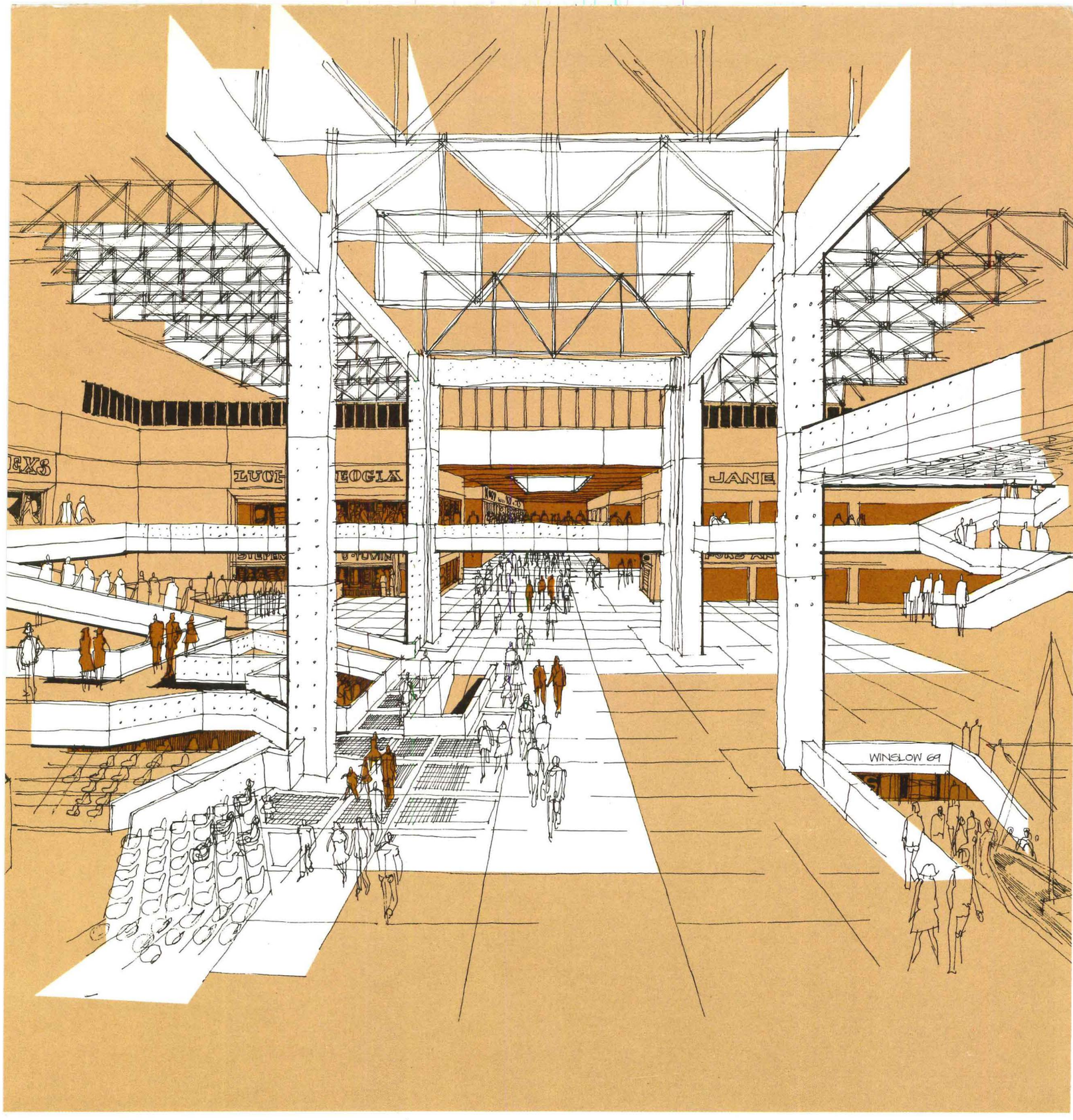


INNOVATIONAL CONCEPTS IN SHOPPING CENTERS BY HARRELL + HAMILTON

A NEW CAMPUS FOR SKIDMORE COLLEGE

ARTISTS' HOUSING: THE WESTBETH REHABILITATION PROJECT

BUILDING TYPES STUDY: SHOPPING CENTERS

FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

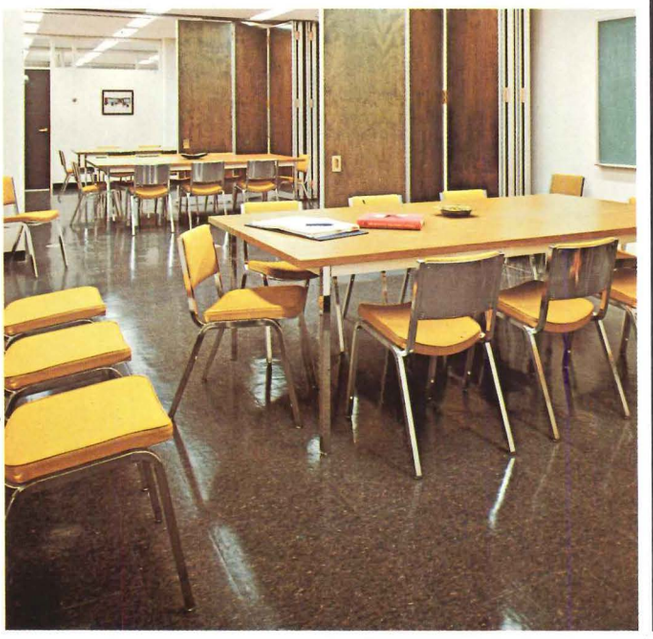
MARCH 1970 3 A McGRAW-HILL PUBLICATION TWO DOLLARS PER COPY

The tight, mottled graining of Imperial Modern Excelon (vinyl-asbestos) Tile helps conceal scuff and heel marks... so the floor stays crisp looking and clean with a minimum of regular maintenance.

This is the striking, new Leeds & Northrup administration building in North Wales, Pa. The tone of the building's exterior, established with bold sweeps of simplistic lines, carries through to the interior with the crisp, dynamic look of Armstrong Imperial Modern Excelon Tile.

ARCHITECT/INTERIOR DESIGNER: Vincent G. Kling and Associates, 1401 Arch Street, Philadelphia, Pa.
GENERAL CONTRACTOR: John S. McQuade Co., 1332 Parrish Street, Phila., Pa.
FLOOR CONTRACTOR: W. S. Holmes Inc., 1025 Mt. Ephraim Ave., Camden, N.J.

While Imperial Modern Excelon is rich in appearance, its cost makes it ideal for a controlled budget. In fact, there's no difference in price between Imperial Modern and Armstrong Standard ⅛" Excelon Tile. And since the contemporary, mottled pattern goes all the way through the tile, the design and color will last the life of the floor.



Floor planners chose Imperial Modern Excelon because it coupled durability, ease of maintenance, and low cost with an outstanding appearance . . . an appearance that completes a sense of unity between exterior and interior.

The planned floor.

80,000 square feet planned for dynamic looks and realistic costs.

Planner's choice: Imperial® Modern Excelon® Tile.

Armstrong

Why not contact your Armstrong Representative the next time you're planning a floor? He can show you the largest, most exciting line of resilient floors available to you. And he'll help make sure that all flooring requirements are met precisely. Or write us directly: Armstrong, 503 Rock Street, Lancaster, Pa. 17604.

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Dover delivers

elevators to meet the requirements of contemporary housing design

VISTA DEL RIO, Kansas City, Missouri. ARCHITECTS: John Lawrence Daw & Associates, Architects & Planners, Kansas City. GENERAL CONTRACTOR: J. E. Dunn Construction Co., Kansas City. Dover Elevators Installed by Dover Elevator Co., Kansas City.

Vista del Rio, recipient of Kansas City Chapter's A.I.A. Medal of Award, is a 250-unit apartment structure built by the Kansas City Education Association's Housing Foundation, Inc., for occupancy by the retired teachers of Kansas City. The 20-story building includes complete dining, infirmary, library, arts-crafts, recreational and activity spaces as well as underground parking. Dover manufactured the complete vertical transportation system, from hoisting equipment through decorative cabs. Offering both electric traction elevators for high-rise buildings and Oildraulic® elevators for buildings to six stories, Dover has the capability to give you the best combination of equipment for any building. And Dover delivers the engineering assistance you require for plans and specifications. Write for catalogs, or see Sweet's Files. Dover Corporation, Elevator Division, Dept. A-3, P. O. Box 2177, Memphis, Tenn. 38102. In Canada: Dover/Turnbull.

DOVER

the elevator innovators

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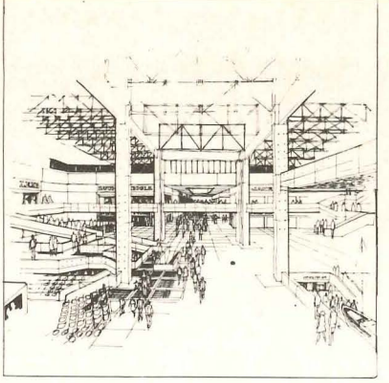

Cover: "Crossroads" Shopping Center,
Oklahoma City
Harrell + Hamilton, Architects
Rendering by Steve Winslow

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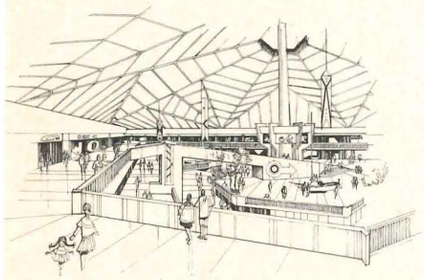

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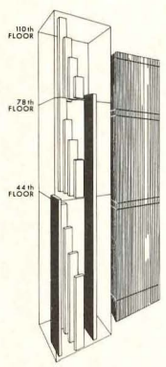

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COMING IN THE RECORD

OPERATION BREAKTHROUGH

The Department of Housing and Urban Development has staked its creditability and its skills on Operation Breakthrough. For complex reasons, large corporations are contending for selection as Breakthrough developers. For the first time in twenty years, architects are involved in mass housing. The press has been cautious—sometimes vitriolic—regarding Operation Breakthrough; people who know the building industry say Breakthrough cannot succeed, and some others say it must not succeed, that it is trying to take housing away from a lot of little guys and give it to a few big guys. The April Building Types Study will study Operation Breakthrough: the complex political, technical, and jurisdictional questions it creates, the proposals that were selected by HUD, and some that were not.

THE OAKLAND MUSEUM

A new kind of land use and a new sensitivity to the urban problems of deterioration and inadequate public and park space will be discussed in April, as demonstrated in the new four-block complex of museums designed by Kevin Roche, John Dinkeloo and Associates to form on the roofs of the spaces a terraced series of gardens serving as a major new park for the city of Oakland, California.

McGraw-Hill

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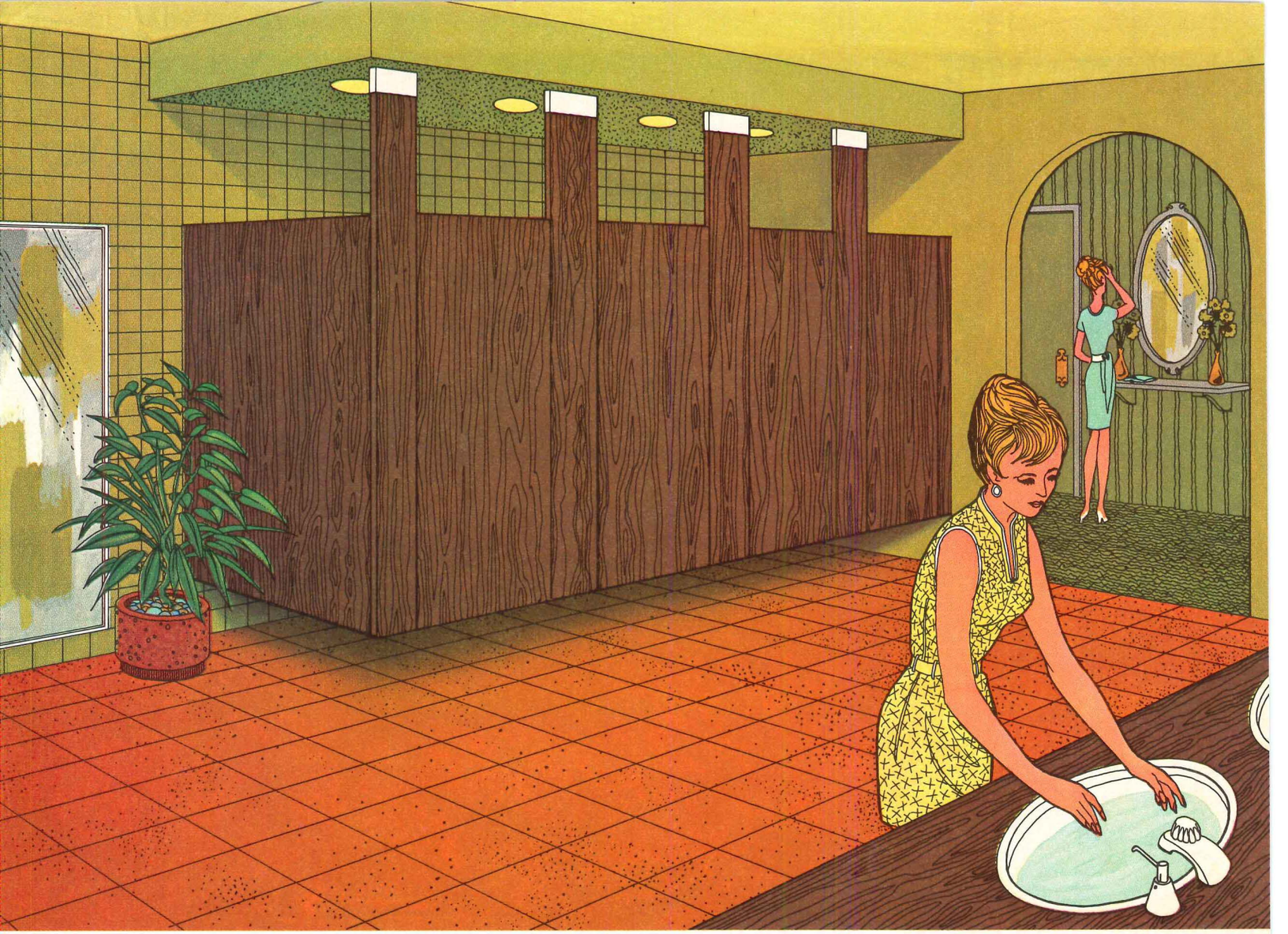

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Faster than a speeding bullet, more powerful than a locomotive . .

. . . able to leap years of apathy in a single bound! Has anyone ever seen a cause, an issue, a new public policy burst on the scene with such Supermanic vigor as "the battle of the environment?"

Much of what has in the last two months become a cause célèbre is no surprise to a great many thoughtful people: to air-pollution control boards in cities across the country, to anyone responsible for our water supply, to the late Rachel Carson and her readers, to the long-embattled Sierra Club behind its redwood barricades, to ex-Secretary Udall, to now-Under Secretary Russell Train. "The cause" is no surprise to the millions of citizens who for many years and for many conflicting (and sometimes intelligently selfish) reasons, have banded together under the banner of conservation. (I think at once of the hunters who set up Ducks Unlimited to assure a continued supply of game, but as part of that process have saved thousands of acres of wetlands for all to enjoy. I think of the college kids who set up the first Great Electric Car Race across the country. I think of the people banded together in citizen groups across the country to bust up yet another utility's plan to put up another generating plant in another scenic waterfront location where the cooling water discharge will thermally pollute the water.)

And it comes as no surprise to many architects, who—I think by the same instinct that makes them want to be architects in the first place—seem to have a high sensitivity to the assaults upon our eyes, ears, noses, lungs, and enjoyment of our land. One can applaud loudly the A.I.A.'s public-spirited advertising program, mounted last year, which in part directed itself to the problems of pollution and conservation (for one example, see RECORD REPORTS, January).

Right now, there's a lot of reaching for credit for "the new awareness." Senator Muskie, whose credentials in the area of environmental concern do indeed reach all the way back to the rock-ribbed coasts of Maine, grumped that President Nixon's "State of the Environment" speech was "a politically effective speech but short on details, particularly in the environmental sector." He's got a point (see below). But surely we'll really get somewhere *if*, Democrat or Republican alike, we *stay angry* and 1) insist that our government set standards for pollution control (on municipalities, on states, on industrial firms, on oil tankers that seem to be breaking up in unprecedented numbers); 2) insist that our government enforce those standards—and court-imposed fines of up to $10,000 a day for violation of air quality standards, as proposed by the President in his Message to Congress, ought to get the attention of even the most hardened polluters; and 3) insist that our government help finance the very expensive programs needed to control pollution.

Financing is, of course, the most kickable of all the political footballs involved. It does appear (though economists are debating this right now) that the President's "bold new water-pollution program" is woefully underfunded—indeed not as well funded as the Clean Waters Restoration Act of 1966, which has helped but certainly not gained on the problem. But debates about money can (and will) come later and continuously—and of course the money spent on improvement of the environment will be much more effective if the President's restraints on spending really do put a lid on inflation.

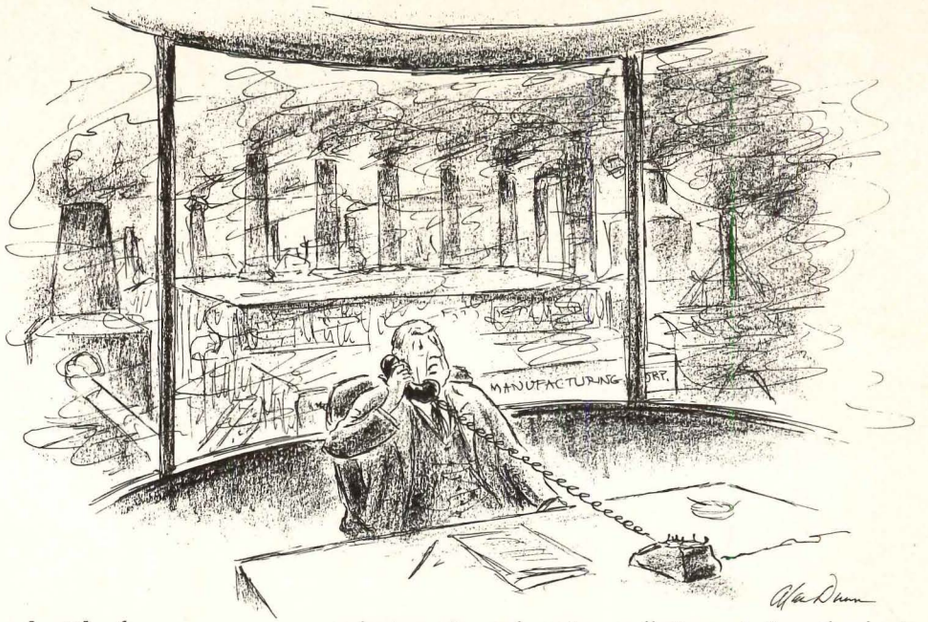
Further, of all people architects need remember, as the pressure for financial support of environmental improvement grows, that there are plenty of other national priorities calling for Federal money that are dear to their hearts (as citizens) and pocketbooks (as practitioners). First on the list, of course, is housing. Then general construction. So . . .

We can (and will, and should) argue a long time about the best way to spend the taxpayer's money. But the cause for rejoicing is that, for whatever reason and no matter who gets the credit, "the people" at last are angry—they want the environment improved and they seem ready to accept and pay for a tough new national policy to do the improving.

So perhaps this is a case where concerned people (whatever their professional discipline and whatever their selfish or unselfish interest) can join forces and help the public *stay angry*. In what better cause can the A.I.A. exercise its newfound voice, its just announced intention "as professionals, to become involved in the creation of public policy that will lead to the creation of a better environment." In what better cause—the end of pollution and the beginning of cleaner, safer, and more beautiful environment—can architects lead a battle as a professional group on the Washington scene and as concerned individuals in our own town, city, and state. Who cares who gets credit? Surely there's enough to go around if we keep the pressure on. For the President's lists of priorities—water pollution, air pollution, solid wastes management, "industrial involvement", parks and recreation—is just a beginning (see Perspectives, overleaf and RECORD REPORTS, page 35). And the villain is clear: to quote another commentator from the comics, little Pogo from the Okefenokee Swamp, "We have met the enemy, and they are us."

—*Walter F. Wagner, Jr.*

—Drawn for the RECORD by Alan Dunn



" 'Now or never' meaning when, Mr. President?"

More on the battle for a better environment

It's easy to be for a better environment, but there are of course bills to be paid, technical problems to be solved, century-old habits to be changed. It is, one must admit, easier to be against, say, thermal pollution of our bays and rivers by an electric utility's cooling water than it is to be the utility executive who has to 1) continue the practice and face the combined wrath of his community, the Feds, and his customers, 2) make the necessary improvements and pass the cost on to consumers who already think their electric bill is too high, or 3) convince his board of directors to swallow the cost of needed improvements.

But it has to come eventually—why not now? If it is going to cost us (and it is) in local and state taxes to build the sewage treatment plants and to handle the growing problems (where to put it?) of solid waste disposal, let's start facing up to it now. I'm perfectly willing to pay a little more per kilowatt-hour for power if the utilities will use a generating process which, unlike coal, does not pollute the air in big black clouds or which, unlike atomic reactors, does not require heating up the water for miles around.

I guess it does take the threat of enormous fines (see Alan Dunn's alert comment in the drawing above) to convince some industrialists that the people are no longer willing to grant them the right—under the banner of The American Way—to blacken the skies and discharge the effluent from their plants into rivers and lakes that belong to all the people.

We're finally beginning to ask the real American Way question: Who profits from abuse of the environment?

Who profits? Ford might profit

Ford Motor Company has announced that it will spend $60 million in the next two years reducing air and water pollution at its plants, and it has announced that it will spend $31 million next year on vehicle pollution control. *Before* anyone told them they had to. They might just have a pollution-free car before the people get angry enough to outlaw the internal combustion engine.

Reynolds might profit . . .

They've begun offering, in some parts of the country at least, one cent for the return of aluminum cans. The Boy Scouts will profit; and perhaps it might persuade at the least the more parsimonious housewives, money being tight and all that, that carrying cans and bottles back to the store for re-use is not an monstrous assault on their way of life.

Environmental control means more than pollution control

For one thing (and this is an area subject to abuse on all sides) there's the matter of land use.

Last month, the Oregon State Senate passed a statewide zoning bill that would require the governor to zone areas under a "comprehensive plan" if the counties have not done the job by the end of 1971. The goal: setting a pattern "to preserve the quality and make best use of the land" and "to save open space and scenic resources for future generations." While many state opponents of the bill argue that this gives the governor extraordinary power and risks "mis-use of executive powers" others suggest that "it is the beginning of a policy that is absolutely essential if Oregon is to be retained as a good place to live."

A similar bill is proposed for Colorado.

Such bills are indeed controversial. And if I were a speculative homebuilder they'd drive me to the state capitol roaring mad and more than a little worried. But maybe "the people" are beginning to realize that the basic American right to do what you darn please with your land has, by a few, been badly abused so that the many need some protection.

The Sierra Club has some new ideas about land use

That effective fighter for open space has, like so many other organizations, begun to direct its attention to the city. In a new photographic exhibit by Arthur Tress it explores "where to find open space" in such areas as abandoned piers, under bridges, in under-used freightyards, between buildings, in unused parking lots, the roofs of apartment houses, office buildings, schools and garages, on unused rights of way, and in swamps and landfill sights. It's never been done—but why not this kind of land use.

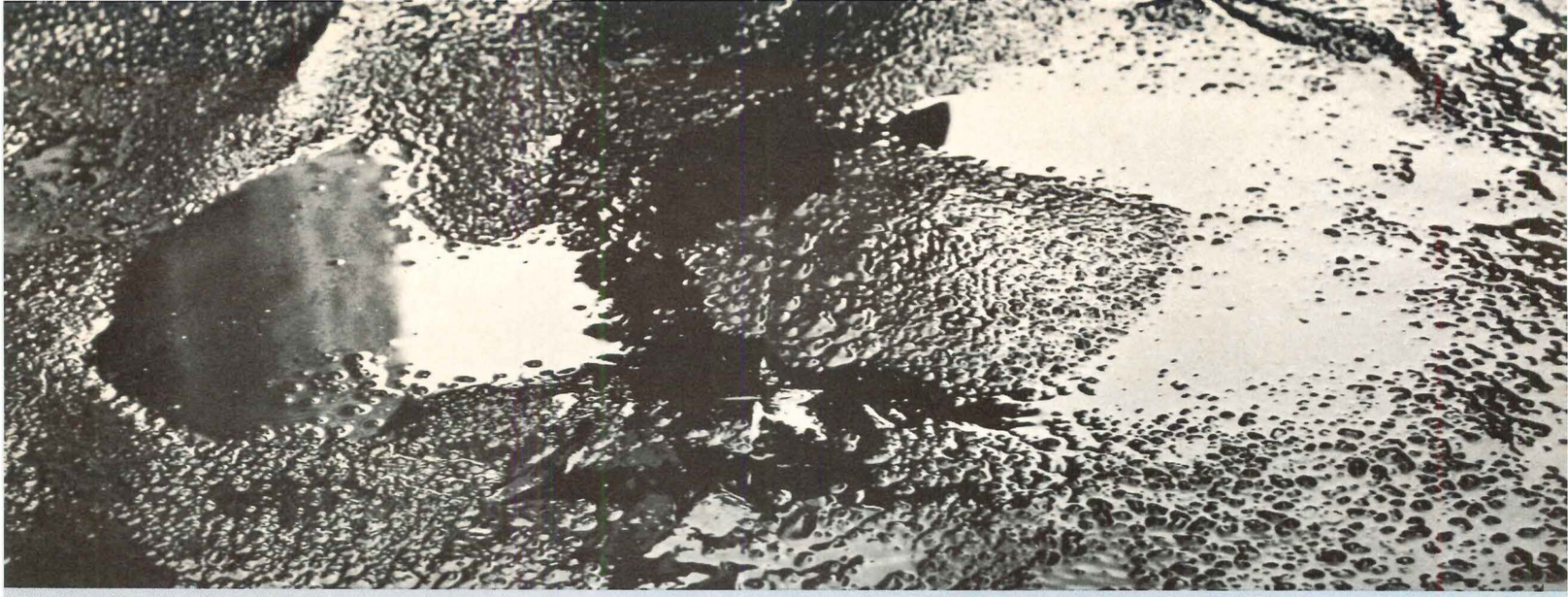
Meanwhile, deep below the earth

. . . a start has been made on the atrocious environment of the subway. The New York Transit Authority has announced that, as leases expire, the newspaper stands, candy and gum machines, and assorted other smelly, ugly, and space-consuming paraphernalia will be phased off the platforms. And why not—has anyone lately, at least in New York—found a telephone booth that works? Do people really need to know how much they weigh before they board the train? What they really need is a little more space on crowded platforms and fewer visual assaults. It's bad enough down there without having to wade through candy wrappers.

Final note:

From Bill Houseman's splendid newsletter, The Environment Monthly: "Nowadays, you read about health menaces being banned before you hear they even exist."

—*W.W.*



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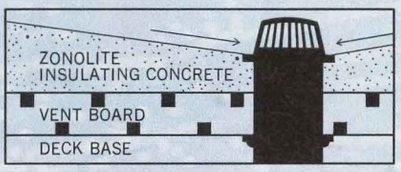

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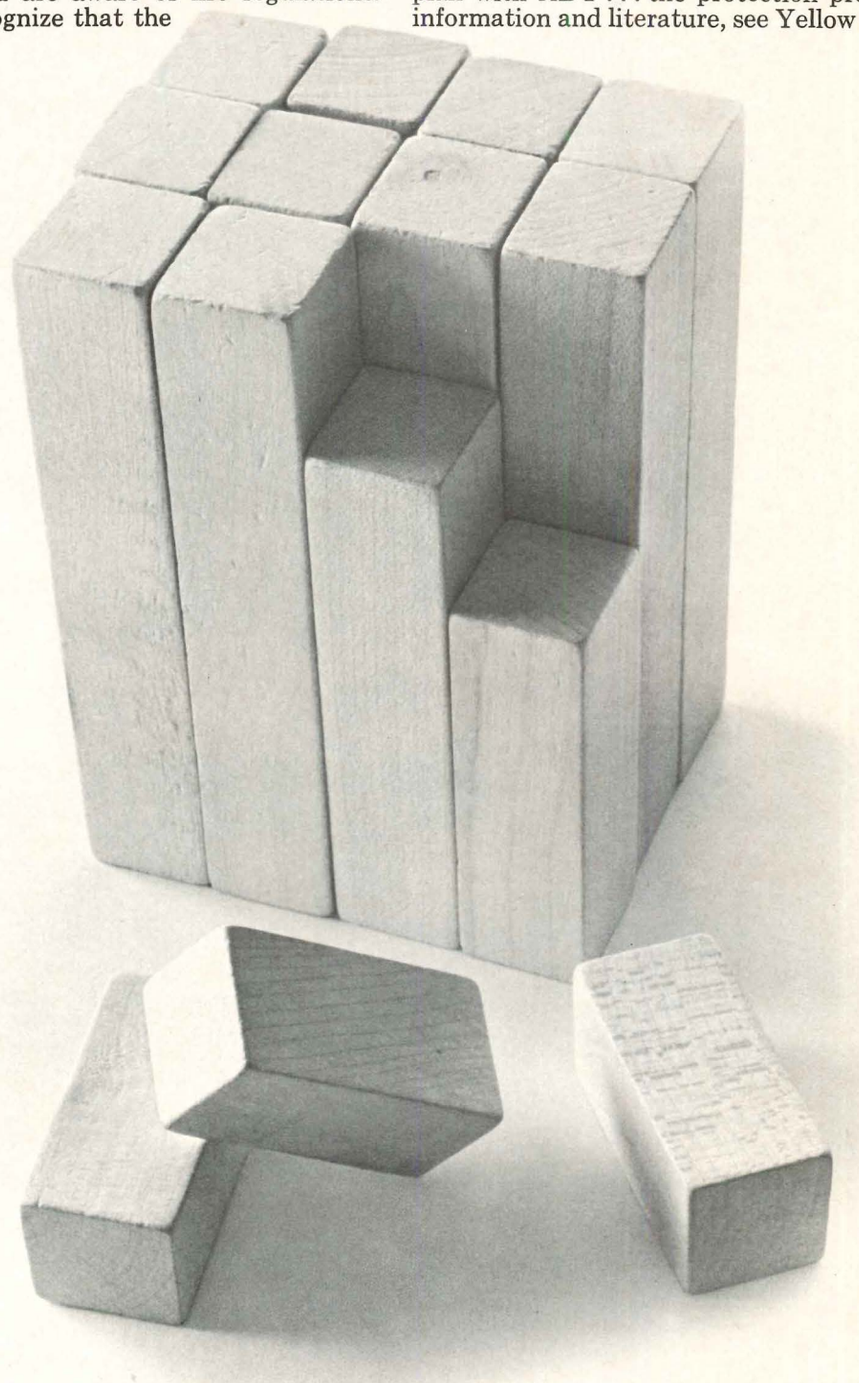

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PPG Performance Glass is saving money for the county government in Fairfax, Virginia.

By reducing heating/cooling equipment and operating costs in the new Administration Building.

PPG Performance Glass enabled the designers of the new high-rise County Administration Building in Fairfax, Virginia, to achieve the exact esthetic effect they desired. It also enabled the building's mechanical engineers to lower the capacity, equipment and operating costs of their specially-designed heating/cooling system.

Design studies indicated that with glass areas exceeding 35%, reflective insulating glass should become an economic probability. And because, in this case, maximum use was to be made of a "heat-of-light" HVAC system, with the lowest possible energy input and without supplementary electric heat input, a high-performance insulating glass was considered strongly desirable.

The unique all-air "Dual Fan–Double Duct" system is shown in the accompanying diagram. Seventy percent of the heat from the lights is picked up by the return air. Interior rooms use ceiling fixture introduction and return grilles. Outside rooms use a perimeter system of sill diffusers.

Study data for the mechanical design was handled by a computer. It favored PPG *Solarban® Bronze (3) Twindow®* Units and indicated that they would permit a savings of approximately 200 tons of capacity in the heating and cooling system.

According to Lee Kendrick, Mechanical Engineer, this low energy mechanical system was made possible with Solarban Twindow Units (insulating glass constructions with a low-emissivity coating and a ½" air space). He attributes all the savings realized to the U value of 0.35, significantly better than that of the rest of the building's basic wall structure.

The *Solarban Bronze (3) Twindow* Units also implemented all the designers' esthetic considerations for the building. The lower portion of the glass (18%) slants in and picks up the reflection of any objects on grade level. The upper portion (82%) slants out and reflects the sky. This canting of the reflective *Solarban* Units results in a smooth, unbroken-looking surface.

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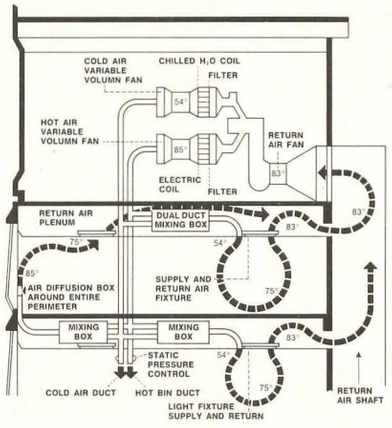
Architects-Engineers: Vosbeck, Vosbeck, Kendrick and Redinger, Alexandria, Virginia.

AIR FLOW DIAGRAM



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PPG is Chemicals, Minerals, Fiber Glass, Paints and Glass. So far.

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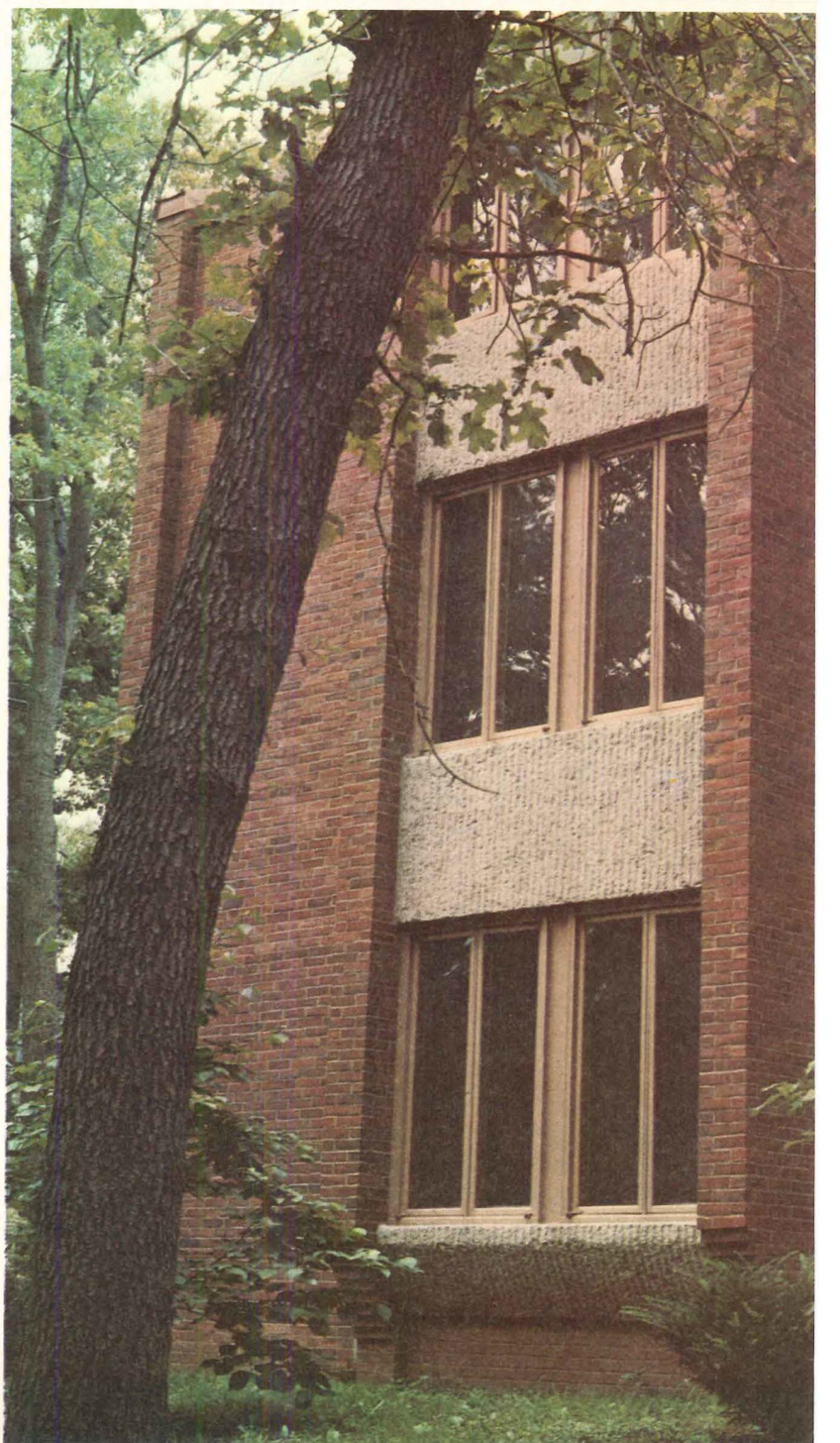

How Andersen Windows helped Lasell Jr. College keep its Boston accent.

Lasell Jr. College for girls nestles quietly in the rolling west-Boston suburb of Auburndale—a heavily-wooded community filled with sturdy old New England "sheds" and genteel Georgian Colonials.

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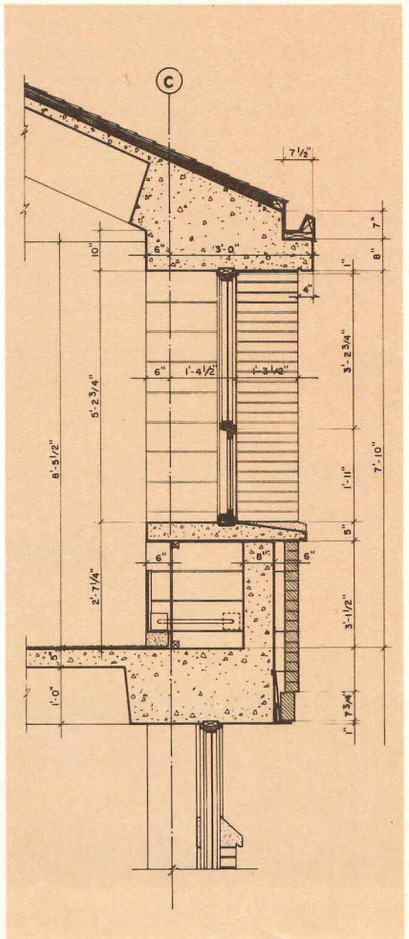
Architects: Steffian, Steffian and Bradley, Inc., Boston, Massachusetts



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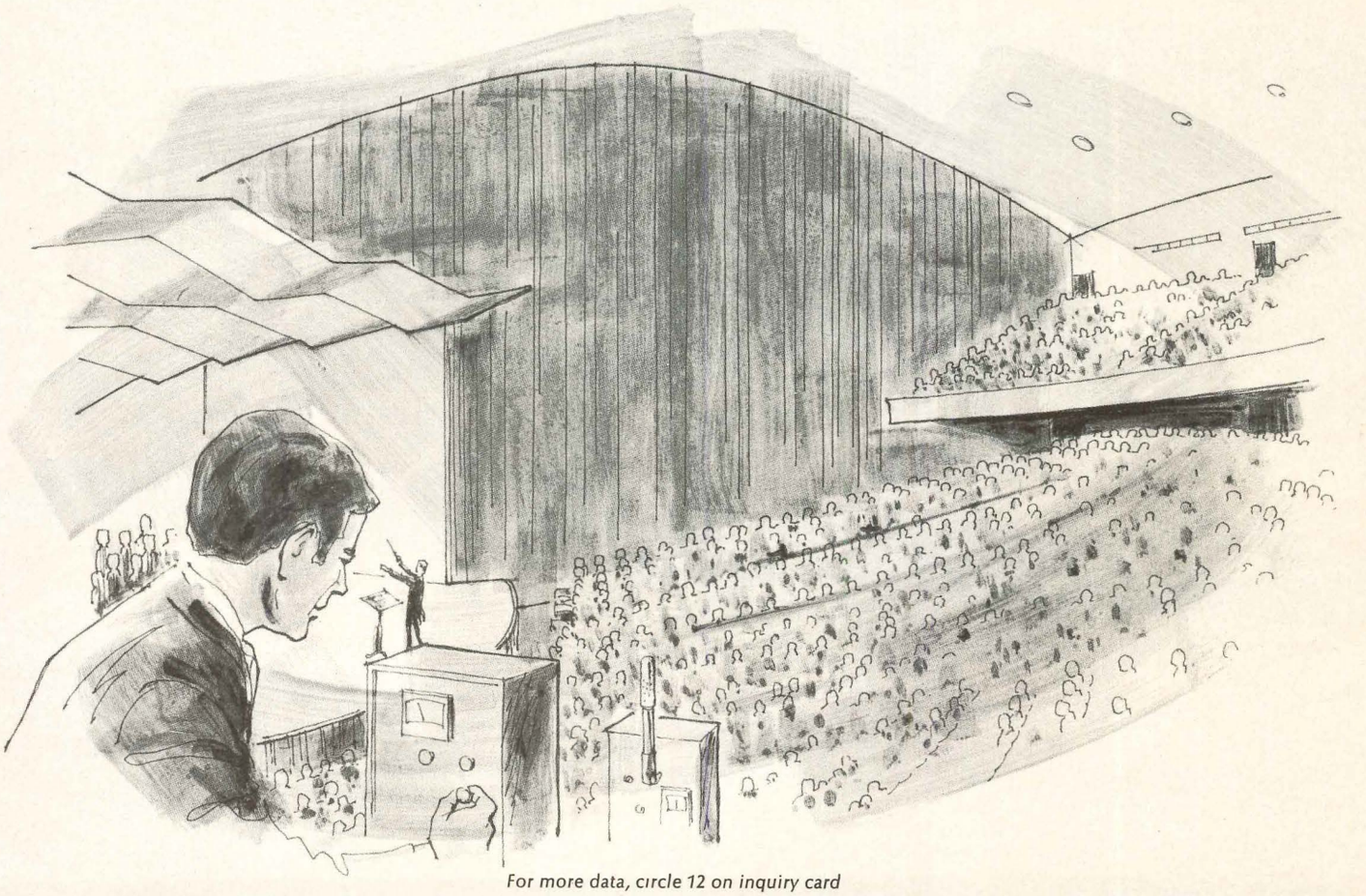

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Lennox presents the "tenant system" of apartment comfort control

Indoor comfort is a highly personal need. Individual. And complicated. As apartment dwellers become more sophisticated in their comfort demands, so must the equipment that heats and cools their individual living areas. Lennox answers this need with a "tenant system" of comfort control (where the tenant completely controls his environment), as opposed to mass, central systems of take-it-or-leave-it heating or cooling.

continued overleaf . . .

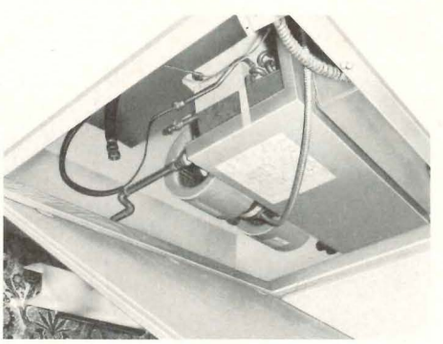
Brooktown Apartments, Addison, Texas. 400-unit development of garden-type apartments styled for the casual, indoor-outdoor living of this Dallas locale. Each tenant controls his own Lennox heating and cooling system. *Inset photo:* New model, low-silhouette Lennox condensing units hide quietly. Architects: Burson & Hendricks. Developers: Brooktown Properties. General contractor: C. C. Blaylock Construction Co. Heating/cooling contractor: Citywide Plumbing & Air Conditioning.

Heritage Village, in Southbury, Connecticut, is an all-electric condominium community planned for 2000 units in "houses that fit the land." Lennox equipment providing cooling for 1800 units and heating for 900 permits use of "tenant system" comfort control. Planning and design consultant: Charles Warren Callister. Developers: Paparazzo Development Corp.

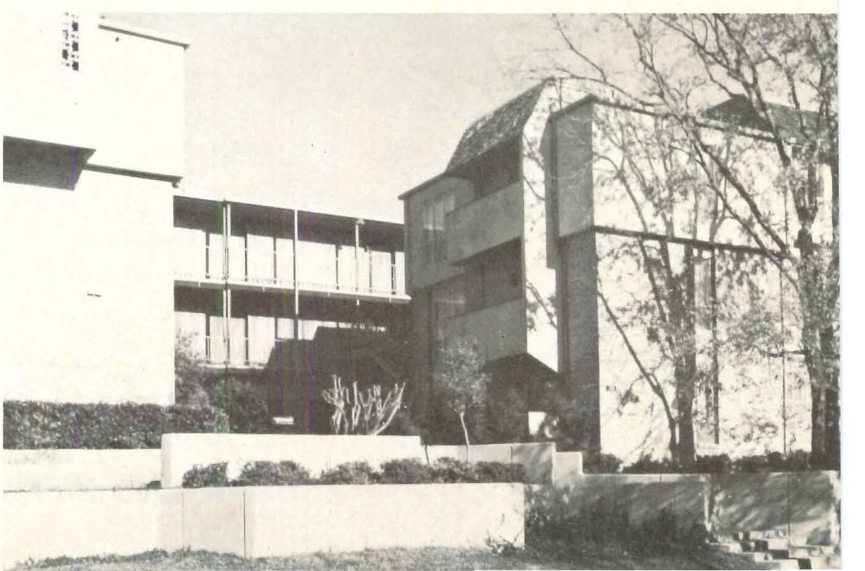
continued . . .

"tenant system" apartment comfort control

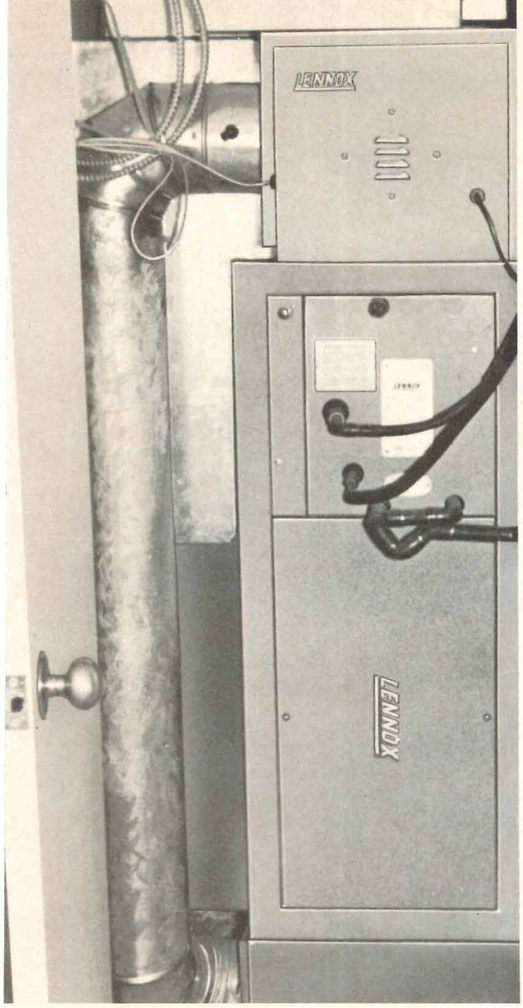
Lennox systems are designed to serve the owner as well as the tenant. There are scores of systems to select from. Every fuel. Endless sizes. Indoor. Outdoor. Through-the-wall. Both rooftop and ground units are compact, low silhouette, easily-concealed. They are all quality-built. They will last longer, cost less to maintain. Because they are factory-assembled and -wired, including controls, cost of installation is fully predictable (on-site labor is minimal). And cost of owning is fully predictable. Extended guarantees cover critical components.



Brooktown Apartments (preceding page) have hallway, bathroom or kitchen ceiling hideaway for easy access to compact Lennox electric heating/cooling units.



The Saracen, Dallas mini-rise garden apartments. Landscaped for hideaway-privacy effect, optimum land usage. Lennox ducted electric heating and air conditioning, "tenant system" comfort control. Rooftops conceal condensing units. Designed and built by the Brookgreen team (listed at right), plus consulting engineer Herman Blum.



Total Comfort in a closet: Complete Lennox Total Comfort System—electric heating, cooling, humidifying and electronic air cleaning equipment—neatly and compactly fitted into the closet of a Heritage Village condominium unit.

Mi Amigo Apartments, under construction in Dallas, is a complex of 149 apartments with individual ducted Lennox heating and air conditioning. New-design cooling units hide low on the rooftops. Architect: John Moss. Building Contractor: GTC Company. Heating/cooling contractor: Citywide Plumbing & Air Conditioning. Owners: George T. Connell and M. I. Harris, Jr.

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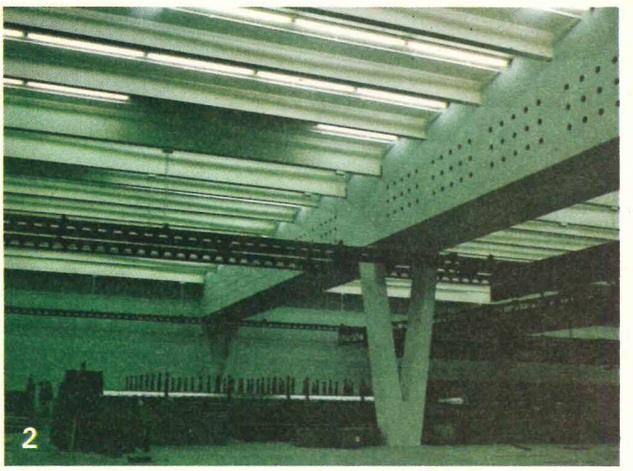
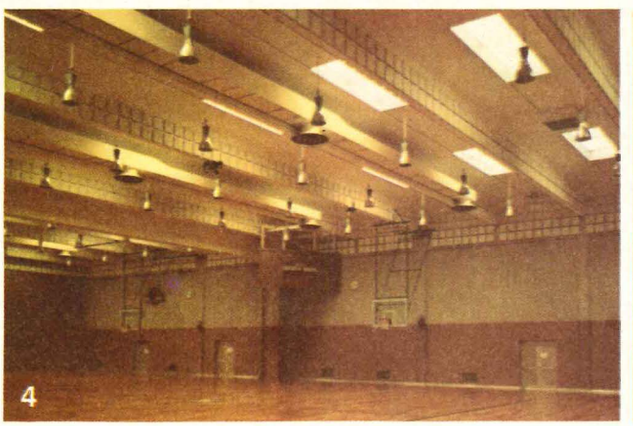
Brookgreen Town Houses, striking 230-unit development in Dallas. Imaginative planning includes efficiency town houses. Individually-controlled Lennox ducted electric heating and air conditioning; condensing units hidden from street. Architects: Ralph Kelman & Associates. Structural engineers: Chappell, Taylor & Mitchell. Owner/developer: I. C. Deal.

For more data, circle 13 on inquiry card





ARCHITECTS: *(1) J. ALFRED HAMME & ASSOCIATES; (2) HARRY PAYNE & ASSOCIATES; (3) ALEXANDER KEAY & ASSOCIATES; (4) J. ALFRED HAMME & ASSOCIATES; (5) PIERSON, MILLER, WARE & ASSOCIATES*

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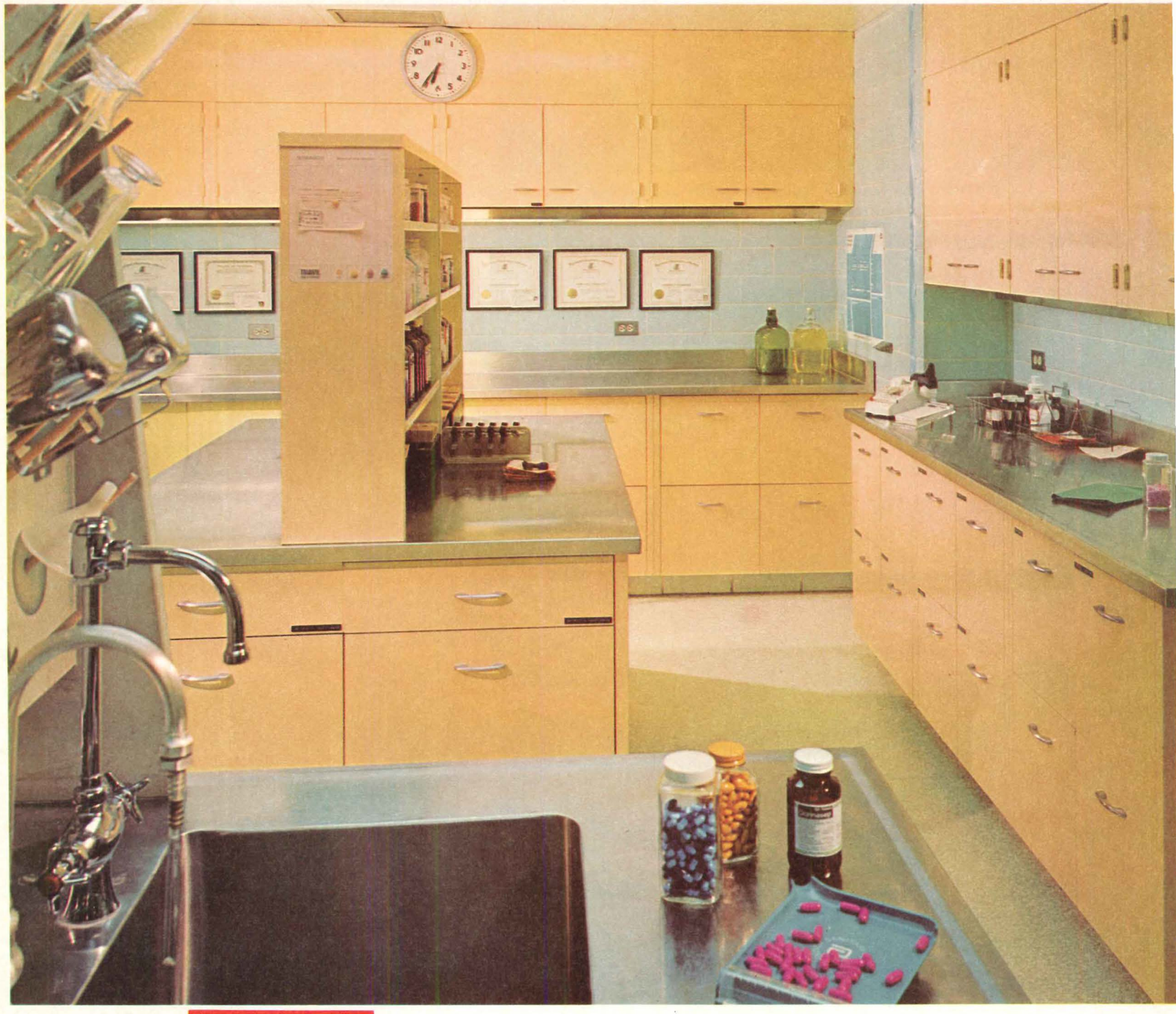

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Architect: Ralph G. Dix, Jr.

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Basic component: The Moduline air terminal. 12″ x 48″. Flush-mounted. Interconnectable plenum. Self-contained automatic controls regulate flow of air (15-180 cfm) through linear slots which in turn diffuse air so it hugs ceiling, mixes evenly with room air.

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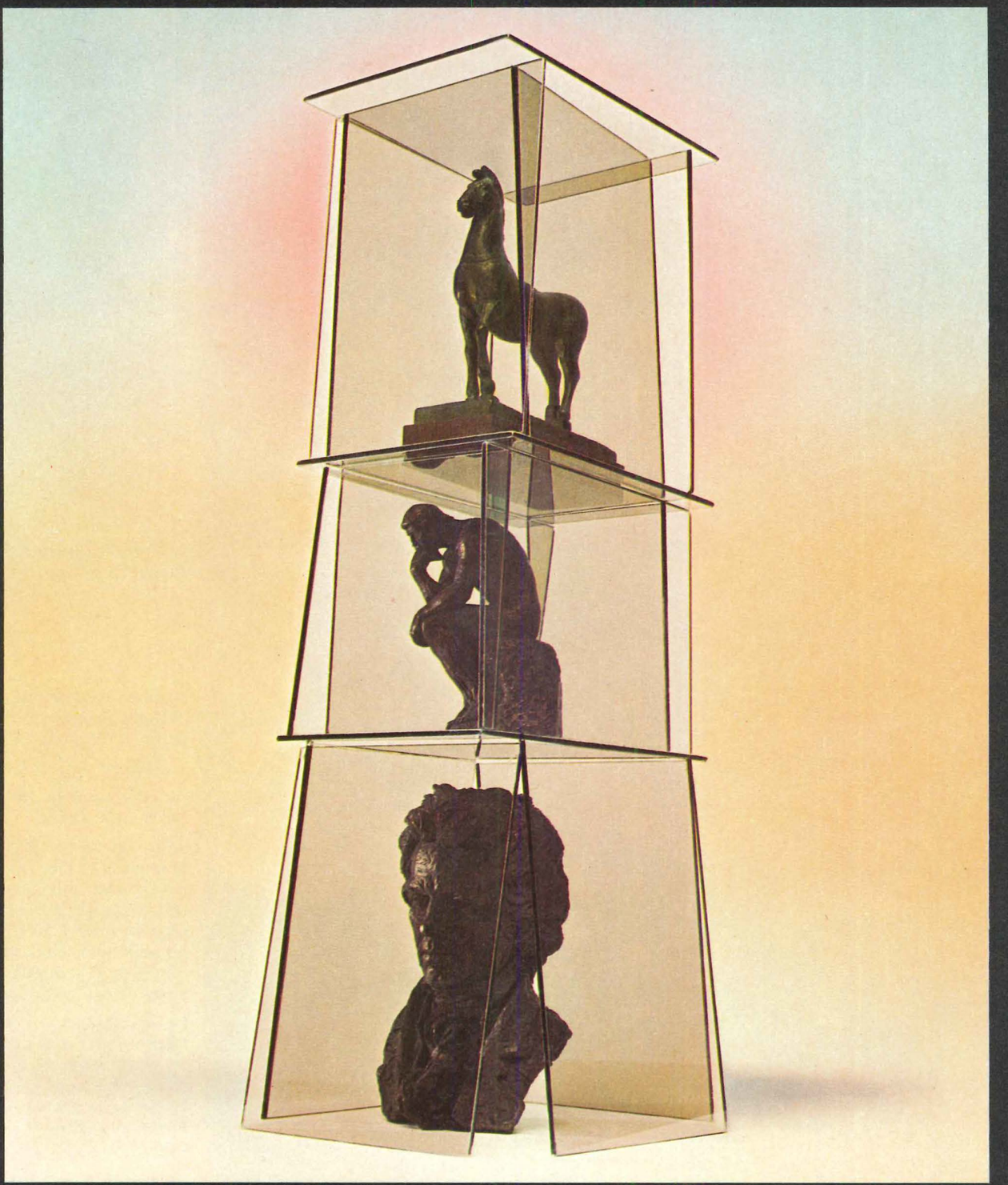

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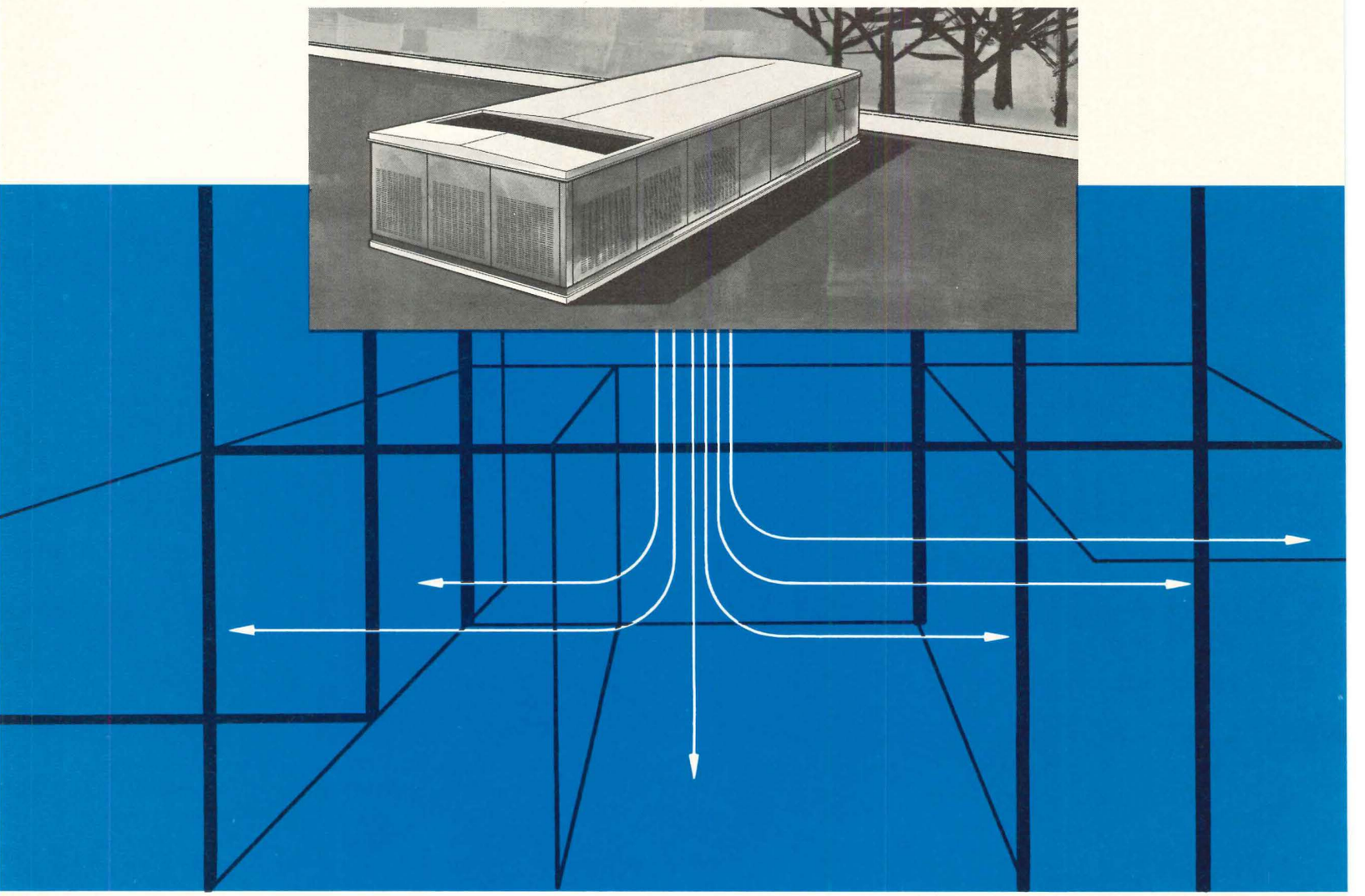

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News in brief

Reaction to President Nixon's 37-point anti-pollution plan has been mixed, though nearly everybody agrees it's a step in the right direction. Conservatives fear the plan would give the Federal government too much power; while liberals, such as Senator Edmund Muskie (D-Maine) and California gubernatorial hopeful Jesse Unruh, who has called environment "the new motherhood," think the program is too weak, and many of both political persuasions feel it is woefully under-financed. The plan would include $4 billion for a five-year water clean-up effort; stringent air pollution controls and penalties; incentives to improve solid waste disposal; expansion of parks; and reorganization of Federal environment agencies. (For more on the President's proposals, see next page, also editorial and Perspectives, pages 9 and 10.)

Two groups to improve rural housing have been set up—one Federal, one private. The Rural Housing Coordinating Group links HUD and the Department of Agriculture, while the National Rural Housing Coalition is a non-profit group of organizations and people "determined to wipe out rural shacks and replace them with decent homes." Two-thirds of America's bad housing is in rural areas, says HUD.

Construction contracts increased unexpectedly in December, according to the F.W. Dodge Division of McGraw-Hill Information Systems Company. However, the increase is "more apt to be just another temporary departure from 1969's essentially downward trend", says Dodge's George Christie. The December index was 218, compared to 178 in November (1957-59 = 100).

Members of the Council on Environmental Quality will be Russell Train, chairman; Robert Cahn; and Gordon J. F. MacDonald. Mr. Train is Under Secretary of the Interior and a former president of the Conservation Foundation; Mr. Cahn is a Washington correspondent for the *Christian Science Monitor* and Pulitzer prizewinner for his series on national parks; Mr. MacDonald is vice chancellor for research and graduate affairs at the University of California, Santa Barbara.

Britain's general building decline will continue throughout 1970, according to a poll conducted by the 17,000-member National Federation of Building Trades Employers.

The Senate has passed the Mass Transportation Assistance Act 83 to 4. The bill would spend $10 billion over the next twelve years. Secretary of Transportation Volpe nevertheless remains pessimistic about the future of U.S. transportation. In the next ten years, he says, demands on transportation will be so great every means will have to be used just to keep movement at present levels. He made this prediction after receiving *Engineering News-Record's* Construction's Man of the Year Award.

Five semifinalists have been named in the Yale Mathematics Building competition (October 1969, page 35). The $10,000 prizes will go to: John Fowler, John Paul McGowan, Architects; Office of Fitzhugh Scott-Architects, Inc.; Van Slyck, Callison, Nelson Architects; Venturi and Rauch; and Verman, Lepere, Petit.

Five architects and planners will be on Operation Breakthrough's 13-man technical advisory panel, which will provide guidance for evaluating innovative systems, materials, and techniques, especially those not covered by building and safety codes. The panel will include Raymond D. Caravaty, professor of architecture and director of the Center for Architectural Research at Rensselaer Polytechnic Institute, Arthur L. Grey, Jr., professor of urban planning and chairman of the department at the University of Washington (Seattle), and William H. Scheick, recently retired executive director and now consultant of the American Institute of Architects.

The A.I.A.-C.E.C. Public Affairs Conference drew a record 700 professionals to its third annual meeting at Washington's Mayflower Hotel February 17-18. Talks by a dozen congressmen, senators and government officials underscored increasing awareness and concern for a broadening base of environmental components and the professional's role in dealing with them. Housing, urban affairs, education, product boycott, mass transit and environmental quality in general got thoughtful attention, and the background of emerging legislation was reviewed.

Workshops on planning of schools and colleges will be held this spring in 10 cities. Citizen participation and Federal help will be among the topics. The film, "A Child Went Forth" (January, page 36) will be premiered at the workshops, which the American Institute of Architects Committee on Architecture for Education and the U.S. Office of Education are sponsoring.

The fight to save life on earth becomes global

Global warning network
Scientists from around the world, including the Soviet Union, have been meeting at the National Academy of Sciences in Washington, D.C. to plan a global network of warning stations to identify potential environmental disasters. Computers, satellites, and animals and plants of high sensitivity to certain imbalances would be used. More details and financing will be worked out when the International Biological Committee meets in Rome this fall. The National Science Foundation and the United Nations are two possible sources of money.

Jail for life
The government of Taiwan is drafting new laws which would sentence people causing air pollution to a degree that endangers public health to from three years to life imprisonment. How's that for "now or never" thinking?

International conference
Representatives of 24 countries met in Strasbourg, France last month to discuss pollution and find ways to cooperate in anti-pollution efforts.

"Action Programs" hearings
The House Conservation and Natural Resources Subcommittee, under Rep. Henry S. Reuss (D—Wis.) invited the advice last month of conservation groups, architects, planners, public health groups and labor on how the Federal government should form "Action Programs for the 1970 Environmental Decade."

American Institute of Architects president Rex Allen suggested placing most of the responsibility in the Council on Environmental Quality set up by the newly signed National Environmental Policy (February, page 36). Mr. Allen placed heavy responsibility on industry for making up to the public for the damage it has done. He favored strong court action and government-initiated litigation.

U.N. World Conference
The 24th General Assembly appointed a committee to help prepare guidelines for the 1972 World Conference on Environment to be held in Stockholm.

McHarg's Doomsday warning
Ian McHarg, head of landscape architecture at the University of Pennsylvania, keynoting the Alabama Council of Architects convention forecast the end of human life within ten years if the destruction of the balance of nature is not reversed.

Some men are a planetary disease, said Mr. McHarg; "they are an epidemic, a bubonic plague threatening all creation." "Identify them," he said, "scratch, fight, bite, do anything. This is not a matter of manners. This is a matter of survival."

World legal data center
The National Pollution Control Foundation (Washington, D.C.) has established a computerized legal data and research center dealing with laws affecting the environment and health and pollution control.

Meyerson to leave Buffalo for Pennsylvania presidency

Martin Meyerson, city planner and educator, will become the new president of the University of Pennsylvania, leaving the presidency of the State University of New York at Buffalo, where he has been since 1966. He will replace Gaylord P. Harnwell, who retires in September.

Mr. Meyerson revamped the building plans at Buffalo, aiming for an extraordinarily high quality of planning and architecture at the State University's new Amherst, New York campus (RECORD, February). His efforts ran into a good many difficulties, both with blacks who threatened to shut down construction unless the union provided a quota of blacks, and with the state government and bureaucracy. While Mr. Meyerson thinks the worst problems are largely solved, he is nonetheless ready to go to Philadelphia largely because of them.

Mr. Meyerson served on the Philadelphia planning commission in the 1940's, and taught city and regional planning at the University of Pennsylvania from 1952 to 1957.

In Buffalo, he lives (photo above) in Frank Lloyd Wright's Martin house (1904), which he

N.Y. Times by Wm. Aller

persuaded the University to buy, and which architect Edgar Tafel is restoring.

Cambridge group campaigns for registration reform

In Massachusetts last year, 216 people took the Architectural Examination. Forty (or 18 per cent) passed, according to the Committee for Registration Reform, a Cambridge, Massachusetts group which intends to fight through the courts, if necessary, to reform registration exams. According to the committee, the Massachusetts statistics of first-time passing for other professions were: medical: over 90 per cent; dental: 95 per cent; law: 67 per cent; engineers: no exam necessary in most cases.

The committee proposes a simplification of exams and registration requirements, pointing out that NCARB has made similar proposals, and that sweeping reforms are under consideration in Pennsylvania.

NAHB holds convention in Houston's Astrodome

The National Association of Homebuilders Convention in Houston (January 18-22) was a success if we use as our guide the number of builders in attendance, or the number of exhibitors, but if our guide is the mood of the builders or the ability of the NAHB leadership to do anything about their financial problems, then the convention was rather dismal.

The new president of the NAHB, Louis Barba, and three other officers flew to Washington during the conference for a meeting at President Nixon's request. However, they returned to the convention with glowing reports on the administration's efforts to alleviate the housing depression, but with no concrete proposals.

The exhibits were useful information sources on every conceivable residential product and every tool a builder might need to carry out his work. The two-hour seminars (over ninety of them) were well attended, particularly those on mobile home development and apartment construction, an indicator of the new income sources for which these single family homebuilders are reaching.

Encouraging note: the formal and informal design seminars—conducted for buildings by architects, suggesting simple design improvements often shown in pencil on tissue overlays of the builder's plans and elevations—were, as they were last year, well attended.

Vast urban renewal for Paris section

250 acres of the Porte d'Italie section of southeastern Paris are in for a complete rebuilding, to include office buildings, apartment towers, parks, a commercial area and separation of pedestrian and auto traffic. The plan is expected to be twenty years in the building, and construction will begin later this year on a design by architects Albert Ascher and Michael Holley, who formed a group, Ateliers d'Urbanisme de l'Avenue d'Italie, to complete plans.

The project is the first large-scale privately financed renewal project in France, and it is expected to cost $1.2 billion. The first section, including a 50-story (at least) skyscraper, should be complete by 1974.

There has been vociferous criticism of the "tours isolées" and the general super-scale of the new plan, but few will miss the 19th century tenements, 6 per cent of which have baths.

Books

Japan

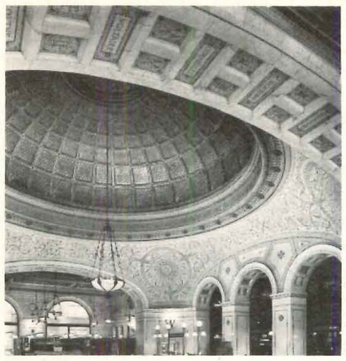
For anyone going to Expo, *New Directions in Japanese Architecture,* by Robin Boyd (Braziller, $5.95), or *New Japanese Architecture,* by Egon Tempel (Praeger, $18.50) are practically necessities. The first is shorter, more bitingly written: "Formal themes are the nitroglycerin of architecture," and concentrates heavily on works of individual architects; the second is longer and more scholarly—it is written in both English and German, and begins with a history of Japanese architecture up to 1945—and is arranged according to building types. Both books are very well illustrated, and when it comes to works by such architects as Tange, Otani, and Murano, there is a good deal of duplication.

The Elegant Japanese House, by Teiji Itoh, photos by Yukio Futagawa (Walker/Weatherill, $25.00) describes traditional Sukiya architecture. It doesn't try to be a guide or compendium, but shows a few houses in great detail.

Bauhaus

The Bauhaus, by Hans M. Wingler, edited by Joseph Stein (MIT Press, $50.00) is an immense (653 pages) and authoritative collection of Bauhaus material. It covers all the phases, from Weimer to Dessau to Berlin to Chicago with ample historical descriptions and hundreds of illustrations.

Chicago landmark in luck



Hedrich-Blessing

The Central Building of the Chicago Public Library (above) (1897) will be remodeled and extended according to plans coming from a national competition whose deadline is April 13. A survey last year had recommended its demolition. While usable space must be increased 150 per cent on a restricted site, several major parts of the building must be preserved, including three facades, a four-floor grand staircase, and a rotunda and reading area with Tiffany mosaics. Three architects, Ambrose M. Richardson, F.A.I.A., George E. Danforth, F.A.I.A., and Martin L. Beck, F.A.I.A., will be on the jury.

Philadelphia Plan gets court test

A great deal of confusion surrounded the Federal government's Philadelphia Plan as it went to test in a Pennsylvania U.S. District Court.

This plan, announced by Labor Secretary George P. Shultz in revised form last fall, seeks to force contractors to meet prescribed percentage goals of minority employment in certain crafts or at least show good faith in efforts to attain them if, indeed, the percentages are not met. The crafts and the percentages are named by the Federal Office of Contract Compliance of the Labor Department.

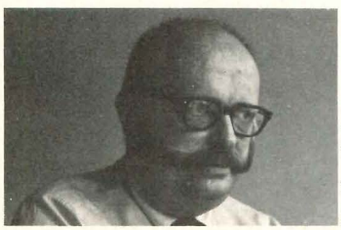
The organized general contractors and the unions have opposed the government's arrangement for hiring goals on grounds it comes into line with "quotas" which are prohibited by the Civil Rights Act of 1964. In this position they are backed by a ruling of the Comptroller General of the United States who has said the plan violates the law's ban on discriminatory hiring.

The issue became involved in executive versus legislative strife when the Attorney General upheld the position of the Secretary of Labor, in effect ruling out the CG's stand. This dichotomy reached into the halls of Congress in the closing days of the last session and threatened for a time to kill the plan by authorizing the Comptroller General to withhold Federal funds from the assisted projects covered by it. The issue was temporarily resolved when President Nixon sent a special letter to members urging prompt court review of any differences between legal opinions of the Comptroller General and the Executive Branch. This review was under way with the filing of suit by the Contractors Association of Eastern Pennsylvania. The action came just before bids were to be opened for a dam and water conservation project handled by the Agriculture Department.

Goff show makes wave in New York City

Crowds jammed New York's Architectural League last month to see an extensive exhibition of drawings, slides and prints of buildings by Bruce Goff (below). Contrary to popular opinion, he never worked for Frank Lloyd Wright. Though a Wright influence sometimes seems clear, Mr. Goff's buildings tend to be more fanciful, and are carefully tailored to clients' personalities. The Harold C. Price house in Bartlesville, Oklahoma is among the most spectacular. Its owner built Wright's Price Tower, in which Mr. Goff lived and had an office for many years.

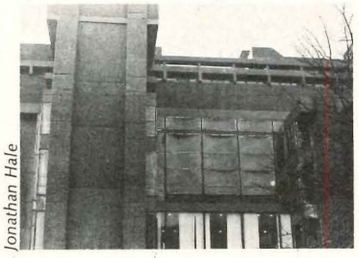
Yale A and A: restructured and still going strong



Jonathan Hale

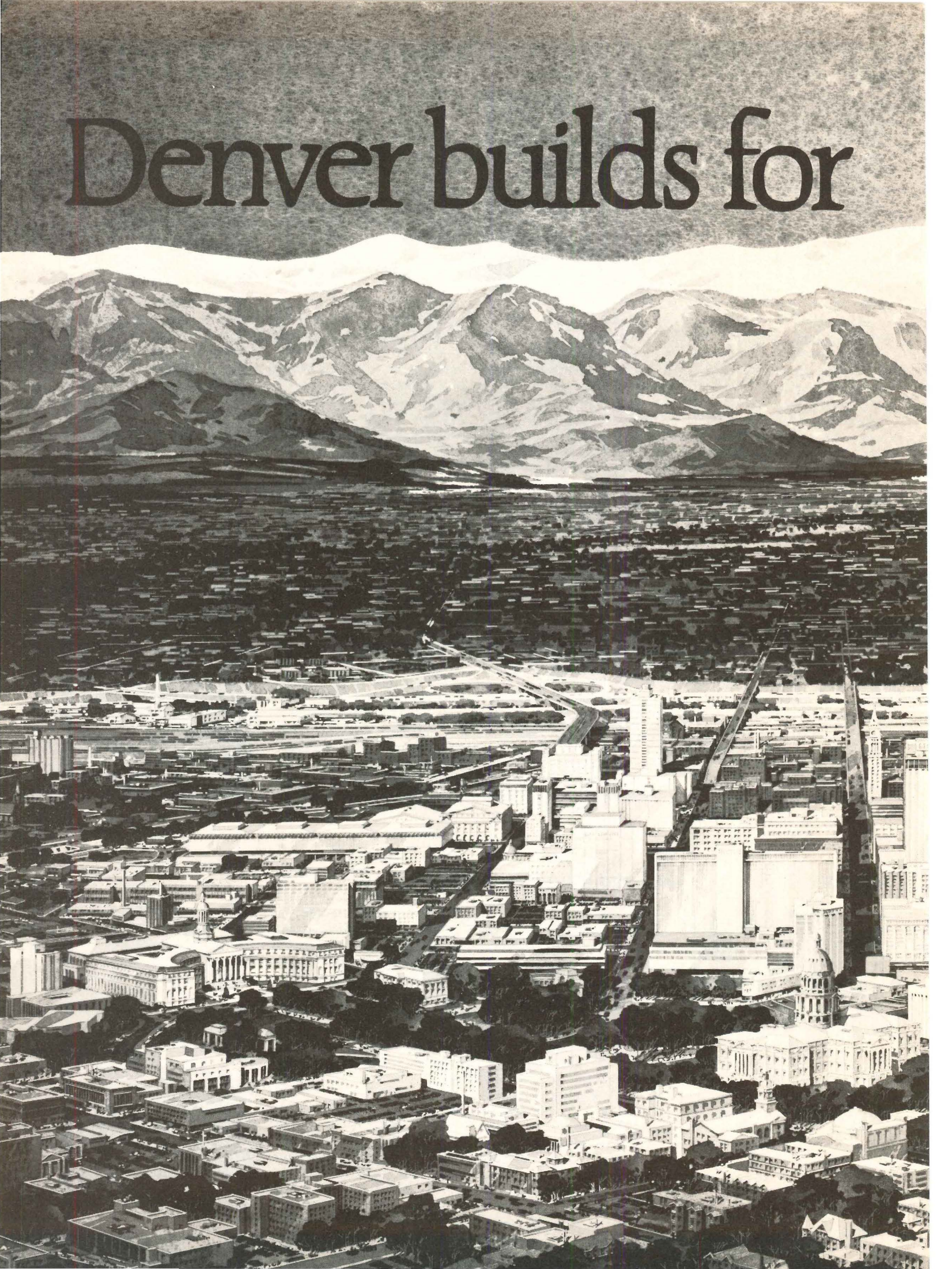
Yale's graduate courses in architecture are being held in New Haven lofts and store-fronts and in the remains of the Art and Architecture Building, much of which was gutted by fire last year (July, page 36). Many of the students like things that way, too, according to Dean Charles W. Moore (above), Director of Studies in Architecture. Not that the Art and Architecture building (right) won't be restored; that work is under the direction of architect William de Cossy, of Douglas Orr, de Cossy, Winder and Associates, a long-time associate of its designer, Paul Rudolph. However, the way in which it is restored, and the curriculum to take place inside it, is far different from the time when it was built, seven years ago. The new interiors of the upper floors will be planned for "maximum flexibility, freedom and comfort," and with the step-by-step approval of a student-faculty committee. Much of the work is to be completed by September.

Within the restructured building will be a restructured school, the result of a student revolution last spring. At present, student-faculty committees have such responsibilities as admissions, rules, and choice of visiting critics; and, although the Yale administration is so far opposed to so much student control, Mr. Moore thinks the reforms are working well. Students have control over all but 1½ years of the 3½ year course of study. "People who come looking for 'how to do it' are really desperately frustrated," says Mr. Moore. Mr. Moore is pleased with the school's new emphasis on social consciousness and student liberty, much of which he helped bring about even before last spring's upheaval, but he plans to leave his administrative position in the fall to return to teaching and the growing practice of his firm, MLTW/Moore Turnbull, which is specializing in low-cost housing.



Jonathan Hale

Denver builds for



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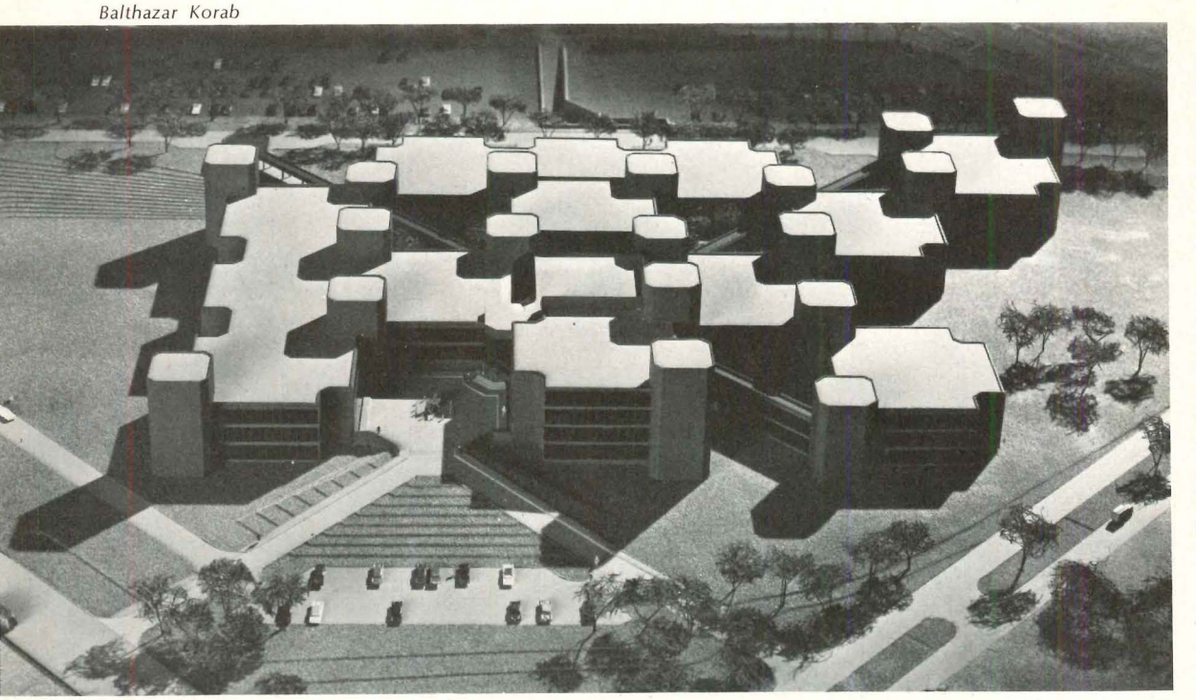
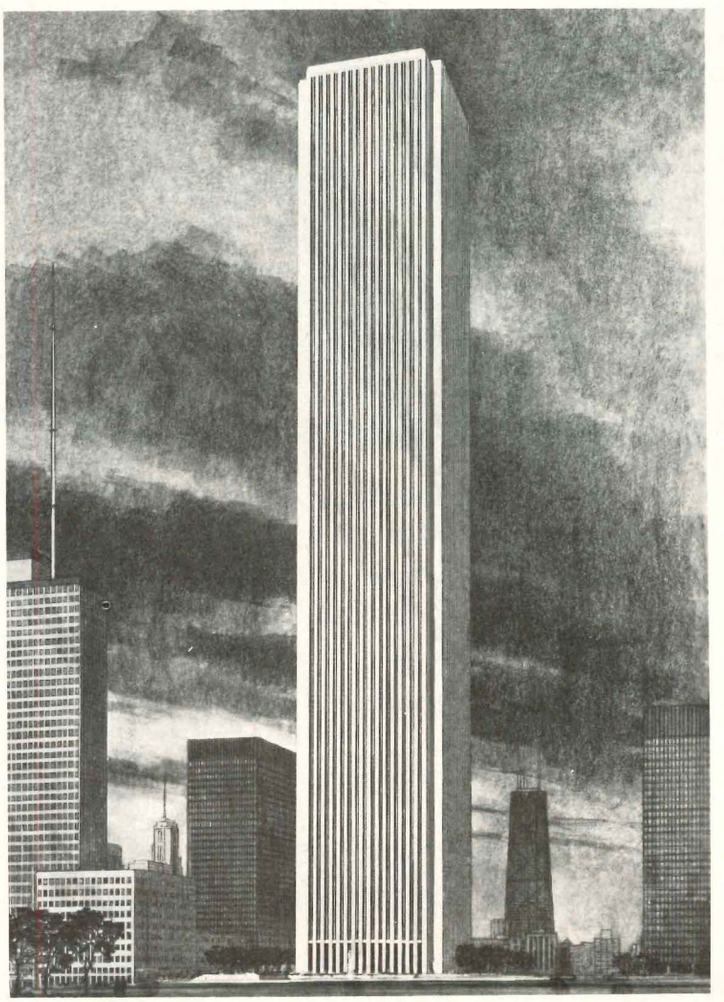
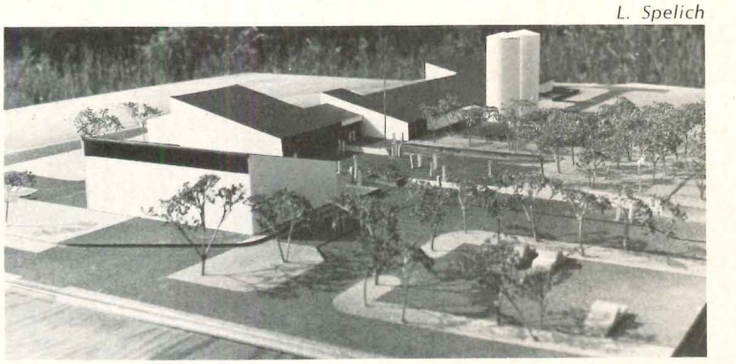


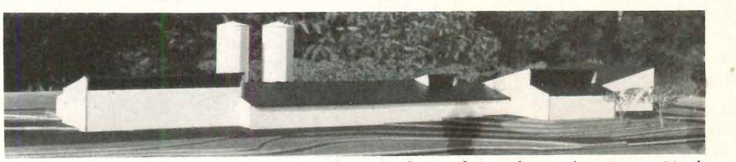
S. S. Kresge Company International Headquarters, Troy, Michigan, is an assembly of self-contained building units organized about a spine corridor system. Says Sigmund F. Blum of the architects and engineers, Smith, Hinchman and Grylls Associates, Inc., "Because of the constantly changing and expanding requirements of the company within its headquarters complex, a primary goal was to develop the most flexible structure. . . . We conceived the unitized molecular system." Each unit has an attached core containing vertical circulation, rest rooms, air conditioning equipment and lounges. The units are connected at corners, leaving a large amount of glass wall for offices.



Chicago's tallest building will be Standard Oil Company's 80-story international headquarters designed by associated architects Edward Durell Stone and Associates and The Perkins & Will Corporation. The design incorporates an outside wall of five-foot windows separated by five-foot triangular sections, which are part of the building frame. This design permits flush window walls inside the structure.

L. Spelich

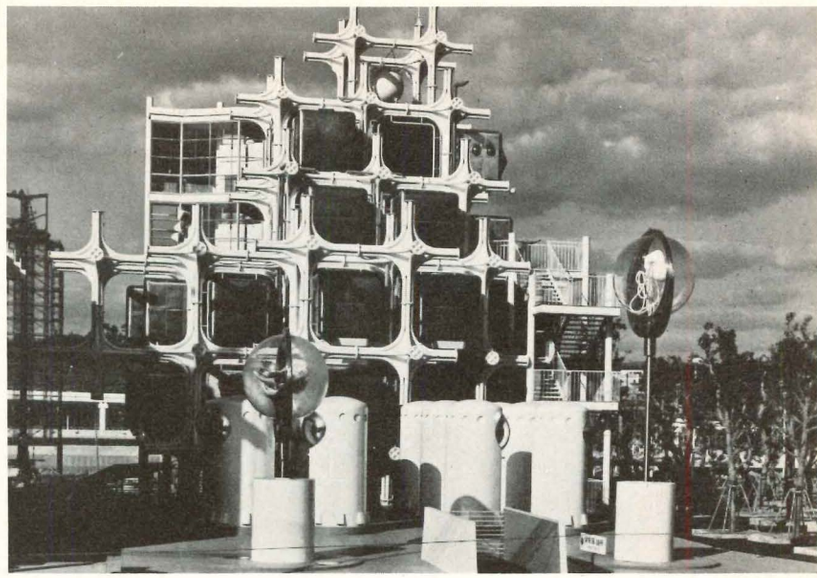




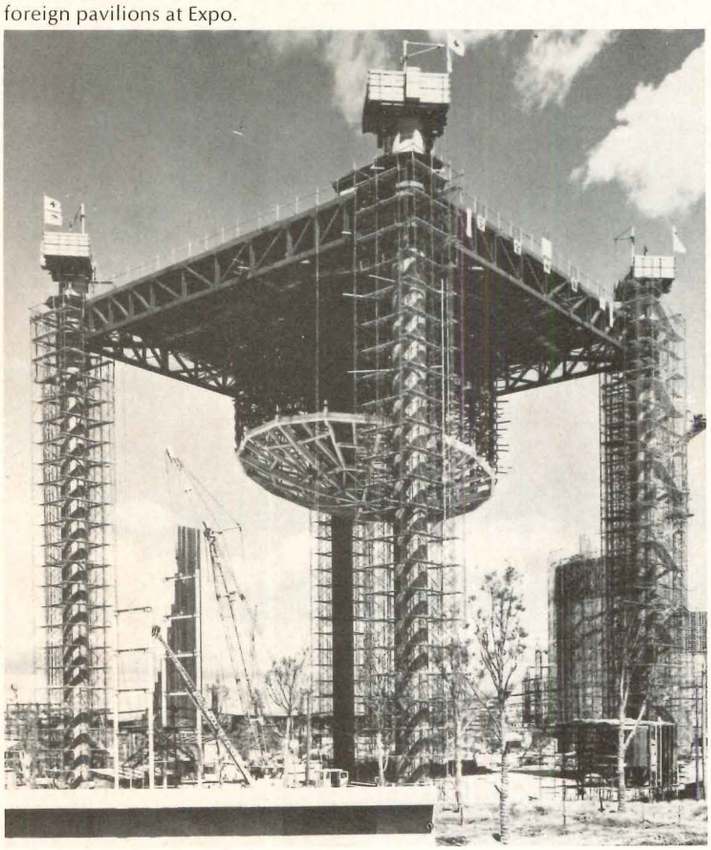
Modern dairy farm for New York State University Agricultural and Technical College at Delhi is designed as an exemplary model of a typical present-day farm to provide a means of teaching every aspect of managing and working such a complex. The group includes a tie-stall dairy barn, a farm machinery housing building and a silo. Architects: Geyer and Hollister Associates, Architects A.I.A.

"Progress and Harmony for Mankind": Osaka's Expo '70 opens March 15

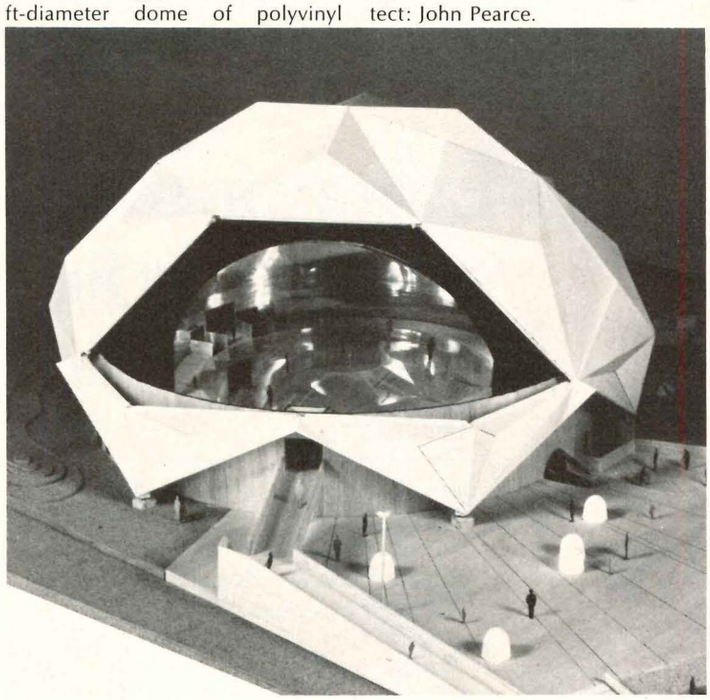
Takara Beautilion is an abstract five-story structure exhibited by the Takara Group specializing in the manufacture of chairs. The theme, "Joy of Being Beautiful," is carried out by a glittering design of 3.3-meter cubes framed with steel pipes and panels. Architects are Takenaka Komuten, Co., Ltd.



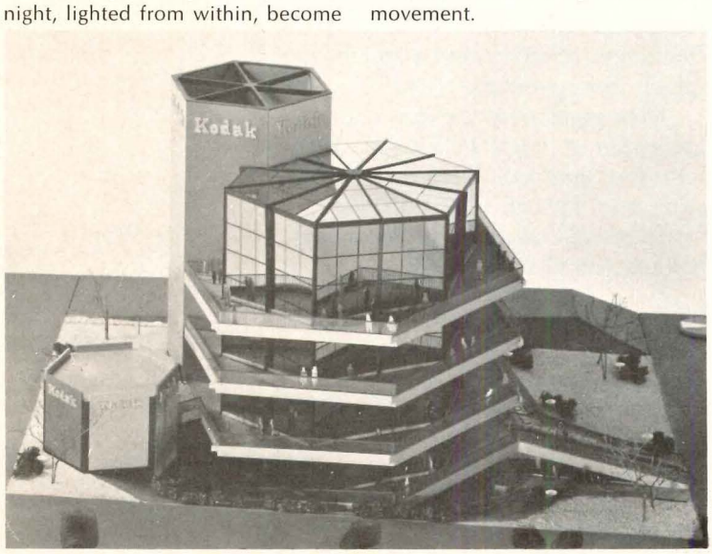
Electric Power Pavilion, jointly sponsored by nine major power companies of Japan, is a one-thousand-ton structure suspended from four large steel columns. Under the theme, "Man and Energy," this "Electorium" will feature audio-visual displays dealing with nuclear power generation. Architects are Takenaka Komuten Co., Ltd. who are doing a total of 28 Japanese and foreign pavilions at Expo.



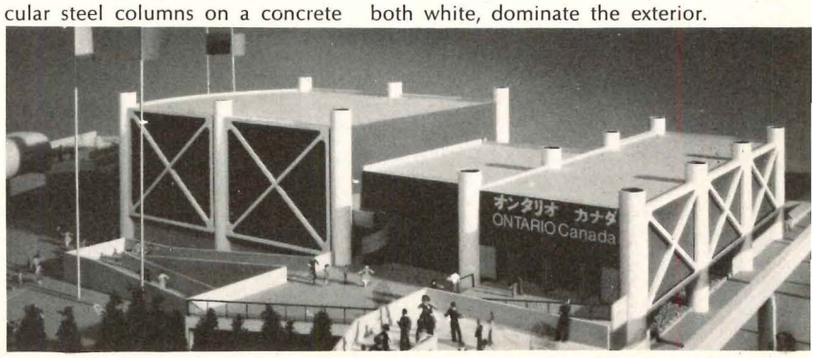
Pepsi-Cola Pavilion, a collaboration of artists and engineers brought together through Experiments in Art and Technology, New York, is a 20-ft-diameter dome of polyvinyl chloride panels over steel. Visual, aural and tactile stimulants will "encourage visitors to create their own experience." Co-ordinating architect: John Pearce.



Kodak's Golden Picture Pavilion will have a six-sided glass tower with "golden" walls that mirror the surroundings during the day and at night, lighted from within, become great glass panels. Architect Franz Johann Schwenk designed a ramp to encircle the hexagon from top to bottom, thus allowing freedom of movement.



Ontario Pavilion, designed by John B. Parkin Associates, will have a 4,000-sq ft exhibition space and 800-seat motion picture theater. Circular steel columns on a concrete base will carry the vertical loads and act as distribution cores for the air handling system. These and the cross-bracing members, which are both white, dominate the exterior.



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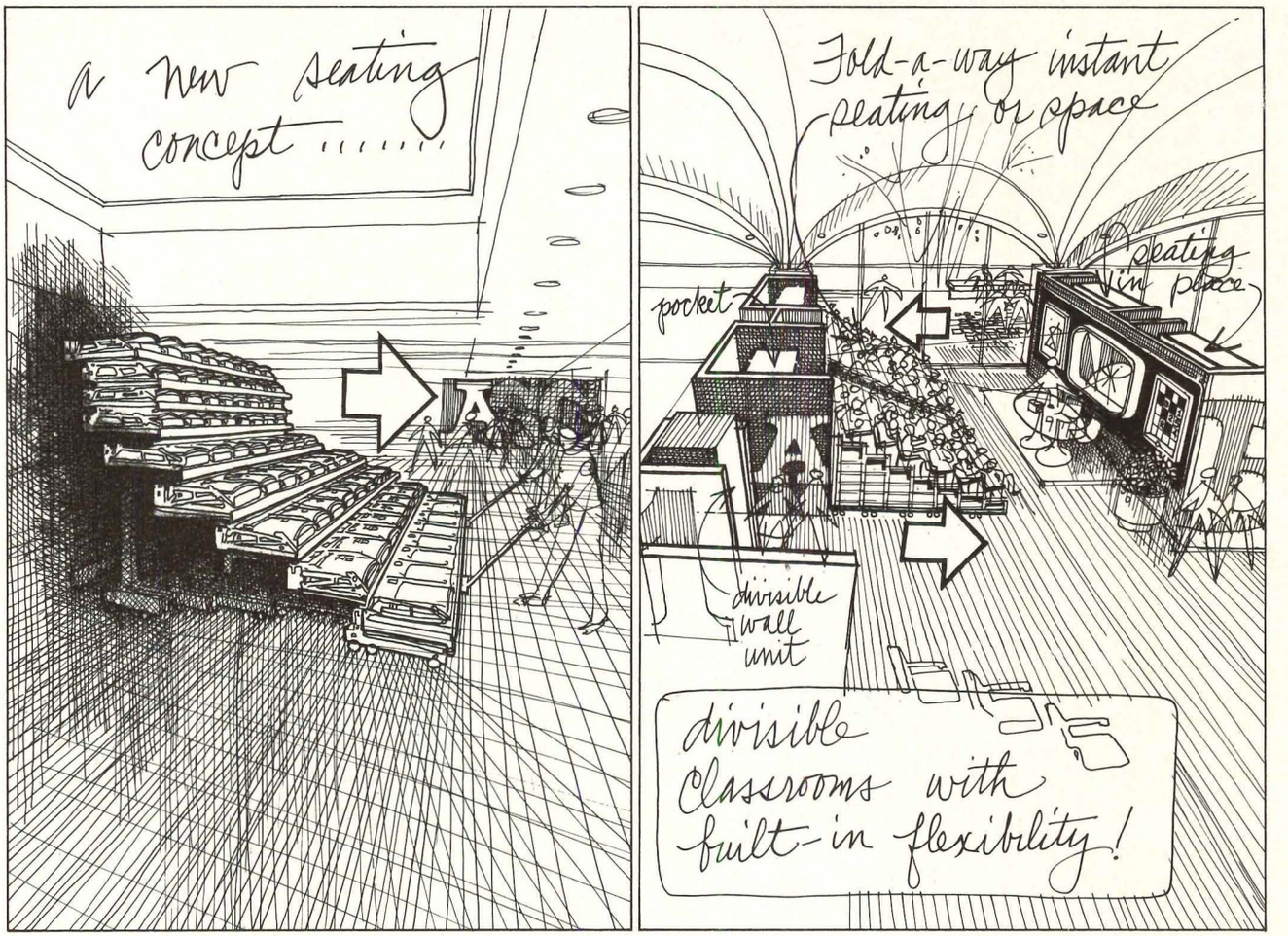

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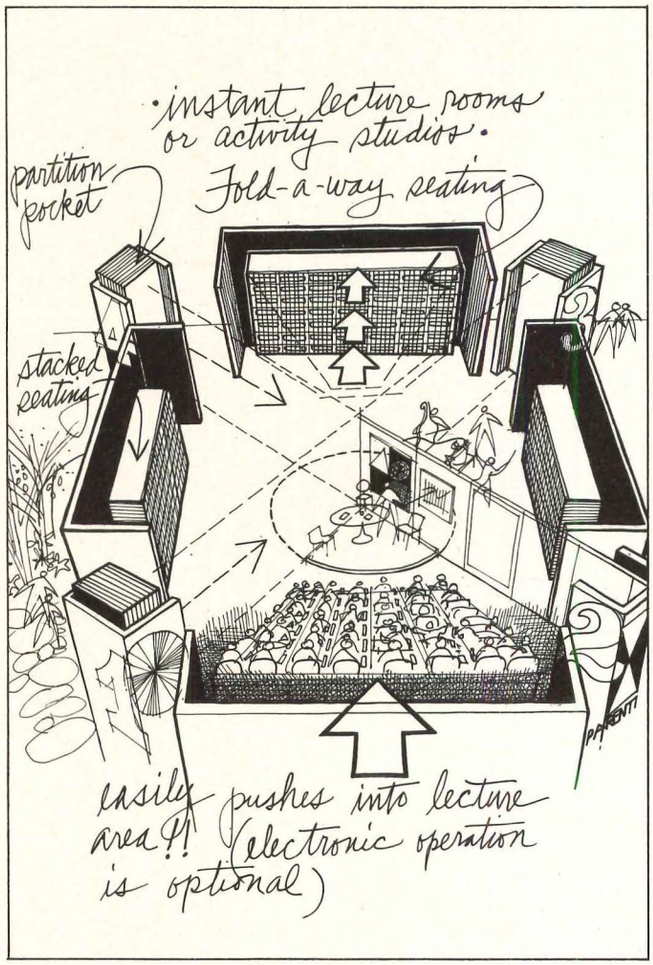

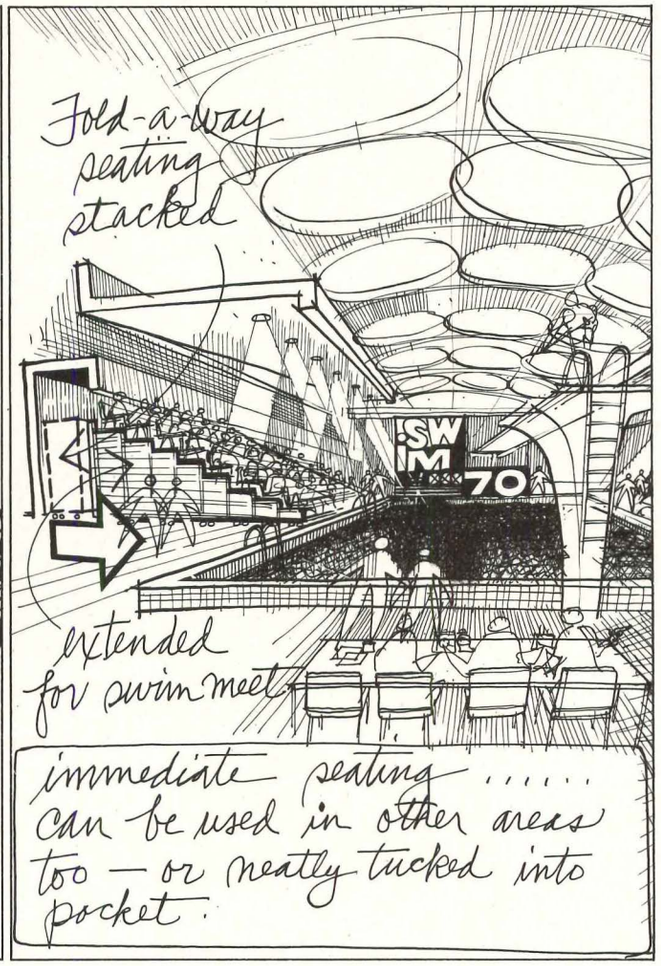

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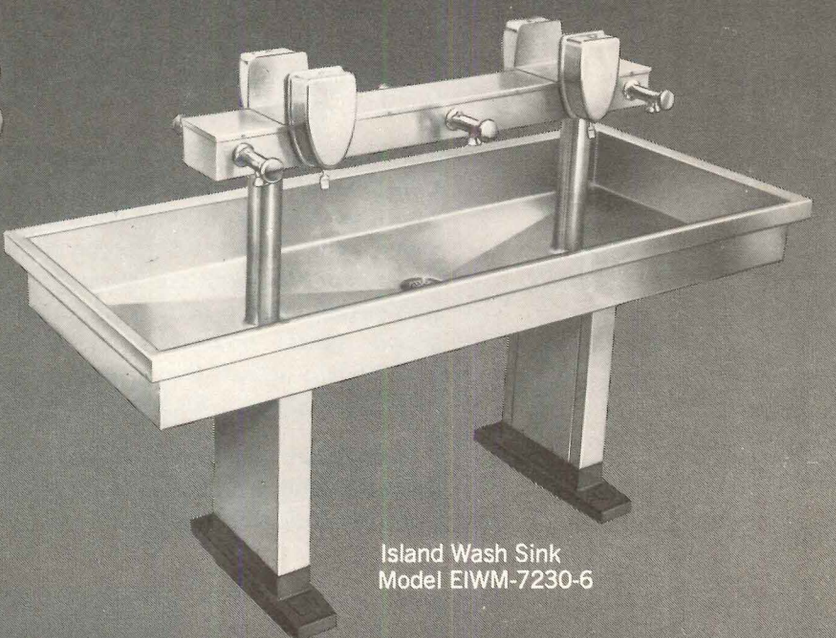

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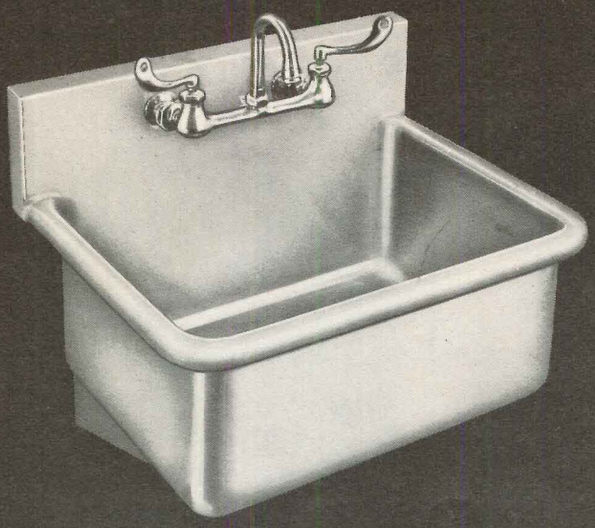

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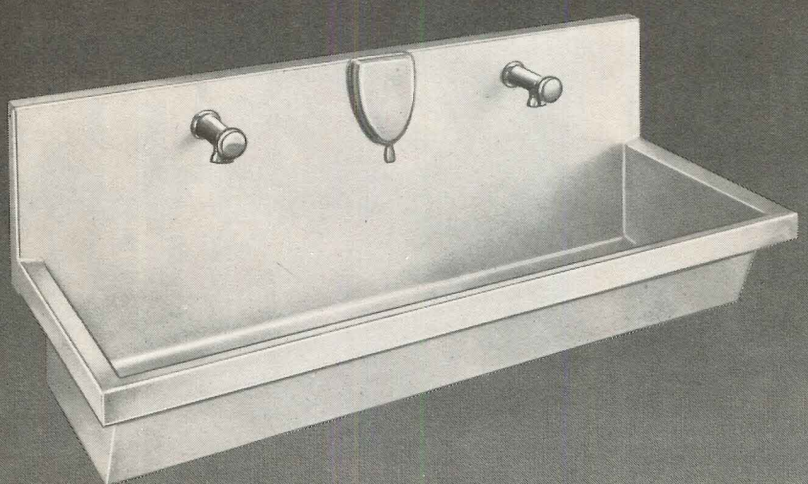

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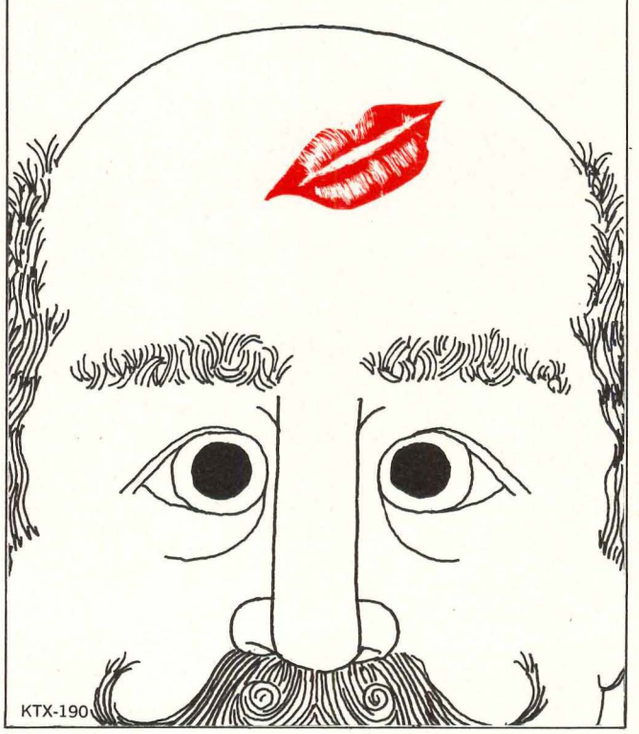

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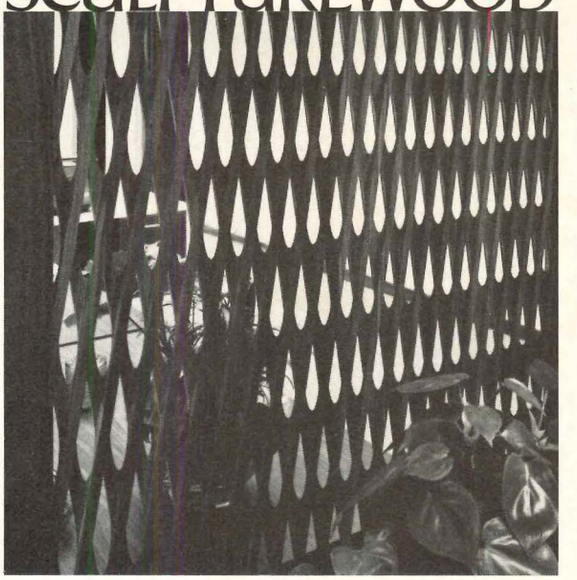

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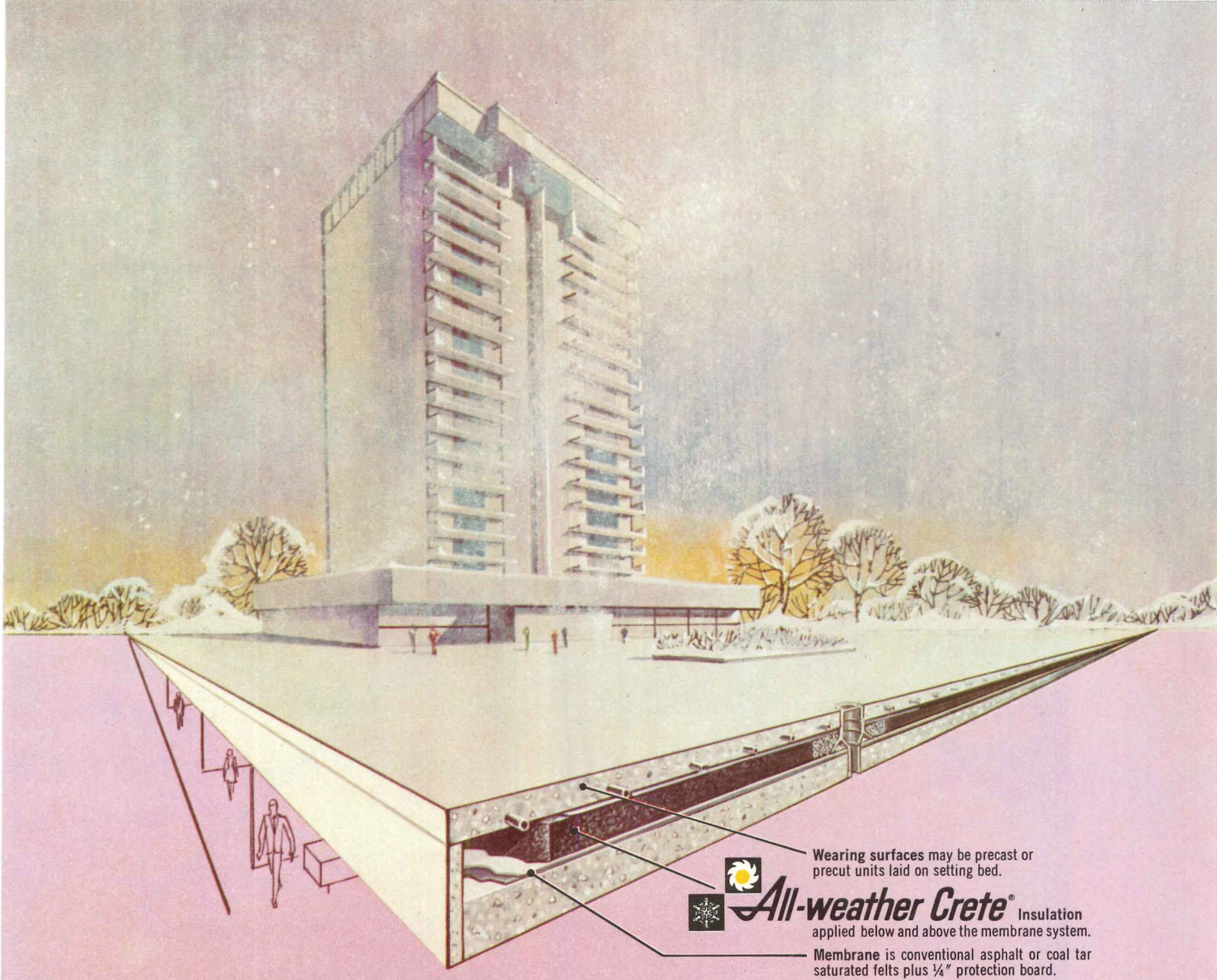

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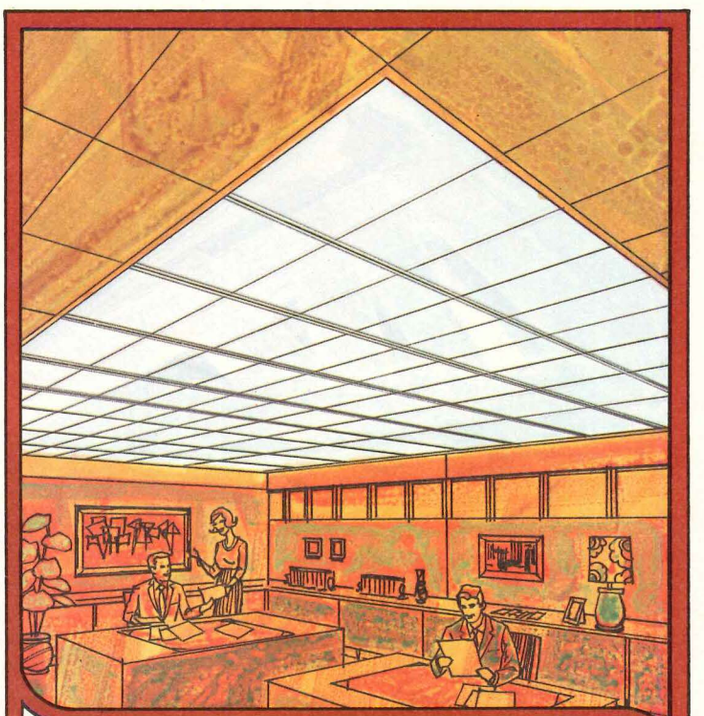

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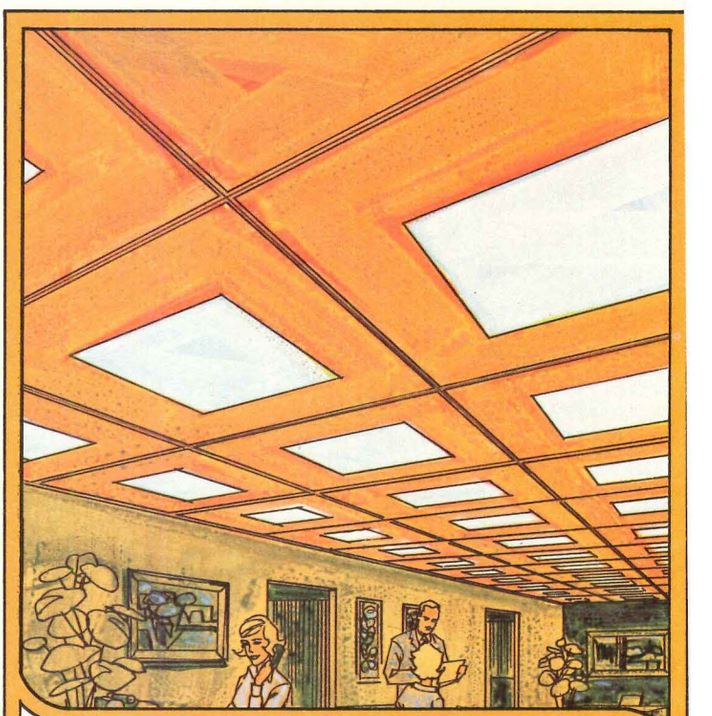

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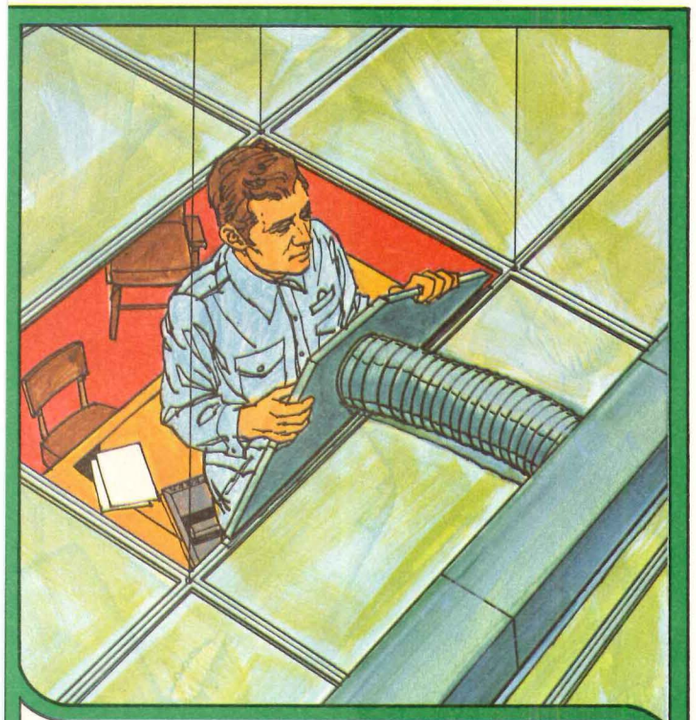

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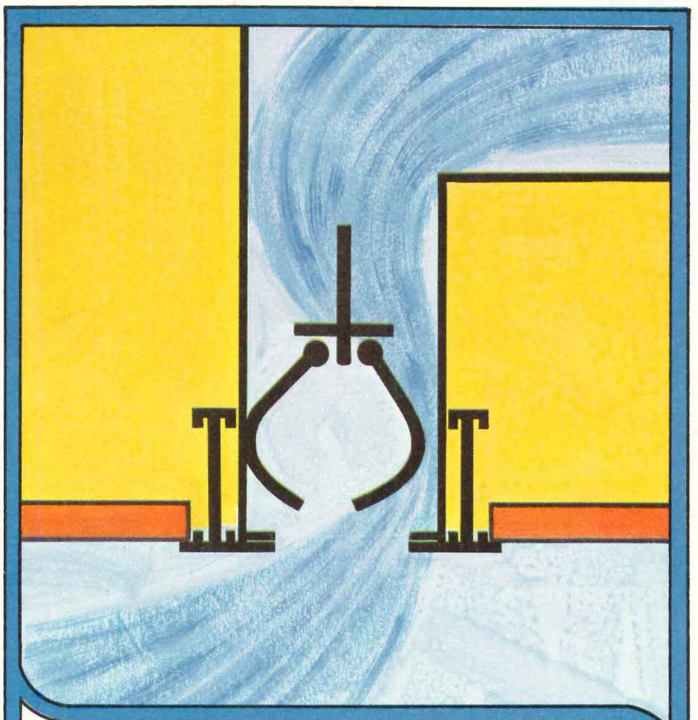

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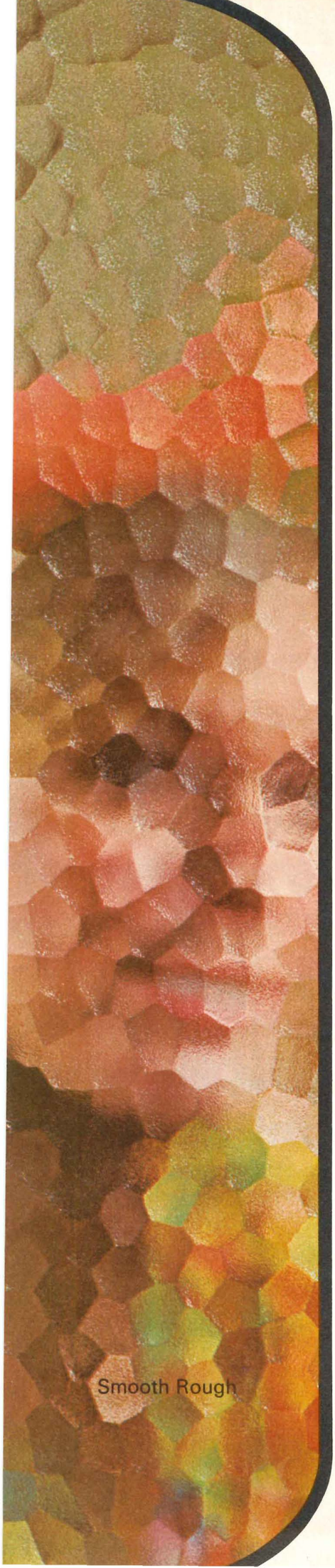

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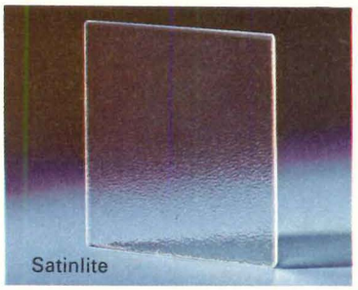

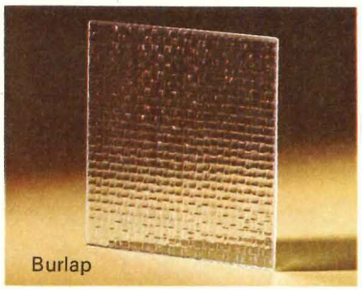

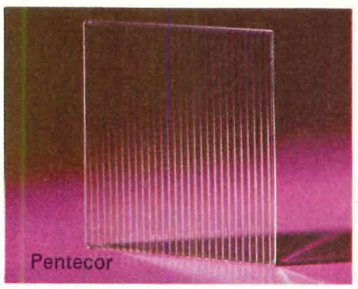

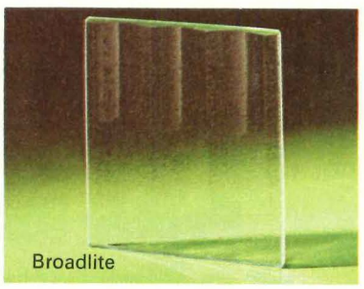

Mississippi patterned glass is available from leading distributors of quality glass in the principal cities of the United States and in Canada from Canadian Pittsburgh Industries, Ltd., Glass Division. Write for samples.

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The birds are Boeing 737's. The nest is their final assembly building in Seattle, Washington. Overhead is a beautiful textured ceiling of Tectum roof plank. Unnecessarily beautiful for an industrial plant, perhaps. But beauty is just a bonus. Because Tectum is a lot of things you can't see on the surface. Here, it's a lightweight, but structurally strong roof deck for built-up roofing. An insulator with a 0.53 "k" factor. A sound absorber with up to .80-.90 noise reduction coefficient.

Designed, engineered and constructed by the Austin Company, a 2″-thick Tectum® roof plank spans 225,585 square feet of assembly area here in Seattle. And another 179,814 square feet at the sub-assembly building additions in Renton, Washington. It was used with box sections placed 36″ O.C. and the spans were basically 8′ between the "I" beams.

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Gypsum Company

Gold Bond®
TECTUM

The name Gold Bond identifies fine building products from the National Gypsum Company. For further information about Tectum, write Dept. AR-50T, Buffalo, New York 14225.

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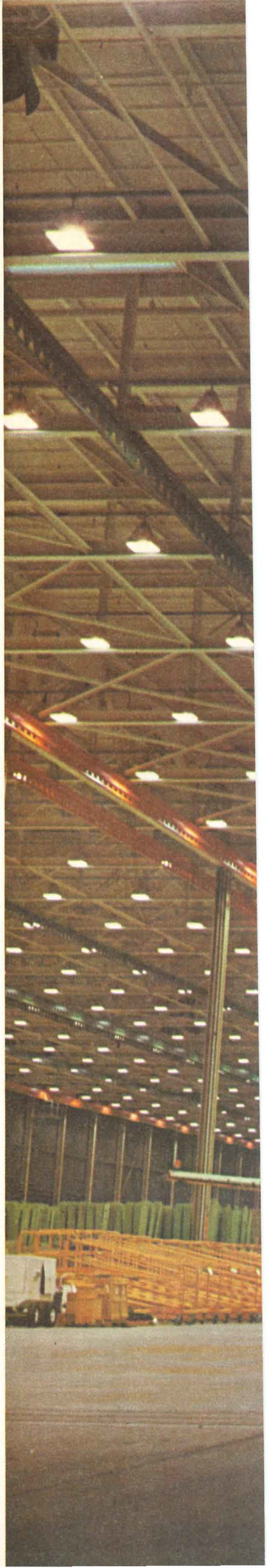

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solves problems ordinary office furniture creates.
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in a 30-man meeting...

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To meet these changing concepts of modern meeting dynamics, Shure offers a broad range of specialized microphones, along with a selection of unique microphone mixers and associated circuitry products that let you connect those microphones through a single amplifier and loudspeaker set-up.

For you, they're easy to install. For your customers, they're easy to use. And for the people with things to say, they're a must!

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Put a Bally Prefab Walk-In Cooler-Freezer in the kitchen. It helps when happy vacationers, relaxed by sun, surf, or fun, seek fast service. With plenty of space it's a breeze to pre-prepare house specialties. If there's an expansion program ahead, it's easy to increase Walk-In size with extra panels. Equally easy to relocate. Write for 32-page booklet and 4 inch thick urethane wall sample.

There's an evolution in the kitchen

Bally

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Dept. AR-3

inner strength
FROM KEYSTONE

Inner strength reinforcements make roofs, walls and floors stronger with less weight.

Fire-rated roof decks are made lighter, stronger, truly monolithic with Keydeck Truss-T Subpurlins and Keydeck Reinforcement.

The cast-in-place material flows through the open webs of Keydeck Truss-T subpurlins. Result: a truly monolithic deck with the material bonded *through* the subpurlins. This makes the total deck section stronger. It is also lighter because there is less dead steel weight in the subpurlin.

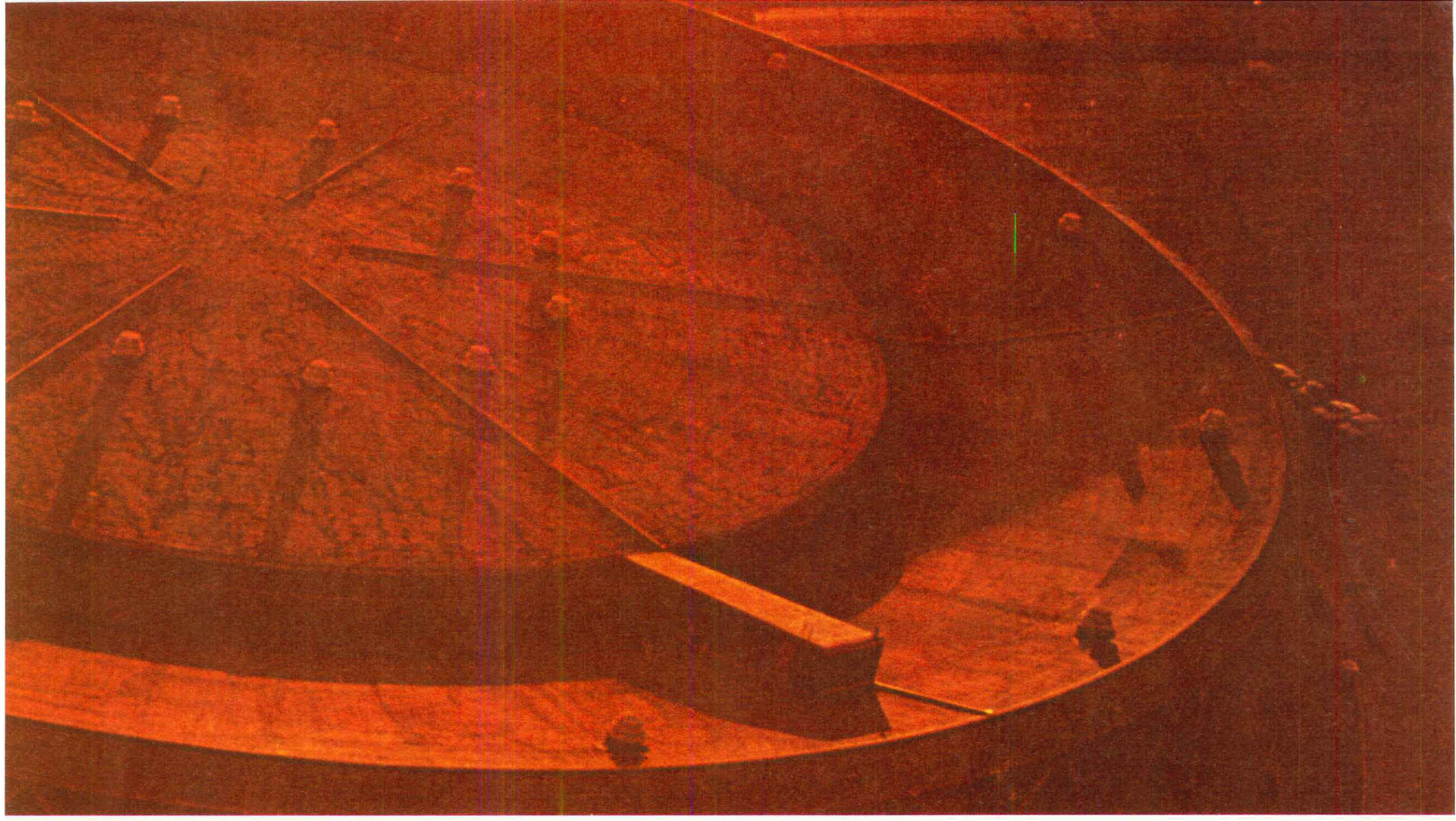
Keydeck reinforcement unrolls flat and the twist weave construction gives maximum bond with the deck materials. Keystone Steel & Wire also supplies the popular bulb-T subpurlins.

Oakland Coliseum, Oakland, Calif.
Architects: Skidmore, Owings & Merrill.
General Contractors: Guy F. Atkinson.
Roof Deck Contractor: Anning-Johnson.
Roof Deck System: Cast in place gypsum reinforced, with Keydeck Truss-T subpurlins and Keydeck reinforcement.

Keyweld reinforcement sheets save on steel; cut construction time, inspection time and labor costs with mechanical handling and placement.

Improvements in welded fabric equipment now make it possible to weld large steel sizes into large sheets to meet the reinforcing requirements of individual jobs. Steel sizes to ⅝″ diameter with 2″ to 16″ spacing in sheet-sizes up to 16′ wide and 36′ long. Just supply the floor plan and the concrete and steel reinforcing specifications. We will recommend the Keyweld weight, spacing and sheet size.

Addition to Finished Products Warehouse, Weirton Steel Division of National Steel Corporation at Weirton, West Virginia. Designers: Weirton Steel Engineers, J. W. Martt, Chief Engineer. Construction by Weirton Steel Construction Department, F. W. Schmidt, Superintendent.



Keywall masonry reinforcements are matched to the mortar strengths for better, stronger, walls.

Conventional mortars need the extra bonding surface, mortar locks and mechanical anchors provided only by Keywall Multibond. Together they work to better control thermal movement and cracking in masonry walls bonded with conventional mortar.

The lightweight rolls are easy to handle; the mesh easy to cut with a pair of snips for lapping, making accurate cutouts, etc.

Truss-type Keywall, which is matched to the strength of high strength mortar, is also available from Keystone Steel & Wire.

Columbian Elementary School, Kokomo, Indiana. Three additional school buildings in Kokomo by same architect, general contractor and masonry contractor: Maple Crest School, Haworth High School and Sycamore Jr. High School Addition. Architect: Everett I. Brown & Co., Indianapolis. General Contractor: Modern Structures, Inc., Indianapolis. Masonry Contractor: B. E. C. T. Co., Indianapolis. Construction: Concrete block and brick cavity walls alternate courses of blocks reinforced with Keywall Multibond (Roll-Type) Reinforcement.

inner strength
FROM KEYSTONE

For complete information, call your Keystone representative or write Keystone Steel & Wire Division of Keystone Consolidated Industries, Inc., Peoria, Illinois 61607.

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OFFICE NOTES

OFFICES OPENED

Richard R. Bradshaw Consulting Engineers of Van Nuys, California recently opened new San Francisco offices located at 1045 Sansome Street.

ECODESIGN, architects and urban designers, 1120 Massachusetts Avenue, Cambridge, Massachusetts, recently opened a second office, **ECODESIGN TWO,** Route 100B, Moretown, Vermont, for the practice of architecture, urban and rural design and land planning.

Glaus, Pyle, Schomer, Burns and DeHaven, Poland, Ohio architects and consulting engineers, have opened an Akron, Ohio office at 341 White Pond Drive.

Arthur G. Howard, Jr. and **W. Fitzgerald Hill** have announced the opening of their office for the practice of architecture, **Hill and Howard, Architects,** 2801 Woodward Avenue, Muscle Shoals, Alabama.

Alexander Hutcheon, Engineer recently established an office for the practice of architectural engineering and consulting at 105 Preble Street, Portland, Maine.

Miller/8 Associates, Inc., Architects, has announced the establishment of its new offices for the practice of environmental analysis and design at 167 Townsend, Birmingham, Michigan. Principals are: **J. Arthur Miller, A.I.A., Ralph W. Clampitt, Keith A. Brown, Mark W. Steele, Thomas M. Anglewicz, Richard J. Bos, Roy J. Brockert,** and **Michael J. Linehan.**

William M. Walsh Jr., A.I.A. has announced the opening of his office for the practice of architecture at 19th Street and Arctic Avenue, Virginia Beach, Virginia.

NEW ADDRESSES

Charles Colbert, Architect, Planner, 8522 Freret Street, New Orleans.

Duncombe/Roland/Miller Architects and Planners, 25 Old Courthouse Square, Santa Rosa, California.

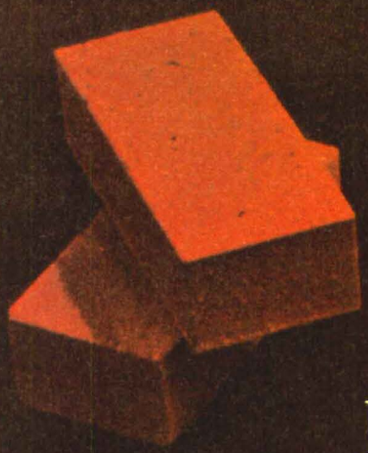
Hastings and Chivetta, Architects, Suite 840, 7733 Forsyth, Clayton, Missouri.

McComas & Moneypenny, Architects, A.I.A., 2801 Columbine Place, Nashville.

Schutte-Mochon, Inc., A.I.A. Architects, Planners and Engineers, Coventry Green Professional Building, Crystal Lake, Illinois (Illinois office).

ADDENDUM

Our November news article on the A.I.A. Task Force on Social Responsibility (Record Reports, page 40) incorrectly identified one of the members of the task force, Roger Margerum. Mr. Margerum, whose name also appeared incorrectly in the article, is not a student, as reported, but a practicing architect with Smith, Hinchman & Grylls.



The brick: a handy-sized unit of baked clay used in building—floors, for instance. Hand-laid, earthy, textured floors, which, unfortunately, cost a fortune to install.

Brick Uniflor: easily installed sheet vinyl flooring. In an earthy, textured herring-bone brick pattern made only by Nafco. The kind you'd get with a hand-laid floor.

At a fraction of the cost.

If you think you can't afford a great-looking brick floor, you haven't seen Uniflor.

Samples on request.

Uniflor by Nafco, the reasonable alternative.

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See our complete line of quality flooring for residential and commercial installations in Sweet's Catalog.

RALSTON PURINA COMPANY
CHECKERBOARD PLAZA TOWER OFFICE, ST. LOUIS.
Architect: Hellmuth Obata & Kassabaum, Inc.
Contractor: J. S. Alberici Construction Company, Inc.

NEW DESIGN FREEDOM!

A-E System Delivers Air and Electricity THROUGH THE FLOOR SLAB

Ugly, bulky ducts, piping and other obstacles to design freedom need no longer stand in your way. Granco's A-E (Air-Electric) Floor System puts all mechanical and electrical services into a slender sandwich floor slab. Air, telephone, power and signal distribution are artfully concealed.

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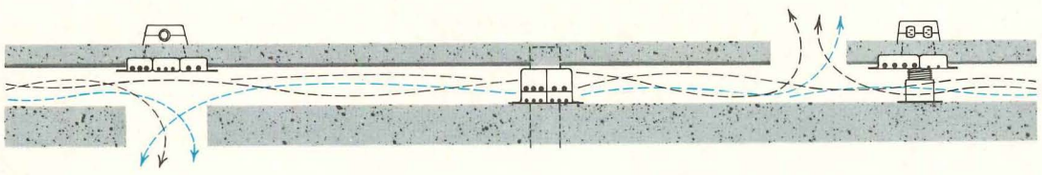
A-E Floor gives you new freedom to create and to innovate. *It's the only system compatible with both concrete and steel frame construction.* It's the only system that gives you such scope for expressing your most advanced architectural concepts.

Send for our new A-E Floor Systems brochure. This 24-page, award-winning booklet shows how A-E Floor brings new versatility and freedom to architectural design. Granco Steel Products Company, 6506 North Broadway, St. Louis, Missouri 63147. A subsidiary of Granite City Steel Company.



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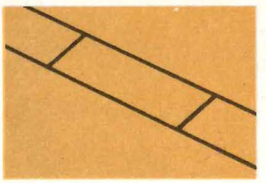
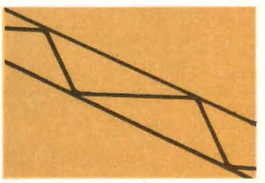
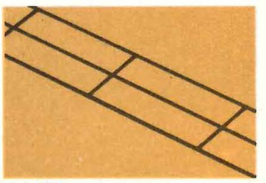


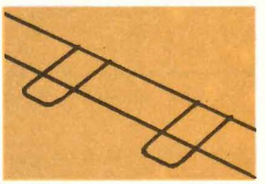
A ☐ BLOK-LOK®



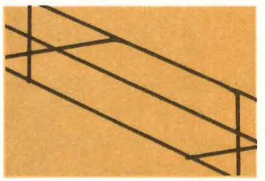
B ☐ BLOK-TRUS™



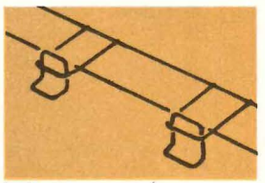
C ☐ TRI-LOK™



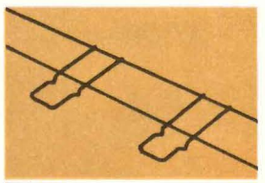
D ☐ ECONO-LOK®



E ☐ AA-LOK®

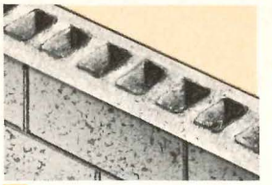


F ☐ ADJUSTABLE ECONO-LOK®



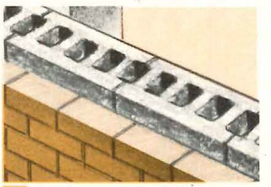
G ☐ ECONO CAVITY-LOK®

H ☐ WEB-TIE FLEX-O-LOK®

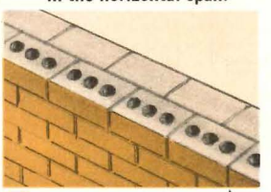


1 For crack control in block walls.

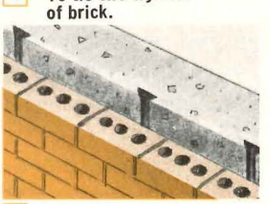
2 For non-aligning horizontal joints.



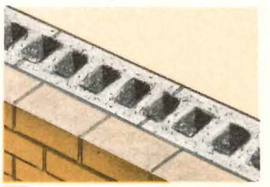
3 Cavity walls restrained in the horizontal span.



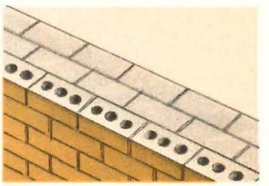
4 To tie two wythes of brick.



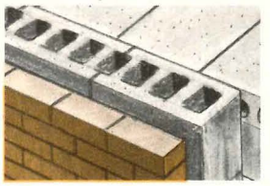
5 Flexible tying of masonry to concrete.



6 Continuous tie system for faced walls.



7 For added strength in three portions of wall.



8 Cavity walls restrained in the vertical span.

Test Yourself!

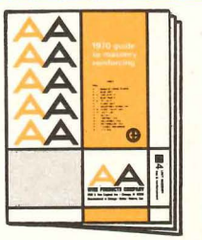
How good are you in selecting the best reinforcing or tie for different types of masonry walls? Study the eight wall situations shown here and choose the wire which will be most effective. Score yourself by comparing your answers with those below. A few of the styles shown can be used with a number of different walls. However, they should be placed here with their recommended use. The reinforcing and ties shown are part of the AA full line of quality products specifically engineered to perform best for each application. They provide greater design freedom, economy, ease of construction and maximum wall strength. Test Yourself! Then test AA reinforcing in actual use.

FLUSH WELDED · PROVEN TO BE STRONGER ·

WIRE PRODUCTS COMPANY

HERE ARE THE ANSWERS: A-4, B-1, C-7, D-6, E-3, F-2, G-8, H-5.

Disagree?.....or do you want more information and specifications? Send for the free 1970 AA Guide to Masonry Reinforcing. AA WIRE PRODUCTS CO. 6100 South New England Avenue Chicago, Illinois 60638 (312)586-6700



Reference: Sweets Spec Data 4

Name _____

Company _____

Address _____ Title _____

City _____ State _____ Zip _____

For more data, circle 42 on inquiry card

Guardrails against legal pitfalls in design and construction

A check-list of legal points to consider in verbal or written contracts among architects, owners, engineers and contractors

The continuing rise in number and size of liability suits against architects and engineers is generating defensive response at all levels, professional and inter-professional. While professional associations, insurance companies and concerned legal minds research modes of alleviating an over-all condition that now approaches crisis, many architects, for one reason or another, continue to sign contracts and letters of agreement that have astonishing and seemingly simple errors of omission. As a reminder for current use, it may be helpful to review some simple points of contract and liability law, already well established, that architects and engineers should bear in mind.

Concluding notes to chapters of the book,[1] *Legal Pitfalls in Architecture, Engineering and Building Construction,* by Nathan Walker and Theodor K. Rohdenburg, offer lists of "don'ts" that provide such a set of reminders and underscore the tricky simplicity that leads many to overlook their importance.

Owner-architect (engineer) agreements [2]

1. Don't neglect to have a written agreement signed by the client before beginning work or undertaking additional or extra work.

2. Don't fail to state in the agreement the amount of the professional's compensation, or the method of computing it.

3. Don't enter into a contract with a private corporation, or a public body, without verifying its right to make the contract and the authority of the signing officer to represent it.

4. Don't use unqualified contract words or phrases to which your client may attribute a meaning other than the one you intend.

5. Don't permit a cost limitation to be established in your agreement, either expressly or by implication, unless you are willing to accept the responsibilities involved. If you are, be explicit.

6. Don't fail to restrict your obligation when it is necessary to include in the contract a reference to cost limitation, but it is recognized that you are not to suffer any penalties if actual cost exceeds the limitation. Be sure the contract says so.

7. Don't guarantee construction costs or permit a guarantee to be implied.

8. Don't overlook the importance of neutralizing unfair contract stipulations making your compensation subject to conditions beyond your control.

9. Don't select a basis for the professional's compensation which is inappropriate to the project at hand.

10. Don't fail to include specific rights and remedies to safeguard you against possible default in payment of compensation, especially in contracting with a foreign client.

11. Don't fail to be definite regarding compensation for prolonged contract administration.

12. Don't neglect to provide for appropriate payments to the professional in the event of abandonment of the project.

13. Don't fail to exercise the most advantageous remedy in case the client repudiates the agreement.

14. Don't forget that, unless specifically anticipated, a change in the membership of a professional partnership may dissolve an existing agreement with a client.

Owner-architect (engineer) professional services

1. Don't forget that, because of the technical knowledge imputed to the professional, he should proceed upon the assumption that he is expected to:
   a. Provide a design which is suitable for its intended purpose.
   b. Question the validity of conditions reflected in basic documents such as surveys, when lapse of time dictates a need for review of the contract.
   c. Provide a design which conforms to the governing legal requirements.

2. Don't fail to check and recheck all contract documents to make absolutely certain that no conflicting instructions exist.

3. Don't neglect to have the contracting parties identify, by initialing each page, all contract documents, at the time of signing the contract.

4. Don't assume that the architect is relieved from the duty to exercise his technical knowledge and judgment merely because he makes use of standard contract forms.

5. Don't include in specifications language having no force, but don't delete language necessary to avoid confusion.

6. Don't specify methods of doing work if results are to be guaranteed by the contractor.

7. Don't fail to define all specifications terminology which may prove to be a pitfall for the unwary reader.

8. Don't assume, gratuitously, responsibility for the work of others by incorporating their findings in your own drawings; and when making them available for inspection, don't forget to disclaim responsibility as to their accuracy and completeness.

9. Don't forget that claims of contractors for extras may be successful if the architect's instructions by plans and specifications are incomplete or ambiguous.

10. Don't issue to the contractor instructions that are a material departure from the contract documents, without the owner's written approval.

11. Don't withhold a certificate of payment for any reason not specifically contemplated by the contract documents.

12. Don't neglect to visit the job site as frequently as may be necessary, and to prepare detailed records of these visits for the owner.

13. Don't rely solely on representations of manufacturers as to suitability of materials. Responsibility for selection is yours.

14. Don't serve two masters at the same time.

15. Don't change insurance companies without being assured of continuity of coverage for errors and omissions.

16. Don't fail to ascertain which risks are covered and which are excluded by your professional liability insurance policy.

[1] Published by McGraw-Hill and reviewed in the RECORD, April 1968

[2] These 14 "don'ts" repeated for convenience from the 1968 review and abstract of Chapter 1.

ARCHITECTURAL BUSINESS THIS MONTH

Responsibility of the professional to public

1. Don't perform professional services, or even offer to perform them, in a state in which you are not licensed, even if the statute merely protects the title "Architect."

2. Don't perform professional services as a partnership in any state, unless every partner is licensed in that state, unless you are positive that you are not violating the law by doing so.

3. Don't forget that the professional may be adjudged liable to anyone who is injured as a result of a hidden defect in his design.

4. Don't forget that an architect or engineer who prepares a faulty plan may be responsible to a third party for any injury caused thereby.

5. Don't forget that an architect or engineer who negligently supervises construction likewise may be liable to a third party who is injured as a result thereof.

Intraprofessional relationships

1. Don't forget that the architect may be liable to his clients for the negligence of his consultants.

2. Don't neglect to carry professional liability insurance, and to require it of your consultants.

3. Don't overlook the advantages of including the consultant and owner in the same arbitration proceeding.

4. Don't be lax in providing for every foreseeable contingency in partnership and joint venture agreements.

5. Don't fail to define the circumstances under which a joint venturer or partner may or may not act unilaterally.

6. Don't overlook the fact that, despite the absence of a contract between architect (engineer) and contractor, the professional may be given a direct right of action against a contractor by so stipulating in the general conditions or specifications.

Owner-contractor relationship: contracts

1. Don't start work without a contract, in the belief that the starting constitutes the necessary acceptance of an offer.

2. Don't fail to consider the need for protection against claims resulting from delays for any reason.

3. Don't fail to include in the written agreement every oral understanding.

4. Don't forget that "including" is a word of limitation unless followed by such words as "but not limited to . . ." or "without limitation."

5. Don't rely on a mistake by the other party to a contract to give you an advantage.

6. Don't depend upon custom to establish your right to interim payments; if the contract does not contemplate interim payments, the work must be completed before payment can be required.

7. Don't forget to stipulate that orders for extras, changes, or alterations must be in writing and signed by the proper party.

8. Don't confuse "extra work" (not contemplated in the original contract) and "additional work" (necessary for the completion of the original contract).

9. Don't forget that a contract performed according to only one of two inconsistent or contradictory conditions may be said to have been performed.

10. Don't provide for a guarantee of results and then contradict the intent of the guarantee by other words and phrases.

11. Don't rely upon your own interpretation of a contract to establish your intent, if the contract language clearly establishes a contrary one.

12. Don't change the terms of the original contract until after the relet contract is entered into, if excess cost is to be collected from the original defaulting contractor.

13. Don't forget that a subcontractor, having no direct contract with the owner, is not liable to the owner for breach of contract.

14. Don't forget that the submission of unit prices requires the contractor to do the work for those prices.

Owner-contractor relationship: performance

1. Don't think that performance of a contract becomes impossible simply because it becomes exceedingly expensive, inconvenient, or even absurd.

2. Don't omit to define adequately those conditions beyond your control which would excuse delay or nonperformance.

3. Don't forget that a contractor may recover for partial performance if contract requirements prevent full performance.

4. Don't overlook the fact that a contractor will not necessarily be relieved from his guarantee by owner's changes, and that if the contractor contracts to do the impossible he may be held to his promise.

5. Don't fail to arrive at an understanding regarding who shall bear the loss in the event of a calamity resulting in damage to or destruction of a building being built, remodeled or repaired.

6. Don't fail to be definite regarding whether the contract is entire or severable.

7. Don't fail to arrive at an understanding regarding who shall pay the additional cost arising from a subsequent change in building department requirements.

8. Don't forget that assumption by owner of joint responsibility with contractor involves risks.

9. Don't neglect in disputes under contracts with the government to follow specifically and carefully the avenue for relief stipulated in the contract.

10. Don't rely upon the owner's taking possession as a waiver of his right to damages for defective work.

11. Don't forget that the injured party must make all reasonable efforts to minimize the loss resulting from a breach of contract.

12. Don't blame the contractor for defects arising out of faulty instructions given to him.

13. Don't rely upon acceptance by FHA as proof that the building necessarily conforms to FHA specifications.

Precautions for the contractor

1. Don't forget that by engaging a subcontractor, the general contractor may not avoid duties imposed upon him by statute.

2. Don't hesitate to exercise such general superintendence as is necessary to see that the subcontractor performs his contract. However, in exercising such superintendence, don't control and direct the manner in which the work shall be done.

3. Don't give instructions involving the safety of subcontractor's employes.

4. Don't forget that it is the duty of a general contractor to provide a safe place to work for all workmen, no matter whose employes they may be.

5. Don't assume that engaging a subcontractor relieves you from your responsibility to protect the public from injury.

6. Don't forget that you may be held liable for injury sustained long after completion and acceptance of the work.

7. Don't fail to consider the need for products liability—completed operations insurance, to protect you from liability for damage or injury occurring after completion of your operations.

8. Don't agree to indemnify anyone unless you fully understand the scope of your undertaking and are prepared to assume all of the risks involved.

9. Don't overlook the fact that an indemnity agreement may be so broad in scope as to make you an insurer for the negligence of others.

10. Don't forget to secure contractual liability insurance to protect you in case of liability to the owner under an indemnity agreement.

Relationships of the several contractors

1. Don't fail to incorporate into a subcontract all of the relevant and material terms and conditions of the prime contract.

2. Don't forget that a general contractor should make provisions in his subcontracts to protect himself in case the prime contract is terminated.

3. Don't forget that the problems relating to temporary heat are such a frequent source of discord that extreme care should be exercised in specifying the rights of the parties under all circumstances.

4. Don't neglect to verify that provision is made for adjustments in the contract price to operate upward as well as downward.

5. Don't forget that the term "when, as, and if" ultimately may mean "never."

6. Don't abandon performance because the other party is no longer a good credit risk, unless your contract expressly permits you to do so.

7. Don't confuse "delay" and "abandonment", or fail to provide for both contingencies.

8. Don't expect to hold your subcontractor responsible for damages for delay if you, also, were at fault.

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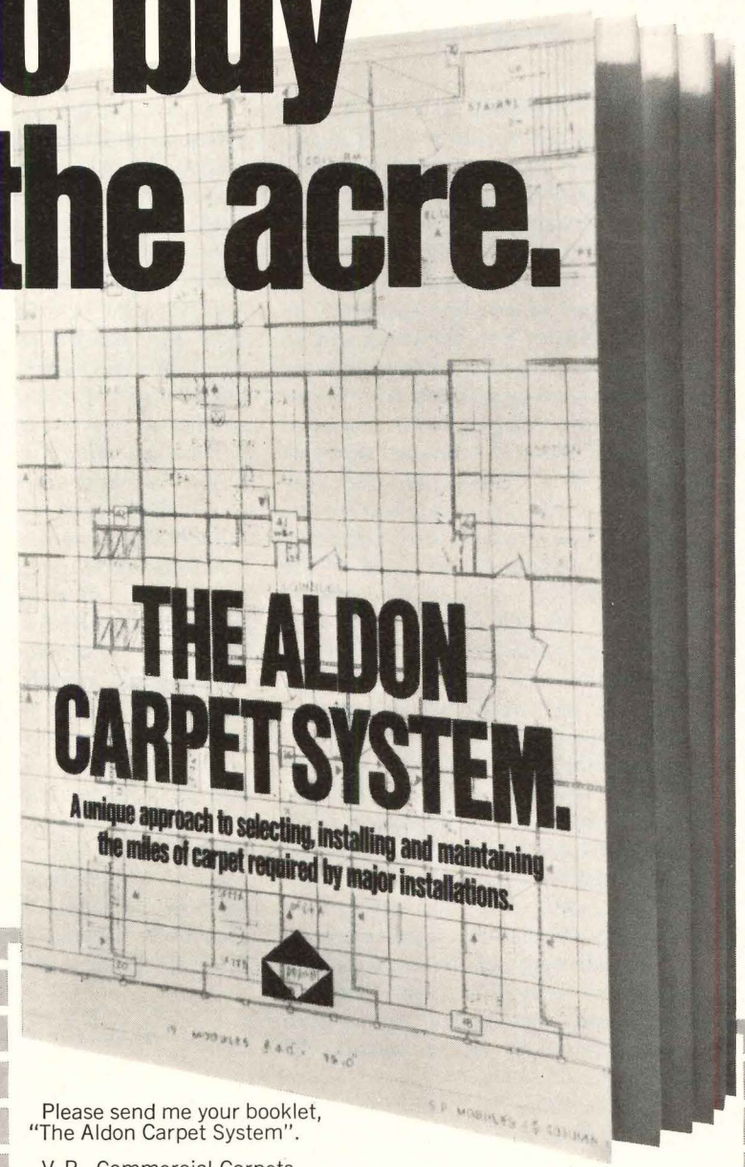

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CURRENT TRENDS IN CONSTRUCTION

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

1969 construction in review: demand outweighed restriction

A record year—up nine per cent in dollars for a two per cent gain in floor space enclosed

Construction contracting activity in 1969 began and ended at record levels. The seasonally adjusted Dodge Index reached a new peak, up to that time, of 204 (1957-59 =100) in January and an all-time high of 218 in December. In between, the index values bobbed up and down in yo-yo fashion, responding on the up side to a seemingly insatiable demand for new buildings and on the down side to severe restrictions imposed by monetary and fiscal policies. For the year as a whole, the total value of contracts jumped to $67.4 billion, a nine per cent gain over the 1968 total. Construction costs rose throughout the year, however, and by December they were seven per cent higher, on average, than in January. So, most of the year's good increase was in the form of higher prices—the actual amount of space created in new buildings was only two per cent more than in the previous year.

The pull of private demand against both government- and market-imposed restrictions was the outstanding feature of the construction markets in 1969, and this showed up especially in the major architect-designed types of buildings—nonresidential and apartments. Single-family housing reached a peak early last winter, then traced a fairly steady downward course as mortgage funds began to dry up, with support from the Federal National Mortgage Association and the Federal Home Loan Bank bringing on an upturn toward the end of the year.

The total value of major architect-designed building types rose 14 per cent in 1969, and the month-to-month fluctuations were a lot sharper than for total building. This pattern was a result of especially strong demand for some types of buildings, the preponderance of large projects ($30 million or more) and the types of financing used to bring each building type to the contract stage.

Office building was construction's outstanding success story in 1969. Contracts totaling $5.4 billion were up almost 50 per cent over the 1968 level and nearly double the 1967 total. Dominated by New York's huge World Trade Center, 24 large projects accounted for $1.6 billion of this category —an amount equal to the total value of office construction as recently as 1961. The magnitude of this concentration of major projects is indicated by a comparison with 1968, the previous record year, in which 12 large buildings were valued at only $500 million—a figure more than double the total for 1967, a more-or-less typical year. Why this sudden spurt in building? No doubt fear of changes in favorable tax laws played a part, as did the interest of large institutional investors in equity financing opportunities. But the biggest factor was simply demand—especially in New York City, where much of the gain occurred. A burgeoning office work force coupled with a shortage of space (in New York, less than one per cent of office space was vacant at the beginning of the year) had created a heavy backlog of needs, with the prospects of continued growth adding to the incentive to build. Since financing could be obtained from internal sources or earlier commitments, the tightness of the money market had little effect on office building plans.

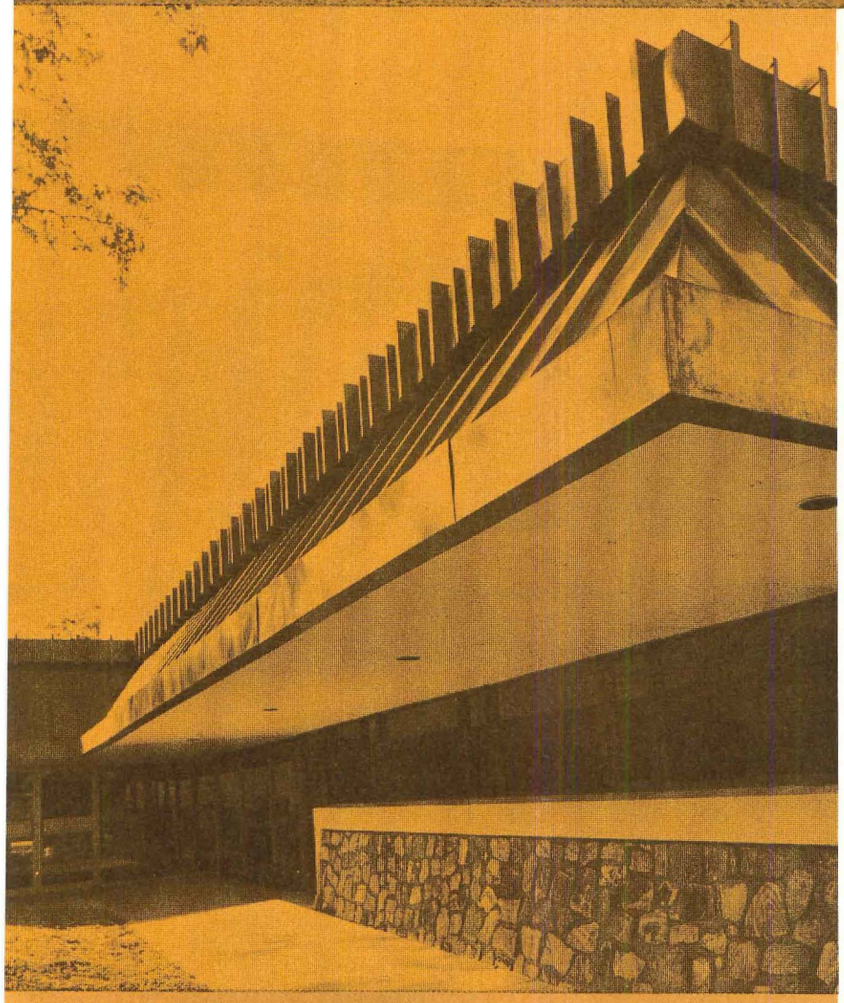
Construction of manufacturing facilities increased for the eighth consecutive year in 1969, although the gain was limited to three per cent. The surprising thing is that there was any increase in contracting at all, since much of the interest of government policies was to limit capital investment. Apparently, the need to modernize and offset escalating labor costs, as well as to provide capacity for future expansion, offset the disadvantages of higher borrowing costs and the possible removal of tax advantages in the minds of many.

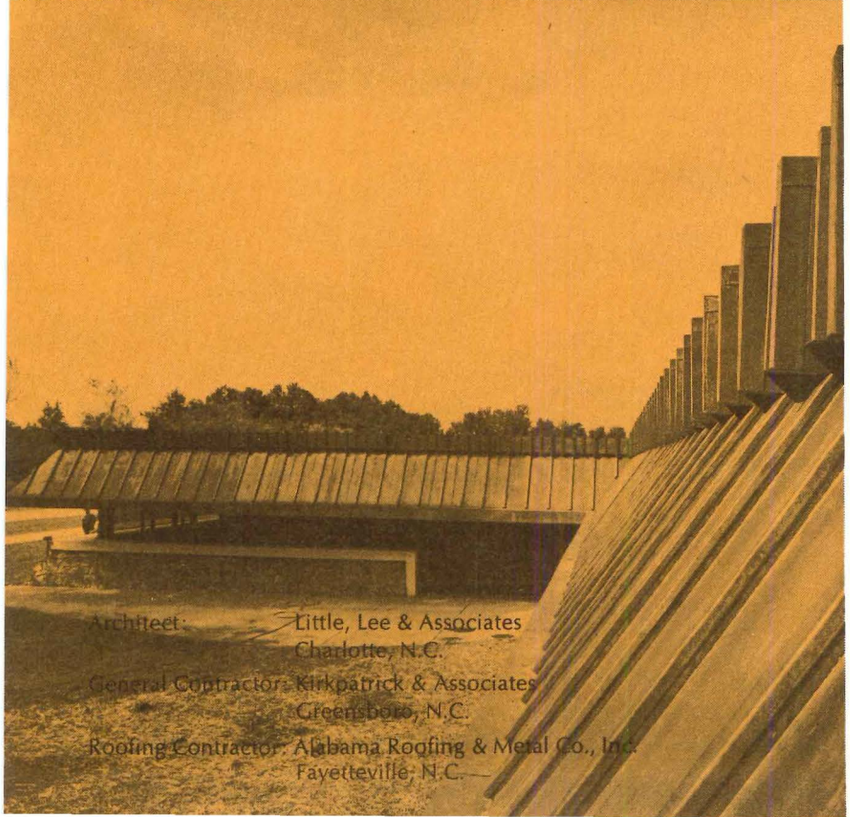
Educational construction apparently suffered the sharpest setback from 1969's restrictive money markets. After topping the year-ago values by as much as 14 per cent in mid-summer and ten per cent as late as October, contract activity dropped enough in the final two months to pull the year's gain down to only two per cent. This was a direct result of a sharp drop in school bond financing, especially toward the end of the year. New issues in 1969 totaled only $3.2 billion, compared with $4.8 billion a year ago.

It's apparent that the full impact of restrictive policies has not yet been felt by most types of construction. Hospital contracting jumped 31 per cent on the strength of previously committed funds, and even public building managed a three per cent gain in contract value in 1969. Other types of private construction, including apartments, recreational facilities and miscellaneous nonresidential, posted gains in excess of 10 per cent. Smaller gains or even declines are in store for all types of architect-designed construction in 1970 as the impact of restriction offsets the lessening pressure of demand.

F. W. DODGE SUMMARY OF CONSTRUCTION CONTRACT VALUES

	Millions of Dollars		
	1968	**1969**	**% Change**
Stores & warehouses	3,968	4,367	+10
Office buildings	3,677	5,357	+46
Manufacturing	3,768	3,887	+ 3
Educational	5,347	5,480	+ 2
Hospital and health	2,114	1,141	+ 3
Public	1,112	669	−14
Religious	778	1,100	+15
Amusement	954	886	+11
Miscellaneous nonresidential	795	7,627	+16
Apartment buildings	6,551	2,780	+ 2
Hotels, motels, dormitories	1,492	1,525	+14
Total architect-designed building	30,556	34,819	+31
One- and two-family houses	16,795	16,067	− 4
Nonbuilding construction	14,381	16,539	+15
Total construction	61,732	67,425	+ 9





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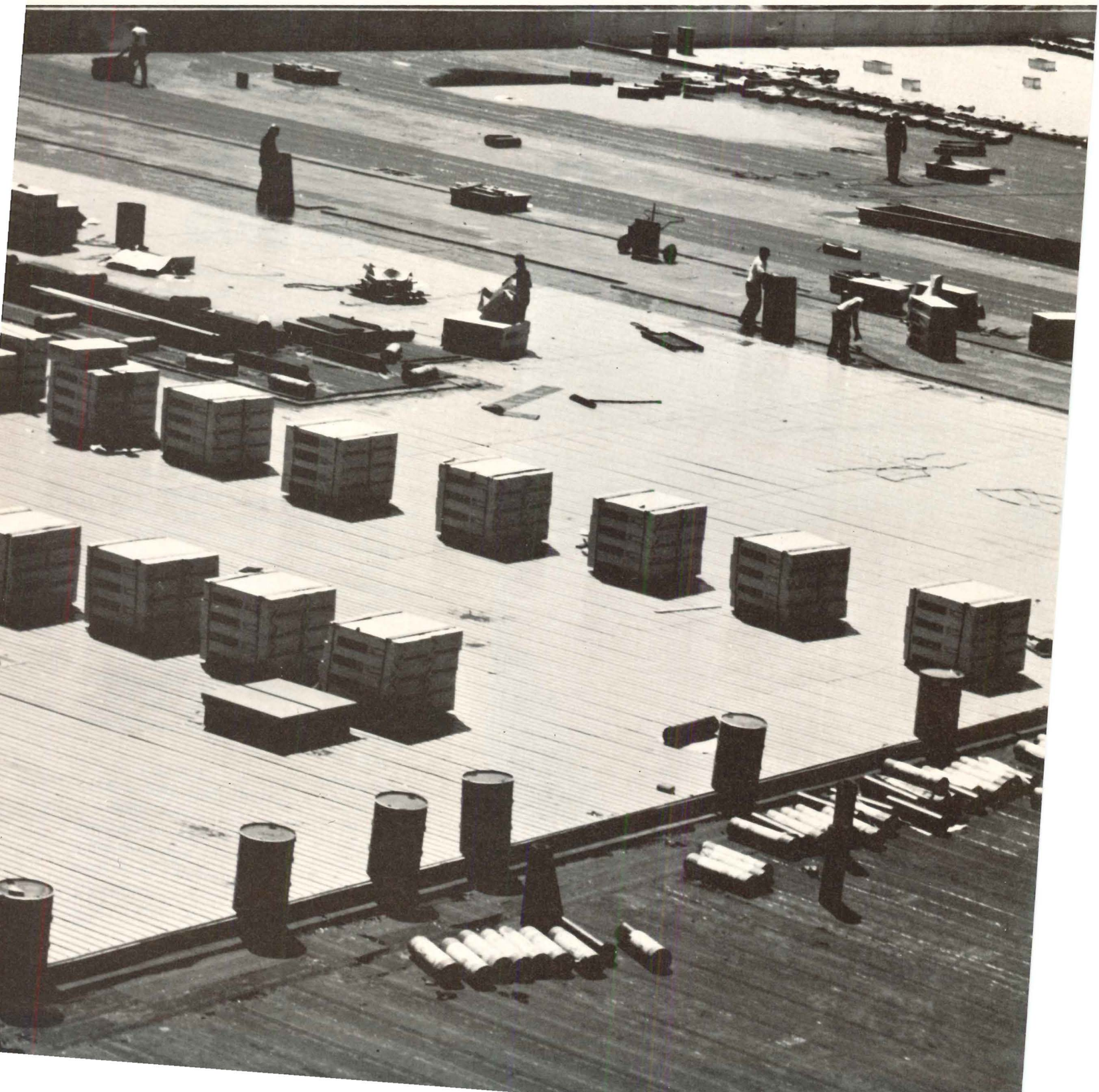

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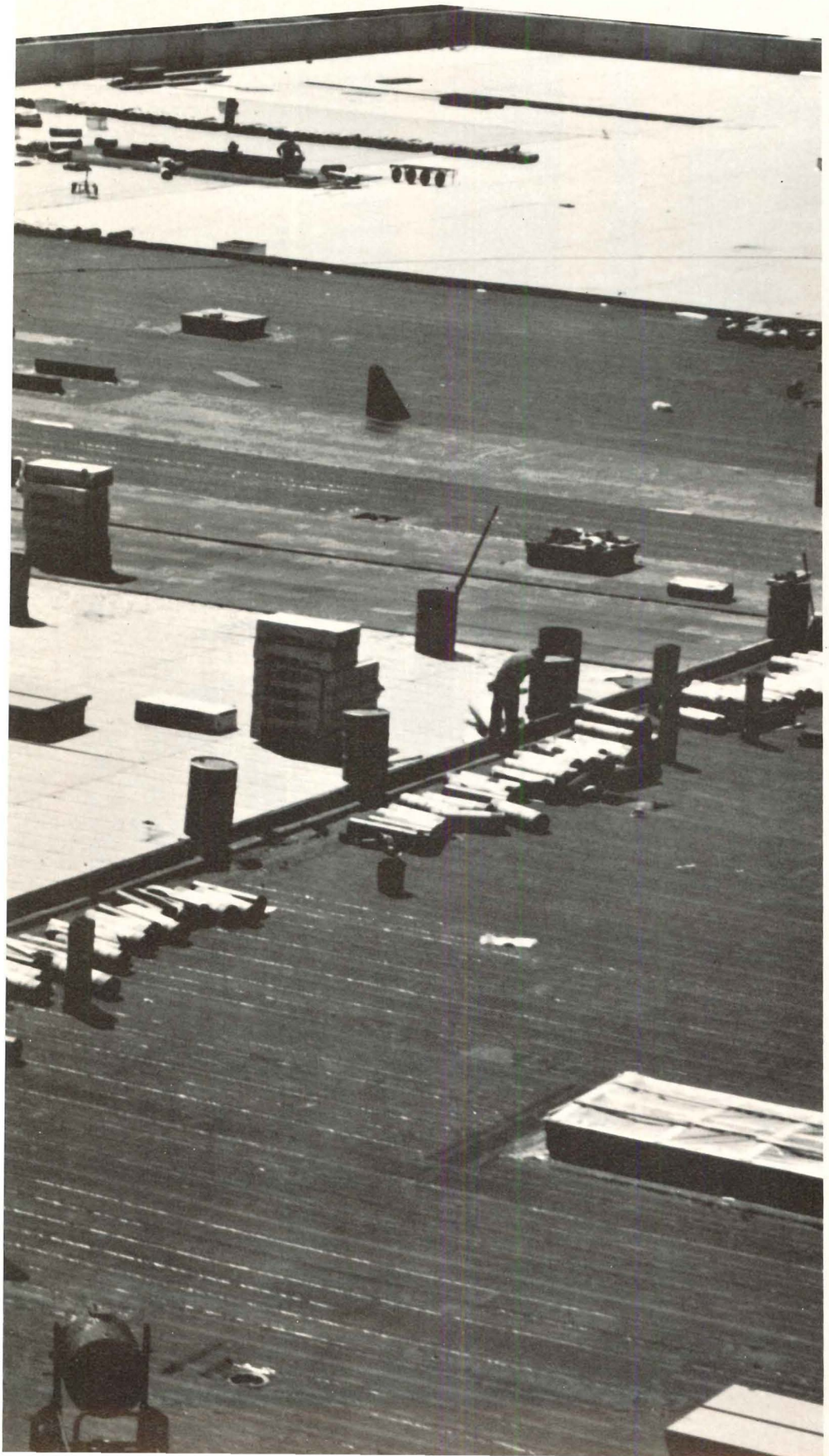

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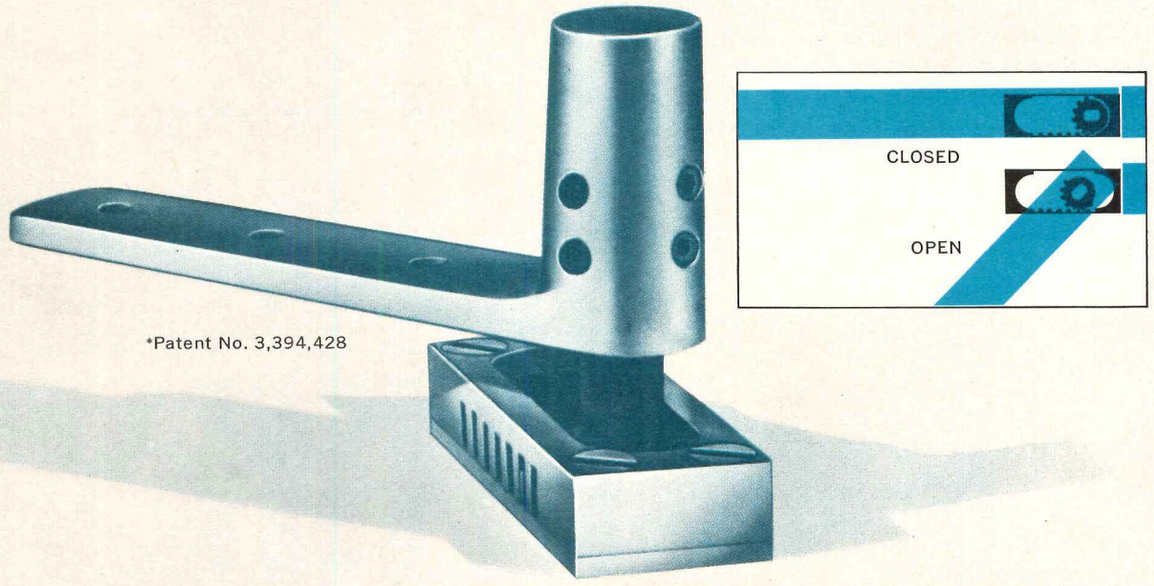

*Patent No. 3,394,428

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INDEXES AND INDICATORS

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

WHAT'S BEHIND COST TRENDS

Labor—Continuously in the spotlight during the last 14 months, construction labor has been winning impressive wage increases all across the country. Because of its contribution to inflation (more than 15 percent in annual wage gains, accompanied by only slight gains in productivity), labor could easily find itself subject to much closer governmental scrutiny—especially so since many wage contracts cover stepped increases over several years with the result that their inflationary effects will be with us for a while.

Material—Lumber prices have stabilized at levels somewhat above those prevailing before the price gyrations of the past two years, and very likely will remain at these levels or slightly decrease during the coming year. Copper prices are at very high levels and will probably continue at these levels until supply and demand get back in balance. Other materials' prices will be erratic with 2 to 6 per cent increases expected.

Building cost indexes

The information presented in the tables indicates trends of building construction costs in 35 leading cities and their suburban areas (within a 25-mile radius). Information is included on past and present costs, and future costs can be projected by analysis of cost trends.

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

Differences in costs between two cities can be compared by dividing the cost differential figure of one city by that of a second.

1941 average for each city = 100.00

MARCH 1970

Metropolitan area	Cost differential	Current Index residential	Current Index non-res.	% change year ago res. & non-res.
U.S. Average	8.5	301.8	322.3	+ 7.74
Atlanta	7.5	381.3	404.5	+ 9.64
Baltimore	7.6	309.3	329.0	+ 3.79
Birmingham	7.2	285.7	307.2	+ 5.06
Boston	8.4	287.4	304.2	+ 7.84
Buffalo	9.2	333.8	355.5	+ 8.92
Chicago	8.8	348.9	367.0	+ 6.23
Cincinnati	9.0	316.9	364.1	+ 7.23
Cleveland	9.8	342.9	364.5	+ 7.23
Columbus, Ohio	9.0	322.8	343.8	+ 7.01
Dallas	7.7	303.1	313.0	+ 7.90
Denver	8.3	326.3	346.9	+ 8.14
Detroit	9.5	341.8	358.8	+ 8.51
Houston	8.1	295.2	314.4	+11.12
Indianapolis	8.8	286.6	305.2	+ 6.37
Kansas City, Mo.	8.3	288.6	305.5	+ 7.22
Los Angeles	8.3	323.3	353.7	+ 6.83
Louisville, Ky.	8.1	298.1	317.5	+ 8.53
Memphis	7.6	288.7	307.5	+ 5.57
Miami	8.6	325.9	342.1	+ 9.08
Milwaukee	9.2	356.3	379.5	+ 8.25
Minneapolis	8.9	324.6	345.1	+ 9.79
Newark	8.9	297.3	316.7	+ 7.77
New Orleans	7.9	291.8	309.2	+ 6.79
New York	10.0	333.7	358.9	+ 7.88
Philadelphia	8.6	316.6	332.3	+ 7.81
Phoenix	8.2	167.3	178.2	+ 6.62
Pittsburgh	9.1	301.2	320.2	+ 6.53
St. Louis	9.2	320.3	339.4	+ 9.09
San Antonio	8.1	121.3	129.2	+ 7.61
San Diego	8.2	121.7	129.6	+ 7.67
San Francisco	8.9	425.2	465.3	+ 9.43
Seattle	8.6	298.6	333.7	+ 9.73
Washington, D.C.	7.9	277.1	295.2	+ 8.26

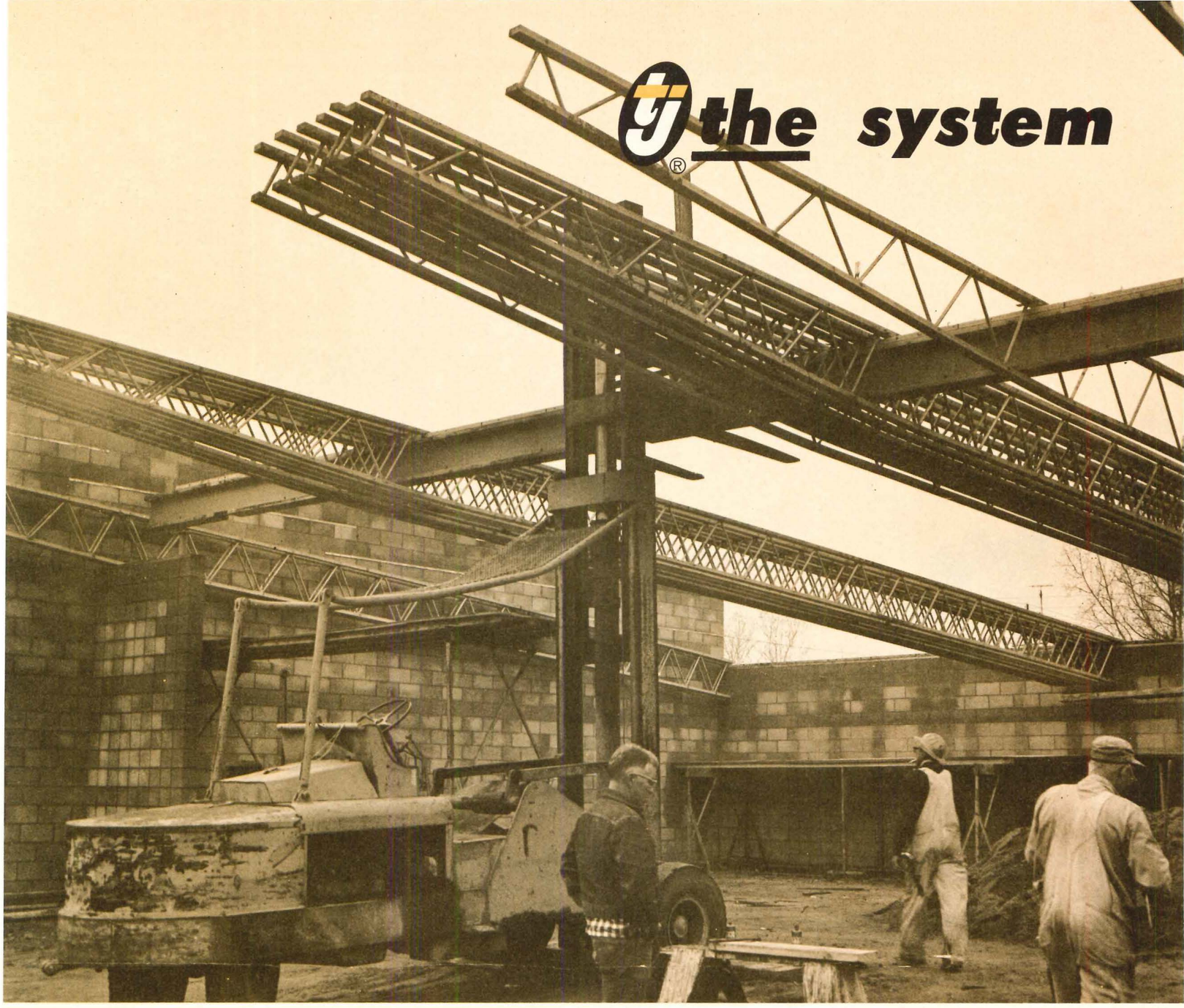
Cost differentials compare current local costs, not indexes.

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

1941 average for each city = 100.00

Metropolitan area	1961	1962	1963	1964	1965	1966	1967	1968 (Quarterly) 1st	1968 (Quarterly) 2nd	1968 (Quarterly) 3rd	1968 (Quarterly) 4th	1969 (Quarterly) 1st	1969 (Quarterly) 2nd	1969 (Quarterly) 3rd	1969 (Quarterly) 4th
U.S. Average	264.6	266.8	273.4	279.3	284.9	286.6	297.5	301.5	302.6	309.3	310.0	314.9	316.5	332.4	333.5
Atlanta	294.7	298.2	305.7	313.7	321.5	329.8	335.7	345.6	346.7	352.3	353.1	364.2	365.9	382.8	384.0
Baltimore	269.9	271.8	275.5	280.6	285.7	290.9	295.8	302.9	304.1	307.9	308.7	311.4	313.0	321.8	322.8
Birmingham	249.9	250.0	256.3	260.9	265.6	270.7	274.7	278.5	279.5	283.6	284.3	288.4	289.9	302.4	303.4
Boston	237.5	239.8	244.1	252.1	257.8	262.0	265.7	269.3	270.3	276.3	277.1	278.2	279.6	294.0	295.0
Chicago	289.9	292.0	301.0	306.6	311.7	320.4	328.4	329.4	330.0	338.7	339.5	340.4	342.1	354.9	356.1
Cincinnati	257.6	258.8	263.9	269.5	274.0	278.3	288.2	291.4	292.5	301.8	302.6	309.8	311.5	324.8	325.8
Cleveland	265.7	268.5	275.8	283.0	292.3	300.7	303.7	316.5	318.3	330.7	331.5	334.9	336.7	357.1	358.3
Dallas	244.7	246.9	253.0	256.4	260.8	266.9	270.4	272.3	273.4	281.0	281.7	287.2	288.7	307.6	308.6
Denver	270.9	274.9	282.5	287.3	294.0	297.5	305.1	304.9	306.0	311.7	312.5	317.9	318.5	337.9	339.0
Detroit	264.7	265.9	272.2	277.7	284.7	296.9	301.2	309.2	310.4	315.5	316.4	326.8	328.5	351.8	352.9
Kansas City	237.1	240.1	247.8	250.5	256.4	261.0	264.3	267.5	268.5	277.2	278.0	281.0	282.3	294.5	295.5
Los Angeles	274.3	276.3	282.5	288.2	297.1	302.7	310.1	312.0	313.1	319.3	320.1	323.7	325.4	343.0	344.1
Miami	259.1	260.3	269.3	274.4	277.5	284.0	286.1	293.1	294.3	304.5	305.3	309.6	311.2	328.3	329.3
Minneapolis	267.9	269.0	275.3	282.4	285.0	289.4	300.2	300.0	301.0	309.0	309.4	310.6	312.2	330.1	331.2
New Orleans	244.7	245.1	248.3	249.9	256.3	259.8	267.6	270.6	271.6	273.9	274.2	285.5	287.1	296.6	297.5
New York	270.8	276.0	282.3	289.4	297.1	304.0	313.6	315.9	317.0	320.6	321.4	324.9	326.6	343.4	344.5
Philadelphia	265.4	265.2	271.2	275.2	280.8	286.6	293.7	293.3	294.2	300.9	301.7	304.6	306.2	320.0	321.0
Pittsburgh	250.9	251.8	258.2	263.8	267.0	271.7	275.0	293.0	284.2	291.3	293.8	297.0	298.6	310.0	311.0
St. Louis	256.9	255.4	263.4	272.1	280.9	288.3	293.2	293.7	294.7	303.6	304.4	306.8	308.3	323.7	324.7
San Francisco	337.4	343.3	352.4	365.4	368.6	386.0	390.8	396.4	398.0	401.9	402.9	415.6	417.5	439.9	441.1
Seattle	247.0	252.5	260.6	266.6	268.9	275.0	283.5	286.2	287.2	291.6	292.2	296.1	297.5	316.8	317.8

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



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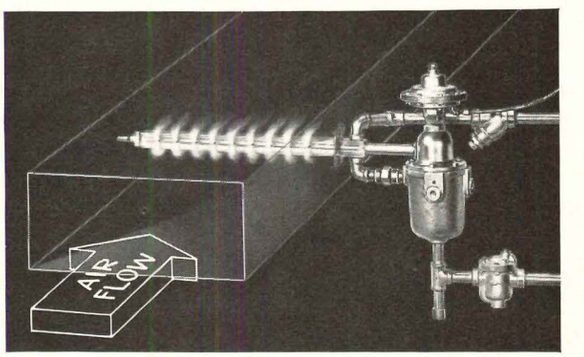

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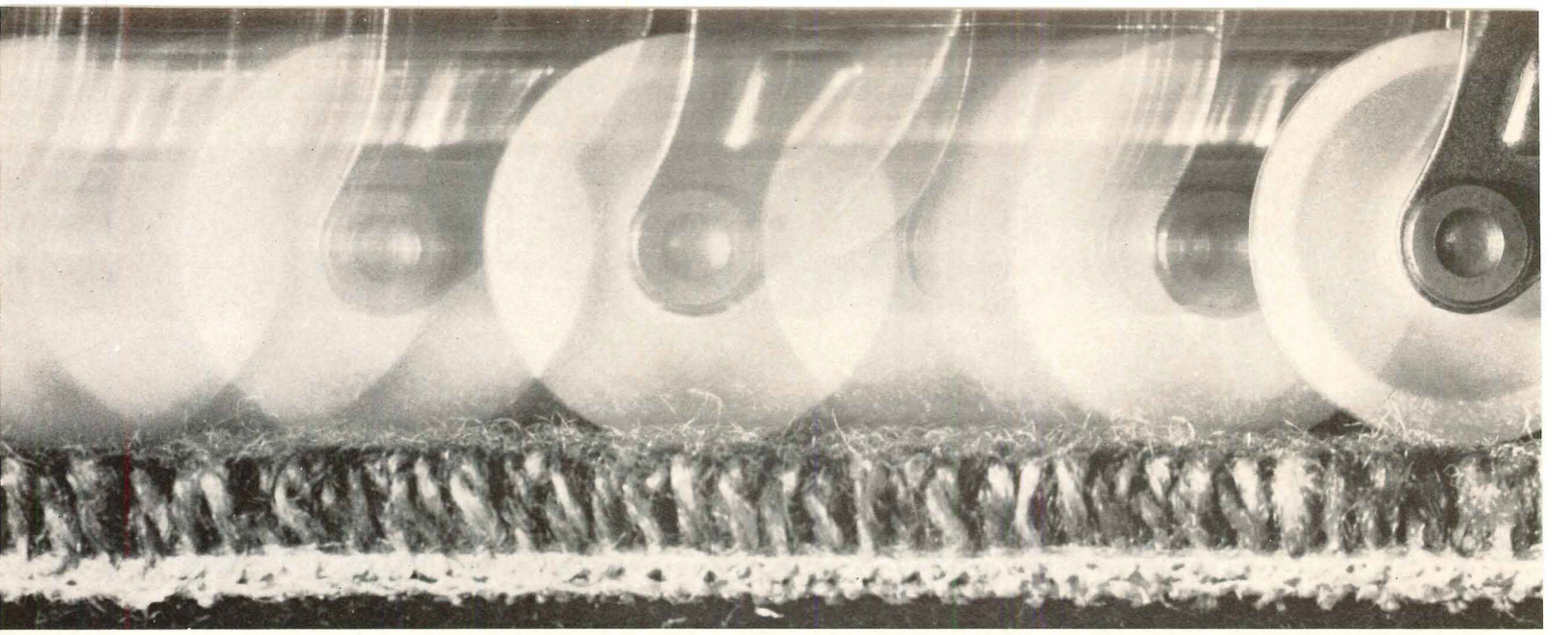

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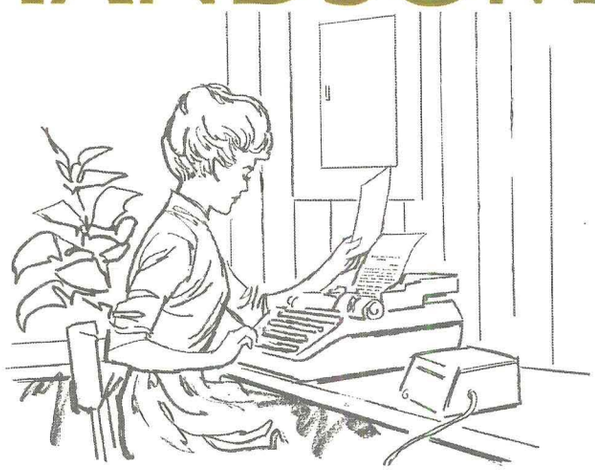

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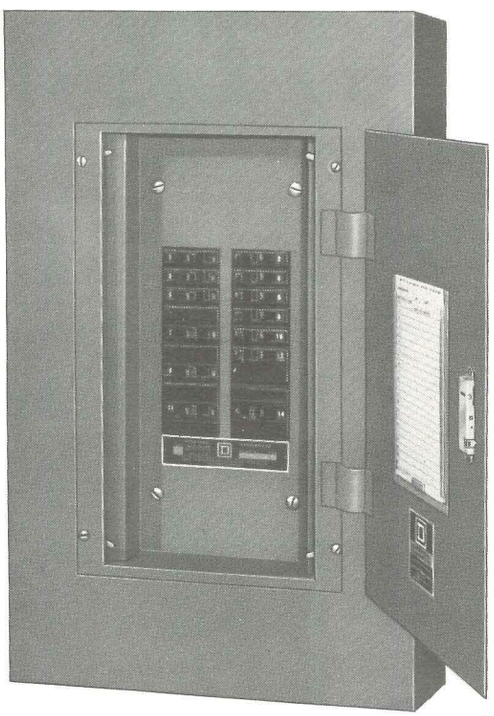

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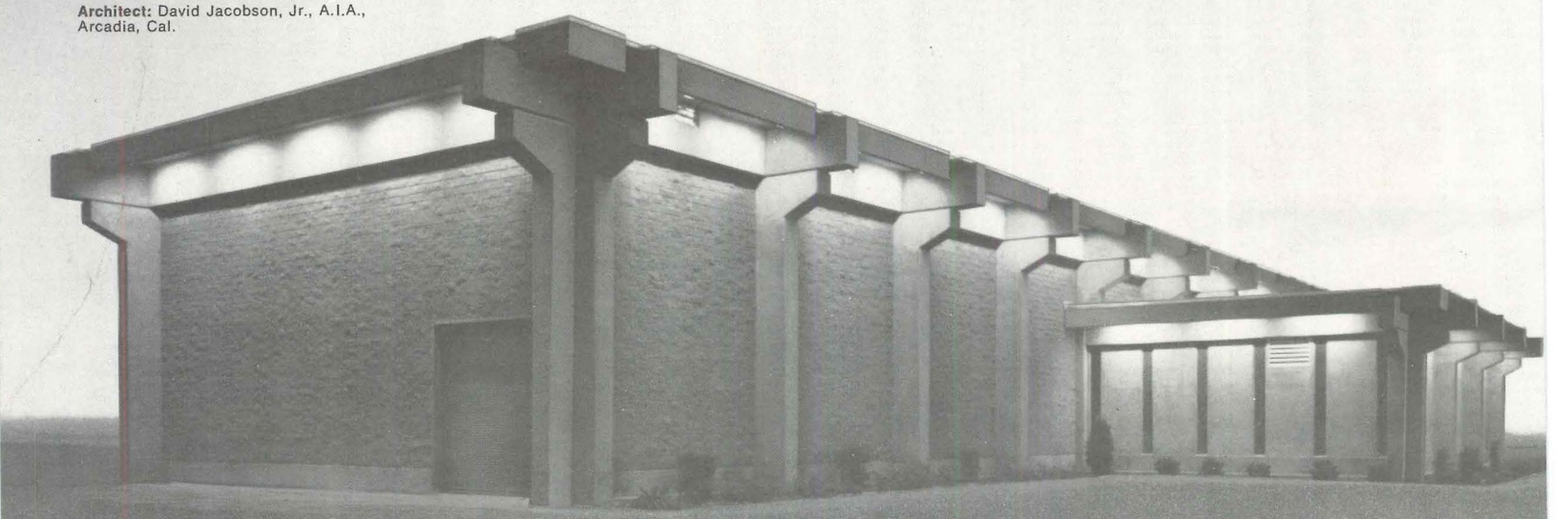

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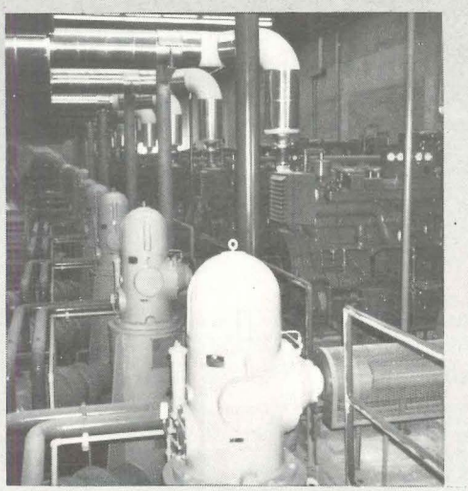

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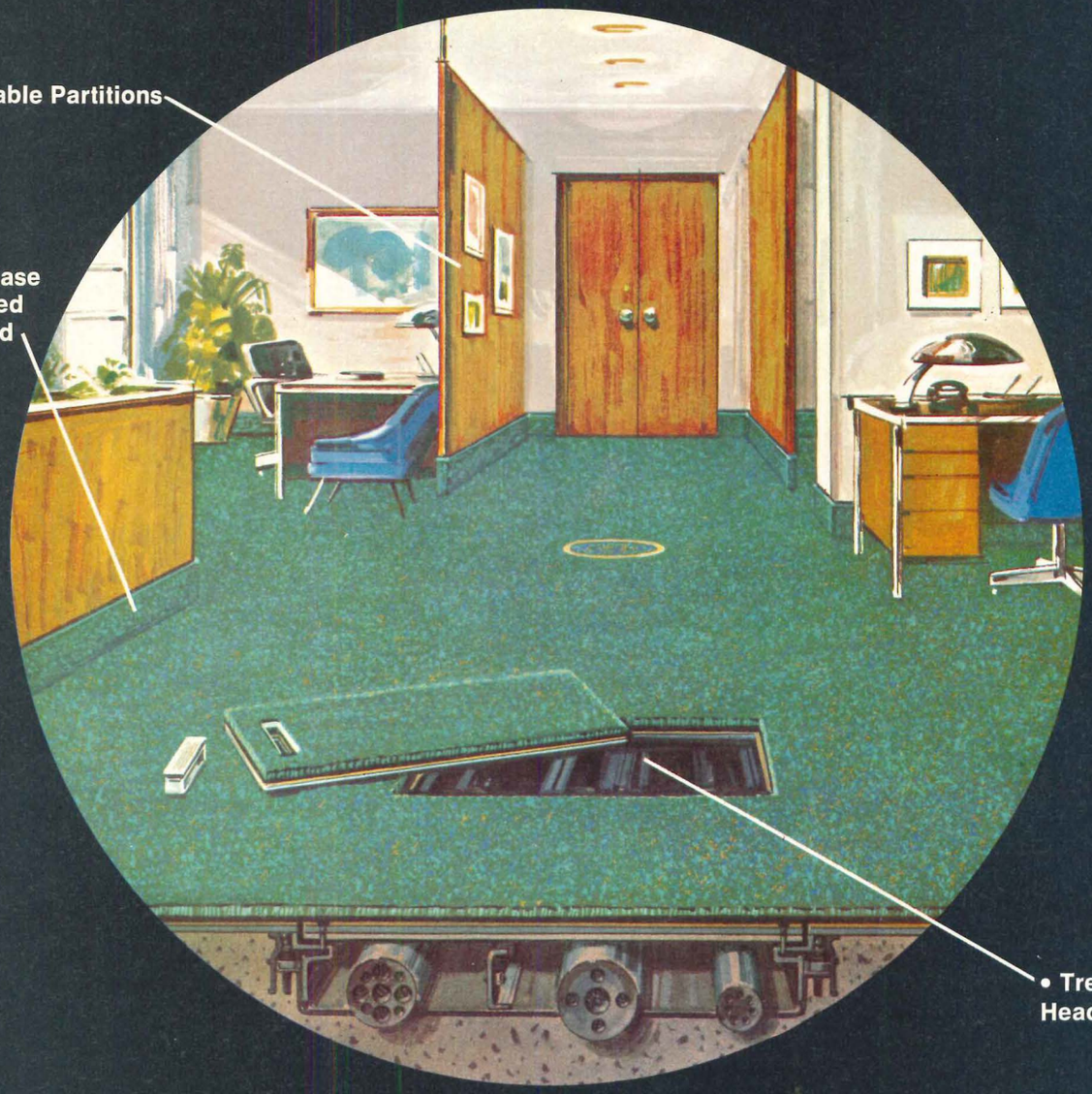

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For Hartford's 60 Washington Street

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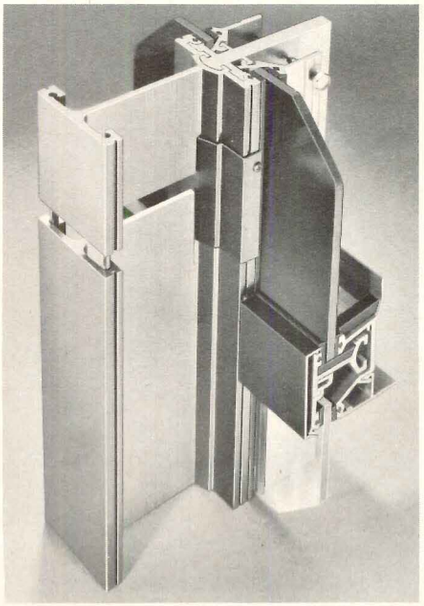

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CROUSE-HINDS

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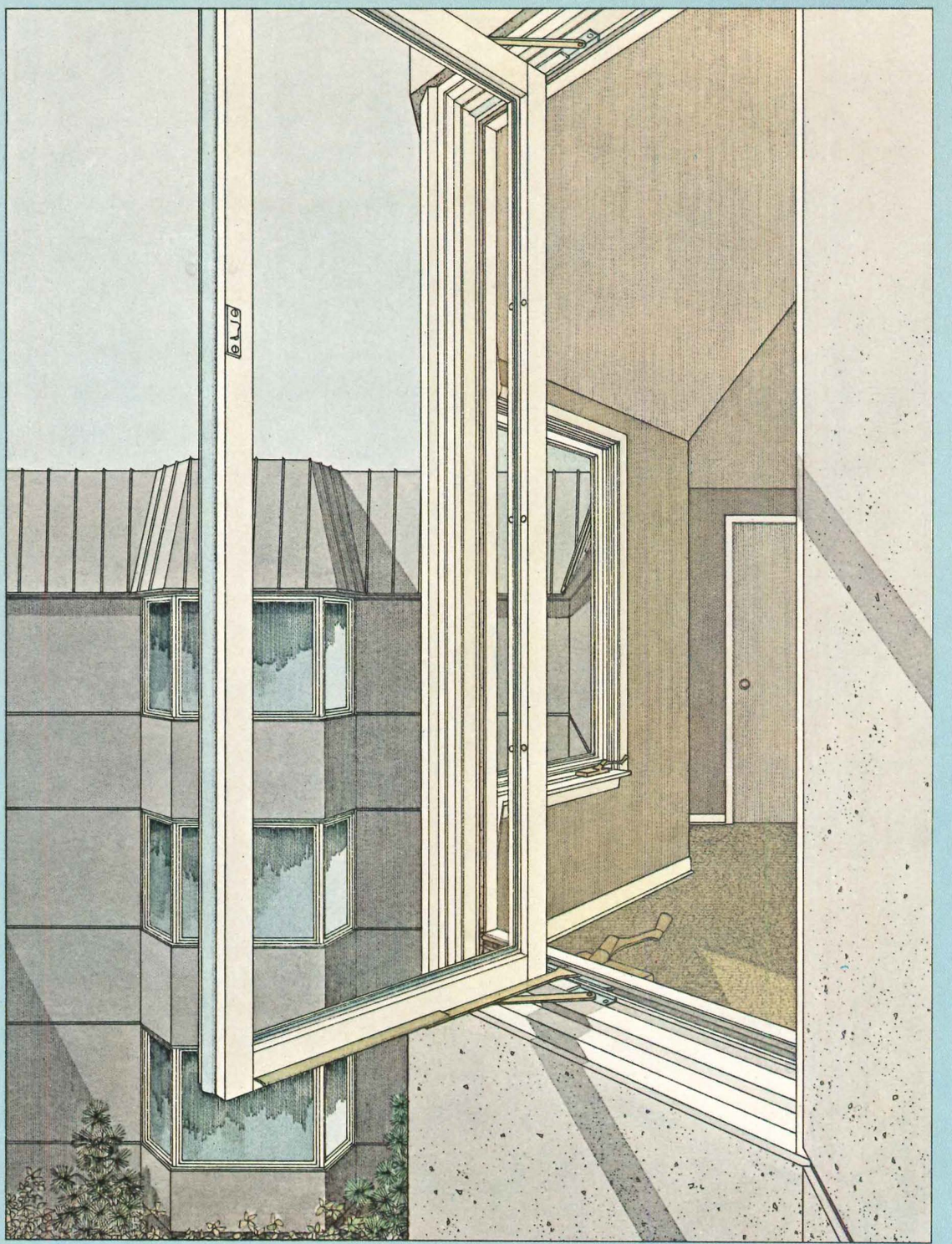

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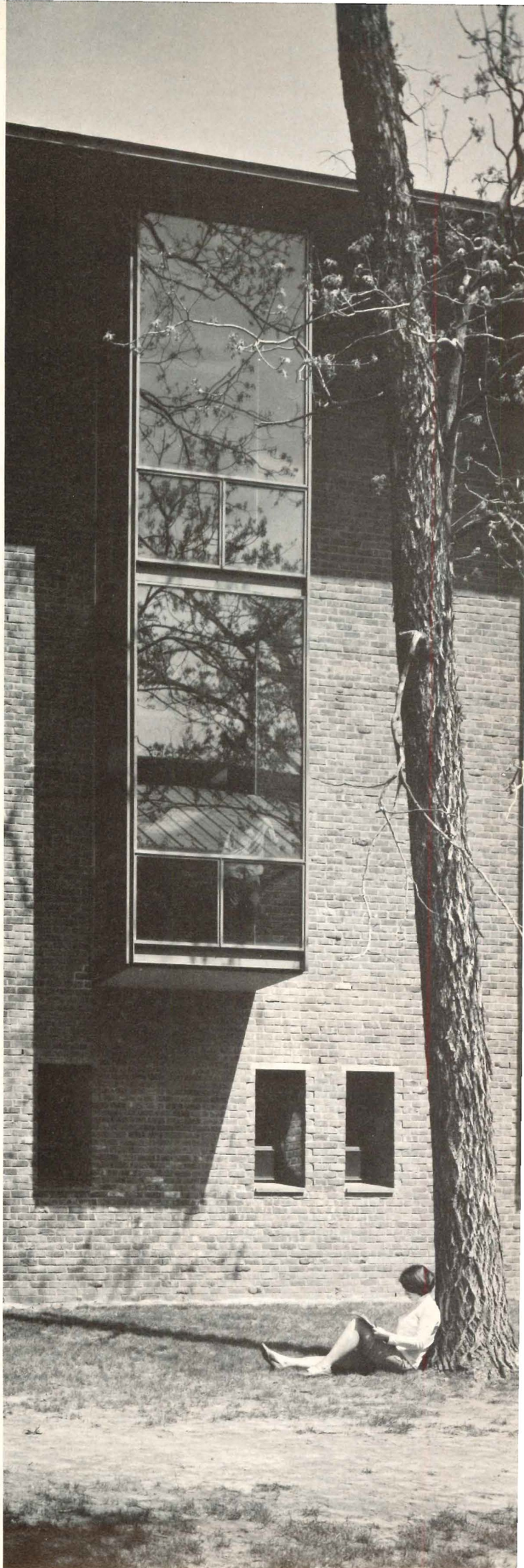
ARCHITECTURAL RECORD
MARCH 1970

SKIDMORE COLLEGE

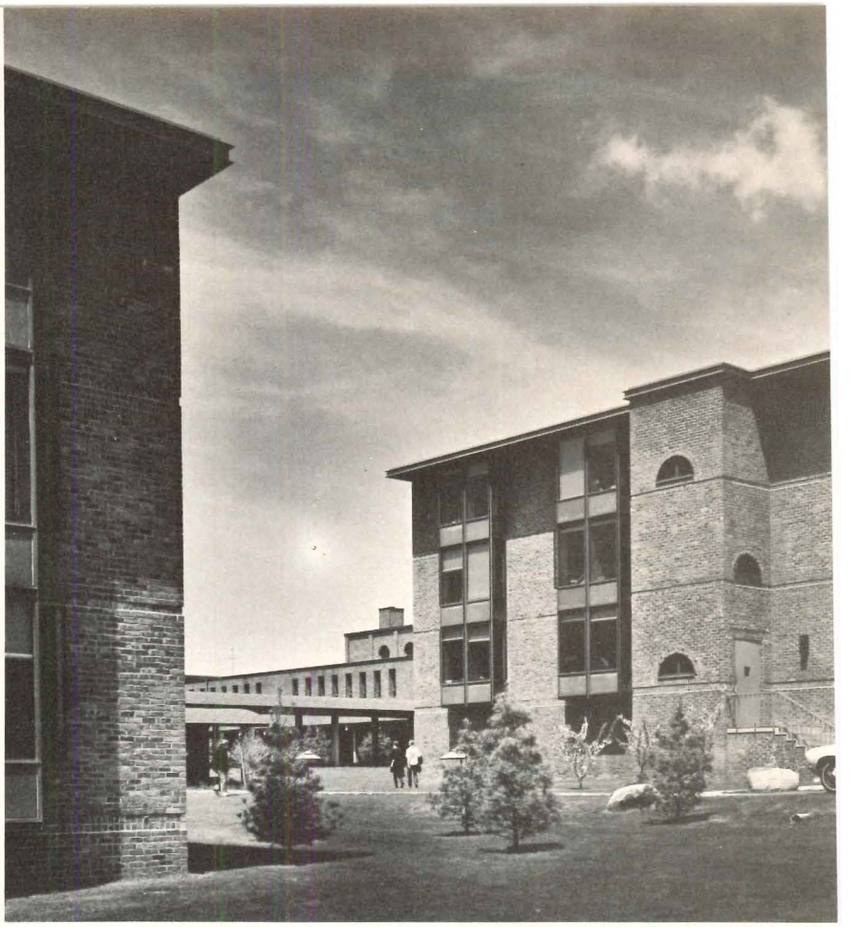
Given a virtually building-free site of a thousand acres, architects Ford, Powell & Carson and planner S. B. Zisman were commissioned to design a new campus for Skidmore College in Saratoga Springs, New York. The school—including an enthusiastic student body—seized the opportunity to examine exactly what they wanted in the way of a new home. The answer: something of the architectural flavor of the gracious Victorian Age buildings they were leaving behind, and an emphasis everywhere on maximum flexibility.

The old campus of Skidmore, a private women's college, is a collection of over eighty buildings near the center of town. It consists mainly of converted mansions, stables, summer hotels and carriage houses dating from the turn of the century—the town's heyday. Charming in themselves, they became increasingly inadequate to house a school which wanted to expand and to utilize the latest in educational equipment. In addition, a major street, leading to a new interstate highway, bisected the campus, and the path of the highway itself had resulted in the loss of a major portion of the college's athletic fields. Nevertheless, due to a lack of alternatives, the trustees had decided to rebuild, and the first stage of that operation had actually commenced, when a donor presented them with Woodlawn Park. The 1,000-acre site, about two miles from the existing campus, had once been a public park and before that, a private estate.

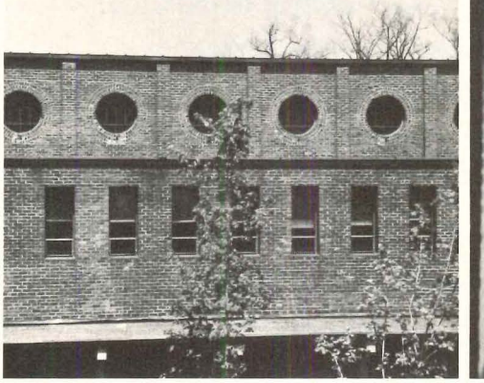
To help the school decide whether to move or not, planner Sam Zisman undertook an intensive year-long study, in part financed by Educational Facilities Laboratories, of four colleges that had built entire new cam-

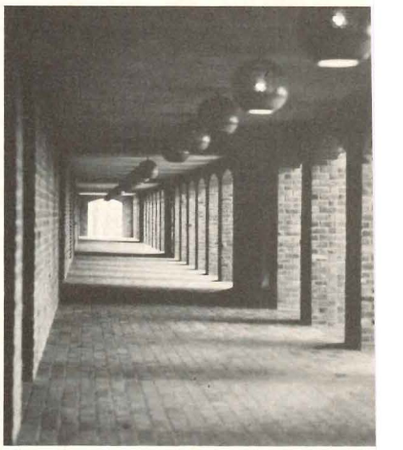


Joseph W. Molitor photos



BLENDING ONE CENTURY WITH ANOTHER





19-century bay windows, adapted from those common to the townhouses of the old campus, have been squared off and rendered with a modern attention to detailing. The oculus as a window form reappears untouched, while the gently arched wide span windows of stately industrial buildings are transformed into the sheltering arcade of the science center. A special brick, composed of a mixture of burned and overburned clay, resulting in a rust-red color and deepened texture, like the brick used in the area in the 1900's, was developed and used throughout the new campus.

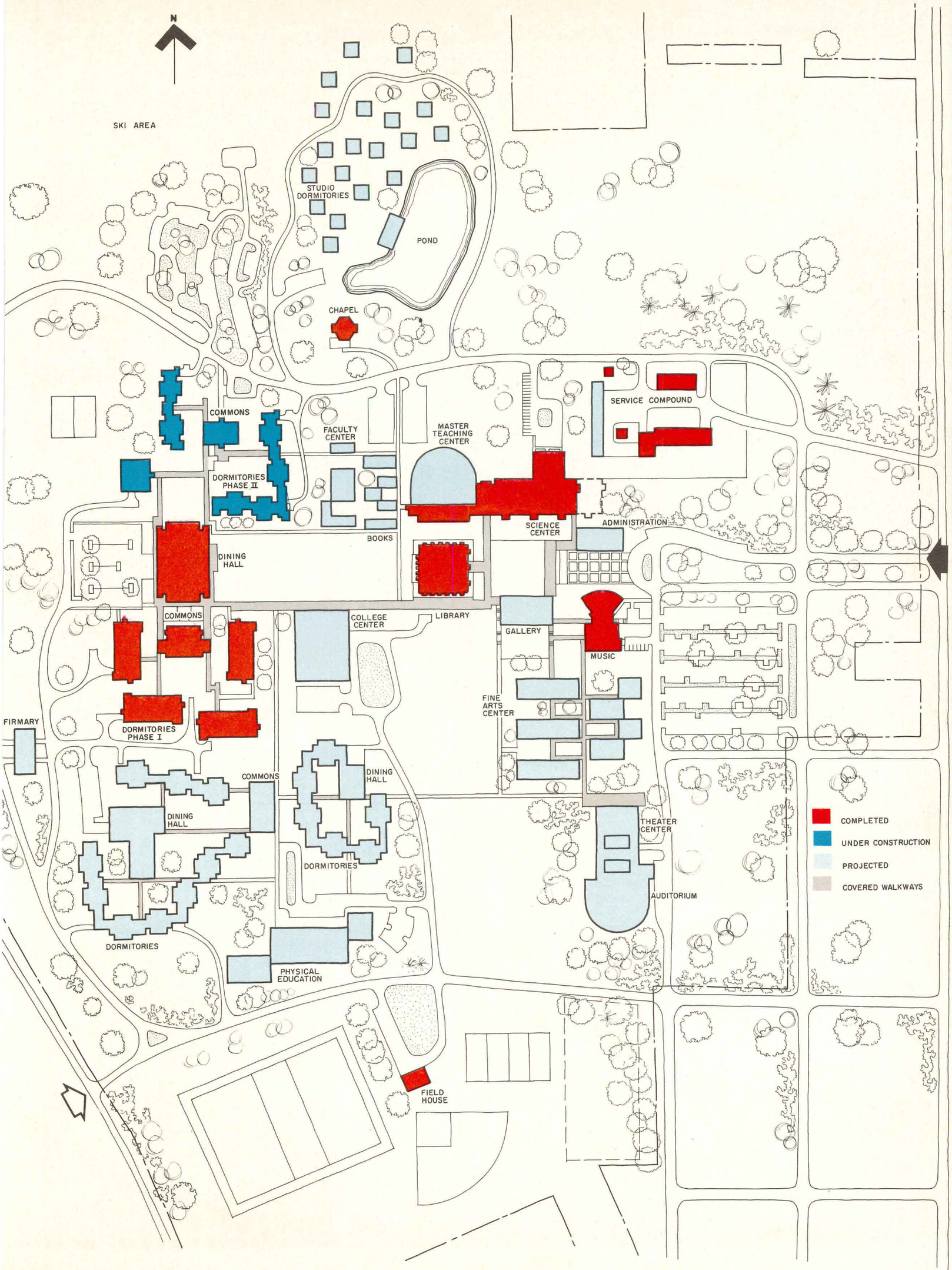
SKIDMORE

puses. One of these was Trinity College in San Antonio, on which Zisman had worked together with the present architects, then known as O'Neil Ford & Associates. Meanwhile the Skidmore faculty conducted a study of its educational program—specifically in terms of the opportunities to meet change that a new campus might offer. A third major study centered on the characteristics of the new site, and the cost of a new campus. The estimates for a new campus were about the same as those projected for the renovation of the old.

It is particularly interesting to note that the student body, as well as faculty, administration and alumnae, took part in the studies and discussions as to whether to move.

It was decided to do so, and the architects and planner were commissioned to design a master plan and building time schedule for the new site, which would be used in conjunction with the old campus as soon as the first buildings were ready, but which would eventually be the school's single home. It was necessary, then, for the first phase of the new campus to work equally as well as the completed plan, although, at minimum, a ten-year interval would be necessary for the completion of the entire project. In the meantime the two campuses must be used in conjuction with one another. Some spaces in the newly completed buildings would be used for purposes different from their eventual ones. Many areas would, for a time, have to be multi-purpose. Such adaptability to changing uses and functions was to be, moreover, one of the prime characteristics of the design as a whole. This is the only way, client and designers agreed, to meet the various changes the modern college curriculum constantly undergoes in order to keep pace with new knowledge, and the latest in educational equipment and theories. In addition, to provide for a proposed eventual enrollment of two thousand girls, space for expansion must be built into the original design, in many different places and forms.

The nature of the land was so conducive to a certain layout of buildings that the master plan substantially incorporates the findings of the original site study. It was early decided to use only the flatter, southernmost part of the land for the various buildings and athletic facilities. The northern section


N
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FIELD HOUSE
COMPLETED
UNDER CONSTRUCTION
PROJECTED
COVERED WALKWAYS

SKIDMORE

(not shown on site plan), rich in a variety of natural areas, is to be left untouched for recreation and refuge. The campus proper was placed as a relatively compact composition on a land bench formation running from east to west through the middle of the southern section. This is composed of a central core of academic facilities—library, master teaching center and the science building—together with a subsection—the fine and performing arts complex—and the administration building. The western half of the area is given over to athletic and student residential facilities. A choice of student living accommodations was felt to be desirable. Thus the townhouse-height dormitories are punctuated by a high-rise tower; and eventually there will be a group of single-occupancy studio-type residences in the woods bordering a pond.

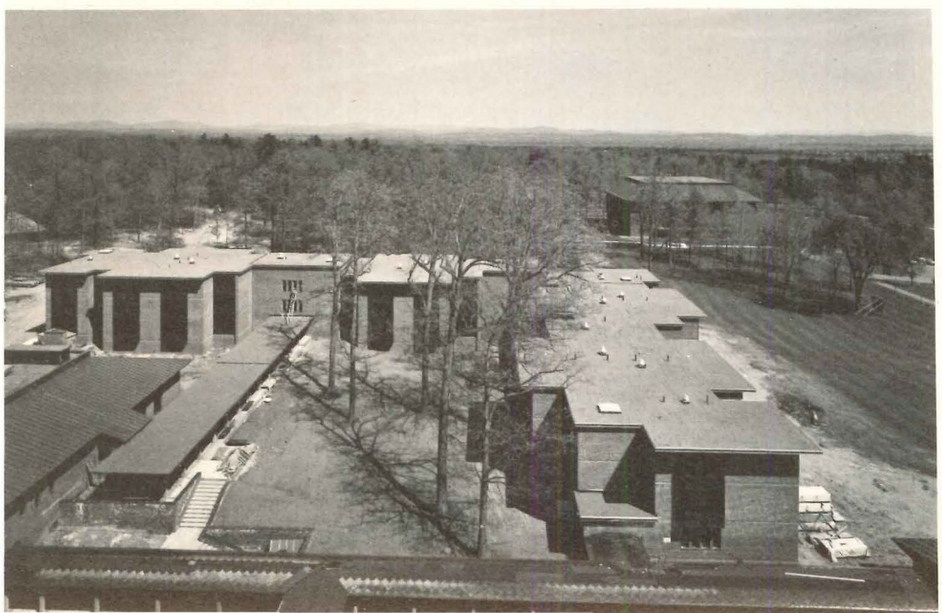
Essentially, the architects and planner strove to create a single building complex. The buildings, sited individually according to the terrain, are for the most part to be linked eventually by a system of covered walkways and arcades. At certain points interior links are made as well, such as the common stairwell for the science building and the classroom wing of the master teaching center. This system will provide a kind of backbone for the campus, connecting the residential areas, college center (student union), library, and arts complex. At the same time anyone is free to use a more informal system; in fact, as the more frequented informal paths become known, it is planned to provide some sort of surface treatment, in the form of blocks or tiles which can be removed and reused if a particular path is abandoned for another route.

The siting of the buildings and passageways creates a system of varied open spaces, counterpointed, as are the buildings, one against the other. The buildings and the intervening exterior spaces share in the abundant views of the surrounding countryside. The exterior design of the buildings has been quite consciously muted in order that the variety of nature should assume a large and definite role in contributing to the environment.

SKIDMORE COLLEGE, Saratoga Springs, New York. Architects: *Ford, Powell & Carson—L. D. Cloud, project architect;* planning consultant: *S. B. Zisman;* engineers: *Feigenspan & Pinnell (structural), D. W. Torry & Associates (mechanical & electrical).*

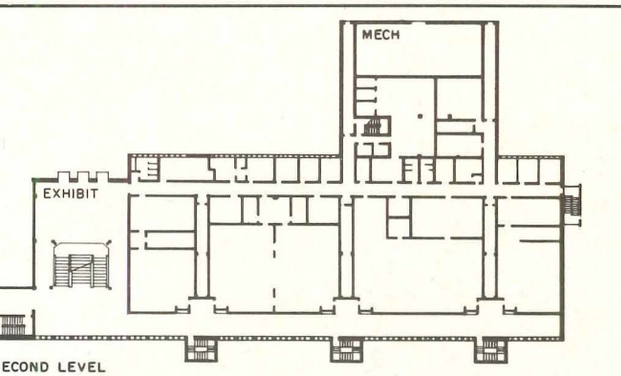
A SERIES OF CONNECTED BUILDINGS, EACH OPEN TO THE COUNTRYSIDE

A complete system of covered walkways and arcades, with heat coils imbedded in the pavement, will eventually link most of the buildings shown on the master plan, the first two stages of which are now complete. Above, library and science center of phase 1; below, the low- and high-rise buildings of the phase 2 dormitories, shown under construction. On the roof of the dormitory tower is a student lounge surrounded by a terrace with commanding views of the countryside. The area is heavily wooded and the most important stands of trees in the building area were carefully preserved as evidenced in the dormitory courtyard, left.

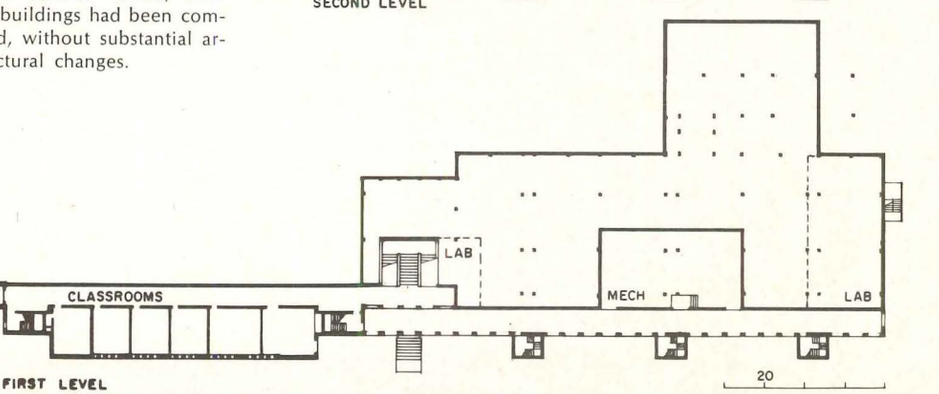


A CLASSROOM BUILDING THAT WILL GROW

The classroom hall, containing eleven conventional-type classrooms, will ultimately be a part of the master teaching center. It is connected with the science center via a joint stairwell, the generous landings of which are used for exhibitions that tie in with the science curriculum. Illustrative of built-in flexibility is the fact that a language lab was added to the classroom hall, a geology lab and electron microscope room to the science center, after both buildings had been completed, without substantial architectural changes.

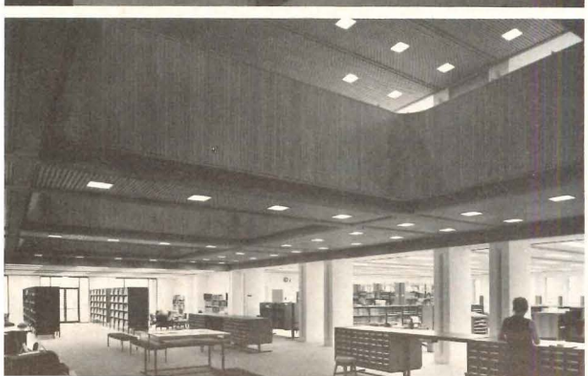


SECOND LEVEL

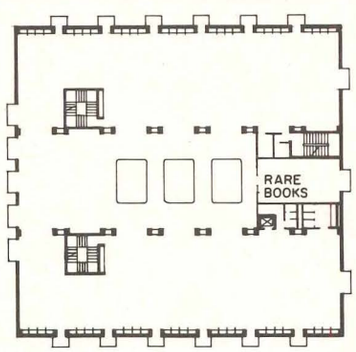


FIRST LEVEL

A LIBRARY PLANNED FOR MAXIMUM ADAPTABILITY



The library, designed to house three times the number of volumes in the college's current collection, also provides seating for 600 students, including 216 individual study carrels. Essentially the second and third floors are open plans with a maximum of flexible space surrounding the more permanent facilities. Here, as in other buildings, precast, prestressed double T-beams are the key element in the structural system, permitting large unobstructed spaces with the maximum potential for various and changing uses. Since the opening of the building, a computer classroom, linked to similar facilities on other campuses, has been installed on the fourth floor located within the mansard roof.



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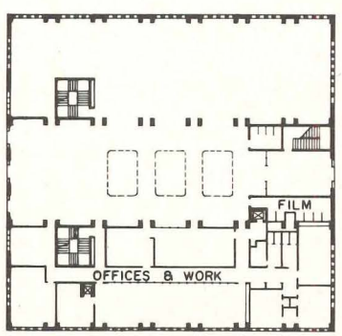
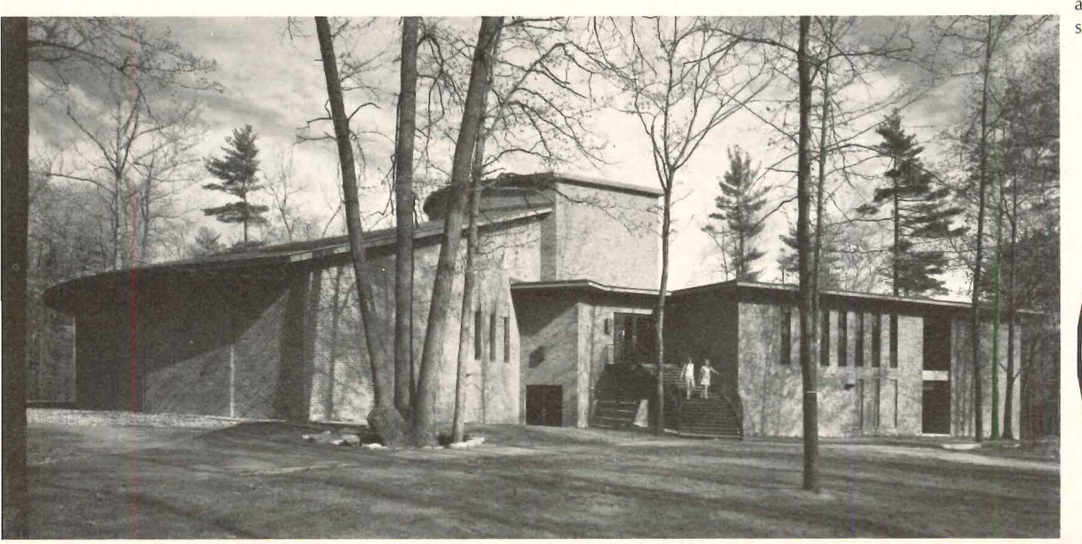
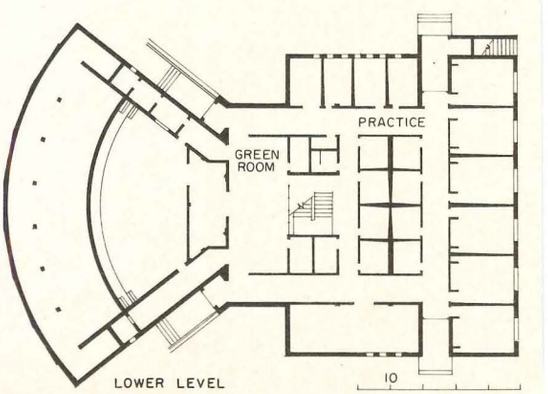


GROUND LEVEL

A RECITAL HALL FOR STUDENTS, FACULTY AND COMMUNITY

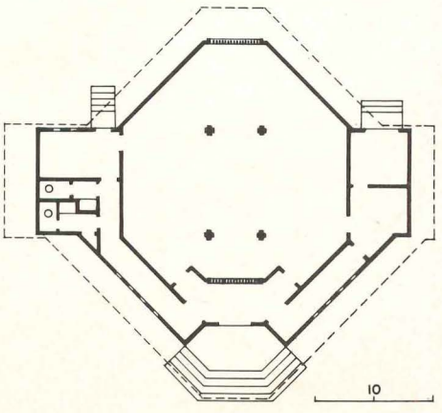
The music building is the first building of the arts complex to be built to date. A two-story-high lobby, opposite page, serves as connecting link between the 242-seat recital hall and a wing housing practice and classrooms, offices and studios.





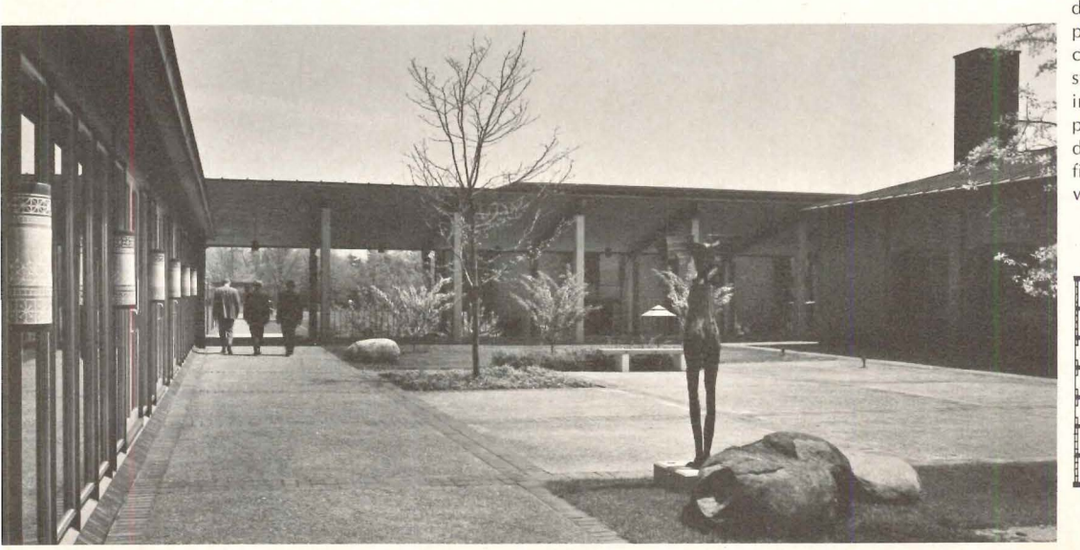
A RUSTIC MEMORIAL CHAPEL

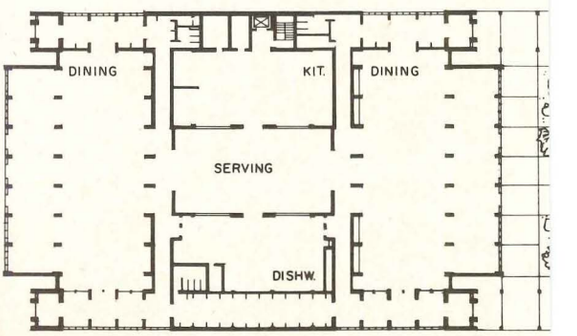
A small chapel of rough-sawn board and batten construction on a base of weathered field-stone collected from the site provides a contrast to the other large brick buildings. Overt religious symbolism was avoided so that the building could be used by various denominations.



DINING AREAS WITH A RELAXED, INFORMAL AIR

The dining hall is actually two separate but virtually identical dining rooms separated by a central area containing the kitchen, reception and coat-room areas. The building accommodates a thousand students, thereby serving both phase 1 and phase 2 residential complexes. A covered walkway system connects all the buildings in each residential complex and continues on to the dining hall. Ceramic lighting fixtures, carpeting and chairs were all architect-designed.

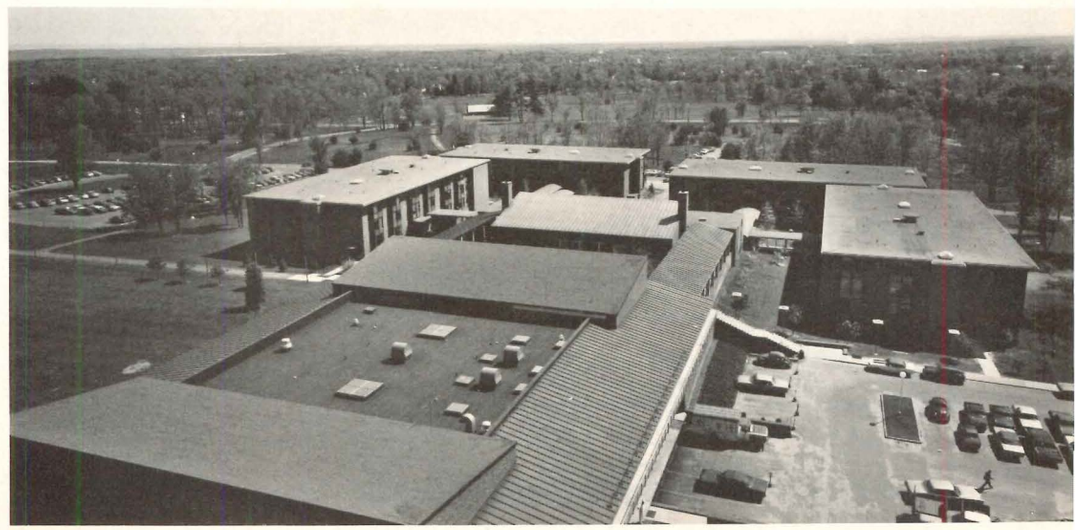


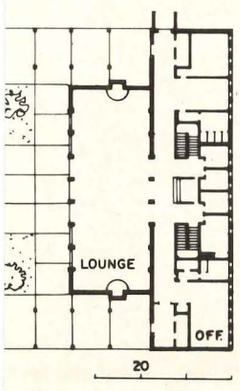


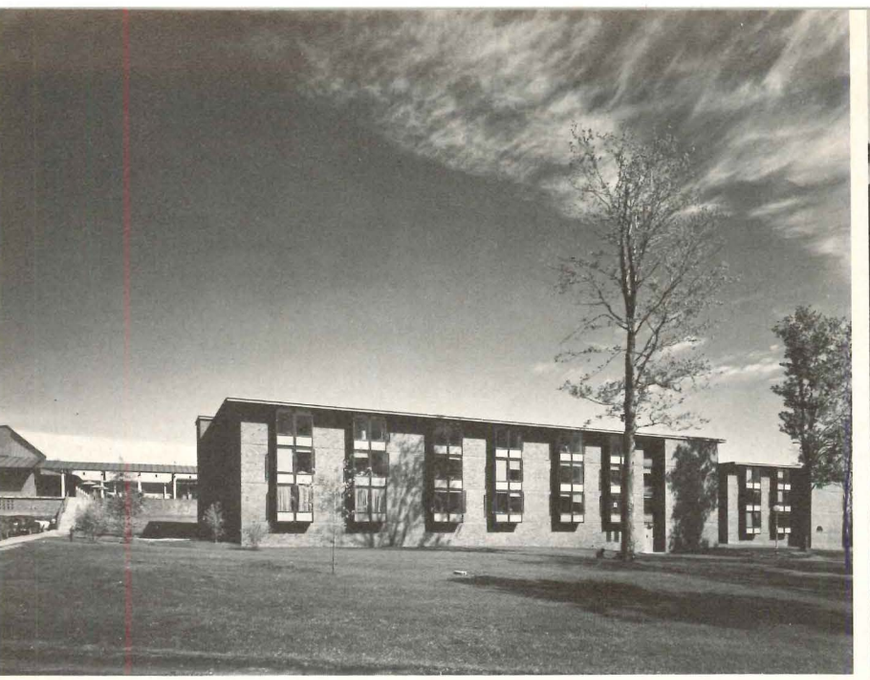
FIRST LEVEL

A PLACE TO RELAX OR ENTERTAIN

The commons building serves as the main hub of the dormitory complex, to which it is connected by a series of walkways, and provides lounge space for the residents. The one wall, of masonry arches and large areas of glass, opens onto a small landscaped patio between the commons building and the dining hall.

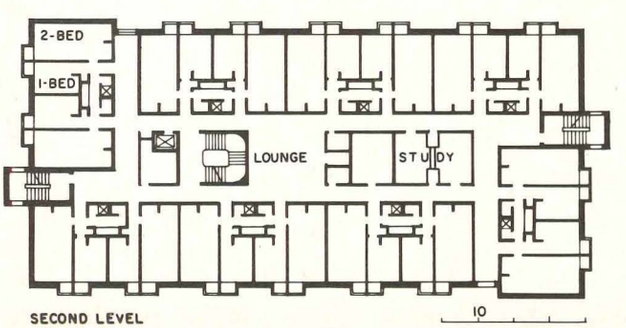




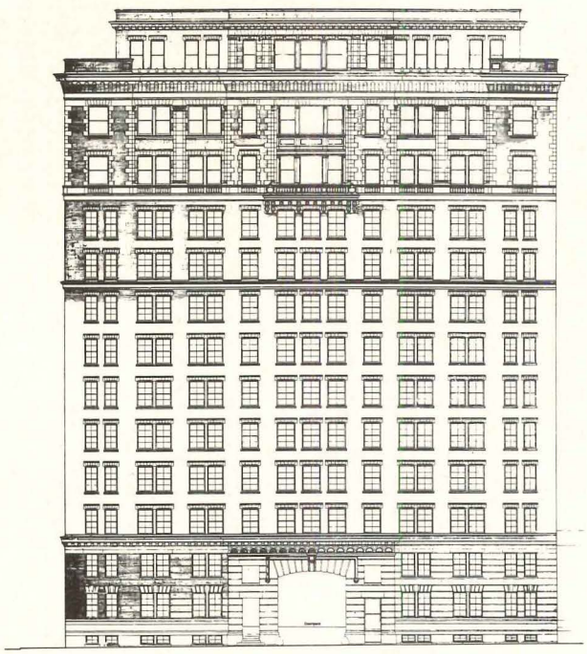


A ROOM WITH A VIEW

Stacked series of bay windows, which appear from the exterior as single units, actually are individual window seats in separate rooms. A suite consists of two double rooms and two single rooms clustered around a private bath. There is a pajama lounge on each floor, and a public lounge off the first floor entry area.

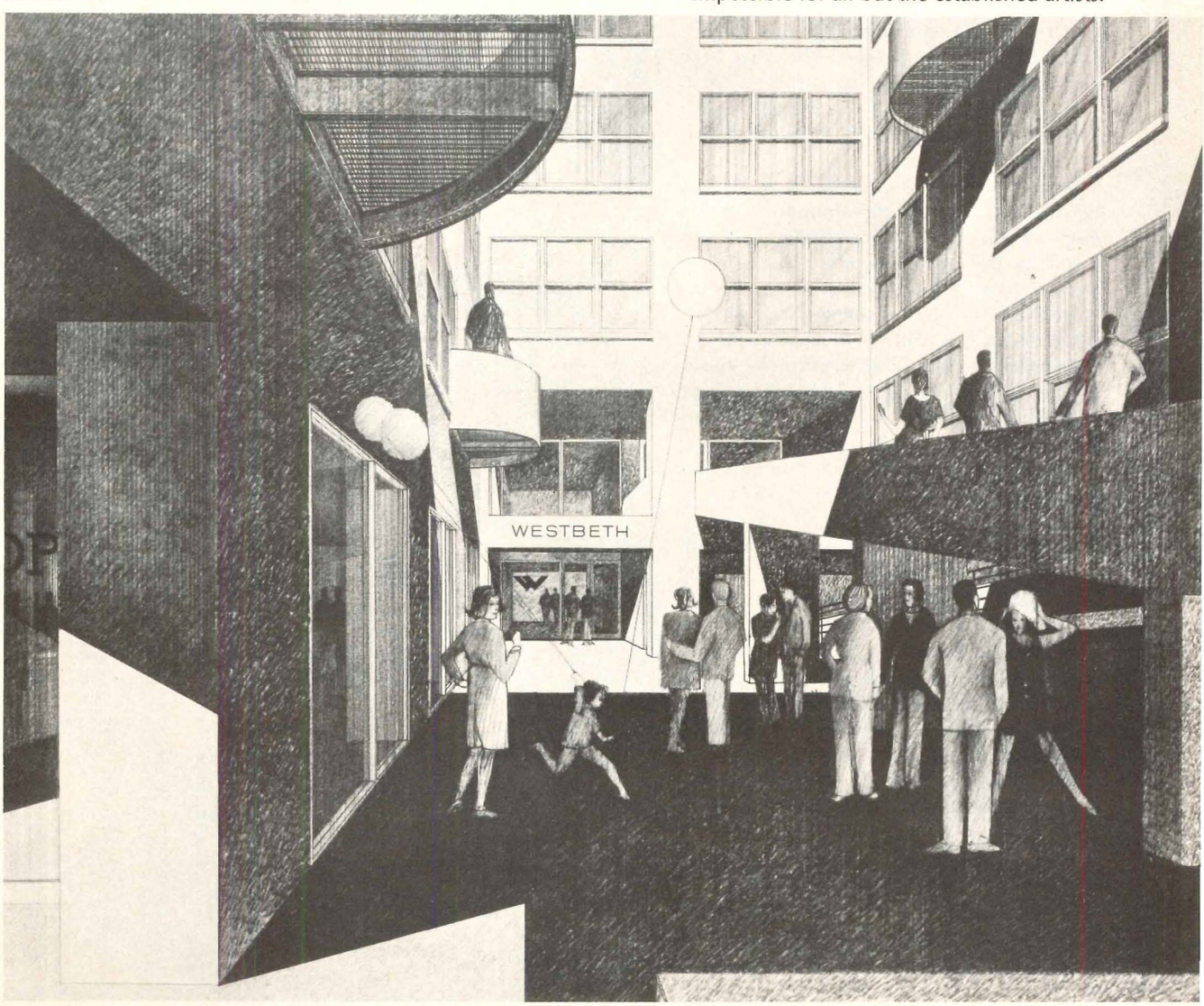


Westbeth's rehabilitation project: a clue to improving our cities



Westbeth Artists Housing is one of the few recent projects to provide additional housing units in New York City, and one of the largest and most complex rehabilitation projects in the country. Westbeth can be called a generative experiment in both the financing and physical reclamation problems which occur in rehabilitating an existing structure for residential use. Designed by Richard Meier, the renovation has turned a square block of old buildings in Greenwich Village (formerly used as laboratories and warehouses) into some 384 new apartments for working artists and their families. Painters and sculptors are eligible to live there, as well as photographers, dancers, composers, actors, musicians, singers, writers and, yes, architects too.

Before the present site in Greenwich Village became available, the J. D. Kaplan Fund and the National Council on the Arts had been searching for several years for the proper buildings to house a large-scale living and working complex for artists. They recognized that a growing problem among New York artists was trying to maintain both living quarters and a studio; increasingly higher rents make such arrangements impossible for all but the established artists.



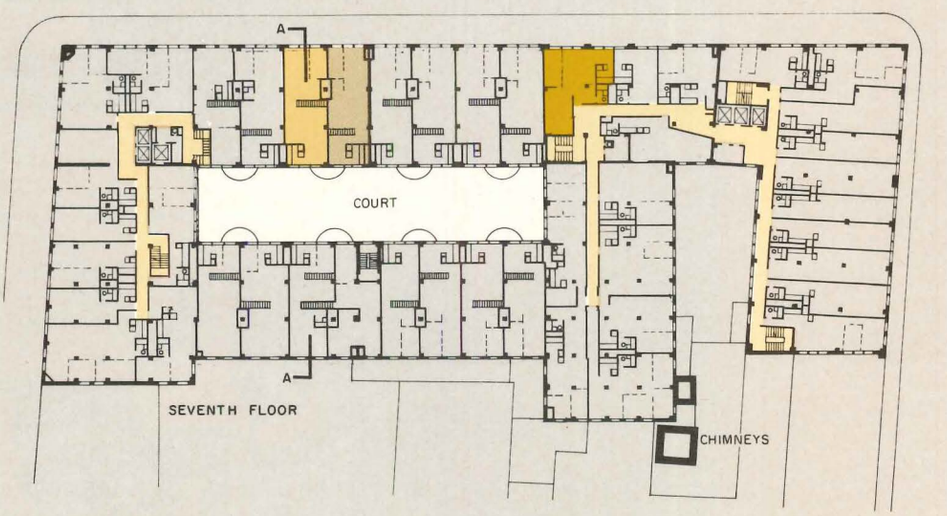
After locating the present site, both the National Council and the Kaplan Fund provided interim financing and seed money grants of $750,000 to begin Westbeth as a non-profit venture. The project is ultimately being financed under the Federal 221(d)(3) middle income housing program—total cost of land acquisition and renovation is about $10 million.

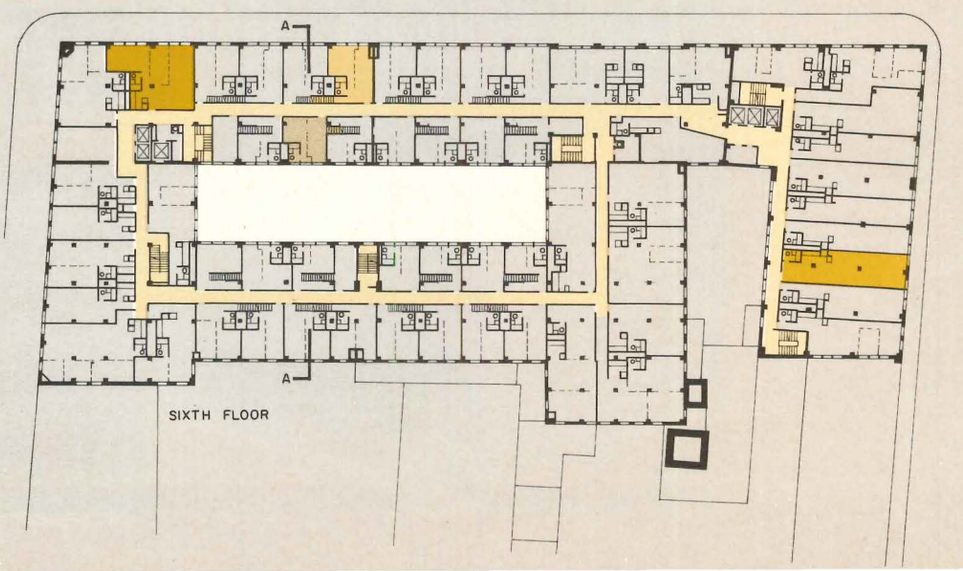
The site is a square block in the West Village, bounded by the West Side Highway, Bank, Bethune and Washington Streets. The main buildings on the site were erected between 1898 and 1920, and were originally designed to house laboratory facilities for Bell Telephone Company; all have high-ceiling rooms, large factory-type windows, thick masonry walls, poured concrete floors, and fireproof construction throughout.

Meier's toughest problem was the transformation of this rather chaotic block of buildings into some sort of identifiable whole. The strongest existing feature in the complex was the central air court of the laboratory facilities, roofed over and used as a truck loading area by Bell. Meier made this relatively narrow shaft the unifying spatial feature, connecting it at the ground with three of the peripheral streets and to the small on-site park facing Bank Street (see plans, right). The design of the park, the cleaning and painting of the existing exteriors, and the reglazing of some existing windows is the only new work on most of the exterior of the project. The new balconies (rendering, page 103) which project into the central court shaft fulfill city building regulations, providing two means of egress from apartments.

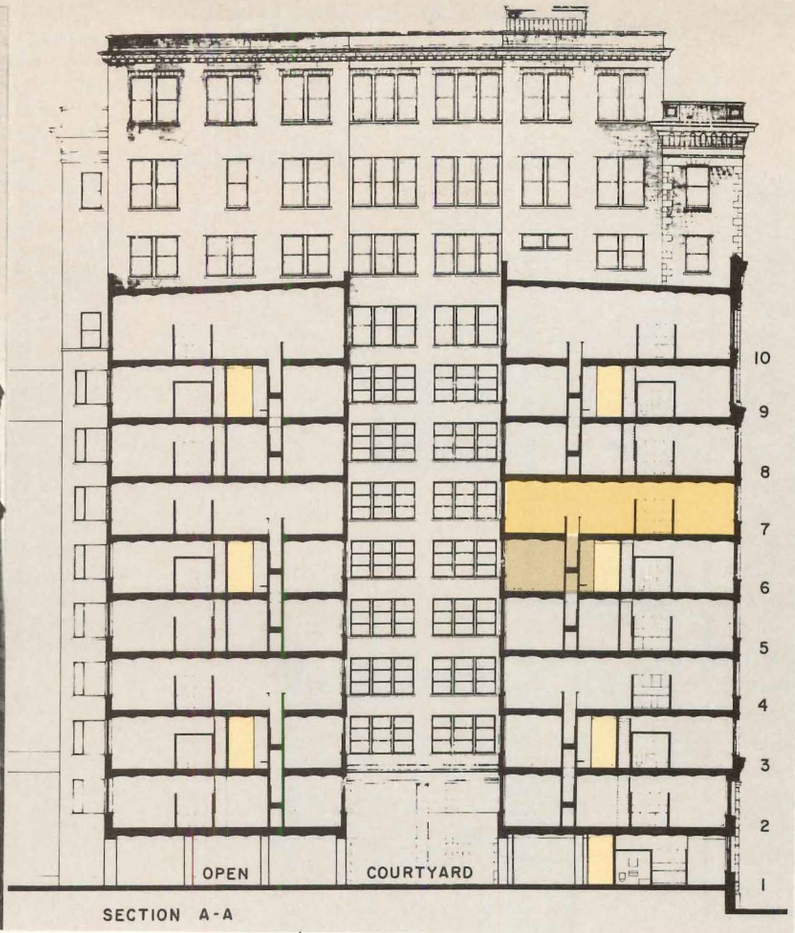
Inside, Meier's manipulation of space has ingeniously increased the amount of apartment area available by reducing circulation areas. In the ten-floor center portion of the complex (section, above right) interior corridors have been eliminated on all but three floors—circulation to apartments in this section of the building facing the court well occurs on floors 3, 6 and 9 only. Apartments here are two-level units; the first or entry level on the corridor floor is relatively small, with a stair leading either up or down (depending on the apartment) to the main level, which runs clear through what used to be the old corridors, from window wall to window wall, some 50 feet—compare floor plan six with floor plan seven, right.

People are moving into Westbeth now, and occupancy will be complete by mid-March. In rehabilitating old buildings, instead of tearing down and starting over, and in the act of claiming apartments from commercial space, Westbeth offers some useful clues about possible ways of improving cities throughout the country.



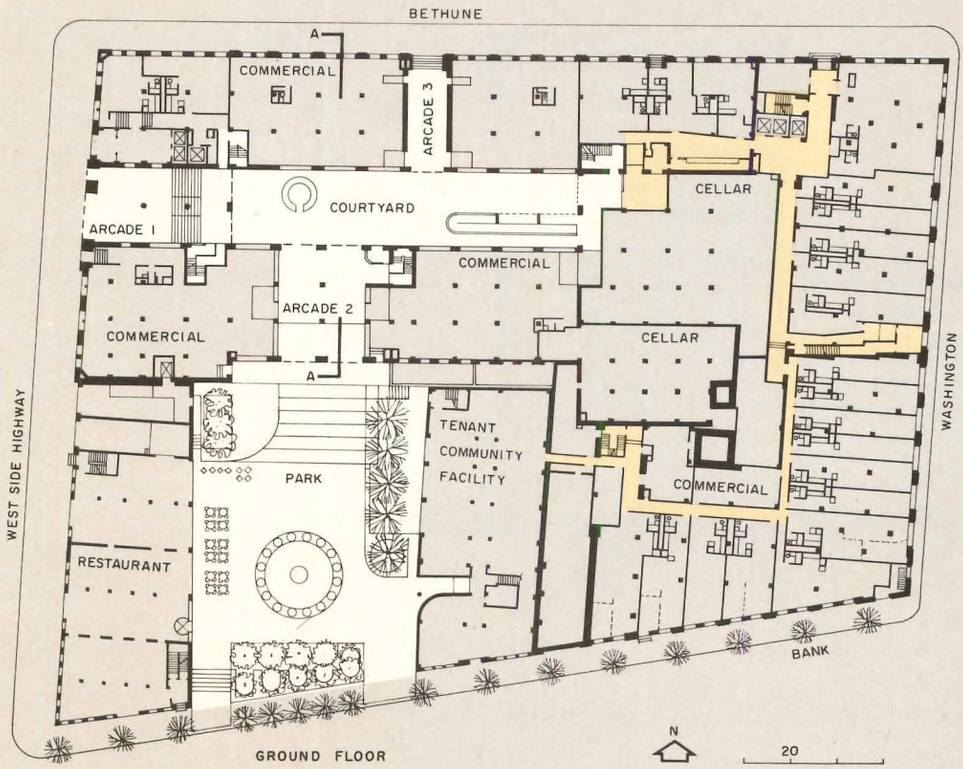


WESTBETH ARTISTS HOUSING, New York City. Architect: *Richard Meier—Gerald Gurland and Carl Meinhardt, associates; Murray Emslie, project architect; John Chimera, field representative;* mechanical engineers: *Wald & Zigas;* structural engineers: *Felcher-Atlas Associates;* contractor: *Graphic-Starrett Company.*



SECTION A-A

At left is a photograph of the old Bell Telephone facilities. The facade shown here faces south and Bank Street, while the elevation drawing on page 103 shows the facade which faces west. (The two central large chimneys in the photo at left correspond to the twin chimneys shown in heavy black on the three floor plans below.) The ground floor has a bank of apartments along Washington Street, but a large portion of its area is taken up by spaces for small commercial shops, a large restaurant, a community hall, and the on-site park (see rendering, below). The open courtyard is connected to the park by an arcade at ground level, and has a new circulation ramp within it leading to the second floor (rendering, page 103). Floor plan six (below, left) is one of the three floors on which a complete corridor loop occurs around the center portion of the complex. The two apartments with their entry floors shown shaded on the 6th-floor plan are connected by stairs to their larger "floor through" second levels—one on the 7th floor (see plan), one on the 5th floor. In neither case is the "floor through" level directly above or below the entry—rather the stairs lead to the adjacent "module." The apartments shown shaded on these pages correspond to the larger detailed floor plans on page 106. The section at left shows the corridors on floors three, six and nine, plus those portions of the shaded apartments through which the section is cut. On floor plans 6 and 7 all interior public circulation spaces—corridors, lobbies, stair wells, and elevators—are shaded, illustrating how exceptionally small an area in the scheme these spaces occupy. Besides community ground-floor facilities, large community studio spaces are interspersed throughout the complex, and there is an 800-seat theater on the 11th floor.



GROUND FLOOR

- INTERIOR CIRCULATION
- EXTERIOR GALLERIES & COURTS
- TYPICAL TWO BEDROOM DUPLEX
- TYPICAL THREE BEDROOM DUPLEX
- TYPICAL EFFICIENCY, ONE & TWO BEDROOM FLATS

Westbeth and flexible code interpretations

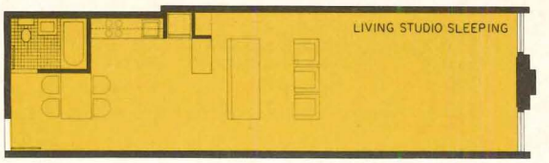
a statement by Richard Meier

The unifying theme at Westbeth was ultimately suggested by an enclosed courtyard, used by the former owners—the Bell Telephone Laboratories—as a loading dock for trucks. With the roof removed, this area could become a courtyard open to the sky while simultaneously providing a focal point for both residential units and commercial shops and galleries. Thus, one of the potentially most constraining features of the site was converted into a strong visual asset that offers important advantages in pedestrian traffic flow and spatial organization of the several buildings.

Creative participation and leadership in the New York and Washington offices by Federal Housing Administration officials were critical in clearing the way for the necessary modification of regulations to permit architectural treatments such as the above, and to allow flexibility in the Westbeth development. New York City Building Department regulations were modified to allow apartments to be designed and built as loft-type spaces. Essentially, changes in the standard FHA regulations, permitted at Westbeth, allow the construction of a minimum number of interior walls within a unit; only the finished bathrooms and kitchen spaces are enclosed. Drawings show dotted lines to indicate room spaces (page 105), but no partitions are erected. Apartments of a size at least equivalent to one-, two- or three-bedroom units with additional working spaces are thus possible. Almost every size apartment thereby provides a large, open loft-type space ideally suited to the individual artist's needs.

Mobile closets will be provided, which will serve as room dividers to satisfy requirements for storage facilities while affording tenants flexibility in use and design of their apartments.

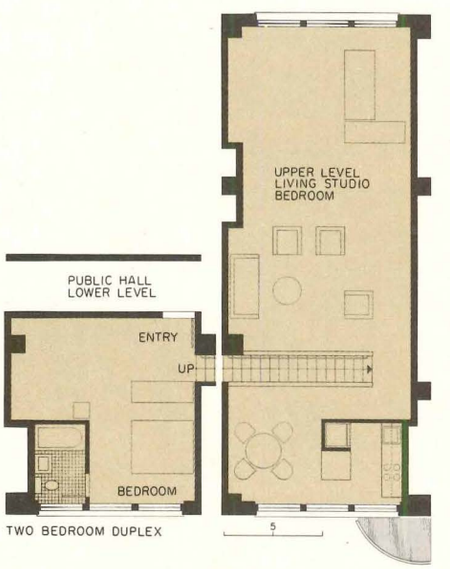
Perhaps most gratifying was the manner in which the various city and Federal agencies responded to our efforts to provide maximum openness and flexibility, both on the site itself and in the creation of the residential and commercial units. A willingness to open new directions in the field of urban rehabilitation was strongly evidenced by all of the agencies involved, and it is entirely clear that without the close cooperation and involvement of the FHA, the City Planning Commission and related bodies, Westbeth would have never advanced beyond the stage of feasibility studies.



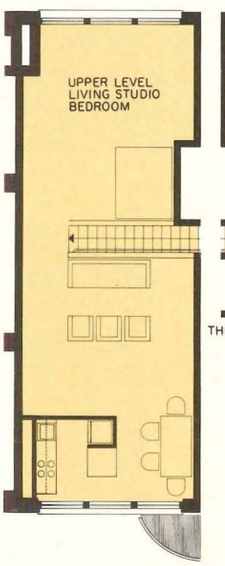
EFFICIENCY

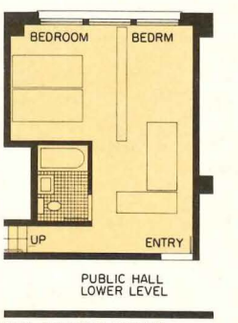
ONE BEDROOM

TWO BEDROOM



TWO BEDROOM DUPLEX





THREE BEDROOM DUPLEX

Apartments in Westbeth range from efficiency units renting from about $110 a month (left) to three-bedroom units on two floors (below) renting for about $190 a month. The floor plans shown here correspond with those shaded in the same tone on the preceding page. All kitchen facilities and the bathrooms are built in as shown here, but the architect has merely suggested furniture arrangements and possible allocations of space. Several movable closet units are provided for each apartment, but no partitions have been erected; occupants may divide their apartments as they wish. All apartments, however, had to be labeled as to the number of bedrooms which could be created in them, for FHA financing purposes. As is usually normal in remodelings such as this, no two units are really alike; in otherwise similar apartments, the architect tried to give more space to those units which did not have a good view or had less window area than others.

Adventures in architectural services on the frontiers of change

Programming, client education, user research, systems analysis and post-design evaluation are five pillars of support for design at Kaplan and McLaughlin's small office.

A primary objective of design excellence confronts—in today's architectural practice—mounting barriers of budget, competition, technical changes and increasingly complex program requirements. Many clients do not themselves fully understand these requirements or are unable to convey them adequately to their architects. Design of new building types, particularly those in research and medical fields, is especially hampered by limited architectural research and a scarcity of successful examples.

Kaplan and McLaughlin is one small (less than 25-man) firm that has recognized these barriers and done something to surmount them. They have committed themselves to an exceptional degree of client-related activity so that the best design obtainable within their considerable scope of basic talent is in fact the end point of supportive processes which allow good design to flourish.

"Good design," says Herbert McLaughlin, "is useful design in the full sense of the word. Useful denotes, in our mind, not only the functional adequacy of a building, but also its capacity to enhance the enjoyment of both its occupants and its beholders.

"This often means that a useful building is innovative. Conservative wisdom would have it that most innovative buildings do not function well, having too many 'bugs' in their systems. However, in the contradictory mass culture through which we push our way, innovation is certainly necessary to deal with rapid change."

Response to change has been one of the outstanding characteristics of the Kaplan and McLaughlin firm since its inception as a two-man office in January, 1964. The two principals, Ellis Kaplan, now 44, and Herbert McLaughlin, now 35, had been working as designers in the office of another architect. The emergence of new building types, in particular community mental health centers, engaged their interest and Kaplan set up a one-man office to implement and describe some of the emerging criteria under development by the National Institute of Mental Health. When the Marin County Community Mental Health Center (described on later pages) developed as a commission, the two decided to execute it together as a firm. The work increased until today the staff averages 18 to 25 people, most of whom are under 40.

Now good design has five supports

The adventures of Kaplan and McLaughlin on the frontiers of change soon brought realization that genuinely architectural involvement would require supportive activities in addition to those conventionally associated with extended services. The questions confronting them in new pre-design problems had no ready method of solution by conventional consultation and coordination processes. There was, in fact, a need for creative architectural participation in developing program concepts which clients themselves agreed were in the vanguard of their own disciplines.

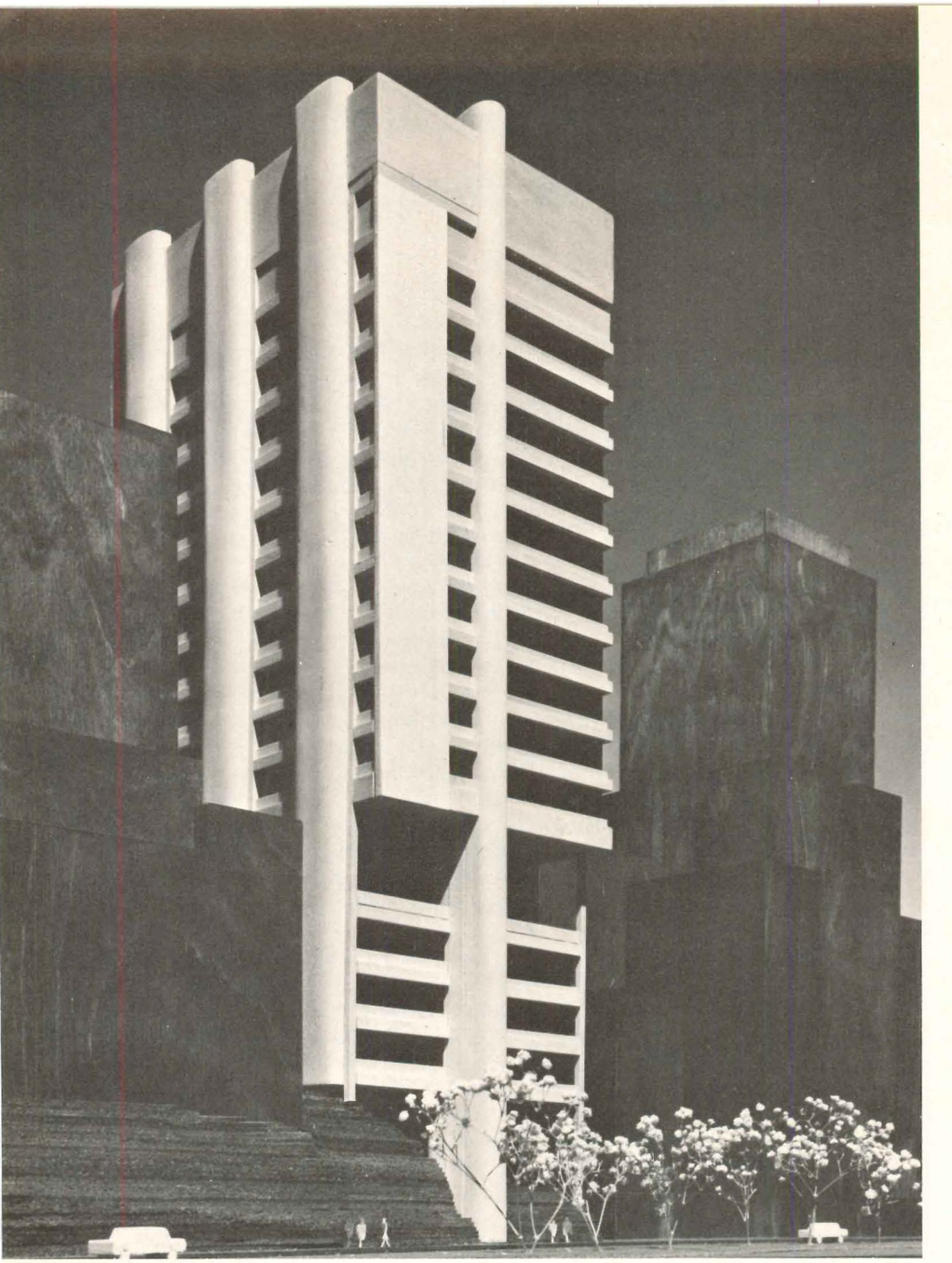
For example, in the Marin County Community Mental Health Center project, architectural translations of therapeutic objectives called for an educational exchange between the disciplines involved as a necessary preamble to both program and design.

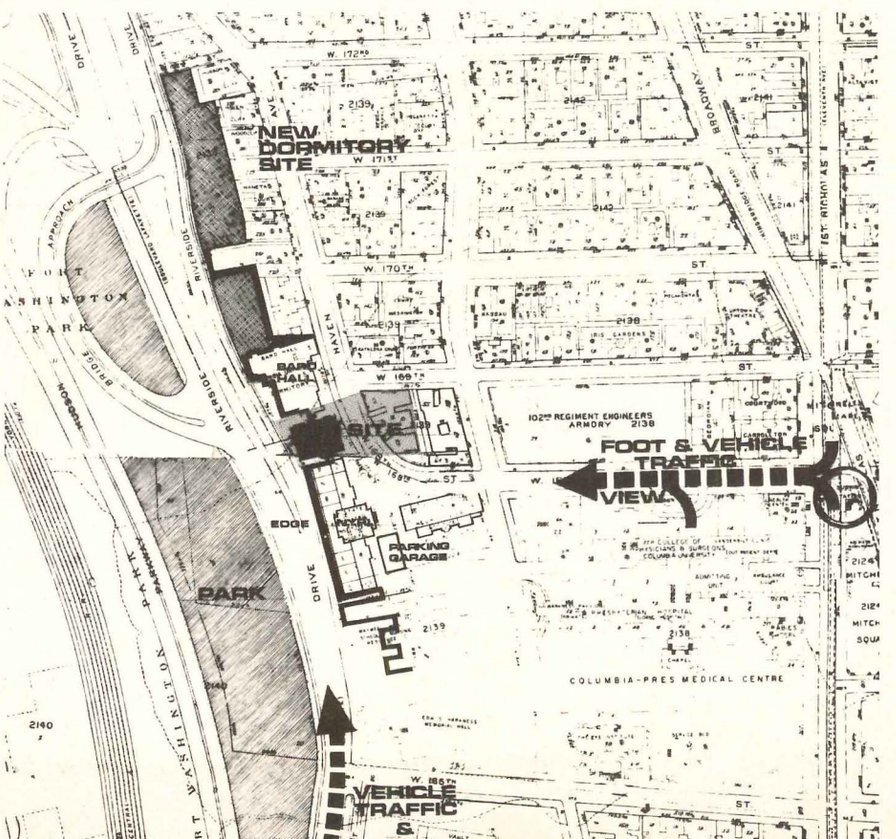
Within the architects' office, then, there emerged a category of activity called client education. This was not so much a didactic posture of expertise as it was a gearing up for information exchange with clients on a practical and continuing basis. How this has worked in one case is described in connection with the research facilities for New York Psychiatric Institute on following pages.

Similar client-involvement procedures were developed for design-augmenting purposes in four other categories: in-depth programming (related to but not identical with client education), user research (as in the street life studies preliminary to development of the Martin Luther King Square project, page 110), systems analysis (St. Marks Hospital, page 112) and post-occupancy project evaluation (Marin County, CMHC, page 116).

The choice of examples illustrating these supporting services on these pages should not imply that they are used separately on one project and not on another. In some degree, each is enlisted as circumstances indicate on any or all projects. Further, the predominant presence of medical-related facilities in these examples is not construed as indicating special appropriateness for these fields. The processes are, in fact, universally applicable throughout the diverse architectural practice of this firm.

—William B. Foxhall





RESEARCH BUILDING PROGRAMMING VIA CLIENT-ARCHITECT EDUCATION

This research addition to the New York Psychiatric Institute is physically and programmatically related to the Columbia-Presbyterian Medical Center and is also a part of the New York State mental health system. It was designed by Kaplan and McLaughlin with Morris Ketchum Jr. and Associates as associated architects.

In early user-interviews, researchers did not anticipate rapid growth or change and felt that interdepartmental relationships were not very important. These responses seemed quite contrary to prior basic program research and were perhaps being overstructured by researchers' present experience with extremely cramped quarters. Therefore, two lines of inquiry into future operations were pursued.

A series of interviews was developed to analyze the types of contact, both casual and structured, which researchers were already having and would desire to have in the future. Careful analysis was made of the interaction patterns which existed in terms of corridors, elevators, conference rooms, lounges, public outdoor spaces, dining facilities, offices and labs with particular emphasis on unstructured interaction.

The initial attitude of skepticism changed as various potentials were explored, and the plan shown here reflects that change.

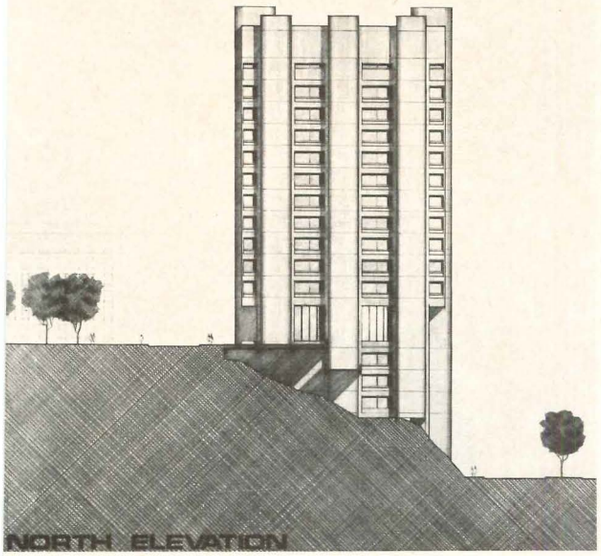
The second line of inquiry was developed around the possibility that the researchers had, either consciously or unconsciously, been limiting the size and scope of projects due to limited existing physical facilities.

Characteristically, animal experiments using large or middle-sized animals had not been conducted. After considerable questioning, researchers remained firm in their opinion that they would probably not want to do experiments with human subjects involving large-scale spaces, and also they could not conceive of a circumstance in which they would wish to experiment on elephants.

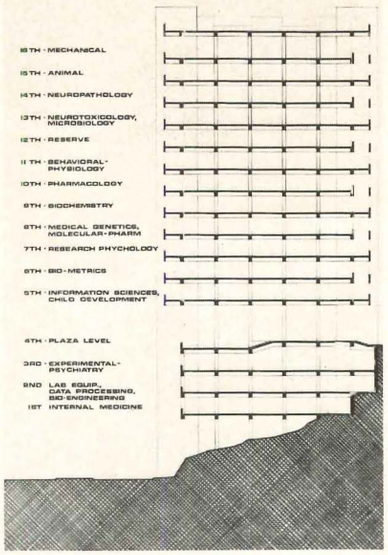
In the course of research on the attitudes of scientists towards the buildings they use and, arising from this, attitudes of architects towards researchers, it was found that all too often laboratory planning practice has been to enclose the scientist in a windowless box. At the same time the researcher tends to place a relatively low value on the importance of the visual quality of his environment.

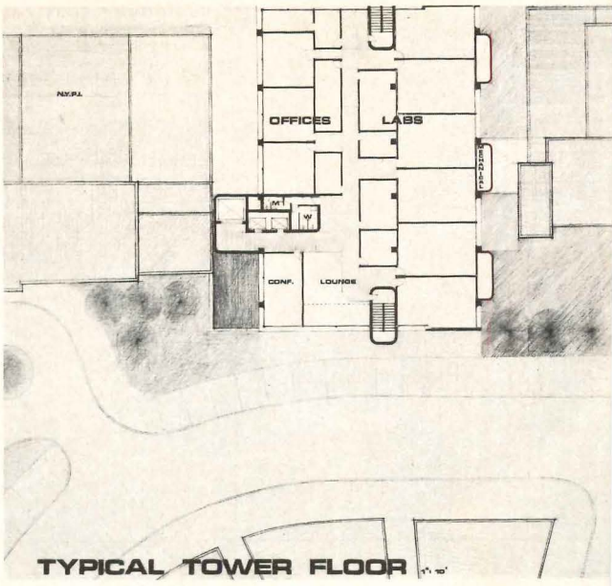
The educative process, then, sought common ground on which sensible and sensitive architecture and a reasonable respect for visual values on the part of the researcher could meet. Then detailed analysis of functional space requirements and relationships developed on a firm base of user-architect communication.

Engineers: *Joseph R. Loring & Associates (mechanical); Severud-Perrone-Sturm-Conlin-Bandel (structural).*

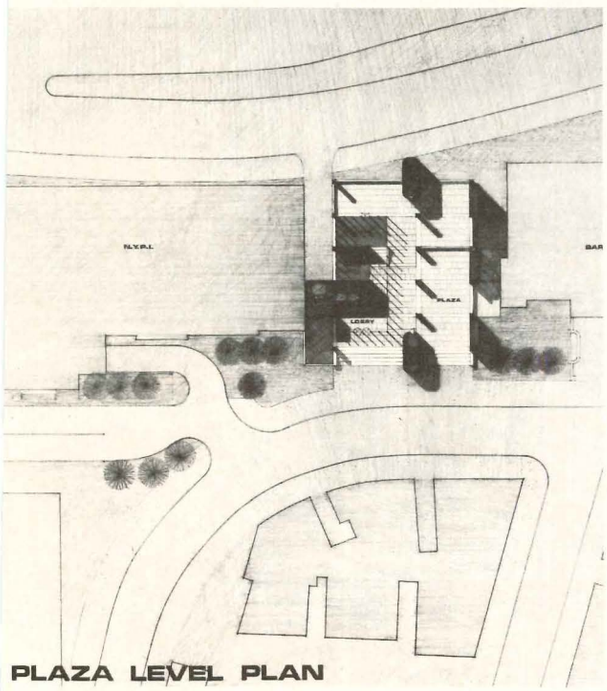


NORTH ELEVATION

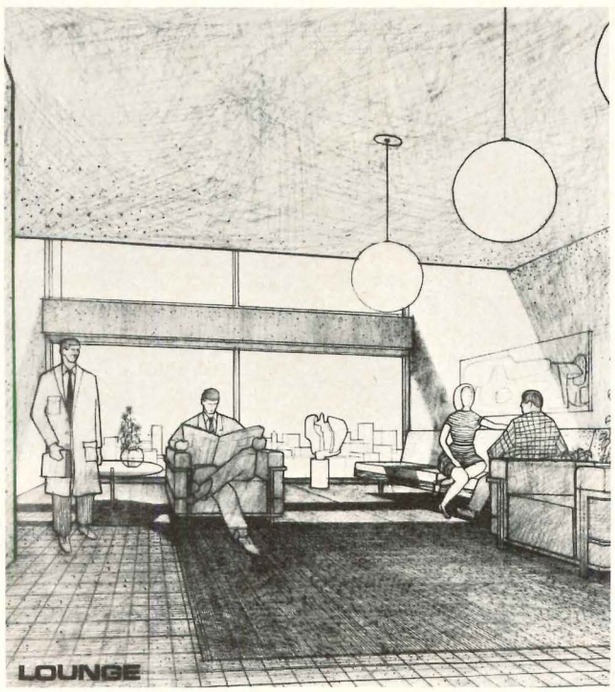




TYPICAL TOWER FLOOR



PLAZA LEVEL PLAN



LOUNGE

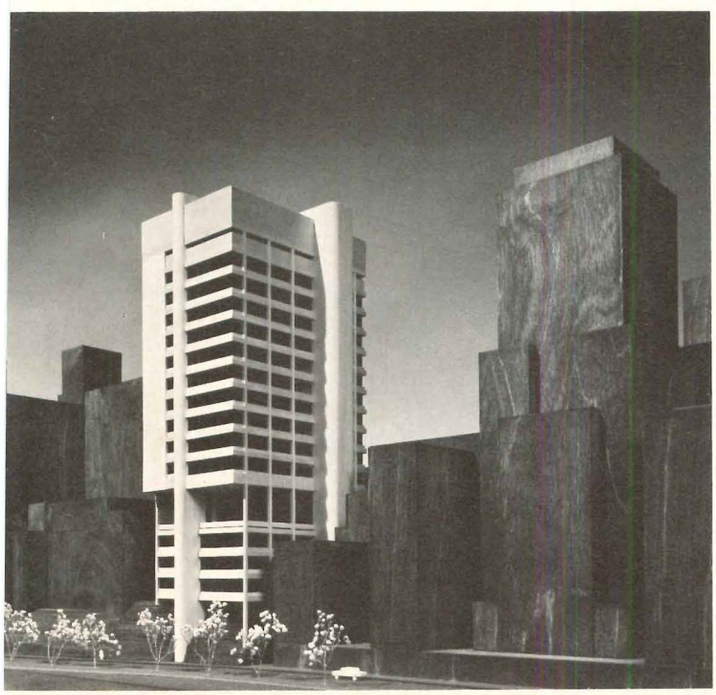
The building will have 16 floors (about 180,000 gross square feet) of research space with emphasis on the behavioral and biological sciences.

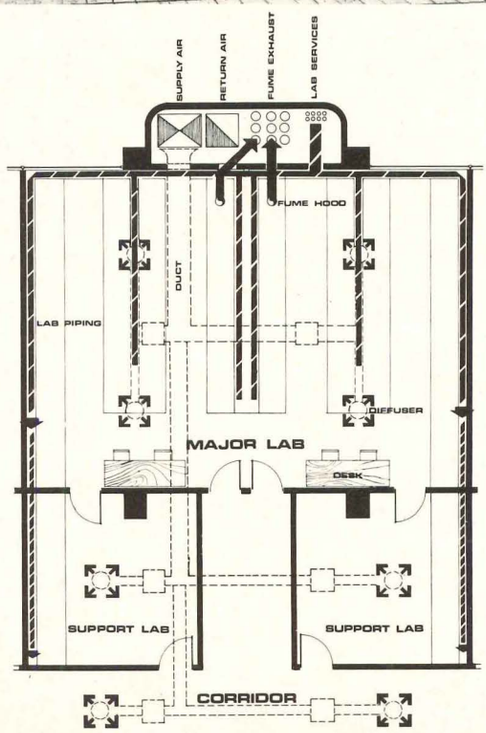
The site is an "unusable" portion of New York's 168th Street which plunges down a cliff from the medical center above to Riverside Drive below (plan opposite). At present the site provides a visual release at the end of 168th Street and one of the few open spaces for the neighborhood.

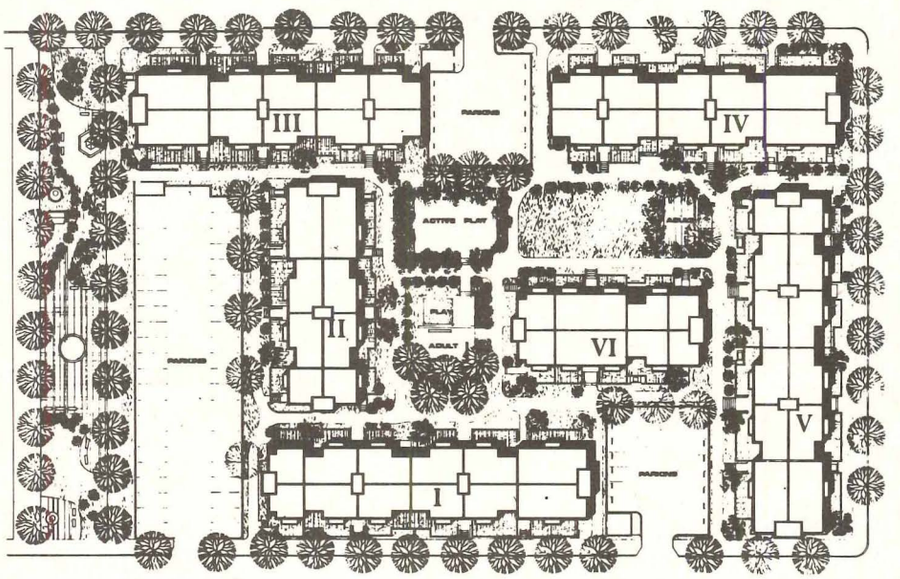
The design develops an open plaza at 168th Street which maintains the westward view from the neighborhood to the Hudson. The plan emphasizes possibilities for unstructured interaction by maintaining an extremely simple circulation system and a series of interlocking, two-story lounge spaces adjacent to each elevator. These offer maximum opportunity for casual meeting and communication between the various disciplines represented in this facility.

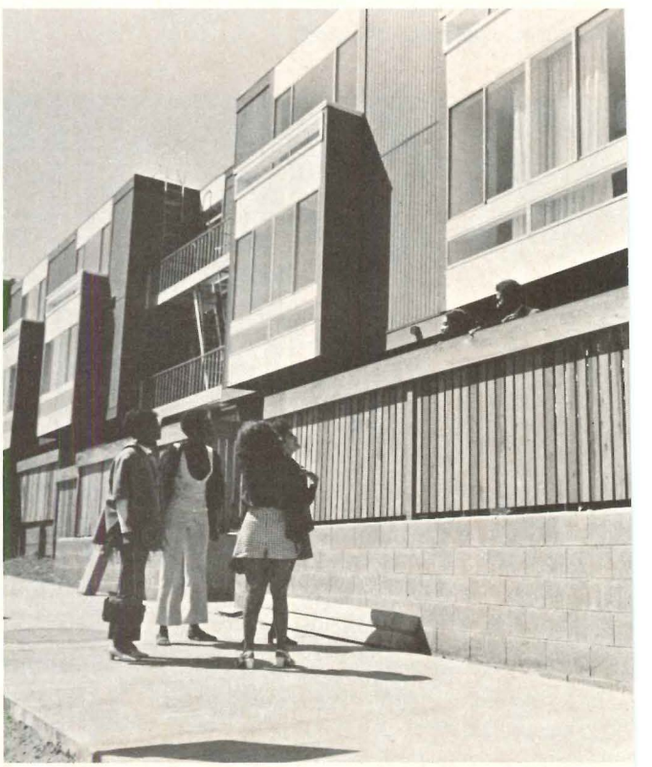
The plan is zoned into four areas of use: offices, circulation, subsidiary lab and major lab. The location of circulation on each floor is able to be shifted considerably to adjust to the ratio of space types within each department.

Mechanical elements are given clear expression in the projected design. Vertical shafts for elevators, stairs and mechanical services are all located on the exterior for maximum flexibility of space arrangement and use on each floor.









Ernest Braun photos

A STUDY OF STREET LIFE PRECEDES TOWN HOUSE DESIGN

User research is Kaplan and McLaughlin's term for pre-program investigation of the special needs and habits of future building occupants—especially where occupants have little voice in design development and frequently little concept of what the design objective might be. This town house development known as Martin Luther King Square in San Francisco, which won a city Redevelopment Agency competition for 221-d-3 apartment housing in 1966, is a case in point.

The architects approached the design of this and other low-income housing projects with a conviction that the patterns of street life in lower-income neighborhoods were especially pertinent to architectural solution. The life style of urban Negroes in this region of moderate climate and only medium population density (as compared, for example, with New York's Harlem) has traditionally made use of the street as an extension of living and socializing spaces.

In translating the concept of the street as living space, assumption is made that interaction and activity on the street are essentially benign and can lead to a sense of community.

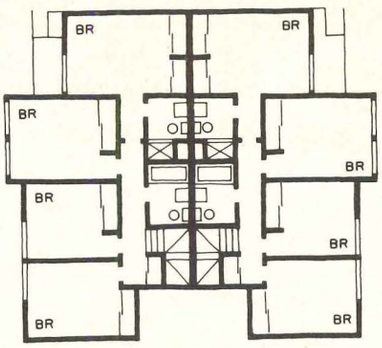
The research supporting this assumption was less a formal program of interview and tabulation than it was response to many hours of observation and some personal acquaintanceship in the area. The specifics of use patterns and trafficways were ultimately defined in some detail and related to the program. It was acknowledged, however, that these definitions were not precise in their extension from existing, "undesigned" urban slums to a new design without much precedent in reality.

Evaluation was made of the varieties of people, the sense of family, loyalty to the street and community, the passage of vehicles, the activities at entryways and hallways, and the general dimensions of boundaries and acceptable distances between people under various life situations.

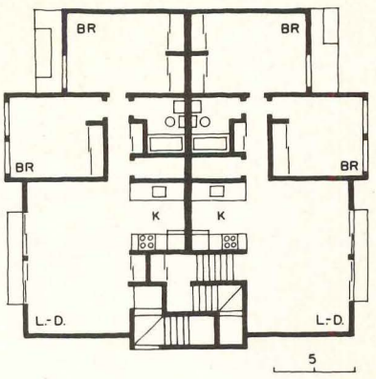
It was found that the architects had to identify with residents to an unusual degree in matters of response to both the character of the dwelling place and the nature of its materials. The preferred visual texture for example, was found to be rough and more varied in both materials and colors than is customary in other communities. Further, there is no nostalgia for historical architectural character but preferences in shape and material were found to derive from social symbolism rather than architectural stylism.

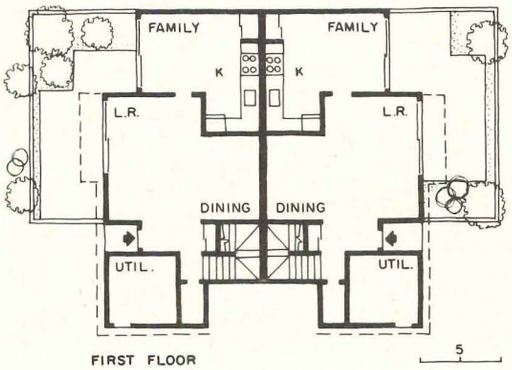
User research as practiced here is recognized as an extension of the conventional programming process. It is in the depth of its sociological involvement and in previously unexplored relationships of new kinds of clients to new concepts of urban life that the process acquires exceptional character.

Engineers: *Yanow & Bauer (mechanical); Gilbert, Forsberg, Diekmann, Schmidt (structural).*



SECOND FLOOR

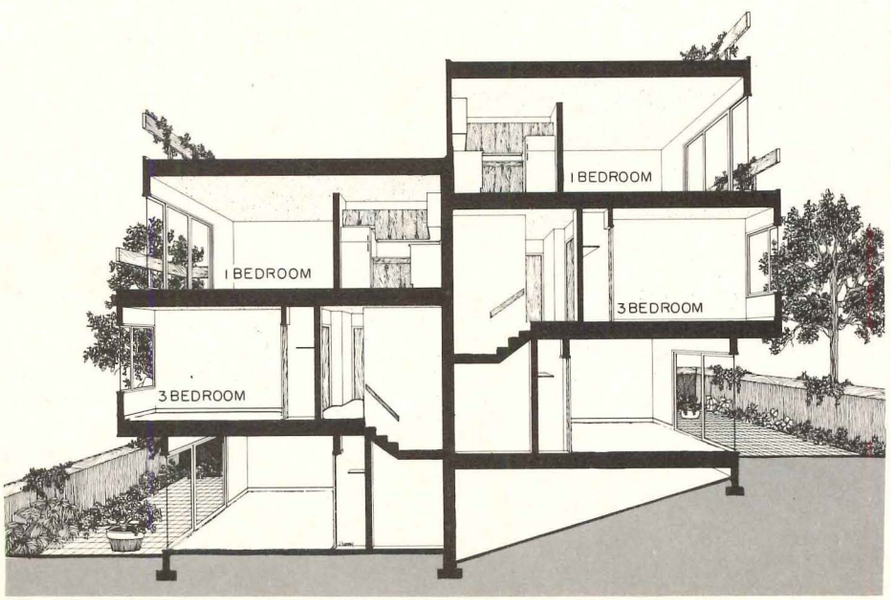


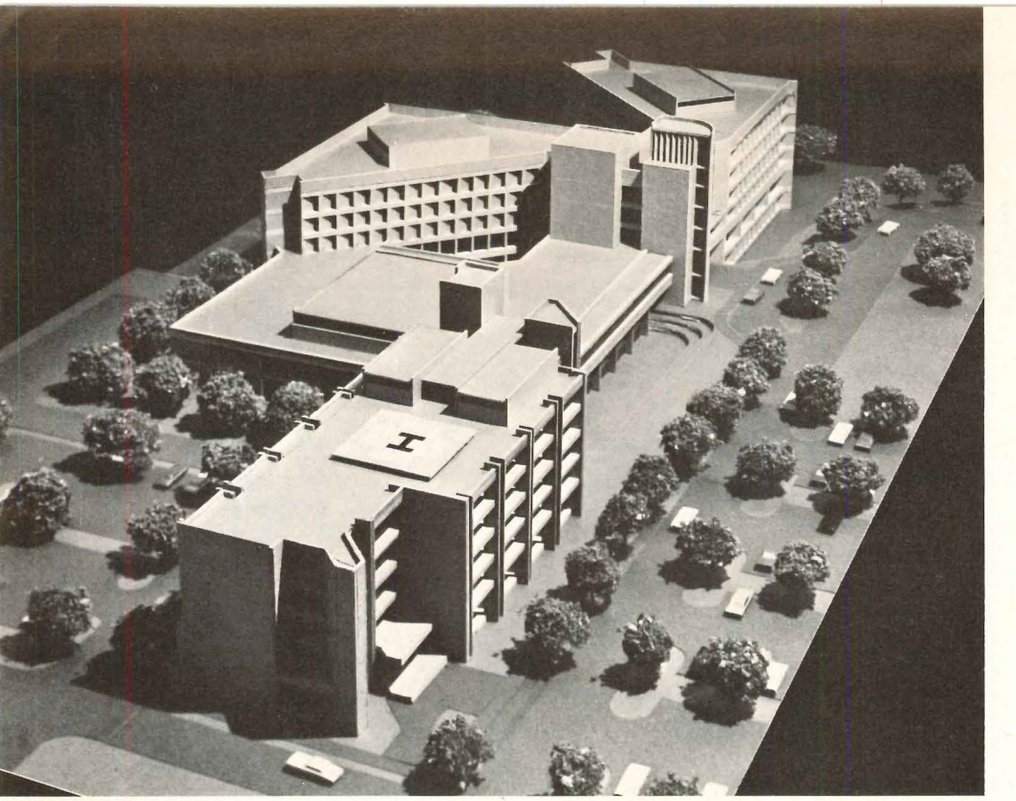


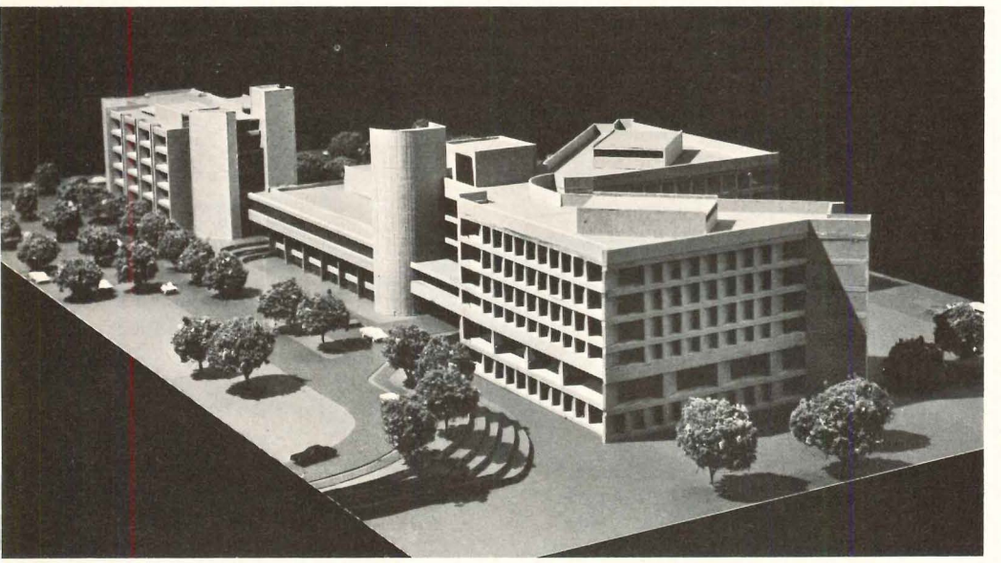
FIRST FLOOR

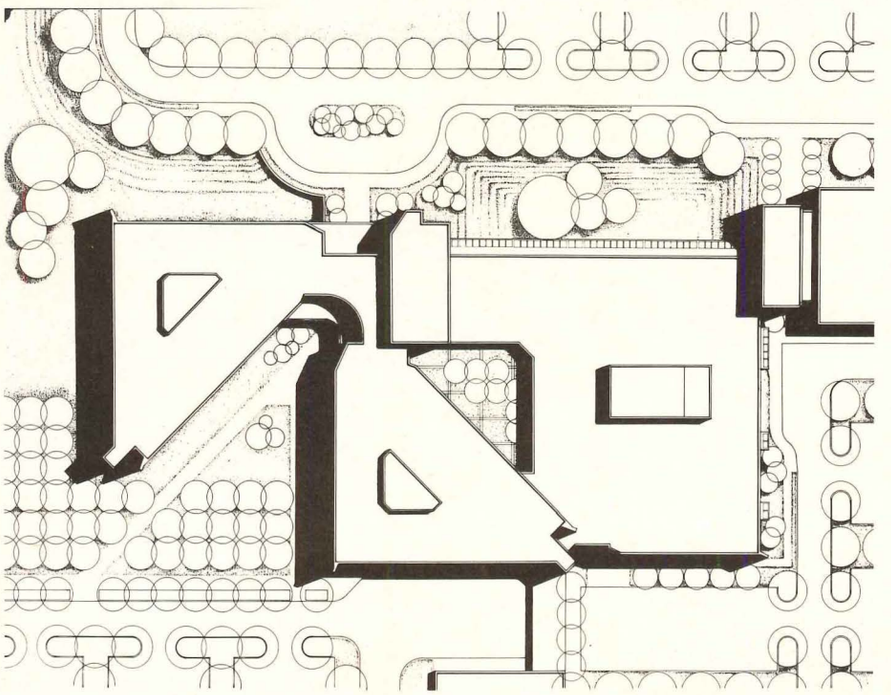
The design of Martin Luther King Square, as previously described (RECORD, June 1968) takes advantage of the natural slope of the ground. The typical module consists of two two-story units placed back to back, each one with its own garden. Above these units are either a pair of smaller units or, in some instances, a larger, split-level unit. The smaller units cluster in groups of four about a common entry way. All three- and four-bedroom units—and many two-bedroom units—have private entrances and gardens.

The concept evolves out of a clear hierarchy of spaces beginning with the street where large-scale activity takes place and continuing to more intimate sheltered spaces between and within buildings and in courtyards. Porches provide family-scale areas and outlooks over play areas as well as talking bases for communication with nearby families. Thus, there is something for everyone, children, oldsters, young adults and automobiles.









A SYSTEMS-ANALYSIS APPROACH TO HOSPITAL DESIGN

Programming and design development of St. Mark's Hospital in Salt Lake City, Utah, presented Kaplan and McLaughlin with exceptional opportunities to test and evaluate their commitment to design-supportive, client-involved, analytical approaches. The problem in terms of technicality was not unique. Although the combination of budgetary and functional criteria would have challenged conventional approaches, the firm had reason for confidence in analytical approaches that had worked well before in solving difficult problems. Much applicable expertise was contributed by the consultant firm, Medical Planning Associates, and by St. Mark's own staff. The architects' project designers were James Diaz and Roy Latka.

The proposed hospital was to be a 300-bed general hospital with extensive outpatient, psychiatric and rehabilitation services. The complex was planned for expansion to 600 beds, and a proposed medical office building was assumed to imply additional demand for outpatient services in the future.

Although the mathematical techniques applied to verifying options in ultimate configurations (triangular vs. rectangular nursing floors, for example) were an unusual discipline, many phases of program and design development proceeded along conventional lines. For example, the program requirement for expansibility and adaptability to changing demands elicited the design development response that areas prone to expansion be on the periphery of lower levels of the building. Further, one face of the building was planned as a spine with circulation towers through which new growth can be attached.

To counteract obsolescence, each portion of the building is designed as an entity with an independent mechanical system so that remodeling or replacement can be accomplished without affecting functions in other parts of the hospital. High floor-to-floor dimensions in areas subject to periodic alteration permit an adaptation of the interstitial concept of mechanical systems.

Program conditions favor a triangular nursing floor

Typical nursing floors were to have two independent nursing units of 34 beds. Each unit would be operated by two nursing teams caring for 17 patients each, all in private rooms.

Single-bed rooms, McLaughlin points out, tend to create an imbalance between the need for exterior orientation of rooms and the nursing support area required within each nursing unit. This can result in an excess of central support area and presents problems in clustering of bedrooms around support facilities. It also calls for care in attaching the units to the principal circulation system. The well-proportioned triangle is one successful shape for the single-room

requirement, because it can be joined to the tower at one of its corners and does not require a connecting bridge.

The triangles, when attached to the tower, leave open spaces which insure an open vista from each patient bed. The selection of a saw-tooth perimeter further enhances the view from each room.

The final selection of triangular towers at St. Mark's was confirmed by results of detailed comparative studies between rectangular and triangular nursing units, as described on following pages. The triangular unit for the numbers of beds stipulated was found to be superior in reducing the distance between nursing team stations and in creating a feeling of openness where corridors converge around each nursing station.

The two unit shapes were found to be quite similar in terms of building areas and travel distances to beds, as shown in diagrams on page 115.

Comparative analysis technique evaluates nursing unit design

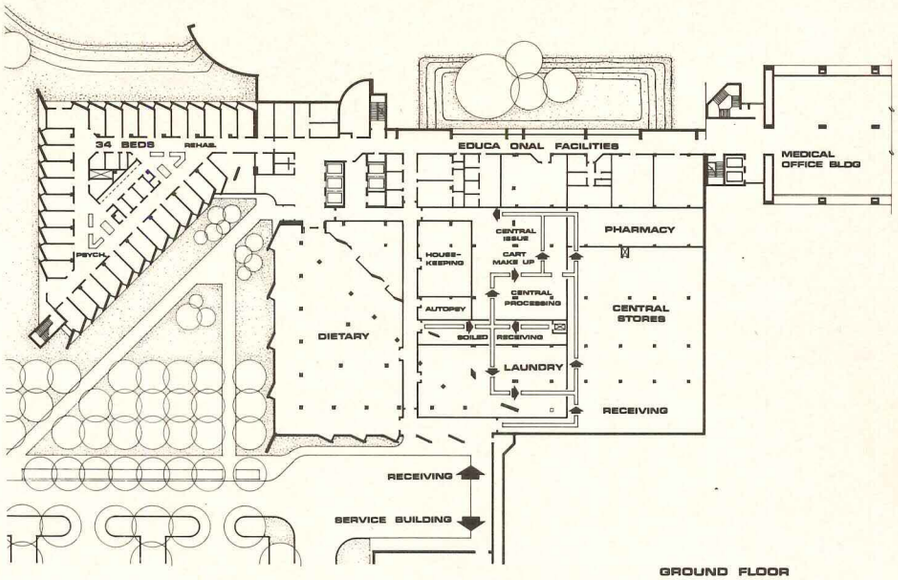
The analytical technique illustrated on the next two pages has been applied to all parts of the St. Mark's design and is proposed as a valid method for evaluating the options that occur in the design of any building type. Its application to the nursing floor involves a wide variety of program elements and serves to demonstrate the method.

The patient floor is regarded as an entity and is analyzed in terms of five major categories of program objective. They are: expansibility, flexibility, organization and circulation, operational cost, and capital cost.

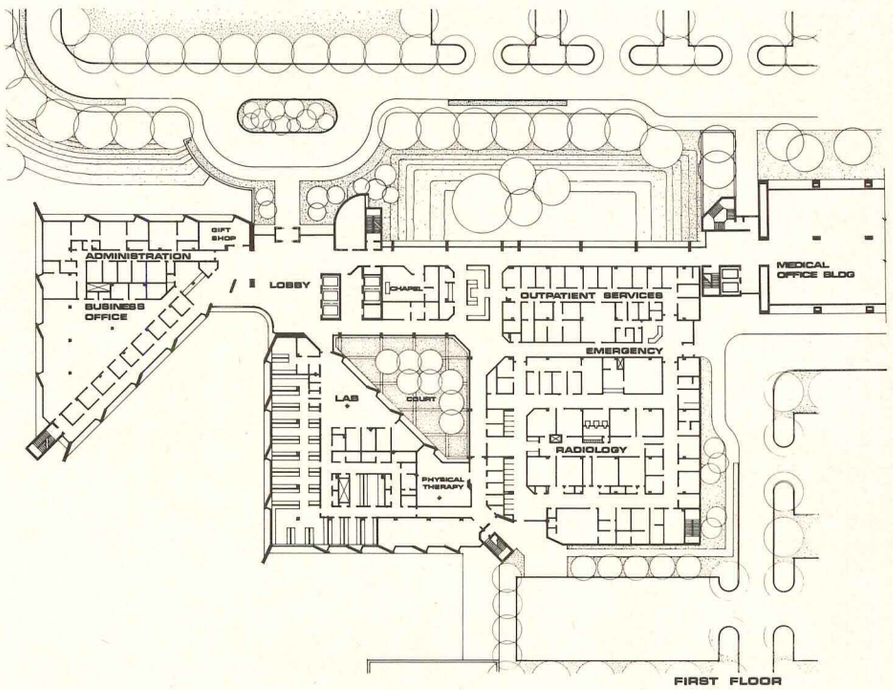
The performance characteristics of a given configuration are evaluated by breaking down each of the five major categories into sets of sub-categories of applicable considerations. Expansibility, for example, would be evaluated from the standpoint of the feasibility of making major additions, minor additions, and ultimate demolition for reconstruction. Each of these three categories would then be further divided into an appropriate number of component considerations such as ability to expand vertically or horizontally, directions available for growth, new shape options available, etc.

Similarly, sub-categories of the other four major considerations can be charted with reference to various configurations. The sample tabulations at top left of the next page are fragments of such a charting process comparing triangular and rectangular configurations of the nursing floor, each of which respond to basic requirements of the program regarding numbers of beds, nursing stations, etc.

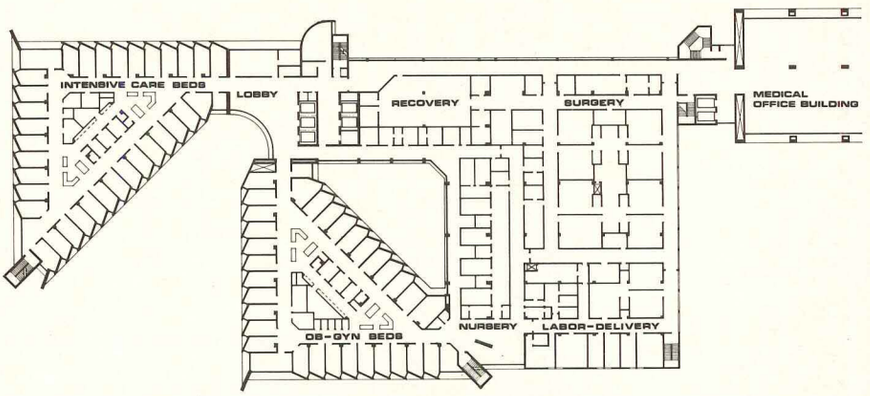
The performances of alternate solutions are thereby paired in a procedure that considers the relative importance of design qualities and operational characteristics weighted mathematically not only in re-



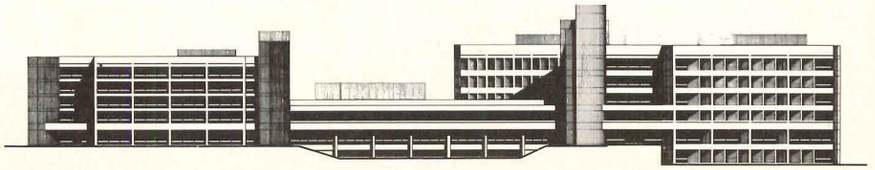
GROUND FLOOR



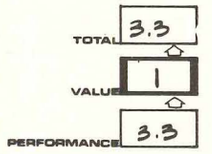
FIRST FLOOR



SECOND FLOOR PLAN

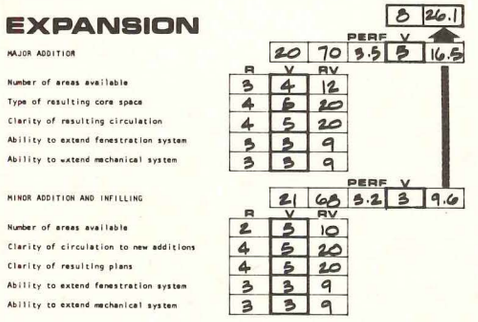


The charted tabulations at right show the five major categories of program objective involved in over-all performance rating of rectangular (top set) vs. triangular shapes of nursing floors. The method, described in the text, relates the intrinsic values of design criteria in subsets pertinent to each category (as for triangular unit expansion, below) to a rating of the plan in its response to each criterion.



Triangular Unit

EXPANSION



Note that dividing summed RV's in a given set by summed V's is not a simple algebraic wash of V factors but gives different values depending on pairing of R and V factors for each item in the subset.

NURSING UNIT ANALYSIS

Rectangular Unit

	RATING	VALUE	SCORE
EXPANSION	2.9	1	2.9
FLEXIBILITY	1.2	3	3.6
ORGANIZATION & CIRCULATION CHARACTERISTICS	2.0	5	10.0
OPERATIONAL COST	2.0	4	8.0
CAPITAL COST	2.3	3	6.9
	TOTAL		TOTAL
	16		31.4

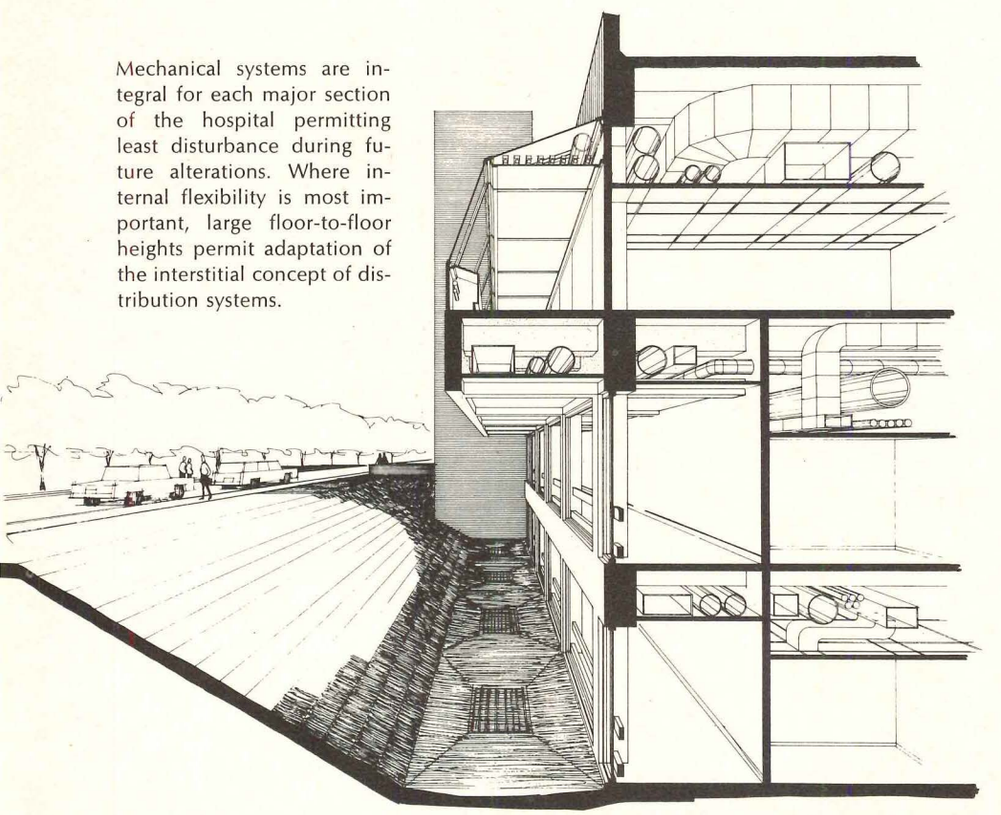
PERFORMANCE = TOTAL SCORE / TOTAL VALUE POSSIBLE = 2.0

Triangular Unit

	RATING	VALUE	SCORE
EXPANSION	3.3	1	3.3
FLEXIBILITY	2.7	3	8.1
ORGANIZATION & CIRCULATION CHARACTERISTICS	3.1	5	15.5
OPERATIONAL COST	2.2	4	8.8
CAPITAL COST	2.0	3	6.0
	TOTAL		TOTAL
	16		41.7

PERFORMANCE = TOTAL SCORE / TOTAL VALUE POSSIBLE = 2.6

Mechanical systems are integral for each major section of the hospital permitting least disturbance during future alterations. Where internal flexibility is most important, large floor-to-floor heights permit adaptation of the interstitial concept of distribution systems.



sponse to client preference but also in terms of design efficiency considering matters of nurses' travel time, over-all area per bed and other components of conventional analyses of plan efficiency.

The mathematical technique is a simple one. Each sub-item of each category is considered on the basis of two aspects. First it is weighed on the basis of its intrinsic *Value* to the program as measured on a positive scale of 1 to 5. Second is a performance *Rating* indicating on a scale from −5 to +5 how well the plan under consideration responds to requirement of the item. The product of *Rating* times *Value* is the score for each item in the subset.

In the chart fragment showing expansion analysis of a triangular unit (far left), for example, the "number of areas available" has a value of 4, a plan performance rating of 3, and a score of 12. The following tabulation shows how a subset evaluating nursing unit efficiency might appear.

Subset of Nursing Unit Efficiency	*R*	*VALUE*	*RV*
Nurses Station to beds	4	5	20
Nurses Station to elevators	−2	1	−2
Nurses Station to supply source	3	2	6
Nurses Station to Team Stations	2	3	6
Average distance between beds	5	4	20
		—	—
		15	50

$$\frac{\text{Total score}}{\text{Total value}} = \frac{50}{15} = 3.33 = \text{Performance rating of subset}$$

The ratio of total score to total value is an index of performance of the subset and becomes input for a similar performance evaluation of the major category ("organization" in the case of floor efficiency) under which it is listed. Performance rating of the major category is derived similarly as illustrated for the "expansion" category in the chart fragment at far left, above.

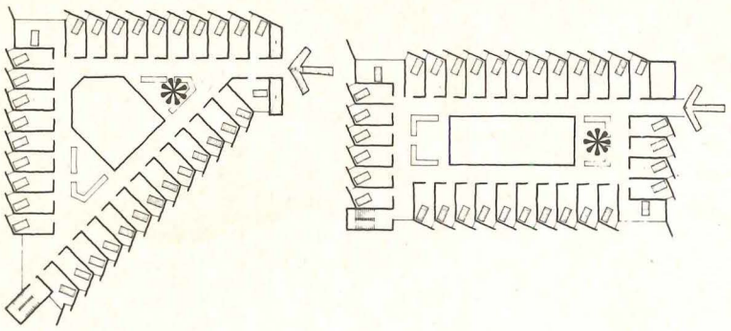
Finally, to find an over-all performance rating for a given plan solution, the same operation is performed on a set containing major categories as items, as illustrated at immediate left, above, for triangular and rectangular configurations of the nursing floor.

Arriving at the ratings and values of the various items combines the opinions and intuitions of both architect and client with factual numerical analyses of those items that lend themselves to measurement. The compared triangular and rectangular floors diagrammed on the opposite page illustrate one of the methods of analyzing distances of nurses' travel. Other measurable quantities can be similarly analyzed.

There is probably some added cost to the architect involved in the fullest application of these procedures, although the advantages in accelerated approvals and reduction of change orders through increased client participation and comprehension reduce any such costs to negligible amounts.

Engineers: *Bridgers & Paxton (mechanical); H. C. Hughes, Page & Associates (structural).*

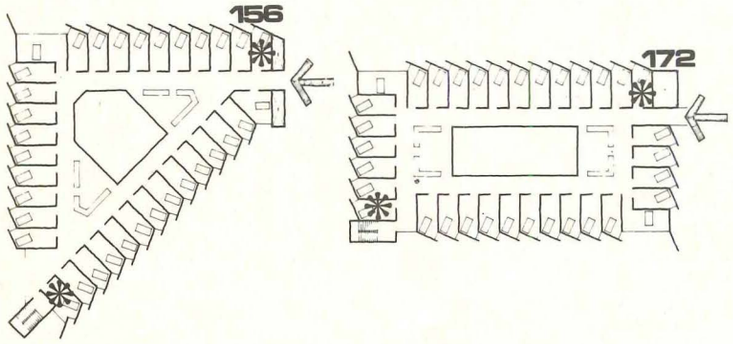
NURSES' TRAVEL TO PATIENT BEDSIDES



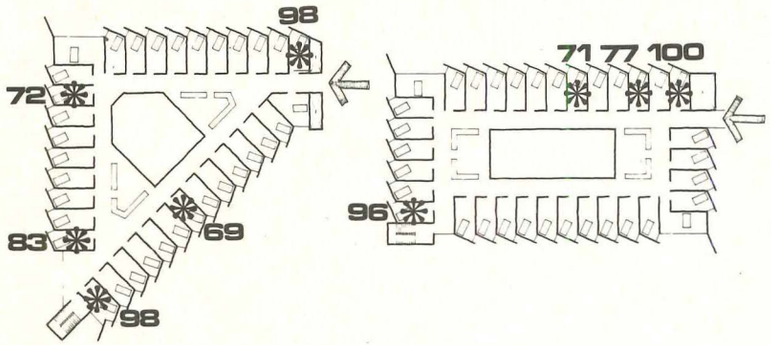
52 FT

NURSING TEAM STATION
TO 34 PATIENT BEDS

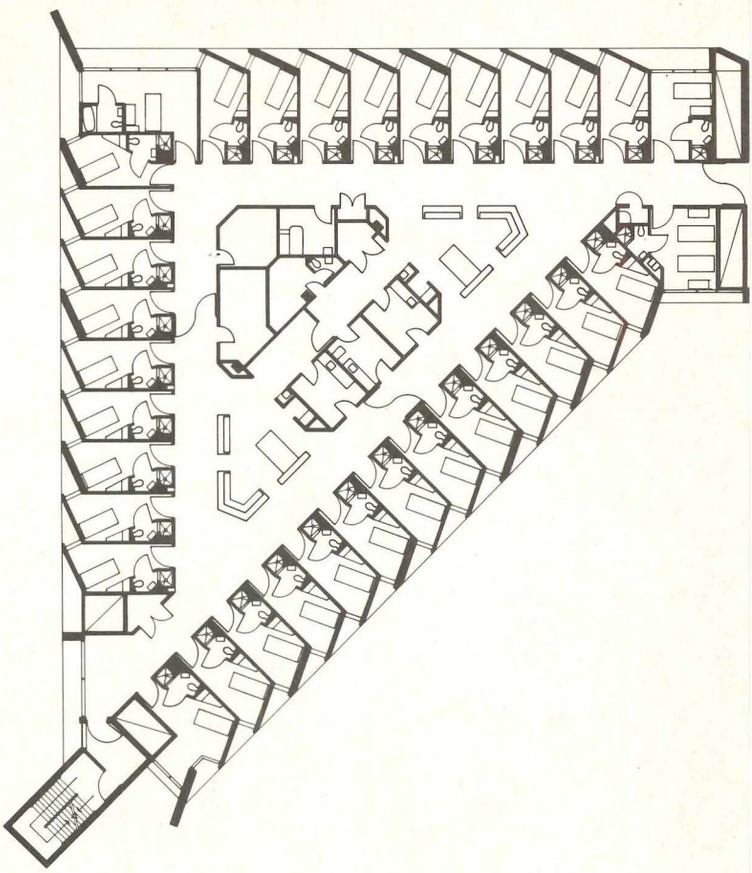
57 FT

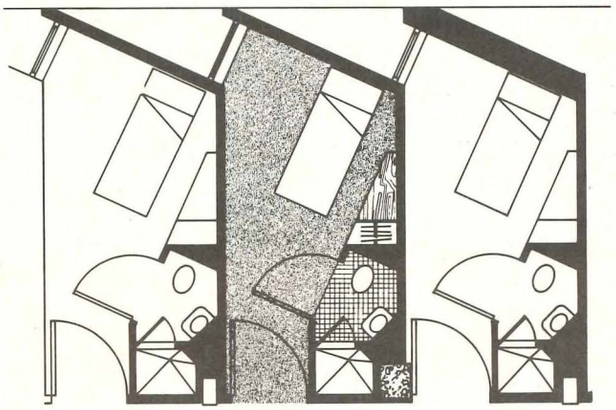


LONGEST DISTANCE BETWEEN TWO PATIENT BEDS

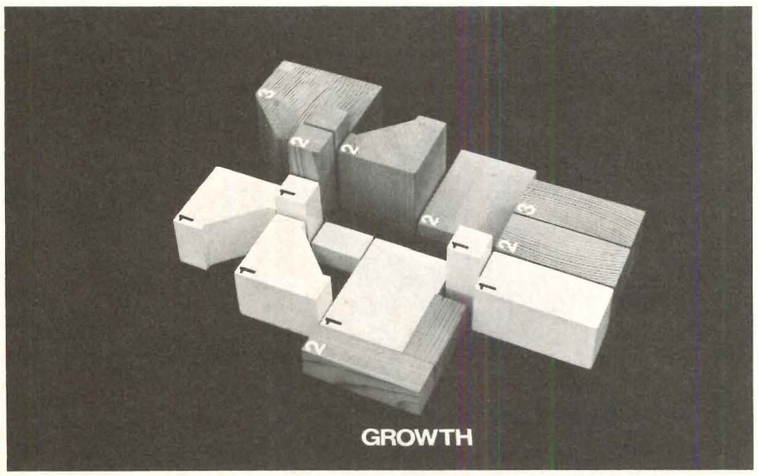


AVERAGE DISTANCE FROM SELECTED PATIENT BEDS RESPECTIVELY TO THE REMAINING 33 BEDS





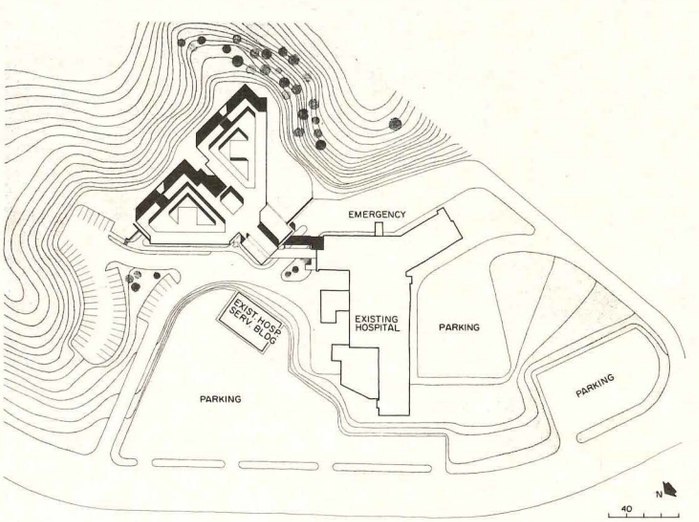
TYPICAL PATIENT ROOM

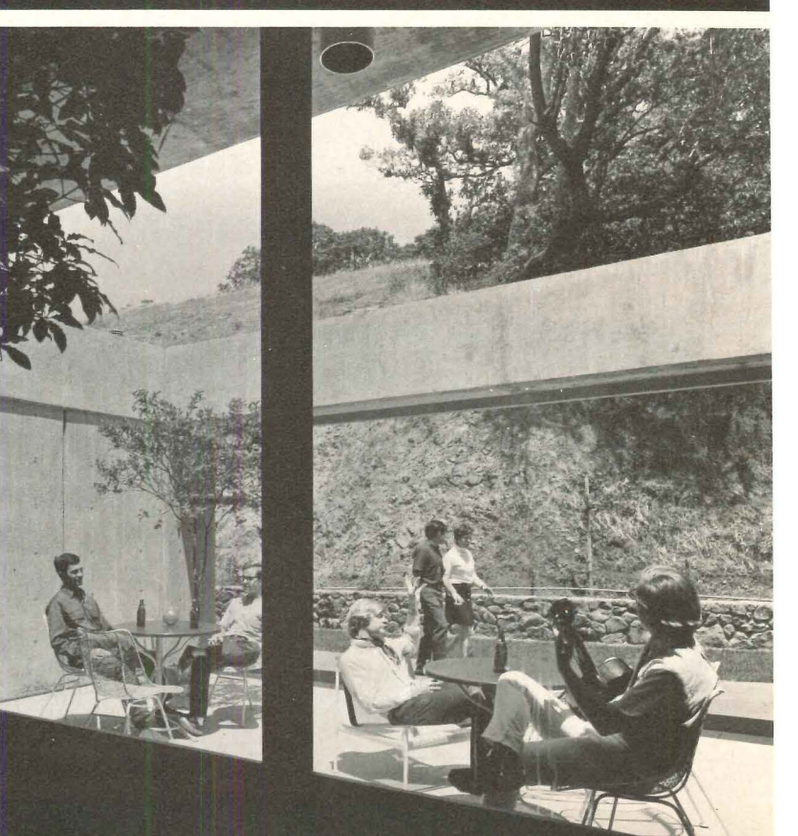


To evaluate comparisons between rectangular and triangular nursing floors, many series of sketches were made to show how each configuration responds to various criteria conventionally applied to nursing floor efficiency. Those shown above left are a study of nurses' travel.

The single-room criterion puts a premium on available perimeter. Details above show maximum use of perimeter per bed by using minimum room widths alleviated by serrated exterior wall which permits bed-oriented windows to provide views to the outside while maintaining maximum privacy.

Block model at left shows projected phases of future growth.





Ernest Braun photos

MENTAL HEALTH CENTER REVISITED TO EVALUATE DESIGN EFFECTS

In an attempt to evaluate the success or failure of design methods applied to a new building type, Kaplan and McLaughlin twice revisited the Marin County Community Mental Health Center; once for staff conferences just after completion and again a few months after it had been put in operation. The purpose was first to articulate for the staff the design response to the therapeutic program and second to examine the immediate interaction of the architecture and the people it houses under operating conditions. A third phase will be another series of interviews after the center has been in operation for enough time to see how the building continues to perform under changing conditions.

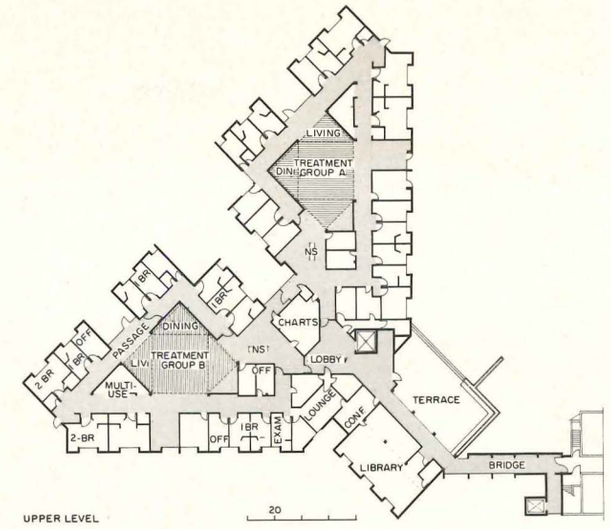
The response by patients and staff to the evaluation procedure, the architects report, was unusually organized, perceptive and generally enthusiastic. As might be expected it turned out that some details of design might have been done differently (closet space, food service lines, meeting rooms, security devices, etc.). The over-all conclusion, however, was that the building works well and clearly demonstrates that architectural design can and does enter actively into the therapeutic milieu and that the mentally ill respond positively and in an unusually structured way to innovative, complex architecture. Further, and unexpectedly, a quality of non-rectilinear openness is highly valued and contributes to group interaction. (Code writers, please take note.) The image sought was that of a benign institution rather than a home and appears to be correct for this type of center.

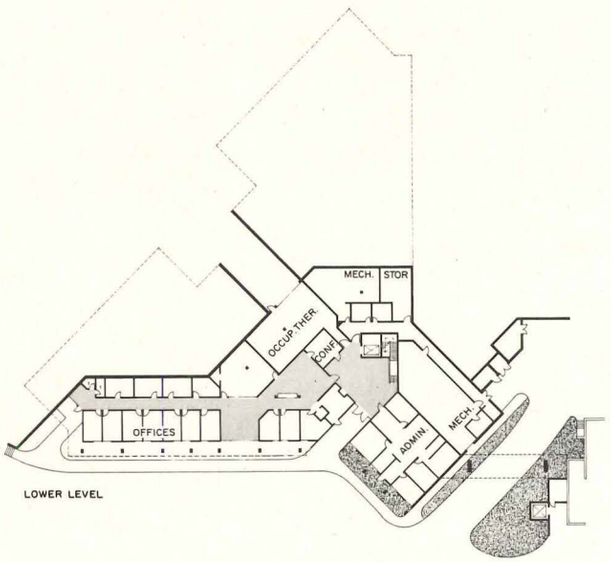
The evaluation process, the architects point out, is necessarily subjective, since there are few ways to quantify the reactions of individuals to space. The method used was to set up a series of interviews with staff and selected patients, develop group interaction sessions and to collect information in the form of behavior reports, statistics and other data considered as useful indicators.

Evaluation was conducted by a team of architects, psychologists and sociologists who were experienced in building evaluation. Kaplan and McLaughlin participated in the process to the extent of organizational and review meetings and joined in some of the interviews and group meetings. Most of the actual evaluation work, however, was done by the independent firm of Building Program Associates of San Francisco. This firm, headed by architect Gerald Davis, is now The Environmental Analysis Group.

Details of the findings are not really the subject here so much as the extension of the architectural function into the evaluation process. The confirmation of specific architectural effects on patients and staff lays ground for improving future design.

Engineers: *G. L. Gendler & Associates (mechanical); Rutherford & Chekene (structural).*

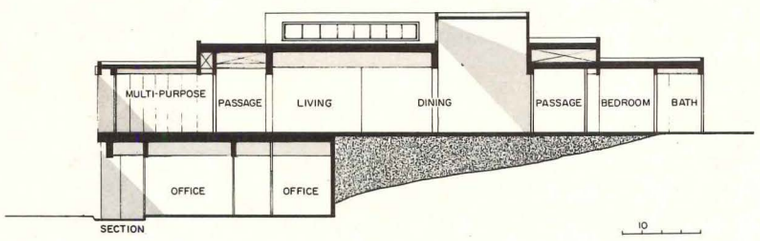




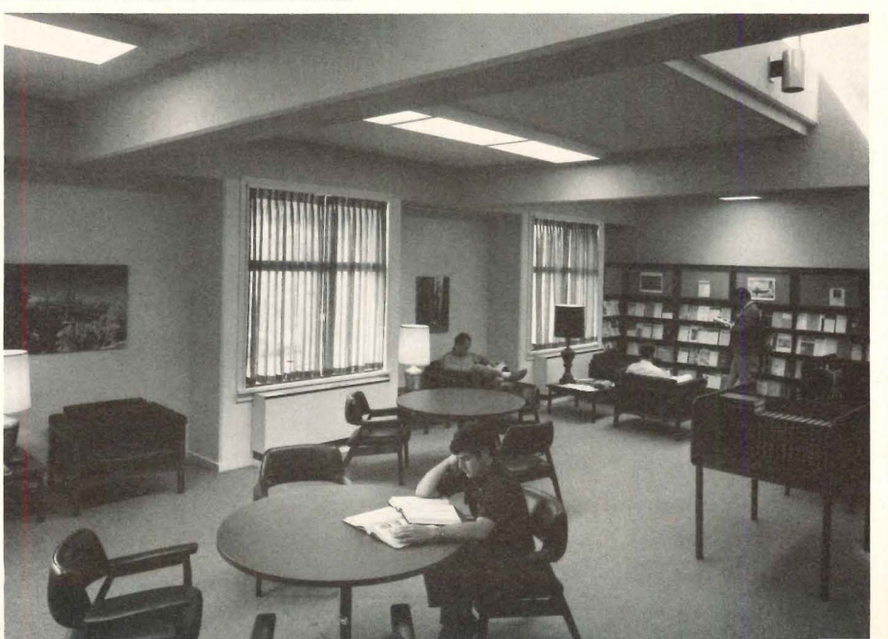
The Marin C.M.H.C. was completed in 1968 at a cost of approximately $1,250,000, excluding site work, furnishings, and fees. It is a two-story, poured - in - place concrete structure with full air conditioning. Interior finishes are generally exposed, painted concrete, acoustical tile ceiling, plaster walls and carpeted floors. The area of the building is approximately 39,-500 square feet.

The building consists of four essential elements: Two triangular treatment units for inpatients and day patients; a bridge linking these units to the existing Marin general hospital and containing a medical library and conference rooms; administration and reception area; and a mechanical floor below the two treatment units.

The center was sited on a steep hillside. This allowed it to have a horizontal organization and a close relationship to the ground. A noticeable aspect of the design, seen in the section, features high triangular spaces with clerestory lighting around a low, large, square central space. The result is an irregularly defined space with a character of openness to which light from clerestories provides changes throughout the day.



Interior views of Marin County Community Mental Health Center show unconstrained variety of space and light in common rooms in treatment areas.



The underlying drive and philosophy of this young firm of Kaplan and McLaughlin may be best conveyed in the following paragraphs from a recent statement by Herbert McLaughlin on the occasion of opening a New York branch office: "It is too easy to blame failure on the pace at which the world moves and on the rigidity of construction. Certainly the architect's task is difficult, keeping up with both social and technological change, but it is made more difficult by the fact that many architects have not developed enough techniques to enable them to analyze their work well, both before and after it is built.

"The profession is now making very promising efforts in the field. User research and multi-disciplinary design teams are gaining new applications. Building evaluation and the use of systems analysis in architectural design are rare, but there is a very real drive to make use of these techniques.

"There should be an equal drive to make sure that we use them with the client. We feel the tools we have used at Kaplan and McLaughlin in programming, evaluation, systems analysis and design are of particular value to us as architects, because all are designed for use *with* the client. We have a long way to go in making this relationship more effective, but I think that it is a beginning.

"Useful buildings of any complexity require client involvement and client education. We have found that the traditional approach of a brief period of programming which establishes space needs and the general operational pattern of the client, followed by a retreat to the selected studio and a presentation of a scheme to be approved, simply is not adequate in most complex and innovative buildings. Programming and design are inextricably linked. Operational concepts will change as design reveals new opportunities, and the client must play an informed role in this process. Both architect and client must have wide knowledge of each other's traditions, tools and operation.

"The client who really does not have a firm idea of what he wants—and clear understanding of what he is getting—is in the majority; and he is the one to whom we must devote considerable attention. If the world is moving awkwardly fast for the architect, architecture is also moving in frequently incomprehensible ways to the client. Answering the layman's questions as to why a building functions or looks a certain way is often difficult. But it is necessary and can be done well only if the layman has some knowledge of the language, limitations and potentials of architecture.

"I would say further that using these techniques does seem to work. This is not fancy flim-flam designed to snow the client. These techniques have helped us turn out better buildings. Evaluation thus far tells us that the buildings do work, and are flexible enough to allow significant adaption."

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SHOPPING CENTERS

The shopping center as a unique building type has come a long way in a short time. The vast number of centers built has to do certainly with the speed of evolution from the first centers—several blocks of neighborhood and branch department stores rudely set down in a sea of asphalt on the fringes of suburbia—to the sophisticated and complicated planning that goes into the three extensive developments, all by Harrell + Hamilton of Dallas, Texas, shown on the following pages. Between these two extremes we find progressive stages as transplanted and truncated Main Street was expanded and enclosed, then air conditioned, landscaped, specially lighted, acoustical tiled, beautified, and, to the thinking of some, sterilized. Shopping center design and planning slipped into a lull. Outstanding, however, in this 'middle period' was the same firm's NorthPark (RECORD, April, 1966). NorthPark was designed as one building, a single entity, not an incoherent collection of stores. Yet the individuality of merchandisers was maintained, mainly by a design meant to be viewed from all sides, with easy identification of the larger stores; and control of graphics, at least with regard to size and location. The firm's work in this field that followed—8 million square feet of completed enclosed mall shopping developments, plus six (including the three shown here) in various stages of execution—is built on the principles of unity, exposure and control first displayed at NorthPark. Also at NorthPark, fountains and extensive plantings softened what otherwise might have been long expanses of monotonous corridors. A shopping mall is not, however, an arboretum. That should hardly be the goal in the '70's, say Harrell + Hamilton. Water and plantings have a role to play in their newest centers, but they are decidedly subordinate to a newer, richer, more exciting *architectural* concept, evolved, paradoxically, from recent researches into such unexciting-sounding subjects as shopper motivation studies and population projections. Music endlessly oozing from loudspeakers is out, and many other current practices and ideas as to what the shopping experience is all about have been scrapped. The larger share of the buying dollar is coming from the pocket of less traditionally-minded young people (More than half of the American population is now under 25 years of age.) And people of all ages, with ever more leisure time, see shopping as far more than just a necessary chore. People-noise, bright colors, activity, recreation, entertainment: these can, and should be, a part of the shopping adventure. It is more gratifying to the shopper when they are, and studies show that it is more profitable for the merchandiser. The previous, long corridor-type mall becomes a centralized multi-level giant court filled with many activities, that facilitates, by the way, quicker and easier access to the stores. It is a court where the shopper is king, where many things, some planned, some unplanned, happen. Harrell + Hamilton also encourages the developer to buy and build on the land surrounding the center. The building containing the stores clustered about the center court becomes itself the core of a larger whole, a community; an urban sub-center. The shopping center, hotels, offices, low- and high-rise housing, theaters, a transit system, in carefully worked out stages of development, ultimately form an integrated living-working-shopping environment. As might well be imagined, the planning of this type of regional shopping development requires the architect to go far beyond the traditional concepts of architectural responsibility. The last center shown here, Crossroads, in Oklahoma City, Oklahoma, carries with it a description of the intricate process that precedes the design, *per se,* of the center itself. For the firm is often, in fact prefers, to be called in even before a site is selected, when, so to speak, the center is still only a gleam in the developer's eye.

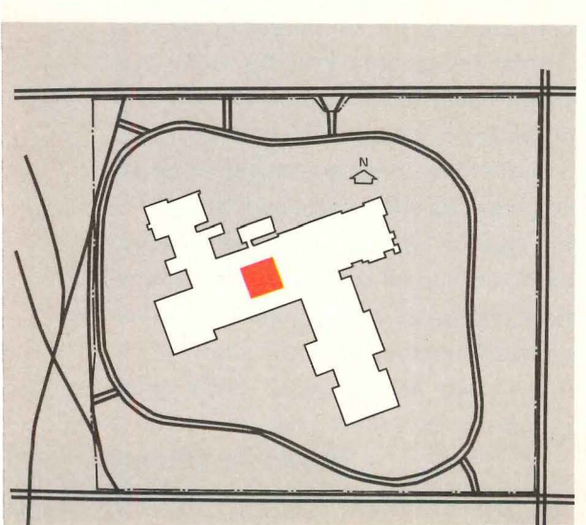
—Donald-David Logan

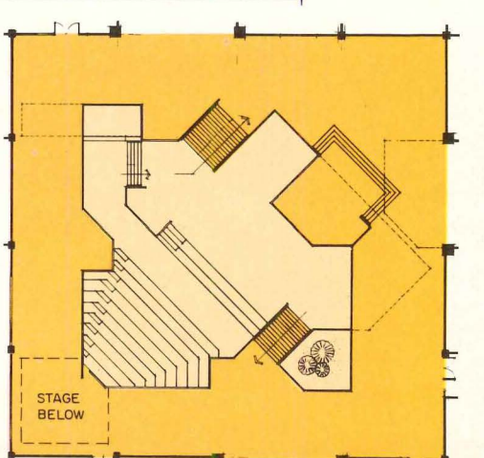
Jim Parker photos

FORUM 303: MUCH MORE THAN JUST A PLACE TO SHOP

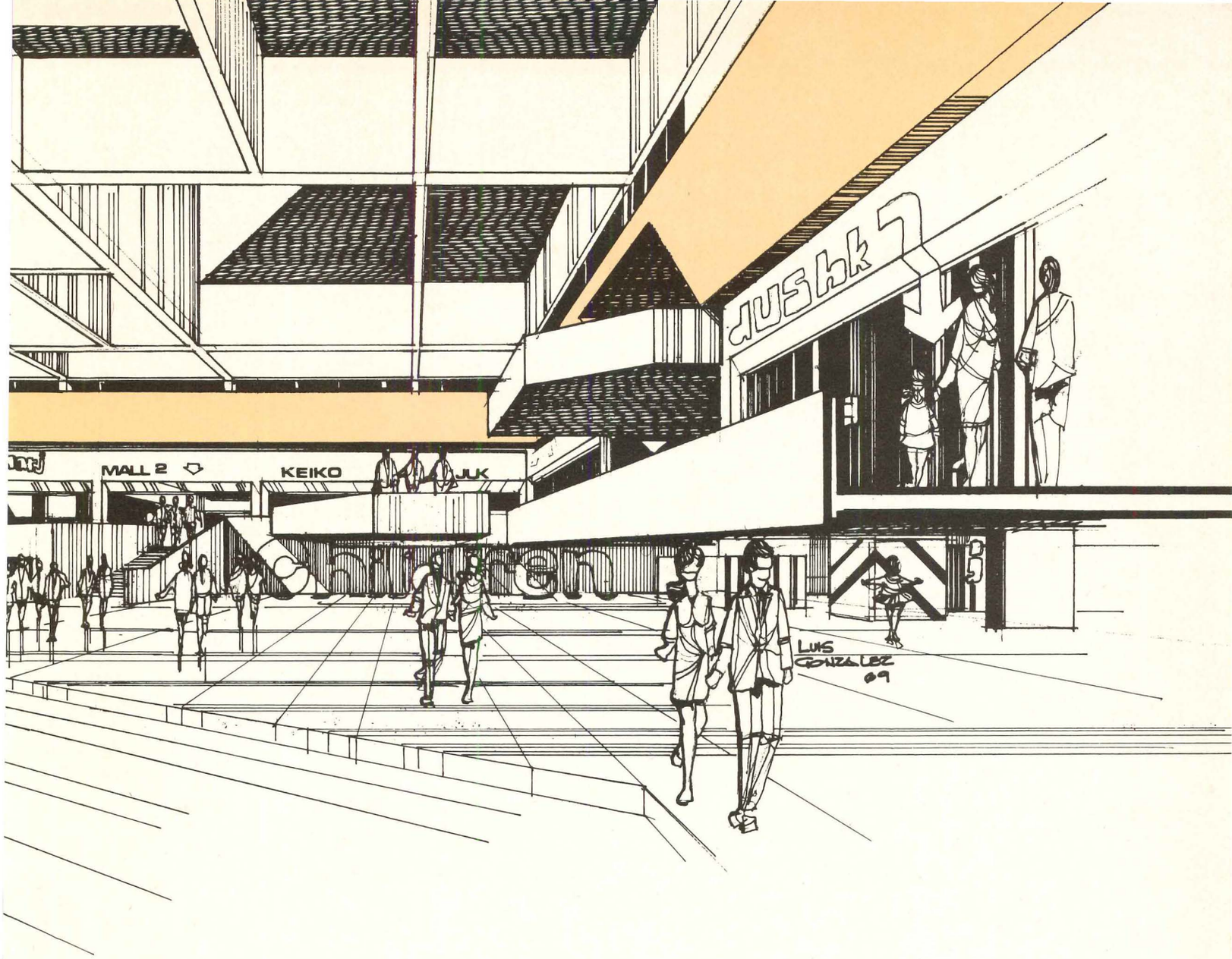
Forum 303 is located on a site of 120 acres in Arlington, Texas, about midway between the metropolitan centers of Dallas and Fort Worth. One store is already open; the mall is currently under construction and scheduled to open in the spring. The initial phase of 875,000 square feet is to be completed in 1971; eventually the completed center, with four or five department stores and including a high-rise hotel connecting directly with the central court (as do all the department stores and specialty shops) will total 1,186,000 square feet. The court itself is divided into three subsidiary areas. These areas are approximately 250 feet on center, a distance the architects have found to be best for visual motivation while not so far apart as to discourage walking from one to the other. The area in the foreground of the rendering at the right features a 320-seat amphitheater. Its uses include merchandise promotion, such as fashion shows, and customer entertainment, either live or on film. Neighborhood little theater productions, a puppet show, the filming of a television program are all possibilities. At other times the area is made available to various civic and community groups. Whatever the activity, the architects feel the amphitheater plays an important role in contributing to the excitement and abundance of activity choices which are essential to the success of the center-court plan.

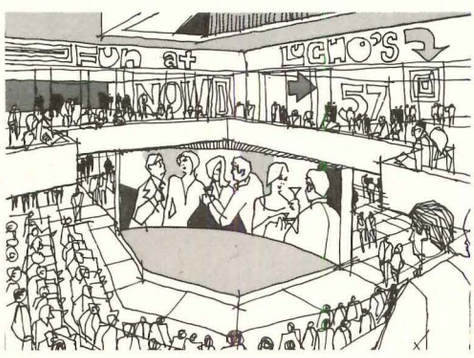
FORUM 303, Arlington, Texas. Architects: *Harrell + Hamilton—William McGrew, partner-in-charge; Terry Forrester, project manager; Gene Watson, project designer; Luis Gonzalez, team leader; Janet Needham, graphics;* structural engineers: *Terry-Rosenlund & Co.;* civil engineers: *Ray L. Goodson, Jr., Inc.;* mechanical engineers: *Gaynor & Sirmen, Inc.;* landscape architects: *Richard Myrick & Associates;* developer: *Alpert Investment Corporation.*



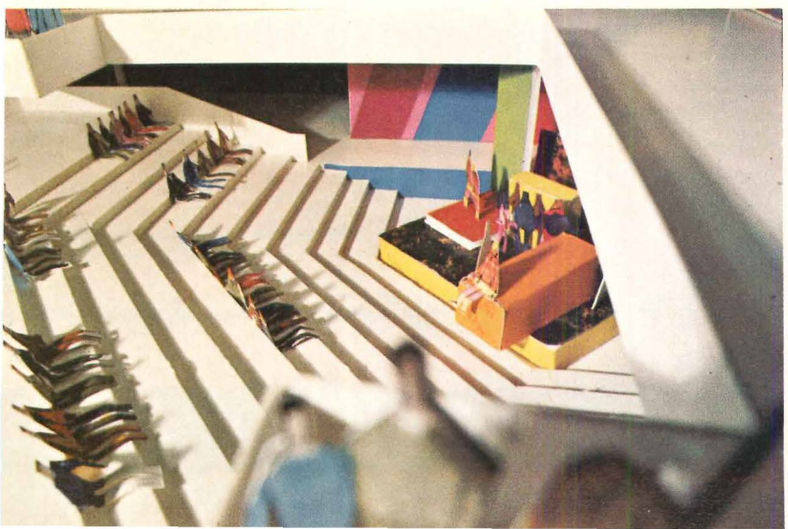


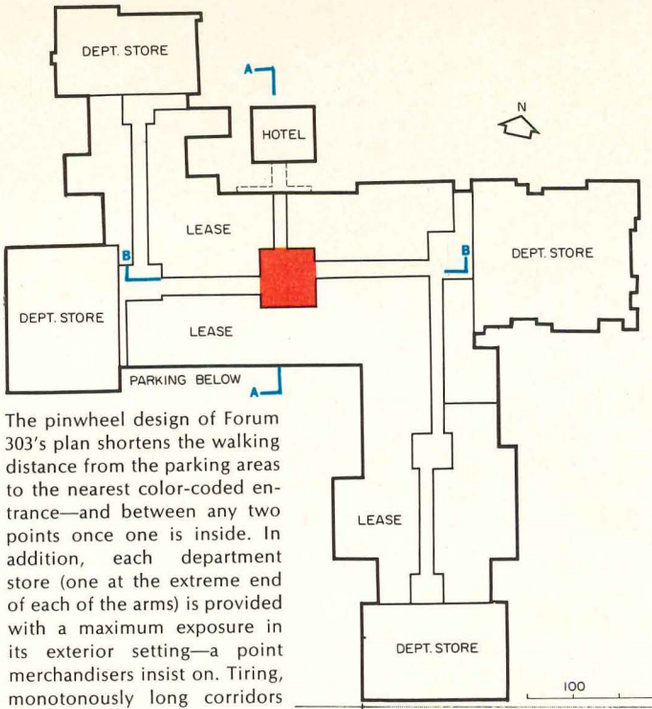
The amphitheater is integrated with both the retail areas and lower-level covered parking; the seating arrangement is, in fact, part of the vertical circulation system connecting the two. Small sketch, upper right, shows drop-down wide-width film screen in place. Upper-level shopping tiers serve as viewing balconies for performance or are simply for 'people watching.' In the large drawing, above, the slanted continuous fascia just above the identifying signs for the individual stores is an electronically operated 'reader board' featuring store announcements and ads.



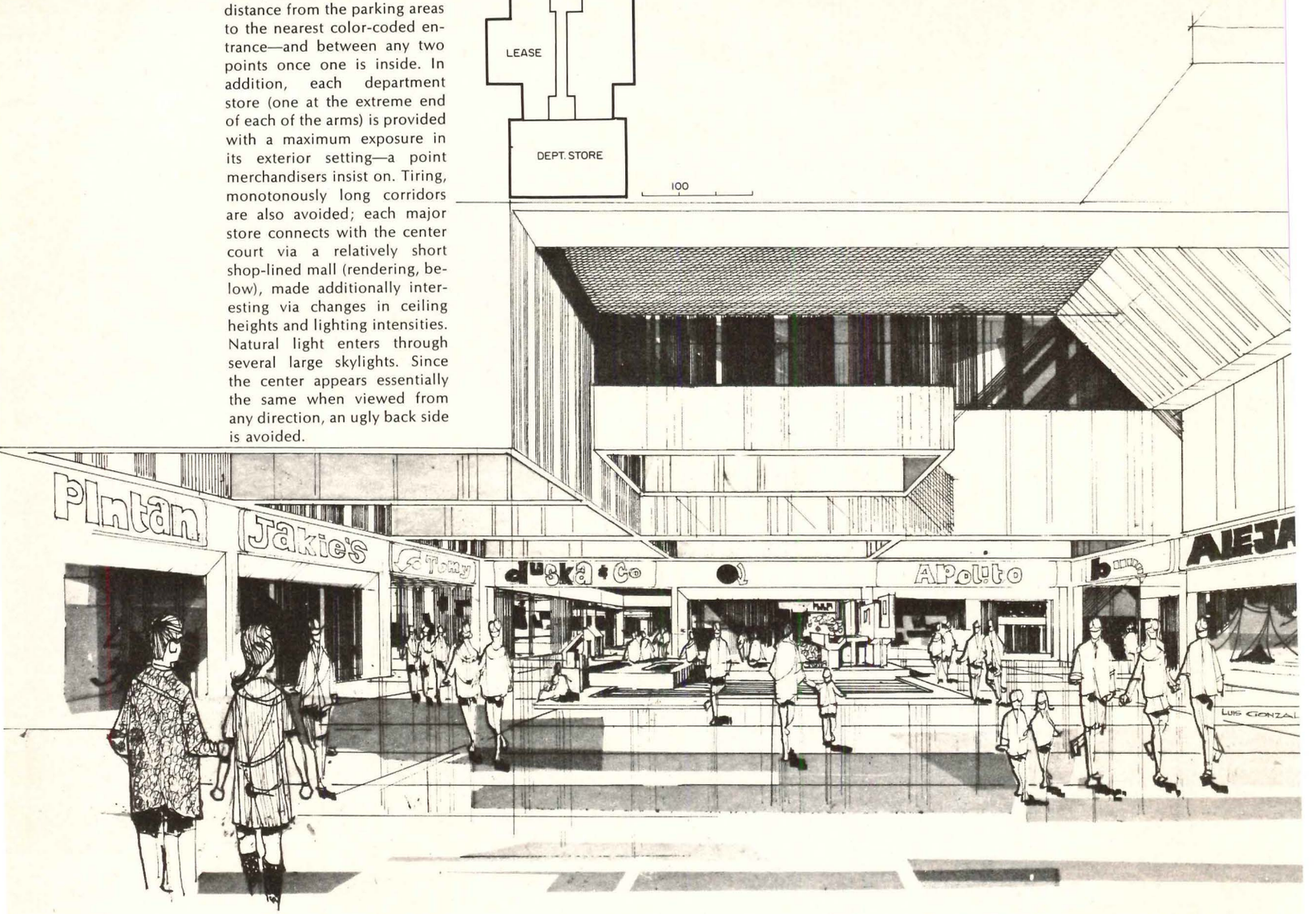


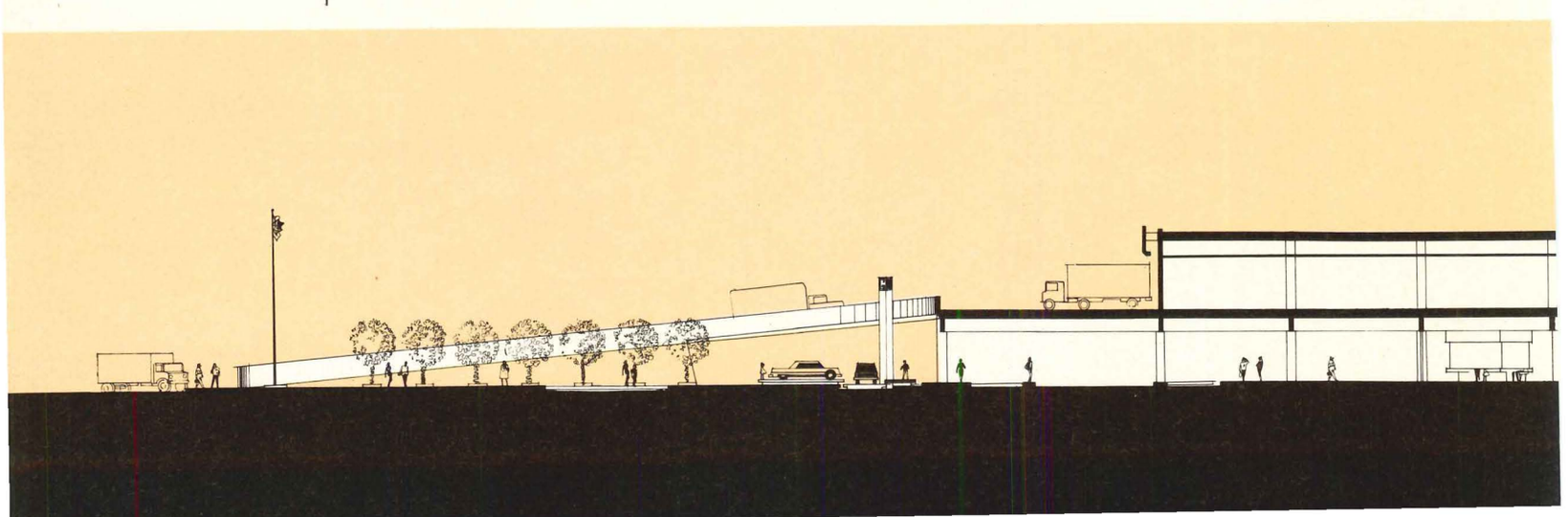
Another subsidiary mall area, below, is an activity court specially planned for children. Graphics are integral to the architects' design concept, particularly in establishing the extra controls needed with an open design and an abundance of activity. Besides the children's space, where they abound, graphic panels in walls and floors serve as traffic controls, area definers, or call shoppers' attention to displays and shop windows.

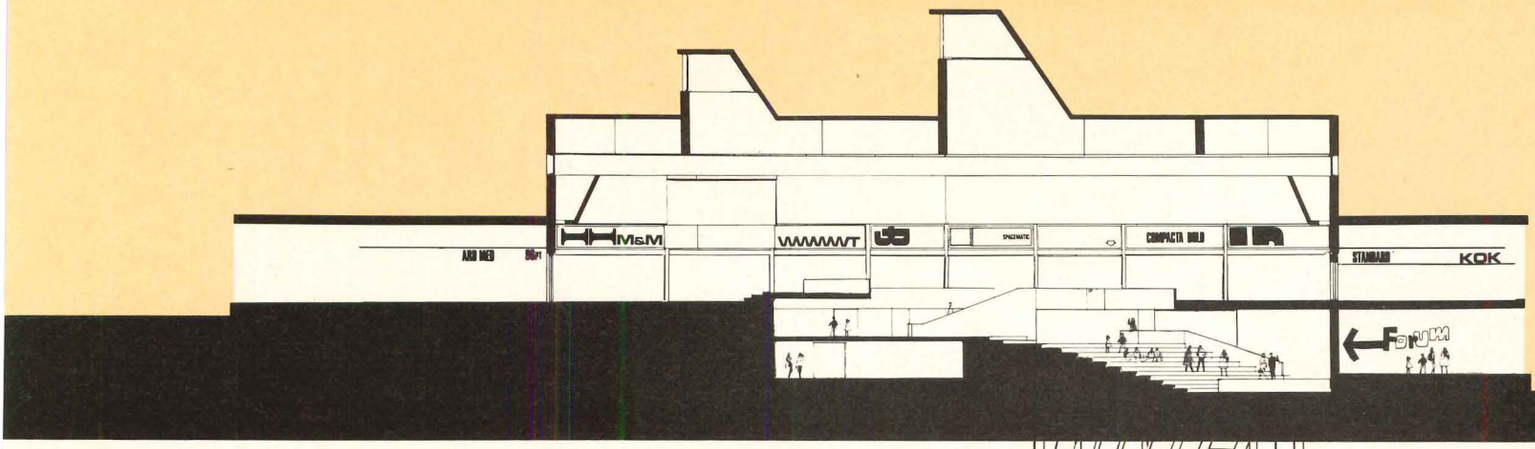




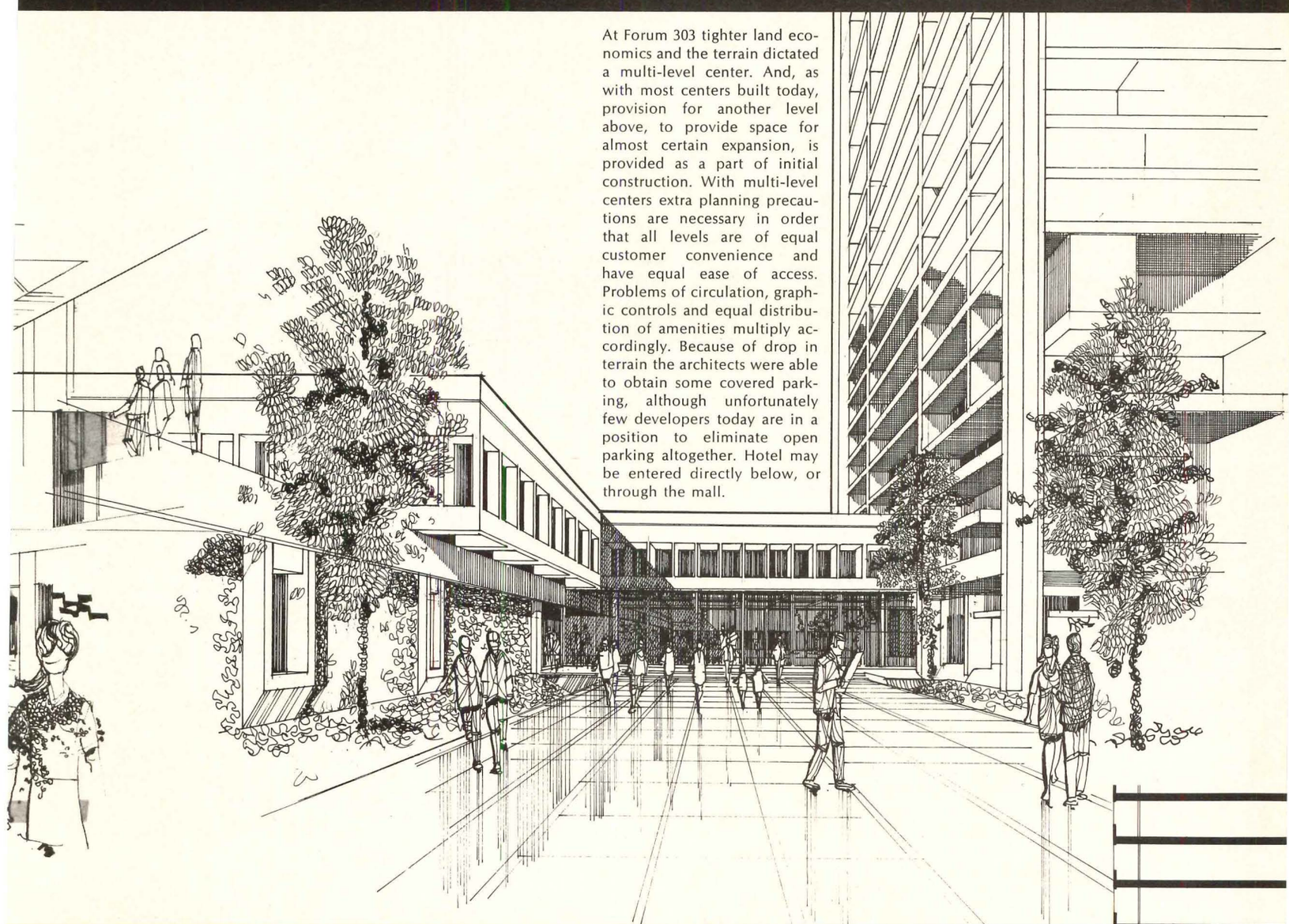
The pinwheel design of Forum 303's plan shortens the walking distance from the parking areas to the nearest color-coded entrance—and between any two points once one is inside. In addition, each department store (one at the extreme end of each of the arms) is provided with a maximum exposure in its exterior setting—a point merchandisers insist on. Tiring, monotonously long corridors are also avoided; each major store connects with the center court via a relatively short shop-lined mall (rendering, below), made additionally interesting via changes in ceiling heights and lighting intensities. Natural light enters through several large skylights. Since the center appears essentially the same when viewed from any direction, an ugly back side is avoided.

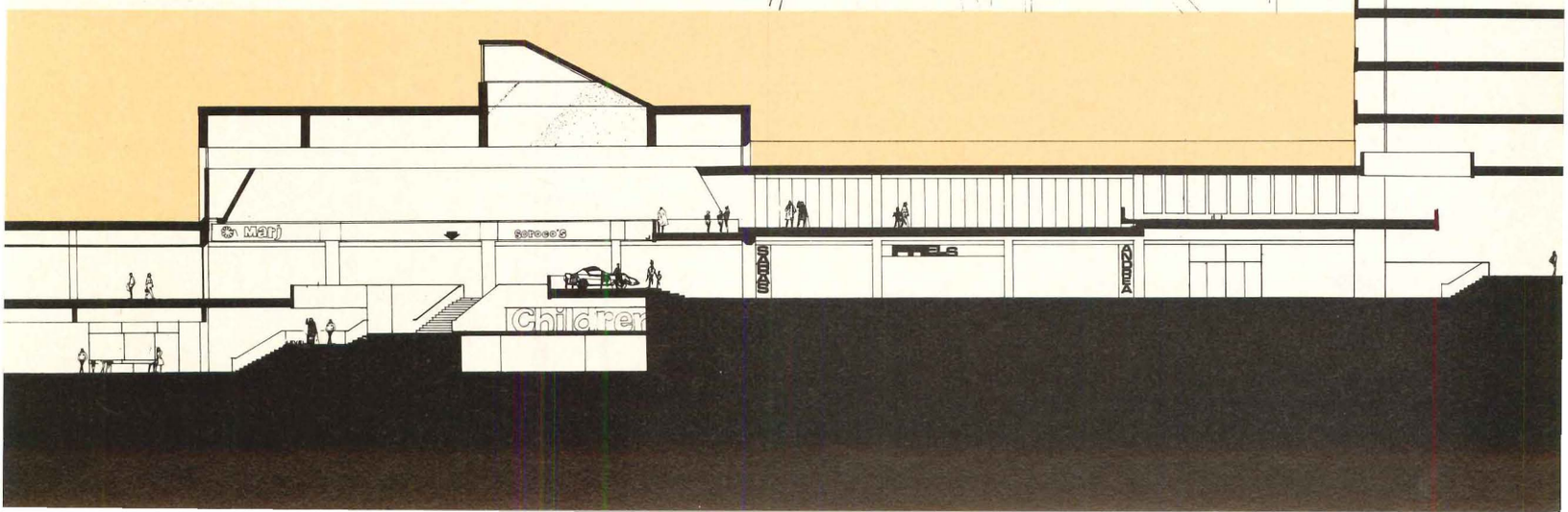


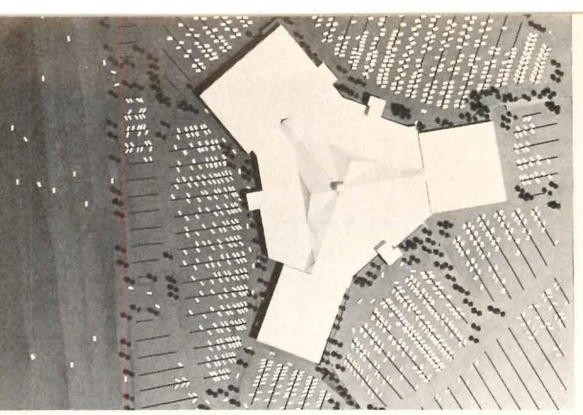




At Forum 303 tighter land economics and the terrain dictated a multi-level center. And, as with most centers built today, provision for another level above, to provide space for almost certain expansion, is provided as a part of initial construction. With multi-level centers extra planning precautions are necessary in order that all levels are of equal customer convenience and have equal ease of access. Problems of circulation, graphic controls and equal distribution of amenities multiply accordingly. Because of drop in terrain the architects were able to obtain some covered parking, although unfortunately few developers today are in a position to eliminate open parking altogether. Hotel may be entered directly below, or through the mall.

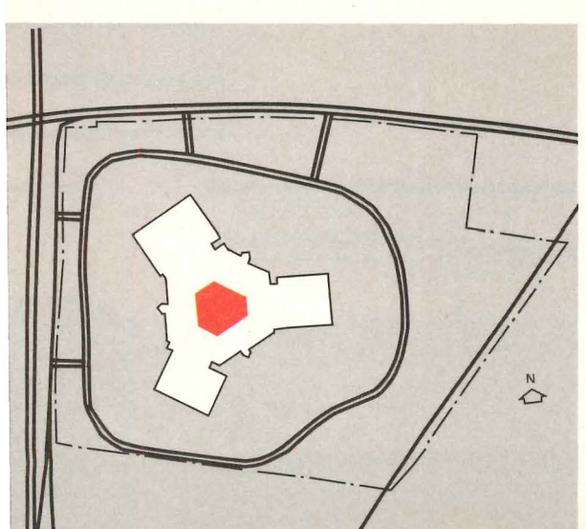




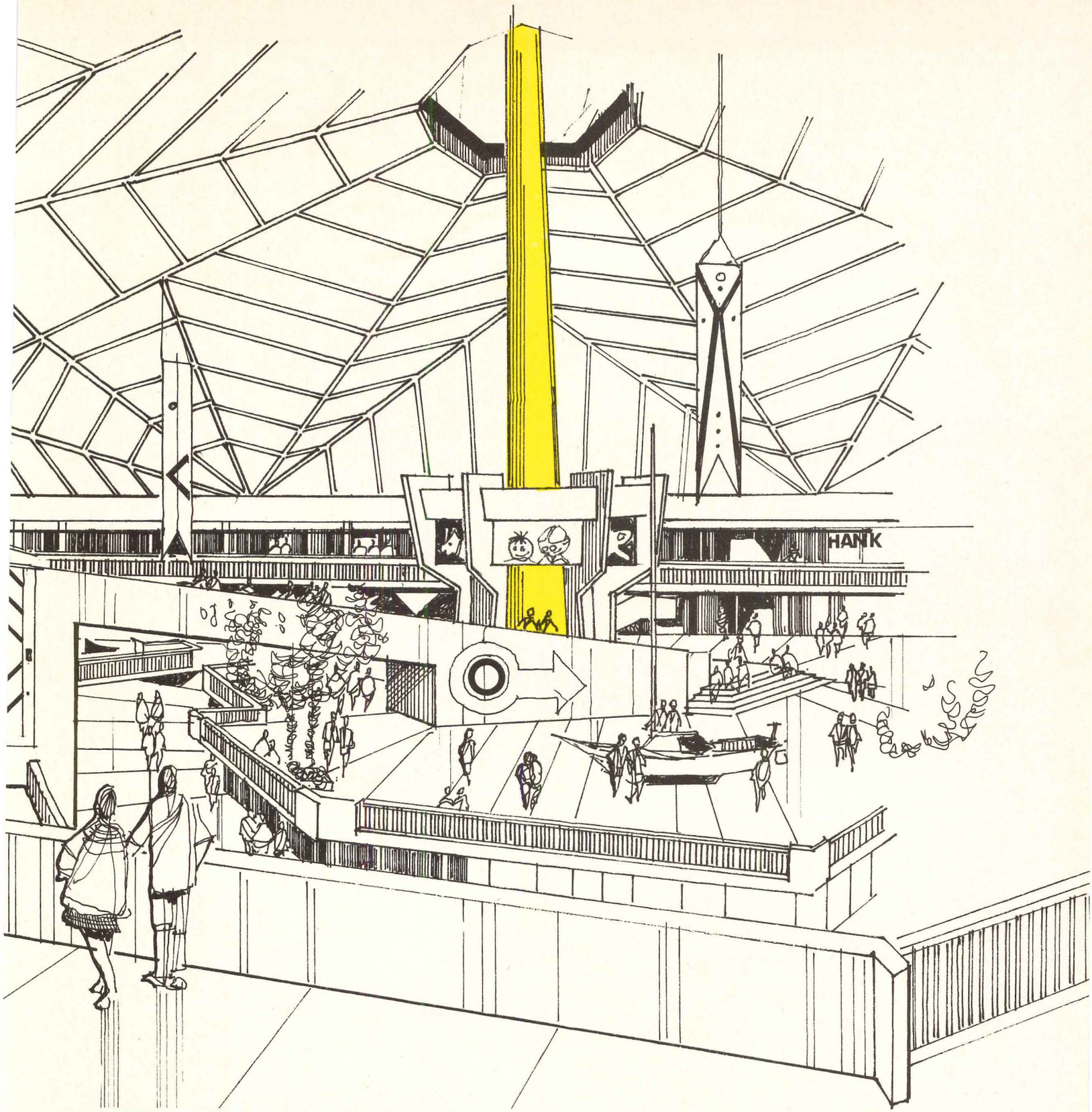


TOWNEAST: THE INTEGRATION OF SHOPPING AND ENTERTAINMENT

TownEast is a Harrell + Hamilton shopping center now under construction on a 99-acre site in Mesquite, Texas, near Dallas. The site adjoins three major freeways, and a great deal of attention was given to the access and exit points connecting with the inter-highway system. Because of this extra advance planning—obtaining the cooperation of the highway department, for example, in the creation of additional arterial roads—it is unusually easy for even the first-time visitor to find his way to the parking areas. Because of the building's shape the distance from even the furthest parking areas (there are spaces for over 7,000 automobiles) to the building has been kept fairly short. Once at the building itself, there is equal and direct access to both lower and upper shopping levels at more than a dozen points. The center's design represents the first core-type retail development of the firm, but in many ways its Y-shape plan and central hexagonal mall, covered, as it were, by a giant circus tent, represent the epitome of the architects' ideas as to shopping environments suitable to the '70's—and, hopefully, many years thereafter. Due to their location, each of the major department stores, as at Forum 303, is easily identified from the multiple approaches to the center. More importantly, the particular shape of the plan results in a tremendous over-all compactness and density. If placed side by side, the 100 stores and shops would equal a linear mile. Here, it is only a few minutes from the central court to any store. This is the plan of the center; the key to the *functioning* of the plan is the activity, color and excitement at its core: the center's users, arriving at any of the various points, are drawn because of curiosity, visual stim-



The focal point of the central space is a 160-ft high steel pylon, which serves as the primary structural support, as well as a major air-conditioning and artificial lighting source. At its top a 15-foot-high clerestory skylight emits natural light into the court. Incorporated into its base, 15 feet above floor level, six rear projection screens provide entertainment combined with sales promotion announcements. A giant swashbuckling kind of a ramp, punctuated with displays, exhibits and some landscaping, connects the shopping levels.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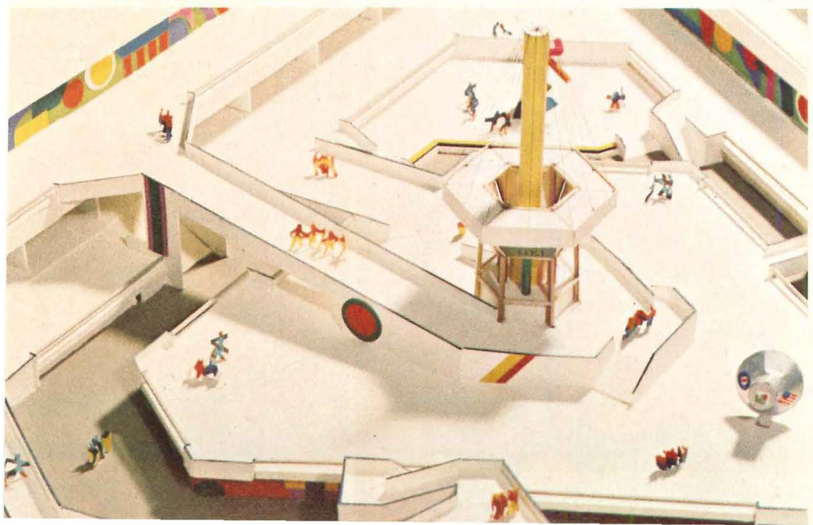
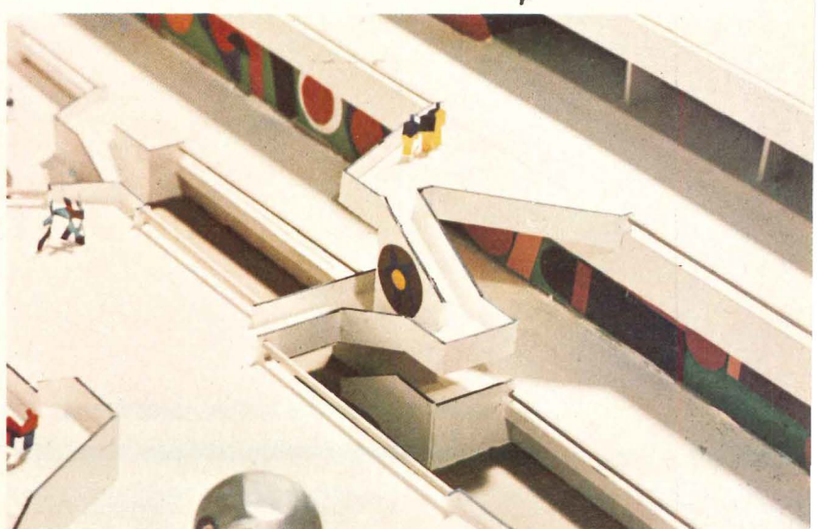
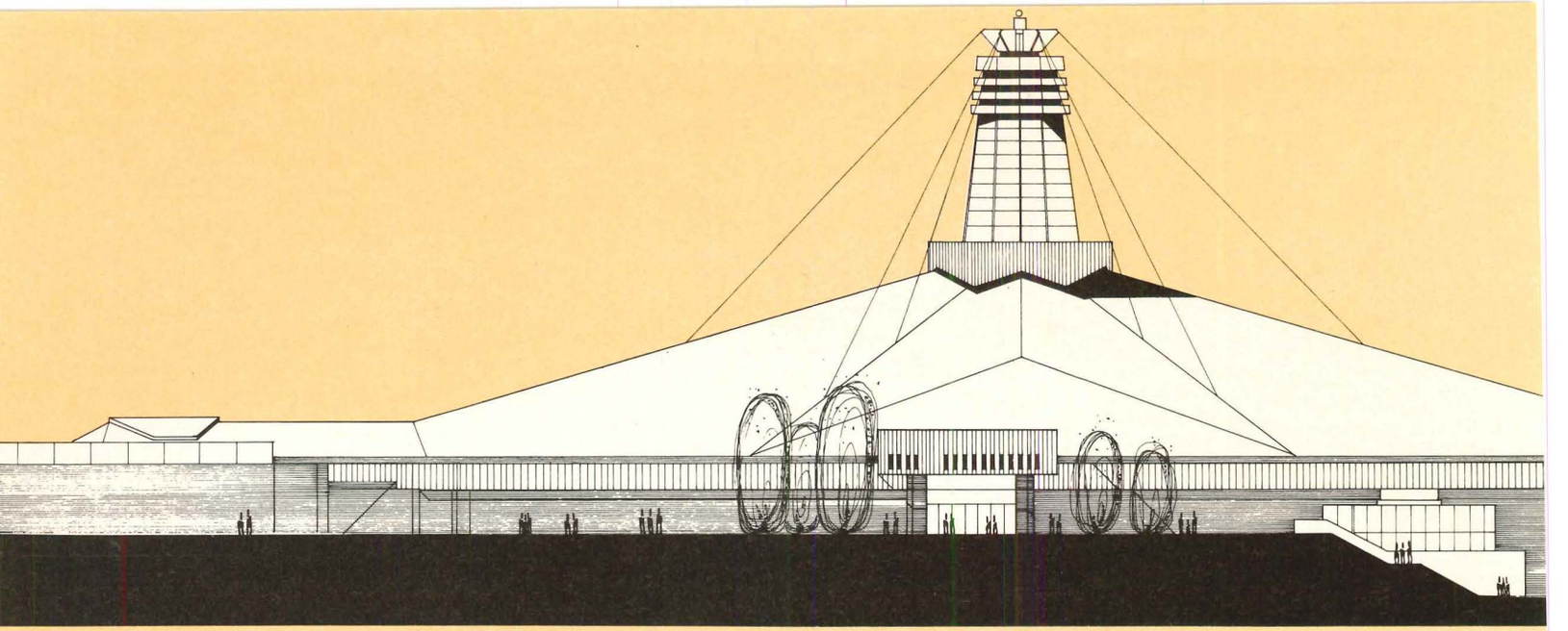
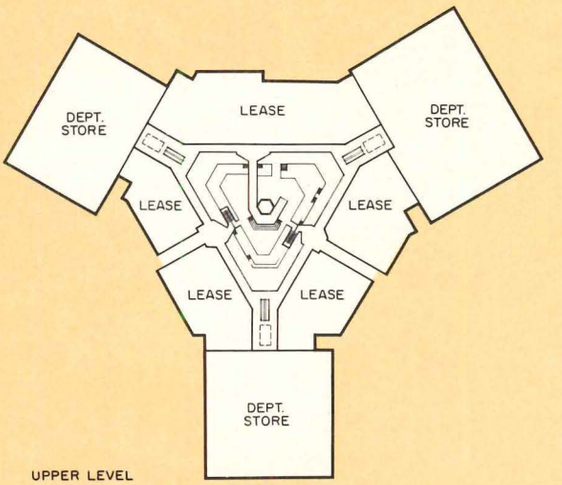
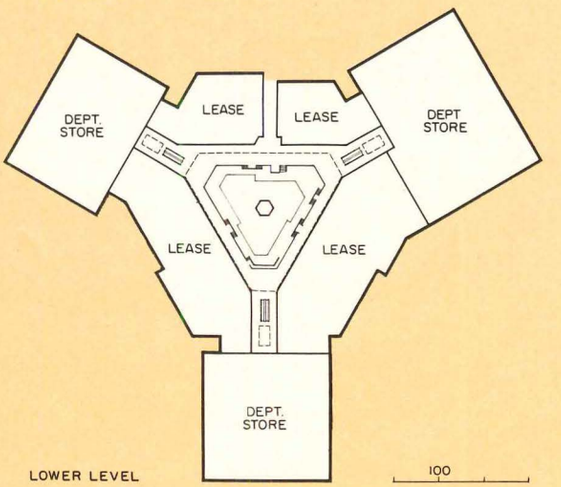




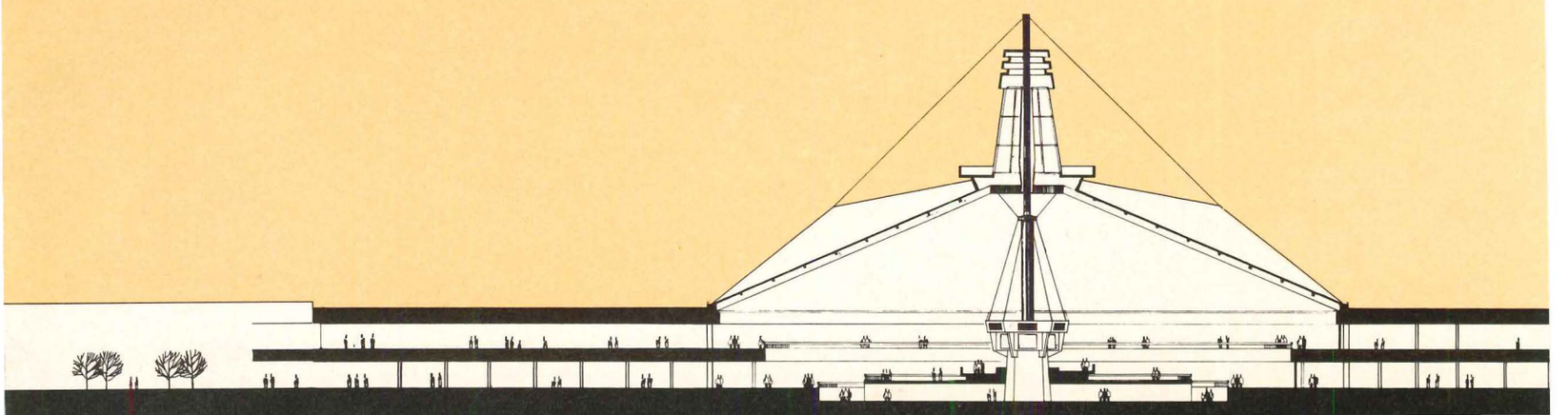


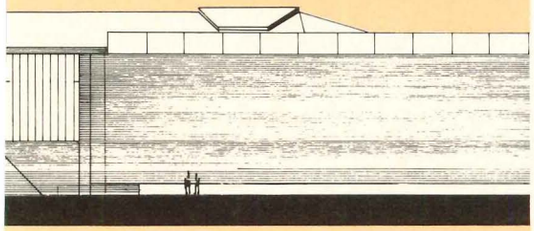


UPPER LEVEL



LOWER LEVEL

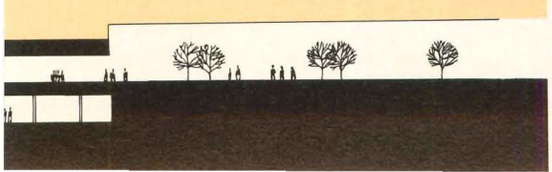


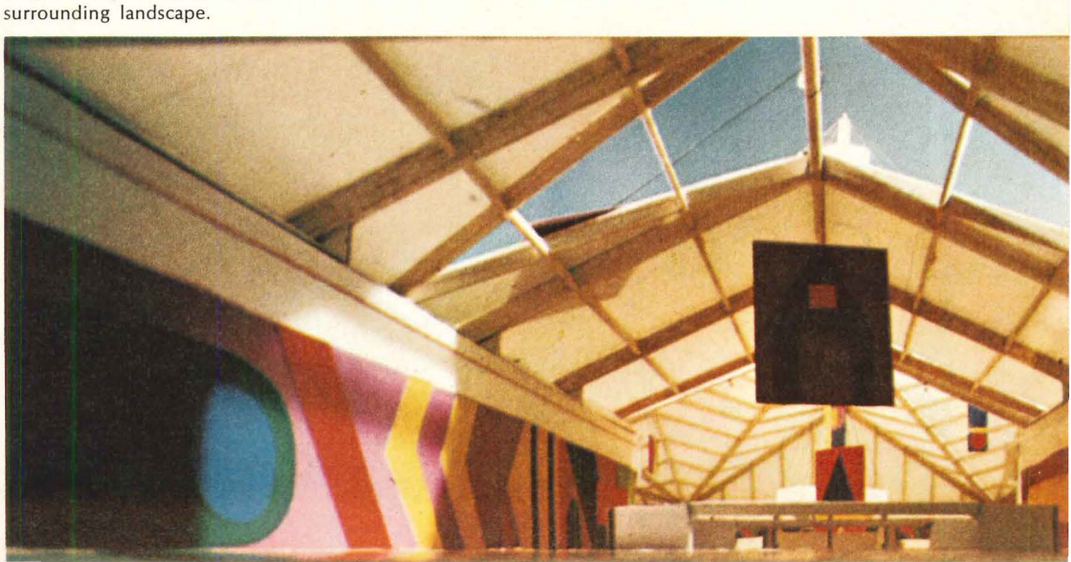


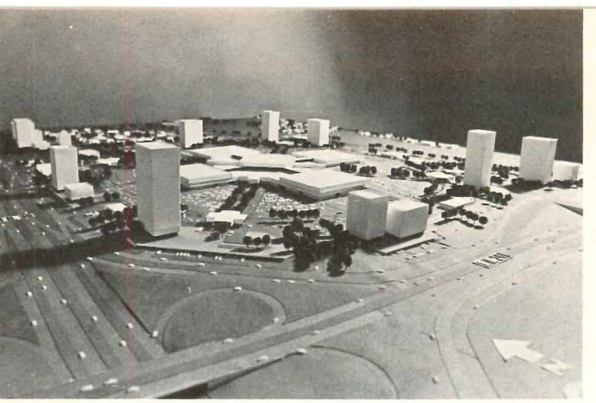
uli, greater people density, noise, etc. to the central court. This great (the central space is equal in size to a baseball diamond) covered public 'living room' of the building, with a variety of entertainments replacing the single family television set, becomes a home base. From here the shopper explores the rest of the building, interweaving shopping and errands with the opportunities for amusement, rest and refreshment, and social intercourse which the central area provides. This centripetal, centrifugal traffic pattern flow gives life to the efficient plan.

TOWNEAST, Mesquite, Texas. Architects: *Harrell + Hamilton—William McGrew, partner-in-charge; Terry Forrester, project manager; Gene Watson, project designer; John Miller, team leader;* architect for the owner-developer: *Truett C. Wagley;* structural engineers: *Chappell, Taylor & Mitchell;* civil engineers: *Powell & Powell;* mechanical engineers: *B. Siegal;* landscape architects: *Richard Myrick & Associates;* contractor: *Avery Mays.*

Each level at the TownEast shopping center has its own shopping sidewalks and direct access from the surrounding parking areas, while the clustering of the stores around an open core results in continuous horizontal and vertical circulation. Two-thirds of the entire center can be viewed from the central space. Color photo of model, bottom right, shows a view from department store down one of the short, shop-lined malls that lead to the center court. Cutouts in floor slab allow natural light to reach lower level. At night artificial light from within makes the central supporting mast structure into a giant beacon, locating the center in the surrounding landscape.



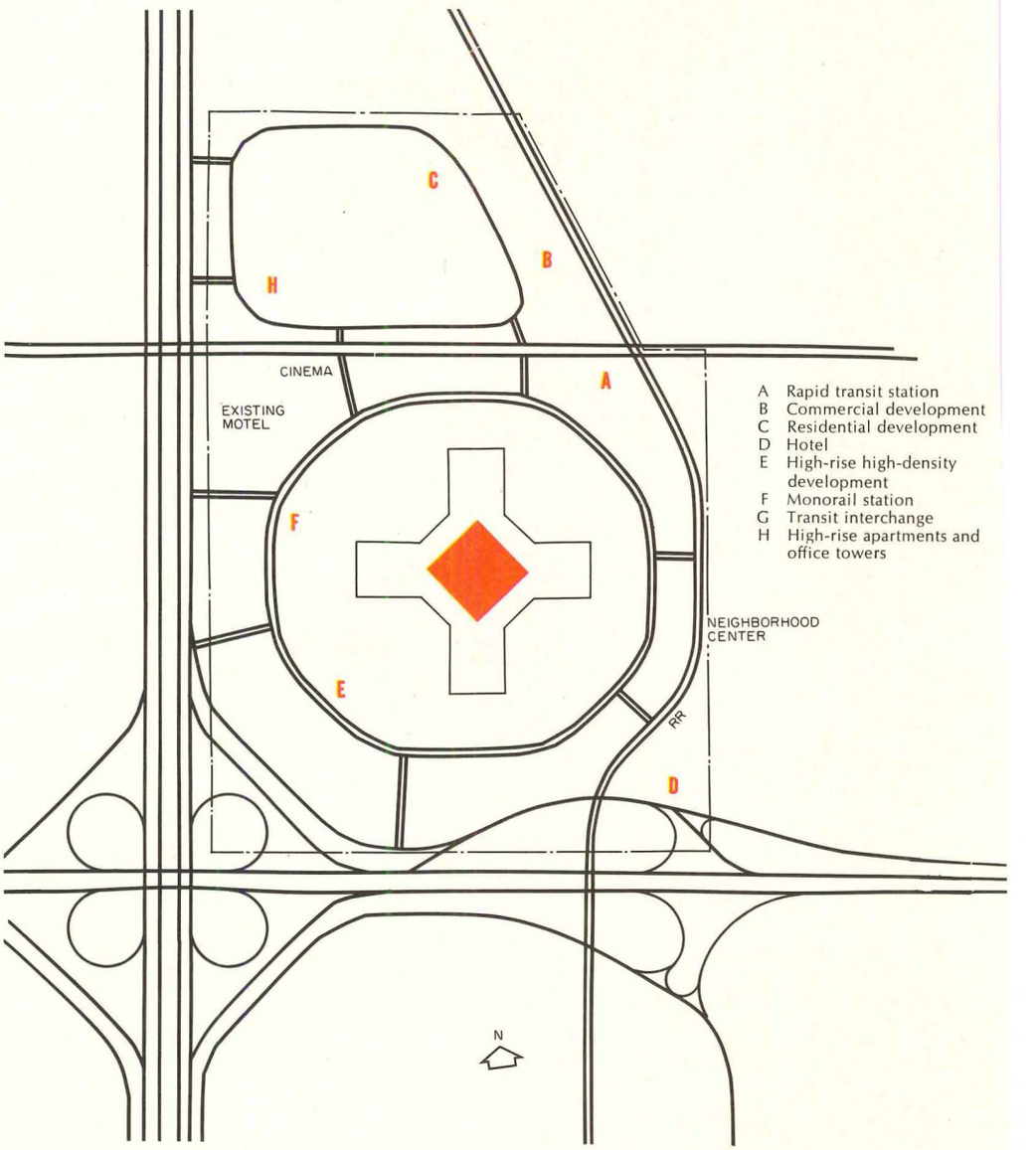


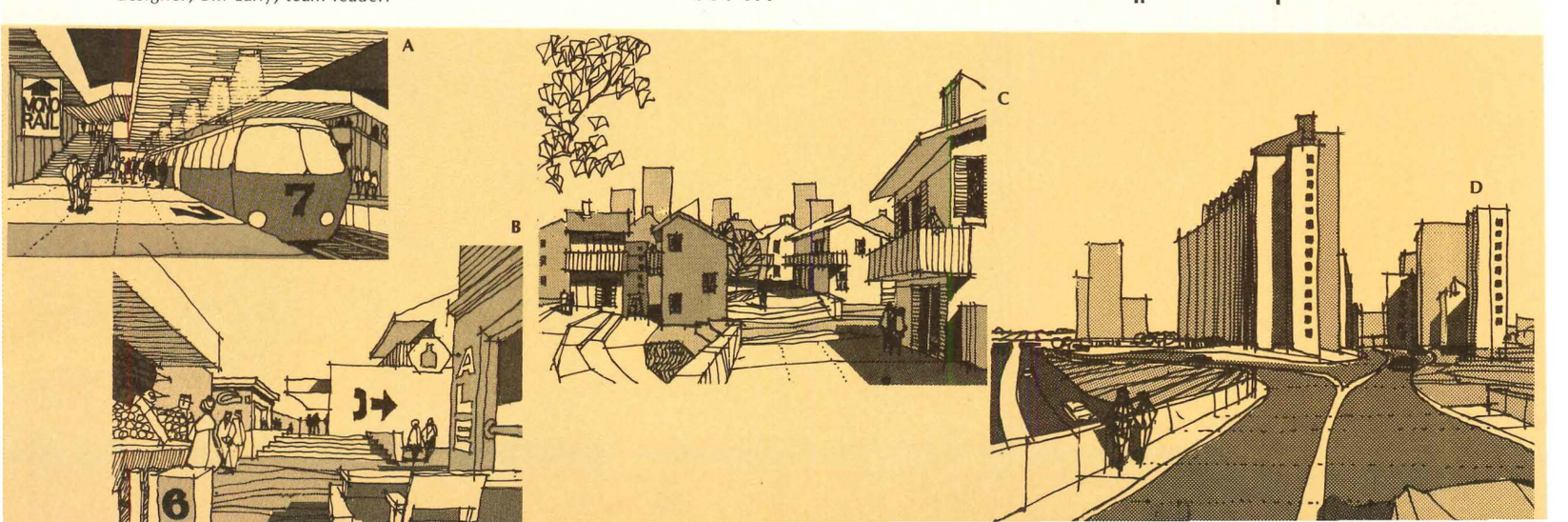


CROSSROADS: UNITING THE LIVING-WORKING-SHOPPING ENVIRONMENT

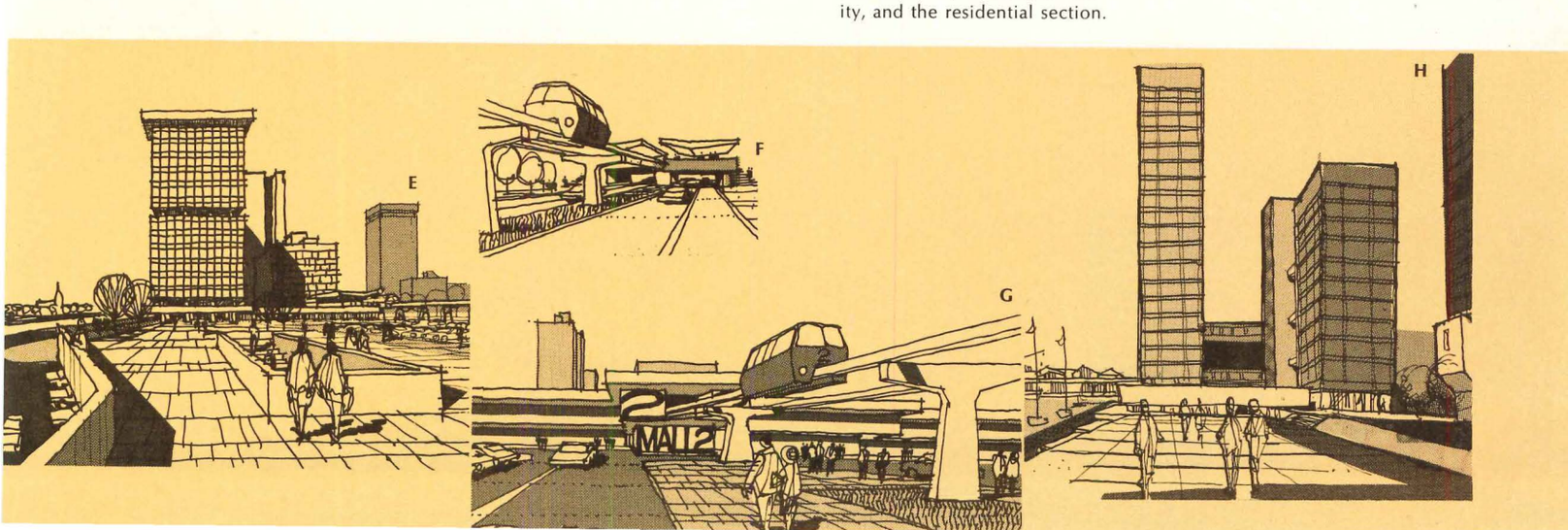
At Crossroads, a 185-acre project in Oklahoma City, Oklahoma, the architects have developed an integrated living-working-shopping environment. The master plan for the project, on which construction is to begin later this year, includes, besides the center itself with its four department stores and various specialty shops, three motor hotels, several office towers, a theater, a high-density residential area including both high-rise apartments and 80 townhouses, 50,000 square feet of neighborhood businesses, a supermarket area for an estimated total of over 1,640,000 square feet. From the beginning the firm saw that the role of transportation within the complex was of paramount importance and set as one of their goals a total cohesiveness of all facilities via a well-articulated vehicular and pedestrian traffic system. The entire complex will be served by a high-speed belt highway with direct access to all parking areas. Following the path of this highway a monorail is planned, reaching into the housing area, and with frequent stops, one of which, it is hoped, will be a link with a projected regional rapid transit system that would utilize existing railroad tracks bordering the site on one side. The transit system would run southward as far as Norman, the home of the University of Oklahoma. This would greatly increase the size, of course, of the center's total trading area. Whether this tie-up is eventually achieved or not, the comprehensive nature of the project will greatly add to its total number of users.

CROSSROADS, Oklahoma City, Oklahoma. Architects: *Harrell + Hamilton/Phelps-Spitz-Ammerman-Thomas—William McGrew, partner-in-charge; Terry Forrester, project manager; Gene Watson, project designer; Bill Early, team leader.*



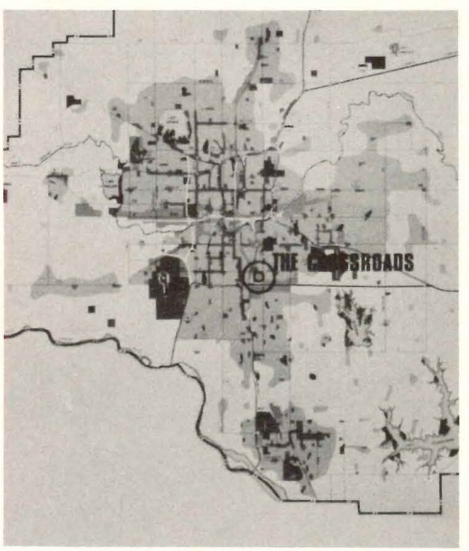


By utilizing basic, economical, yet attractive design solutions the architects save on building costs. These in turn are used for shopper-attracting, sales-stimulating amenities, such as the amphitheater, part of which appears in the lower left corner of the sketch above. On the opposite page, the site plan diagram illustrates how the center is ringed by a business area (with its own off-street parking) which serves as a buffer zone between the center, with its heavy volume of activity, and the residential section.



STUDY AND RESEARCH=NEW CONCEPT AND TECHNIQUES

Even with well-planned shopping centers, wild fringe development often spoils their total effectiveness. One solution to this problem is a larger amount of acreage, and architects capable of designing entire integrated communities: apartments, offices, and the shopping center itself. Such shopping centers might be similar in approach to the examples shown here—a shopping center that is not just a collection of stores, but rather one that fulfills the need for a community recreational and social meeting place as well. Harrell + Hamilton agrees with the esthetic and social values activating this wider-base type of planning, and has been especially successful in working with the shopping center de-

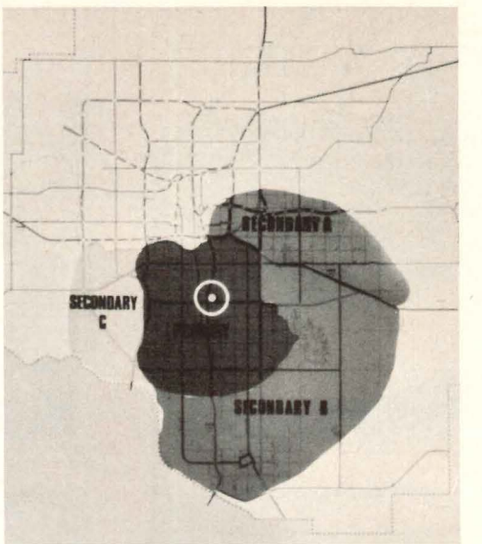


1985 land use forecast (Wilbur Smith and Assocs.)

veloper interested in planning on a larger scale. With a number of hard facts and figures to support one's ideas, it is fairly easy to demonstrate that it is to his financial advantage to do so. When a center is announced, for example, if done with the proper advance planning so that prospective leaseholders and the general public believe in its eventual reality, the value of the site doubles immediately. It again rises, as much as 300 per cent, when the stores open their doors for business. At both times there is a concomitant escalation in the value of the surrounding land, all the more so, of course, if the center is well designed. In fact, of both cases it is said that the higher the quality of the center the greater the land value escalates. "Well designed" in this context must be taken to mean not only an attractive building, but one that is so comprehensively and well planned that it is the favorite of shoppers for miles around from the beginning. In addition it must be so strong in its planned component of stores, particularly with regard to the 'anchor' merchandisers—branches of the largest department stores in the area—that no other developer can build a more magnetic competitive center nearby.

In order to achieve this goal the Harrell + Hamilton firm seeks to be involved in the formulation of plans for a new center as soon as possible. Ideally, their role begins with helping the developer to select a site, or, at least, beginning with the acquisition of the land by him. To this end they have profited from their extensive work in the shopping center field (which accounts for approximately 30-40 per cent of the firm's work) and have evolved a detailed and highly organized pre-design-stage program of research and planning that greatly extends the architects' role in the development of the center and its surroundings. The assurance of a well-designed and successful project increases accordingly.

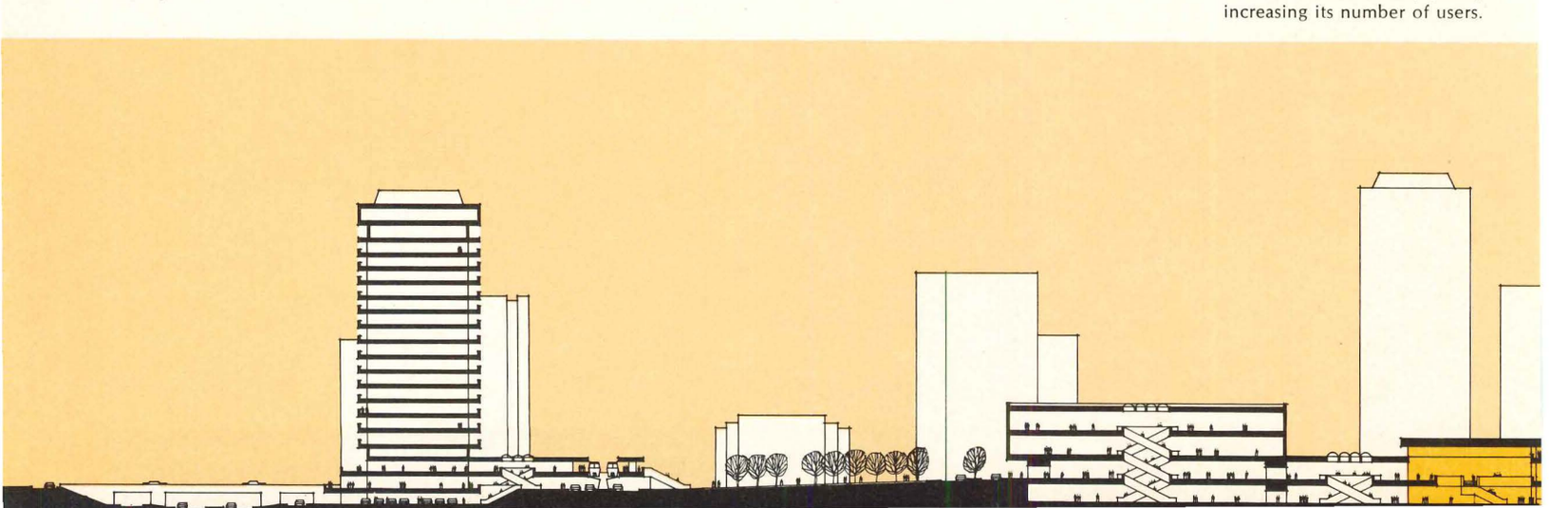
The best way to understand how the firm proceeds lies in examining the extensive feasibility studies they undertake (Phase I). These in turn lead to a two-part development plan (Phase II). The tremendous importance and multiple uses of an audio-visual program, used to present in a very forceful fashion their findings and proposals, should also be emphasized.



Primary and secondary trade areas

If the developer has a site then the feasibility studies begin with exploring how the already chosen site might best be developed. However, the firm often enters the picture earlier; they make preliminary studies as to which of a number of sites is preferable. In either case, they use at least six basic criteria, each of which weighs against the others, in making their proposals. These are: the number of potential users, both current and projected; community attitudes; the adequacy of existing public utility and fire protection systems; the total regional traffic picture; site conditions; and costs. Land maps and popula-

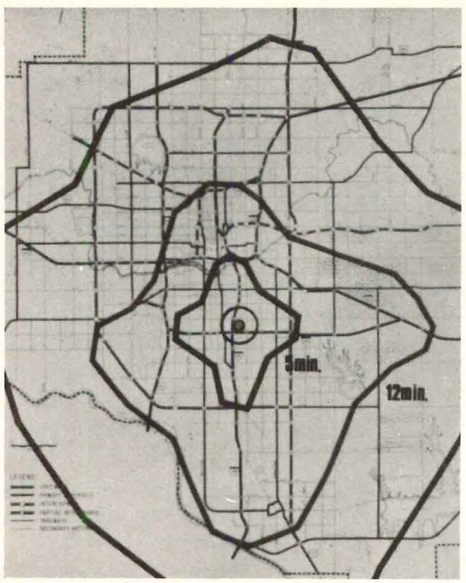
Below is a section through the Crossroads project; the tinted area is the shopping center. The acquisition of the land surrounding the center allows the architects to control the neighboring environment, and to plan a multiple-use project with an over-all unity and coherence of design. The surrounding buildings add to the attractiveness of the center itself while automatically greatly increasing its number of users.



tion-projection charts are studied to determine the maximum effective radius of the prospective center, and the driving times from various points ascertained. The architects have found however that, educated calculations to the contrary, the number of people using a particular shopping center almost always exceeds the number predicted. The population growth rate, and in what particular neighborhoods it will occur, is also a factor that must be taken into consideration. For this reason the structural system must be designed to carry almost certain upward building expansion. A cooperative community, lending assistance in such matters as possible changes in existing zoning laws and variations in building code regulations, can contribute tremendous cost savings. These are eventually returned to the community in the taxes the center will be paying. In several cases it has been necessary to make improvements on a possibly inadequate sewage system or other public utility. It is important to good community relations that the center does not unduly overtax existing public services. A new shopping center can result in traffic pattern changes as far away as six miles, as it did at Crossroads. New or improved arterial roads and interchanges may be needed. At the TownEast center the developer is building new roads in accordance with the city's master plan—but ahead of the city's schedule, the agreement being that the funds will be returned to him at the time the new roads were to have been built. Besides the obviously desired juxtaposition of the center to one or more freeways, the firm looks for convenient rail and even air transportation. The topography, which greatly influences the choice of a single or multi-level design, must be studied, and the additional cost of earth-moving, if necessary, taken into consideration. Soil testing, for the best type of foundation, takes place.

The Harrell + Hamilton firm then analyzes the findings of its research, utilizing its past experience in doing so, and drawing on more general authoritative material gathered from such sources as the Urban Land Institute and the Shopping Center Council. Despite the depth and extent of the work involved, these feasibility studies can be completed in 30 days if necessary. At such time the abnormal development expenses are known and, added to the land acquisition price, equal the true cost of a prospective site.

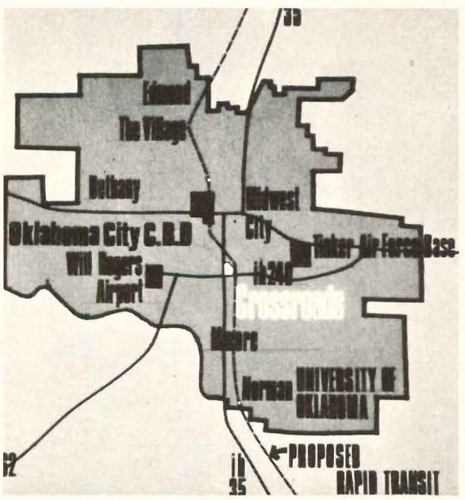
The feasibility studies are concerned



Anticipated shopper travel times

mainly with where to build; the next step—Phase II, the formation of a development plan—with what to build, how and when. Phase II involves going over some of the previously explored material at greater depth and from new viewpoints, together with the exploration of new areas of concern.

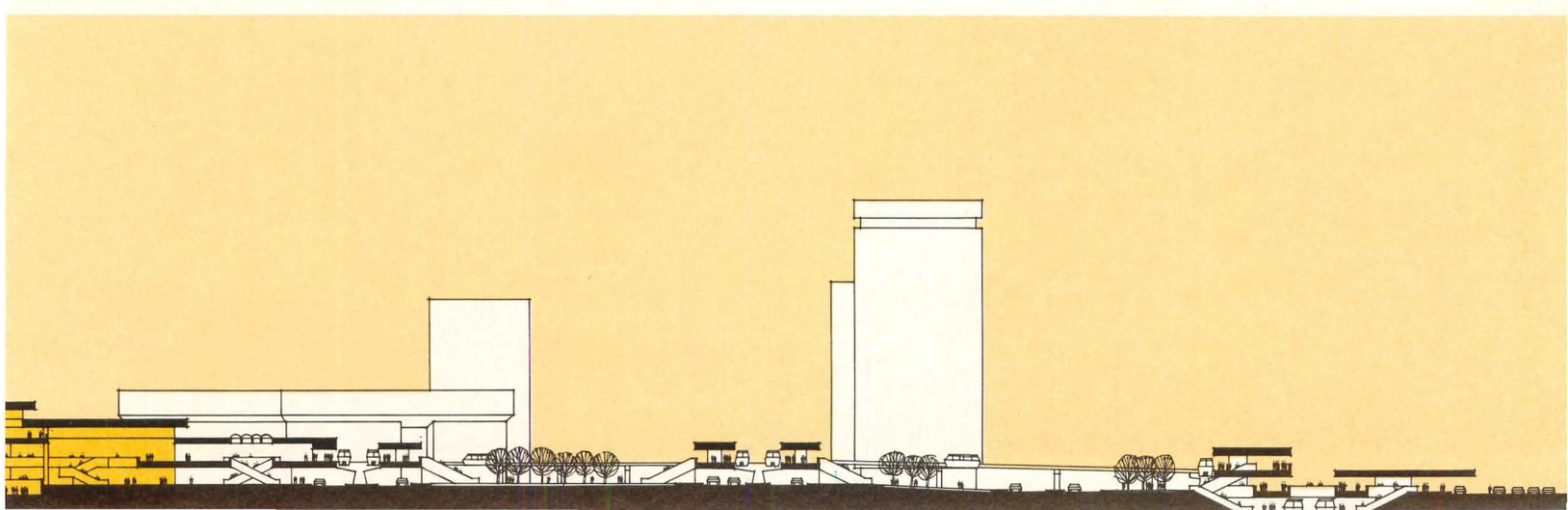
Municipal policies are carefully studied with an eye to what changes it might be beneficial to request. Under the general heading "land use studies," a preliminary building layout, together with grade changes, is drawn up. From this it is possible to determine tentative square footages —important figures since the size of the central court depends on the amount of leased area. The number of parking spaces



City limits and major highways

is ascertained, and the number and location of connections to the immediate circulation roads planned. All traffic planning is coordinated with the highway department. Lengthy discussions with the developer on the subjects of a suitable tenant mix and a general leasing program are aimed at achieving a strong, unified design yet one with a maximum of leasing flexibility. A construction budget begins to take shape. At the same time, recommendations regarding the use of the peripheral land are being formulated.

Many experts are needed in a carefully organized program if the goal of a "well-designed" center is to be achieved. A development team is formed at the outset, consisting of a partner of the firm, a project manager, a design captain, an economics



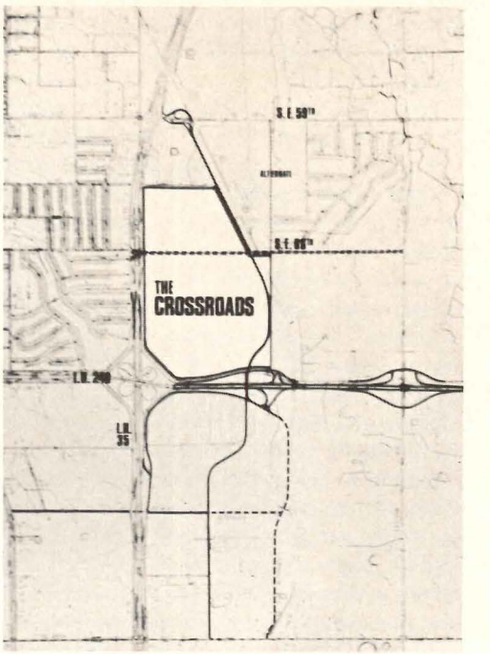
researcher, and a single liaison from the developer's office, plus a full battery of engineers: civil, structural, mechanical, electrical, traffic, and fire protection. To these are added lighting and other specialized consultants and a landscape architect. An effort is made to make the contractor a part

Regional freeways

of this team. The outside consultants, usually well-known experts in their field, often represent the choice of the client. But the Harrell + Hamilton firm is making an effort to have technical experts as members of the staff—an economics expert is an example—available to the client as part of the firm's expanded services, or at least available to the firm as a check on the outside experts' conclusions. A heavy emphasis is placed on the fact that the development team is a *group,* that each member understands the scope of the entire project. Receiving equal emphasis is the belief that only the architects are in a position to act as master-coordinators for the project.

The second stage of the development program begins with the preparation of a slide show. A large number of colored slides are of a well-constructed model of the project. The architects find that these are more expedient and efficient in illustrating their design solution than the model itself, as well as being far more portable. Additional slides illustrate the results of the feasibility studies in graphic form; also included are slides made by photographing small "character sketches," uncomplicated small renderings of interiors and exteriors. When shown on a full-size screen these give a vivid impression of what the buildings should look like. A member of the firm then makes a cassette recording to accompany and explain the slides, obviating the need for a Harrell + Hamilton person to be present every time a presentation is made.

For this capsule documentation of the total planning effort is used over and over again: First by the architects to present their research, ideas and solutions to the developer, who in turn uses it to elicit financial backing, to interest local department stores in signing branch store leases in the new project; and in presentations of the project to the state highway department, public utilities, city officials and planning commissions, community groups, and to the press. Thus, Harrell + Hamilton extends its planning services by providing information to back up the developer in his leasing effort, and they work together in winning support for the center on other fronts. This is typical of their attitude toward the expansion of the architect's role. For they have become leaders in the shopping center field by immersing themselves in shopper motivation and sales psychology, in problems



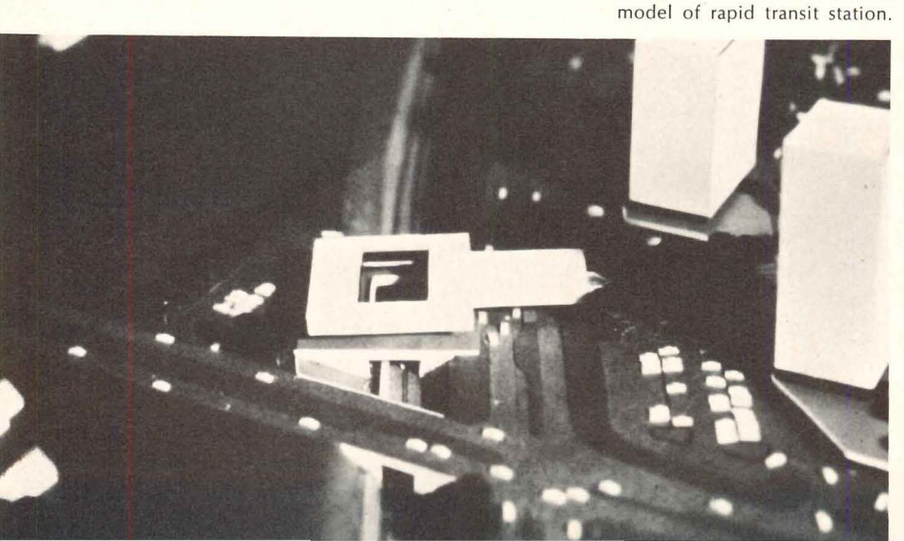
Proposed highway improvements

of economics, traffic, merchandising, financing, promotion and leasing.

When a sufficient number of department stores have signed leases to insure the project's being built, the final design is undertaken. Thus, although they have been on the job from six to eight weeks the architects here begin what have been thought of heretofore as normal architectural services. Even here the firm offers a full complement of design, planning and engineering services.

The efficiency with which these predesign stages are accomplished is matched by the design program which can be accomplished in ninety carefully worked out days. Thus, instead of the normal two-year period for the design and construction of a center, Leonard's, a department store in the Forum 303 project, opened its doors eleven and one-half months from the time a site was selected.

Possibly the single most vital element in the success of a living-working-shopping complex is the ease and convenience of the public transport within the project. The architects at CrossRoads plan to link the various areas via a monorail. It will in turn tie in with a projected regional rapid transit system. Shown here is a model of rapid transit station.



Optimizing space requirements for elevators

by W. W. Swartz, Otis Elevator Company

Space, which means money, can be saved in high-rise buildings both through nitty-gritty attention to detail and through dramatic new techniques such as double-deck elevators and "sky lobbies."

Not long ago, even monumental buildings seldom exceeded 60 stories in height. The limit was imposed more by economics than engineering. Land costs in cities account in part for the economic rationale of taller buildings. Improved vertical transportation efficiency has enhanced the economics. But in any high-rise building, not just the skyscraper, understanding the capabilities and potentialities of modern elevator systems can aid the architect.

Recent experience in using elevators emphasizes the value of primacy in planning the vertical core. Reversing old priorities of laying out the over-all structure first and fitting in elevators afterward—an "inside-out" approach—promises greater return on the investment in building.

Keeping the elevator core to a low percentage of the gross area

At an early stage in building design, a traffic analysis establishes elevator system performance requirements. Analysis helps determine the quantity and quality of service required and the location in the building where service is to be concentrated or distributed, in relation to both plan and section.

Total dollar investment in the building is jeopardized unless the system fully satisfies service requirements. Serious shortcomings in service may confront the owner with the staggering costs of attempting to add elevators in an occupied structure.

Once service requirements are established, planning seeks to satisfy them as economically as possible. Integrated design of the building and its service core helps hold down the structure's total cost and makes fullest use of its floor area and elevator system.

To an appreciable extent, effectiveness of building design varies directly with the ratio of net usable floor area to gross area. Especially on the lower floors of a high-rise structure, local and express elevator hoistways carve out so much space that only competent planning can assure an economic building. That is, high net-to-gross space ratios are achieved by locating and designing the service core so that elevators consume as little floor area as possible while providing the necessary vertical transportation.

True economy in vertical transportation thus depends on the cost not only of the elevator plant but also of the building space it occupies. Minimizing space consumption for elevator hoistways and machinery, consistent with safety codes and working clearances, also reduces requirements for building materials and costly field labor. Savings are possible in framing and enclosing the hoistways and constructing the elevator pit, overhead heights and machine room.

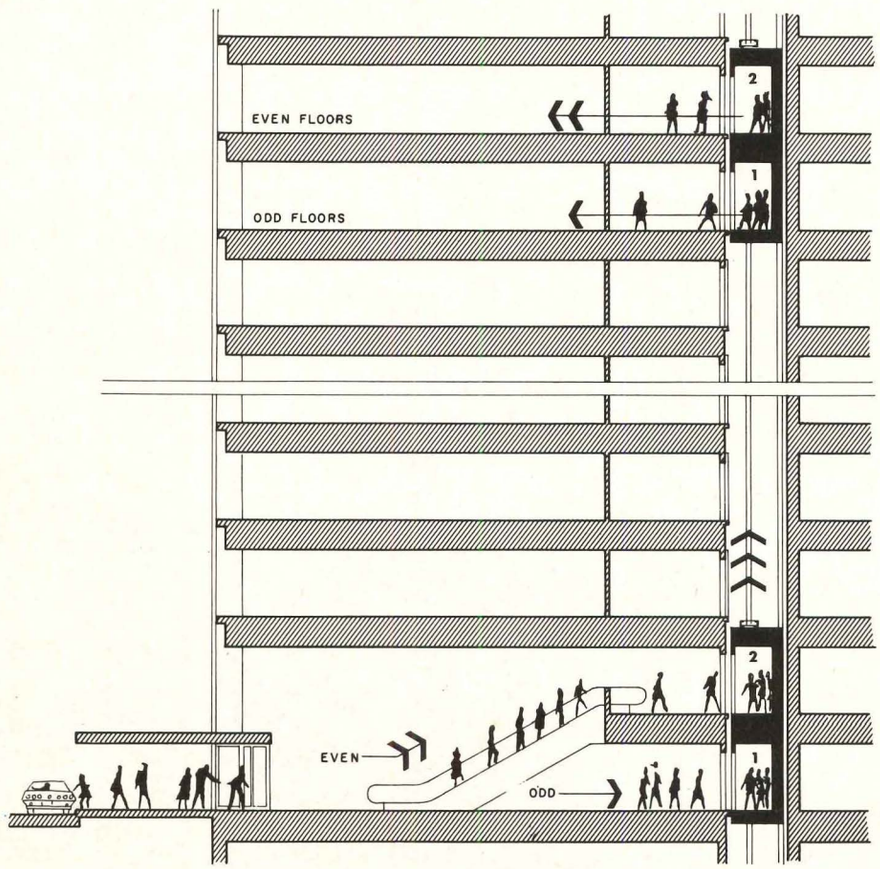


Figure 1: Two new skyscrapers (Boston and Chicago) will have double-deck elevators to minimize the number of necessary elevator shafts. People entering the buildings will use the street level if they are going to odd-numbered floors, or take a moving stairway to a mezzanine for even-numbered floors.

Standardization decreases elevator costs while assuring quality performance

Architects have long accepted dimensional

modules as a basis for planning the frame and other elements of the building structure. More recently, a trend has been developing to integrate modular structures with standardized components of major building systems.

A natural step is to extend the concept of standardization to elevators as well. Savings in the cost of the elevator equipment and—possibly even more important—in installation time can be achieved by planning the system for standard platform, hoistway and other dimensions.

If these standards have not been observed and hoistway dimensions are determined haphazardly by column spacing or by space left over after office areas and corridors are laid out, hoistways may be too large or too small. Unnecessarily large hoistways sacrifice space economies. On the other hand, excessively small hoistways may reduce elevator capacity or require the costly engineering, production and installation of special equipment.

Standard dimensions for equipment have been developed by the elevator industry, applying the results of years of experience. Since this equipment has already been designed, stress-analyzed and detailed, its use entails fewer engineering changes and charges. Planning for standard elevator equipment assures the architect that, regardless of the elevator supplier finally selected, little or no structural change will later be required in building plans. Because manufacturers are already tooled up to produce standard equipment and have proper materials in stock, they can fabricate orders expeditiously as well as economically. Tighter delivery and construction schedules can be established and fulfilled with greater assurance—the building can be completed with lower interest and labor costs and it can be occupied sooner.

Standard equipment dimensions facilitate laying out the elevator core to mesh spatially with the rest of the building in both plan and section. In addition to typical standards illustrated in this article, complete specifications are available from elevator manufacturers.

In the building floor plan, the core requires space primarily for elevator corridors and hoistways. Their number and size depend on the volume and character of service that passengers demand.

Corridors must be wide enough so that people getting on and off and waiting for elevators will not interfere with each other. For a six-car group, corridor width usually ranges from 1¾ to 2 times the depth of the elevators but is at least 9 ft.

Hoistways must be long and wide enough to accommodate elevator platforms, counterweights, guide rails, traveling cables and other hoistway equipment and allow space for normal running clearances. Typical layout drawings and applicable dimensions (Figure 3) can be obtained from elevator companies or from the National Elevator Industry, Incorporated.

Industry standards for platform dimensions are based on the direct relationship between carrying capacity and platform size and on experience with practical ratios of car width to depth that enable passengers to get in and out rapidly.

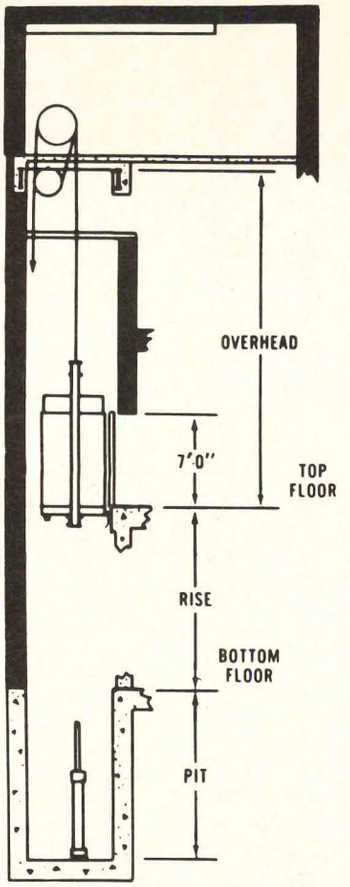


Figure 2

Table 1

SPEED	CAPACITY IN POUNDS									
f.p.m.	2000		2500		3000		3500		4000	
	pit	o. ht.	pit	o. ht.	pit	o. ht.	pit	o. ht.	pit	o. ht.
250-300	5'-0"	15'-2"	5'-2"	16'-2"	5'-2"	16'-2"	6'-9"	15'-8"	—	—
350	5'-0"	15'-2"	5'-2"	16'-2"	5'-2"	16'-2"	—	—	—	—
400	—	—	—	—	—	—	8'-0"	22'-2"	—	—
500	8'-2"	17'-4"	8'-2"	17 -10"	8'-4"	18'-8"	8'-6"	22'-2"	8'-8"	23'-6"
600			9'-2"	23'-6"	9'-2"	23'-6"	--	—	—	—
700			9'-10"	24'-6"	9'-10"	24'-6"	—	-	--	—

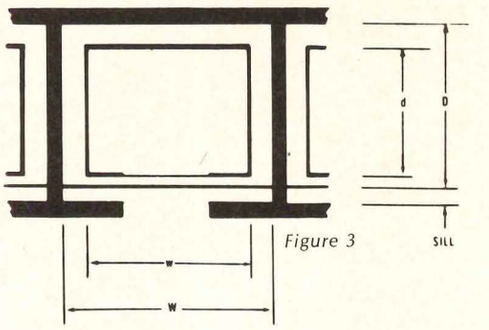


Figure 3

Table 2

BUILDING	RATED CAPACITY		PLATFORM		HOISTWAY CLEAR		DOORS (standard ht. 7'-0")
	in pounds	in passengers	(w) width	(d) depth	(W) width	(D) depth	clear opening
small office	2000	13	6'-4"	4'-5"	7'-8"	5'-9"	3'-0"
office	2500	16	7'-0"	5'-0"	8'-4"	6'-4"	3'-6"
office/hotel	3000	20	7'-0"	5'-6"	8'-4"	6'-10"	3'-6"
large office	3500	23	7'-0"	6'-2"	8'-4"	7'-6"	3'-6"
store	3500	23	8'-0"	5'-6"	9'-5"	6'-10"	4'-6"
large office	4000	27	8'-0"	6'-2"	9'-4"	7'-6"	4'-0"

Figure 2 shows in vertical section space taken for pit and overhead. The pit must be deep enough to accommodate space taken by platform and car frame below the floor level of the lowest stop plus that for the car buffer. Overhead space is required for height of the car plus that for structure and equipment atop the car. Pit and overhead dimensions for elevators of different capacities are given in Table 1. Width and depths of cars and hoistways (Figure 3) vary according to passenger capacities, (Table 2). Sill is 4 in. for single slide or center-opening doors and 5½ in. for two-speed doors.

Space savings are possible in hoistway design, but some elements are fixed

Comfortable elevator service calls for a car with about 2 ft of platform area per passenger, although rush-hour conditions can crowd riders to an average density up to one person per 1.3 square feet. A 3,500-lb elevator, for example, with a standard platform size of 7-ft width by 6 ft-2 in. depth has an inside floor area of 36.15 sq ft, enough to take 18 passengers and allow each an average standing room of 2 sq ft.

After the platform the next largest area in the hoistway of an electric traction elevator is taken by the counterweight. This assembly of cast iron weights or steel plates —equal to approximately 40 per cent of the full passenger load—moves up and down in the hoistway, behind the car if it has the usual front entrance, or to one side if the elevator requires front and rear entrances. Limitation of the counterweight height to about that of the car imposes a minimum for the horizontal space the weight must take in the hoistway.

Space is also needed for the guide rails on which the car and counterweight run. Guide rails and the brackets that fasten them to the building frame must form a supporting system rigid and strong enough to keep the elevator traveling in a true vertical direction and to stop the elevator in an emergency with safety clamps gripping the rails.

Maximum vertical distance between guide rail brackets are specified in the American National Standards Institute Code A17.1. In normal service, the code usually

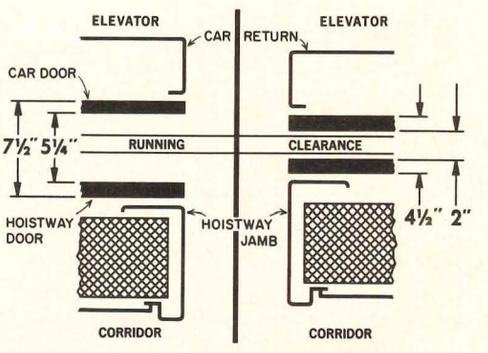


Figure 4: Tightly designed elevator entrance assemblies can save space and improve operating safety and esthetics by bringing car and hoistway entrances closer together.

requires brackets or additional horizontal space for structural members to reinforce the guide rails.

Besides platform, counterweight, rails and supports, hoistway dimensions must also provide for a traveling cable, governor ropes, operating cams, switches and other equipment and for running clearances. These clearances include a spacing of ½ to 1½ in. between car and hoistway door sills, about 2 in. between the rear of the car and the counterweight, and another 2 in. between the counterweight and its rail brackets. Tolerance for plumbness requires another 1 in. both front-to-back and side-to-side for the first 20 stories, increasing by 1/32 in. for each added floor up to a maximum of 2 ins.

All hoistway space requirements other than the platform area itself add about another two-thirds of that of the platform. Architects and engineers have, therefore, sought ways to minimize space consumption without impairing elevator service. Whatever space can be trimmed from the hoistway floor plan is multiplied by as many floors as the hoistway passes.

With fully automated passenger elevators being almost universal, the omission of an operator makes room for one more passenger. Other space-takers that have been eliminated are handrails in elevator cars. Modern elevators ride so smoothly that the handrails are never missed but the extra passenger room is welcomed.

Space saving is combined with improved esthetics and operating safety in close-coupled designs for elevator entrance assemblies that bring car and hoistway entrances closer together (Figure 4). The shallower entrance arrangement saves space to make the elevator roomier without enlarging the hoistway. Alternatively, hoistway depth can be reduced, releasing core area for wider corridors or other purposes.

When the beams which frame the hoistway protrude into the hoistway, rentable area may often be increased by setting the enclosure walls flush with the hoistway side of these beams. This procedure is possible only if rails are erected straight and plumb and minimum clear hoistway dimensions are provided.

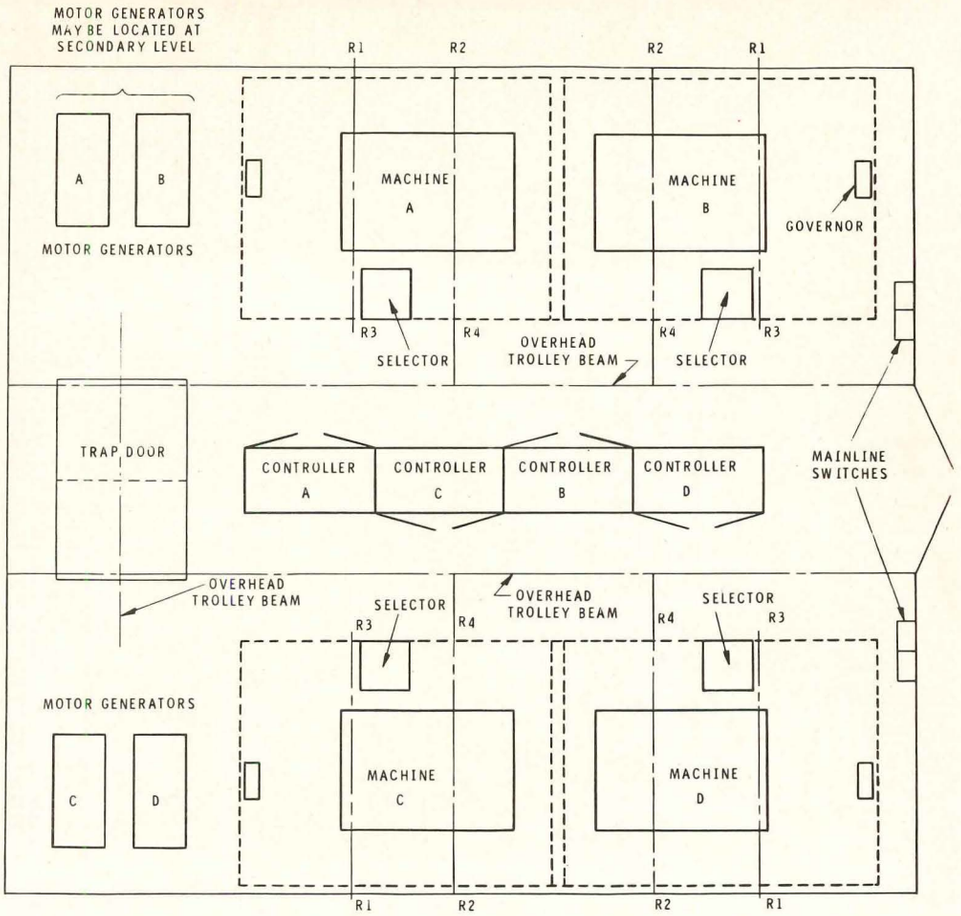


Figure 5: Typical machine room layout for a four-elevator group in a high-rise building. Space must be provided not only for equipment, but also for the service personnel. The National Electrical Code requires 30 in. in front, 24 in. behind and 18 in. on one side of each piece of installed equipment.

Because the elevator core is three-dimensional, its vertical extent as well as its horizontal dimensions appreciably influence building design. Planning the elevator installation around standard equipment helps hold pit depth and overhead height to practical minimums (Figure 2).

The pit must be deep enough to accommodate the extent of the platform and car frame below the floor level of the lowest stop, the car buffer standing and stroke dimensions, and normal operating clearance of the car frame above the buffer. Depending on elevator speed, total pit depths range from 5 to 16 ft or more.

Space is also necessary in the pit for the counterweight buffer. Additional depth should be provided so that the elevator ropes can stretch without making the counterweight land on its buffer and necessitating shortening the ropes.

Pit dimensions, horizontal and vertical, must also be great enough so that when the car descends to the bottom landing, there is enough room for the traveling cables and they are not abraded by being forced against buffers or other equipment. The pit may also need space for sheaves to guide compensating ropes.

At the bottom, each elevator hoistway terminates in the pit; at the top, in the overhead. Pit dimensions as well as overhead heights may be determined by local or state code requirements. Typical pit layouts and data provided by elevator companies comply with the A.N.S.I. Code.

Overhead is the vertical distance from the top floor to the top of the hoistway (Figure 2). It includes not only the height of the car but also space for structure and equipment atop the car, such as the crosshead, door operating mechanism, ventilating blower and leveling device. In addition,

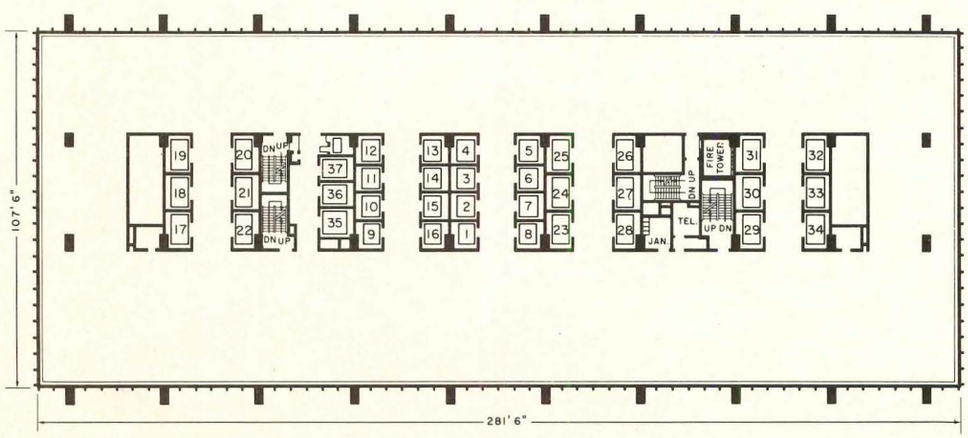


Figure 6: On lower floors of a high-rise structure elevator hoistways take a considerable amount of space—economics demand careful planning to achieve highest net-to-gross space ratios. This is the first floor of New York's Chase Manhattan Building by Skidmore, Owings & Merrill.

safety codes require a minimum clearance of 2 ft to protect a mechanic who may be working atop the car. This 2-ft height must be *clear*, after the counterweight has completely compressed its buffer when the car has overtraveled.

Clearance must also be left above the counterweight so it cannot strike the structure at the top of the hoistway should the elevator land on its buffer and compress it to the full extent. From the top landing to the machine room floor, overhead height may total 20 to 30 ft or more, again depending on elevator speed and other factors.

Machine room dimensions are determined by space requirements of such equipment as driving machines, safety governors, motor-generator sets, and elevator and group controllers (Figure 5). Plans must leave room not only for equipment but also for people who service it and may on occasion have to remove and replace parts. For this purpose, the National Electrical Code and local codes require about 30 in. in front, 24 in. behind and 18 in. on one side of each piece of equipment.

High-speed gearless elevators are often installed with a secondary sheave below the driving machine. Access to this sheave for maintenance requires a secondary level, half a floor below the usual elevator machine room floor.

A brand new idea to save space: the double-deck elevator

Less conventional approaches to getting more elevator service capability into less core space are the lobby and double deck systems.

Sky lobby elevator arrangements are especially effective to conserve hoistway space in very tall buildings. Such systems contribute materially to the economic feasibility of the John Hancock building in Chicago and World Trade Center in New York.

Each tower is, in effect, two or three "buildings" stacked one over the other, with a sky lobby at the base of each "building" above the lowest. Passengers reach floors in the lowest "building" by local or express elevators in the usual way.

To reach floors in upper parts of the tower, passengers take high-speed elevators nonstop to the sky lobby at the base of the section of the tower, where they change to other elevators for their floors. Hoistways of the latter elevators, from the sky lobby up to floors in the upper tower section, do not extend down into the floors below and so overcome the primary problem of consuming lower-floor space.

Other factors also increase elevator service in proportion to core space. Elevators from the street level to the sky lobby levels and from there to the floors above do not travel as far as conventional elevators all the way from street level to upper floors. Round-trip time is further reduced by nonstop operation at high speed from ground level to sky lobby. Sky lobby elevators have large cars and achieve the highest possible handling capacity per square foot of hoistway.

In The World Trade Center towers, the sky lobby system is estimated to leave 87 per cent of the gross floor area as rentable space, compared with only 77 per cent if a conventional elevator arrangement had been used.

The capacity could be increased by making elevator platforms larger, to take more passengers per trip. But elevators with larger platforms would need larger hoistways. To gain extra passenger capacity without enlarging hoistway dimensions an elevator may have two platforms, one above the other—this is the principle of the double deck elevator. Core-slimming by this means is being applied on an extensive scale in the Time-Life Building in Chicago and John Hancock Tower in Boston.

An upper and lower compartment are mounted in a car frame twice the usual height. Passengers enter the compartment from two lower-terminal levels, often the street floor and a basement or mezzanine. People going to odd-numbered floors in the tower use one terminal level, to even-numbered floors, the other, with escalators linking the two terminal levels.

As with other elevators controlled by automatic group supervisory systems, the double deck elevator stops as it reaches floors for which passengers touch buttons at landings or in either compartment. Some stops are made in response to calls by passengers in both compartments. At others, passengers enter or leave only one compartment while those in the other wait momentarily.

Since each compartment is normal size and carries the usual load, door operation and passenger entry and departure take no longer than in a conventional, single deck elevator. At many stops the elevator serves, not one, but two floors. Total stops per trip are less than for a conventional elevator, further increasing the effective capacity of the double deck installation.

Under typical conditions, double decking is estimated to increase elevator handling capacity by 25 to 50 per cent, reducing the number of elevators and hoistways needed by as much as one-third. For example, in a 50-story diversified tenancy building 24 double deck elevators could do the work of 34 of the conventional type. With each elevator subtracting some 150 sq ft of floor space from each floor through which its hoistway passes, double decking could save 14,000 sq ft in a 50-story building.

Space saving by double decking demands close integration of core planning with building design from the start, with all floor heights uniform. For even greater carrying capacity, the double-deck principle could be applied to non-stop elevators in a sky lobby system with two-level sky lobbies. Upper and lower compartments of each double deck elevator would serve, respectively, first floor and lower lobby at ground level and, at sky lobby levels, odd and even numbered floors. Escalators would connect lower and upper levels of each sky lobby.

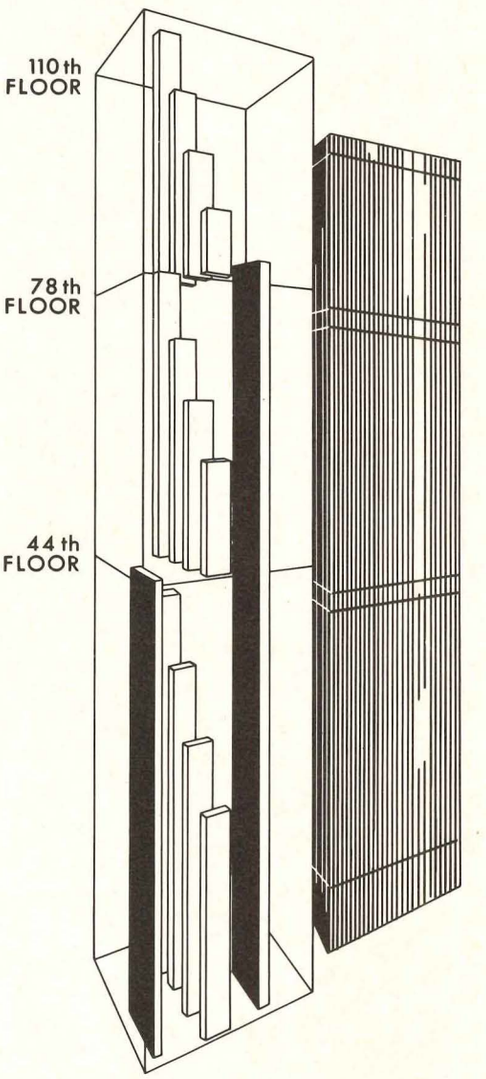
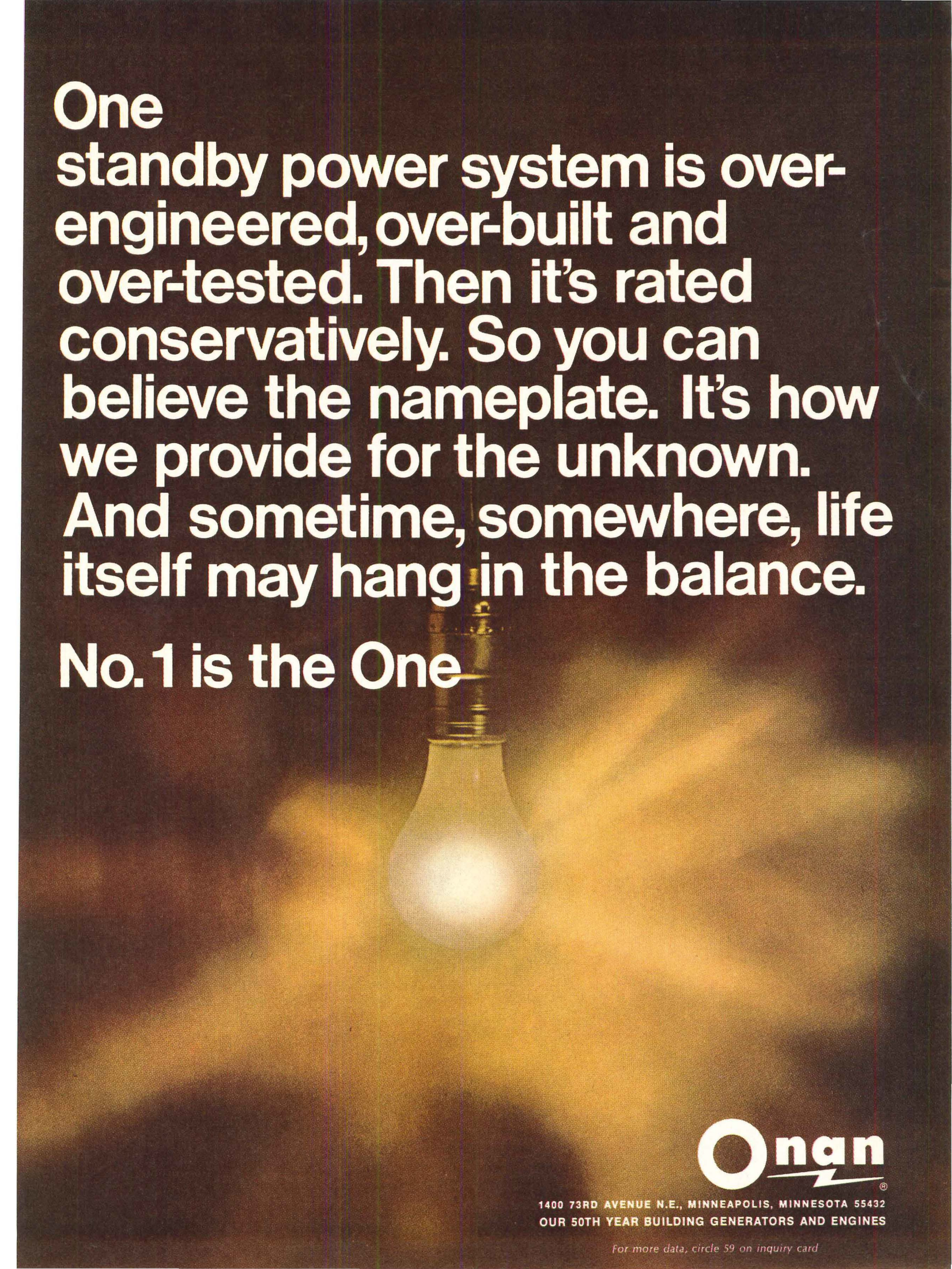


Figure 7: With respect to the elevator installation, each of the two 110-story twin towers of the World Trade Center in New York is basically three "buildings" set atop one another. At the base of each section is a "sky lobby." Passengers reach floors in the lowest "building" in the usual way. Those going to higher floors take high-speed, non-stop elevators to the sky lobby at the base of one of the sections, where they then change to other elevators that take them to their destination. Architects: Minoru Yamasaki and Associates and Emery Roth & Sons.



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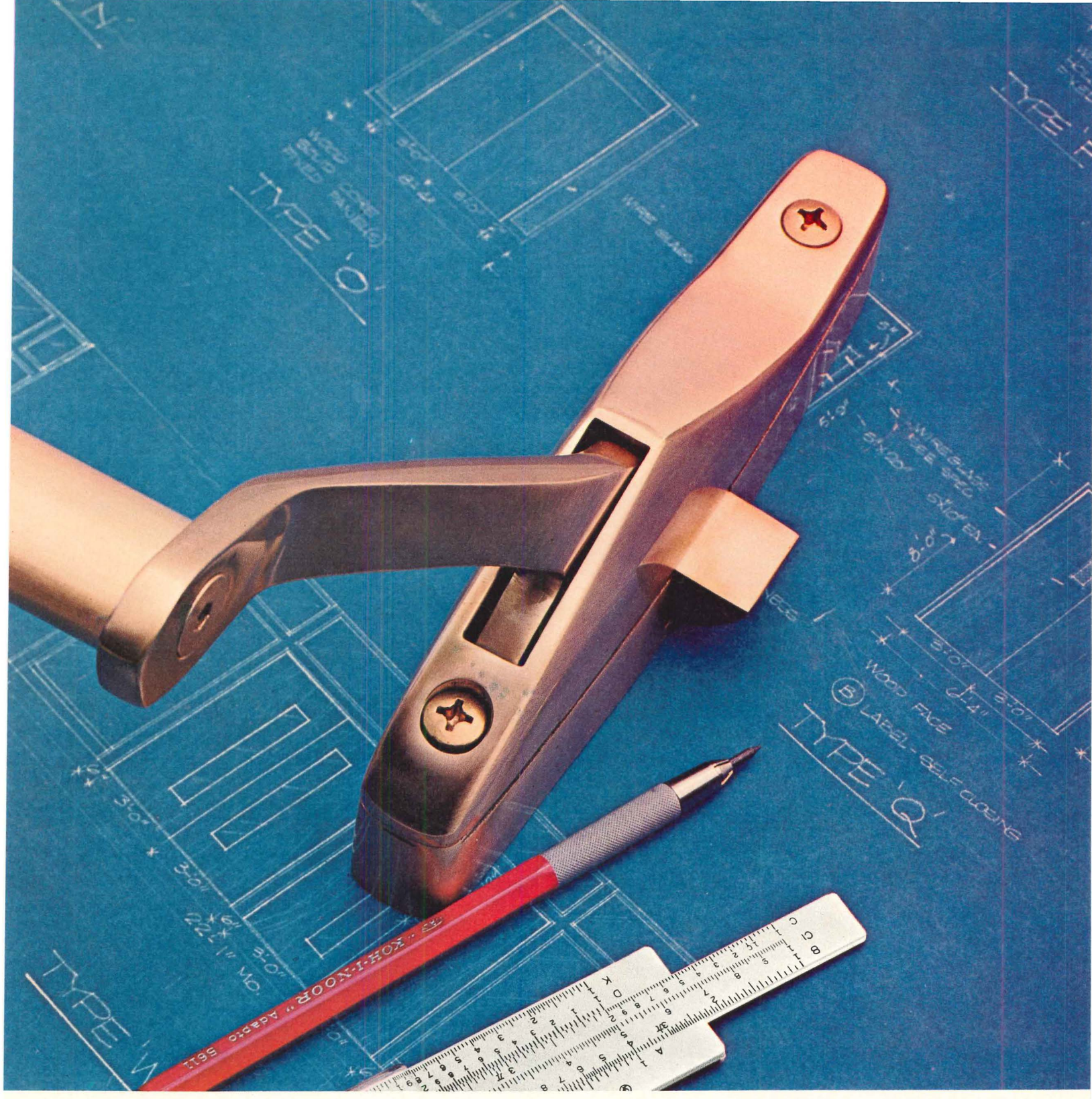
FOLLANSBEE STEEL CORPORATION • FOLLANSBEE, WEST VIRGINIA

For more data, circle 60 on inquiry card



When slim stiles are on your mind, put Russwin in your plans.

When emergency exit requirements involve doors with narrow stiles, you can confidently specify Russwin Narrow Line Exit Bolts for any of your buildings. They set today's door safety standards . . . and do it in style. Open at a touch from inside. Provide positive security outside. And their crisp, clean lines are very much in the modern mood. Designed for constant use in schools, hospitals and stores. Contact your Russwin distributor or write for brochure. Russwin, Division of Emhart Corp., Berlin, Conn. 06037. In Canada – Russwin Division of International Hardware.

RUSSWIN

For more data, circle 61 on inquiry card

You don't have to specify JAMISON

but if you value VALUE, you will

The finest materials, superior design, expert workmanship—these are all part of the value of a Jamison cold storage door. You take them for granted in a door made by the oldest and most experienced firm in the business.

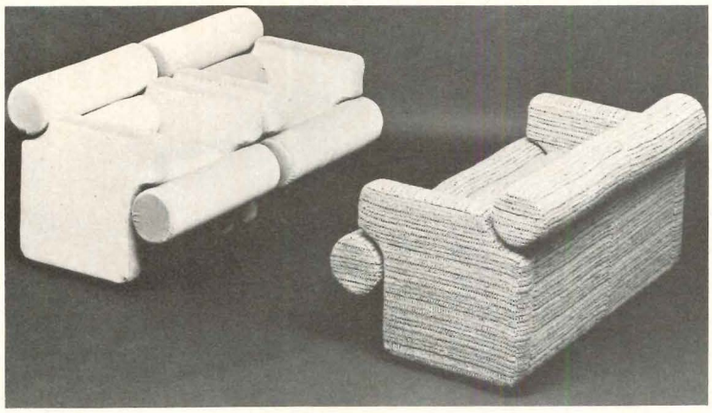
But Jamison also gives you value of another kind. For instance, you may have an assignment to remodel a restaurant or cafeteria. In that case our remodelling layout sheets for food service installations can be of great value in saving you time and trouble. We have provided cooler and freezer doors for thousands of remodelling jobs, and our experience is reflected in these layout sheets.

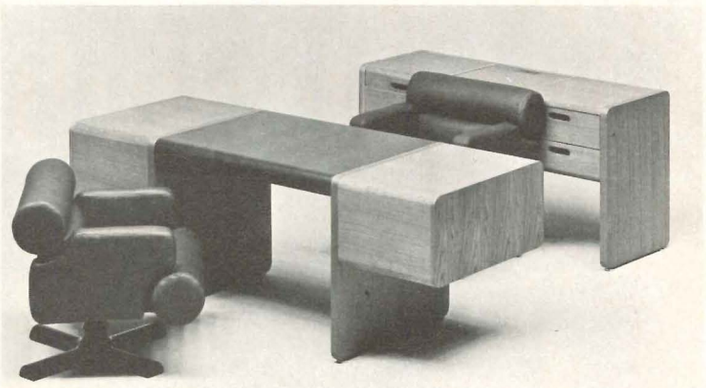
They are yours free without obligation. Also without obligation, our book "How to Select and Specify Doors for Cold Storage Warehouses and Food Processing Plants." Send for both values.

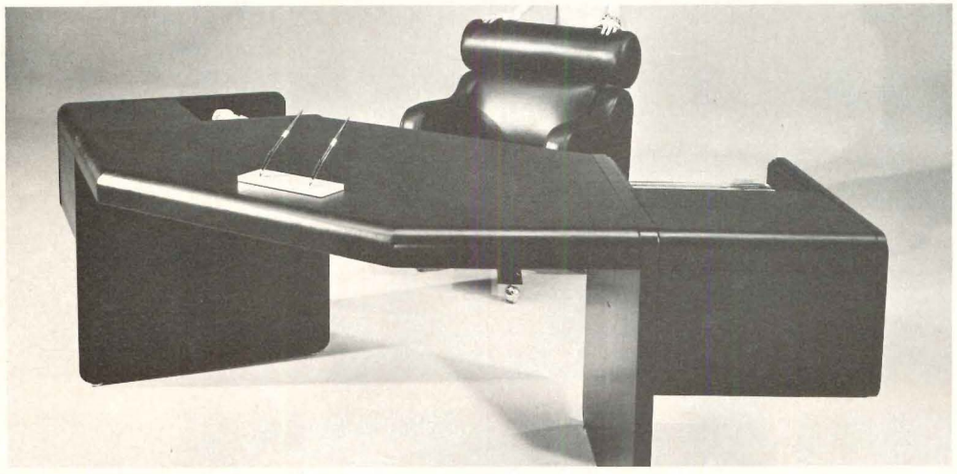
When you receive them, you still don't have to specify JAMISON. But if you value VALUE, you will.

COLD STORAGE DOORS BY
JAMISON
JAMISON DOOR COMPANY · HAGERSTOWN, MD.
For more data, circle 62 on inquiry card

For more information circle selected item numbers on Readers Service Inquiry Card, pages 211-212







FURNITURE FOR THE SEVENTIES / *System I* is designed "to give today's communication-oriented executive an efficient system that is also fine furniture." A hexagonal-shaped executive desk with cantilevered modules provides easy access to such possible business information appliances as telecommunication and dictating systems, small computer terminals and closed circuit T.V. The entire line is characterized by a soft, natural, warm appearance, with cylindrical elements for posture control, rounded edges, soft leather (both in chairs and desk tops), natural wood finishes and vivid fabric colors. ▪ Marble/Imperial Furniture, New York City.

Circle 300 on inquiry card

TOUGH GLAZING / *Lexan* sheet is being recommended for windows in areas with high vandalism. Applications include schools, factories, public housing units, banks and retail stores. ▪ Plastics Department, General Electric Company, Pittsfield, Mass.

Circle 301 on inquiry card

ACRYLIC PLASTIC / Architects Dean Unger and Associates designed this auto showroom with luminous ceiling panels and fascia of translucent *Plexiglas* acrylic plastic. The panels are extended beyond the walls to overlook the exterior display ramp. ▪ Rohm and Haas Company, Philadelphia.

Circle 302 on inquiry card

more products on page 146

Security– Uptight or Out-of-Sight.

Cookson Steel Rolling Doors and Counter Doors provide the widest range of applications in all types of commercial, industrial, government and institutional buildings. They meet the most demanding architectural and design specifications. When locked up tight, they deliver the greatest possible security and protection against damage; yet they roll up, out of sight, into a compact hood whenever desired. Smooth and easy operation, trim appearance, reliability, reasonable installation and maintenance cost—all are Cookson Steel Rolling Door and Counter Door by-words. As are many exclusive special features to fit your specific needs.

For more complete information on Cookson Steel Rolling Doors and Counter Doors, "Servire" Fire Doors and Counter Fire Doors, Rolling Grilles, Side Coiling Grilles and Operable Walls, write for Bulletin 7001, or see us in Sweet's.

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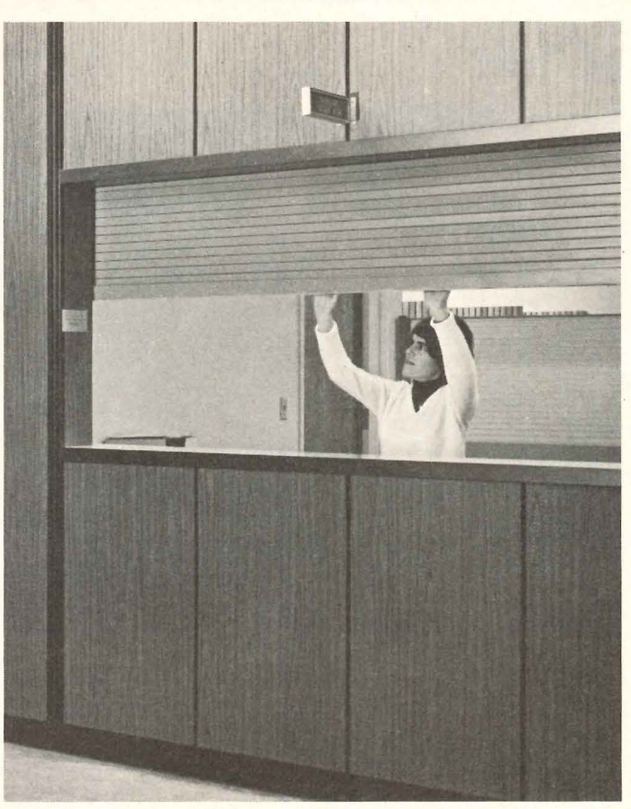
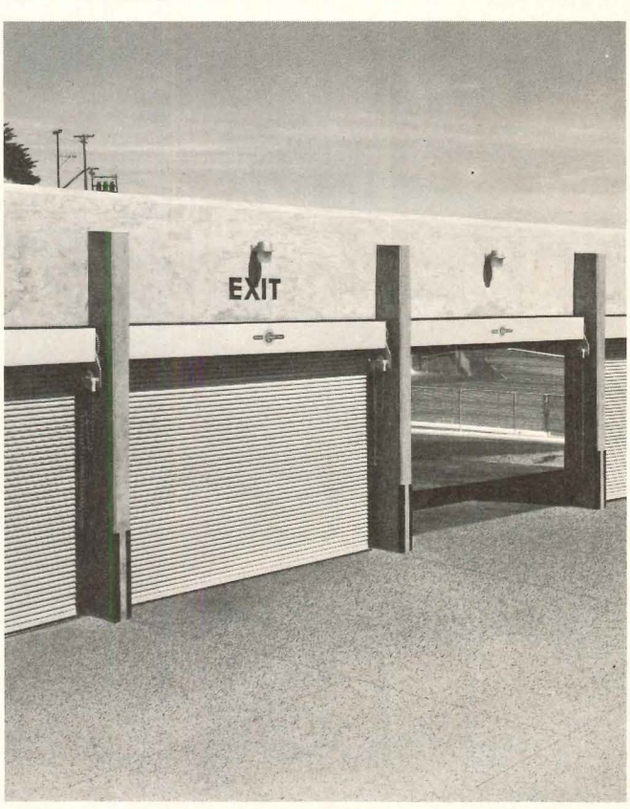


Counter Door



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They are also impressive, attractive, functional, economical. You design Smith Walls to present the image and fulfill the requirements of your specific building project.

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Specify Smith Walls in place for your next assignment . . . new building, expansion or remodeling. For full details, write:

General Electric Company Plant, Oklahoma City, Okla.

Architects: Benham-Blair & Affiliates, Oklahoma City, Okla.

General Contractor: Manhattan Construction Company, Oklahoma City, Okla.

Smith C-Panel, 1½" insulation, aluminum exterior finished in Kynar II. Ribwall profile on fascia. The main wall consists of Contourwall profile panels.

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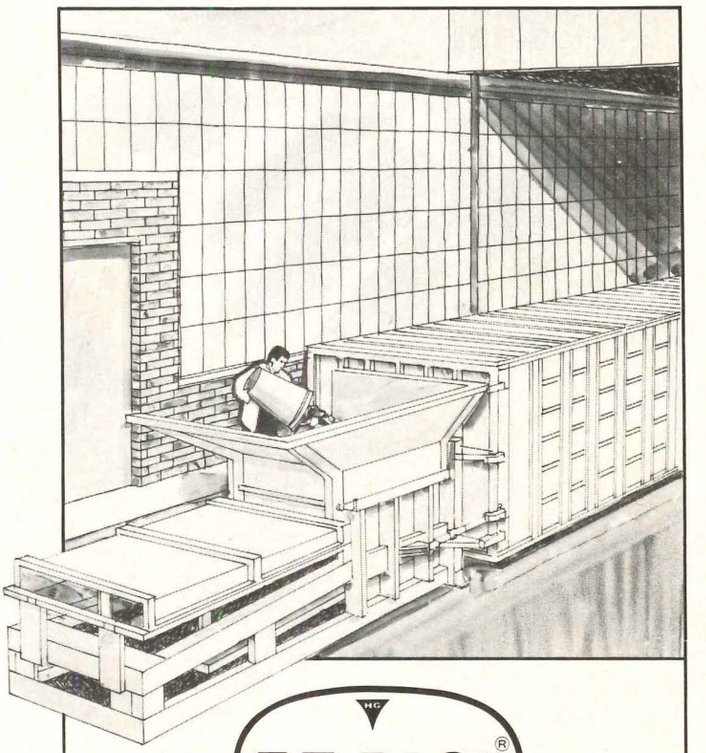
But who has a realistic solution?



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Even pallets, metal tubing, fiber glass. *All* refuse is carted to the compactor from in-plant collection centers . . . then compacted and stored at a fraction of its original size till transfer to the dump site.

Result. More refuse stored in less space, fewer dumping trips. And there's no more air pollution due to incineration.

Have one of our experts survey your plant. He'll recommend the most efficient E-Z Pack refuse collection/compaction/container system. The realistic solution to industrial refuse handling. E-Z PACK COMPANY, Division of Peabody Galion Corporation Galion, Ohio 44833.

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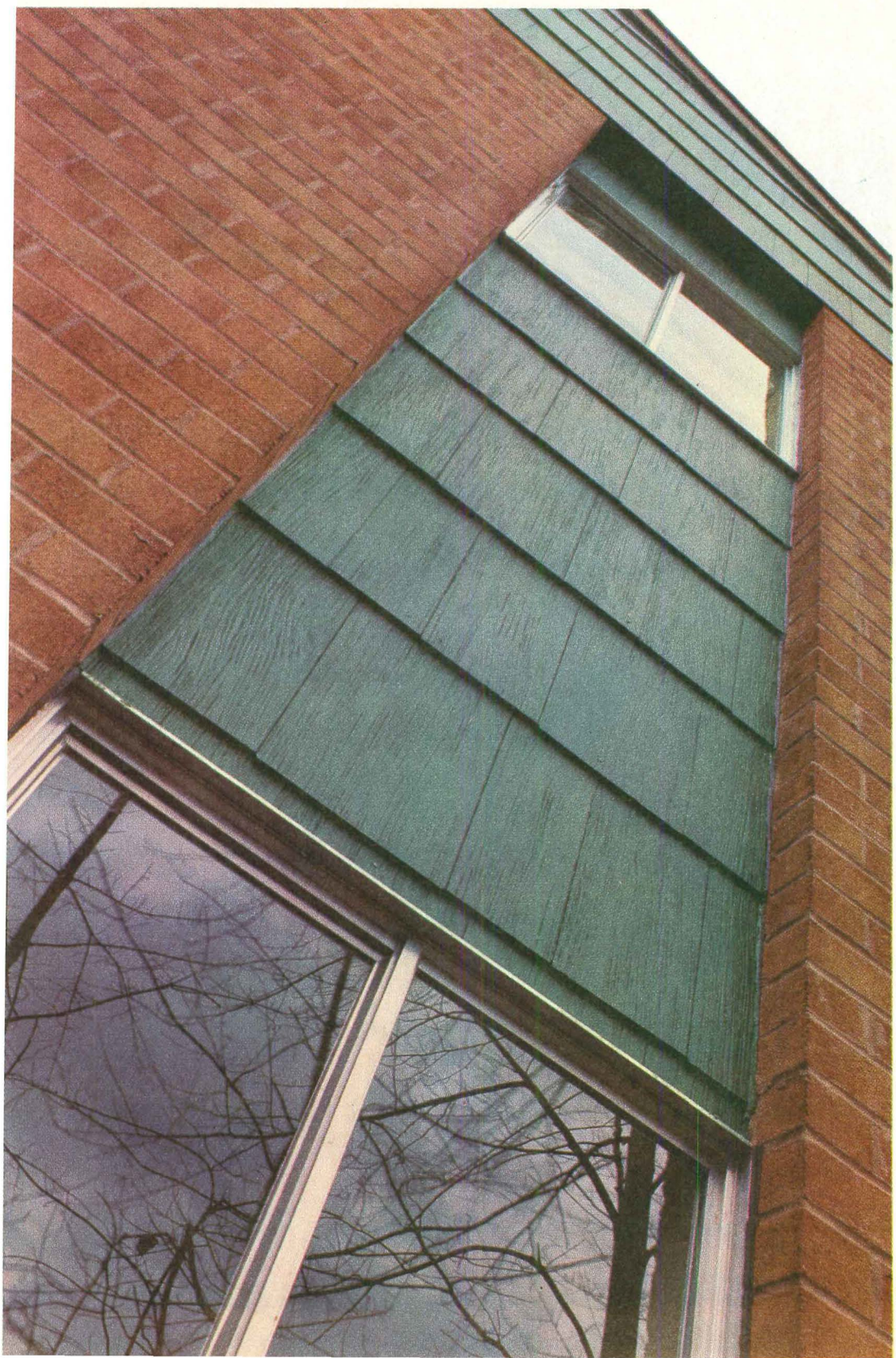
GAF Stratalite™ siding. It looks like wood. But it wears like brick.



Stratalite is a permanently finished mineral siding material with all the beauty of wood shingles.

But none of the problems of wood.

It doesn't need periodic repainting.

It's fire-resistant and termite-proof.

It won't rot, warp, shrink, split or curl like wood. (Nor will it dent, buckle, rust or conduct electricity like metal.) Yet Stratalite has the deep-textured grain and substantial thickness of wood shake shingles. It comes in eight distinctive sealed-in wood shingle colors. And its wood shingle shadowline can be dramatically enhanced with GAF Kick-Strip Undercoursing. Stratalite siding combines beautifully with brick and other permanent building materials. It can be used on all four walls or for that special touch, as shown here.

Lightweight, 14⅝" x 24" panels are fast and easy to apply, with very little waste. Warranted for 20 years by GAF, one of America's leading manufacturers of building materials. For further details, call your GAF Building Products dealer or send the coupon below. In Sweet's see GAF Building Materials insert.

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GAF Corporation AR-3
Building Products Division
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Yes, I'd like more information on GAF Stratalite Thatch Siding.

☐ Please send further details, including specifications and application data.

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For more data, circle 66 on inquiry card

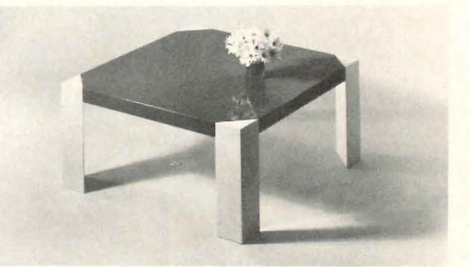
continued from page 141

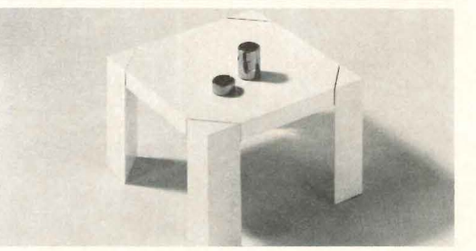
WOOD FLOORING / Interior designer David Barrett chose white oak *Brittany* flooring for a modern library interior in a recent special exhibition, "Floors Par Excellence." The large squares of flooring were banded by 4-in. stainless steel strips. Brass strips could be used to provide a similar look. For the same exhibition, Michael Greer used the Monticello floor design—the original design was created by Thomas Jefferson for his home. ▪ Wood-Mosaic Corporation, New York City.

Circle 303 on inquiry card

TILTING CHAIR / Executive and conference room chair has a tilting and swivel mechanism on casters. Chair tilts and revolves within the mirror-polished stainless steel base. The base is also available in other metal finishes as well as fabric-covered or wood. ▪ P. H. Enfield Designs, New York City.

Circle 304 on inquiry card

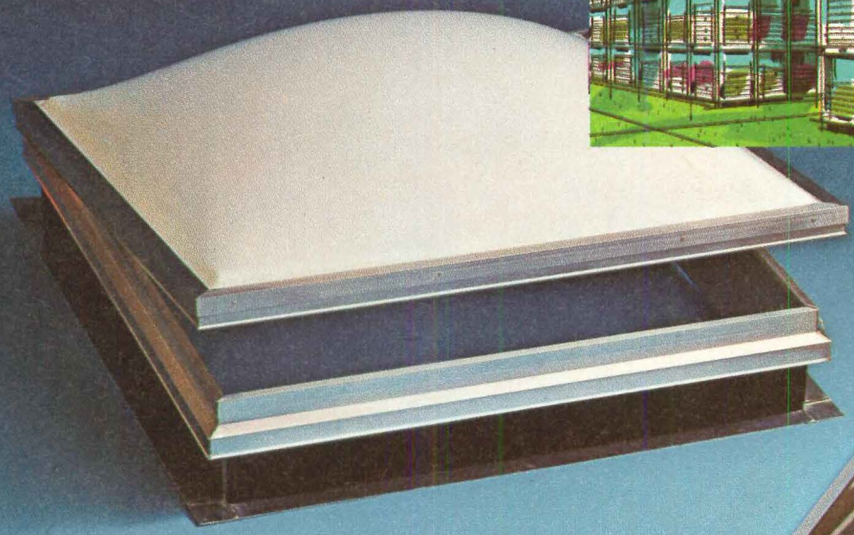


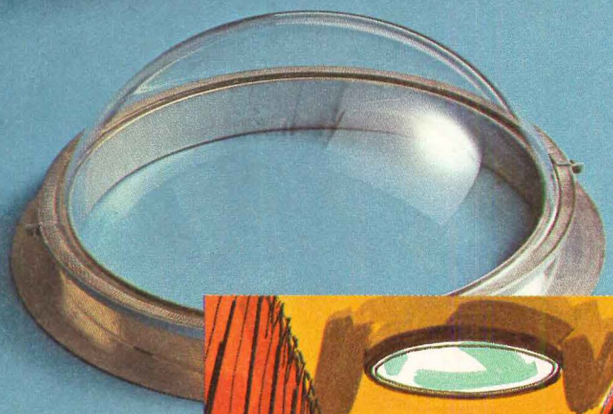


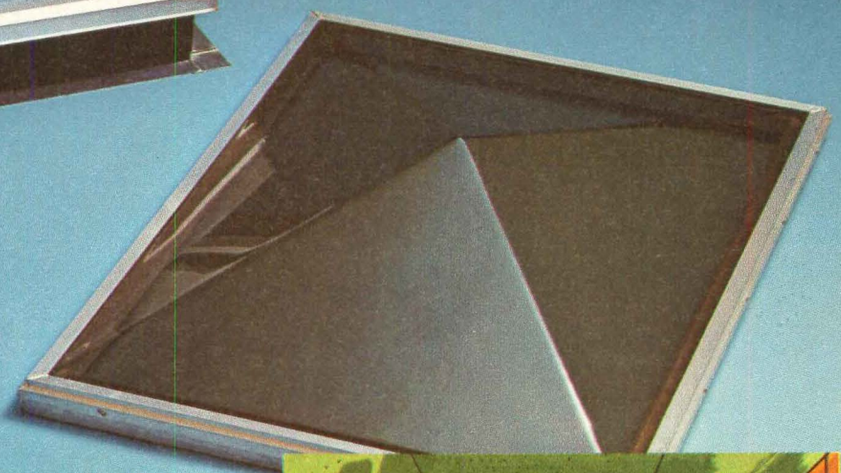
EXCHANGE TABLE / A design system, developed by Paul Mayen, consists of detachable triangular legs and removable tops. The line offers: "maximum variability in sizes and heights; maximum choice in combining the standard 33 lacquer colors, and almost unlimited variations when using lacquer colors with any of the 8 selected woods." ▪ Intrex Incorporated, New York City.

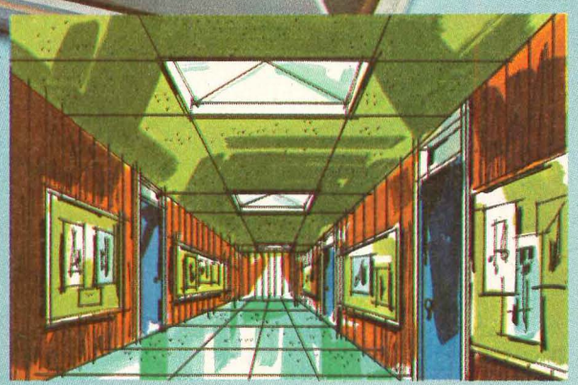
Circle 305 on inquiry card

more products on page 158









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Skylight shapes in Plexiglas include domes and pyramids in circles, rectangles and squares. Both single and double domes can be specified in colorless, in light-diffusing white translucent or in solar-controlling transparent bronze and grey tints.

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Sizes up to 92″ x 92″ are available as standards (larger sizes are available on request) from skylight manufacturers across the country. Write for the names of suppliers near you.

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PHILADELPHIA, PENNSYLVANIA 19105

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Bright ideas

Now you can select quality washroom accessories on a systems basis, just as you specify Bradley Washfountains and showers. Bradley's expertly crafted accessories reflect the clean, functional lines of today's contemporary structures. They allow you complete design freedom. And conserve space and reduce maintenance. Towel dispensers, waste receptacles, mirrors and shelves are only a few of the many accessories Bradley offers. Others include soap dispensers, napkin vendors and disposals, toilet tissue holders, seat cover dispensers, and related equipment. It's the complete line for commercial, industrial, institutional, and public buildings. From Bradley. The washroom systems specialists. Bradley Washfountain Co., D. J. Alexander Division, 9255 Fountain Blvd., Menomonee Falls, Wisconsin 53051.

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BRADLEY

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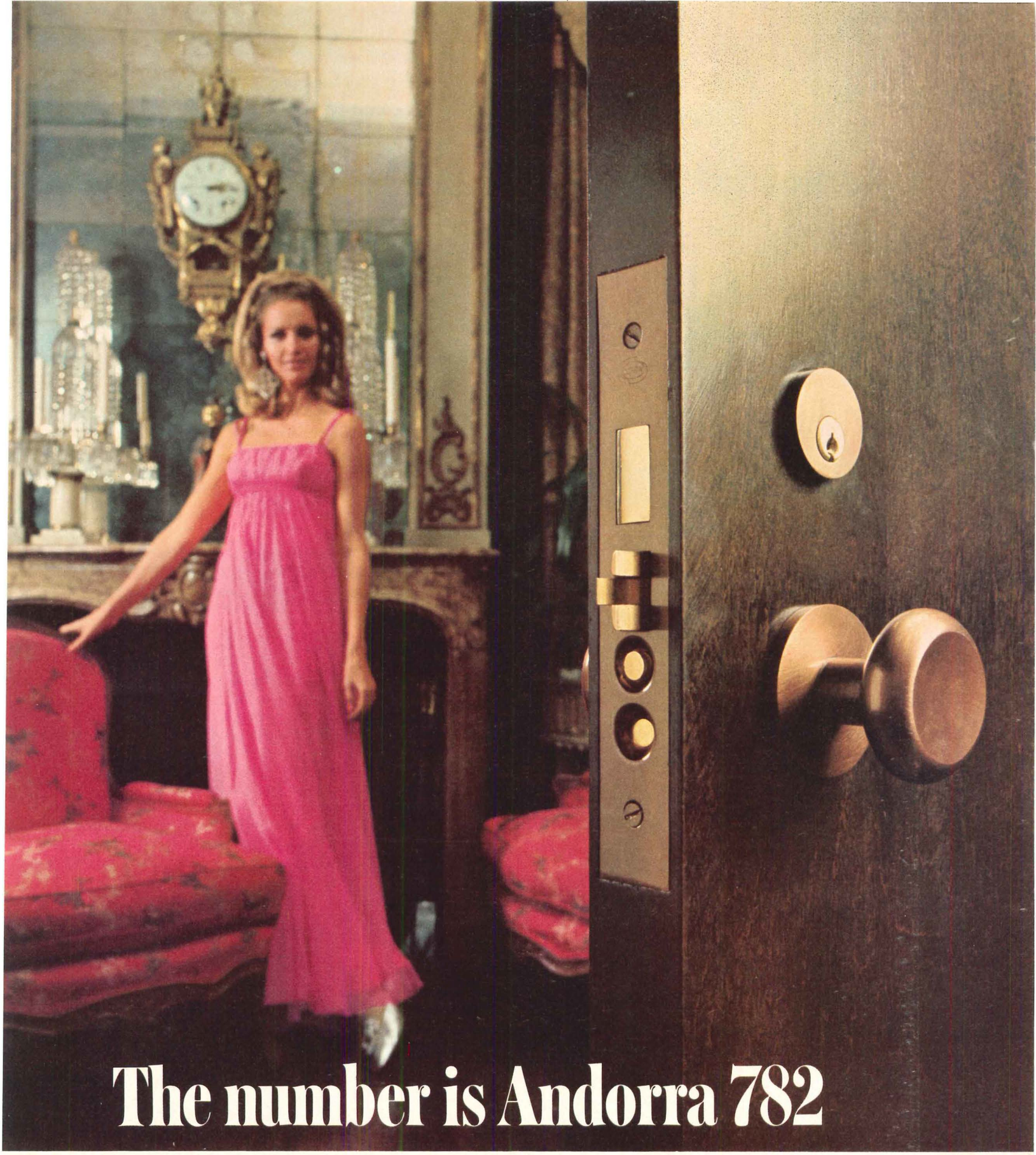

The number is Andorra 782

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

Your Corbin distributor can furnish you with complete data on this design, or write P. & F. Corbin Division, Emhart Corporation, Berlin, Connecticut 06037. In Canada—Corbin Lock Division.

CORBIN

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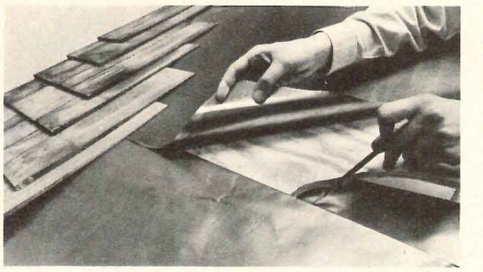
continued from page 146

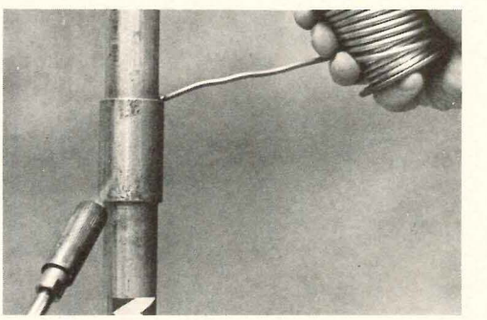


ROOFING / A new roofing system is said to be the first wood shingle system to be assigned an Underwriters' Laboratories "Class B" rating for prepared roof-covering materials. Cedar shingle roofs can be specified in buildings designed for the inner-fire-zone areas of many major cities. The system calls for fire-retardant red cedar shingles over a roof deck covered with a plastic-coated steel foil. The shingles are "pressure-impregnated with a special fire-retardant compound designed for exposure to all weather conditions." ▪ Koppers Company, Inc., Pittsburgh.

Circle 306 on inquiry card

COLORFUL URETHANE COATING / Workers spray non-discoloring urethane coating, NC-104, on the concrete roof of the Marin County Civic Center in San Rafael, Calif., designed by architects of the Frank Lloyd Wright Foundation. The coating is a tough, waterproof one that can be produced in any color and will withstand deteriorating effects of weather and air pollution. ▪ The Goodyear Tire & Rubber Company, Akron, Ohio.

Circle 307 on inquiry card

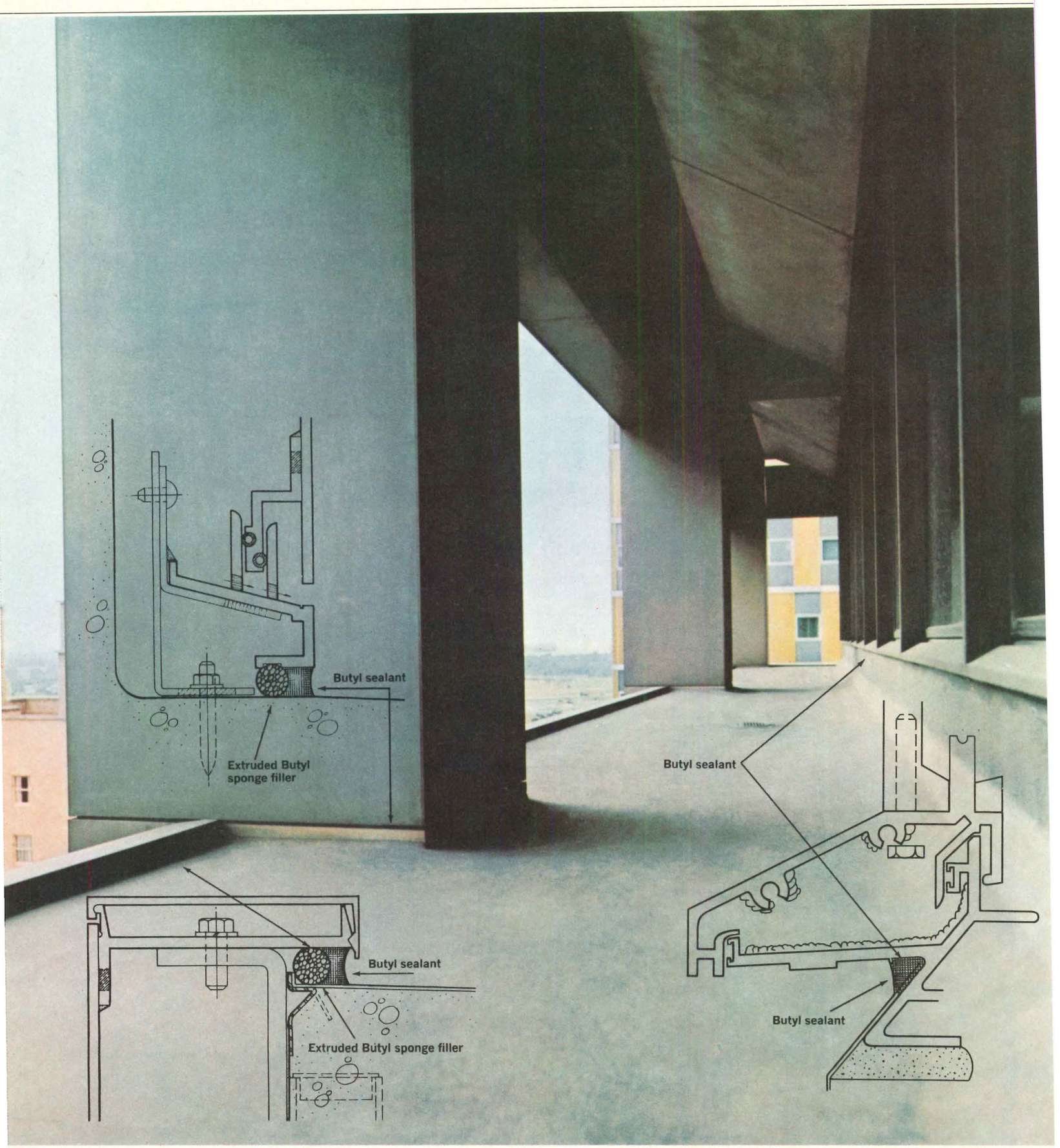


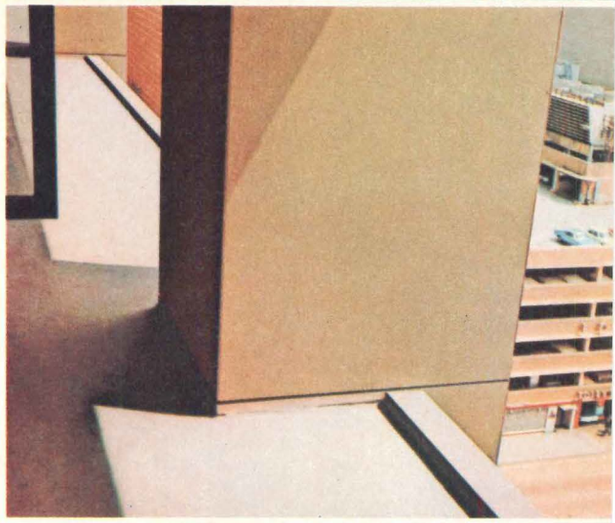
SOLDERABLE GALVANIZED STEEL PIPE / A galvanized steel pipe, available in ½-in., ¾-in. and 1-in. sizes, can be soldered quickly and easily. Other advantages are reported to be low initial cost, high strength and long life. It can be used for residential, commercial and light construction water line installations. ▪ Wheeling-Pittsburgh Steel Corporation, Pittsburgh.

Circle 308 on inquiry card

more products on page 172

For more data, circle 72 on inquiry card


Butyl sealant
Extruded Butyl
sponge filler
Butyl sealant
Butyl sealant
Extruded Butyl sponge filler
Butyl sealant



Butyl rubber sealants help striking Houston landmark keep its cool.

Extruded sponge fillers and sealants based on Enjay Butyl rubber used extensively for the durable weatherproofing of this unique building.

The Tenneco Building—a notable feature of the Houston, Texas skyline—owes much of its distinction to its unusual sunshaded facades which permit setback of the glass walls four and five feet.

A compound based on Enjay Butyl rubber was used exclusively to seal three key joints on each setback. The photo at left shows all three—the long snap-on aluminum copings at the outer edge of the setback floor, the supporting column base joints, and the under-sides of the slanting sills below both the windows. An extruded sponge void-filler made with Enjay Butyl rubber was first pressed into position under the aluminum floor copings and at the column bases and then covered with the Butyl sealant.

The Butyl sealant was chosen because it has excellent adhesion to construction materials and is non-corrosive to metals. It provides outstanding weatherproofing and long life over a temperature range of —20°F to 200°F. It has little heat conductivity, cures with minimum shrinkage. The one-component compound has excellent container stability and is easily applied with conventional tools. It can be colored to match other materials.

ENJAY

Enjay Chemical Company, Synthetic Rubber Division,
60 West 49th Street, New York, N.Y. 10020

Owner: Houston National Company
Architect: Skidmore, Owings & Merrill
Sealing Contractor: Kawneer Company, Inc., a subsidiary of American Metal Climax, Inc.
Sealant: Construction Products Div., W. R. Grace & Co., Cambridge, Mass.

PHOTO: Memorial Art Gallery of the University of Rochester, Rochester, New York. Waasdorp Northrup and Kaelber, Architects, Rochester, New York.

Where should the door closer be placed?

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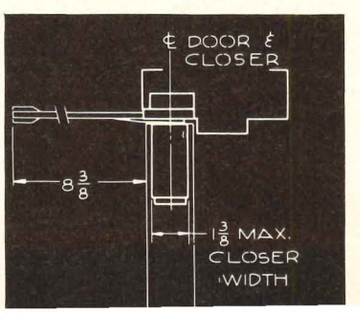
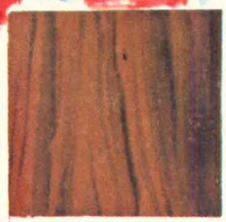


For more data, circle 74 on inquiry card

Globe Union, Inc.—Glendale, Wis.—Reception Area
Charles Harper and Assoc., Architects



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AR3

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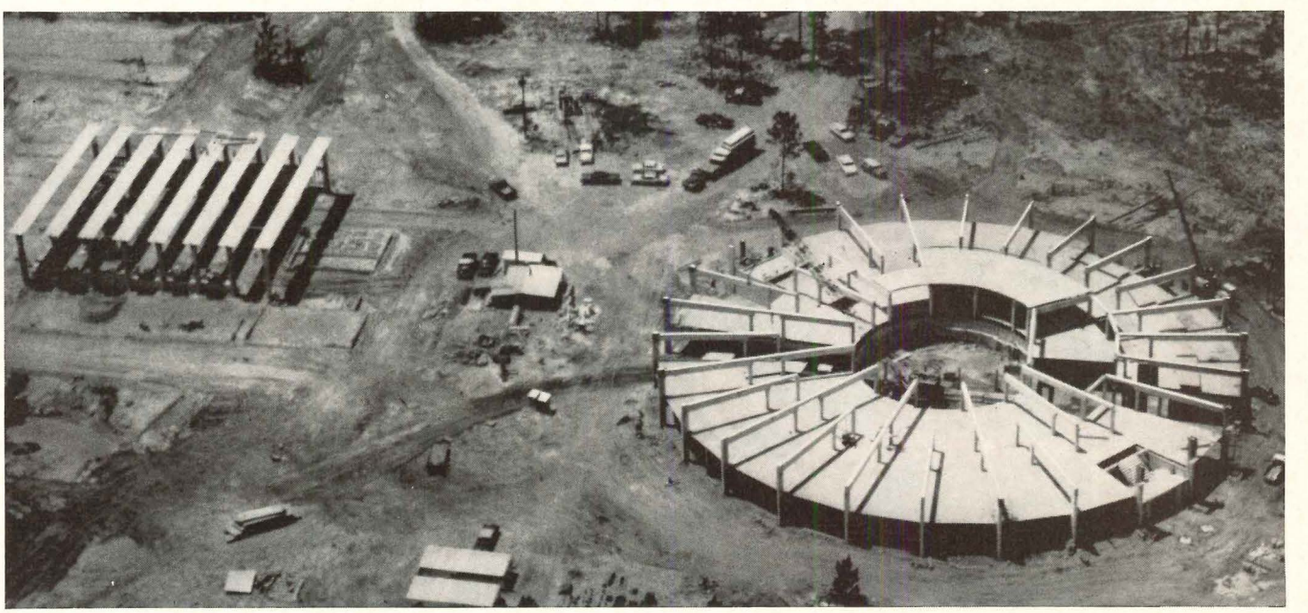
Prestressed concrete adapts to a variety of forms

Students began attending classes in this new Ocala High School in January of this year. It is designed to accommodate 1200 students.

OWNER: Marion Country Board of Public Instruction. **ARCHITECT:** J. C. (Berry) Walker, Ocala, Fla. **GENERAL CONTRACTOR:** Drake Construction Co., Ocala, Fla. **PRECAST & PRESTRESSED STRUCTURAL UNITS:** Dura-Stress Inc., Leesburg, Fla. **PRECAST LINTELS AND SILLS:** Wekiwa Concrete Products, Zellwood, Fla. **READY MIX CONCRETE:** Thomas Concrete Co., Ocala, Fla. **CONCRETE MASONRY UNITS:** Cummer Inc., Kendrick, Fla.

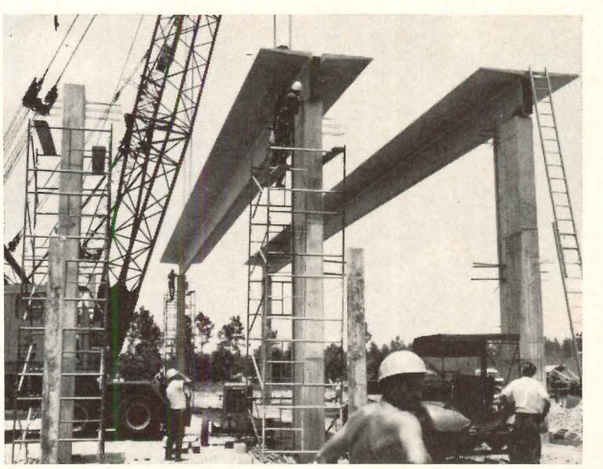


The circular structure is 232′ in diameter and 27′ high. In addition to the huge single T's in the gym, the project has 113,464 sq. ft. of double T's; 4594 sq. ft. of 8″ flat slabs; and 3673 lineal ft. of structural beams.

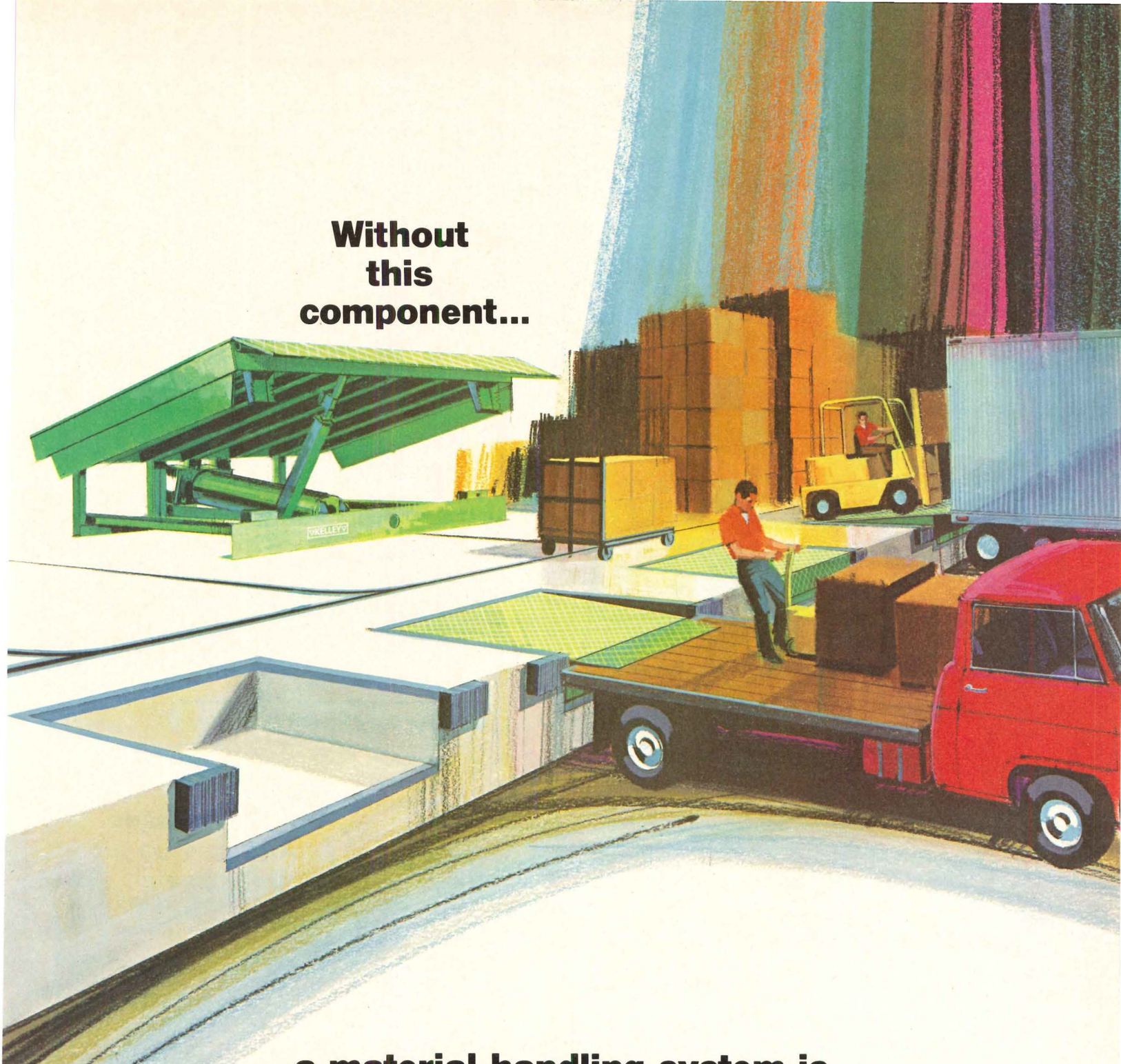
This new high school in Ocala, Florida, is another example of how prestressed and precast concrete can serve both functionally and esthetically. The unusual circular classroom and adjacent gymnasium show the excellent adaptability of this material.

Dura-Stress, Inc. used Lehigh Early Strength Cement in the manufacture of the precast and prestressed structural units in this school. Here, as in almost any precast work, this cement benefits precaster, erector, and architect alike. Quicker re-use of forms. Earlier delivery of units. Orderly on-time construction scheduling. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH



Eight Lin T prestressed beams compose the roof structure of the center portion of the gym. Beams are 106′8″ long, 8′ wide.



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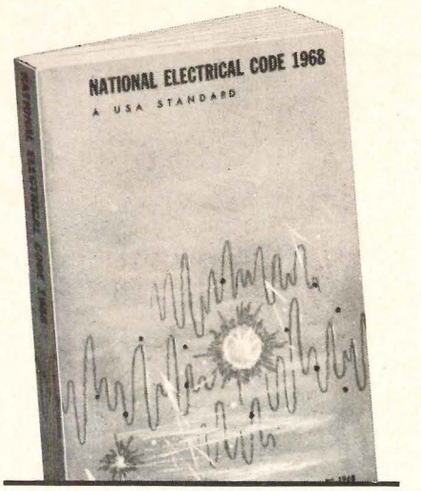

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The very latest edition—480 pages. Over 300 substantive changes, 6 new articles, and over 100 new rules since 1965 issue. The most widely adopted and used code in the U.S.A. Sponsored by NFPA, approved by USA Standards Institute. $2.00 per copy. Enclose check with order to Dept. D6.

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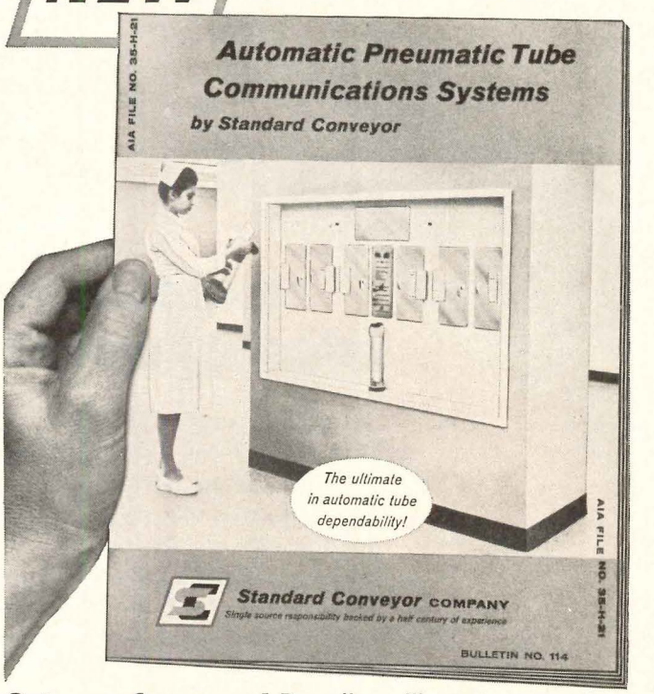

Get your free copy! Describes, illustrates new type automatic tube systems featuring greater dependability, quieter operation. 12 pages. ***Standard Conveyor Co., 312-C Second St., North St. Paul, Minn. 55109.***

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Imperial House, Dallas, Texas
Architect: George L. Dahl, Inc.

"Imperial House" of Dallas . . . Outstanding Architectural Creation with Ludowici-Celadon Roofing Tile

WIDE SELECTION OF OTHER PATTERNS, TEXTURES & COLORS

For a roofing material that can express his every architectural fancy, the perceptive architect looks to Ludowici tile. Varied patterns, colors and surfaces offer an unlimited choice in hard-burned clay that cannot wear out, fade or discolor . . . and that requires minimum maintenance.

Architect George L. Dahl of Dallas selected Ludowici's Designer Tilestones in tones of blue, green and gray for this luxurious modern apartment building.

For additional information see Sweet's Catalog or write Dept. AR

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Manufacturers of quarry tile, the nation's largest producer of roofing tile and NAILON Facing Brick.

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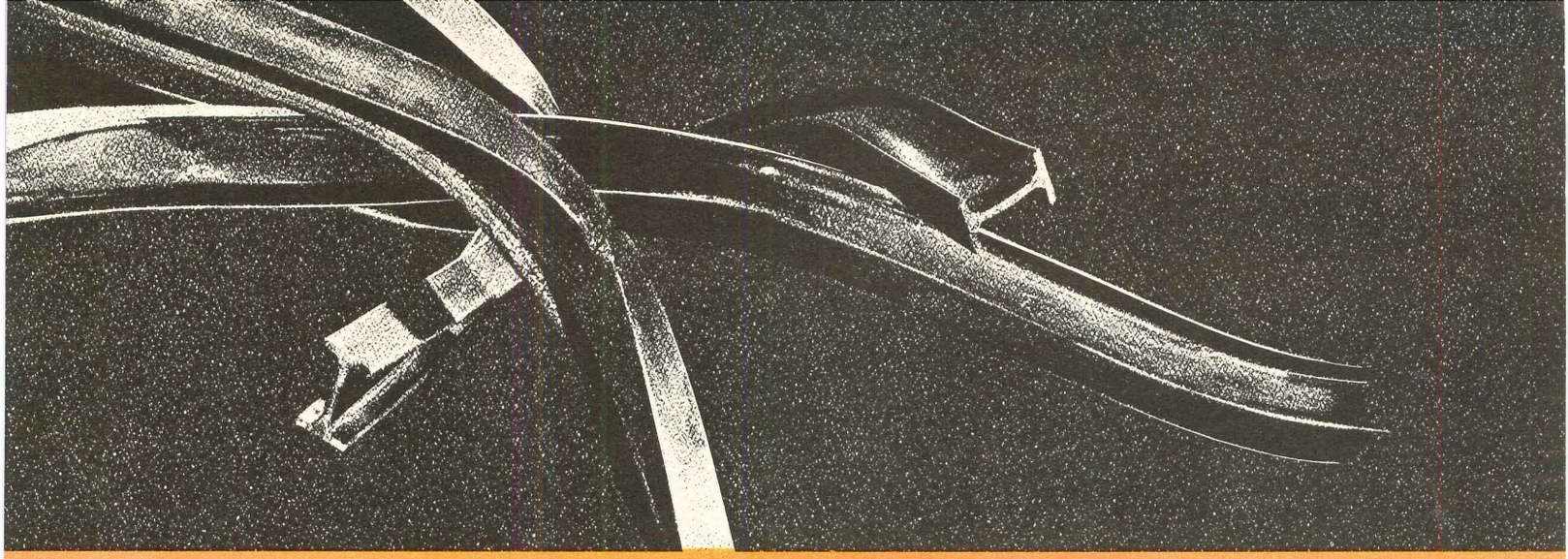
American Cancer Society®
Fight cancer with a checkup and a check.



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It's Zonolite® Mono-Kote, the compound that fireproofs steel and concrete. And does it so well that its fire-resistance ratings range up to 5 hours, depending on the structural system it's part of.

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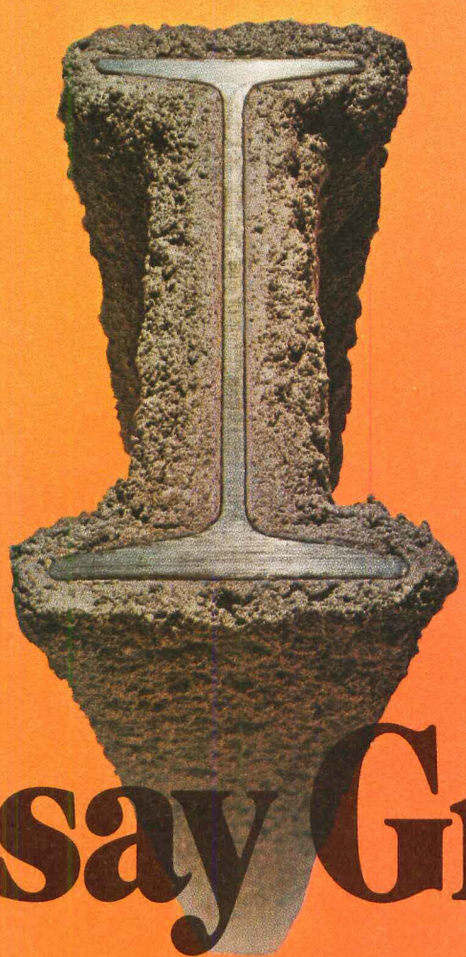

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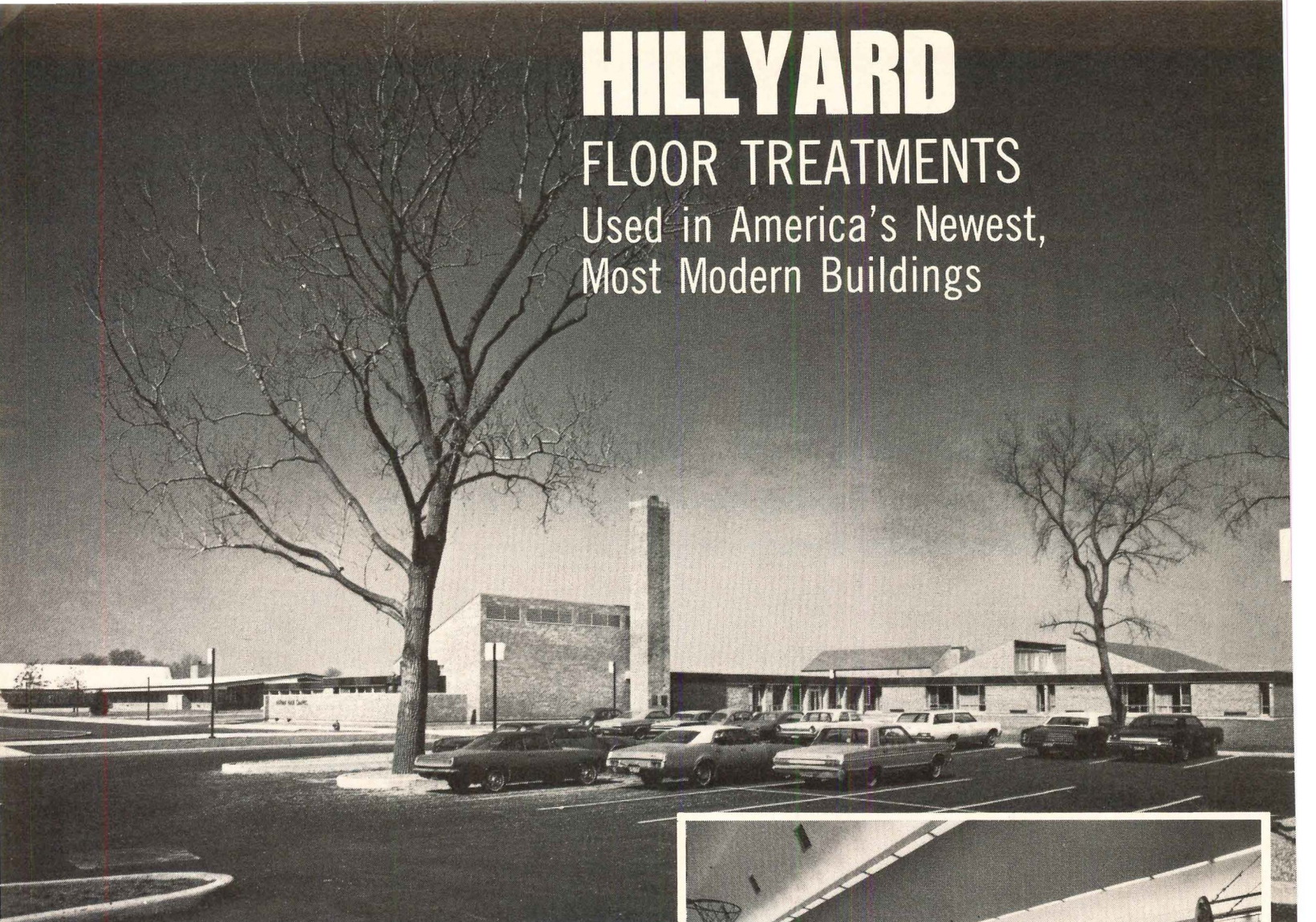
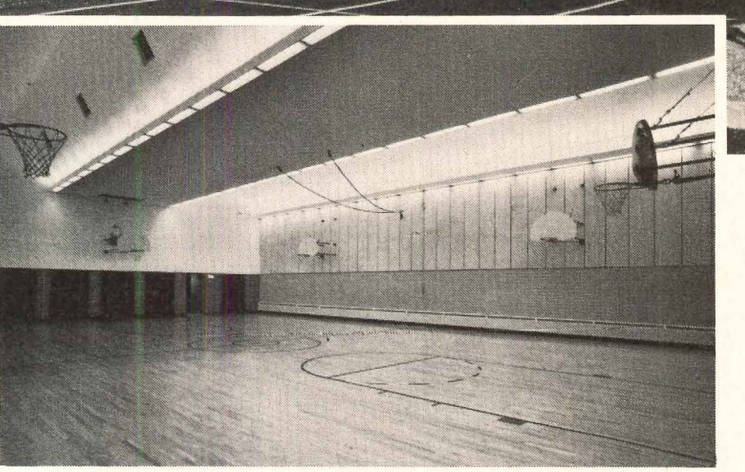
FLOOR TREATMENTS
Used in America's Newest, Most Modern Buildings





Nathan Hale School at Crestwood, Ill.
Architects: The Perkins & Will Partnership, Chicago, White Plains, N.Y., and Washington, D.C.

Hillyard seals, finishes and cleaners are the superior choice for use on every type of floor in every type of structure—from schools to airport terminals, from office buildings and shopping centers to hospitals and nursing homes.

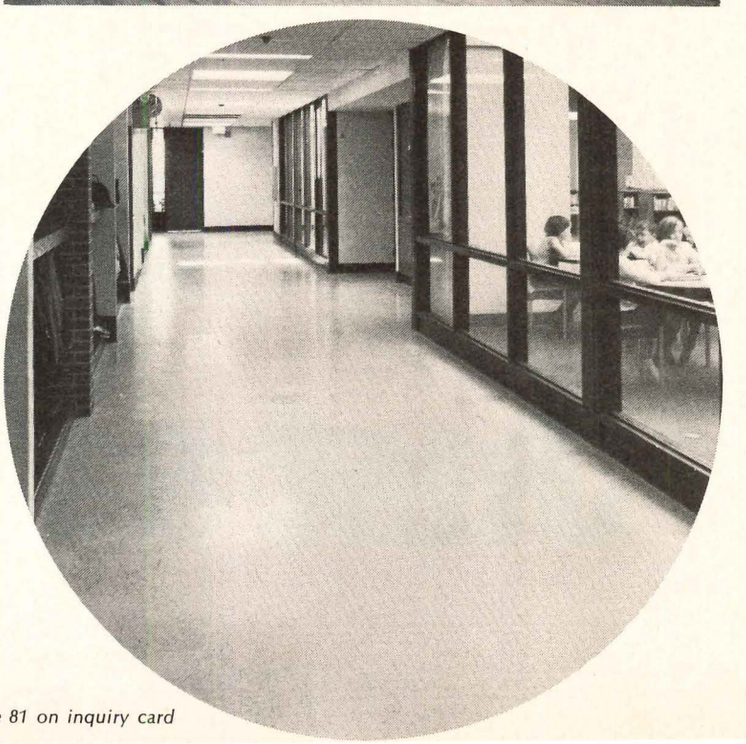
The reason: repeated proof that Hillyard products provide (1) better, longer-lasting protection for the surface; (2) enhanced appearance; and (3) easier, more economical maintenance.

WRITE FOR UP-DATED SPECIFICATIONS MANUAL

It contains a Sweets Architectural Catalog; Spec-Data sheets on seven widely specified products; and a treatment folder for every type of floor.

In ring binder form, each copy is numbered so that you will be furnished with new inserts as still later information becomes available. Write for your copy on your letterhead.

Hillyard architectural consultants are ready to recommend proper, approved treatments for the floors you specify; and to supervise application at the job site.



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Darn clever, these Chinese.

4,000-year-old building secret revealed in ancient Chinese porcelain-enamel vase

The fact that porcelain enamel as a building material is virtually indestructible was dramatically demonstrated by the discovery of this 4,000-year-old Chinese vase. Its brilliant colors and gleaming finish have not aged over the centuries.

TODAY LEADING ARCHITECTS AROUND THE WORLD ARE SPECIFYING ALLIANCEWALL PORCELAIN ENAMEL PANELS MORE AND MORE. The unusual durability of AllianceWall panels has greatly contributed to this growing popularity. After decades of tough, punishing wear, early-day AllianceWall installations still look bright and new. Consider these facts:

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- **AllianceWall panels are compatible with nearly any other type building material.**
- **The smooth non-porous glass surface of AllianceWall porcelain-on-steel panels will not retain dirt, grease or stains.**
- **AllianceWall panels come in 107 standard beautiful colors which never fade, corrode or appear to age.**

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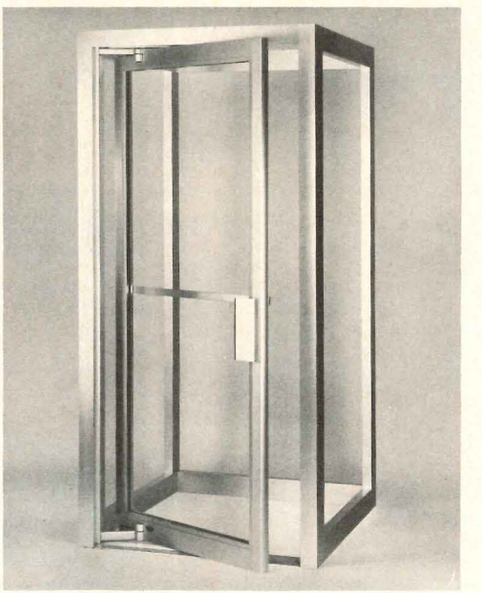
continued from page 158



ADJUSTABLE DOOR / The latching, back checking and closing speeds of this manual balanced door can be fully adjusted to meet any situation. The unit is covered by a three-year factory-parts replacement warranty on operating hardware and the standard LCN 5-year warranty on the door closer. ▪ The Natcor Company, Nashville.

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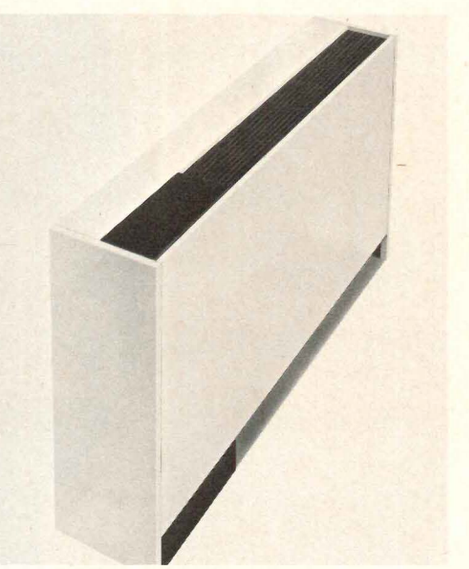

AIR-CONDITIONING TERMINAL UNITS / A line of fan-coil *UniTrane* room units is designed "to compare favorably with the quality of large refrigeration machines which form the heart of big systems." Among the favorable features are the NC curves and octave band sound power ratings—testing per ARI Standard 443-66—and ARI Certified Performance ratings. A large high temperature rise coil and small auxiliary coil make the units adaptable for use on the company's 4-pipe system, which is reported to have an installed cost only 5 to 10 percent above 2-pipe systems. ▪ The Trane Company, La Crosse, Wis.

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more products on page 186-B

We make a lot of different ceilings. To do a lot of different things.

This one's thing is total accessibility.

You can't see it, but above the monolithic beauty of this ARMSTRONG acoustical tile ceiling is a unique suspension system that provides complete accessibility at any point in the ceiling. The system is called ATS. Short for Accessible Tile System. With ATS, a simple tool is all that's needed to gain access or to change tiles or to rearrange light fixtures. Like all Armstrong Ceiling Systems, ATS was designed to meet a specific set of needs—both functional and esthetic.

Because there are so many different Armstrong Systems, your Armstrong Architectural Representative is in the best position to help translate your particular needs into a workable recommendation. For his name, and a copy of our ceiling systems folio, please write. Armstrong, 4207 Rock St., Lancaster, Pa. 17604.

Armstrong CEILING SYSTEMS THAT WORK

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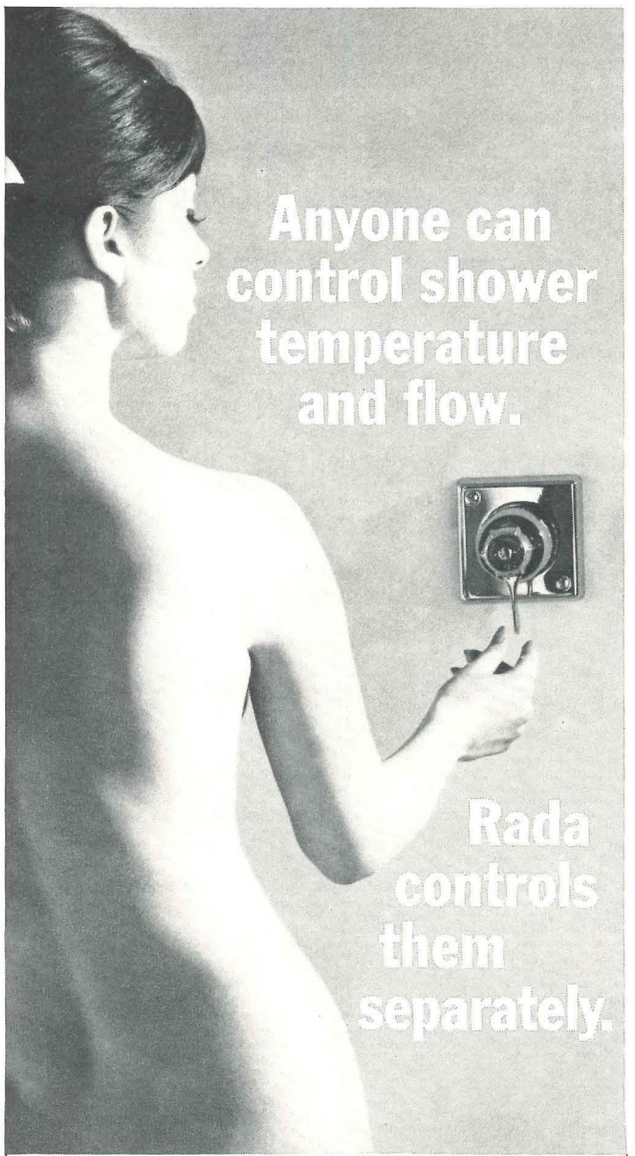

The Rada Thermostatic Mixing Valve has dual controls. Touch one—and adjust the temperature. Touch the other—and you adjust the flow. And either may be adjusted without upsetting the other.

Reason: Rada's responsive bi-metal thermostat. It holds the temperature steady no matter how much or how often the hot and cold supplies change. This sensitivity is combined with simplicity and strength in construction.

Next time you specify thermostatic mixing valves for shower, or in matching tub-and-shower combinations, specify Rada. Made by Richard Fife, Inc. The company that's made a big business out of controlling water beautifully.

Also specify Unitap spray mixing faucets—another way to control water beautifully.

Richard Fife, Inc.

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Phone: (212) 683-0745

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Just add people. Haughton Escalators do the rest. Beautifully

From our wide range of models, you can specify just the right equipment to move up to 8,000 people hourly. Reliably and safely. Indoors or outdoors. Wherever you need space-saving, continuous transportation. Call in your Haughton man for complete specification data on Haughton advanced-design escalators to meet your new construction or modernization needs. Or, please write us direct.

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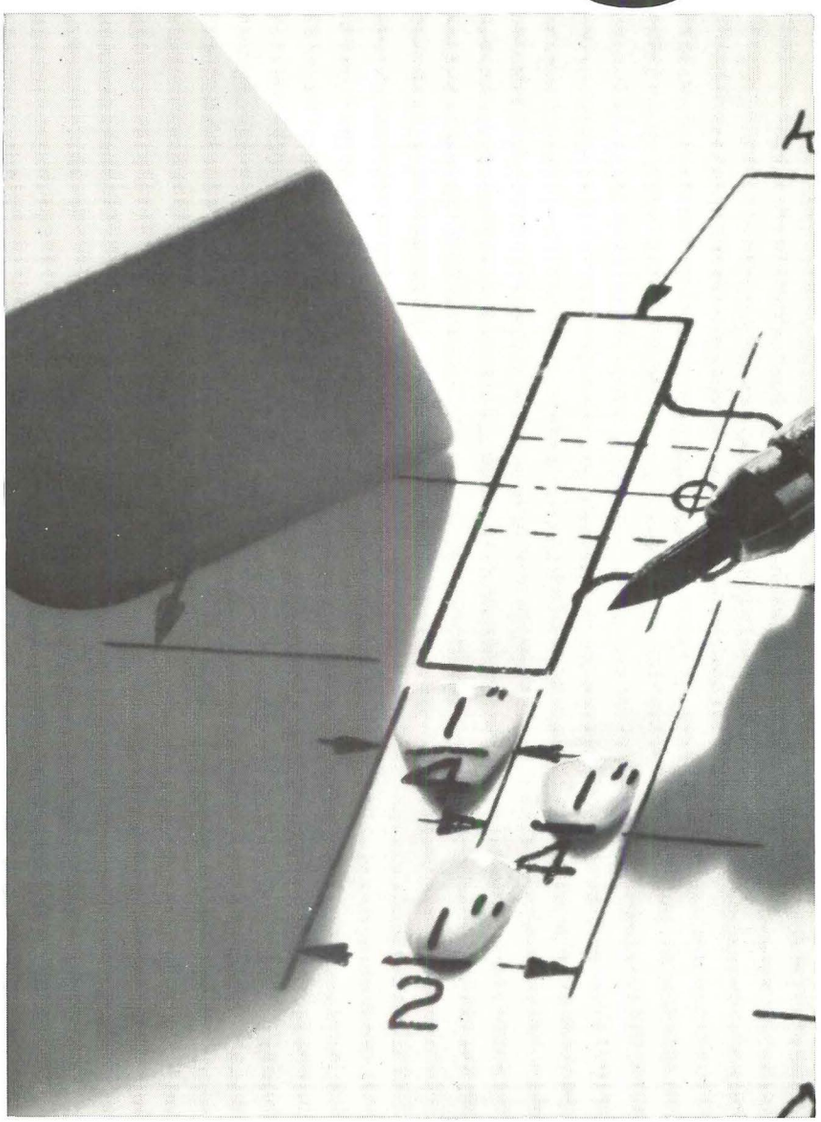
Instant Changes.



Revisions are easier with KODAGRAPH Wash-Off Films.

Here's a real bonus for draftsmen.

You don't need to retrace an entire drawing that needs only revision. A beautiful reproduction on KODAGRAPH Wash-Off Film can be made that includes only the unchanged areas. You merely draw the new details.

The improved drafting surface on these ESTAR Base Films takes pencil or pen nicely—holds up under repeated erasures. Photographic lines are wet erasable. Resulting diazo prints will be sharp and clean.

Ask your local Kodak Technical Service Representative to show you all the drafting shortcuts possible with Kodak Photo Drawing Systems. Or write Eastman Kodak Company, Business Systems Markets Division, Rochester, New York 14650. Dept. 710

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Kodak

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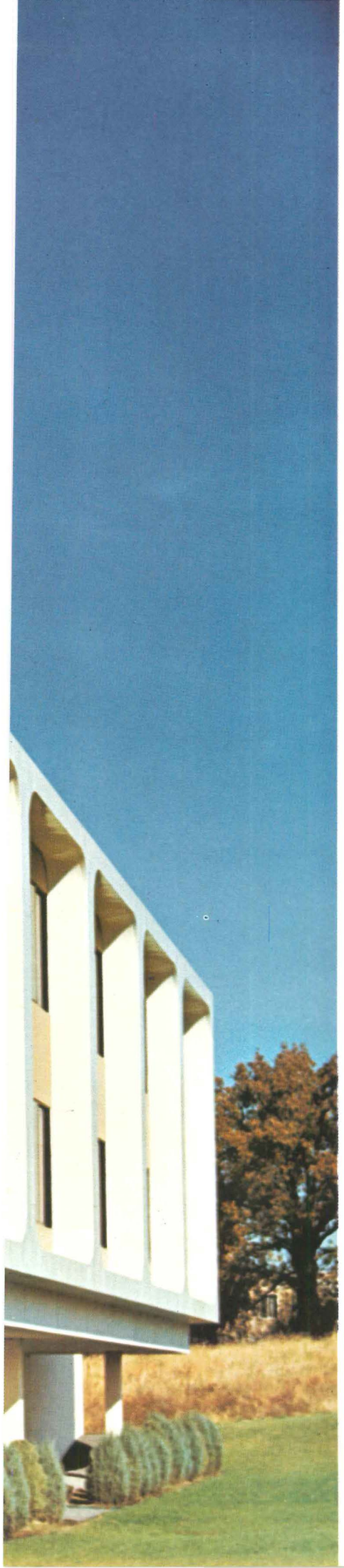

can this really be porcelain-enameled steel?

every graceful square foot of it.

This entire facade (except of course for the glazing) was created in porcelain-on-steel panels. Notice how steel's versatility permitted graceful contouring and sculpturing to carry out the desired architectural expression.

Porcelain-enameled steel panels can be designed in a wide variety of embossments, textures, and shapes. On the practical side, they offer rigidity, light weight, corrosion resistance, cleanliness, and long-range economy.

Bethlehem furnishes special enameling sheets to fabricators who form and coat architectural panels. Colors run the full range of hues, including the new matte-finish Nature-tones which harmonize with the soft understatement of Nature herself. Let us send you a copy of the Porcelain Enamel Institute's brochure on Nature-tone finishes. Bethlehem Steel Corporation, Bethlehem, PA 18016.

BETHLEHEM STEEL

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Office Building, Manchester Insurance Group, Creve Coeur, Mo.
Architect: Jerome Samuel Peters, Brentwood, Mo.
Structural Engineers: Lapin-Ellis-Dabler, Inc., St. Louis, Mo.
Porcelain Enamel Manufacturer:
Rittiner Industrial Enameling, Bay St. Louis, Miss.

Steel

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For more data, circle 88 on inquiry card

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Can architects and engineers help management control rising construction and building operating costs? Here's one inflation fighter you must not ignore.

These construction statistics show that in 1969 construction costs increased abnormally—faster than most businesses could absorb without a real crimp in profits. These figures also suggest that cost increases on buildings generally protected by automatic sprinklers are far less than increases on buildings usually left unsprinklered. Specifically, changes in sprinklered building costs ranged between —9.0% and +8.1%, while non-sprinklered types increased from +11.7% to +15.6%. See for yourself. Compare *your* buildings.

These economies are facts. Are they coincidence?

1. Proven construction economies with "Automatic" Sprinklers

Building codes let you cut costs when an "Automatic" Sprinkler system is designed in. Here are some of the ways:

Building codes permit, with *sprinklers:*

a. Increased area
b. Increased height
c. Increased distance to exits
d. Less flame-resistant materials
e. Lighter roof framing
f. Fewer fire walls
g. More fire wall openings, and larger ones
h. Smaller corridor and exit widths
i. Fewer draft stops
j. Less fire-stopping

Let the codes help you cut construction dollars. Ask your architect to show you how.

2. Increased rental income with "Automatic" Sprinklers

During recent planning and construction of the new Georgia-Pacific headquarters, a modern 27-story structure in Portland, Oregon, these facts presented themselves: Architects Skidmore, Owings &Merrill found that the cost-saving offsets provided by full automatic sprinkler protection enabled them to install the sprinkler system at no additional cost. This approach also resulted in *more usable rental space.* The owner's annual gain from additional rental income and insurance savings will be approximately $50,000, or *two and a half million dollars* over a 50-year building life. Every extra square foot of usable space can mean savings for industrial and commercial businesses alike.

Construction Costs Per Square Foot Based on October 1969 F.W. Dodge Statistics

Classification	Usually Sprinklered or Usually Not Sprinklered	$ Per Sq. Ft. 1968	$ Per Sq. Ft. 1969	% Change 1968 vs 1969
Stores & mercantile	Sprinklered	14.41	14.38	—0—
Warehouses (exl. mfr. owned)	Sprinklered	7.02	7.36	+4.8
Office & bank bldgs.	Not Sprinklered	24.17	27.96	+15.6
Commercial garages & service stations	Sprinklered	10.36	10.61	+2.4
Total Commercial	See Above	15.36	17.03	+10.8
Manufacturing Plants	Sprinklered	14.03	12.76	—9.0
Warehouses (mfr. owned)	Sprinklered	8.14	8.80	+8.1
Laboratories (mfr. owned)	Sprinklered	19.66	18.16	—7.7
Total Manufacturing	See Above	13.13	12.22	—7.0
Schools	Not Sprinklered	21.40	23.91	+11.7
Laboratories (not mfr. owned)	Not Sprinklered	34.42	39.00	+13.3
Libraries, museums	Not Sprinklered	31.50	31.07	—1.4
Total Educational	See Above	22.89	25.01	+9.2
Total Hospitals & health	Some Sprinklered	31.01	32.30	+4.1

3. Insurance savings and increased coverage with "Automatic" Sprinklers. A leading manufacturer in Mansfield, Ohio recently reduced its insurance premiums by 80% by installing an "Automatic" sprinkler system. (Insurance savings such as this are not uncommon and generally range between 40% to 90%.) More important, this manufacturer was able to apply a portion of these savings toward much needed additional insurance coverage. They are now fully protected against loss because of fire and lack of sufficient insurance coverage.

Obtain this "Inflation Fighter" file. Are these unusual situations? Or can you save this kind of money? Our "Inflation Fighter" file will help you fight high building costs. Send for it.

The Code Book details the many permissive clauses of building codes to allow greater design flexibility and make your dollars stretch farther.

Construction Cost Statistics allow you to completely analyze sprinklered and non-sprinklered building costs.

Georgia-Pacific Building is a reprint from *Fire Journal* detailing the cost savings, insurance savings, and increased rental income achieved with sprinklers.

The High Cost of Burning is a detailed booklet about leasing, insurance savings, other financial facts and figures.

Send for this file. And copies for your clients, associates and everyone else who must protect investments, expenses, and lives. Send your request to: Richard L. Pardee, Manager of Marketing Services, "Automatic" Sprinkler Corporation, Dept. BA, PO Box 180, Cleveland, Ohio 44141.

"Automatic" Sprinkler
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And that includes elevators.

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Right from stock. Off-the-shelf.

This simplifies elevator planning and installation. And makes it possible to plan and hold a tighter construction schedule. To finish earlier.
And start renting sooner.

And to *stay* fully rented. That's another way our off-the-shelf elevators can help you.

Our brochure on pre-engineered low-rise elevators gives the details.
Write on your letterhead to Dept. 13, 260 Eleventh Avenue, New York, N.Y. 10001.

Otis®
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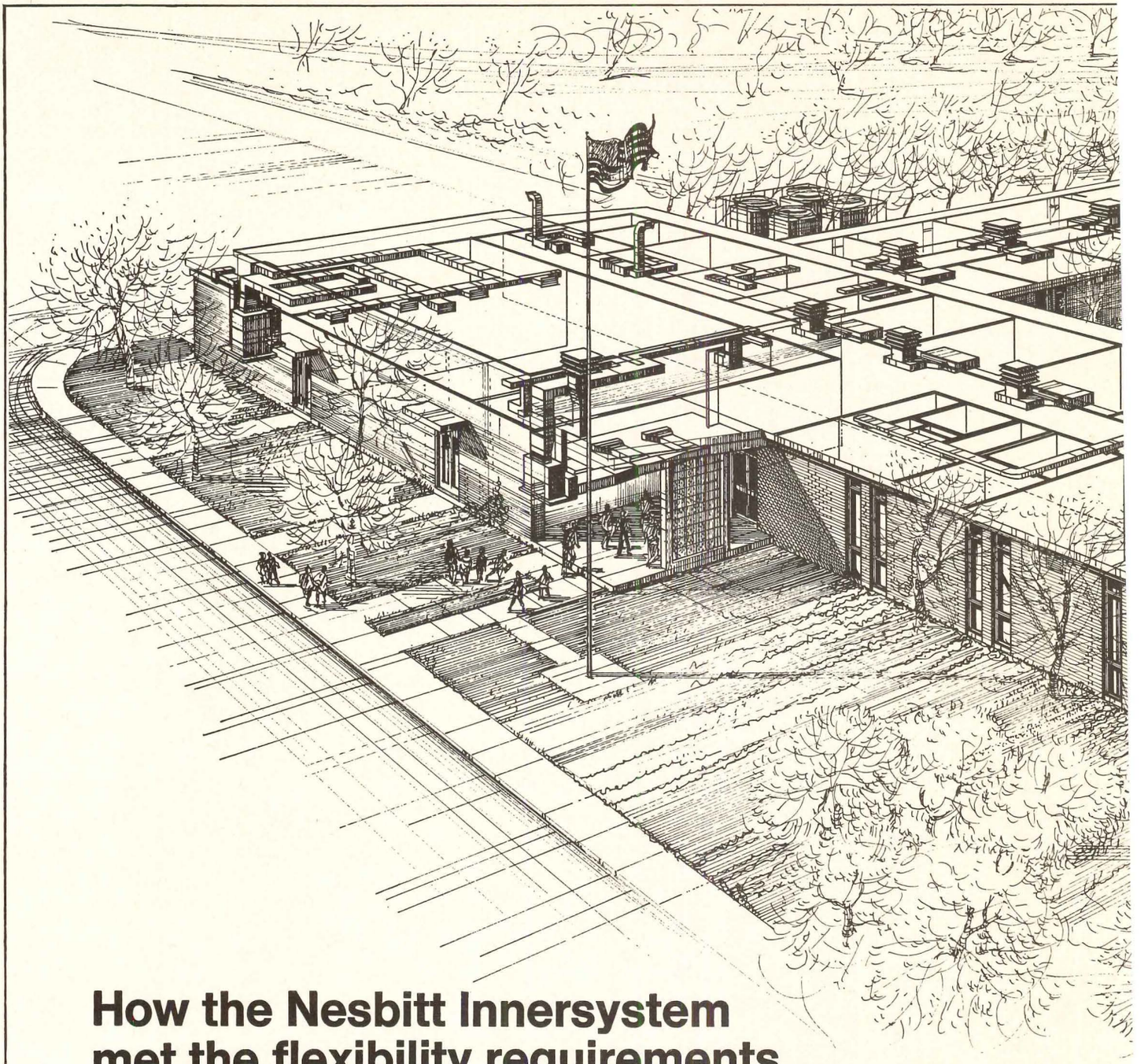


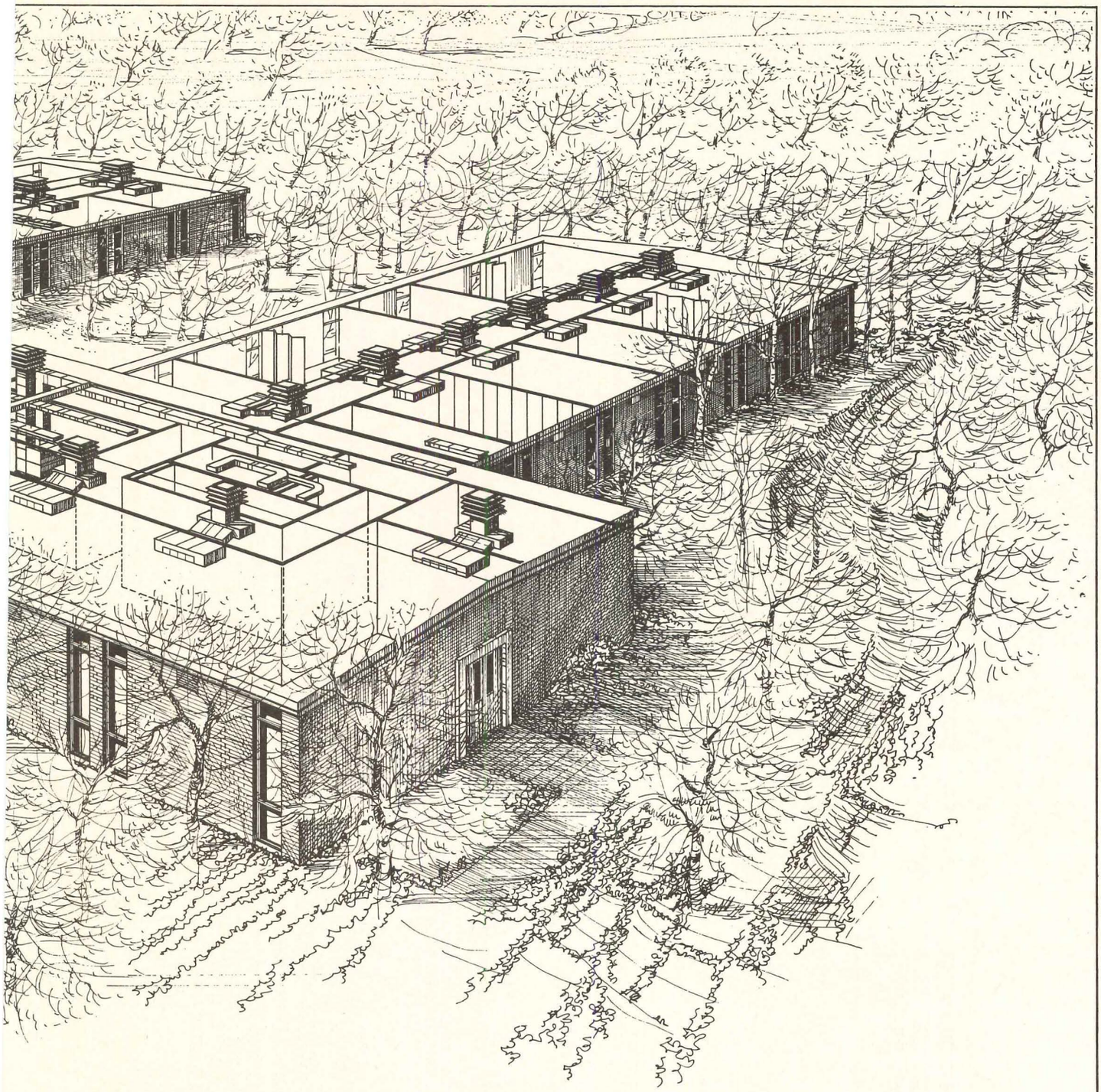
How the Nesbitt Innersystem met the flexibility requirements of Tibet Avenue School at $2.77 per sq. ft.

What's an Innersystem? You might ask that question of the Savannah, Georgia School District where the Tibet Avenue Elementary School is located, but the chances are they've already forgotten about the Innersystem and justly so.

You see, the Innersystem provides year-round heating, ventilating and air conditioning to service learning spaces in all shapes and sizes. And if the school district has forgotten about that—the reason is plain. The Nesbitt Innersystem isn't in view! It was designed to fit at the ceiling or in the ceiling sandwich, out of sight, saving valuable floor space.

The versatility of the Innersystem is unmatched for air conditioning, heating and ventilating. Hydronic, electric or a combination of hydronic and electric. Add to this, simplified maintenance provided by the exclusive Nesbitt Vac-Clean filter. You can see how easy it is to forget about the Innersystem. Actually, the Vac-Clean filter never needs changing. When the filter media in use becomes dirty, a tiny light signals the custodian. He advances the reel of filter media to a clean section. Once every two years, he vacuums the entire reel of permanent filter media. That's it, no ladders required at any time.

At the Tibet Avenue Elementary School, Architect Oscar M. Hansen and his Consulting Engineers, White, Hobbs and McClellan selected chilled water cooling and electric heating for their Innersystem units. It is the first system of this type in the State of Georgia. As



a matter of fact, the Tibet Avenue Elementary School will be the first fully air-conditioned school in the Savannah District. That in itself meant that everyone was extremely careful in the selection of the equipment and the system.

The Savannah School District bought the best possible comfort conditioning system available for $2.77 per square foot. With the Nesbitt Innersystem, individual area comfort is always maintained. This means that one area can demand heating while another cooling and the individual Innersystem units serving those areas can handle both these requirements simultaneously.

To create even more learning spaces, the builders chose to place the refrigeration system outside the building, piping chilled water to the individual units. Innersystem piping is installed in the ceiling sandwich, eliminating pipe trenches as well as shortening piping runs.

Note also, that with the Innersystem, fresh air intakes do not have to be located in perimeter walls. Doing so could defeat educational flexibility. You see, the Nesbitt Innersystem was developed out of educational demands. It is the most reliable system for answering the call for flexibility.

For further details on the Nesbitt Innersystem of air conditioning, heating and ventilating, write Nesbitt Operation, ITT Environmental Products Division, International Telephone and Telegraph Corporation, Philadelphia, Penna. 19136.

NESBITT ITT

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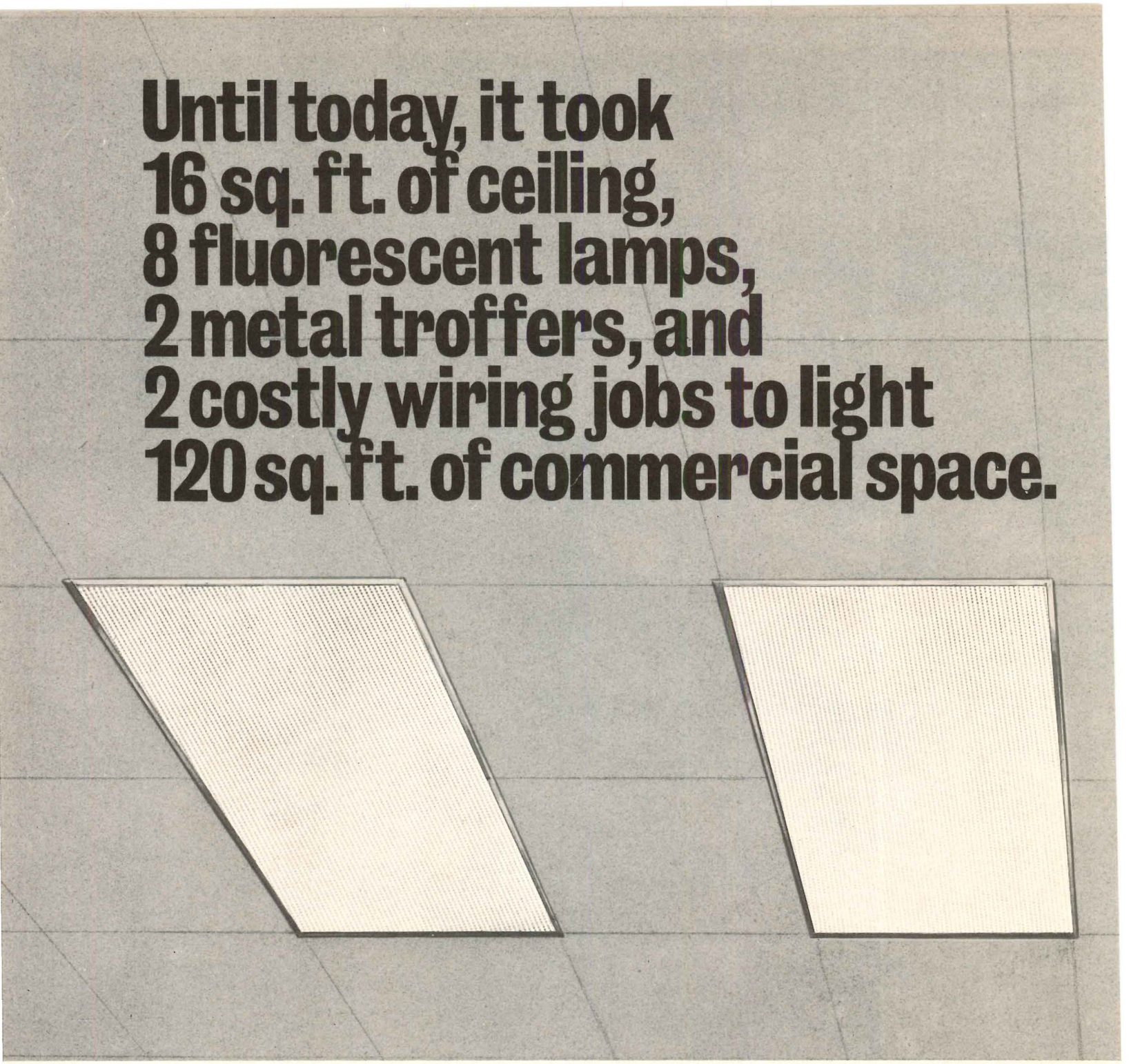
Until today, it took 16 sq. ft. of ceiling, 8 fluorescent lamps, 2 metal troffers, and 2 costly wiring jobs to light 120 sq. ft. of commercial space.



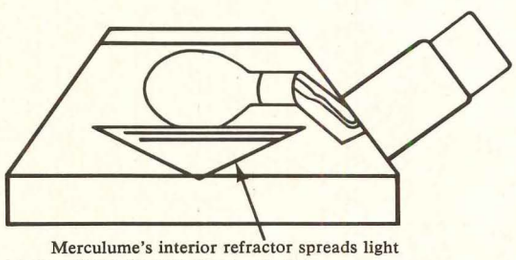
The Holophane Merculume luminaire fits into a ceiling opening only 2′ x 2′. It's the only luminaire designed to exploit fully the potential of today's high pressure lamps. With a mercury lamp, Merculume delivers as much light as two 2′ x 4′ standard fluorescent units. Only 4 sq. ft. of ceiling give you all the light you used to get from 16 sq. ft.

With a metal halide lamp, Merculume delivers yet another 50% more light than with a mercury lamp —three times the illumination you get from a standard fluorescent unit.

Whichever you use, you cut installation time at least in half, and you free 75% or more of your ceiling area.

Best of all, you can use Merculume anywhere you'd use a fluorescent luminaire. You get the same comfortable, effective light you've always been accustomed to. The secret is Merculume's unique interior refractor. This refractor captures the light from the lamp and spreads it evenly over the inner surface of the lens. The result is uniform brightness with no trace of discomforting hot spots or glare. All you see in the ceiling

Until today and Merculume 2000.



Merculume's interior refractor spreads light evenly, eliminating hot spots and glare.

is an unobtrusive, softly glowing square of light.

Merculume is a modular 2′ x 2′—that means maximum layout flexibility. And, of course, there's the benefit of long lamp life that's characteristic of high pressure lamps.

If you are involved in planning or building new commercial space, get all the facts on the revolutionary Holophane Merculume 2000 before you make any decision on lighting.

For complete details write: Dept. A-3, Holophane Company, 1120 Avenue of the Americas, New York, N.Y. 10036.

Merculume 2000 by

HOLOPHANE

For more data, circle 92 on inquiry card

continued from page 172

GLASSLESS MIRROR / This glassless mirror is shatterproof, non-tarnishing and lightweight. It can be manufactured in any size or shape and used wherever traditional mirrors are used. The mirror is made of a thin sheet of aluminized polyester film stretched over lightweight panels with slightly raised edges, holding the film clear of the panels' surface. ▪ American Velcro Inc., New York City.

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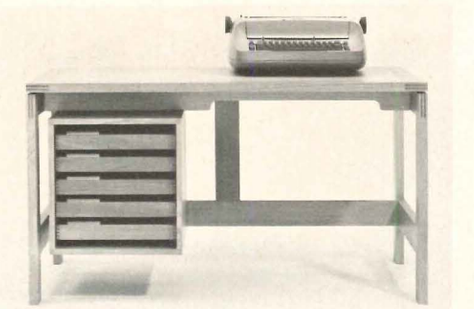

OFFICE FURNITURE / The *M 40* line is based on a 40 cm module: Horizontal dimensions are products of this module and all heights match. Storage furniture above base level is a multiple of 40 cm. The system offers many combinations and makes both small and large groups of furniture harmonize. ▪ Fritz Hansen, Inc., New York City.

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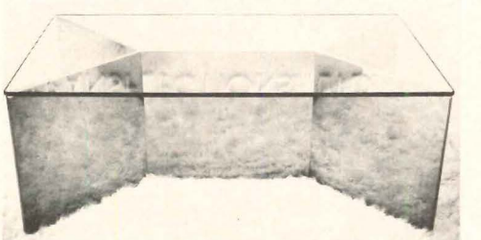

STAINLESS STEEL IN FURNITURE / R. J. McDonald has designed contemporary furniture using large planes of stainless steel in simple, bold, reflective designs. The combination of stainless steel and glass in the tables has produced a transparent look that will be further developed in forthcoming designs for modular acrylic seating and table systems. ▪ Transflections, Ltd., Floral Park, N.Y.

Circle 313 on inquiry card

Innovative Design of Galveston Motel Features 65 Gulf View Guestrooms Heated and Cooled Electrically

Unusual S-shape, brown face brick interior and exterior are features of the Commodore Motel in Galveston.

PROJECT: Commodore Motel, Galveston, Texas. ARCHITECT: Louis Lloyd Oliver, Galveston, Texas. CONSULTING ENGINEERS: Joe E. Lee & Associates, Houston, Texas.

DESIGN CHARGE: To design a motel with 65 guestrooms and supporting facilities on a limited waterfront site in such a way that each guestroom would have a view of the water.

DESIGN RESPONSE: To meet the specification, architect Louis Lloyd Oliver designed a three-story, S-shaped building of light brown face brick and wide expanses of solar bronze glass. All guestrooms, in addition to a restaurant, cocktail lounge, and sundeck overlook a swimming pool and the Gulf of Mexico.

The interiors of the guestrooms and public areas are finished in the same light brown face brick which, architect Oliver explains, is an excellent soundproofing material and eliminates the need for painting.

To space condition the building the year around, the designers selected an electric heating/cooling system after studies indicated that it would be lower in first cost, would occupy less rentable space, and would provide greater design flexibility, especially in regard to zone control. Guestrooms are heated and cooled by ceiling-mounted fan-coil units equipped with strip heaters. Cold water is supplied by a single 52.5-ton centrifugal chiller which also services the air handlers installed in the ducted systems that condition the public areas. Heating in these areas is provided by duct heaters.

Mr. Oliver says that a major advantage of the electric system is the fact that each guestroom has its own heating/cooling unit which means that each guest can select the precise temperature that suits his personal preference without regard to other rooms or outdoor weather conditions. He also points out that the electric system offered the design freedom required for the unusual S-shape configuration of the motel and cost less to buy and install than equivalent systems using a flame fuel for heating. It doesn't require a large boiler room or chimney with the result that added space is available for income-producing purposes and there is nothing extraneous to "clutter" the exterior design. The owners also save $300 a year on boiler insurance.

SEE REVERSE SIDE FOR DETAIL INFORMATION

1 CATEGORY OF STRUCTURE:
Shelter—Motel

2 GENERAL DESCRIPTION:
Area: 36,000 sq ft
Volume: 288,000 cu ft
Number of floors: three
Number of occupants: variable
Number of rooms: 65 guestrooms
Types of rooms: guestrooms, lobby, offices, cocktail lounge, sundeck, restaurant, kitchen, laundry rooms, storage areas

3 CONSTRUCTION DETAILS:
Glass: single
Exterior walls: 8" brick finished both sides, load bearing; U-factor: 0.37
Roof or ceilings: built-up roof on 6" concrete deck over steel beams, gypsum board; U-factor: 0.36
Floors: concrete slab
Gross exposed wall area: 14,976 sq ft
Glass area: 5560 sq ft

4 ENVIRONMENTAL DESIGN CONDITIONS:
Heating:
Heat loss Btuh: 800,000
Normal degree days: 1211
Ventilation requirements: 5260 cfm
Design conditions: 25F outdoors; 75 indoors
Cooling:
Heat gain Btuh: 630,000
Ventilation requirements: 5260 cfm
Design conditions: 95F dbt, 80F wbt outdoors; 75F, 50% rh indoors

5 LIGHTING:
Levels in footcandles: 20-75
Levels in wattts/sq ft: 1-3
Type: fluorescent and incandescent

6 HEATING AND COOLING SYSTEM:
Guestrooms are heated and cooled by ceiling-mounted fan-coil units equipped with strip heaters. Cold water is supplied by a single 52½-ton centrifugal chiller. The same chiller also serves the air handlers installed in the ducted systems for the public areas. Duct heaters provide the heating for these areas.

7 ELECTRICAL SERVICE:
Type: overhead
Voltage: 120/480v, 3 phase, 4-wire
Metering: secondary

8 CONNECTED LOADS:

Heating & Cooling (52.5 tons)	237 kw
Lighting	46 kw
Water Heating	57 kw
Other	12 kw
TOTAL	352 kw

9 INSTALLED COST:*

General Work	$425,000	$11.80/sq ft
Elec., Mech., Etc.	125,000	3.48/sq ft
TOTALS	$550,000	$15.28/sq ft

*Building was completed 6/66

10 HOURS AND METHODS OF OPERATION:
24 hours a day, seven days a week.

11 OPERATING COST:
Period: January 1968 through December 1968
Actual degree days: 1455
Actual kwh: 760,160*
Actual cost: $8,773.93*
Avg. cost per kwh: 1.15 cents*
*For total electrical usage

Month	Degree Days	Demand	kwh	Amount
1/68	381	184	71,680	$ 810.58
2/68	404	208	66,560	811.92
3/68	233	187	67,840	788.64
4/68	8	176	57,760	702.15
5/68		130	48,800	575.44
6/68		166	65,440	747.18
7/68		181	69,920	801.62
8/68		176	77,280	845.25
9/68		184	83,200	898.92
10/68	4	152	61,600	698.75
11/68	142	122	44,640	539.24
12/68	283	128	45,440	554.24
TOTALS	1455		760,160	$8,773.93

12 FEATURES:
The fan-coil unit in each guestroom is controlled by a separate thermostat so that each guest may select independently the temperature that suits his personal preference.

13 REASONS FOR INSTALLING ELECTRIC HEAT:
Preliminary studies indicated that the electric heating/cooling system would be lower in first cost, would occupy less rentable space, and would provide greater design flexibility, especially with regard to temperature control.

14 PERSONNEL:
Owner: Druss Realty Co.
Architect: Louis Lloyd Oliver
Consulting Engineers: Joe E. Lee & Associates
General Contractor: Sol Druss
Electrical Contractor: George Smith
Mechanical Contractor: Letsos Co.
Utility: Houston Lighting & Power Company

15 PREPARED BY:
Jack M. Cobb, Manager of Sales Promotion and Research, Houston Lighting & Power Company.

16 VERIFIED BY:
Louis L. Oliver
Louis Lloyd Oliver, AIA

Joe E. Lee
Joe E. Lee, P.E.

Gentlemen:
Please send the complete series of Electric Heating Case Histories as they become available to me at the following address:

Name and Profession: _____
Firm, University or other affiliation: _____
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When you're number one in designing the most unique and contemporary laminates, you're always ahead of yourself and you always think you're behind. No sooner do we design a trend-setting laminate than we feel we have to replace it with an even more exciting one. That's the only way we can keep ahead of our greatest competition. Ourselves. To see our more than 120 stay-ahead designs write General Electric Company, Laminated Products Department, Dept. #426, Coshocton, Ohio 43812.

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Von Duprin 55

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VON DUPRIN LTD. • 903 SIMARD ST. • CHAMBLY, QUEBEC

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Armstrong Rubber chose Multi-Vent® Industrial Air Diffusers

Offices and a portion of the Armstrong Rubber Company's Des Moines, Iowa, plant; one of five in the United States. With approximately five million square feet of facilities at Des Moines, Armstrong produces over 15,000,000 passenger, truck and implement tires annually.

. . . designed for economical installation and maximum efficiency in minimum space

Controlling environmental hygiene problems is an absolute essential to Armstrong Rubber Company's efficient operation of its tire manufacturing facilities in Des Moines, Iowa.

To help solve this problem in the curing section, a high velocity duct system, incorporating a series of Multi-Vent Industrial Air Diffusers for each bank of curing presses, was installed.

A "first" in air handling for tire curing presses.
The MV-600 Air Diffusers direct air straight down and laterally to form a literal "curtain of air" to entrain contaminated air inward and upward within the hood and through roof vents. The heat factor is also considerably reduced.

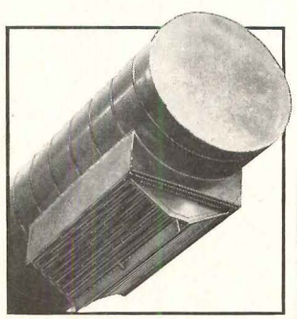
Previous experience and performance double checked.
Even based on the successful operation in other applications, additional evaluation tests on the MV-600's were required before they were accepted for this application. Not only have they measured up to their 600 cfm rating but they are now performing easily and efficiently well above rated performance.

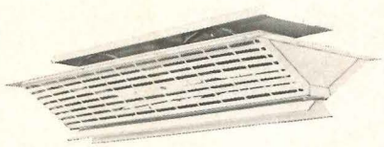
Saves money on new or remodeling installations.
This system was also installed in another section of the plant where space was at a premium and installation problems were many. The versatility and simple installation facilitated by these air diffusers enabled Armstrong to meet their target of air handling efficiency at a minimum total installation cost which was considerably lower than a conventional system. A bonus is the amazingly low noise level of this "air curtain of comfort and safety."

In addition to efficient performance, the MV-600 Industrial Air Diffuser can help you solve your specific problems through adaptability, economy of installation and space-saving factors. Send for Bulletin 696 on Multi-Vent Industrial Air Diffusers.

Just write:
MULTI-VENT PRODUCTS DIVISION
Dynamics Corporation of America
1400 North Kostner Avenue
Chicago, Illinois 60651

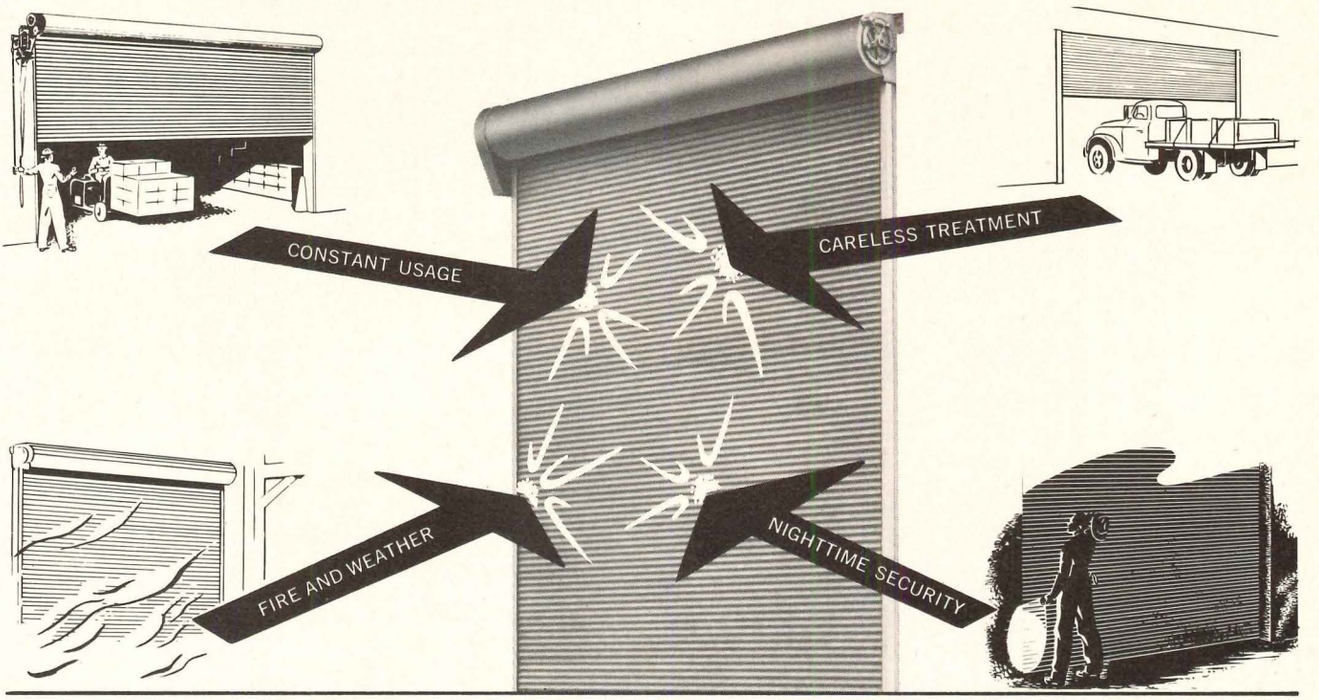
For more data, circle 100 on inquiry card





MV-600 Industrial Air Diffuser. This aluminum air diffuser gives complete mechanical control of air volume and direction and is applicable to any industrial design.

Mechanical Contractor: Waldinger Corporation, Des Moines A&E: John J. Harte & Assoc., Inc., Atlanta



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get the "SHOCK TREATMENT" night and day...

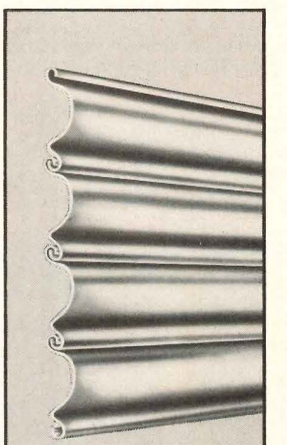
and thrive on it. Between constant ups and downs during heavy traffic, occasional bumps and tormenting weather, a Kinnear Service Door will keep going strong. They are seldom pampered.

The interlocking slat curtain was developed and perfected by Kinnear to withstand excessive abuse, operate with dependable ease, and store above the door opening completely out of the way without robbing valuable storage or work space. This system has proven itself time and again, and over the years has not been excelled. It also has proved extremely adaptable to a broad range of applications.

The configuration of the steel slats serves several important functions. First, each slat is channeled to add structural strength — second, the interlocking hinge feature is very positive but compact so the curtain rolls and stores in the minimum of space above the door. Each slat is triple protected with Kinnear (1.25 oz. per sq. ft. — per ASTM Standards) zinc and paint-bond finish. Finally, if repair is necessary, only the damaged slats need replacement which is easily accomplished.*

If you are planning a new building or remodeling an existing one, Kinnear Doors should be considered for both their operational and appearance advantages.

Kinnear has, or can supply, a service door to fit most any requirement, either manually or motor operated. Push button controls for motor operation can be located for convenience at any number of remote or adjacent stations. Ask about Kinnear's "AKBAR" labeled fire doors or Kinnear's Rolling Metal Grilles if you want protection without sacrificing ventilation or vision.



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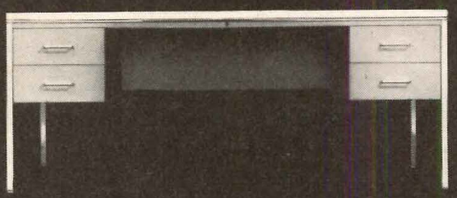
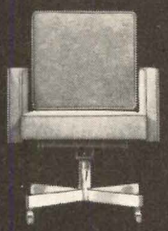
Offices & Representatives in All Principal Cities — listed in Yellow Pages under "Doors." Also see Sweet's!

For more data, circle 101 on inquiry card

For more data, circle 102 on inquiry card



Choice of two furniture series
for contemporary office concepts



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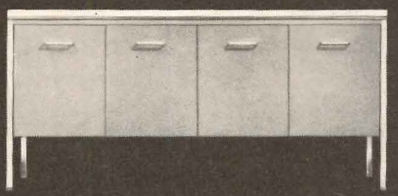
every design arrangement



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Yet very individual. Select from incomparable furniture lines, finishes and fabrics in an inspired spectrum of colors and textures to impart infinite expression to your design. All-Steel Equipment Inc., Aurora, Illinois 60507. Showrooms in New York, Chicago, Los Angeles, Aurora. Canada: B. K. Johl Inc. Montreal, Toronto, Vancouver.

One of the C.I.T. companies

OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Card, pages 211-212.

ACCESS FLOORING / According to a 12-page booklet, "the concept of access (or raised) flooring offers many advantages that have been largely overlooked except in special-purpose applications such as computer rooms and communications centers." Included are capsule descriptions of two large projects built entirely with access floors and explained by the architects who designed them. One is the American Hospital Association headquarters in Chicago designed by Richard O. Evans of Schmidt Garden & Erikson. The other is Globe-Union's administrative complex designed by Charles H. Harper. ▪ Weber Architectural Products, Grand Rapids, Mich.

Circle 400 on inquiry card

DECORATIVE GLASS BLOCK / A 4-page brochure describes decorative glass block made with 1 in.-thick stained glass dalles, cut by hand to various shapes. Glass is then cast into the spaces within the blocks with an epoxy matrix forming a solid masonry unit "that can be easily masoned into place." When used as stained glass in religious buildings the blocks are particularly effective, both from the inside and outside. When lit up at night they offer an unusual exterior view. ▪ Conrad Pickel Studio, Inc., New Berlin, Wis.

Circle 401 on inquiry card

SOLID GLASS BRICK / A 4-page brochure "Solid Glass Brick . . . Lets Nothing Through But Light," points out that "conventional glass is vulnerable to accidental or intentional breakage, but *Glass Bricks* 3 in. thick provide protection without seeming to." ▪ Pittsburgh Corning Corporation, Pittsburgh.*

Circle 402 on inquiry card

SEALANT SELECTOR / A sealant selector guide for use by "architects, building contractors and engineers," lists generically optimum elastomeric sealants for twenty types of joints. Considerable additional information is provided. ▪ Essex Chemical Corporation, Clifton, N.J.

Circle 403 on inquiry card

LABORATORY FURNITURE / A 116-page catalog describes a full line of steel scientific furniture and equipment for industrial, educational and hospital laboratories. The facilities and personnel of the following firms have joined to form the organization responsible: Metalab Equipment Co., Laboratory Furniture Co., Inc., Labcraft, Royal School Laboratories, Eastone Co., Taylor Stone Co., Permalab-Metalab, Standard Wood Products Corp. ▪ NII Laboratory Furniture Inc., Hicksville, L.I., N.Y.

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** Additional product information in Sweet's Architectural File*

more literature on page 210

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When a discussion of architectural-type cabinet hardware is on the agenda, let Stanley Hardware call the meeting to order. Stanley offers a full line of architectural cabinet hardware — pivots, hinges, pulls, knobs and catches — to meet all requirements. For clean, uncluttered lines, Stanley provides a variety of styles that are simple, yet functional. And all of these styles are designed for heavy-duty, long-life applications.

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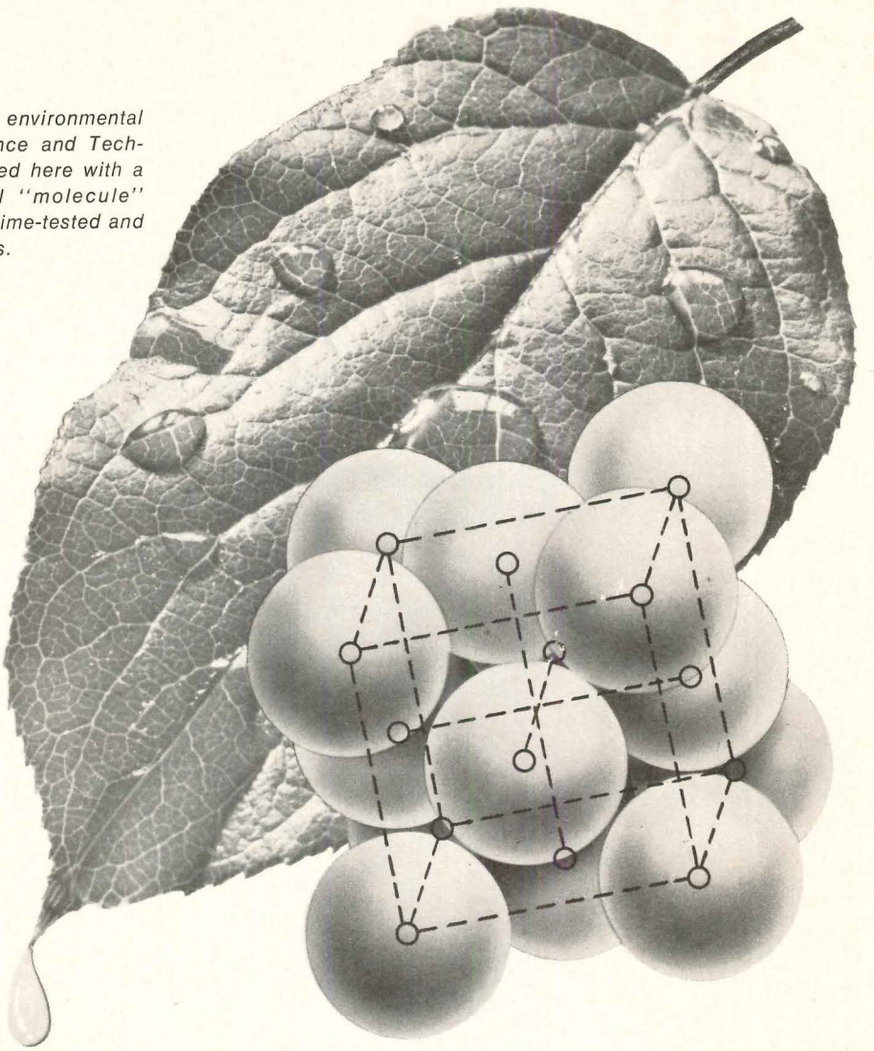
*TSP is an example of progress in environmental control through research by Science and Technology . . . this progress is depicted here with a Chrome-Nickel, Stainless Steel "molecule" superimposed over one of nature's time-tested and most efficient rain handling systems.



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An entirely new Rain Handling concept created by Washington Steel — it is our ***Total Stainless Package (TSP),** fulfilling the rain handling requirements of the Architect, the Builder, the Contractor and Roofer. Engineered specifically for MicroFlex Chrome-Nickel Stainless Steel, it eliminates all past deterrents to installation of Stainless Steel from rooftop to storm sewer.

MicroFlex rainware, in addition to combining lightness with great strength and flexibility to adapt to any architectural design, assures permanence and durability with no maintenance costs. Esthetically it assures beauty and prestige, since its soft matte finish subtly reflects nearby colors and complements the texture of its immediate surroundings.

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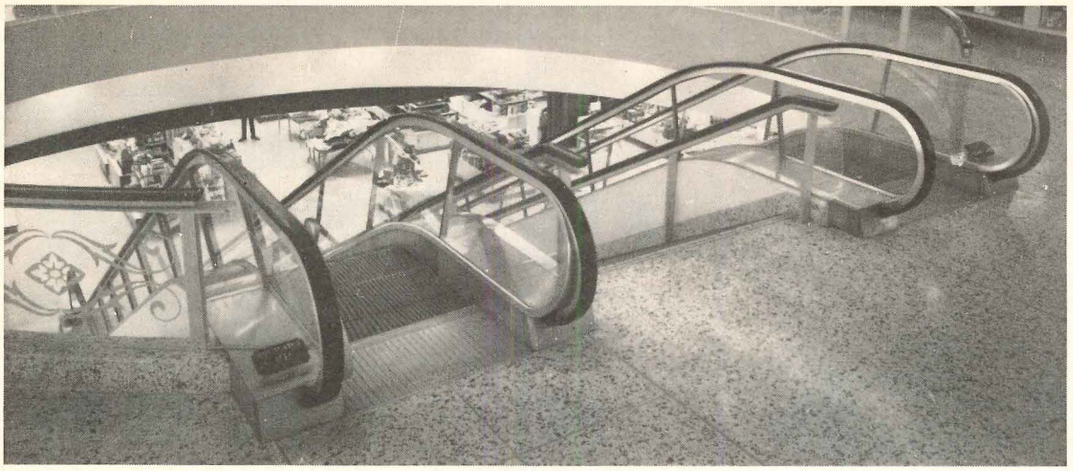
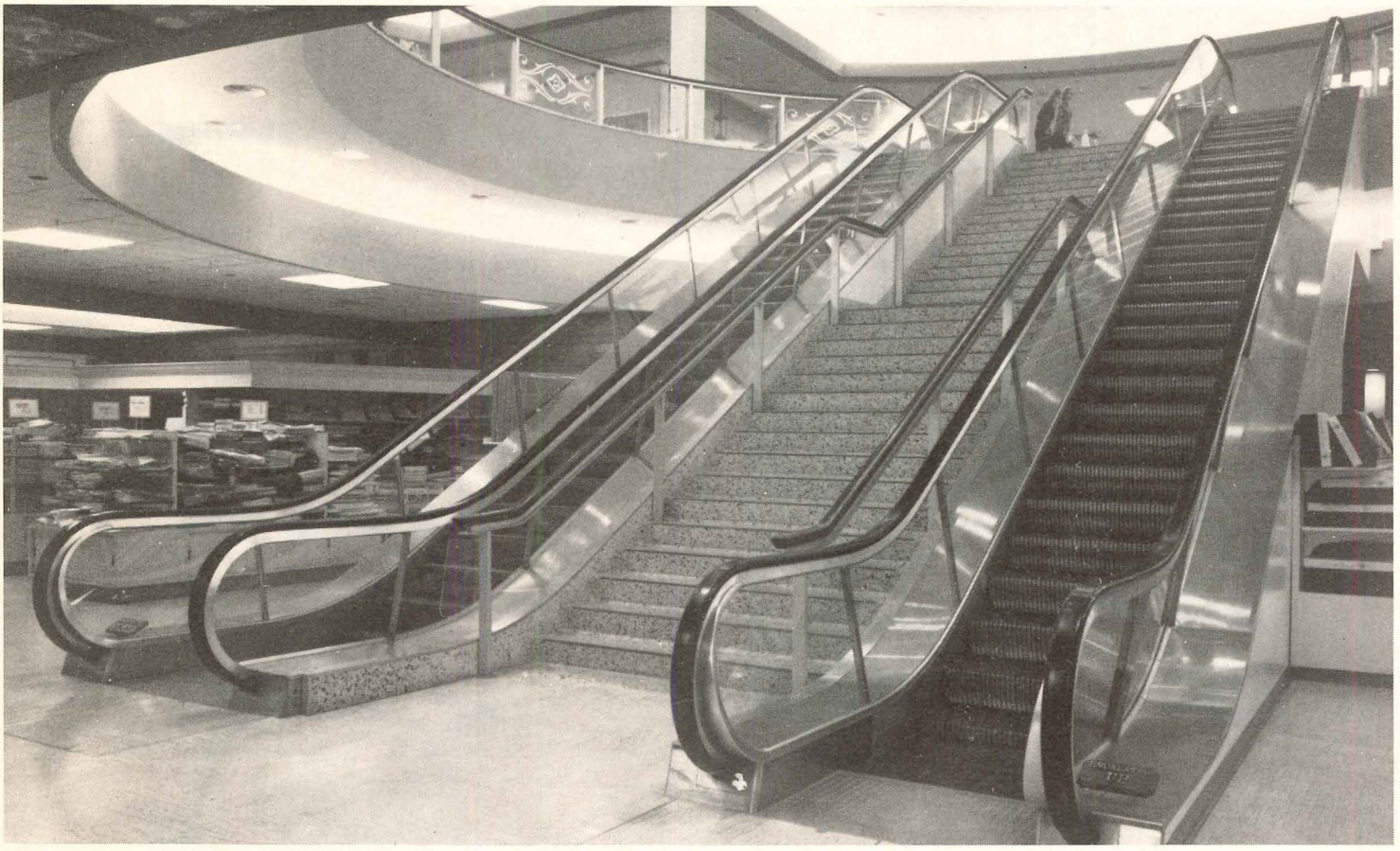


Montgomery two-steps-level* escalators move people at The Hecht Co., division May Department Stores



The Hecht Co., Montgomery Mall Shopping Center, Montgomery County, Maryland

Architect: John Graham & Company, N. Y., N. Y.
General Contractor: Baltimore Contractors, Inc., Baltimore, Maryland

Exclusive two-steps-level design of Montgomery escalators helps speed traffic flow, assures shopper's confidence, and safe transportation at The Hecht Co. store in Montgomery Mall. Two-steps-level at entry and exit reduces the momentary hesitation experienced by many people upon boarding other escalators, and makes exiting smoother, too.

In addition to the 48" Crystal Ballustrade escalators shown here, Montgomery Elevator Co. has installed one oil-hydraulic passenger elevator, and one oil-hydraulic freight elevator in The Hecht Co. area of Montgomery Mall.

Montgomery Elevator Company offers you a complete range of people-moving machinery, plus design, installation, and service skills through more than 120 locations in the United States, Canada, Mexico, and the Caribbean.

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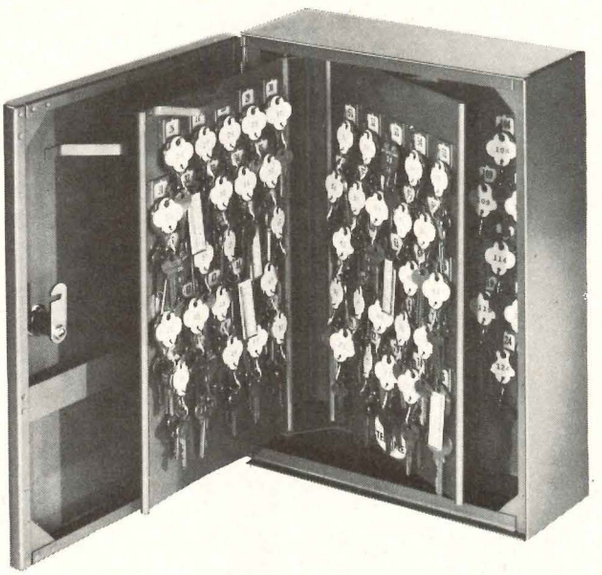

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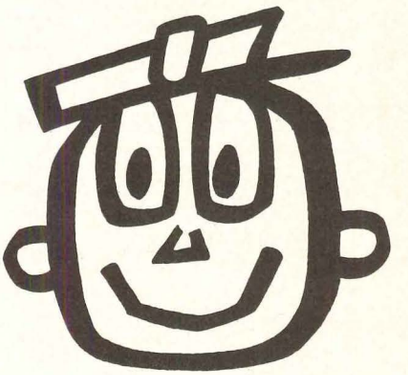

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Sturdy, but lightweight (2 pounds/square foot), Facad is easy to handle. It comes in sizes up to 4′ x 10′. No special skills or extra structures are required. Installation is within the competence of carpenters or glazers.

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Facad comes in a series of standard panel surfaces, one of which is shown above. It can also be custom molded to afford architectural designers a broad choice of texture, color and pattern.

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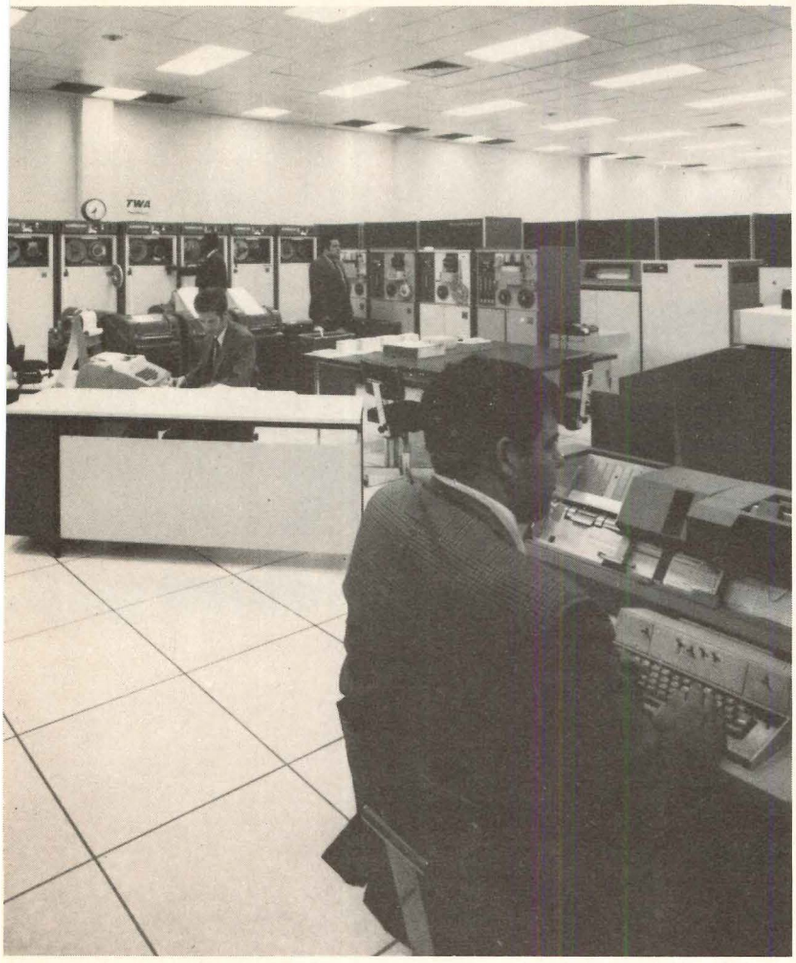

TWA computerized reservations center, largest such facility ever built.

Two Solar gas turbine generator sets supply the center's emergency power needs.

Why TWA selected Solar gas turbines

for emergency electrical power at its giant computerized reservations center.

Trans World Airlines, Inc.'s sophisticated computer facility at Rockleigh, New Jersey, handles world-wide passenger reservations, cargo scheduling, flight plans, equipment availability, and other airline data. Electrical power outages here are completely unacceptable.

That's why two Solar *Saturn*® gas turbine 750-kilowatt generator sets were selected to provide reliable emergency electrical power.

One turbine generator set is used to charge the storage batteries in the computer's "no-break" electrical supply. The second Solar set provides emergency power to the air conditioning system for the computers, which are extremely sensitive to their environment and cannot tolerate a temperature change of more than 3°F. in one hour.

In addition to meeting the emergency needs of the computers and their support systems, the Solar gas turbine generator sets also furnish emergency power for all other services required to keep the building in normal operation.

Hundreds of Solar gas-turbine-powered generator sets, including 750 kw, 800 kw, 200 kw and 225 kw units are now in operation providing emergency electrical power for a wide variety of installations throughout the world. And coming soon is Solar's new *Centaur* gas turbine 2000-kw generator set.

For more complete information on these reliable, compact, lightweight, gas turbine generator sets write: Solar, Dept. S-177, San Diego, California 92112.

IH SOLAR
DIVISION OF INTERNATIONAL HARVESTER COMPANY

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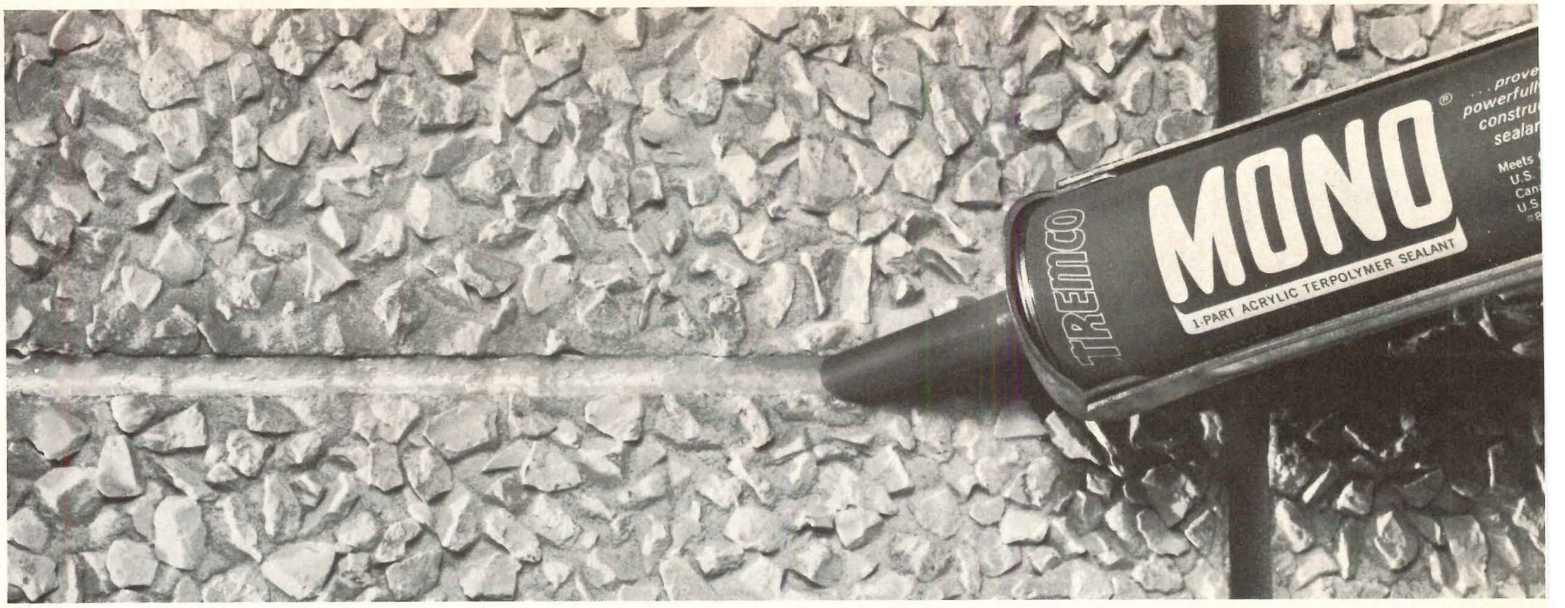

Nine times out of ten, MONO fills the sealant gap.

When it can't, he can.

We know you'd like an all-purpose trouble-free construction joint sealant. □ So would we. But right now, MONO's as close as we can come . . . and it won't do everything, any more than any other types and brands we've tested. □ Sure, MONO's good and works so well under the kind of adverse conditions (dust and moisture) that are common to the job site, that we suspect many construction people actually look on it as an all-purpose sealant. □ But actually Tremco's business isn't based on selling *any* all-purpose sealant. Instead we're a single-purpose company. We're The Water Stoppers and we want to give you leakproof security in every joint on the job. □ So we make not one, but fourteen other sealants besides MONO, like a very good polysulfide (Lasto-Meric), a highly-regarded preformed tape (440) as well as a dozen others with special purposes. □ The only all-purpose item in our catalog is the Tremco Representative. He has been thoroughly trained to provide you the proper sealant for each application and is ready to give job-site assistance before, during and after each project. □ Why not give him a call next time you run into the sealant gap? He'll get you across every time. □

The Tremco Manufacturing Company, Cleveland, Ohio 44104; Toronto 17, Ont.

TREMCO
The water stoppers

For more data, circle 111 on inquiry card

At Howard Johnson's Motor Lodges, two heads are better than one.

Howard Johnson's Motor Lodges offer guests the ultimate in shower convenience: the Symmons Safetymix'Ette' Series II.

These non-scald shower valves maintain the hot-to-cold ratio to keep the temperature constant right through the shower, no matter who operates what in the rest of the water system.

This handsome shower equipment provides the user with a comfortable, safe, non-scald shower everytime.

And to provide the absolute in comfort and convenience, (for the woman who doesn't want to get her hair wet, for instance) the Safetymix'Ette' Series II comes with two shower heads.

What's more, everything has been specifically designed for multi-unit installation where economy is necessary, but where quality cannot be sacrificed.

Find out why Symmons is the supplier of shower systems for most Howard Johnson's Motor Lodges.

Call or write your Symmons representative.

Symmons Engineering Company, 31 Brooks Drive, Braintree, Mass. 02184

In non-scald showers, Symmons has outsold all other makers combined.

Symmons®

For more data, circle 112 on inquiry card

ADVERTISING INDEX

Pre-filed catalogs of the manufacturers listed below are available in the 1970 Sweet's Catalog File as follows.

A Architectural File (green)
I Industrial Construction File (blue)
L Light Construction File (yellow)
D Interior Design File (black)

ARCHITECTURAL RECORD

McGraw-Hill, Inc., 330 West 42nd Street,
New York, New York 10036
Advertising Sales Mgr.: Louis F. Kutscher (212) 971-2838
Eastern Sales Mgr.: Donald T. Lock (212) 971-3583
Central Sales Mgr.: Robert G. Kliesch (215) 568-6161
Production Mgr.: Joseph R. Wunk (212) 971-2793
Marketing Services Mgr.: Elizabeth Hayman (212) 971-2858
Classified Advertising: (212) 971-2557

District Offices:

Atlanta 30309 — Edward G. Graves, 1375 Peachtree St., N.E., (404) 892-2868

Boston 02116 — Ted Roscoe, 607 Boylston St., (617) 262-1160

Chicago 60611 — Robert T. Franden, Edward R. Novak, 645 N. Michigan Ave., (312) 664-5800

Cleveland 44113 — Willis W. Ingersoll, 55 Public Square, (216) 781-7000

Dallas 75201 — Angus A. Macaulay, 1800 Republic National Bank Tower, (214) 747-9721

Denver 80202 — Douglas J. Carthew, 1700 Broadway, (303) 266-3863

Detroit 48226 — 2600 Penobscot Bldg., (313) 962-1793

Houston 77002 — Angus A. Macaulay, 2270 Humble Building (713) 224-8381

Los Angeles 90017 — Robert L. Clark, 1125 W. Sixth St., (213) 482-5450

New York 10036 — Donald T. Lock, Douglas S. Markhouse, Ted Roscoe, 500 Fifth Ave. (212) 971-3583

Philadelphia 19103 — Robert G. Kliesch, George T. Broskey, 6 Penn Center Plaza, (215) 568-6161

Pittsburgh 15222 — Edward C. Weil, 4 Gateway Center, (412) 391-1314

Portland 97204 — Linwood S. Williams, Mohawk Bldg., 222 S.W. Morrison St., Suite 218, (503) 223-5118

St. Louis 63105 — Richard Grater, 7751 Carondelet Ave., (314) 725-7285

San Francisco 94111 — Robert L. Clark, 255 California St., (415) 362-4600

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CLASSIFIED SECTION

POSITIONS VACANT

Fast Growing! ! Akron, Ohio. General Contractor wishes to employ a full time registered architect (registered in the state of Ohio). Submit complete resume with experiences and referencs. Salary commensurate to ability. P-9754, Architectural Record.

Architect—Outstanding opportunity for graduate architect to present original designs for industrial and commercial structures. Occasional travel involved. American citizenship required. Registration and foreign language ability desirable. Location will be modern office in Michigan. This is an established international Design, Engineer, and Build firm offering a unique and comprehensive approach to facilities planning. Send current resume to : P-1071, Architectural Record.

Young, expanding professionally oriented engineering firm has openings offering unusual challenge, responsibility, diversity, and career advancement potential. Openings in home office, Springfield, Illinois; and in new office now being organized in Chicago, Illinois: Mechanical engineer (HVAC), Mechanical engineer (plant and layout), Electrical engineer (power and lighting), Structural engineer (bridges and buildings). Applicants must be highly competent, responsible and personable with high standards of professional conduct. Send resume of education, experience, technical or professional activities, and references to: Ralph Hahn & Associates, Consulting and Design Engineers, 1320 South State Street, Springfield, Illinois 62704.

Architectural Designer—Design oriented, West Coast Architectural and Planning firm has opening for a creative designer to develop concepts, work with clients, and control design development through production phases. Diversified and expanding nationwide practice. Send confidential resume including salary requirements to: Walter Richardson Associates A.I.A., 230 E. 17th Street, Suite 200, Costa Mesa, California, 92627.

Senior Design Architecture: to $18,000. yr. Prominent expanding service firm, Mid-Atl. (coastal) location. Management oriented position, degree or Reg. + minimum of 5 yrs. exp. in multi-story projects. ARCHITECTURAL-DRAFTSMEN to $12,000 yr. Tech. School + 3 yrs. exp. with detail working drawings—Mid-Atlantic (coastal) locations. Contact Ronald Williams. EVERETT KELLEY ASSOC., 121 South Broad St. 20th fl., Philadelphia, Penna. 19107. Exclusively an Employer FEE PAID Personnel Agcy.

MURAL ART OFFERED

Magnificent Murals from famous French liner Normandie by Jean Dupas. 125 separate glass panels painted gold and silver 31½" x 49" can be used separately. Also glass bricks, lights, etc. Write: Showcase Art Gallery, 1840 Grand Concourse, Bronx, N.Y. 10457, Att. Marco Behar, or call (212) TR 2-4340.

PROFESSIONAL SERVICES

CONSTRUCTION COST CONTROL, INC.
Consulting Engineers
Construction Management • Preliminary Estimates
Working Drawing Estimates • CPM Scheduling
6355 N. Broadway Chicago, Ill. 60626
312-338-6060

SLAB DECKS / A 6-page bulletin explains how retirement apartments in Muskegon, Michigan were successfully bid $100,000 under an estimate made two years previously. The project includes precast slab decks on brick bearing walls. Drawings show structural and architectural details of the building. ▪ The Flexicore Co., Inc., Dayton, Ohio.*

Circle 405 on inquiry card

COMMERCIAL SEATING / A 77-page catalog illustrates a concept in design for custom commercial seating with a residential look. Included are fabric selections, as well as complete specifications for the buyer or specifier. ▪ Summit Furniture Industries, Inc., Chicago.

Circle 406 on inquiry card

BATHROOMS / "How to put more living room in your standard-size baths" is a 36-page color booklet that features a variety of bathrooms designed by architect Robert Martin Engelbrecht. According to the booklet, "Even the smallest bathroom no longer has to be cold, conventional and inconvenient." And there are plenty of ideas for baths in a new house. Price of the booklet is $1. Write direct. ▪ Eljer, 3 Gateway Center, Pittsburgh 15222.*

GRANITE / A 24-page publication shows 18 different colors of granite in photo close-ups and installation shots. One section is devoted to possible uses for granite mosaic, broken joint ashlar, split face ashlar, ribwall and modular blocks. Another centers on granite paving and street furniture. ▪ Cold Spring Granite Company, Cold Spring, Minn.

Circle 407 on inquiry card

WOOD / A 32-page booklet, "Engineering in Wood" shows applications of glued laminated timber arches, beams, domes, rigid frames and trusses in the construction of churches, schools, and commercial, industrial and institutional buildings. Included are the results of a full-scale load test on a 159-ft dome structure. ▪ Timber Structures, Inc., Portland.*

Circle 408 on inquiry card

TERNE-COATED STAINLESS STEEL / An 8-page specification brochure contains information on specifying and using TCS. Also available is an illustrated brochure on seamless terne roofing which contains diagrammed installation instructions for standing seam, batten seam, Bermuda roof and flat and locked seam roofing applications. ▪ Follansbee Steel Corporation, Follansbee, West Va.*

Circle 409 on inquiry card

** Additional product information in Sweet's Architectural File*

. . . a revelation in versatility, ease of installation, esthetic value

Incorporating glass accent panels are no problem with Eastern's new Wallmark demountable wall system. Self-adhering P.V.C. molding makes installation quick, secure. Other system features: Studs with continuous integrally formed bulbs. (Battens simply snap into place.) Non-progressive installation. Full salvageability. Accommodation of any desired layout for partitions up to 12′ high. **Plus** a unique door frame that assembles at the site for either right or left hinged doors . . . .simplifies specification and handling . . . enhances reusability. Brochure on request (Sweets 13a/Ea).

By the makers of
Eastern Drapery Hardware,
Venetian Blinds,
Acoustical Suspension
Systems

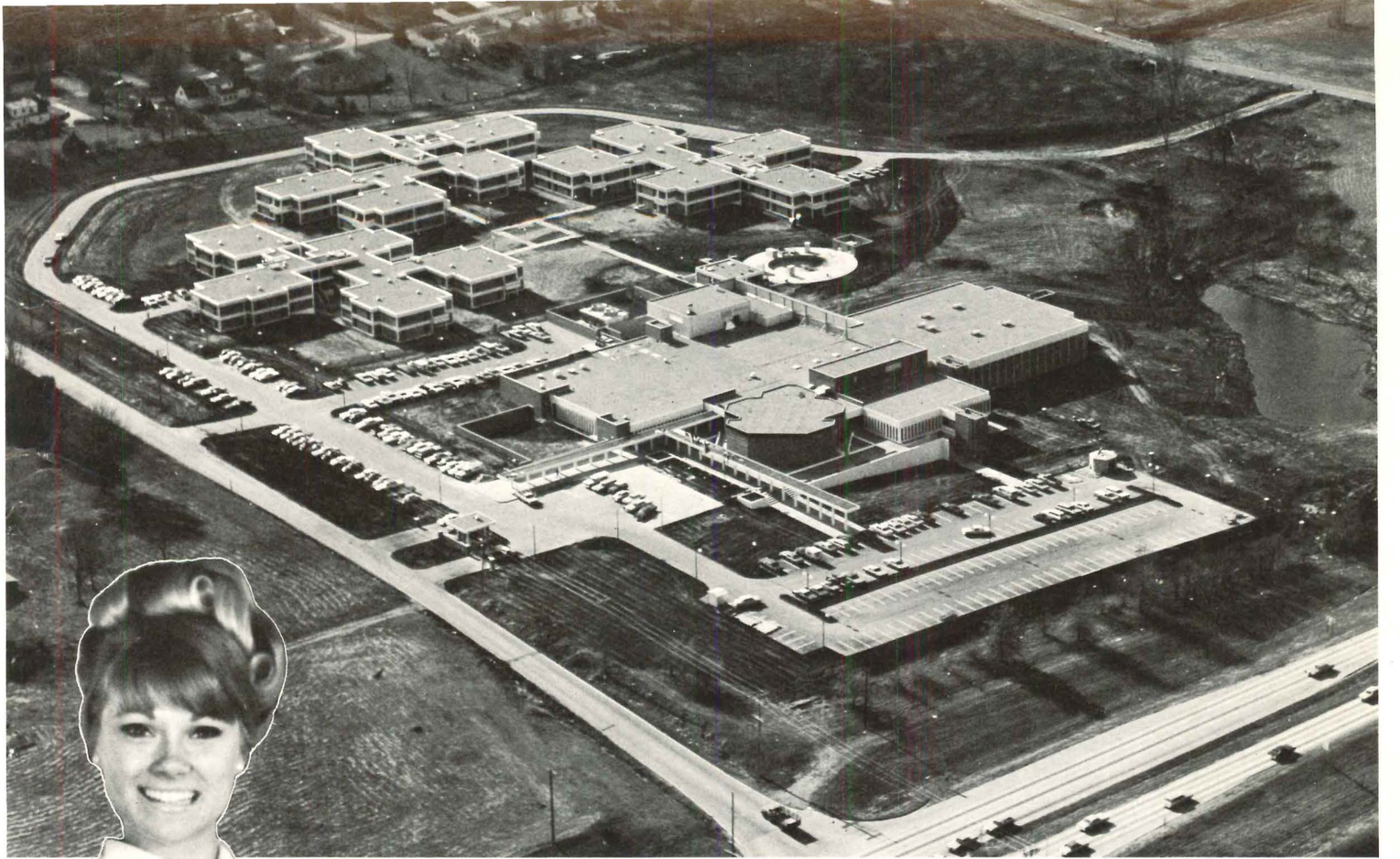
Eastern Products Corporation
Subsidiary of Roper Corp.

WALLMARK

demountable wall system

Architectural Metal Products Division
9325 Berger Road / Columbia, Maryland 21043

For more data, circle 113 on inquiry card



ARCHITECT, *Folger and Pearson* · MECHANICAL ENGINEERS, *Burns and McDonnell Engineering Co.*
PLUMBING WHOLESALER, *Grinnell Company* · PLUMBING CONTRACTOR, *A. D. Jacobson Company, Inc.*
FIXTURE MANUFACTURER, *Kohler Company*

TWA built this $10,000,000 Academy to train Million Dollar Smiles

■ Over 2,000 airline hostesses a year will be trained by Trans World Airlines at the new Breech Training Academy said to be the most advanced facility of its kind in the world. The campus-like complex is located on 34 acres of rolling countryside in Overland Park, a Kansas City suburb.

Hostess training encompasses all phases of in-flight service with emphasis on efficiency, customer orientation and charm. The quality atmosphere that TWA strives to convey assures the trainee that her presence as a hostess on the Company's aircraft is very important to its prestige and passenger satisfaction. Full scale mock-ups of cabins, simulating galleys, seats and other equipment found on all types of TWA planes, including the new Boeing 747, implement the learning process.

Three uniquely designed two-story residence buildings, each with sunken living rooms and five wings of bedroom-bath studio apartments provide luxurious living for 600 girls.

The facilities of the Academy complex comprise the most modern equipment for utmost comfort and convenience—including Sloan Quiet-Flush II flush valves. Renowned for their quality, quietness, dependability and low maintenance costs, Sloan Flush Valves are a mark of excellence. Your new building can have this same Sloan quality. Specify and insist on Sloan Quiet-Flush II flush valves.

SLOAN VALVE COMPANY • 4300 WEST LAKE STREET • CHICAGO, ILLINOIS 60624

For more data, circle 114 on inquiry card