lighting fixtures, speakers, air diffusers, or acoustic tile. The lighting fixtures were designed to serve also as air handling devices to exhaust heat from lights. A U-shaped 4 ft-fluorescent tube

was used, which fit well into the 24-in. service module.

The bottoms of the webs were capped with a metal channel. Reason was to avoid having to grind down the small fins that occur normally with waffle pan type of forming. Without a fill-in piece, the metal channel could be used as a receptor for office partitions.

Because air flow tests were initiated some time after the building was under design, the architect and his engineers were not able to apply the results to the first floor. Result was that air was supplied conventionally to baseboard diffusers, and the waffle slab was used to provide return air channels leading to a dropped ceiling in the corridor that served as a return air duct. On the second floor, however, the only ducts are those formed by channels in the waffle slab. Air movement is from the hot and cold concrete-enclosed roof ducts through openings in the roof to channels formed in the waffle structure.

# How to keep down noise levels in computer facilities

by L. L. Boyer, Jr., P.E., consultant in architectural technology, Bolt Beranek and Newman, Inc.

At present, computer facilities are designed primarily to accommodate equipment, and little attention is given to the sonic environment provided for the occupants. Consequently, normal speech communication is often impossible in adjoining office spaces. Moreover, machine vibrations are sometimes transmitted to other parts of the building. Considerable air-conditioning capacity is required to cool the high-speed electronic equipment, and the custom-designed blower systems often compound existing computer noise control problems.

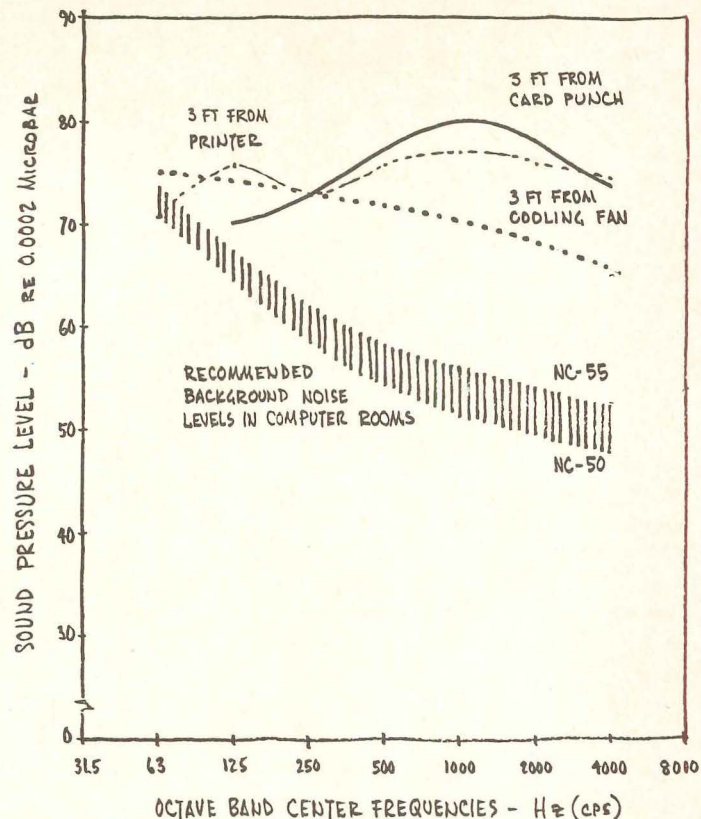
Air-borne noise levels of card punches and high-speed printing devices in computer rooms typically reach 75 to 80 dB in the speech frequency range at 3 ft from the source. Typical noise levels of various devices are shown in Figure 1. In addition to speech interference and annoyance, these relatively high levels fall just short of the hearing-damage risk levels for prolonged exposure. Acceptable room levels for continuous exposure vary from 15 to 30 dB below typical levels experienced close to the source, depending on the frequency. (Recommended levels are shown in Figure 1.) Because of these high noise levels common to high-speed computer systems, considerable effort must be made to contain or diffuse and dissipate this acoustical energy. Many of the required provisions must be incorporated into the architectural design of the facility.

Some information on computer room design is presently available and special associated problems have been studied. Also, most computer manufacturers have developed physical planning manuals for the use of the prospective customer. However, no specific acoustical guidelines have been publicly established, although several noise control techniques that have been used successfully in factories may be adapted to computer facilities. The purpose of this article is to present some tentative guidelines prepared specifically for computer facilities.

## Best computer locations

The physical location of the computer room within the building depends upon a number of factors, including noise control. For air-conditioning purposes, interior core areas of the building, where the cooling requirements are relatively constant, are often selected for the computer room. When this is done, establishment of a corridor system around the computer room will provide an excellent buffer zone to acoustically separate peripheral office and equipment spaces from the central computer space. Additional office space that requires a more critical acoustical environment could be located on separate floors. A typical recommended layout of the computer room

Figure 1: Noise levels of some computer accessory devices such as card printers are not only annoying, but fall just short of hearing-damage risk. Recommended noise level should fall somewhere between the NC-50 and NC-55 curves, indicated by the hatched band.



floor is shown in Figure 2. The air-conditioning system often serves both the computer room and the adjacent office areas. Therefore, these two areas cannot be completely isolated from each other, sometimes creating noise control problems which require further analysis and treatment (i.e. duct lining and/or mufflers).

The ground floor level is generally favored for computer expansion possibilities and for accommodation of the various service functions required. The ground floor usually provides a vibration-free floor system, a condition that is often difficult to achieve on upper floors. If the computer room is located on an upper floor, positioning of machines over beams or near columns is preferred rather than positions near the center of a structural floor panel.

## Spatial separation helps

The principal noise sources in the computer room are the electro-mechanical devices such as printing machines, card readers and punches, tape drives, and cooling blowers for the various units. Although these devices must usually be located in the computer

room proper, they can be separated and positioned to advantage.

The operator work area, where two to five operators must function and communicate with each other, should receive the most attention, because this is where prolonged exposure to the noise environment will occur. Electro-mechanical units should be placed outside of this immediate area where possible. If this is not feasible, any openings in the machine cabinets should be directed away from the operator area. Where the operator area is located near the corner of the computer room, printers or other necessary but noisy machines should not be placed at the junction of the wall boundaries because a corner will re-radiate noise produced in that area, unless the walls have highly efficient absorptive material.

Placement of work tables in the operator area can be used as spatial separators, requiring a larger operator area in which no machines are located. Enlargement of this area increases the average distance from operator to machines and also makes possible increased sound absorption by ceiling and floor.

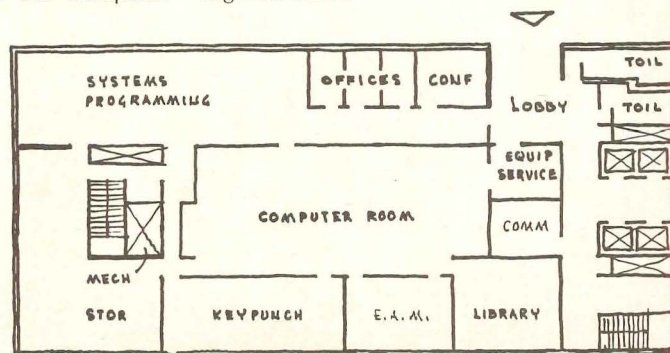


Figure 2: Good planning for noise isolation suggests that the noisiest activities be placed farthest from office space. By locating the computer room in the center of the plan, the corridor serves as a buffer zone to give acoustical separation.

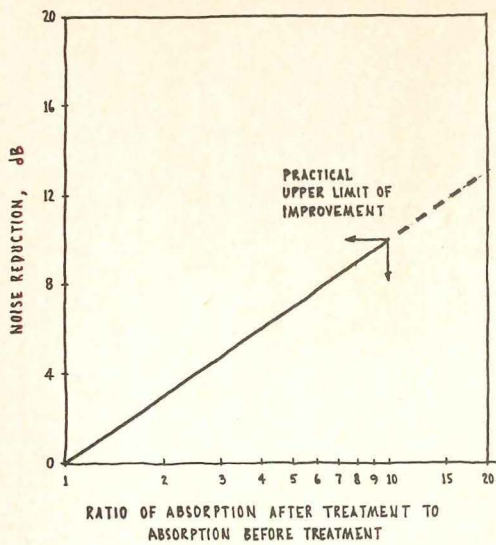


Figure 3: For every doubling of the acoustical absorption in a space, the noise level is lowered by 3 dB, which is a "perceptible" reduction.

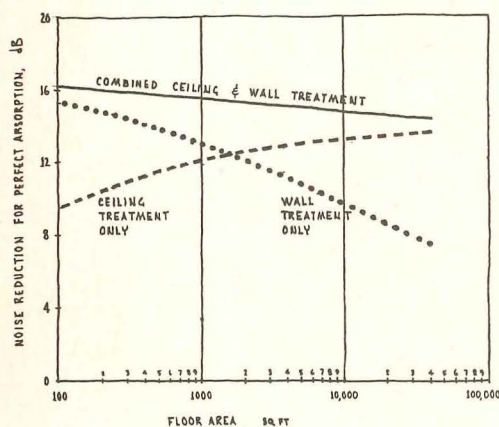
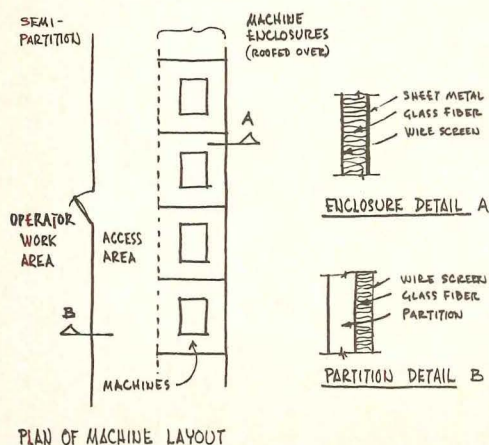


Figure 4: Absorptive treatment of walls is more effective in smaller rooms; of ceilings, in larger rooms. Decibel reduction assumes surface treatment absorbs 100 per cent of incident sound.

Figure 5: Noisy devices can be isolated either in a separate absorptive room, or as indicated here by use of a series of partial enclosures—i.e., three-sided, roofed housings. Housings and partitions have surfaces covered with fibrous glass.



Major air-conditioning equipment for cooling the computer equipment should of course be located in another room separated by heavy sound-isolating walls from floor slab to structural ceiling. Fan vibration isolation and duct lining may be necessary at that point, but only blower noise at individual computer machines will have to be controlled within the computer room proper. Often additional air-conditioning equipment must be installed when the initial computer system is expanded. Also, an auxiliary power system (i.e. stand-by generators) is often justified. Therefore, an ample reserve of future mechanical equipment space should be provided in peripheral spaces separated by solid walls, so that these usual future additions do not create new noise problems.

### Effect of sound absorbing materials

A noise level in an enclosed acoustically untreated space can be reduced by placing sound absorbing material on the room boundaries. Even with large amounts of absorptive material added to the room, the noise level theoretically could be reduced only to the level that would exist outdoors in a "free field."

Figure 3 shows that for each successive doubling of the available absorption in a computer room, the noise reduction is increased by about three dB; three dB is a perceptible reduction. Practically speaking, one may not attempt to reduce the noise level by absorption by more than 10 to 12 dB, which represents an increase in absorption of greater than 10 times the initial "untreated" value.

The ceiling is the most common location for placement of high-efficiency absorptive material, generally a suspended acoustical ceiling. For this absorption to be most effective, and to facilitate diffusion and dispersion of noise from a machine, the recommended floor-to-ceiling height should be at least 10 feet. An underfloor plenum height and a ceiling plenum height of at least 16 in. or more, each, are usually required for cable access, air distribution, etc. Therefore, a total height between floor slabs of 13 to 14 ft is typically recommended where feasible.

The application of suspended ventilating ceilings has come into wide use in computer facilities because of the ability to handle large quantities of air with equal distribution throughout the room, but without high draft-producing velocities and low air temperatures. The acoustical absorption value of these ceilings is usually not affected when this additional air-distribution function is incorporated, so that these ceiling sound absorptive panels could qualify as high-efficiency sound absorptive panels. If the room size is less than about 1600 sq ft, or less than 40-ft wide, the wall areas become very effective if surfaced with absorptive material. Figure 4 shows the relative effectiveness of the wall and ceiling surfaces, assuming that perfectly absorptive material is attached. In the operator area a further absorptive treatment

can be employed through the use of suspended unit absorbers at suitable positions below the suspended ceiling. One suitable area would be over the work tables, where an integrated unit of dropped lighting and unit absorbers could be suspended. Further absorptive material could be added under the table tops. Carpeting should be considered for the operator area and also in nearby areas where cooling air intakes or discharges may be located near the floor. Where carpet is used, anti-electrostatic protection is required to prevent electrical disturbances in computer equipment.

The absorption characteristics of the acoustical materials should be equally effective throughout the speech frequencies, especially above 250 Hz, since the over-all computer room noise has a broadband character.

### Isolating noisy machines

Some noisy machines, such as printers and card equipment, cannot be remotely located from the operator area. These input-output units could be completely isolated in a separate absorptive room adjacent to the operator area. A plate glass panel can establish visual contact, and a side door opening can provide access.

An alternative technique would be to use a series of partial enclosures for the input-output equipment. The machines could be enclosed in absorptive, three-sided, roofed housings. If these enclosures are favorably oriented and used in conjunction with absorptive partial-height partitions as shown in Figure 5, this technique can be quite effective for reducing noise in the high end of the speech frequencies. Visual contact could be provided through a series of intermittent plate glass panels or through a horizontal strip of glass at eye level.

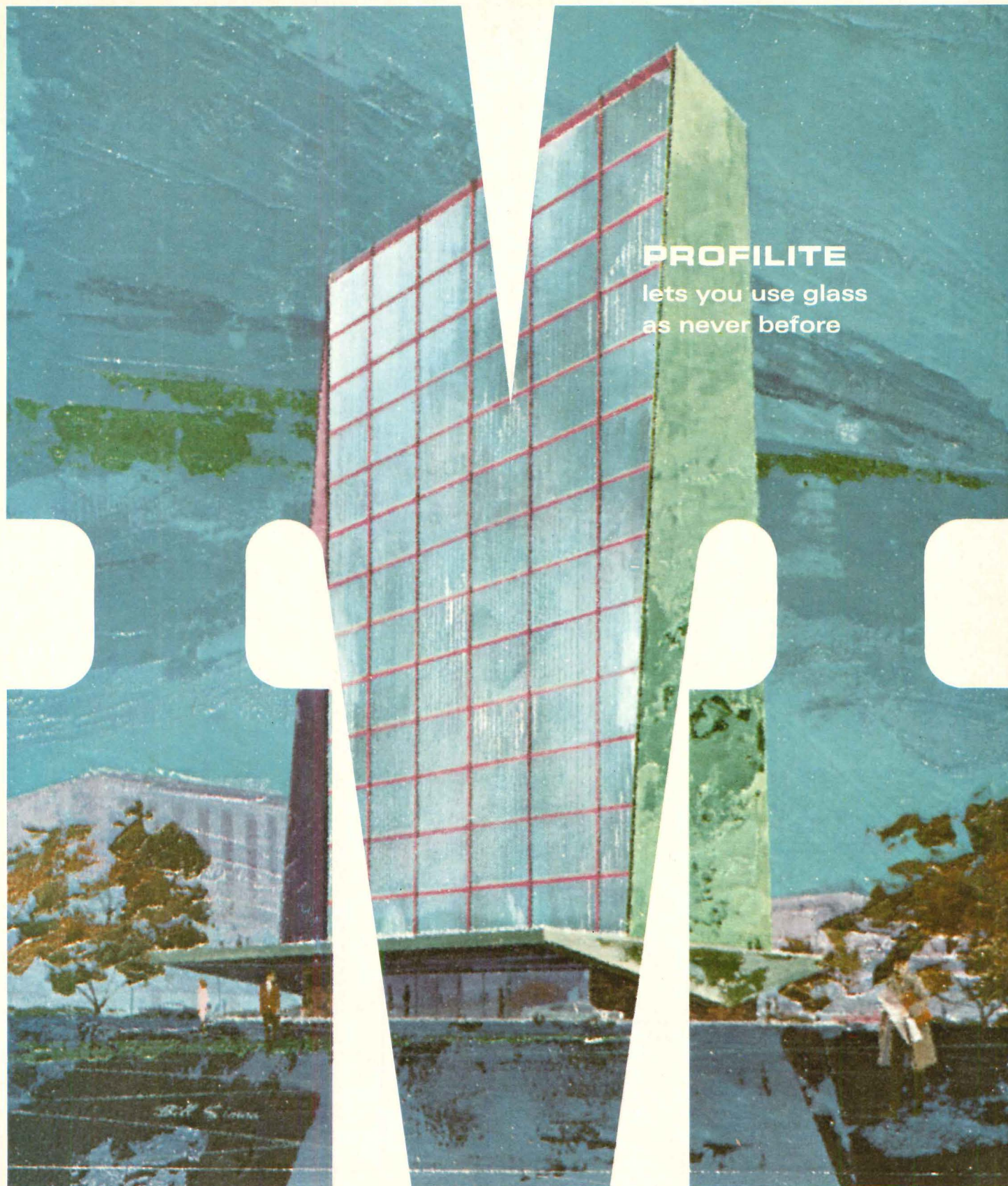
Elevated floor systems can be used advantageously as barriers to attenuate blower noise. Fan inlets and discharges in machine cabinets should be deliberately located in the base with direct connection into an air-handling floor plenum where a large portion of the fan noise can be dissipated, while the elevated floor prevents transmission of that noise back into the room. An airtight seal should be provided between the floor panels and the panel support framework.

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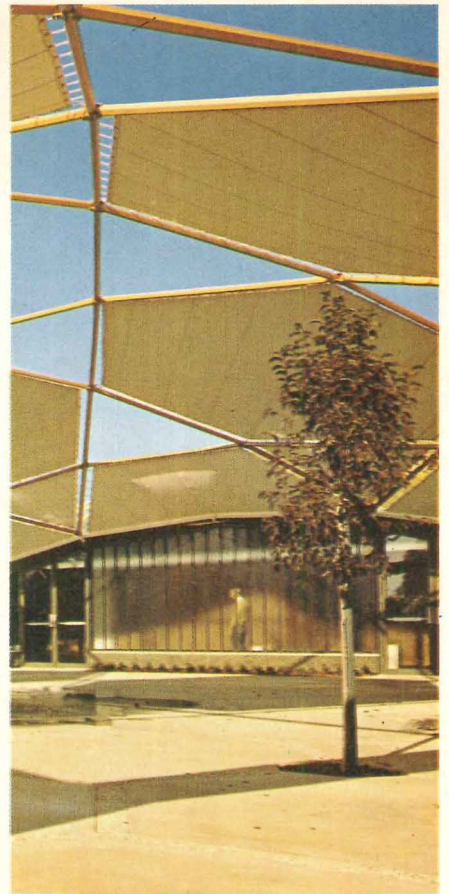
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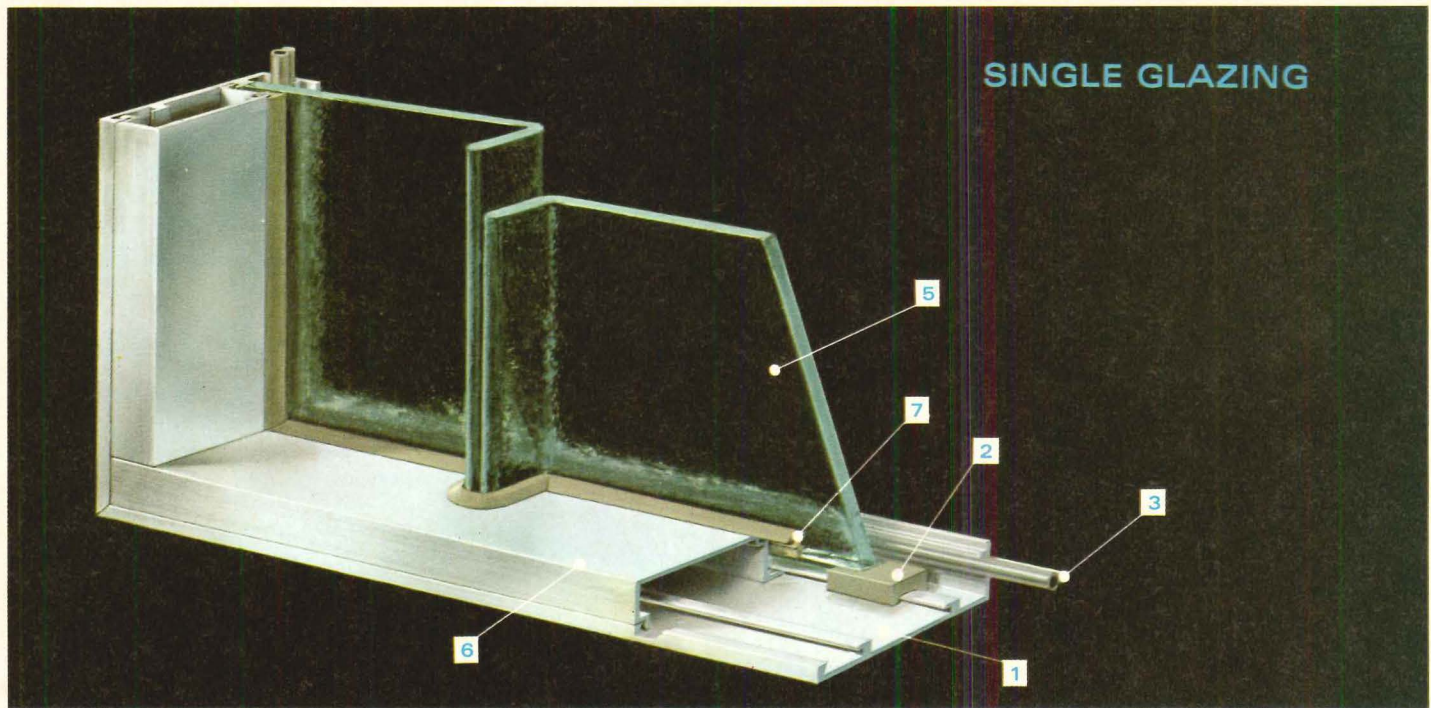
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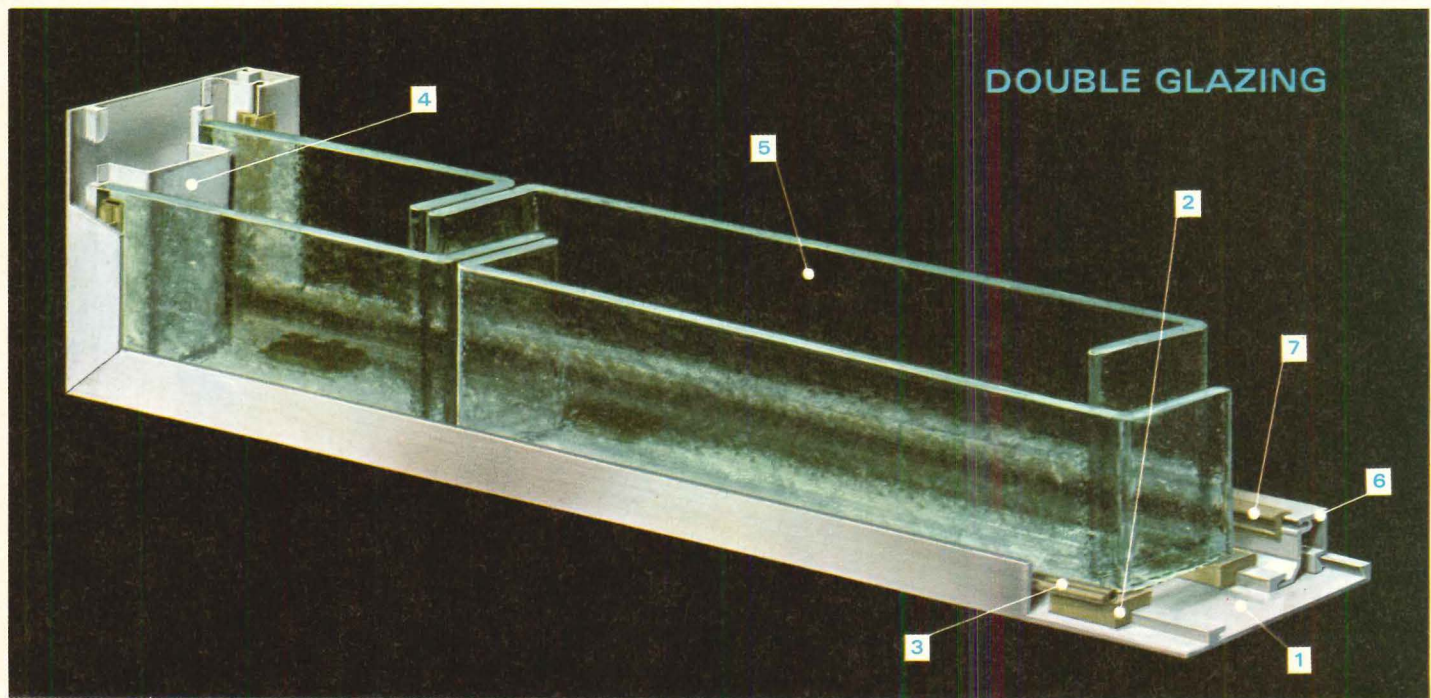


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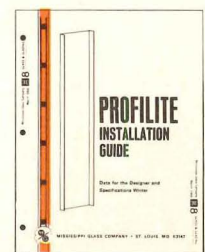
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## Vinyl powder coatings protect and color steel paneling for walls and roofs

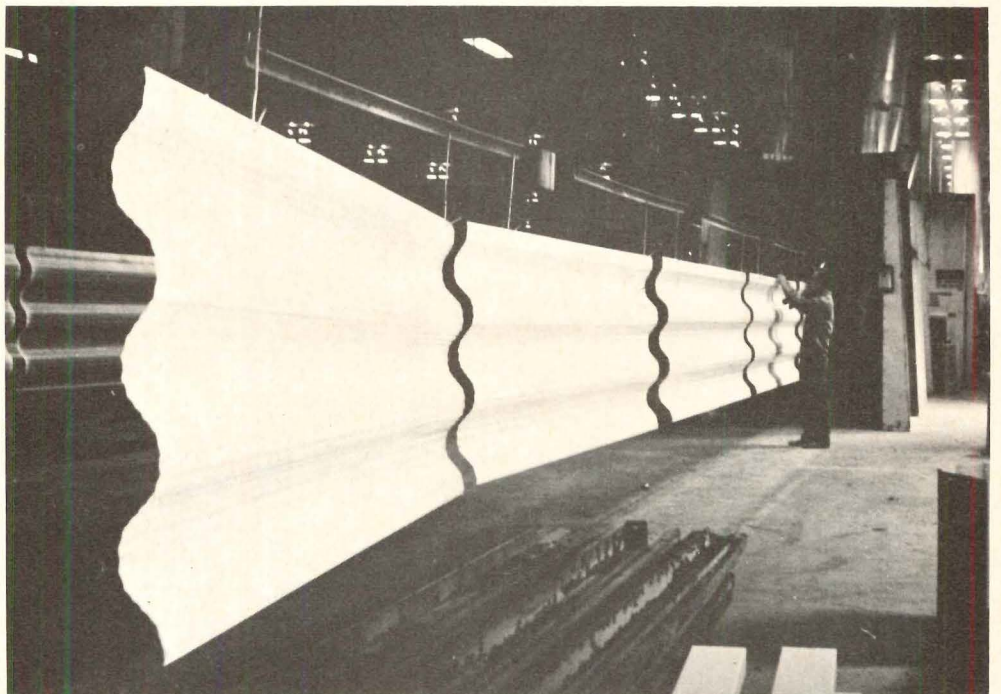
The Midwest steel building components manufacturer that pioneered in the design of long-span steel roof structures and load-bearing stressed-skin panels in the 1950's now has another first to its credit. Behlen Manufacturing Company of Columbus, Nebraska is reported to be the first building component producer to have an in-house production line for electrostatically spraying vinyl powder coatings on steel panels, windows, and accessories. Practice of many manufacturers has been to purchase coil stock already precoated, which requires them to uncoil, flatten, form, punch and assemble coated steel. But Behlen, by coating as the logical last step prior to shipment, is reported to have simplified inventories, speeded up production and deliveries, and lowered costs.

The new coating line is believed to be the largest plastic coating operation in the world. Galvanized or aluminized steel sections as large as 50 ft by 8 ft are coated at speeds up to 20 ft per minute as they move along the huge conveyerized line. In addition to wall and roof panels, trim, downspouts and gutters have been coated with the melt-mixed, freeze-ground vinyl powder especially developed for Behlen by The Polymer Corporation of Reading, Pennsylvania.

### The plastic coating concept

Powdered plastic coatings on steel substrates first gained substantial commercial recognition through the fluidized bed technology, introduced by Polymer in 1957. Today suppliers to the electric utility, telephone, chemical, electrical manufacturing and furniture industries, among others, use this coating system for well-identified end-uses. Specific thermoplastic polymers are selected as coatings to provide corrosion resistance, improved weathering qualities, impact or chip resistance, or for the esthetic reasons of attractive color and warmth to the touch. Thermoset polymers or the new co-polymers provide essential insulation for electric motors and telephone circuit boards, to mention a few.

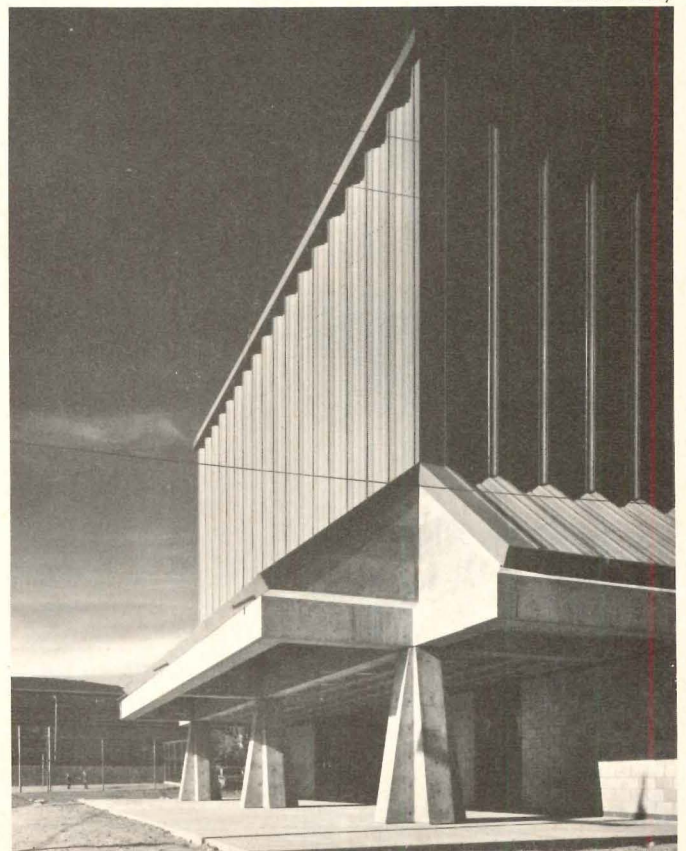
In recent years, other coating technologies have been introduced to use the same families of plastic powders as coatings. The



Gordon Peery

Vinyl-coated steel panels are inspected (above) on Behlen Manufacturing Company's production line. Panels have deep corrugations so that they work both as load-carrying and closure elements. Corrugations range from 3-in to 7½-in deep (as in the Kiwanis-Felt Boys' Club in Salt Lake City, right). When used for a roof, single panels span up to 30 ft. When combined with lightweight struts to form trusses, roof systems span up to 300 ft.

In compounding the vinyl coating powders, the ingredients are melt-mixed and freeze-ground to assure thorough dispersion. Melt-mixed vinyls are used for long-term, high-performance end-use requirements. Because of the superior dispersion of ingredients, these vinyls are said to have a higher opacity than other types, thus screening out more of the ultraviolet rays that have a degrading effect on plastics.



fastest growing system by far is the electrostatic spray method, now widely used in coating transformer covers, steel pipelines for gas utilities, and many other products.

After Behlen had decided upon an in-plant coating system, Polymer developed a new vinyl formulation that was tested over a two-year period. The application method selected by Behlen was the electrostatic spray technology, with inherently better process control than solution coating.

Behlen expanded its 14-acre plant at Columbus, Nebraska to house the new \$200,000 electrostatic spray coating operation. The line was designed to provide for application of solution coatings as well, in case this is the customer's preference.

#### Advantages of the new coatings

The 10-mil-thick vinyl coatings are expected to offer a new standard for the building industry. Similar coatings applied by electrostatic spray have documented service records of superior resistance to corrosion; to impact, scratches or other abrasion; to dirt accumulation and staining; and to other hazards. After more than 14,000 hours exposure on Weather-Ometer, the coatings maintain their excellent weathering resistance. There is no evidence of rusting or underfilm corrosion, no reduction in adhesion and

only a slight reduction in toughness and flexibility. Vinyl coated steel transformer covers have withstood more than 10 years of exposure in seacoast and industrially contaminated atmospheres—a record never equaled by other coatings. A significant advantage is that the electrostatic spray process insures edge coverage of about 50 per cent of that on flat surfaces.

The integrity of the coating is enhanced because the vinyl powder is melt-mixed and freeze-ground to assure uniform dispersion of all the ingredients throughout the formulation. This characteristic is essential because the electrostatic spray method will separate out ingredients of vinyl powders prepared by dry blending technique.

Color choice of the new vinyl powder is extensive. Behlen offers 13: aqua, olive, brown, green, bronze, ebony, tan, yellow, black, dark blue, light blue, red and white. With the electrostatic spray system, the line can change over immediately from one color to another.

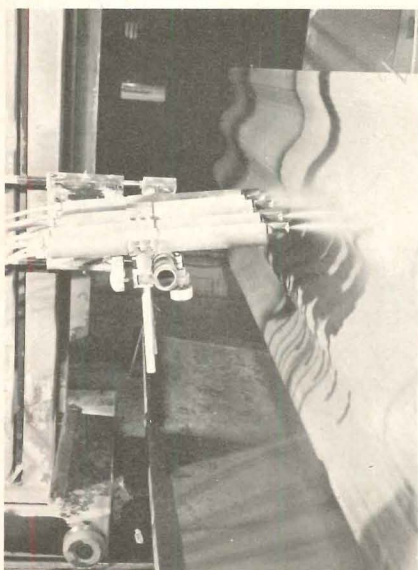
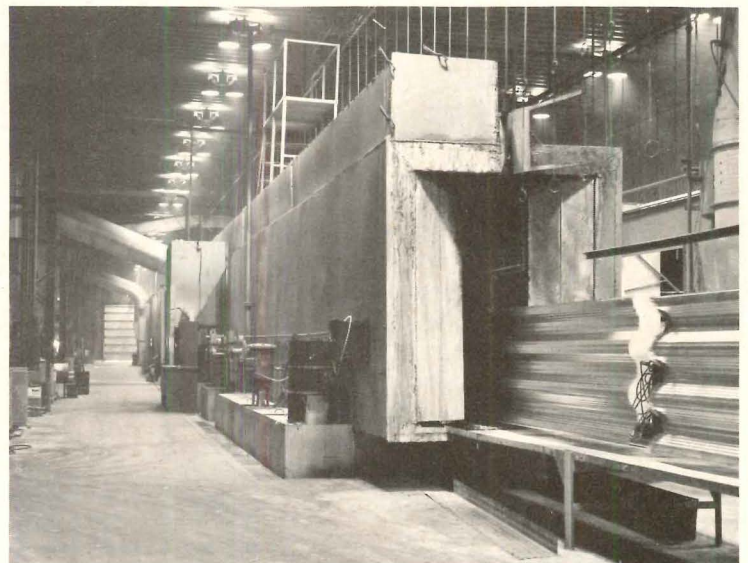
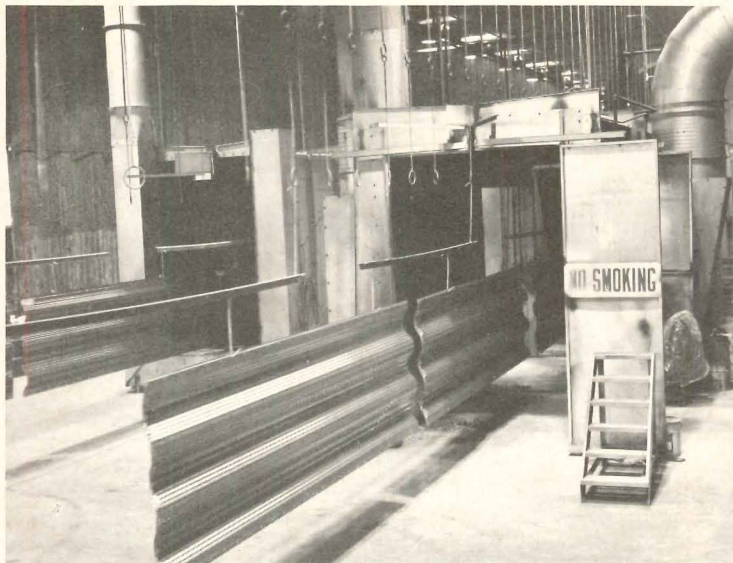
#### The coating system

The installation of its own coating line has enabled Behlen engineering to redesign its production operations to provide a steady flow of steel into the coating line. The highly sophisticated line moves varying size

parts by conveyors at speeds from 10 to 20 ft per minute, enabling 4-ft wide sections to be coated at the rate of 40 to 80 sq ft of surface area per minute. The uniform thickness applied of 10 mils is a new standard for the building industry, as compared to other coatings.

Pre-coating operations are designed to insure a permanent bond of the coating to the corrugated substrates. The five-stage cleaning line includes: 1) cleaning in an alkaline spray to remove dirt and dust; 2) rinsing in fast-flowing water to assure cleanliness of all surfaces; 3) application of zinc phosphate to etch the surfaces and to assure greater adhesion of the coating; 4) water spray rinse; and 5) chromic rinsing to "set" the zinc phosphate for steel panels.

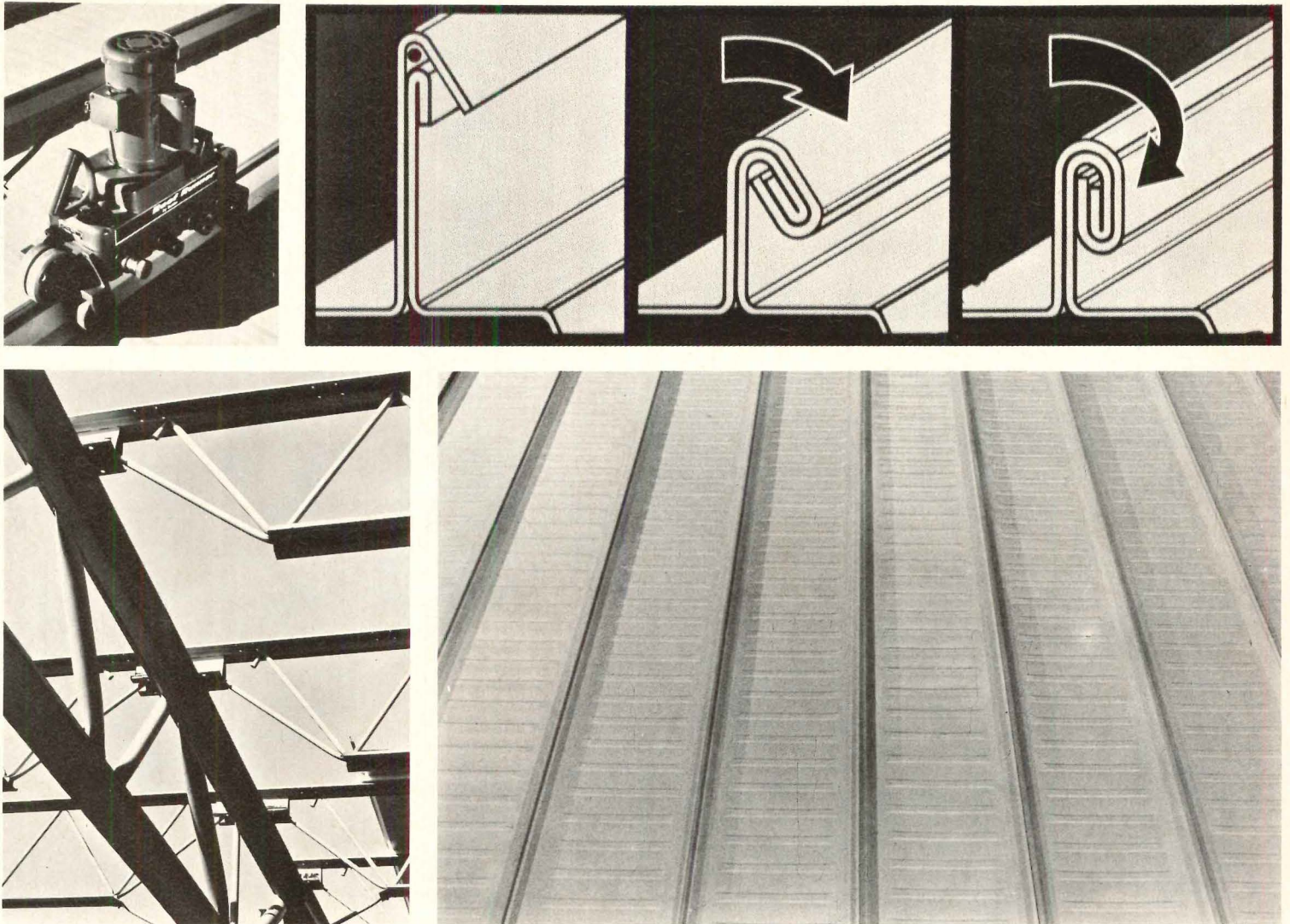
Coating is accomplished by the following carefully controlled steps: 1) drying in a 50-ft oven; 2) application of a liquid primer; 3) heating of parts in ovens to a temperature of 260 F; 4) automatic coating as parts pass through an in-line, electrostatic spray system. Vertically reciprocating powder guns assure that all surfaces, including edges and joints, are coated to the desired thickness. 5) Heating in a huge tunnel oven to a temperature of 460 F to cause the vinyl powder to melt and flow, permanently fusing the coating to the substrate.



Galvanized steel panels pass through a multi-stage cleaning system and are primed before coating (top, left). Vertically reciprocating powder guns coat the panels and assure that all surfaces, including edges and joints, receive a uniform thickness (bottom, left). Coated panels are heated to 460 F in a tunnel oven so that vinyl powder melts and is fused to the substrate (top, right). Finally, panels are allowed to air cool (bottom, right).



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### Lightweight roof design: new approach to structural efficiency

Tubular structural support and lightweight standing-seam steel, aluminum or copper roofs offer a system of total roof construction that is flexible, durable and economical.

The key to the system is a self-propelled, roll-forming machine (photo top left) that joins the edges of roof panels under pressure into a water-tight double seam. With the panel edge serving as the track along which the electrically-powered unit operates, the sealing operation of turning the seam through two 180-degree folds (drawing top right) is accomplished at a speed of 15 feet per minute. The result is the MR-24 roof, which functions like a continuous metal membrane (photo bottom right). It is said to be maintenance-free, to weigh only  $\frac{1}{3}$  as much as conventional built-up roofs and to have a unique system of compensation for expansion and contraction.

The structural system, *Landmark*, is made possible because of the lightweight roof. It consists of tubular steel formed by welding continuous tube to T-sections at top and bottom (photo bottom left). The tubes are said to match the efficiency of bar joists while weighing only  $\frac{1}{3}$  as much. Every part is engineered for the system and all parts function as a unit, resulting in a precise, factory-formed structural system with flexibility in dimensions, in cantilevered overhangs, in fascia treatment, and in interior and exterior materials.

The roof is fastened to the supporting structure by a special clip assembly. One end of each clip fits into a slot in the supporting structure, while the other end is rolled into the seam during sealing. To help provide thermal expansion and contraction, each clip is free to move slightly along the

seam line. Movement at right angles to the seam is handled by a bellows-like action of each of the standing "shoulders." There are no fastener holes in the roof membrane or openings of any kind in interior spaces.

Because of the reduced weight of the entire system, there is no need for masonry walls or other heavy structural members or for heavier structurally-reinforced foundation work. As a result, widths of open space spanning up to 80 ft, with no structural framing visible in the completed interior, are possible.

The company has summarized the major advantages of the system as follows: in-place economy, reduced engineering and planning time, faster erection. ■ Butler Manufacturing Company, Kansas City, Mo.

Circle 300 on inquiry card

More products on page 188



**Crane's new Embassy  
half-stall: siphon-jet action  
at a low washout price.**

The new Embassy  
Urinal from Crane is the  
first half-stall siphon-jet  
ever offered. It combines the quiet  
efficiency of a washout with  
the positive flushing action of a blowout.  
And at a price competitive with  
the washout design it obsoletes.

But there's more:

Thorough flushing action that eliminates  
strainers, odor cakes or ice.

Streamlined styling to simplify cleaning.

Two inches narrower in width than  
most others for space-saving,  
easier installation.

And of course, competitively priced.

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contact your Crane distributor.

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**CRANE**

Valves • Pumps • Fittings • Water Treatment • Meters • Controls • Plumbing • Heating

# Use a partition system that adapts to changing office needs—in a hurry!

## Quick Change partitions save trouble with design flexibility.

With some movable partitions, you're stuck with whatever design (good or bad) the manufacturer came up with.

But not with Masonite Quick Change movable partitions.

Their variety provides the design flexibility needed to give every building interior its own personality.

For instance, there are ceiling-high and cornice-high Quick Change partitions. Low rail and glazed rail versions. Flush post and feature post models.

Then there's a variety of Royalcote woodgrain finishes to choose from. And decorator colors too. We'll even leave the hardboard panels unfinished so they can be custom finished on the job.

In short, Quick Change partitions save trouble with design flexibility.

## Quick Change partitions save trouble with easy installations.

A movable partition isn't much good if it's not easy to install.

Masonite Quick Change partitions aren't troublesome for two reasons.



First, our partitions are designed specifically for quick, economical installation with a unique friction fit that minimizes labor and parts.

For example, a straight ceiling-high partition wall can be run almost any

length without the use of mechanical fasteners.

Second, we have professional Partition Representatives located around the country. They're the experts with the training, equipment, and experience to do a fast, clean installation job.

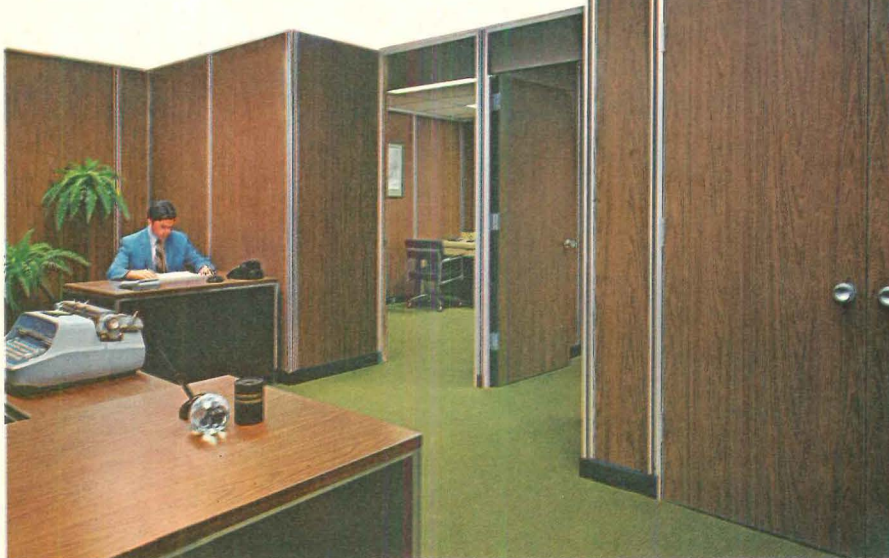
## Quick Change partitions eliminate problems with quick changes.

The whole idea of movable partitions is that they be movable. If they're not; if moving them creates more trouble than they're worth, what's the use?

As the name implies, Quick Change changes quickly. A few screws here, a nut or bolt there, and the whole partition system can be easily disassembled. Then it can be moved to another place and reassembled just as easily. And as sturdily as ever.

If you'd like to know all the details of how to eliminate a lot of trouble, ask a Masonite Partition Representative about our Quick Change partitions.

Or just send the coupon to us.



MASONITE CORPORATION Dept. AR-5

Box 777, Chicago, Illinois 60690

Please send me your literature on Masonite Quick Change movable partition systems.

Please have your representative call.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

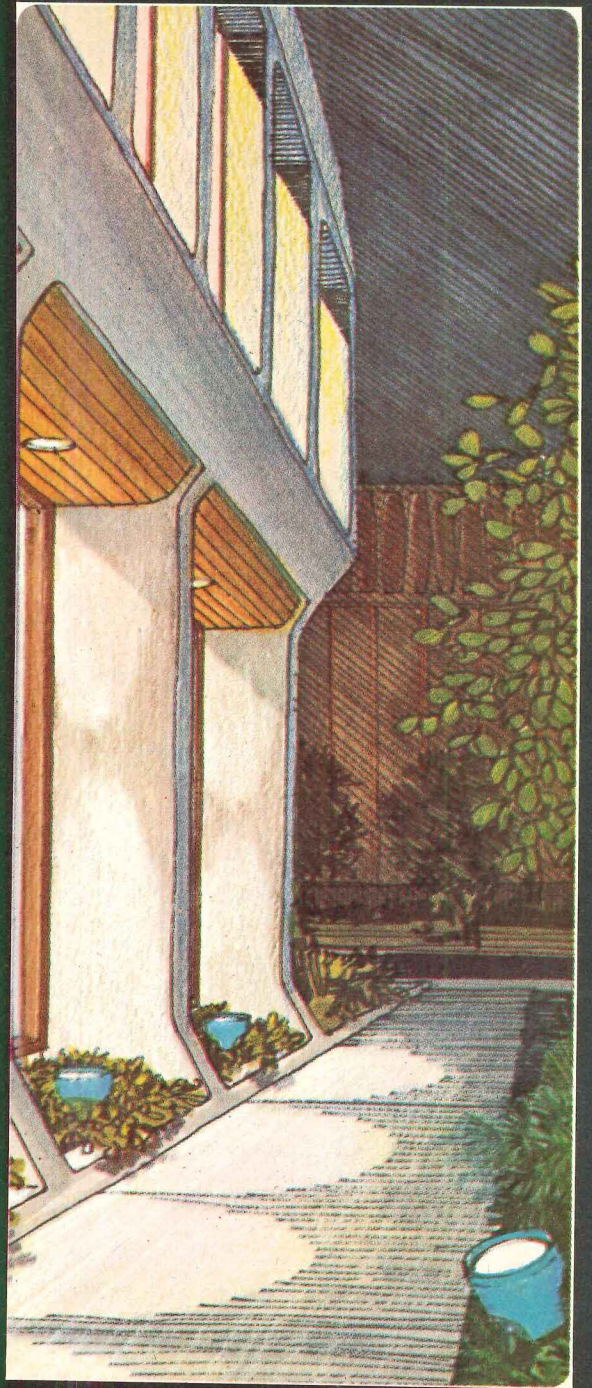
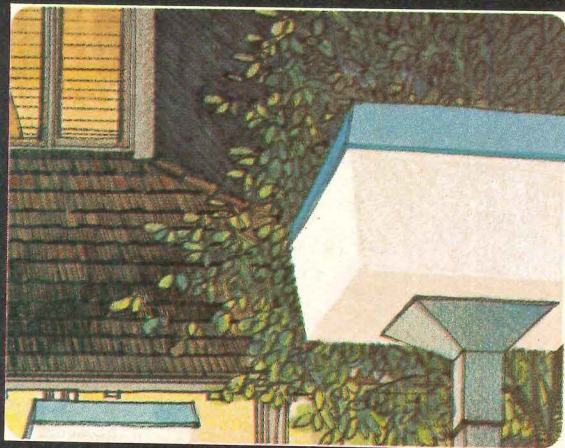
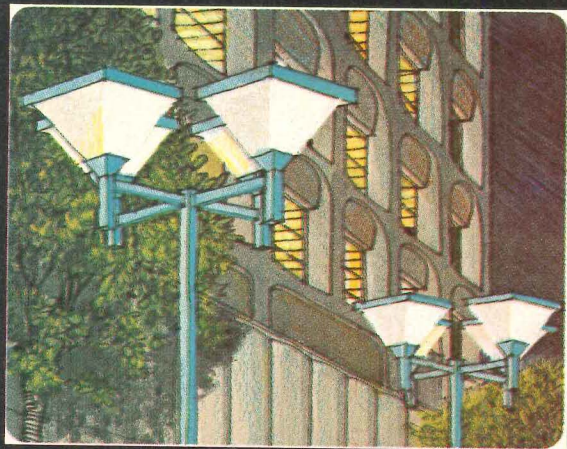
Street \_\_\_\_\_

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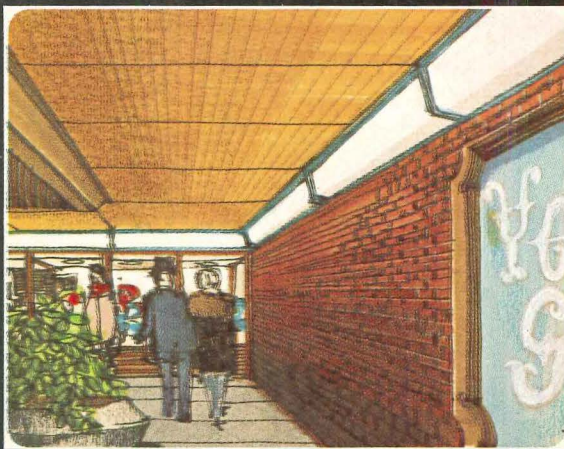
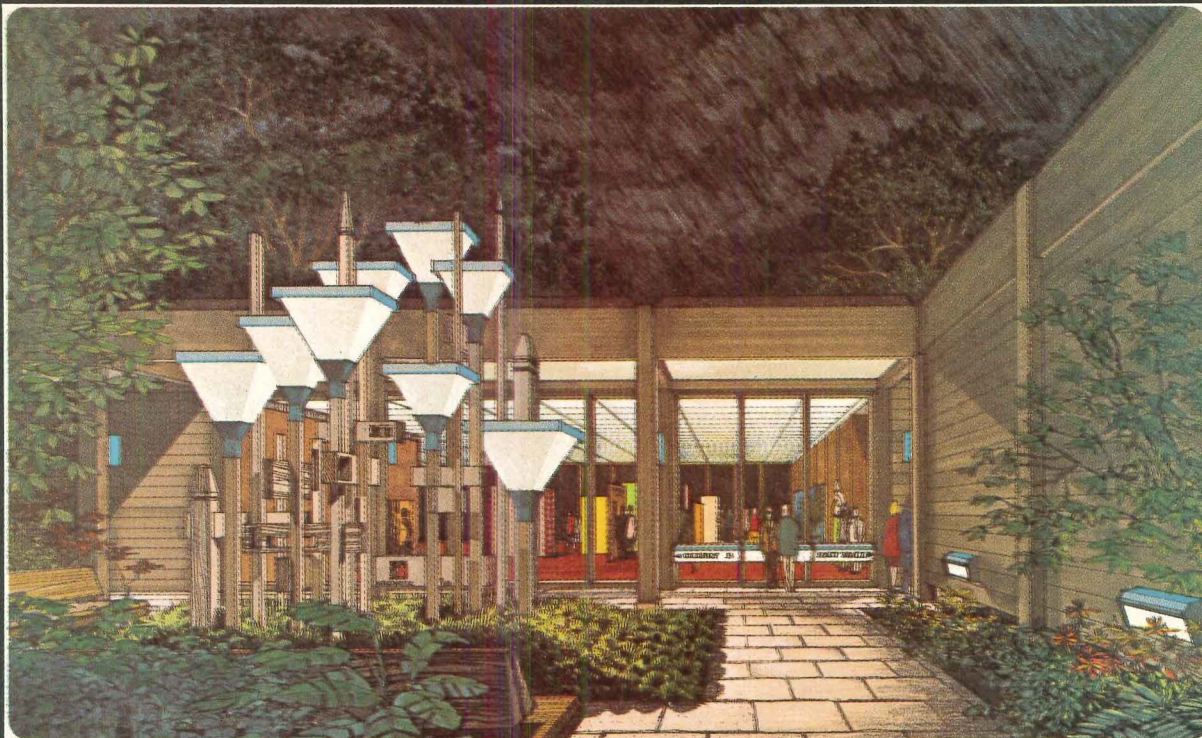
Masonite and Royalcote are reg. trademarks of Masonite Corporation. Quick Change is a reg. trademark of Glen O'Brien Movable Partitions Co.

For more data, circle 82 on inquiry card

Light is to be impressive by.  
Light is to be friendly by.  
Light is your personality  
after dark.







What you see and think of a building at night comes down to one thing. The light. It speaks for the architect. It speaks for the owner. We think light can speak eloquently.

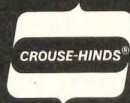
You see a sample here. How our light fixtures coordinate to enhance the architecture. Post tops. Wall mounts. Up downs. Pencil beams. You name it, whether to spot a spire or flood an acre.

We can start with where you want to light. Or you can start with our new Idea Book that covers the full spectrum. Check the reader service card. Call us. Or call your nearby Crouse-Hinds agent or distributor. We're ready to do the analyzing, costing and comparing, with an assist from our home office computer.

We'd like to hear from you. In the meantime, you can find us in Sweet's Section 31-b.

Outdoor Lighting Dept.,  
Crouse-Hinds Company,  
Syracuse, N. Y. 13201

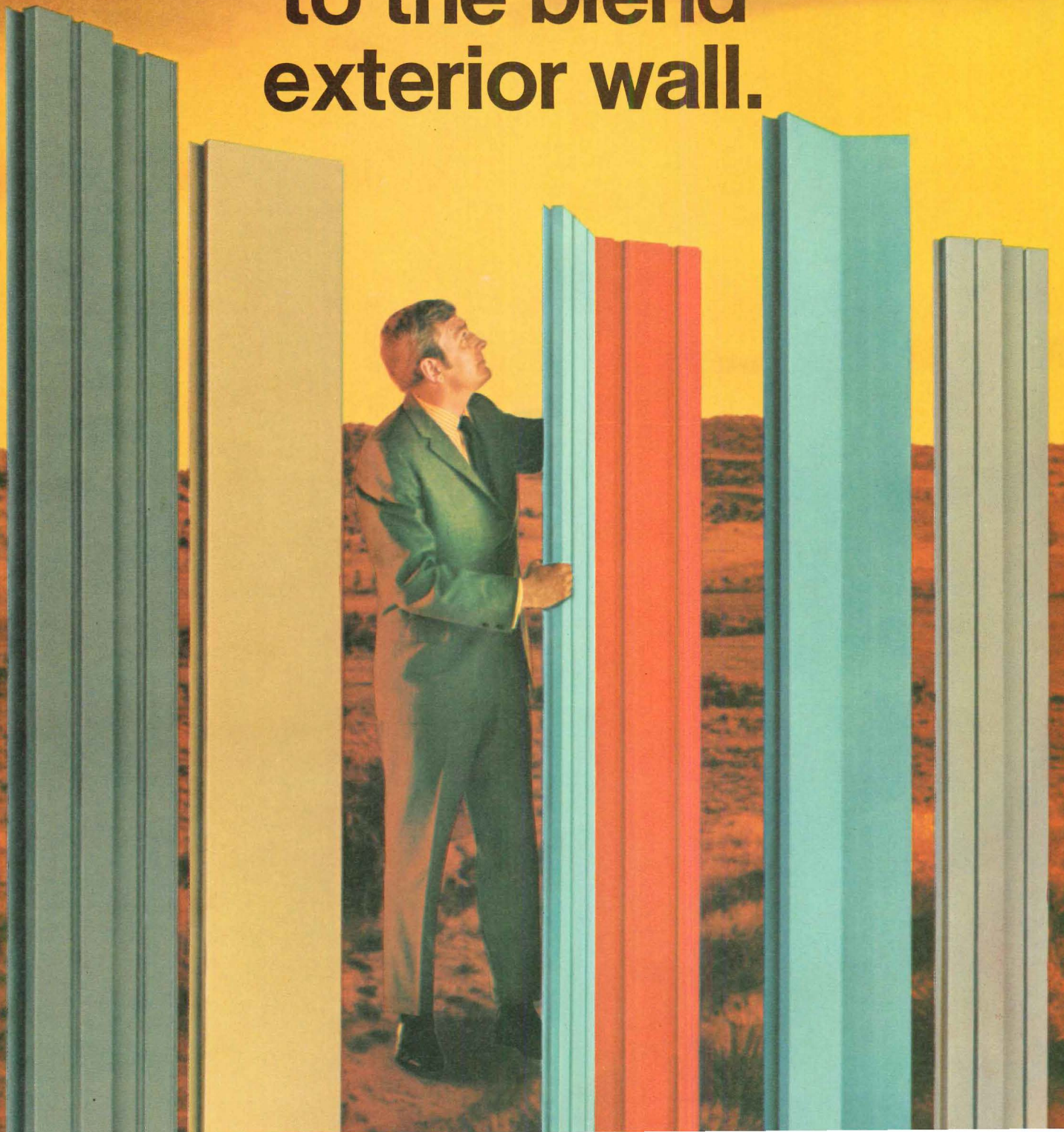
**CROUSE-HINDS**



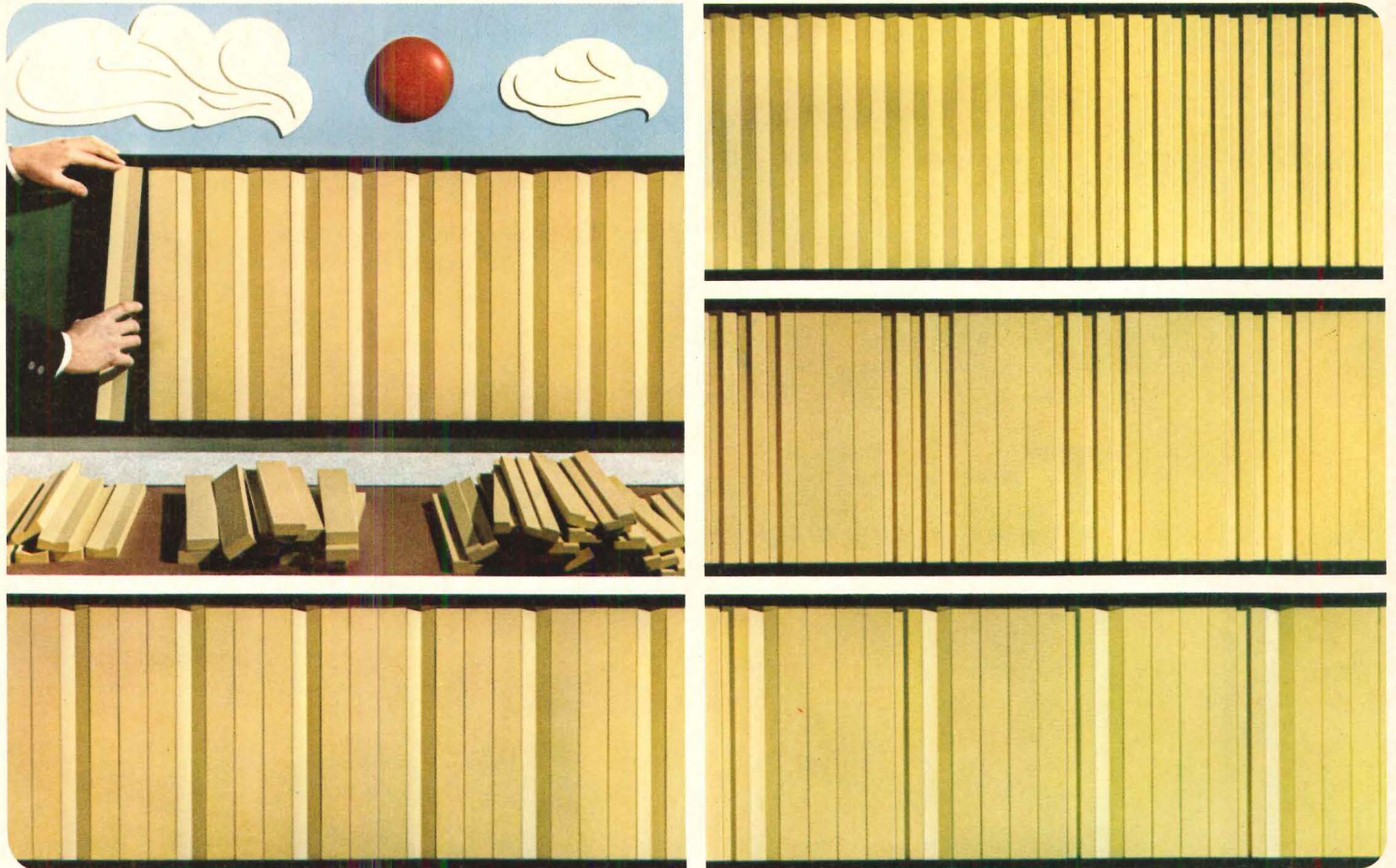
For more data, circle 33 on inquiry card

**say goodbye  
to the bland  
exterior wall.**

**say hello  
to the blend  
exterior wall.**



Inland-Ryerson introduces  
 six new wall panels with a common lock arrangement  
 that permits you to blend them in a wide variety  
 of textures, colors and shadow patterns.



Only three of the six new IW panels were used to achieve this variety of sculptured patterns. Many other effects can be obtained.

The day of the bland exterior wall is over. Inland-Ryerson has added six new profiles of the IW series which can be easily intermixed to form a seemingly endless variety of visual effects, giving you new design freedom to spark your creativity.



The secret: individual panels are just 12" wide, and a common lock system provides fully concealed fastening of any arrangement. The side seams are hard to find too.

The lock system also offers unmatched weather protection at the joint. The U-shaped design provides positive metal-to-metal contact at two points. Yet it completely covers the fasteners used, and the panels interlock quickly.

The IW series panels are available with Inland-Ryerson's famous double-coat weather protection. Duofinish™ offers the security of baked-on finish in a wide variety of colors. For extra-long life, specify polyvinylidene base Duofinish 500.™

Ask your Inland-Ryerson sales engineer to show you these new steel wall panels. Or write for Wall Systems Catalog 242. Inland-Ryerson Construction Products Company, Dept. E, 4033 W. Burnham Street, Milwaukee, Wisconsin 53201.

**INLAND RYERSON**

General Offices: Chicago, Illinois

# *Pomeroy's Department Store moves people to buy.*

Customer-pleasing in every detail.

That's Pomeroy's spacious new branch store in Camp Hill, Pa., where quality merchandise is offered at attractive prices. And made readily accessible by Haughton escalators to make between-floor travel fast and pleasant.

Of course, the handsome styling of Haughton Escalators enhances store decor . . . while the panoramic view of

varied merchandise displays enjoyed by shoppers as they travel from floor to floor further stimulates the buying mood.

Users know that Haughton escalators match every demand for economy, easy maintenance and long life. We offer them in a wide range of models to move up to 8,000 people hourly, safely and quietly, indoors or outdoors. *Wherever you need space*

saving, continuous transportation.

Your Haughton representative will gladly give you complete specification data on new, advanced design Haughton Escalators to fit your new building or modernization plans. Call him soon. Or, please write us.

**HAUGHTON**   
**ELEVATOR COMPANY**  
DIVISION OF RELIANCE ELECTRIC COMPANY  
TOLEDO, OHIO 43609

## *On Haughton Escalators.*



**100**  
HAUGHTON ■ 1869-1969

For more data, circle 84 on inquiry card

# Is resistance still a virtue?



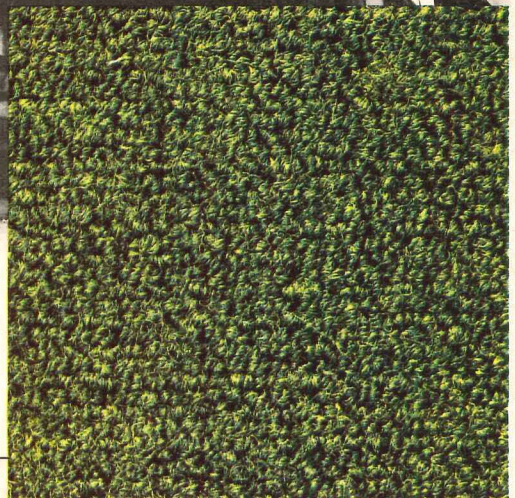
## Atlantic says yes, with Vectra fiber.

New Atlantic "Spartan" tufted contract carpet made with Vectra® fiber resists stains, fading and wear... but can't resist being beautiful.

Don't let the name Spartan fool you. This new fine gauge tufted contract carpet from Atlantic is luxurious enough for your most lavish installations. It's Vectra olefin fiber that puts the rugged Spartan spirit into it. With resolute resistance to stains, fading and wear... even in the most murderous traffic and stain-prone areas. Which means fewer commercial cleanings... lower maintenance costs. Is resistance still a virtue? It is in new Spartan tufted contract carpet made with Vectra fiber!

### SPECIFICATIONS

Pile: 100% Solution dyed Vectra olefin fiber  
 Gauge: 5/64"  
 Pile wt.: 25 oz. per yd.  
 Pile ht.: 5/32"  
 Stitches per inch: 9½  
 Yarn count: 2.85 cc (2 ply)  
 Primary backing:  
 100% polypropylene  
 Secondary Backings:  
 (wt. per sq. yd.)  
 8 oz. jute  
 24 oz. high density rubber  
 38 oz. high density rubber  
 Available in 8 colors



Atlantic Rugs, Inc./Box 29/Calhoun, Georgia 30701  
 Please send me samples and information on Atlantic "Spartan" carpet.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

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



Vectra® olefin fiber is manufactured by Enjay Fibers and Laminates Company, Odenton, Maryland, a division of Enjay Chemical Company. Odenton: (301) WO 9-9000. New York: 350 Fifth Avenue (212) LO 3-0720. Charlotte: One Charlottetown Center (704) 333-0761. Enjay makes fiber, not carpets.

**Vectra . . . the fiber that believes resistance is still a virtue.**

For more data, circle 87 on inquiry card

# Simple way to get positive roof drainage: The Tapered FOAMGLAS® System.

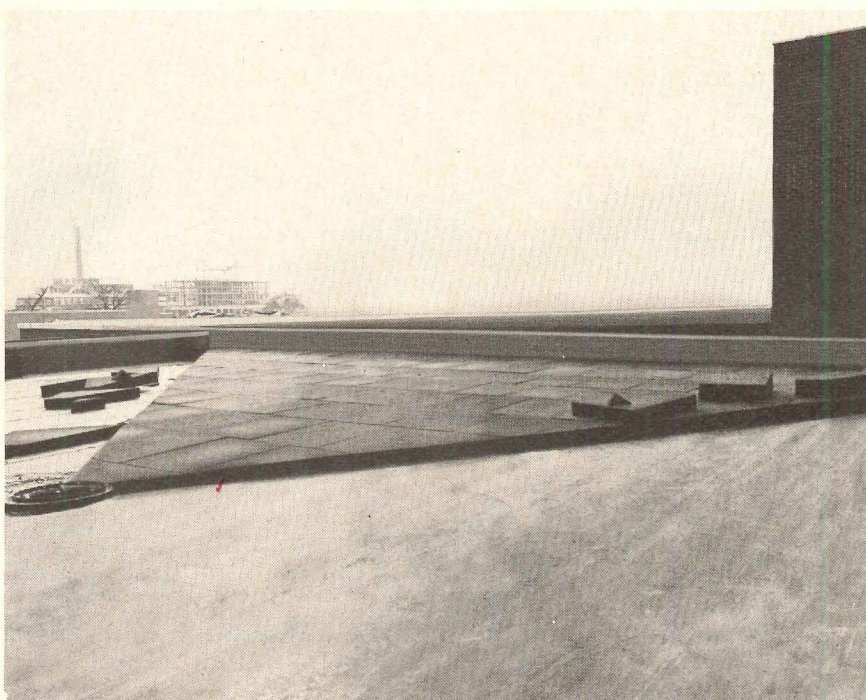
Tapered FOAMGLAS roof insulation automatically slopes a flat deck for positive drainage. The system is simple: the roofer places factory-tapered blocks in sequence and roofs over immediately. No delay or waiting for roof fills to dry. Single-contractor responsibility.

FOAMGLAS is 100% closed-cell glass, so it's completely waterproof and can't absorb vapor from inside the building.

Dimensional stability and high compressive strength make it an excellent base for built-up roofing. And it's the only roof insulation guaranteed for 20 years.

Write for more information and a free sample. Pittsburgh Corning Corporation, Dept. AR-59, One Gateway Center, Pittsburgh, Pa. 15222. In Western Europe, contact Pittsburgh Corning de Belgique, S.A., Brussels, Belgium.

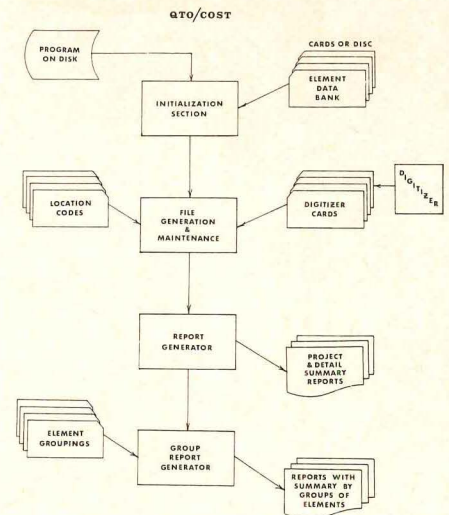
The Insulation People



For more data, circle 88 on inquiry card

**ELEVATOR CONTROL** / A computer-controlled supervisory system, which coordinates two to six elevators, continuously analyzes changing traffic demands and assigns the distribution of elevators accordingly. / Otis Elevator Company, New York City.

Circle 301 on inquiry card



**COMPUTER PACKAGE** / A standard computer software package called *QTO/COST* is an automated "quantity take-off" and cost estimating system designed primarily for architects and construction companies. The program, developed by Design Systems Incorporated of Cambridge, Massachusetts, requires either an IBM 1130 with 8K, one disk, card reader and printer, or an IBM 360 configuration which supports DOS or OS and FORTRAN. Price for the system is \$25,000, including a library of routines, installation, modification when necessary, maintenance, training in generation and use of the system and complete user and operating documentation. ■ Cullinane Corporation, Boston.

Circle 302 on inquiry card

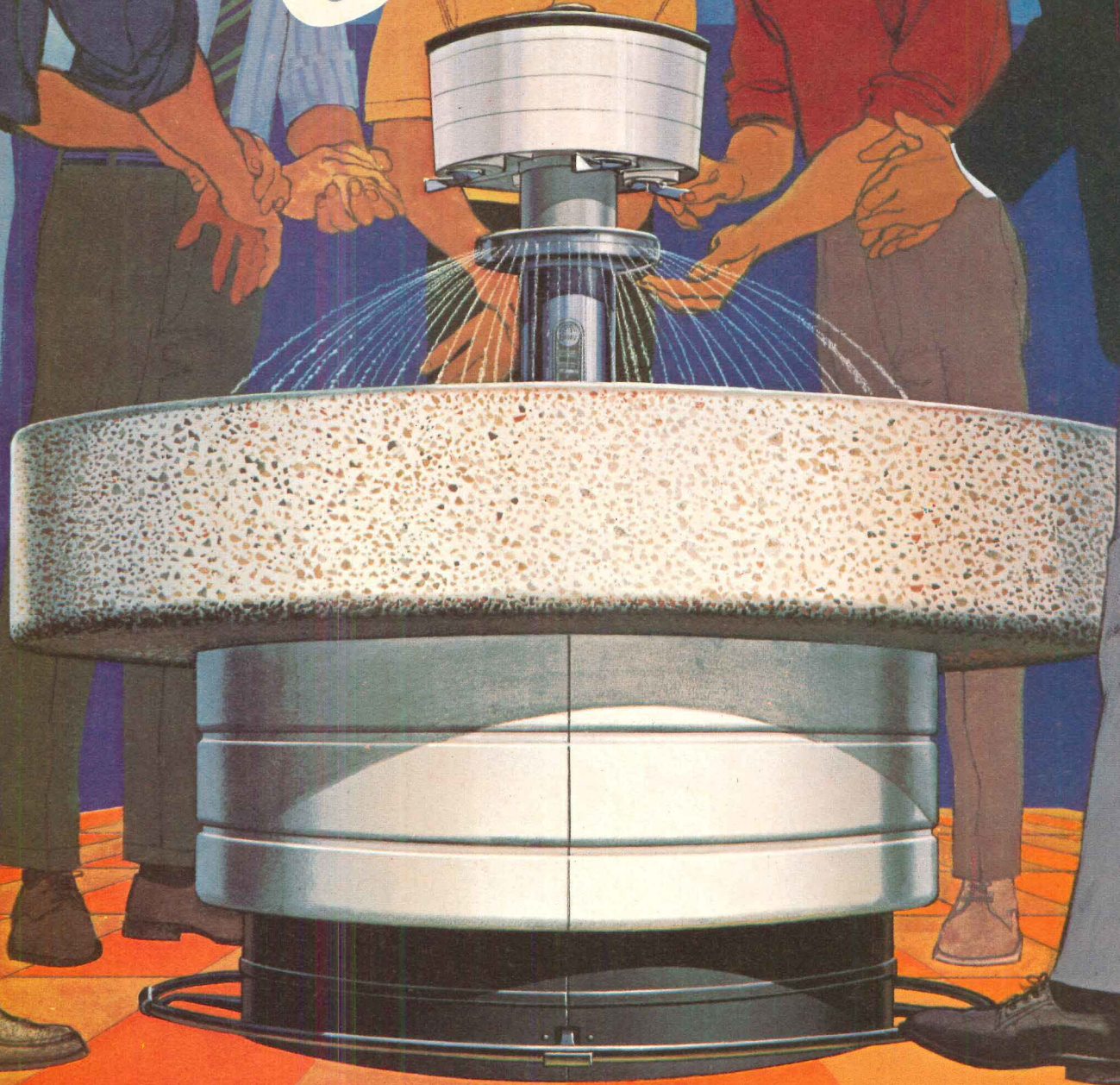


**TILE FOR COMPUTER FLOORS** / A line of special grade laminated plastic floor tile is made expressly for raised floor systems. Features include: extra-wear surface; outstanding warp resistance; extremely low static generation; and high compressive strength. ■ Enjay Fibers and Laminates Company, Odenton, Md.

Circle 303 on inquiry card

more products on page 196

# Bright idea



**Wash fixtures that serve many and save money!** Bradley Washfountains save an average of 25% on floor and wall space. You can choose from 54" and 36" diameter circular and semi-circular models, plus two-person Duos. So you can specify Washfountains that get maximum use out of every square inch of available space.

What's more, Washfountains serve up to 8 people with one set of plumbing connections, cutting installation costs as

much as 80%. They require practically no maintenance. And they reduce water consumption from 45% to a whopping 80%. Specify Washfountains for plants, commercial buildings, schools, institutions—wherever you want to handle large groups of people economically. The more Washfountains serve, the more they save. See your Bradley representative. And write for literature. Bradley Washfountain Co., 9109 Fountain Boulevard, Menomonee Falls, Wisconsin 53051.

# from Bradley!

For more data, circle 89 on inquiry card





**USS** Cor-Ten Steel...naturally

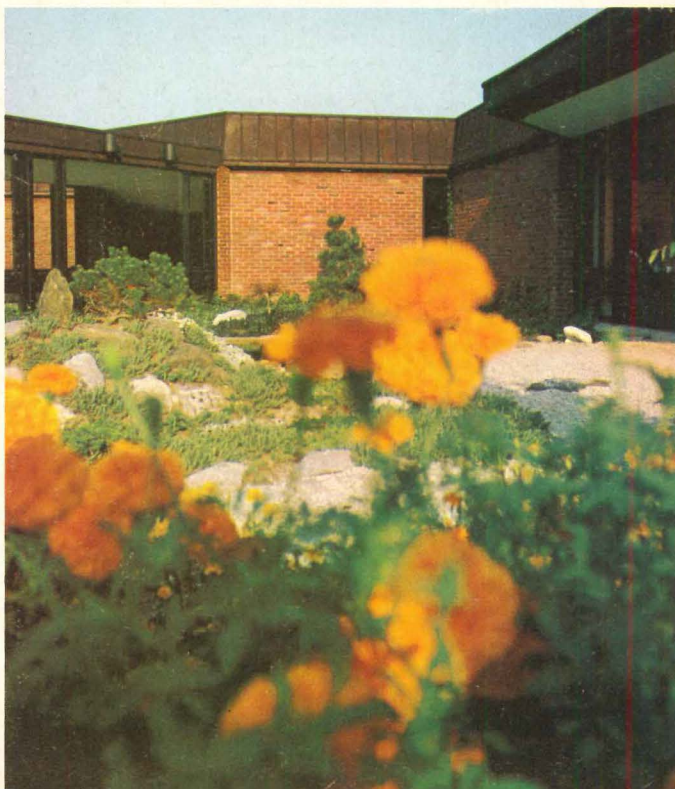
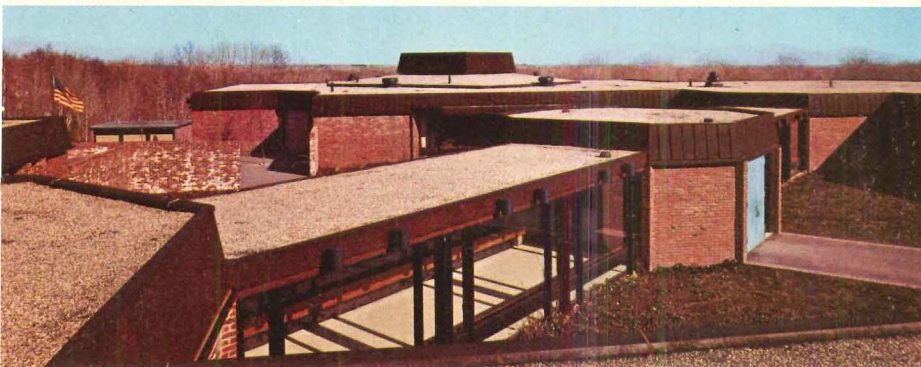


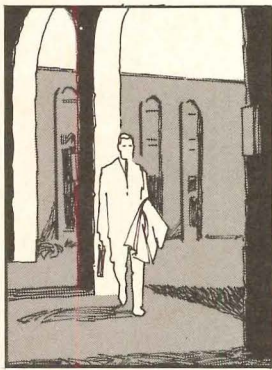
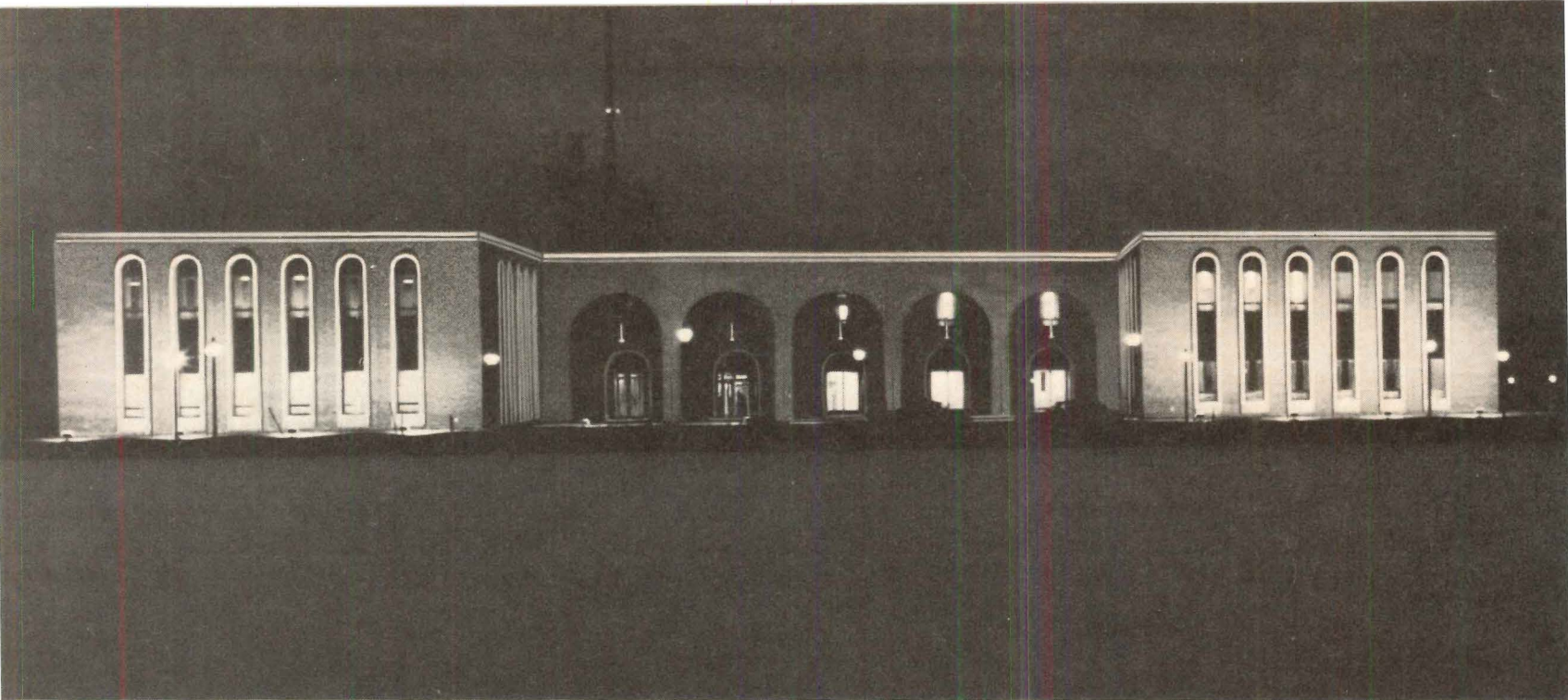




T. W. MILLER SCHOOL, WILTON, CONNECTICUT  
ARCHITECT; THE PERKINS & WILL PARTNERSHIP;  
WHITE PLAINS, N.Y., CHICAGO, ILL., WASHINGTON, D.C.

For information on bare USS COR-TEN Steel, the original weathering steel, contact a USS Construction Marketing Representative through the nearest USS sales office, check your Sweet's Architectural File, or write to United States Steel, Box 86, Pittsburgh, Pa. 15230. USS and COR-TEN are registered trademarks.





## Therm-O-Proof insulating glass goes modern in colonial windows.

Arches are coming back—a colonial feature caught up in a modern design trend.

Proof is in these arched colonial windows framed by a modern Spanish collonade. This combination creates a unique facade for the Blackstone Valley Electric Company designed by Charles A. Maguire & Associates, architects, Providence, R.I.

The arched windows themselves have been modernized, too — glazed with up-to-

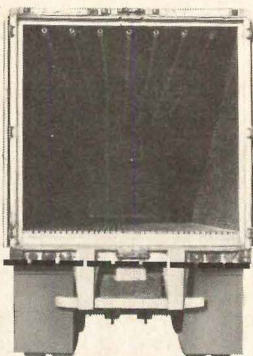
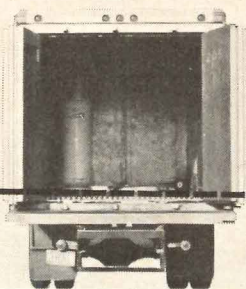
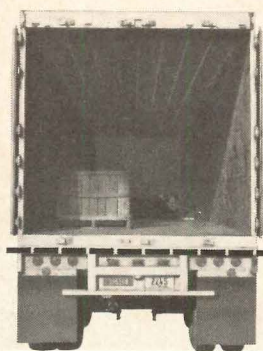
date Therm-O-Proof insulating glass, providing excellent insulation for the building's advanced electric heating system. These units were fabricated with an outside light of ¼" bronze plate for thermal comfort, and an inside light of ¼" plate, separated by a ½" air space.

Therm-O-Proof insulating glass is made more ways to fit more modern ideas.

Full color insert  
in Sweets  $\frac{4a}{Th}$

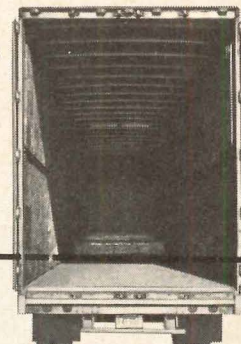
Insulating glass by  
Thermoproof Glass Company  
subsidiary of Shatterproof  
Glass Corporation  
4815 Cabot Avenue  
Detroit, Michigan 48210

For more data, circle 15 on inquiry card



Be sure  
your clients  
can service  
all trucks

above dock  
below dock



## Specify Kelley permanent dockboards

Kelley Permanent Adjustable Dockboards easily accommodate trucks with bed heights from 36" to 60" above ground. Effectively link trucks and docks to provide smooth, efficient, safe loading and unloading under all conditions.

Kelley Dockboards give you access to the full width of trucks; have sufficient length for proper incline; won't slip or slide; han-

dle even the heaviest load; are always in place, ready to use.

Write or phone today for complete information. Ask for your copy of Modern Dock Design. It's the most authoritative source available on dock design. KELLEY COMPANY, INC., 6748 North Teutonia Avenue, Milwaukee, Wisconsin 53209, Phone: 414-352-1000.



55-363R

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*THE SECRET of THE MASTERS  
IS IN EVERY CAN of  
PRATT & LAMBERT PAINT*

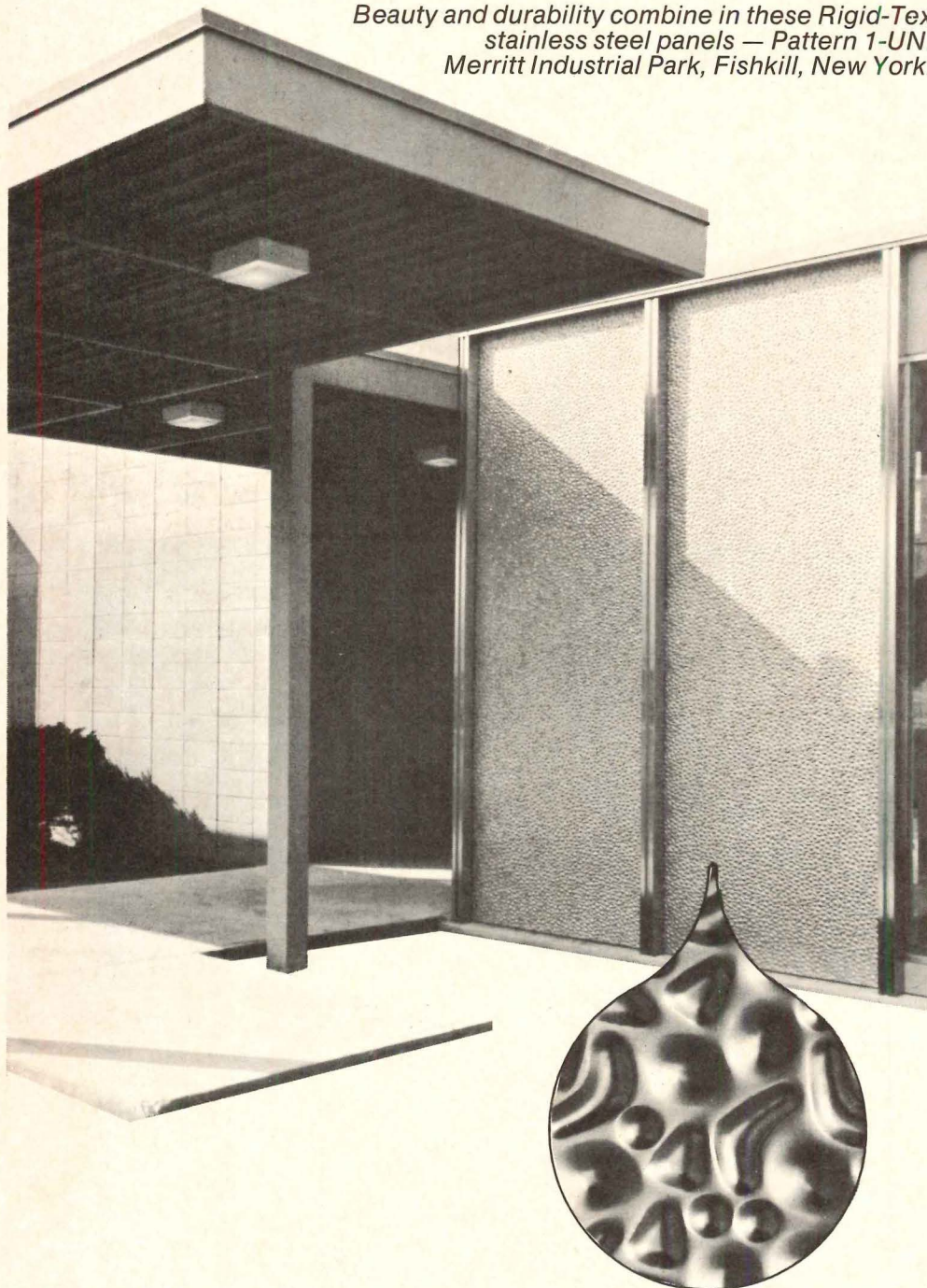


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Rigid-Tex Metals preserve the integrity of metal . . . and that's important to architects  As for appearance, this unique process embodies distinctive aesthetic effects right in the material itself . . . not just superficial embellishment  Rigid-Tex spans a broad range of over 65 textures (or your own exclusive design) in all metals, solids, perforated, almost any finish . . . even laminated  Attractive appearance, however, belies the underlying reason leading architects have been specifying RTM since its original introduction three decades ago . . . *function*  Its many inherent characteristics, i.e. — mar resistance — greater strength — less weight — controlled light diffusion — improved acoustical qualities — non skid — to mention a few, have earned its use in applications from curtain wall panels to soffits — from acoustical panels to kick plates  Rigid-Tex may solve some vexing problems on your current project  Send right now for Architect's Applications Portfolio with Texture Chart  Rigidized Metals Corporation, 6853 Ohio Street, Buffalo, New York 14203

*Beauty and durability combine in these Rigid-Tex stainless steel panels — Pattern 1-UN. Merritt Industrial Park, Fishkill, New York.*

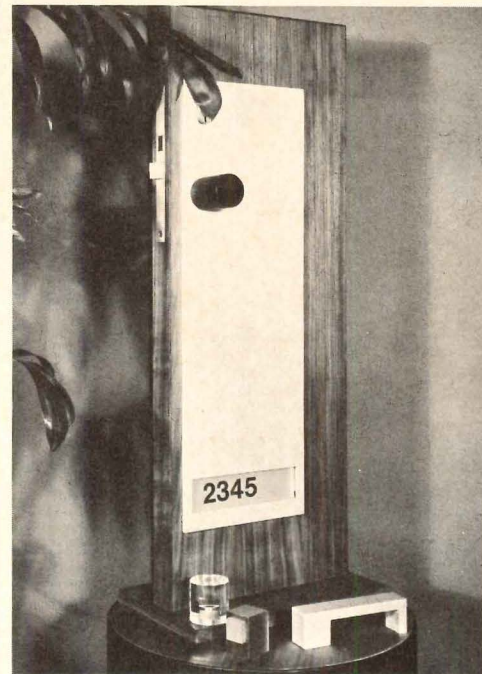


*P. S. In New York City? See Rigid-Tex Metals Display at Architects Center, 101 Park Avenue.*

THE ORIGINATOR

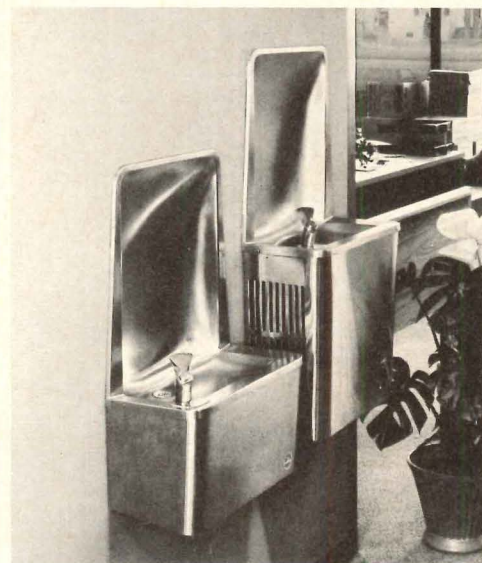
# RIGID-TEX<sup>®</sup> METALS

For more data, circle 93 on inquiry card



**SYSTEMIZED HARDWARE** / A modular system of building hardware products, which have no visible screw or fasteners, is designed, cataloged and packaged as a kit of parts from which the designer or architect can create his own design. The system includes everything from door handles and locks to mechanical, electrical and architectural cover plates. All components, which are packaged separately according to shape, size, material and finish, are interchangeable. ■ Canware Limited, Toronto, Ontario.

Circle 304 on inquiry card



**DUAL FOUNTAIN** / The *Dual Semi-Recessed Drinking Fountain* combines the SR-12CA refrigerated fountain with the SSF-13 non-refrigerated fountain to serve refrigerated water to both children and adults. ■ Sunroc Corporation, Glen Riddle, Pa.

Circle 305 on inquiry card

more products on page 207

# We just complicated your life a little...

(OR MAYBE WE JUST MADE IT EASIER!)



## Introducing new VINCOR™ the first commercial grade vinyl polymer floor tile

Specifying flooring isn't so simple any more. Now instead of choosing between luxurious looking, expensive homogeneous vinyl or practical, versatile vinyl asbestos tile, there's a third choice which combines the best features of both...and at a price that will be a happy surprise.

With new, totally new VINCOR, subtle elegance is now practical and economical. VINCOR gives you the deep-down translucent beauty of real marble while improving on the rugged, durability of vinyl asbestos tile. The pattern goes clear through the tile, won't wear off. And you can install it on, above or below ground level. It is a new quality standard in floor tile.

Note the magnified photograph above. A piece of VINCOR tile has been enlarged several times to give you proof of its exceptional smooth, tight surface. VINCOR is easier to keep clean and is ideal for use with a no-wax maintenance program.

Size 12" x 12" in  $\frac{1}{8}$ " or  $\frac{3}{32}$ " thicknesses.

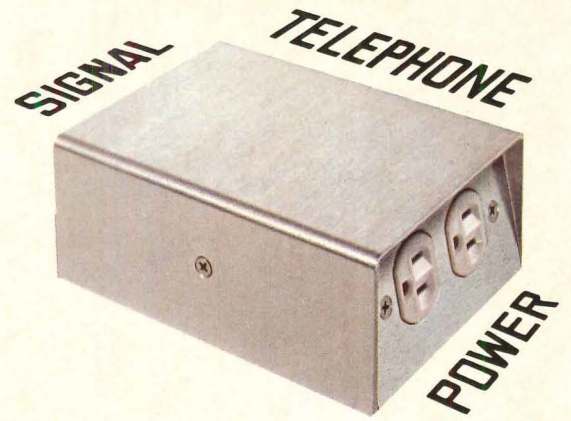
**FLOORING PRODUCTS DIVISION**

480 Central Avenue, East Rutherford, N.J. 07073



For more data, circle 94 on inquiry card

# CEL-WAY® *The in-floor electrical distribution system for every need!*



Cel-Way in-floor electrification adapts itself to the whole spectrum of architectural ideas and construction techniques: high rise, low rise, concrete frame, steel frame, interior landscaping.

Here is *system* in the pure sense of the word. All electrical services—telephone, power, signal—are neatly sandwiched into a single slender floor slab. This floor fitting and in-floor electric cell system accommodates itself to any building module. It meets all electrical

requirements for the present, and anticipates changed or expanded needs for the future. It's the perfect antidote for building obsolescence.

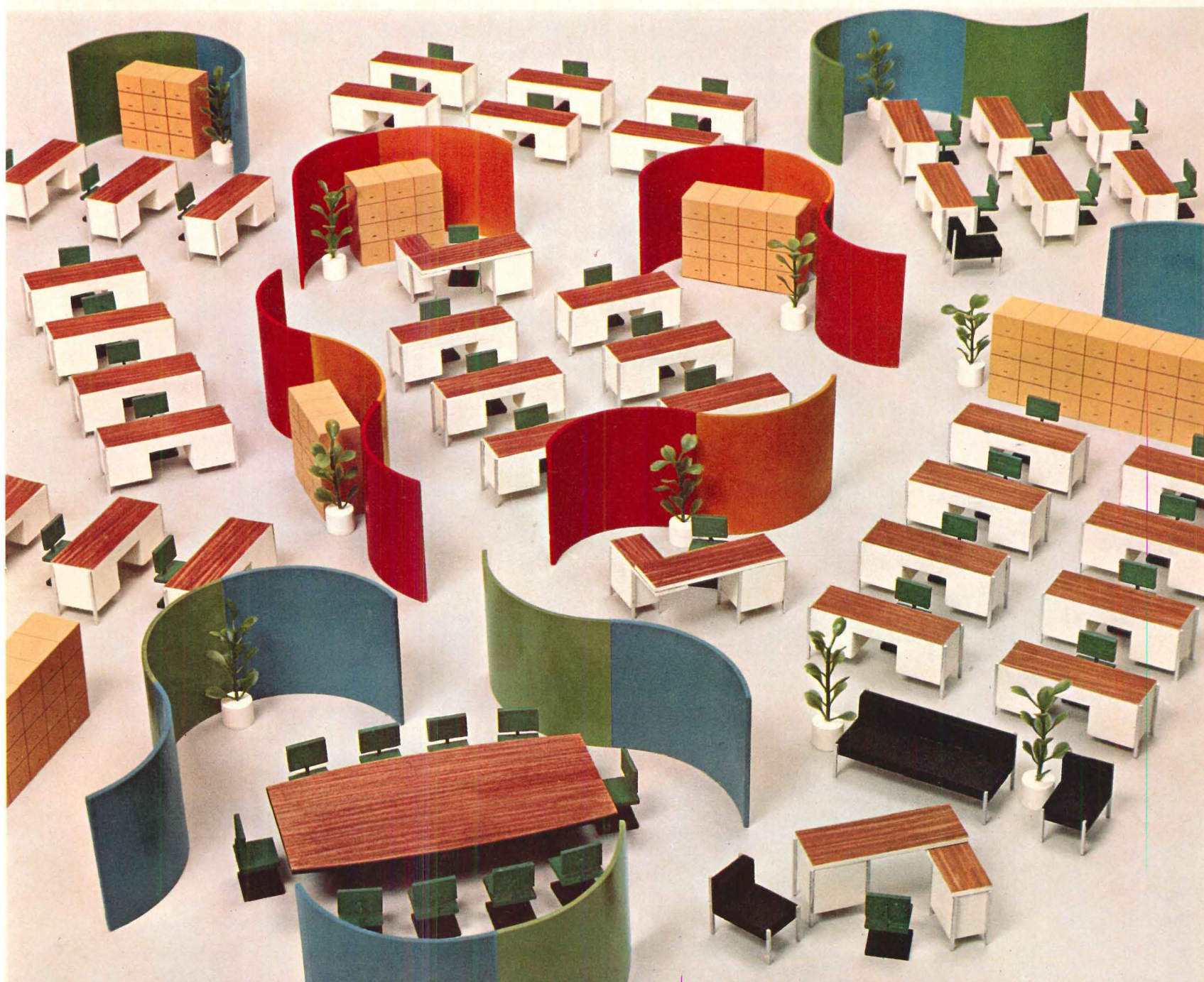
Here is *economy*, with labor savings as much as 50% in some cases. Single, dual or triple electrical cells can be supplied in long lengths—up to 30'; new trench header design saves field labor over other types of feeding systems; electric, signal and telephone services can be supplied through a single-easy-to-install floor fitting.

Here is *versatility* which opens the way to innovations never before possible, like supplying partitions with all three electrical services through a single entrance.

For the complete Cel-Way story, including construction and installation details, specifications and other data, check Sweet's 1e/Gr, or write for Cel-Way product manual. Granco Steel Products Company, 6506 North Broadway, St. Louis, Mo. 63147. A subsidiary of Granite City Steel Co.

**IMAGINATION IN STEEL**

For more data, circle 95 on inquiry card



**When clients count...**



**You better specify TelKee Key Control systems.**

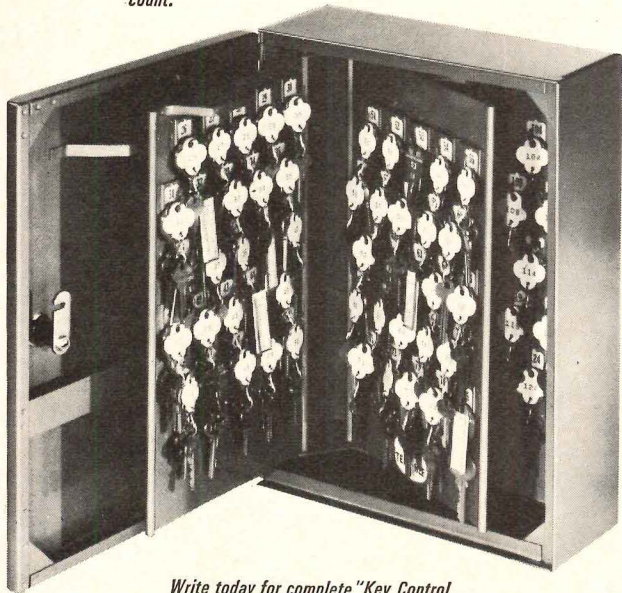
If you're not preparing his premises for functional efficiency, you're not doing your job. If he's not ready for an emergency, he's asking for one.

So specify TelKee Key Control. Insist on it.

TelKee systems mean complete convenience and security—because he always knows where every key is. Anytime.

TelKee means you thought for him as you think for yourself.

*There's a TelKee system to control 25 keys or 2500, guaranteeing peace-of-mind and safety when minutes count.*



*Write today for complete "Key Control" TelKee catalog. Dept. AR-59*

**TelKee INCORPORATED**

*A subsidiary of Sunroc Corporation  
Glen Riddle, Pennsylvania 19037 • Phone (215) 459-1100*

*For more data, circle 96 on inquiry card*

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**A**  
**AMERICAN CHAIR CO.**  
**SINCE 1887**

Wide selection of contract seating with complementary tables. See your dealer or write for our distributor's name.

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*For more data, circle 74 on inquiry card*

**Here's a free-bee on The Stripper.**



You don't have to pay a cent to get a spec sheet on The Stripper—Mystik 6461 Copolymer film tape.

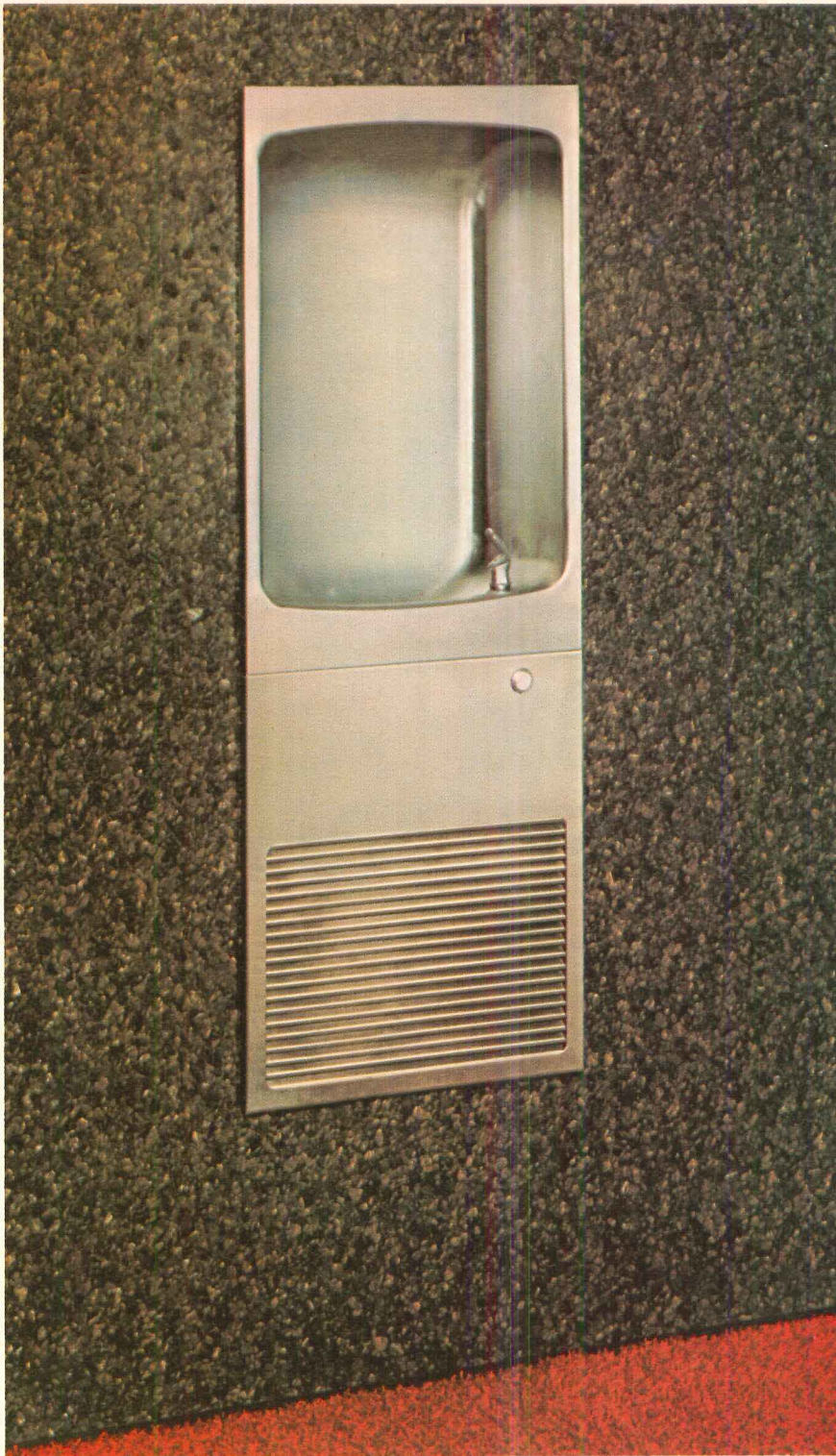
It's an indispensable tape in the architectural field because it protects any surface from steel to polyglass. Grips tightly. Strips off quickly and without residue. And it's unaffected by ultra-violet rays and weathering.

For detailed facts and figures on The Stripper, send for free spec sheet. From Mystik Tape Division, Borden Chemical, Division of Borden Inc



*For more data, circle 148 on inquiry card*





**THE CRISP,  
CLEAN,  
CONTOURED  
LOOK IS**

*Halsey Taylor*®

There is a touch of elegance in this new sculptured design from Halsey Taylor. The RC 8A fully recessed electric water cooler features a one-piece contour-formed receptor and basin. Corners are gracefully rounded instead of square-welded—for easy cleaning. Receptor and louvered access panel are of type 304 stainless steel, polished to a subdued satin finish. Push button control and exclusive 2-stream projector are matching satin finish.

The fountain and cooling unit can be flush mounted in any type wall — requires only 12" back recess.

Recommended for hospitals, schools and other public lobby or applications where uninterrupted corridor space is required.

**THE HALSEY W. TAYLOR CO.,  
1560 THOMAS RD. • WARREN, O.**

**SUBMITTAL INFORMATION KIT**

Information on the Halsey Taylor RC 8A fully recessed electric water cooler is not contained in Sweet's or the Halsey Taylor product information catalog. If you need specification sheets, roughing-in drawings, full product description, and photographs for a current job, please fill in this coupon and mail.

I am submitting a proposal on \_\_\_\_\_ (please describe)

When would you require delivery?  1-3 months  3-6 months  over six months

What quantity do you anticipate using? \_\_\_\_\_

Comments \_\_\_\_\_

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

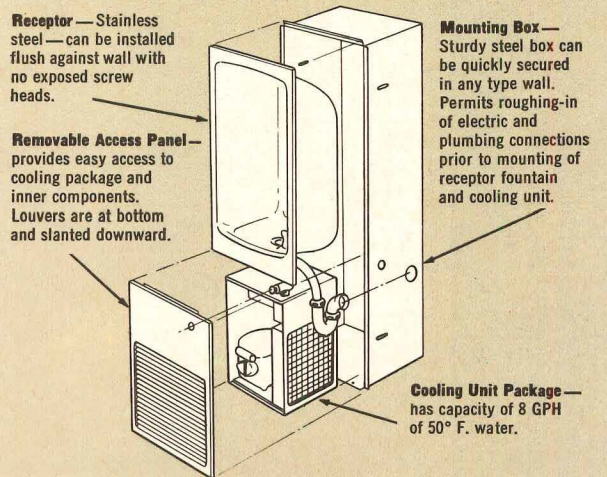
COMPANY or INSTITUTION \_\_\_\_\_

ADDRESS \_\_\_\_\_

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

For more data, circle 97 on inquiry card

**NEW FULLY-RECESSED ELECTRIC WATER COOLER  
COMPLETE PACKAGED UNIT IS EASY TO INSTALL**



## You can specify draperies of Owens-Corning Fiberglas for their good looks.



### Or for their inherent fire safety.

If a mind-boggling choice of handsome colors, textures and prints is what you want, you can get it in draperies of Owens-Corning Fiberglas glass yarn.

But we figure that's not enough.

That's why draperies of Fiberglas\* do things like help make your building safer from fires.

Fiberglas yarn is inorganic, so it can't burn.

Properly finished, it will meet even the strictest code requirements for fire safety.

It may actually cut your insurance costs. Even controls glare and absorbs sound.

So if you're interested in draperies that'll do more than just beautify your building, write:

Owens-Corning Fiberglas, Architectural Fabrics  
717 Fifth Ave., N.Y., N.Y. 10022.

\*Trademark Owens-Corning Fiberglas Corporation

 FIRE-SAFE FABRICS

OWENS/CORNING  
**FIBERGLAS**  
TRADE MARK R

For more data, circle 98 on inquiry card

**A ceiling for a school  
can't get by on looks alone.**

**It has to provide the flexibility to meet requirements that may change. And it has to function. Which is why C-60 Luminaire is chosen for so many schools. C-60 can handle air, for example, any one of seven different ways and not show it. It can provide from 30 to well over 300 fc of glare-free light. (And do it with fewer fixtures and less wattage than conventional light sources.) Additionally, C-60 offers superior acoustical control and rated fire protection. And design flexibility, too. Vaulted modules and flat areas are interchangeable. Our folio on C-60 Luminaire and other ceiling innovations goes into more detail. Please write for a copy. Armstrong, 4205 Rock Street, Lancaster, Pa. 17604.**

**Armstrong**  
Ceiling Systems that work

Or for more data, circle 1 on inquiry card.



## New designs keep coming from BOBRICK

*Commercial building washroom design objective:* Install modern, high quality stainless steel equipment...positioned for efficient traffic flow, maximum utilization of space and easy servicing. You can accomplish this from one source—Bobrick.

Bobrick Representatives in the United States, Canada and overseas are ready to help you finalize your washroom design objectives. For Catalog and Free Tracing Sheet write: Architectural Service Dept., 868 East 42nd St., Brooklyn, New York 11210 or 11611 Hart St., Los Angeles, California 90039.

### Typical Design Objective

Make paper towels and liquid soap conveniently available; also provide shelf for personal belongings.

Provide for convenient towel disposal at lavatories.

Isolate mirror so lavatories won't get clogged with hair and bobby pins.

Provide for a choice between feminine napkins and tampons in one vendor.

Keep cigarettes and ashes off floor.

Provide necessary accessories in toilet compartments without multiple installation, equipment and maintenance costs.

### Suggested Bobrick Unit

B-317 Recessed Multi-Purpose Unit above lavatories combines paper towel dispenser, shelf and soap dispenser.

B-269 Waste Receptacle installs under countertop.

B-290 Stainless Steel Framed Mirror is integral part of planter, separated from lavatories.

B-352 Recessed Combination Feminine Napkin and Tampon Vendor has separate dispensing mechanisms in a single cabinet.

B-376 Recessed Wall Urn Ash Tray.

B-357 Partition Mounted Units combine Toilet Seat Cover Dispenser, Feminine Napkin Disposal and Toilet Tissue Dispenser in one unit serving two adjacent toilet compartments.



Since 1906 Designers and Manufacturers of Washroom Equipment

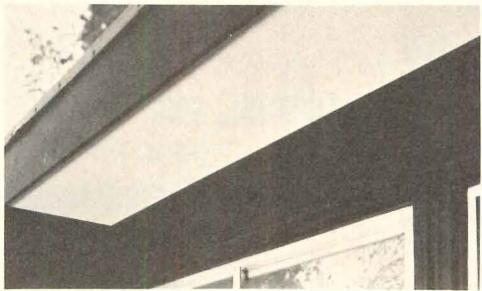
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continued from page 196



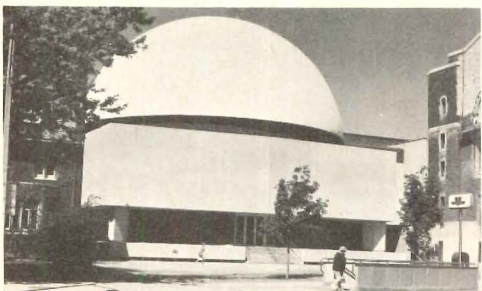
**SPRINGLESS SMOKE VENT** / Designed for rooftops where heavy snow conditions can hold down spring-operated hatchways, this automatic vent, actuated by a small nitrogen cartridge, can lift over 1000 lbs. *Power-hatch* can be set off by the melting of a fusible link, by a smoke detector or manually. ■ Bohem Manufacturing Co., Inc., Conshohocken, Pa.

Circle 306 on inquiry card



**SOFFIT PANELS** / *Gold Bond* perforated soffit panels are said to ventilate properly without added cost of louvers or wire screening. The panels are made of asbestos cement and will not burn, rot or corrode. In addition, they will not buckle, warp, expand or contract. ■ National Gypsum Company, Buffalo.

Circle 307 on inquiry card



**ROOF PROTECTION** / Buildings with oddly-shaped roofs provide an ideal surface for *Neolon*, an elastomeric, thermoplastic coating, available in an unlimited range of colors. The coating, which will adhere to many materials, has waterproofing features, and resists chipping, chemicals and fumes, has both exterior and interior uses. Desco International Association, Buffalo.

Circle 308 on inquiry card

more products on page 216

# Built-In Beauty. New from Haws



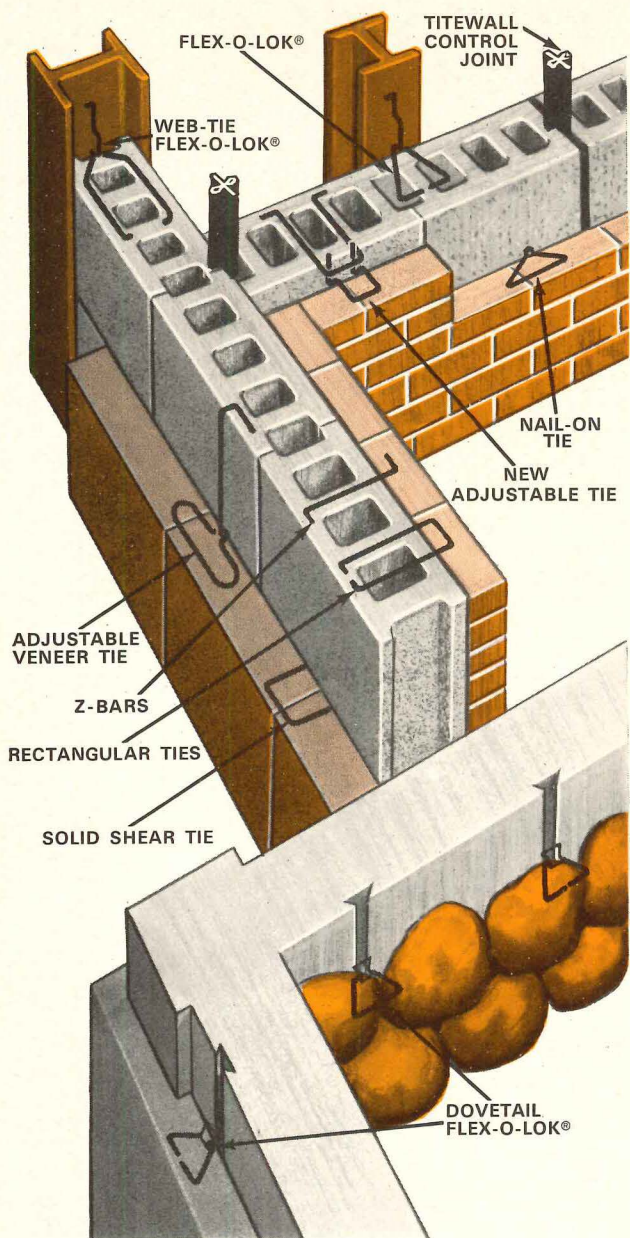
■ Keep hallways high, wide and handsome by blending a Haws fully-recessed water cooler with your wall decor. Or choose from many other smartly designed coolers and drinking fountains. Consult Sweet's or write for catalog today. **Haws Drinking Faucet Co., 1441 Fourth Street, Berkeley, California 94710.**

■ Model 84-RC: Receptor of gleaming stainless steel matches louvered grille below, which conceals remote water chiller. Serves six to 12 gallons per hour. Easy to install and service.



*Haws makes a better-looking drink of water.*

For more data, circle 101 on inquiry card



## AA FLEX-O-LOK® wall systems and AA wall ties assure greater ease of construction plus STRENGTH!

AA FLEX-O-LOK® wall anchorage systems provide complete vertical and horizontal flexibility, easy installation, reduce wall cracking, and remain securely tied laterally for maximum wall strength. Adjustable ties are available in various lengths to fit 4, 6, 8 and 10" block. FLEX-O-LOK and AA wall ties are just a few of the many AA quality reinforcements designed, through research, to do your specific job best . . . and at a savings too. Let AA solve your special wire problems.

Manufactured in Chicago,  
Dallas and Ontario, Canada



Send for FREE  
Reinforcing Guide.

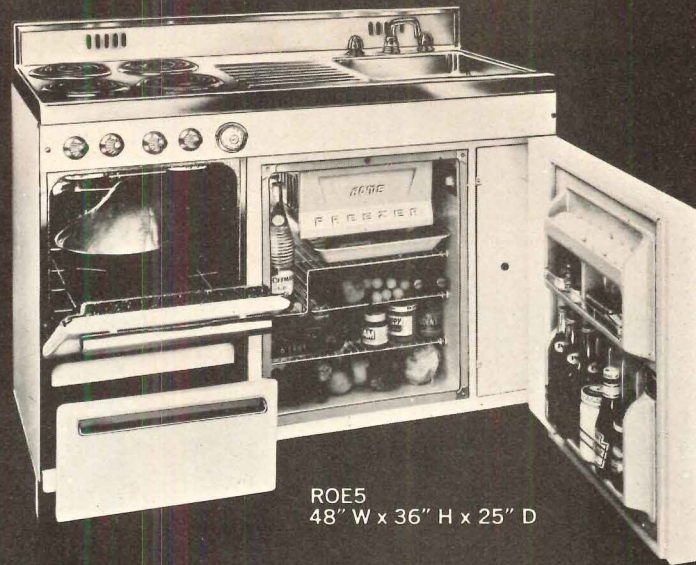
Reference  
CSI File Div. 4  
Sweets 6h  
Aa



# AA WIRE PRODUCTS COMPANY

6100 South New England Avenue • Chicago, Illinois 60638 • Phone (312) 586-6700

For more data, circle 102 on inquiry card



ROE5  
48" W x 36" H x 25" D

## when quality counts . . . ACME compacts are specified again and again

ACME America's most complete line of compact kitchens. Made by the oldest and largest manufacturer of compact kitchens to the exacting standards required for rugged use. Write for catalog.

**ACME**  
NATIONAL REFRIGERATION CO., INC.  
19-26 Hazen Street Astoria, N.Y. 11005

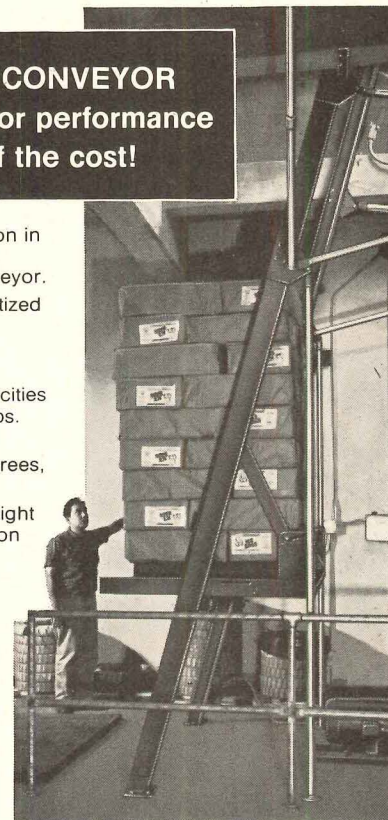


For more data, circle 149 on inquiry card

## Moto Flow CONVEYOR Freight elevator performance at a fraction of the cost!

- Approved for installation in new buildings or old; classified as freight conveyor.
- Moves bulky and palletized loads to and from mezzanines as well as between floors.
- Four models with capacities from 2000 lbs. to 6000 lbs.
- Operates at any angle between 30 and 70 degrees, indoors or outside.
- Does the work of a freight elevator at a small fraction of the cost.
- Optional automatic loading and unloading accessories for incorporation with present materials handling system.

SEND FOR CATALOG  
SHOWING VARIED  
INSTALLATIONS AND  
ENGINEERING DATA.



**M-B COMPANY**  
NEW HOLSTEIN, WISCONSIN 53061 • DEPT. AR-5  
Phone: (414) 898-4261

669

For more data, circle 103 on inquiry card

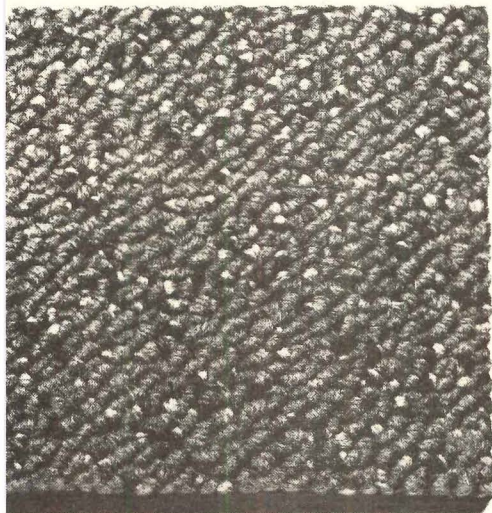


Antron® puts up with the daily grind

McCarran International Airport knew that even 3,400,000 people a year wouldn't faze Antron.\*



So they installed 9,000 square yds. of "Design III" by Lees.



When a carpet has to look good despite both wear and dirt, it should be made of "Antron" nylon by Du Pont.

When McCarran International Airport in Las Vegas became the world's first carpeted airport, they wanted more than just prestige and luxury. They needed carpeting that would improve the acoustics, morale and safety, muffle the jet turbine whine and solve the complex and hazardous maintenance problems they had faced with hard-surface flooring.

The solution simply had to start with "Antron"—the dirt-defying nylon from Du Pont. Lees "Design III" was the choice, loomed of continuous filament "Antron". Lees describes "Antron" as "the fiber combining the longevity and toughness of nylon with the resistance to soil appearance, low static generation, and some of the other aesthetic characteristics

formerly only associated with natural fibers."

"Design III" is the carpet that proved itself more than equal to millions and millions of visitors at the New York World's Fair "without apparent wear." Its performance there convinced the officials of the McCarran International Airport that it could do the job for the 17,000,000 travelers they expect in the next five years.

So far the decision to put "Antron" to work has paid off in reduced injury claims, improved acoustics and easier, more hazard-free maintenance.

Why don't you look into "Antron" for your next job? For the complete "Antron" story and information on other Du Pont fibers, write: Contract Carpet Specialist, Du Pont Carpet Fibers, Rm. 16D5, 308 E. Lancaster Ave., Wynnewood, Penna. 19096.

\*Du Pont registered trademark. Du Pont makes fibers, not carpets.

Visit Du Pont at Room 1097.



Better things for better living  
...through chemistry

For more data, circle 104 on inquiry card

# Who's responsible for all this?

## Northwestern University Biological Center, Illinois:

Concrete reinforcing steel for slabs and walls.

## Westinghouse Nuclear Components Plant, Florida:

Steel wall panels with Duofinish 500™ polyvinylidene fluoride coating.

## First National Bank of Chicago Office Building, Illinois:

Hi-Bond® cellular steel floor deck (installed).  
Post tensioned tie beams.  
Fabricated structural steel.  
Milcor® steel access doors.  
Stainless steel rail for window washing apparatus.  
Concrete reinforcing steel.

## Aircraft Taxi Strip O'Hare International Airport, Illinois:

Fabricated structural steel.





**Point Beach Nuclear  
Power Plant, Wisconsin:**

Post tensioning assemblies  
for prestressed concrete  
containment structure.  
Long life Duofinish 500  
steel wall panels. Steel  
roof deck. Steel floor deck.


**Salt Lake County Civic  
Auditorium, Utah:**

Steel roof deck and  
Acoustideck® (erected).  
Steel floor deck.  
Milcor® metal lath, corner  
beads, wide flange studs.  
Milcor steel access doors.

**H. K. Porter  
Company, Inc. Plant,  
Arkansas:** Slope Beam  
structural steel framing  
system. Steel wall and roof  
panels with Duofinish™  
factory baked-on finish.  
Roof drainage system.  
(Building erected).

**Inland-Ryerson.** These two leading  
construction industry suppliers are now  
combined to help you design and build tomorrow's  
projects. Inland-Ryerson can offer you a unique  
combination of products and skills never before  
available from a single company. We'd like to give  
you some specifics about who we are and  
what we can mean to you. Write for a colorful booklet.


Inland-Ryerson Construction Products Company, Dept. E,  
4033 W. Burnham  
Street, Milwaukee,  
Wisconsin 53201.

**INLAND**   
**RYERSON**

SYSTEMS / COMPONENTS / SKILLS  
TO HELP YOU BUILD

A member of the  Steel Family

For more data, circle 105 on inquiry card



# Lead insures silence at the top

*Building Architect: Edward Durell Stone and Emery Roth & Sons, Associated Architects • Tenant Consulting Architect: Richard Gascoyne • Interior Designers: Braun & Chamberlin, Inc. • Lead Work: Movable Partitions, Inc.*

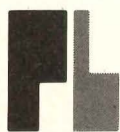
Insulation against potential sound transmission between offices on the forty-fourth and forty-fifth floor of New York's most spectacular new office building was provided by 10,300 square feet of one-pound sheet lead as plenum barriers.

The J. B. Williams Company, Inc., internationally-known manufacturers of toiletries and pharmaceuticals are the occupants of these two floors of the fifty-story General Motors Building, the latest addition to New York's Fifth Avenue. Architects and sub-contractors for the Williams' space in the building selected thin gage sheet lead as the most effective means of assuring quiet office efficiency.

One-pound per square foot sheet lead (1/64 inch in

thickness) was hung vertically above Vaughn walls between all offices on the two floors. Material selection was based on the knowledge that dense, naturally limp lead is an ideal sound insulator. Also thin sheet lead cuts easily, and forms with ease, simplifying installation around pipes, ducts and conduits. And lead is economical and salvageable. Solve your noise problems with lead; metallic sheet, leaded plastics, bulk damping compounds and other lead products.

For additional information on the use of lead for the attenuation of airborne noise and your copy of "Acoustical Plenum Barriers and How to Install Them," write Lead Industries Association, Inc., Department L-5, 292 Madison Avenue, New York, New York 10017.



**Lead Industries Association, Inc.**

*For more data, circle 106 on inquiry card*

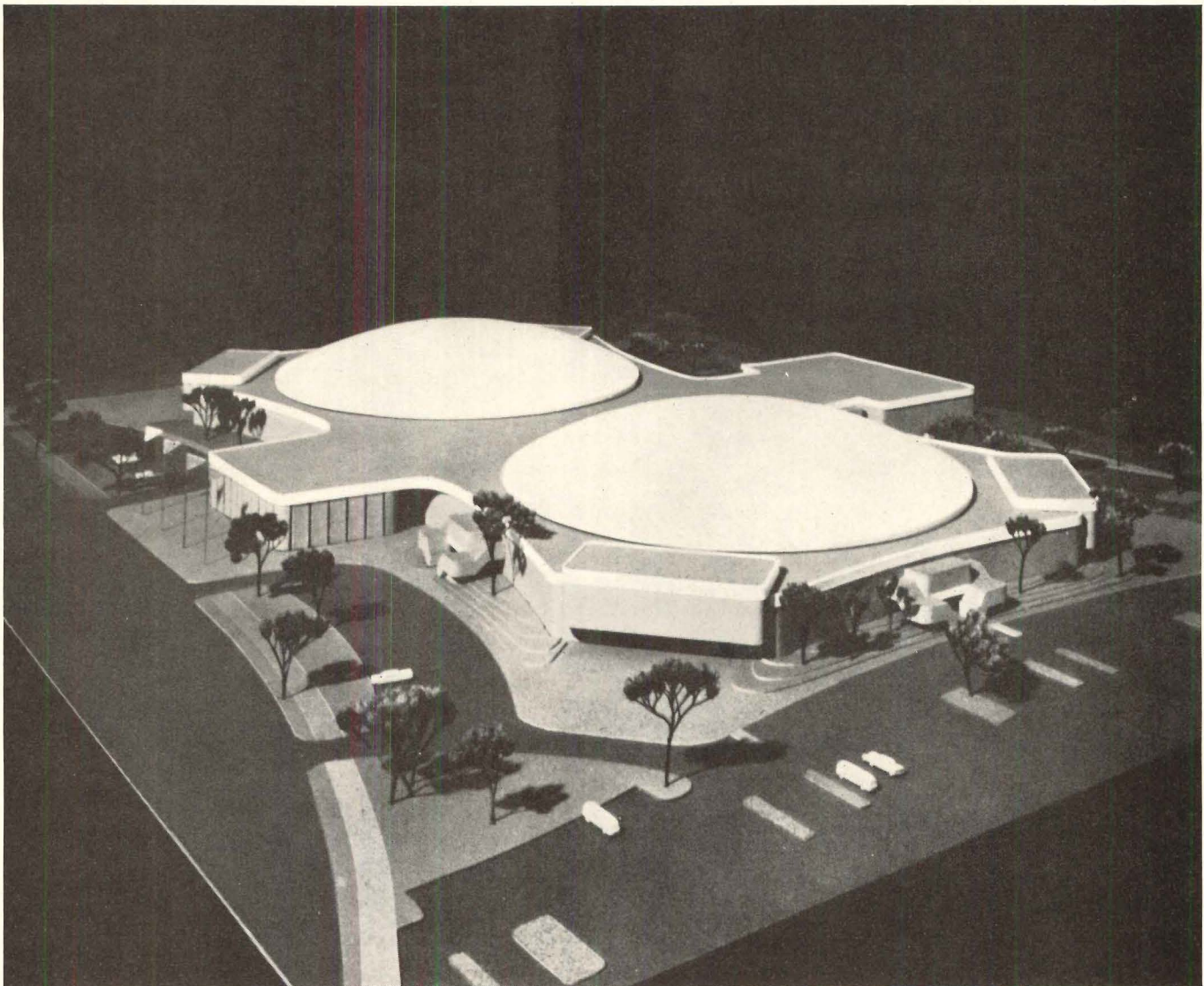


Doors in this outstanding Athletic Convocation Center, University of Notre Dame, South Bend, Indiana, are equipped with GJ devices. GJ is always the safe specification... the hardware that can be depended upon to function through the years.

**ARCHITECT**  
ELLERBE ARCHITECTS, St. Paul, Minnesota

**GENERAL CONTRACTOR**  
SCHUMACHER SONS, INC., Mishawaka, Indiana

**BUILDER'S HARDWARE**  
MILLER STEEL AND SUPPLY CO., INC., Elkhart, Indiana



**GLYNN • JOHNSON CORPORATION** 4422 No. Ravenswood Ave. • Chicago, Illinois 60640

For more data, circle 107 on inquiry card

# PERFORMANCE CERTIFIED

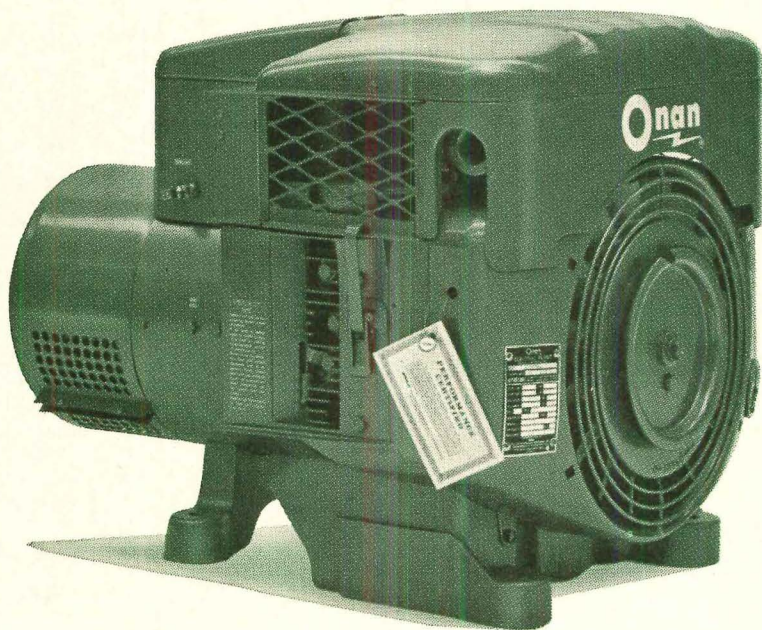
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.

## ONAN

THE  
SHO  
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D.C  
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EXE  
GEN

# Here's Onan's promise. No double talk. No fine print.



You'll find it on every generator we ship. And behind the performance promise on that little tag, there's an independent testing authority that verifies our right to make it.

Often, and always without advance notice, a team of representatives from J. B. Calva and Company visits the Onan plant. They select generators for testing *at random* from our production line, and carefully put them through their paces.

Of course, before we ever put that tag on in the first place, every Onan plant

is run in for 2 to 8 hours under full load. Engines and generators are thoroughly tested together before they're OK'd for shipping.

But because J. B. Calva and Company double checks us, our tag isn't just a *claim*, it's a certified promise that your Onan plant will deliver every watt of power the nameplate promises . . . every watt you pay for.

Why don't you take a few seconds and read the large print promise on that tag right now? You won't find one like it on any other generator.

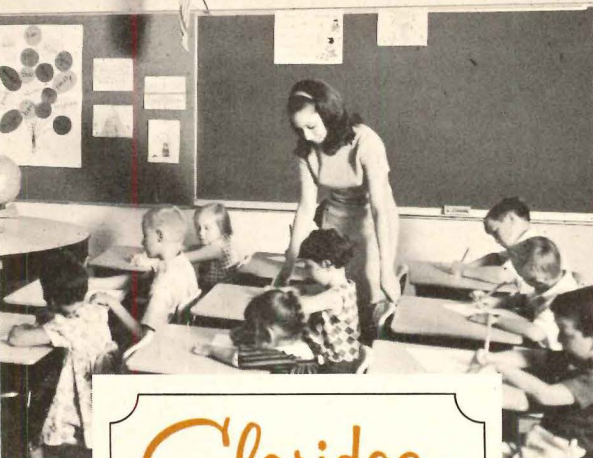


1400 73rd Avenue N.E. • Minneapolis, Minnesota 55432  
A DIVISION OF STUDEBAKER CORPORATION

*We build our future into every Onan product.*

*For more data, circle 108 on inquiry card*

**What's the One Word That Means Chalkboard Quality, Performance and Durability In Any Language?...**



**Claridge**

*Over two thousand schools of higher learning throughout the free world use Claridge chalkboards. So do countless numbers of elementary and high schools.*

There's a reason, of course, for the remarkable acceptance which Claridge products have gained.

It's very simply this: Claridge makes the finest chalkboards and related equipment available anywhere. To assure product excellence, Claridge maintains rigid quality control over every step of manufacture. And Claridge research provides products that meet the ever-changing needs of modern education.

Through its industry leadership, experience and innovation, Claridge can serve you in many ways:

For instance, if you need help in selecting the most practical chalkboard for any given installation, ask Claridge. Since Claridge makes every type of chalkboard, the advice you get will be completely unbiased.

And only Claridge extrudes and anodizes aluminum chalkboard trim in a new, modern plant devoted expressly to these operations. Thus, trim quality can be fully controlled, and chalkboards and trim can be color-coordinated to add new dimension and beauty to classrooms.

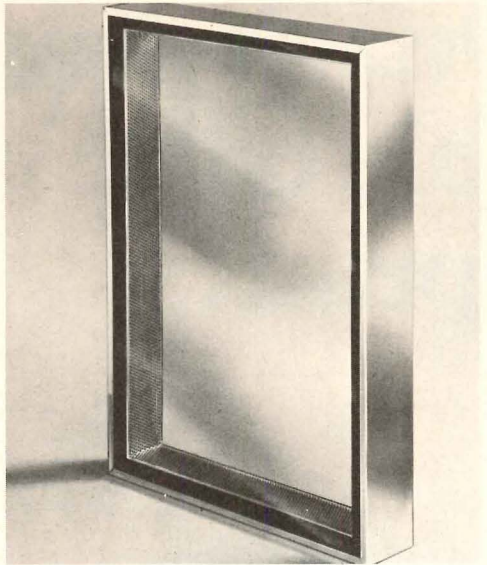
Claridge also offers a new concept in movable walls and space dividers that permit greater classroom flexibility. In addition, Claridge provides horizontal or vertical sliding chalkboards for lecture rooms.

*All these items and many more are fully described and illustrated in Catalog 69 in Sweet's Section 37a, 1969 edition.*



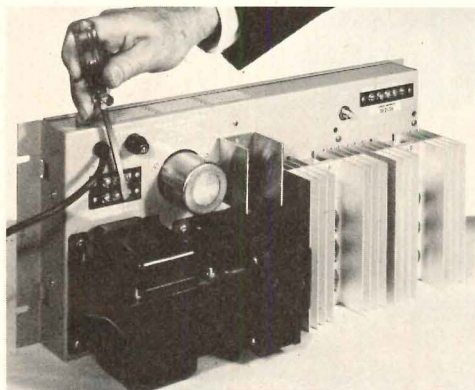
*Special Claridge School Architect's Manual shows samples of various chalkboards, bulletin boards and trim. It's yours for the asking. Just drop us a line on your stationery.*

**CLARIDGE PRODUCTS AND EQUIPMENT, INC.**  
HARRISON, ARKANSAS 72601  
PHONE: AC 501/365-5415



**INSULATING GLASS** / Sound-reducing insulating glass has been specifically designed for buildings near airports, expressways, railroads and heavy traffic areas. A unit consists of two lights of glass held apart by an aluminum frame with a hollow separator. The unit is hermetically sealed by butyl and/or polysulfide sealants. A silica gel dessicant, permanently present in the hollow separator, dehydrates the captive air. By varying thickness of lights and airspace, units can come in a wide range of high acoustical performance units. ■ Multipane, Inc., Pennsauken, N.J.

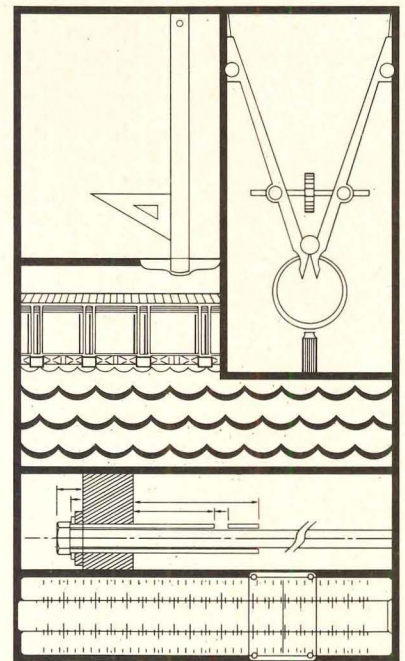
Circle 309 on inquiry card



**SOUND SYSTEM AMPLIFIER** / A 100-watt booster-amplifier for school, institutional and industrial sound systems is said to be "virtually breakdown-proof." The solid-state unit withstands sudden surges and variations in power from zero to 135 volts; can take any signal output of microphone-tuner-preamplifier; cannot be destroyed by even a direct short circuit along speaker lines or at the terminals of the amplifier; is turned off automatically when destructive heat is generated and is turned on again automatically when the heat is dissipated; and is designed so that any sequence or combination of hazards mentioned will not harm the unit. ■ Dukane Corporation, St. Charles, Ill.

Circle 310 on inquiry card

## NEED A MARINA DESIGN DEPARTMENT?



## WE'LL LOAN YOU ONE...FREE!

Forward-looking architects are beginning to realize that much of the recreational-facility construction done in the next decade will be floating construction. Marinas, boat service areas, floating restaurants and recreational barges will represent a substantial portion of the construction market created by America's recreational boom.

How can you capitalize on this boom without enlarging your staff or investing heavily in specialized training? Call MEECO! MEECO has the know-how, the experience and the design capability you need to complete your land/water recreational development plans. And this expertise is yours at *no cost*.

MEECO specializes in designing and building all types of floating structures on a turnkey basis. Our planning and design facilities are yours for the asking. Call or write us today!

MEECO MARINAS  
P. O. Box 518  
McAlester, Oklahoma  
Ph. 918-423-6833

Yes — I would like more information on a free Marina Design Department.

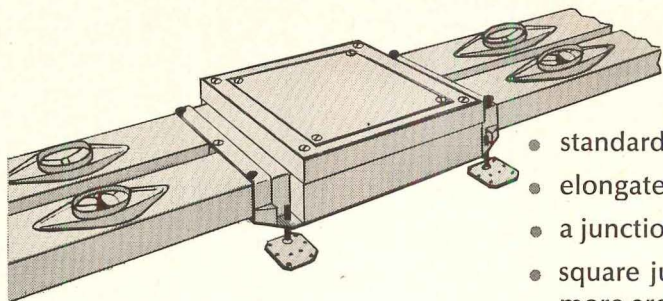
Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

# Whatever your underfloor raceway requirements, **we have what you need**



## UNDERFLOOR DUCT

All underfloor duct systems are not alike. Square D gives you these extra advantages:

- standard duct lengths of 5, 6, 10 and 12 feet
- elongated inserts that simplify fishing and pulling
- a junction box that can be adjusted easily after the concrete is set
- square junction box tops for easier tile and carpet installation—more architecturally pleasing
- tile trims that are part of the box itself, eliminating extra pieces and parts
- feet on all leveling legs (both boxes and support) for nailing and fastening to forms, pans and rough slabs

## HEADER DUCT

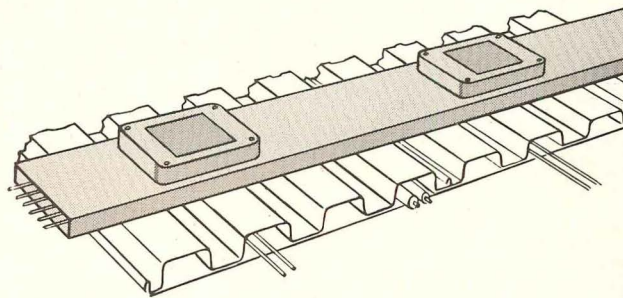
Square D offers real flexibility in design with two types of Header Duct:

### separate access units

- units can be installed on cells on any centers desired
- interconnect between units with blank header duct
- compensates for irregularities in cell centering during construction

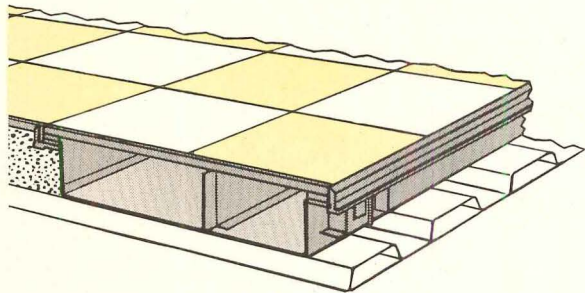
### attached access units

- access units factory-installed on duct on predetermined centers
- lengths available up to 12 feet



### standard with both types of header duct

- after-set inserts that require no special tools to install
- square access unit tops for easier tile and carpet installation



## TRENCH DUCT

You get better trench duct from Square D. We give you:

- cover plates and trim assemblies that are supported by the concrete. Once installed, they won't move
- tile trims that can be installed without removing cover plates

### Expert Application and Installation Help



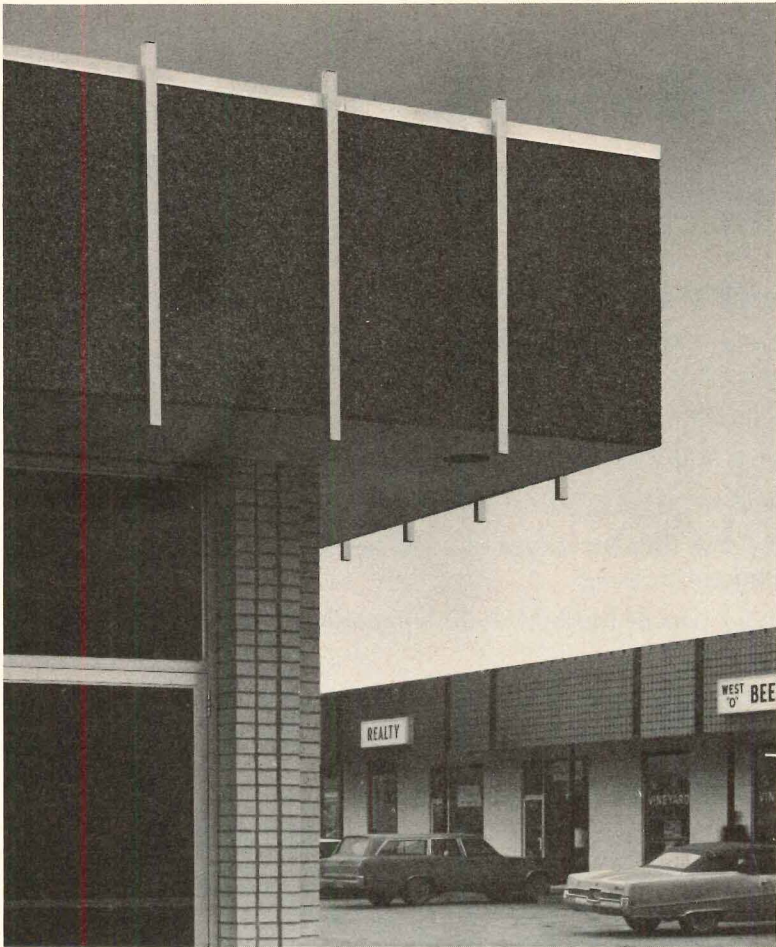
We will make an installation drawing for any job, large or small, at no charge. We have a staff of qualified layout men who will make recommended layouts on very short notice. Our product specialists are available to travel anywhere to help—not to mention more than 400 local field men. So bring your underfloor duct problems to Square D. We're in business to help you.

*For detailed information, contact your Square D distributor or field office  
Or write Square D Company, Dept. SA, Lexington, Kentucky 40505*

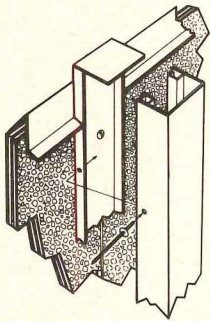


**SQUARE D COMPANY**

*Wherever Electricity is Distributed and Controlled*



**mapes**  
**aggregate panels...**  
*fast...distinctive*  
*permanent...at*  
*surprisingly low cost*



Mapes Aggregate Panels give your jobs natural stone beauty and permanence for as low as \$1.59 per square foot\*. What's more, they use larger aggregate than you'll find anywhere on panels priced this low. Choose from ten attractive colors, all permanently epoxy bonded to cement asbestos board, exterior plywood or insulated substrate. Ruggedness proven in American Plywood accelerated aging tests. (Note the attractive Mapes Shadopanel Wall Facing/Solar Screen in background.)

**NAIL THEM** to studs or furring strips with galvanized or aluminum finishing nails.

**SAW THEM** on the job, if necessary, using ordinary power tools and Mapes cutting instructions.

**USE THEM** for exterior facades, interior walls, decorative fences, window spandrels, fascia, etc. Many decorative joint treatment accessories, including Mapes "clip-on" Accent Molding as shown on building above.

See our catalog in Sweets... 3d  
 \*Suggested Retail F.O.B. Lincoln, Nebr. Map  
 in 4' x 8' or 4' x 10' sizes

For complete information,  
 phone or write **mapes industries, inc.**  
 Box 2067 Lincoln, Nebraska 68501

For more data, circle 112 on inquiry card

**Every architect should read our 12-page sermon on sound columns.**

**It's an ear opener.**

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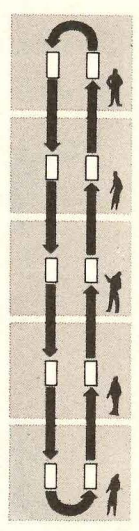
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June 22-27 at The Merchandise Mart

### Sunday, June 22

#### Architects' Day in The Merchandise Mart

11:30 a.m. - 1:00 p.m. Complimentary Brunch for all registrants.

1:00 p.m. - 3:00 p.m. — Dr. Bruno Bettelheim, Director, Orthogenic School, University of Chicago. A paper: "How Interior Environment Affects People". Discussion moderated by Roger Montgomery, Professor, Department of City and Regional Planning, University of California at Berkeley. Arranged by Illinois Chapter, American Institute of Interior Designers and Midwest Chapter, National Society of Interior Designers.  
3:00 p.m. - 6:00 p.m. All Merchandise Mart showrooms will be open for the convenience of NEOCON participants.

NEOCON is the first exposition of products and programming that reflects the total resources of the contract interior furnishings industry now available to the architect. Over 700 superbly arranged, full-line presentations including indoor and outdoor furniture; floor and wall coverings; fabrics and draperies; lamps and lighting equipment; decorative accessories; bedding; tableware; textiles and all types of special equipment for lodging and food service, education, health care, office and business interiors and other institutions. More than two million square feet of exhibit space under one roof! All showrooms will be manned by contract specialists trained to serve the architect's needs in environmental planning.

### Friday, June 27

#### Architects' Workshop

An all-day event of exceptional interest:

9:00 a.m. Complimentary Continental breakfast.  
9:30 a.m. - 10:45 a.m. Sergio Bernardes, architect, Brazil. Followed by discussion period.  
10:45 a.m. - 12:15 p.m. Visits to showrooms.  
12:30 p.m. Complimentary luncheon. Speaker: Wolf Von Eckardt, "Washington Post" columnist, architecture critic and author.  
2:00 p.m. - 4:30 p.m., "From the Inside Out" Symposium moderated by Wolf Von Eckardt and featuring Gio Ponti, architect and Director of "Domus" Magazine, Italy; Jørn Utzon, architect, Denmark; Dr. Ernest Dichter, President, Institute for Motivational Research; C. Theodore Larson, Professor, School of Architecture and Coordinator, Architectural Research Laboratory, University of Michigan; Dr. Robert Finley, Superintendent of Schools, Glen Cove, N. Y., with other speakers of similar distinction.

The Merchandise Mart has worked in cooperation with the national board and the convention committee of the AIA and RAIC to develop these two outstanding programs for architects.

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Brunch and program  Program only

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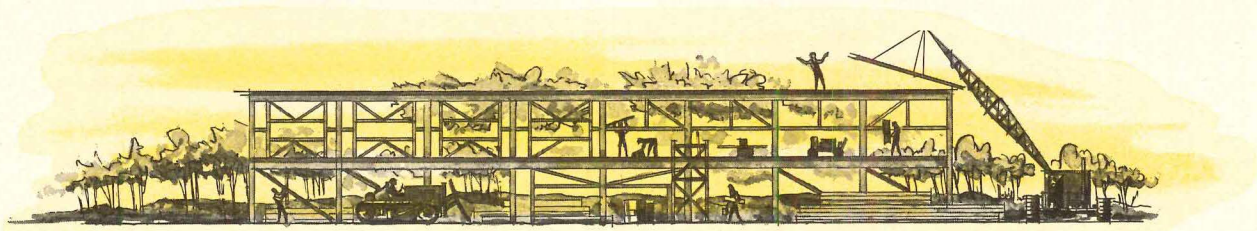
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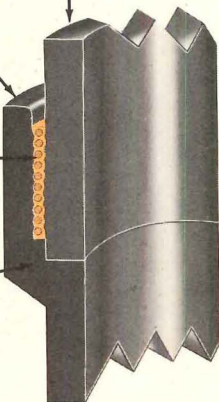
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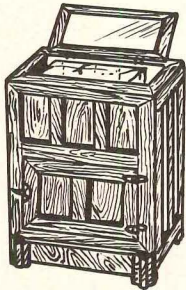
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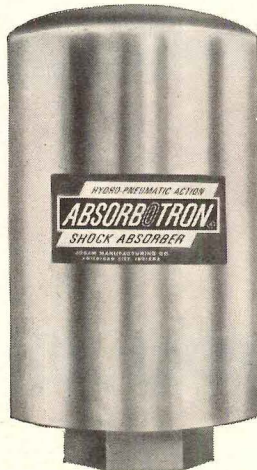
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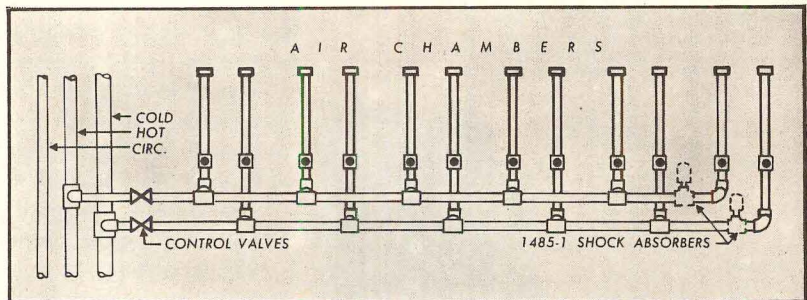


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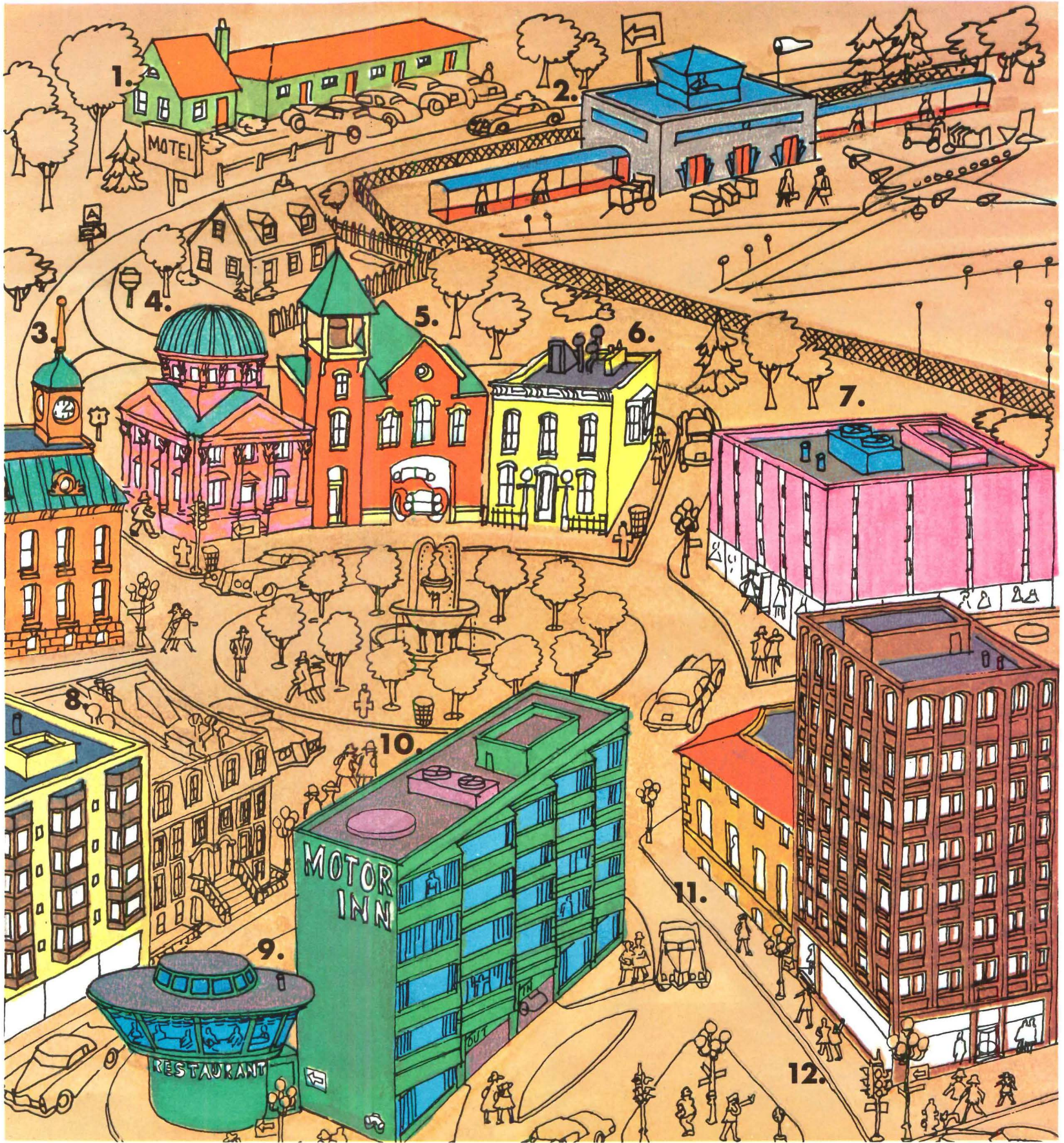


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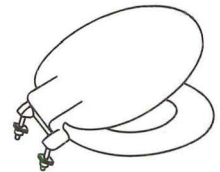
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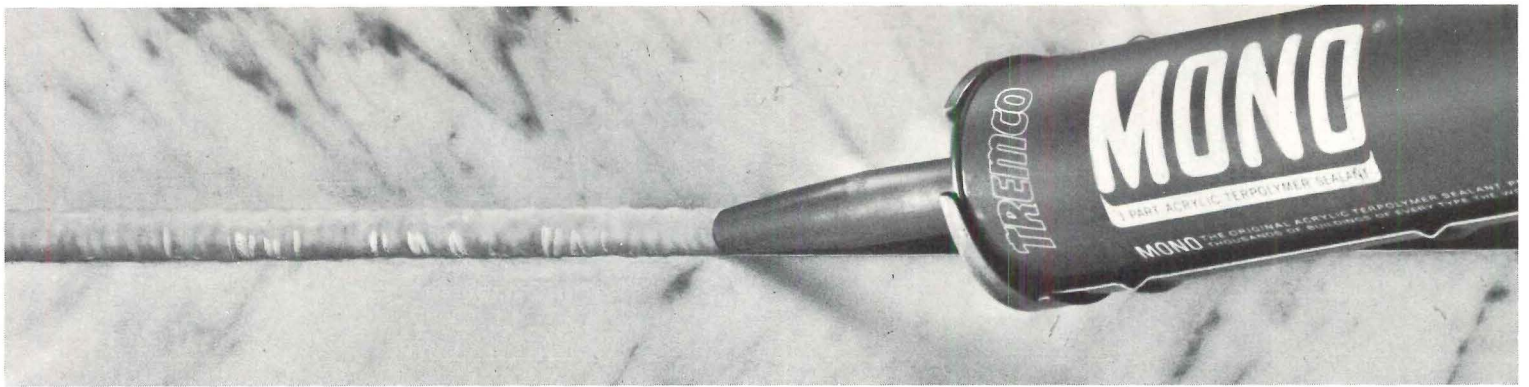
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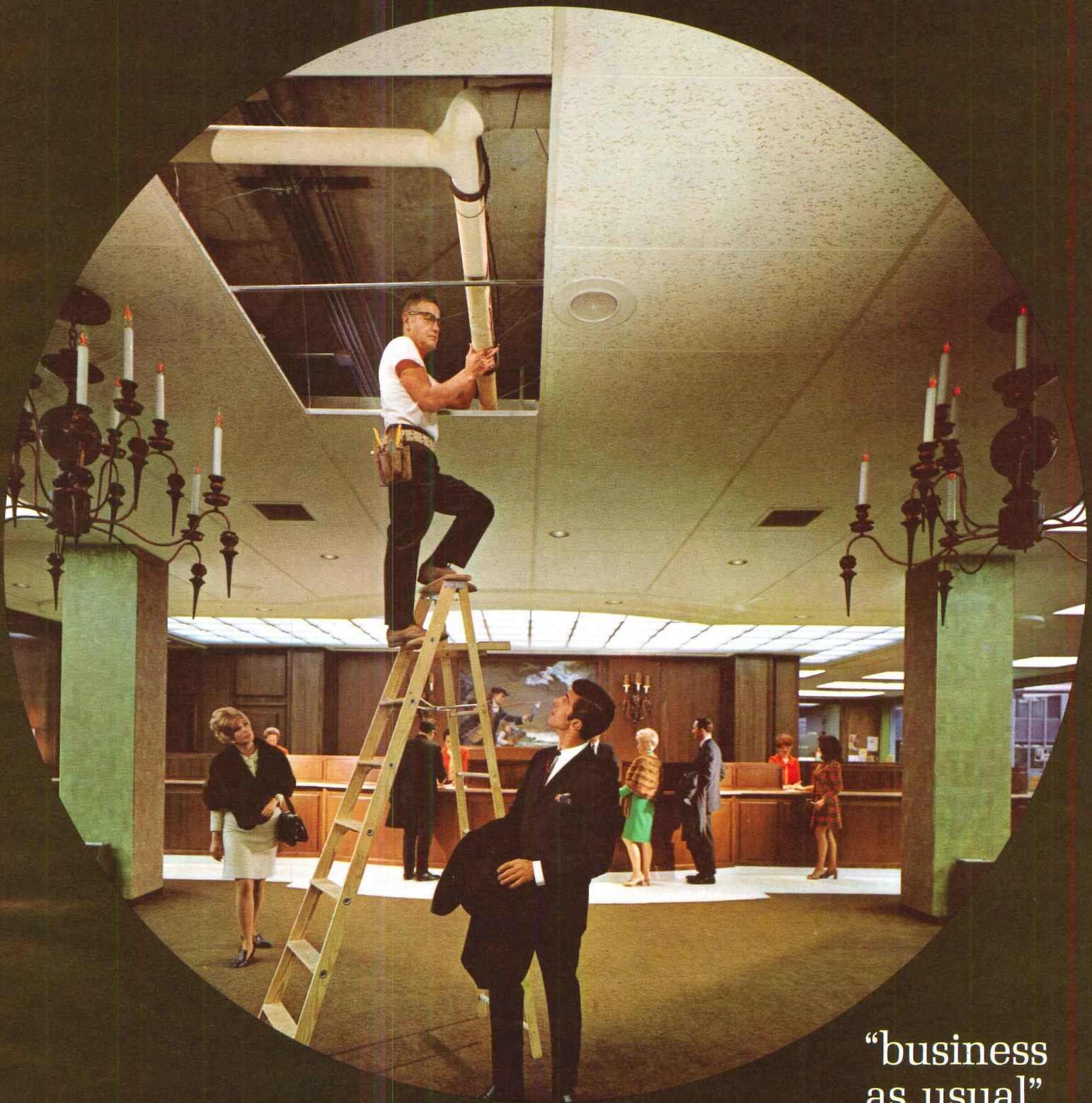
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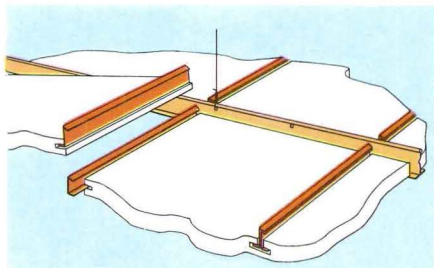
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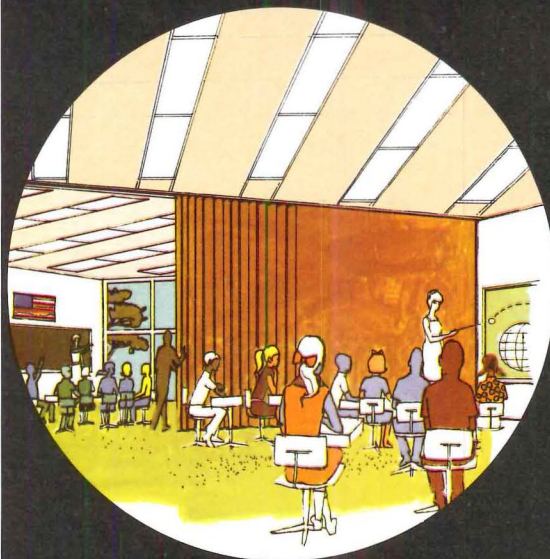
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PROJECT: Ben Franklin Savings & Loan, Oakbrook, Illinois

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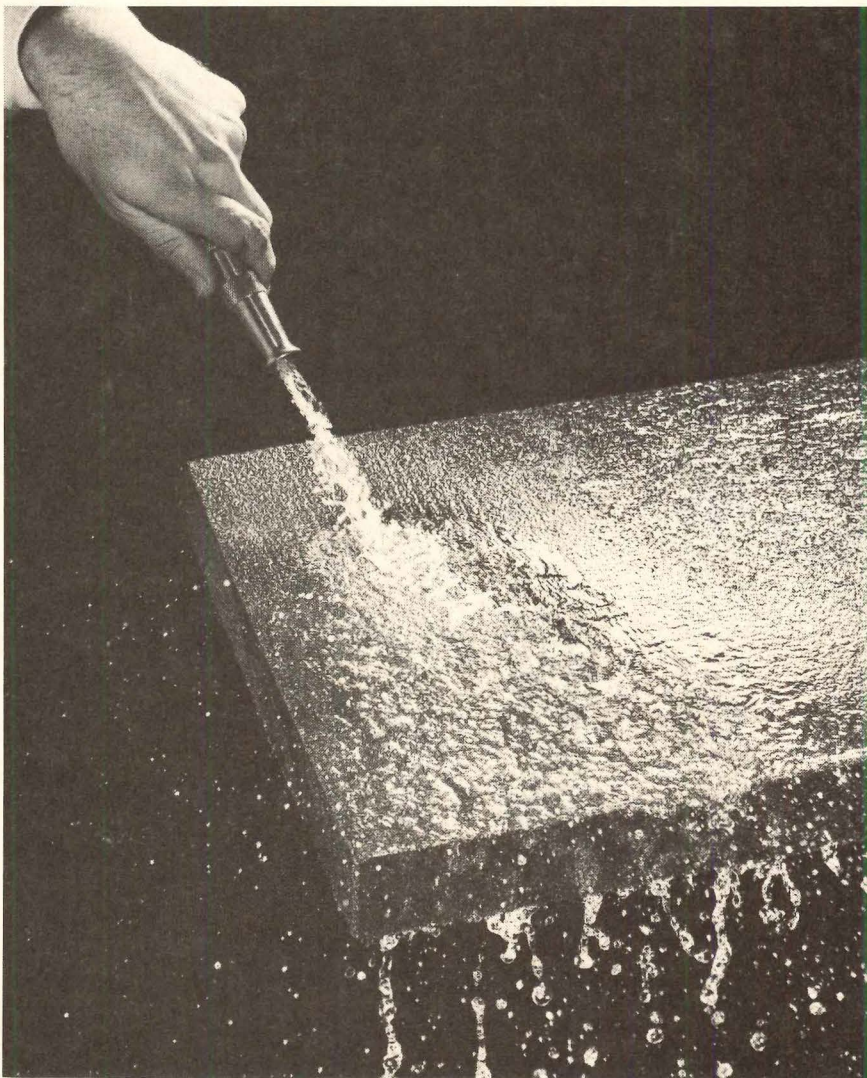
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## OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Card, pages 267-268

**DRAFTING EQUIPMENT** / A 100-page catalog presents drafting furniture, fixtures, accessories and supplies. ■ Frederick Post, A Teledyne Company, Chicago.

Circle 400 on inquiry card

**DOUBLE-TEE ROOF SYSTEM** / An 8-ft-wide double-tee roof system for commercial warehouses is described in a four-page booklet. ■ Portland Cement Association, Skokie, Ill.

Circle 401 on inquiry card

**COLORED FINISH FOR COPPER** / How to achieve attractive colored finishes on copper and copper alloys is the subject of a 10-page report. ■ Copper Development Association Inc., New York City.

Circle 402 on inquiry card

**FIRE-PROTECTION VALVES** / Bulletin D-1 describes the *Post Indicator* and *Indicating Butterfly* valves for fire protection sprinkler systems. The valves have been designed "to eliminate shut-valve fires with indication positive and foolproof." ■ Henry Pratt Company, Aurora, Ill.

Circle 403 on inquiry card

**GLASS** / The winter edition of "Creative Ideas in Glass" includes buildings by the following architects: Volk & London; J. Herschel Fisher and Pat Y. Spillman; Max O. Urbahn Associates; William P. Ficker; and A.G. Odell, Jr. & Associates. ■ American Saint Gobain Corp., Kingsport, Tenn.\*

Circle 404 on inquiry card

**ROOF VENTILATORS** / An unusually low silhouette is a feature of a complete line of industrial-commercial centrifugal power roof ventilators presented in a four-page brochure ■ Kool-O-Matic Corporation, Niles, Mich.

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**ARCHITECTURAL GLASS** / An eight-page brochure describes such items as drawn sheet, tinted, solar, figure rolled, floated plate, diffusing and enamelled glass. Color photos present residential and commercial applications. ■ Glaverbel (U.S.A.), Inc., New York City.

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**PANELING** / A 1969 guide provides complete information on the current line of plastic-finished hardboard for walls and ceilings. Technical information on *Korelock* custom laminated panels, moldings and accessories is included. ■ Marlite Paneling, Dover, Ohio.\*

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\* Additional product information in Sweet's Architectural File

more literature on page 236

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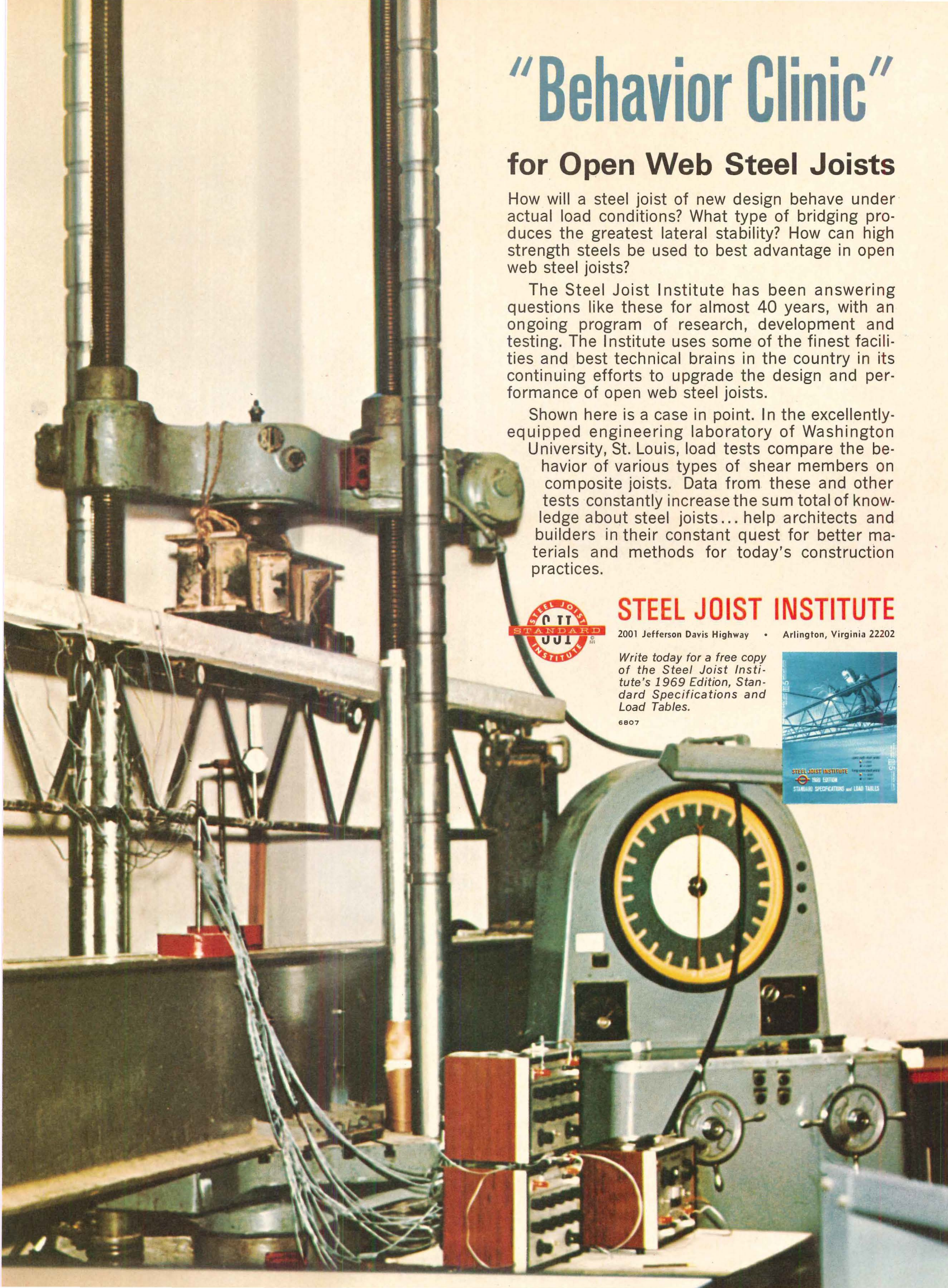


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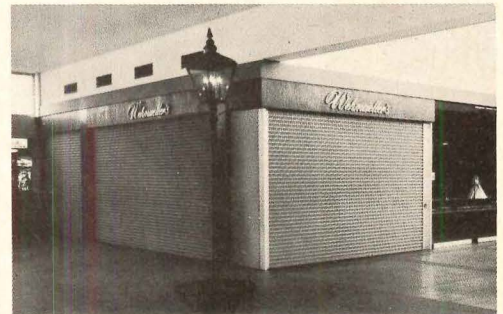




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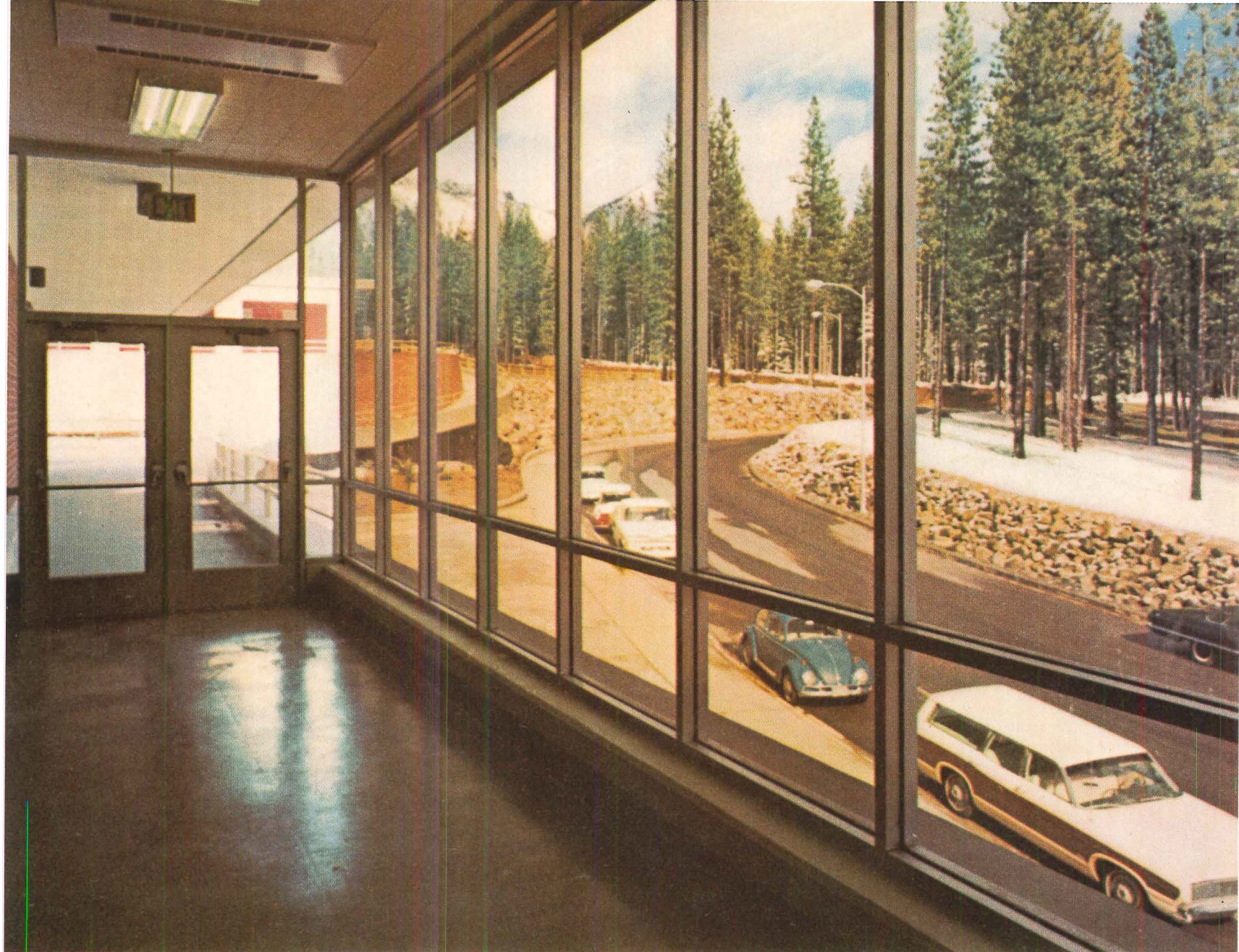


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Incline High School, Washoe County School District, Washoe County, Nevada

Architect: Edward S. Parsons, A.I.A., Reno, Nevada

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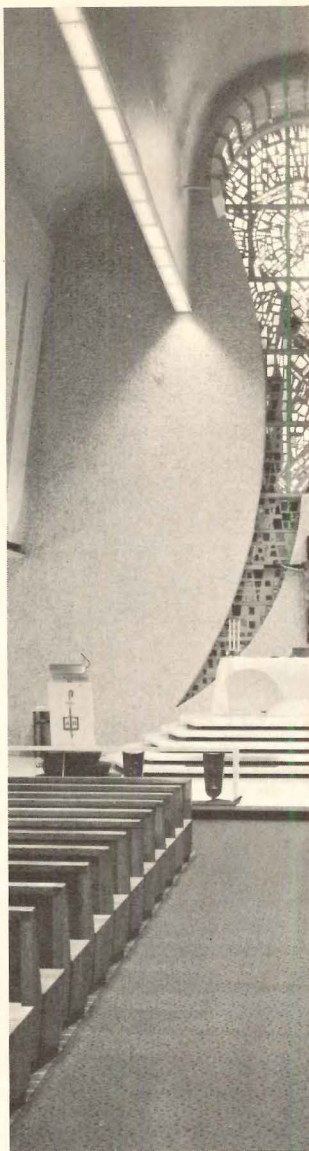
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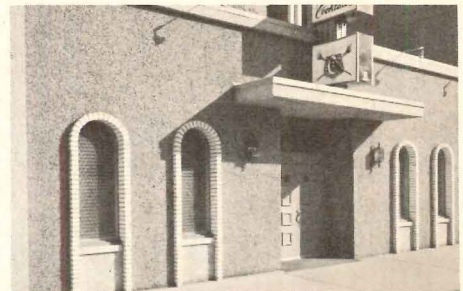
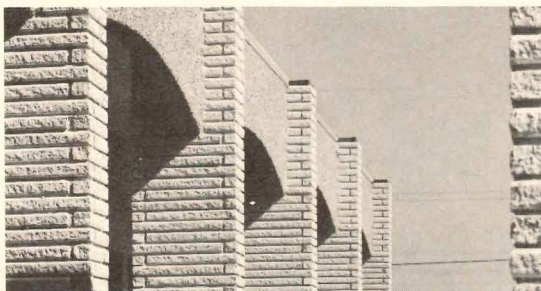
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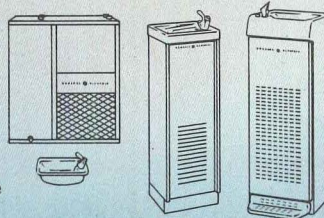
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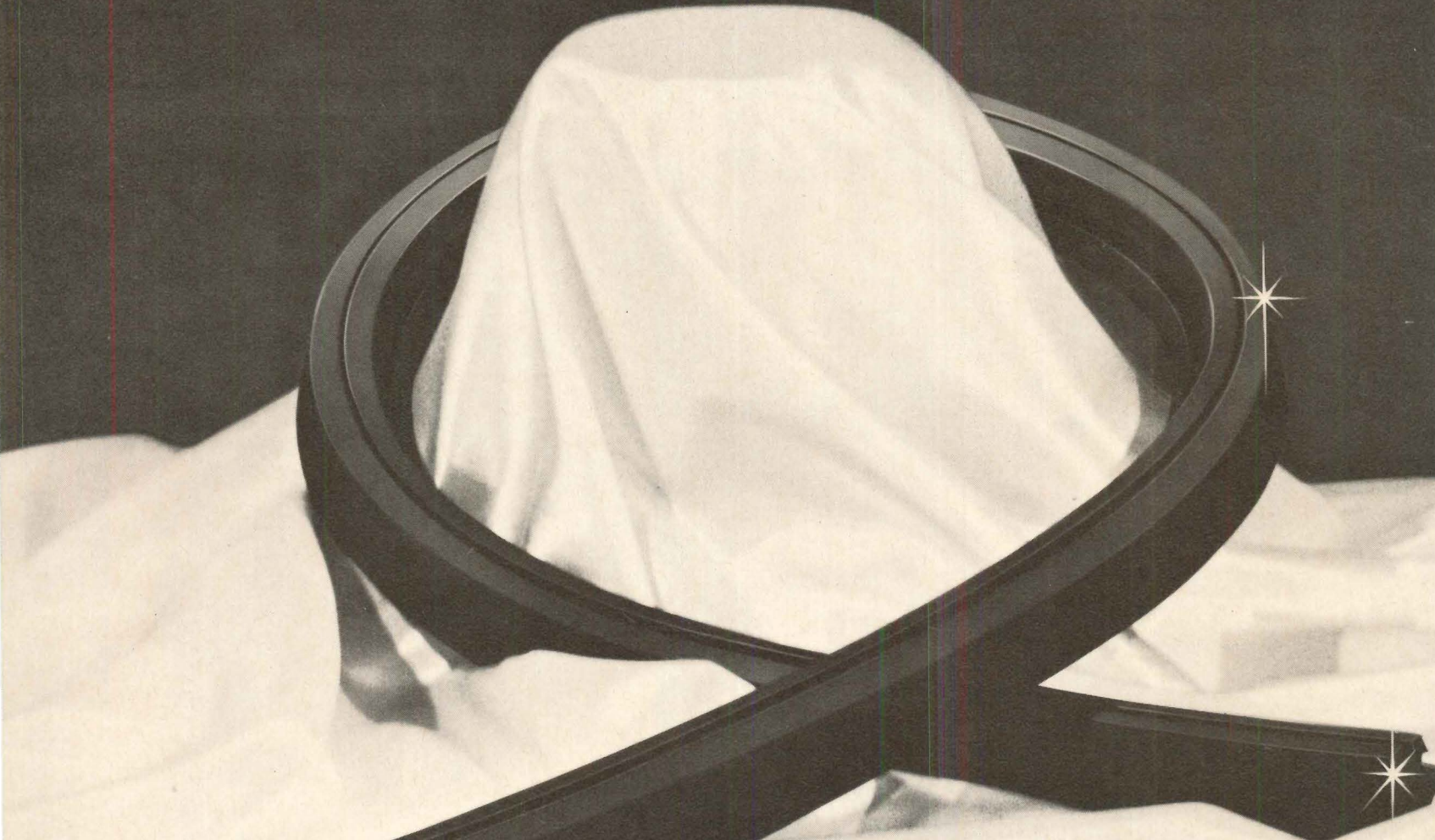
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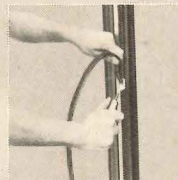
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The Von Duprin 66—the original stainless steel exit device, set a standard in quality for the industry that has yet to be matched. And we've been setting other stainless steel standards since the introduction of the 66. □ The Von

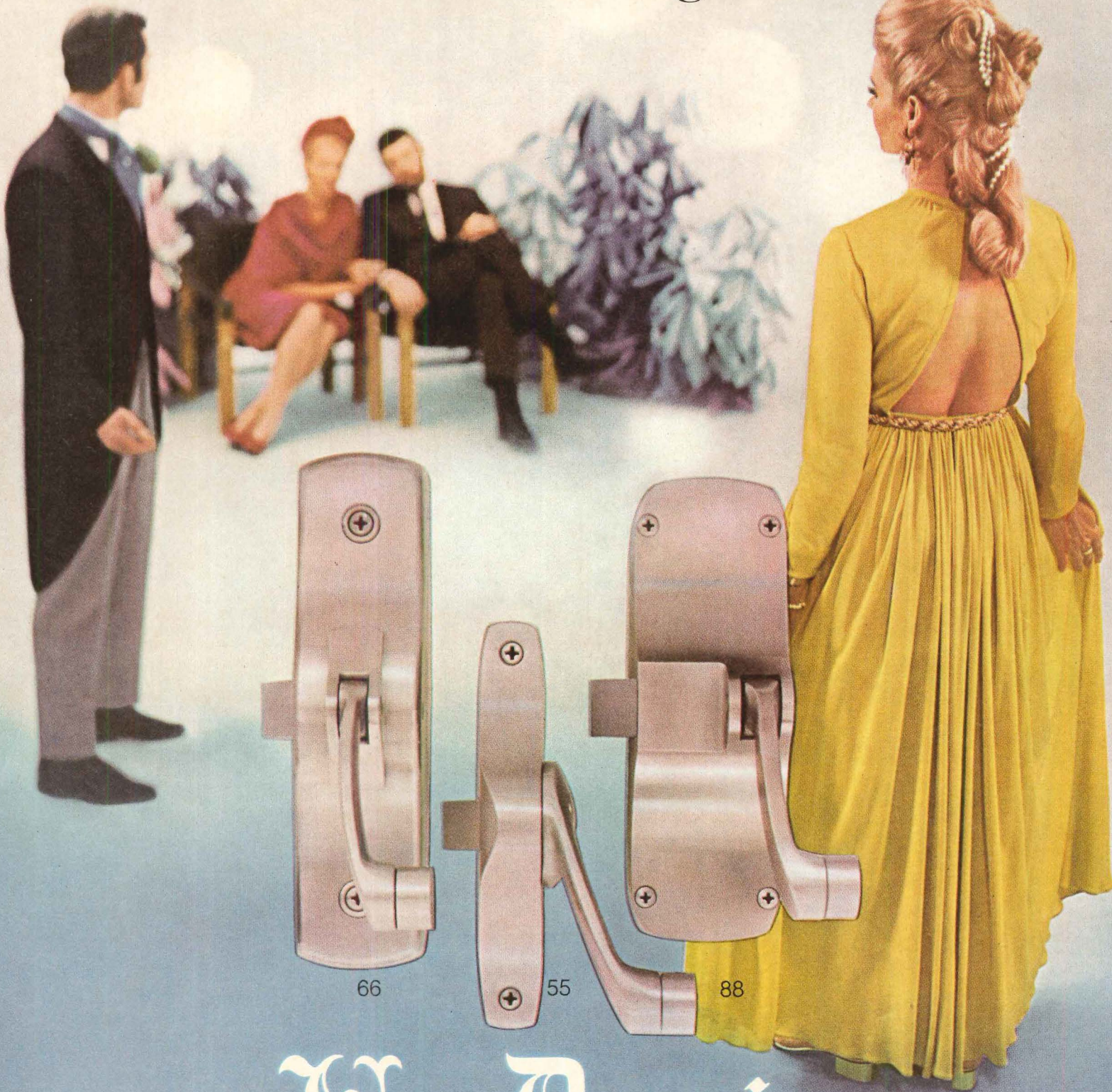
Duprin 55 devices. Slim. Compact. Designed to take it on narrow stiles or wide stiles. □ And, of course, the popular 88 series devices. A multitude of applications, functions and operations. □ The next time you're originating a

new building project, think of Von Duprin, the originator of the safe way out in stainless steel.

*Von Duprin, Inc. • 400 West Maryland Street • Indianapolis, Indiana 46225  
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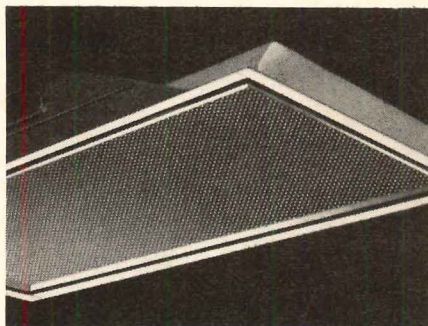
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## Stainless steel from the originator



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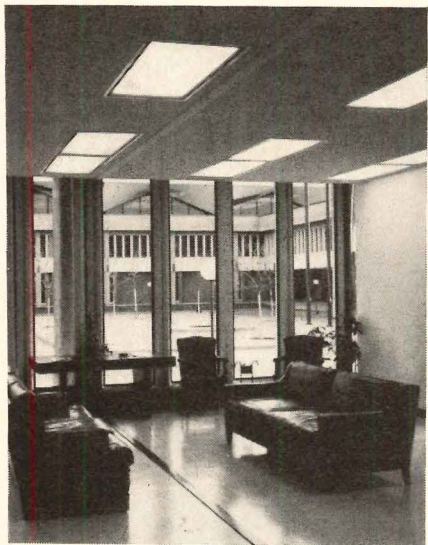
continued from page 228



## Smaller ducts, less noise, more light, longer life.

Silhouette 500 Troffers combine light, air supply and air return into one unit. Return air flows through the lamp chamber taking heat with it. Amount of recirculated, reconditioned air can be reduced.

Result: smaller ducts, fans and cooling coils. Less noise, too. Lamps operate closer to optimum temperatures, hence more light. Air cooling ballast increases life. Complete specs available and free. ①



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Lighting Division,  
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We've just begun to grow.

**KEENE**  
CORPORATION  
LIGHTING DIVISION

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**PANEL DOORS** / A booklet pictures over 140 types and styles of wood panel doors. A two-page section suggests how doors may be used decoratively in the home as panels, screens, room dividers, wainscoting and bed headboards. ■ St. Regis' Forest Products Division, Tacoma, Wash.\*

Circle 408 on inquiry card

**LANTERNS** / A 14-page booklet presents cast aluminum lanterns scaled for large residences, apartments and commercial buildings. Over 90 lanterns are shown. ■ Sternberg Manufacturing Co., Chicago.

Circle 409 on inquiry card

**COMMERCIAL WATER EQUIPMENT** / The 1969 catalog is 32 pages of sculpted drinking fountains, decor-blending water coolers, cafeteria/restaurant water dispensers, remote chillers, emergency decontamination facilities, laboratory equipment and accessories. ■ Haws Drinking Faucet Co., Berkeley, Calif.\*

Circle 410 on inquiry card

**AIR POLLUTION CONTROL** / A 12-page bulletin discusses a complete line of equipment for the control of industrial air pollution and in-process operations. ■ Arco Industries Corporation, Detroit.

Circle 411 on inquiry card

**HOSPITAL ENVIRONMENTS** / A bulletin describes the problems associated with the proper filtration of a hospital complex, from the surgical suites to the laundry room. ■ American Air Filter Co., Inc., Louisville, Ky.

Circle 412 on inquiry card

**NOISE REDUCTION** / A 12-page booklet on sound reduction doors discusses characteristics and control of noise, with special sections on the effect of noise on hearing loss and speech communication. Construction and suggested specifications for doors and wall panels are described. ■ Jamison Door Company, Hagerstown, Md.\*

Circle 413 on inquiry card

**PLASTIC-FINISHED HARDBOARD** / Loose-leaf binder contains reference material and installation information on a line of plastic-finished hardboard. There is also a selection of color prints of typical residential and commercial installations. ■ Marlite Paneling, Dover, Ohio.\*

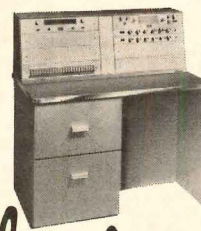
Circle 414 on inquiry card

**REINFORCEMENT FABRICS** / "Let's Look at Membranes," is a brochure featuring technical information and uses for cotton, jute and glass reinforcement fabrics for bituminous roofing and waterproofing systems. ■ Koppers Company, Inc., Pittsburgh.\*

Circle 415 on inquiry card

\* Additional product information in Sweet's Architectural File

more literature on page 242



planning a  
sound system?

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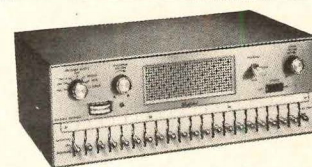
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**SCHOOLS:** Widest selection of Central Control Solid-State Systems—with full intercom and program facilities—in console, table turret or rack configurations—in every price range bracket.

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- Complete Engineering Help.** RAULAND engineers are at your command to help you specify with confidence.
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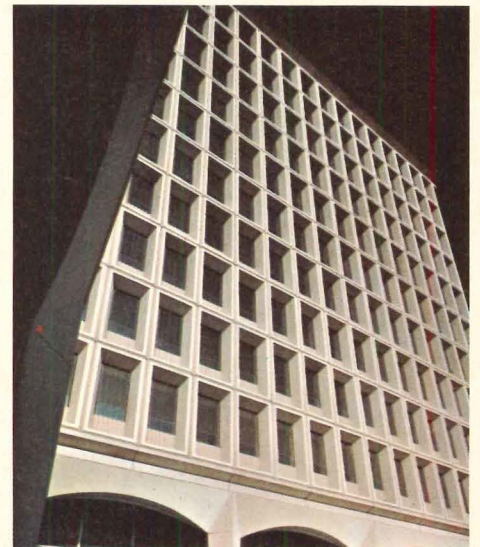


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**MEDUSA WHITE.**

Precast units in the low rise shopping complex include 14,000 lb. arches, 7,000 lb. parapets, 2-piece columns. In the high rise office complex; 610 window units (5' x 12').

All are precast in Medusa White, the aristocrat of white portland cements, for design unity in color. Use Medusa White to bring faithful reality to any color theme in any concrete structure. Write for White Precast Bulletin, Medusa Portland Cement Company, P.O. Box 5668, Cleveland, Ohio 44101.



VILLAGE PLAZA, Dearborn, Michigan.  
*Architect: Harley, Ellington, Cowan & Stirton, Detroit, Mich. Gen. Contractor: A. Z. Shmina & Sons Co., Dearborn, Mich. Precast Producer: Precast/Shokbeton, Inc., Kalamazoo, Mich.*



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with the best  
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For your next curtain wall, window wall, entrance or lobby design, consider one of the following three types of ULTIMET:

**USS ULTIMET in Stainless Steel.** For the first time, you can provide clients with the life-time beauty and durability of quality stainless steel curtain walls, including windows and doors. The cost? You'll find ULTIMET is competitive with systems utilizing materials of less strength and durability.



**USS ULTIMET in COR-TEN High Strength Steel.** Here is a new dimension in curtain wall design which combines the simplicity of ULTIMET and the natural beauty of bare USS COR-TEN Steel — the renowned weathering steel that protects itself with its own handsome oxide patina.

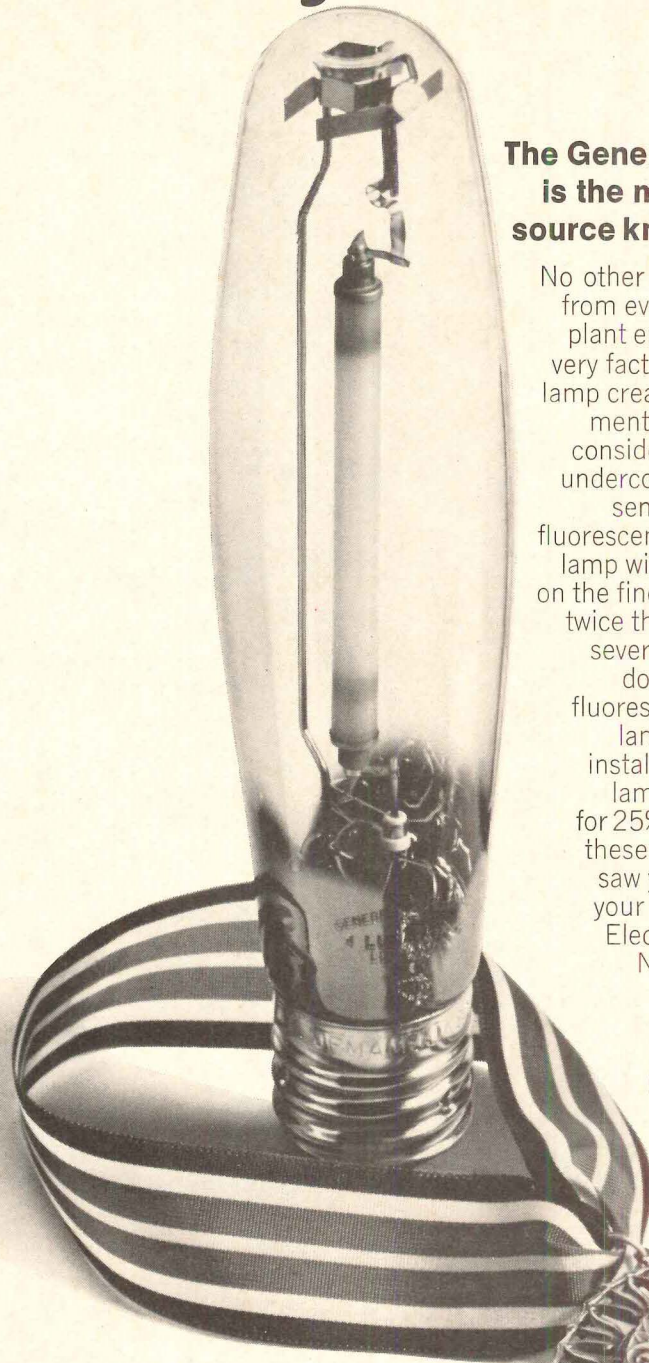
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and outstanding resistance to fading. For a copy of our new catalog on USS ULTIMET, contact a USS Architectural Products Representative through the nearest USS Construction Marketing Office, check your Sweet's, or write to U. S. Steel, Box 86, Pittsburgh, Pennsylvania 15230.

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**USS** **Ultimet Wall Framing Systems**  
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**The General Electric Lucalox® lamp  
is the most efficient general light  
source known to man—or factories.**

No other lamp will receive such a blessing from everyone concerned—management, plant engineers and factory workers. The very fact that the General Electric Lucalox lamp creates a more ideal working environment is worth the price alone. But also consider that nothing can outlight it—or undercost it. That makes strong business sense. Proof? Bring on the strongest fluorescent—and our 400-watt GE Lucalox lamp will give 2½ times more light. Bring on the finest mercury lamp—and it will give twice the light. More evidence? Recently, several industrial operations wanted to double their light levels. The choice: fluorescent, mercury or 400-watt Lucalox lamps. It was hardly a contest. Their installation estimates showed Lucalox lamps and fixtures could be installed for 25% less. Now that you're armed with these facts and figures, isn't it time you saw your GE Large Lamp Agent about your factory lighting? Or write: General Electric Co., Large Lamp Dept., C-806, Nela Park, Cleveland, Ohio 44112. Look at your ceilings. The savings could floor you.

**GENERAL  ELECTRIC**



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Wearing surfaces may be precast or precast units laid on setting bed.

Membrane is conventional asphalt or coal tar saturated felts plus 1/4" protection board.



**All-weather Crete** Insulation  
applied below and above the membrane system.

# plaza one

Tomorrow's plaza system is in use today! There are seven other systems to complement number one—all developed for different purposes—all designed with All-weather Crete insulation. "System One" has wearing slabs sloped to drain.

These systems are being used today by leading architects throughout the nation. Why? Because no other type of insulation offers so many advantages in plaza construction. Heavy density All-weather Crete acts as an insulating cushion to protect the waterproof membrane, thus solving a failure problem often encountered in other systems. The K Factor is .46; it has excellent load bearing capabilities and can be sloped or applied level. There's other advantages too.

Check out "Plaza One"—Two—Three—all Eight! Write for a full color brochure complete with diagrams and specifications. (You may want to design "AWC Plaza Nine" yourself.)



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## OFFICE LITERATURE

*continued from page 236*

**ILLUMINATED CEILINGS** / "Dimension '70" is an eight-page publication showing a series to be used with standard suspended ceiling components. Ceilings may be used in commercial, institutional and residential interiors. ■ Wilson Research Corporation, Erie, Pa.

Circle 423 on inquiry card

**ARCHITECTURAL GLASSES** / Three technical catalogs include selection tables, suggested glazing methods and specifications, strength data and transmittance values on various flat glasses. ■ Libbey-Owens-Ford Company, Toledo, Ohio.\*

Circle 424 on inquiry card

**ELECTRIC HEATING** / A 16-page booklet contains information on baseboard, wall, and bath heaters, and on related thermostats and controls. New company items include a draft barrier wall heater, thin-space heaters, floor drop-in heaters, a mini-space heater and utility and unit heaters. ■ Emerson Electric Co., St. Louis.

Circle 425 on inquiry card

**FIBER GLASS AIR DUCT SYSTEM** / A booklet explains "a high performance air delivery system with integral thermal-acoustical insulation and vapor barrier." ■ CertainTeed/Saint Gobain, Bala-Cynwyd, Pa.

Circle 426 on inquiry card

**LUMINAIRES** / An eight-page brochure describes three totally enclosed and gasketed fluorescent industrial luminaires for indoor and outdoor hazardous or non-hazardous areas with dusty, moist, corrosive or smoky atmosphere. Another eight-page booklet presents an extensive line of industrial and commercial luminaires and a computer service to determine optimum lighting systems using the new equipment.

■ Crouse-Hinds Company, Syracuse, N.Y.

Circle 427 on inquiry card

**PLUG-IN BUSWAY** / A 32-page bulletin covers *ARMOR-CLAD* plug-in busway, a totally enclosed, one-bolt joint design that is rated 600 volts a-c maximum. ■ General Electric Co., Plainville, Conn.\*

Circle 428 on inquiry card

**SEAMLESS FLOORING** / A 24-page technical bulletin entitled "Floors From Cans" describes 13 urethane resins for seamless flooring. The bulletin includes moisture or catalyst cure and two-package polyol cure resins, and contains data relative to physical tests, chemical and stain resistance, color retention, low-odor solvents and catalysts. ■ Spencer Kellogg Division of Textron Inc., Buffalo.

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\* Additional product information in Sweet's Architectural File

more literature on page 260

## There's just one thing worse than finding out about cancer.



## Not finding out.

Sure, finding out is a shock. But finding out gives you a fighting chance. And the earlier cancer is found, the better the chances of beating it.

There's one certain way to lose to cancer. And that's not to find out. Until it's too late.

The thing to do is to have your physician give you a good going over now, when you feel great. And then when your doctor tells you that you are great, you'll feel even better.

american  
cancer  
society



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**Visual  
Drama  
with  
PPG  
Glass**

# PPG Glass helps open up Miami

Mutual of Omaha asked for a dramatic glass wall design for its new building to take full advantage of its view of Biscayne Bay. The architect faced a very difficult design problem: keeping a glass wall building cool in spite of the intense Florida sunshine. He found PPG's *Solarban® Bronze (3) Twindow®* Insulating Glass an excellent solution to both esthetic and engineering requirements. The warm bronze tone of *Solarban Bronze* was selected as a handsome color complement for the building's white concrete columns, and as an extension of the bronze tones of the exterior metals and interior color scheme.



The reflecting qualities of *Solarban* add design interest, help keep the building comfortably cool, and significantly reduce the size and cost of the building's cooling system. The functional and design advantages of PPG Performance Glass have made a larger, better view of Miami both possible and practical.

The custom *Twindow* units were fabricated to match exactly the poured-in-place arches. The curves of the window openings correspond with the arches extending from the tops of the building's exterior columns.





With *Solarban Bronze (3)*, sunlight seems only one-eighth as bright to the indoor viewer, an important consideration with light-colored concrete construction in the brilliant Florida sunshine. The bronze hue of these units harmonizes with the warm earth tones selected for the interior decor.

*Solarban's* reflecting qualities provide a new visual dimension to the building while turning back much of the sun's radiant energy.



Architects for the Mutual of Omaha Regional Home Office found that PPG's Performance Glass solved both their design challenges: it added to the building's beauty while helping to keep it cool efficiently and economically.

Mutual of Omaha Regional Home Office, Miami

Architect: Houstoun, Albury, Baldwin & H. Maxwell Parish, Miami  
 Interior Design: Houstoun & Parish, Miami  
 Consulting Design Architect: Leo A. Daly Co., Omaha  
 Consulting Engineer: Breiterman, Jurado & Associates, Miami

# There's a PPG Performance Glass for every design problem

Mutual of Omaha's consulting engineer states, "This glass, *Solarban Bronze (3)*, permitted us to use the air conditioning system we did. If you want to have an open-building design like this in Florida, you would have to figure it with glass like this."

*Solarban Twindow* units offer a reflective film coating which keeps

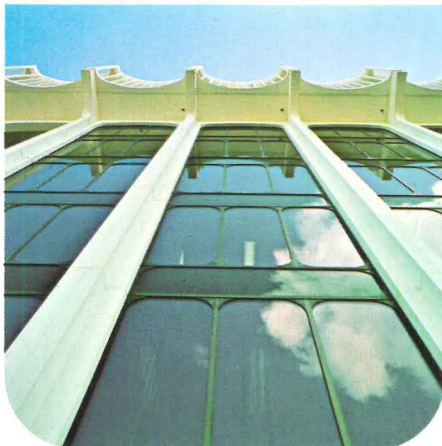
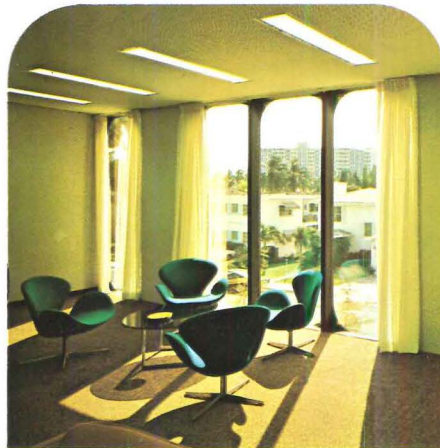
much of the solar radiant energy outdoors rather than permitting it to become a load on the cooling system. This same low-emissivity reflective film enables *Solarban Twindow*, a normal insulating unit with 1/2" air space, to perform like triple glazing in reducing the conducted heat loss during Florida's winter months. Coupled with PPG's *Solarbronze*

Plate Glass in this *Solarban Twindow* unit, the reflective coating reduces the overall light transmission to 12%, thus shading much of the outdoor brightness without obstructing the occupant's view.

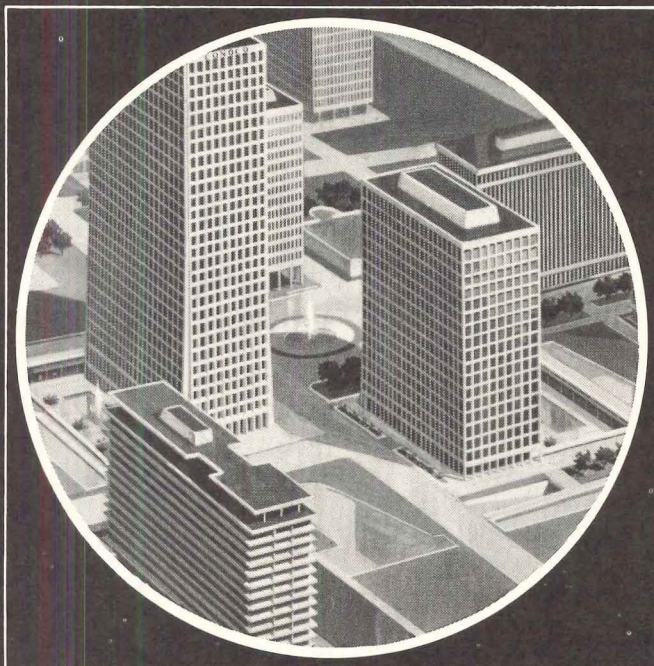
Write: PPG Industries, Inc., One Gateway Center, Pittsburgh, Pennsylvania 15222.



PPG is Chemicals, Minerals, Fiber Glass, Paints and Glass. So far.



# Houston's Greenway Plaza; the \$150 million city within a city.



## Zonolite Mono-Kote is making every fireproofing dollar count.

*\*Architects: Lloyd, Morgan & Jones, Houston, Tex.*

Here at Houston's gigantic new Greenway Plaza, all the buildings have their frames, concrete or steel, sprayed with Zonolite Mono-Kote.<sup>®</sup> Why? Architects Lloyd, Morgan & Jones insisted on it.

Zonolite Mono-Kote<sup>®</sup> is the cheapest, lightest, fastest-to-apply fireproofing you can get.

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weight just to get the same fire rating you get from Zonolite Mono-Kote? You save on materials, materials handling and time.

Do some smart saving on your next project. Learn more about Mono-Kote and its use with tested, fire-rated constructions appropriate to your building design. Just check the handy coupon and mail it in.



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Please send me information on your lightweight, fire-rated construction for:

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|----------------------------------|-------------------------------------|
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| <input type="checkbox"/> Girders | <input type="checkbox"/> Roof Decks |
| <input type="checkbox"/> Trusses | <input type="checkbox"/> Floors     |
| <input type="checkbox"/> Walls   | <input type="checkbox"/> Partitions |



**Construction Products Division**  
**W. R. Grace & Co. Dept. AR-05**  
**Cambridge, Mass. 02140**

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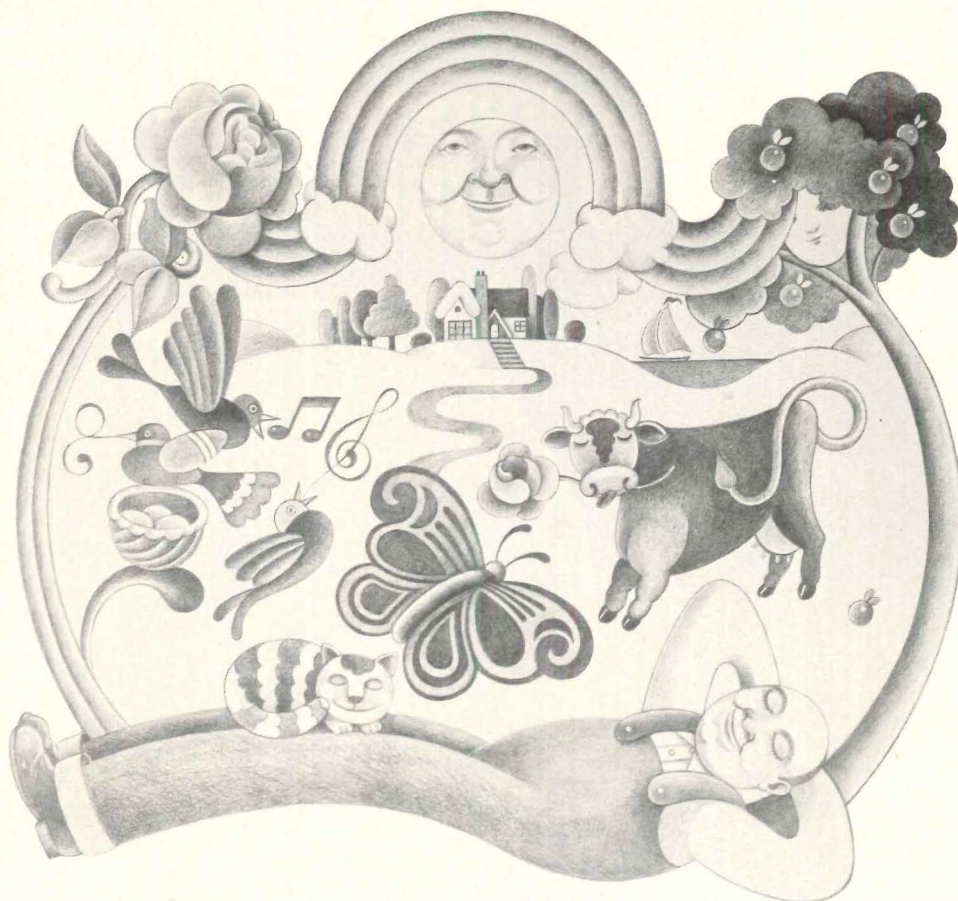
See the nice man.

He is asleep  
beneath the tree.

The sun is shining,  
shining, shining.

The birds are singing,  
singing, singing.

Everything is nice and  
peaceful and serene.



Do you know why everything is always nice and peaceful here?  
Because this is not a real world.


It is make believe. It never rains. There is no bad.  
And nobody ever gets sick. Ever.

Real worlds are different. We know. We work against  
real cancer in this real world. Every year more and more people  
are helped to live longer because they go for checkups  
when they think everything is nice and rosy.

It is the only way they can be helped. If they go.  
Too many people live in a make-believe world. They put it off  
and put it off and put it off.  
Tsk. Tsk. This is naughty, naughty, naughty.

Do you know why we talk to you like this?  
Simple. When we talk to you like adults, you don't listen, listen, listen.

200,000 were saved last year.  
Annual checkups can help save thousands more.  
What are you waiting for?

Help yourself with a checkup. And others with a check. American Cancer Society 

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Auditorium Addition  
Fairview School  
Skokie, Illinois  
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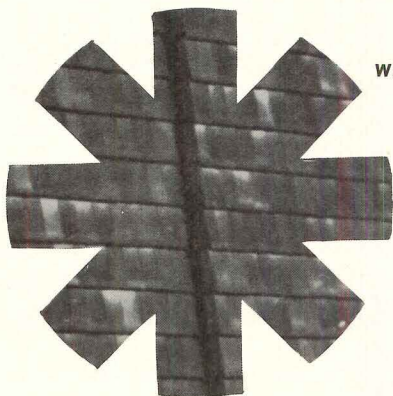
# Ludowici Clay Roofing Tile...

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Versatile beauty is but one of the pluses. Award-winning architects also select Ludowici Roofing Tile be-

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A wide variety of patterns, colors and surfaces are available to provide an unlimited choice of roof styling in hard-burned clay—all architecturally sound . . . all with the potential for award-winning designs.



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design problems**

from  
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Reinhold Co.**

**PLANNING DESIGN CRITERIA**

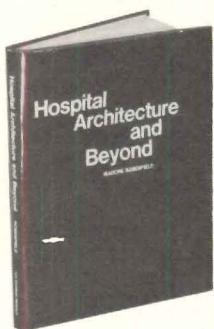
By Joseph DeChiara and Lee Koppelman

This comprehensive volume does not delve into philosophy, nor overwhelm you with countless technical details. It does provide, in a single source, the basic reference material you need for effective urban planning. . . .

The book's first section gives you the methodology and scope for the preparation of the various major planning studies such as land-use study, population study, etc. Subsequent sections examine the major phases of planning and design with particular emphasis on such subjects as: new zoning concepts, shopping centers, cluster housing, industrial parks, transportation, air pollution, recreational areas, and government programs. Many original drawings and illustrations supplement and clarify the text material.



395 pp., 9"x12", \$25.00



**HOSPITAL ARCHITECTURE AND BEYOND**

By Isadore Rosenfield,  
in collaboration with Zachary Rosenfield

This book shows how a hospital should function in society and details how it should be put together. It examines the shaping of today's hospitals through a variety of motivations such as conceptions of disease, ideas on what constitutes health, technologies of medicine and building, social forces, and esthetic attitudes.

Most important, the book confronts you with the basic problem of meeting the complex needs of a modern community. It cuts through any preconceptions you may have about hospitals and shows you how to solve problems on their merits by such forms and configurations as you find necessary.

320 pp., 8 1/2"x11", \$24.95

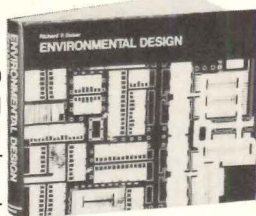
**ENVIRONMENTAL DESIGN**

By Richard P. Dober

240 pp., 9"x12", \$22.00

This exceptional work affirms that environmental design is an art larger than architecture; more comprehensive than urban planning; more sensitive than civil engineering.

Succinctly informative, the book lays the groundwork for an interdisciplinary approach to creating a viable and rewarding new human environment—an approach emphasizing existing methodology and opportunities. To lend support to its timely premise, vivid illustrations serve to point out the influence of historic designs . . . promising current trends . . . and the present frontiers of design.



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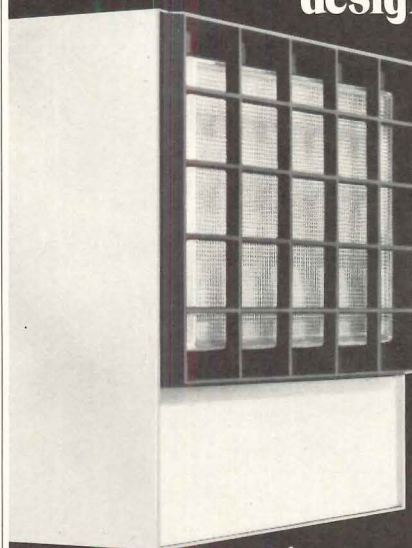
- PLANNING DESIGN CRITERIA**, by DeChiara, Koppelman, \$25.00  
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strong** visually...

when you  
design with light  
the mcPhilben  
way...



These rugged 15 Line luminaires beautifully express mcPhilben's concept of lighting continuity. This bold 15 Line fixture is a high performance Mercury Vapor luminaire of integral cast aluminum construction . . . anodized for permanent beauty . . . with a wide range of mountings — ideal for building campuses and shopping malls. So come on strong . . . design with light the mcPhilben way.

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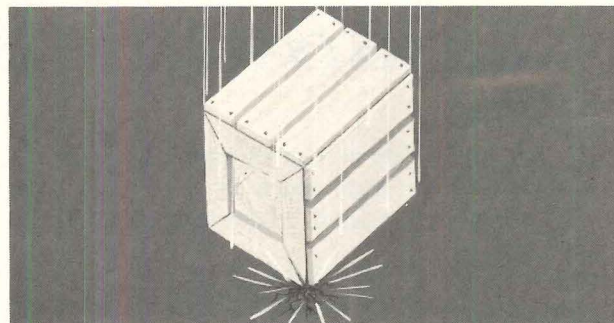
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statement specific  
make it...

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For more data, circle 136 on inquiry card





## How to keep World War II out of a quiet love scene

Take one large motion picture theater and convert it into two, one up and one down. Exhibit different films in each and improve the overall profitability of the building. Loew's Theaters did just that with the famous old Loew's State at Broadway and 45th Street in New York City. □ Keeping the sound within each theater is essential; the thunder of bombers in one doesn't add to a love scene in the other. Loew's did the soundproofing by making the floor of the upper theater plenty thick and then covering it with a lead shield. □ The density and

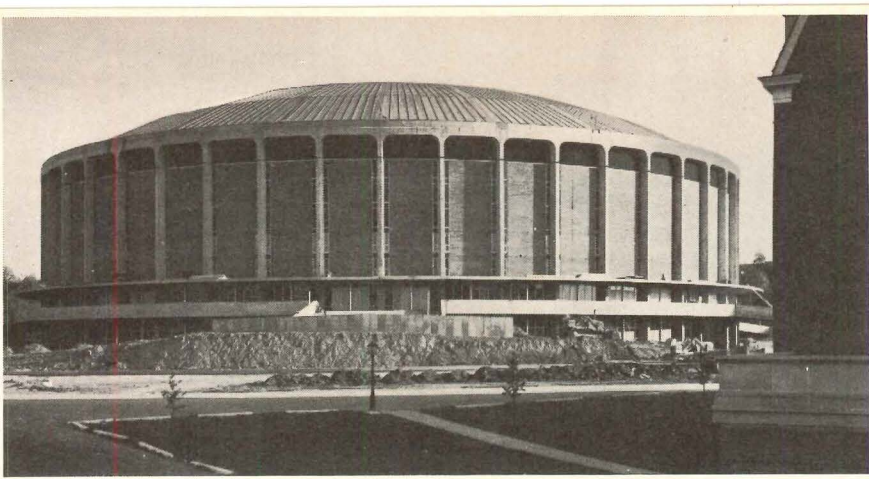
limpness of lead makes an effective barrier against noise. It is being used, in a variety of forms, in offices, schools, theaters, hotels, building foundations, boats, planes, and industrial applications. Today's architects and designers are using lead to stop noise from invading our privacy, lowering human efficiency and injuring our health. □ You can make life more liveable by designing for quiet... with lead. □ **St. Joe supplies quality lead —American industry puts it to work.**

**ST. JOE**

Producers and Marketers of Lead, Zinc, Zinc Oxide, Iron Ore Pellets, Iron Oxide, Agricultural Limestone, Cadmium, Copper Concentrates, Silver and Sulphuric Acid.

ST. JOSEPH LEAD CO., 250 Park Avenue, New York, New York 10017

PB-359



Ohio University Convocation Center, Athens, Ohio  
**Architect:** Brubaker & Brandt, **Engineer:** Fling & Eeman, Inc.  
**Steelwork:** Bristol Steel & Iron Works, Inc.  
**General Contractor:** Knowlton Construction Co.



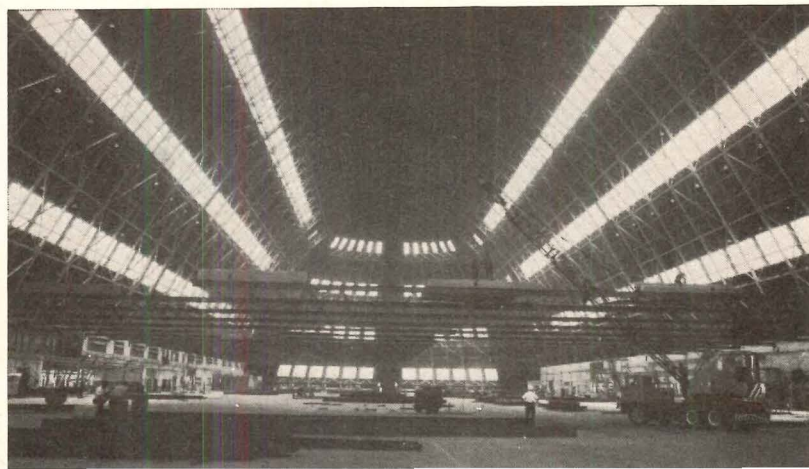
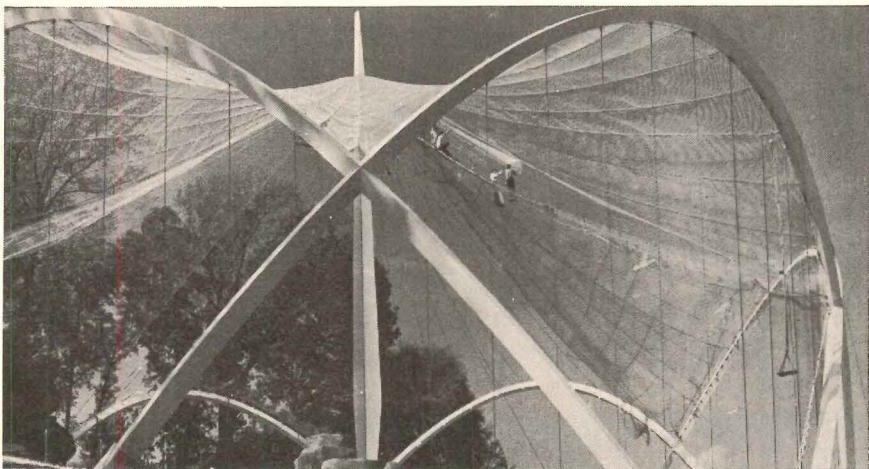
Stargets Golf Course, Hanover, Massachusetts  
**Designer-Owner:** Family Leisure, Inc., **Engineering Consultant:** Simpson, Gumpertz & Heger, Inc., **Project Engineer:** John F. Notemeyer, **Steelwork:** Chestnut Welding & Iron, Inc., **General Contractor:** Taverna Brothers

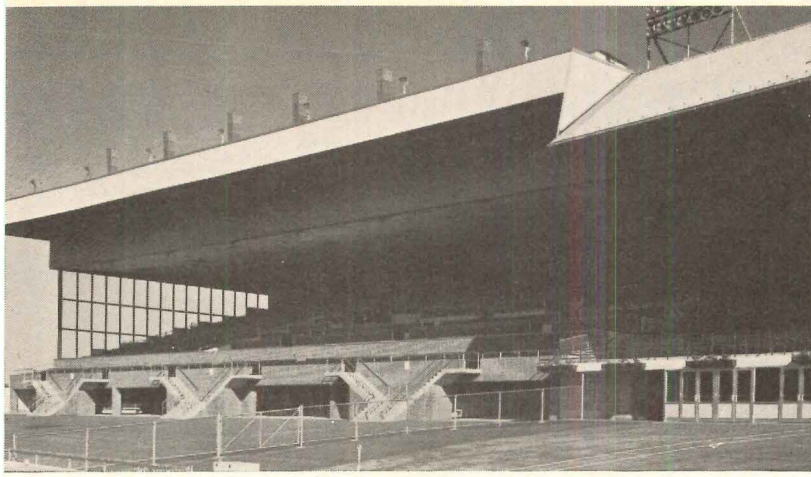


Hampton Roads Coliseum, Hampton, Virginia, **Architect:** A. G. Odell, Jr. & Associates  
**Structural Engineer:** Severud, Perrone, Sturm, Conlin, Bandel, **Steelwork:** Bristol Steel & Iron Works, Inc., **General Contractor:** McDevitt & Street

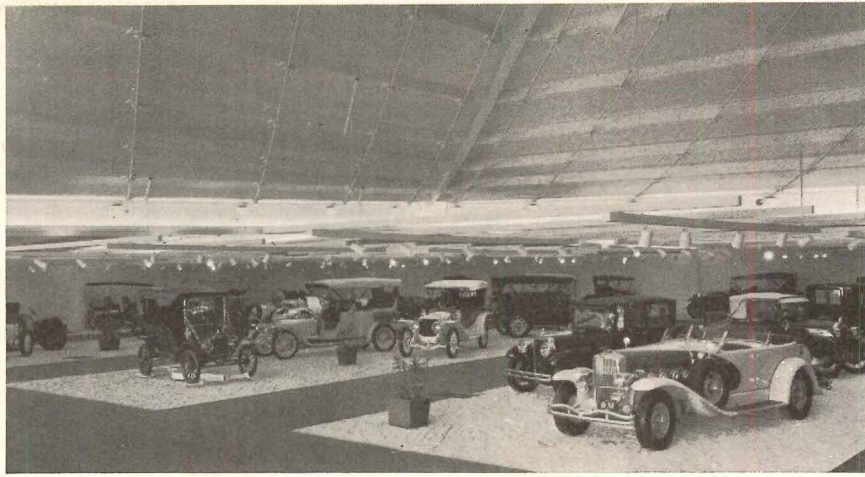
Great Flight Cage, Washington, D. C.  
**Architect:** Daniel Johnson and Mendenhall, **Structural Engineer:** Donald J. Neubauer  
**Consulting Detailer:** Rick Engineering, **Fabricator:** Fabricator's Steel Corporation  
**General Contractor:** Edrow Engineering Co., Inc.

I-XL Furniture Co. Plant, Elizabeth City, North Carolina  
**Architect-Engineer:** Wiley & Wilson  
**General Contractor:** Basic Construction Co.





Brandywine Raceway Clubhouse, Wilmington, Delaware  
**Architect:** Lionel K. Levy, **Engineer:** Robert Rosenwasser  
**Fabricator:** Belmont Iron Works, **Erector:** McCormick Construction Co., Inc.  
**General Contractor:** Ernest DiSabatino & Sons



Museum of Automobiles, Petit Jean Mountain, Arkansas  
**Architect:** Ginocchio, Cromwell, Carter & Neyland  
**Structural Engineer:** Severud, Perrone, Sturm, Conlin, Bandel  
**General Contractor:** Dickens-Bond Construction Co.

# We work closely with architects and engineers on cable applications like these

Bethlehem has furnished the steel strand, wire rope, and end-fittings for many of the nation's cable roofs. It all began with Raleigh Arena, the country's first major cable-roof structure, built in 1953. Since then, we've been involved in a wide variety of cable roofs and related cable applications.

Some of the structures we've been associated with in recent years are shown on these pages. Each combines the bold approach of cable construction with a low-cost column-free interior.

Over the years, we've gained much experience in this field. And we've assembled a considerable amount of data. Because of this, we've been able to cooperate with designers in furnishing information on cables, end-fittings, and complete assemblies. We've also worked closely with them in detailing the cables and supplying them to precise specifications.

Our library of technical and design data on this subject is one of the most complete in the industry. If you'd like to receive any of these materials, just write to: *Room 1049A, Bethlehem Steel Corporation, Bethlehem, PA 18016.*



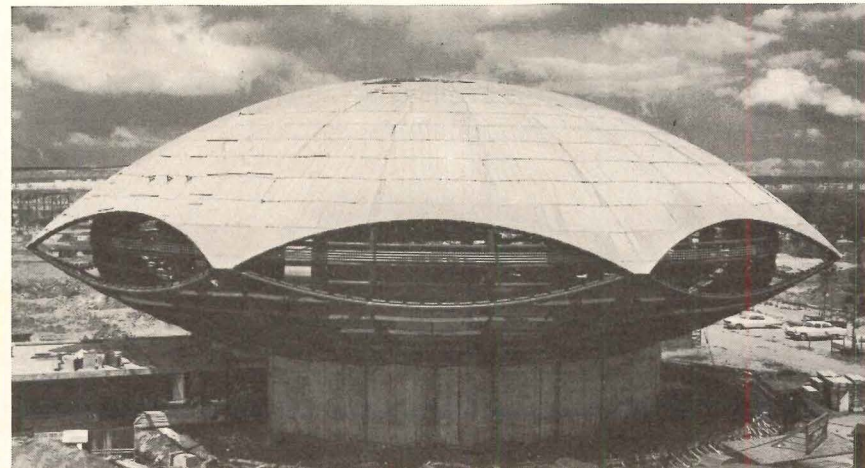
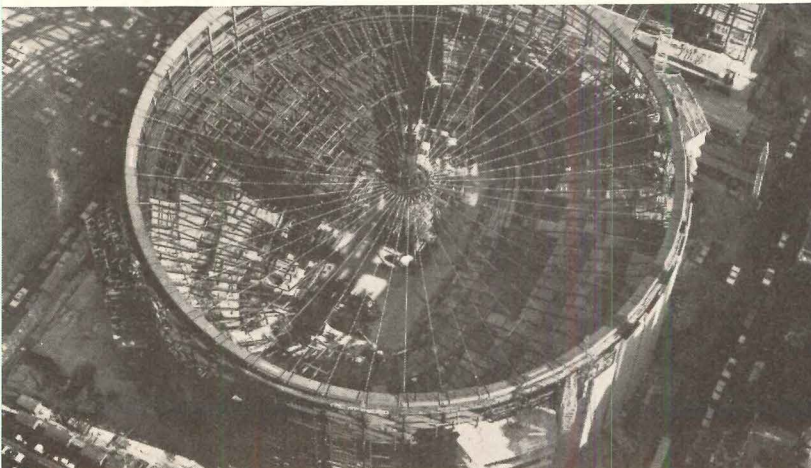
Steel for Strength

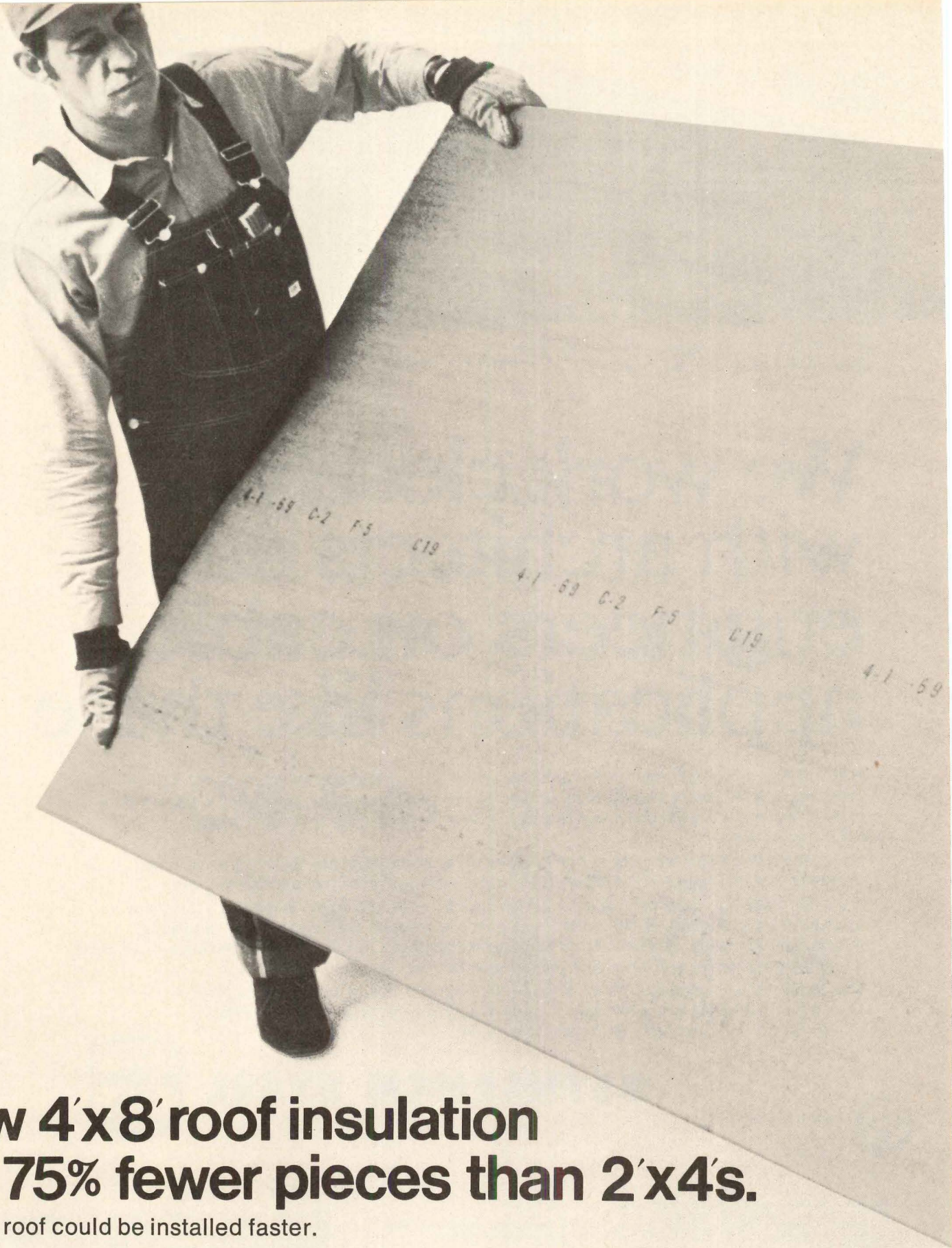
## BETHLEHEM STEEL



Madison Square Garden Center, New York City  
**Architect:** Charles Luckman Associates  
**Engineer:** Severud, Perrone, Sturm, Conlin, Bandel, **Steelwork:** Bethlehem Steel  
**General Contractor:** Turner Construction Co.—Del Webb Corporation, a joint venture

Travelers Insurance Pavilion (World's Fair—dismantled), Flushing, New York  
**Architect:** Kahn & Jacobs, **Designer:** Donald Desky Associates, Inc.  
**Structural Engineer:** Lev Zetlin & Associates, **Steelwork:** Bethlehem Steel  
**General Contractor:** George A. Fuller Corporation





# Our new 4'x8' roof insulation means 75% fewer pieces than 2'x4's.

Only a one-piece roof could be installed faster.

The bigger the roof insulation, the fewer boards there are to handle, and the faster the installation. Your building is put in the dry sooner. Ease and speed of installation are just two of many benefits Owens-Corning Fiberglas\* Roof Insulation, the biggest anywhere, has to offer. Others are inherent and exclusive in the glass fiber material itself. It has a low "k," is rated incombustible (cap excluded), and conforms to minor deck irregularities: you get a smooth, trouble-free base.

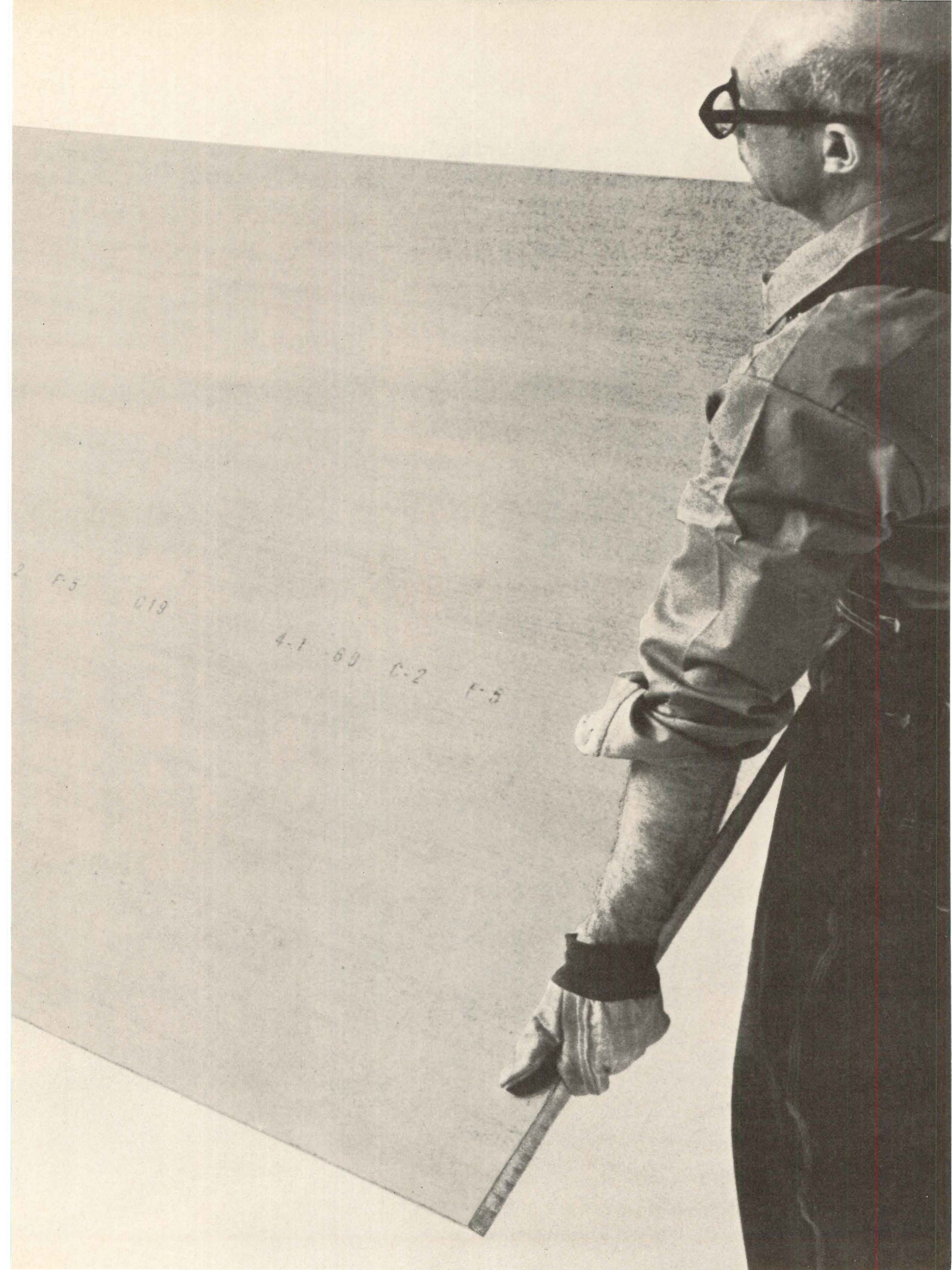
And if the job calls for taping, our Fiberglas taped-joint system with 4x8's can provide the fewest joints in the business.

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4-1-60 C-2 F-5

# Keene imagination

**SIMON FRASER UNIVERSITY POOL  
VANCOUVER, B.C.**

**ARCHITECT: DUNCAN S. McNAB AND ASSOCIATES  
VANCOUVER, B.C.**



# accents acoustical products.

If you've ever tried to make yourself heard around a huge indoor swimming pool, you'll appreciate Keene's solution to a tough acoustical problem at Simon Fraser University, Vancouver. The highly reflective surfaces make speech and hearing practically impossible. That's why those Keene Sonosorbers are hanging from the ceiling. More than 100% sound absorption is obtained from each square foot of their surface area.

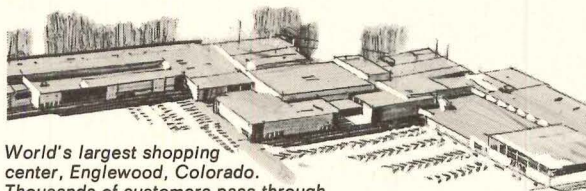
Whatever acoustical problem comes up, chances are Keene has come up with the product to solve it. Sonosorbers are just part of the biggest specialty line in the business.

The most versatile structural framing line in the business is Keene Speed-Steel,™ chosen for the Atomic Energy

Commission's Brookhaven Laboratory shown here. The only flat surface in the building is the floor, since all of the walls are sloping. In



Atomic Energy Commission's Brookhaven Laboratory. Speed-Steel structural framing was used throughout.



World's largest shopping center, Englewood, Colorado. Thousands of customers pass through Keene's metal doors here.

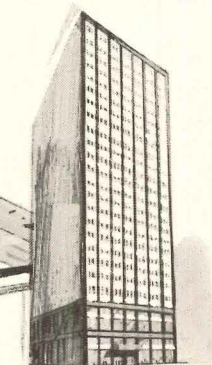
combination with precast concrete, Speed-Steel helped an imaginative concept take shape.

If you open doors, chances are you've handled some of Keene's door products. Keene metal doors, both fire-rated and non-rated, are in thousands of America's schools and colleges, offices and factories.

Keene imagination works for you in products like our movable partitions and architectural mesh, too. Six movable wall systems give you complete freedom of choice in paneling materials, flexibility and sound control. Keene architectural mesh is a decorative product every bit as practical as it is attractive. It diffuses light and increases airflow, decreasing air conditioning costs.

If you've gotten the impression that Keene makes a diversified line of quality building products that may help on your next job, you're right.

For complete information on Keene acoustical products and a general catalog of Keene building products, write to Dept. A-5, Keene B-E-H, 500 Breunig Avenue, Trenton, New Jersey 08602.

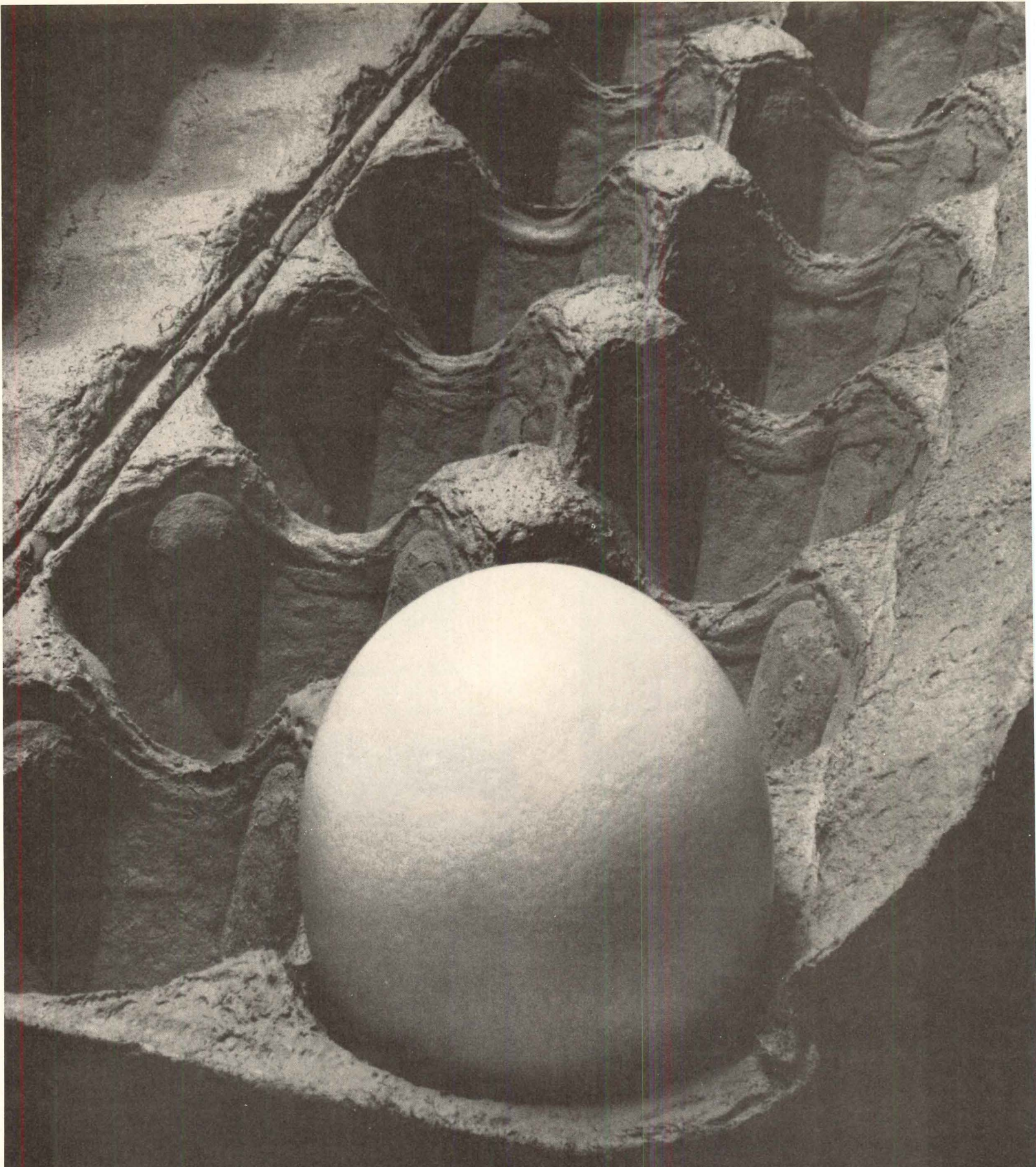


North American Rockwell Building, Pittsburgh. Keene movable wall systems were chosen for interior design flexibility.

**KEENE**  
CORPORATION

**We've just begun to grow.**

For more data, circle 139 on inquiry card



**If you've seen one, you've seen 'em all.**



It's fine for things to look alike. Just fine.

If they happen to be eggs.

But if they happen to be buildings, it's not so fine. Buildings that look alike make cities that look monotonous. Unimaginative. Sort of—well, tacky-tacky. And if you don't quite see what we mean, go downtown on the next clear day, and look up. You'll see what we mean.

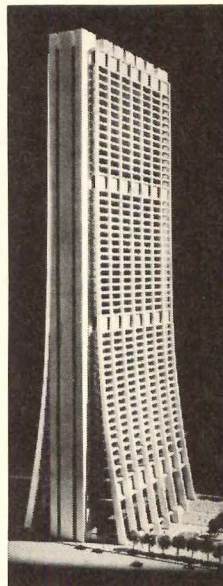
But take heart. There's something new afoot in the cities of America. The boxy, boring buildings are on their way out. They're being replaced by a new kind of building with a new kind of flair. A new kind of freedom. A new kind of excitement.

It's happening everywhere, but nowhere is it happening better than in the heart of Chicago's famed Loop. It's there that the new First National Bank Building is nearing completion. A magnificent sight! Soaring 60 stories into the air with a majesty

and grace that's nothing short of incredible for such a massive structure.

Constructing something as grand as this involves some pretty complex problems. Take steel floor beams, for example. When the First National's plans were drawn, rolled beams 21 inches deep were planned. But then, the structural engineers in concert with the architects decided that a "stiffer" floor would be more desirable, in order to minimize even the slightest chance of noticeable floor vibration. To get the degree of "stiffness" they wanted, 30-inch rolled beams were selected. And there was the rub—30-inch beams would weigh almost twice as much as 21-inch beams.

Solving one problem had created another. But with help from Inland Steel, that problem, too, was solved. Inland's recommendation? 30-inch *welded* beams. It was the way to get a whopping 50% more strength than the 21-inch rolled beams, at just



over half the weight of the 30-inch rolled beams. All at an impressive savings running into many thousands of dollars.

At Inland Steel we produce all sorts of welded shapes; beams with webs thinner than rolled shapes, beams with off-center webs, tapered beams, asymmetrical beams, hybrid beams. With or without camber. We also produce practical solutions to sticky problems.

How about you—got a problem? Give us a call. We may come up with something that'll give you

the same kind of pleasant surprise you get when you open an egg and find two yolks inside.

Inland Steel Company, 30 West Monroe Street, Chicago, Illinois 60603. AC 312 FInancial 6-0300.

## Inland Welded Structural Shapes

For more data, circle 140 on inquiry card

continued from page 242

**ASBESTOS—ASPHALT TILE** / The 1969 *Color Comparison Chart* for vinyl asbestos and asphalt tile contains up-dated charts that list patterns, styles and colors of tile made by Amtico, Armstrong, Azrock, Congoleum, Flintkote, GAF, Johns-Manville and Kentile. The charts show the commercial equivalents of the various color lines and patterns. ■ Asphalt and Vinyl Asbestos Tile Institute, New York City.

Circle 416 on inquiry card

**POLYMERS AND RESINS** / An eight-page bulletin describes liquid polysulfides, epoxy resin systems and liquid urethanes. ■ Thiokol Chemical Corporation, Trenton.\*

Circle 417 on inquiry card

**FLOODLIGHTING** / "Floodlighting to Create a Desired Visual Impression," is number seven in the *Electrical Design Library* series. Photographs of 17 floodlighted structures, some with diagrams to show fixture placement and aiming, illustrate the effects of different lighting methods. ■ National Electrical Contractors Association, Washington, D.C.

Circle 418 on inquiry card

**COLLEGE HOUSING** / A case study describes the 12-building complex at Montana State University, the "first use of . . . modern thin-walled load-bearing construction" in an unstable Seismic Zone 3 area. Cost is reported \$17.27 per sq ft, including appliances, carpets, draperies and landscaping. ■ Structural Clay Products Institute, McLean, Va.

Circle 419 on inquiry card

**RIGID ROOF INSULATION** / The 1969 *Permalite Sealskin* catalog describes the shortline method of laying insulation to minimize problems associated with long joints. Proper specification of *Permalite* non-combustible vapor barrier and cold adhesive is also covered. ■ Grefco, Inc., Chicago.\*

Circle 420 on inquiry card

**PLASTIC BUILDING PANELS** / A six-page brochure presents *Avr-Duraform*, "a new development in flat, corrugated and heat-formable panels, produced by a special process that insures uniform and oriented dispersion of the asbestos fibers throughout the entire PVC mass." A sample is included. ■ Kakor Products Corporation, Yardville, N.J.

Circle 421 on inquiry card

**WARDROBE SYSTEMS** / A catalog on commercial and institutional systems includes semi-concealed classroom wardrobes with a cantilever design. ■ Equipment Manufacturing Co., Inc., Kansas City, Mo.\*

Circle 422 on inquiry card

\* Additional product information in Sweet's Architectural File



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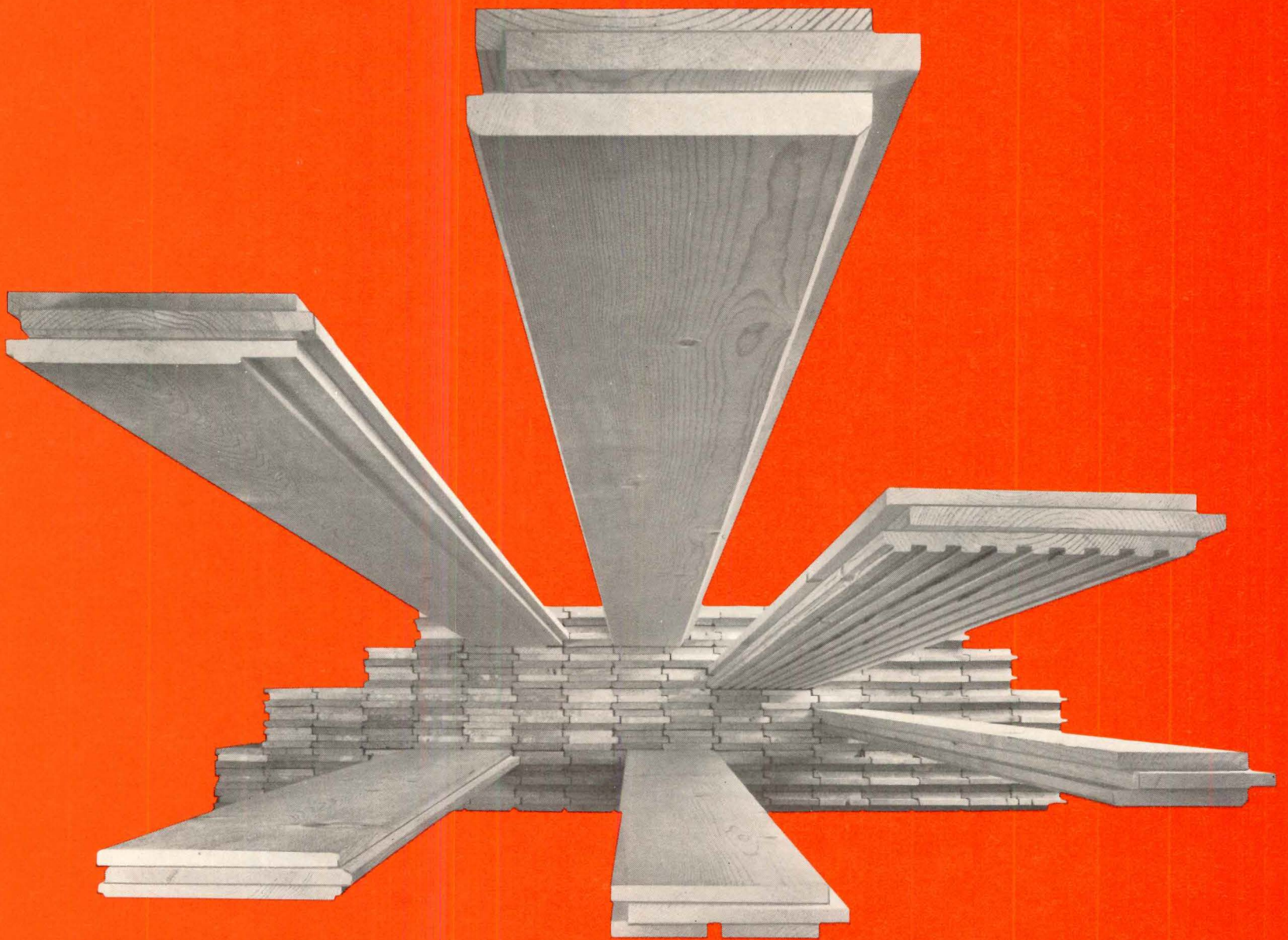
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## Just six of many ways Weyerhaeuser helps to make your deck designs a little more exciting.

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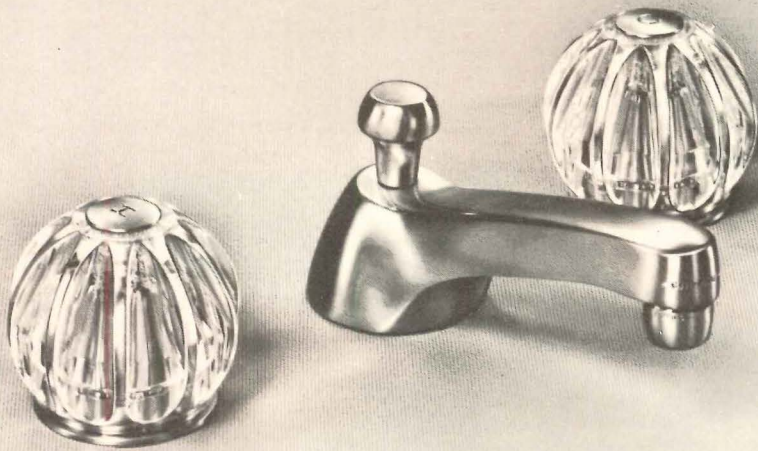


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And there's matchless quality inside too . . . Chicago Faucet's famous trouble-free and drip-free operating mechanism provides long-lasting service that is . . . unsurpassed . . . and truly outstanding.

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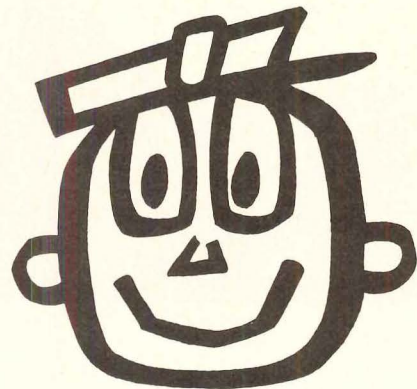
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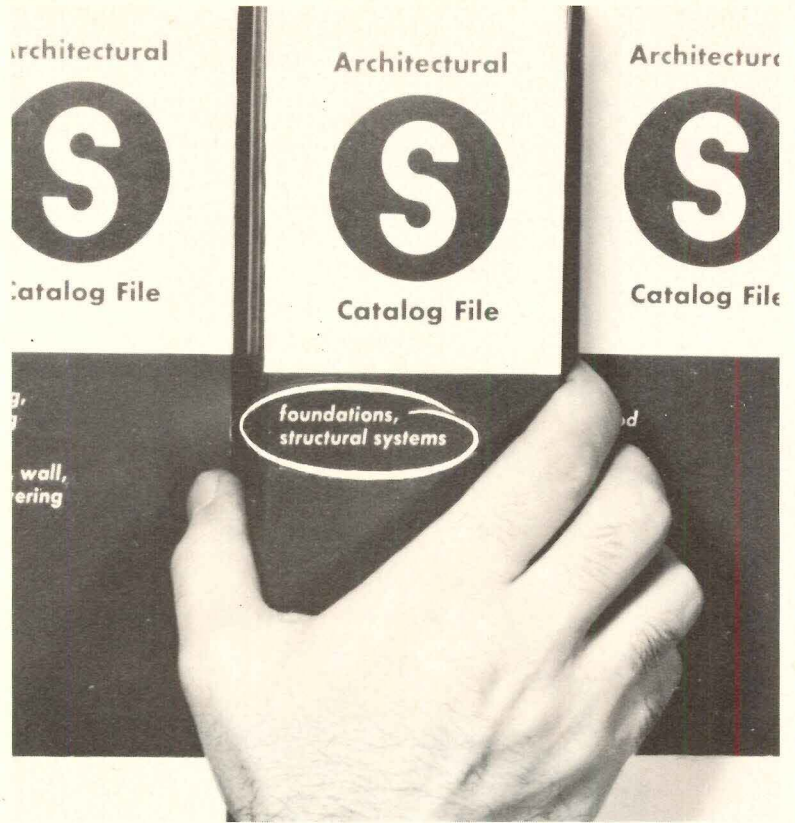
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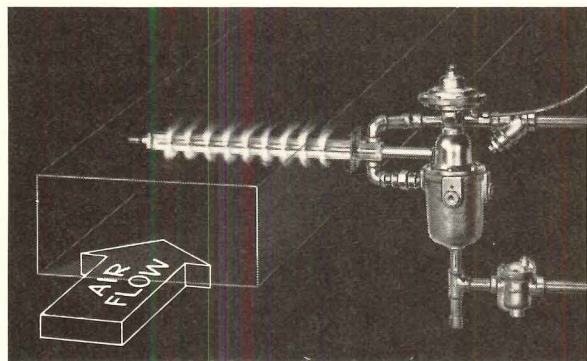
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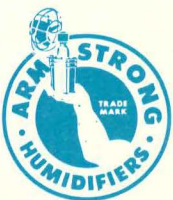


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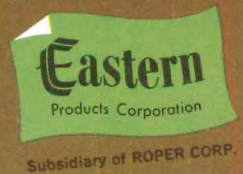


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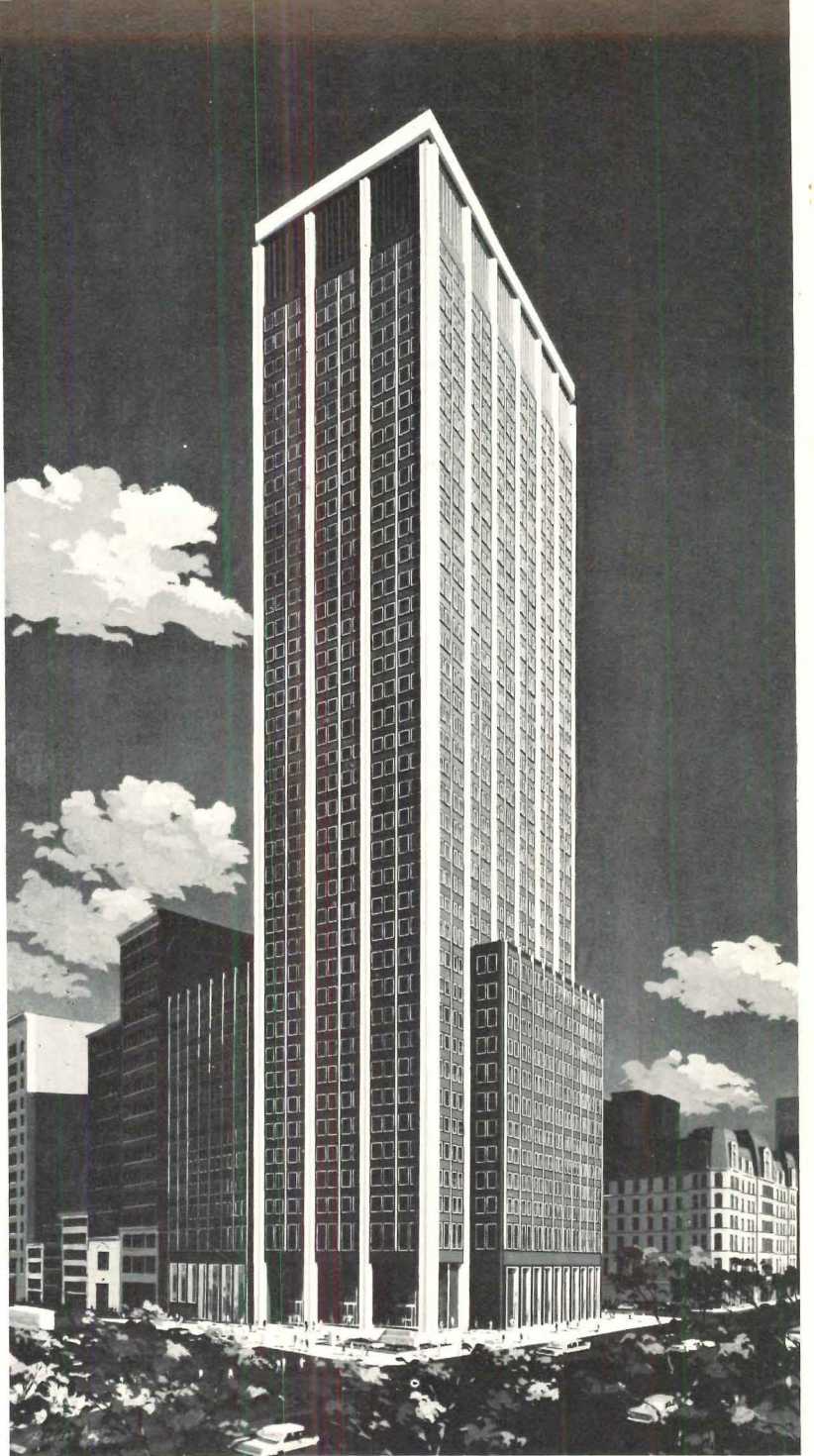
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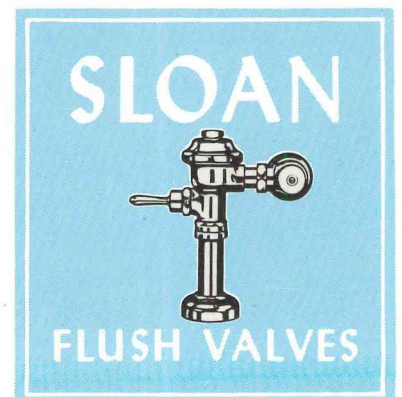
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