



ORANGE COUNTY GOVERNMENT CENTER IN NEW YORK STATE BY PAUL RUDOLPH  
SIX INNOVATIVE INTERIOR DESIGNS  
AN ATHLETICS BUILDING PROJECT IN STEEL BY RICHARD MEIER  
BUILDING TYPES STUDY: CORRECTIONAL ARCHITECTURE  
A.I.A. CONVENTION/NEWS REPORTS  
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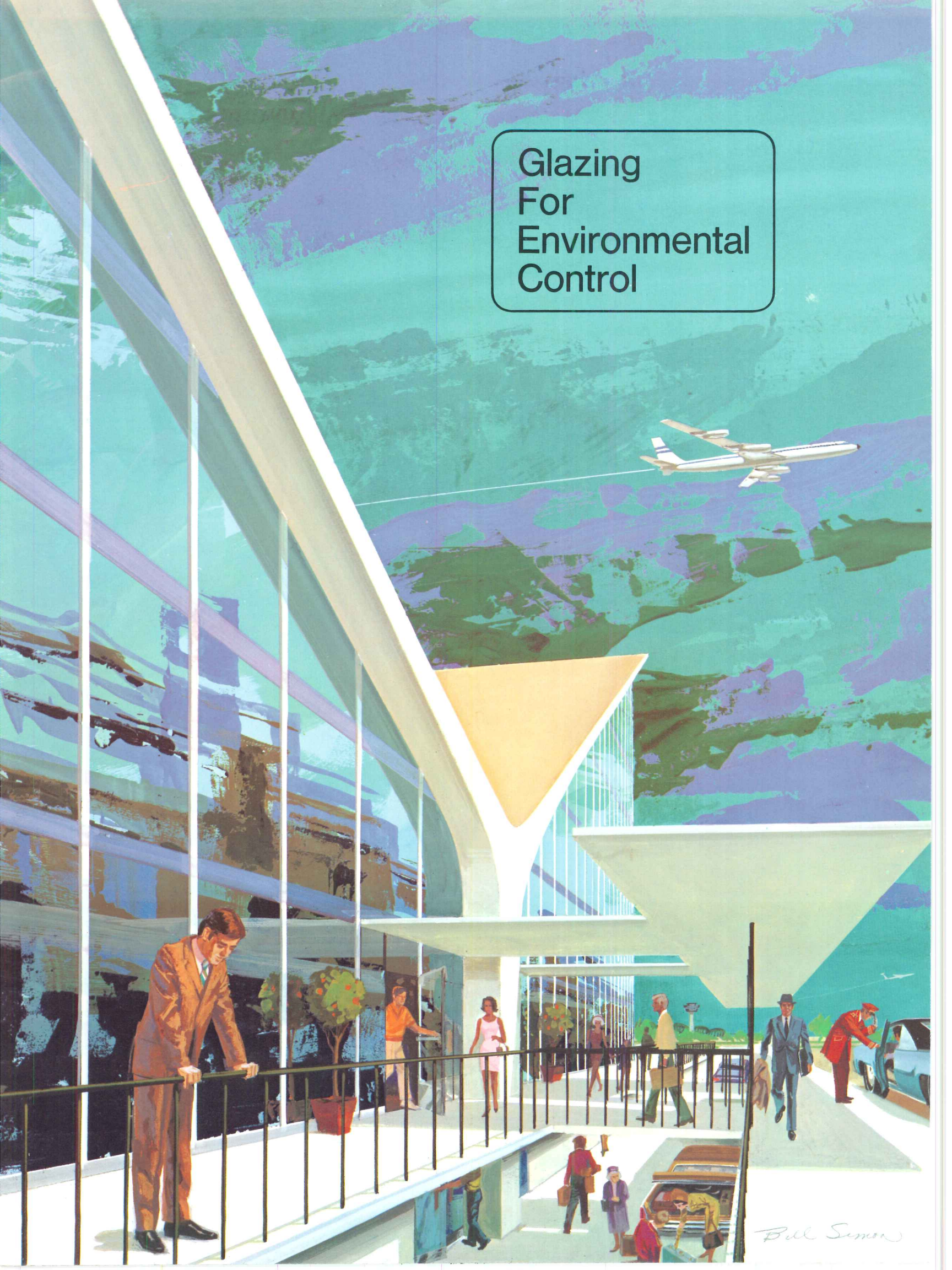
# ARCHITECTURAL RECORD

AUGUST 1971

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publication, but editors and corporation will not be responsible for loss or damage. EXECUTIVE, EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: 330 West 42nd Street, New York, N.Y. 10036. Other Editorial Offices: 425 Battery Street, San Francisco, Cal. 94111; 1249 National Press Building, Washington, D.C. 20004. PUBLICATION OFFICE: 1500 Eckington Place, N.E., Washington, D.C. 20002; second-class postage paid at Washington, D.C. OFFICERS OF McGRAW-HILL PUBLICATIONS COMPANY: John R. Emery, president; J. Elton Tuohig, senior vice-president—services; David J. McGrath, group vice president; vice presidents: Ralph Blackburn, circulation; John

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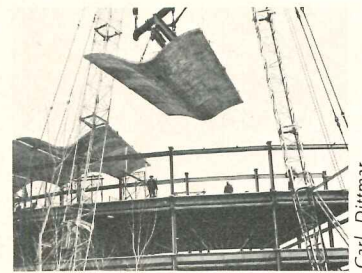
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Carl Dittmar

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THIS ISSUE is published in national and separate editions. Additional pages of separate edition numbered or allowed for as follows: Western Section 32-1 through 32-4. POSTMASTER: Please send form 3579 to Fulfillment Manager, ARCHITECTURAL RECORD, P.O. Box 430, Hightstown, N.J. 08520.



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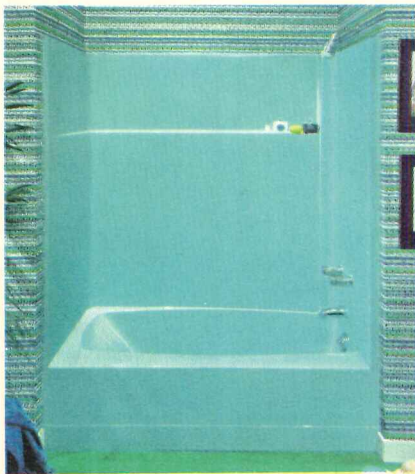


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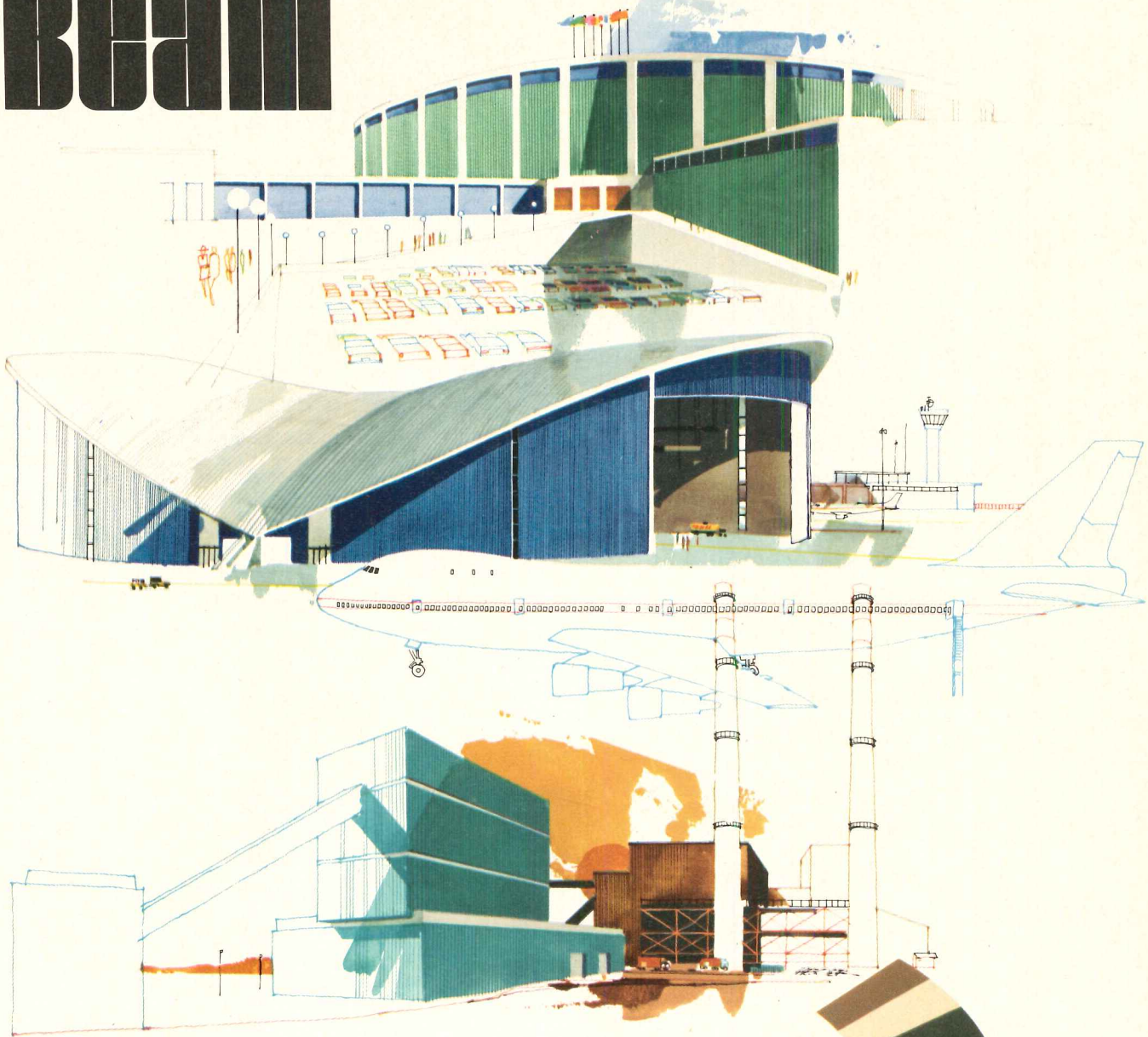
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## Controversy over "competency"; and a proposal for next year

There's a news report on pages 35-42 of this issue that rounds up all of what happened (and didn't happen) at the Detroit A.I.A. convention in late June. But additionally, I want to devote this page one more time, (see also "A.I.A. starts debating goals for architecture—and, for America," July, page 9, and "Some random thoughts on the convention," June, page 9) to a single part of the convention activity: The taking of stands by the A.I.A. on matters of national policy.

**The question is whether or not taking stands on such questions as national priorities and social action is within "the competence" of architects.**

The question is whether the A.I.A. should take stands on such issues as military commitments vs. housing, or mass transit vs. additional roadbuilding, or the relative need for funds to alleviate disaster conditions caused by hurricanes and disaster conditions caused by minority high unemployment rates in ghetto areas.

A.I.A. president Robert Hastings called for such commitments in his keynote address, specifically urging "architects and the Institute itself to enter the political arena, enlist allies, swing votes, mobilize community action, and take positions on issues heretofore considered outside the purview of the design professions"; and he called for new professional initiative to substantially alter "a wide range of public institutions that are failing to respond to demonstrable public need."

Hastings, in his opening remarks, made it clear that "five years ago I would not

have talked this way. But . . . we can hope for no relief for a decaying environment, natural or man-made, unless a national commitment is made to preserve and restore it."

Well, that kind of keynote (and three cheers to a self-described "short haired, middle-aged, conservative member of the Establishment" for making it), followed by a distinguished group of speakers on "The Hard Choices" (see News) facing our nation, got some action in the form of resolutions—and stirred up some controversy.

**Here are some of A.I.A.'s "positions on issues heretofore considered outside the purview of the design professions":**

■ The delegates voted for Resolution 4 which pledges "the Institute's strong and continuing support for achievement of the goals of the Community Design/Development Center program" as well as the programs of the Task Force on Social Responsibility to Society and the newly established (see RECORD, February, page 9) Human Resources Council.

■ The convention passed a resolution (No. 5) committing the A.I.A. "to the promotion and support of programs which encourage the voluntary control of population growth and the ultimate stabilization of the world's population."

■ After voting down at the last three conventions an "anti-war" resolution, and after the hottest debate of the convention, the delegates this time passed (as part of Omnibus Resolution 6 on National Priorities) a section urging "the President and Congress to accelerate the reduction of our military

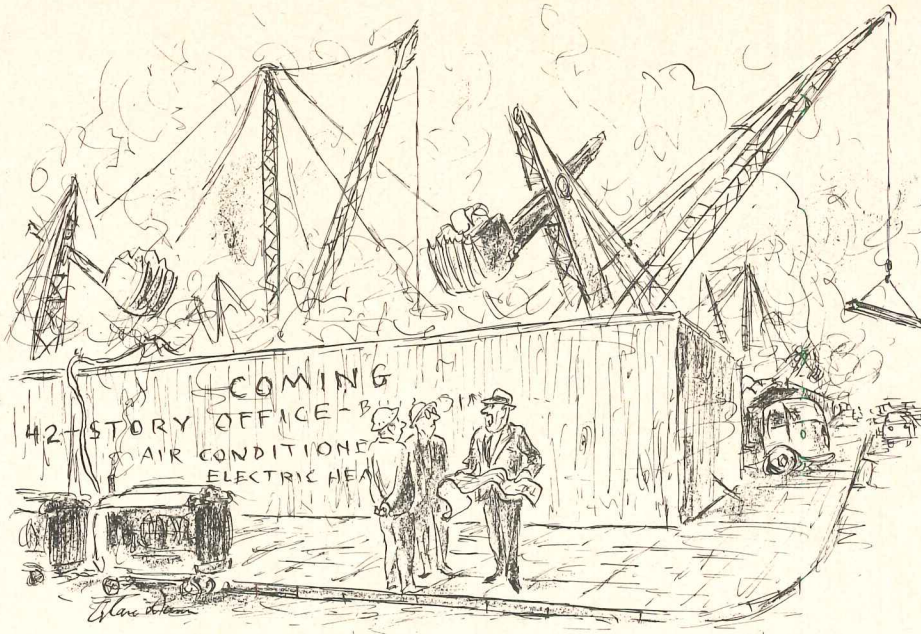
commitments and involvements abroad to the absolute minimum consistent with our nation's security and restore, expand and make more effective our national programs for the amelioration of life in all its aspects and for all our people."

The same resolution resolved "that A.I.A. most strongly urge the President and Secretary of HUD to take steps necessary to accelerate performance towards meeting the Government's promise and commitment of six million low-income housing units, creating, if necessary, special trust funding similar to the funding of the Federal Highway Program" and urges "the President to order at once the release of funds now appropriated for housing and the rebuilding of the urban environment and call upon Congress to vastly increase its commitment to the maintenance of decent conditions by new legislation and additional funding, taking (if necessary to his inflation-control programs) equal amounts of money from programs in less critical areas of national need."

■ Since "we consider that the [Housing and Urban Development Act of 1970] provides a solid platform on which to build a far-reaching new land-use policy in America . . . be it resolved [No. 13] that The American Institute of Architects offer the time, resources, and experience of its members to public officials at every level of government in further developing and refining patterns for urban land-use . . ."

■ Resolution 14, which passed, states that "the A.I.A. . . . specifically supports the creation of state chartered corporations, including but not limited to land development corporations and functional metropolitan governments, and the establishment of vigorous state programs of land use planning . . ."

■ Second hottest debate was on Resolution 18-A, which argued that "because of the growing conflict between our traditional concepts of private property and land use



"Oh dear—didn't anyone clear it with Con Ed?"

and the already desperate need for a national land-use policy, the A.I.A. recognizes that under more and more conditions the public interest must prevail over the interests of private property, and that the development of land is a privilege and not a right." This resolution, which a few strongly felt could lead to the violent overthrow of all kinds of things, was intended to strengthen creative zoning efforts, to make possible land acquisition by local and state governments, and simply to recognize that some land, at least, must now be viewed as an irreplaceable public asset rather than a speculative commodity.

Well, there were lots of other resolutions (for details, see News section) but these are probably enough to demonstrate the Convention did indeed "take positions on issues heretofore considered outside the purview of the design professions . . . calling for new national policies and new professional initiative to substantially alter a wide range of public institutions [to requote Bob Hastings]."

**A couple of questions come up since we're moving into new ground:**

■ Question 1. Is it a good thing? I, for one, think this kind of social and political action is not only a good thing (see many preceding editorials) but critical to the profession, and—one hopes—strongly helpful to the country. A dissenting publication argues that the A.I.A. "confused concern with competency" (a phrase heard more than once during the business sessions) "indulged in self-flagellation," "accepted responsibility, if not blame, for the poor, the slums, the minorities, and even the auto," and "seem to accept the totally false premise that our nation is a moral, physical, and environmental disgrace." It's true that the prefaces to many of the resolutions included such phrases as: "In accordance with our view of the architect's role in society as one bearing a share of

responsibility for the total environment in addition to his traditional responsibilities in the creation and maintenance of the man-made environment . . ." But if taking that kind of a responsibility is self-flagellation, beat on. If saying right out in public that the nation has severe physical and environmental problems and that in some parts of the country—urban and rural—those problems are nothing less than a disgrace is indeed a false premise, I'd be grateful for an explanation of the non-disgraceful benefits of slums, pollution, the mindless sprawl around our cities, strip mining, ghettos, and inadequate educational opportunities. And the fact that architects (individually and as a group) seem to want to take not the blame, but part of the responsibility, is the difference—quite simply—between professionals and too many (not all, mind you, but too many) entrepreneurs.

■ Question 2: Do these resolutions truly reflect the thinking of a majority of architects? My strong feeling is yes, but the answer, alas, is that we really don't know. For the sad truth is that by the time (the last afternoon of the convention) that most of the resolutions were voted on, many of the delegates were gone. Thus, the stands taken were taken by only (by my count) 150 delegates (who, of course, properly represented many more). It was originally scheduled that the resolutions be voted on early (Tuesday), but the process was delayed by debate. Further, there's a real question as to whether or not the delegates had a serious chance to analyze all of the proposals. Most were preprinted and presumably discussed at chapter meetings (indeed some were hotly debated on home ground), but some—and some especially responsive to "The Hard Choices" questions raised by the speakers—were presented only at the convention with no time for private discussion.

■ Question 3: So how do we do it better

next time? The next convention (next May, in Houston) will be covering some of the same ground—reflecting incoming president Max Urbahn's concern with housing, shelter, and community. By then, the National Policy Task Force headed by Arch Rogers (see News, and Editorial, July) will have formulated a "national strategy—for guiding our settlement patterns during the next 20 years." When that group has set goals, let's put them, well in advance, into the form of resolutions that can be well debated and voted on by all chapters in advance of the convention. Let's invite responsible criticism of these goals at the convention itself. I, for instance, would like to see a leading figure in the road lobby tell the convention why we should continue to spend \$8 billion a year on highways instead of diverting a great part of that money to housing. I would like to see a responsible (and responsive) member of the Administration explain the relative merits of the country and to all of its people of some of the priorities suggested by the 1971 A.I.A. Convention, and the priorities presently being given to farm support, foreign aid to doubtful friends, and further exploration of the surface of the moon. Let's have a real debate, and then let's have a real vote of all the delegates truly representing all the members of A.I.A.

That would really be a stand by the architects of America. And it might get the kind of attention that the human problems architects "have been taking the blame for" truly deserve: A very high priority not just in the speeches of America's leaders, but in the budgets and commitments of America. It is perfectly true that "something has to give,"—but I'd like to see the country's architects firmly on record that it better not be the air, the water, the land, the cities, the natural resources, or the people.

—Walter F. Wagner, Jr.

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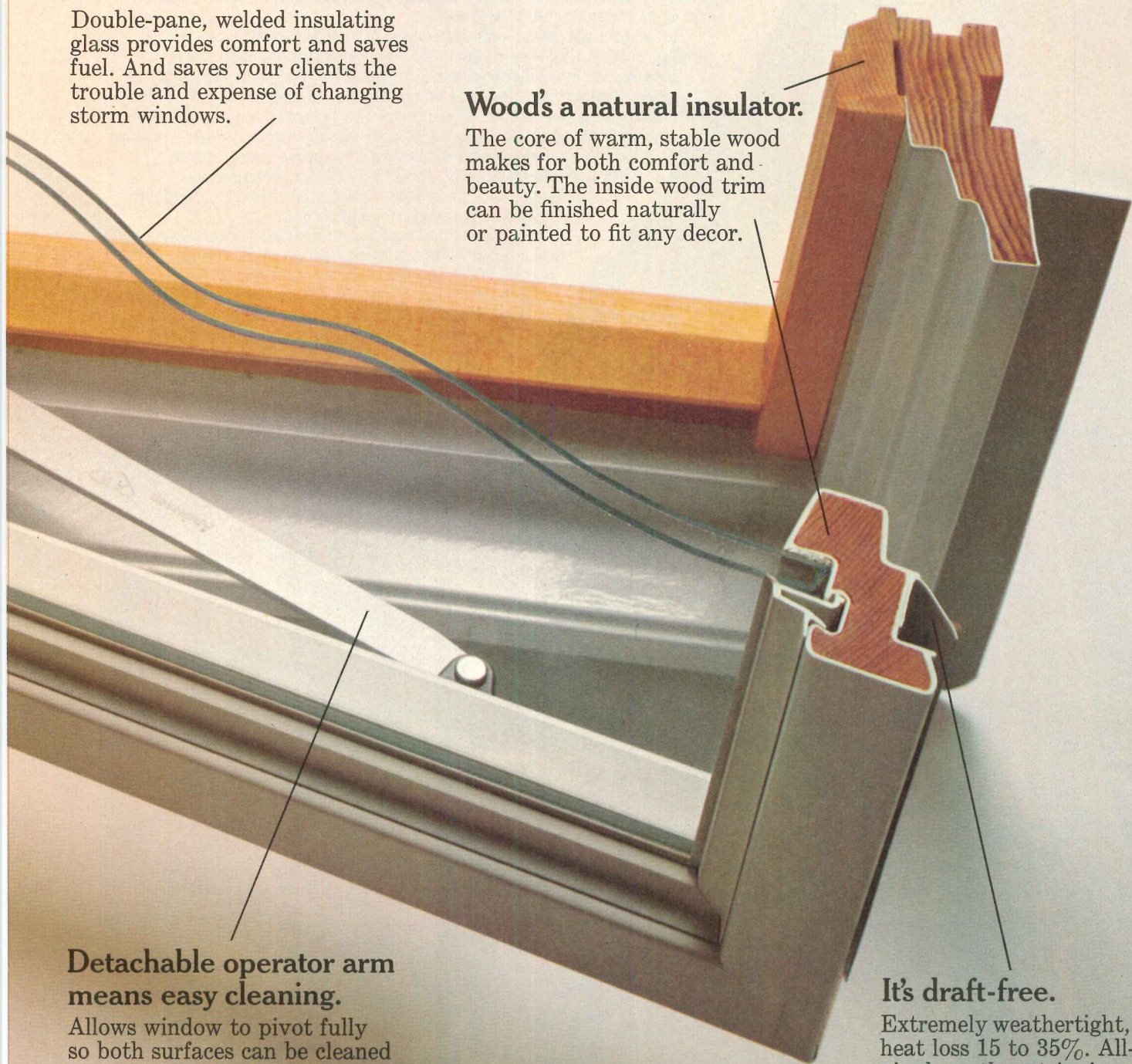
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**GP** **GEORGIA-PACIFIC**  
GYPSUM DIVISION Portland, Oregon 97204

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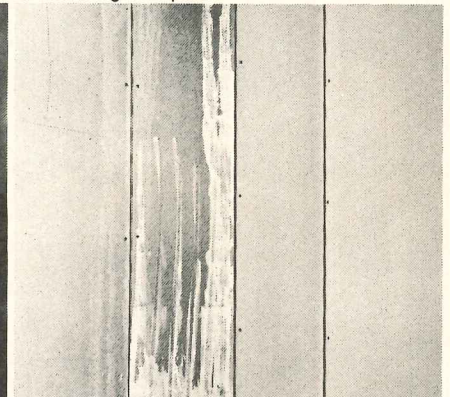
1. Installing floor track.



2. Installing core panel.



3. Attaching core to T-spline.



4. Applying finish layers.

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# Modular vs. Central Station:

## Campus designers opt for Lennox Modular HVAC System

The central station has been specified, traditionally, for heating and cooling a campus. But costs suggested a different choice for the designers of Mount Royal College, Calgary, Alberta. The college will be built in two stages, over a period of time. A modular system poses no diseconomies under such a plan. A central system does. The initial central station installation would have to provide capacity, on standby, to handle all future growth plans.

There were other important economic considerations. Cost predictability is almost 100% with a Lennox modular system. The rooftop units are factory assembled and wired, including controls, and provided with flashed-in-place mounting frames that still further  
*(Continued overleaf...)*

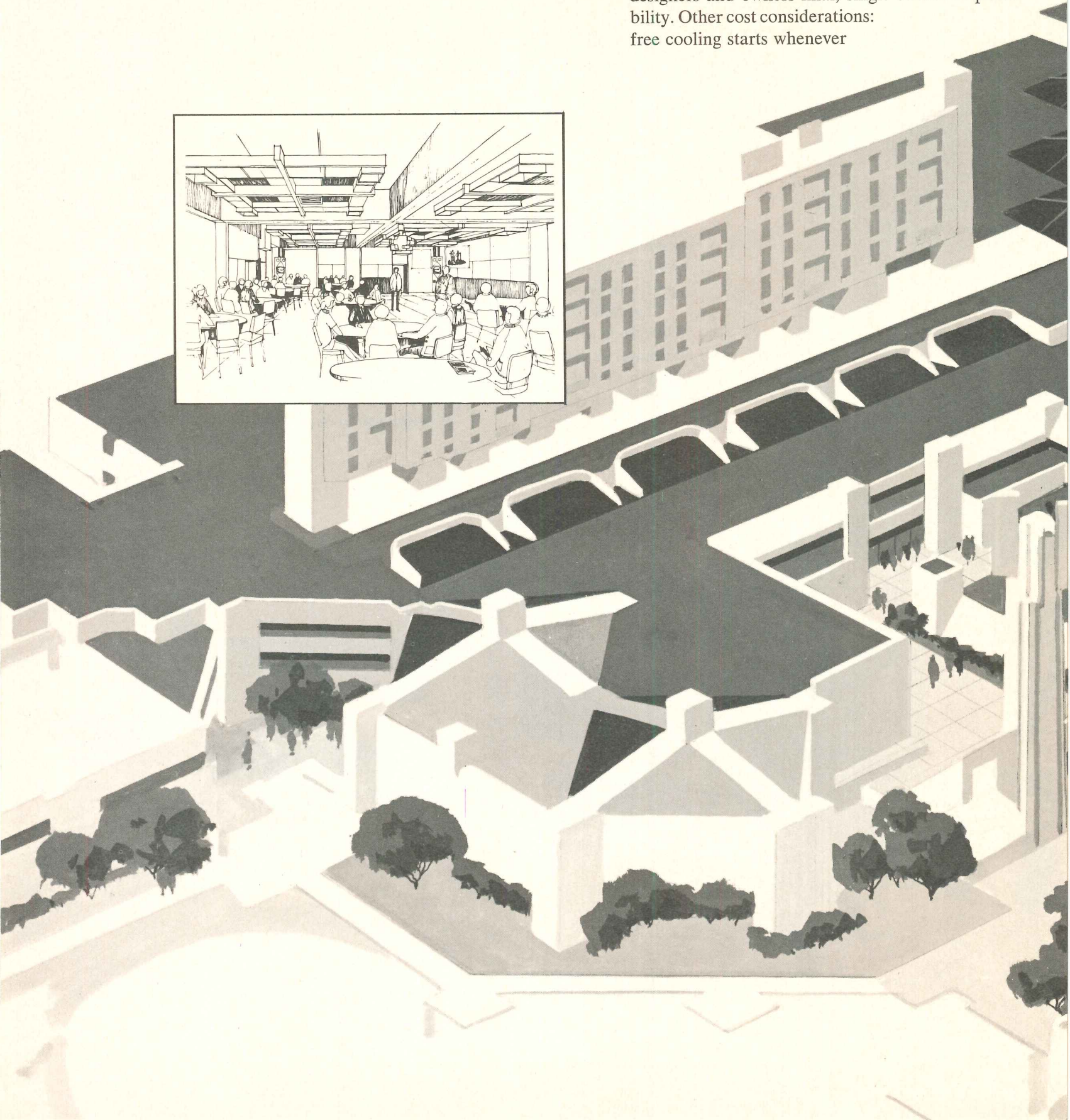
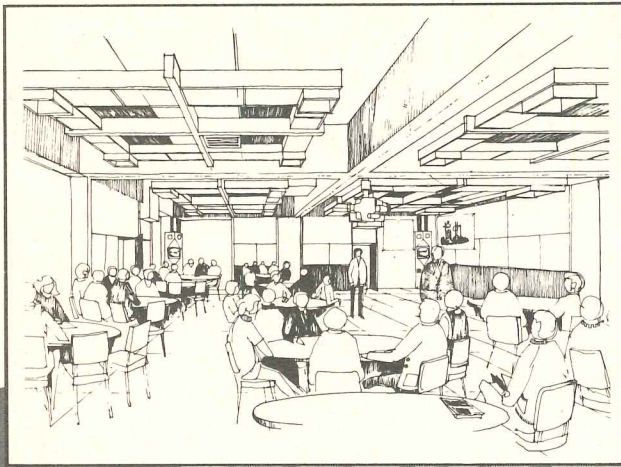


Mount Royal College, Calgary, Alberta, Canada is a post-secondary educational system. The 756,000 square foot community college will be built in two stages—as enrollment demands—to provide academic, residential and recreational facilities for 5,000 students. Basic concept of the \$18,000,000 facility is to provide adults with programs of individual learning at individual growth rates.

continued . . .

**modular vs. central station** reduce on-site labor. Mount Royal budgeted \$2.30 per square foot for HVAC. The Lennox bid was just under \$2.00 installed.

The cost of owning the Lennox system is also predictable. Service contracts are available. Thus, total cost comparisons can be made between the modular and the central station systems. And Lennox, in addition to the service contracts, offers designers and owners final, single source responsibility. Other cost considerations: free cooling starts whenever



outside temperatures fall below 70°F. And the ability to reduce fuel and energy consumption in unoccupied areas. Since this is a community college, inviting many uses, occupancy will be uneven. A central system does not offer this flexibility.

A final important consideration, of course, is the quality of comfort provided to individual spaces. Sound levels are lower. More sophisticated cleaning and humidification systems are available than are commonly incorporated in a central station design.

And because ducts and outlets can be moved, the system permits spaces within the college to be changed without faulting the system's performance.

Write Lennox Industries Inc., 978 South 12th Avenue, Marshalltown, Iowa 50158.

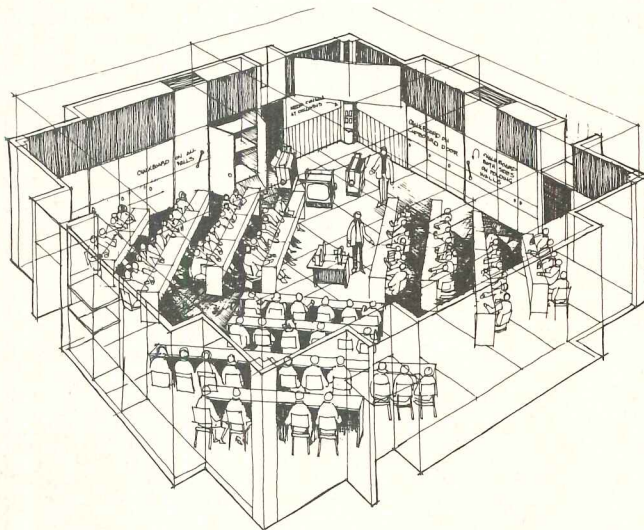
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Marshalltown, Iowa 50158.*

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Model of campus plan for Mount Royal College. The two-stage building program, beginning with a 634,000 square foot unit, gave a strong advantage to the Lennox modular heat-cool-vent system. 1,287 tons of cooling will be provided. A wide variety of equipment will comprise the total system, including both multizone and single zone.

Educational Consultants: Stanton Leggett & Associates, Chicago.  
Architects: Stevenson, Raines, Barrett, Hutton, Seton & Partners, Calgary. General contractor: Hashman Construction, Ltd., Calgary. Heating and A/C contractor: Reggin Industries, Ltd., Calgary.



Mount Royal will employ a sophisticated system of multi-media learning programs, with retrieval systems linking individual carrels and classrooms to program sources. Access to the system—communications, audio, video and power—will be from electronic cabinets in each column in the classroom and the open library. Central-source programs will be supplemented by portable equipment from twelve resource islands.

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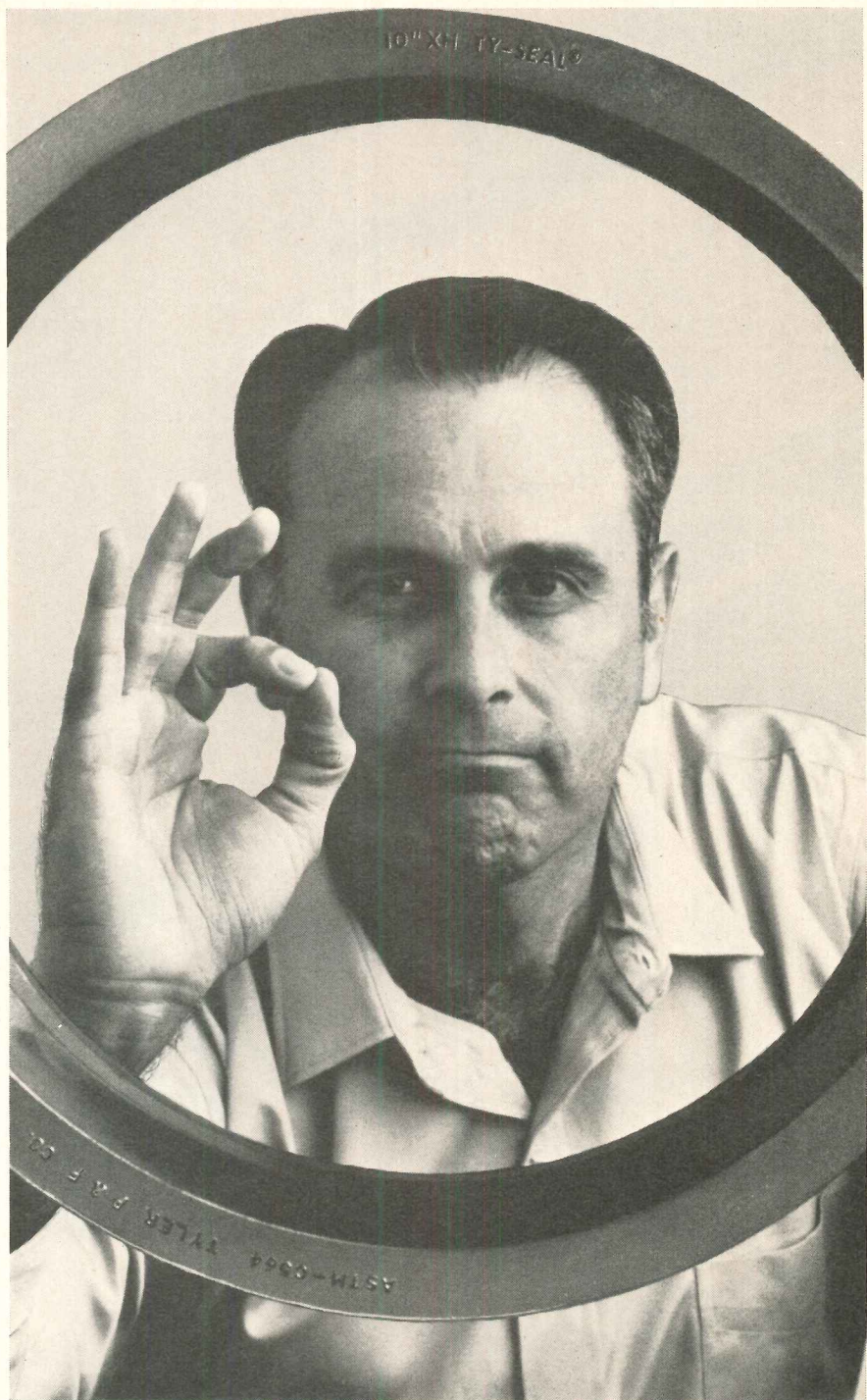
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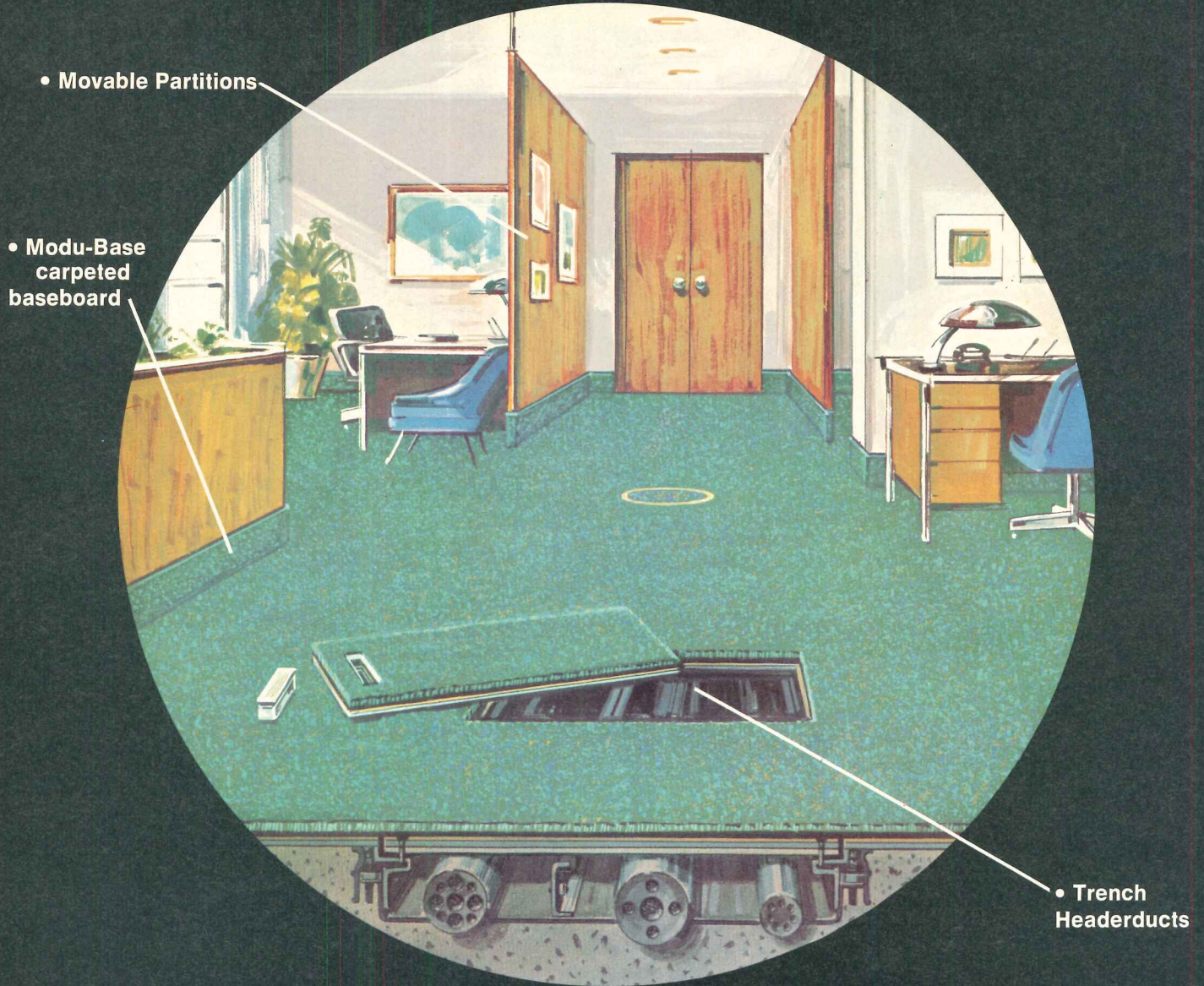
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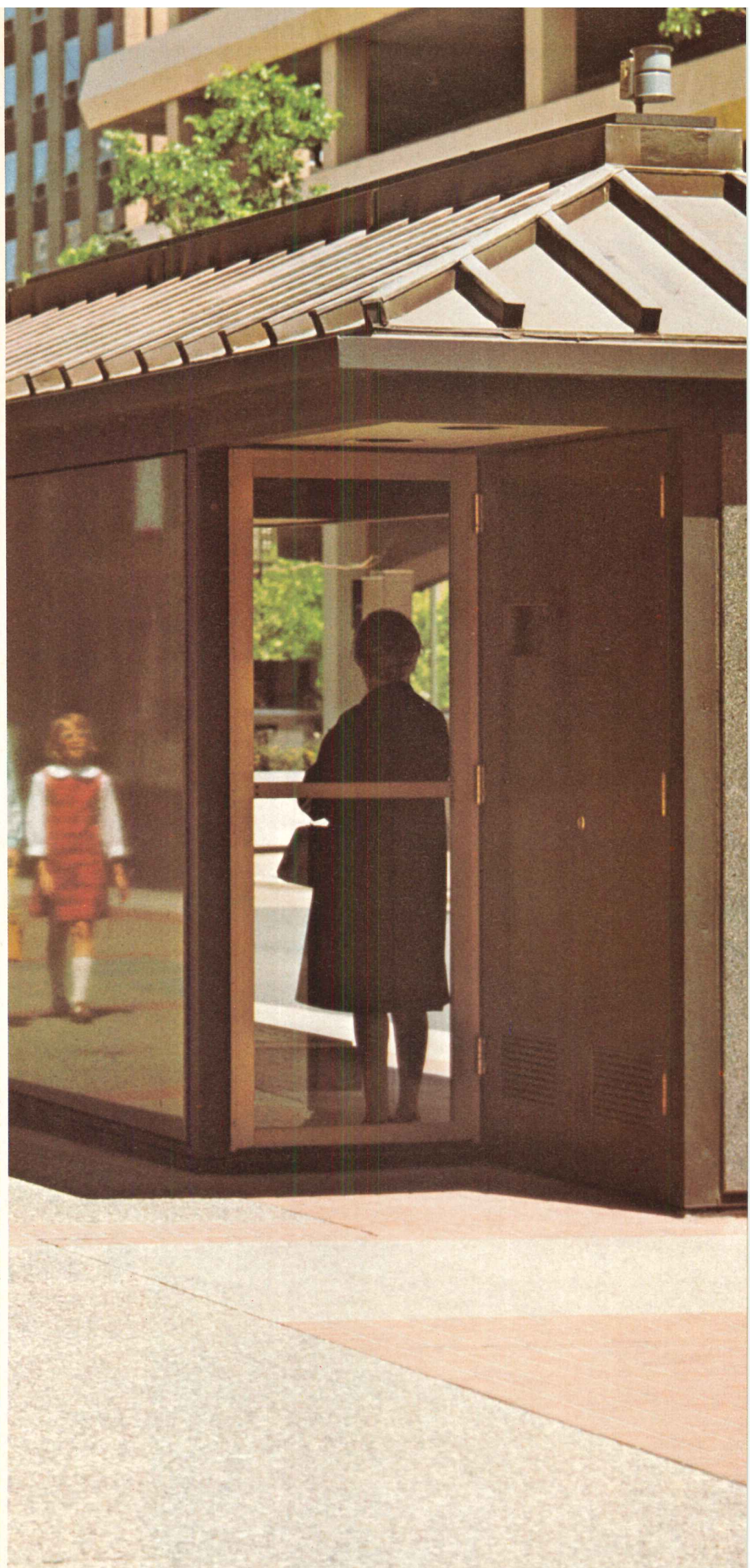
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open areas of the building into reality. Working closely with them, our custom lighting experts soon had the answer: specially designed mass-produced beam lights that focus downward for dramatic effect.

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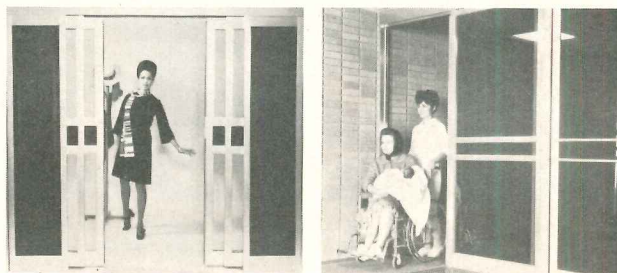
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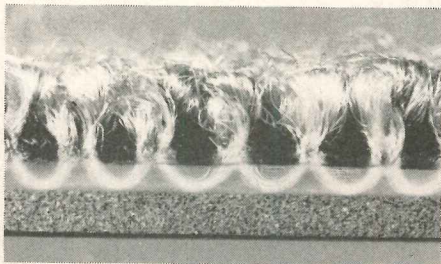
A floor covering whose luxurious soft surface provides the esthetic beauty of carpet. A tough, dense pile surface made from a second generation, anti-soil nylon. Which allows for maintenance as low or lower than other floor coverings. It's fused to a closed-cell sponge vinyl that resists indentation and is virtually waterproof. And provides dimensional stability so Powerbond pile vinyl can't crawl, bag or sag. In short, with Powerbond pile vinyl you get the best of carpet fused to the best of vinyl.

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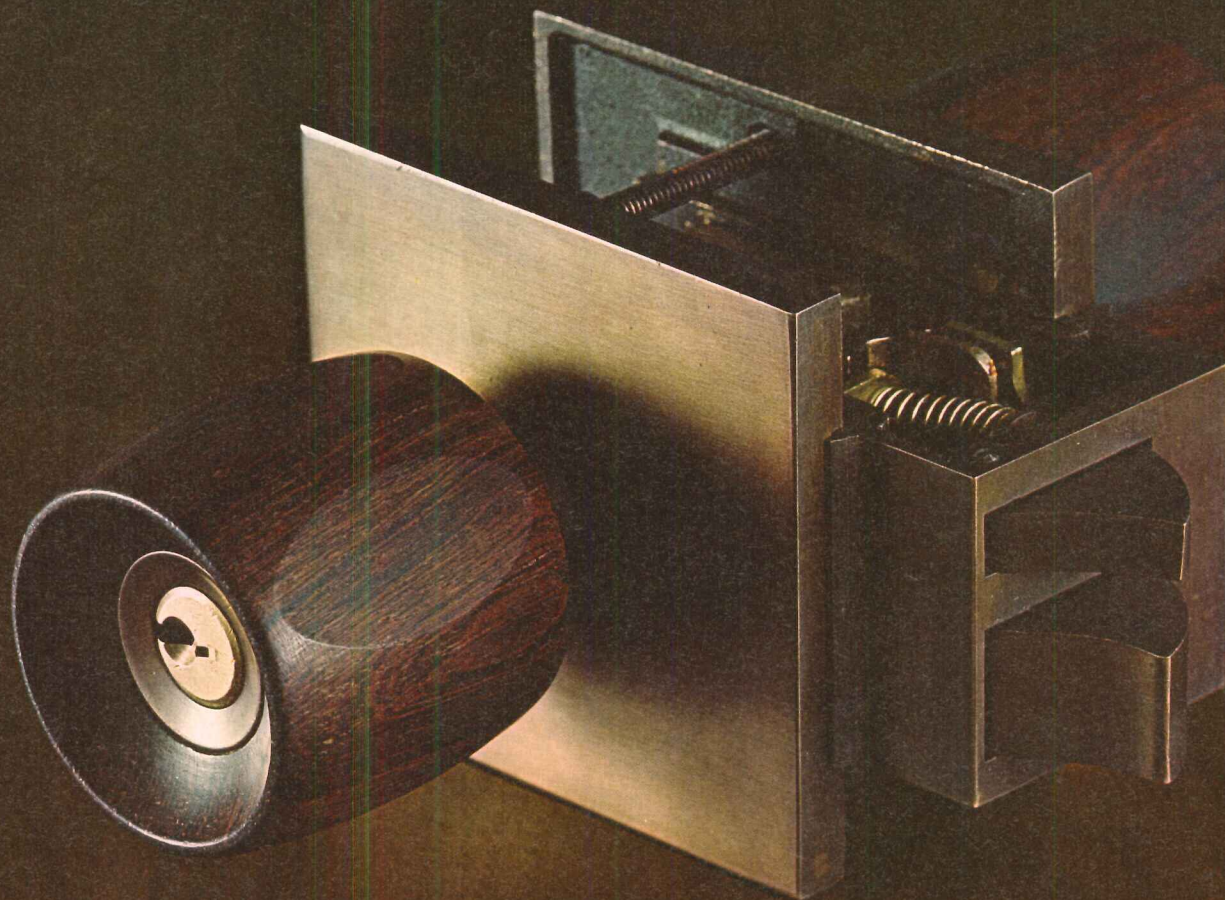
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## Missisquoi Valley Union High School District, Swanton, Vermont

Merging the student bodies of three outdated and overcrowded Vermont schools, this new junior-senior high school enhances the countryside with its flowing curvilinear form.

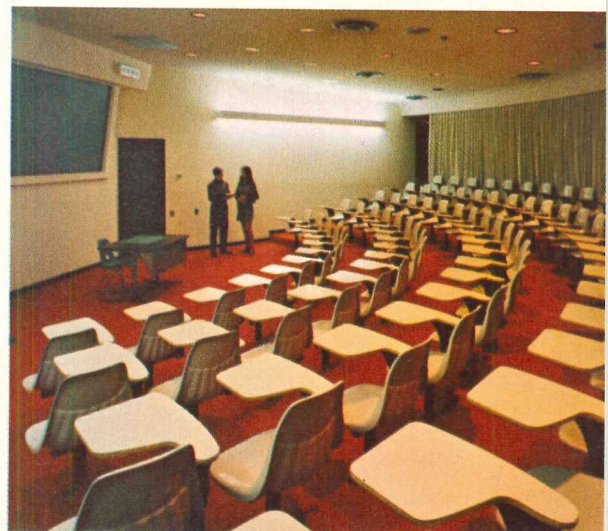
Interior flexibility is the keynote of the design—basically an alignment of six rounds in a cruciform plan. Steel framing is skillfully used to create large clearspan areas within the individual buildings. Movable partitions permit a variety of spatial arrangement.

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# interior flexibility

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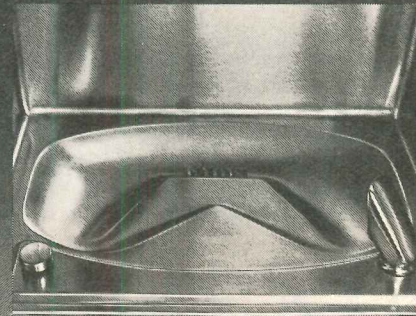
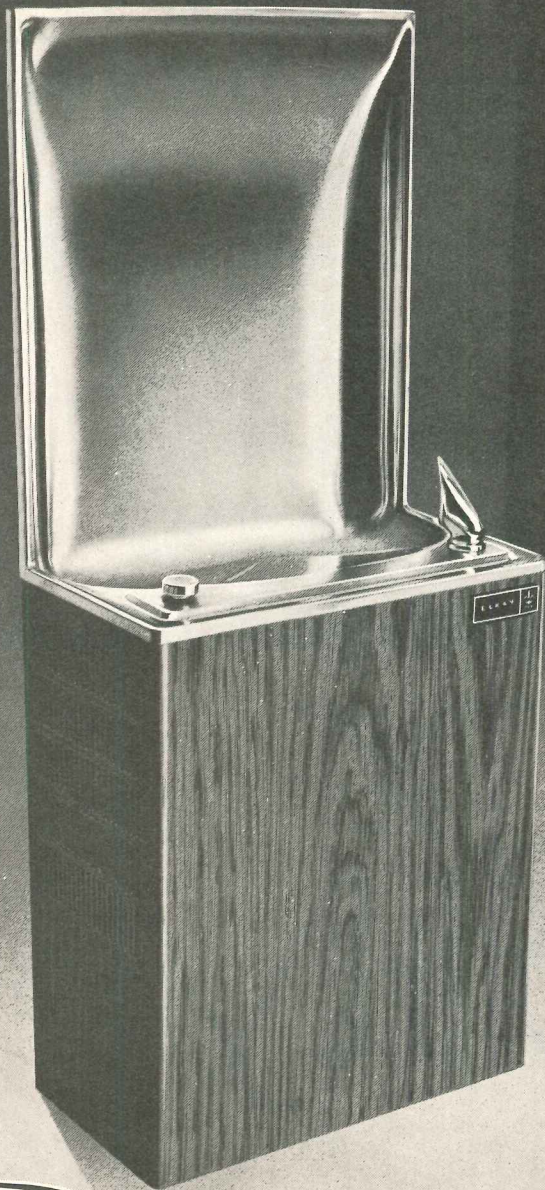
Structural Engineers: Carl Walker Associates, Inc.  
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Steel Fabricators: Bancroft & Martin, Inc.  
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## News in brief

**Complete coverage of the A.I.A. Convention begins overleaf**—including the “Hard Choices” debates, the resolutions, award of the Gold Medal to Louis Kahn, The Building Team Conference, and the 1971 honors.

**With the start of a new fiscal year, the Office of Management and Budget began releasing some of the construction money** held in reserve for so many months. Despite vigorous protests from Congress, even threats of withholding fiscal 1972 funds until such money was released, the OMB, at White House direction, has successfully stretched out its holdback of some \$12 billion in appropriated money until the end of fiscal year 1971. The first release announced involved heavy works projects. No housing resources were included in the first announcement but HUD officials have been promised an “unfreezing” of substantial amounts held back last fiscal period for urban renewal, Model Cities and water and sewer programs. HUD now estimates that the total outlay for urban renewal activity in fiscal 1972—the current fiscal period—will be \$1,300 million. Similar outlays for fiscal 1971 have been estimated at \$1,082 million.

**Multi-family housing starts rose by 60 per cent in first five months of 1971** to 227,900 units, 35.2 per cent of total conventional starts (compared with 33 per cent at same time last year).

**HUD may get a bigger Breakthrough budget.** It asked for \$45 million for fiscal 1972, House trimmed to \$35 million, but Senate approved \$50 million for research and technology. Added \$5 million for research in abandoned housing, housing allowances, lead-based paint poisoning. Now in conference.

**The word is go on the National Council of Architectural Registration Board's new licensing examinations:** At NCARB's fiftieth convention held last month in San Francisco, 43 of the 49 member boards present voted for final development of the examinations: The first is an “equivalency,” required of candidates from non-accredited schools or non-graduates in architecture to qualify them for the second or professional exam, required of all graduates of accredited schools. New also will be the internship term agreed to by the convention—one year for holders of master's degrees, two years for bachelor's in architecture, instead of the present three-year period. The qualifying exam will be given for the first time in December 1972, with the first professional examination scheduled for June 1973. Daniel Boone of Abilene, Texas assumed the presidency from William Geddes of Boston. New officers elected are Thomas J. Sedgewick of Flint, Michigan, first vice-president and president-elect; Ronald Allwork, New York City, second vice-president; Carl Groos, Denver, secretary; Paul Graven, Larry K. Edmondson and William Booth, directors. Continuing in office are E. G. Hamilton, Dallas, treasurer; Andrew Cohen, John M. O'Brien and Willard Nelson, directors.

**Under Congressional pressure, DOD continues to seek faster and cheaper design and construction methods.** For several years now, the appropriations committees of Congress have urged Defense to try out innovative procedures, less conventional construction methods, so that it might acquire facilities more economically. The legislative committees have joined in urging this course. Reviewing progress to date, DOD spokesmen told of using the so-called two-step procurement procedure with some success. The method involves requests for initial proposals which do not list price and which include a simple design concept. These submissions then are narrowed down to four or five “acceptable” proposals and these bidders then are asked for prices. Negotiation follows with final selection not necessarily based on lowest price. Architects and engineers were greatly concerned about this approach to military construction procurement, but following several months of usage, their fears have softened and many believe it has worked quite well without posing danger to them as professionals.

**HUD is embarked on a major new effort in the field of rebuilding rundown shelter.** The program is headed by Robert E. Philpott, newly named assistant to Harry Finger, HUD's assistant secretary for research and technology. Under Mr. Philpott's leadership, the Department already has committed more comprehensive resources to “project rehab” than at any time in the past. Nineteen cities have been selected (Chicago among them) to participate, with 41,550 units pledged by HUD to these locations altogether. When reconstructed, these units will represent approximately \$600 million worth of activity, Philpott estimates.



Clark Art Center Theatre, Rockford College, Rockford, Illinois. Architects: The Perkins & Will Partnership. General Contractor: Gúst. G. Larson & Sons, Inc. Dover Stage Lift installed by Lamps Elevator Sales and Service, Inc. Hedrich Blessing photograph.

## Dover Stage Lift helps create a theatre for all seasons.

A college theatre should be able to handle many styles of theatrical presentations. Which is why so many new college theatres include a Dover Stage Lift in their plans.

For example, take a look at what the Dover Stage Lift does at the Clark Arts Center Theatre at Rockford College. This double-decked, 56' x 18' lift changes the stage from a regular proscenium set-up to a musical theatre with orchestra pit, or to a classical or thrust stage.

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facture more of them than anybody else in the business. Dover Lifts are in the Metropolitan Opera House, New York; the Julliard School, New York; Harvard's Loeb Drama Center; the Santa Fe Opera House; and the Stardust Hotel, Las Vegas.

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For more information, see our catalog in Sweet's Files. Or write Dover Corporation, Elevator Division, Dept. A-8, P. O. Box 2177, Memphis, Tenn. 38102. In Canada: Dover-Turnbull.

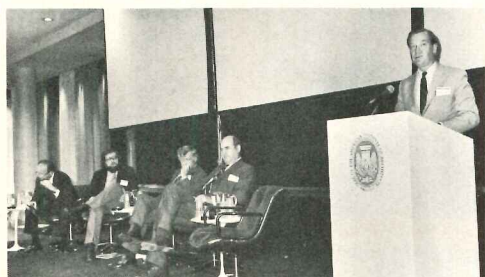
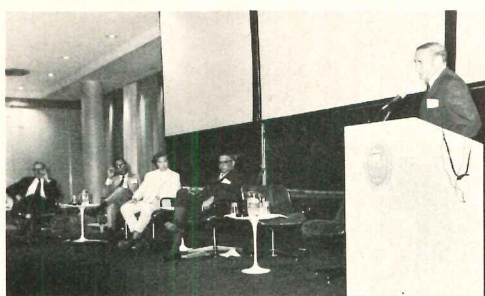


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## A. I. A. Convention report:

"Hard Choices" speakers call for growth policy, domestic "Marshall Plan" for cities

Press Picture Service photos



The most significant part of the 102nd Convention of the American Institute of Architects in Detroit was the three "Hard Choices" panels. It was significant mostly because it pointed up the enormous gap between what the delegates heard and what they actually think. Compared to the members who voted on the resolutions, the national A.I.A. leadership which organized the sessions studded with distinguished speakers seems deeply concerned and liberal indeed. The topics chosen reflect the bluntness of the title, "Hard Choices": "Will Americans accept a national program for urban growth?"; "How do we best use our resources to meet basic human needs?"; and "What do we have to give up to create a livable environment?".

The opening session had Robert K. Andras, Minister of Housing and Urban Affairs for the Canadian Government as its main speaker followed by a panel of which Edward L. Logue of New York State's Urban Development Corporation served as mod-

erator. Mr. Andras and Mr. Logue expressed the belief that a national policy for regulating urban growth is inevitable, noting that the haphazard development of the recent past has often been due to competing agencies or lack of an over-all policy. Congressman Thomas L. Ashley of Ohio described legislation he has pending in Washington which will strengthen last year's Housing Act, which the Administration has not yet broadly implemented. Governmental agencies would be empowered to produce publicly-assisted housing, including purchase of land and planning of types of units and identification of income groups to be served; in other words, a program to put low-income housing in other places than center-city ghettos. Janet Null, the student member of the panel from Berkeley, was one of several during the three panels who made the point that existing cities will not just disappear if we decide as a nation to develop new towns to solve our urban problems. Perhaps no speaker understood that point better than her fellow panelist Kenneth Gibson, Mayor of Newark, New Jersey. In what was prob-



ably the hardest-hitting speech of the entire convention, Mayor Gibson made clear the extent to which Americans have ignored urban problems. Far from developing without over-all policies, he said, rebutting Logue's point, four areas of public policy have implicitly shaped urban America in the last forty years: 1. FHA which has produced the tightly-zoned suburbs that now ring the cities while ignoring the rehabilitation of existing housing stock within them; 2. the interstate highway programs which have destroyed the houses of the poor in order to connect the suburbs with the commercial centers; 3. national policies, including recent statements by the President, which support discrimination in sub-

urban housing and zoning; and 4. Federal control of mortgage credit rates which has discouraged the production of low-and moderate-income housing. He asked in short that we recognize that we already have national urban policies that have, "more often than not, intensified the problems they were supposedly intended to alleviate." Using Newark's problems and assets as an example, he called for a realignment of national priorities as the basis for a rational policy of urban growth.

The second panel, concerned with allocation of resources, had John Gardner, chairman of Common Cause, as its principal speaker. Mr. Gardner, along with moderator Vivian Henderson, president of Clark College, Peter Drucker, management consultant, and Gregory White, Rice Institute, and other members of the panel, said that by "resources," he meant people and even more to the point, black people. Harold Sims, acting executive director of the Urban League, took underemployment of minorities, the actual topic of the session, filled it out with grim statistics and then called for implementation of the Whitney Young "Marshall Plan" for American cities in crisis—the same massive aid poured into ghetto disaster areas as into towns devastated by hurricanes.

The final panel, exploring what we must give up, was not as single-minded. On the one hand, Thornton S. Bradshaw, president of Atlantic-Richfield Co., thought that since there is very little wrong, we really don't have to give up anything. On the other side, Paul Ylvisaker of Princeton, Russell Train, chairman of the Council on Environmental Quality and Dr. Carl Madden, chief economist of the United States Chamber of Commerce proposed many areas where pressures to create a livable environment will bring change: population control; intensified land use; pollution control as part of first cost causing natural economic restriction of wasteful industries. Bruce Webb, student member of the panel and final speaker, urged environmental activists not to let attachment to symbols of action, Earth Day for instance, become a substitute for the really hard work necessary if environmental improvement is ever to be realized.

**1971 Honors: Gold Medal, honorary fellowships, honorary memberships, medals**

Press Picture Service photos



**A.I.A. President Robert F. Hastings presented the Gold Medal to Louis I. Kahn, F.A.I.A.,** at a banquet and ball in his honor, the traditional final event of the convention. Mr. Kahn's acceptance speech, made without notes, was (as is often the case) not easy to follow, but (as is always the case) full of memorable phrases. Samples:

"The room, I feel, is really the beginning of architecture. The room is the place of the mind. Its dimensional limit makes it so that you do not say the same thing in a small room as you do in a large one. (Further) it seems that when you are with just one person you become generative, you say what you have never said before, and when you are with two other people it seems as though it is a time of performance. . . . So sensitive is a room . . . the great recognition of the marvelousness of the emergence of architecture itself."

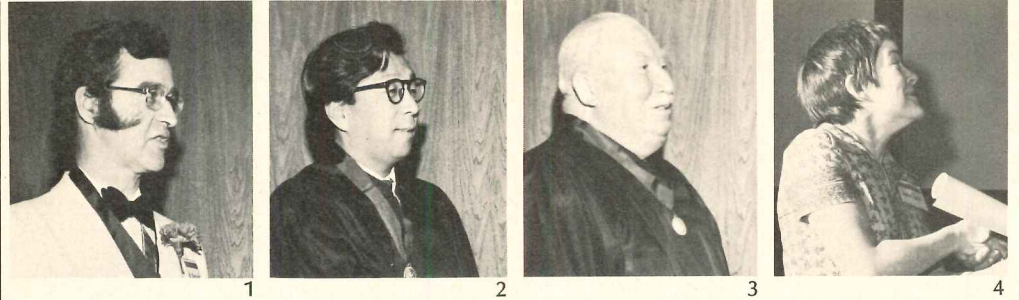
"And a society of rooms is the plan . . ."

"The world is full of the possibility of new agreements from which new architecture will come. It won't come from technology because I believe that technology should be inspired, not just used. . . ."

"I don't believe in need as a force at all. Need is a current, everyday affair. But desire—that is something else again. Desire is the forerunner of a new need, it is the yet not stated, the yet not made which motivates. . . ."

"It is not enough to solve the problem. To me solving the problem is duck soup—nothing to it. But to imbue the spaces (with) quality—that is a different matter entirely. . . ."

"I don't like the architects accepting the divisions of their profession of architecture into urban design, city planning and architecture as though they were three different professions. What a dastardly scheme that is completely commercial. . . . An architect can turn from the smallest house to the greatest complex, including a city. . . . But the specialists, as in other fields, ruin the essence of a tremendous revelation which architecture gave man. . . . To be an architect is quite sufficient."



**Honorary fellowships** were presented by A.I.A. president Robert Hastings to eight "architects of esteemed character and distinguished achievement who are not citizens of the United States and do not practice within the domain of the Institute." This honor, held by only 155 previous recipients, went to: Gordon R. Arnott, president of the Royal Architectural Institute of Canada (1), Kiyonori Kikutake, the Japane

nese architect, and one of the main planners of Expo '70 and architect of the theme tower (2), Jacques Barge, chief architect of Civil Buildings and National Palaces in France (3), and (not shown) Austrian architect Carl Auböck; British architect John Michael Austin-Smith; Gustavo Gallo Carpio, president of the Mexican Society of Architects; Indian architect Balkrishna Vitaldas Doshi; Dutch architect Alex Haak.

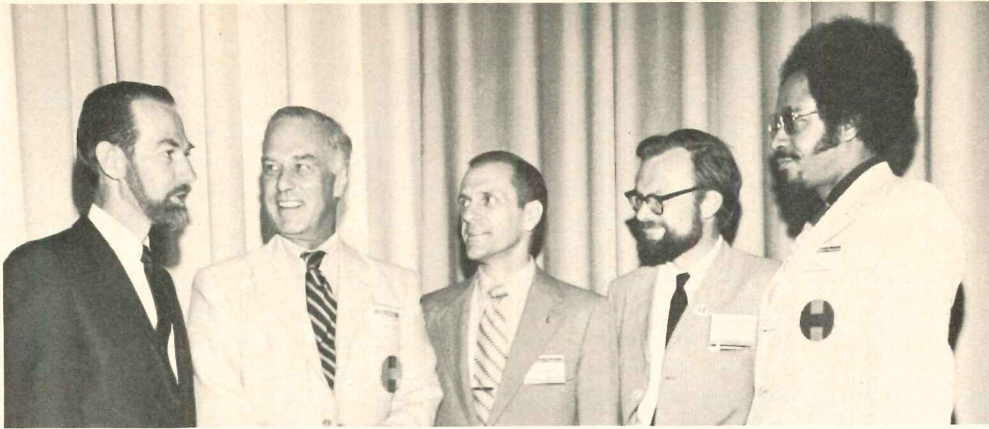
**Honorary membership**—for "distinguished contributions to the architectural profession, or to allied arts and sciences"—were presented by president-elect Max Urbahn to Jeanne M. Davern, architectural journalist and editorial consultant and former managing editor of RECORD (4, above);

Lord Kenneth McKenzie Clark, art historian and writer-narrator of the acclaimed film series, "Civilisation"; Pipsan Saarinen Swanson, A.I.D.; Donald E. Gibson, executive director of the Indiana Society of Architects and editor of its journal; and Robert E. Koehler, editor of "A.I.A. Journal."



**These 1971 Institute honors were presented by president-elect Urbahn:** the Architecture Critics' Medal to Sibyl Moholy-Nagy (posthumous), accepted by her daughter, Dr. Claudia Moholy-Nagy (1); the Architectural Firm Award to Albert Kahn Associates, Detroit, accepted by Sol King (2); the Craftsmanship Medal to furniture craftsman Wharton Esherick (posthumous); the Industrial Arts Medal to ceramicist Edith Heath of Sausalito (3); Allied Professions

Medal to Daniel U. Kiley (4); Architectural Photography Medal to Alexandre Georges (5); Citation of an Organization to the San Francisco Bay Conservation and Development Commission; Architecture Critics' Citation to "Perspecta," Yale architectural journal; the Edward C. Kemper Award for "significant contribution to the Institute" to Gerald M. McCue, (6) Fine Arts Medal to sculptor Anthony Smith (7), special citation to photographer Ansel Adams (8).



## New A.I.A. officers: Ferebee is president-elect

S. Scott Ferebee, Jr., of Charlotte, North Carolina (center) was elected first vice president (president-elect). He will assume office in December; a year later will automatically succeed Max Urbahn as president. Mr. Ferebee is president of Ferebee, Walters and Associates, architects, engineers, and planners; a student of management and business procedures for the small architectural practice. He became a Fellow in 1968, the same year was elected

to the A.I.A. board representing the South Atlantic Region. He served as chairman of a special committee of the North Carolina chapter to establish a new school of architecture at the University of North Carolina at Charlotte.

Elmer E. Botsai (left) of San Francisco was elected treasurer. Preston M. Bolton of Houston (not shown) is secretary.

New national vice presidents are Archibald C. Rogers of Baltimore (second from left), Louis de Moll of Philadelphia (second from right), and Robert J. Nash of Washington (right).

## Resolutions: good intentions, but not too many hard promises

Delegates voted on what must be a record 28 resolutions—and, as happened last year, a progressive, though far-from-liberal pattern emerged. For the first time, many of the resolutions concerned social and political actions long considered “outside the competence” of the profession—and these resolutions are described in detail and commented on in the Editorial, this issue, pages 9 and 10.

In other actions, the delegates:

- favored “a reasonable limitation period” on liability for professional services;
- agreed to fund or obtain funding for environmental awareness teaching in primary and secondary schools, working with the student chapters to this end;
- supported the work of NCARB in developing new exam and registration procedures (for last-minute details on the NCARB meeting, see News in Brief, page 33);
- voted to establish an accurate system of storing and retrieving records of time required for professional services;
- supported Federal-revenue-sharing;
- supported limitations on the amount that can be spent in political campaigning for national offices (but referred to the board a resolution by the New York chapter to require that any architect keep records of any political contributions “and disclose such information to his chapter upon request to the Judicial Board of the A.I.A.”

A resolution that “proposed ethical standards include the principle that members of A.I.A. should not accept commissions which tend to support or strengthen public or private policies of racial discrimination and that the Board develop guidelines which will lead to enforcement” was withdrawn by the Resolution Committee and thus not debated.



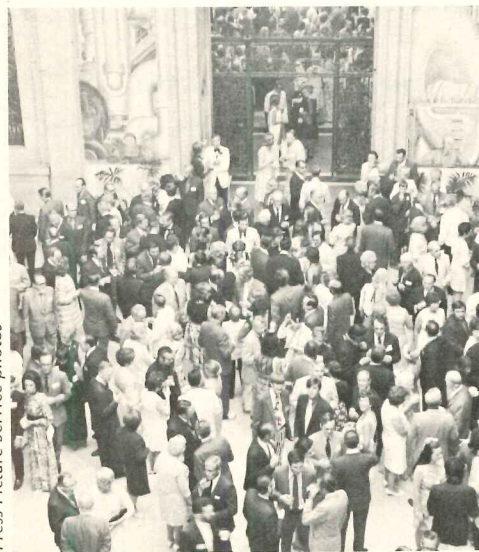
## Honor awards

**Ten Honor Awards**, from 550 entries, were awarded. The complete list appeared in RECORD, June. Shown here accepting their awards are architect Benjamin Thompson and William Garbett, current

president of Design Research (for Design Research Building, Cambridge, Mass.); client Richard Daland and architect Ulrich Franzen (for Christensen Hall, University of New Hampshire, Durham); and client Macey of the U.S.I.A. and architect Lew Davis (for the U.S. Pavilion at Osaka).



**The Dodge/Sweet's Jazzfest**, this year's edition of the Convention's traditional opening event, featured seven of Detroit's leading jazz groups (here, harpist Dorothy Ashby), attracted 2,100 guests to the Detroit Public Library.



Press Picture Service photos

**The President's Reception** filled several of the great halls of the Detroit Institute of Arts. On the receiving line were A.I.A. officers Bill Slayton, Max Urbahn, Robert Hastings. This year, only the new Fellows wore traditional semi-formal dress.



Jenepher Walker

**The Host Chapter Party** was held at Bob-Lo Island—an amusement park—after a pleasant cruise on the Detroit River. Rock and “Welk-ish” bands alternated for youngsters and oldsters after a dinner in the Island's “great space.”

## Notes from NEOCON: New products, new projects new concepts

The showrooms of Chicago's mammoth Merchandise Mart were bulging on June 23rd as 2,500 registrants assembled from all parts of the country for the third annual National Exposition of Contract Furnishings (NEOCON III). The three-day program included morning and afternoon seminars, corridor conferences and countless special events. May new products and furniture lines were introduced which ran the full range from prestigious and costly to modest and inexpensive. Though several manufacturers were showing modular, steel units for office landscaping, most of the office furnishings were of conventional design and stressed elegance and durability. "See-through," "deflatables" and other novelties were not much in evidence. Many of the individual furniture pieces appeared to be variations or extensions of earlier prototypes.

The seminars, by and large, were well-attended. The session entitled "New Uses for Old Buildings" attracted wide interest. Brock Arms, AIA, AID, introduced the subject by recalling that on a recent trip to Russia he visited a Museum for Aethism that, ironically, had once been a Russian Orthodox Church. Most conversions, he was quick to add, are not as dramatic.

Speaking from his long experience in real estate finance, Frederic C. Wood (Wood & Tower, Inc.) banished the myth that, owing to numerous unforeseeable problems, converting older structures was necessarily expensive. He cited numerous examples of successful conversions and pointed out that in the overwhelming majority of cases, no unexpected difficulties or costs had arisen.

Henry Jova, AIA (Jova-Daniels-Busby of Atlanta) described his firm's part in the salvage and renewal of portions of underground Atlanta—a sunless and shabby section of the city long ago abandoned to winos and drifters. Now beginning to

blossom with restaurants and bars (mostly done in what Jova calls "a slightly hokey, Gay Nineties motif"), the area is attracting Atlantans who enjoy a sense of the catacombs with their dining. The architects expect that Stage II, now beginning, will include a great many stores and shops.

In a lively and amusing address, Ben Graves (Educational Facilities Laboratories) drew audience attention to a number of schools fashioned out of "found space," citing many examples from cities across the country. With enrollments increasing and bond issues failing, the demand for existing under-utilized space—or even "throw-away" space—is expected to rise sharply. Mr. Graves also encouraged manufacturers of school furnishings and equipment to respond with products that are easily adaptable to new uses and to the special, loft-like character of many older buildings.

Filling in for an absent panelist, architect Bill Brubaker (The Perkins and Will Partnership) approached the problem from the opposite direction. He suggested that architects (and others) identify historic buildings in danger of being torn down, and find new uses for these buildings. Chicago's Reliance and Monadnock Buildings, and the Stock Exchange (all by Louis Sullivan, see RECORD, News Reports, November 1970, page 36) were given as cases in point.

Most provocative perhaps was the session entitled "The Planning Team: How, When and Why a Professional Chooses Collaborators." Controversy started early. Dr. V. R. Buzzotta, the panel's psychologist, objected to the phrase *planning team*, preferring instead "results-oriented group." A member of the audience objected to the word *Collaborators* in the seminar's title. To him it meant someone who gave aid and comfort to the enemy in time of war. So it went most of the morning. But in the midst of these frank exchanges, one point

emerged and re-emerged: few clients, so far, have been willing to foot the bill for a true interdisciplinary team.

The consensus seemed to be that the formation and organization of such a team was essentially the architect's responsibility. If he assembled the team "in house" before getting a job, it would be expensive. Furthermore, a static team tends to become a stagnant team. But if the architect turns this responsibility over to the client, he is likely to find himself part of a team with no pitcher or first baseman.

Other architect members of the panel were: Bill Lacy (Omniplan), George Heery (Heery and Heery) and Raymond Gaio (Gaio Assoc., Ltd.). Sherman Emery, editor of *Interior Design*, served ably as moderator and referee.

In one morning session, Edward Larabee Barnes revealed plans for Crown-Center—a gargantuan development financed by Hallmark Cards, Inc. to be built in the deteriorating margins of Kansas City. The project, planned by several architectural firms, will include high-rise apartments, offices, shopping, recreation and vast areas of underground parking. The decision to invest so heavily in the area is Hallmark's commitment to the future of the city.

Other NEOCON seminars included:

"Living Under Water"

"Student Life Styles and Their Impact on College Union Planning"

"The Concepts of Ameriplan: Implications and Implementation"

"The Office of the Future: Open Plan, Landscape, Conventional or Modular"

"The Walt Disney World Story"

Mr. Harry Finkel and members of his Merchandise Mart staff, who organized NEOCON, deserve our continuing thanks for bringing together so many people from a fragmented industry with varied interests and diverse concerns.

## Sixty-two new Fellows bring College membership to 990

On June 21, at ceremonies at Detroit's Institute of Arts, 62 new Fellows (selected by a jury headed by Kenneth W. Brooks of Spokane) were invested by A.I.A. president Robert Hastings. The new Fellows are: Gerald Lou Allison, Honolulu; Ronald Allwork, New York City; George Adrian Applegarth, San Francisco; Edmund Norwood Bacon, Philadelphia; Kenneth E. Bentsen, Houston; Frederick Jacob Bentz, Minneapolis; James Buchanan Blich Sr., New Orleans; Harold Box, Dallas; Albert Orin Bumgardner, Seattle; Charles Burchard, Blacksburg, Virginia; Richard Edward Collins Sr., Silver Spring, Maryland; Bruno Paul Conterato, Chicago; Whitson W. Cox, Sacramento; Robert R. Cueman, Summit, New Jersey; Arthur F. Deam, Deland, Florida; Russell Orrin Deeter, Pittsburgh; Jean Roth Driskel (Mrs. R. E.), South Pasadena, California; William Edward Dunlap, Chicago;

Benjamin P. Elliott, Silver Spring, Maryland; Lawrence Albert Enersen, Lincoln, Nebraska; Hermann Haviland Field, Boston; Howard A. Friedman, San Francisco; William James Geddis, Cambridge, Massachusetts; Marvin Edward Goody, Boston; E. Keith Haag, Cuyahoga Falls, Ohio; Frank Bouldin Hunt, San Francisco; John Willard Huntington, Hartford; Hugh Newell Jacobsen, Washington, D.C.; Henry Anthony Jandl, Princeton, New Jersey; Leland Wiggins King, Atherton, California; Donald Robert Knorr, San Francisco; Pierre Francis Koenig, Los Angeles; Wayne Farland Koppes, Basking Ridge, New Jersey; Gillet Lefferts Jr., New York City; Murvan Morris Maxwell, New Orleans; Henry Dustin Mirick, Philadelphia; Frederick Doveton Nichols, Charlottesville, Virginia; Louis Arthur Oliver, Norfolk, Virginia; John Hans Ostwald, Berkeley; Walter G. Peter Jr.,

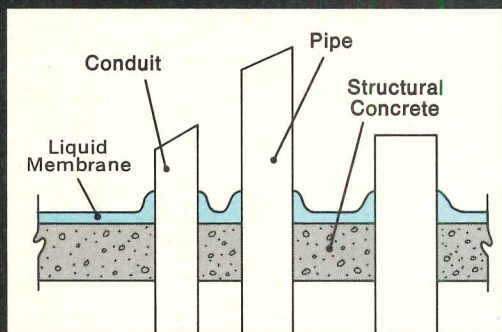
Washington, D.C. (posthumous); J. Gerald Phelan, Bridgeport, Connecticut; Ralph Pomerance, New York City; James G. Pulliam, Los Angeles; John G. Rauma, Minneapolis; George Swiler Sowden, Fort Worth; William Bradford Sprout Jr., Boston; Russell Lee Stecker, Bloomfield, Connecticut; Frederick Gordon Stickel, Troy, Michigan; Robert S. Sturgis, Cambridge, Massachusetts; Marvin David Suer, Philadelphia; Gray Taylor, Stamford, Connecticut; Edward Leighton Varney Jr., Phoenix; William Frederick Vosbeck Jr., Alexandria; Hobart Dean Wagener, Boulder; Francis R. Walton, Daytona Beach, Florida; Raymond Leslie Watson, Newport Beach, California; Payson Rex Webber, Rutland, Vermont; William P. Wenzler, Milwaukee; George Malcolm White, Washington, D.C.; Arthur Richard Williams, Champaign, Illinois; Michael Wornum, San Francisco; Ralph Park Youngren, Chicago.

(more news on page 42).



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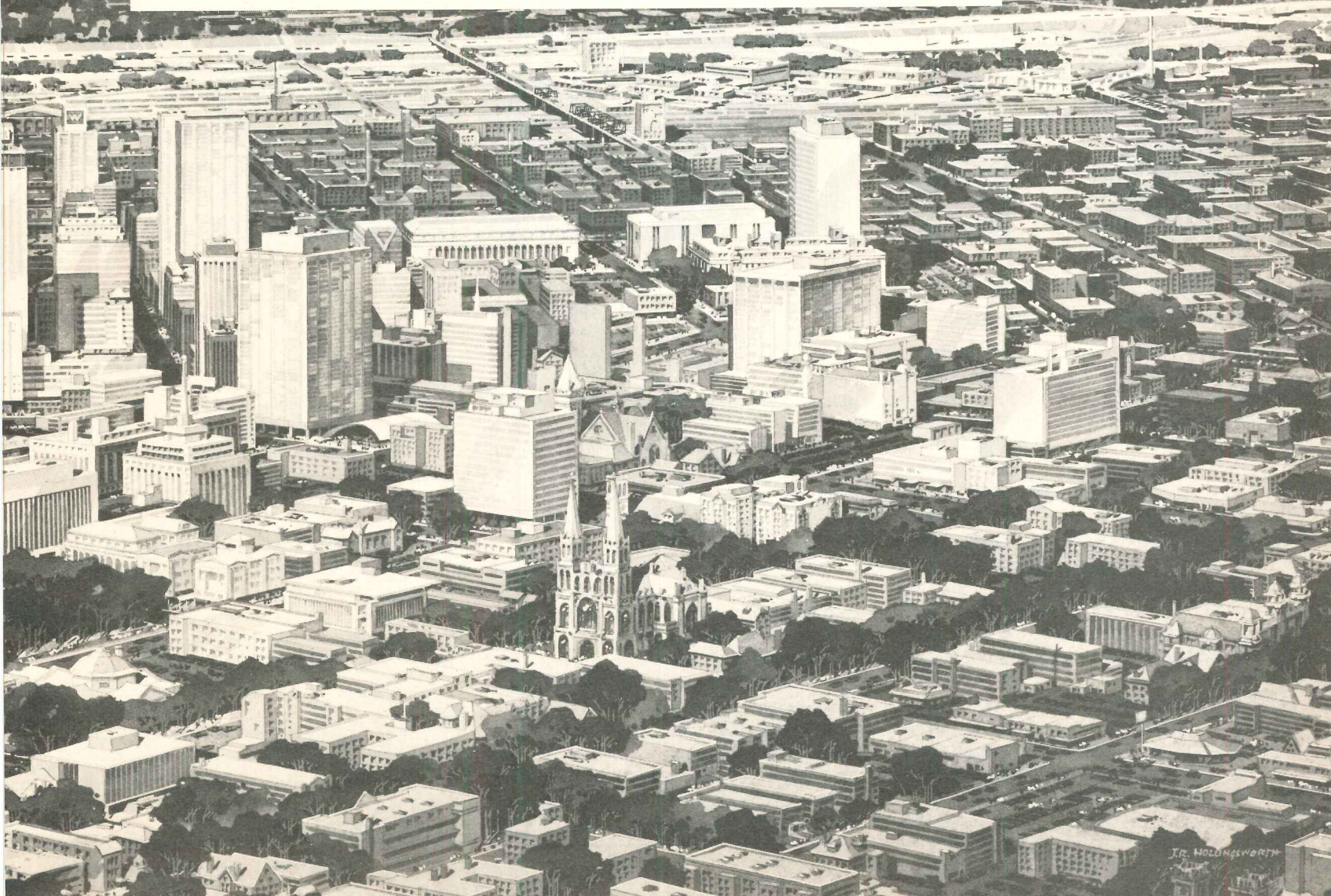
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## Convention hears little of HRC, students, black architects

Various reasons might be given for the low profile of the more action-oriented groups at the Detroit convention. In his speech to the delegates at the poorly-attended last session, Joseph Siff, president of the Associated Student Chapters of the A.I.A., quoted from the "Greening of America" by Charles Reich and said that the students now see their goals of change and revitalization coming about through natural forces that no longer require demonstrations and confrontation. Others, less charitable, sensed that to avoid embarrassment similar to that at the Boston convention, segments of the A.I.A. leadership had simply engineered confrontation out of the format.

### Human Resources Council

There was no time allotted on the main convention program for the annual report of the A.I.A. Task Force on Professional Responsibility to Society or any discussion of its newly-organized fund-raising arm, the Human Resources Council. True, the agenda was overly-full as it was but this exclusion meant that only persons already interested in CDC's would leave the main meeting and find their way to the inaccessible rooms assigned HRC in the cavernous Cobo Hall. Once there, visitors saw a slide show and heard Eugene Brooks, chairman of the CDC executive council and Vernon Williams, AIA's director of CDC programs

(1). But even so, for the majority of delegates, it was out of sight, out of mind. An information booth sponsored by the A.I.A. Community Services Department among the other exhibits featured two publications by the Architects Workshop of Philadelphia, one of the most vigorous of all Community Development Centers. In addition to their Progress Report No. 2, the Workshop, under Gus Baxter, the executive director, has published a handsome and comprehensive "Primer for Community Design Centers," available for \$2 at 2012 Walnut Street, Philadelphia, Pa.

### Students

Even though their own meeting room was just down the hall from the main hall, the students—and the exhibit of local student work—were ignored by most delegates. After a couple of sessions of trying to decide what constructive role in the convention they might play, the students decided to try directly to raise money for the HRC on the floor of the convention. After passing the hat among themselves and raising about \$100.00, they were given permission to interrupt one of the main convention business sessions briefly in order to ask delegates for money or expression of support. Anyone who stepped out for a cup of coffee would have missed it all, so quickly and so uneventfully did it happen. Thus, in the midst of beautiful rhetoric on the "Hard Choices," the A.I.A. effectively neutralized its 1969 commitments.

### Black Architects

The fifteen-million dollar goal of 1969? Not a word was mentioned on the convention floor. During the last, sparsely-attended meeting on resolutions, a proposal by the Boston Chapter that a 1969 A.I.A. resolution calling for an ethical standard against racial discrimination be implemented, could not even gain enough support on the floor to be discussed, let alone be voted upon. In other words, the A.I.A. explicitly disavowed a position against racial discrimination which it took just two years ago.

The only event of the convention specifically organized for black architects was a reception memory of Whitney Young (2). Organized by the Michigan Black Architects Group, it was held far from Cobo Hall and attracted few white delegates. David Todd, (3), one of the most vigorous liberals of the liberal New York chapter delegation, was an exception. One well-known black architect who has chosen to work for change within the A.I.A. hierarchy spoke for the disillusionment of many at this convention when he said, "I hate to think in terms of confrontation everytime something must be done, but it seems as though that's the only way to accomplish anything." It looks as though the A.I.A. given the really "Hard Choices" of living up to its promises of two years ago or of ignoring them, is setting the stage for another round of pressure politics.

—James D. Morgan



1



2



3

## "Building Team" called way to build faster and cheaper

The first annual National Conference and Exposition for the Building Team was held in Detroit concurrent with the A.I.A. Convention, June 21 and 22, 1971. In spite of some conflicts with A.I.A. business sessions, both the sponsors (Producers Council in a joint venture with A.I.A.) and participants generally felt it was a success. In his keynote speech, Roger Blough, formerly president of United States Steel and now chairman of the Construction Users Anti-Inflation Roundtable attacked the building trades unions and called for unity within the building industry to reduce building cost.

The Building Team is seen as one component in a program, supported enthusiastically by Arthur F. Sampson, commissioner of the Public Buildings Service of the General Services Administration, one of the speakers and by others in the Fed-

eral government as a means to reduce the time and money required to produce new construction. In his speech, "Federal Construction—It's a New Ballgame," he indicated that super-clients like the Federal government would be turning to building systems, standardized components, construction management and phased construction, performance specifications to make building easier whether architects and other building industry members like it or not.

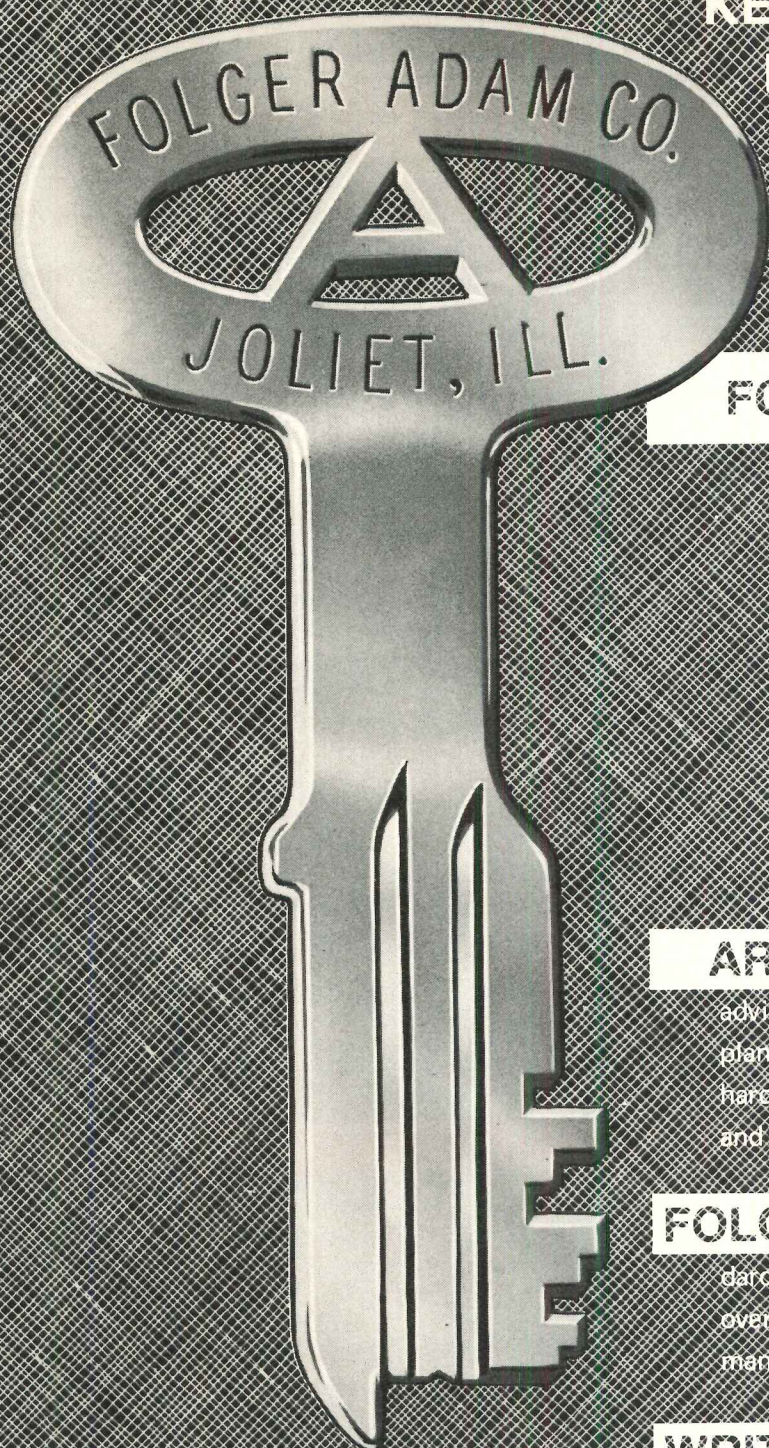
Other speakers were less bold in their predictions, but like Mr. Sampson, urged architects to be aware of the thrust toward large-scale building organizations and to consider what their place in the future might be. Walter A. Meisen, assistant commissioner for construction management, a colleague of Mr. Sampson in the General Services Administration, spoke of the construction manager's job. He sees this position, whether one man or an organization, as the client's agent responsible for meet-

ing cost, quality and time deadlines by managing all aspects of the construction process, especially as that grows more sophisticated. From another point of view within the Administration, in a speech delivered by Mike Moscow, Laurence H. Silberman, Undersecretary of Labor asked members of the Building Team to consider some of the insecurities of the construction worker, especially the seasonal unemployment associated with those trades. It is a construction manager's responsibility to minimize that problem as he plans the project, he said. Following Mr. Silberman, a panel of construction industry editors, including Walter F. Wagner, Jr. of RECORD, presented questions designed to draw various speakers out on points made in their talks.

Other speakers during the two-day session included Philip J. Meathe of Smith, Hinchman and Grylls, George Heery of Heery and Heery and Frederick A. Rehkopf of Becker and Becker.

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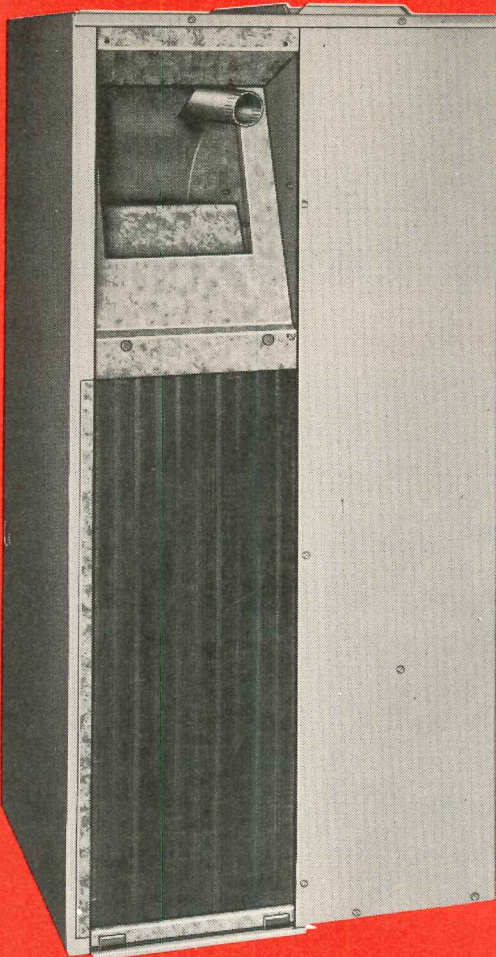
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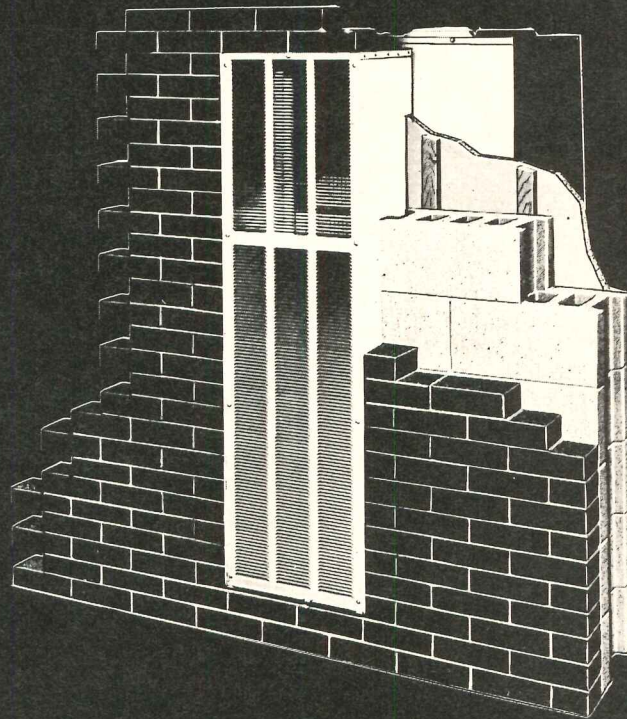
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**Note:** Fedders Submittals 1, 2, 3 were shown in immediate previous issue of this magazine.

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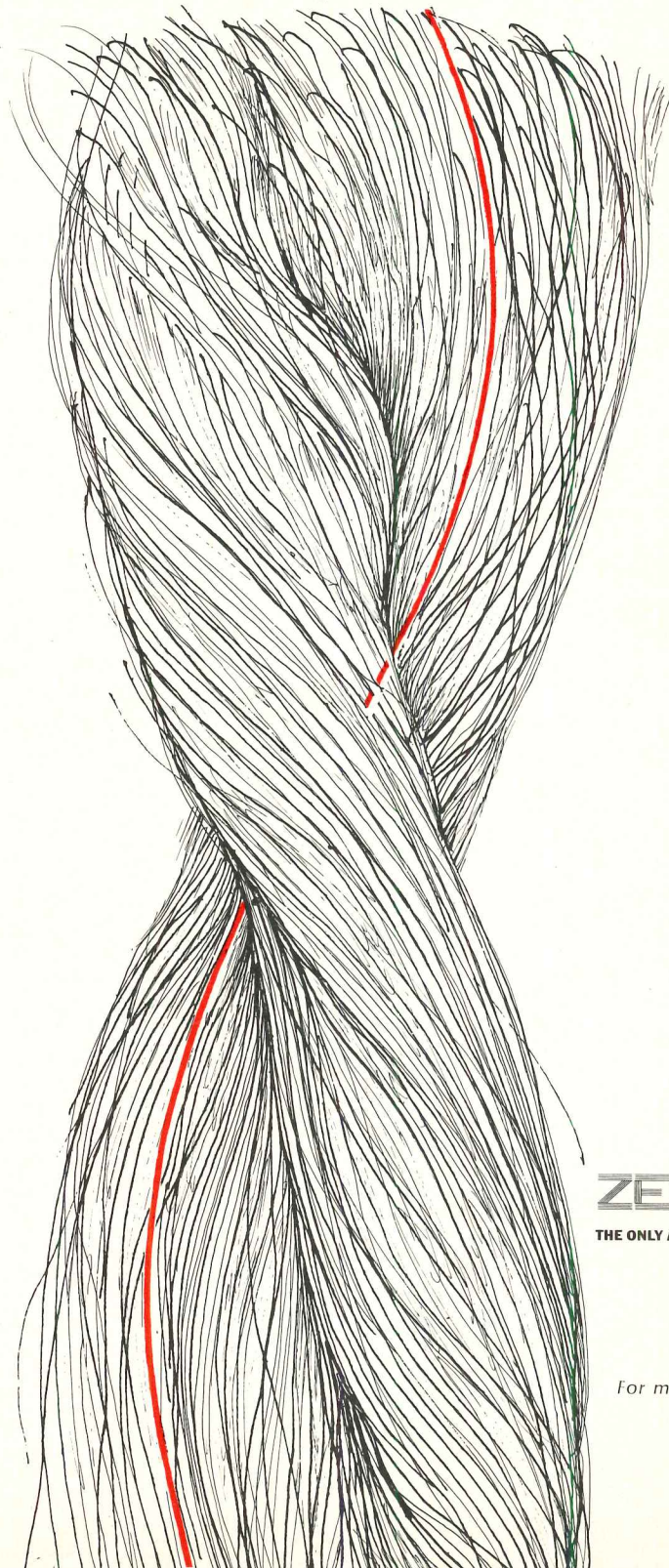
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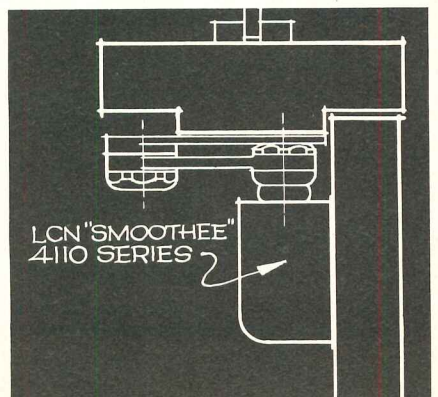
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South Senior High School, Minneapolis, Minn.; The Cerny Associates—Caudill-Rowlett & Scott, Associated Architects.

### Can there ever be a perfect school doorway?

Until there is we recommend the one in the picture. The remarkable elegance is achieved with a simplicity and honesty that invites outright imitation. The closers are LCN Smoothees®, stop-face mounted, 4110 Series. Your Hardware Consultant knows all about them. Ask him, or write LCN Closers, Princeton, Illinois 61356.

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# Our bumps make the grind easier.

In the face of rising costs, tough design requirements, and a poor site, our bumps helped make the grind easier for the architect and engineer of the New Bedford (Mass.) High School.

They wanted the strongest, lightest and least expensive structure. So they chose a composite system, using 200,000 sq. ft. of our SUPERBOND BC Composite Deck.

Our deck is unique because it has embossments (bumps) on every surface—more bumps than any other—for greater shear-bond resistance. Locked together by the bumps, steel and concrete perform as a composite unit under load.

BC Deck helped them bring in the design almost \$500,000 under budget. As a structural component used with composite beams, up to 15% less steel is used in the entire structure.

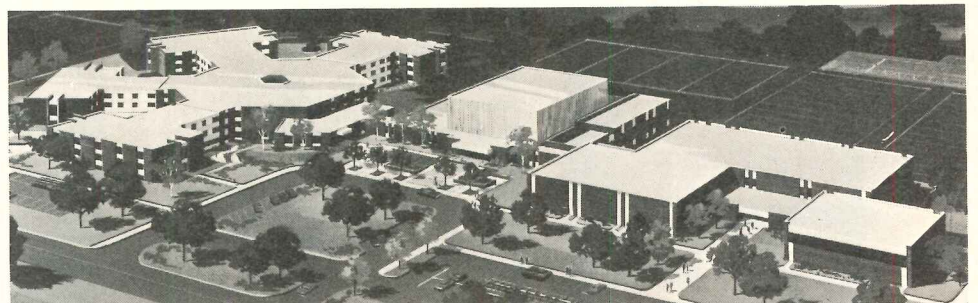
The shallower composite beams gave them more usable space by cutting down on floor-to-floor height. In addition to reducing the overall height, it gave them the lightest structure per sq. ft. without losing any strength. (Foundation load was critical because of poor drainage on the site.)

Finally, the deck met their performance specs for construction loads as well as dead load, without shoring.

SUPERBOND BC Deck comes in light-weight galvanized coating, 1-1/4 oz. galvanized coating and prime coat painted. For more information, write for our free brochure WC-450.

Today the bumps are in school.

Tomorrow they can go anywhere.



Architect: Owen F. Hackett, Jr. & Associates, New Bedford, Mass.  
Structural Engineer: MacLellan, Dormer, Mulcahy, Inc., Providence, R.I.  
General Contractor: Perini Corp., Framingham, Mass.

  
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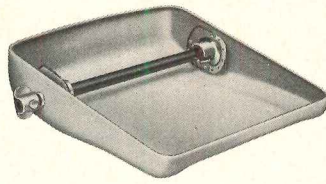
As strong as the wire itself. Test it yourself. With your bare hands pull apart most tack welded reinforcing sections. (It may only require a 20 lb. pull.) Now try this with any of the flush welded AA wire tie systems. It won't break! (Unless you can pull well over a thousand pounds.) Laboratory reports are available upon request. Remember a wire tie system is only as strong as the welds that hold it together. Be sure — select from the full line of AA flush welded designs. Send for complete catalog. AA Wire Products Company 6100 S. New England Ave. Chicago, Illinois 60638

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## Massey chairs have a self-rising hinge mechanism which rotates on a stationary spanner rod, which extends entirely through the cushion pan, and is permanently attached to the standards on each side of the seat.



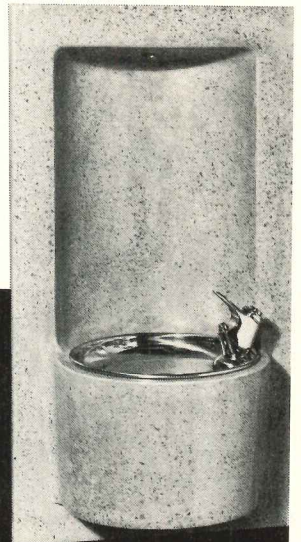
And you can say all that in just one word: *Quality.* For the complete story on Massey quality, see your Massey dealer, or write:



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Semi-recessed, precast stone fountain in polished smooth or light sandblast finish. Choose from five colors at no extra charge. Send for more data now. HAWS DRINKING FAUCET COMPANY, Fourth & Page Streets, Berkeley, California 94710.



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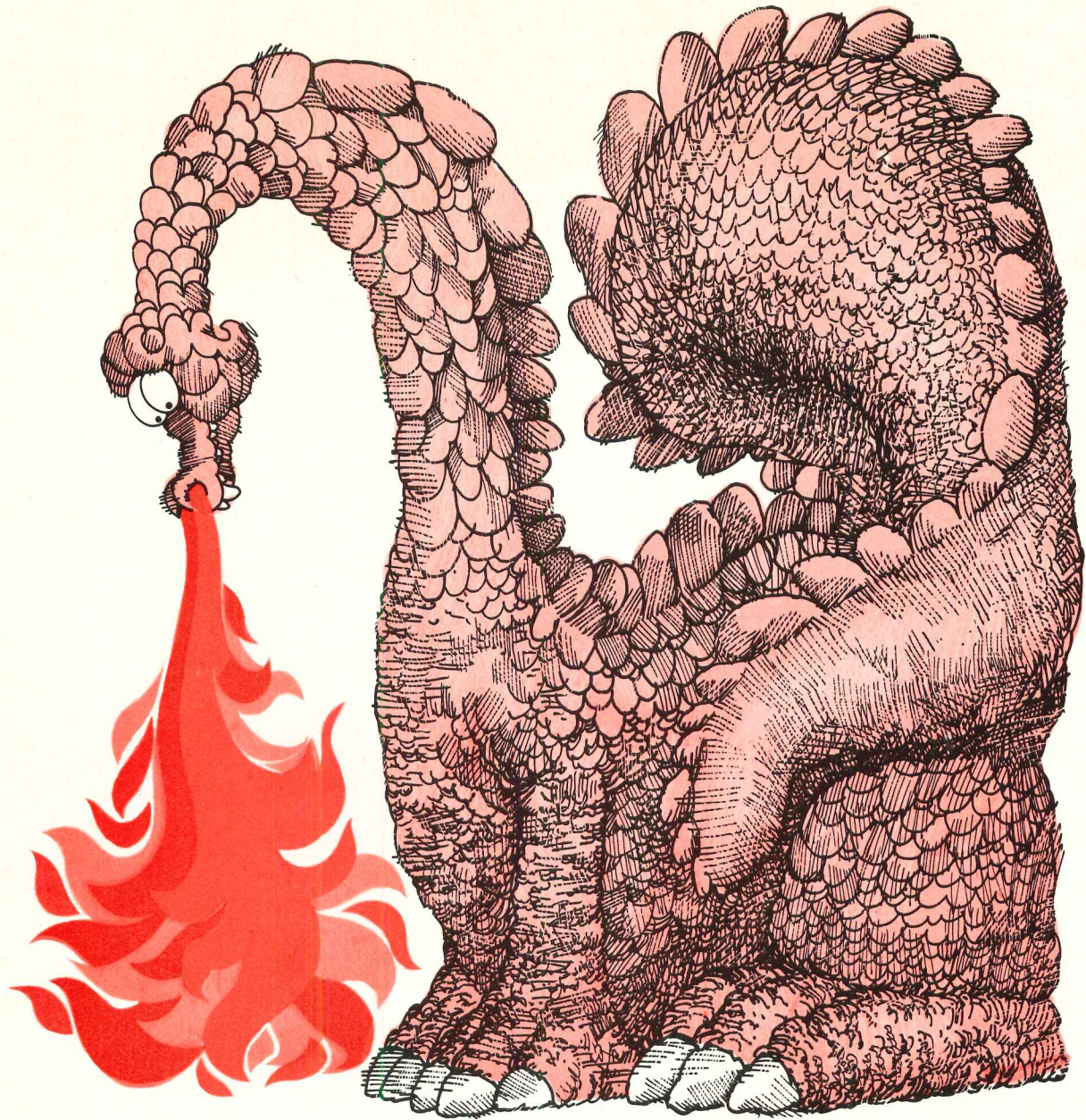
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**DRINKING FOUNTAINS**

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# Looking for a waterproof deck coating system you can rely on in any climate?



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New "Scotch-Clad" Brand Deck Coating could withstand dragon breath if it had to . . . because it's more than waterproof—it's weatherproof!

"Scotch-Clad" material is tough but yet remains flexible in any climate even when exposed to the most severe weather. It bonds aggressively to concrete, asphalt and wood, as well as other surfaces, and has unique properties which provide excellent joint and crack bridging.

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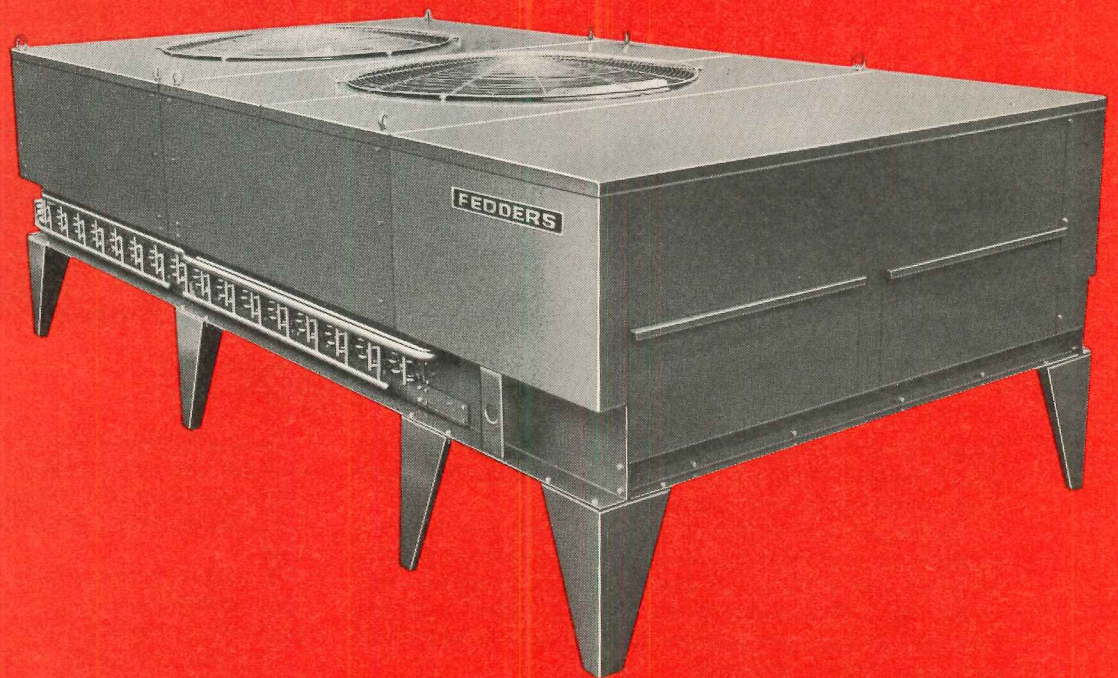
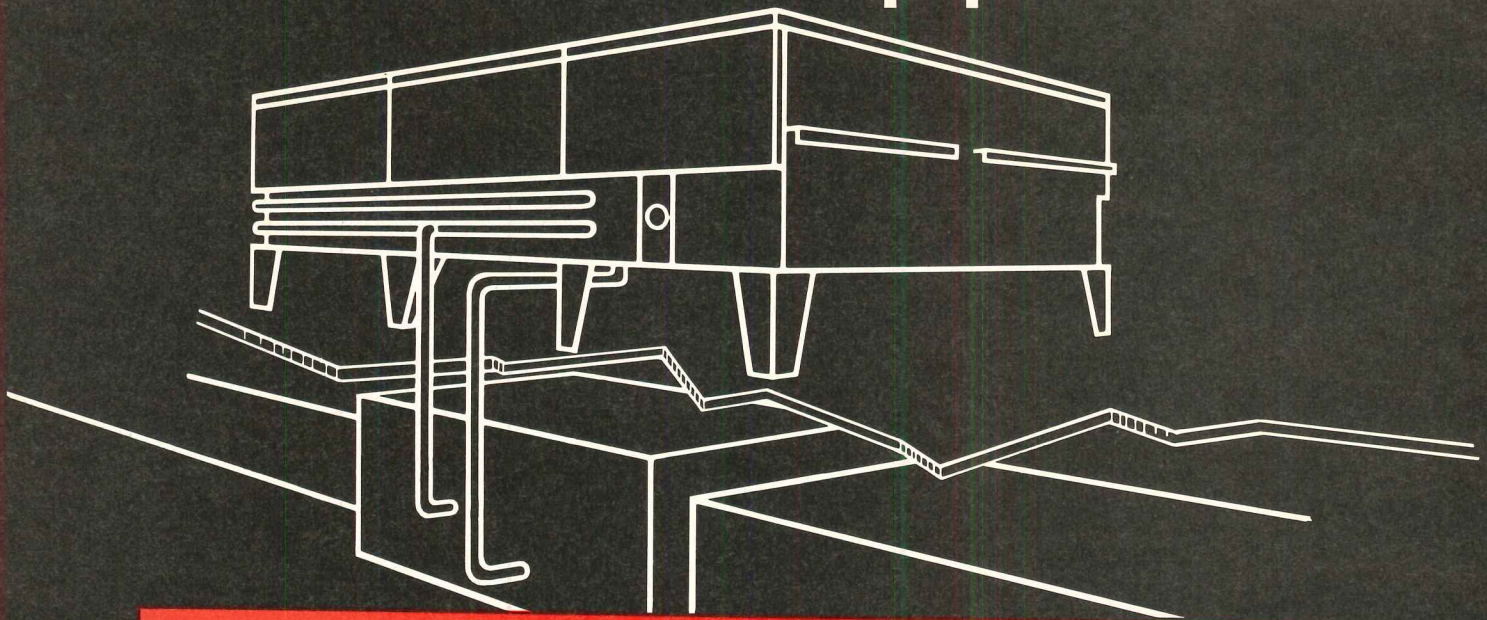
For the complete story, write direct to: J. Blackwell, Building 224-5E.

**Adhesives, Coatings and Sealers Division** **3M**  
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# Submittal # 5

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**because** Fedders condensing units and evaporator blowers are pre-engineered and factory matched for optimum performance and economy.

Capacity requirements can be met exactly because there are 62 condensing units with capacities from 1½ tons to 80 tons. All models 6 tons and over bring even further flexibility with operational capacity reductions in both heating and cooling. Low ambient controls permit year round cooling operation to 0°F.

The condensing units have low silhouettes... line-of-sight for roof mounting is exceptionally shallow. Condenser air is discharged upward by low RPM fan along with the operating sounds of the compressors and motors to minimize sound transmission to surrounding areas and to the structure.

The evaporator blowers come in all sizes and shapes with choices of CFM's from 600 to 36,000. Some are only 10" high so they can be placed on a shelf in a closet or tucked above a drop ceiling. Others are big enough to handle the wide range of CFM's required in commercial applications.

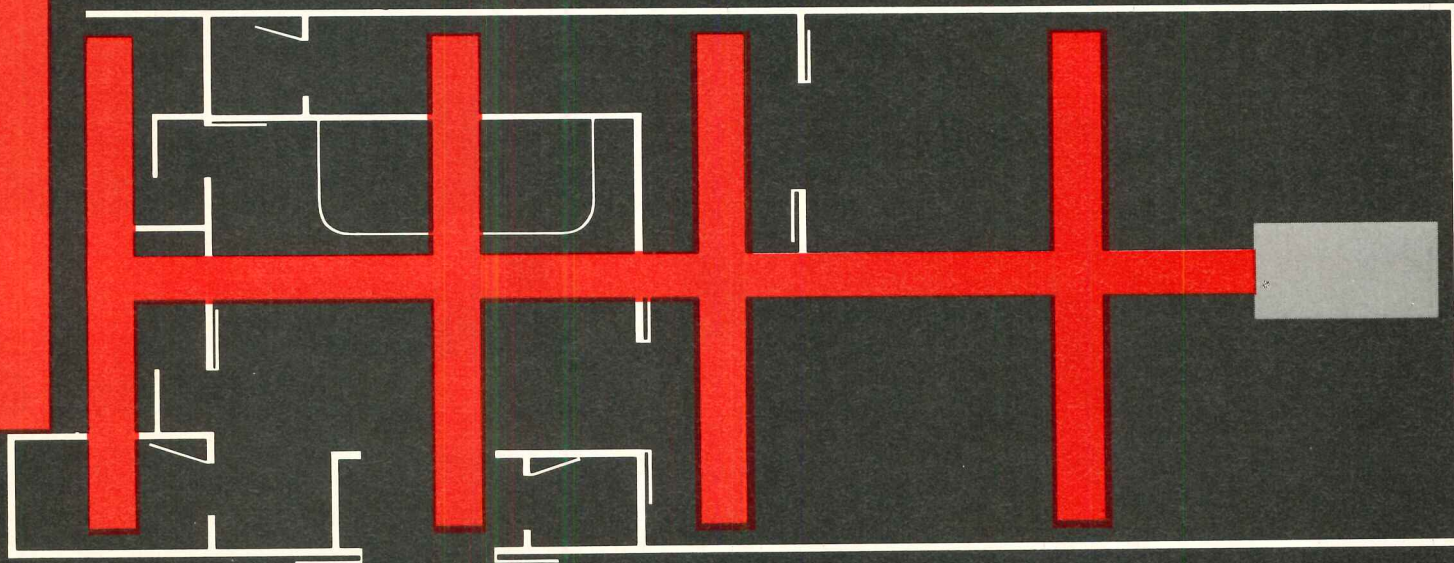
In the application shown in the plan view below and in the sketch at left, the condensing unit is roof mounted and connected to evaporator blower suspended from ceiling joists. Cooled air is ducted to ceiling diffusers.

In addition to the condensing units, Fedders has a complete range of packaged heating and cooling units (see Fedders Submittal #4 this issue), air handlers, heating units, terminal units, rooftop units, air and water cooled chillers (see Fedders Submittal #6 this issue).

Write Fedders Technical Information Department now to learn more of the advantages of having Fedders as one source for all your air conditioning and heating needs.

*Note: Fedders Submittals 1, 2, 3 were shown in immediate previous issue of this magazine. Reprints are available.*

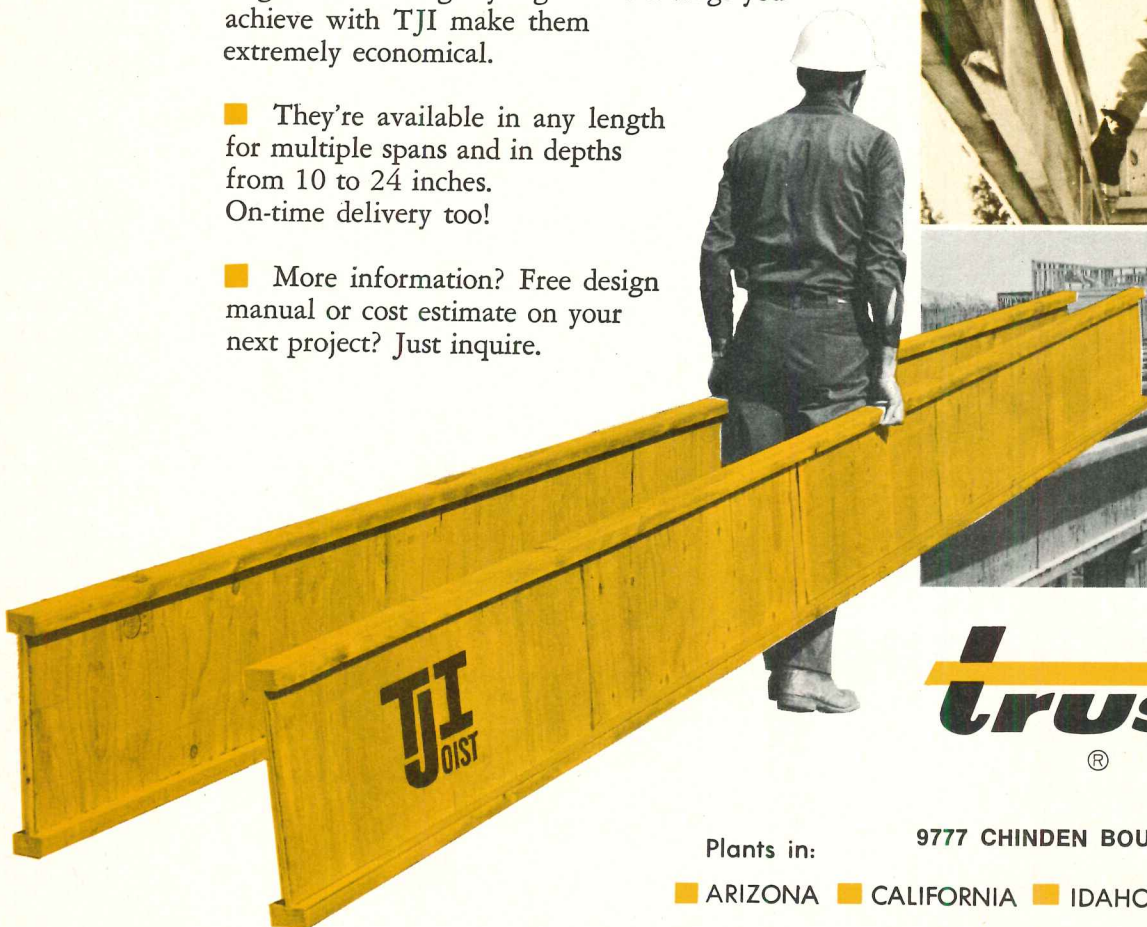
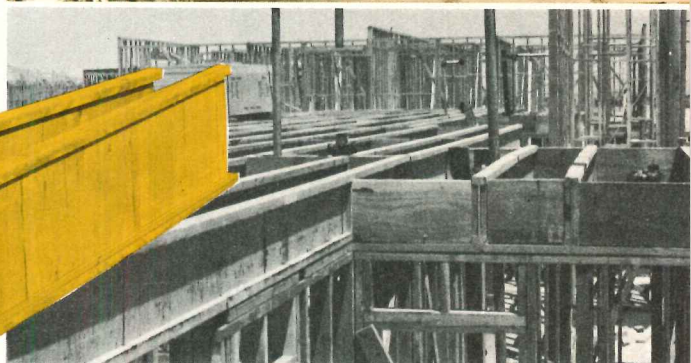
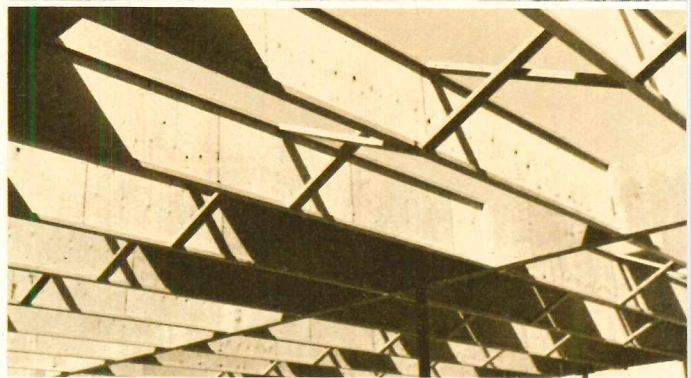
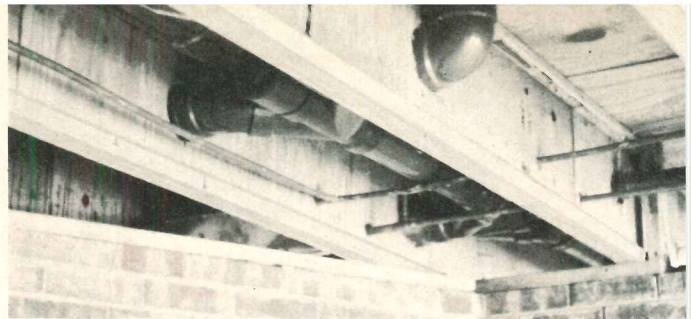
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CENTRAL AIR CONDITIONING & HEATING  
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# ZINC prevents corrosion from getting a seat in Wrigley Field

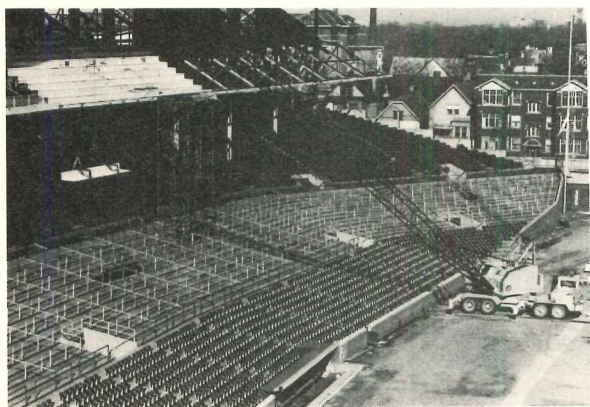
The newly refurbished seating sections in the home of the Cubs use pre-cast concrete panels reinforced with hot dip zinc galvanized steel.

"The galvanizing of reinforcing steel and mesh was specified to eliminate rusting and corrosion in the event of any cracking in the concrete and as part of the requirement of having all imbedded metal items rust resistant to the highest degree possible," said Charles E. Correa, president of LBC, Inc., general contractor for the project.

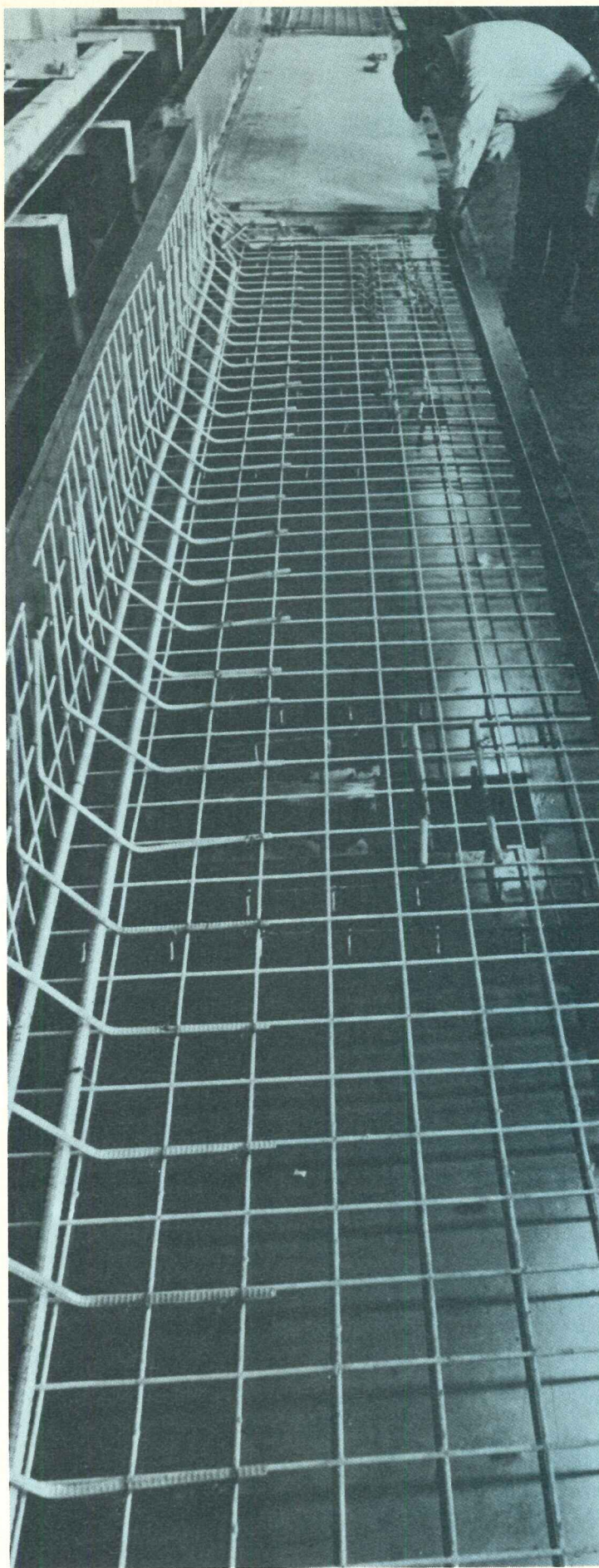
About 1000 pre-cast L-shaped panels, 19' long by 2'9" wide by 18" high and weighing a ton apiece were used in the \$1,200,000.00 project.

The zinc-protected reinforcing steel was decided upon after consultation among the architect, consulting engineer, owner and general contractor. By preventing sub-surface rust, galvanized re-rod also eliminates surface cracking or spalling from internal pressures caused by rust build-up.

Used in concrete or as a separate material, galvanized steel provides the most practical combination of strength, corrosion resistance and economy.



Architects—Solomon, Corewell, Buenz & Associates • Structural steel design engineers—Alfred Benesch & Company • Concrete panels — Prestcrete Corp. and Midwest Concrete Products Co.



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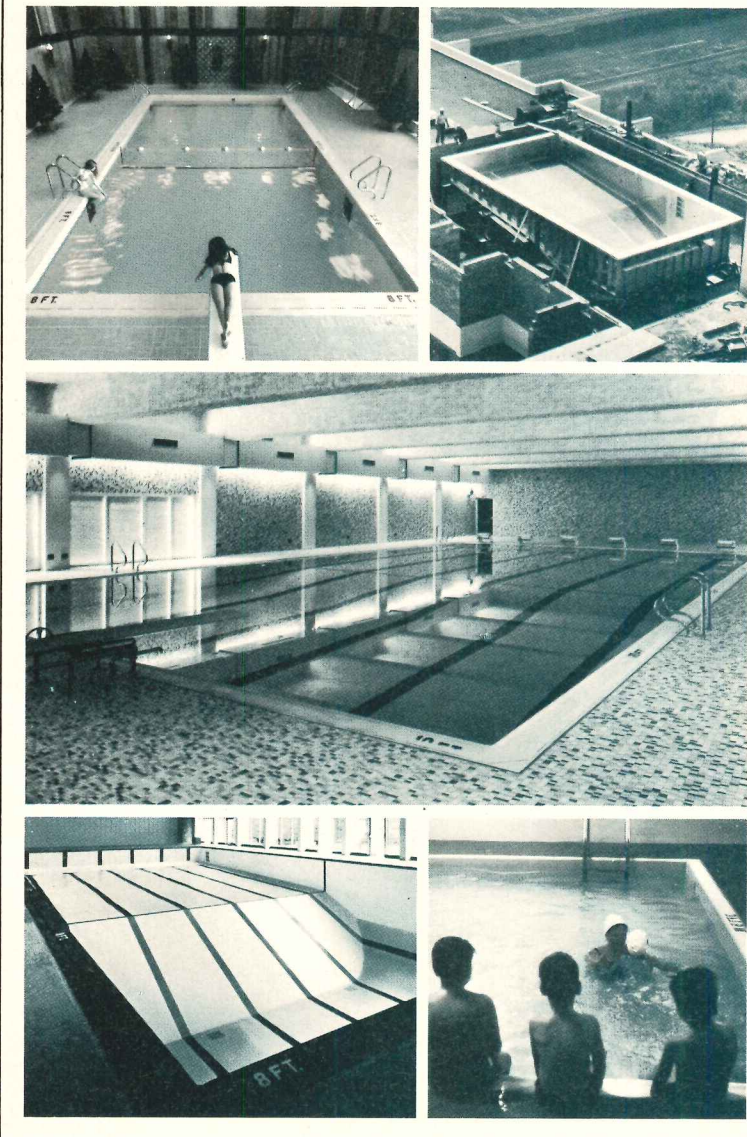
250 Park Avenue, New York, New York 10017, Tel. (212) 986-7474



## *Anything can happen*

In Lawford, Essex, England, Peter Strawson treaded water for 17½ hours on July 25-26, 1967, a new world record. Mr. Strawson emerged from the water with wrinkled skin.

From the GUINNESS BOOK OF WORLD RECORDS  
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## *And anything can happen at Overly*

Like building swimming pools in the sky.

Leaks are the last thing you want to worry about when you put a swimming pool on top of a high-rise apartment building. Or anywhere, for that matter. We can custom-design and build an all-aluminum, welded-seam pool warranted against leakage for five years. Our pools can be adapted to any specifications, indoors or outdoors. You get the entire system: recirculation system, nonskid coping ledge, overflow gutter and colorful coating.

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Overly has plants in Greensburg, Pa. and Los Angeles, Calif. For more information, contact Overly Manufacturing Co., Architectural Metal Division, Department 19, West Otterman St., Greensburg, Pa. 15601.

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## Recommendations on payment practices issued by construction industry council

*Problems in cash flow and payment practices to contractors and suppliers have plagued the industry for years. The Construction Industry Affairs Council of Kansas City finds that contract documents already existing as recommendations of A.I.A. and contractor associations go far toward correcting the situation.*

Improvement in payment practices in the construction industry is the subject of three recommendations issued by the Construction Industry Affairs Council of Kansas City. Entitled "Progress Payment and Retention," "Final Acceptance and Final Payment," and "Warranties and Guarantees," the three recommendations are intended as guidelines for all contract procedure and payment practice in the Kansas City construction industry and are based on a review of nationwide practices.

The Construction Industry Affairs Council (CIAC) was formed in Kansas City in early 1970, with representation from the American Institute of Architects, Associated Plumbing Contractors, Construction Specifications Institute, Consulting Engineers Council of Missouri, Mechanical Contractors Association, National Electrical Contractors Association, and Sheet Metal & Air Conditioning Contractors Association. The Builders Association, which represents a wide spectrum of the construction industry, and the Associated General Contractors of Kansas City have been invited to full membership on the Council.

Gene E. Lefebvre, an architect and chairman of CIAC, noted that the Council's continuing purpose is to establish communications within the construction industry so that problems can be discussed and resolved. Payment practices received first priority attention. Mr. Lefebvre pointed out that CIAC intends to serve all segments of the construction industry in the Kansas City area—architects, engineers, contractors, subcontractors, labor and suppliers—and represents no special segment of the industry.

Some of the payment problems covered have been:

1) Slow monthly payments, as funds get delayed in the channels from owner to general contractor to subcontractor and to supplier;

2) Concern about the amount of retention held on work partially or entirely complete and in use by the owners;

3) The difference between "beneficial occupancy" and "acceptance" as a basis for release of funds to contractors;

4) Payments to one subcontractor whose work is satisfactory being delayed because of the unsatisfactory work of another subcontractor;

5) The distinction between design inadequacies which are the responsibility of the architect or engineer and construction inadequacies which are the responsibility of the contractor or subcontractor should be clearly defined;

6) "Punch list" procedures, and the need for only one such list covering any given aspect of the contract completion;

7) Establishing the date upon which warranties and guarantees become effective, especially when systems such as the heating equipment go into use for the owner's benefit prior to the completion of the remainder of the contract.

In working out recommendations as to how to best handle these problems in the Kansas City construction industry, CIAC relied heavily on the work of similar organizations in Chicago, St. Louis, Indianapolis, Minneapolis, the state of Michigan and the New York-based Construction Industry Foundation.

Frank Grimaldi, the architect who led the Kansas City CIAC's recommendations committee, noted that there is already substantial precedence and practice established in the A.I.A. Document A201 General Conditions of the Contract for Construction, A401 Standard Form of Agreement Between Contractor and Subcontractor, G702 Application for Payment, G703 Certificate for Payment, and G704 Certificate of Substantial Completion. He emphasized that adherence to the provisions of these documents would help to

resolve many of the payment problems brought to CIAC's attention.

### Progress payments and retention

In line with national trends, the Kansas City CIAC recommends that retention be ten per cent of the completed work only until the project is 50 per cent complete, with none additional thereafter. In other words, the maximum retainage at any time would be 5 per cent of the contract sum.

The CIAC's recommended "Schedule for Monthly Progress Payments" agrees with schedules and limitations stated in A.I.A. contract forms, providing for a cycle of 24 working days between subcontractors' request for payment and receipt of payment. Payments not received within the 24 working days would be delinquent.

A.I.A. Document A201 General Conditions of the Contract for Construction, provides in paragraph 5.4.1 that "The Contractor shall pay each Subcontractor, upon receipt of payment from the Owner, an amount equal to the percentage of completion allowed to the Contractor on account of such Subcontractor's Work. . . ." Then A.I.A. Document A401, Standard Form of Agreement Between Contractor and Subcontractor provides in paragraph 12.2 that "The Contractor shall pay the Subcontractor within seven days . . . upon the payment of certificates issued under the Contractor's schedule of values"

CIAC recommends implementation of the payment schedule through use of A.I.A. Document G702, "Application for Payment." This monthly application by the contractor has on it a statement, to be signed and notarized "that all amounts have been paid for items for which previous Certificates for Payment were issued and payments received . . ." If the A.I.A. Document G702 is not used, then this statement can be completed by the contractor and notarized in essentially the same format as it appears on the bottom part of A.I.A. Document G703, "Certificate for Payment."

Contractual relationships are clarified to all subcontractors and suppliers involved if the contract spells out clearly that the A.I.A. series of forms will be used.

If a subcontractor is in doubt about payments made, A.I.A. Document A201 provides in paragraph 5.4.4. that "The Architect may, on request and at his discretion, furnish to any Subcontractor, if practicable, information regarding percentages of completion certified to the Contractor on account of work done by such Subcontractors." Similarly, A.I.A. Document A401 states "The Contractor shall permit the Subcontractor to obtain directly from the Architect evidence of percentages of completion certified on his account."

Concerning the subcontractor's payments to his suppliers or sub-subcontractors, there is also precedence. A.I.A. Document A401, in paragraph 11.3, covers this situation as follows:

"The Subcontractor shall pay for all materials, equipment and labor used in, or in connection with, the performance of this Subcontract through the period covered by previous payments received from the Contractor, and shall furnish satisfactory evidence, when requested by the Contractor, to verify compliance with the above requirements."

The CIAC noted that a form, "Subcontractor's Application for Payment," (developed by AGC, NECA, MCAA, SMACNA, and NAPHCC nationally) covers this verification by including the subcontractor's notarized statement that "I also certify that payments, less applicable retention, have been made through the period covered by previous payments received from the contractor, to (1) all my subcontractors and (2) for all materials and labor used in or in connection with the performance of this Contract."

It is CIAC's recommendation that such certification of the proper flow of funds be a clearly stated requirement in all Kansas City construction contracts.

One complaint of subcontractors has been that their payments were at times delayed because of the work of other subcontractors. The CIAC felt that this subject is already covered in A.I.A. Documents A201 and A401.

Paragraph 9.5.1.3 of A.I.A. Document A201, General Conditions, entitled "Payments Withheld" defines the Architect's role in assuring that the Owner's money has been properly disbursed and utilized:

"The Architect may also decline to approve any Applications for Payment . . . or he may nullify the whole or any part of any Certificate for payment previously issued, to such extent as may be necessary in his opinion to protect the Owner from loss because of . . . failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment."

When contract terms define payment "delinquency," the General Conditions in A201, paragraph 7.9.1, cover this problem: "Any moneys not paid when due to either party under this contract shall bear interest at the legal rate in force at the place of

the Project." This "legal rate" can be made specific in the Special Conditions.

#### **Final acceptance and final payment**

As portions of the contracted work are completed, or "substantially" completed, problems arise about processing "punch lists," defining "substantial completion," and releasing some or all of the retainage. The CIAC worked extensively on this complex subject, and made not only three basic recommendations but five other recommendations about contingencies.

Again, the procedural guidance came from the "General Conditions" A201, in paragraph 9.7, "Substantial Completion and Final Payment." The punch list procedures developed by the Chicago CIAC were adopted for use in Kansas City as they have been in several cities since their introduction in Chicago in 1969.

The CIAC recommendation states the responsibility of the contractors or subcontractors to complete their work satisfactorily and then "give written notification of completion and request verifying inspection."

The architect/engineer then has the responsibility to "within seven days, prepare *one only* Punch List, identifying each item of unsatisfactory work and describing required corrections." Although punch lists may be prepared for separate designated portions of a contract, the CIAC opposes multiple punch lists covering the same work.

After issuance of the one punch list and completion of corrections, the contractor or subcontractor requests final inspection and approval of the punch-listed work.

The "General Conditions" paragraph 9.7.1 states "When the Architect on the basis of an inspection determines that the Work is substantially complete, he will then prepare a Certificate of Substantial Completion, which shall establish the Date of Substantial Completion . . . and shall fix the time within which the Contractor shall complete the items listed herein."

The A.I.A. Document G704, "Certificate of Substantial Completion," clarifies what "substantial completion" means: it is "the date certified by the Architect when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner may occupy the Work or designated portion thereof for the use for which it is intended."

The "Certificate of Substantial Completion" allows for further work possibly needing to be done, with a list of these items to be appended to the certificate. Importantly, the certificate's text states that, "The Date of Substantial Completion . . . is also the date of commencement of all warranties and guarantees required by the Contract Documents."

The CIAC's recommendation then goes on to say that after issuance of the Certificate of Substantial Completion or

Certificate for Final Payment, "Remittance is due in 30 days." There was question as to whether this included remittance of retainage. CIAC's position: "Retained amounts should be reduced to be proportionate to the value of the unsatisfactory items and sufficient to assure completion of the items."

The CIAC's recommendations involving identification of incomplete work and remittance within 30 days after substantial or final completion relate directly to A.I.A. Document A401, the Standard Contractor-Subcontractor Agreement, which states in its Article 6, "Final payment shall be due when the Work described in this Subcontract is fully completed and performed in accordance with the Contract Documents and is satisfactory to the Architect." This completion makes payment due to the subcontractor, and in no way contingent upon the work of other subcontractors or the general contractor.

Another aspect of the problem of release of retainage, dealt with by the Council, concerned large change orders: "If a large Change Order is processed late in the job, acceptance and final payment of the basic project should be processed. The change order work would subsequently be processed separately." This stand is consistent with the CIAC's general position that retainage should be held only in proportion to unsatisfactory items or work not substantially complete.

#### **Warranties and guarantees**

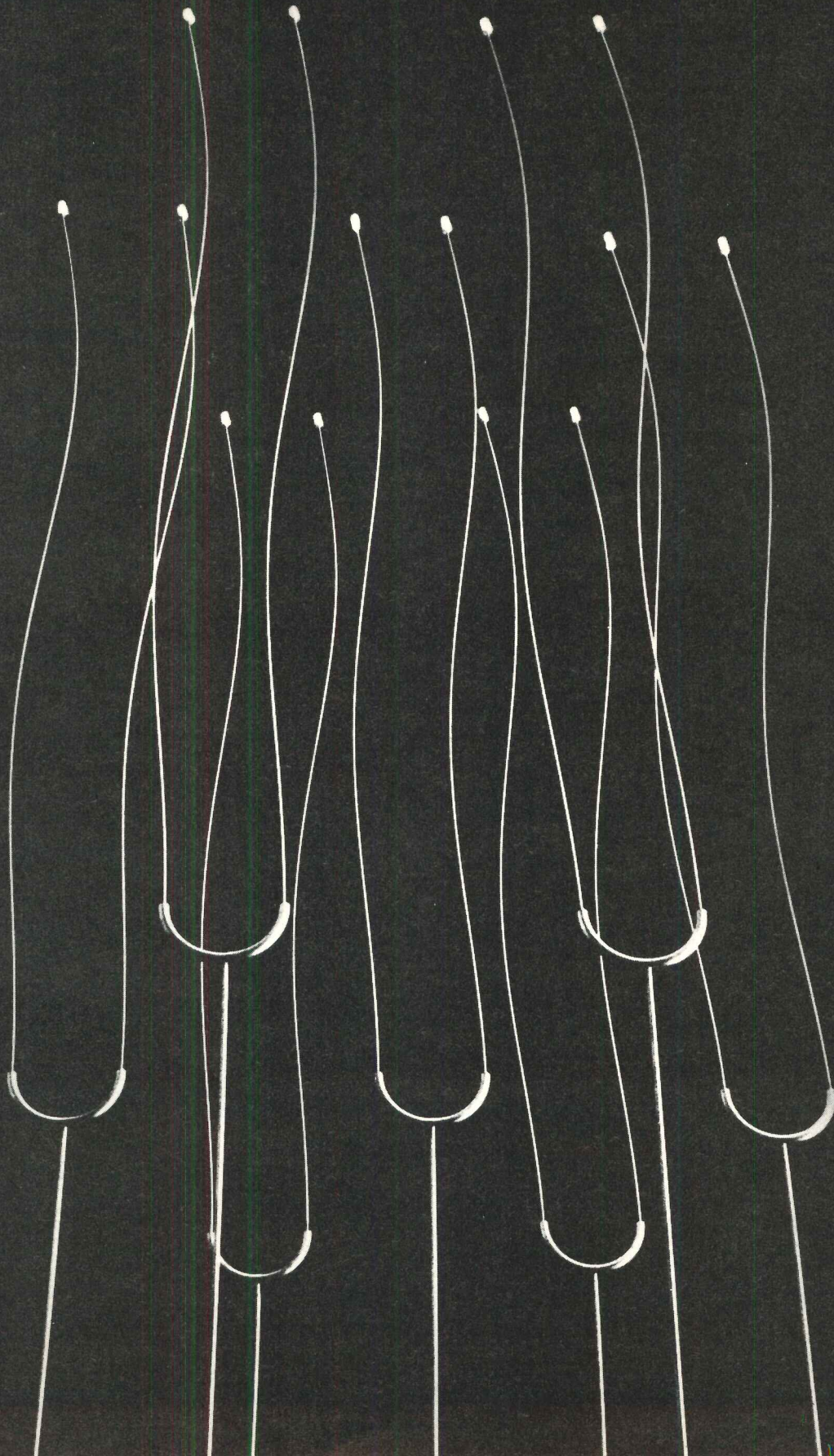
The Construction Industry Affairs Council's third recommendation is on warranties and guarantees. The Certificate of Substantial Completion G704 serves to establish "the date of commencement of all warranties and guarantees required by the Contract Documents," so the CIAC recommends use of that Certificate, either on the project or on designated portions of it.

The CIAC's Recommendation 3 states, in part, "Equipment and systems put into use with prior authorization shall commence their period on the date of such commencement." The emphasis is on the words, "with prior authorization," examples being the owner's, architect's or engineer's written authorization to the contractor to put into operation a whole or partial system or any separate piece of equipment or component of the heating, piping, electrical, or other systems.

The CIAC's recommendation points out that "the architect/engineer shall be responsible for the design requirements" and "the contractor shall be responsible for workmanship, materials, equipment and proper installation." The installing contractors on the construction contract should not be held responsible for the performance requirements for systems and equipment designed and specified by the architect/engineer, nor should their retainage be held because of any such design problems.

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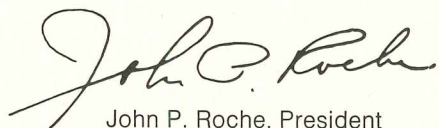
In a sculptural high-rise office building.

And in the first cable-stayed bridge in North America.

All individualistic. All distinct.

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It is to these architects, designers, engineers and artists and their imaginations that American Iron and Steel Institute dedicates its sponsorship of the Design in Steel Award Program.



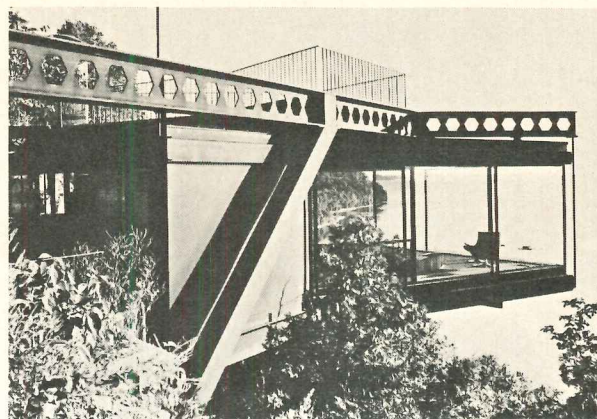
John P. Roche, President  
American Iron and Steel Institute

**Judges:**

- |                    |  |
|--------------------|--|
| James Alexander    | Chairman, Education Committee, Industrial Designers Society of America       |
| Tracy Atkinson     | Director, Milwaukee Art Center   |
| Samuel S. Baxter   | President-elect, American Society of Civil Engineers                         |
| William Goldsmith  | President, Industrial Designers Society of America                           |
| Robert F. Hastings | President, American Institute of Architects; Fellow, AIA                     |
| John M. Hayes      | Past Vice President, Zone III, American Society of Civil Engineers           |
| Tucker P. Madawick | Chairman of the Board, Industrial Designers Society of America; Fellow, IDSA |
| Kenneth A. Roe     | President, American Society of Mechanical Engineers                          |
| George T. Rockrise | Vice President, American Institute of Architects 1969/1970; Fellow, AIA      |
| Paul J. Smith      | Director, Museum of Contemporary Crafts, N.Y.C.                              |
| Dr. Joshua Taylor  | Director, National Collection of Fine Arts, Smithsonian Institution          |

OUR COVER DESIGN, and winner of the Fine Art in Steel Award, is Wen-Ying Tsai's "Cybernetic Sculpture". It consists of thin, stainless steel rods that constantly sway in their electrically activated atmosphere.

**Structures**



Harry Weese

BEST DESIGN and BEST ENGINEERING of Housing was won by Harry Weese & Associates for its dramatic overhanging, summer retreat/study, Shadowcliff. It's cantilevered by steel beams from the face of a rocky cliff to obtain maximum view without blocking the view from the main house. This study is an elegant steel and glass enclosure 24 foot square with its exterior members made of weathering steel for muted appearance and low maintenance.



Bogue B. Babicki



Randle Iredale



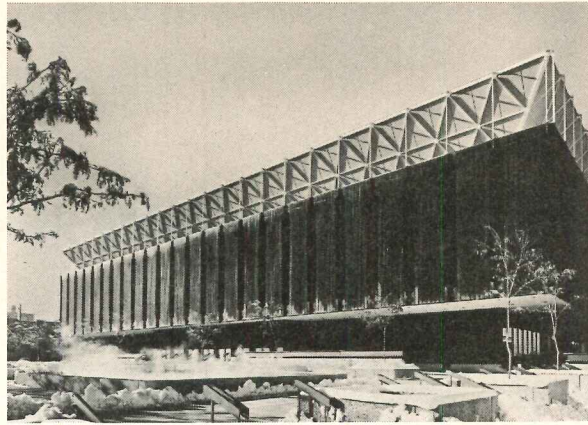
William Rhone

BEST ENGINEERING of High Rise Construction was won by Bogue Babicki & Associates and Rhone & Iredale for their cable suspended, 12 story office building. The building holds its floors with a system of galvanized steel bridge cables draped over a central poured core. The core was built from the bottom up and the steel floors were installed from the top down, saving in material costs and building time.



Robert Towle

BEST DESIGN of High Rise Construction was shared by Wurster, Bernardi and Emmons, Inc.; Skidmore, Owings and Merrill; Pietro Belluschi, and H. J. Brunner Assoc. for the stunning Bank of America World Headquarters Building in San Francisco. The steel frame is lightweight and very rigid and meets all seismic requirements. This unusual 52 story high-riser uses a system of cantilevered bay windows and irregular set backs to give a dramatic sculptural effect and bring the building to human scale.

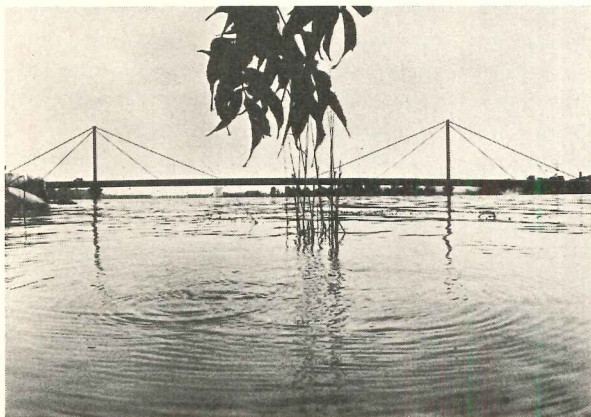


James Ream



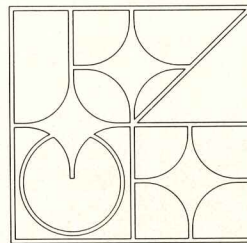
Don Pyle

BEST DESIGN of Low Rise Construction was awarded to a joint venture of Muchow Associates, Haller & Larson and James Ream & Associates for Curragan Exhibition Hall, Denver; BEST ENGINEERING of Low Rise Construction was shared by Muchow, Ream & Larson with Ketchum-Konkel-Barrett-Nickel-Austin, again for Curragan Exhibition Hall. The 240 by 680 foot enclosure was built with a steel space frame roof to provide a column free interior for large exhibitions. The hall's ceiling is also adjustable for different size exhibits. James T. Ream accepted the award for Muchow, Ream & Larson; and Don Pyle, Partner, accepted the award for Ketchum-Konkel-Barrett-Nickel-Austin.



Marc A. Gendron

BEST DESIGN and BEST ENGINEERING in Public Works Construction was given to Gendron, Lefebvre & Assoc. for the cable-stayed Papineau-Leblanc bridge. Supporting the steel box girder with steel cables extended the functional length of the girders, making it possible to support the bridge with only two 126-foot high steel towers, 790 feet apart. This structure is the first cable-stayed bridge of its type to be built in North America.



As you have seen, steel has made its mark on the world in a number of ways. It's wherever you look and eventually touches your life in some way. We hope it will continue to serve man and to further inspire architects, designers, engineers and artists to realize their imaginative concepts through designs in steel.



**AMERICAN IRON AND STEEL INSTITUTE**  
150 East 42nd Street, New York, N.Y. 10017

James E. Carlson  
 Manager of Economic Research  
 McGraw-Hill Information Systems Company

## Industrial building: turning the corner?

The highwater mark for the U. S. economy came during the fourth quarter of 1969—officially. Industrial construction, which historically paces the economy downward from its peaks and upward from its troughs, continued an upward trend into 1970; but the decline, when it came during 1970, was a sharp one. Contracts for industrial building fell almost 50 per cent on a seasonally-adjusted basis between the first and second quarters of 1970. They levelled off during the third quarter, but declined still further in the fourth. 1970's fourth quarter was the bottom, however. It's also the "official" trough for the 1970 recession.

Progress out of the trough has not been very rapid. This year's first quarter brought a good seasonally-adjusted gain to the industrial building category, but things softened again during the second quarter.

Expenditures for new industrial buildings are part of total business expenditures for what's called "new plant and equipment." And they're only a small part at that. To better understand the fluctuations in industrial building, it might be useful to consider the basics of this type of expenditure. Manufacturing firms will invest in new plant and/or machinery if: 1) their existing plant and equipment cannot produce sufficient quantities of goods to meet the anticipated demand from their traditional market, or, 2) from a prospective new market, or 3) existing plant and equipment are obsolete, or becoming so, and a threat to their competitive position in the market place, or, 4) the advance of technology creates a more efficient production process, or a new, potentially profitable product, and they want to take advantage of it.

During periods of economic growth, firms in the aggregate will invest for all four of the above reasons. When the economy turns down, businessmen will concentrate more on replacing obsolete plant and equipment, try and stimulate the technological aspect as much as possible, and seek to generate activity in both traditional and new markets.

When the economy turns sluggish, not only does the volume of plant and equipment spending slow down, but its complexion changes. Concentrating on replacing obsolete plant and equipment typically

means relatively more equipment and relatively less plant. This shift in the "mix" goes far toward explaining why manufacturing plant and equipment expenditures were virtually unchanged between 1969 and 1970, and so far through 1971, while contracts for manufacturing plants declined seven per cent between 1969 and 1970, and are expected to drop another 15 per cent this year.

As far as regional markets are concerned, a lot depends on what type of manufacturing building is the weakest. Cutbacks and stagnation in the aero-space, transportation, and primary metals industries were primarily responsible for the 1970 decline in industrial building; aero-space because of its declining importance in the order of national priorities, and transportation and primary metals because their position as basic industries makes them more sensitive to the swing of the cycle. Since the traditional base of the aero-space industry is in the West, the value of manufacturing contracts awarded in that region was reduced by one-third between 1969 and 1970. Most of the transportation and primary metals industries are still located in the Midwest. Manufacturing contracts there were off by 10 per cent last year. The Northeast, with its more general economic base, sustained a decline in manufacturing construction contracting of only five per cent last year. On the other hand, the petroleum-petro-chemical industries continued to erect plants at a record rate all through 1970. The South, where most of these firms are now located, enjoyed a seven per cent gain in manufacturing plant contracts during 1970's recession.

1971's first half was weak across the board. Every major industrial category sustained declines of varying percentages, and these declines extended to every major region. The urge to add new equipment was still there, as evidenced by the second quarter strength in total plant and equipment outlays, but with plant operations still well below 80 per cent of capacity, businessmen appear to be looking for firmer evidence that a sustained upturn is in the making before they add on still more plant capacity.

Capacity utilization is really the key here. You have to go all the way back to the 1957-1958 recession to get a figure comparable to the 70 per cent utilization rate reached during last year's fourth quarter. The latest McGraw-Hill survey puts the current rate for manufacturing firms at about 77 per cent. That's still well below the 85-plus capacity rate manufacturers were accustomed to throughout most of the sixties, or the 90-plus rate they'd like to maintain. But, the operating rate has shown steady improvement since late last year, and by all indications it will continue to improve all through 1971.

With industrial plant construction, then, it's just a question of time. When businessmen begin to feel that existing plant capacity will not be adequate to satisfy the anticipated demand from their traditional markets or their prospective new markets new plants will start going into the ground at an accelerated rate. When will businessmen begin to feel this way? As the figures for 1971's second half come in, they'll be recording a busy summer for industrial building.

### NATIONAL ESTIMATES

updated forecast of physical volume of floor area (millions of square feet)		1970 actual	1971 forecast	per cent change
nonresidential buildings	commercial	536	545	+ 2%
	manufacturing	209	185	-11
	educational	195	196	--
	hospital/health	76	77	+ 1
	public	29	34	+17
	religious	27	26	- 4
	recreational	48	52	+ 8
	miscellaneous	41	42	+ 2
	TOTAL	1,161	1,157	--



# Flame Retardant

## POLYPROPYLENE PIPE AND FITTINGS



**R & G SLOANE MANUFACTURING COMPANY, INC.**  
A SUBSIDIARY OF THE SUSQUEHANNA CORP.

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### memo:

**TO: ALL SPECIFIERS OF ACID WASTE SYSTEMS FOR DWV USE...**  
**SUBJECT: A MAJOR BREAKTHROUGH... FLAME RETARDANT**  
**GSR® FUSEAL® PIPE AND FITTINGS!**

Now polypropylene acid waste systems are safer and better than ever. The new flame-retardant polypropylene--an exclusive GSR® formulation--will not support combustion.

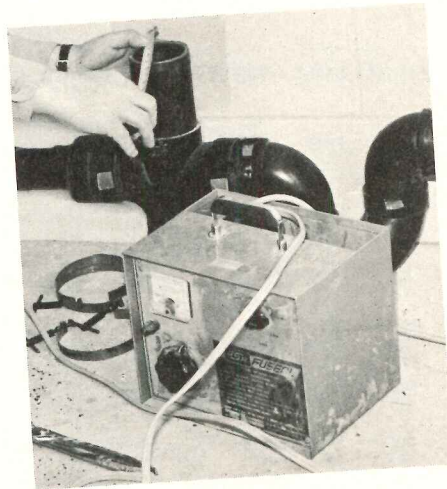
The superior corrosion resistance of polypropylene remains the same. The speed and simplicity of the Fuseal® electrical fusion process remain the same. And now this superior system meets fire prevention requirements.

Flame-retardant Fuseal pipe and fittings (a complete selection of DWV configurations) are available in standard sizes from 1½" to 6". A new line of polypropylene lab sinks is also available. Details may be obtained from your GSR Fuseal representative or by writing to me at the above address.

Very truly yours,

Tony Phillips  
Product Manager

P.S. The GSR® Fuseal® process is the most practical way to join polypropylene pipe and fittings. An electrical fusion coil, slipped over the end of the pipe before joining, fuses pipe and fitting into a solid, homogeneous unit. It applies timed, controlled heat automatically.



1164

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The GSR FUSEAL bonding process is covered by U.S. Patents No. 3,094,452 and 3,506,519 and Canadian Patents No. 668,419 and 837,562; Fuseal Power Unit, U.S. Patent No. 3,465,126 and Canadian Patent No. 846,954; Fuseal Coil, U.S. Patent No. 3,378,672 and Canadian Patent No. 811,837.

For more data, circle 40 on inquiry card

**AUTOMOBILE PARKING EQUIPMENT**

For preliminary budget purposes the following costs for automobile parking control equipment may be of interest. A two-gate system activated by coded cards for use in office or residential building complexes will cost about \$3,000 installed. An unattended commuter parking lot can be equipped with a two gate coin activated control for \$3,500-4,000. And a commercial parking lot control system (ticket dispenser, two gates, out-clock, and prefabricated shelter building) can be set up for about \$6,500.00.

**Building cost indexes**

The information presented in the tables indicates trends of building construction costs in 33 leading cities and their suburban areas (within a 25-mile radius). The table to the right presents correct cost indexes for non-residential construction, residential construction, masonry construction and steel construction. Differences in costs between two cities can be compared by dividing the cost differential figure of one city by that of a second city.

The table below presents historical building cost indexes for non-residential construction; future costs can be projected after examining past trends.

All the indexes are based on wage rates for nine skilled trades, together with common labor, and prices of five basic building materials are included in the index for each listed city.

1941 average for each city = 100.00

Metropolitan area	Cost differential	Current Indexes			% change year ago res. & non-res.	
		non-res.	residential	masonry steel		
U.S. Average	8.3	350.6	329.2	343.9	335.7	+ 8.29
Atlanta	7.9	451.9	426.1	440.6	431.2	+ 10.99
Baltimore	7.9	368.0	346.0	360.2	351.7	+ 11.12
Birmingham	7.4	319.9	297.6	311.7	305.9	+ 3.40
Boston	8.7	344.7	324.8	340.9	331.9	+ 12.51
Buffalo	9.0	383.8	360.5	378.2	367.3	+ 7.20
Chicago	8.3	398.1	378.5	385.7	380.1	+ 7.69
Cincinnati	8.8	378.5	356.2	371.2	362.0	+ 11.60
Cleveland	9.5	398.2	374.7	390.1	381.2	+ 8.43
Columbus, Ohio	8.4	378.3	355.2	368.8	362.2	+ 9.26
Dallas	7.6	345.8	334.9	339.2	331.7	+ 9.71
Denver	8.3	382.6	360.0	380.0	367.3	+ 9.50
Detroit	9.4	390.3	371.8	389.8	376.3	+ 8.56
Houston	7.7	342.0	321.2	333.7	327.6	+ 7.98
Indianapolis	8.0	331.6	311.4	323.9	317.3	+ 7.79
Kansas City, Mo.	8.2	335.1	315.7	327.2	319.7	+ 8.90
Los Angeles	8.0	383.9	351.0	372.1	366.3	+ 7.75
Louisville, Ky.	7.6	346.2	325.1	338.2	331.4	+ 8.22
Memphis	7.7	336.1	315.6	327.2	321.7	+ 8.49
Miami	8.1	372.7	355.1	364.4	356.0	+ 8.14
Milwaukee	8.6	405.3	380.6	401.3	388.5	+ 5.97
Minneapolis	8.7	371.4	349.4	364.9	355.2	+ 6.84
Newark	8.9	351.2	329.7	346.6	338.0	+ 10.12
New Orleans	7.3	333.3	314.6	329.1	321.2	+ 7.07
New York	10.0	389.0	361.7	377.0	369.0	+ 7.86
Philadelphia	8.4	361.7	344.6	356.0	347.6	+ 8.01
Phoenix	7.7	196.2	184.3	189.6	186.7	+ 8.66
Pittsburgh	8.7	343.2	322.9	338.2	329.0	+ 6.43
St. Louis	8.7	366.0	345.5	361.1	350.6	+ 7.09
San Antonio	8.0	143.5	134.8	140.5	136.9	+ 9.02
San Diego	8.1	140.7	132.1	137.7	135.1	+ 6.53
San Francisco	8.9	492.8	450.5	487.9	474.0	+ 5.36
Seattle	8.8	357.5	320.0	355.1	340.9	+ 6.39
Washington, D.C.	7.8	330.3	310.1	320.7	315.2	+ 11.02

Cost differentials compare current local costs, not indexes.

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

1941 average for each city = 100.00

Metropolitan area	1962	1963	1964	1965	1966	1967	1968	1969	1970 (Quarterly)				1971 (Quarterly)					
									1st	2nd	3rd	4th	1st	2nd	3rd	4th		
Atlanta	298.2	305.7	313.7	321.5	329.8	335.7	353.1	384.0	399.9	406.2	408.1	422.4	424.0	445.1				
Baltimore	271.8	275.5	280.6	285.7	290.9	295.8	308.7	322.8	323.7	330.3	332.2	348.8	350.3	360.5				
Birmingham	250.0	256.3	260.9	265.6	270.7	274.7	284.3	303.4	303.5	308.6	310.2	309.3	310.6	314.6				
Boston	239.8	244.1	252.1	257.8	262.0	265.7	277.1	295.0	300.5	305.6	307.3	328.6	330.0	338.9				
Chicago	292.0	301.0	306.6	311.7	320.4	328.4	339.5	356.1	362.2	368.6	370.6	386.1	387.7	391.0				
Cincinnati	258.8	263.9	269.5	274.0	278.3	288.2	302.6	325.8	332.8	338.4	340.1	348.5	350.0	372.3				
Cleveland	268.5	275.8	283.0	292.3	300.7	303.7	331.5	358.3	359.7	366.1	368.1	380.1	381.6	391.1				
Dallas	246.9	253.0	256.4	260.8	266.9	270.4	281.7	308.6	310.4	314.4	316.1	327.1	328.6	341.4				
Denver	274.9	282.5	287.3	294.0	297.5	305.1	312.5	339.0	343.4	348.4	350.3	368.1	369.7	377.1				
Detroit	265.9	272.2	277.7	284.7	296.9	301.2	316.4	352.9	355.2	360.5	360.6	377.4	379.0	384.6				
Kansas City	240.1	247.8	250.5	256.4	261.0	264.3	278.0	295.5	301.8	306.8	308.8	315.3	316.6	329.5				
Los Angeles	276.3	282.5	288.2	297.1	302.7	310.1	320.1	344.1	346.4	355.3	357.3	361.9	363.4	374.2				
Miami	260.3	269.3	274.4	277.5	284.0	286.1	305.3	392.3	338.2	343.5	345.5	353.2	354.7	366.8				
Minneapolis	269.0	275.3	282.4	285.0	289.4	300.2	309.4	331.2	341.6	346.6	348.5	361.1	362.7	366.0				
New Orleans	245.1	284.3	249.9	256.3	259.8	267.6	274.2	297.5	305.4	310.6	312.2	318.9	320.4	327.9				
New York	276.0	282.3	289.4	297.1	304.0	313.6	321.4	344.5	351.1	360.5	361.7	366.0	367.7	378.9				
Philadelphia	265.2	271.2	275.2	280.8	286.6	293.7	301.7	321.0	328.9	337.7	335.7	346.5	348.0	356.4				
Pittsburgh	251.8	258.2	263.8	267.0	271.1	275.0	293.8	311.0	316.9	321.6	323.3	327.2	328.7	338.1				
St. Louis	255.4	263.4	272.1	280.9	288.3	293.2	304.4	324.7	335.2	340.8	342.7	344.4	345.9	360.0				
San Francisco	343.3	352.4	365.4	368.6	386.0	390.8	402.9	441.1	455.4	466.9	468.6	465.1	466.8	480.7				
Seattle	252.5	260.6	266.6	268.9	275.0	283.5	292.2	317.8	325.4	335.1	336.9	341.8	343.3	347.1				

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.



**NEW I.B.E.W. OFFICE BUILDING** located in Atlanta adjacent to the city's Sports Stadium.  
Building owner: International Brotherhood Electrical Workers.  
Architects-Engineers : Stevens & Wilkinson, Atlanta  
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Window-wall Fabricator: Southern GF Company, Atlanta

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Striking color accent was achieved for Atlanta's new I.B.E.W. Building with AllianceWall porcelain-on-steel insulated panels. Specifically selected were AllianceWall earthen tone, matte finish, Terra Cal colors which combined perfectly with the pre-cast concrete to create a structure of unusual beauty and durability.

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**INNOVATION IN DESIGN.** One of a series created for DAP Architectural Sealants. Design and rendering by Richard P. Howard Associates, Architectural Illustrators, Sylvania, Ohio. Harold R. Roe, A.I.A.

# adaptability

The real test of any sealant is its ability to stay on the job—and up to the job—in spite of omissions and errors in joint preparation. DAP one-part Acrylic terpolymer Sealant is designed specifically to achieve design adhesion in hard-to-reach joints where application instructions may be slighted. It resists hardening, shrugs off the effects of wind and weather. It reseals itself, thus adding a dimension in protection beyond the scope of elastomerics. For condensed catalog on this and other outstanding DAP architectural sealants, please write: DAP Inc., General Offices: Dayton, Ohio 45401. Subsidiary of *Plough, Inc.*

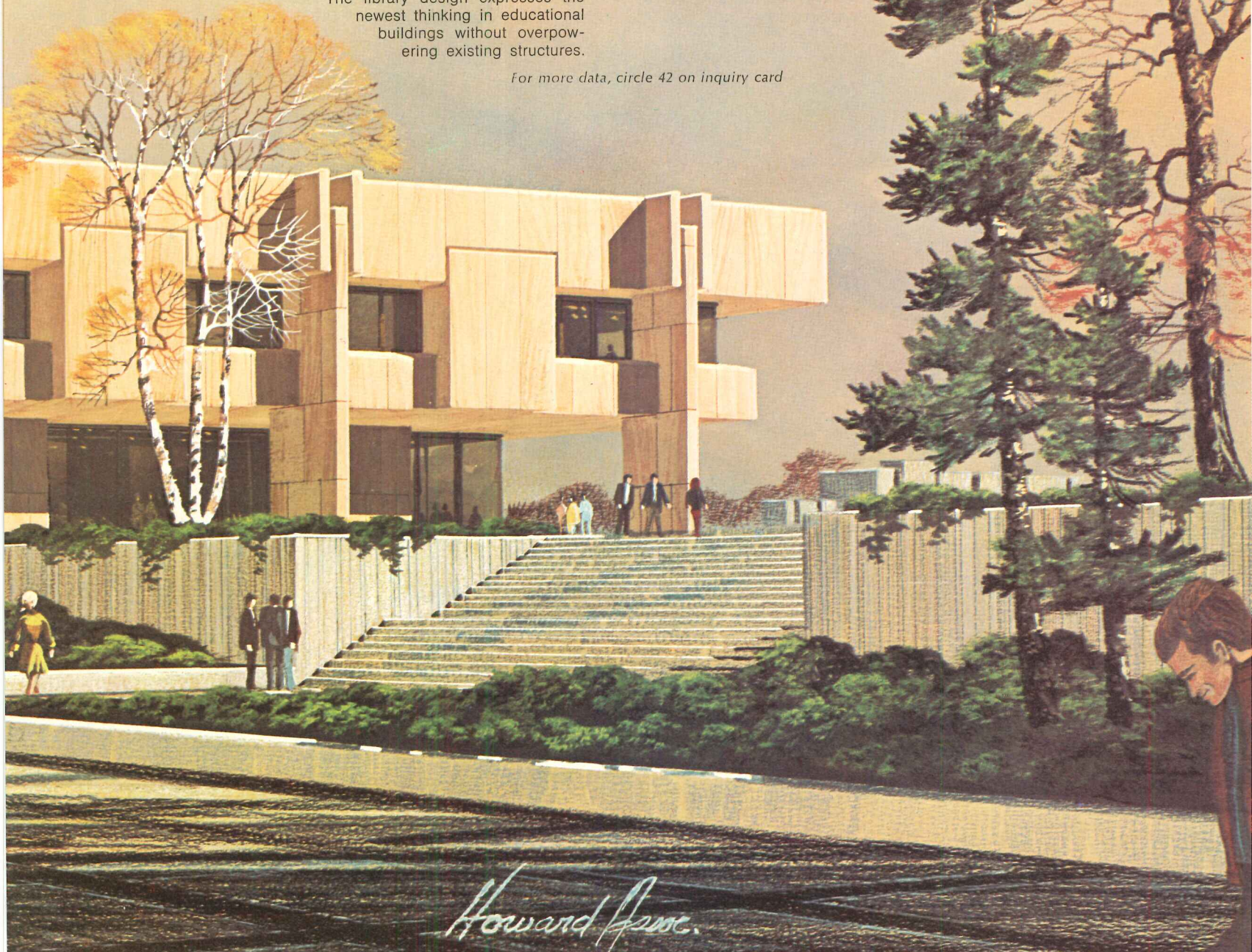
**DESIGN CONCEPT.** This university library, a simple statement executed in sandstone, becomes the center of an academic area by offering access from neighboring facilities on two separate levels. The library design expresses the newest thinking in educational buildings without overpowering existing structures.

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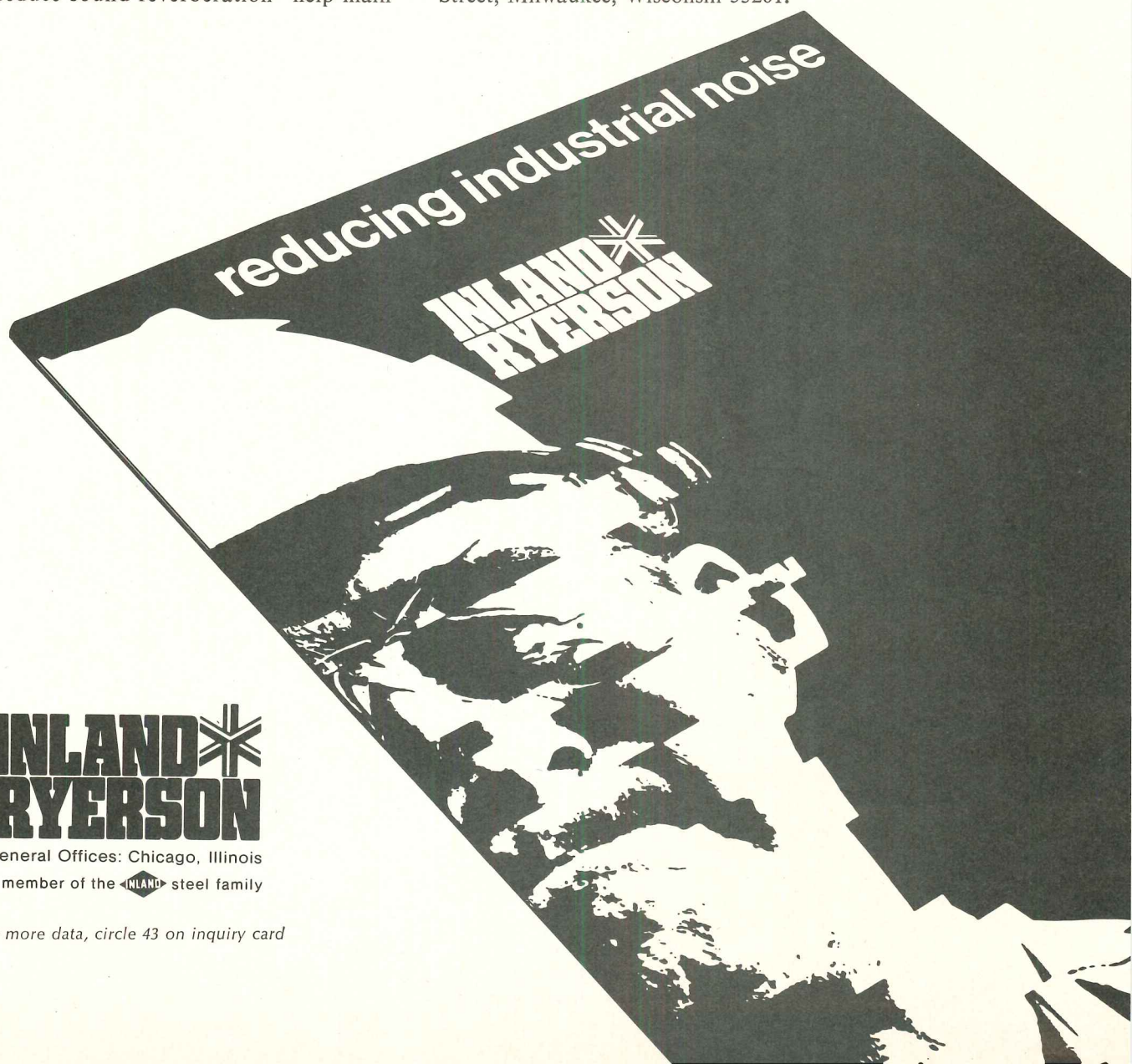
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Noise pollution is not new. But it's getting worse. Particularly in industrial plants, too many decibels can be a threat to employee efficiency, morale, even health—and therefore to profits. Furthermore, recent amendments to the Walsh-Healey Acts set rigid standards for plants handling federal contracts.


Because of this widespread concern, we've studied noise pollution from all sides. And we've learned plenty. We can show you how our Inryco® Acoustideck® and Acoustiwall™ can absorb unwanted noise—greatly reduce sound reverberation—help main-

tain desired decibel levels in a new plant . . . economically.

We've put some basics about controlling decibels into a booklet, which is yours for the asking. Write today for "Reducing Industrial Noise," Catalog 23-8. For information on Acoustideck and Acoustiwall ask for Catalog 23-1, "Inryco Roof Systems" and Catalog 22-1, "Inryco Wall Systems" (Sweet's Architectural File, Section 7). Write Inland-Ryerson Construction Products Company, Dept. H, 4033 West Burnham Street, Milwaukee, Wisconsin 53201.



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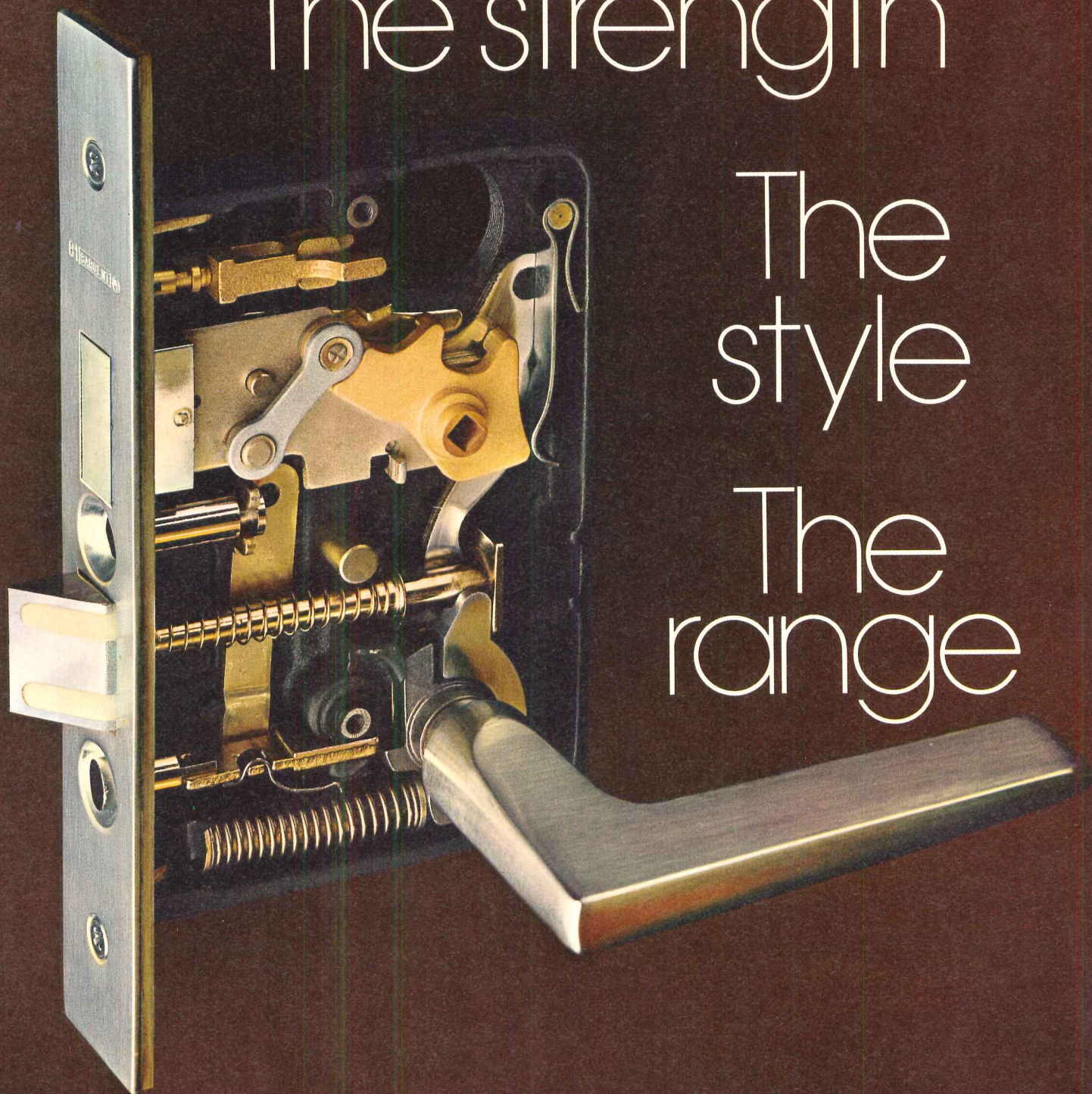
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The looks, the lines of Sargent locksets speak for themselves. The high-styled trim, the handsome hardware finishes. □ Now look deeper for the inside Sargent quality. We give you the works that last . . . and out-last. □ And Sargent provides the range of locks and latches to accommodate any door requirement, in any value range. □ Sargent locks and latches . . . well worth another look.

# The strength

# The style

# The range



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A complete line of advanced architectural hardware, including the Sargent Maximum Security System  
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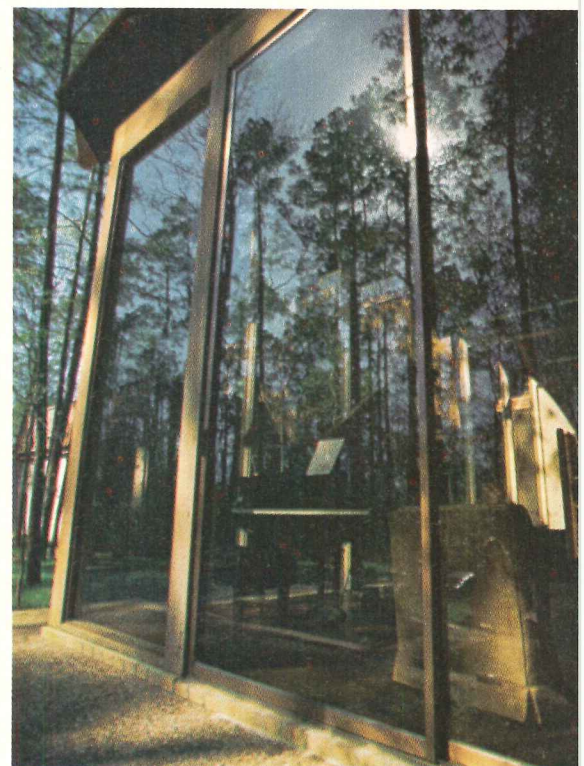
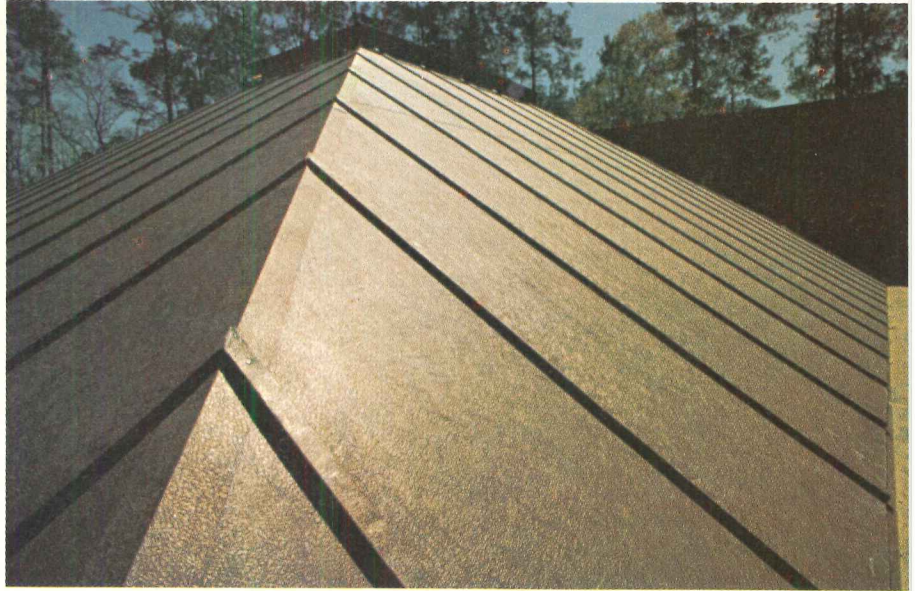
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# Copper sheet. Obviously beautiful.

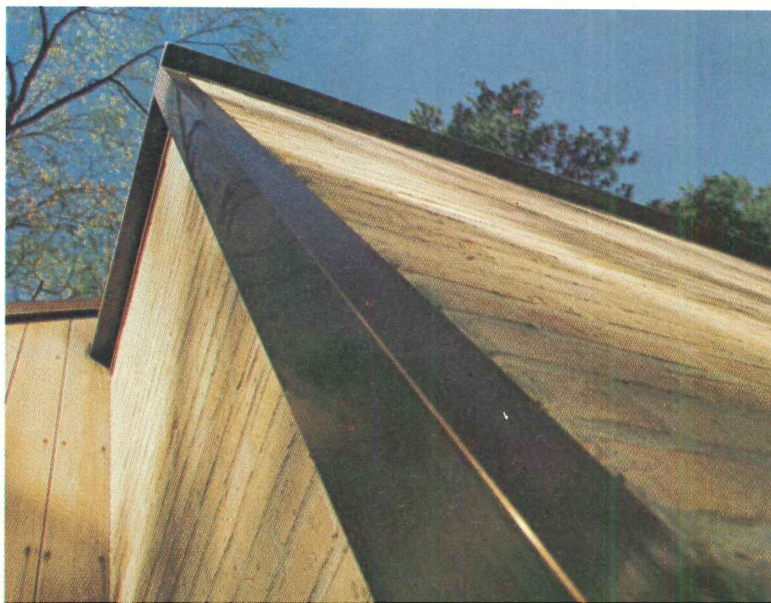
Here are some economical uses for copper that may surprise you. Using standard sheet copper. Available now. Every bank, restaurant, hotel, office building, house of worship and residence can be made more attractive and elegant with the quality features of copper. Feast your eyes.

**New copper/roofing system** (right). Large copper sheets bonded to plywood. Quick, easy to apply. Needs no special tools. **Clear film-finished copper roof** (below). Copper sheet laid over plywood deck in a vaulted design. Secured with hidden clips. Factory coated to preserve natural color.

**Bronze sliding glass doors, windows** (below right). Brings the outdoors indoors. Beautifully framed in roll-formed bronze, a rich looking copper alloy. Quiet elegance that lasts.



**Copper leaders that are an integral part of the design** (right). Copper's resistance to corrosion especially valuable here. Painting eliminated. Weathers naturally to a russet brown. **Copper vent hoods** (far right). Long-lasting, good-looking. New high-strength and economical copper strip is perfect.





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**Bronze floor tiles** (left). Pebble textured bronze on copper sheet applied directly to concrete or plywood. Needs only minimum care. Foot traffic adds varied highlights of muted gold tones.



**Copper-accented entrance** (above). Stamped copper rosettes with a patina finish. Easily applied. **Copper-clad ceiling** (left). Chemically etched ultra-thin sheets of copper and brass in a kaleidoscope of tone and color. Every pattern unique. For walls, counters too. For details on these—or any other architectural uses for copper, brass and bronze—just write us.

Copper Development Association Inc.  
405 Lexington Ave., New York, N.Y. 10017

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**Copper gutters and flat roofing** (above). Corrosion-resistant copper is as functional as it is beautiful. Highlights quality.



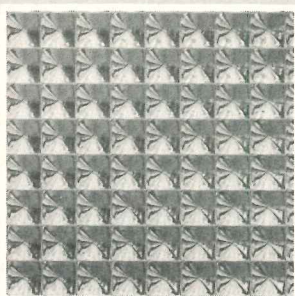
# The New KSH-19 Lighting Panel is NOT Revolutionary

(but it's just about everything else a panel can be!)

Most important—it proves again that anyone who still thinks injection molding is the only way to produce top quality lighting panels . . . is way behind! Yes. KSH has proved it again!

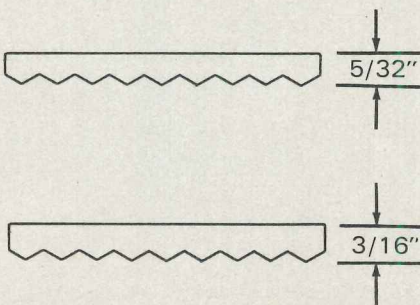
**KSH-19 is extruded. And it will equal or excel the performance of any injection molded panel of similar design. WE GUARANTEE IT. YOU CAN SPECIFY IT WITH CONFIDENCE. Now, check the features:**

## MALE CONICAL PRISMS

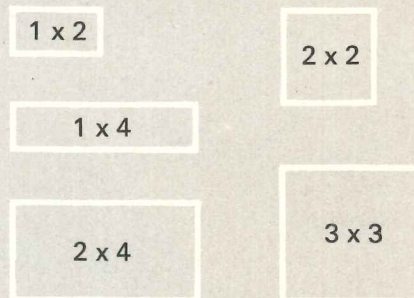


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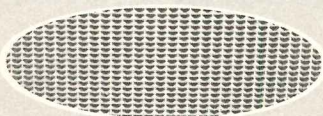
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## COLORS

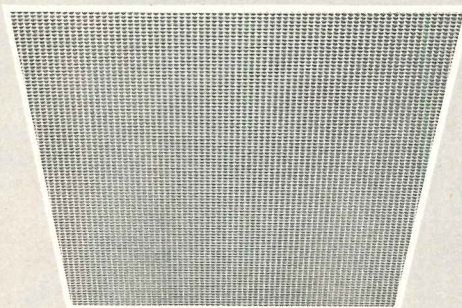


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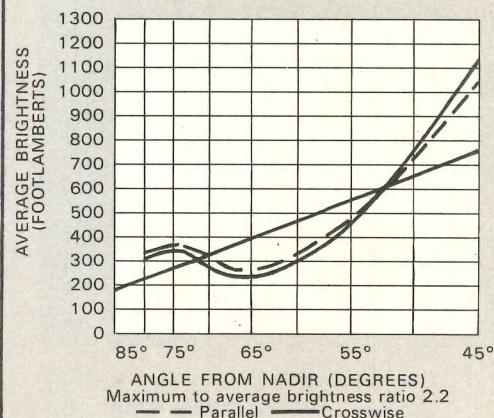
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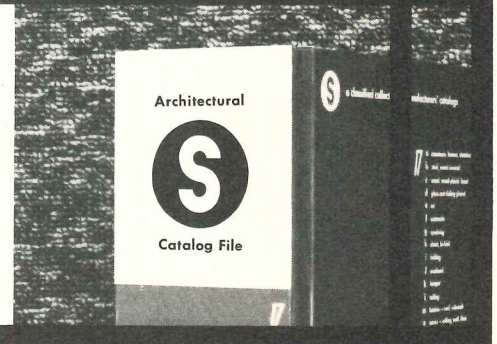
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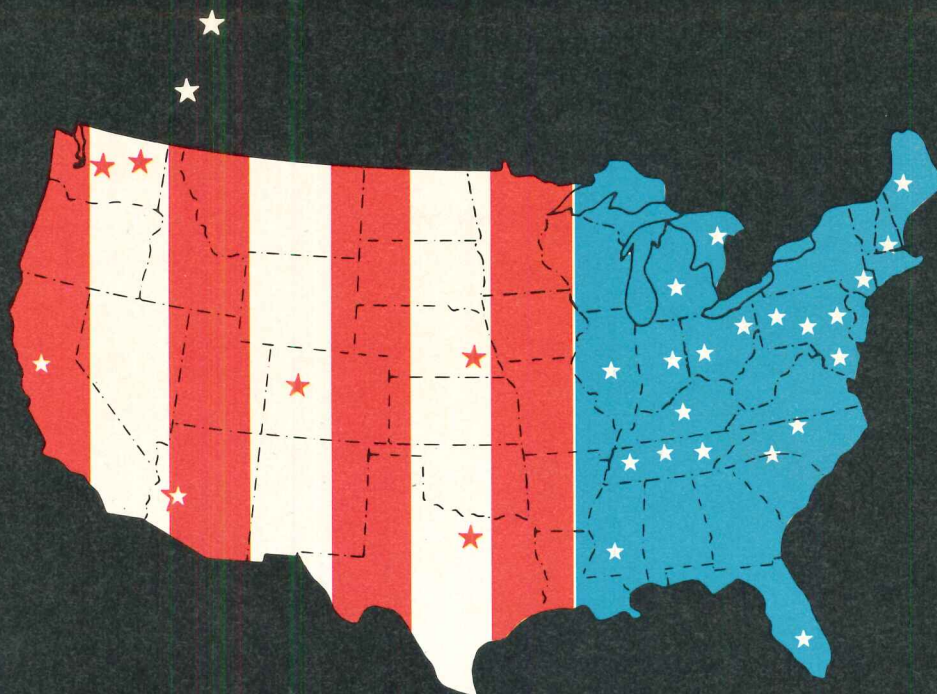


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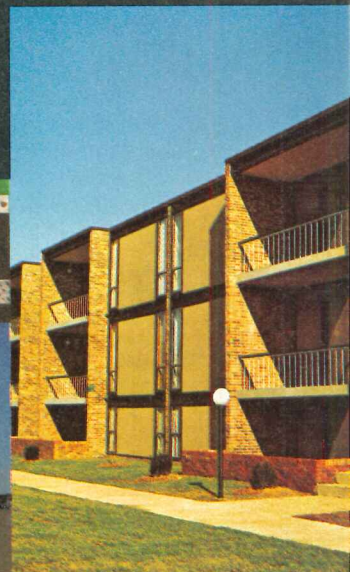
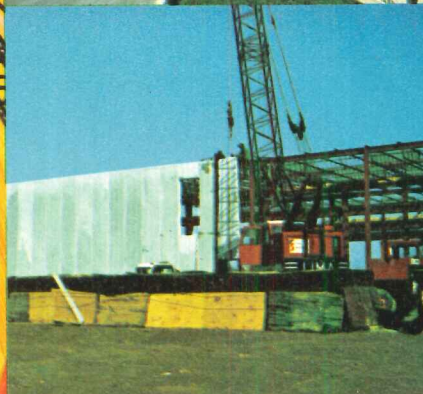
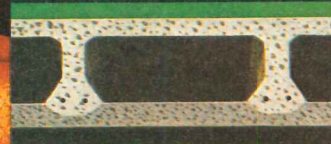
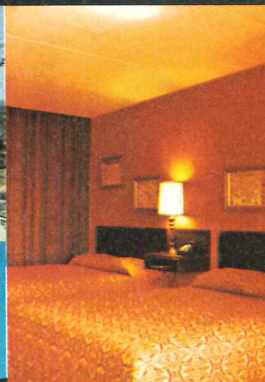
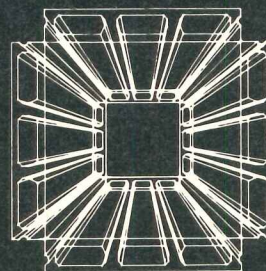
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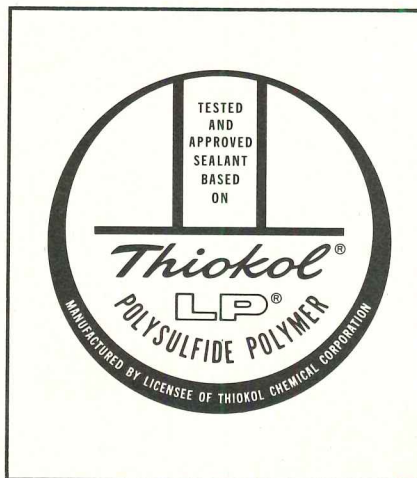
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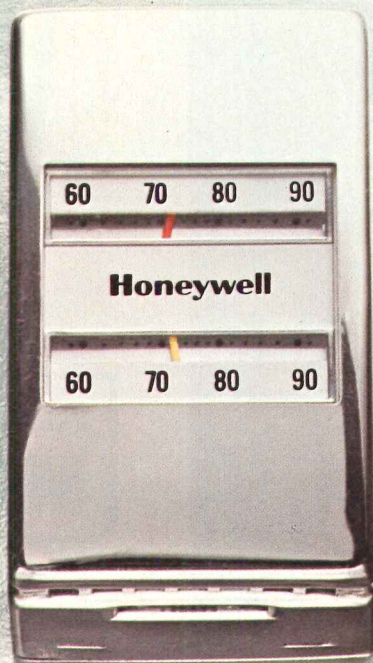
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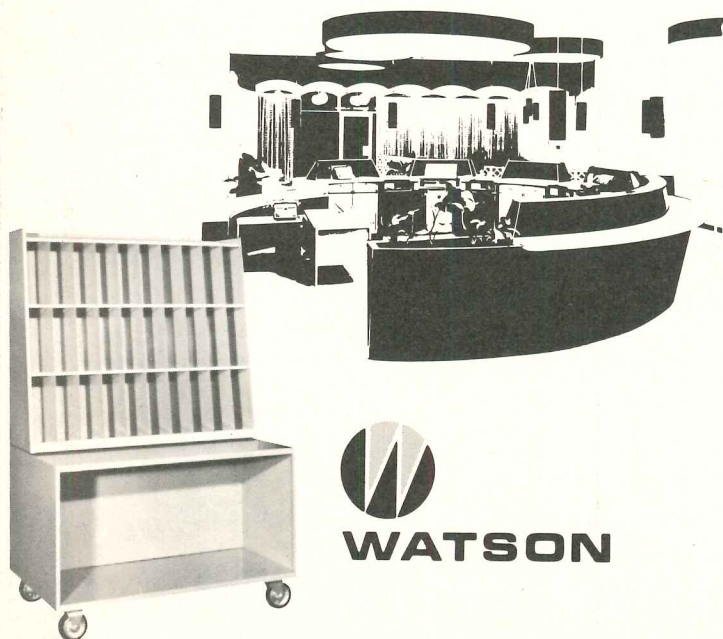
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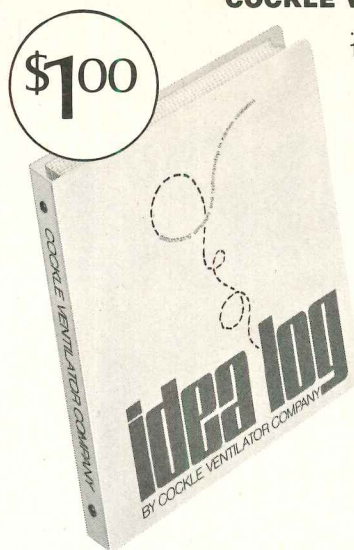
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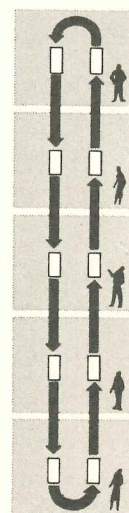
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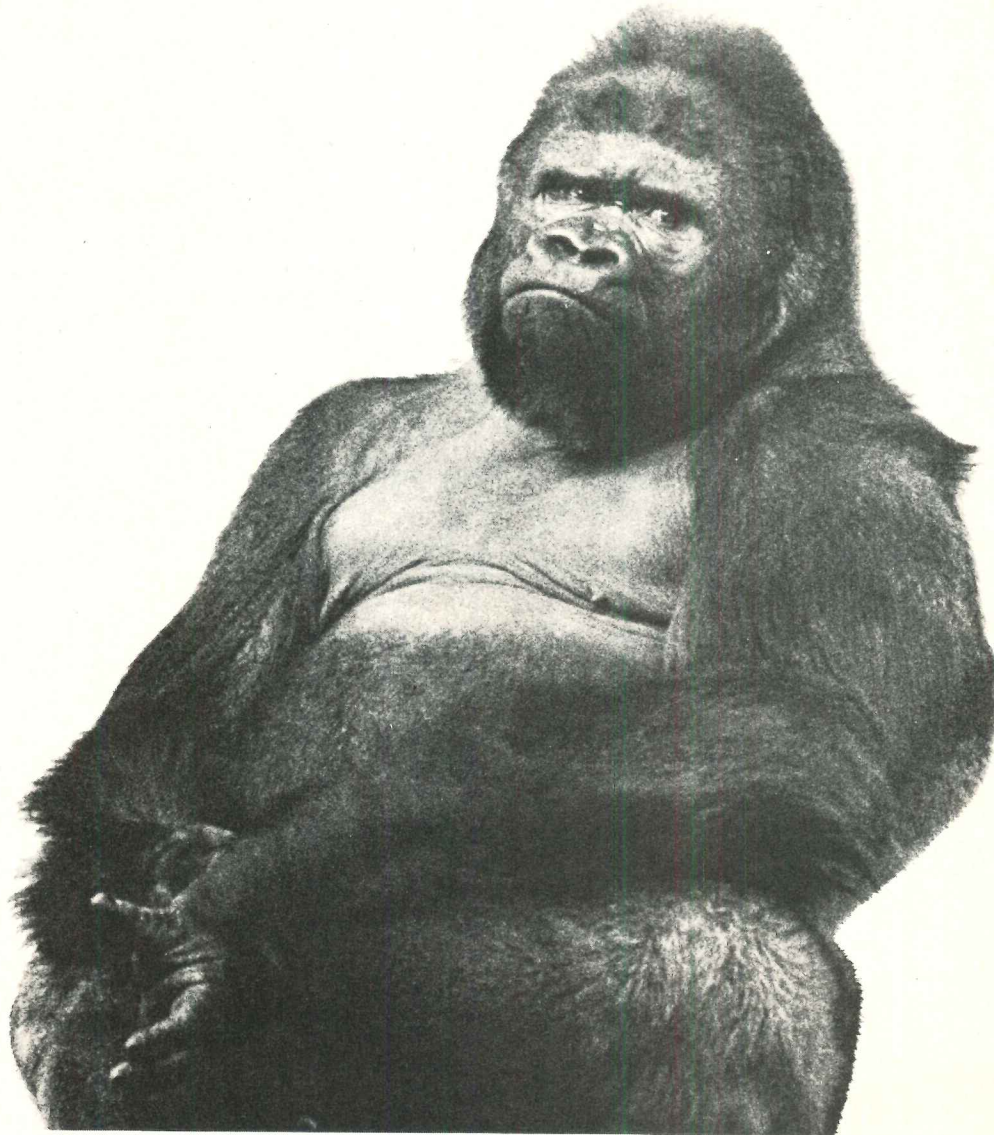
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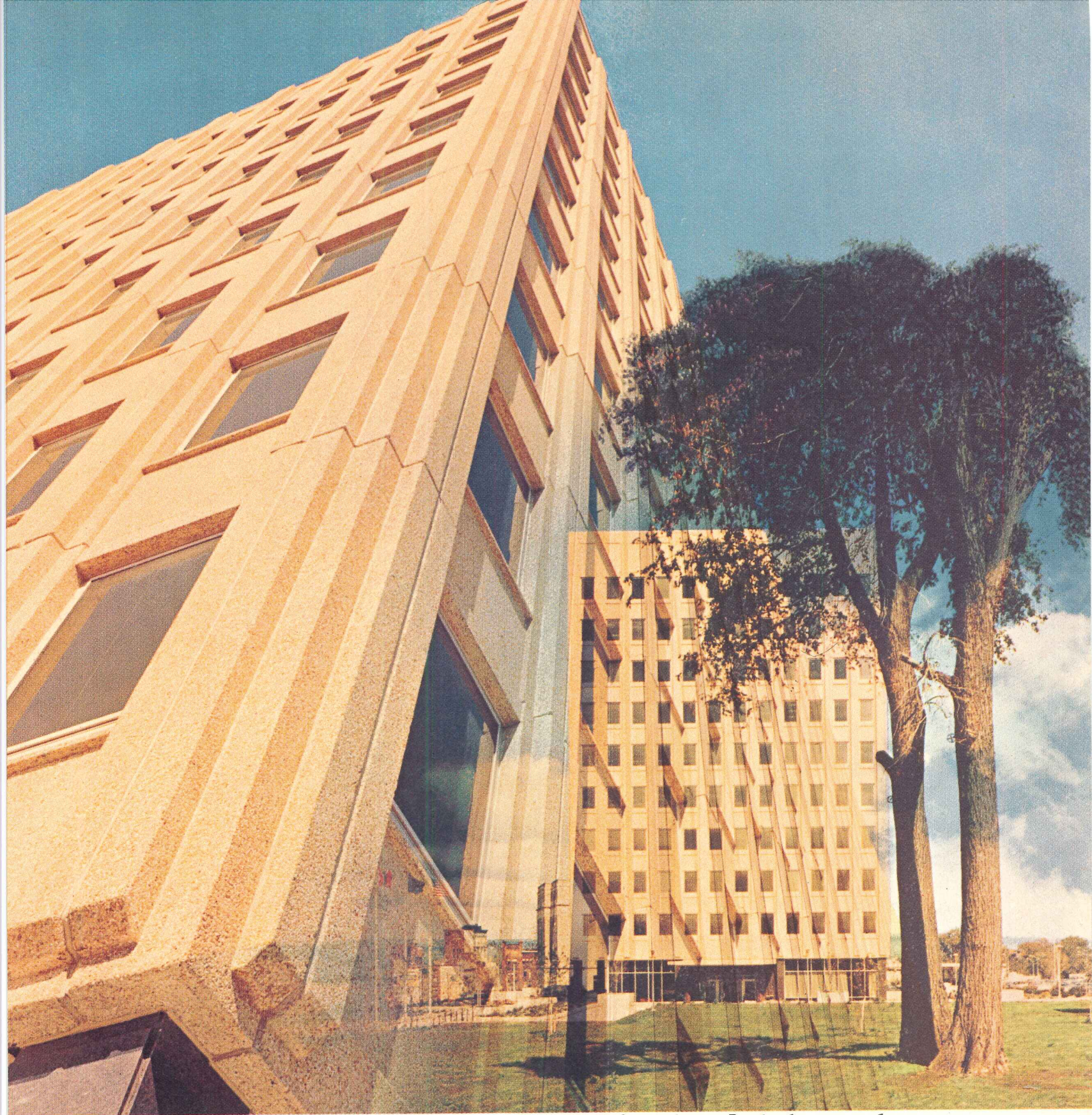
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Over 500 concrete precast double window units were used in this soaring 10-story Oneida County Office Building in Utica, N. Y. Each unit exceeded 15' x 12' and weighed 11 tons. Erection, completed in eleven weeks, was accomplished by large truck-mounted cranes rather than a tower crane. An underground garage extending outside of the building lines complicated the reaches involved to erect the large panels. ATLAS White Cement and Amberlite aggregate are featured in these precast panels. Architect: Edmund J. Booth, A.I.A., Utica, N.Y. General Contractor: Vincent J. Smith, Johnson City, N.Y. Precast panel manufacturer: Winkrete Precast Corp., Syracuse, N.Y. ATLAS White is only one of the many cements produced by the Universal Atlas Cement Division of U.S. Steel.

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Joseph W. Molitor photos

## A COUNTY GOVERNMENT CENTER BY PAUL RUDOLPH

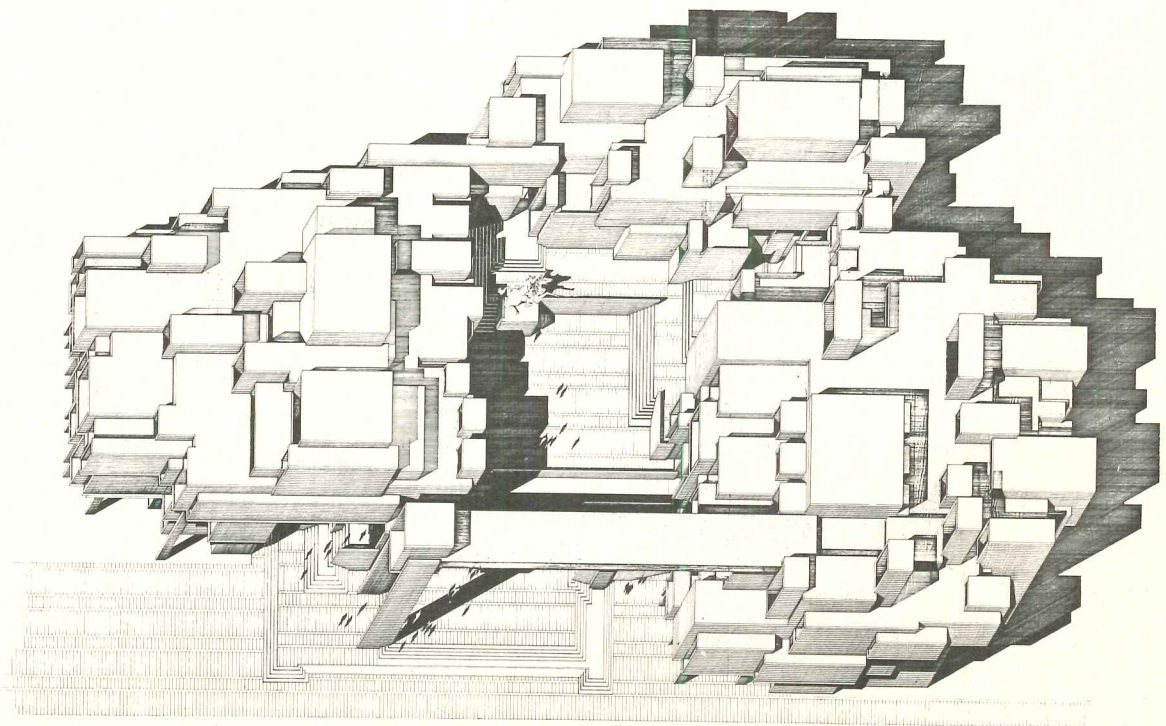
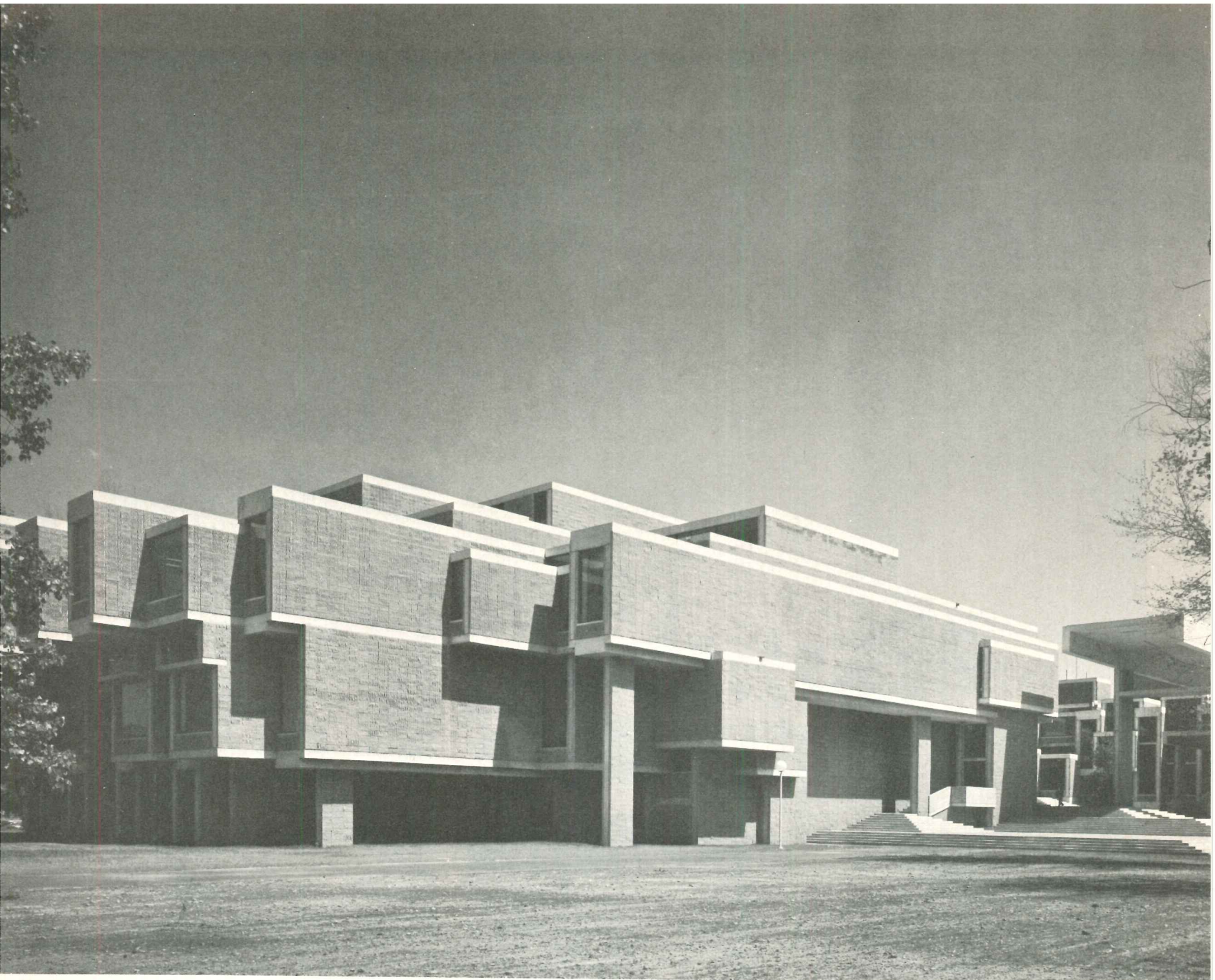
At first glance the Orange County Government Center in Goshen, New York looks improvised, random, almost capricious. Monumental, as befits a building from which law and order is dispensed, it is at the same time oddly picturesque in a rugged, earnest way. Viewed from any angle it disdains elegance and if one squints it takes on the appearance of a rough clay model which has mysteriously arrived at full size.

Almost all of Paul Rudolph's buildings of recent years can be described in this way, yet all of them, including this one are in fact not improvised at all. Typically this latest major building is close in spirit and form to the works of Le Corbusier's last years and reveals an under-

standing of the buildings of Frank Lloyd Wright which far exceeds that of Wright's more literal-minded disciples. Like all of Rudolph's buildings it is based upon a carefully worked out system of intersecting and parallel surfaces and planes.

Rudolph is under no compulsion to achieve the appearance of structural clarity, which he considers a naive aim and a pitiful remnant of twentieth century architecture's still lingering "commitment to an enfeebling, narrow interpretation of functionalism." Nonetheless, this courthouse has clarity of another kind. It is superbly organized within a complex spatial order which the drawings and photographs on the following pages reveal.

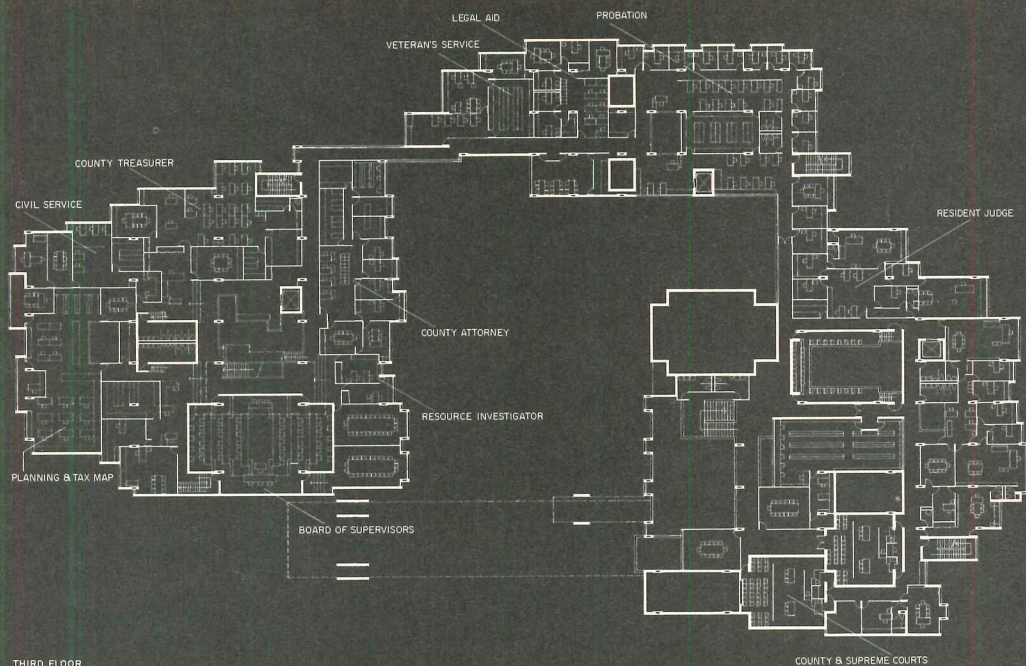
—Mildred F. Schmertz



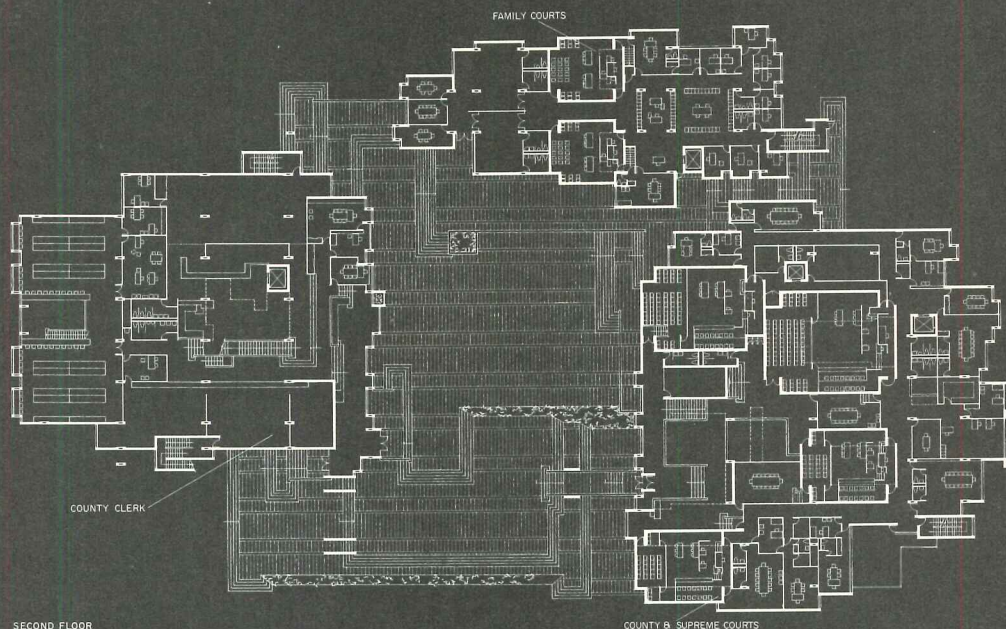


The complex program for the Orange County Government Center called for many specific interior spaces, such as separate courtrooms for adults and juveniles. It included assembly spaces for the local government, spaces for the issuing of licenses, fixed and rather special offices for various types of government officials including judges and clerical assistants, and storage of records.

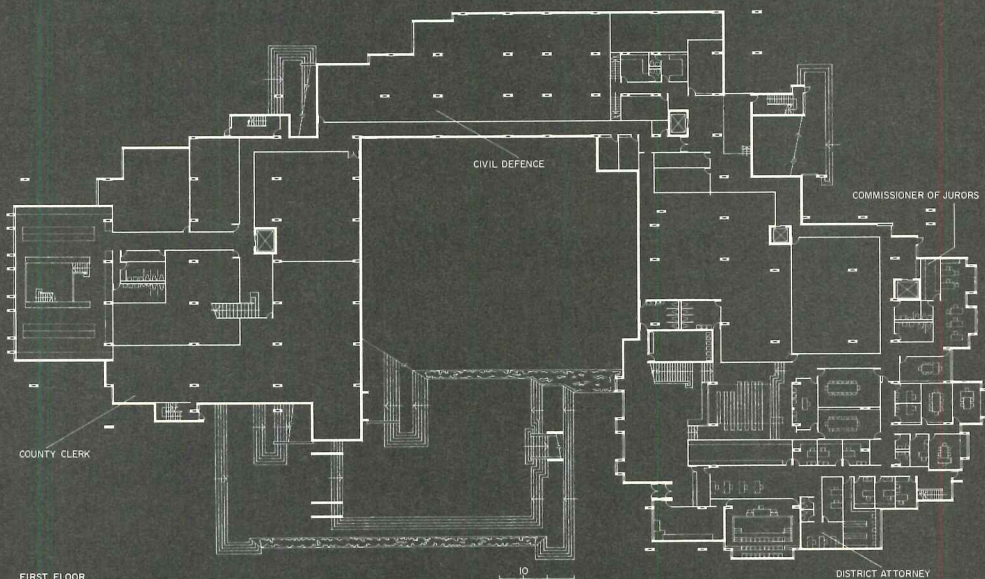
Rudolph's solution to this program divides the building into three areas, one for the adult courts, one for the juvenile courts, and one for the government assembly and licensing facilities. These three areas are clearly articulated as such, but are closely grouped around a court. As the drawing (left) indicates, light enters through an elaborate series of clerestories made possible by the higher ceiling heights for the more important rooms.



THIRD FLOOR

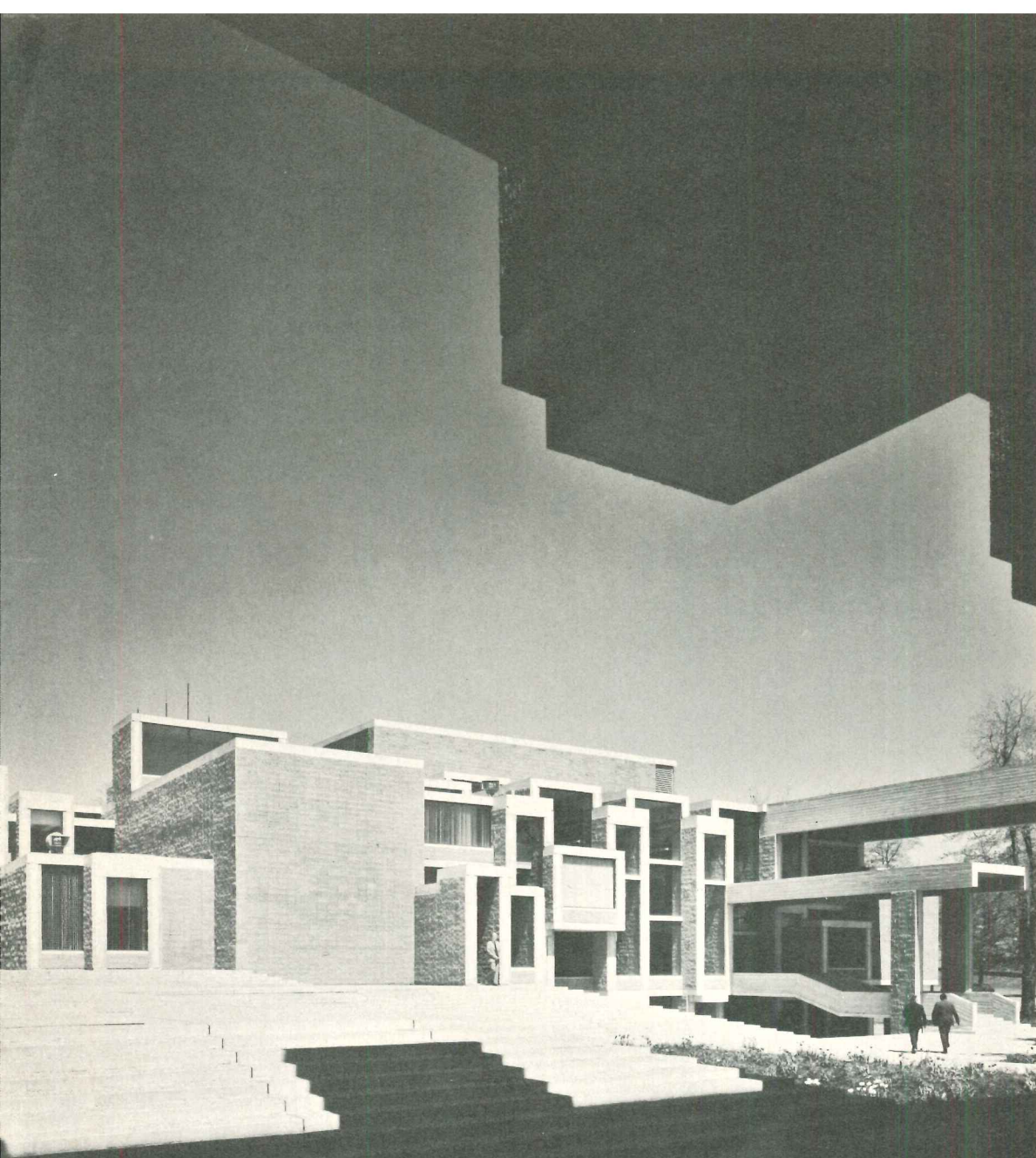


SECOND FLOOR



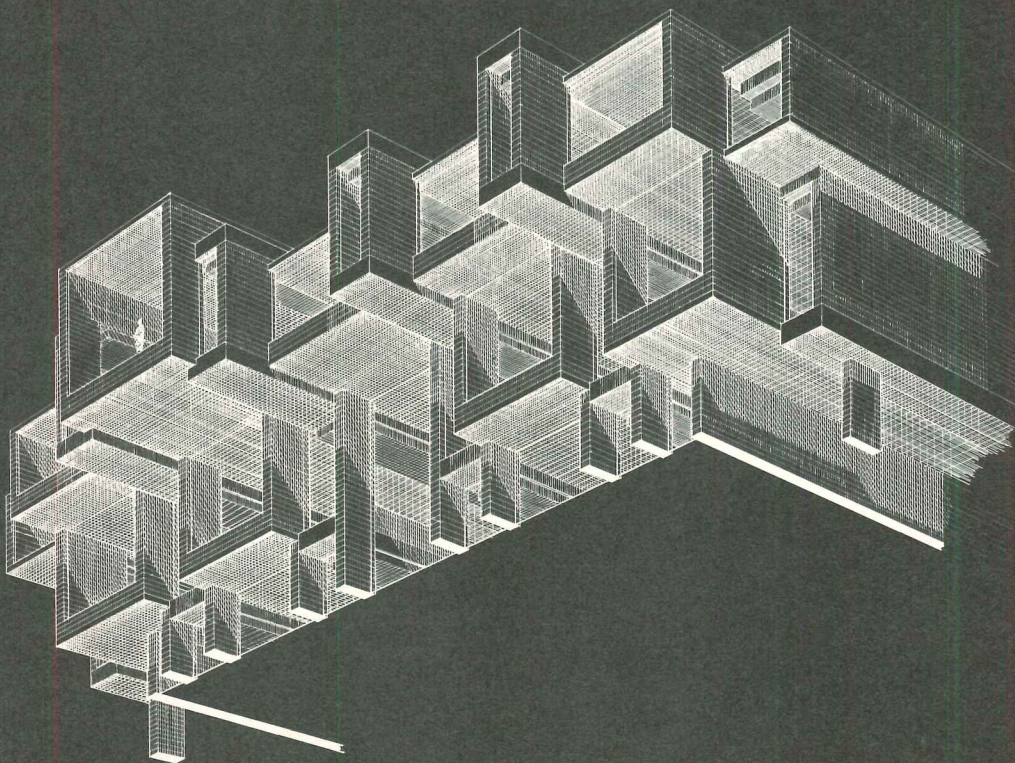
FIRST FLOOR

COUNTY GOVERNMENT CENTER  
BY PAUL RUDOLPH

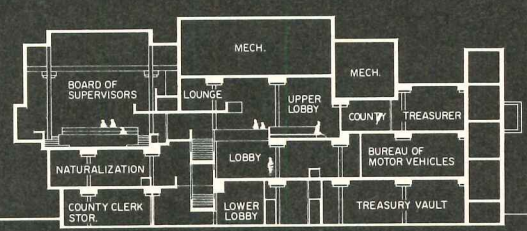
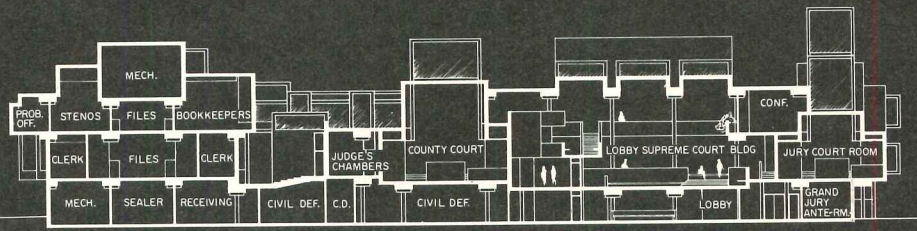
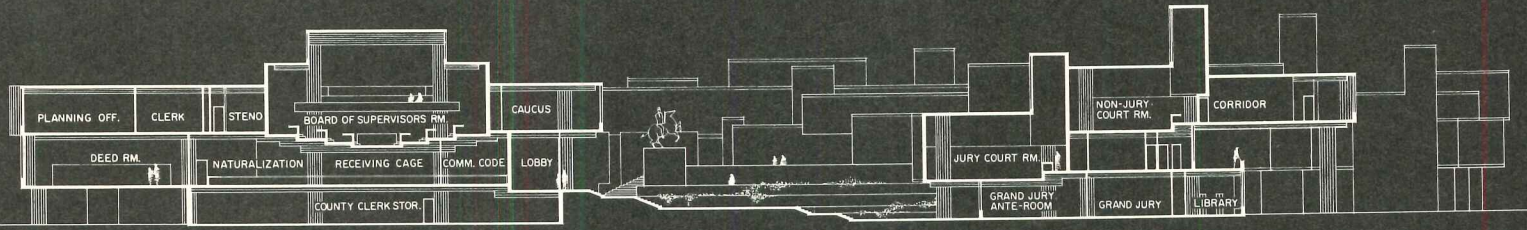


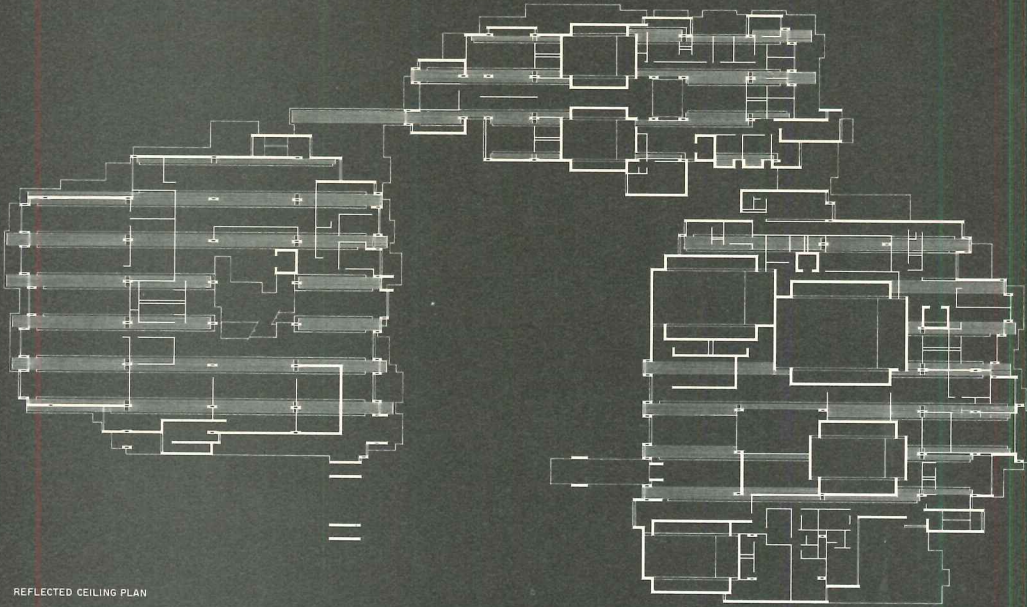
From the exterior one senses the basic tensions of the interior spaces as they oppose and balance each other. The fragmented scale which these juxtaposed forms create is appropriate to the building's surroundings which are small in scale as the photograph of Goshen's main street (above) indicates. The building itself is set in a small park and is surrounded by small houses.

The courtyard (above left) serves as the focal point for the building since most employees and visitors enter their respective wings from this area. It is also accessible to the off-street parking facilities and to pedestrians entering from the adjoining streets. As can be seen in the sections, the courtyard occupies the highest rise of the site, about six feet above the surrounding land. Thus elevated, it gives the complex a monumental character.









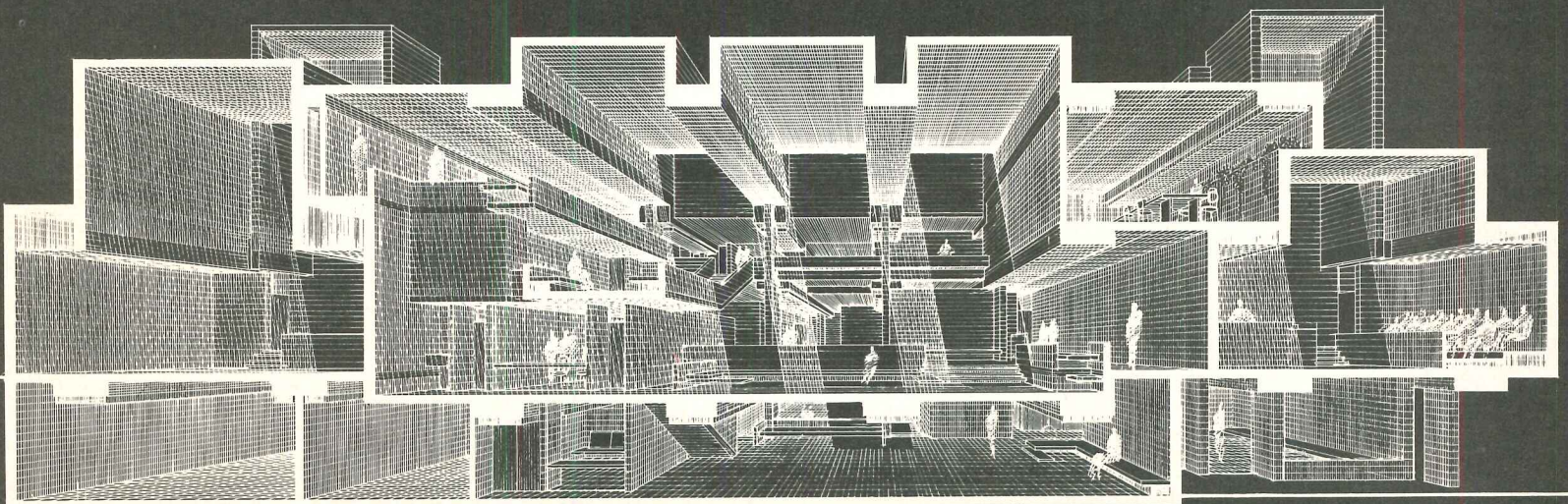
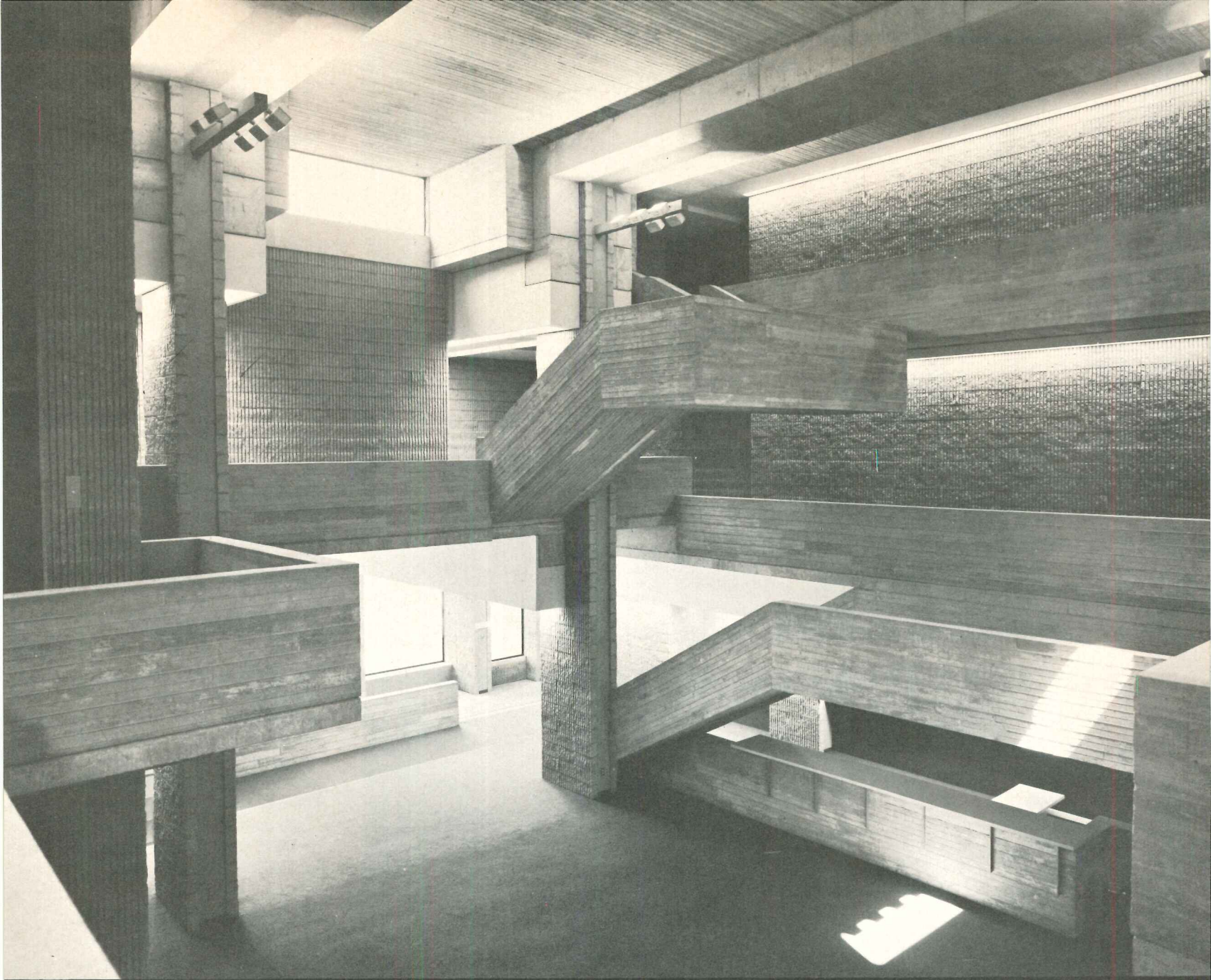
REFLECTED CEILING PLAN



The interior spaces thrust upward, diagonally and horizontally. The enclosed volume of one room often penetrates the adjacent room giving what Rudolph calls a "sense of implied space," which he attributes to Mies van der Rohe. In Mies' buildings the implied space flows over and around freestanding interior walls, but so does the transmission of sound. Because acoustical privacy is essential in this county courthouse, Rudolph's task was more complex.

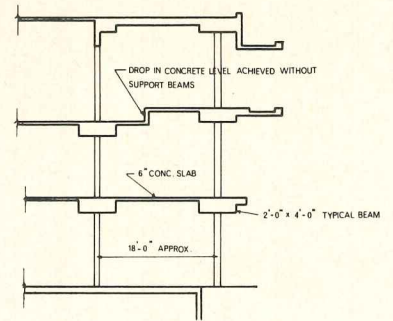
Each volume as the reflected ceiling plan (left) and the drawings on the preceding pages indicate, has its own principal axis which meets the principal axes of adjoining spaces at a 90-degree angle. Most of the volumes are defined by two continuous solid walls on either side of the major axis, with a wall of glass and a wall of entry or storage on opposite sides of the minor axis. Sizes of the volumes were determined by the various room functions.

While the photographs and section on these pages reveal interiors of great spatial complexity it can be seen that they are assembled within a structural and mechanical framework of simplicity. The column spacing is regular and both the air-conditioning ducts and light fixtures are in the structural module, under the beams.

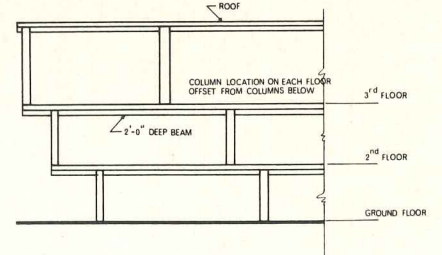




COUNTY GOVERNMENT CENTER  
BY PAUL RUDOLPH



TYPICAL SECTION



TYPICAL END OF BUILDING

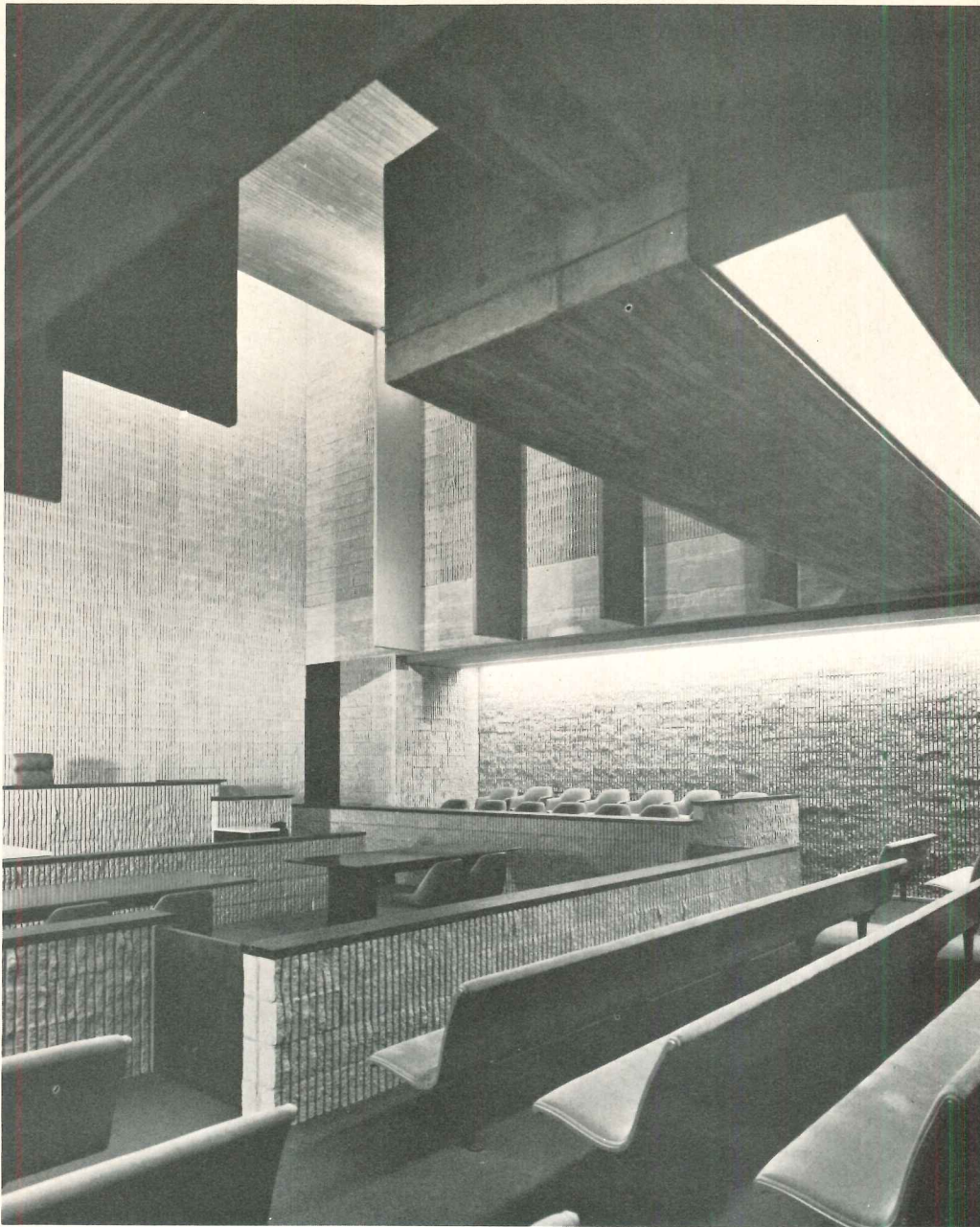


The courtrooms, designed as symbolic space, attest to Rudolph's great skill in handling spaces which are not strictly functional—one mark of a good architect. The courthouse wing has been designed so that the facilities that administer to the greatest number of people are located on the lower floors.

The structural system as described by Lev Zetlin Associates, Inc., the structural engineers, is comprised of parallel beams five feet wide and two feet deep that are placed 18 feet apart and span 40 to 50 feet. The beams frame slabs that are six to eight inches thick. The natural ability of concrete to develop moment capacity or frame action is utilized by framing beams and slabs which are not placed at the same elevation or in the same plane. Beams span between adjacent columns of varying elevations, and slabs spanning between these beams change direction up to four times. By using the natural plasticity of concrete, in which surfaces are bent, shaped and generally arranged, floors in one area become walls and then ceilings in adjacent areas. The exposed concrete areas were formed of two inch tongue-and-groove form boards used for slabs, with a plastic-coated plywood form used for all beam sides and soffits.



COUNTY GOVERNMENT CENTER  
BY PAUL RUDOLPH



**Interior finishes** are simple and consist of exposed concrete and split-rib concrete block. Total cost of the building was a little over \$5.8 million, or \$34.85 per square foot.

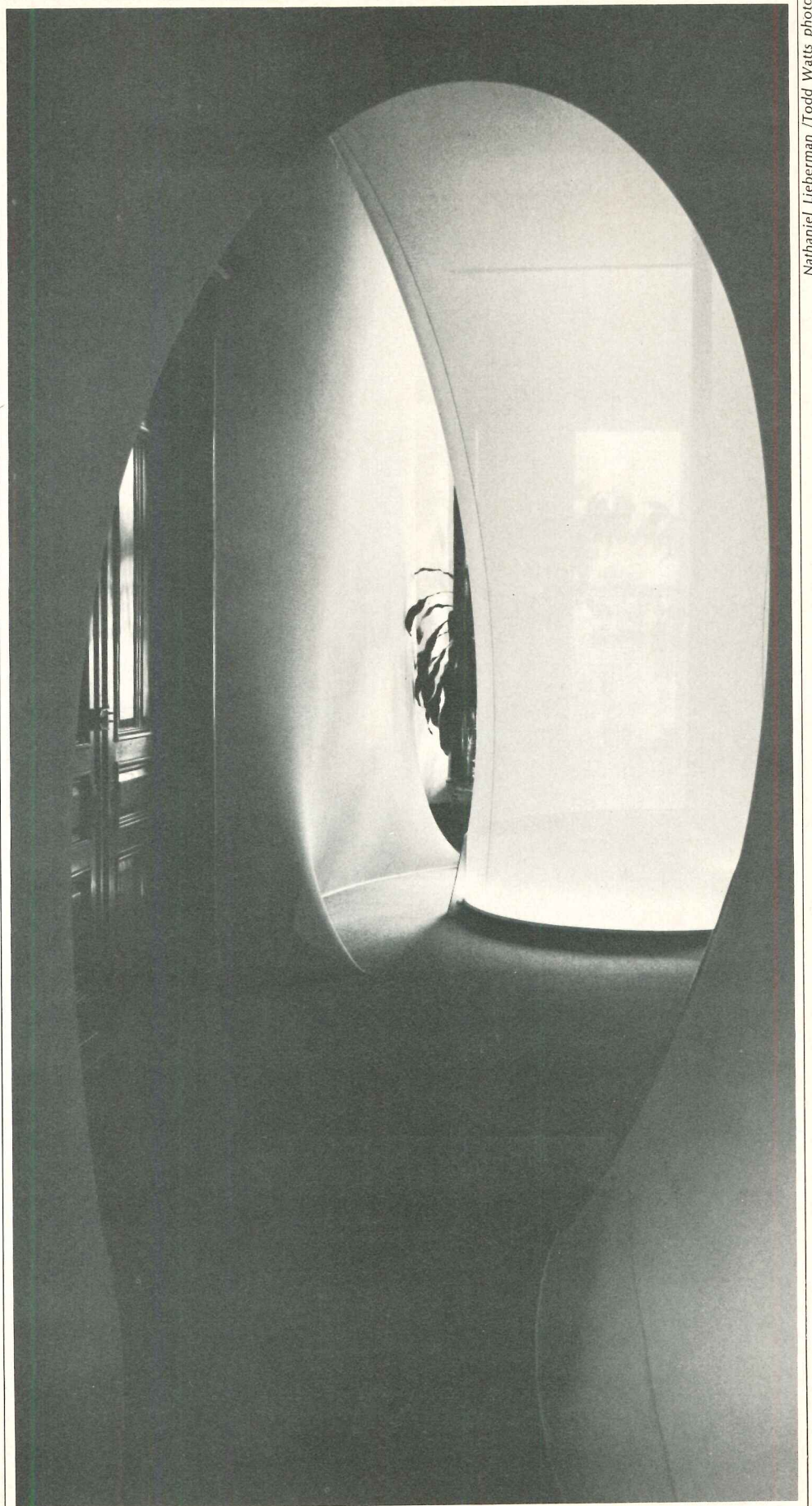
The largest of the courtrooms seats 125 spectators, the smallest 24. Adjacent to the courtrooms are the judges' chambers and offices for resident judges.

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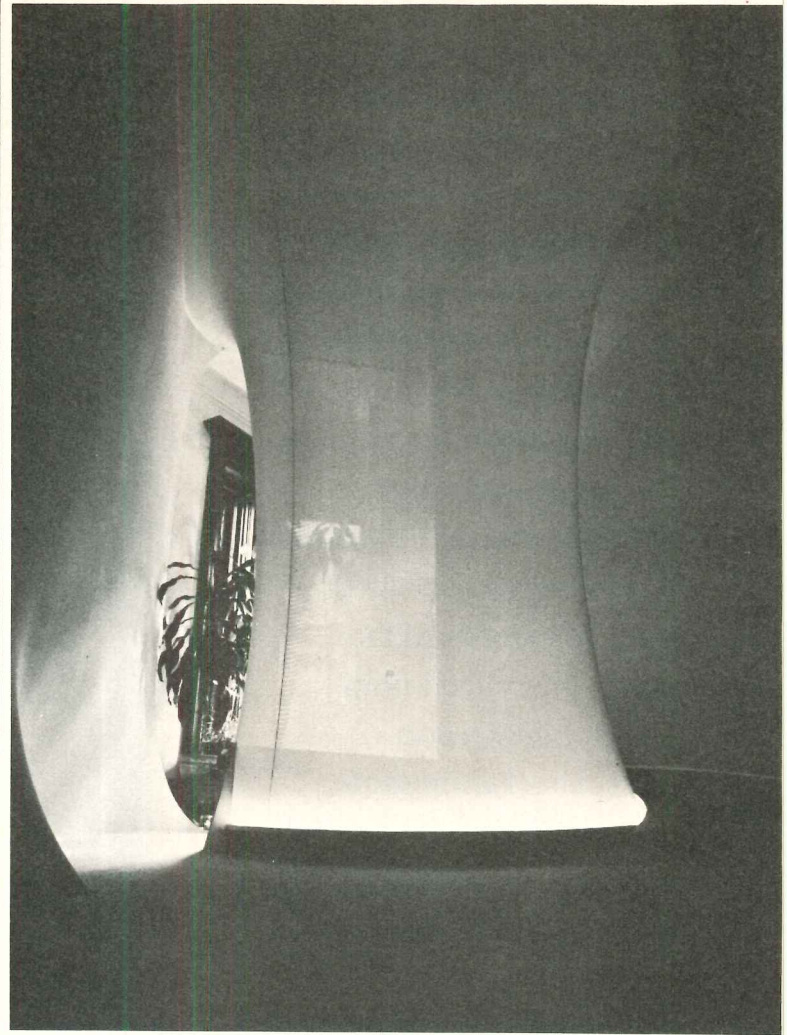
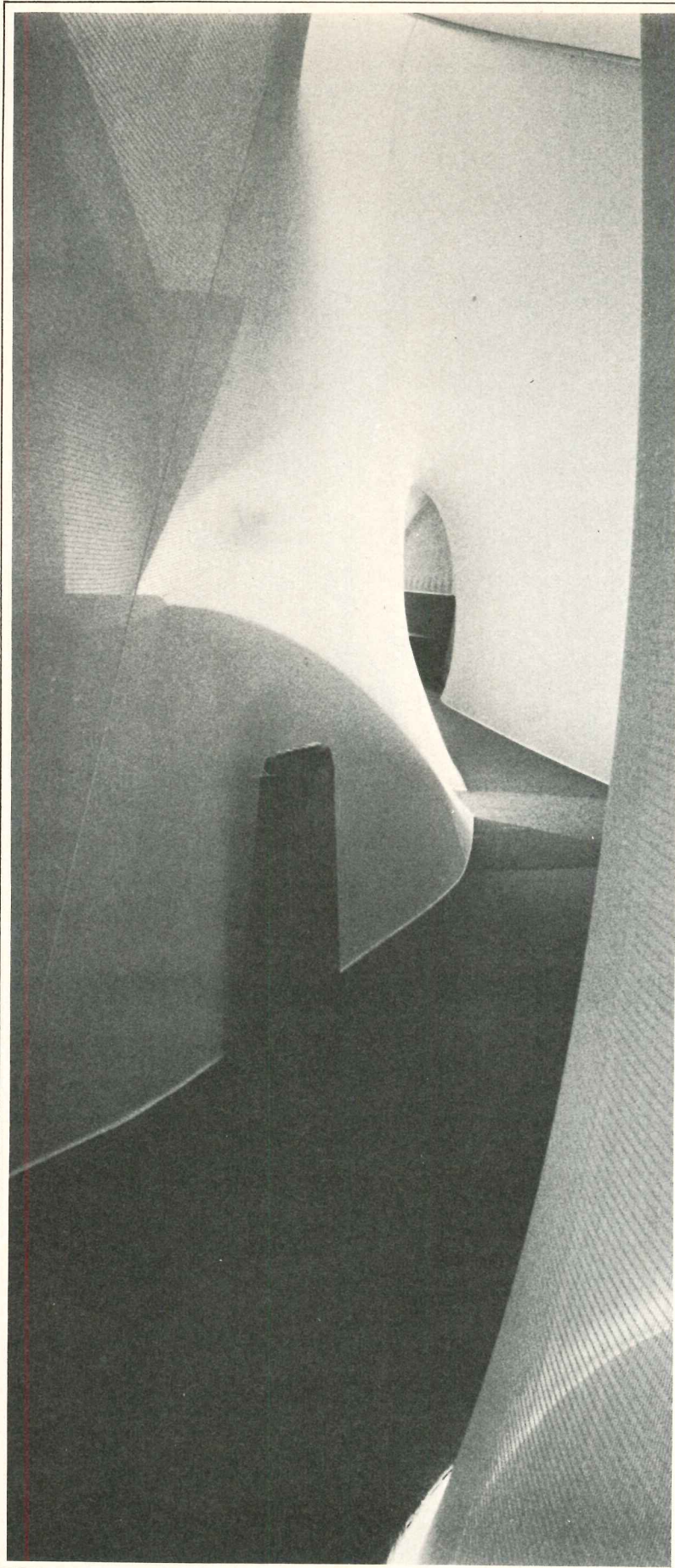
ORANGE COUNTY GOVERNMENT CENTER, Goshen, New York. Owner: County of Orange. Architect: Paul Rudolph—project architects: William Bedford and James Brown; structural engineers: Lev Zetlin Associates, Inc.; foundation or soils engineers: Orange County Highway Department; mechanical and electrical engineers: Caretsky & Associates; acoustical consultants: Cambridge Acoustical Consultants; general contractor: Corbeau-Newman Construction Corporation; principal subcontractors: mechanical—D'Onofrio & Jatkoff; electrical—Raffa Electric Company; plumbing—H. H. Braun.

# 6 INTERIORS

Not too many years ago, the phrase "architectural interiors" could mean little else than four Barcelona chairs and a glass-topped coffee table set precisely into a pristine room. The six projects which follow indicate that such is not true today. The focus, for instance, on architectural matters at the recent NEOCON meeting in Chicago (see page 38 for a report), is an index of the growing interrelationship of interior design and architecture. Furthermore, many offices are now deeply involved in renovation with its heavy emphasis on interior architecture. The question becomes not who is doing what but how well it is being done. Not every person capable of producing such work is an architect, of course, but the standards are high. One such is sculptress Aleksandra Kasuba, whose New York City apartment, (right), not only presents new and dynamic concepts of interior space, but is realized with extraordinary attention to detail. As the next two pages make clear, it is certainly "interior architecture."—James D. Morgan



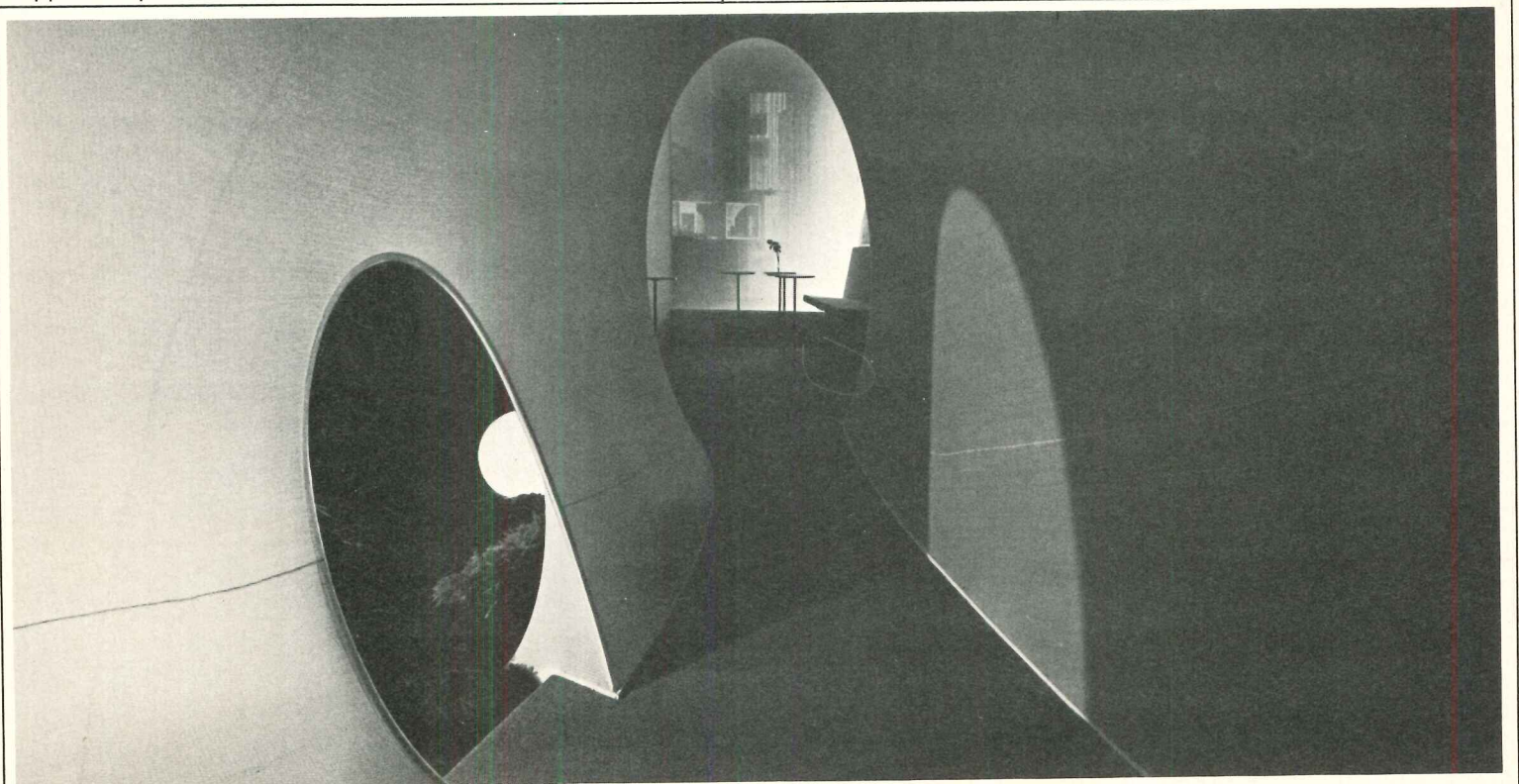
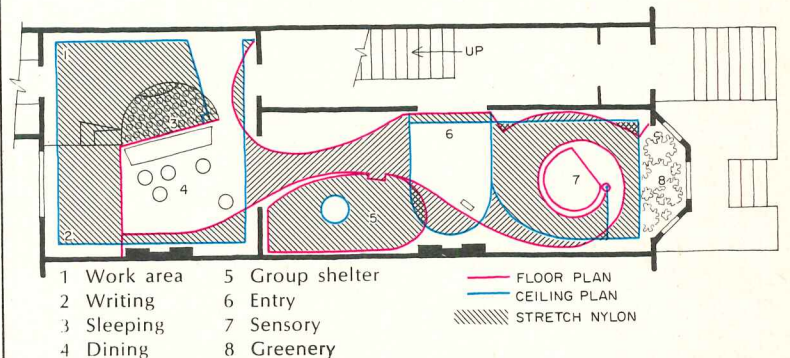
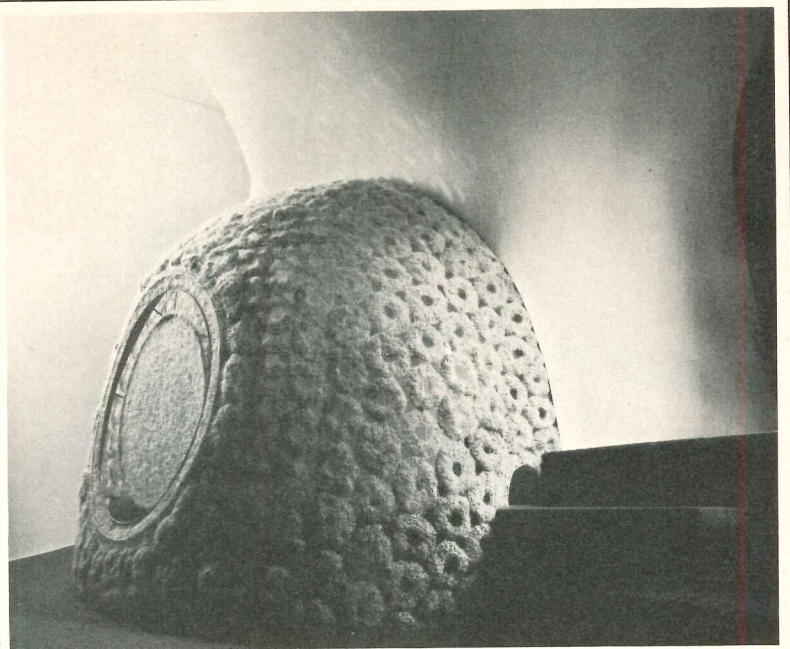
Nathaniel Lieberman / Todd Watts photos



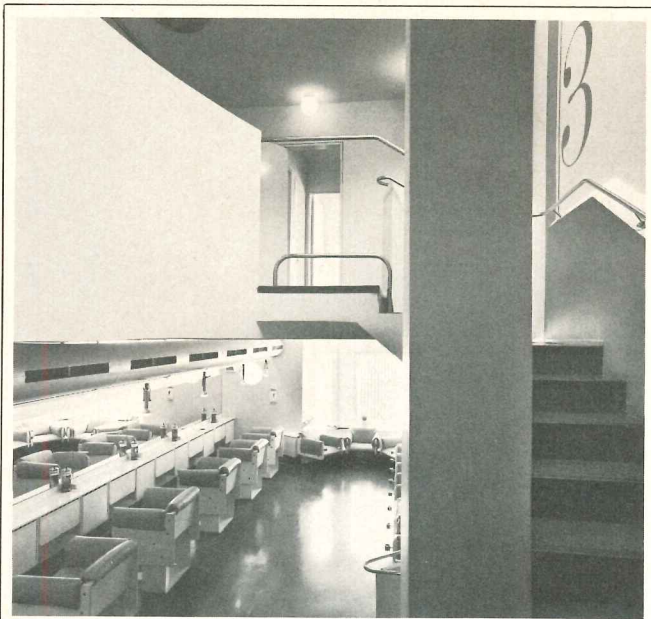


**Unexpected spaces  
formed by stretched fabric  
and reinforced by  
light, sound, and color  
turn an urban apartment  
into another world  
of sensuous delight**

The parlor floor of the brownstone in which her sculptor husband, Vytautas, and she have worked for many years, seemed to Aleksandra Kasuba the perfect place for an experiment in sculpture for living. Two or three small-scale "environments" using stretched nylon fabric had convinced her of the potential visual delight of curved surfaces. But the execution of this project with eight separate areas, (plan right), has exceeded even her expectations. Relying heavily on her husband for technical advice and criticism, Mrs. Kasuba has developed joints at floor and ceiling, as well as around openings, (below), that effectively heighten the fabric's natural qualities rather than inhibit them. Lighting and light switches are so well integrated that one must know exactly where they are to find them. Beginning at the bay window filled with plants, (left), spaces unfold both as distinct shelters and as intertwining elements. Thus the view, (far left), from the entrance to the sensory, (an "individual shelter"), past the group shelter leads toward the eating area through a constantly changing tube of space. As one passes the group shelter, (below), he can see through the opening (and through the fabric to some extent) the opulent three-dimensional rug, (below left). Around behind the couch and movable tables is another surprise, the hemispherical sleeping bower of woven yak hair on bent acrylic support strips.



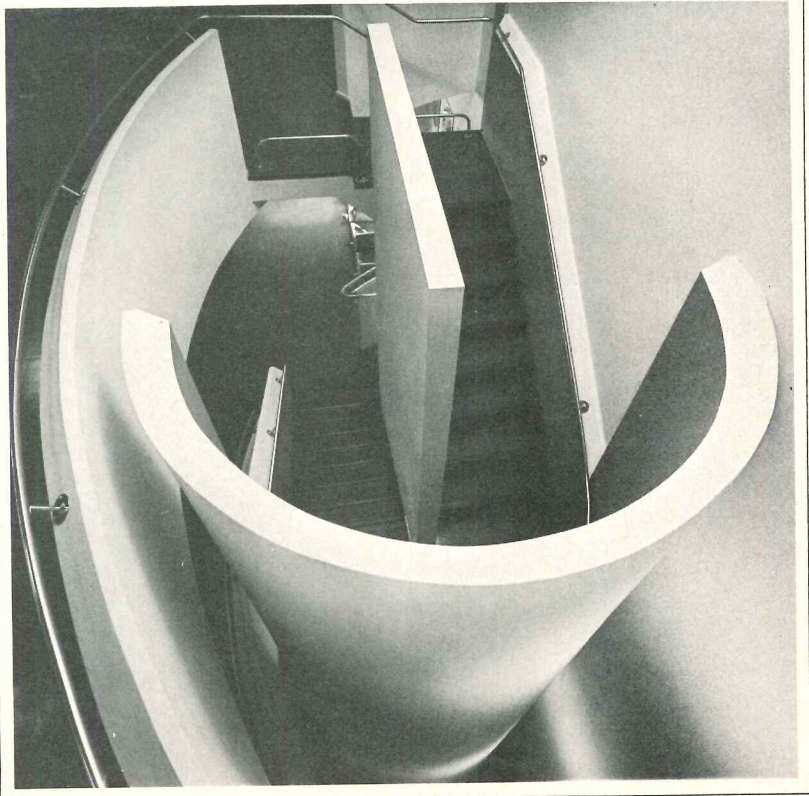
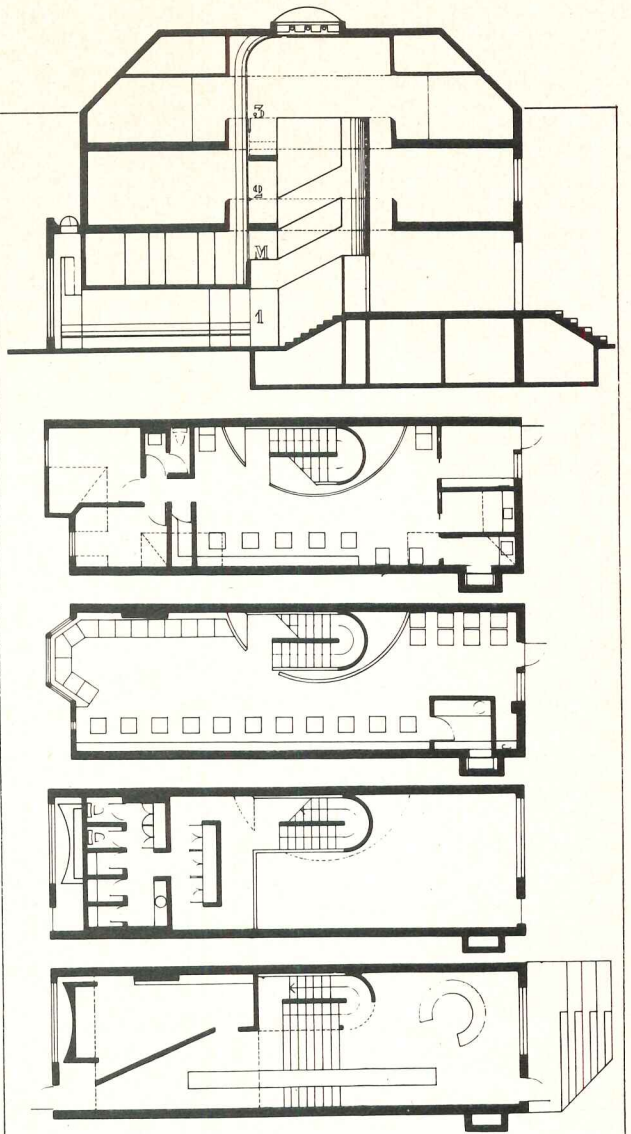
**A sculptural stair  
rising through curved space  
turns this old house  
on Toronto's lively York Square  
into a glamorous,  
spacious environment  
for haute coiffure**



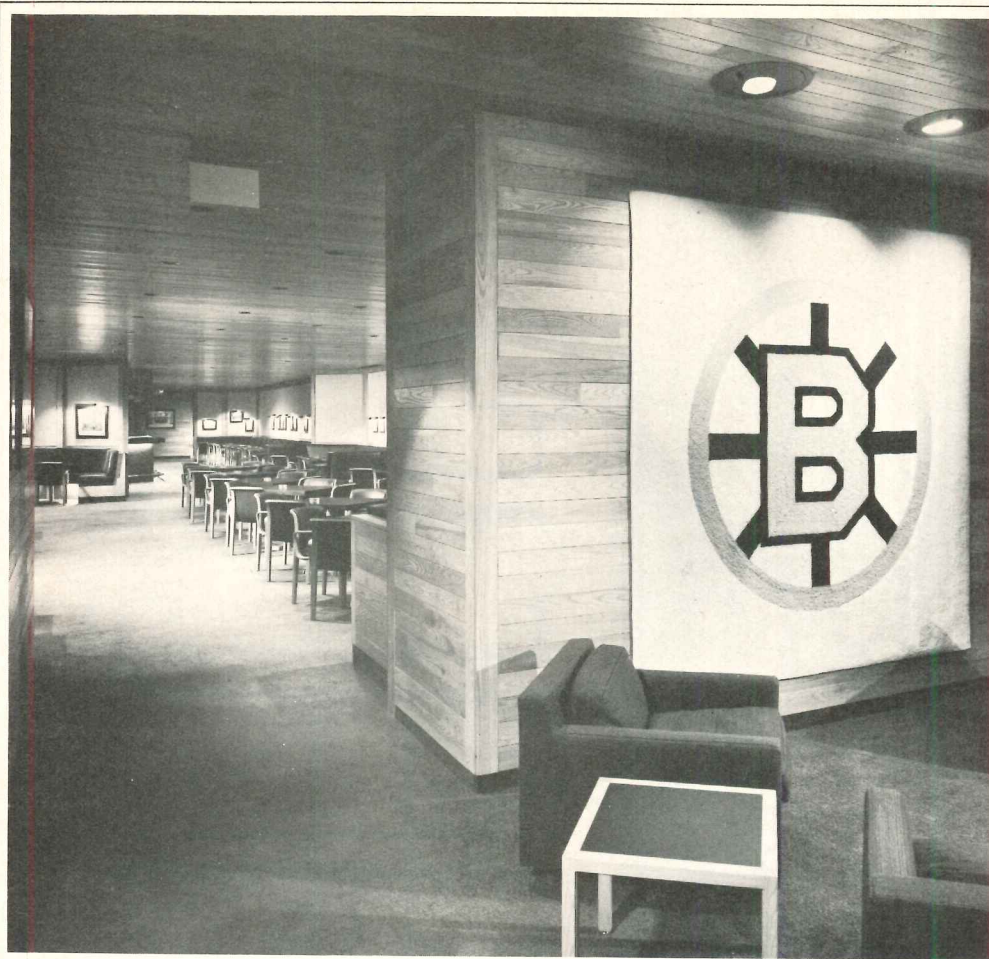
As part of the renovation of York Square, an old three-story house has become the luxurious Vidal Sassoon Salon in Toronto. Architects A. J. Diamond and Barton Myers, working with Barrie Briscoe on graphics and Muller & Stewart on furniture, have used a free-standing staircase in a semi-circular, sky-lit well to tie all the floors together. The ground floor has two entrances, one from York Square, and serves as a reception area and boutique, (below). On a mezzanine added by the architects, half a flight up, are the dressing rooms. Next floor in ascending order of privacy and function is cutting and shampoo, (left), and at the top, closest to the sky-light are the stations for tinting and wig fitting, (opposite page). Engineers: *M. S. Yolles and Associates*, structural; *Rybka, Smith & Ginsler*, mechanical; owner and contractor: *Iaver Investments, Ltd.*



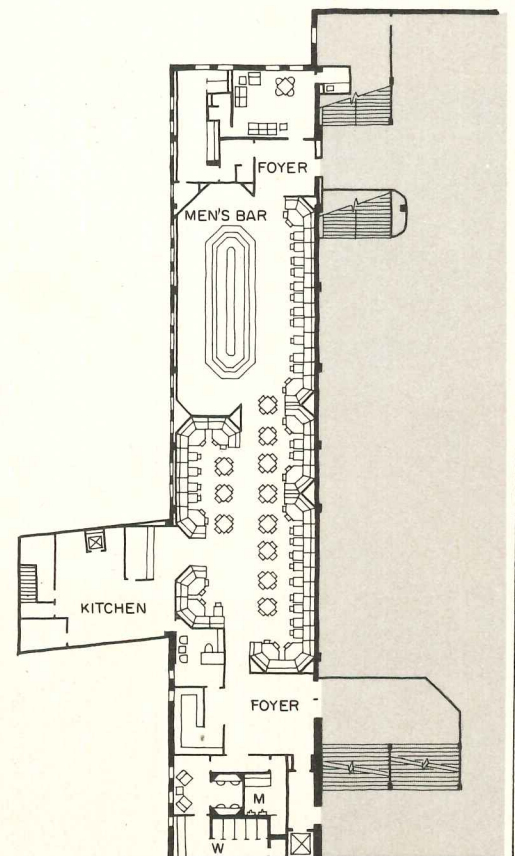
Ian Samson photos



**Restraint, consistency and elegant details make this Boston club a space that evokes images of the past using up-to-date techniques and materials**



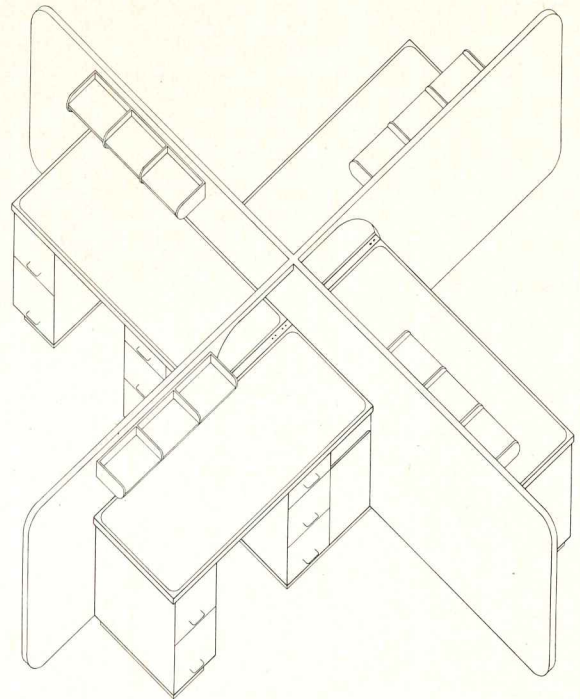
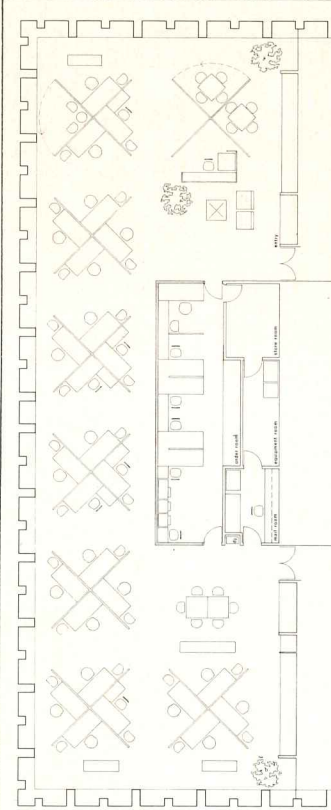
Two problems faced architects Keith Kroeger and Leonard Perfido when they were commissioned to redesign the Boston Madison Square Garden Club at the Boston Garden Arena. First, they had to solve the functional problems involved in more than doubling the size of the original club into space formerly occupied by Arena offices and a concessions commissary. Secondly, and more important, they had to retain the flavor of the club, a gathering place for members attending events at the Boston Arena for more than forty years. Materials and furnishings were chosen carefully. The ash boards and chair frames are lightly stained to accent the grain. The chairs, banquettes and the bar arm rest are upholstered in stretch vinyl. Natural linen covers the wall panels and green wool carpeting continues up the front of the bar, (right). Engineers: *LeMessurier and Associates*, structural; *Reardon and Turner*, mechanical; contractor: *Turner Construction Co.*





**Free-standing four-person trading desks open the entire space of a Rochester brokerage house to the perimeter walls for maximum light, ventilation and functional interaction**

In order to eliminate the typical "back room" in a brokerage office, the order room, in this design by Booth and Nagle of Chicago for the Rochester office of Shearson-Hammill Co., Inc., which serves all brokers and customers, has a central place, (right). To capitalize on a space unbroken by columns, the architects have designed, in collaboration with the Cambridge Seven Associates, a four-person trading desk that allows brokers to share equipment and secretarial services. The diagonal placement of the desks emphasizes the openness of the room, allows easy movement from desk to desk and permits flexibility in office organization. The rounded corners on the panels separating desks, right, are meant, says Jim Nagle, to complement the flowing space. Surfaces are black plastic with oak trim, chrome hardware.



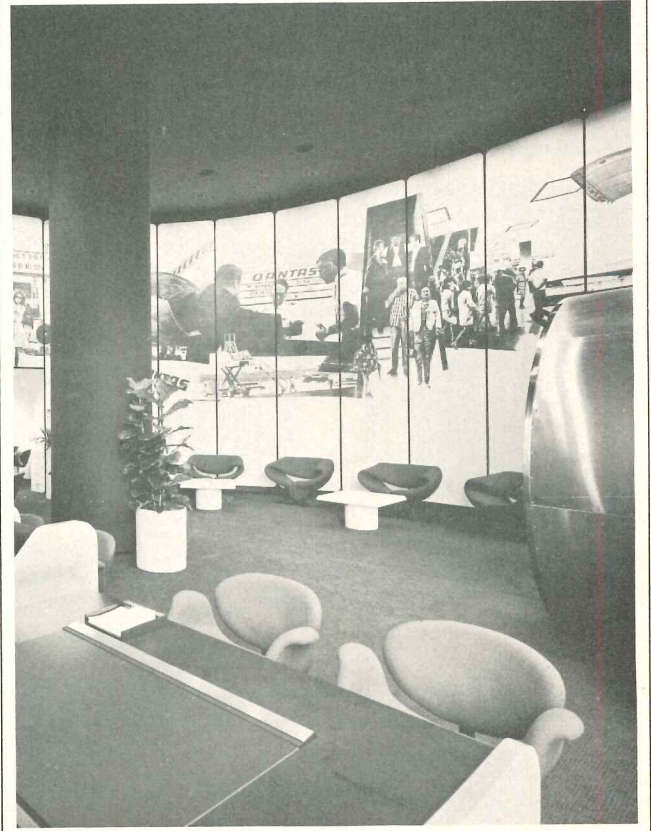
*Hedrich-Blessing photo*



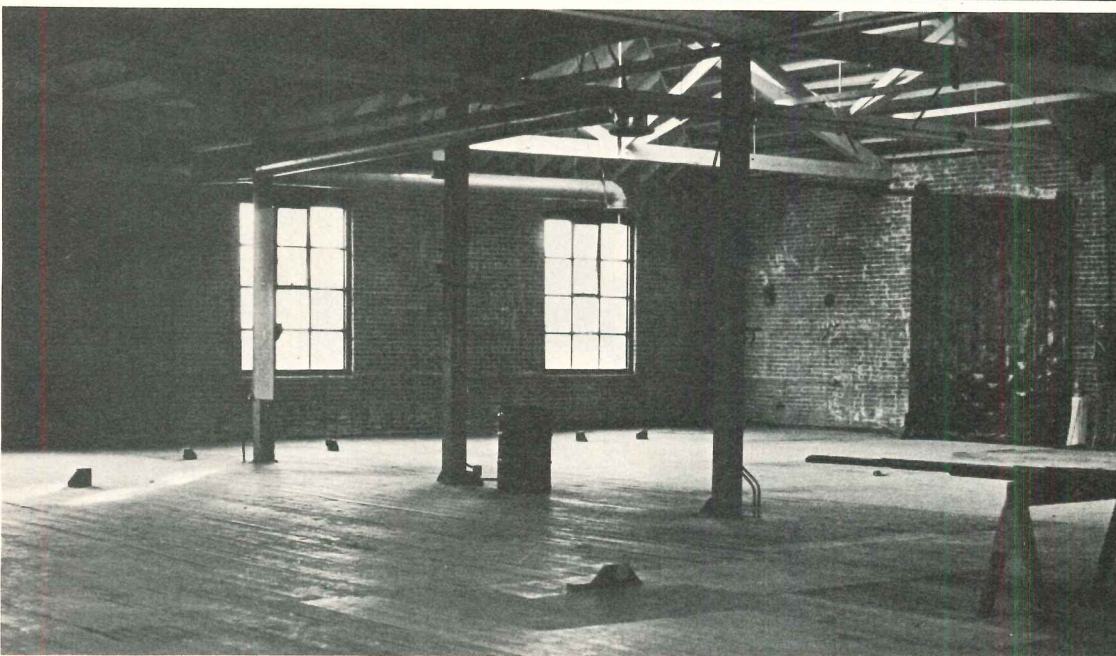
**A massive entrance  
set in a glass wall  
and backed by  
strong graphics and furniture  
produces an interior  
which is a major event  
on its Los Angeles street**

Jeremiah Bragstad photos

The riveted stainless steel skin and the tubular entrance through it into the new Qantas Airways ticket office in downtown Los Angeles, are symbols of the excitement of jet travel, say architects Whisler-Patri of San Francisco. Once one has passed through the entry, he is literally surrounded by the photo mural designed by Don Johnston of Sydney. Twenty-three panels, each 17 feet high, wrap around the interior walls and show passengers at Sydney's new airport checking in or collecting baggage, boarding or deplaning, saying farewell or hello, as well as other daily airport activities. The four reservation desks were designed by the architects in pairs that share nicely-integrated computer terminals. Their end panels contrast effectively with the Australian carpet used on the front of the desks as well as on the floor. A pair of chairs with bright red upholstery, designed by Pierre Paulin, face each reservation desk. The other chairs have blue upholstery. Contractor: *Joseph Illig.*

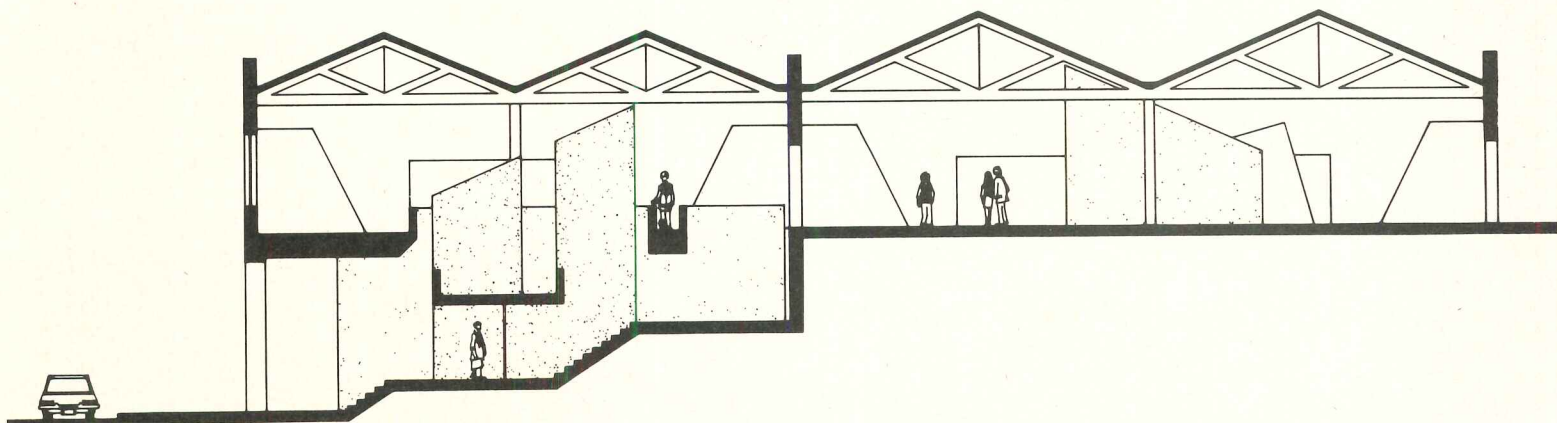


**A renovated waterfront warehouse in San Francisco is now the comfortable home of a bustling advertising agency**



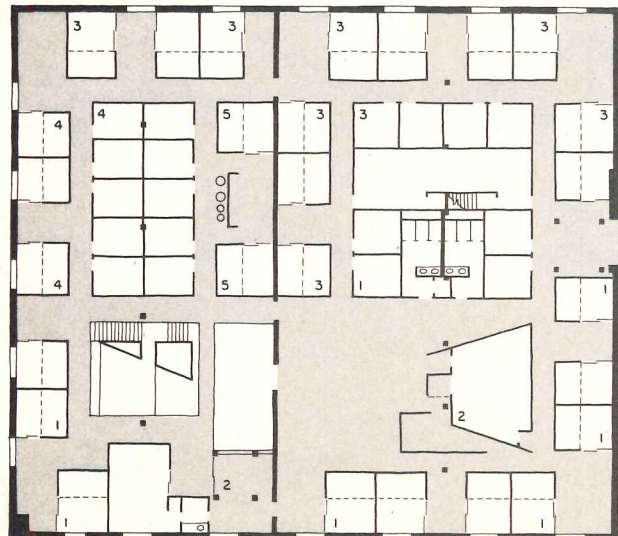
Along with a number of other groups in San Francisco, when Dancer-Fitzgerald-Sample, Inc. decided to find new office space in 1968, they took a close look at the old warehouses along the now drowsy North Waterfront. When the architects, R. A. Zambrano and Gwin Richards of the Hugh Stubbins/Rex Allen Partnership, told DFS that the 1907 structure they had tentatively selected was sound, they plunged into the remodeling with the vigor that only an advertising agency could muster. Selecting a building committee with representatives from all the departments, including the secretaries, they began to study the problem. Even though they admit in retrospect that the architect's recommendations were always the best ones in the end, the committee analyzed everything from building procedures to fabric and color choices. Two principal design problems had to be solved; first, the arrangement of necessary work spaces on the second floor which, at the same time, would preserve everyone's view of the existing timber trusses; and second, an entrance and main stairway that would draw visitors to the second floor from the street with as little effort and as much drama as possible. The photographs on these two pages and the one following show how handsomely the criteria were met. Starting with straightforward loft space, (below left) the client and architect placed most of the private offices around the perimeter. All are roofless so that the structure can be seen above. The inviting entrance, (left), visible through the arched facade from the street, focuses on a reception desk that is half-way to the second floor. Views up into the vaulted space from that point, (opposite), tie the two parts of the design firmly together. Engineers: *Geoffrey Barrett*, structural; *O'Kelly and Schoenlank*, mechanical; *Mel Cammissa*, electrical. Contractor: *Robert L. Wilson, Inc.*



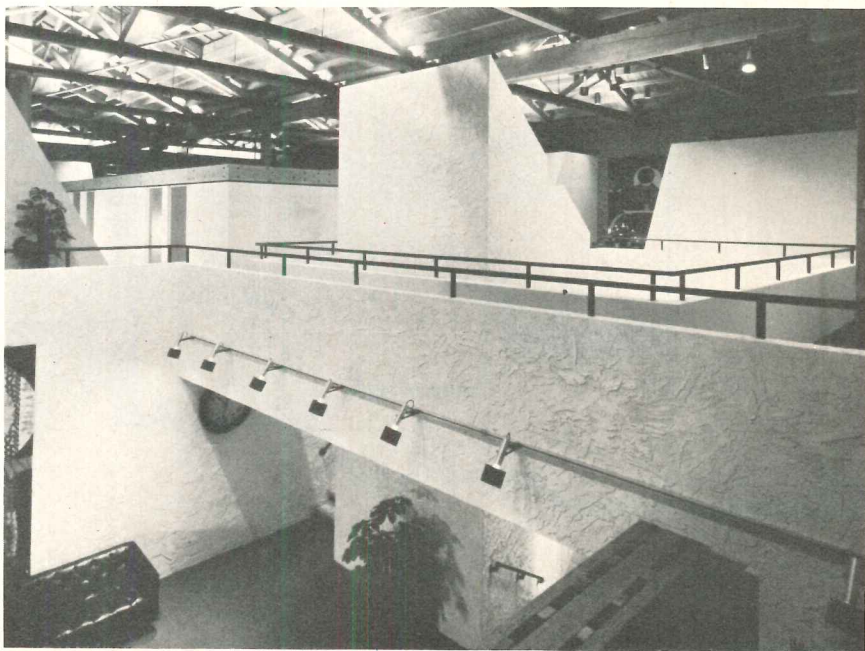




Sloping-walled offices, above, are open to the trussed space but have curtains for visual privacy. The bridge, (right), connects a glass-walled conference room with the offices.



1. Accounts; 2. Conference; 3. Creative; 4. Media; 5. Production



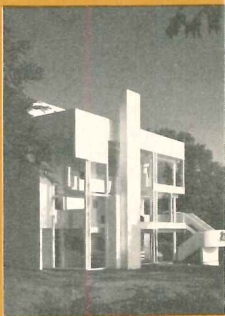
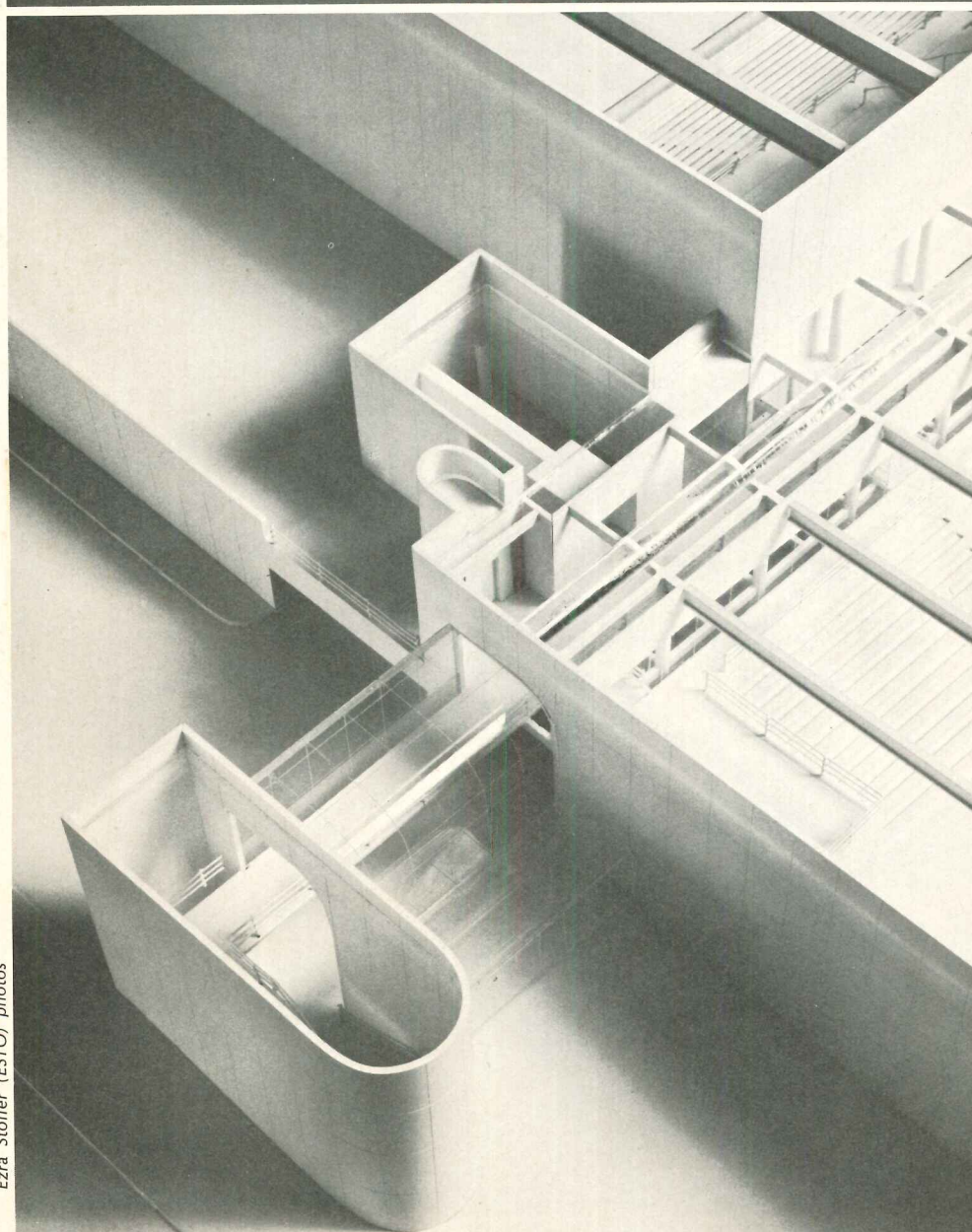
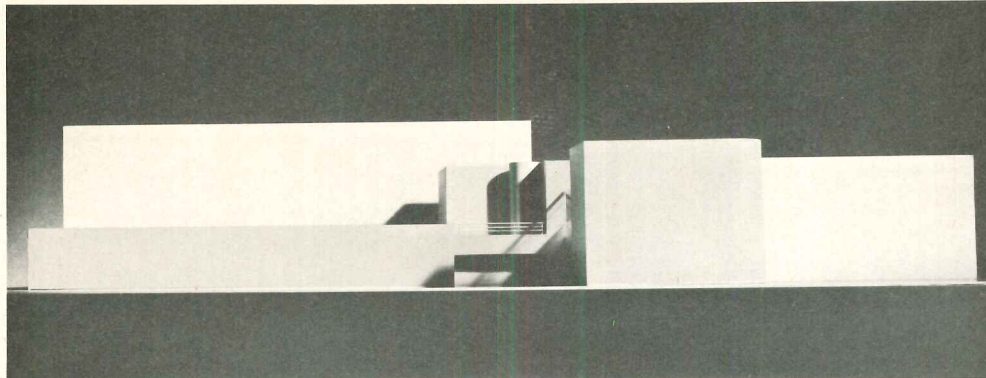
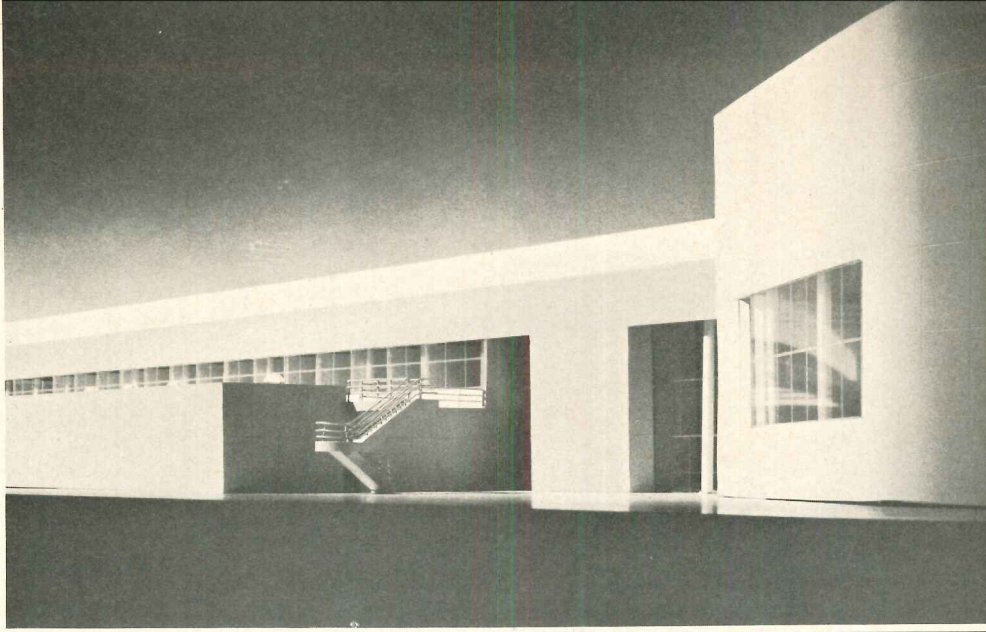
# Fredonia's athletic center: legible design in steel

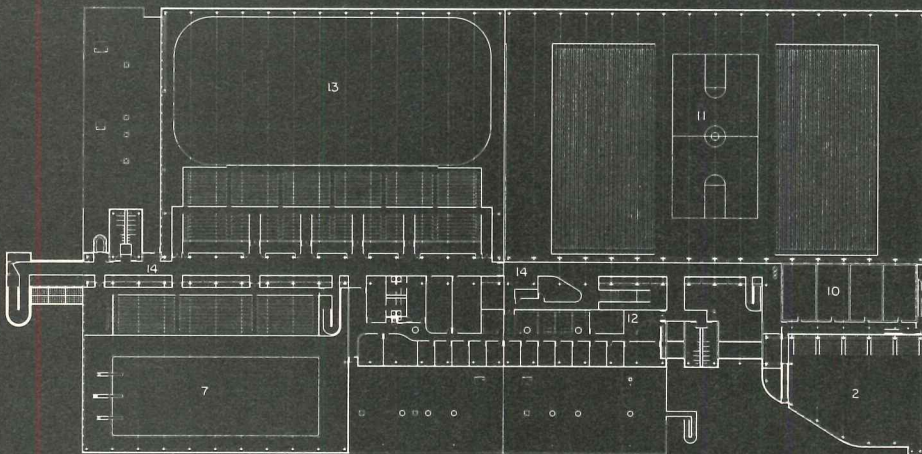
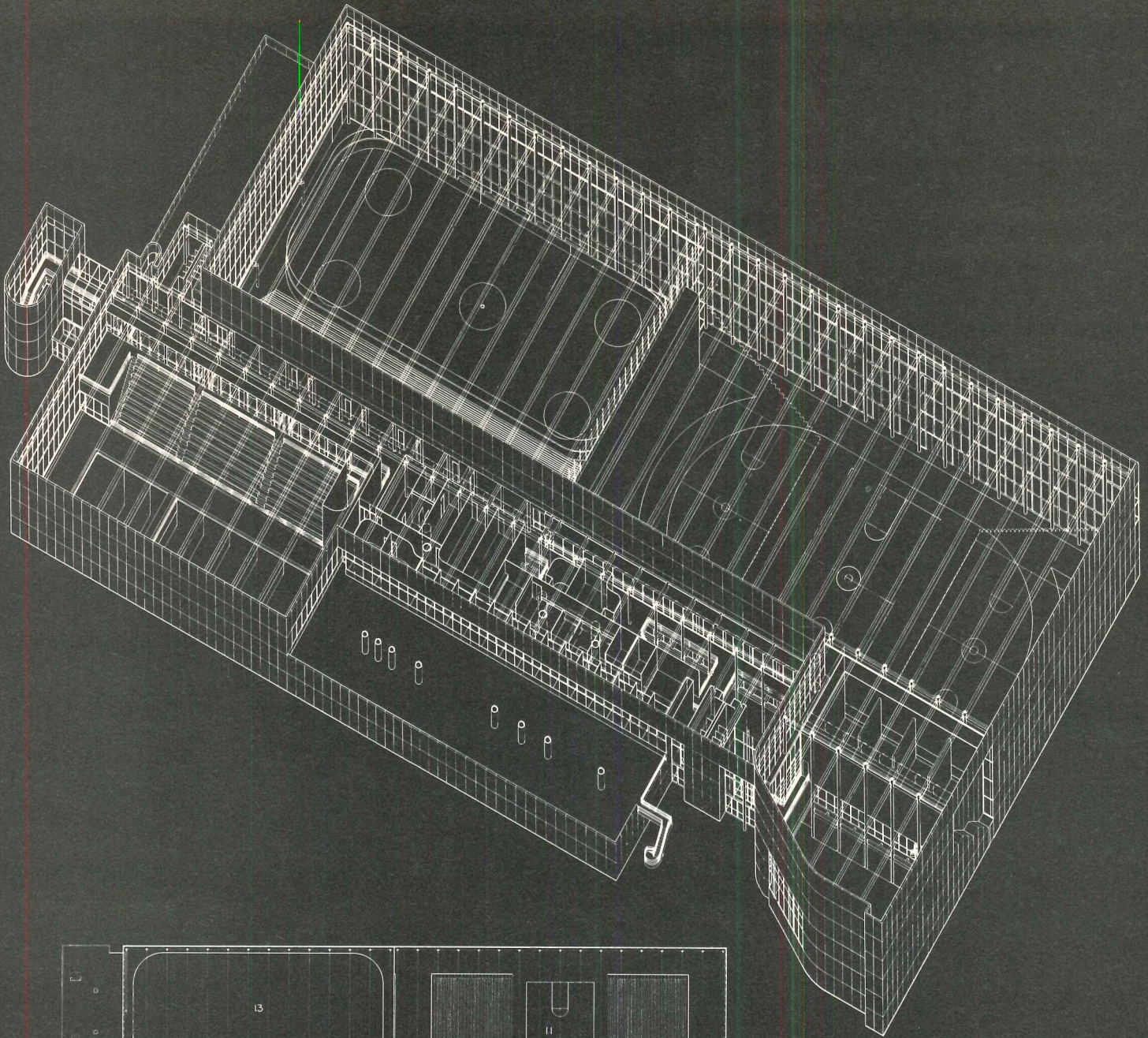
by Richard Meier

Richard Meier's architectural practice has until recently been occupied with houses, which he has done simply and skillfully in an all-white explosion of articulated surfaces and transparent structural systems, best shown in his Smith house of four years ago (inset, below and Record Houses, mid-May 1968). But his small practice in houses has grown into a larger office (about 25 people) and he is now getting larger buildings to do. The first was Westbeth, an award-winning remodeling of old warehouses into lofts (RECORD, March, 1970), and the second is a new Health and Physical Education Facility for the State University of New York at Fredonia, shown on these pages. And a large building it is: housed under one roof will be an Olympic swimming pool with seating for 800, a hockey rink convertible to tennis with seating for 2,000, and indoor track and a basketball arena with seating for 4,500, plus a gymnastics room, handball courts, and the locker, shower, storage and administrative spaces to service all of these. It is a 160,000 square-foot-building that will cost \$6 million to complete.

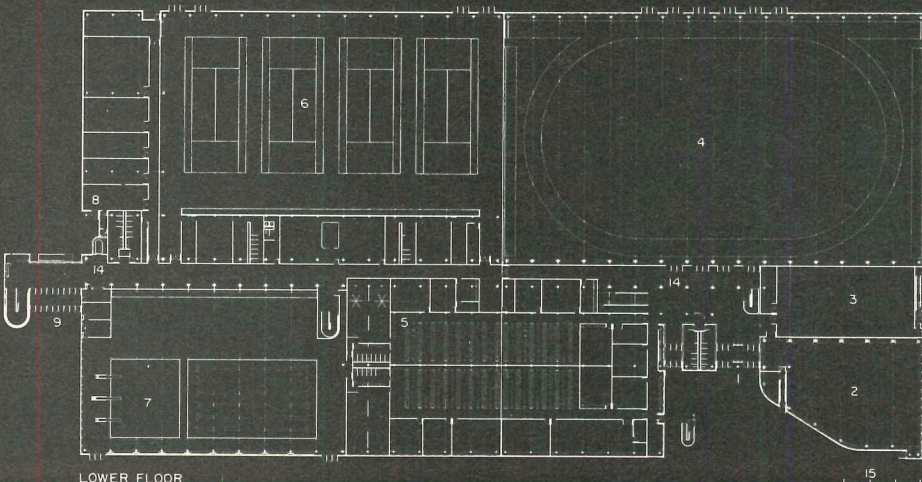
Meier's preoccupation in moving from the relatively small scale of houses to the larger scale of Fredonia's athletic facility has been one of maintaining his personal stylistic commitments. He believes in the absolute legibility of every part of his buildings: in steel being exposed rather than covered, in functioning mechanical and structural parts being visible features in their spaces, but with their joints and forms therefore controlled by the architect, not the engineer. He wants his buildings to be well-performing machines with nothing extraneous to their functioning, but with any building as a whole finally . . . related to a human scale and human movement that makes it architecture in spite of its machine aesthetic." Meier has said further of his architectural intentions: ". . . the whole must have inherent integrity, like a machine, that derives from the integrity of the parts, but the imposed considerations of human use give it a final meaning beyond that of a machine." These are not new conceptions, of course, but when the architecture created is a clear expression of the stated intentions, as Meier's is, the words are worth noting.

Meier worked predominantly in wood in those early houses, but he has turned





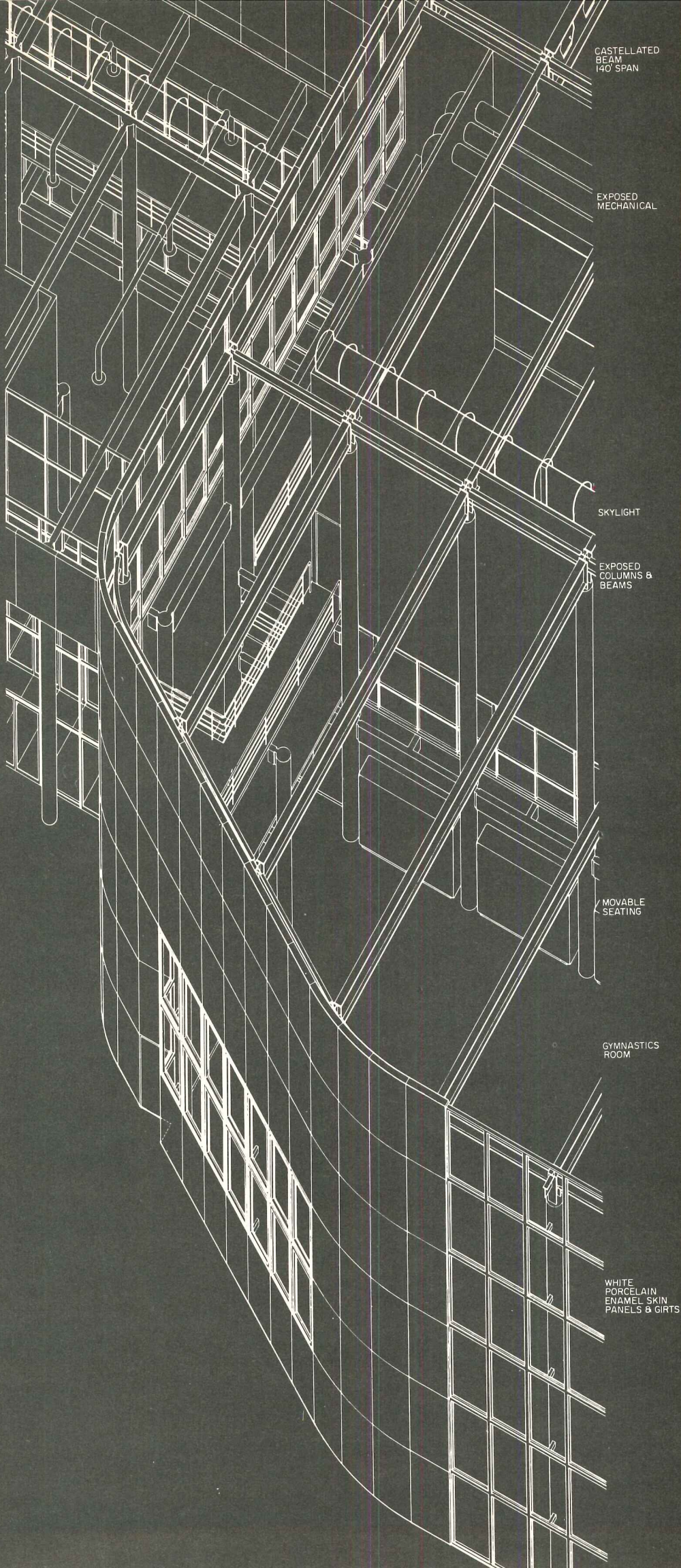
UPPER FLOOR



LOWER FLOOR

Legend:

- 1 Campus entrance
- 2 Gymnastics—300 spectators
- 3 Wrestling
- 4 Arena—track deployment
- 5 Lockers
- 6 Rink—tennis deployment
- 7 Swimming Pool—800 spectators
- 8 Service
- 9 Parking entrance
- 10 Squash courts
- 11 Arena—basketball deployment  
2,000 spectators
- 12 Administration
- 13 Rink—hockey deployment  
2,000 spectators
- 14 Circulation spine

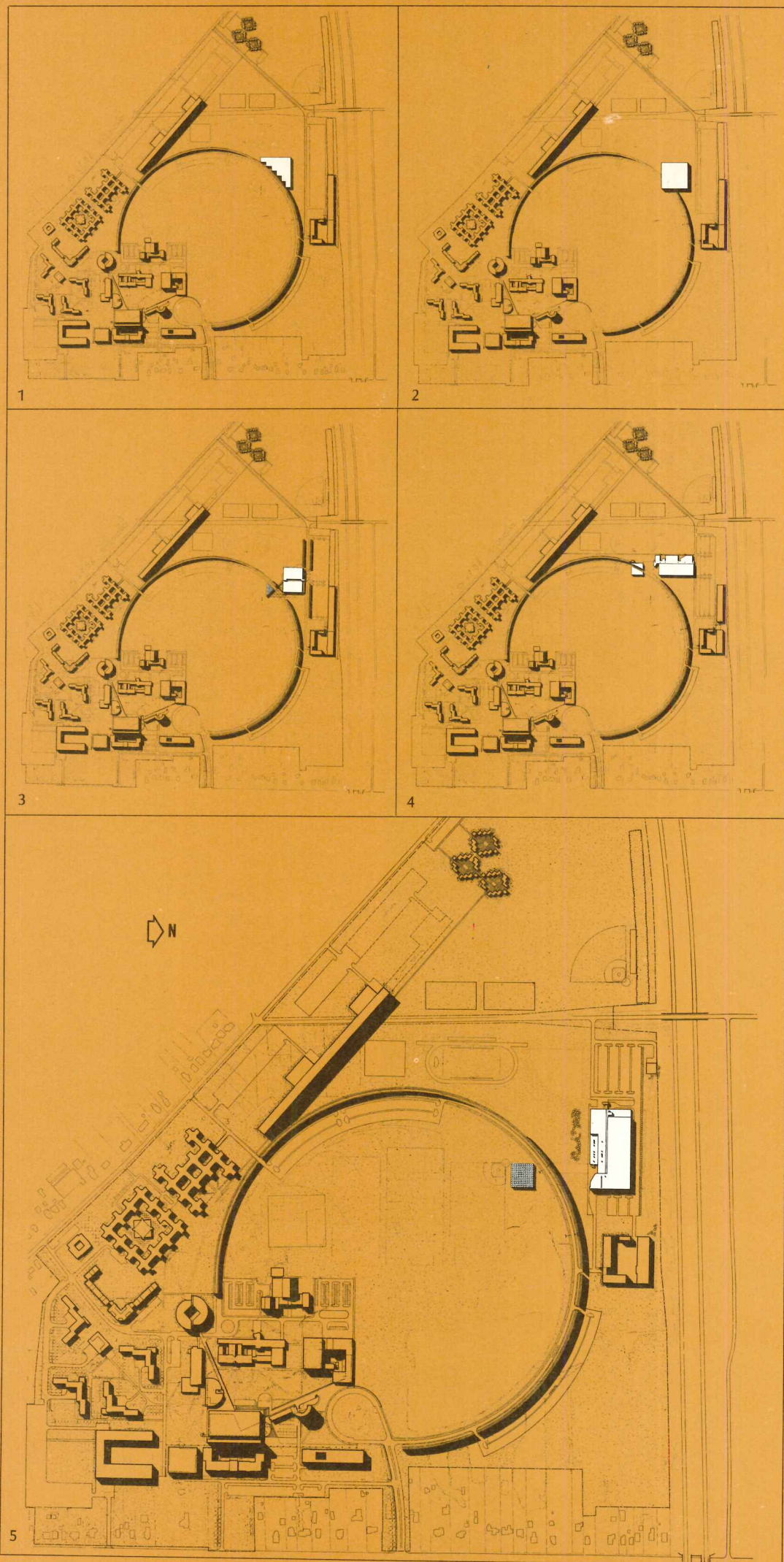


to steel at Fredonia and the larger buildings that are following it. This integrated detailing and expression of parts in steel—framing, exposed ventilation and plumbing, and especially the stretched steel skin of the walls—is the most prominent characteristic of these Fredonia designs. He has learned to express with steel at a large scale what was easier with wood in small houses, and he is keeping alive those analytical, constructivist expressions that are perhaps the primary source of modern architectural form, but that were nearly ignored in the sixties.

The various major athletic spaces in the Fredonia design are organized linearly along a two-level circulation spine. This spine begins at the detached stairway that forms one end of the main bank of doors of the parking lot entrance, runs past the swimming pool, hockey rink, tennis courts, track, and basketball spaces to the main campus entrance at the other end of the building (see plans and isometric, opposite page). Except for this circulation spine there are no other consistent horizontal planes in the building; that is, the major athletic spaces are volumes not necessarily related to each other in floor level, but wrapped in a common skin. The arena and rink are three levels high. The wrestling room and gymnastics space are one and one-half levels high with another gymnastics and squash area of the same volume stacked above them. The pool is a two-level volume and locker rooms adjacent on the ground floor are single level with single level offices and a deck above them.

But it is the parts of the building, not its volumes, that have been articulated. The steel column structure and beam grid that supports the roof is separate from the metal wall panel and window system. This structural grid is the building's unifying element; it determined the size of the 5 ft by 8 ft wall panels, and its 5 ft by 8 ft, 5 ft by 5 ft, and 5 ft by 3 ft window sizes. Separate functional systems can thus be read as juxtaposed layers, as shown in the large-scale isometric at left, taken near the campus entrance.

The thin-skin wall is the most expressive part of the building, establishing the exterior form and designed so that its interior surface, bracing and girt system will also be entirely exposed to view. The panels of the skin are white porcelain enamel on both faces and 2¼ in. thick; rigid foam insulation between 16 gauge steel gives a U factor of 0.16. The panels are fastened to a 4 WF grid of girts that are in turn fastened to the building columns. The insulated metal panels and their girt system form both the outside and inside walls, and the structural columns stand free in front of them in the interior spaces. The tensioned, mechanistic expression of this skin-wall is the most original form within the system, and accurately reflects the meaning of the whole building.



The Fredonia campus plan (left) and much of its recent architecture has been designed by I. M. Pei. Its most prominent feature in plan is the ring road that terminates the central campus area at either end of its segment, and that encloses most of the intramural playing fields that are accessible to Fredonia students. One of Meier's principal problems in design, and one that occupied a large portion of the design time given to the whole project, was the siting of his athletic facility in relation to the ring road, and to the athletic field inside it.

Site schemes 1 and 2 (above) are two early and generalized proposals by Meier to give the athletics building a firmer attachment to the ring road and the campus as a whole than it now has. Both of these schemes were rejected by the school in favor of scheme 3, which does not encroach on the ring road except in its paving pattern, and through a formalized grouping of trees that Meier has consistently proposed to acknowledge the placement of his building from within the ring. Scheme 4 is a later variation on this same theme, as the building began to take shape in more nearly its final form. The final site plan (5) shows the results of an eleventh-hour change in the minds of the school administration, shifting the building to a site nearer the public parking facilities, and still farther away from the intramural playing fields. This has been the final location of the structure, and working drawings are now complete based on this site plan. A sudden cut in the funding of the State University system as a whole temporarily held up further bidding on the contract documents, but the athletic facility will be constructed as designed when funding is restored.

HEALTH AND PHYSICAL EDUCATION FACILITY, State University at Fredonia, Fredonia, New York. Architects: Richard Meier and Associates—associates, Gerald Gurland and Tod Williams; mechanical engineers: Wald & Zigas; structural engineers: Severud-Perrone-Sturm-Conlin-Bandel.

# CORRECTIONAL ARCHITECTURE:

## The Symptoms of Neglect The Signs of Hope

In a recently completed state prison, correctional officials authorized the construction of a large swimming pool in a corner of the exercise compound. Knowing that disclosure of the pool's presence would subject them to angry charges of "coddling" criminals, authorities carefully buried the pool under a heavy mantle of earth. The pool is a commitment to the future, to be dug up—like a time capsule—when the climate of public opinion permits.

Much of what is happening now in the field of corrections is distilled in this incident. Officials favoring maximum security and those advocating reform continue their familiar debate—but even a buried swimming pool suggests that the reformers are gaining ground. The public, as always, would like to be as far away from the debate as possible except that it will rise to express its resentment at policies it considers "soft on crime." Elected officials fear such outbursts and seek to prevent them. They are reluctant to spend tax money on prison research because the crisis in prisons has not yet reached high tide, and because the public itself has divided feelings about the mission of corrections.

This confusion of purpose is revealed in a 1967 Harris poll: ". . . The total public seems more willing to attack the problem of crime through increased funds for the application of force than for rooting out the social causes of crime . . . or for attempting to rehabilitate criminals."

Not much had changed by 1971 when a Gallup poll conducted for Newsweek reported that "although 44 per cent [of those polled] called for subsidizing bigger and better police forces, only 21 per cent would be willing to finance the construction of additional prisons to handle the additional felons that better police would inexorably produce."

—Barclay Gordon



Marvin Rand

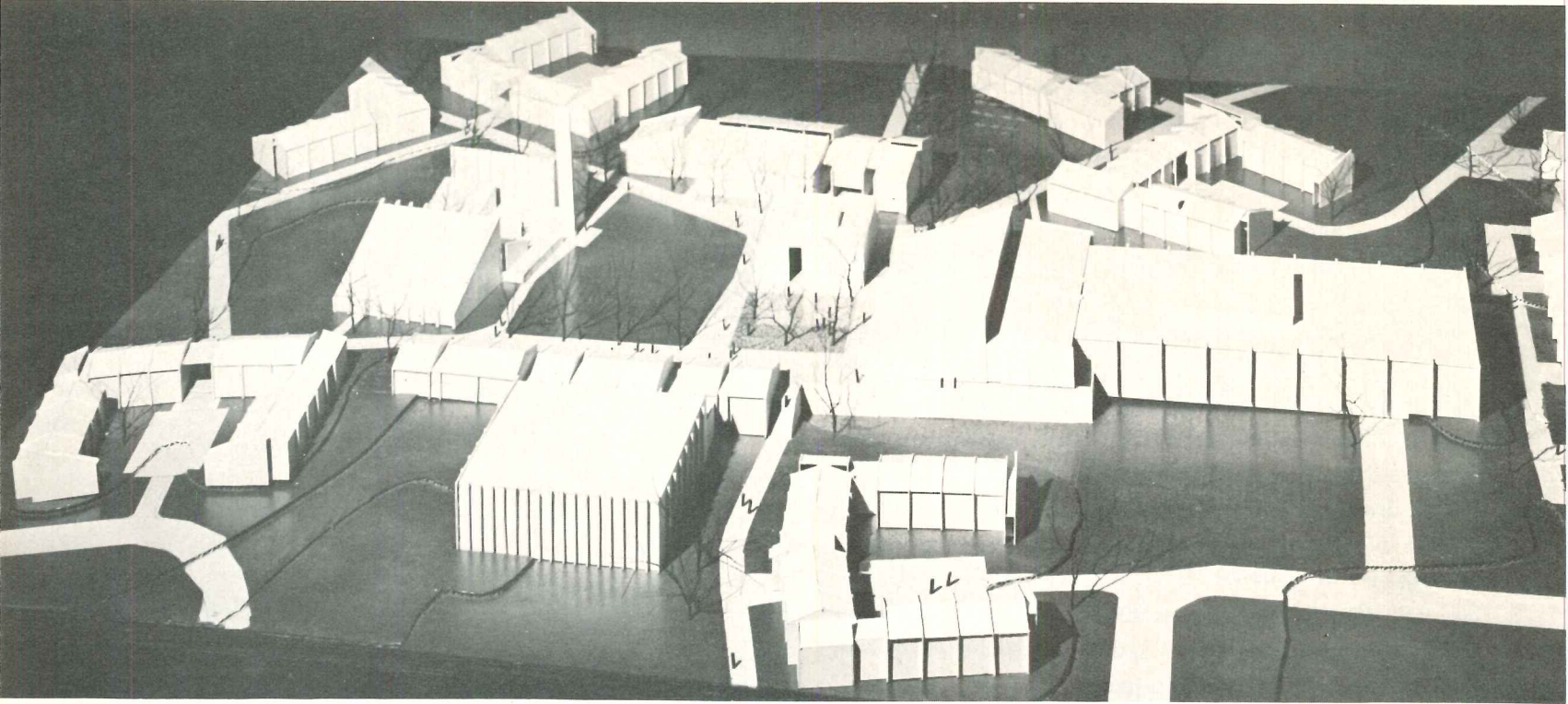
We look to correctional officials for miracles but we are asking them to make bricks without straw. Americans spend more on household pets than on police; more on tobacco than on the whole process of criminal justice.

The result of public apathy and indifference is long neglect. More than a hundred prisons now in use were in operation before Grant took Richmond. At least four, still functioning today, date to the time of the Louisiana Purchase. In Trenton, New

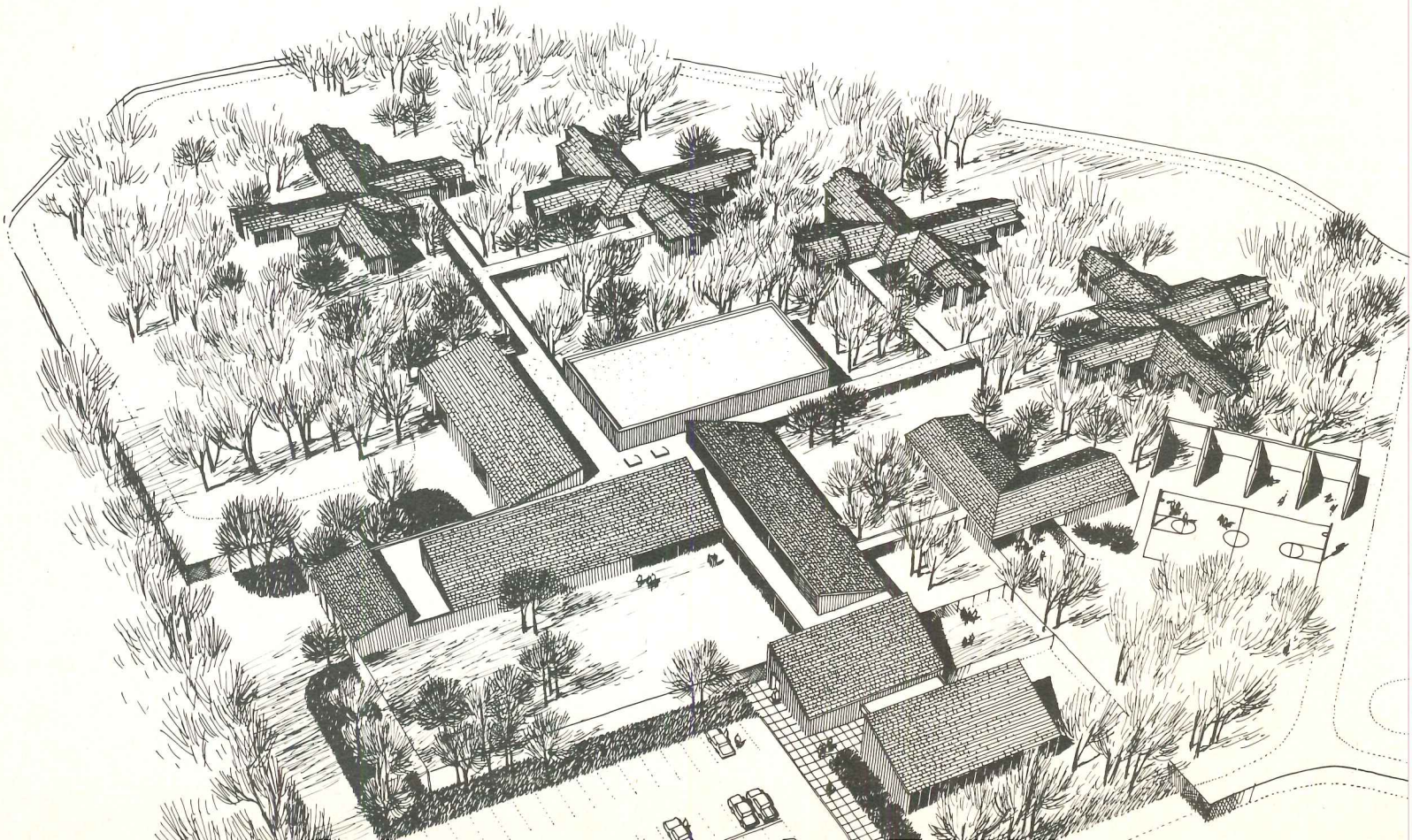
Jersey, one prison, built in 1798, is—at last report—still in use. This degree of neglect is probably found in no other building type.

The prison prototype we have constructed affects its users with extraordinary force. It grew out of the public's demand for protection and vengeance. From the beginning, its chief concern has been custody. Its tall turrets, its security wall, its barred windows form a striking image of repression. In a piece for the American Correc-

tion Association, architect Sid Folsie (Curtis & Davis) has written: "The antiquated cell blocks in almost all states run to a general pattern, and at their worst, they are grim, forbidding places. Tiers of inmates are stacked like crates in warehouses, four or five high. There are harsh shadows, ominous vistas down long corridors, a few overhanging light bulbs; windows are few—or absent. What paint exists is in the dingy color range of creams and tobacco browns which offer nothing but monot-



## Up from authoritarianism: a shift toward humanized, campus-like plans





ony. . . . The clang of locks and doors, of steel striking steel, has been one of the accepted horrors of incarceration since ancient times. . . . At the base of toilets and urinals, in some institutions, uric acid acting over many decades has eaten inches deep into cement, has corroded metal and left a permanent reek." When these conditions are aggravated by serious overcrowding, is it surprising that strange prison subcultures develop or that the reflex to violence is automatic? Is it surpris-

ing that wardens and overworked staffs concentrate almost exclusively on maintaining order and control? Is it even possible, in institutions like these, to talk of rehabilitation? The word simply has no meaning. But this is the prison that confines most inmates today.

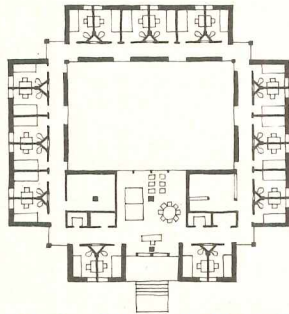
Other signs of neglect are not wanting. Two years ago, at the fortress-like Kansas State Penitentiary at Lansing, 226 inmates, 19 in one night, slashed their Achilles tendons in protest and despair at what they

considered a repressive administration. "They couldn't be repaired in the prison hospital" said medical director Dr. R. S. McKee "because most of our instruments had disappeared."

Neglect also has a vicious side. The Arkansas prison farms—Tucker and Cummins—offer a glimpse of our prison system at its worst. Responding to sinister rumors of cruelty and abuse, Governor Winthrop Rockefeller ordered an investigation of the camps which began in 1966. The investi-

The plan for the Illinois State Penitentiary in Vienna reflects a growing concern for humanized prison environments. Acknowledging that the practice of warehousing criminals has contributed to criminality, correctional officials are urging designs that place some value on human dignity and emphasize rehabilitation. Small scale housing units allow segregation of inmates by type, easier surveillance, and more congenial, hopeful surrounding.

Architects: Curtis & Davis with Samuel E. Sanner & Associates.

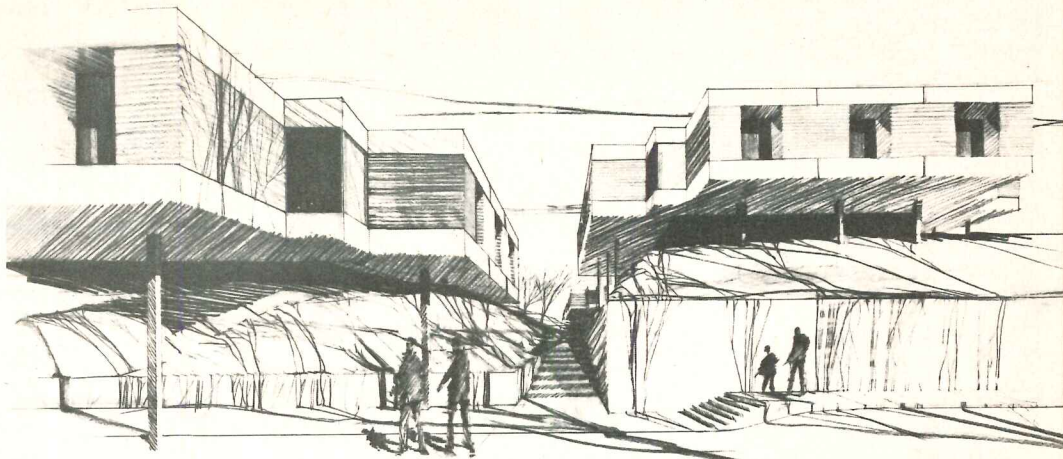


At The Liberty Institute in Hickman County, Tennessee (rendering and site plan, right) 600 young inmates are housed in private rooms that together with common facilities, form a self-contained rural community. Typical housing unit (above) is planned for twenty-two inmates and includes a landscaped court. These units are grouped informally to soften the institutional character and promote a low-rise campus atmosphere.

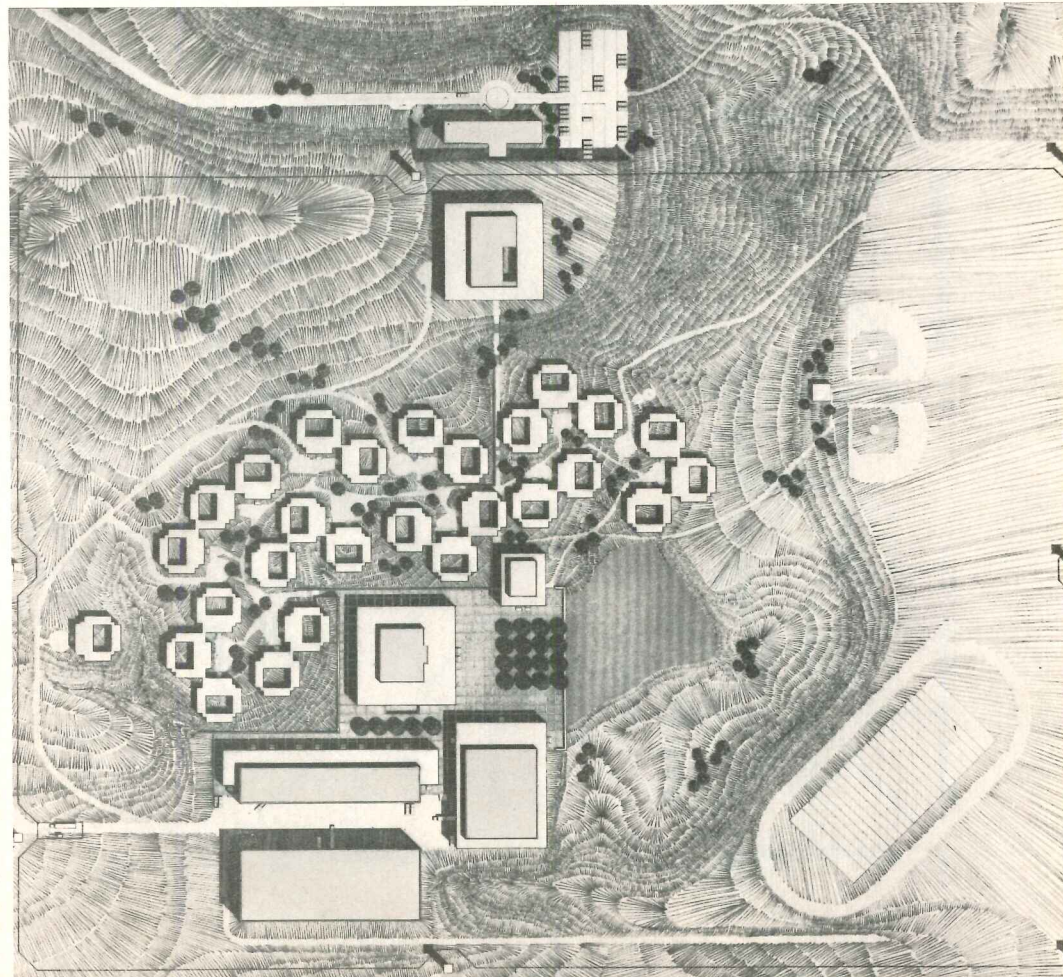
Architects: Curtis & Davis with Howard Nielson Lyne Batey & O'Brien.

Using an "incentive system" in which the inmate is given more freedom as he proves he can live by the rules, this Regional Correctional Institution in south-central Alaska (left) is planned as a cluster of 40-man living units with centralized common facilities. Pitched roofs and plywood siding give the units a typically residential character. The grouping of buildings, heightens the sense of community.

Architects: Hellmuth, Obata & Kassabaum with Crittenden, Cassetta, Wirum & Cannon.



Frank Lotz Miller



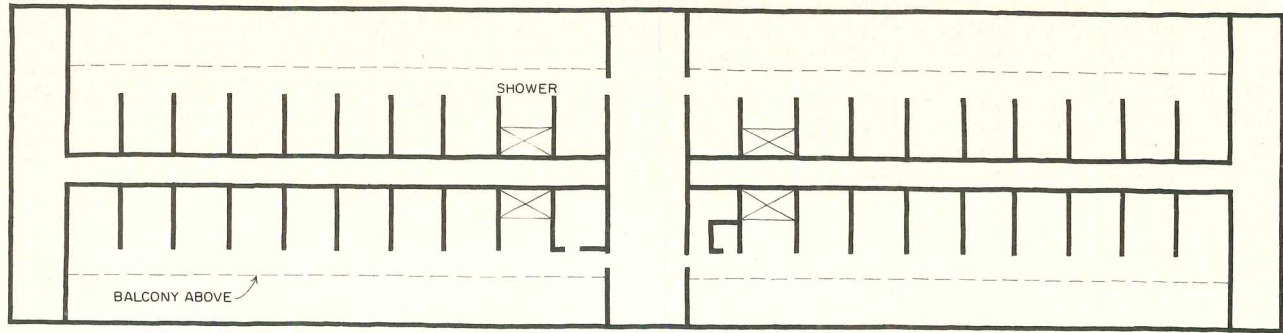
gators found that discipline had eroded to the point that it was left largely in the hands of "trustee inmates." Forced homosexuality was openly tolerated. Many shallow graves containing broken, mutilated bodies gave credence to claims that prisoners were commonly tortured, beaten and killed. Extortion by "correctional officials" of money and sexual favors from the families of prisoners was also alleged.

Concerned and able correctional authorities shudder with anger at revelations

like these. They know that such conditions are by no means typical but that the callous public indifference that gave rise to such excesses persists.

But by far the most discouraging expression of this neglect is the apparent inability of the correctional system to correct. While excellent at custody and even better at punishment, the system's record for rehabilitation has been minimal. In 1968, Myrl Alexander, then Director of the Federal Bureau of Prisons, said it this simply:

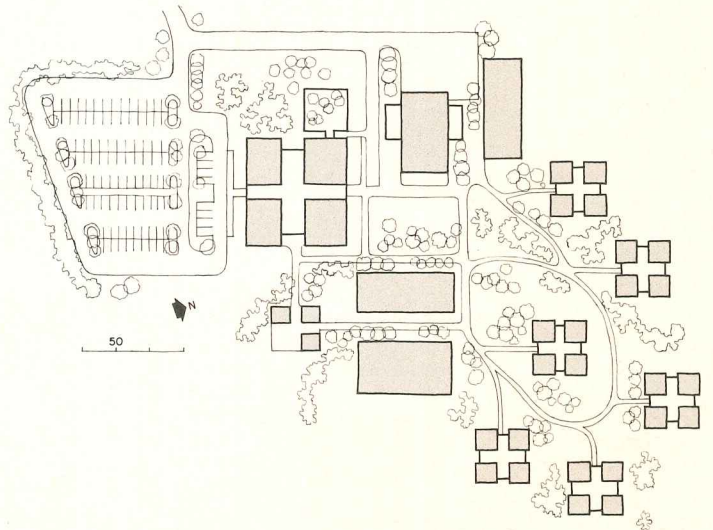
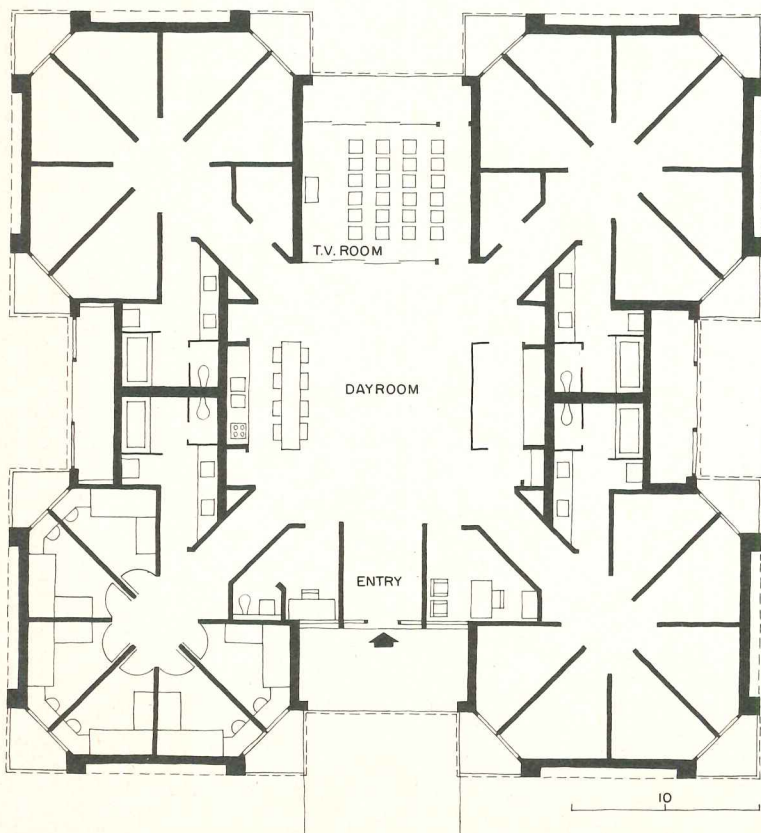
". . . As a means to change criminal behavior, imprisonment is still a failure." Dr. Karl Menninger, in *The Crime of Punishment* is more emphatic: "Our prison system is a shambles—beastly, unworkable and expensive . . . Its sole effect: to degrade and humiliate, to rob people of their human dignity." Two statements: one passionate, one matter-of-fact, but both pragmatic and both leading to the same essential truth—our system for correction is not working. The evidence indicates that,



## The cellblock redesigned for habitability and control

Site plan and cell arrangement for the South Carolina Women's Institution at Columbia. Cells are grouped in four units of six each. Each cell has a small window and the cells are oriented so that inmates can converse comfortably. A T.V. room and washrooms serve as buffers between the living units and open to a large central recreation space.

Architects: Geiger-McElveen-Kennedy in association with Curtis & Davis.



instead of curtailing crime, prisons manufacture criminals. Many describe our prisons as "post graduate courses in criminality."

This failure to correct manifests itself most alarmingly in high rates of recidivism. Statistics on recidivism tend to be slippery. They must be treated with caution since much depends on when the "books" are closed. Such figures also lump those who revert to a life of crime together with those who are returned to prison for some

minor violation of their paroles. But these cautions notwithstanding, nearly every authority agrees that the overwhelming majority of felonies committed each day are perpetrated by men already known to the criminal justice system through prior convictions. Former Attorney General Ramsey Clark puts this figure at 80 per cent; other writers set it slightly lower. All agree that the figure is much too high.

And so the study of prison design begins with a history of failure. But . . .

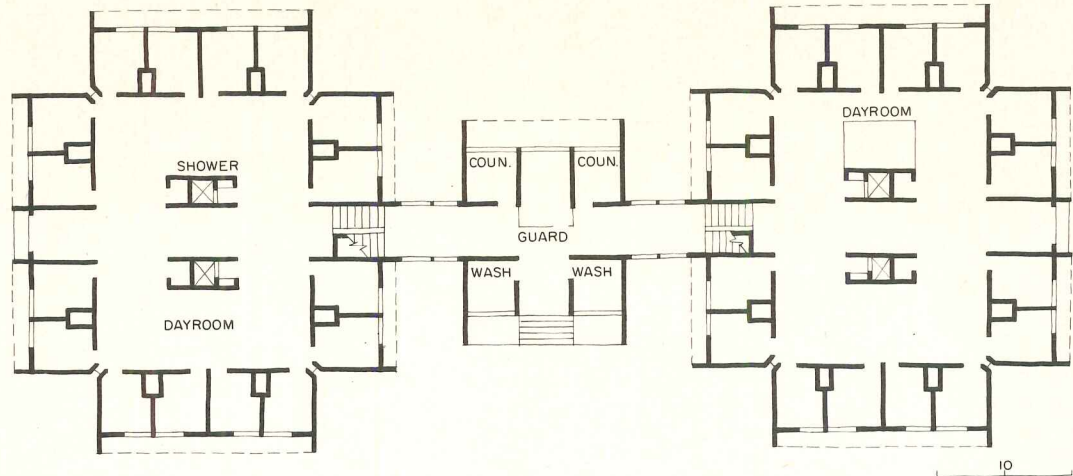
**If signs of neglect still predominate, signs of hope are present too:**

*1) There is reform in the law affecting the definition of confinement*

The parts of our criminal justice system—police, courts, corrections—are so interdependent that reform cannot proceed easily in one area if it lags in the others. The legal framework for reform was greatly strengthened in 1963 by passage of the Model Sentencing Act. In its first article

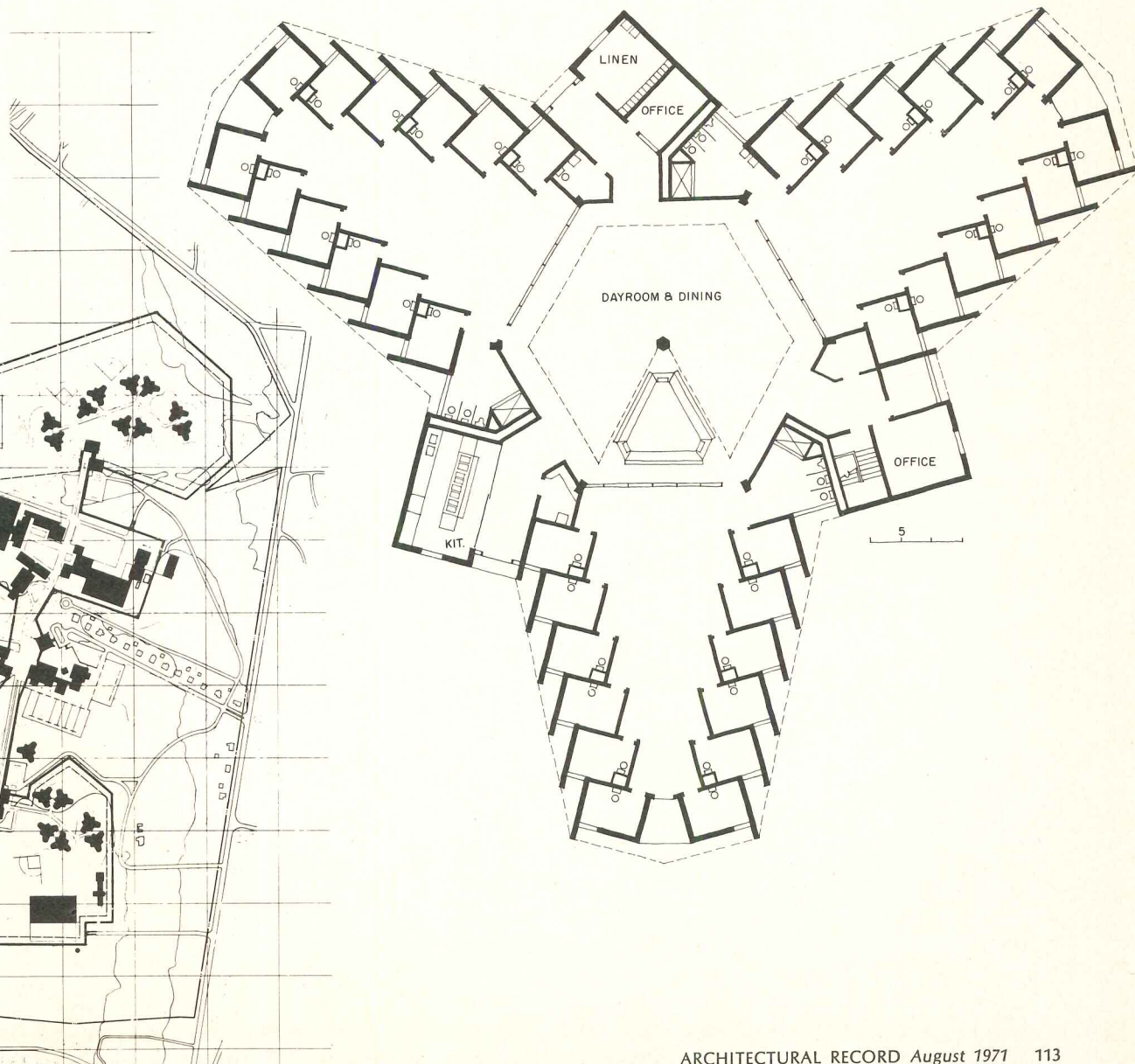
At left, a traditional high security, double- or triple-tiered cellblock. Cells are arranged in long rows and face a blank exterior wall. Showers and washrooms are often located outside the cell.

At right, a plan prepared for the South Carolina Department Corrections uses space more economically and provides what is obviously a more humanizing setting. Cells form the outside wall and face in on a dayroom. Long corridor perspectives are broken by two changes of level.



At the Cheshire Corrections Community in Connecticut, designers are providing an architecturally significant variation on the normal cell arrangement. A large, dining/dayroom spaces out three clusters of twelve cells each. Each cluster has its own secondary recreation space and cells are arranged to look out into both. Each cell, in addition, has a window to the surrounding farmland.

Architects: Curtis and Davis.



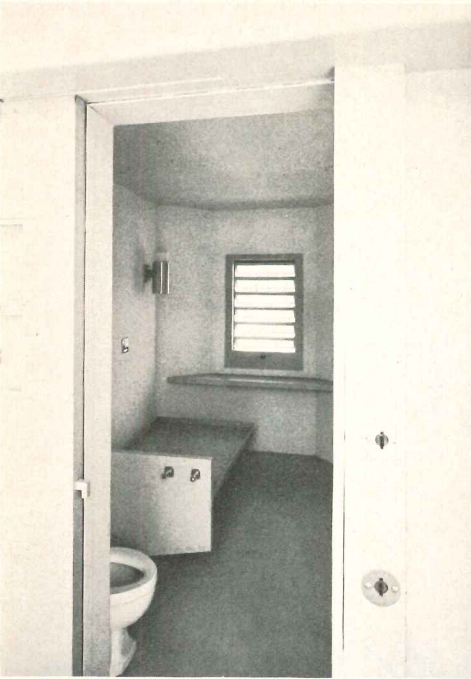
the Act stated that “. . . persons convicted of crime shall be dealt with in accordance with their individual characteristics, circumstances, needs and potentialities as revealed by case studies . . .” Judges were granted important options in sentencing offenders instead of offenses.

The Prisoner Rehabilitation Act of 1965 set the groundwork for community treatment centers and half-way houses by extending the definition of confinement to include certain kinds of facilities outside

prison walls. The Crime Control Act in 1968 established the Law Enforcement Assistance Administration (L.E.A.A.) to review the needs of corrections in all the states, to provide guidance and discretionary funding for state and local programs. And by serving L.E.A.A. as consultants, architects have been—and continue to be—involved in upgrading prison standards.

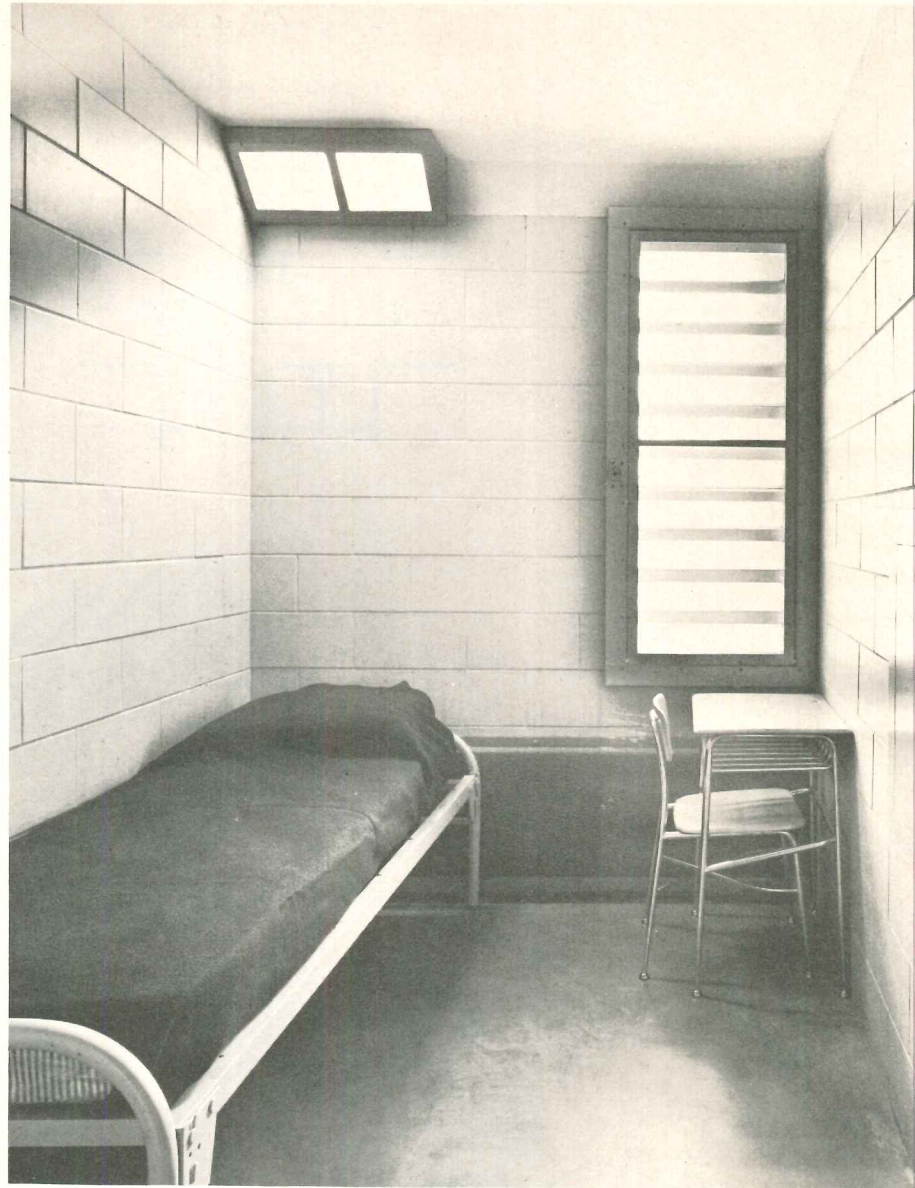
2) There is reform in the conditions of confinement

Leadership in matters of prison reform must—and has—come from Washington. Since its establishment in 1930, The Federal Bureau of Prisons has enjoyed enlightened—if underfunded—leadership. Its present director, Norman Carlson, has responsibility for roughly 21,000 Federal prisoners distributed over twenty-nine institutions across the country. Some of these institutions are too old, many are overcrowded or just too large for effective management. Since World War II, the Bu-



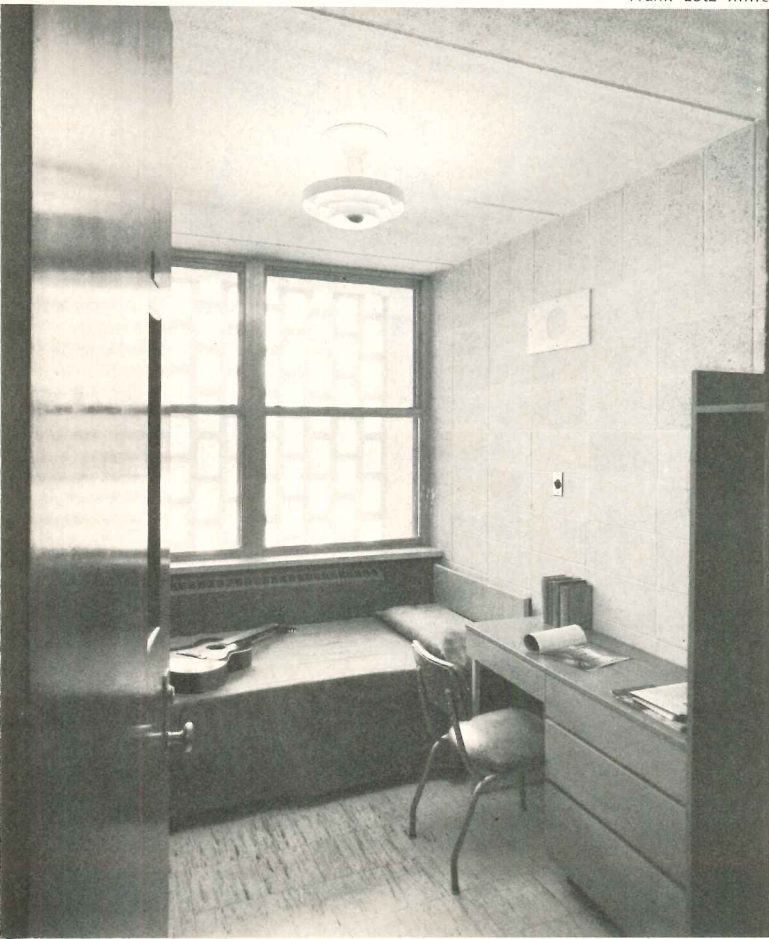
The cells shown here are typical of most in newer institutions. While security requirements still predominate, surfaces are still hard and finishes durable, care has been taken to upgrade the basic level of habitability. There is an emphasis on single-cell occupancy. Fixtures are selected with at least some concern for appearance and use. Louvered windows with bars integral (or sometimes grilles) have mostly replaced traditional barred openings. In short, cell design is beginning to reflect the growing interest in rehabilitation instead of mere custody.

George Cserna

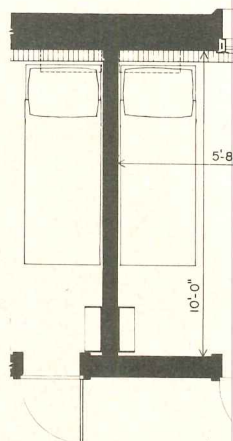


**Cells: privacy and minimum comforts**

Frank Lotz Miller



Standards for cells vary considerably. Typical cell, lower left, at Wisconsin Correctional Institution (Curtis & Davis) resembles a minimally-furnished college dormitory. Cells at Leesburg, N.J., upper left, (Gruzen & Partners) and at Westchester Women's Jail, above and right, (LaPierre, Litchfield & Partners) are slightly more spartan. All three belong to the upper end of the spectrum.



reau has closed two of its decaying facilities—the men's penitentiary at Alcatraz and the Federal reformatory at Chillicothe, Ohio. To replace them, the Bureau has built a new Federal penitentiary at Marion, Illinois (RECORD, April 1965) and the Kennedy Youth Center at Morgantown, West Virginia. Both are model facilities. At the latter, opened in 1969, youngsters of both sexes study and work in an environment without fences or other symbols of custody. They are motivated by an elaborate

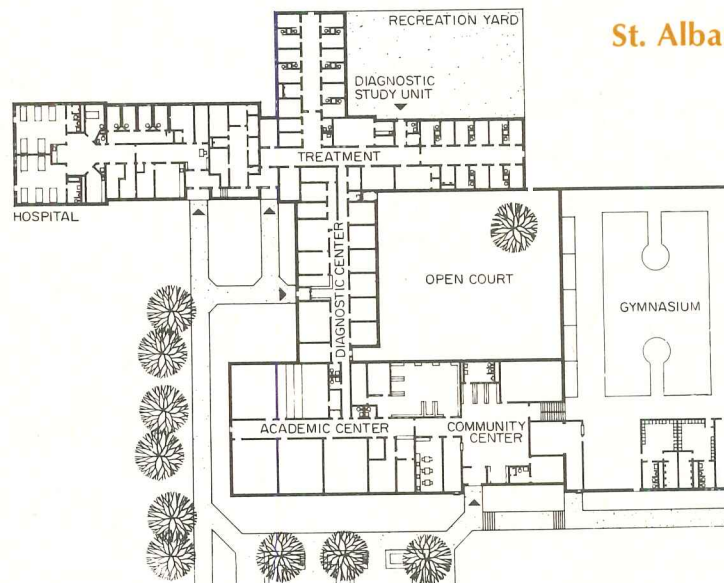
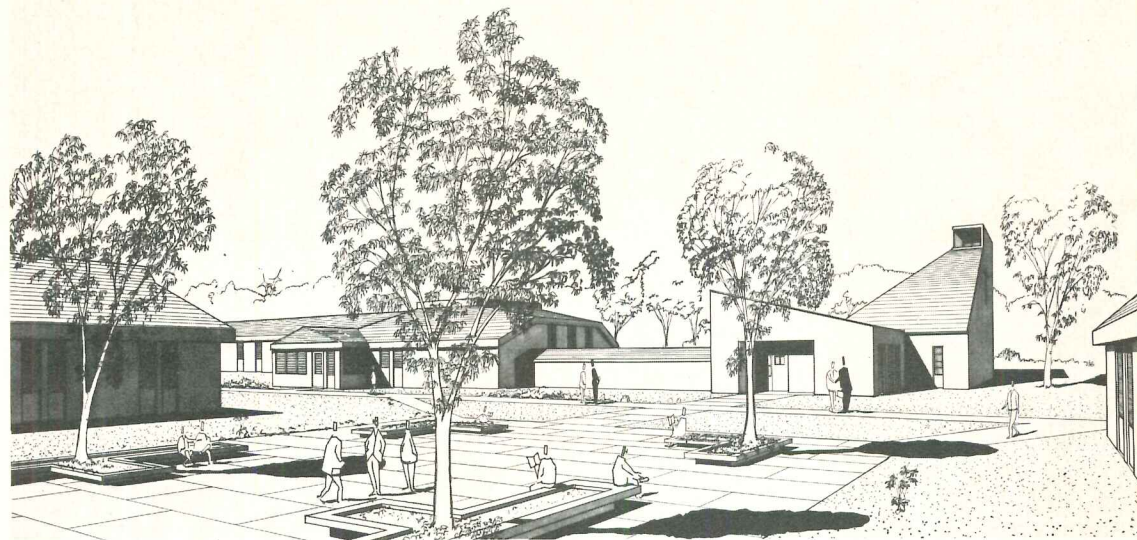
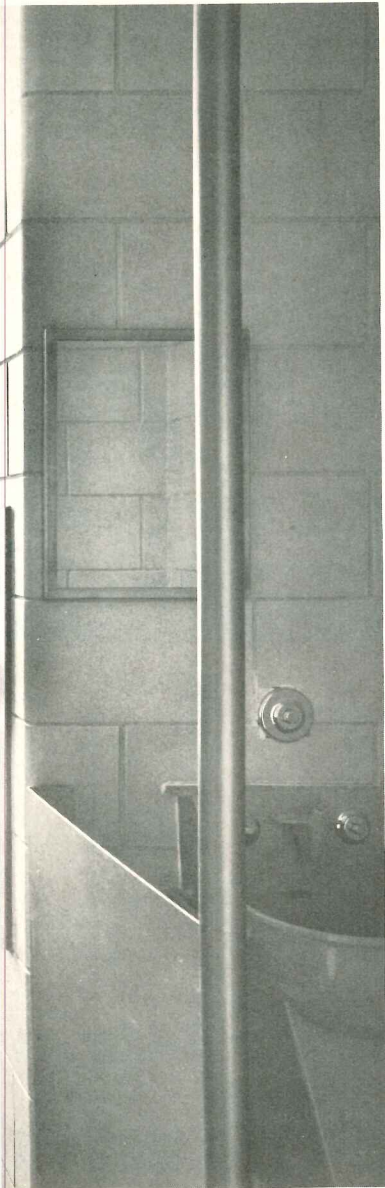
system of privileges and pay. By constructive behavior, a student can progress from "trainee" to "apprentice" to "honor student." With each promotion he acquires a greater personal freedom, more comfortable surroundings and, eventually, furlough and release. The deterrent to escape is removal to a less congenial institution.

In discussing their results, staff members are cautiously optimistic. They point out that theirs is a carefully selected prison population with violent offenders and re-

peaters screened out. It is too soon to tell much, but the first indications are that the program is getting results.

#### Future Federal facilities

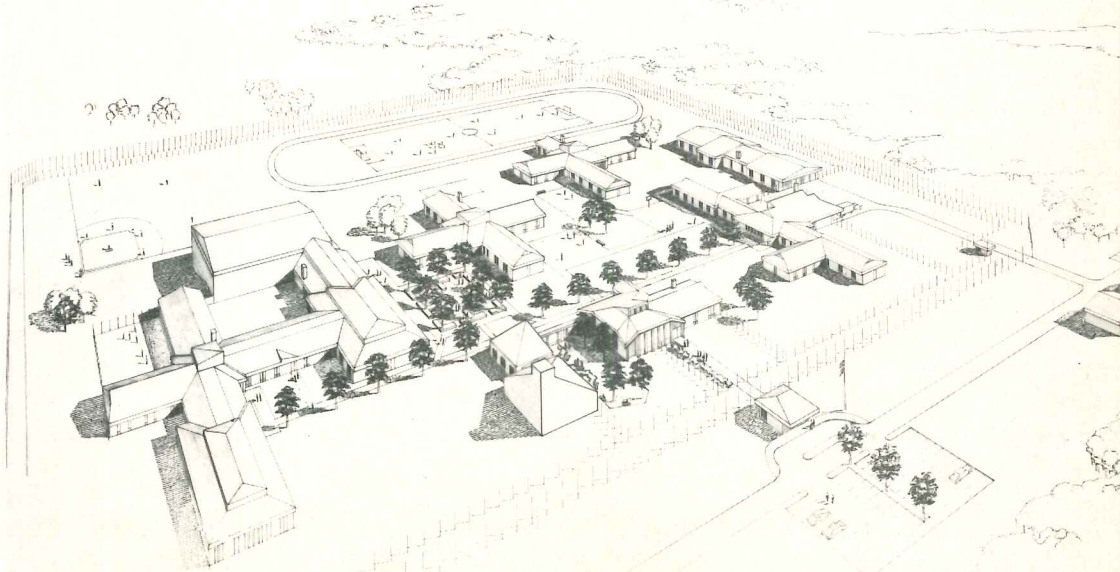
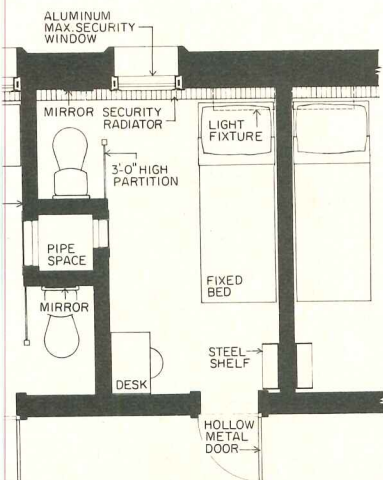
A new Behavioral Research Center for Butner, North Carolina is now under design. It will be a specialized 300-400 bed facility to diagnose and treat a wide variety of acutely disturbed offenders including youths. In addition to its rehabilitative function, the facility will include a center



### St. Albans Correctional Facility

"More than fifty per cent of crimes committed in Vermont are by people in the 16-25 year-old bracket," says Rudy Morse, the state's Director of Probation and Parole. This campus-like facility, programmed for 140 youthful offenders, aims first at pre-sentencing diagnosis and later at treatment and restoration to community life. The 186-acre Vermont site will eventually include facilities for academic and vocational training, psychiatric services, religious consultation, recreation and family therapy.

Architects: Clarence B. Litchfield & Associates.



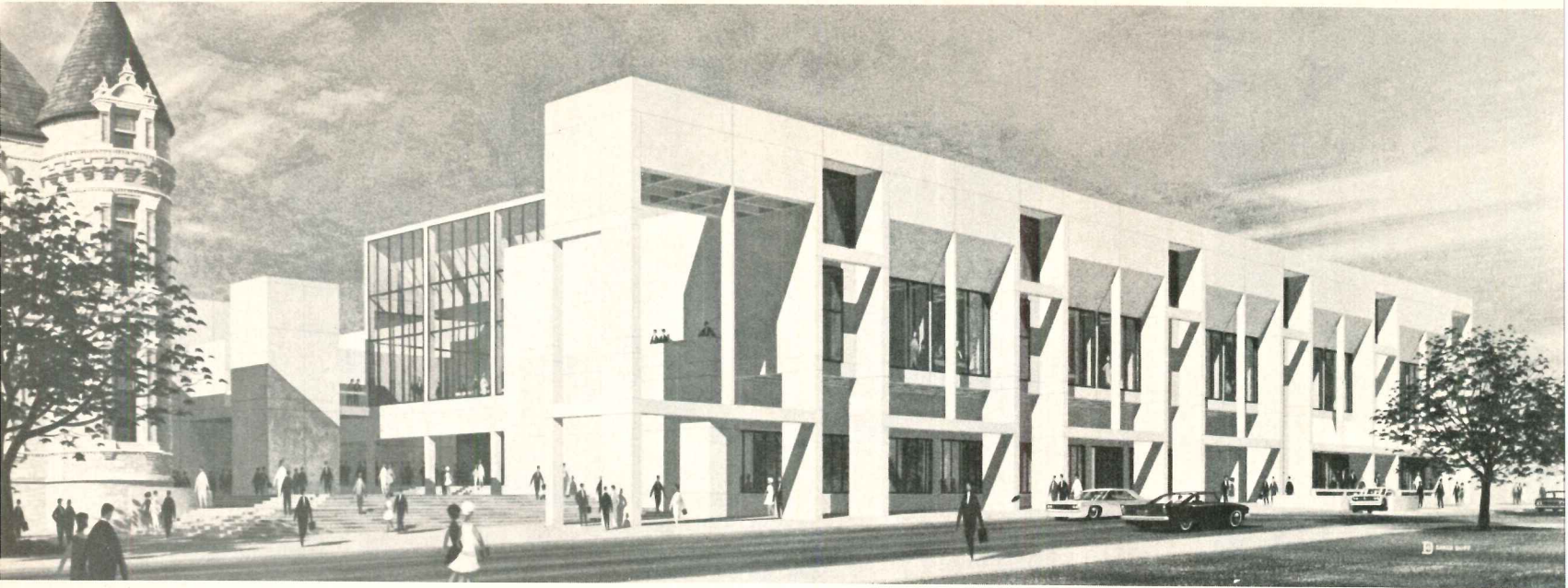
for training correctional staff in dealing with deviant behavior.

Funds are now being appropriated for two urban detention centers (New York and Chicago), regional correctional complexes (Northeast and West) and metropolitan correction centers in five large cities (San Francisco, Philadelphia, San Diego, Houston and El Paso). Estimated cost of these metropolitan centers is about \$53 million.

▪ **State, city and county corrections**

Independent of the Federal system, but looking to it for guidance and funding, are correctional systems for each of the fifty states. These tend to be crazy-quilt networks that include state penitentiaries for long-term offenders and county or city jails, run by a sheriff, for misdemeanants or those awaiting trial. Police know little about a man they apprehend. His potential for violence—even his identity—may not be known for many days. For this reason,

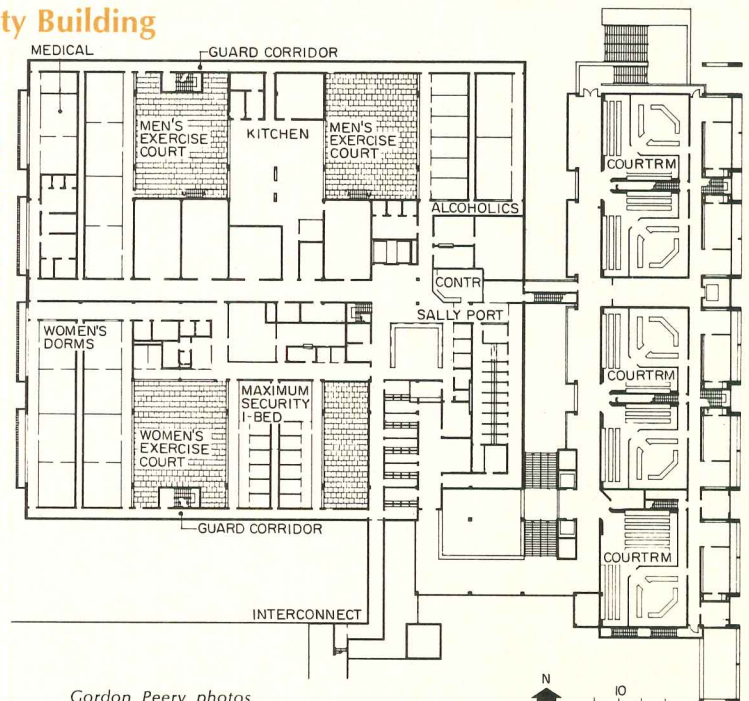
most jails must be maximum security installations. Often suffering from unclear jurisdictions and lack of cooperation, and seldom having any capability for rehabilitation, these facilities can be the bane of penologists. When they are consolidated with other criminal justice functions—as in the Spokane Public Safety Building (page 116) or the Orange County Jail (page 119) they are most apt to be effective. Duplication of functions can be curtailed, important records made more immediate, and



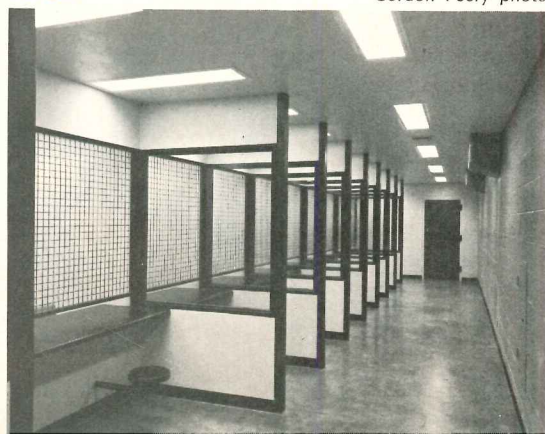
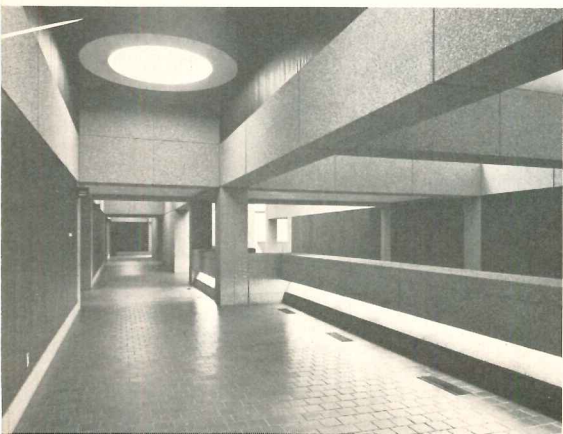
**Spokane Public Safety Building**

This handsome structure in Spokane, Washington, is one of the first in the country to combine the full range of city and county criminal justice functions. By sharply reducing the usual duplication of these functions, the architects have been able to provide space for educational and rehabilitative programs that previously were nonexistent. The facility includes sheriff's office, police quarters, courts, prosecuting attorney's office and separate jails for men, women and youthful offenders. The new structure is linked to the existing courthouse building which stands as a city landmark. It is smaller in scale than its older neighbor but clearly retains its own identity.

Architects: Walker & McCough.



Gordon Peery photos



prisoner transportation all but eliminated.

At the state level, the most difficult problems exist. Overcrowding and decrepitude are their worst. First offenders have long been locked up with hardened criminals. Educational opportunities are minimal, work meaningless and rehabilitation all but impossible. But even here, improvements have been noticeable.

■ **New spaces, new planning requirements**  
In California, with a prison population of

28,000, excellent diagnostic facilities have been developed at Vacaville and Chino. Before being sentenced, prisoners are given educational, medical, social, vocational and psychological evaluations. From the results, judges can sentence men to appropriate institutions that offer differential modes of treatment. Specialized treatment centers for juveniles, for instance, are located throughout the state. If the spiral of crime has a soft underbelly anywhere, surely it is at this juvenile level. Young offenders

are only recently beginning to receive the benefit of special funding and research.

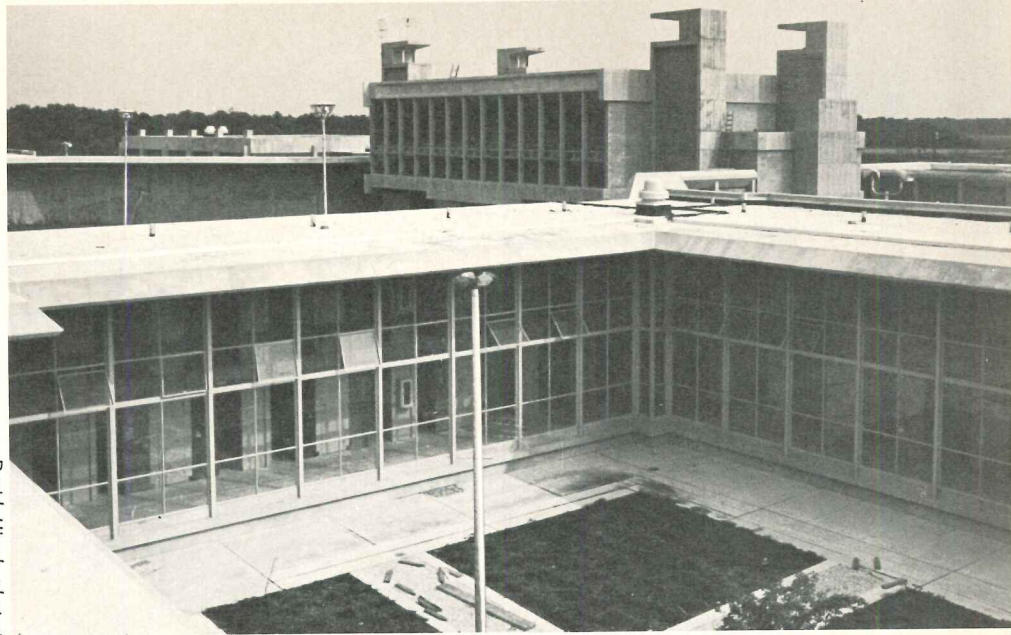
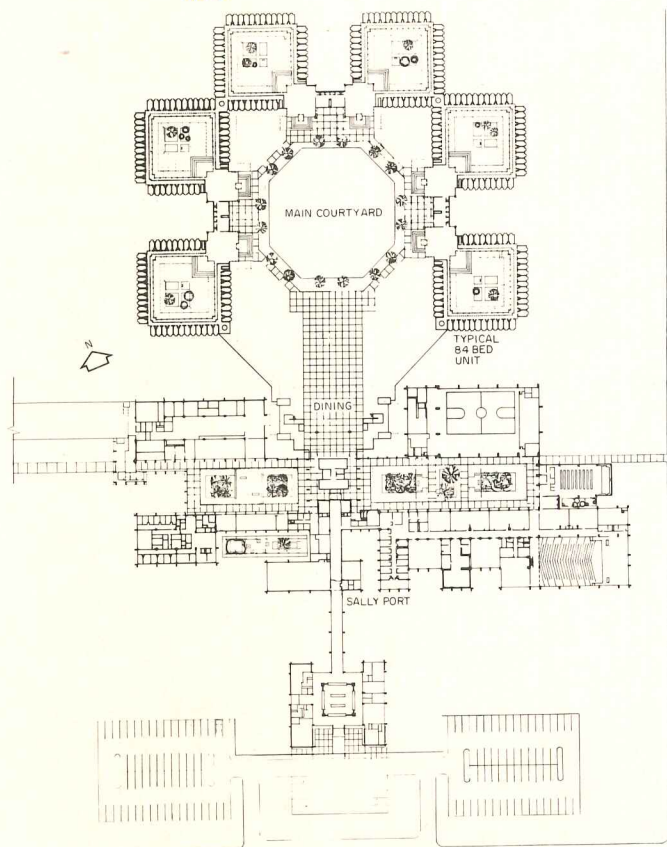
In other states there are other signs. At Oregon State Penitentiary, a \$600,000 vocational building is now rising. In Kansas, the Boy's Industrial School has had marked success in reducing juvenile crime. A number of states have re-evaluated correctional work programs and are now training inmates in marketable skills—data processing and electronics among them.

Last spring, at Temple University's De-

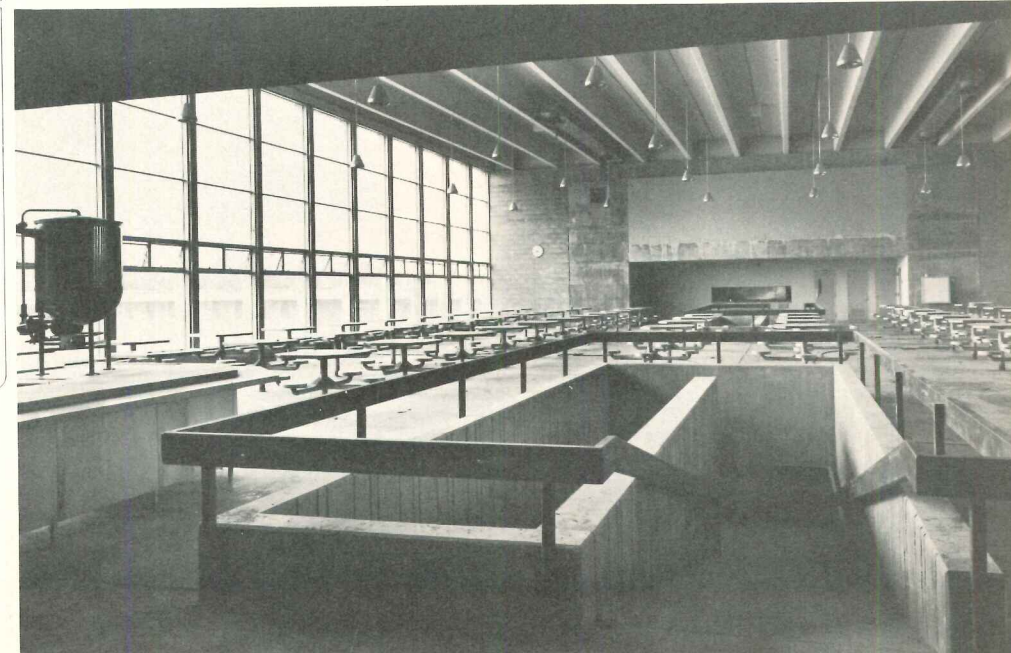
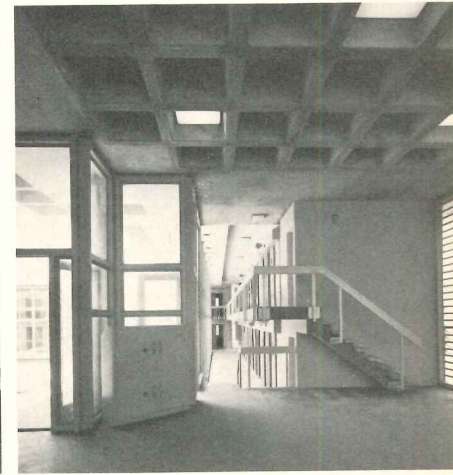
## Leesburg Medium Security Prison

When complete, this prison in southern New Jersey will house 504 male inmates classified as medium-security risks. The six living units each contain eighty four single cells distributed over two levels and arranged around a large court to form a security perimeter. Each unit, in addition, has its own interior courtyard. The central, glasswalled dining hall is linked to administrative and educational spaces, an infirmary and chapel. The whole plan is loosely arranged to minimize the sense of confinement while maximizing the variety of visual experience. Informal outdoor walkways allow prisoners to experience the changing seasons.

Architects: Gruzen and Partners.



David Hirsch photos



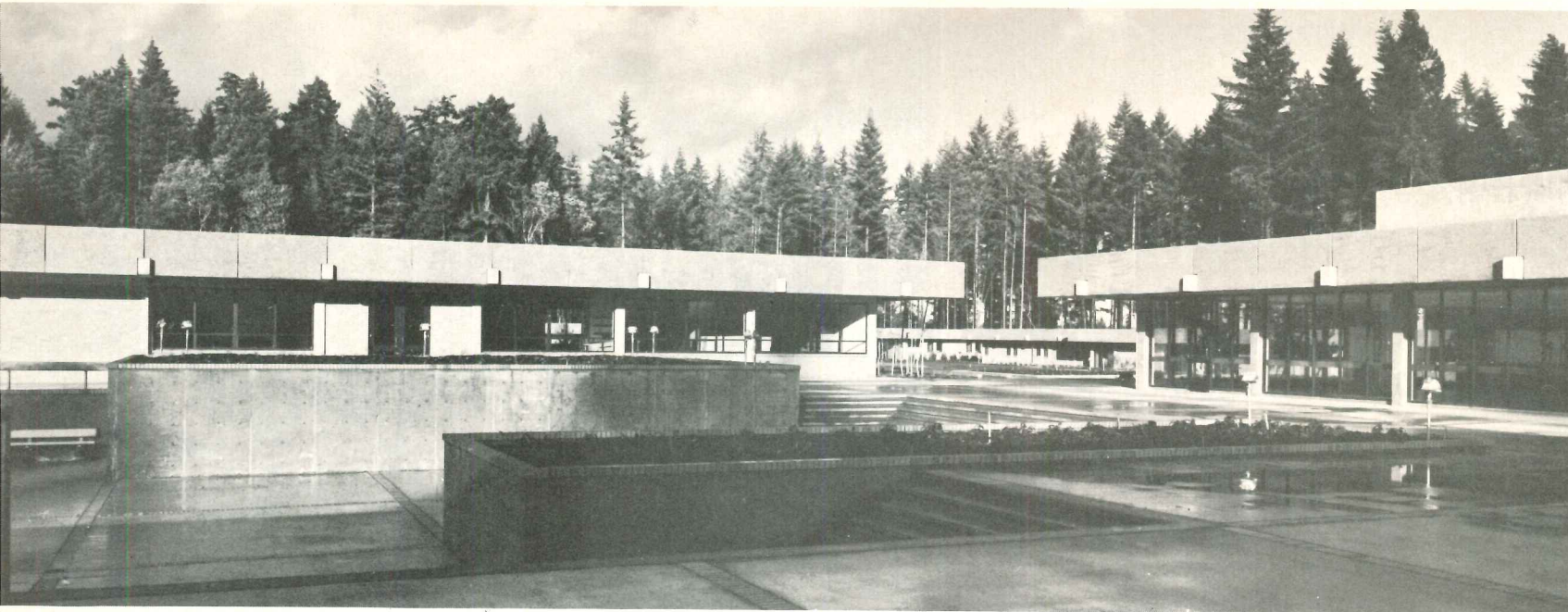
partment of Architectural Design and Construction, chairman Carl Massara supervised his students in a prison design project for downtown Philadelphia. Among the fresh ideas that emerged: a city prison that places a small shopping center on the street and provides an opportunity for prisoners to sell goods made behind prison walls. Not only would such an outlet assist prisoners in rehabilitating themselves, it would contribute to the economy of a community in need of retail stores.

▪ **The search for alternatives**

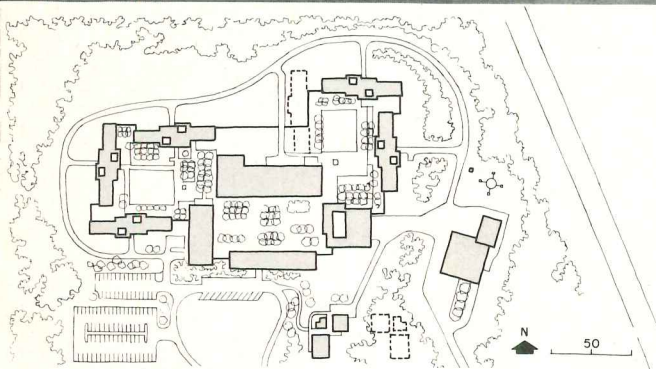
Few people concerned with criminal justice in America doubt that our prisons and jails contain many men, women and children who would offer no serious threat to society if released immediately to selected community treatment facilities. These include narcotics offenders and alcoholics who need highly specialized treatment centers—not jails. These include “one-time offenders” and “nuisance offenders” in jail for non-support, vagrancy and simi-

lar minor offenses. These also include men who have refused induction into the armed services.

By conservative estimate, violent and dangerous criminals represent only 15 per cent of the population now confined. These must be kept out of circulation—indefinitely if necessary. Many of the rest, at little public risk, could be released into community treatment centers under the supervision of an augmented parole and probation force. Such probationary ar-



Gordon Peery photos

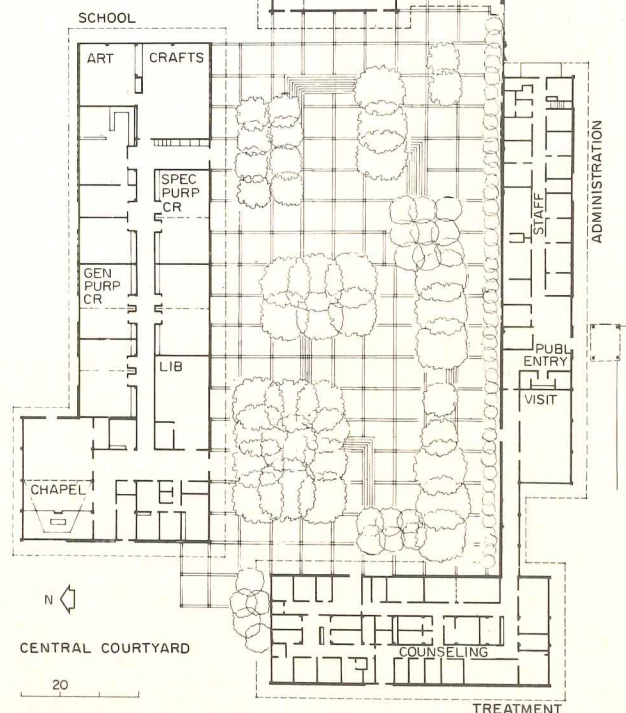
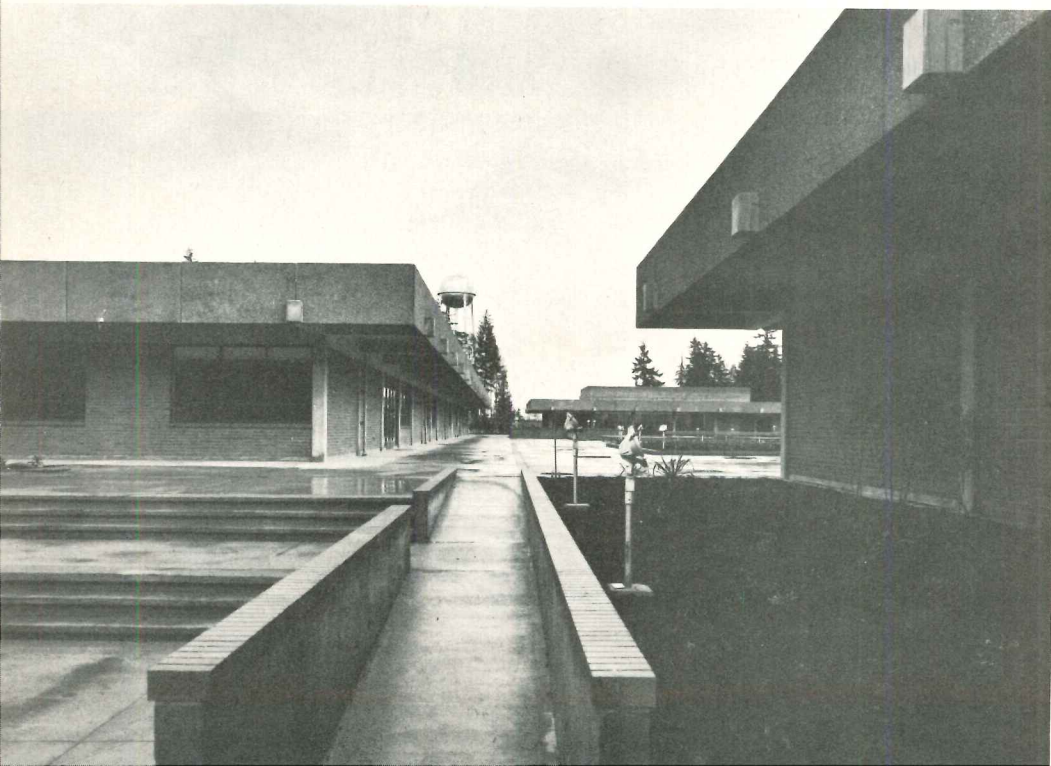
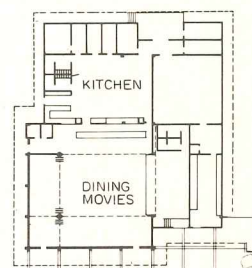


**Washington Institute for Women**

Located fifteen minutes from Purdy, Washington, this new facility for adult women aims almost exclusively at rehabilitation and is designed to express this goal. Common-use buildings define the central court-yard while housing units form two additional courtyards to the north and west. Most residents carry keys to their own rooms and are al-

lowed an unusual degree of freedom. By sensitive detailing and treatment of scale and massing, the architects have succeeded in creating a pleasant atmosphere, devoid of all symbols of security, neglect and indifference.

Architects: Walker/McGough/Foltz/Lyerla in joint venture with John M. Morse.





rangements are far less expensive than confinement and would allow correctional resources to be concentrated on those who need them most.

At the University of Illinois at Urbana, architect Fred Moyer and sociologist Edith Flynn are using a \$150,000 grant from L.E.A.A. to produce a study of community-based alternatives to incarceration. Now in draft form, *Guidelines for the Design and Construction of Regional Correctional Centers for Adults* will be in print early this fall.

Copies may be obtained from L.E.A.A. in Washington or from the University.

#### ■ Work release and furloughs

Work release programs are not new. Wisconsin pioneered the idea in 1913 and by 1969, more than half the states had developed such programs. Generally, they permit inmates in the last months before release to work in the community during the day and return to custody at night. These arrangements have forcefully demonstrated

their ability to ease an inmate's reintegration into society. Roughly 500 inmates are currently on work release in the Federal system. Fewer than one in twenty fails to live up to its terms. These are returned immediately to prison where they serve out additional terms.

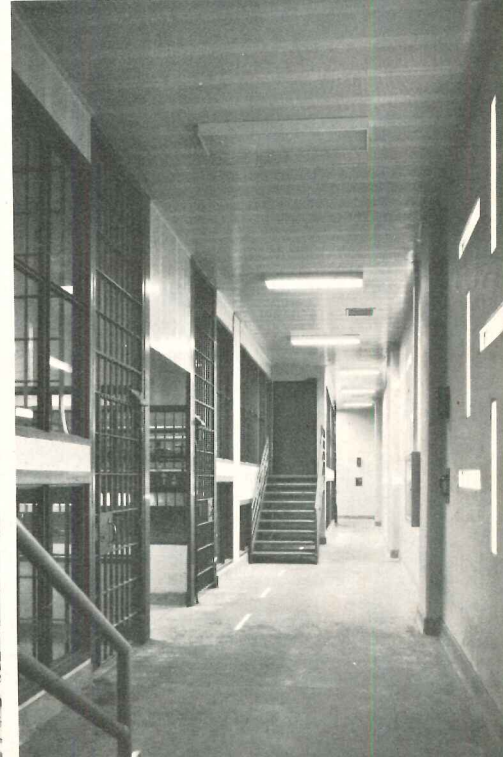
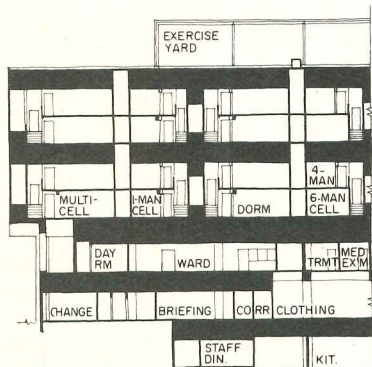
Among the states, work release has been generally successful. South Carolina's work release centers have provided a model. William Leeke, the State's Director of Corrections, has acquired several vacant

Marvin Rand Associates photos

## Orange County Jail

Part of a new civic center for Santa Ana, California, this three-building complex is designed to house 1,335 prisoners (1,200 men and 135 women) in maximum security. The inside cell block denies prisoners access to the exterior wall and permits the use of a continuous, perforated concrete grille in place of barred windows. The split level arrangement of tiers allows visual surveillance from a guard corridor at an intermediate level. Closed circuit television augments this surveillance capability by monitoring all remote spaces. The project also includes separate dining facilities for both men and women, an infirmary, a chapel, and several special treatment spaces. All security spaces incorporate electro-mechanical locking devices operated from a protected central control.

Architects: Albert C. Martin and Associates; general contractor: F. E. Young Construction, Inc.



facilities on dollar-a-year leases for use as halfway houses. Carefully-screened applicants are placed in these centers prior to release. During their stay, they earn salaries, pay taxes, and help support their families. If successful, they are released into the community with a job, a record of employment, and some accumulated savings.

Such centers usually cause understandable anxieties in the communities where they are located. Inmates on work release do escape and sometimes commit fresh

crimes. But of those who escape, many return voluntarily, most others are quickly caught. Since all inmates on work release are to be paroled or released outright in a matter of months, the worst that can happen is that a crime will be committed six months sooner. Many experts argue we should accept this risk if the long-term possibility of crime is significantly reduced.

Prison furlough programs are newer. Like work release, they aim in part at testing an inmate's stability and readiness to

return to society. They are granted only for short periods and to comparatively few prisoners. Oregon has such a program and its first results are hopeful. Twenty inmates went home briefly last Thanksgiving and fifty-one at Christmas. All returned.

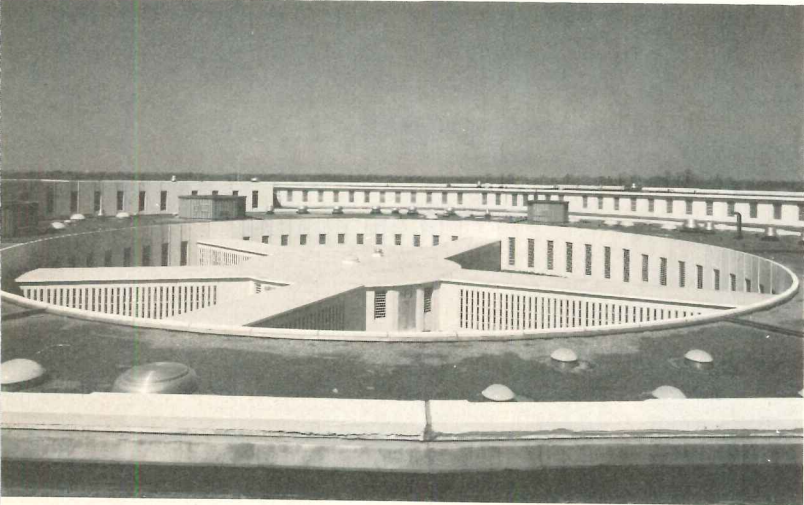
3) *And thus there is reform in the principles of prison design*

▪ **Custody but new concerns**

Certain long standing conventions in the



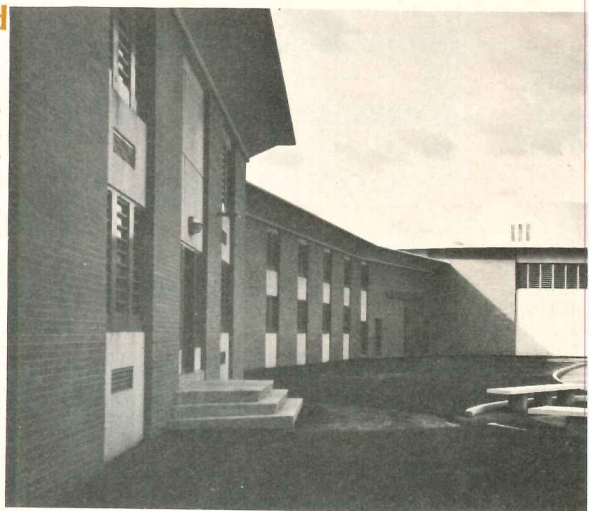
R. Di Maggio below



**Youth Reception and Correction Center**

A large complex by contemporary standards, this Yardville, New Jersey, facility for youthful offenders combines a 400-bed short-term diagnostic center with a longer term, high security institution for 500 inmates. A small special unit of 60 beds (for psychologically disturbed youngsters) is also included. Housing is distributed in a giant, two-story arc around a central, landscaped court; the building perimeter itself forming a security barrier. Interlocking circular structures house communal functions for education, treatment, dining and administration.

Architects: Alfred Claus and Kramer, Hirsch & Carchidi.



Corlandt Hubbard photos

design of correctional institutions are being challenged in the prisons shown on these pages.

■ **The search for close-in sites continues**

For reasons of economy, politics, and penal philosophy, prison sites used to be sought in isolated, rural locations—typically in the northwest corner of the state, out there where the road ends. This resulted in many difficulties. A high grade correctional staff was difficult to assemble and keep. Distant

travel was a hardship for prisoner's families. More often than not, they could not afford the trip. Today, legislatures and correctional departments look for "close-in" sites near courts, near cities and universities where communities can have a part in rehabilitation by offering jobs to inmates on work release and by providing education.

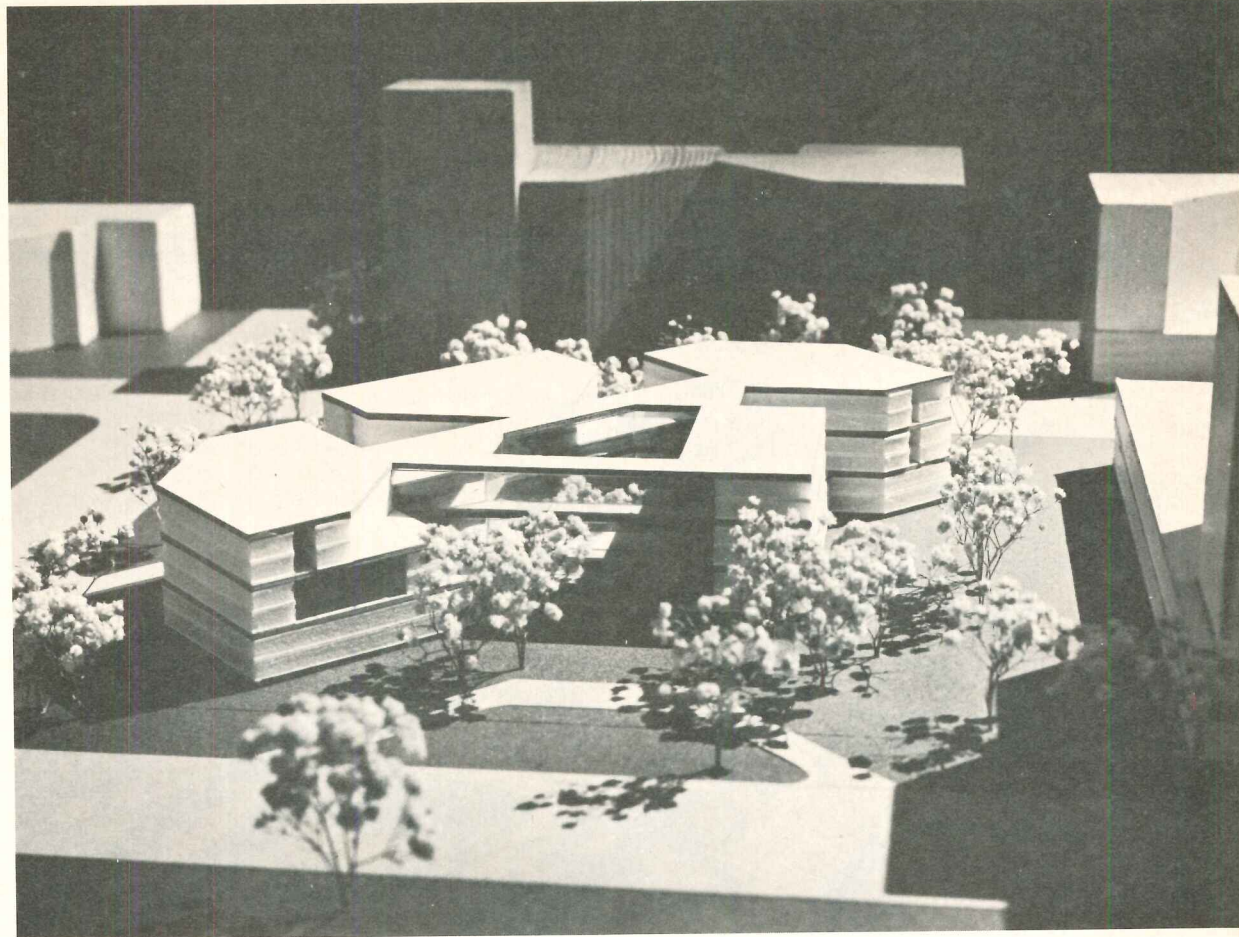
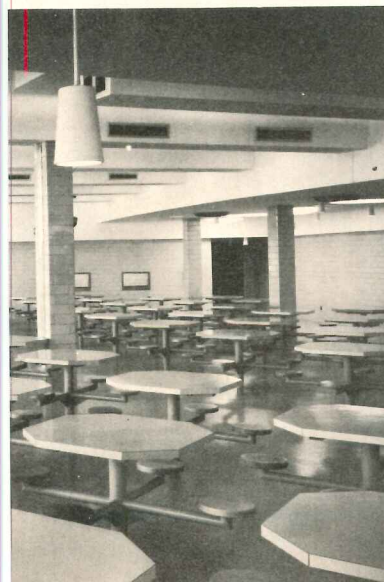
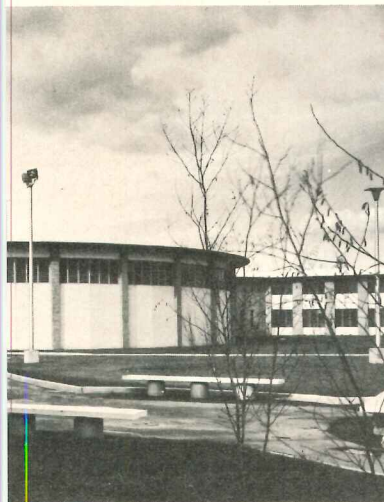
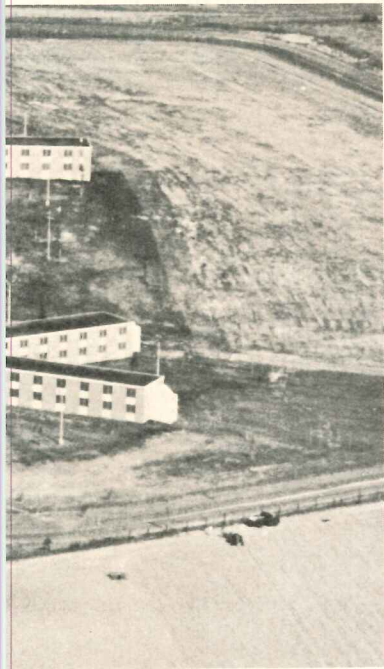
■ **In most cases architects have worked to avoid stiff formality**

They have broken down the stultifying

symmetry and scale of earlier models to create a community or campus-like environment. Bars, grates, towers and locks, while still present, tend to blend into the architectural character rather than dominate it.

■ **New facilities tend to place greater reliance on electronic surveillance**

While concurring in its obvious economies, architect John Grosfeld (La Pierre, Litchfield, Weidner & Grosfeld) warns that



### Omaha-Council Bluffs Correctional Facility

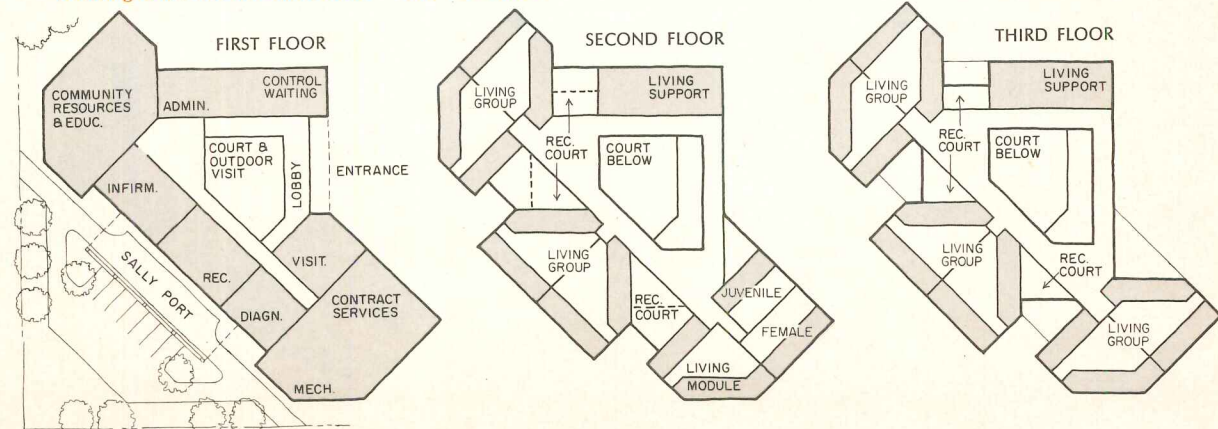
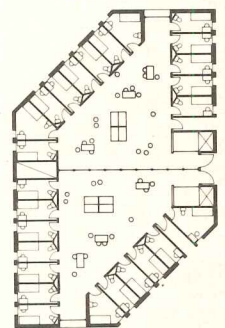
This design for a regional correctional facility in Omaha departs significantly from typical jail solutions. The designers have planned a structure that is non-institutional, non-authoritarian and asymmetrically massed around a large open court. Though security has not been compromised, the whole design has an unexpectedly open and permeable quality.

Housing units are one-man cells

ranged in groups of 12 around open recreational space—a system that permits both control and segregation of prisoners in the most flexible way. Infirmary, diagnostic center, educational space and visiting areas are located on the ground floor.

Architects: Kaplan & McLaughlin in joint venture with Kirkham, Michael and Associates.

TYPICAL MODULE



closed-circuit T.V. has important drawbacks. "Picture resolution is not always of satisfactory quality. Furthermore, prisoners tend to resent electronic monitoring and express that resentment by vandalizing the equipment."

▪ **The prison administrators' preference for single-occupancy cells is beginning to replace the traditional prison dormitory.**

Cells are being grouped in 12- to 18-man clusters and rearranged in ways that have

clear social and architectural implications.

▪ **The controlled setting**

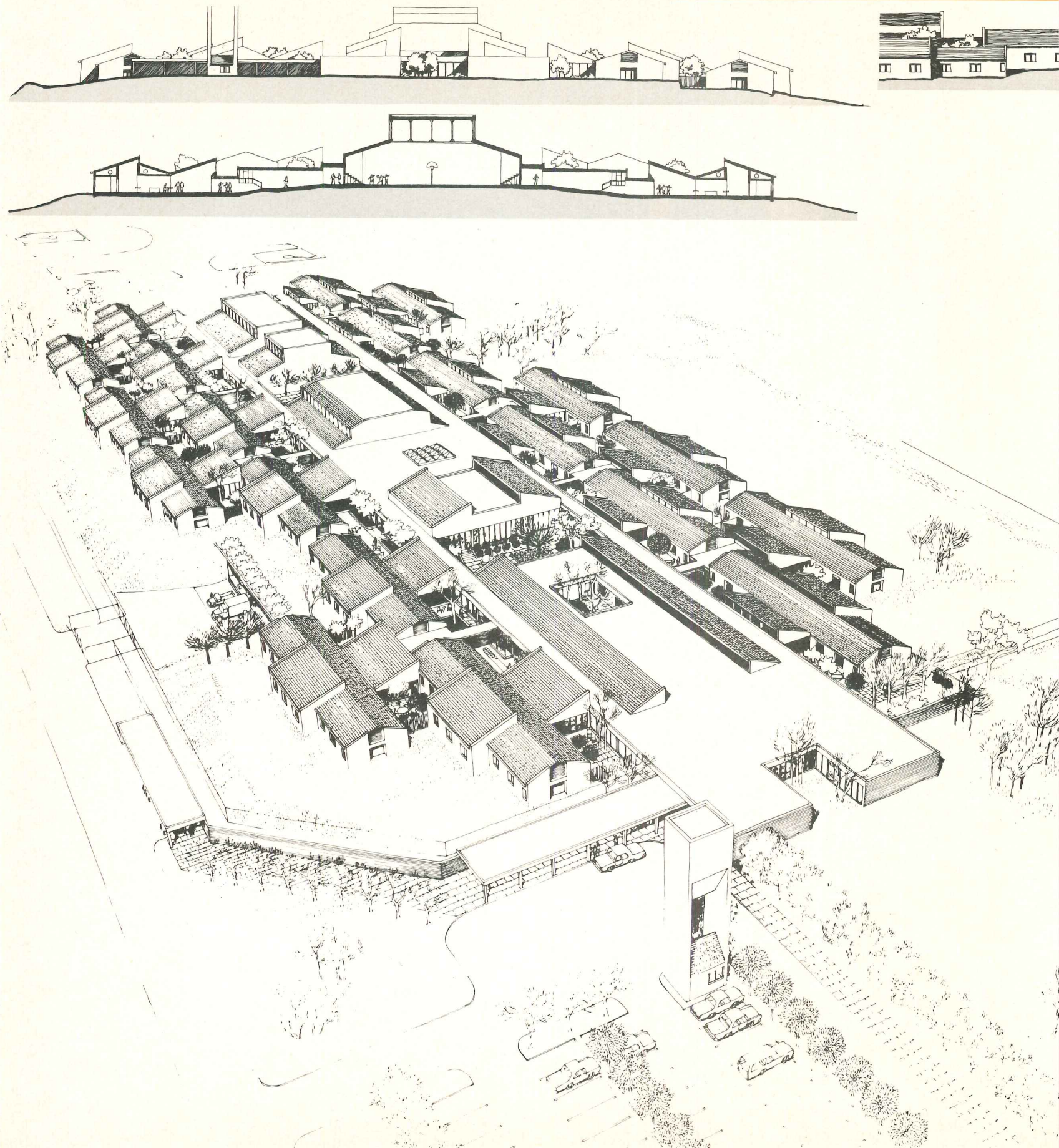
While the temptation is always present to build large facilities, there is a general recognition that the behemoths of the past—San Quentin, Sing Sing, Atlanta, Leavenworth—offered no prospect for rehabilitation. Most new facilities have 600 capacity.

▪ **Increasing specialization**

Both at the Federal and state levels, they

have tended to become more specialized also. The Illinois Security Hospital (page 123) and the St. Albans Correctional Facility (page 115) are clearly programmed, designed and staffed to treat two particular classifications of offenders. As diagnosis and treatment techniques improve, this kind of specialization seems likely to increase.

These humanizing influences reflect a more balanced view of corrections—a view that places rehabilitation on at least a par



with custody and punishment as social objectives.

Rehabilitation programs have been written before. Most remained paper programs. Rehabilitation spaces have been created before. Under pressure of overcrowding, they have often been absorbed into custodial space.

Whether this newest generation of correctional facilities will succeed in correcting is still uncertain. Many signs point to hope. Architect Herbert McLaughlin

(Kaplan & McLoughlin) has expressed this forthright view: "The design of a jail must work to the purpose of humanity. It must provide both the jailer and the inmate with a sense of themselves as non-threatened, worthy individuals. . . . We are learning from the newly emerging discipline of socio-physical design how environments give behavioral cues. These lessons must be applied to jails. An atmosphere which provides privacy, choice, informality and control is not only possible, it is man-

datory."

In a recent letter to Dr. Karl Menninger, Daniel Gale, A.I.A. (Hellmuth, Obata & Kassabaum, speaks to the point: "I think it is becoming clear that inmates have to live in small, treatable groups, be supervised by counselors, not jailers, be given the opportunity to keep busy in fruitful pursuits, express themselves as individuals, be further educated and, perhaps most important to my mind, be permitted to develop a sense of responsibility. . . . The

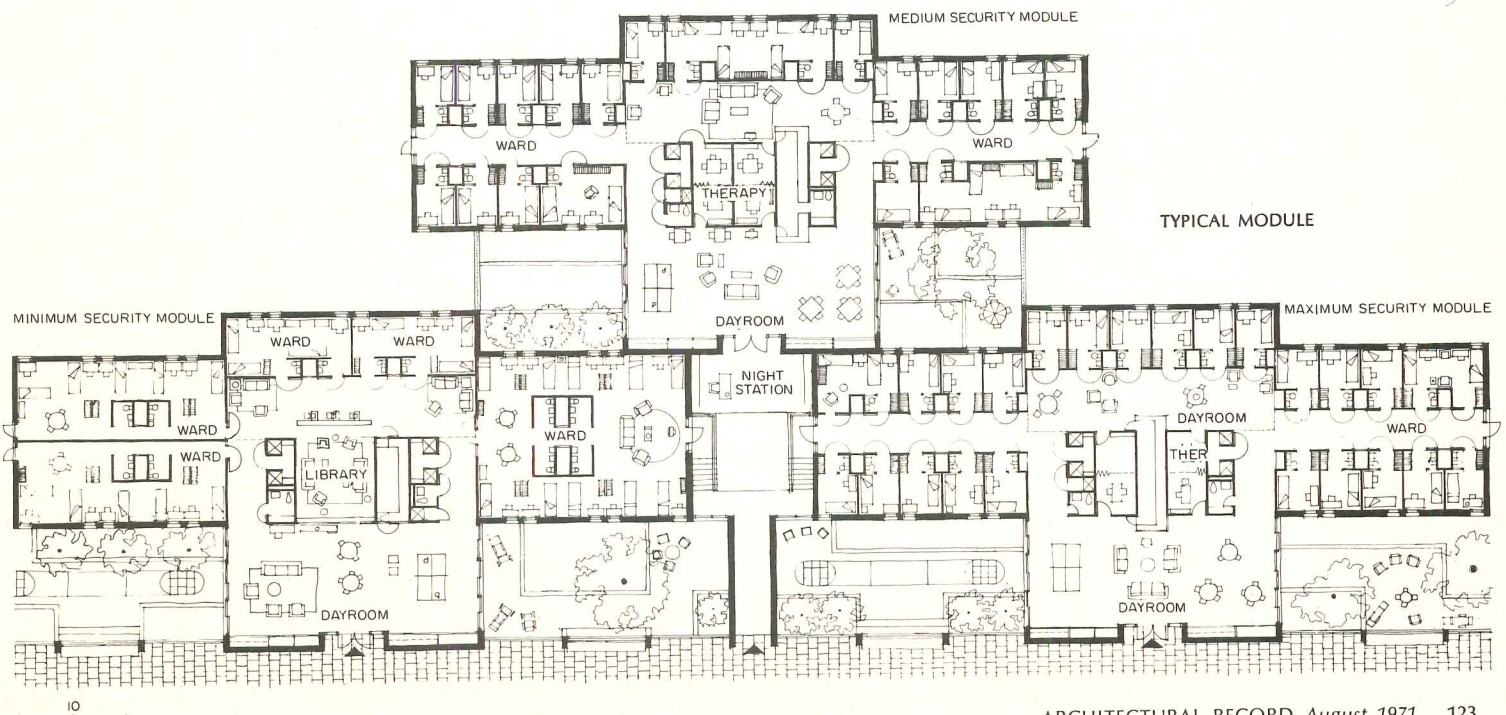
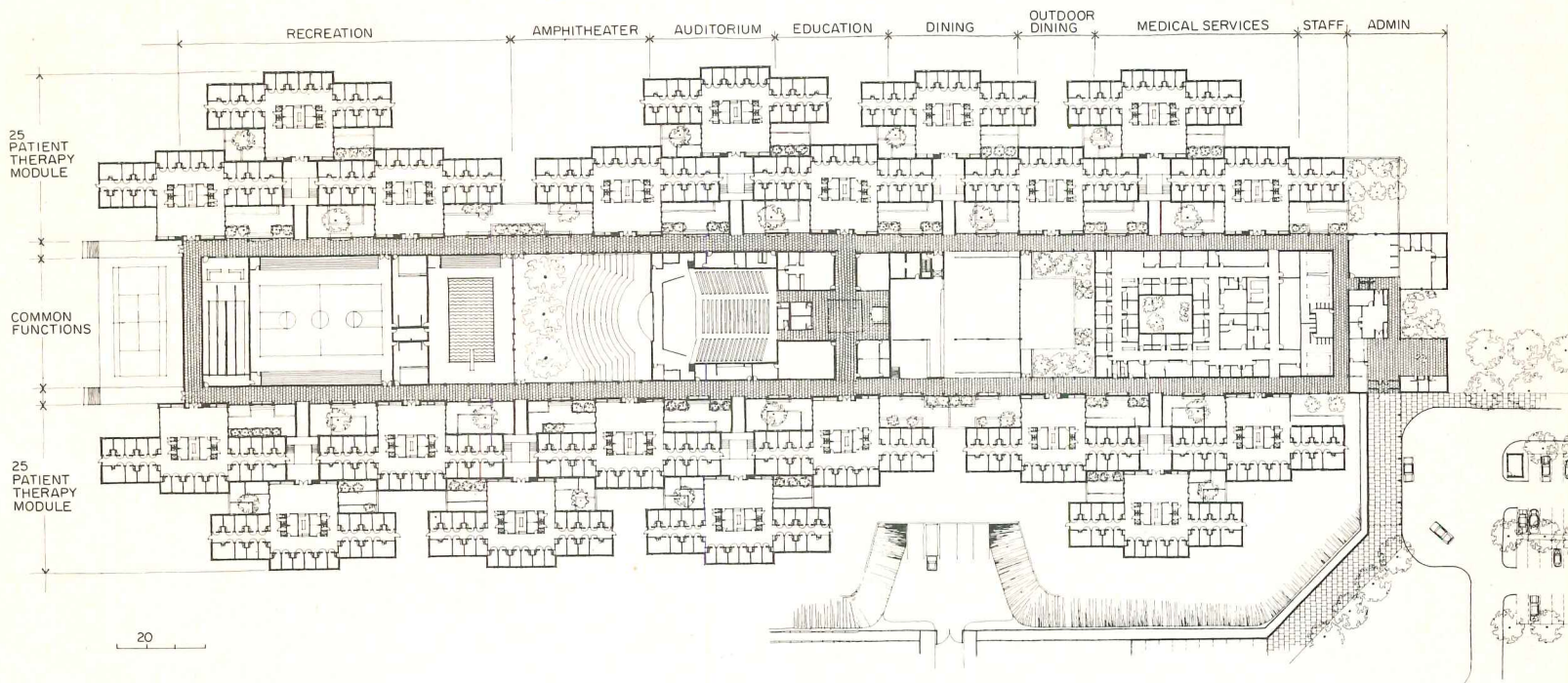
## Illinois Security Hospital

A specialized correctional facility in Belleville, Illinois, for offenders diagnosed as mentally ill, this competition-winning scheme clusters differentiated housing units around common treatment facilities. The circulation-systems

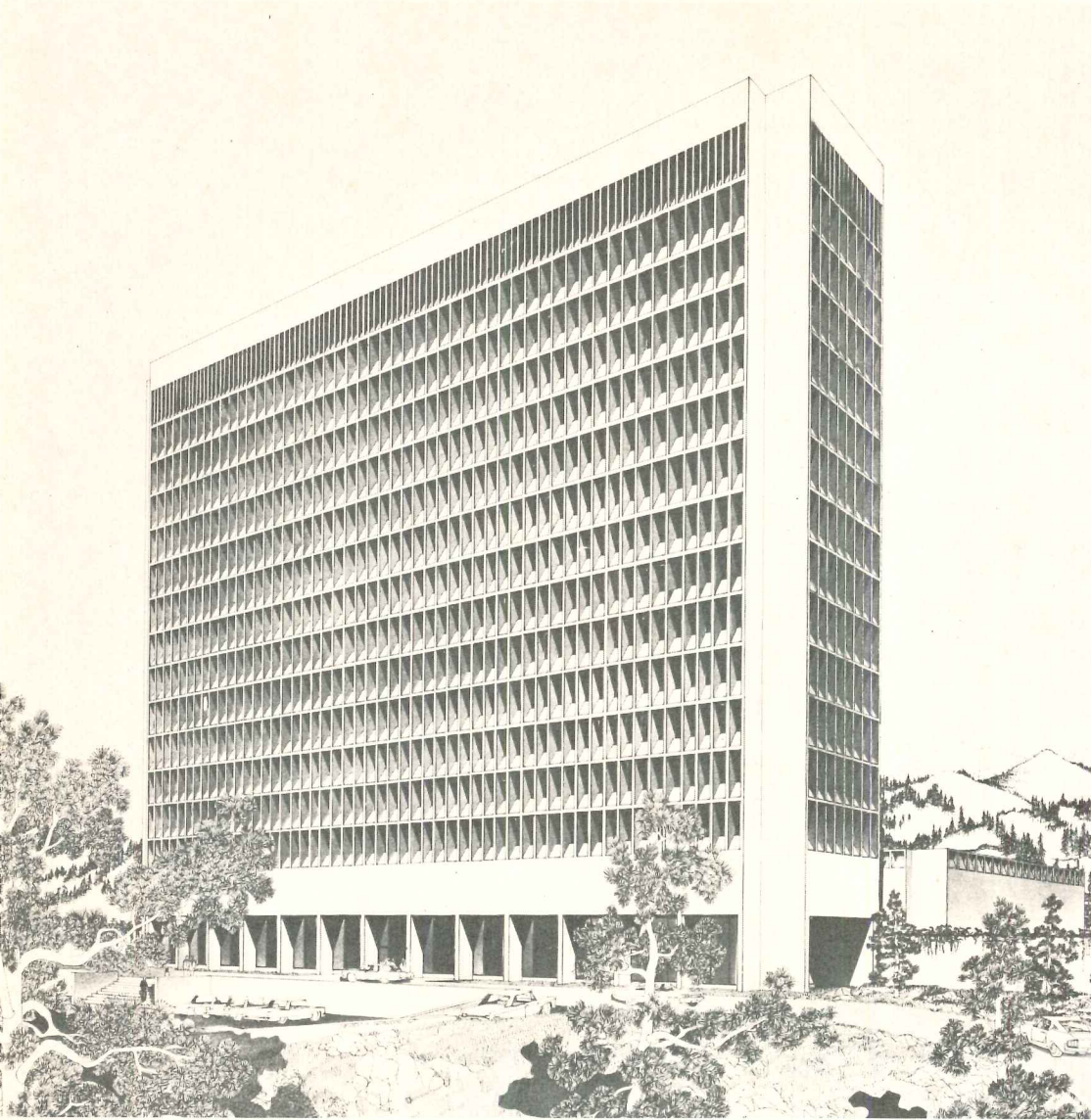
includes interior courtyards used as outdoor therapy space. The facility will use a progressive privilege system based on behavioral response. Living units, graduated from maximum to minimum security, are located sequentially throughout the complex. As patients improve, they ad-

vance into spaces with less restraints, more recreation and a pleasant environmental more quality. Scale and massing have been important determinants in design.

Architects: Hellmuth, Obata & Kassabaum.



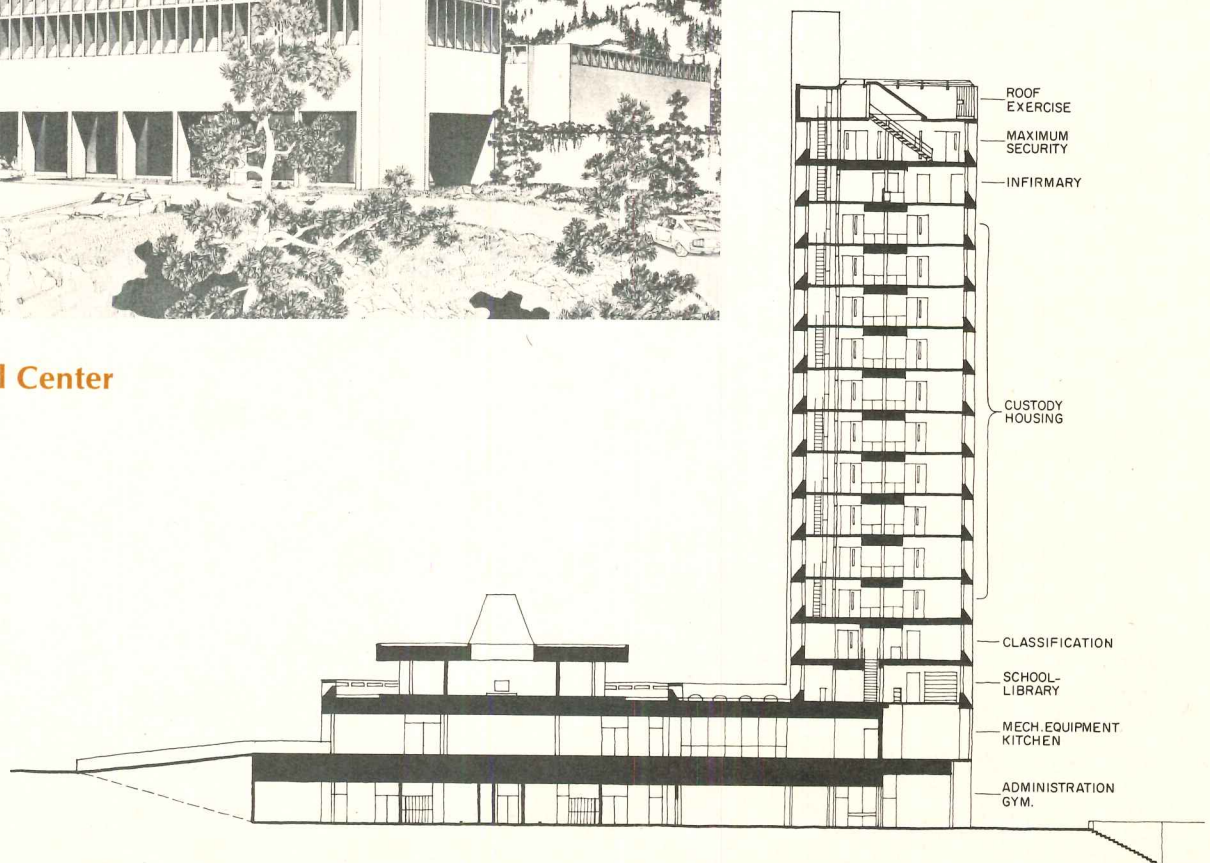
architect must help the division of corrections, assuming he is fortunate enough to have a capable and concerned one, sell, sell, sell, to the public, the legislature, the division of public works, and in some cases the correctional staff itself and the funding agency. . . . Our role, then, can only be to master plan a system, or parts of a system, to give facilities their proper weight in the total plan, then execute those facilities with as broad an understanding as possible. . . . Fantastic things are possible."



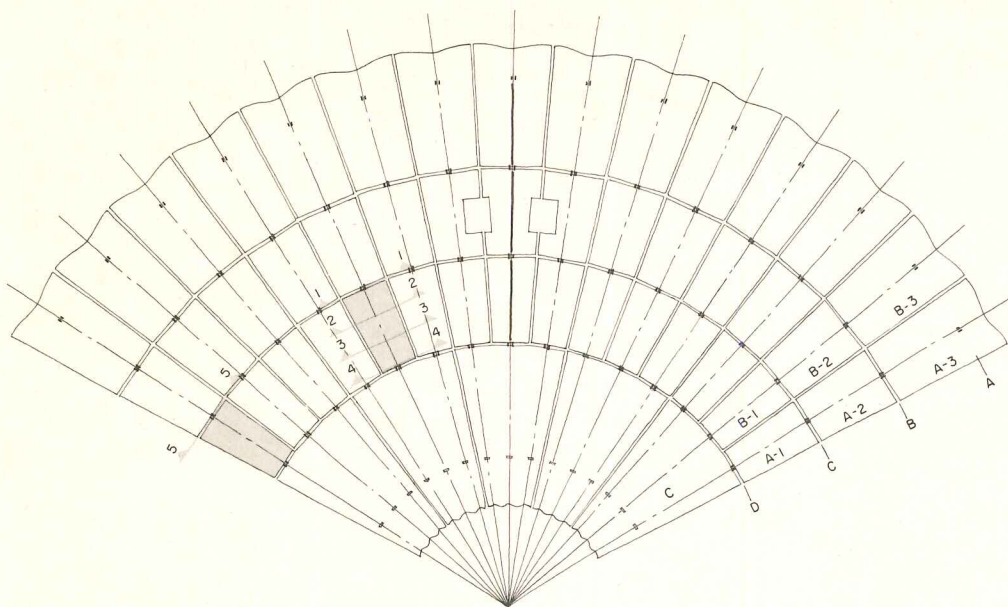
## Western Correctional Center

Believed to be the first high-rise plan for a state prison in the country, this facility for Burke County, North Carolina is now under redesign. It is included here as a project because of its urban implications and the obvious building and land economies it suggests. Common use elements, inside a security perimeter, are located in the base. Classification, treatment and custody units form the tower.

Architects: Charles Morrison Grier & Associates with Curtis & Davis.



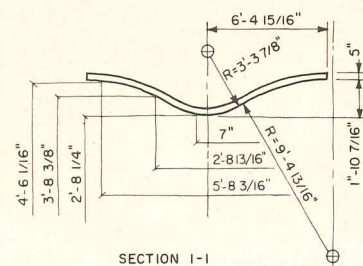
## Ingenuity simplifies construction of a complex concrete roof



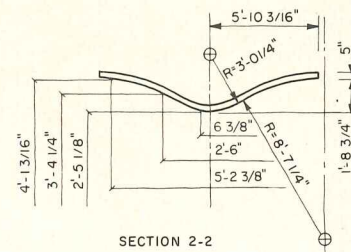
High Ridge Park in Stamford, Connecticut is a series of office buildings developed and built by the F. D. Rich Company to attract company headquarters and managements. All the buildings in the development—each with its own distinctive exterior and shape—have been designed by architect Victor H. Bisharat, A.I.A. One of the buildings, shown here under construction, has a plan in the shape of an arc, and its special visual feature is the roof which resembles a scallop shell.

Because of the straightforward, modular nature of the plan, a conventional steel frame was used for the superstructure of the building. How to construct the roof was, however, not so clear-cut. Various techniques were considered, including poured-in-place concrete, metal lath and plaster, etc. The economical technique developed by the consulting structural engineers, Schupack Associates and Company, was to precast the roof in small segments on the ground at the site, using the earth to give shape to the initial form which had a surface of 2 in. of concrete. The 50 arch segments of the roof were formed in only four casting beds. This was made possible by a neat trick of geometry. In section along the arc of the roof the shape is sinusoidal. The segments were designed so that connections between them would

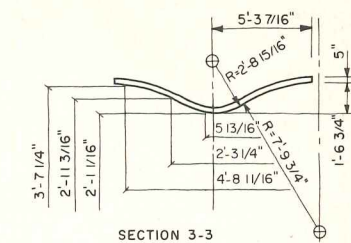
Precast units that comprise the roof shown in the plan above were cast one atop the other at the site using only four casting beds. The earth was used as a mold and covered with 2 in. of concrete to form a bed. The "A" panels for the ends of the roof were cast first. After the first three "A" panels (each a different size) were cast, the second three were cast. Then "B" panels were cast successively on top of them.



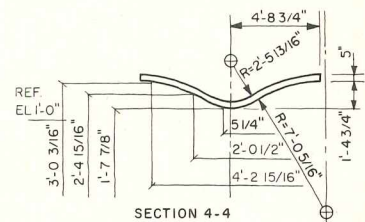
SECTION 1-1



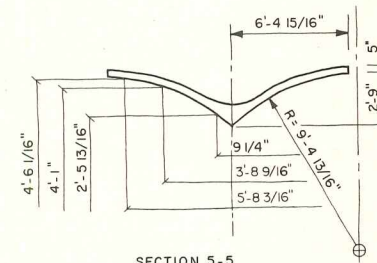
SECTION 2-2



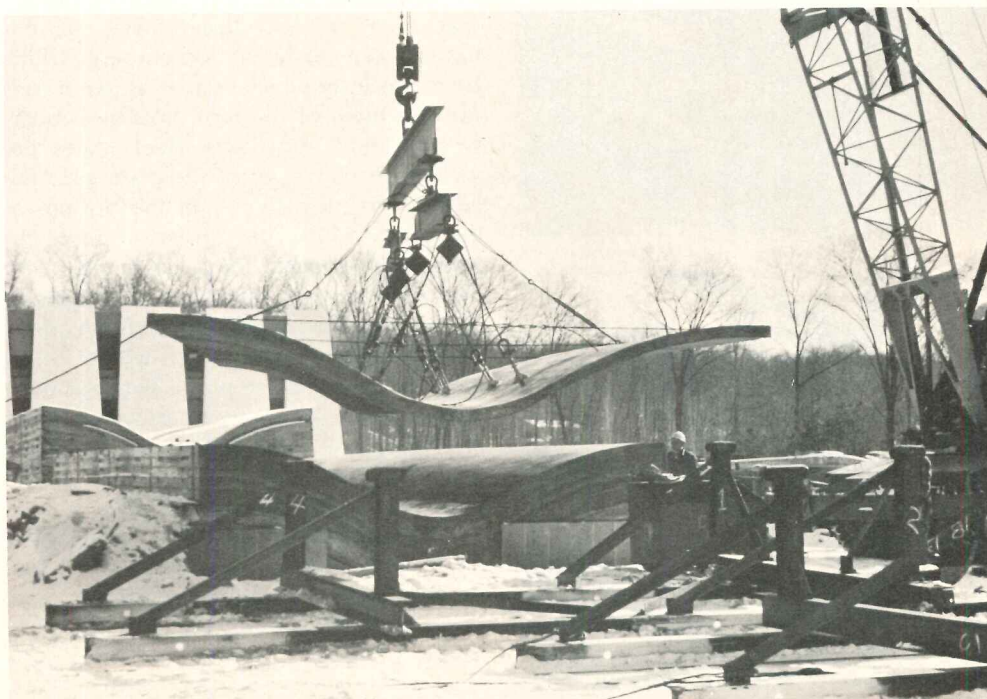
SECTION 3-3



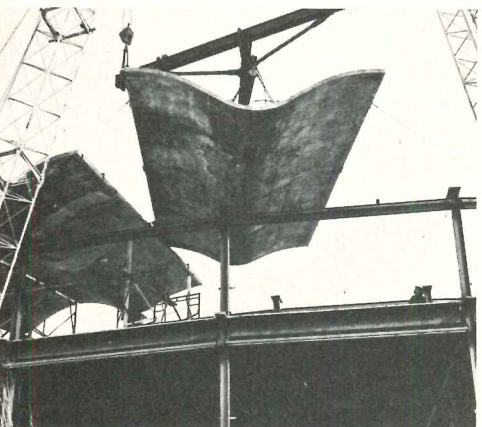
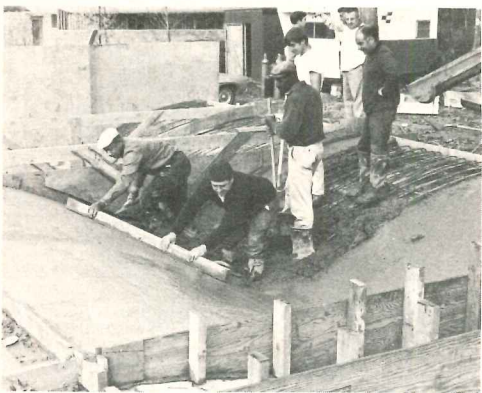
SECTION 4-4



SECTION 5-5



Construction and erection of the "B" panels are shown in the series of photos at left. Front and rear views of the roof under construction are shown bottom, right. Connection details are shown in the accompanying drawings and in the photo across page. Plates are welded to channels to join panels at the ridges. Column connections are comprised of steel plates that form a "box" which is filled with dry-pack concrete.



be made at the ridges rather than at the valleys. In this way the cable ties, which prevent the element from spreading as it is hoisted, could be attached to each element in the stack before it was lifted off by crane. But for the precast elements to be cast one on the top of the other, obviously the top and bottom curvatures of the elements must be the same. (By way of explanation: a concrete pipe, if it were sliced in half, would not stack because the outer radius and the inner radius are not the same). For the precast elements, the curvature was kept the same for each by maintaining a consistent vertical distance from the form. Thus the thickness of the element varies slightly from its average of 5 in., but the top and bottom curvatures do not vary.

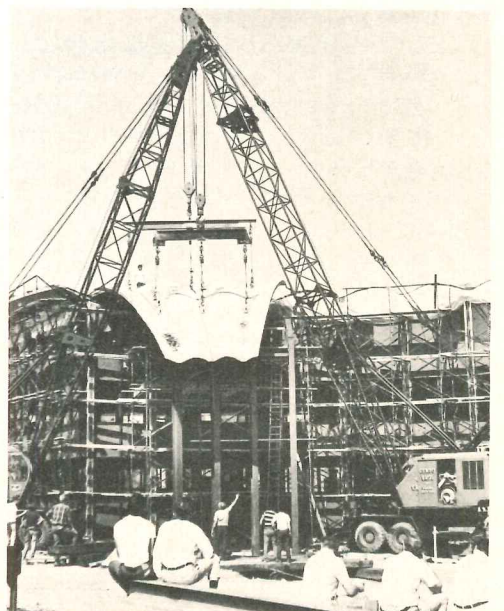
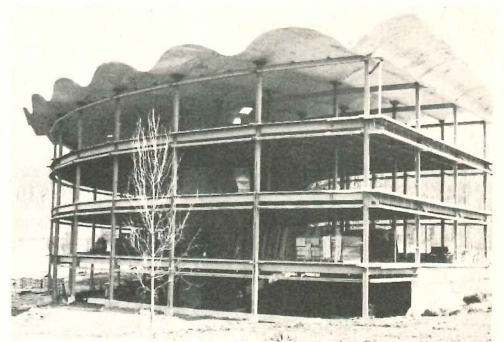
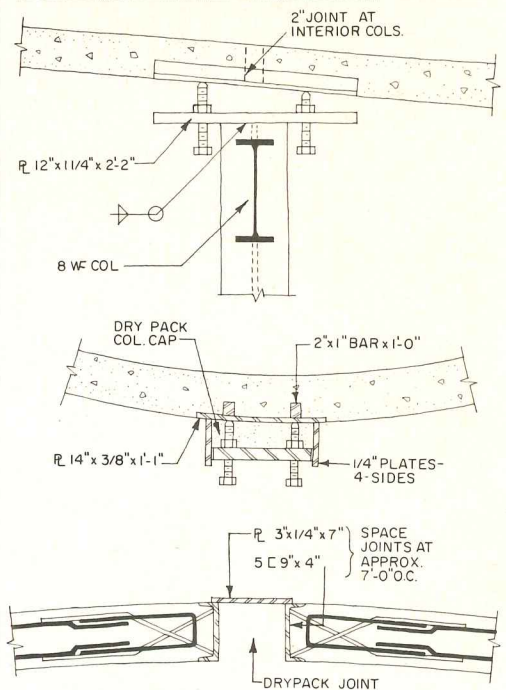
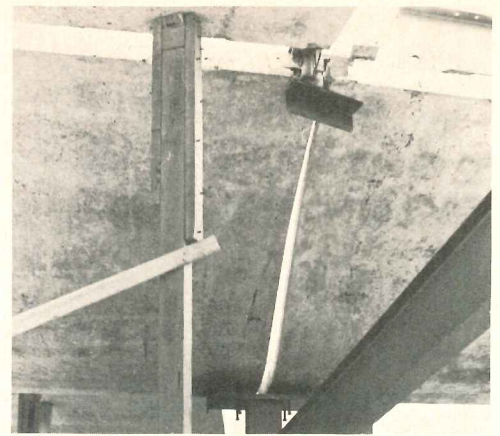
The roof elements at the ends of the building have a different section than the others. These elements jut out in a cantilevered half-arch, and a thicker section is needed in the center to resist the bending induced by the cantilever.

In the casting process, the "A" elements were formed first. The first one of these was removed and the second one formed. Then on top of the second "A" element, reinforcement for the first "B" element was assembled (the top of the "A" element has the same curvature as the bottom of the "B" element). Successive "B" elements were then formed on top of one another. A parting compound was used to prevent bonding, and release of the units was aided by springing the units with the tie cables, and also by the use of wedges.

The "C"-type panels are much larger than the "A" and "B" units. They do not cover interior space, but are used to form a porte-cochere on the narrow arc of the building. No roof drains are required because rainwater flows by gravity off the sloping roof down into a reflecting pool.

Connection of the roof units to the columns is made with an interesting detail that forms a shear head. Steel columns have a steel plate on top through which bolts are inserted that serve as set screws for alignment of the roof units to the correct position. Small-size steel plates are welded to the edges of the plate atop the column and a plate set in the bottom of the precast unit. After three of the plates have been fastened, the space is filled with dry-pack concrete to ensure full bearing of the precast unit on the column plate. Finally the box is completed with a fourth plate being welded in place. The four sides of the box also serve to provide lateral strength to the connection. Steel tie beams were provided between columns in the longitudinal direction of the plan.

To minimize crane travel, the precast units were transported from their stacks on skids, pulled by bulldozer to convenient crane locations around the site. Threaded inserts set in the precast units were provided for attachment of the hoisting cables.



Carl Dittmar photos



## Lightweight, nailable framing speeds construction of resort hotel

Construction time and costs were reduced in the building of a new resort hotel for Playboy Club in Vernon, New Jersey—a ski resort area—through the use of *Speedsteel* lightweight, nailable steel framing for attachment of redwood siding. The main building of this complex, which houses restaurants, banquet rooms and swimming pool, is five stories high and 240 by 360 ft in plan. The exterior is predominately redwood siding, with contrasts being pro-

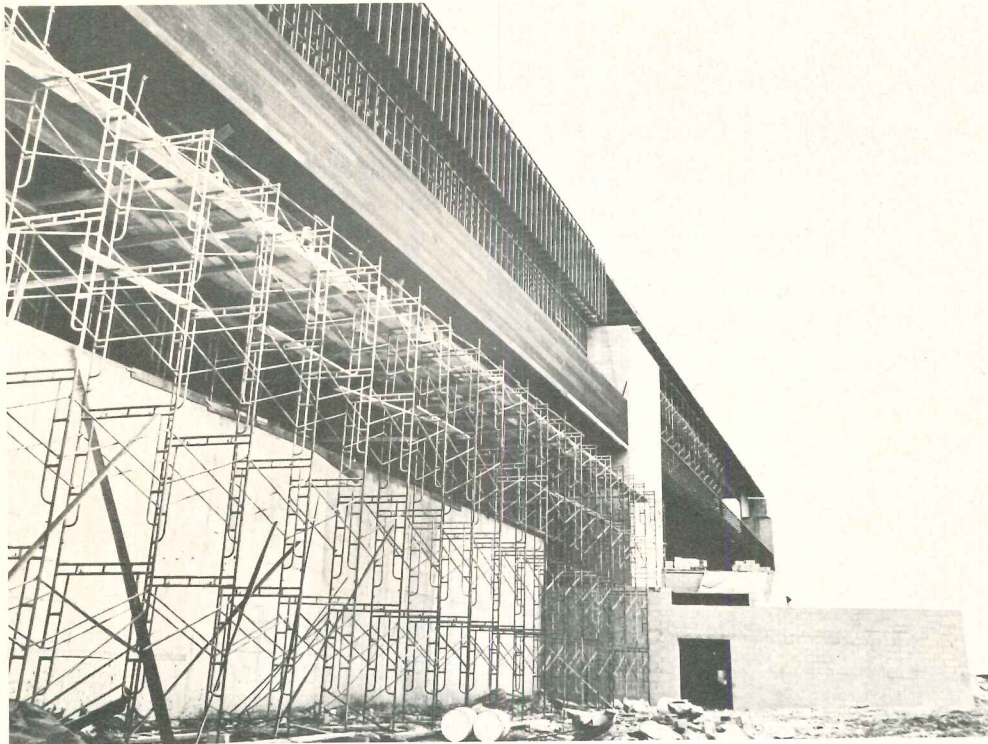
vided by areas of exposed aggregate over concrete masonry and horizontal ribbons of tempered, bronze plate glass.

Originally, the designers, A. Epstein and Sons, Inc., engineers and architects, called for steel beams and angles and 2-in. by 4-in. submembers for the redwood. But very close spacing of the framing elements would have been required for random lengths of plywood and redwood.

Shop drawings were prepared by Keene

Corporation's Metal Construction Products Division in only two weeks.

The designers report that because of the light weight of the nailable steel, the framing could be easily fabricated to the multiple configurations required, and that it could be erected much faster than the alternative wood and heavy steel members. Plywood was attached to the framing with clips and nails, and the redwood was screwed to the plywood.



The 350-ft long facade of this resort hotel is sheathed mainly with random length redwood. The substrate is plywood which is attached to the nailable, lightweight steel framing with metal clips and fasteners. The lengths of redwood are, in turn, attached to the plywood with screws. The light weight and weldability of the steel framing made possible quick fabrication and erection of the in-and-out configuration of the exterior.

## Joint connections of plastic laboratory piping key to cost savings

Installation of acid-resistant polypropylene pipe and fittings, joined by an electrical heat-fusion process was credited with significant cost savings in the installation of the laboratory drain-waste-vent system at the Reed Neurological Research Center at the University of California, Los Angeles. The \$3 million nerve disease research center, designed by Welton Becket and Associates, architects and engineers for UCLA's Center for the Health Sciences, contains facilities both for patients and for highly specialized laboratories.

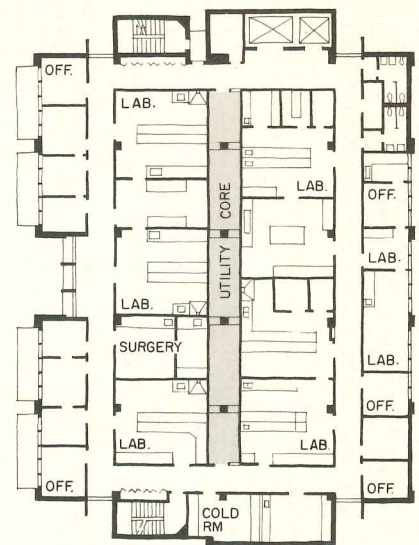
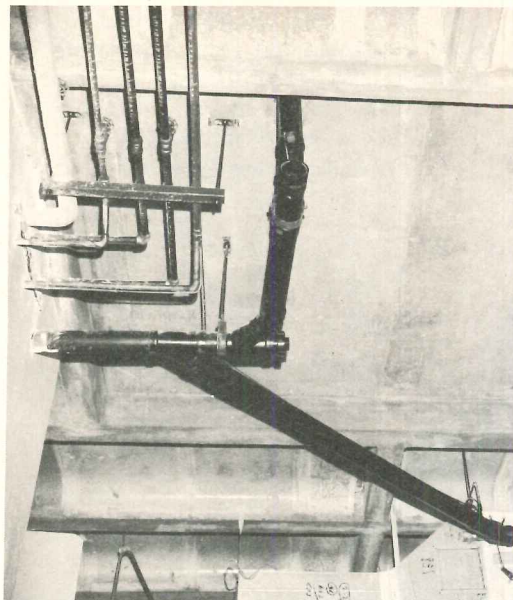
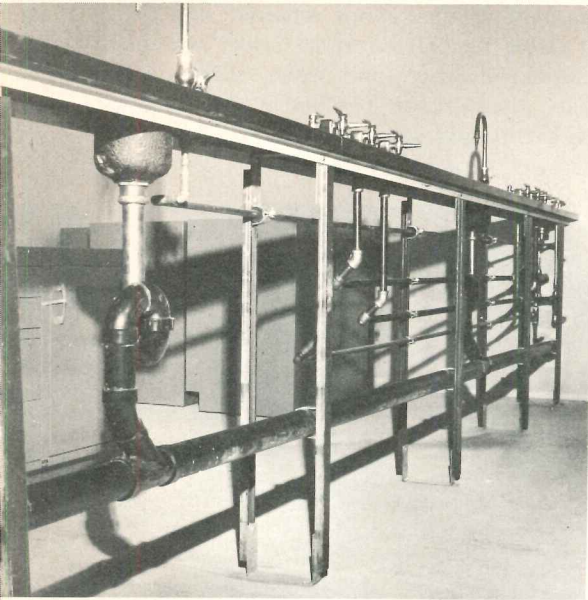
To accommodate the diverse requirements of neurological studies and in- and out-patient care, an integrated system was

provided so that services could be run to any part of the building without major disruptions of large areas and without heavy renovation costs. An 8-ft. wide, central service core runs nearly the height of the building, carrying all mechanical and electrical services for the eight floors.

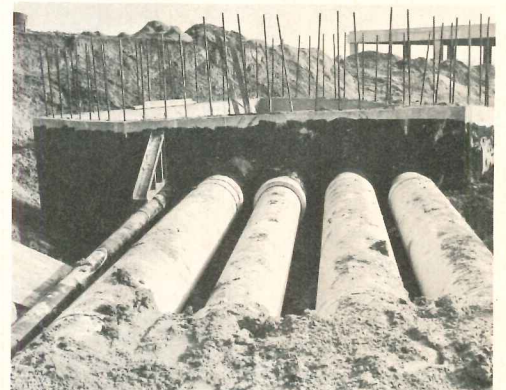
The polypropylene chemical waste system serves all laboratories from the third through the eighth floors. Most installations consist of 2-in. lateral lines running from island-type or well-mounted sinks into the central service core, where they connect to 3-in. vertical waste stacks that feed into a 6-in. polypropylene main. This main then runs to a dilution chamber

outside the building.

More than 5,000 joints were sealed by the GSR Fuseal heat-fusion method. With this method, a simple resistance coil embedded in polypropylene is slipped over the end of a pipe before it is inserted into the fitting socket. This coil is connected to a power unit which applies timed, temperature-controlled heat to the interface between pipe and socket. The result is a solid, homogeneous joint accomplished in about 90 seconds. In the past, heating of socket and pipe separately has been time-consuming, awkward, and un dependable. The new technique was developed by R&G Sloane Manufacturing Co.



## Asbestos-cement pipe selected for industrial park underground piping



Durability and reliability of central heating and cooling systems were especially critical factors in the design of McGaw Park, a 227-acre industrial campus for the American Hospital Supply Corporation in Lake County, Illinois. Plans call for 13 buildings totaling more than two million square feet when the project is finished.

Because chilled-water and hot-water piping, domestic-water piping, and fire-protection-water piping is buried as deep

as 16 ft, and because the facility is located in an area of medium-corrosive soil, the design engineers decided to use non-corrosive asbestos-cement pipe. Insulated *Temp-Tite* asbestos-cement pipe, made by Johns-Manville, was used for the hot-water supply and return lines and for the chilled-water supply line; uninsulated asbestos-cement pipe was used for chilled-water return. Hot water is supplied at 210 F and maximum temperature drop is 40 F. Chilled

water is supplied at 40 F and maximum temperature rise is 18 F. A 10-acre lake supplies water for the building sprinkler systems and to fire hydrants.

The complex was designed by Nelson, Ostrom, Baskin, Berman & Associates, Inc., architects and engineers, in association with architect James N. Lindenberger, director of facility planning for the owner. Sherwin Stenn Engineers, Inc., were mechanical and electrical engineers.

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From roof deck to vapor barrier to insulation to built-up roof to flashing to walkway, Carey's proven roofing products offer superior protection to buildings... and to you.

We top it all off with a 10-Year Inspection and Service Contract that includes periodic inspections at 2, 5 and 10-year intervals.

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One of our Architectural Relations Managers is ready now to help you select the best combination of materials to meet your requirements. See our catalog in Sweet's Architectural and Industrial Construction Files — 7.1/Ca. Or return the coupon. Philip Carey Company, Division of Panaco Corporation, Cincinnati, Ohio 45215.

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- Have an Architectural Relations Manager contact me.

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Company \_\_\_\_\_

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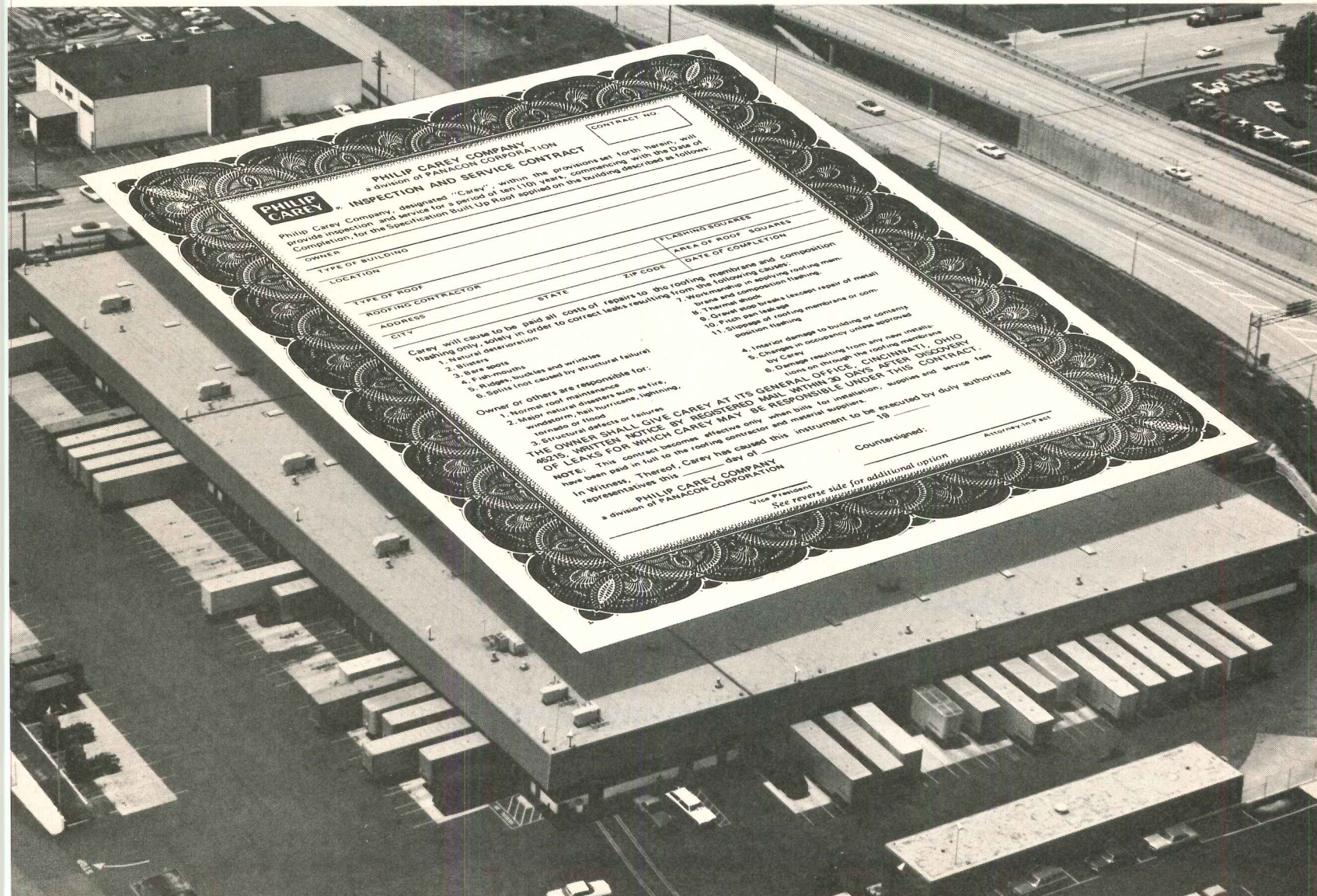
City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_



Dept. AR-871  
Philip Carey Company  
A Division of Panaco Corporation  
Cincinnati, Ohio 45215

For more data, circle 60 on inquiry card



CONTRACT NO. \_\_\_\_\_

**PHILIP CAREY COMPANY**  
a division of PANACO CORPORATION

**INSPECTION AND SERVICE CONTRACT**

Philip Carey Company, designated "Carey", within the provisions set forth herein, will provide inspection and service for a period of ten (10) years, commencing with the Date of Completion, for the Specification Built-Up Roof specified on the building described as follows:

OWNER \_\_\_\_\_

TYPE OF BUILDING \_\_\_\_\_

LOCATION \_\_\_\_\_

ZIP CODE \_\_\_\_\_

FLASHING SQUARES \_\_\_\_\_

AREA OF ROOF SQUARES \_\_\_\_\_

DATE OF COMPLETION \_\_\_\_\_

ROOFING CONTRACTOR \_\_\_\_\_

STATE \_\_\_\_\_

CITY \_\_\_\_\_

Carey will cause to be paid all costs of repairs to the roofing membrane and composition flashing only, solely in order to correct leaks resulting from the following causes:

1. Natural deterioration
2. Natural defects and wrinkles
3. Bares spots
4. Ridges, voids and structural failures
5. Spots (not caused by structural failures)
6. Storm (not caused by structural failures)
7. Workmanship in applying roofing membrane and composition flashing
8. Thermal shock
9. Cracked stop breaks (except repair of metal)
10. Patch pan leakage
11. Storage of roofing membrane or composition flashing

Owner or others are responsible for:

1. Normal roof maintenance
2. Major natural disasters such as fire, windstorm, hail, hurricanes, lightning, tornado or flood
3. Structural defects or failures
4. Changes in occupancy unless approved by Carey
5. Damage resulting from any new materials
6. Damage through the roofing membrane
7. Damage through the roofing membrane
8. Damage through the roofing membrane
9. Damage through the roofing membrane
10. Damage through the roofing membrane
11. Damage through the roofing membrane

**THE OWNER SHALL GIVE CAREY AT ITS GENERAL OFFICE, CINCINNATI, OHIO, WRITTEN NOTICE BY REGISTERED MAIL WITHIN 30 DAYS AFTER DISCOVERY OF LEAKS FOR WHICH CAREY MAY BE RESPONSIBLE UNDER THIS CONTRACT.**

NOTE: This contract becomes effective only when bills for installation, supplies and service fees have been paid in full to the roofing contractor and material supplier.

In Witness Whereof, Philip Carey Company representatives this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_

**PHILIP CAREY COMPANY**  
a division of PANACO CORPORATION

Vice President  
See reverse side for additional option

Counterigned: \_\_\_\_\_ Attorney in Fact

# The Carrier Volumaster<sup>®</sup>

A revolutionary apartment air-distribution system  
harnesses the Coanda effect.

The Volumaster starts with all the proven advantages of a central climate control system. Then adds some unique improvements of its own.

First, a Carrier exclusive: a special variable-speed fan-coil unit. Only one unit is needed for each apartment. Its motor is specifically designed to follow the heating/cooling load. This offers the owner up to 20% lower operating costs. And the unit's reliability greatly lowers maintenance costs, too.

Then, there's the new Volumaster outlet. This Carrier exclusive provides even air distribution regardless of the load.

How does it work? Instead of pouring air into a room, the damper blade automatically adjusts to the air flow. The aerodynamic design of the outlet enables the discharge air to cling to the ceiling.

The air hugs the ceiling even under low flow conditions. There are no drafts. No hot spots. No dumping of air.

That's not all that's exclusive with the Volumaster. It also features patented solid-state controls. Controls that are totally dependable, last longer, and require no field maintenance.

In addition, the factory's prepackaging reduces installation costs and provides more effective quality control.

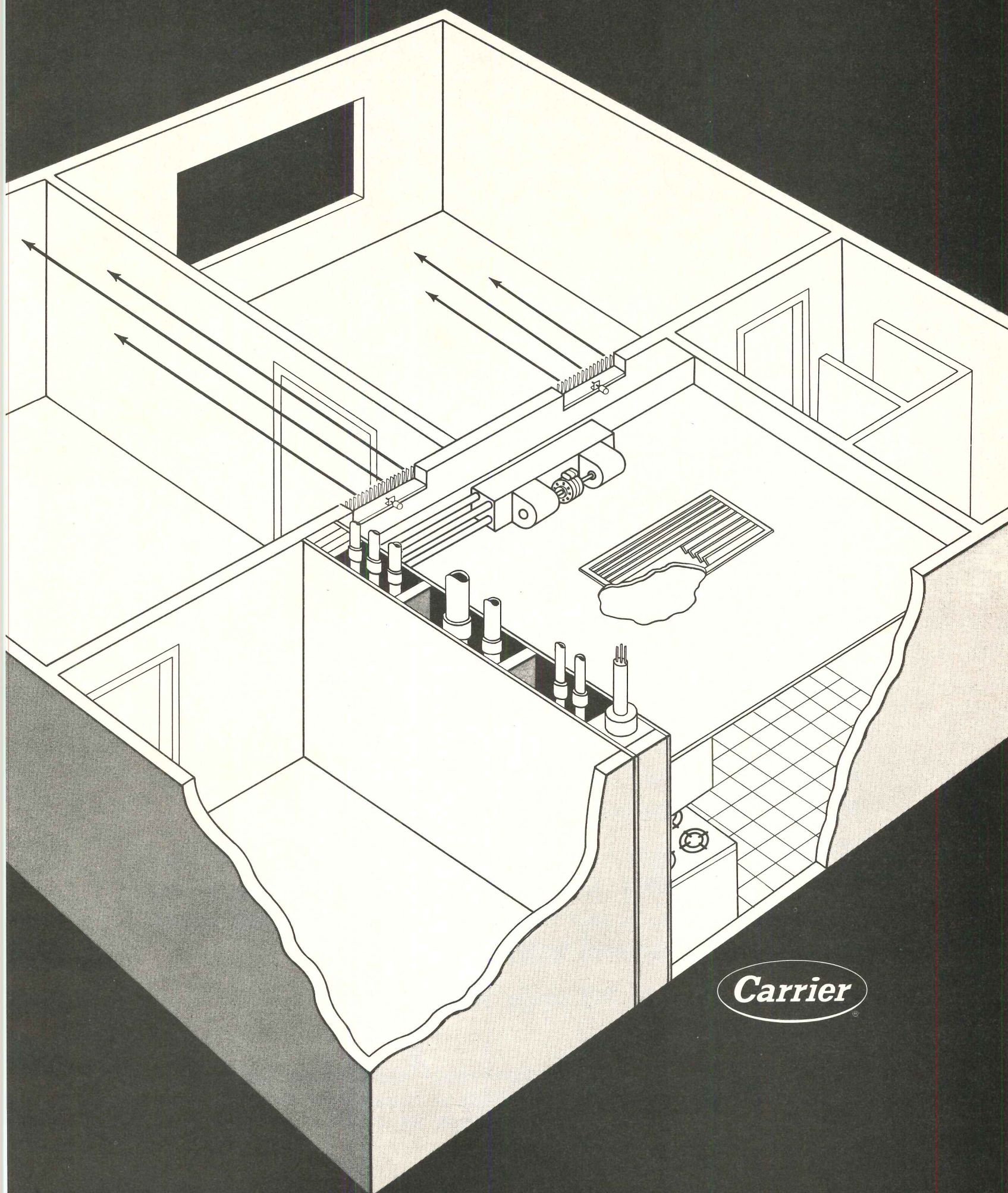
All this gives owners and developers a much higher profit on their investment. And at the same time, it gives tenants the most comfortable, most efficient and quietest air conditioning around.

Ask Carrier how a Volumaster air distribution system can improve your new building with central air conditioning and save money.

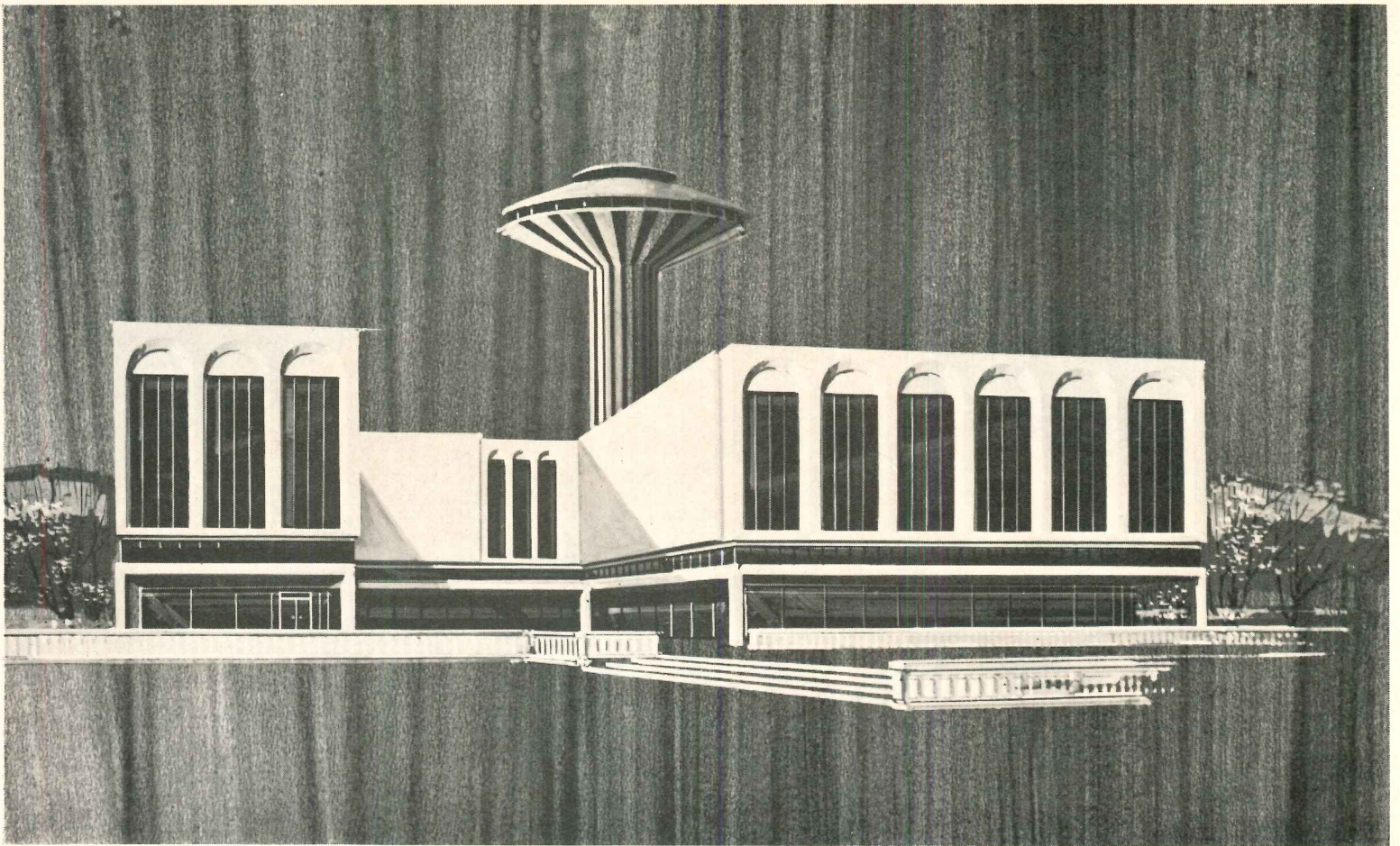
And when you do, ask them about their big advance in gas absorption cooling machines: the 16JB.

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*Weath·R·Proof*—A reliable product without quality worries.

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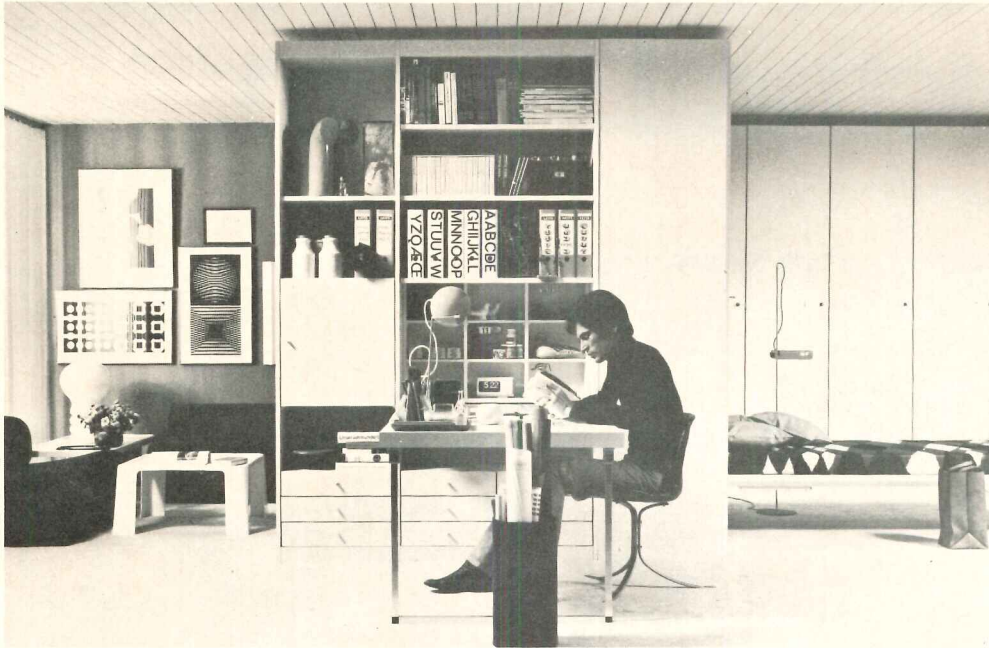
*Weath·R·Proof*—Manufactured by a company that will meet your construction deadlines with personal attention from start to job completion, all backed with a . . .

*Weath·R·Proof*—20 year warranty.

**Weath·R·Proof**  
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**MOBILE CABINET-WALL SYSTEM** / A wide range of built-in components provides a total living environment in a one-room setting. A foldaway table which can serve as a desk or dining counter comfortably accommodating five persons can be fitted into a cabinet-wall measuring 22 in. or 36 in. wide. A revolving pull-down bed turns around to a fully usable cabinet-shelving wall. Shelves need not be cleared during the transfer. Other built-ins include a drop-front bar and revolving television shelf.

The wall system is free-standing and as easily movable as normal furniture. Vertical units can be added or eliminated to fit new space requirements. ■ International Contract Furnishings, Inc., New York City.

Circle 300 on inquiry card

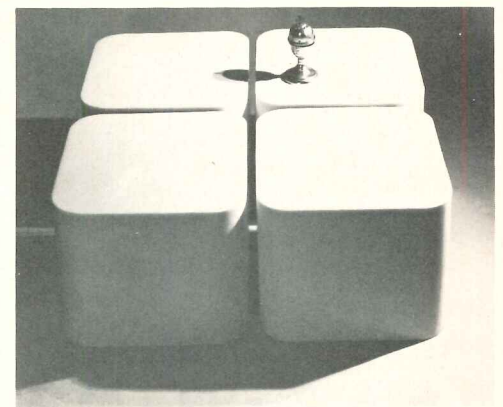
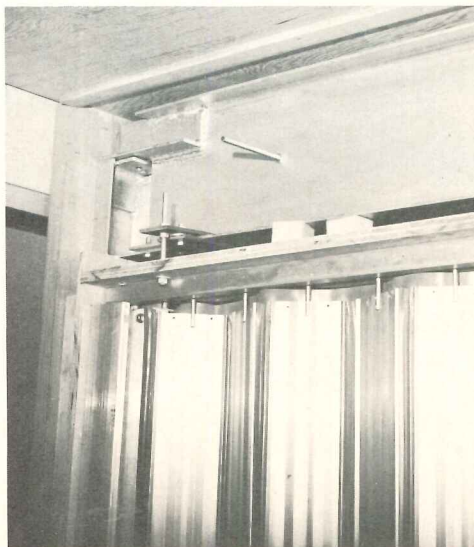
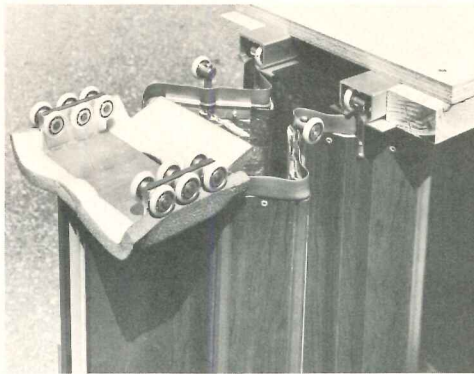
**SOUND-FIRE BARRIER FOLDING PARTITION** /

Reported results of a fire test held in accordance with ASTM E-152 regulations showed the partition remained intact and operable after withstanding furnace temperatures exceeding 2300 degrees F. for over eight hours. Outer panel surfaces unexposed to the flame never exceeded 194 degrees F. due to an inner-cooling effect in the air space between the double-walled partition. Heat from the fire caused massive convection currents inside the wall that maintained a constant cooling effect on the inner surfaces.

A foil-backed fiberglass liner blanketed to inner wall surfaces plus the separating air space are said to provide a sound barrier equal to many solid walls.

Basic panels are made of steel or aluminum hinged with live vinyl. Header and track are secured within a self-enclosing frame allowing vertical, horizontal or diagonal adjustment to compensate for sagging, twisting or warping of building members. Individual panels can be removed and replaced in position. ■ The Won-Door Corp., Salt Lake City.

Circle 301 on inquiry card



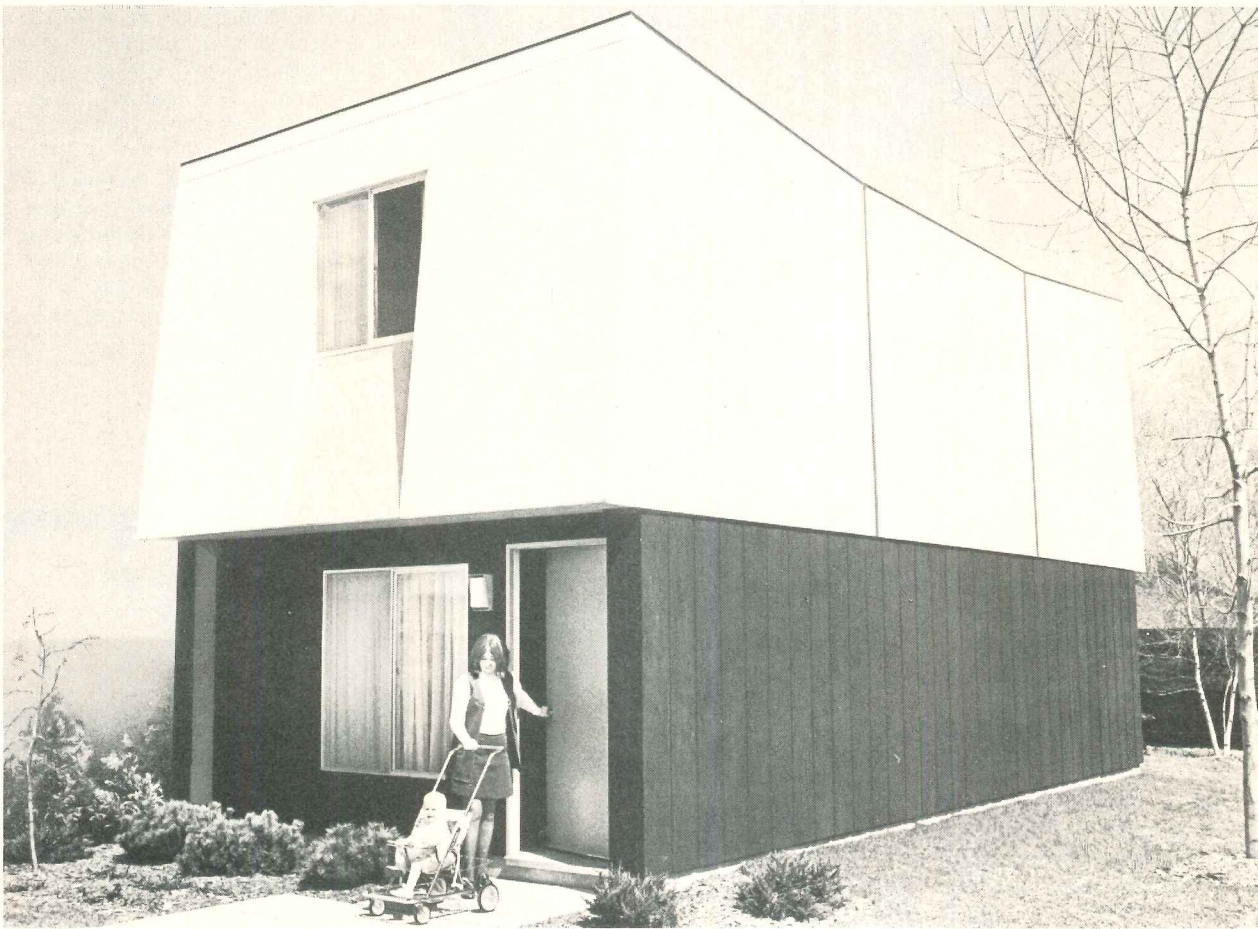
**POLYETHYLENE MODULAR FURNITURE** / Cube-table units can be placed together to form a square coffee table, or used individually where smaller surfaces are required. Other basic sets in the collection include modular, armless lounge chairs which join to form two- or three-seat sofas, triangular tables which can serve as low-seating stools or snack tables, cylinders 18 in. high which can be used as stools, table bases, or planters, and S-shaped bar stools. ■ U.S.I. Chemicals, New York City.

Circle 302 on inquiry card

More products on page 136

The architect  
who designed this townhouse  
is staking his future on our  
new structural system.

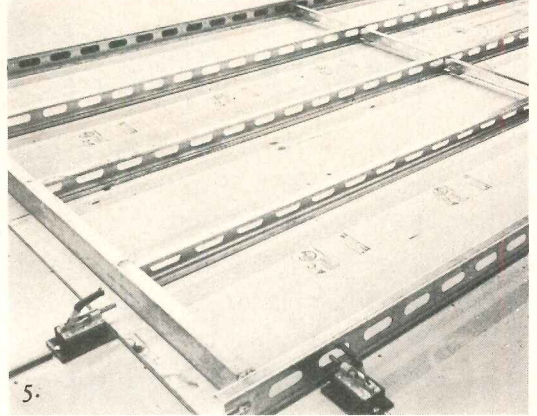
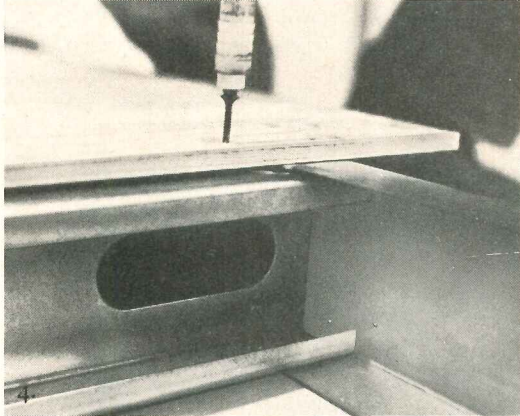
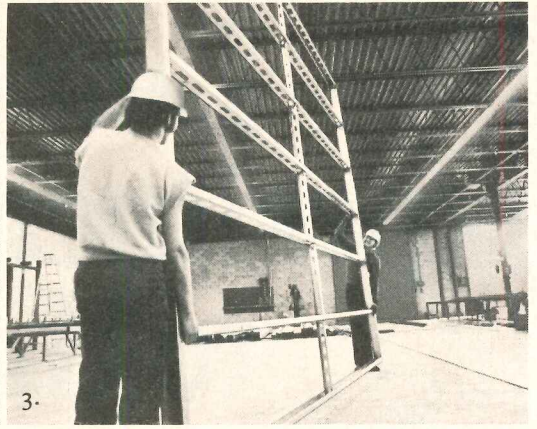
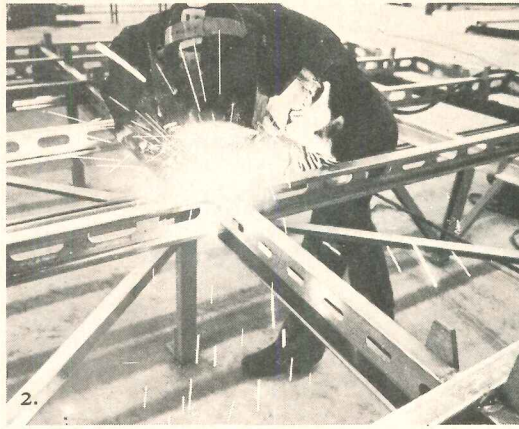
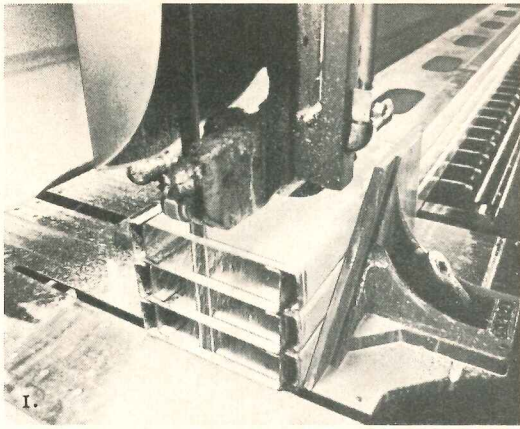
And our old  
company policy.



Architects: Roger Allen Associates, Inc.  
Grand Rapids, Michigan

Manufactured by: Modular Methods, Inc.  
Ernie King, A.I.A., Pres.





1. Studs in lengths of 20' to 32' are cut to  $\pm 0.1/32$ " with a vertical band saw.
2. Cut studs are welded to form framework for module.
3. Framework is light enough for two men to carry to panelizing table # 1.
4. Plywood is skinned to frame with glue and self-tapping screws.
5. Framework is flipped onto panelizing table # 2 for interior finishing.

The architect is also the President of the company (Modular Methods, Inc.) that's erecting the townhouses.

So you know he did a lot of careful combing for the best framing system he could find.

After all, it's his reputation, money and company that's on the line.

With all that at stake, he went with our steel framing system.

He knew from talking to our people that we made a great system. And that we'd back it all the way.

You see, our system is the most complete lightweight steel framing system available today.

It's made up of a full line of load-bearing steel studs (including 4 styles, in a variety of widths, in every gage you'll ever need to specify), track, bridging and joists.

But perhaps the most unique feature is it allows you complete design freedom.

Because it takes any exterior or interior surface material—gypsum masonry, wood, steel, etc.

There are also many other impressive features you should know about our system.

Namely, since it's half the weight of wood, you can specify a lighter foundation.

As for weight and bulk as a design requirement, you can add strength in gage without adding bulk.

You can hide all the mechanical and electrical

equipment because the studs form a hollow wall.

It can be fabricated off the site as well as on. That saves on labor costs and financing.

If you're designing for volumetric construction, the system is perfect.

In fact, the entire second floor of the townhouse on the left was volumized in plant. (The first floor was panelized in plant.) And everything stayed tight and plumb in transit.

Now. Everything we've just told you is what sold the above architect on our framing system.

And today, we're happy to report that his townhouses, his company, his reputation and his future are doing extremely well.

But in talking with him further, we found out something that impressed him even more than our system.

Us.

To quote, "the Wheeling people stayed with it...worked out some of our problems...adapted some new methods...got involved."

And, frankly, he wasn't too surprised when we told him we work with all our customers the same way we worked with him.

For more information write for brochure WC 455.



Cee & Nailable Joists    Nailable Studs    Channel & Cee Studs    Track & Bridging



**Wheeling Corrugating Company**

Wheeling Corrugating Co., Div., Wheeling-Pittsburgh Steel Corp., Wheeling, W.Va.

96% of what we make builds highways, buildings and reputations.

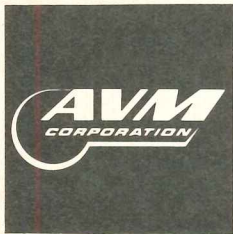
For more data, circle 63 on inquiry card

# Leave experimentation to the lab workers.

If you are the type of architect or contractor who seeks to avoid experimentation with lesser brands, AVM Jamestown makes the caliber of casework you want.

We produce only the finest. Every piece is custom-made and is obtainable in an imaginative array of materials to suit your clients' exact needs.

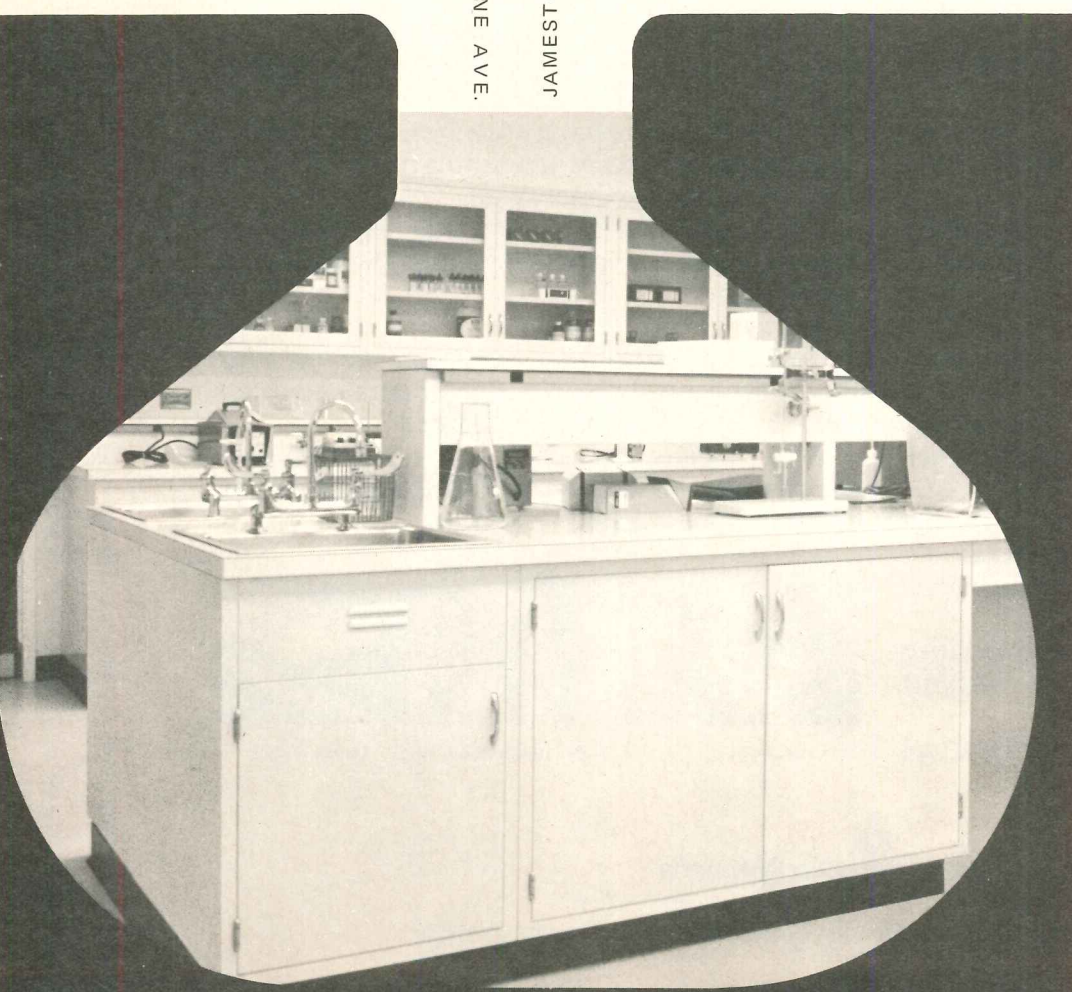
AVM Jamestown believes as you do . . . that the laboratory should be a complement of your total concept of a beautiful and functional building. Our catalog is available upon request.



JAMESTOWN PRODUCTS DIVISION

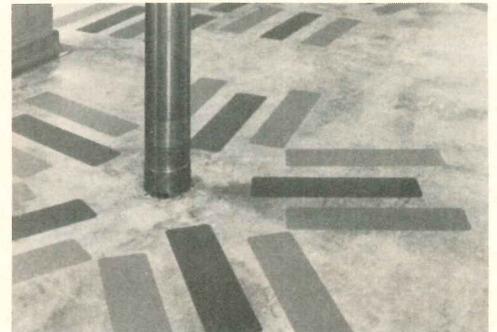
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JAMESTOWN, N.Y. 14701  
178 BLACKSTONE AVE.



**CHAIR** / Framed in graceful curves of stainless steel, this chair is available in a choice of leather, fabrics and vinyl. Shown is the suede leather version. ■ Quantum Designs, New York City.

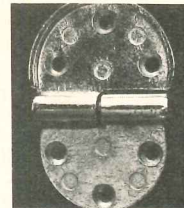
Circle 303 on inquiry card



**FLOOR SURFACING** / Recommended for use in bathtubs, whirlpool and shower room areas, this non-slip surfacing material is available in five separate colors which increase visibility. It can be applied onto any smooth, clean, dry surface. An adhesive backing holds materials in place. ■ 3M Co., St. Paul, Minnesota.

Circle 304 on inquiry card

**BALL HINGE** / The segmented circular hinge leave is recessed in the jamb. The other leave is flush mounted on the door, and is received by the recessed jamb leave when the door is closed. Hinge movement is concentrated on the captive ball at the bottom of the hinge housing. ■ Product Source Inc., Boston.



Circle 305 on inquiry card



**PIPE RAILING SYSTEM** / Components of this aluminum system are connected by tubular rivets and machine screws at intersections, and by epoxy adhesive at splice joints. ■ Julius Blum & Co., Carlstadt, N.J.

Circle 306 on inquiry card

more products on page 156

◆ For more data, circle 64 on inquiry card

For more data, circle 130 on inquiry card ◆

# UPDATE *A classified advertising section devoted to helping architects and engineers keep up to date on building product manufacturers.*

Sauder Designare International, Inc., Archbold, Ohio, has introduced a modular seating system of interlocking stacking chairs. Called MOD-LOK, these stylish chairs have a laminated Danish beech finish with upholstered seats and backs available in both vinyl or a woven fabric in many colors and patterns. Each leg interlocks, providing neat, sturdy and safe seating. Rows remain straight with a feeling of permanence; yet MOD-LOK can be easily rearranged and unused chairs stacked neatly and stored in a minimum of space.

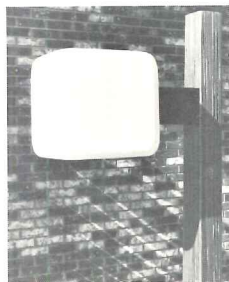


For more data, circle 65 on inquiry card

NEW ONE COAT HIGH BUILD PAINT called "Hide-A-Spray" is described in a Pittsburgh Paints booklet. This new, competitively priced airless spray paint covers plaster, drywall, wood, pre-primed metal—walls, ceilings, doors and trim, IN ONE COAT—without primer. "Hide-A-Spray" coating can be applied up to 40 mils wet on unprimed drywall; however, 6 to 10 mils wet is normal application. Pittsburgh Paints states that "Hide-A-Spray" Latex Flat Enamel saves application time and also volume of paint because it is burnish-resistant and can be easily washed. With the "Hide-A-Spray" method, there is no cutting-in with a brush around doors, trim and heating convectors then brush-painting them with a matching semi-gloss enamel.

For more data, circle 67 on inquiry card

ACCENT: LIGHTING BY McGRAW-EDISON Styled outdoor lighting in a variety of contemporary shapes—spheres, cylinders, cubes, ellipses. A new line offering sizes and shapes to cover a wide range of outdoor lighting applications for either high or low mounting heights. Units can be mounted singly or in multiple configurations on either metal or wood poles. Or they can be wall-mounted. Your McGraw-Edison sales engineer, manufacturer's representative or authorized distributor can show you the complete Accent line. Or, for an application booklet in full color, write McGraw-Edison Power Systems Division, P.O. Box 440, Canonsburg, Pa. 15317.



For more data, circle 69 on inquiry card



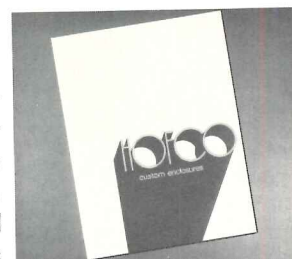
STEELCASE INTRODUCES NEW LUXURY GROUPING The world's largest maker of office furniture has combined its skill with the talents of designer Gardner Leaver to produce a striking luxury furniture grouping. The grouping has exploited the natural strength and beauty of stain-

less steel to bring openness and classic simplicity to chair design. This introduction marks Steelcase's entry into the entirely handcrafted, luxury furniture market. For information, contact: J. A. Andrew, Steelcase Inc., Grand Rapids, Michigan 49501. For more data, circle 70 on inquiry card

Pittsburgh Corning has replaced its present 13½" square GEOCOUSTIC® Sound Control Unit with a new 11½" x 16" size. Offering 5% greater sound absorption in the medium frequency range, GEOCOUSTIC II units furnish two full sabins of absorption. The new size gives greater design flexibility with four times as many layout possibilities. Of open cellular glass, the units improve hearing conditions by eliminating echo, improving sound dispersion and controlling noise. The units are mounted on walls and ceilings with cement or simple mechanical fasteners. For a 12-page bulletin write Pittsburgh Corning Corporation, One Gateway Center, Pittsburgh, Pa. 15222.

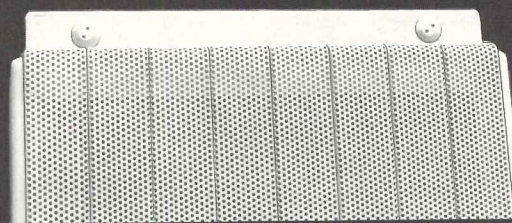
For more data, circle 66 on inquiry card

The Hofmeister Company, manufacturers of HOFECO custom enclosures, has issued an attractive new brochure. This highly illustrative brochure covers types of installations completed in vinyl clad steels in various colors. A new (patent applied for) process of vinyl clad grills as well as vinyl clad covers for all types of base materials has recently been added to the available grills of extruded aluminum, aluminum bar, punched louver and plastic. Write for this eight page brochure. Hofmeister Company, 6653 Howard Street, Niles, Illinois 60648.

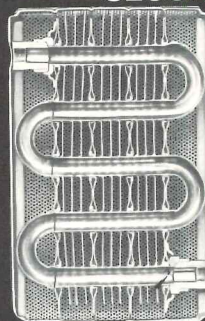


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## "TamperProof"



### SECURITY RADIATORS



Unitized construction... Full length heating fins... Three fins comprise 2" x 3" box section. Sections enclose heavy 1" copper coil. 3750 psi hydraulic pressure expands coil to lock elements permanently.

**STRONG**... Defies the most violent treatment or abuse.  
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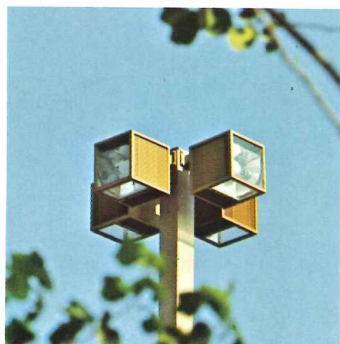
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For more data, circle 71 on inquiry card

For more data, circle 72 on inquiry card

# Tigers, temples, pachyderms pagodas, parrots, and great looking Spectras by Wide-Lite.



## SPECTRA III AT THE PETTING ZOO.

Versatile IIIs, this time pole-mounted in a four-cube arrangement. Twenty-four "Wide-Lite" fixtures here are equipped with 1000 watt lamps.

Spectra III also available in ground-mounted models.

A famous brewer just opened a multi-million dollar family fun park in Texas. Houston's new Busch Gardens comes complete with exciting rides, oriental splendors, a menagerie of birds and beasts.

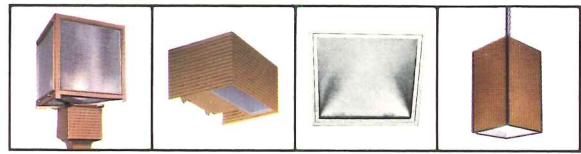
And 93 Spectra luminaires from Wide-Lite. Which are pretty splendid themselves.

From parking lot to petting zoo, dramatic Wide-Lite\* Spectras provide good looks and good

lighting at Busch Gardens. (Spectra's geometric cube design projects remarkably uniform illumination with a minimum number of these handsome fixtures.)

Join us now for a tour of Houston's newest entertainment attraction. "Wide-Lite" Spectras will light the way. Then, when you're done, give your "Wide-Lite" representative a call. He's in the Yellow Pages under Lighting, and he has the complete Spectra story.

The Spectra Series for Mercury Vapor, Metal Halide, and High Pressure Sodium lamps also includes



SPECTRA II	SPECTRA IV	SPECTRA V	SPECTRA VI
100 to 1000 watt post-top and roadway fixtures	175 to 250 watt wall washers	100 to 1000 watt indoor luminaires	400 to 1000 watt pendent indoor luminaires

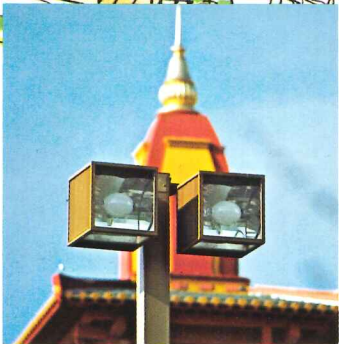
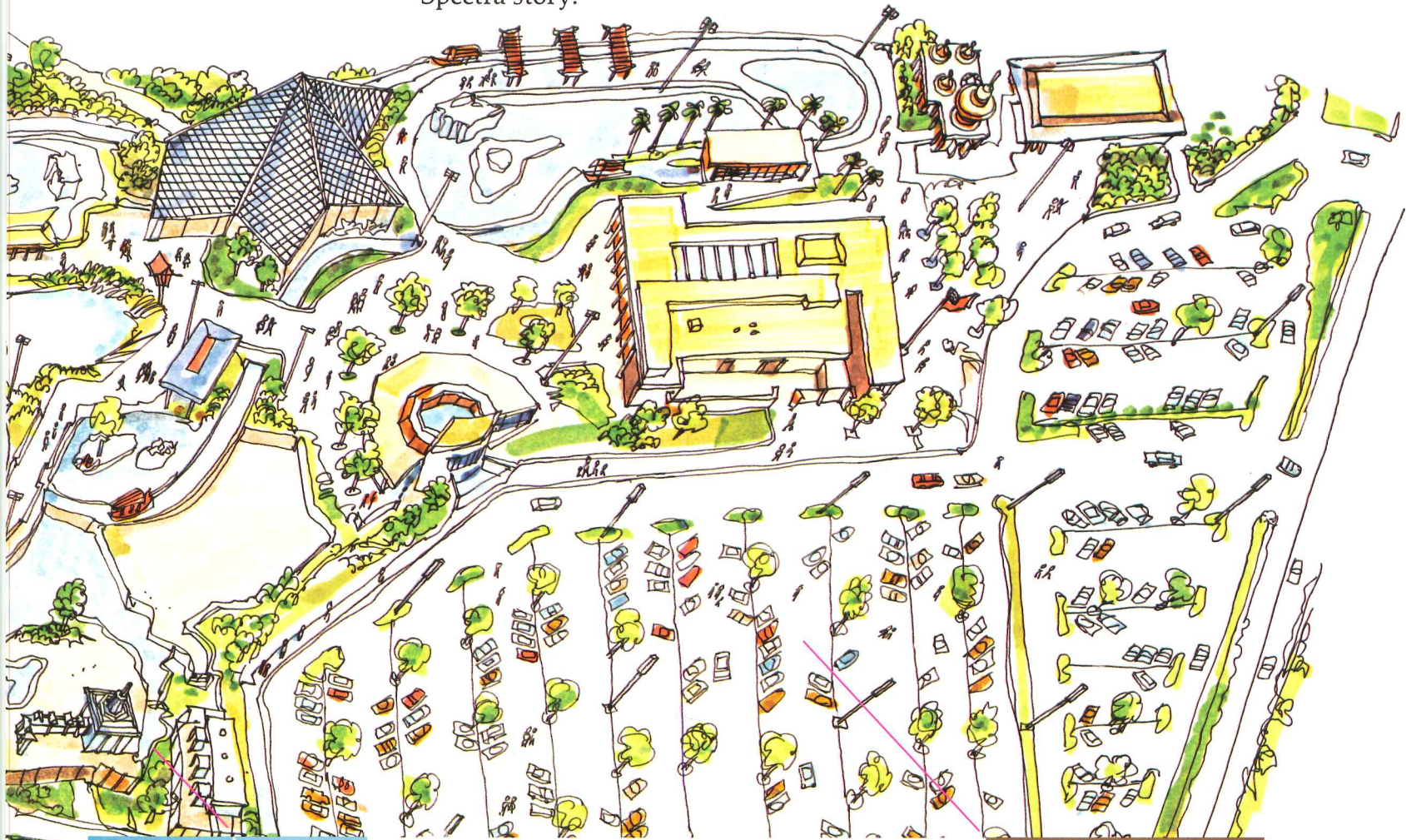
## WideLite®

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Houston, Texas 77001

Also manufactured in Australia, Belgium, Canada, Mexico and Great Britain

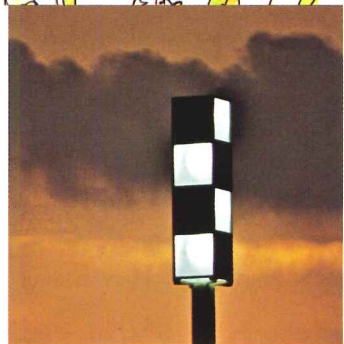
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SPECTRA III FOR THE TIGER TEMPLE.

And the polar bear enclosure. Mounted two cubes to a pole, Spectra floodlights handle two lighting jobs at once. These are 400 watt Spectra IIIs with Deluxe White lamps. Similar fixtures handle general floodlighting for most of the Gardens grounds.

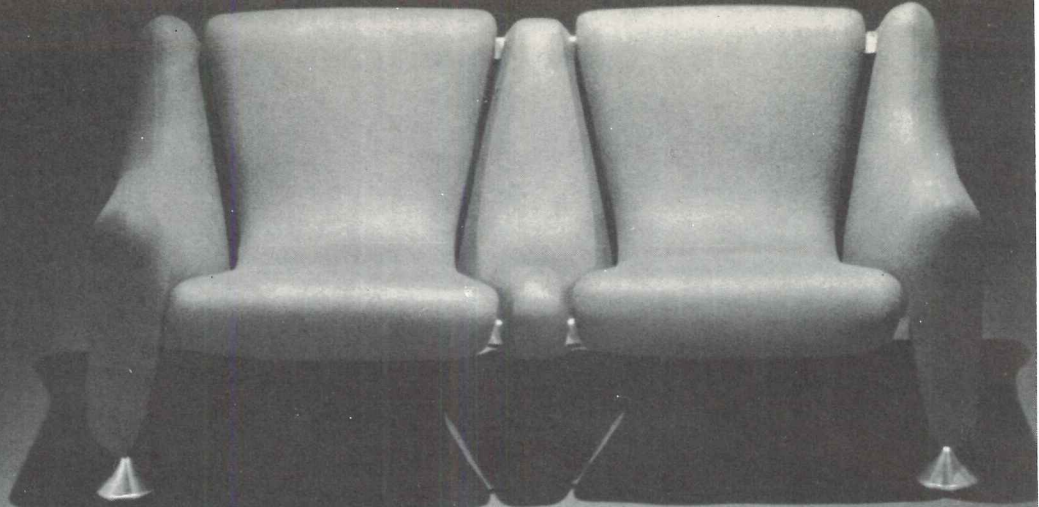


SPECTRA I FOR THE PARKING AREA.

Eleven "Wide-Lite" area lights here, mounted on 40' poles. Each equipped with four 1000 watt lamps; each producing over an acre of smooth lighting. Spectra I is available in 400 and 1000 watt models. "Two-cube" Spectra area lights also available.



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## Modular Seating Group by Luigi Colani

A brilliant, contemporary concept—imaginative and unique—including lounge chairs (with or without arms) and sofas (two- and three-seat). Soft foam over steel mesh frames, upholstered in fabric.

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Call Tony Fusco collect at 716-695-1600 today.

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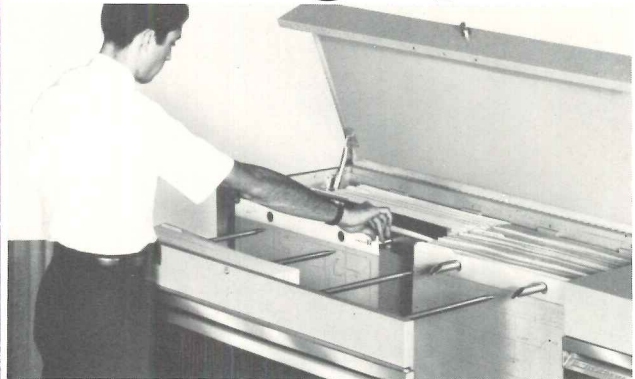
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A 6¢ stamp or a 5¢ post card can get your business started on the good business of higher education. Write for "HOW TO AID EDUCATION." Council for Financial Aid to Education, 6 East 45th St., New York, N.Y. 10017.

Join the future. Give to the college of your choice.



advertising contributed for the public good







## Accent adds the spice of light

Accent—by McGraw-Edison. Quality, outdoor Accent lighting in a variety of contemporary shapes. Spheres, cylinders, cubes, ellipses. With crisp, geometric edges or soft, rounded curves on cubical and cylindrical designs. A variety of sizes and shapes to Accent pools and plantings at heights as low as four feet; sizes to Accent building lines on ten-, fifteen-, twenty-foot poles or even higher.

There are designs for just about every Accent application you're planning.

But we'll go even further. If you're thinking about a particular effect that we haven't considered, tell us. We'll be happy to work with you. And we'll thank you for the suggestion.

All are made of quality materials, such as molded acrylic globes. Accent reflects good design, so that globes go on the pole in minutes with an internal-locking pole adapter and base. You can mount single luminaires, or use multiple-configuration on either metal or wood poles. Or you can wall-mount

them with an easy-to-install bracket.

Accent, by McGraw-Edison. Your McGraw-Edison sales engineer, manufacturer's representative or authorized distributor has a complete portfolio to show to you. Or, for an application booklet in full color on these new designs, write:

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Post Office Box 440,  
Canonsburg, Pa. 15317.  
In Canada: Ontario.



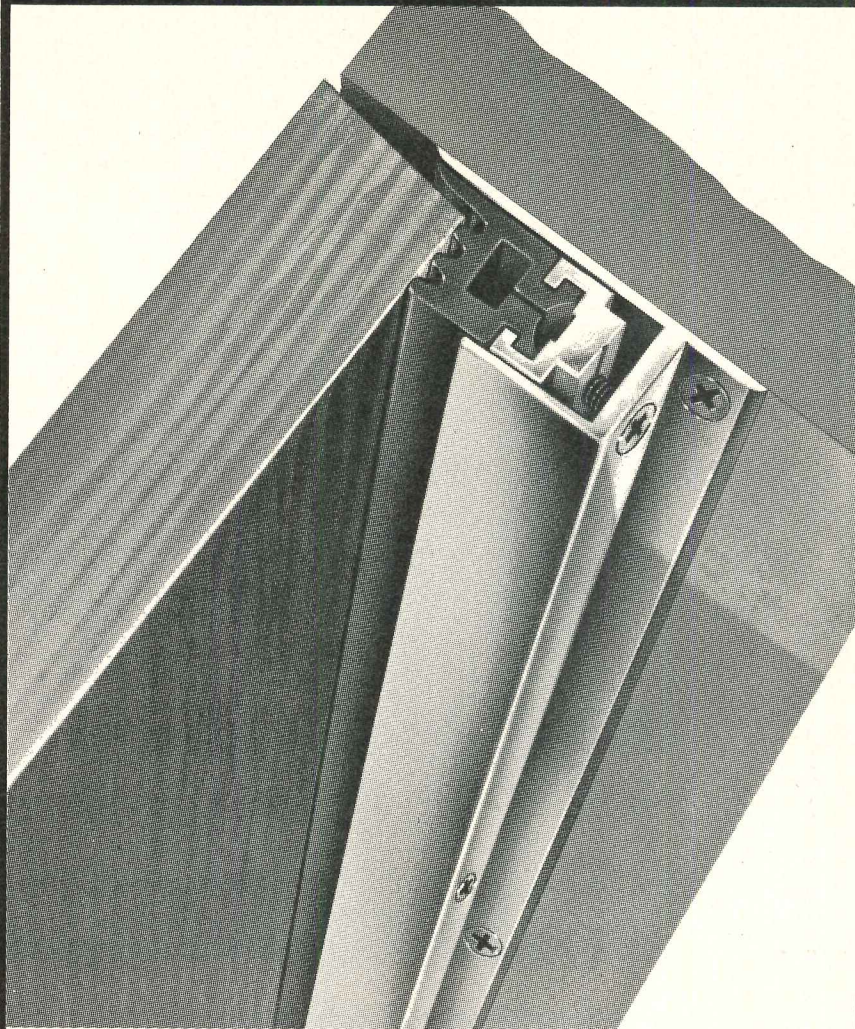
# McGraw-Edison

7112

For more data, circle 78 on inquiry card



## Weather-Stripping Sound-Proofing Light-Proofing Thresholds



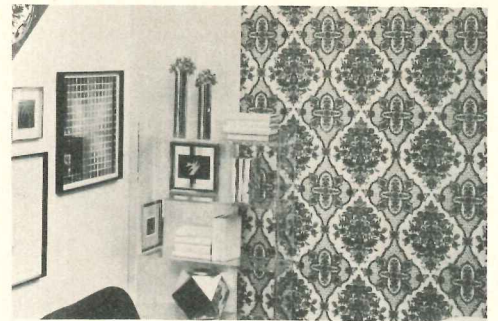
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Newly revised! ZERO #170 Adjustable Door Stop. Extended finger between door and jamb creates positive seal, insures against sound leakage. Only one of 184 full size drawings to be found in our new 1971 catalog. Write for your copy today.

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**WALL COVERING** / This non-woven vinyl design is strippable and guaranteed by the manufacturer not to fade for a period of three years.

■ Imperial Wallpaper Mill, Inc., Cleveland.

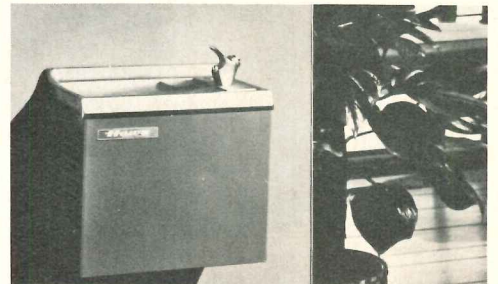
Circle 307 on inquiry card



**TUB DESK** / A recessed filing basin holds approximately 500 legal-size file folders. The height is adjustable from 28 to 36 inches in one-in. increments.

■ Kwik-File, Minneapolis.

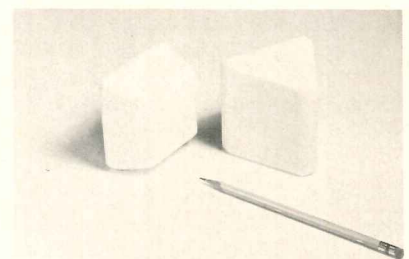
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**COMPACT WATER COOLER** / Designed for offices and stores, this wall-mounted unit comes with a removable wrap-around lower cabinet in standard sandalwood. The unit is air-cooled.

■ Haws Drinking Faucet Co., Berkeley, Calif.

Circle 309 on inquiry card



**LIGHTING** / These indicator lights, designed for signaling systems, can be equipped with up to three different colored lamps, separated by barriers that eliminate cross-lighting of adjacent areas.

■ American Zettler, Costa Mesa, Calif.

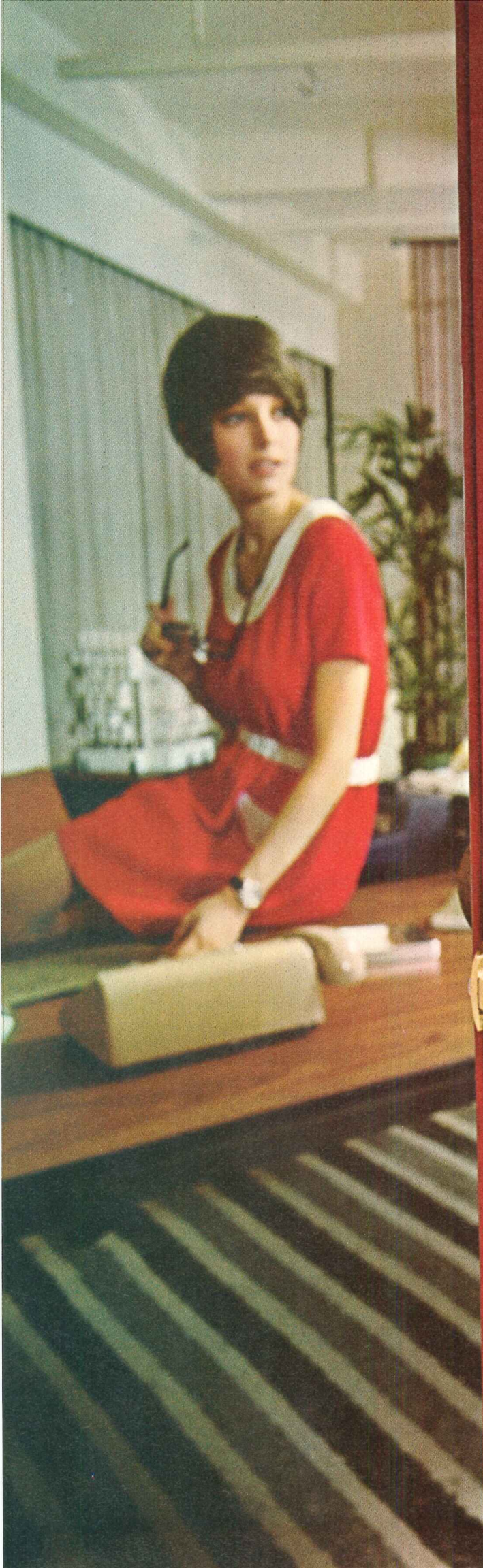
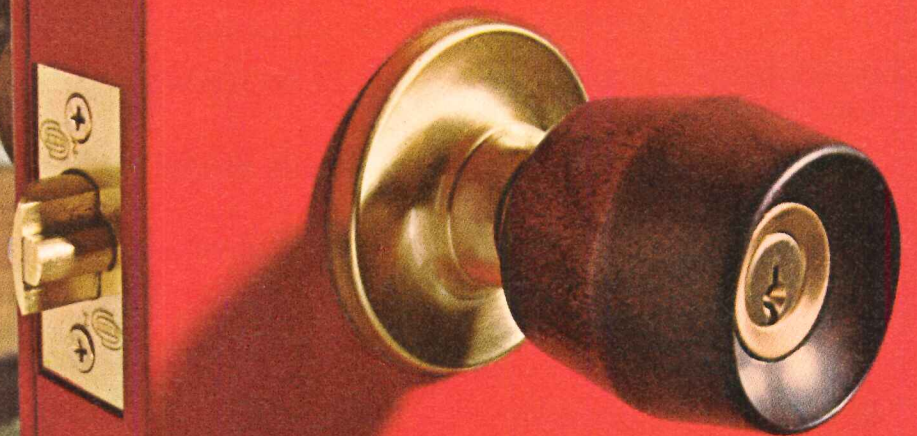
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more products on page 162

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# 831 Monterey... where you plan for security

When your plans include Corbin, you're designing for safety, security and style. Corbin heavy duty cylindrical locksets are renowned for combining security and efficiency with design leadership second to none. Contact a Corbin distributor for information and service or write P & F Corbin, Division of Emhart Corporation, Berlin, Conn. 06037. In Canada, Corbin Lock Division.



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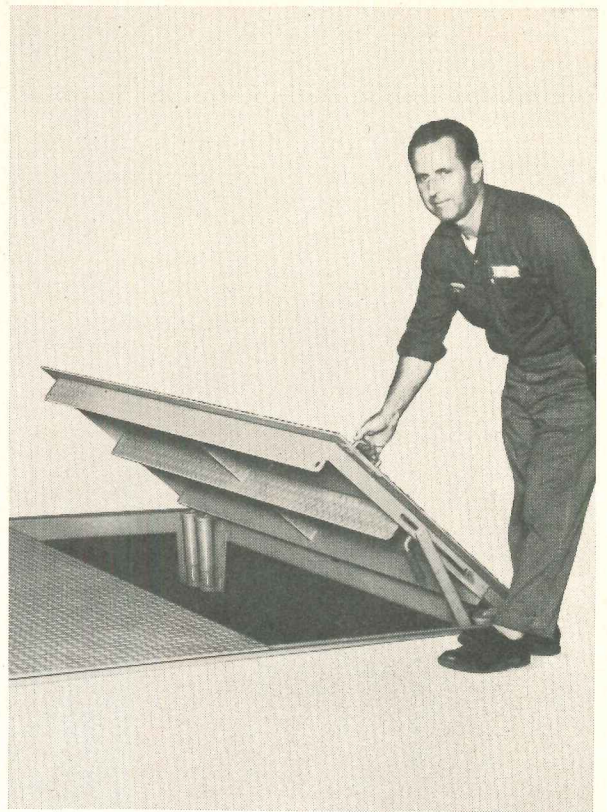
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Send for catalog with details and specifications for the revolutionary new Type JD and other steel or aluminum doors by Bilco.

Only the best is stamped Bilco.



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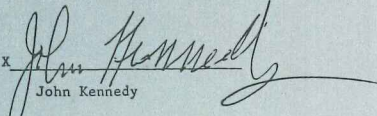
DOORS FOR  
SPECIAL SERVICES

The Bilco Company, Dept. AR-81, New Haven, Conn. 06505

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# "Leisure World wanted a quality faucet that needed a minimum of maintenance. So I got them 50,000 Delta faucets!"

x   
John Kennedy

Kennedy Mechanical Contractors

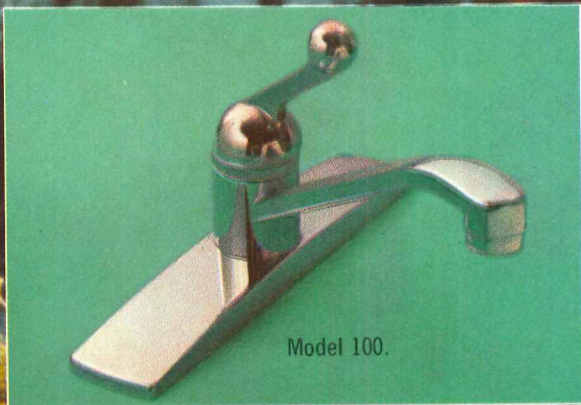
Leisure World is just that. A beautiful retirement community in California that's become a new living concept in America. And for the maintenance crew and the plumbing contractor, it's even more of a leisure world. Because during the 7-year history of Leisure World, they've hardly had to repair or replace any of the community's 50,000 Delta faucets.

But beside its great maintenance record, Delta single handle faucets were chosen because of their ease of operation. And because they look as good as they work.

As John Kennedy said, "Seven years ago when Ross Cortese, the developer of Leisure World, awarded me the project, he said he wanted a Class A job. And with Delta faucets that's just what he got."

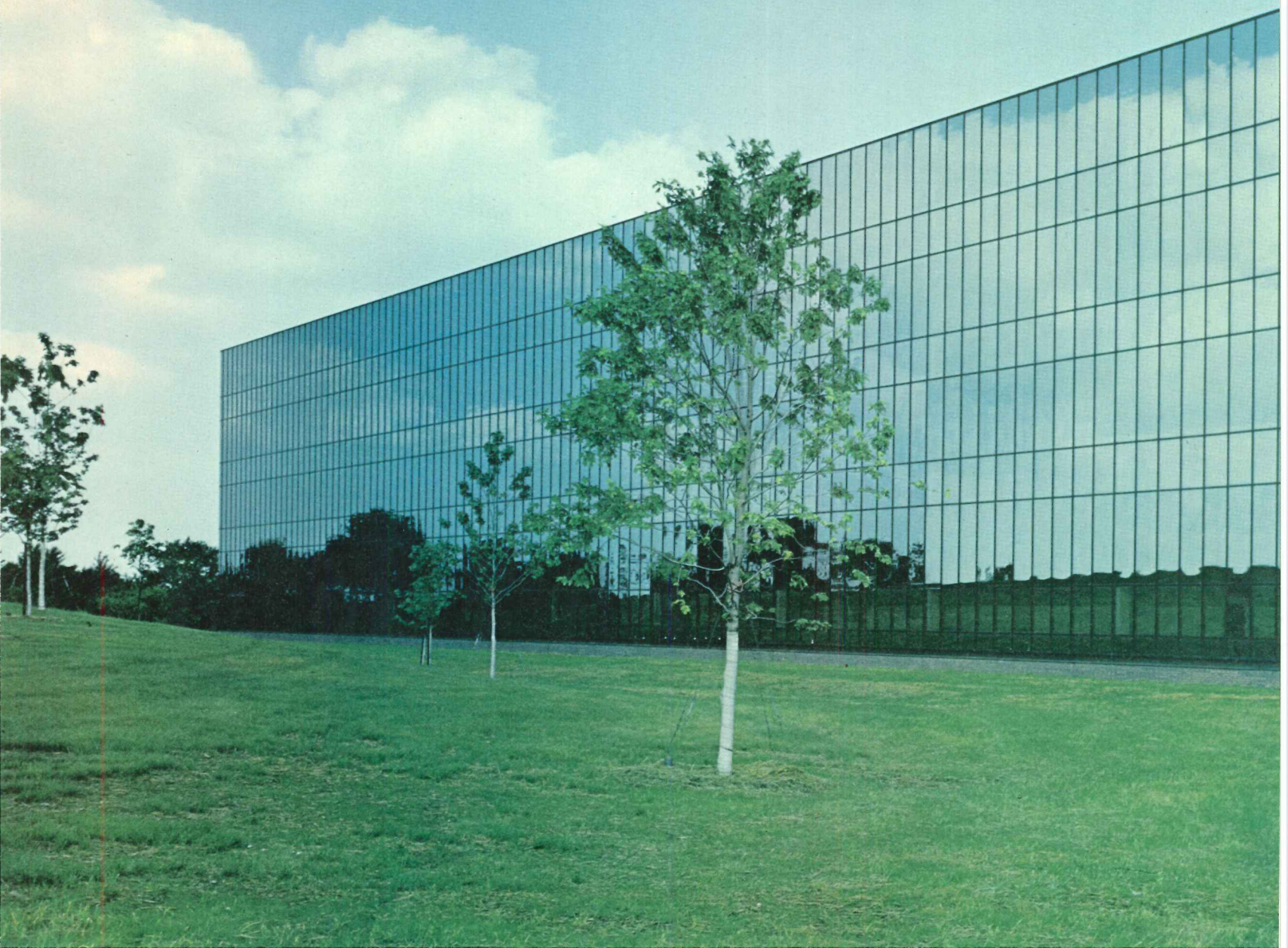
We can tell you even more about the full line of trouble-free Delta faucets. Just write Delta Faucet Co., a Division of Masco Corporation, Greensburg, Indiana 47240.

**Delta Faucet.  
Simply beautiful.**



For more data, circle 82 on inquiry card

# LHR<sup>®</sup> Glass from PPG



## The Westinghouse Nuclear Center reflects a contemporary image with PPG Environmental Glass.

For this esthetically unique complex, the architect specified a PPG Environmental Glass—*LHR* (Light and Heat Reflective) Glass—because he believes "it is the most practical, maintenance-free, economical cost-per-square-foot material available to do the job."

Working with Westinghouse Nuclear Energy Systems and Westinghouse Corporate Design Center, the architect determined that this glare-reducing glass

would provide a comfortable and pleasant working atmosphere for a large population of scientists and technical people.

And *LHR* Glass proved to be beautiful as well as practical. It reflects the Center's wooded surroundings, and presents a facade that changes as often and dramatically as the sky tones and clouds . . . a visual effect of architectural oneness, because *LHR* Glass serves both vision and spandrel areas.

The availability of Environmental Glass such as *LHR*, plus its ease and speed of installation, influenced the architect toward his glass curtainwall design.

See PPG about *LHR* Glass—or the others in our family of Environmental Glasses for your next building. Early in the design stages. There's a PPG Environ-

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### PPG: a Concern for the Future

Owner: Westinghouse Electric Corporation, Pittsburgh

Architect: Deeter Ritchey Sippel Associates, Pittsburgh

*For more data, circle 83 on inquiry card*



INDUSTRIES

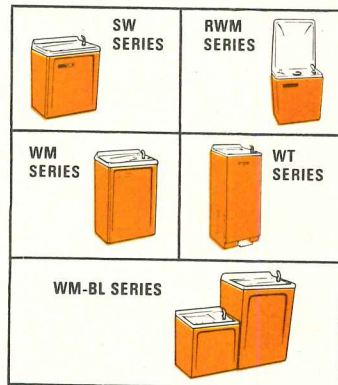


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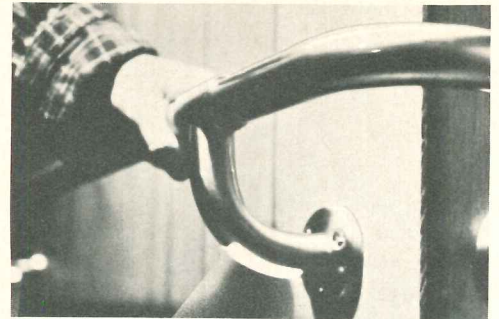
**THE HALSEY W. TAYLOR COMPANY • 1560 Thomas Road, Warren, Ohio 44481**

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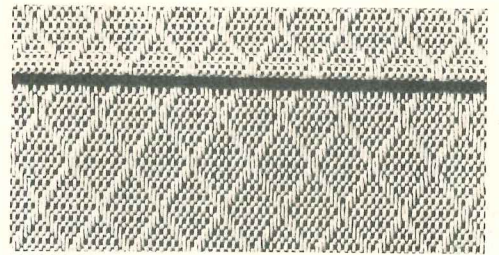
### PRODUCT REPORTS

*continued from page 156*



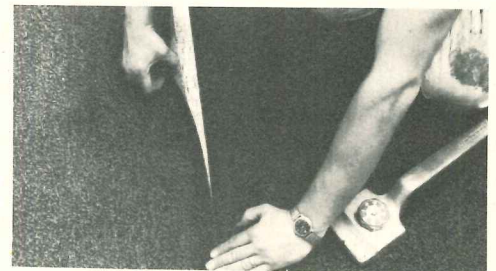
**HANDRAIL EMERGENCY LIGHTING SYSTEM /** The handrail, made of stainless steel tubing, is said to withstand over 500 lb of downward pull. Should normal power fail, the emergency power system, operating on long-life batteries, is activated. ■ Dual-Lite Co., Newton, Conn.

*Circle 311 on inquiry card*



**WINDOW BLIND /** This design is one in a collection in which wood wefts are interwoven with yarn to create intricate patterns of stripes, diamonds, and scallops. The line, intended for commercial use, is offered in custom colors, designs and sizes. ■ Window Modes, Inc., New York City.

*Circle 312 on inquiry card*



**NYLON CARPET /** Anti-static yarns reduce electrostatic build-up. This striated, loop-pile pattern is recommended for direct glue-down installations to cement, tile or wood surfaces and is ideally suited for large-area installations. ■ J. P. Stevens & Co., Inc., New York City.

*Circle 313 on inquiry card*

### **AUTOMATIC DOOR CONVERSION PACKAGE /**



The visible model is attached to the door transom and door; the concealed model replaces the transom. Both models plug into standard electrical outlets. The package will automate most single- or double-swing doors. ■ Stanley Door Operating Equipment, Farmington, Conn.

*Circle 314 on inquiry card*

*more products on page 164D*

*For more data, circle 85 on inquiry card*

*For more data, circle 84 on inquiry card*



LOW MAINTENANCE

# PELLA CLAD

WINDOWS



Architect: Richard E. Martin & Associates  
Builder: Morton Lamm and Associates

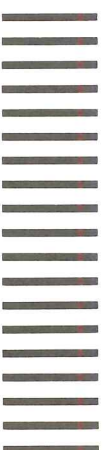
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PELLA, IOWA

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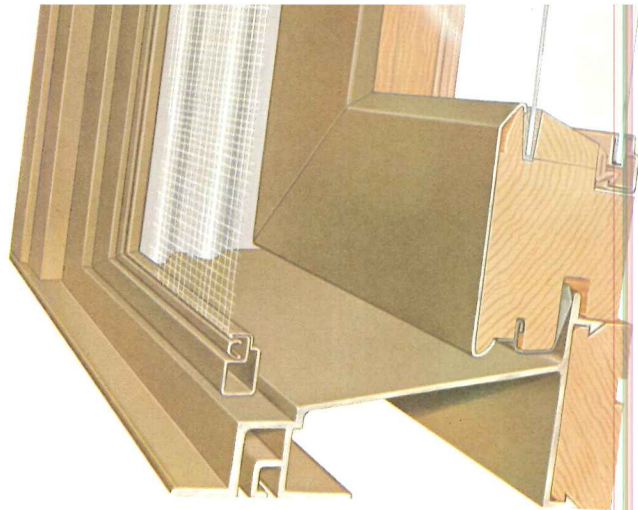
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PELLA, IOWA 50219



# PELLA CLAD

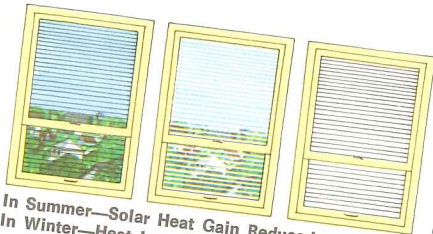
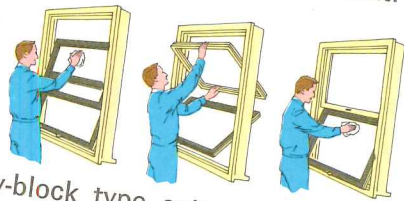
combines insulating qualities of wood with acrylic color coated aluminum



PELLA Clad Windows are vertically-sliding wood windows that are protected from weather elements by an exterior "second skin" of sturdy aluminum. A time-tested, baked-on acrylic color coating, applied at the factory, assures superior durability. The PELLA Clad Window is designed for simple installation. Glass rests in bed of butyl mastic. Removable inside wood glass stops allow glazing or vinyl weatherstripping at head, check and bottom rails — plus a combination of polypropylene pile and vinyl at the side stiles — keeps out cold and heat.

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Quick pivot sash lets maintenance be handled quickly and easily — all from the inside. Movable sash is counterbalanced with concealed pulley-block type extension spring for easy operation. Spring-loaded vinyl weatherstripping at sash to pivot for washing and to allow removal.



### Slimshade® Controls Light and Sun

This exclusive PELLA feature fits neatly between double glazing panels and outside glass. Offers full open to full closed. Keeps summer heat out and reduces heat loss for economical, year 'round comfort control.

In Summer—Solar Heat Gain Reduced . . . 82%  
In Winter—Heat Loss Reduced . . . 62%

variations in light control from full open to full closed. Keeps summer heat out and reduces heat loss for economical, year 'round comfort control.

### Superior Construction Features

Aluminum that covers the sash has overlapping corners that allow for the minute expansion and contraction of the metal. The sash joint is mortised, tenoned, glued and nailed — as are all PELLA sash. With this rugged construction joints remain tight and window operation stays smooth and easy.

### Filler Panels and Other Options

Filler panels can be used above, beside and below the window units. The frame is wood with a 1/2" panel — all clad in aluminum color-matched to the window units. Options include factory-made cutouts for unit air conditioners. Other features include frame expanders that snap onto the window frame. They're made for use with wood bucks and for filling a non-standard opening with a standard size window. Ideal for replacement work. For more information about PELLA Clad Windows — the various inside installation methods and window/frame combinations — contact your PELLA Distributor (under "Windows" in the Yellow Pages) or see SWEET'S Architectural File.



ROLSCREEN COMPANY, PELLA, IOWA 50219

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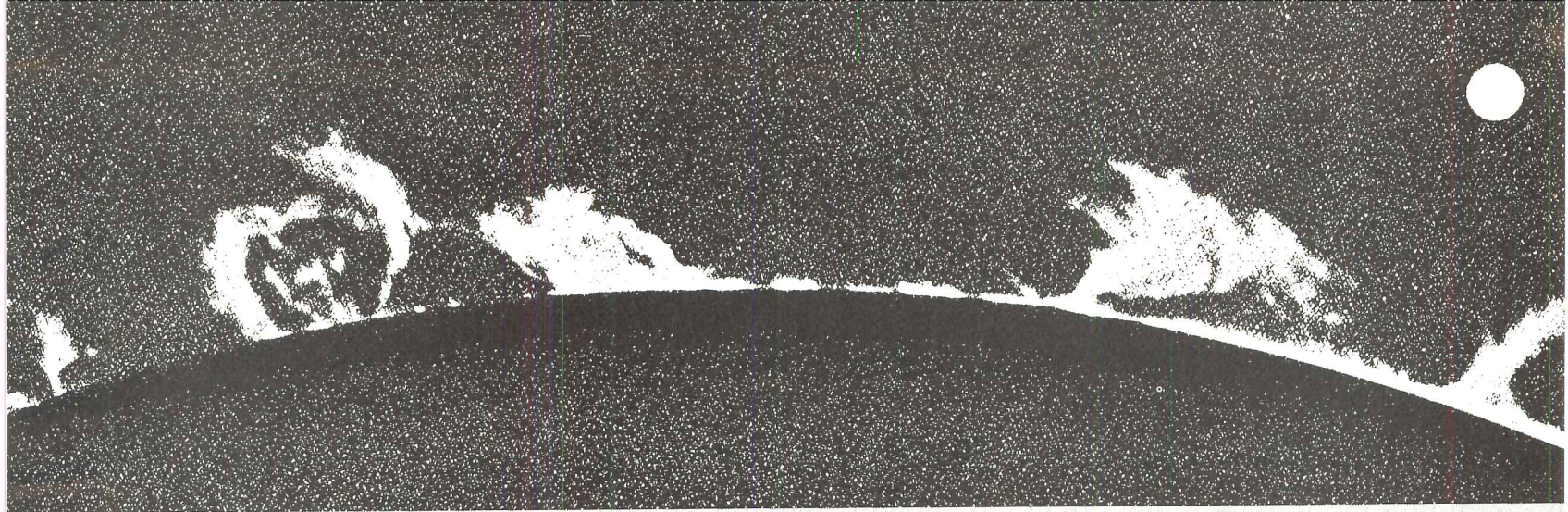
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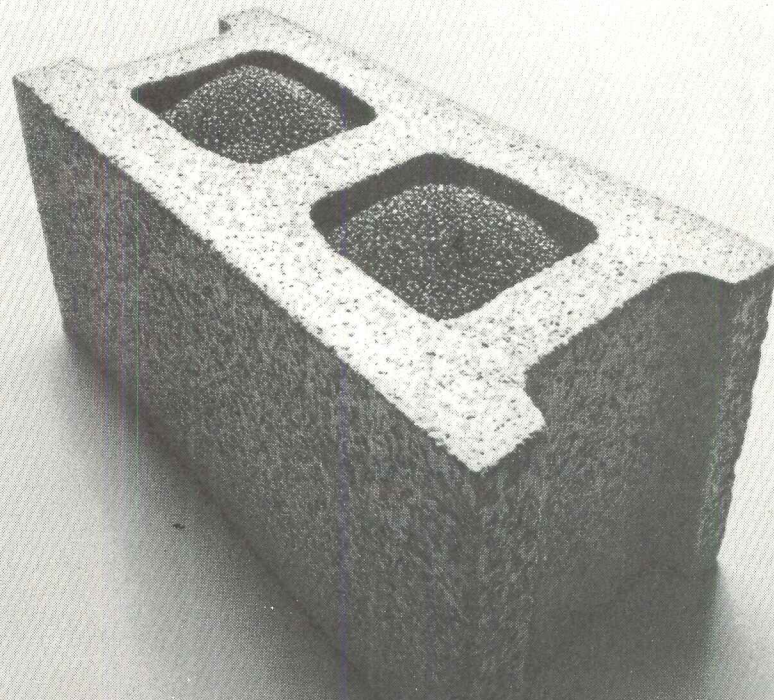
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	Heavyweight	.33	.17
8	Lightweight	.53	.36
	Heavyweight	.33	.12
12	Lightweight	.46	.25
	Heavyweight	.46	.25

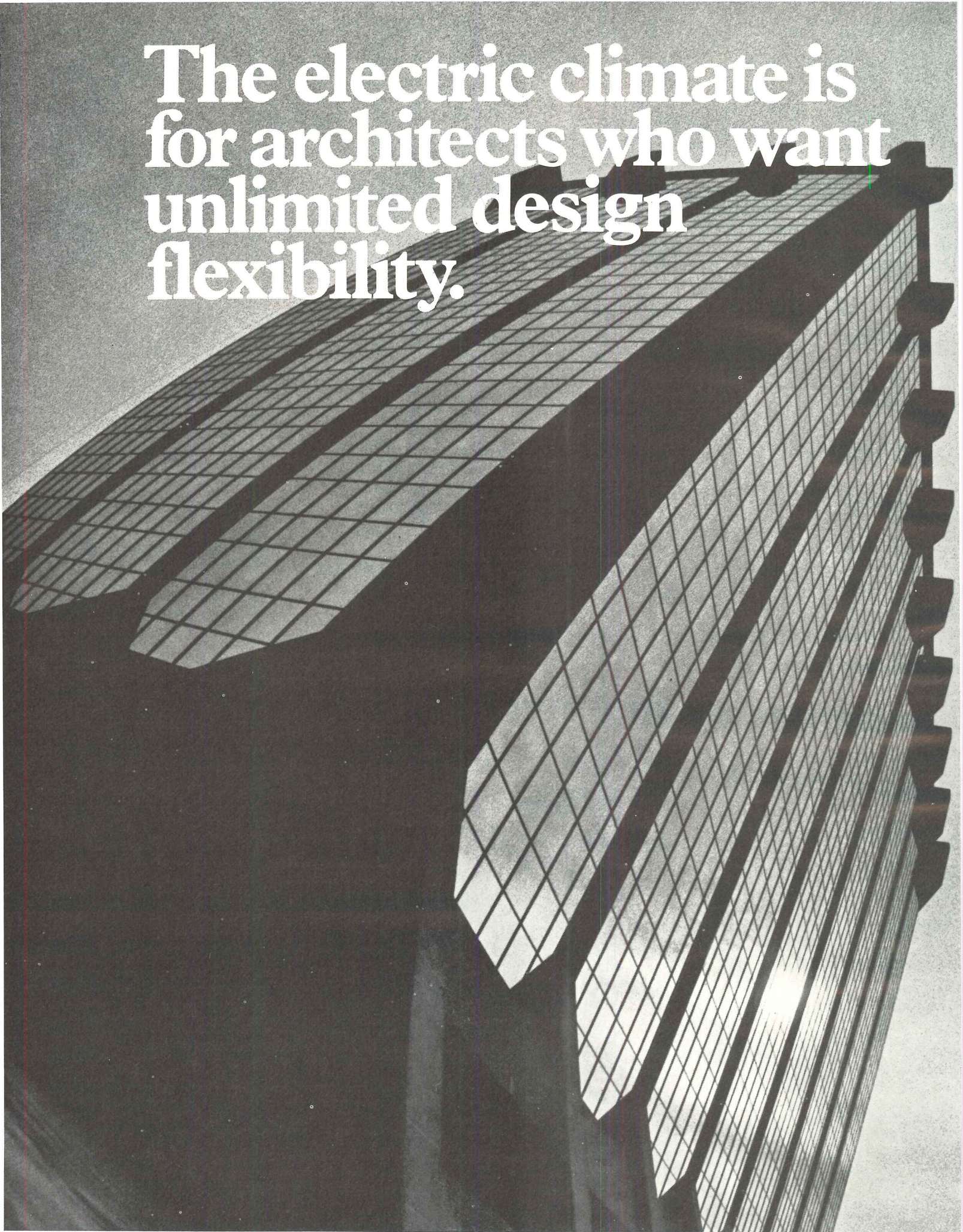
**ZONOLITE**

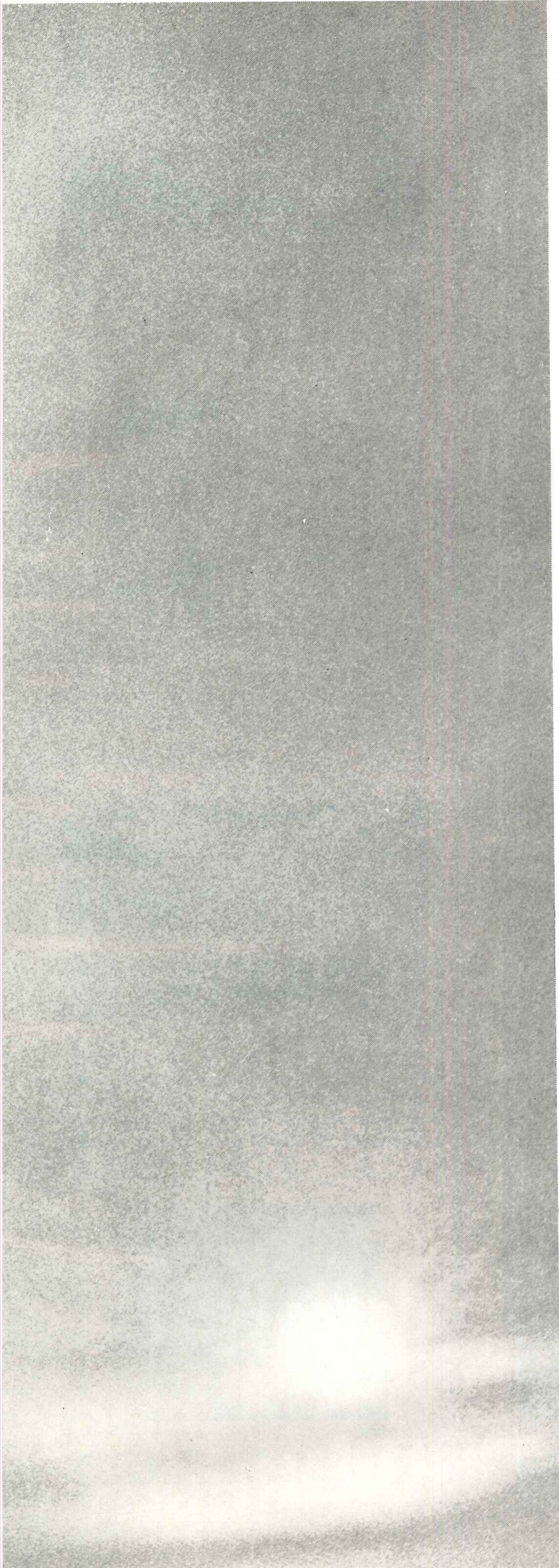
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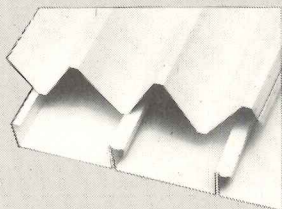
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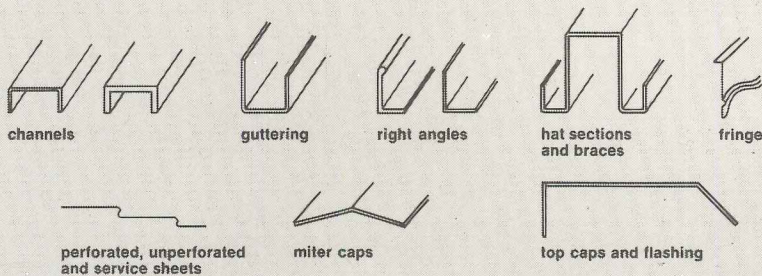
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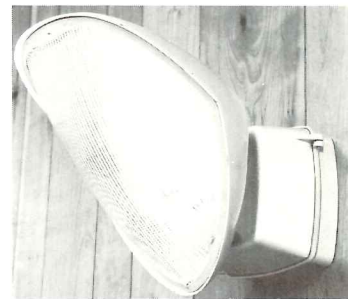
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**We start with this,  
then do everything  
but curve it!**

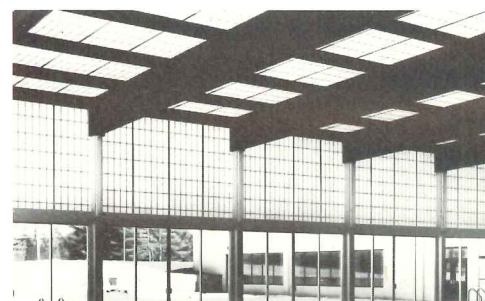
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**MOVABLE PARTITIONS** / Glass and/or steel construction may be specified. A range of heights is available. Steel bonding and color-baking process maintain durable finish. ■ Rockaway Metal Products Corp., Inwood, N.Y.  
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**WALL-MOUNTED LUMINAIRE** / A polycarbonate prismatic refractor provides maximum vandal resistance in exterior applications. The unit is designed for standard outlet box or exposed conduit mounting. ■ Westinghouse Electric Corp., Pittsburgh.  
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**INSULATING PANELS** / Shown here framing roof and walls, each panel is constructed of exterior and interior fiberglass-reinforced acrylic polyester faces bonded to a structure core of extruded aluminum shapes. The panels are translucent. ■ Kalwall Corp., Manchester, N.H.  
Circle 317 on inquiry card



**PLANTERS** / Over 150 sizes ranging from 8-48 in. in diameter are available. Ten colors are offered. ■ L. Paul Brayton Ltd., High Point, N. C.  
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more products on page 172

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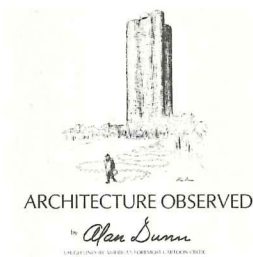
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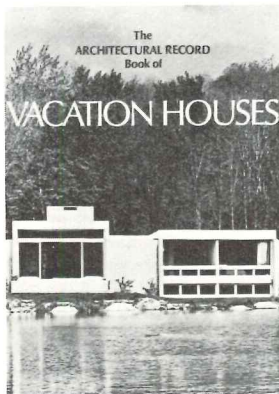
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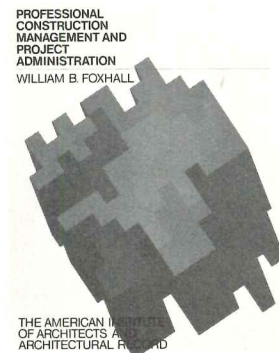
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The Otis walk is a moving walk. We call it the Trav-O-Lator® moving walk. It's a horizontal escalator, yet it can change into a ramp to go over or under obstacles. And it's easily reversible, to accommodate variable traffic flow.

Just step on and the Otis walk will get you there in a hurry.

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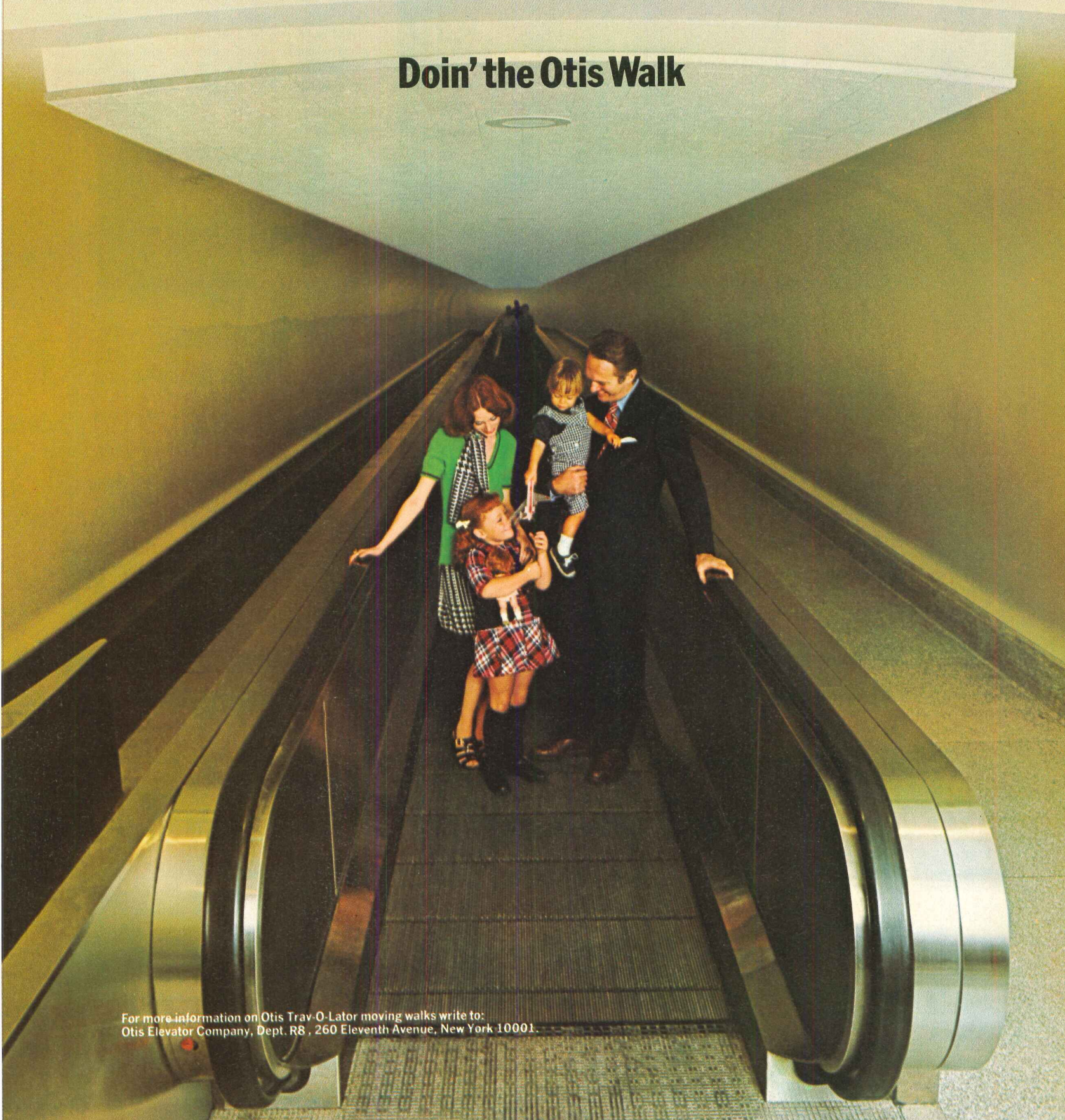
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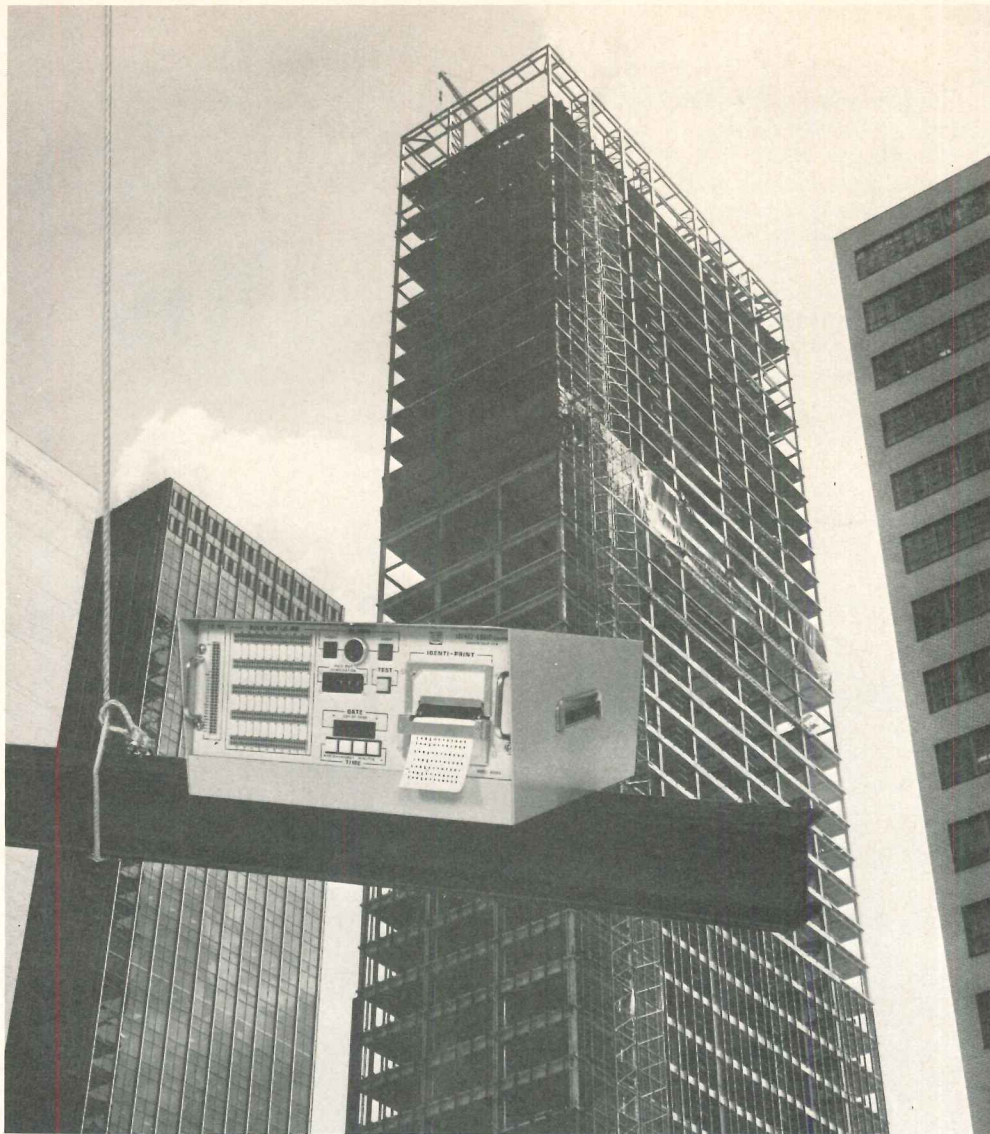
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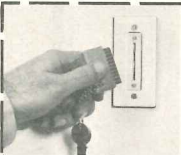
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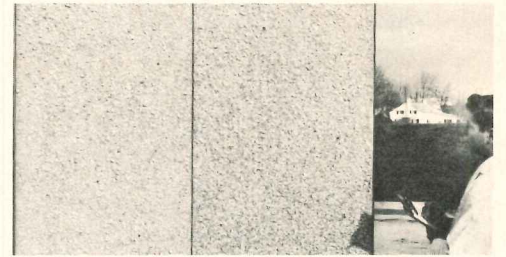
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## PRODUCT REPORTS

continued from 164D



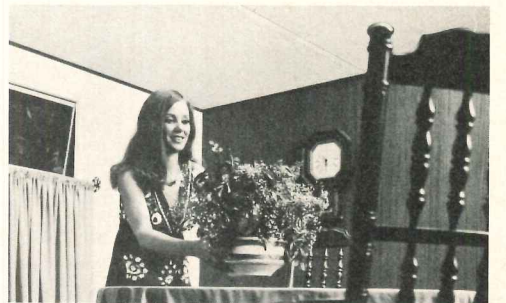
**WALL SYSTEM** / Designed for interior and exterior use, these modular construction panels reportedly provide a total wall unit, complete with both interior and exterior surface finishes, and includes doors, windows, trim and miscellaneous hardware. ■ ESB Inc., Atlas Minerals & Chemicals Div., Mertztown, Pa.

Circle 319 on inquiry card



**SPIRAL STAIRCASE** / Assembly can be completed without welding. The standard unit rises eight feet from floor to floor. Tread material is of diamond-plate steel. ■ Pisor Industries, Carmichael, Calif.

Circle 320 on inquiry card



**GYPSON PANELING** / This pre-decorated gypsum board is designed for ceiling applications in mobile homes and sidewall use as well. The panel is non-combustible, resists abrasion, moisture and can withstand repeated washings. ■ National Gypsum Co., Buffalo.

Circle 321 on inquiry card

**HEARING TEST BOOTH** / A latchless door operated by a magnetic-audio seal assures secure closure and acoustic integrity. Other features include a double-glazed safety plate glass window, integral exhaust and intake silencers, and forced air ventilation system. ■ Audio Suttle Corp., Norwalk, Conn.

Circle 322 on inquiry card



*Edison Plaza Building. Owners: Toledo Edison Company.  
Engineers • Architects • Planners • Samborn, Steketee, Otis and Evans, Toledo, Ohio.*

**The glass that cuts building costs.**



**Here, L-O-F's most expensive glass reduced construction costs, will save in annual operating costs.**



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The engineering • architectural • planning firm of Samborn, Steketee, Otis and Evans made a computerized cost analysis of their glazing alternatives while the building was still on their boards. They compared various types of glass in terms of year-around heat loss and gain, initial glass costs, total building cost, effects on taxes and insurance, annual operating costs, etc. (See summary in box.)



What came out, loud and clear, was that Thermopane with Vari-Tran 108 coated glass as the outer pane would save the owners money. Less expensive to build. Less expensive to operate.

This was not just because Vari-Tran's superior heat-reflecting qualities require less air conditioning tonnage. Since height of cavities between floors is less because smaller ducts are adequate, the same space is achieved in a shorter building at lower construction cost. And Vari-Tran permitted a simple radiation system 6" deep around the perimeter of the building. An average of 500 sq. ft. of usable space



was gained per floor. The other glasses considered would have required an expensive induction system 18" deep.

As to aesthetics, the silvery Vari-Tran 108 blends with the limestone columns and spandrels of Tuf-flex® tempered glass, also Vari-Tran coated. (Vari-Tran is available in golden as well as silvery coatings in reflectivities of 8, 14 and 20 percent.)

If you would like a computerized cost analysis of the glass wall of a building you're planning, contact your L-O-F Architectural Repre-

sentative, or Architectural Dept., Libbey-Owens-Ford Co., Toledo, Ohio 43624. It could surely help you solve your budget problem.

**ECONOMIC GLASS COST ANALYSIS**

by Samborn, Steketee, Otis and Evans, Toledo, Ohio

*Uniform annual costs for the glass were based on an anticipated useful life of 40 years for the building, 20 years for the air conditioning equipment. Both costs are for borrowed money at 8% interest.*

*The initial cost of Thermopane with Vari-Tran and the air conditioning equipment it requires is less than for 1/4" plate and the increased air conditioning it would require. And the total annual cost of owning and operating the building will be substantially less and will result in reductions as follows as compared with 1/4" plate.*

*64.7% reduction in capacity of central refrigeration equipment*

*67.9% reduction in capacity of distribution system*

*53.2% reduction in capacity of central heating equipment*

*19.2% reduction in comparative initial costs*

*24.4% reduction in comparative uniform annual cost*

*33.7% in total annual operating costs*

*29.5% savings in comparative annual operating costs*

*There are also incalculable benefits from glazing with Vari-Tran/ Thermopane: greater humidity control in offices and the computer room located on an outside wall; sharp reduction of roomside condensation and down drafts near windows in winter, increasing comfort.*

**LOF** **Hi-Performance Glass**  
GLASS *The glass that cuts building costs*

## Are you satisfied with those other flooring materials?

We know you want a flooring that will resist fire, has no toxic fumes, is not a breeding ground for bacteria growth, needs only weekly maintenance and will withstand constant wear in high traffic areas.

Compare modern terrazzo, using Medusa White Cement, with competitive materials, and see for yourself which product best meets the above requirements.

A twenty-year cost study comparing terrazzo with carpeting (and rubber pad) showed that terrazzo cost \$15.12 per square yard less than carpeting.\*

And, the unique design flexibility of terrazzo combined with a Medusa White Cement matrix gives the architect the beauty and performance he so rigidly requires. Perform-



ance for successful construction of airports, hospitals, shopping centers and many other commercial and residential applications.

But why stop at floors? Terrazzo is a versatile building material. Let your imagination be your guide for other terrazzo design uses . . . inside or out.

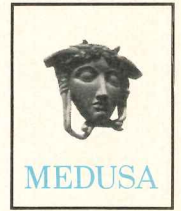
For more details, write for our new terrazzo brochure. Medusa Portland Cement Company, P.O. Box 5668, Cleveland, Ohio 44101.

\*Cost Study was conducted by Terrazzo Tile and Marble Association of Canada.

*For more data, circle 96 on inquiry card*

**MADISON AVENUE  
SIDEWALK,  
NEW YORK, N.Y.**

Art Design: Alexander  
Calder, Paris, France.  
Terrazzo Contractor:  
Foscato Bros., Hunting-  
ton Station, L.I., N.Y.



# WHY you should specify a Terrazzo floor.

## **HURON HIGH SCHOOL, ANN ARBOR, MICHIGAN.**

Architect: Lane, Riebe, Weiland, Ann Arbor. Gen. Contractor: A. Z. Shmina, Detroit. Terrazzo Contractor: Palombit Tile Co., St. Clair Shores.





## OFFICE LITERATURE

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

**CERAMIC TILE** / "1971 Handbook for Ceramic Tile Installation" covers a wide range of installation methods and conditions. Updated information and several technical changes are included. Installation details for such specialized areas as swimming pools and steam rooms are given. ■ Tile Council of America, Inc., New York City.\*

Circle 400 on inquiry card

**ELECTRICAL DESIGN** / Guidelines to the design of standby power and emergency lighting systems are given in a recently published monograph. ■ National Electrical Contractors Assn., Washington, D.C.\*

Circle 401 on inquiry card

**DOOR LOUVERS** / A variety of sizes in extruded aluminum for wood, hollow metal and plastic laminated doors is presented in a 4-page bulletin. Specifications are included. ■ Construction Specialties, Inc., Cranford, N.J.\*

Circle 402 on inquiry card

**PLYWOOD** / "Guide to Plywood Siding," a 12-page brochure, gives application details, and facts on insulation values, and strength. ■ American Plywood Assn., Tacoma, Wash.\*

Circle 403 on inquiry card

**ROOFTOP SYSTEM** / A multi-zone rooftop HVAC system is described in a 60-page catalog. Detailed installation instructions for installing the system in schools and other large multi-room buildings are given. ■ Modine Mfg. Co., Racine, Wis.\*

Circle 404 on inquiry card

**WINDOWS** / A complete line of vinyl-clad windows and gliding doors is described in a catalog. Window combinations for solving fenestration problems are illustrated. ■ Anderson Corp., Bayport, Minn.\*

Circle 405 on inquiry card

**INSULATED PANEL** / A steel wall panel with urethane foam core insulation is described in an 8-page booklet. The panels are available with the manufacturer's metal building systems or for applications where a one-step wall would be specified. ■ Armco Steel Corp., Metal Products Div., Middletown, Ohio.\*

Circle 406 on inquiry card

**BRICK UNITS** / A clay product for exterior and interior applications is described in a brochure. The units are adaptable to load-bearing or curtain-wall systems. ■ Glen-Gery Corp., Reading, Pa.\*

Circle 407 on inquiry card

**FLOORING** / A recent catalog describes a complete line including vinyl asbestos and asphalt floor tile, feature strip and vinyl cove base. ■ Azrock Floor Products, San Antonio, Tex.\*

Circle 408 on inquiry card

\*Additional product information in Sweet's Architectural File

more literature on page 188



*"Backing is backing-  
who sees it?"*



*When it spots the  
surface - everybody!*

The untreated backings of some wallcoverings contain numerous cotton seeds. Oil, released from the seeds, can work through to spot the surface. Mildew also can start in untreated backings and discolor the surface. Vicrtex pioneered the use of and uses only washed, bleached and pre-shrunk backings treated with fungicide. Clean backings also provide better adhesion to walls. Insure your clients' installations by specifying high-quality Vicrtex.

## Vicrtex<sup>®</sup> VINYL WALLCOVERINGS

With Vicrtex, you and your clients are assured:

- The Industry's most complete range of decorative patterns in a broad spectrum of colors.
- Fade-proof colors; unusually durable surfaces.
- High stain-, spot- and alkaline-resistance.
- Easy, fast cleaning for low-cost maintenance.
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- Class "A" Fire Hazard Classifications.
- 1-year protection against manufacturing defects—Vicrtex Vinyl Wallcoverings are guaranteed!



Write today for your copy of this Practical Guide to Specification, Selection, Use and Care of Vicrtex Vinyl Wallcoverings.

**L. E. CARPENTER**

AND COMPANY



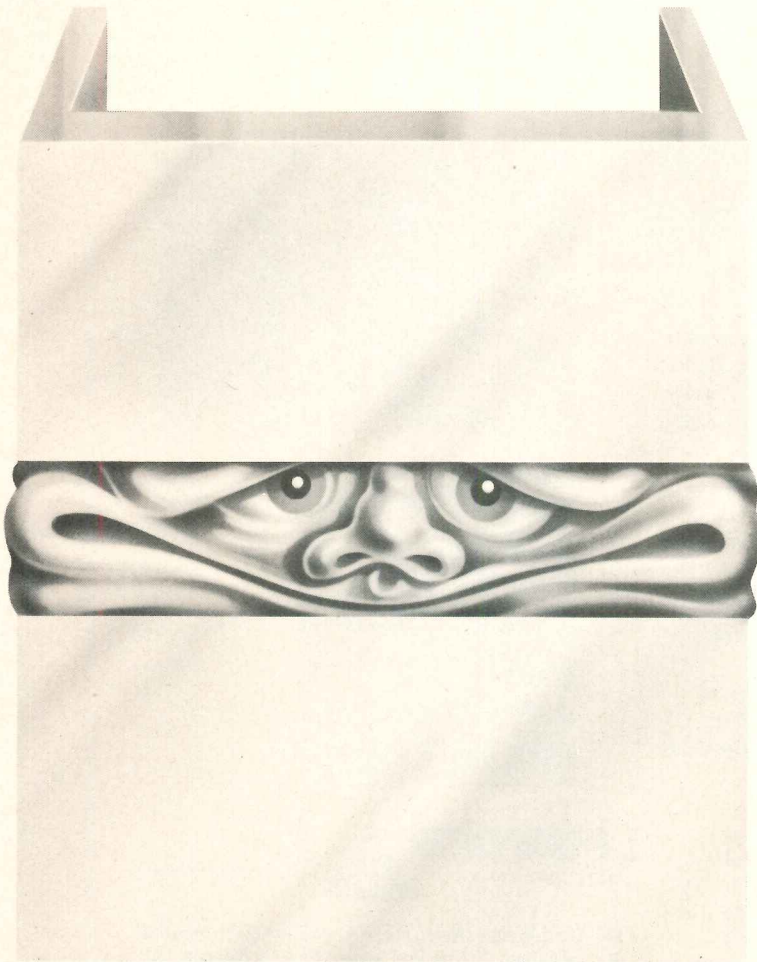
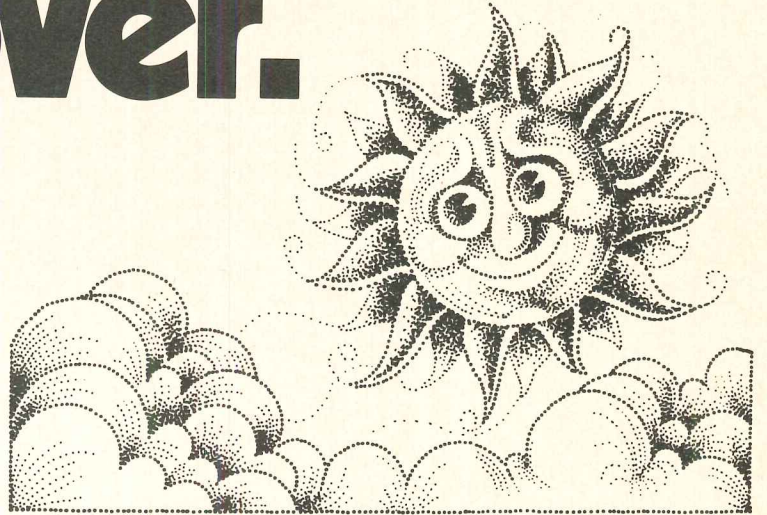
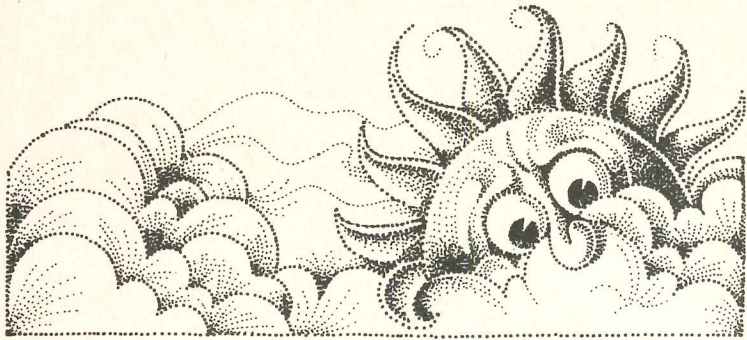
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For more data, circle 93 on inquiry card

# Mating habits of the all-aluminum column cover.

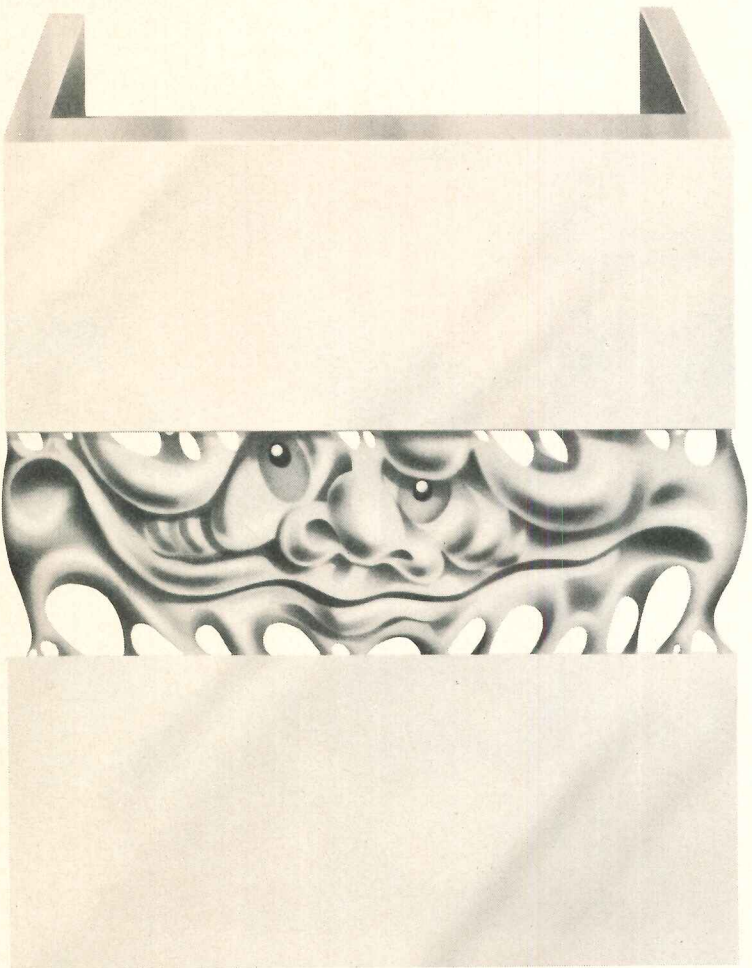
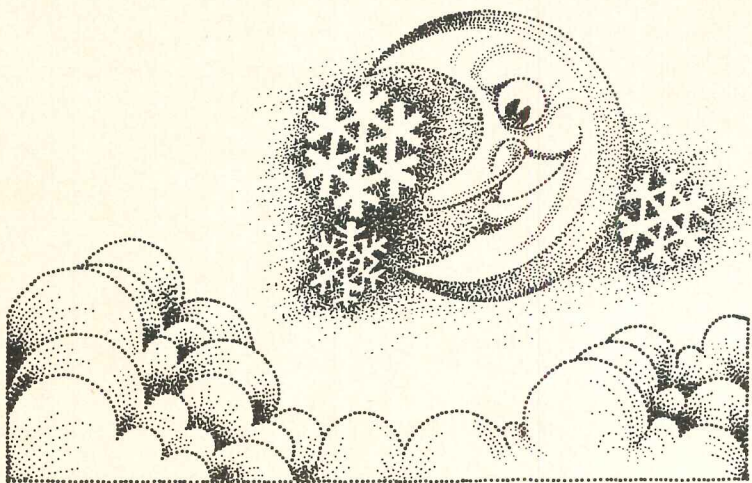


By itself an aluminum column cover is a thing of joy and beauty forever. The trouble starts when you try to make a waterproof joint between a pair of them.

Let's say the job calls for a  $\frac{3}{8}$ " joint between 12-foot panels. The panels are set in place at 8:30 a.m. The temperature is  $50^{\circ}\text{F}$  when the sealant is applied. (Above, left).

But now the temperature starts to rise. By 4:00 p.m. it's  $85^{\circ}$ . And those dark-colored, dull-finished, insulated panels are up to  $175^{\circ}$ . The joint has compressed to  $\frac{1}{4}$ ". This is normal building movement. But look what's happened to the sealant. (Above, center).

Heat speeded the cure. And by 4:00 p.m. the sealant has cured to a firm bead  $\frac{1}{4}$ " wide.



Now the temperature drops. By 9:00 p.m. it is 20°; the joint opens up to  $\frac{7}{16}$ ". And while the job called for a  $\frac{3}{8}$ " cured bead that could move 25% either way, it actually winds up with a  $\frac{1}{4}$ " cured bead that must elongate more than 50% to  $\frac{7}{16}$ ". It probably won't stick it out. (Above, right).

Here's how you can avoid this problem.

Design the joints at least  $\frac{1}{2}$ " wide. This way, you will wind up with a  $\frac{3}{8}$ " cured bead that has to move just 25% of its cured width.

If it is aesthetically feasible, use 6-foot instead of 12-foot panels. You'll cut panel expansion in half and stay well within the sealant's movement capability.

Better still, you might talk to us while you are still in the design stage. We're Tremco. And we cope with aluminum column cover sealant problems every day of the year. We also have some 15 basic sealant formulations to work with — including such familiar names as MONO (our job-proven acrylic terpolymer), DYmeric (our Tremco-developed polymer), and Lasto-Meric (our polysulfide).

With all this going for you, you can stop worrying about the mating habits of the all-aluminum column cover. Because Tremco will come up with a sealant system that will stick with you for years on end. The Tremco Manufacturing Company, Cleveland, Ohio 44104, or Toronto 17, Ontario.

**TREMCO**  
The water stoppers

For more data, circle 97 on inquiry card

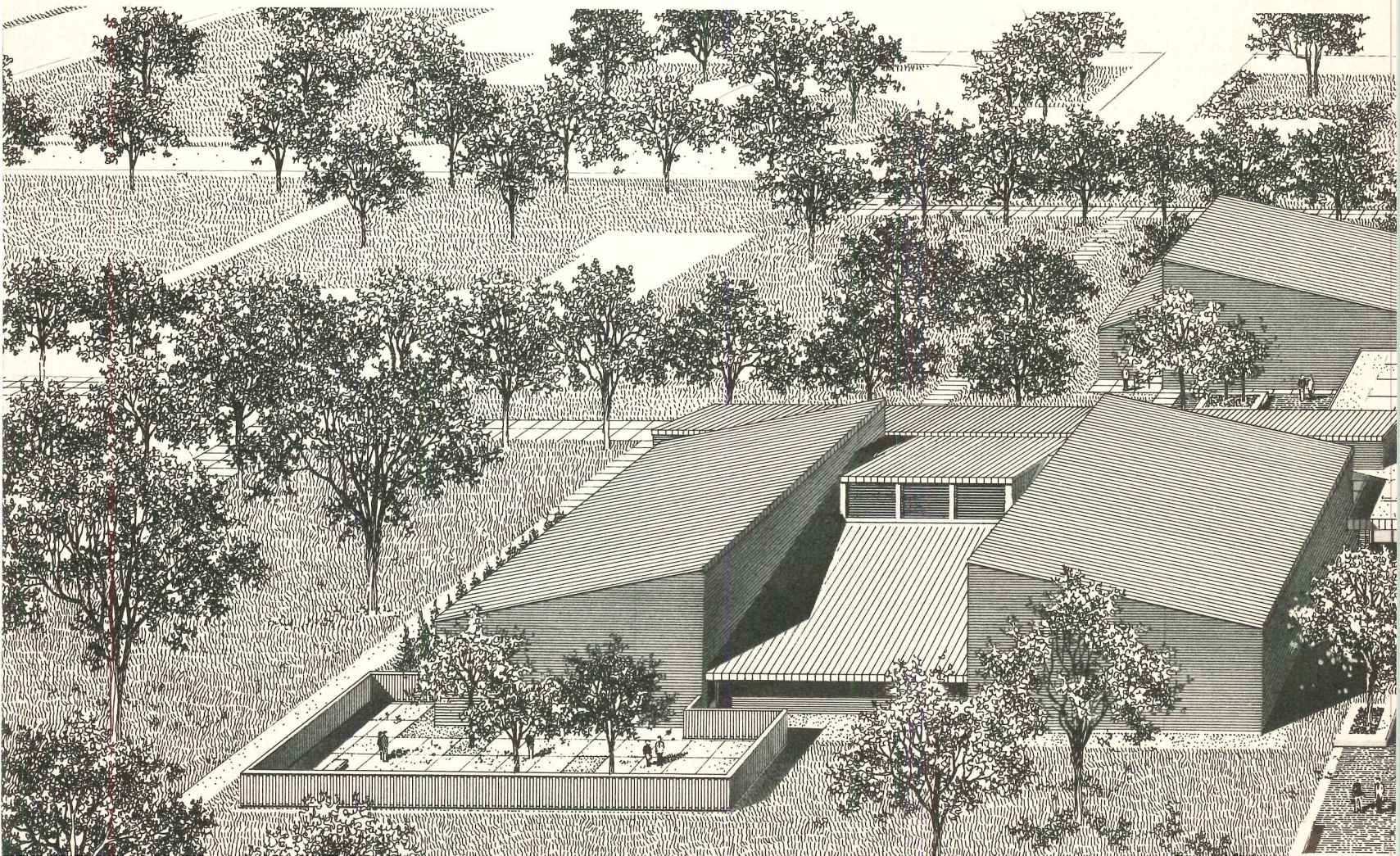
# TCS:

Rehabilitation Center  
Buffalo State Hospital  
Buffalo, New York

Rendering by Brian Burr

Architects: Milstein, Wittek, Davis & Hamilton  
Buffalo, New York

A project of the New York State Health and Mental Hygiene  
Facilities Improvement Corporation for the New York State  
Department of Mental Hygiene



# THE LOGIC OF ITS USE.

The reasons for specifying TCS (Terne-Coated 304 Stainless Steel) can be even more various than the many advantages which are inherent in this superbly functional material.

In the case of the Buffalo State Hospital Rehabilitation Center, the architects were primarily motivated by the fact that TCS weathers naturally to a uniform dark gray, and that it is resistant to corrosive attack under even the most severe atmospheric exposure.

Your own problems may well be different, but TCS provides equally cogent solutions in virtually every situation involving either roofing or weathersealing.

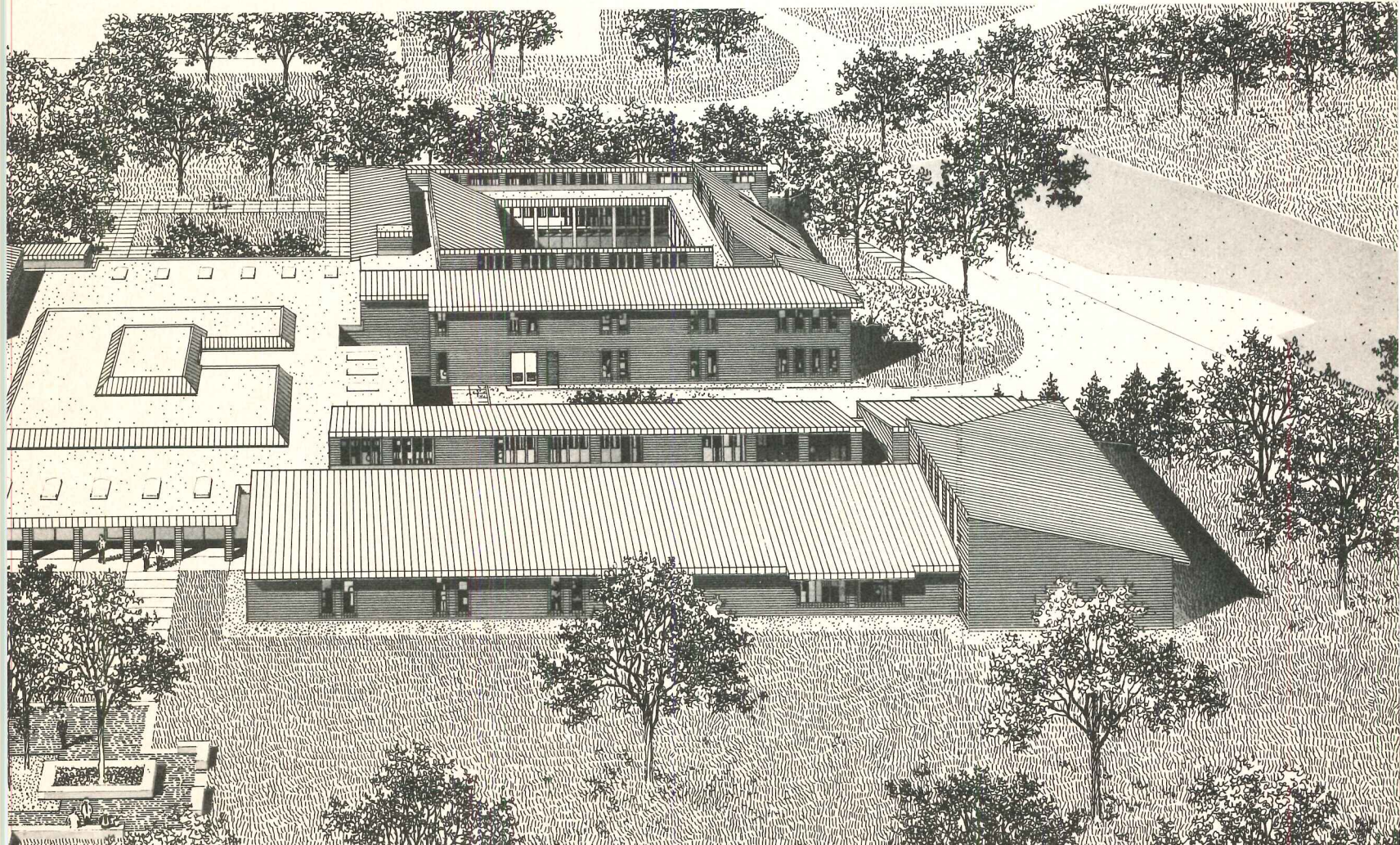
May we send you the substantiating evidence?

---

## FOLLANSBEE

FOLLANSBEE STEEL CORPORATION • FOLLANSBEE, WEST VIRGINIA

*For more data, circle 98 on inquiry card*



to building product manufacturers who are looking for  
a maximum return on their advertising investment

**architects and engineers  
significantly prefer  
ONE magazine.**

**isn't it logical to do an  
optimum advertising  
job in THAT ONE?**

**T**he magazine is Architectural Record. Consistently preferred by architects and engineers in 232 out of 251 studies sponsored by building product manufacturers and their advertising agencies over three decades. Decisively preferred in 27 out of 28 such studies in the last five years.

Case in point: Pratt & Lambert, Inc., leading manufacturers of paints, coatings and adhesives, recently asked their own architect customers, "Which one of the following magazines is most helpful to you as a guide to the selection of building products?" Result: Architects picked Architectural Record by a margin of 66 per cent!

This preference fits all the related facts: largest, most qualified editorial staff; most editorial awards; largest architect and engineer subscriber audience; highest subscription rate; highest renewal percentage; top verifiable market coverage.

And all of these facts add up to equally impressive advertiser preference for the Record. Year after year, more building product manufacturers place more advertising pages in Architectural Record than in any other magazine—40 per cent more to date in 1971. (And Pratt & Lambert, after reviewing its own customers' pronounced preference for the Record, stated: "We will continue to use Architectural Record exclusively.")

Matter of fact, in 1970, nearly 200 building product manufacturers advertised exclusively in Architectural Record—250 per cent more exclusive pages than the second magazine.

When one magazine is dominantly preferred by the readers you have to reach—and the advertisers you have to compete with—doesn't your primary advertising effort belong in that one magazine?

**ARCHITECTURAL  
RECORD** 330 WEST 42ND STREET  
NEW YORK, N.Y. 10036  
A MCGRAW-HILL MARKET-DIRECTED® PUBLICATION

## WHAT IS AN OPTIMUM ADVERTISING JOB IN THE LEADING MAGAZINE?

That depends.

On marketing objectives, the balanced use of marketing tools, competition, product, budget and a host of other considerations.

However, advertising professionals generally agree that four basic laws are operative.

1. *Continuity increases impact.*
2. *Larger space tends to command greater attention.*
3. *Functional 4-color lends dominance and aids understanding.*
4. *Continuity, larger space size and functional color together help get attention, create interest, build reputation, impress the reader.*

Architectural Record would welcome the opportunity to place its knowledge of the market and marketing at your disposal—to help you determine how you can get maximum value out of your advertising program.

*What Advertisers Want in an Architectural Magazine (and find in Architectural Record).*

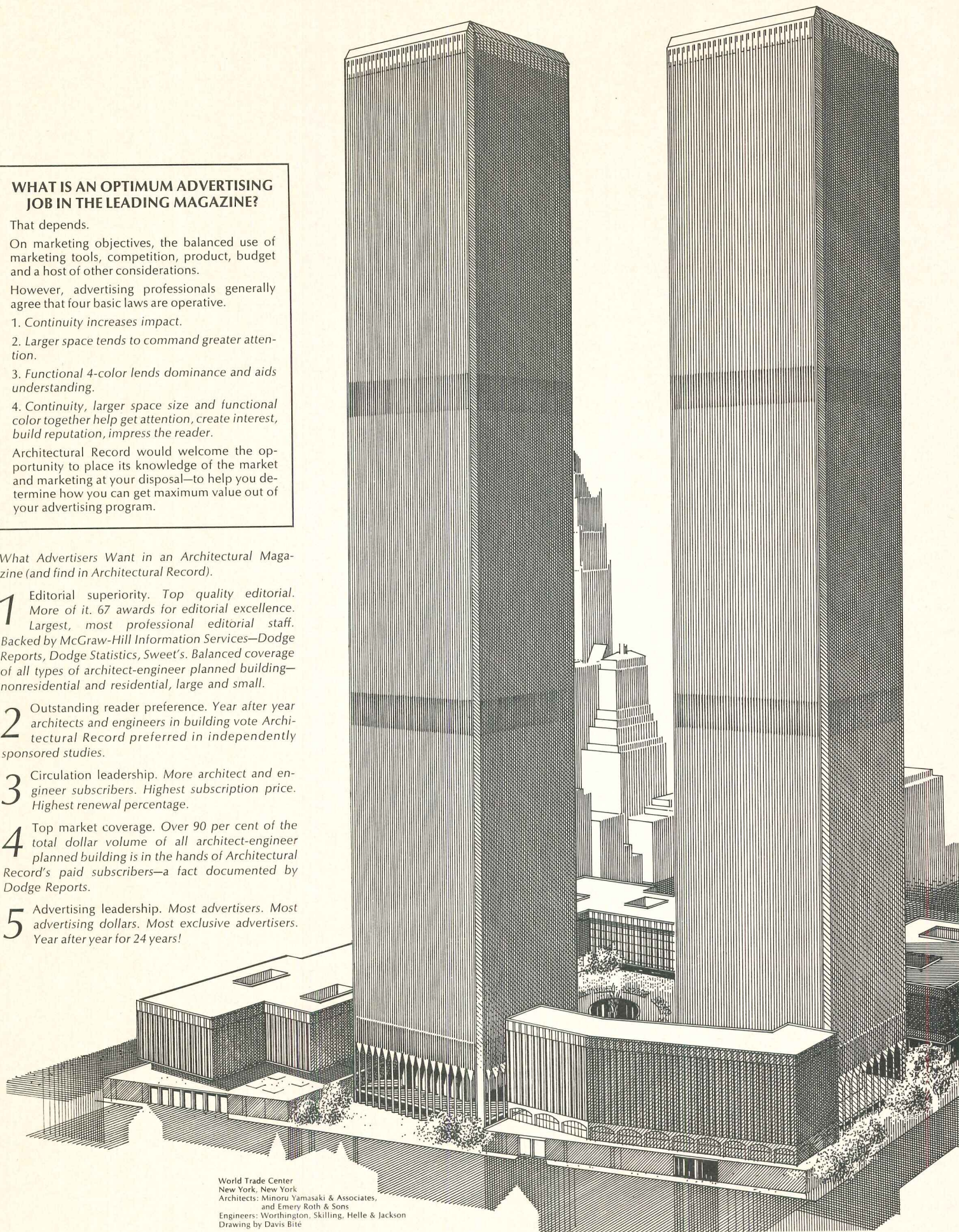
**1** Editorial superiority. *Top quality editorial. More of it. 67 awards for editorial excellence. Largest, most professional editorial staff. Backed by McGraw-Hill Information Services—Dodge Reports, Dodge Statistics, Sweet's. Balanced coverage of all types of architect-engineer planned building—nonresidential and residential, large and small.*

**2** Outstanding reader preference. *Year after year architects and engineers in building vote Architectural Record preferred in independently sponsored studies.*

**3** Circulation leadership. *More architect and engineer subscribers. Highest subscription price. Highest renewal percentage.*

**4** Top market coverage. *Over 90 per cent of the total dollar volume of all architect-engineer planned building is in the hands of Architectural Record's paid subscribers—a fact documented by Dodge Reports.*

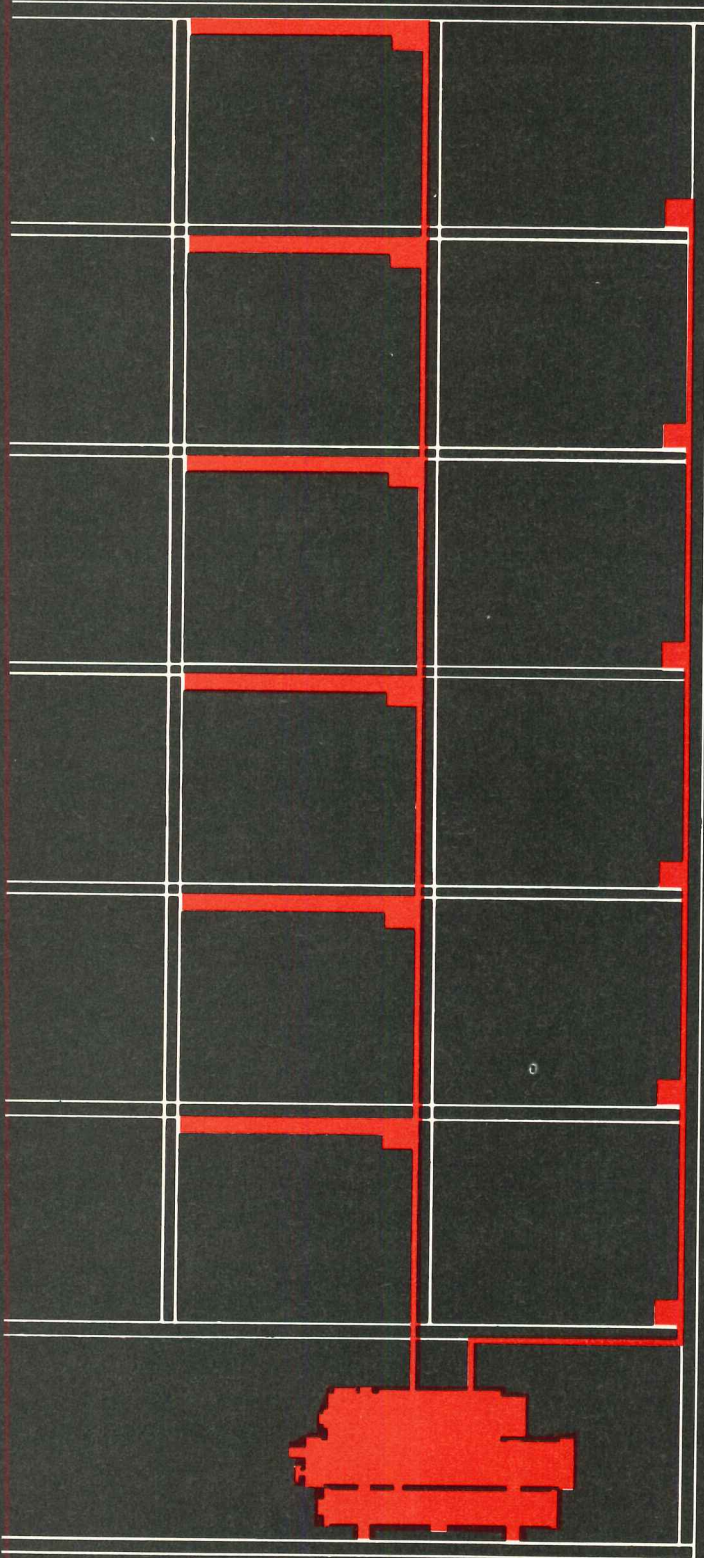
**5** Advertising leadership. *Most advertisers. Most advertising dollars. Most exclusive advertisers. Year after year for 24 years!*



World Trade Center  
New York, New York  
Architects: Minoru Yamasaki & Associates,  
and Emery Roth & Sons  
Engineers: Worthington, Skilling, Helle & Jackson  
Drawing by Davis Bite

# FEDDERS

## Equipment Shall Be Fedders

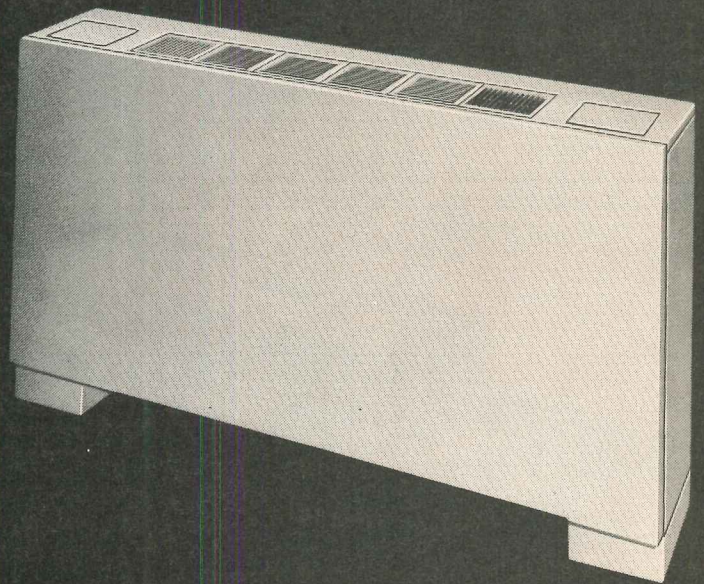


**because** Fedders water cooled liquid chillers are built of carefully selected and tested heavy duty components . . . because the fan coils are engineered for exceptionally low sound levels as rated in compliance with ARI Sound Standard 443-66.

The liquid chillers are available in capacities ranging from 15 to 100 tons and feature a heavy duty industrial type reciprocating compressor with an open motor for more efficient performance, lower maintenance and reduced equipment insurance costs.

The Fedders fan coil units are available in four models with cooling capacities from 6500 to 36,200 btuh and heating capacities from 18,700 to 85,200 btuh.

In the application shown in the elevation drawing, the liquid chiller is located in an equipment room and the chilled water is piped to air handlers located in the core area and to fan coil units located in the outer wall of the perimeter areas.

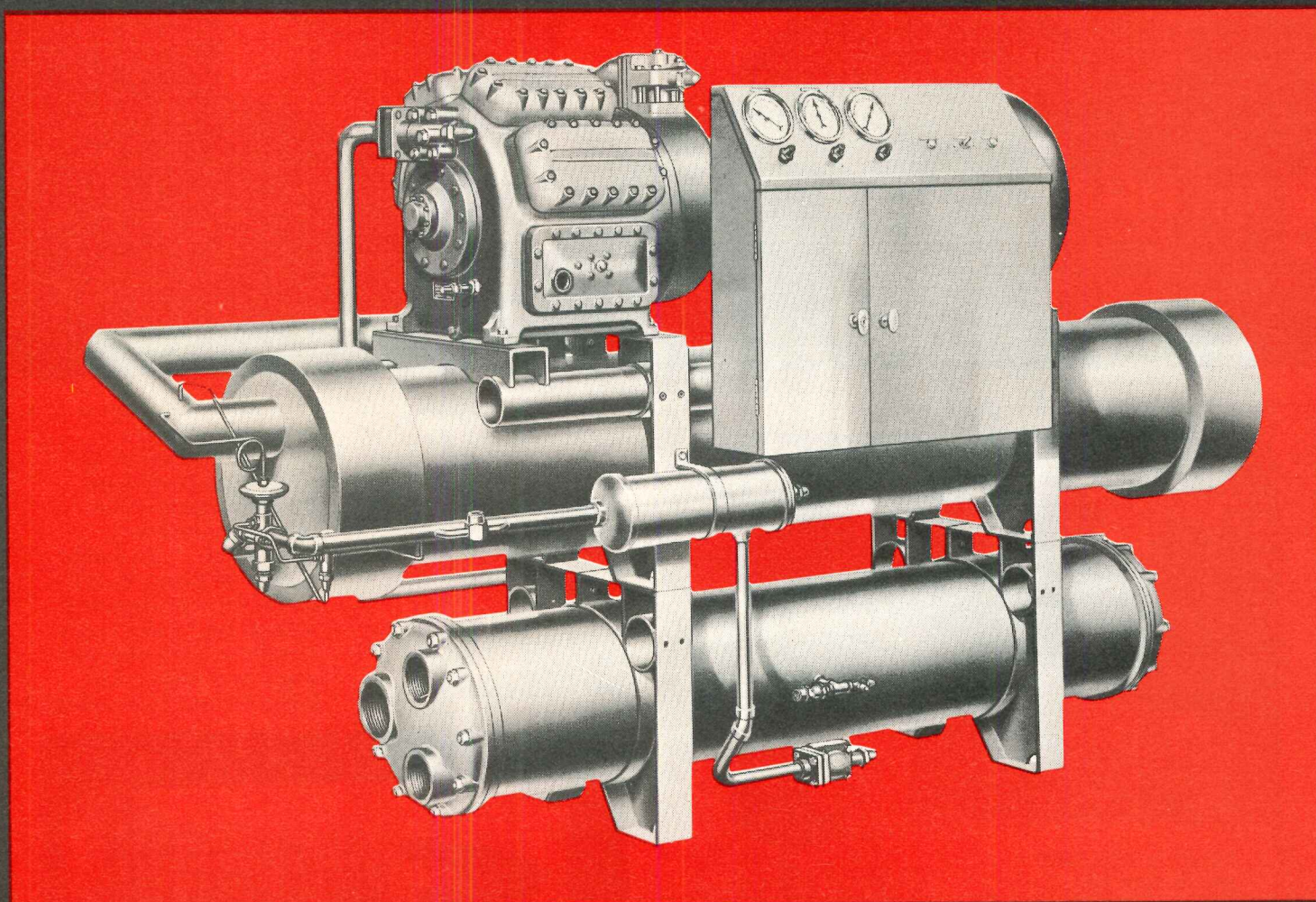




# Submittal # 6

## Water Cooled Coupled Liquid Chillers

## ...And Fan Coil Units



Fedders full range of water and air cooled liquid chillers, air handlers, fan coil units, terminal units, forced air furnaces, package heating & cooling units (see submittal #4 this issue), condensing units, evaporator blowers (see Fedders submittal #5 this issue) and roof top units gives you the opportunity to have one brand you can rely on for all your air conditioning and heating.

For further information, please write the Fedders Technical Information Department.

*Note: Fedders Submittals 1, 2, 3 were shown in immediate previous issue of this magazine. Reprints are available.*

# FEDDERS

**CENTRAL AIR CONDITIONING & HEATING**  
**EDISON, NEW JERSEY 08817**

*For more data, circle 99 on inquiry card*

# New Fascia System by SILBRICO

A fascia, water dam, gravel stop, curb and cant . . . all in one simple, durable system. The Silbrico extruded aluminum fascia system is designed and installed to meet Factory Mutual roof perimeter flashing requirements of Data Sheet 1-49 to resist wind uplift of 60 lb./Lin. Ft. of wall. It controls water, prevents leakage at the roof perimeter, withstands high winds, hides building irregularities and provides a most attractive non-corrosive, durable fascia for any building. An exclusive vinyl seal throughout an extruded aluminum liner-flashing is held tight by the Silbrico "Cam-Lock" locking device to assure a positive water seal always. Wide variety of finishes and colors. Compare fascias . . . then specify "the tough one" . . . the Silbrico Fascia System. Write for details, specifications and brochure showing complete range of sizes.



**SILBRICO CORPORATION**  
6300 RIVER ROAD • HODGKINS, ILLINOIS 60525  
CHICAGO PHONE (312) 735-3322



For more data, circle 100 on inquiry card



## Versatile classroom and lecture hall Sequence Seating

Fixed or folding tablet-arm seating; beam-mounted for flat or pitched floor, and riser applications. Also, individual floor-mounted pedestals. Adaptable to rows, staggered, in-line curves or other configurations. Posture shaped, durable, fiberglass shells . . . plain or upholstered. Write for details on free room planning and consulting engineer services.



**KRUEGER**  
METAL PRODUCTS, INC. • GREEN BAY, WISCONSIN • 54306

Write for  
complete line  
catalog!

For more data, circle 101 on inquiry card

## PROJECT CORPORATE IDENTITY...

See us in  
Sweet's Interior Design,  
File A-6

in reception areas, lobbies, elsewhere with handsome Matthews' 3-dimensional metal letters. Bronze and aluminum . . . in a wide variety of faces, finishes, sizes. Custom-designed letters, trademarks, cast tablets, etched plaques, and name plates, too. Write for our free catalog.



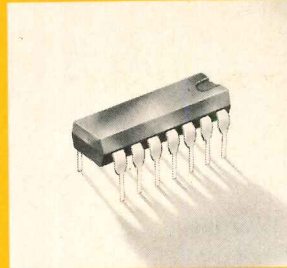
**JHM** Identification In Metal  
JAS. H. MATTHEWS & CO.

1315 W. Liberty Ave., Pittsburgh, Pennsylvania 15226

PLANTS IN PITTSBURGH, PENNSYLVANIA; SEARCY, ARKANSAS; MILTON, ONTARIO;  
SUN CITY, CALIFORNIA; SENECA FALLS, NEW YORK; EL MONTE, CALIFORNIA.

For more data, circle 102 on inquiry card

**small wonder**



**the fastest passenger service  
ever known is delivered by  
the new HAUGHTON 1092-IC  
elevator control system!**

That "small wonder" holds an array of the microminiature integrated circuits that enable Haughton 1092-IC to achieve faster, more flexible passenger service than any other control system.

The interval from pressing a call button to arrival at the destination floor—Passenger Destination Time—is shorter than was ever before possible. That's be-

cause 1092-IC, alone, is packed with enough electronic logic to supervise and weigh every factor affecting service. Others can deal with less than half of them.

In milliseconds, 1092-IC allots and reallots calls to cars; constantly adjusts to all changes in load, location, calls, commands and delays—as quickly as they happen. The entire elevator plant becomes more efficient than ever

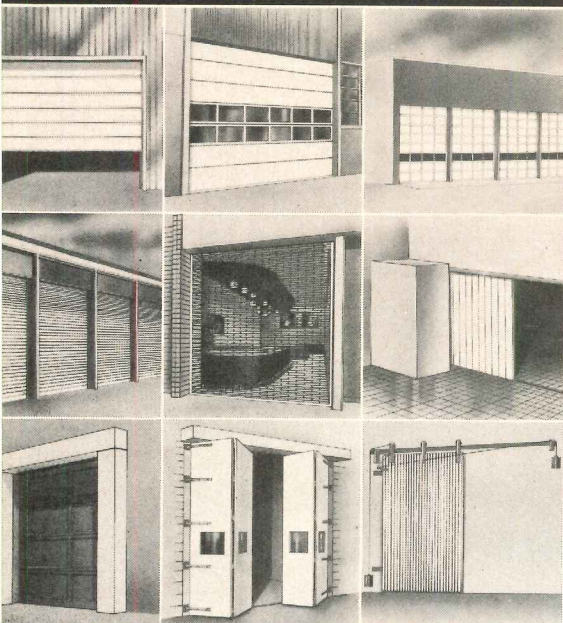
before, because now any car can be deployed anywhere to streamline passenger traffic. And it's accomplished in less than the former space, with greater reliability.

To learn more about this new concept of better service for elevator passengers, write us for your copy of the new HAUGHTON 1092-IC brochure—or call your nearest Haughton office.

**RELIANCE**  **HAUGHTON ELEVATORS**  
ELECTRIC COMPANY  
P.O. BOX 780, TOLEDO, OHIO 43601

*For more data, circle 103 on inquiry card*

when  
it comes to  
filling  
an opening...  
any opening



## CRAWFORD has the DOOR

Industrial, Commercial  
Institutional, Residential

- Sectional Doors: Steel, Fiberglass, Aluminum, Wood—Flush and Panel
- Security and Counterweighted Doors
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- Rolling Grilles: Steel, Stainless Steel, Aluminum, Bronze
- Rolling Counter Shutters: Wood, Steel, Stainless Steel, Aluminum
- Side Coiling Grilles and Doors: Wood, Steel, Stainless Steel, Aluminum, Bronze
- U. L. Labeled Rolling Doors, Counter Shutters, Metal Clad and Corrugated Sliding Fire Doors
- All Special Engineered Doors
- a Full Line of Accessories: Electric Operators and Controls, Pass Doors, Removable Mullions, Dor-Seal Dock Shelters.

FOR FULL DETAILS SEE YOUR SWEETS ARCHITECTURAL CATALOG FILE Section 8.9/Cra "Uprising Sectional Doors" and/or Section 8.7/Cr "Rolling Doors, Grilles, Shutters and Sliding Fire Doors."

Contact your local Crawford Distributor for specific data.



Crawford Door Company, 4270  
High Street, Ecorse, Michigan  
48229  
Division of The Celotex Corp.

### OFFICE LITERATURE

continued from page 177

**VENTILATION SYSTEM** / A concept for obtaining low-cost ventilation between window glass and draperies is described in a brochure. The system consists of an aluminum molding with a series of built-in vent slots. ■ Fry Reglet Corp., Los Angeles.\*

Circle 409 on inquiry card

**INCINERATORS** / Fourteen models are described in a 4-page brochure complete with detailed drawings and engineering data. ■ Kewanee Boiler Corp., Kewanee, Ill.\*

Circle 410 on inquiry card

**INTERIOR LIGHTING** / Several lines for commercial, institutional and industrial applications are described in a 32-page catalog. Fluorescent, incandescent and mercury equipment are presented. ■ The Miller Co., Meriden, Conn.\*

Circle 411 on inquiry card

**INSULATION** / A complete line of insulation products and related items such as adhesives, coatings and sealers are described in detail in a 16-page catalog. New products are discussed. ■ Armstrong Cork Co., Lancaster, Pa.\*

Circle 412 on inquiry card

**INDUSTRIAL DOOR** / A single, horizontal-slide model is described in a bulletin. The door features vertical casings and is available in steel, plywood and plastic. ■ Clark Door Co., Inc., Cranford, N.J.\*

Circle 413 on inquiry card

**HOSPITAL EQUIPMENT** / Portable wood partitions suitable for semi-private and ward rooms are described in a bulletin. ■ Richards-Wilcox Mfg. Co., Aurora, Ill.\*

Circle 414 on inquiry card

**EMERGENCY LIGHTING** / A battery-powered, incandescent, emergency luminaire is described in a booklet. The lighting system features sealed batteries which reportedly have greater longevity than lead-acid batteries. ■ Holograph Co., Inc., New York City.\*

Circle 415 on inquiry card

**WALL SYSTEM** / Prefabricated, total wall units complete with interior and exterior surface finishes are described in a 4-page brochure. The system includes panels with windows, doors, trim and miscellaneous hardware. ■ ESB Inc., Mertztown, Pa.\*

Circle 416 on inquiry card

**ESCALATOR ENCLOSURES** / Rolling shutter enclosures designed to protect escalator floor openings from flames, smoke and gases in the event of fire are described in an 8-page brochure. They operate automatically by motor, or manually by hand crank. ■ Cornell Iron Works, Inc., Wilkes-Barre, Pa.\*

Circle 417 on inquiry card

\*Additional product information in Sweet's Architectural File



## It's easy to be a hero.

All you have to do is write a Viking Sauna into your specifications.

The Viking Sauna. Pre-designed by sauna experts. Pre-built for instant assembly. Pre-sold through national advertising and publicity. Loved by homebuilders and home buyers alike.

Just ask, and we'll send you our new color catalog giving complete specifications for the entire line of Viking Saunas. Could anything be easier?

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State/Zip \_\_\_\_\_ Phone \_\_\_\_\_

**Viking Sauna** COMPANY

909 Park Avenue, P. O. Box 6298, San Jose, California 95150.

Distributor inquiries invited.

For more data, circle 105 on inquiry card



# HIAC<sup>TM</sup>

*Acrylic*

## CONCRETE SEALER



...makes outside concrete surfaces as beautiful and easy to clean as inside floors.

- **Highly resistant to oil; grease; de-icing salts; hydrochloric, acetic and sulfuric acids; caustic sodas and most industrial chemicals.**
- **High acrylic content.**
- **High or medium sheen as desired.**
- **High speed drying.**
- **Highly versatile . . . seals, protects and beautifies concrete, terrazzo, slate, stone, exposed aggregate and other ceramic-type materials.**

... inside or outside, HIAC is a concrete sealer that provides excellent weatherproofing, stainproofing, sealing and dustproofing qualities. HIAC amplifies the natural beauty of concrete and masonry. It can be applied to provide the degree of sheen and protection desired . . . the more coats applied, the higher the resulting sheen of the protective film. The hard, smooth, clear HIAC protective film will not discolor or turn yellow.

The rugged, long-lasting HIAC film is highly resistant to stain . . . spills may be easily wiped up or merely hosed away. Offers excellent wearing qualities for foot and vehicular traffic.



For complete information request your Free copy of Product Catalog No. 2-1.



**W. R. MEADOWS, INC.**  
30 KIMBALL STREET • ELGIN, ILLINOIS 60120

*Other Plants*

**ATLANTA, GEORGIA  
YORK, PENNSYLVANIA  
WESTON, ONTARIO, CANADA**

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# ADVERTISING INDEX

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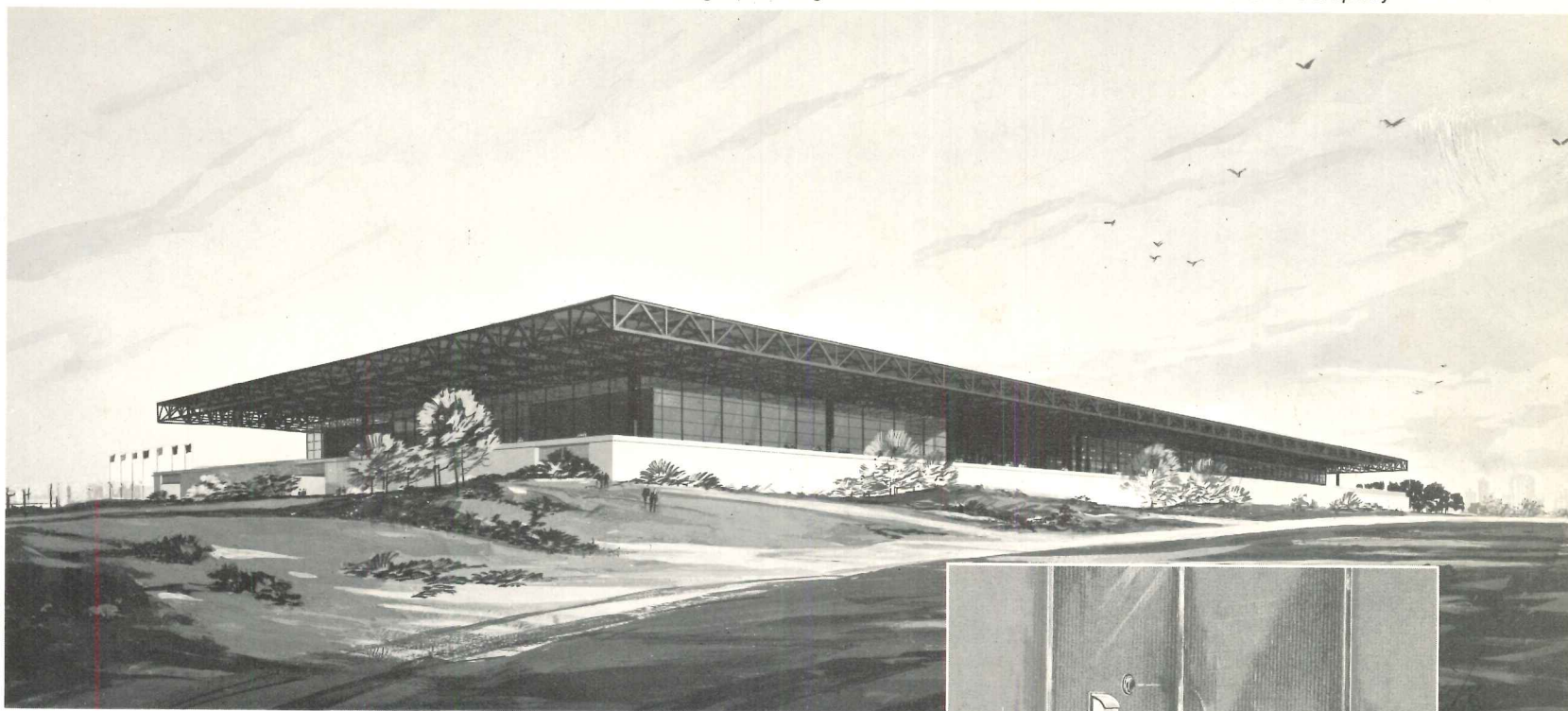
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# Chicago's New McCormick Place Acclaimed



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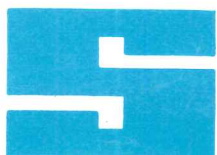
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For more data, circle 108 on inquiry card



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