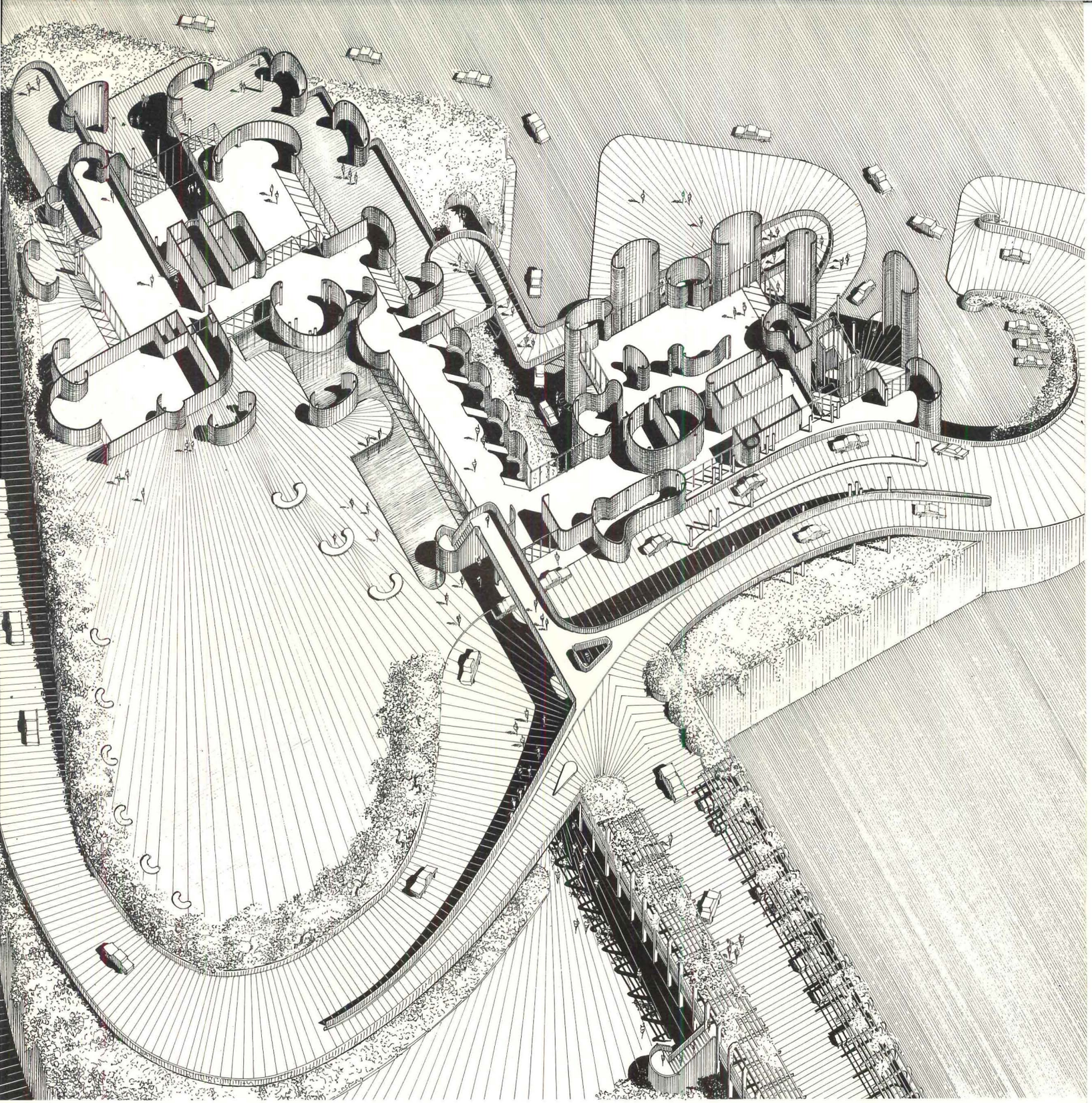


BUILDING TYPES STUDY: URBAN HOUSING—NEW YORK'S REACH FOR QUALITY

A NEW COLLEGE BUILDING BY BENJAMIN THOMPSON

ISSUES IN ARCHITECTURE: ARCHITECTURE IN THE CAUSE OF PEOPLE

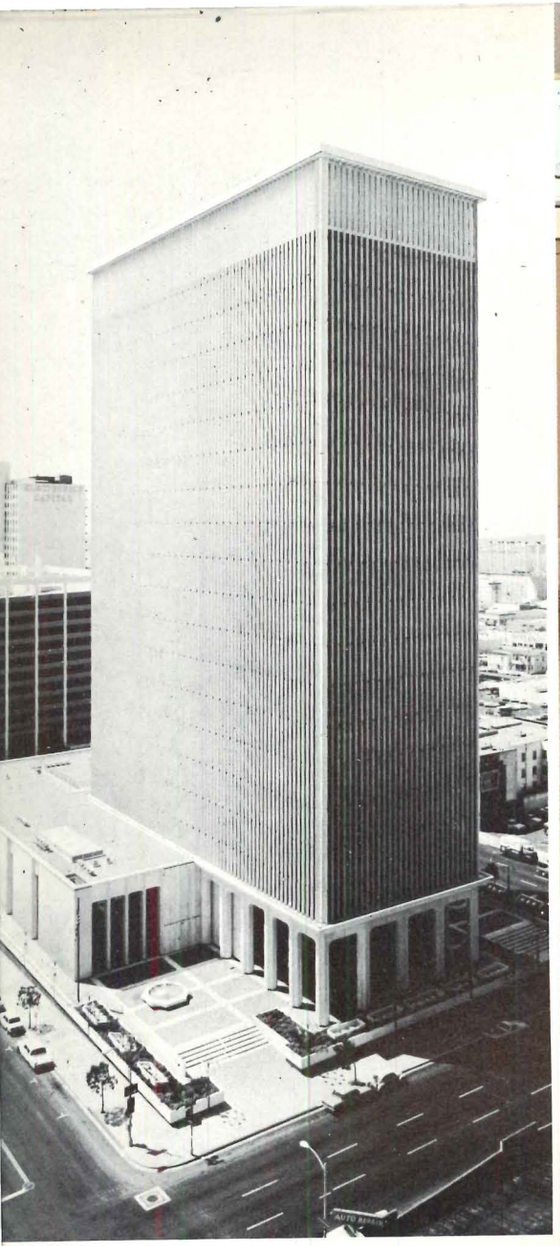
SOME ESSENTIALS OF SUCCESSFUL URBAN SPACE

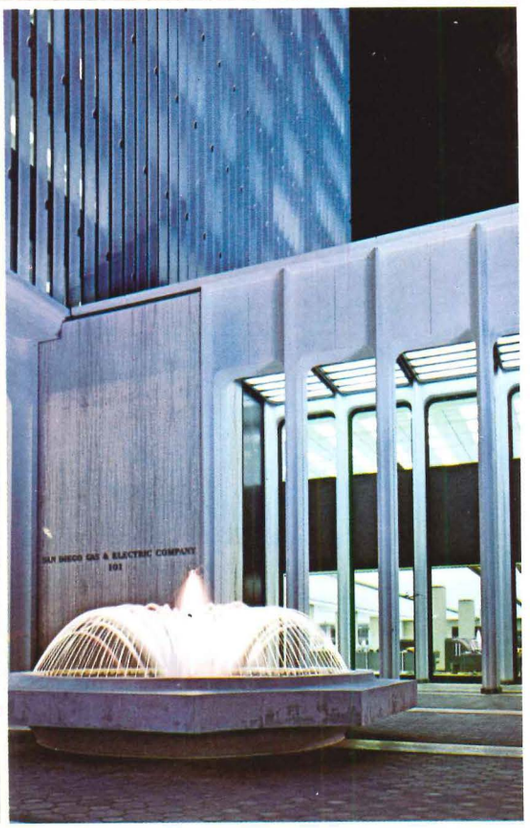
SPECIAL REPORT: SYSTEMS BUILDING—WHAT DOES IT REALLY MEAN?

FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

JANUARY 1969 1 A McGRAW-HILL PUBLICATION TWO DOLLARS PER COPY



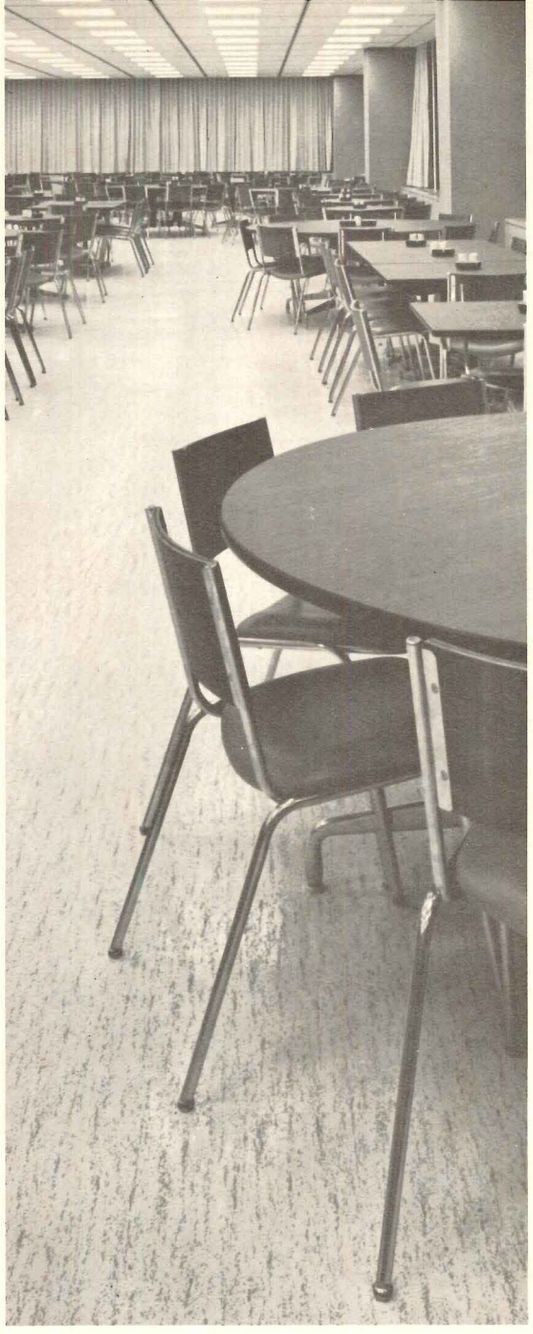


The new headquarters building of the San Diego Gas and Electric Company rises 21 stories on a square-block site in downtown San Diego. **Architect:** Richard George Wheeler and Associates, San Diego. **General Contractor:** M. H. Golden Construction Co., San Diego. **Interior Designer:** LaJolla Interiors, LaJolla, California. **Flooring Contractor:** Raffee's Carpets of San Diego. **Structural Engineers:** Ferver-Dorland & Associates, San Diego. **Mechanical-Electrical Engineers:** Ebasco Services Incorporated, New York.

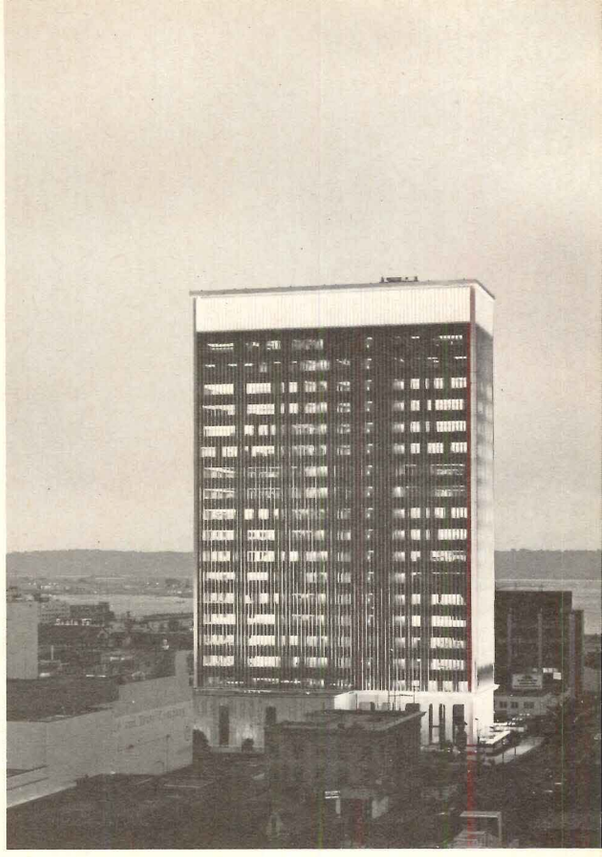
For the San Diego utility, the floor chosen was a utilitarian beauty. Armstrong Embossed Travertine Series in Excelon Vinyl-Asbestos Tile. Over 145,000 sq. ft. of ⅛″ gauge, 12″ x 12″ tile was installed. Tough, durable Excelon is perfect for the kind of traffic an office building gets. Embossed, it's all the better. Scuff marks go into hiding. Scratches become invisible. It's a "one-floor" 21-floor building. To achieve a design that unifies as it beautifies, Embossed Travertine was used throughout. With one exception. Smooth-surfaced Travertex™ Excelon was chosen for the computer room (lower left). Still, this one exception carries out the rich, classic look of Travertine.

The floor plan of an office

The graining of the Embossed Travertine tile in the San Diego installation runs in the same direction. So there are no visible seams. Don't let the expensive look fool you. Excelon Tile is actually budget-priced. And because it's so easy to maintain, it cuts maintenance costs for the building owner.



The Excelon Tile used in this San Diego skyscraper may or may not be the right floor for your next project. The function of the building and style of architecture will surely influence your choice. Just name your requirements. Armstrong can meet them. We have different floors for different contract interiors.



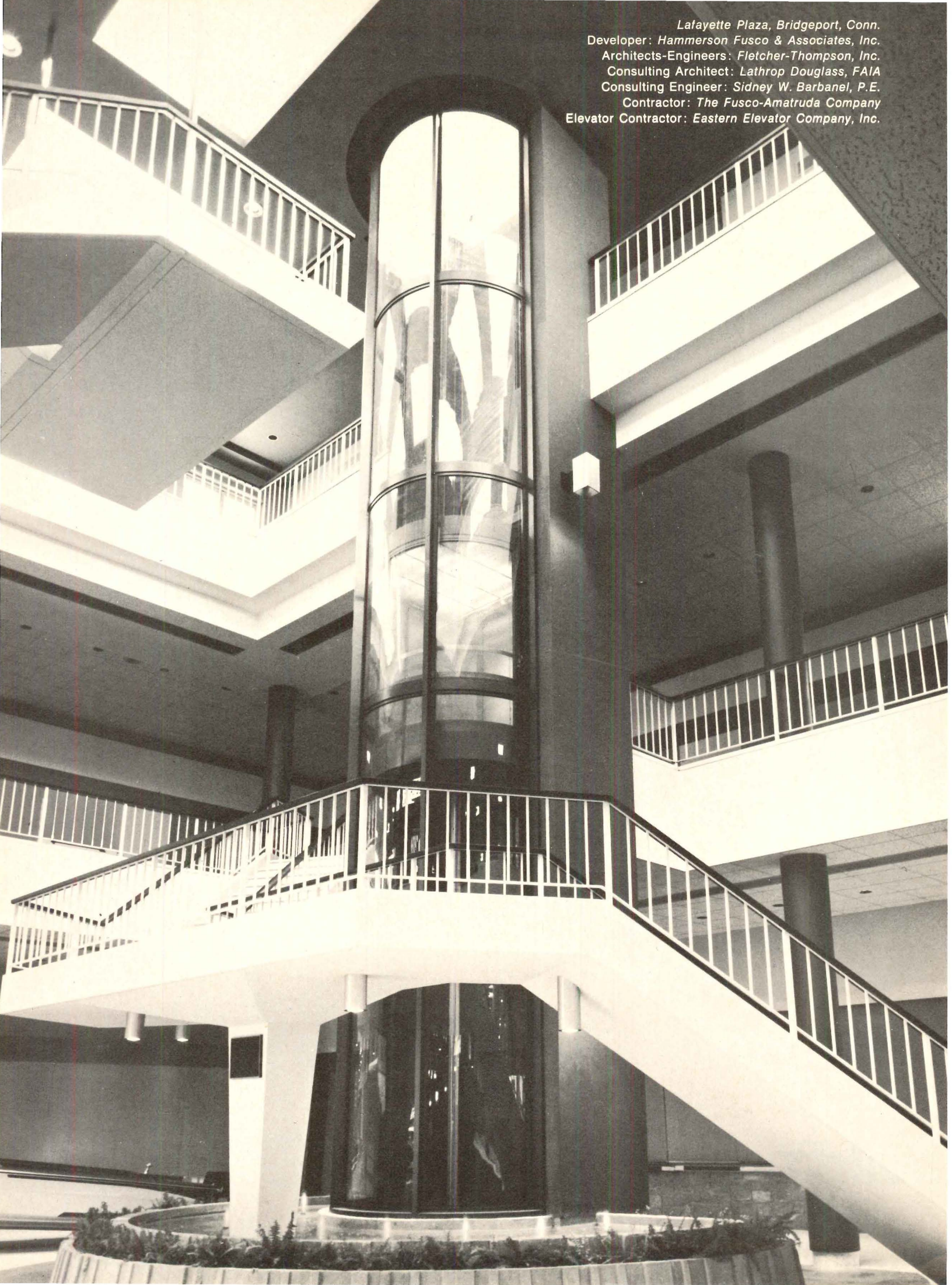
Before you make your next flooring decision, talk it over with your Armstrong representative. He can make objective recommendations on your specific needs. After all, he represents the widest variety of resilient flooring available anywhere. Call him. Or write Armstrong, 501 Rock Street, Lancaster, Pa. 17604.

FLOORS BY
Armstrong

building.

Architects of the new San Diego Gas & Electric Company Building planned the floor around unusually heavy "in" and "out" traffic. Their choice: Armstrong Excelon® Tile.

For more data, circle 2 on inquiry card



Lafayette Plaza, Bridgeport, Conn.
Developer: *Hammerson Fusco & Associates, Inc.*
Architects-Engineers: *Fletcher-Thompson, Inc.*
Consulting Architect: *Lathrop Douglass, FAIA*
Consulting Engineer: *Sidney W. Barbanel, P.E.*
Contractor: *The Fusco-Amatruda Company*
Elevator Contractor: *Eastern Elevator Company, Inc.*

Dover engineers a spectacular elevator innovation for a shopping mall

Cylindrical, glass-enclosed elevator is one of nine Dover Oildraulic Elevators serving Lafayette Plaza
The key element in the central court of this Bridgeport, Conn., commercial and civic center is a half-round, glass-enclosed elevator. Rising out of a flower-bordered pool, it provides a dramatic view of two shopping levels, and also serves a roof-top parking area.

In other buildings of the $25,000,000 Lafayette Plaza development are eight additional Dover Oildraulic Elevators, providing dependable passenger and freight service for the various shops and stores.

Innovative technology is an attitude at Dover. It is apparent in our response to such design challenges as building unusual elevators, and in the overall quality of dependable performance which characterizes Dover Elevators for low and high-rise buildings. For your next project, be sure to talk to Dover if you want something unusual, or if you just want an unusually fine vertical transportation system. Write for catalogs or see Sweet's Files. Dover Corporation, Elevator Division, Dept. D-1, P.O. Box 2177, Memphis, Tenn. — 38102. In Canada, Dover / Turnbull.

DOVER
the elevator innovators

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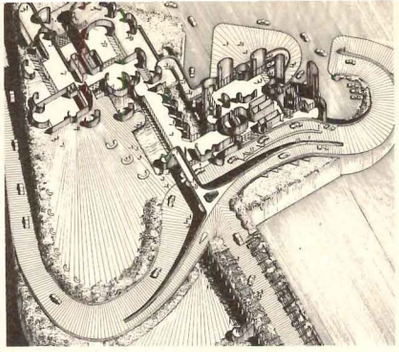

Cover: Tracey Towers, New York City
Architect: Jerald L. Karlan; Design Architect: Paul Rudolph

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ARCHITECTURAL RECORD

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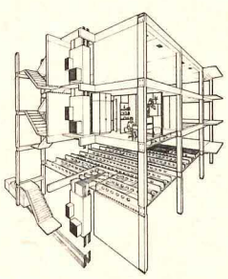

THE RECORD REPORTS

Yugi Noga

COMING IN THE RECORD

FIVE NEW PROJECTS BY ULRICH FRANZEN

A major design feature on buildings in progress, which demonstrate Franzen's ever growing concern with the appropriate relationship of a design style and increasingly complex and urbanistic planning problems. The projects include a major new building for New York's Cooper Union, a research tower for Philip Morris, a residence in Pound Ridge, New York, a dining hall for the University of New Hampshire and the large-scale plans for a new Bronx, New York state school for the retarded.

ARCHITECTURE AND THE SMALL INDUSTRIAL BUILDING

Industrial buildings below 100,000 sq. ft. are often designed without the services of an architect, to the detriment of their owners and the surroundings in which they are placed. Next month's Building Types Study, under the direction of contributing editor Seymour Howard, will focus on five small industrial buildings which were very much under the control of their architects, and point out the valuable amenities an architect can bring to such projects.

McGraw-Hill

ABC AIP MPA

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LAKE POINT TOWER, Chicago, Illinois/Architect: Schipporeit-Heinrich/ General Contractor: Crane Construction Co./Glazing Sub-Contractor: National-Hamilton, Div. of Bienenfeld Glass Corp. 1" Polarpane glazing manufactured by Polarpane Corporation

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An innovator, some administrators, some homework, and some hopes

During the campaign, I had the nervous notion that Mr. Nixon was not really interested and involved in the problems of our cities in particular and our environment in general. At least he didn't talk much about them. But his decision, once elected, to establish a Cabinet-level Council on Urban Affairs (similar in organization and, one hopes, soon equal in influence to the National Security Council) is just great for openers.

Another most encouraging sign, in my view, is the appointment of Daniel Patrick Moynihan to head the new Council. Dr. Moynihan was heavily involved in the development of the Great Society ideas, has been an articulate and biting critic of many Federal programs, is a thoughtful student of today's racial revolution, and has spoken often about the present need to rethink the whole problem of the urban crisis, to reestablish our goals. Moynihan seems handsomely qualified to do the rethinking that is quite appropriate and highly desirable by a new Administration. And, happily, as head of the new Council, he will apparently be in a strong position at least to try to coordinate (or get the President to coordinate) the overlapping and sometimes competing interests of HUD; Health, Education and Welfare; and the Department of Transportation. I would also hope that any such inter-Departmental cooperation and conferring might at least sometimes include the new Secretary of the Interior, a post which lately (i.e., under Stewart Udall) has expanded far beyond its traditional interests into a position with enormous influence in the conservation and development of all of our natural resources in all parts of the country.

The most interesting combination of new appointments is the one most closely related to architects and city rebuilding: Moynihan and Governor Romney. If in fact they do work together, it will be an interesting team of innovator and administrator.

It's reasonable, as noted above, to guess that Moynihan might lead the rethinking of the whole urban problem, and that Romney's strongest contribution—and what a dream contribution it could be—would be as an executive and administrator to start getting things built. I'm not one to have any kind of simple-minded faith that an executive, no matter how good he is and how much he cares—and Romney is obviously a first-rank executive with a strong personal orientation to the needs of people—can straighten out and put on a "business-like basis" any organization as complex as HUD. But I at least am going to start the new year and the new broom off with the earnest hope that Secretary Romney can untangle the complex of available housing and development programs and/or suggest new and more effective ones, get them funded (that would be a new idea) and then get things built. I'm not predicting . . . I'm just hoping.

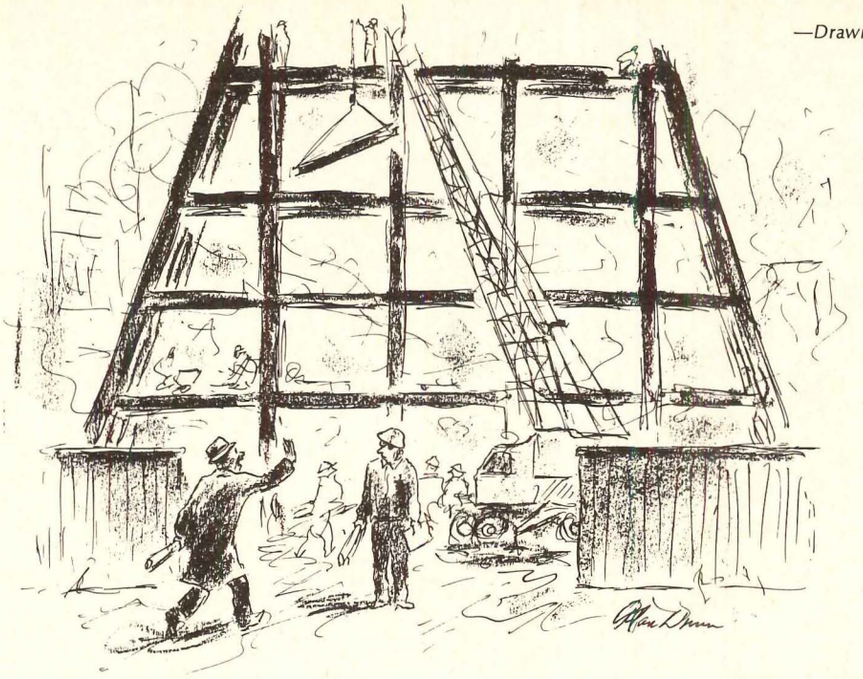
Of the new HEW Secretary Robert Finch, the new DOT Secretary Volpe, and the new Interior Secretary Hickel, I don't know any more than I read in the paper. One could get nervous about Volpe's background as a heavy construction man (like roadbuilder) before he became Massachusetts governor, or Hickel's history of being more on the side of development (exploitation?) of natural resources than their conservation as governor of Alaska. We can hope their their new jobs will broaden their viewpoints to the breadth of the problem.

Before the new government starts forward, I'd urge them to take one look back into a just-published, 304-page book entitled "From Sea to Shining Sea, A Report on the American Environment". It was produced by the President's Council on Recreation and Natural Beauty, Hubert H. Humphrey, chairman. In his letter of transmittal to President Johnson, the Vice-President writes: This report . . . has several major objectives. One is to outline progress in environmental improvement programs since the 1965 White House Conference on Natural Beauty. Another is to present proposals and recommendations which will stimulate Federal, state, local, and private action to further enhance the quality of our environment and the beauty of our Nation. A third objective is to present a guide for action by local officials, professional men and women, citizen groups of many kinds, and individuals." The book, which concerns itself with the environment not just of urban areas, but the countryside, is well done, moving, imaginative, down-to-earth, and specific and evocative in its proposals for future action. It would be good homework for new Cabinet members (and architects, who can get a copy from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402; $2.50).

Which leads to a final thought as the Nixon Administration begins. The administrations of both Presidents Kennedy and Johnson were marked by a strong emphasis on the quality of what was built. For example: Kennedy's directive that the design of all Federal buildings should "embody the finest contemporary American architectural thought" has had a brilliant and revolutionary effect, especially on buildings commissioned by General Services Administration. Secretary Weaver's efforts to raise the quality of housing design were most impressive. And Stewart Udall's writings and most of his actions were in the direction of a new standard of environmental quality. One hopes that the new Secretaries can manage not only to "get things done" but to maintain and perhaps raise the standards of quality their predecessors worked for.

—Walter F. Wagner Jr.

—Drawn for the RECORD by Alan Dunn



"Hold it—obsolete!"

About the new size of the RECORD

As I trust you have noticed by now, the page size of the RECORD is increased, beginning with this issue, about ⅜ inch in both directions to 9 x 12 inches. Thus is triumphantly won for us a campaign that the editors of all magazines with lots of pictorial material wage with their publishers (price of paper and all that). We asked our new publisher Blake Hughes for this extra page size for three reasons: 1) We think that the slightly larger page width lets us use many of our photographs (and especially the color photographs) much more effectively. 2) We feel that the extra area will let us enlarge our drawings significantly, and that in turn enable us to add detail and/or clarity. And 3) the little extra width gives us a great deal more flexibility in page design.

For instance, there is now enough width to use a five-column layout for some text pieces. The Issues in Architecture article beginning on page 127, for example, is laid out on a five-column module. The text columns are each two modules wide, the little quotes along the side are one module wide.

Faithful filers of RECORD material will be relieved to know that the new page size files neatly in the same file folders; and the new size fits a broad range of brief and attache cases for the businessman types.

At any rate, we hope you agree with our decision and await your opinion.

"It is the user that should be the architect's client . . ."

Rex Allen, first vice-president of A.I.A., made a fine speech to the Houston Rotary Club last month. He said some things worth thinking about as we enter a new era of city rebuilding. He quoted Whitney Young's now-famous Portland speech: "We are not at a loss in our society for the know-how. We have the technology. We have the resources. We are at a loss for the will. The crisis is not in our cities, the crisis is in our hearts, the kind of human beings we are." And Allen went on from there: "This is the true cause of the urban crisis. . . . Each of us can make his own particular contribution either as a citizen or a specialized professional. The architect, for example, by his training sees physical problems, and should through his technical training be capable of providing imaginative solutions, not to just individual buildings, but to the entire urban environment.

"Architects have much more to contribute than blueprints or imaginative dreams. Their object is not to destroy and rebuild but rather to preserve patterns of living that have validity for the community and for new areas that have been allowed to deteriorate. The architect's major contribution may well be the very basic one of understanding the *user's needs,* and insofar as these needs can be met by things that man can build, satisfying them.

"One of the most interesting developments of recent years is the realization that the owner and the user are not necessarily the same person. It is the user who should be the architect's client and it is the user's needs that the architect should interpret to the owner."

And that, new Secretary of Housing and Urban Development and state officials everywhere, is a notion worth remembering. Mayors know it well. It is quite a lot of extra trouble to invite into the planning picture the user (i.e., in our cities, militant slum dwellers intent on demanding what they consider to be their rights). But that's the way it is these new hard days.

". . . but no real suburbs have been built either"

While releasing the draft of the Regional Plan Association's "Second Regional Plan," C. McKim Norton, president of RPA, noted that "Everyone recognizes that the quality of life in the older cities has declined so that there are few city areas where people really want to live. What has escaped observers is that no real suburbs have been built in the area for 10 or 15 years, either.

"Instead we have been wrapping Los Angeles around New York—building 'spread city,' a new urban form. It is a city cut into small pieces and scattered rather aimlessly across the landscape—heedless both of nature on the one hand and the purpose of cities on the other."

On flowers and comprehensive planning

The introduction of "From Sea to Shining Sea, A Report on the American Environment" is illustrated by a perfectly beautiful set of pictures, each captioned with a number of quotations. Like this one by Russell E. Train, president of The Conservation Foundation: "The planting of flowers to brighten the heart of a city may not accomplish an environmental revolution, but it may well lead to a new awareness of their surroundings on the part of many members of the public. Flowers can lead to trees, and trees to public parks, and parks to comprehensive planning programs."

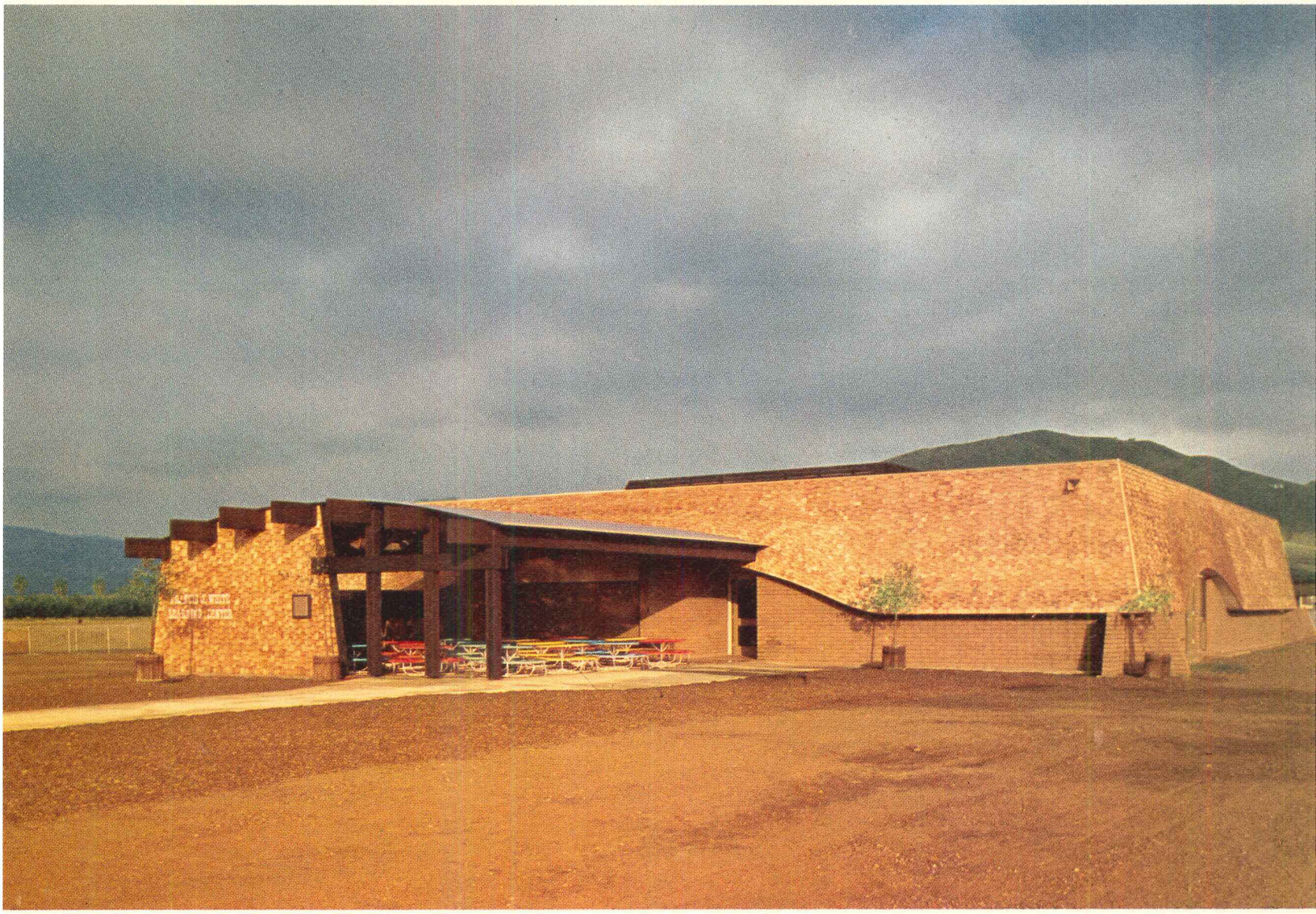
As I said on the previous page, I wish you'd get a copy of the book and read it. It says a lot of things I wish I'd said, and you'll wish you'd said. Superintendent of Documents. $2.50.

A mean thought about Turnkey

It probably isn't true, but it was suggested to me the other day that the real reason HUD invented its controversial Turnkey scheme was to give itself a way around its own administrative and approval bottlenecks. That couldn't be true, could it?

—*W.W.*

Lennox presents



Francis J. White Learning Center, Woodlake, California. Architect/Engineer: Moring & Hayslett.
Roof treatment completely conceals Lennox rooftop equipment.

the case for the air conditioned school

Today, one out of every two new educational buildings is being air conditioned. The figure varies geographically. In southern states, seven out of ten schools are being air conditioned. In New England, three out of ten.

And the cost varies. The John H. Glenn Junior High School, San Angelo, Texas, was air conditioned —heating/cooling/ventilating—at $1.35 per square foot for the 100,908 square feet. Equipment used was the Lennox Direct Multizone Rooftop System (DMS). Architect: Donald R. Goss Associates. Engineer: Cowan, Love & Jackson, Inc.

By way of comparison, a hot-water/chilled-water system for the same school was bid at $1.88 per square foot.

The cost is modest in any event. A figure of $2.00 per square foot for heating/cooling/ventilating, over a 20-year lifetime, represents less than 1/10 of 1% of the total annual educational cost for an average elementary school.

Does air conditioning truly provide a better climate for learning? Research and history are proving that it does. Studies conducted by the University of Iowa show that in addition to the obvious increase in comfort, good thermal environment aids learning to an important and measurable degree. Studies are available on request.*

There are other important reasons for air conditioning a school. For example: freedom of design offered by complete environmental control. Freedom from the need for natural, window ventilation.

Continued . . .

For more data, circle 6 on inquiry card

The low-profile Lennox DMS poses only a minimal screening problem. Example: The "pods" atop the William E. Orr Junior High School, Las Vegas, Nevada. Each conceals up to three DMS units. Architect: Zick and Sharp, in association with Shaver & Co. Engineer: Marvin Shafer.

Continued . . .

the case for the air conditioned school

And through the Lennox DMS rooftop units, with flexible ducts, there is the freedom to move walls, or add them, or eliminate them. And because this is a unitary system, as the building grows, you simply add new units.

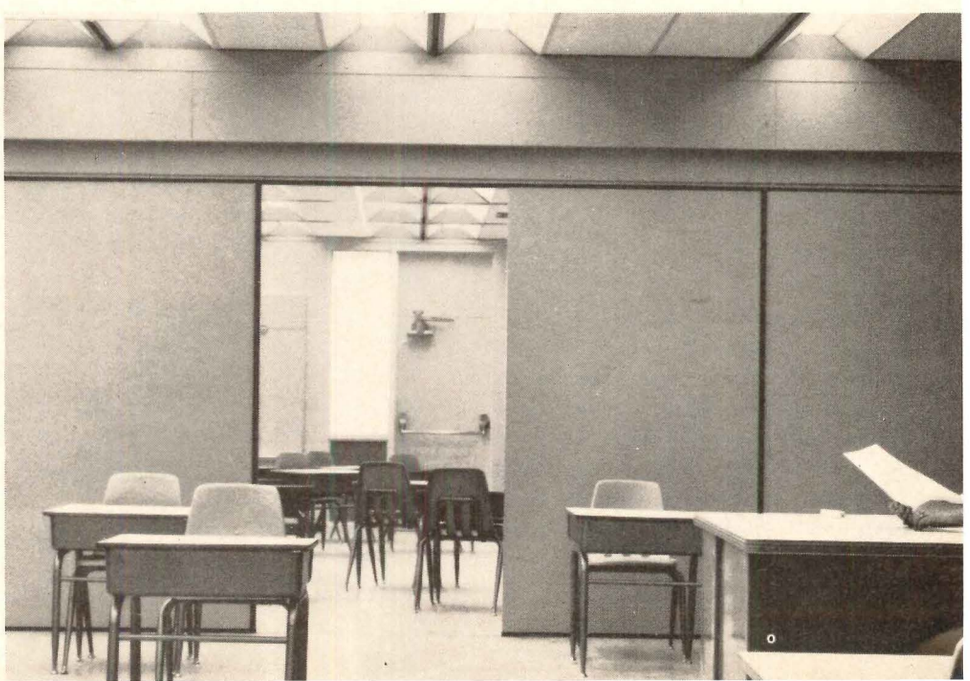
Because the Lennox multizone system provides such flexibility in thermal control, it offers exceptional freedom of design, occupancy or change. The system can heat one zone while cooling another. It can, if needed, provide a 100% air change. Thus, the system allows for great variation in occupancy, activity, and orientation—as they affect heat gain or loss.

Schools, even in the northern states, tend to need more hours of cooling than heating. This is due to high occupancy, high activity levels, and high heat generation at school age. During cool weather, this cooling demand imposes little cost. A modern multizone system like Lennox will cool free at any outdoor temperature below 57° F.

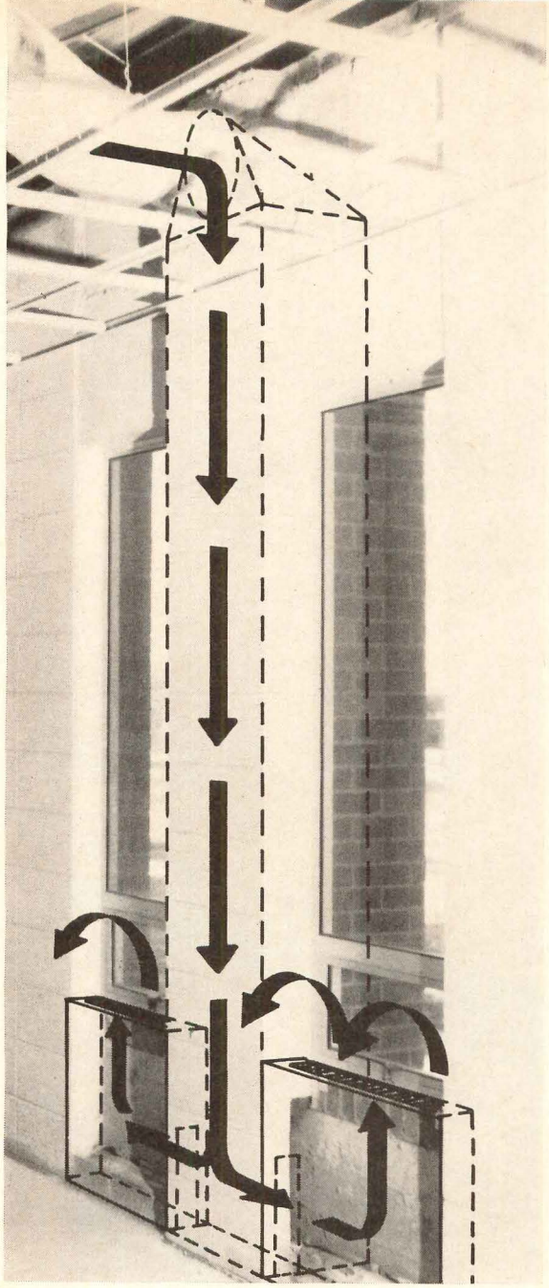
Many factors beyond human comfort justify the modest cost of air conditioning: The summer use of the educational plant. The reduced depreciation of the building. The increased occupancy permissible. The increased capacity of the students to absorb information, thus increasing teaching efficiency.

We have many case studies showing cost comparisons and design and installation data, for schools in differing climate zones. These are available on request. Write Lennox Industries Inc., 336 S. 12th Avenue, Marshalltown, Iowa 50158.

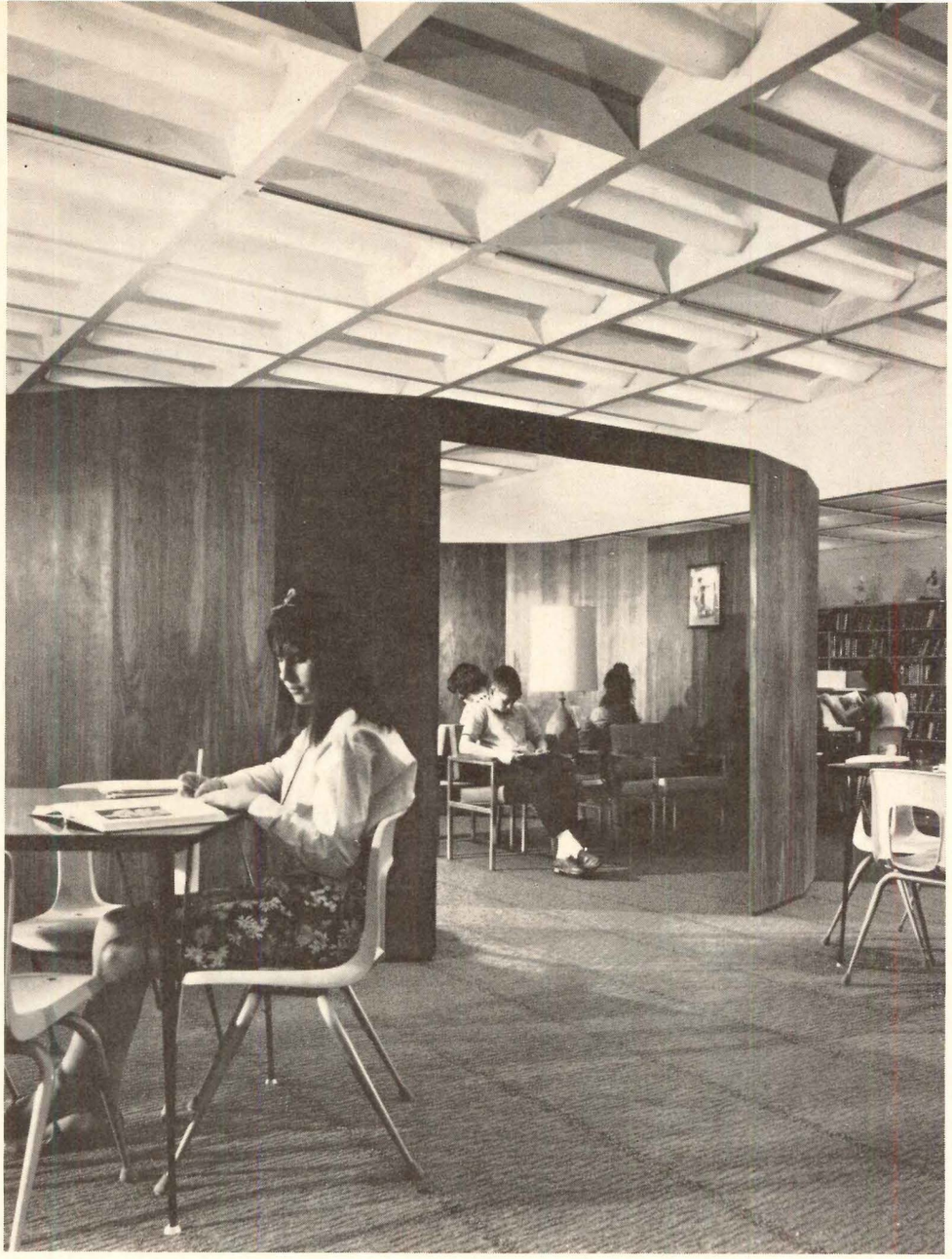
*Reports available: *"Education, Children and Comfort"* and *"The Effect of Thermal Environment on Learning."*



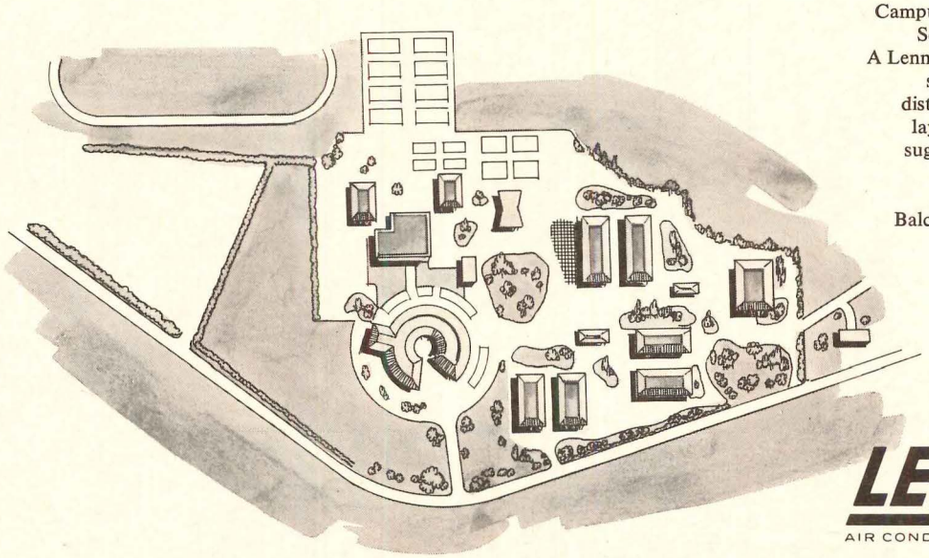
Movable walls, heart of education's new "flexibility" concept, are made possible at Bertha Ronzone Elementary School, Las Vegas, Nevada, by rooftop mounting and flexible ducts which eliminate fixed, wall-oriented ducts, pipes, registers, unit ventilators. Architect: Julius Gabriele, A.I.A.



An outside design temperature of -25° F at Watertown, South Dakota, made it desirable to have perimeter distribution of heat in the Watertown Vocational-Technical School. This was achieved by ducting some 20% of supply air down pilasters into wall ducts. Balance of air was supplied by ceiling ducts. Architects: Harold Spitznagel & Associates; Pope and Robel. Engineer: Harold Spitznagel & Associates.



For heating and ventilating, Barrington Middle School, Barrington, Illinois, chose Lennox DMS units—without cooling—but is adding air conditioning capability one unit at a time. Architect: Cone and Dornbusch, A.I.A. Engineer: The Engineer Collaborative.



Campus layout for Mission Viejo High School, Mission Viejo, California. A Lennox Direct Multizone System was selected here in preference to the district central system, which such a layout—in the past—has commonly suggested. The per-square-foot cost for Lennox heating/cooling/ventilating: $2.19. Architect: Balch-Hutchason-Perkins. Engineer: Kelly-Stewart-Goldstein.

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and fabricator developed components that would fit together on site. Result: one floor of wall system was completed every *three* days. Proof that Alcoa has the know-how to work with architects and fabricators to make aluminum work for them. **(B)** Lake Point Tower is a thing of beauty. The aluminum components feature Alcoa® Duranodic* 300 finish in medium bronze tones. And the rich Duranodic color is an integral part of the metal. This means corrosion and abrasion resistance is multiplied. Duranodic needs less maintenance, yet its original color and beauty last and last.

Get together with Alcoa early in the planning stages. Alcoa has the proven capability to work with you from concept to conclusion. And, as at Lake Point Tower, Alcoa stands ready to supply you with a whole lot more than aluminum. Put Alcoa to work for you. Call your local Alcoa sales office, and talk to Alcoa at the talking tissue stage.

*Trade Name of Aluminum Company of America.

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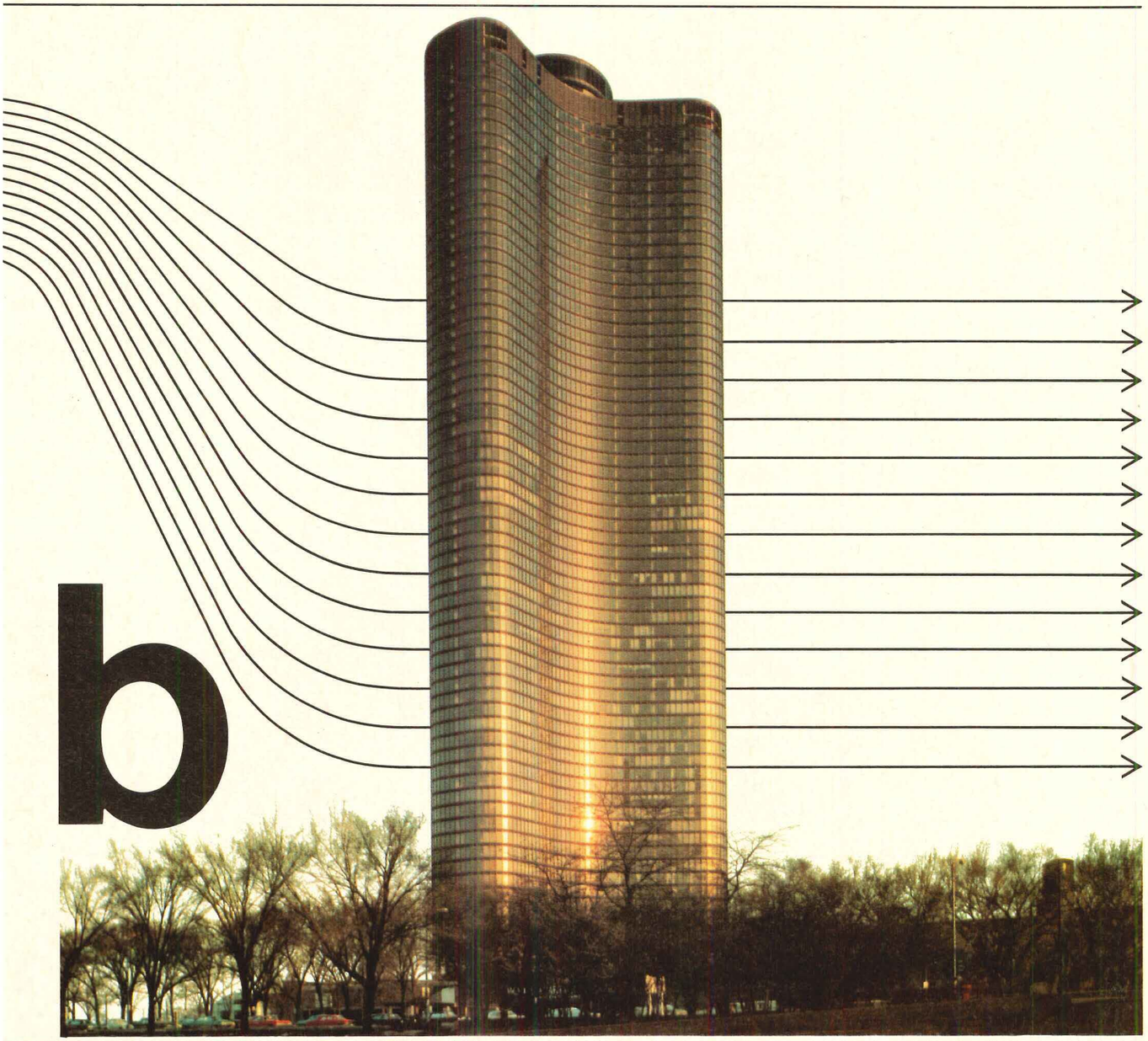
Developer: Hartnett-Shaw & Assoc./Fluor Properties Inc.
General Contractor: Crane Construction Co., Inc.,Aluminum Fabricator: Cupples Products Div., H. H. Robertson Co.



Cotswold by Brian Yale; selected from designs submitted by Students of the Royal College of Art, London

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PILKINGTON GLASS

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It comes in two fibers; Dow-Badische's Weatherbright™ acrylic fiber blend or 100% olefin. Both of them stand up to just about anything. They're fearless, indoors or outdoors.

Ludlow indoor/outdoor carpet passed the U.S. Government's Hill Burton Tunnel Test for flammability with flying colors. The 100% olefin sample showed a flame spread rating of 70. The acrylic fiber blend sample showed a flame spread rating of 44. Any rating below 75 is considered more than satisfactory.

Ludlow's indoor/outdoor carpet won't rot or mildew. stretch or shrink, ravel or curl; is completely non-allergenic, and insect proof.

So you needn't worry about using it on any floors where you want the acoustic, insulative and design advantages of carpet. Hallways. Entrances. Reception rooms. Offices. Stores. Theatres. Schools. Hospitals. You name it. It goes there unafraid.

The range of colors, patterns and textures is big and beautiful. We made it for outdoor use. But designed it for indoor use.

It also comes backed with high-density foam rubber at little extra cost. Or Ludlow can supply quality carpet cushion from the most extensive line in the business.

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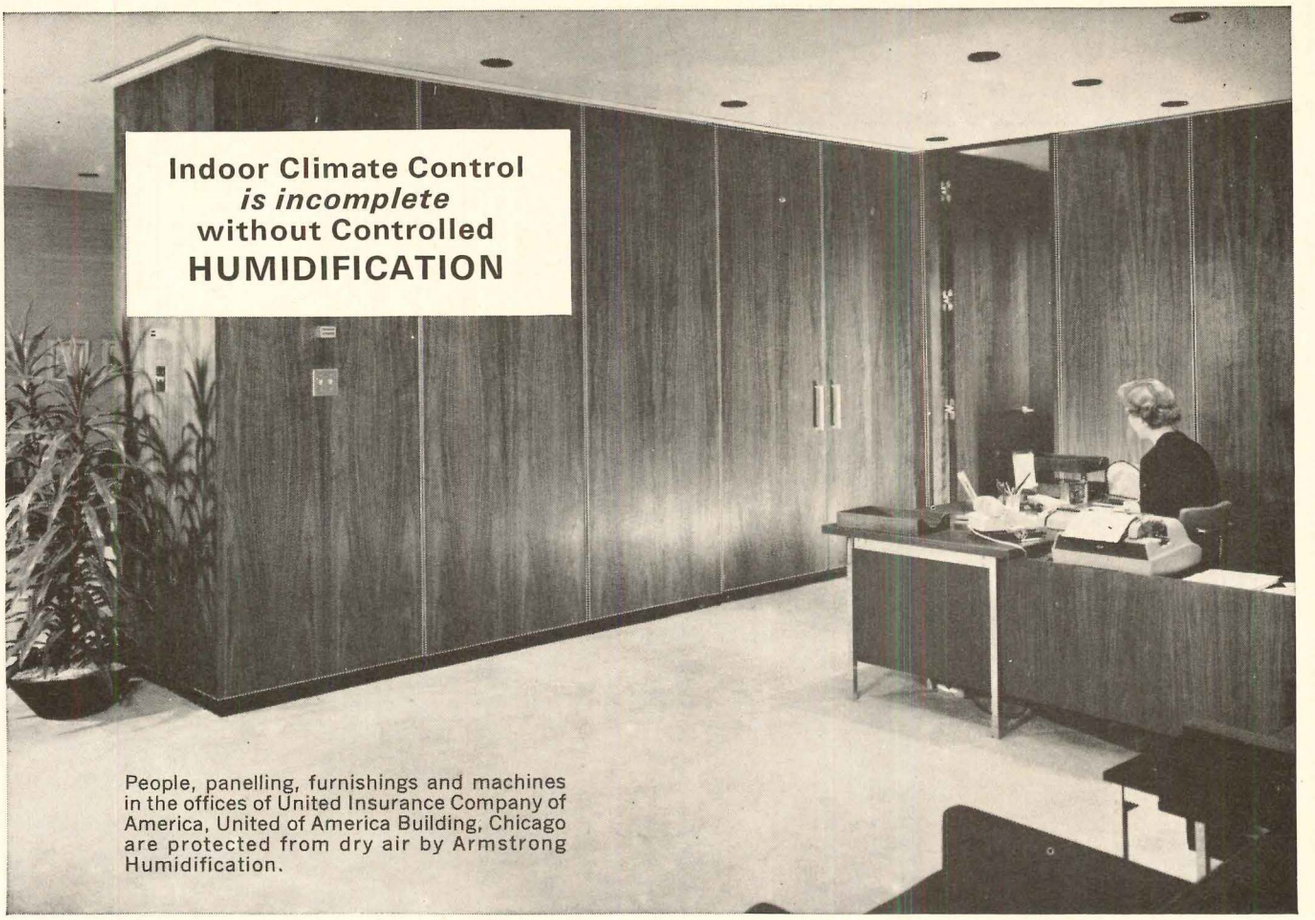
New Ludlow Indoor/Outdoor Carpet.

For specifications, samples, recent installations write: Ludlow Corporation, Floor Covering Division, Dept. C, 295 Fifth Avenue, New York, N.Y. 10013.



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. . . to maintain the most desirable standards of winter-time comfort

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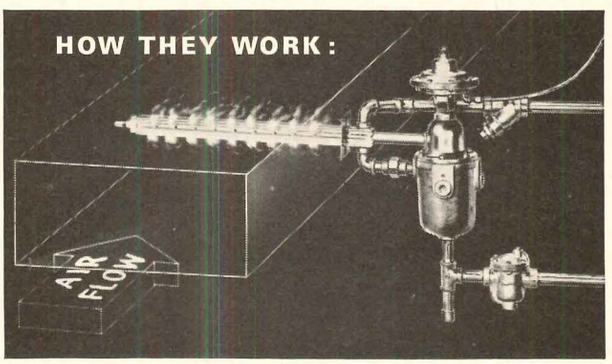

Steam supply is metered in the humidifier body and liquid moisture removed. The steam jacketed distribution manifold assures that steam will be discharged into the air without drip and further assures that the steam will be uniformly distributed in the air flow.

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Office Building Humidification reprint tells how one of the nations' most modern buildings uses Armstrong Humidification.

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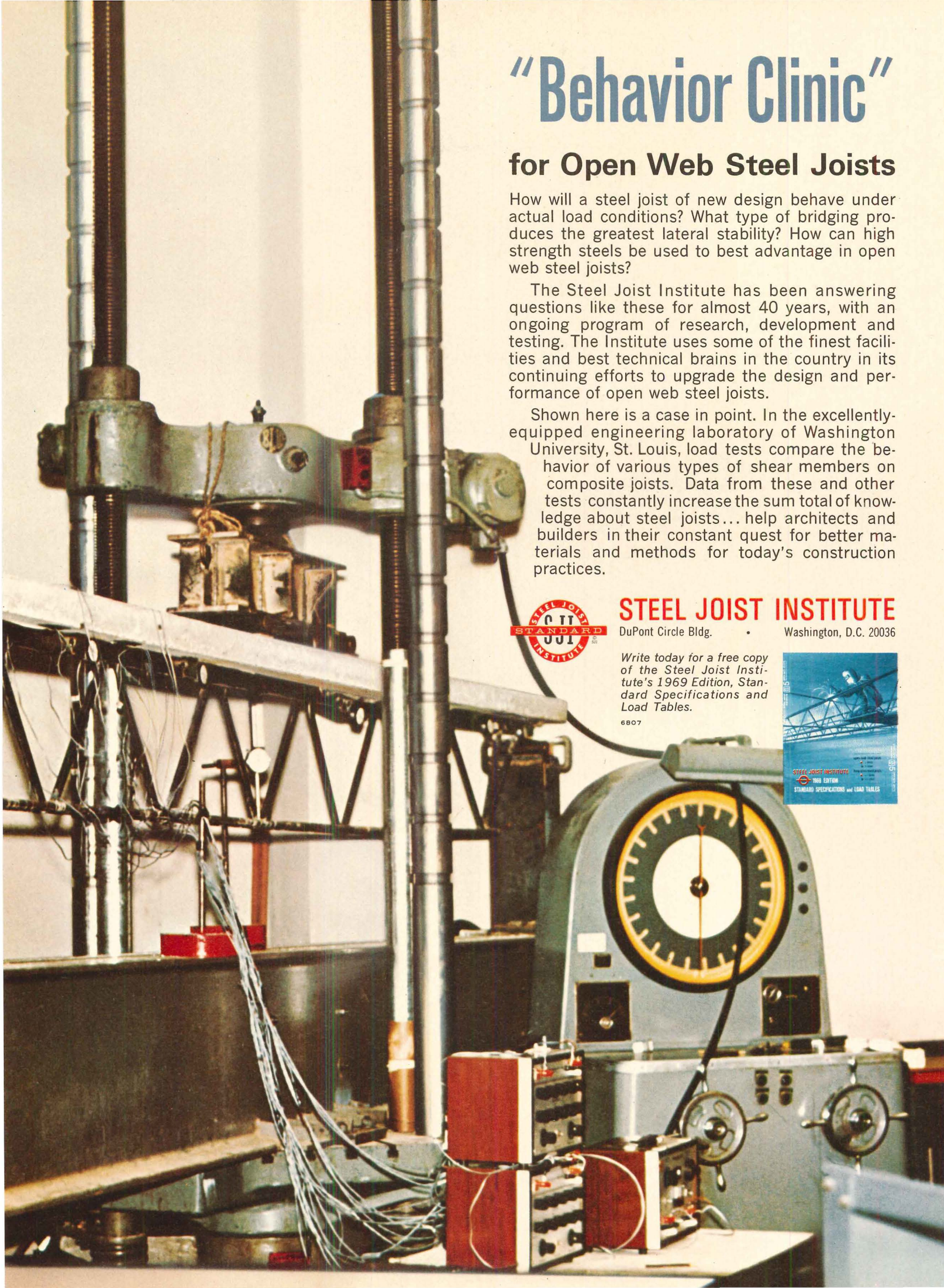

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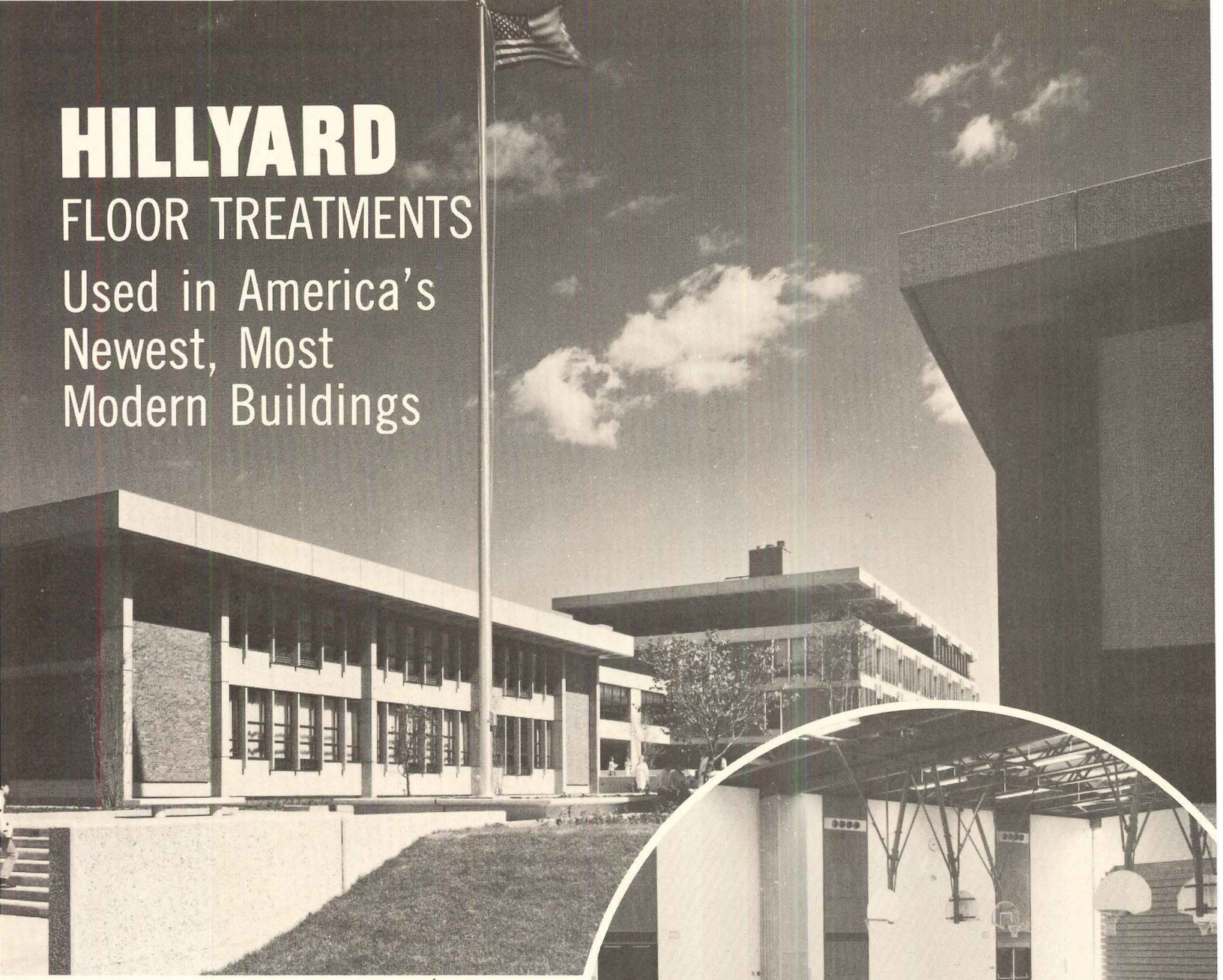

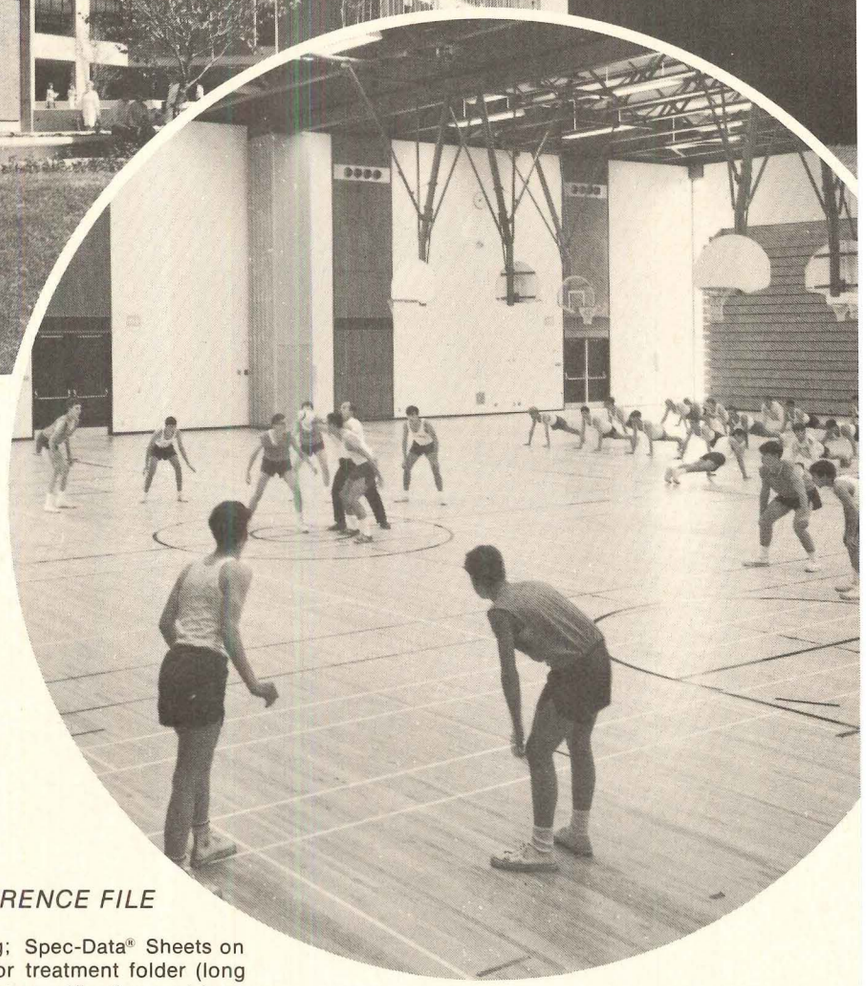

Campus type New Trier Township High School-West at Northfield, Illinois. Architects: The Perkins & Will Partnership, Chicago, White Plains, N.Y., and Washington, D.C.; and the Architects Collaborative, Cambridge, Mass.

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The hydraulic fluid LCN uses is called "X" Liquid but it is not an unknown quantity. It maintains its fluidity at all temperature extremes; keeps LCN Closers operating as smoothly in Fairbanks as they do in Florida. "X" Liquid in itself could be reason enough for specifying "Smoothees." Add good looks, superb engineering, simple installation. It all adds up to the surface-mounted closer favored by architects and owners alike. Look up LCN in Sweet's. Or write: LCN Closers, Princeton, Illinois 61356.

LCN

DOOR CLOSERS

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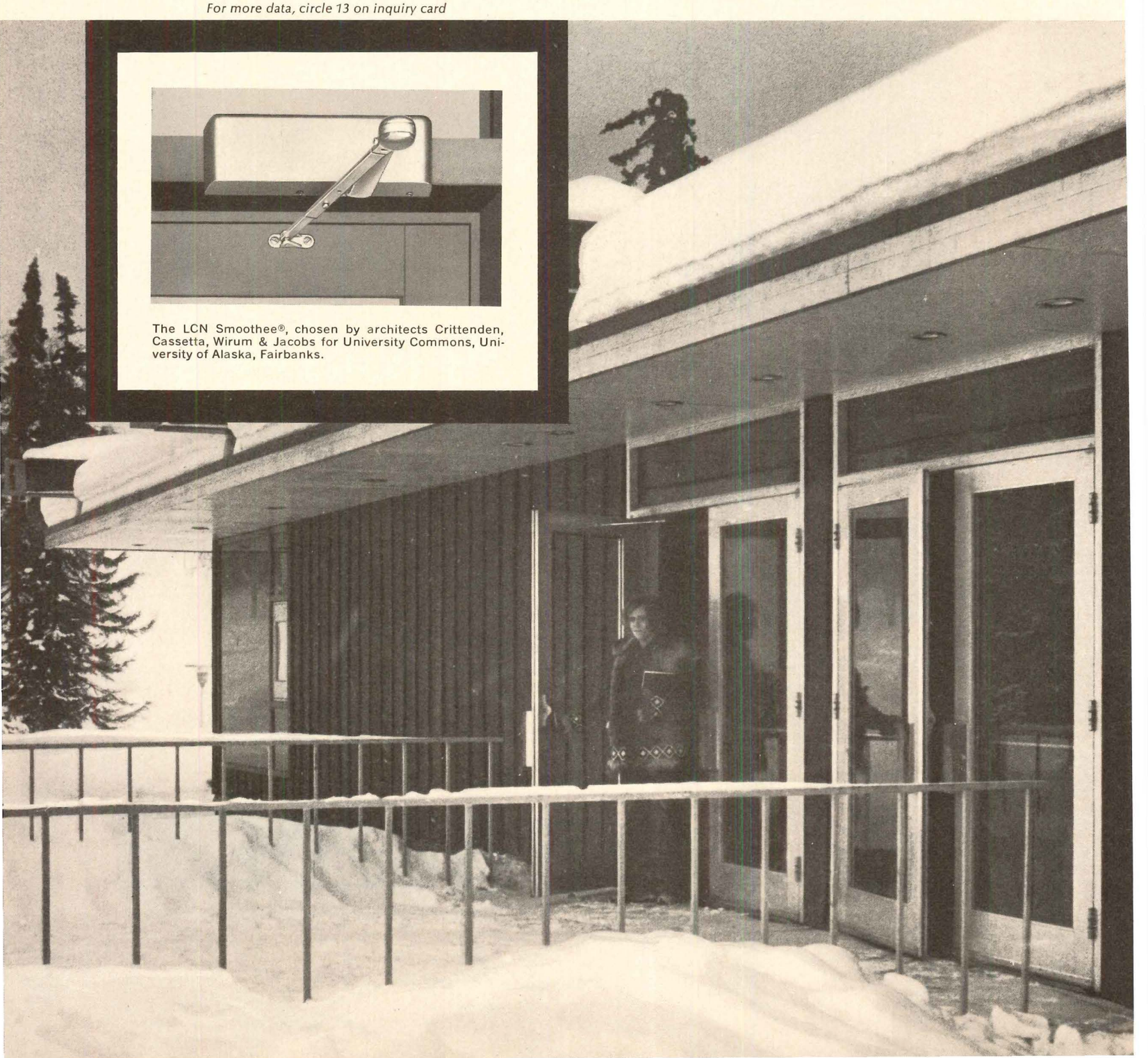

The LCN Smoothee®, chosen by architects Crittenden, Cassetta, Wirum & Jacobs for University Commons, University of Alaska, Fairbanks.

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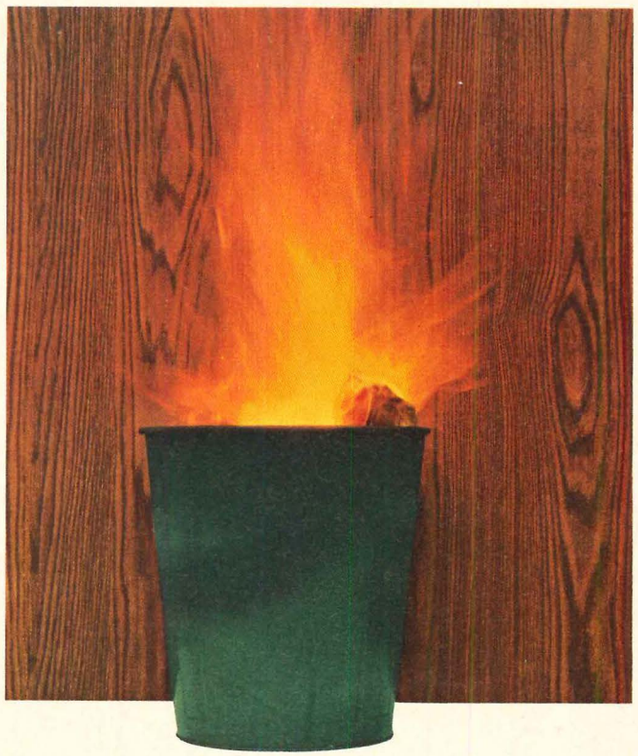

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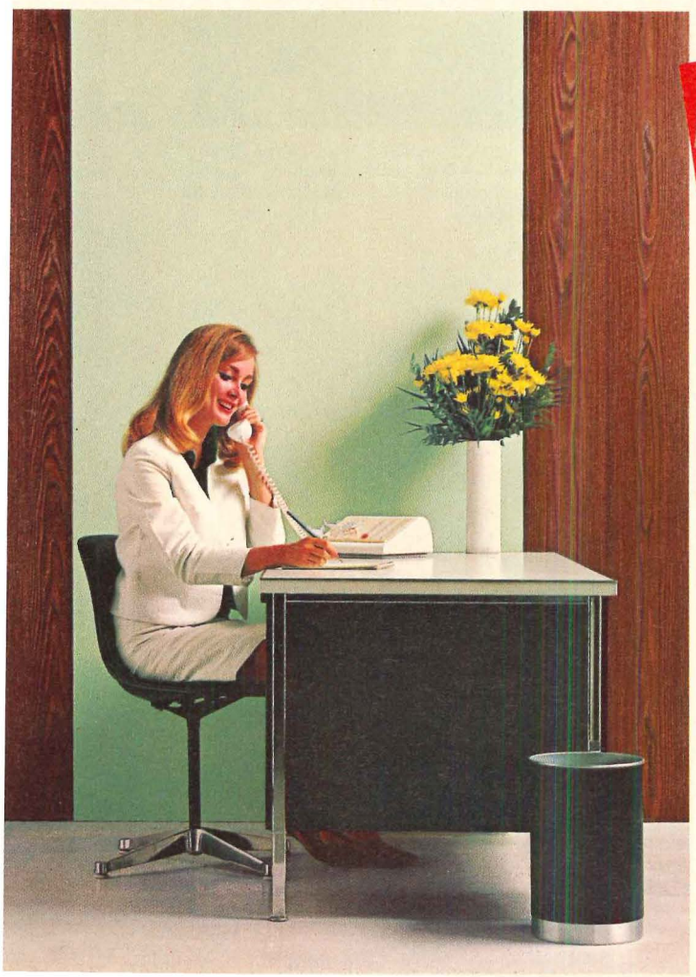

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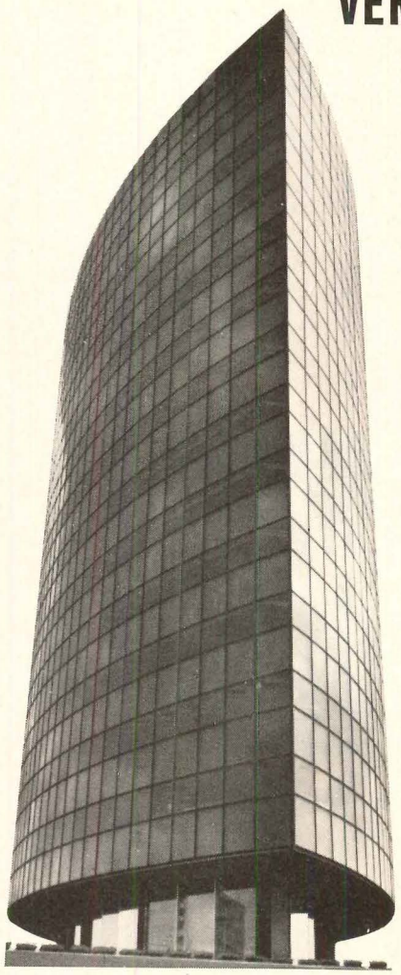
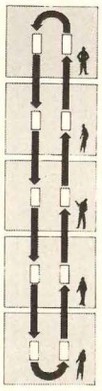


Phoenix Mutual Life Insurance Co., Hartford, Conn. *Architect:* Harrison & Abramovitz. *Contractor:* George A. Fuller Co.



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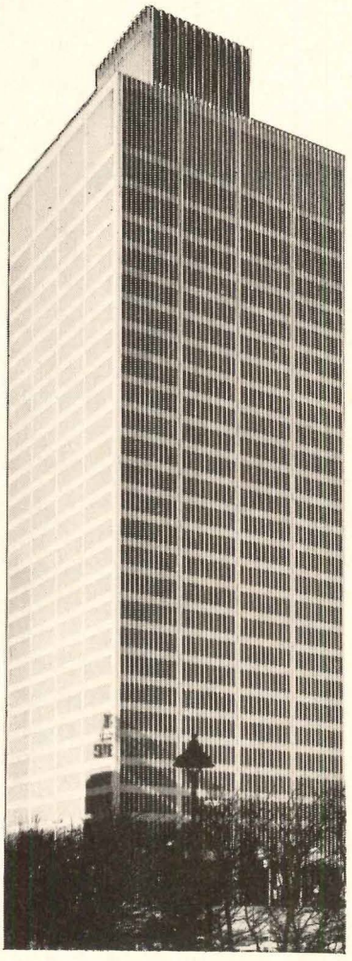
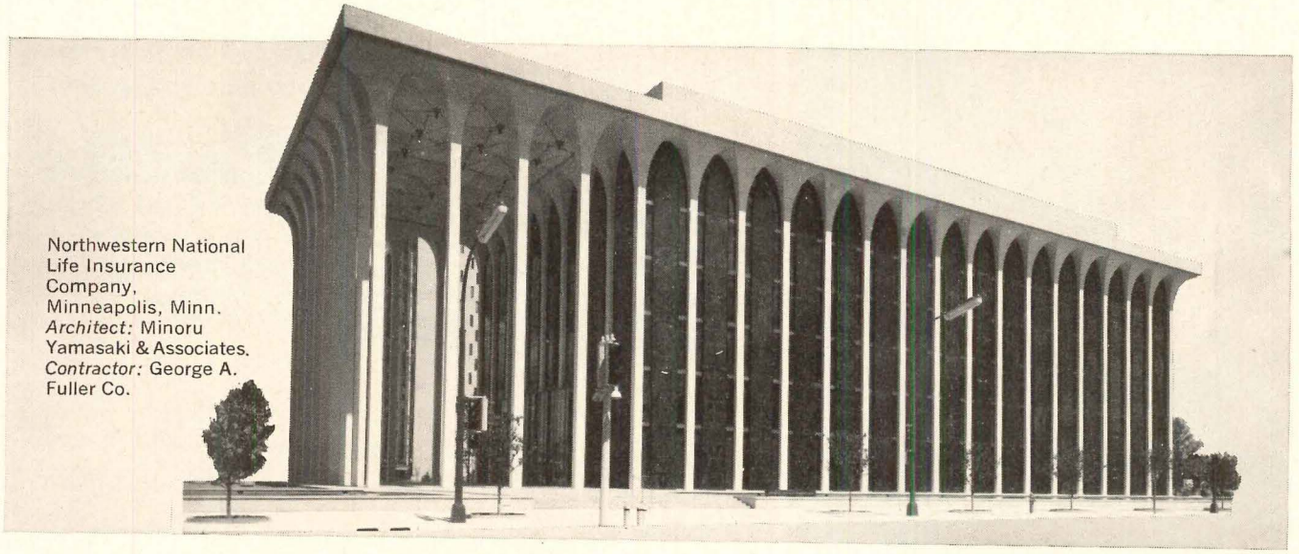


Michigan Consolidated Gas, Detroit, Mich. *Architect:* Minoru Yamasaki — Smith, Hinchman & Grylls. *Contractor:* Bryant & Detwiler Co.



Northwestern National Life Insurance Company, Minneapolis, Minn. *Architect:* Minoru Yamasaki & Associates. *Contractor:* George A. Fuller Co.

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Because there are things other than beauty to talk about.*

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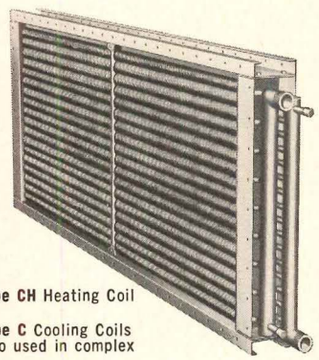

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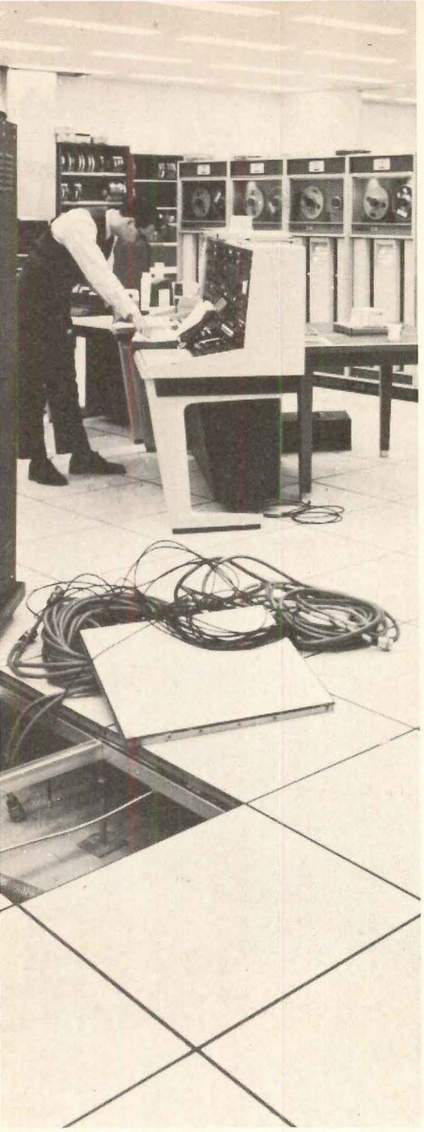
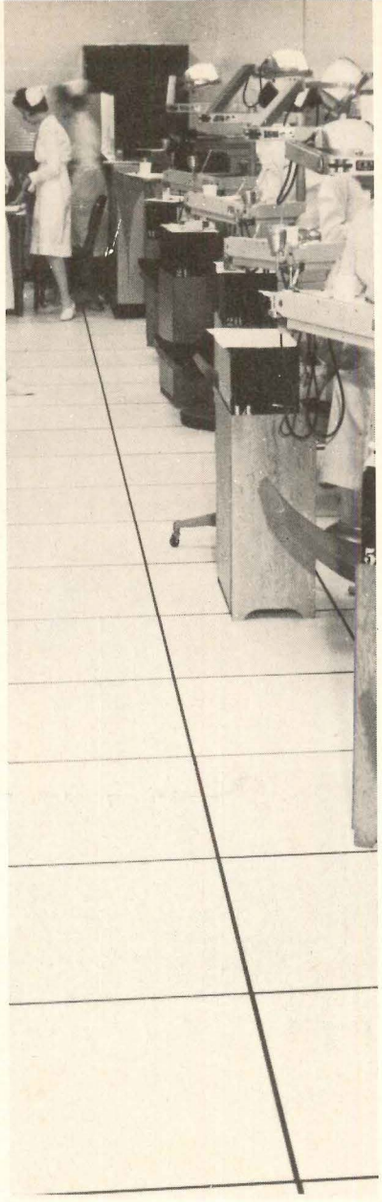
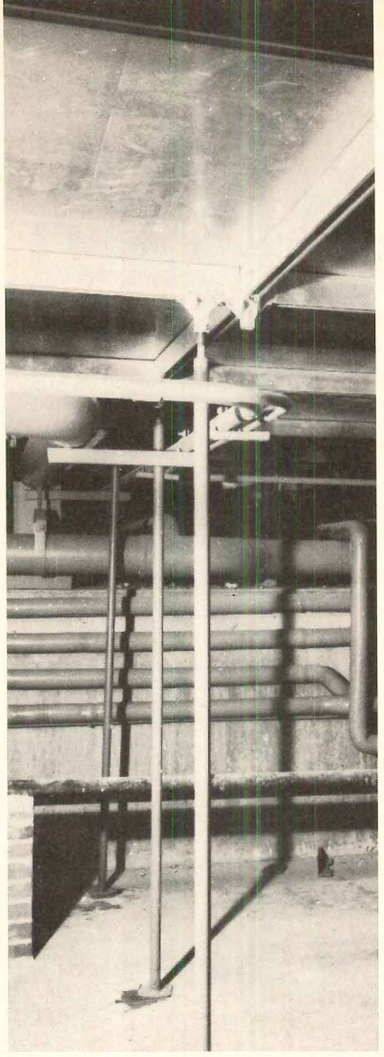


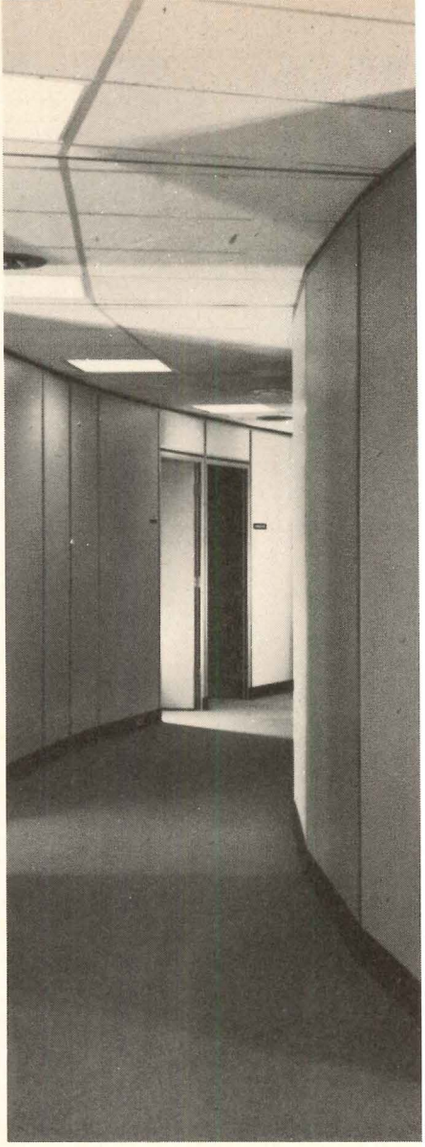
The idea started with computer rooms. Elaflor's vinyl plenum seal combined with Liskey-Aire modular air conditioning units gave highly effective under-floor cooling circulation while panels lifted out easily for instant access to utilities and cabling.



Now, see what it's done for a laboratory area. Electrical, water, gas, air, and drainage lines are completely concealed, yet completely accessible for repair or alterations. Lines can be brought up anywhere, even the middle of the room for full design freedom.



Lowered ceilings are a commonplace technique in renovation work. But here, they raised the floor. This avoids ripping out, provides an ultra-convenient place to run utilities. A simple way to even up different levels varying from inches to feet.



Elaflor provides ultimate flexibility for general office space. Utility and communications lines can be altered at a moment's notice, and with Liskey Spacemaker Movable Partitions, office areas are equally flexible. Floor panels available in tile or plush nylon carpeting.

Solve a design problem with Liskey Elaflor, the only complete elevated flooring system.

Only Liskey offers complete freedom of design. Three basic suspension systems . . . rigid grid, removable stringer, or stringerless. Three floor panels . . . die-formed steel, steel-clad/wood core, or extruded aluminum. No need to substitute or compromise, pick the system that best solves your problem.

See our section in SWEET'S or write for our AIA file of detailed specifications.

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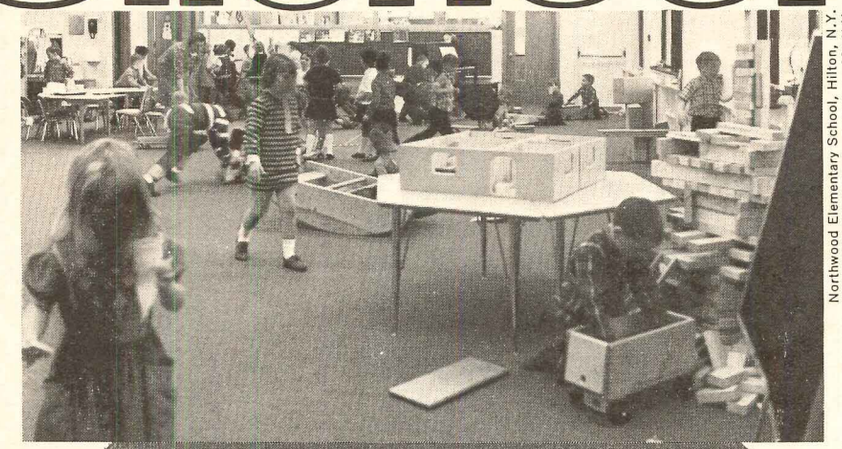
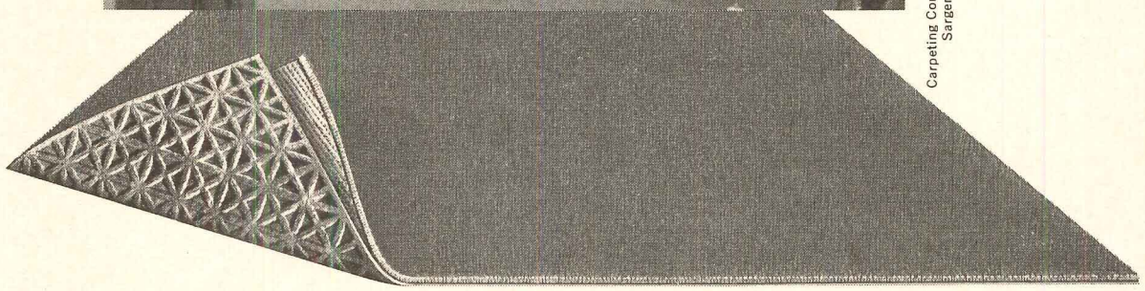
For more data, circle 22 on inquiry card

the Silencer.



Northwood Elementary School, Hilton, N.Y.
Carpeting Contractor: Toby's Furniture & Interiors, Inc., Rochester 63, N.Y.
Sargent, Webster, Crenshaw & Folley: Architects, Engineers, Planners



Allen Rubber-Loc Carpet Cushion

for unparalleled carpet protection plus superior sound absorption

In classrooms, libraries, offices, reception rooms, private homes, wherever silence is golden, put Allen Rubber Loc under the carpet.

Allen Rubber Loc aids in comfortable walking while adding more years to carpet life.

And Allen Rubber Loc quiets like no other cushion can. Recent tests by Geiger and Hamme, a leading sound laboratory, show that quality contract carpets installed over Rubber Loc have a higher NRC (noise reduction coefficient) than that same carpet over all-hair padding customarily selling at higher levels but having less cushioning weight per square yard. (And that goes also for the all-hair padding we make ourselves.) In fact, Rubber Loc installed with conventional carpet has a better NRC rating than "rubber backed" carpets or carpets installed with any other types of separate padding.

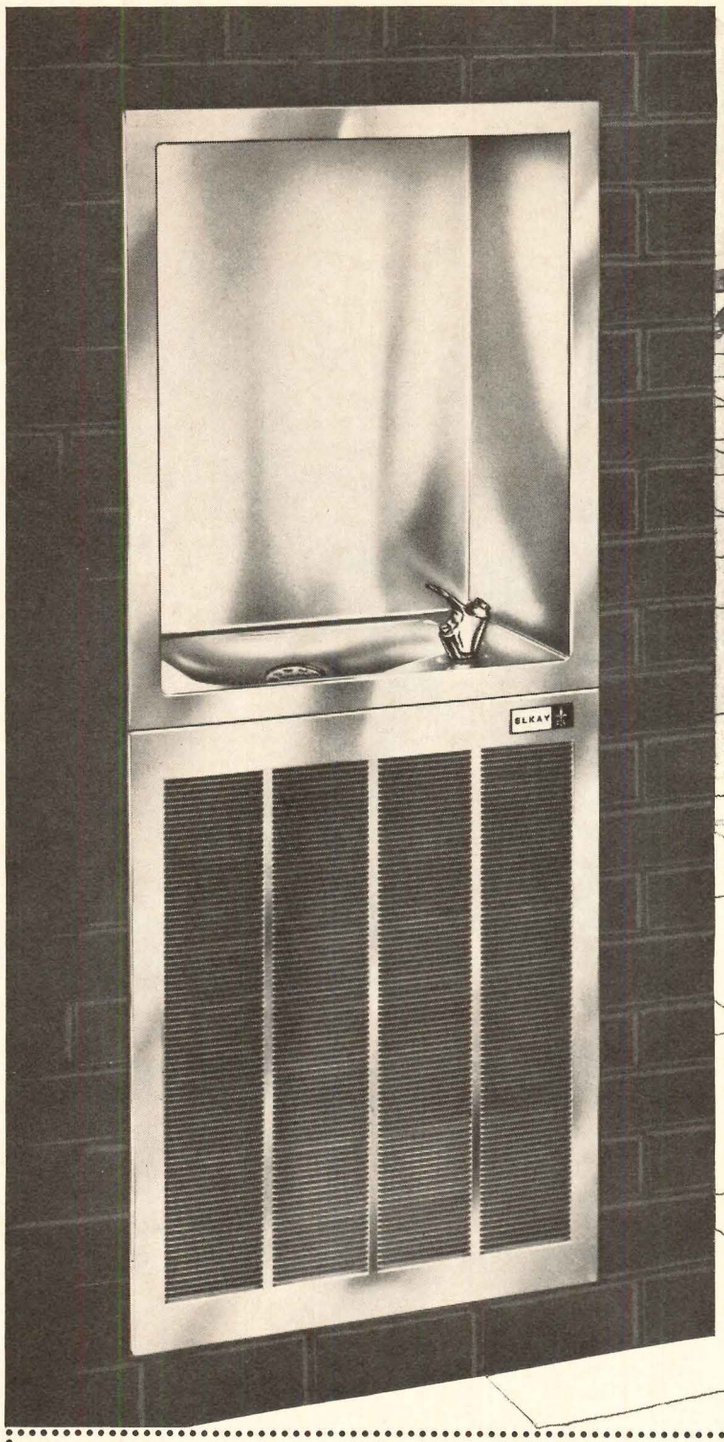
No wonder more and more architects and designers now specify carpets installed over heavy 56 ounce 3/8" thick Allen Rubber Loc. Its patented rubberized waffled top and ribbed rubberized back enclose a shock absorbing blended hair and India Fiber center—secret of its exceptional effectiveness for maximum carpet protection and sound absorption.

This chart indicates results of the tests conducted by Geiger and Hamme. It compares the noise reduction coefficient (NRC) a measure of sound absorption, of carpet without padding; and the same carpeting over all hair and Rubber Loc carpet cushion. The higher the number, the greater the sound absorption. The evidence is clear. Allen Rubber Loc quiets best!

Type of Installation	Sound Absorption Coefficient at frequency of					Noise Reduction Coefficient
	125	250	500	1000	2000	
Contract Carpet over separate Rubber Loc Carpet cushion	.06	.26	.62	.91	.94	**.70**
Contract Carpet over All-Hair Carpet cushion	.06	.24	.56	.87	.95	**.65**
Contract Carpet without any cushion	.03	.09	.20	.47	.75	**.40**

Allen Industries, Inc.
Detroit, Michigan 48207

For more data, circle 25 on inquiry card



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Elkay offers fully recessed styling! No projections to block the passageway or take up valuable floor space! These gleaming coolers are quality built of 18 gauge (type 302) nickel-bearing stainless steel and have a deluxe LK-6K satin finish. Won't chip, crack, wear, or stain. Exclusive stream-splitter basin is splash-resistant. Sound dampened on underside. Delivers 9.5 gallons of 50° chilled water per hour when ambient and inlet water temperature is 80° F.

Measures 22" wide, 55" high and 12½" deep. Provides ample head room. Front grill available in stainless steel, laminated charcoal vinyl, or prime coated steel. Wide choice of models in Elkay's complete line. Write for Catalog DFC-2 or see our listing in Sweet's Architectural File. Elkay Manufacturing Company, 2700 S. 17th Avenue, Broadview, Illinois 60153.

Easy to Install! Easy to Service!

Front grill removes with the turn of 3 screws. Self-contained cooling unit requires two plumbing connections and an electrical connection. Easily removed without disturbing drain.

ELKAY®
Stainless Steel Water Coolers

see our catalog in Sweet's (S)

For more data, circle 26 on inquiry card

News in brief

President-elect Nixon's creation of a Cabinet-level Council on Urban Affairs and his appointment of Daniel Patrick Moynihan as its principal staff officer seem to suggest that Mr. Nixon is planning to move sharply against the crisis of the cities. See next page and page 9.

A plan to revive cities, to "resume the building of suburbs," and to give everyone in the New York region a choice between city and suburban living has been issued by the Regional Plan Association. The plan involves building up existing outlying towns—twenty-four in all—to form a more decentralized urban complex within which a suburban fabric can grow. See next page.

Business predictions for 1969 vary from cautious optimism to substantial gloom according to the source as revealed in reports from five forecasters. See page 69.

Unionization of architectural and engineering professional offices was viewed with alarm at a December conclave of representatives from seven associations including A.I.A. and CEC. Alternates—through enlightened employee relations—were emphasized. See page 69.

The newest development concerning the A.I.A. National Headquarters Building is the appointment of a committee of eight architects to serve with Max O. Urbahn to select an architect to design the building. Rex W. Allen, Edward Bassett, Romaldo Giurgola, Harold Haag, Morris Ketchum, Willis Mills, I.M. Pei, and Philip Will are to serve on the committee.

A.I.A. Document A-201 has been adapted for Federal contract requirements regarding minimum wages and equal opportunity for the special use of the U.S. Office of Education. Other Federal departments may also use the adapted form. See page 70.

Aluminum Company of America has formed a new corporation to provide low-rent housing on a national scale for families and elderly persons with limited incomes. The Alcoa subsidiary, the Housing Corporation of America, will join with local and Federal authorities to produce housing within the Turnkey Program.

The Army Corps of Engineers is in the process of creating a new Construction Engineering Laboratory which will be the government's most advanced center for construction research. See next page.

Product information may become more readily accessible if the new film-and-paper library set up at the New York office of Skidmore, Owings and Merrill with the collaboration of Sweet's Construction Catalog Services passes a shake-down trial run over the next several months. See page 70.

Architect Wilhelm Holzbauer of Vienna, Austria has won the Amsterdam City Hall Competition. Second prize went to Bernado Winkler, Friedrich Hahmann, and Hanna Hahmann of Starnberg, Germany. J. H. Maisonneuve and Eva Karczewska of Paris, along with Jan Karczewski and Andrzej Kozielewski of Warsaw, won third prize. Other participants of the limited competition were: Adrian Meyer, H. Fuhrimann, Urs Burkard, Marc Funk, all of Baden, Switzerland; Jose Moneo of Madrid; and Fairfield and Dubois of Toronto, Canada.

The 19th International Design Conference in Aspen, Colorado, will be held June 15-20, 1969. Co-chairmen are graphic designers Ivan Chermayeff and Henry Wolf.

A time-lapse movie camera aimed at a retail-office-hotel site in Springfield, Massachusetts, is exposing four frames of film a day and will do so throughout construction—in effect reducing years to minutes in a film to be released in 1972 as a guide for similar projects.

Moynihan's appointment may indicate an action approach to urban ills

The creation of a National Council for Urban Affairs, and the appointment of Daniel P. Moynihan, considered one of the nation's most imaginative social thinkers, to head it, is expected to reassure skeptics of President-elect Nixon's campaign pledge to tackle seriously the explosive problems of the big cities.

By choosing the 41-year-old scholar, Nixon also completed his long-promised gesture to the liberals. Dr. Moynihan, presently the director of the Joint Center for Urban Studies at Harvard and M.I.T., will probably be the new administration's most visible Democrat.

Although technically Nixon himself, not Moynihan, will head the new Council, Moynihan, who has gained a reputation for his candor, wit and intelligence, can be expected to play a major role in policy making. Other Council members will be the Vice President-elect and the secretaries of Health, Education and Welfare, Housing and Urban Development, and Transportation.

Since his appointment, Moynihan has emphasized the importance of deciding just what the urban crisis is all about before attempting to devise solutions for such problems as poor education, seemingly eradicable slums and racial discrimination.

In a book to be published in February, he voices the belief that the anti-poverty campaign has become "flawed" in its execution, mainly because President Johnson made community action, rather than "employment strategy," its central theme. Moynihan asserts that the opportunity to institute more or less permanent social changes—a fixed full employment program, a measure of income maintenance—was lost while energies were expended in less productive ways.

Moynihan is known to favor even broader public participation than now exists, and a national program for reconstructing the Negro family-unit.

Douglas Commission: Let local government do it

One of many major conclusions of the report of the National Commission on Urban Problems, headed by Paul H. Douglas, is that "The Commission does not subscribe to the notion that all problems can be best solved or handled from Washington." Noting that "The states are close enough to the people and yet enough removed from petty parochial interests to become major constructive forces in dealing with urban problems," the report urges the Federal funding of programs administered locally. On city participation, it suggests that Federal programs which cities rely upon should be simplified and speeded up. "We urge the long-term funding of these Federal programs—from a minimum of three years and up to 10 years—so the money spigot will not be turned on and off unpredictably."

The Commission also urges that cities be given authority to lease housing for low-income families throughout the entire metropolitan area, especially in suburban areas that have job opportunities for blue collar workers. The report recommends that since "Housing the poor and removing segregation are of such supreme national importance, states and the Federal government must set guidelines for minimum performance, but competent city governments should have the added tools and money to carry out the programs and to make the day to day decisions."

Significantly, in view of President-elect Nixon's apparent strong interest in the use of tax incentives to attract investment to slum housing, the report "does not advocate Federal tax incentives to solve slum problems. Our studies indicate that such an approach would be inefficient and ineffective. . . . To accomplish goals beyond what the private market system produces, direct subsidy programs tend to be superior to the tax incentive route for pinpointing benefits and assuring alert supervision by governmental bodies."

Report on Ronan Point collapse indicates need for change in British Code

Short-comings in regulations controlling the construction of tall buildings in Britain are pinpointed in the report of the investigation into the partial collapse of a twenty-four story apartment building, Ronan Point, in London earlier this year (RECORD, November, page 169).

The report indicates that the British Code fails in the following points: 1) The possibility of a "progressive collapse" is not taken into account; 2) There is no code of practice relating specifically to the large panel type of construction used at Ronan Point; 3) No account is taken of recent research which shows that wind forces might be greater than the code envisages; 4) Fire regulations, while taking into account the effect of fire on individual components, do not deal with its effect on the structure as a whole. The report recommends all buildings in Britain over six stories high should be checked out thoroughly by a structural engineer.

Army creates a new center for construction research

At the University of Illinois, the Army Corps of Engineers is creating a new Construction Engineering Research Laboratory (CERL). When in full operation, CERL is expected to be the Federal government's most advanced center for construction research.

The Building Research Board of the National Academy of Sciences recommended the Corps use systems engineering and technological forecasting to determine what research will be needed in the future, as well as what will be economically and socially feasible. When fully staffed, the new lab will employ about 260 people.

One area expected to benefit is industrialized building. CERL will participate in time-and-motion studies and cost analysis for an experimental housing project at George A.F.B., California, and currently is working with NASA on pre-engineered buildings and industrialized-building research at Huntsville, Alabama.

Urban decentralization urged in regional plan

A plan "to revive cities, to resume the building of suburbs—which have not been built for a decade—and to give everyone in the New York region a choice between city and suburban living" has been issued by the Regional Plan Association as *The Second Regional Plan—A Draft for Discussion.*

The plan proposes policies to guide the growth of New York City and the surrounding 12,000 square miles to the year 2000. "Everyone recognizes that the quality of life in the older cities has declined so that there are few city areas where people really want to live," said C. McKim Norton, president of Regional Plan Association. "What has escaped observers is that no real suburbs have been built in the area for 10 or 15 years."

The plan is a guide to changing these trends. It calls for two dozen real city centers throughout the Region with metropolitan communities forming around them.

Residential areas would cluster around these new, large city centers, but with varying densities. Large apartments would be right in the centers. The report estimates that 43 per cent of the housing units added between 1965 and 2000 should be apartments. Most of the new metropolitan centers would be on present downtown sites of small outlying market towns.

Andrew Russell photo

Architect Julian Levi is shown celebrating his 94th birthday at the Architectural League. With Mr. Levi, left in photo, is Clarence Stein.

Architect: Walton & Madden, Riverdale, Md.
Screen erected by: Acme Iron Works, Inc., Washington, D.C.

BORDEN DECOR PANEL AS BUILDING FACADES

Shown above is Deca-Grid style Borden Decor Panel used as a facade for the Pargas, Inc. building in Waldorf, Maryland. Set off by piers of white precast stone, the sturdy aluminum Deca-Grid panels are finished in blue HINAC, Pennsalt's new finish for metals.

This Deca-Grid installation has tilted spacers, a feature called the Slant-Tab variation wherein spacers may be mounted at angles of 30°, 45°, 60° or 90° as desired. The Slant-Tabs may be further altered by use of non-standard angles, or lengthened tabs.

All the Borden Decor Panel styles, including Deca-Grid, Deca-Gril, Deca-Ring and Decor-Plank, are highly versatile in design specification and in application as facades, dividers, grilles, fencing and the refacing of existing buildings. In standard or custom designs, Borden Decor Panels provide a handsome, flexible, maintenance-free building component.

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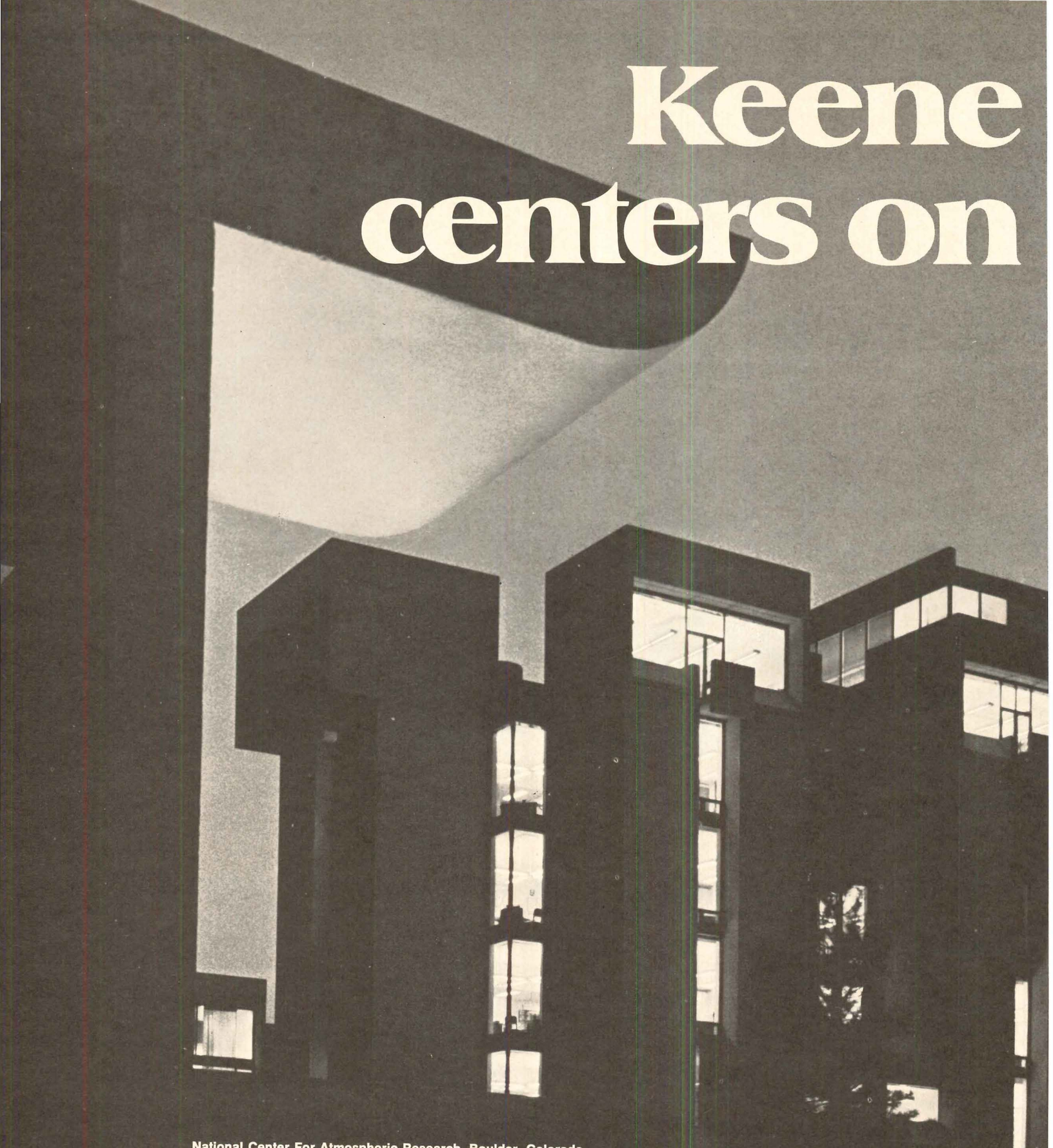
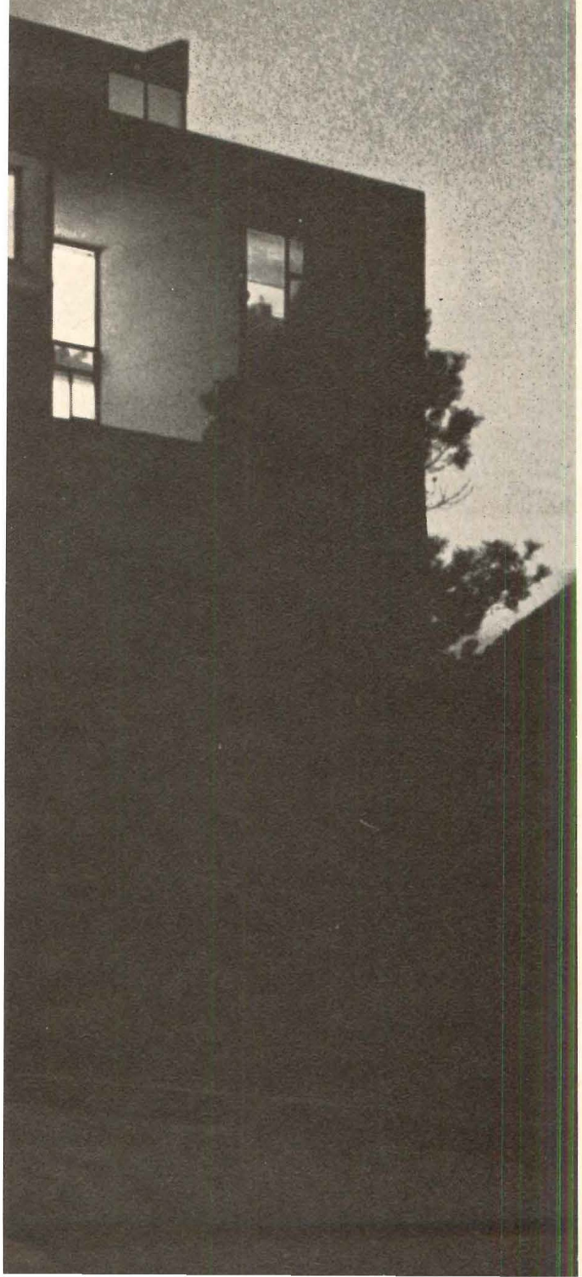
Keene centers on



National Center For Atmospheric Research, Boulder, Colorado. Architects: I. M. Pei & Partners—James P. Morris, Richards Mixon and Robert Lym (interiors), associates-in-charge; structural engineers: Weiskopf and Pickworth; mechanical engineers: Jaros, Baum & Bolles; general contractor: Martin K. Eby Construction Company, Inc.



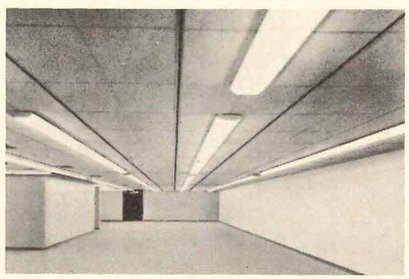
awareness light esthetics.

Combining esthetics with production engineering often results in a compromise that looks it. Not so with the fluorescent fixtures designed by I. M. Pei Associates and made by our Lighting Division for the National Center for Atmospheric Research, Boulder, Colo.

Here pendant and recessed units are unobtrusive, becoming an integral part of the halls, meeting rooms and library they illuminate. Yet the pendant fixture is simple and versatile enough to become a design element itself when combined as a light cruciform.

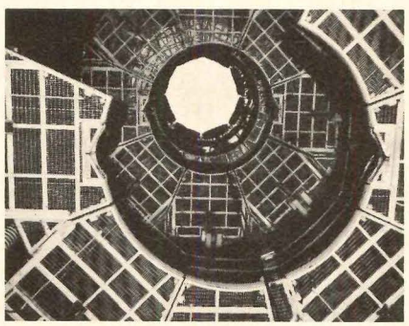
Our Lighting Division (selected over three other companies) met all the architects' specifications, delivered on time, and, importantly, within cost.

Being able to produce and deliver products that architects can use in their designs, is a Keene characteristic. Our ventilating ceiling systems are a case in point. At the Hughes Aircraft Company in Fullerton, California, more than 180,000 square feet of ceiling remain free of obstructions



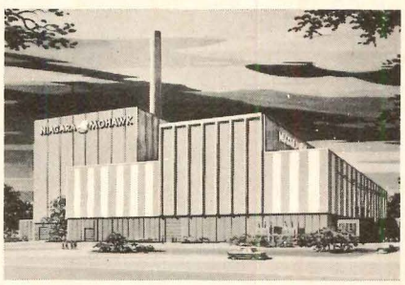
and conventional air diffusers. Our vent splines were used since they eliminated almost all branch duct work, yet provided 2½ cfm of air at almost 30 fpm without draft.

Though architects have used our decorative mesh for beauty as well as for the practical purpose of light and air diffusion, as in the New York Life



Building, few know that our knowledge of lightweight structures was applied to the construction of Titan missile silos. In these, accurate fabrication of the swingable grating platforms was essential to the smooth working of this massive assembly.

Our ability with things moveable becomes apparent in the 75 swinging doors and 11 sliding ones on the Nine Mile Nuclear Station in Ontario. And



in the new Merchandise Mart in Charlotte, N. C. where our Penwall moveable partitions provide versatility as well as beauty through a variety of paneling materials.

Obviously Keene thrives on being part of what architectural designers and engineers want to do. For more information on Lighting and a Catalog of Keene Building Products, write Dept. A-1, Keene Lighting Div., (formerly Sechrist Mfg. Co.), 4990 Acoma St., Denver, Colo. 80216.

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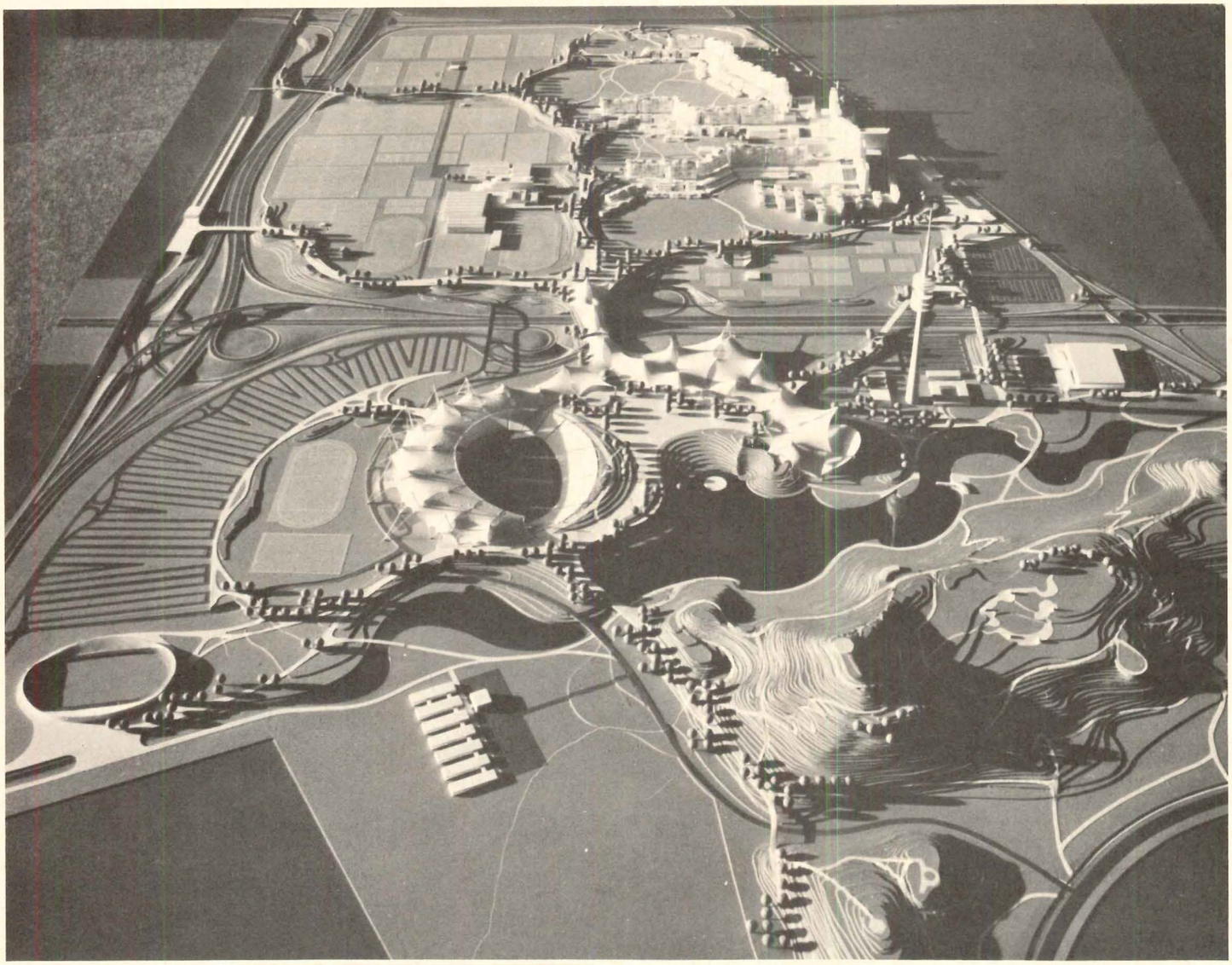


The 1972 Winter Olympic Grounds on the Oberwiesenfeld, 28-million square feet of land about two miles from Munich, Germany, are being prepared to accept some 90,000 people daily. A group of Stuttgart architects, Behnisch and Partners, were the unanimous winners of a nationwide competition to plan the Olympic area, which abounds in lakes, hills and mountains.

About 660,000 square feet of tent roof will unite all Olympic competition facilities — stadium, indoor sports hall, competition swimming pool and access roads — whether they are located at the foot of a hill or by a lake.

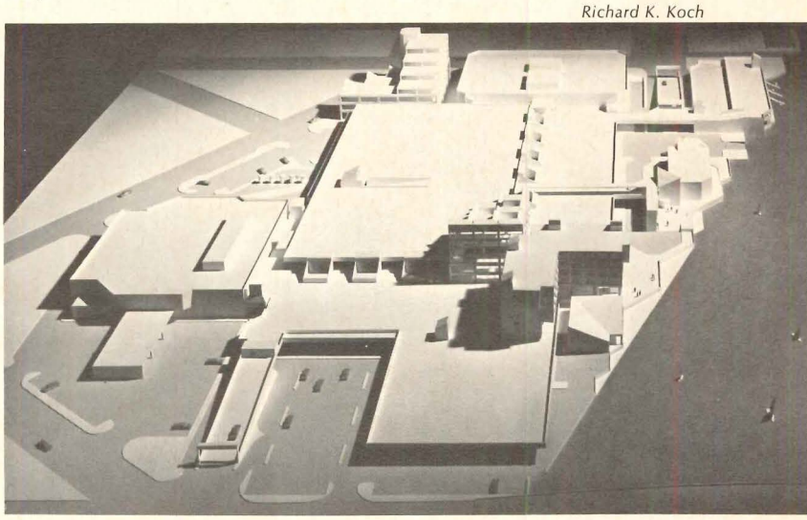
The signpost of the Grounds will be the needle-like 928-foot television tower (to the right of the tent in the photo) which is now being called the Olympic Tower, and which has a revolving restaurant.

The Olympic Village (separate for men and women and top in photo) will house some eight thousand active contestants, plus about 2,500 trainers, coaches and officials, with not more than two persons sharing a room. This small city will have sufficient training facilities, in addition to parks, cinemas, theaters, supermarkets, saunas, libraries, a minigolf course, automatic game facilities, entertainment rooms, a post office, dance halls, souvenir shops and a church open to all denominations. Transport links will be optimal within the Oberwiesenfeld, and other Olympic locations outside can be reached rapidly.

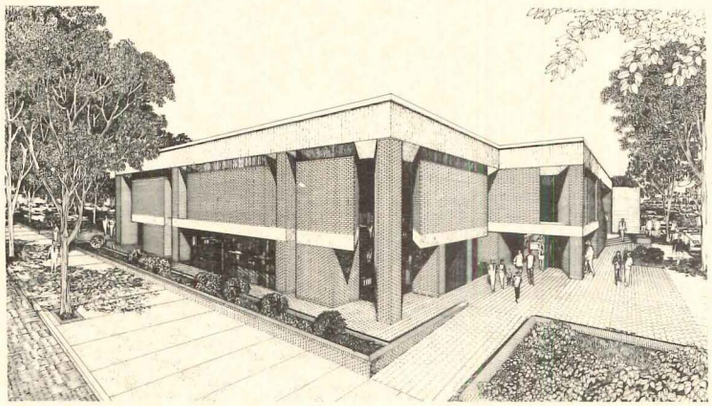
Joseph W. Molitor

Orange County Office Building and Courthouse, Goshen, New York, designed by Paul Rudolph and Peter Barbone, (RECORD, June, 1966) is nearing completion. In keeping with the scale and character of the existing buildings, the height has been restricted to three stories, and the bulk of the building has been subdivided into many small masses. Interior spaces vary in character from the dignity of courtrooms and meeting rooms to the work spaces; this variation on the interior is mirrored in the exterior design.

Richard K. Koch

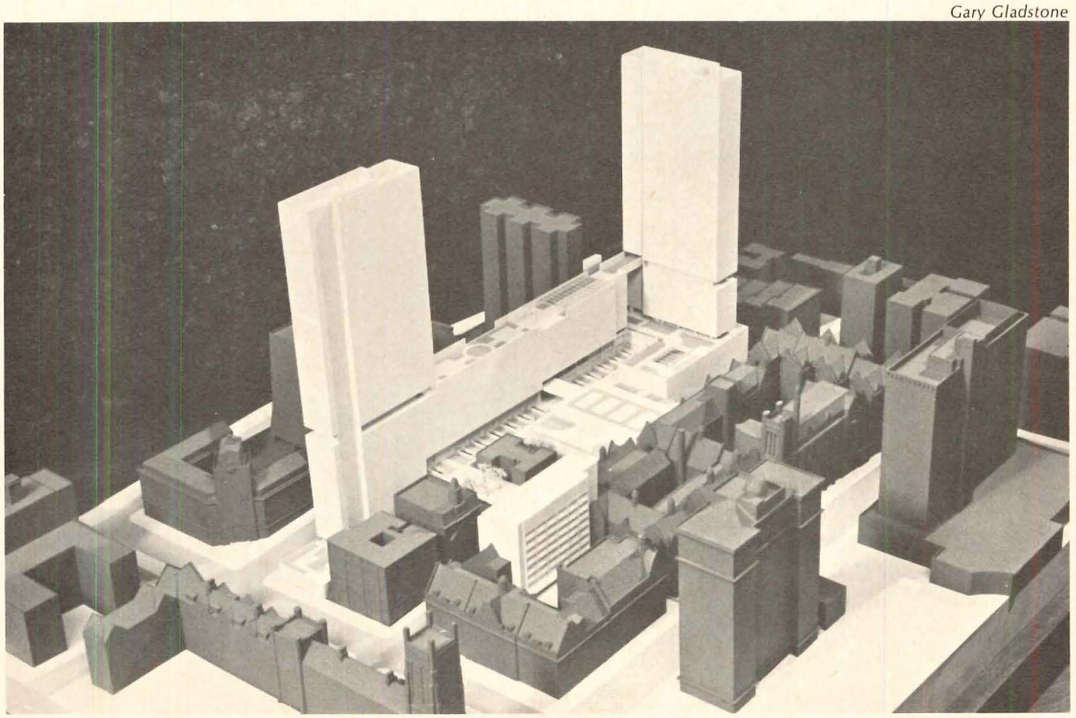


Park Plaza, Oshkosh, Wisconsin, an 18-acre megastructure being built without government subsidy, is designed to revitalize the city's central business district and redevelop its riverfront. Designed by Welton Becket and Associates and developed by the mail order house of Miles Kimball Company, the complex will offer more than 575,000 square feet of space for retail, commercial, cultural and leisure facilities, plus another 495,000 square feet of parking. It will include two department stores, a shopping mall, a hotel and a bank-office tower.



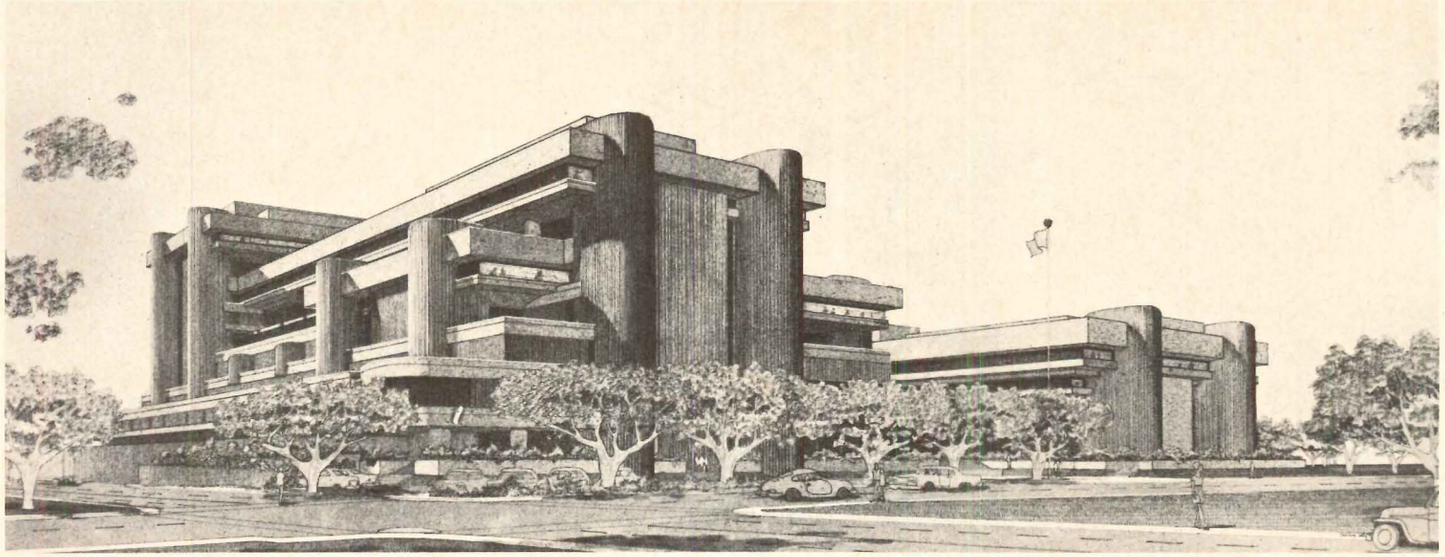
Equitable Savings and Loan Association facility, Long Beach, California, has exterior walls deeply penetrated at 45 degree angles to form a series of openings two stories high. Daniel L. Dworsky, F.A.I.A., and Associates designed the building with brick bearing wall construction, massive brick piers, steel girders and integrating board-formed exposed-concrete fascia and lintel beams.

Gary Gladstone

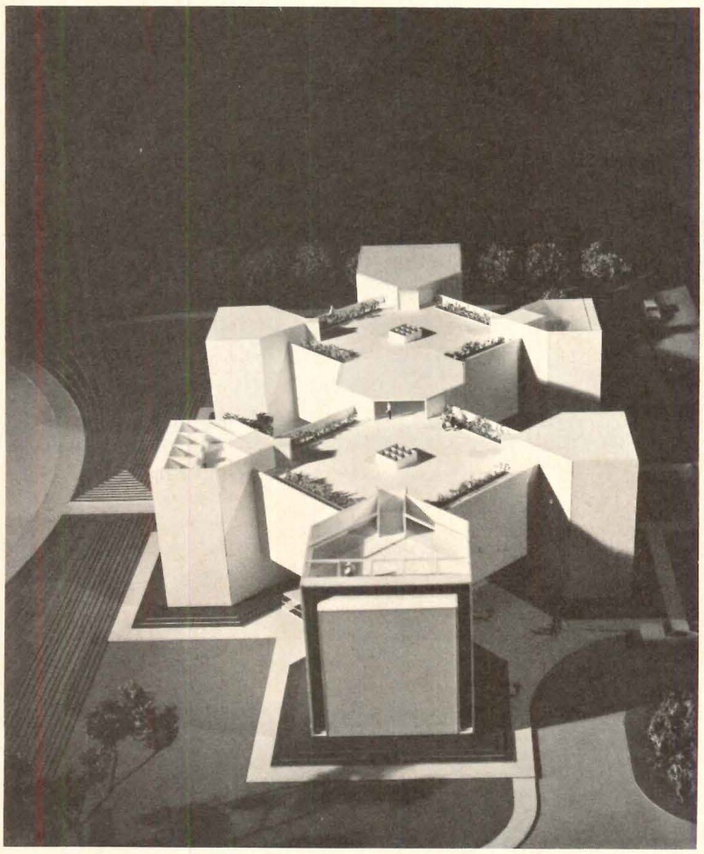


Teachers College, Columbia University, New York City, has announced that a new group of buildings will include a 40-story tower to house low-income families along with graduate students and faculty. The $60-million new campus, designed by Hugh Stubbins and Associates, will more than double the academic space of the largest graduate school of education in the world.

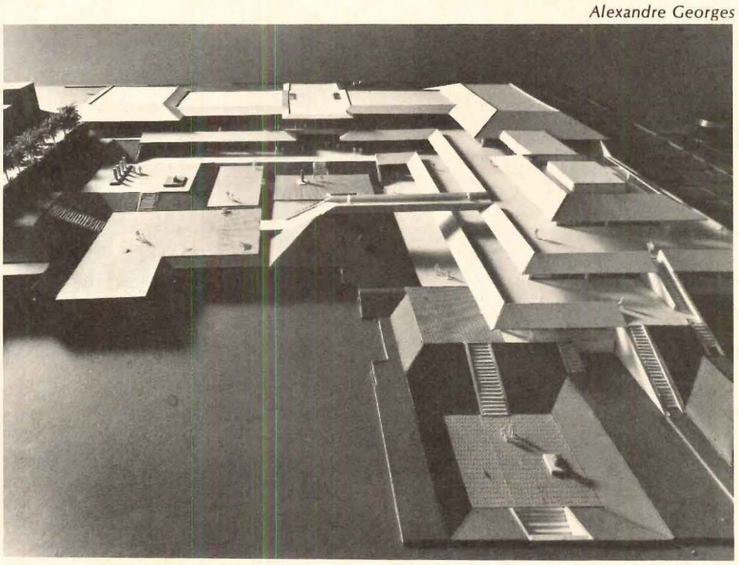
Camera Hawaii



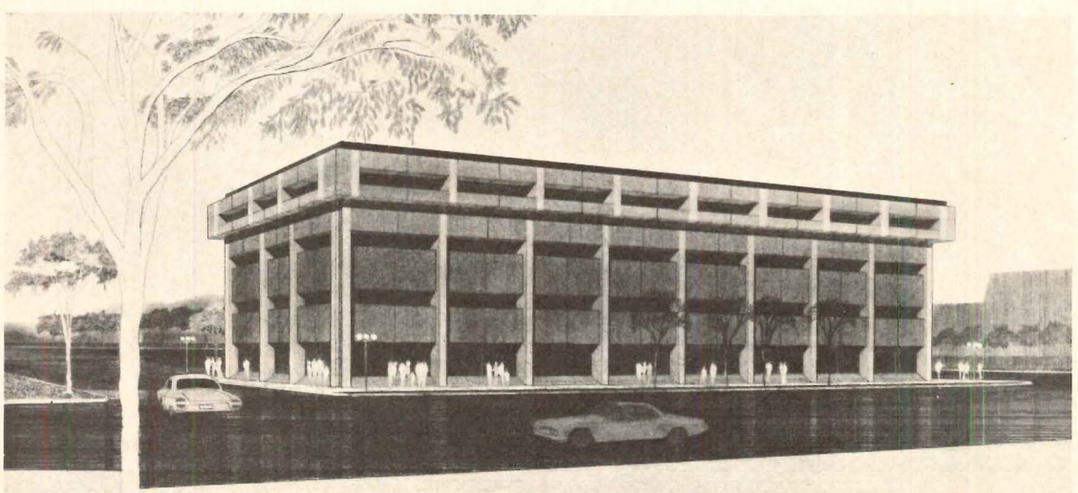
A Federal Building complex in downtown Honolulu will use concrete materials made from local coral sand and coral aggregate. The $20-million complex will house the Post Office on four floors beneath five floors of office space for the various agencies. The Courts will be in another four-story structure. Architects Belt, Lemmon and Lo used oval-shaped masonry towers for stairways and restrooms.



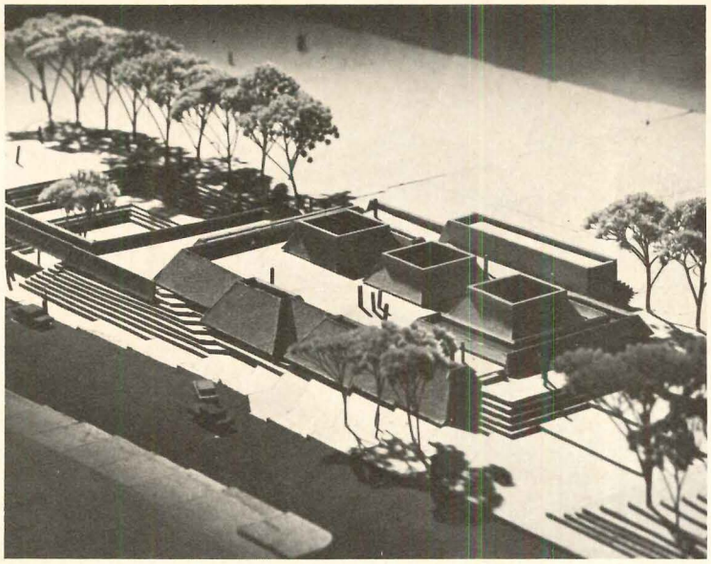
Alexandre Georges



Two museums in Florida have been designed by architect William Morgan. In the Jacksonville Children's Museum (left) the bold towers off the central exhibition areas will include the planetarium, art, sciences, and service areas. The Florida State Museum (above) will have a series of terraces with display windows to serve as a directory. Facilities will include an experimental classroom and projection room.

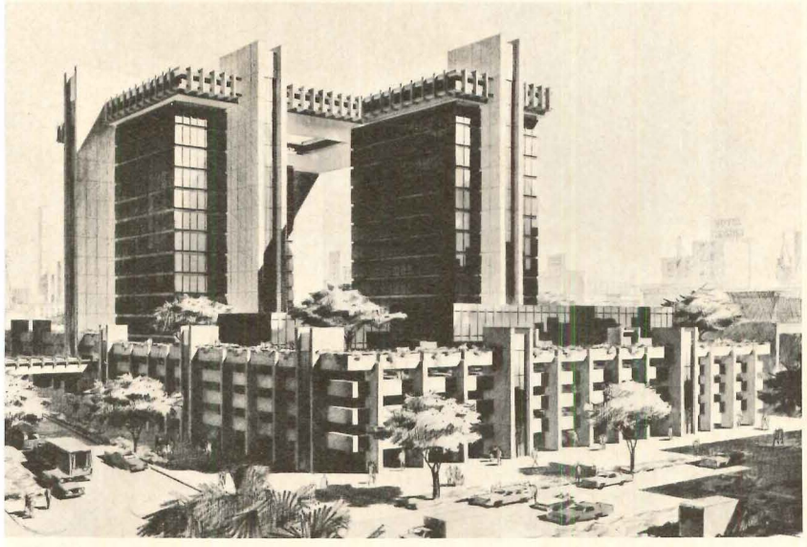


IBM office building, San Diego, California adjoins a freeway, and says architect Leroy B. Miller, "recognizing that the building would be viewed from a distance by people traveling at high speeds, the exterior was designed to consist of large scale elements in a rather simple pattern." The exterior is an extension of the poured-in-place concrete structural frame, and varying degrees of sandblasting will articulate columns and spandrels.



Garfield Pool for the City of Seattle Department of Parks is depressed into the sloping ground so that the roof, which is only a little above the adjacent playfield, will be a terrace for games and sitting and a walkway to surrounding areas. Outside the concrete building, designed by John Morse and Associates, will be an entrance court shaped like a small amphitheater and a wading pool for children.

Leonard Frank



Park City Plaza, an office complex in Bridgeport, Connecticut, will have three 12-story towers, joined by a common penthouse, and two smaller office buildings. Victor H. Bisharat designed the $20-million complex to be built on a landscaped plaza atop a four-story, 1,500-vehicle garage.

The MacMillan Bloedel Building, Vancouver, British Columbia, has over 1,000 windows, each, because of the high ceilings, covering an area of 49 square feet. The windows are recessed four feet on all sides to reduce exposure to direct sunlight, and will have gray-tinted, heat-absorbing glass on the upper floors and gray polished plate on the ground floors. Architects: Ericson-Massey/Francis Donaldson.

Richmond Coliseum, Richmond, Virginia, a nearly circular elipse, has been designed by Vincent G. Kling and Associates with the arena floor below grade to keep the building in the small scale of the city. The exterior will be Virginia brick with the 32 vertical piers, which are arranged radially, serving both as support for the roof and as primary support for the grandstands. Glass between the piers will allow the passerby a view of the interior activity.

Another shopping center finds that making it's own

Waukesha Gas Energy Systems produce electricity for lighting, heating and cooling.

Building a big shopping center can easily give you some big headaches. Especially when you begin thinking of utility costs for lighting, heating and cooling.

That's why the owners of Turfland Mall in Lexington, Kentucky, chose a Waukesha Gas Total Energy system.

How does a Gas Total Energy System work? Gas-fired Waukesha Enginators®* provide all of the electricity the shopping center needs. In the process, huge amounts of engine heat are produced. But this heat doesn't go to waste. Because in a Gas Total Energy system it's recovered and used. For heating, cooling, and hot water. *Waukesha's factory-tested family of engine-generators.

electricity is the best buy.

This thermal efficiency is the reason a Gas Total Energy system is so economical. In fact, installations of this kind can be more than twice as efficient as today's best steam electric generating stations.

And with a Waukesha Gas Total Energy system, area power failures are not a problem. Because all the power is dependably produced on the site. Not from a distant source.

So even if the lights go out for everyone else, this shopping center and its customers are never affected.

Economical Gas Total Energy systems are working in schools, buildings, shopping centers, and plants around the country. Can it work for you? Find out from your Waukesha representative. Or the local Gas Company Sales Engineer. There's no reason why you can't get in on a good buy, too. • AMERICAN GAS ASSOCIATION, INC.

For all your energy needs, Gas makes the big difference.

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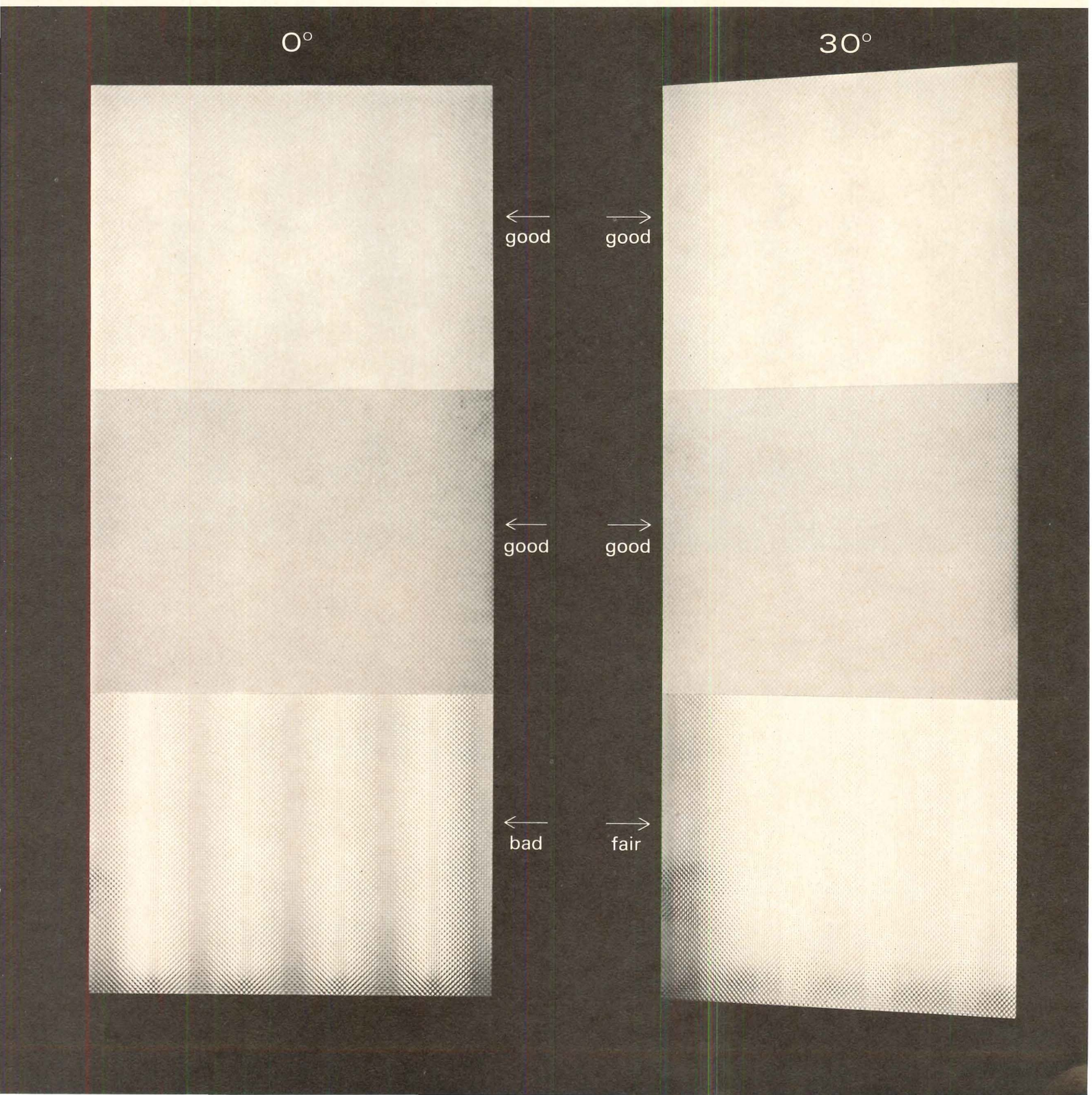
NOW! FOR THE FIRST TIME–

Control reflected glare

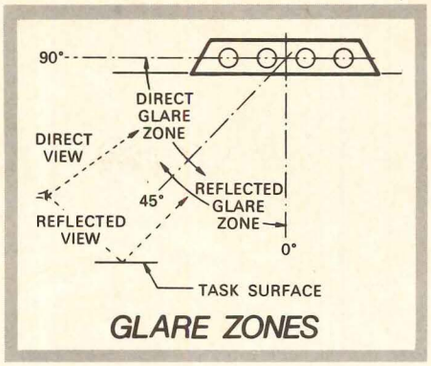


Until now — the big emphasis in lighting has been on *high footcandles and control of direct glare.*

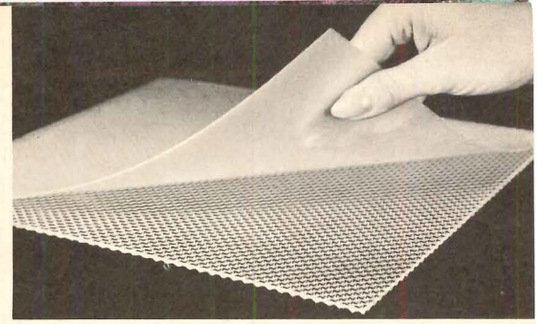
Now — research has shown the importance of emphasizing *visual efficiency and control of reflected glare.*

Note: Reflected glare occurs in two forms: (1) veiling reflections with the task or (2) annoying reflections adjacent to the task.

K-16 is the first panel designed to put this new thinking into your lighting plans.



GLARE ZONES

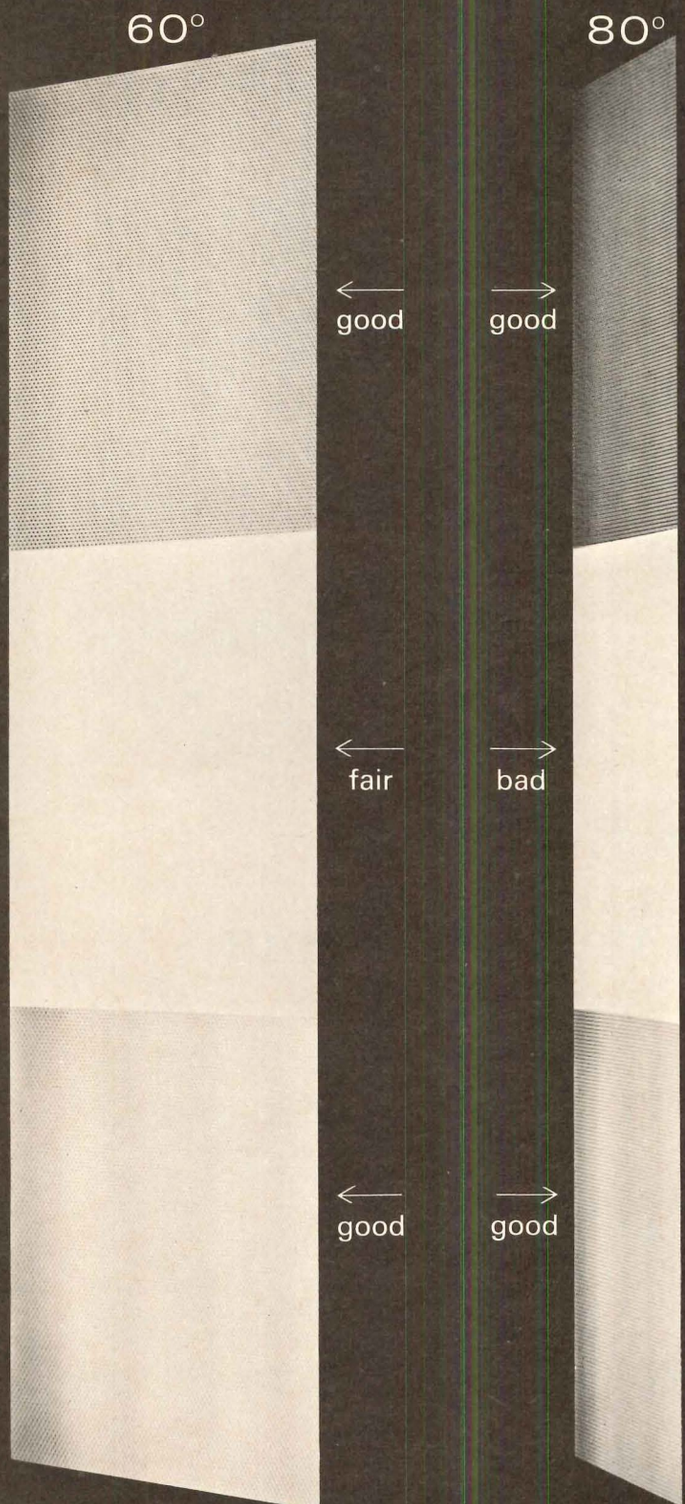


K-16 is a composite panel. A thin sheet of acrylic on top of a high-quality KSH prismatic panel. The edges are sealed together to make it moisture-proof.

For more data, circle 30 on inquiry card

K-16* by K-S-H – a new generation of prismatics

*Patents Pending



The New K-16 prismatic panel
is the first lighting panel that controls both reflected and direct glare at all angles. It's also a "no show" panel — provides lamp-hiding power equal to an opal panel. And K-16 still maintains high efficiency and full prismatic control.

The white opal panel
hides the lamps. But as the viewing angle becomes greater it becomes very bright and produces harsh direct glare. Efficiency of this panel is low.

Prismatic panel
shows lamps clearly from directly below. It produces reflected or veiling glare at the working surface. This is the basic problem with ALL prismatics except the new K-16!

K-LITE®

WRITE FOR K-16 BROCHURE NO. KI-444

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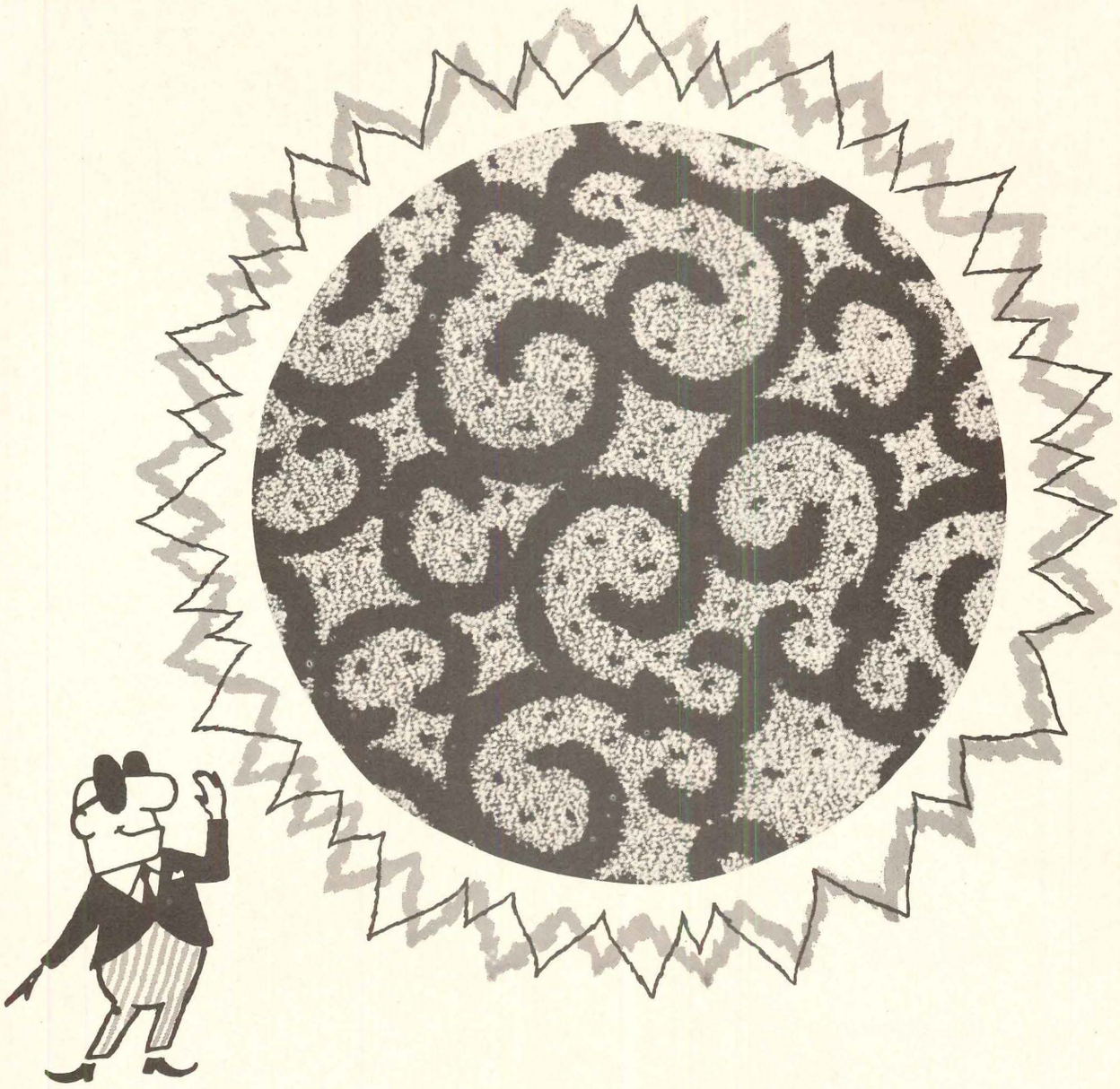

Contract carpet does not have to be dull Example: take HARDWICK'S Escoral 100% Acrilan® Acrylic Pile CARPET

"Escoral", 100% Acrilan® acrylic pile Wilton features a Spanish grillwork design over a richly woven moresque ground.

Presented as the first print in Hardwick's Mediterranean collection, Escoral captures the feeling of old world Spanish influence. The moresque which gives a three-dimensional shading to its background color is tightly packed to add distinctive elegance and durability!

Available in a choice of Maderia red, Espanol blue, Spanish gold and Vineyard green, all with black grillwork. In stock in 12 foot widths.

ACRILAN® acrylic fiber by Monsanto

Write for free color literature on Hardwick's in stock contract carpet lines.

HARDWICK & MAGEE COMPANY . . . *the compact mill*

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808

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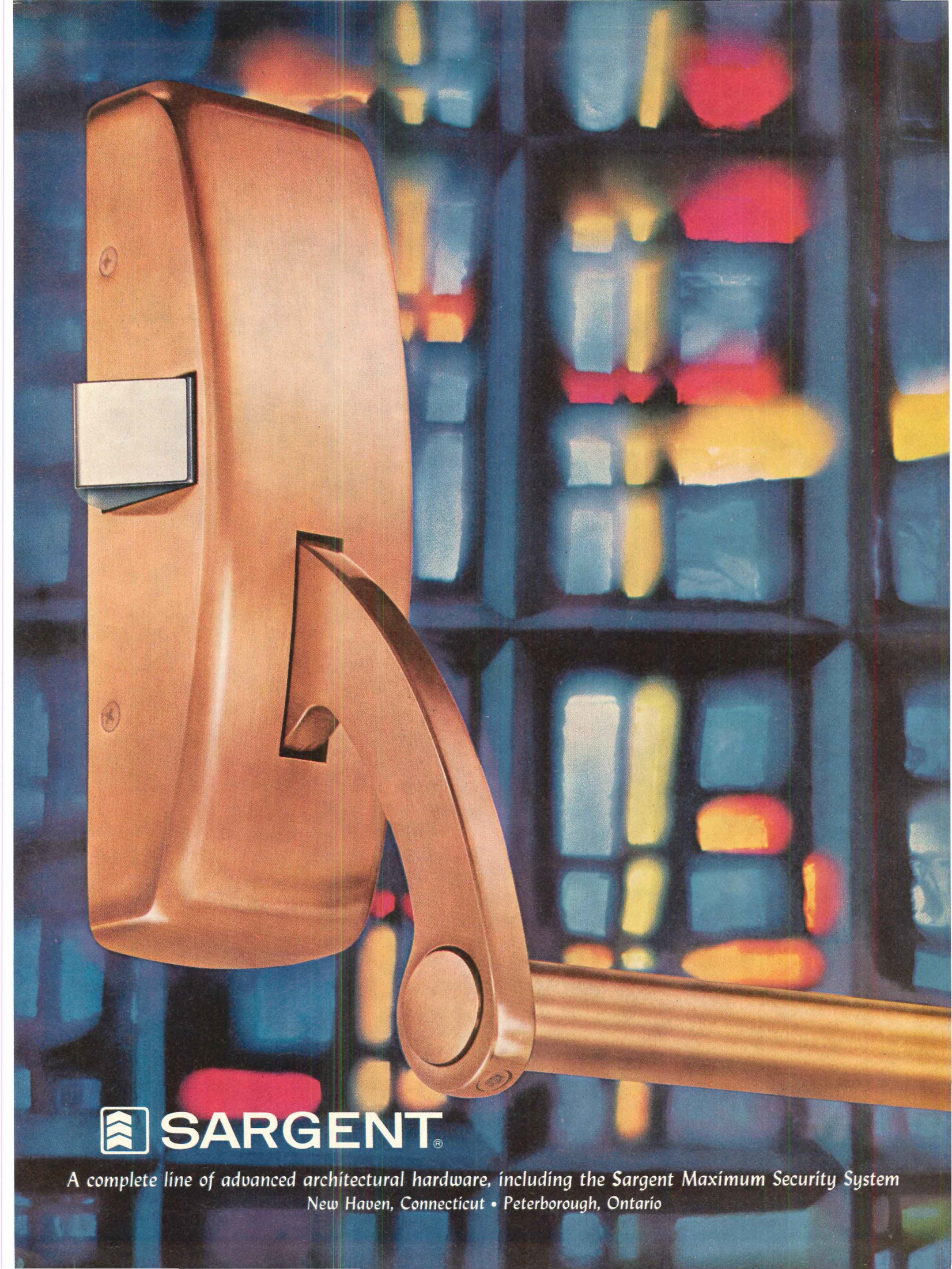
For more data, circle 35 on inquiry card ➧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Architect: Andonian and Ruzsa
Builder: Skyline Builders

The shangle

One picture is worth a thousand words. Beauty, grace, charm, durability. You could go on and on without ever touching upon enough words to fully describe the new Hallmark shingle. It's indescribable.

In the first place, it really isn't a shingle. It's thicker, heavier and more deeply sculptured than any shingle you've ever seen.

And, although many architects insist that it looks like a fine hand-split wood shake, it isn't. It's fire safe and won't rot, warp, shrink or split. It's truly a new concept in roofing. It combines the deep sculptured beauty of a shake and the long life of a high quality asphalt shingle. That's why many people call it "The shangle."

We'd like to show you, with pictures, what words can't, how Hallmark's deep sculptured beauty in bronzed brown, pewter grey and golden tan, can add an extra dimension to homes and apartments with mansard type roofs. Certainteed Products Corporation, AA2, Ardmore, Pa. 19003.

CERTAINTEED

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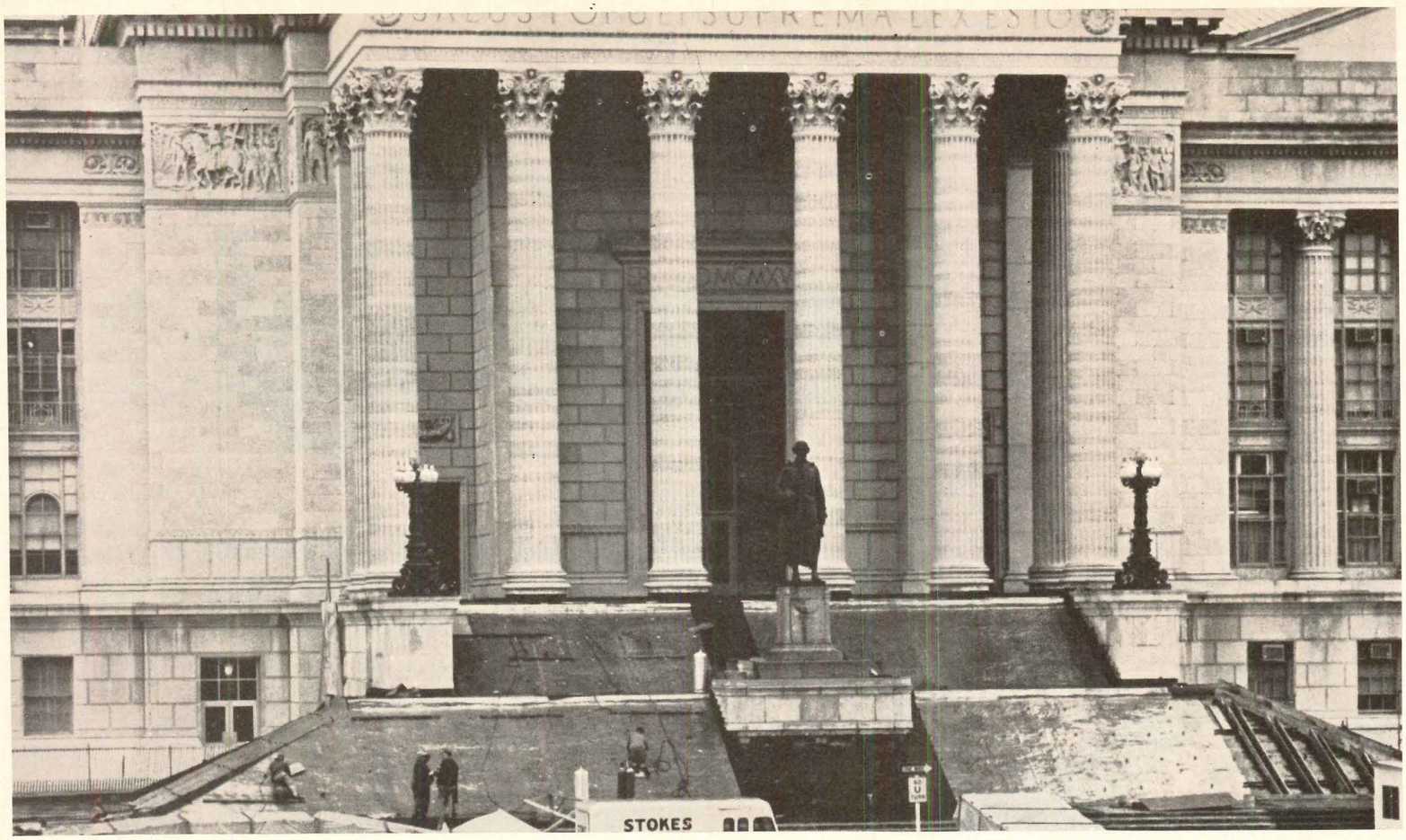

Architect: Bernard McMahon, Clayton, Mo. selected by the Missouri State Board of Public Buildings—Gov. Warren E. Hearnes, Chairman, Lt. Gov. Thomas F. Eagleton, Secty., Attny. Gen. Norman H. Anderson, Member, under direction of Div. of Planning and Construction, John D. Paulus, Jr., A.I.A., Director. General Contractor: E. G. Linhardt Constr. Co., Jefferson City, Mo. Lead Sub-Contractor: Larry Goad & Co., St. Louis.

Missouri Capitolizes on Lead

The State Capitol Building in Jefferson City, Missouri has gained 14,000 square feet of understairs office and storage space by waterproofing with lead. In restoring the promenade and staircases around this impressive building, the architects specified a sheet lead membrane to insure watertight integrity.

Eight-pound antimonial lead sheet (⅛" thick) is used on the building approaches from the street level to the portico column line. The concrete substrate was painted with a bituminous coating compound before the lead was laid. All joints are burned. Existing dowels will support new stringers which are being poured directly on top of the lead sheeting. Carthage marble treads and risers will rest on these stringers after placement of a mortar setting bed.

Flexible workability, ease of handling and durability make lead ideal for this job. Find out how you can put lead to work for you. Write for technical literature.

Lead Industries Association, Inc. Dept. L-1, 292 Madison Ave., New York, N.Y. 10017.

Lead Industries Association, Inc.

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Kern Plaza, El Paso, Texas *Architects: Fouts, Langford and Associates, El Paso, Texas*

Create an oasis with PLEXIGLAS®

A tranquil oasis for weary shoppers was created practically and with economy in this shopping center with a series of transparent domes of PLEXIGLAS acrylic plastic.

A new solar control color of PLEXIGLAS filters the sun's heat and glare from the daylighted area. The bronze PLEXIGLAS used transmits 27% of visible light and filters 65% of total solar energy, providing maximum comfort.

The skylight assembly spans 26′ and is 104′ long. It consists of 104 individual domes, each measuring 4′ by 8′. The light weight and rigidity of PLEXIGLAS plus sound engineering of the frame permit the assembly to be self-supporting.

PLEXIGLAS has year-round resistance to weather, breakage and discoloration. It is an approved safety glazing material.

PLEXIGLAS offers many advantages for daylighting any type of building. For more ideas and data on PLEXIGLAS, send for our brochure, "Transparent PLEXIGLAS Solar Control Series".

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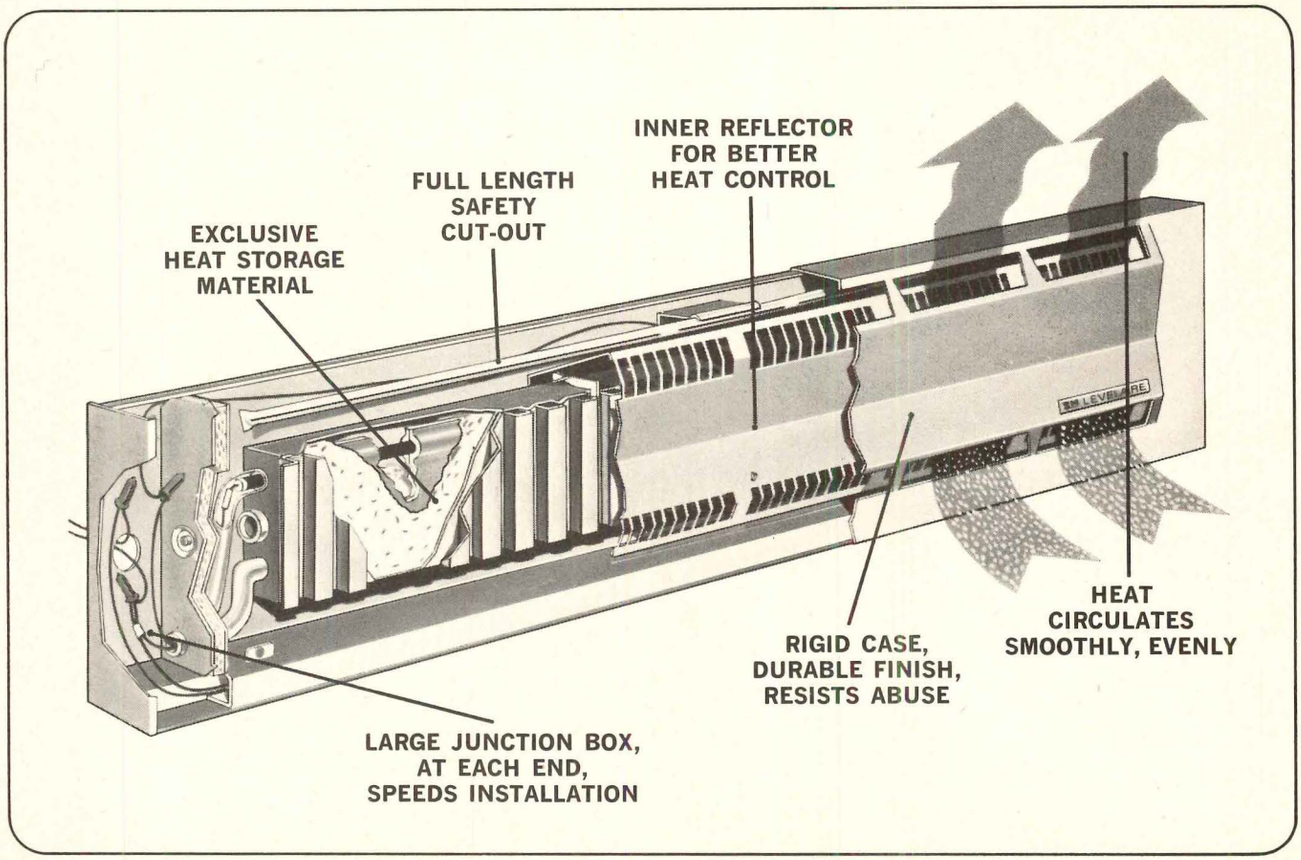
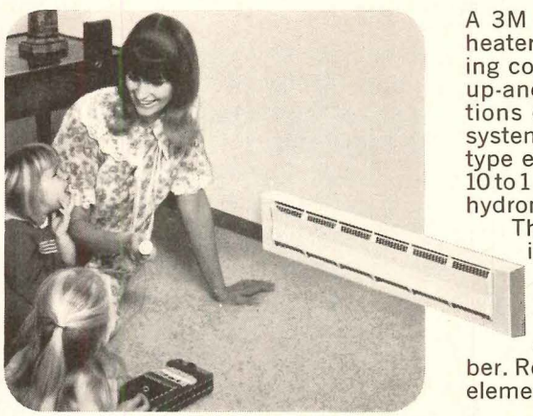
New concept in heating comfort



Now 3M Brand Levelaire Electric Baseboard Heating delivers balanced heat without water at low cost.



A 3M Brand Levelaire Baseboard heater provides the ultimate in heating comfort. Eliminates the erratic up-and-down temperature fluctuations common with most heating systems. Outperforms conventional type electric baseboards by almost 10 to 1 . . . outperforms self-contained hydronic units by nearly 2 to 1.

The secret: the heating element in a 3M Levelaire is surrounded by a unique and exclusive solid-state material developed by 3M. This material acts as a heat storage chamber. Retains heat during the heating element's On cycle. Emits the heat at a relatively constant rate during the element's Off cycle. The result of this self-modulating action is the elimination of rapidly changing highs and lows in the temperature cycle and the assurance of a steady, even, comfortable level of heat.

3M Levelaire Baseboards are far more simple and economical to install than hydronic systems. Provide an ideal heating system for new homes. Make converting older homes to the modern benefits of electric heat an easy task.

For complete facts, write: 3M Company, 220-5W, 3M Center, St. Paul, Minn. 55101.

3M COMPANY

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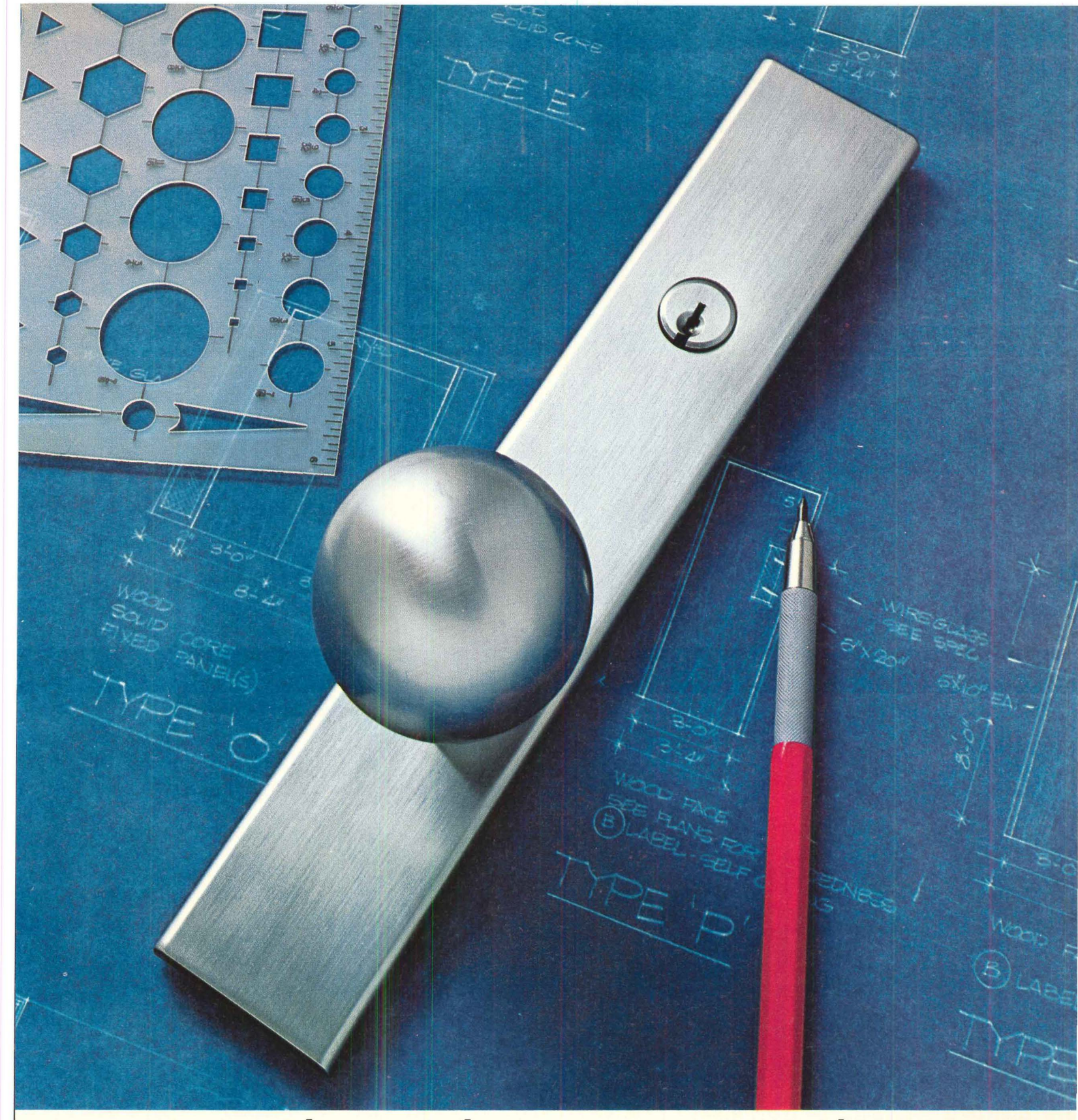

When style is on your mind, put Russwin in your plans.

When you want to combine security with exceptional styling, specify RUSSWIN "Ten Strike" mortise locksets in all desired functions. Available in an exciting choice of metals and color tones. A unique cylinder application enhances style and security. Completely reversible. Creative doorware for schools, offices, hospitals. Write for latest brochure. Russwin, Division of Emhart Corporation, New Britain, Connecticut 06050. In Canada — Russwin Lock Division, Belleville, Ontario.

RUSSWIN®

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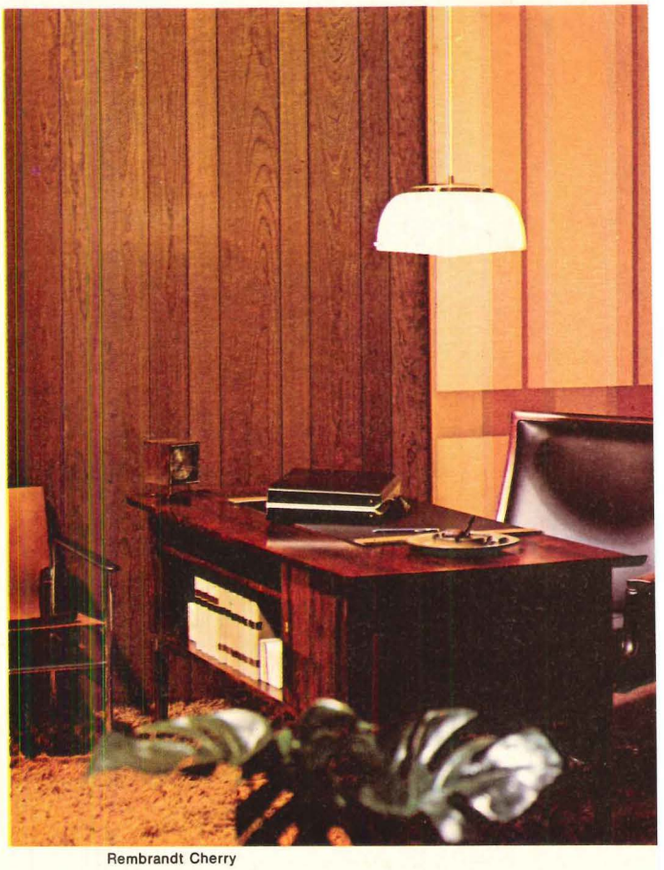
Goya Pecan

Whistler Elm

Longfellow Chestnut



Rembrandt Cherry

Weyerhaeuser Craftwall® paneling now available with a Class I flame spread rating.

The Class I flame spread rating lets you introduce the beauty of fine hardwood paneling in most critical commercial applications. And if Class II is what the codes demand, relax. The U. L. label for flame spread rating in the Class II range is now standard in our Weyerhaeuser Craftwall line.

Internal improvements are just part of the story on new Weyerhaeuser Craftwall. We also have made some sweeping style changes that let you select from a greater variety of species than ever, in 14 color tones and finish treatments.

That's with standard Craftwall.

Custom Craftwall is something else again — a whole new idea in paneling. It's the closest thing yet to architecturally matched hardwood. Now you can order Craftwall with no grooves at all. Or pick regular V-grooving. Or select any of five grooves from 1/4″ to 1″ wide. We can

Audubon Oak (custom grooved)

Van Gogh Paldao (custom grooved)

And you can custom design your own panels.

place the grooves in any combination or spacing arrangement your design scheme calls for.

Your local Weyerhaeuser Architectural Specialty Dealer has products and samples you can examine. In the meantime, we would be glad to provide all the technical details about our new 7/16″ Craftwall line, as well as the latest about our new 1/4″ Forestglo® and Muralwood® lines. Just send us the coupon.

For more data, circle 43 on inquiry card

To: Weyerhaeuser Company
Box B-5665, Tacoma, Wash. 98401

By all means, send me the facts about your new paneling lines.

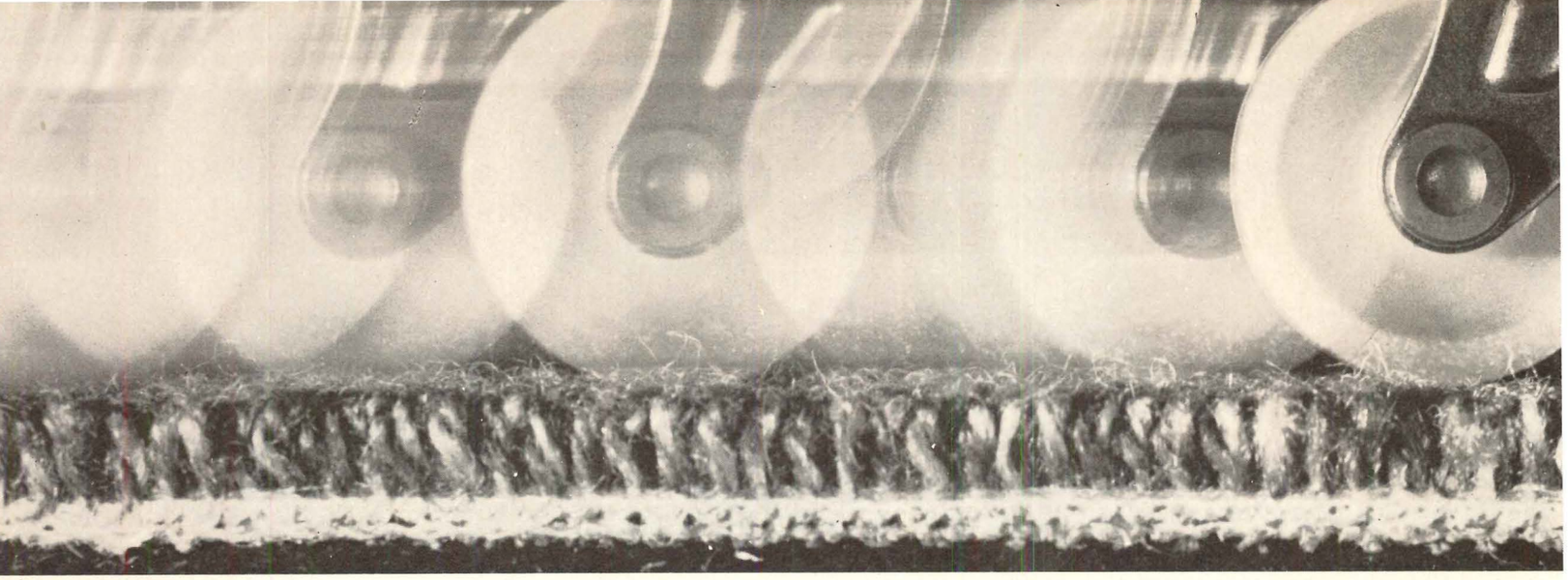
Name_____

Firm_____

Address_____

City_____ State_____ Zip____

Weyerhaeuser



Now wheels roll easily on carpet... if the carpet is backed by Jute!

Direct glue-down installation does it.

Now—specify carpet where you couldn't specify carpet. Glued directly to the floor, double Jute-backed carpet eliminates mushy cushions or pads that bog down conventional wheels and casters. Bonds securely to any floor, to resist shifting and delamination. But will not stick or crumble when removed with solvents.

And the cost is less. Less than foam-backed carpets with equal pile specifications. Less than equivalent carpets, plus separate underlayment. But still gives all the advantages of carpet. Low maintenance cost. Luxury looks. Good sound absorption. High employee morale. Less heat loss in many cases.

Shouldn't *you* be specifying it? Especially since it works so well in all the general office, computer, cafeteria areas (carpeted in the past 2½ years) at Ford Motor Co., Dearborn —and many other demanding installations.

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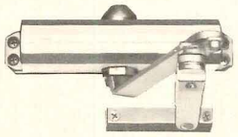
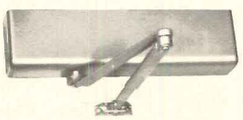
NORTON CLOSERS CONTROL DOORS • NOT DESIGN

Note the clean, crisp entrance design possible with Norton® top-jamb mounted door closers. The rugged construction inherent in these smartly styled surface closers provides the utmost in dependable control. Installations on the top jamb or header bar keeps the closer off the door and out of the opening for an uncluttered appearance.



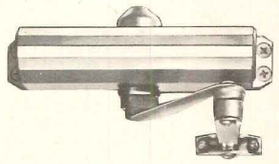
SERIES J6120

Top-jamb mounted Unitrol® controls. A combined door closer and door holder with shock absorber to protect door, frame, and closer.



SERIES J7030

Top-jamb narrow-projection closers with covers in anodized or painted finishes to match hardware or door finish.



SERIES J1600

Top-jamb mounted closers featuring narrow styling to blend with the slim styling of modern aluminum door frames.

CONTACT YOUR NORTON REPRESENTATIVE FOR COMPLETE DETAILS.

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NORTON DOOR CLOSER DIVISION
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Available in Canada–Norton Door Closer Division

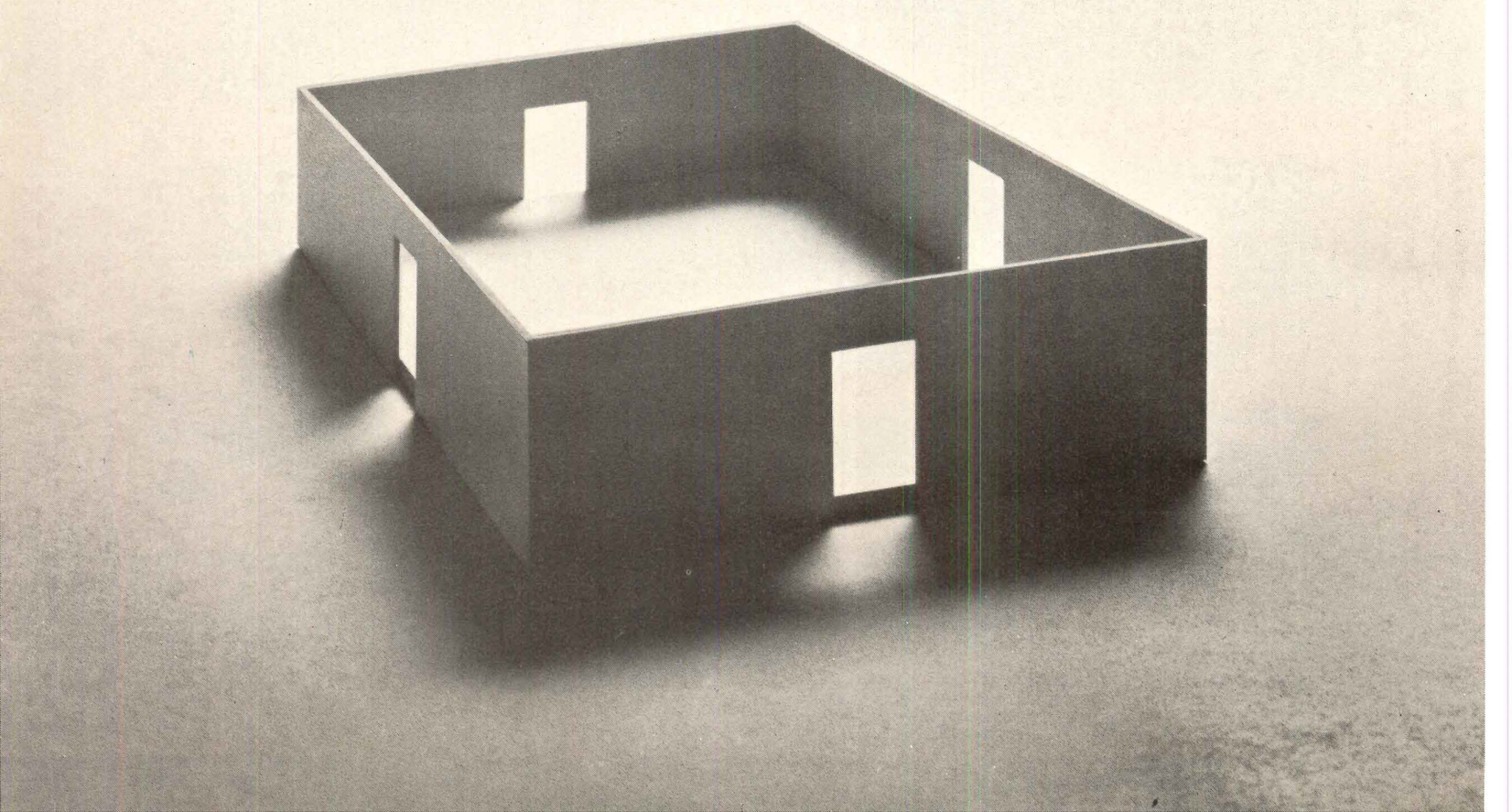
For more data, circle 45 on inquiry card

With sprinklers, you can increase your exit distance.

The permission to extend the distance between exits—if sprinklers are installed throughout—is granted by almost all codes. This can result in less wasted interior space and reduce the size and/or number of stairwells, exitways and doorways.

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

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



Take a few minutes to scan your local building codes for the many specific advantages you can gain when you design-in an "Automatic" Sprinkler system. To help, we have compiled some of the permissive clauses from the four major building codes, and put them into a booklet called, "The Code Book."

For a copy, simply mail your request to Mr. R. L. Pardee, Manager of Marketing Services, "Automatic" Sprinkler Division, Dept. 1068, Box 180, Cleveland, Ohio 44141.

"Automatic" Sprinkler
CORPORATION OF AMERICA

Here are quotations from the four major building codes regarding increased exit distance:

The Uniform Building Code: (SEC. 3302) "No point in an unsprinklered building shall be more than one hundred and fifty feet (150′) from an exterior door, a horizontal exit, exit passageway or an enclosed stairway, measured along the line of travel. In a building equipped with a complete automatic fire-extinguishing system the distance from exits may be increased to two hundred feet (200′)."

The National Building Code: (SEC. 603) "Exit doorways shall be located that the maximum from any point in a floor area, room or space to an exit doorway does not exceed:

75 feet for high hazard occupancies;

100 feet for educational, industrial, institutional, mercantile, residential and storage occupancies;

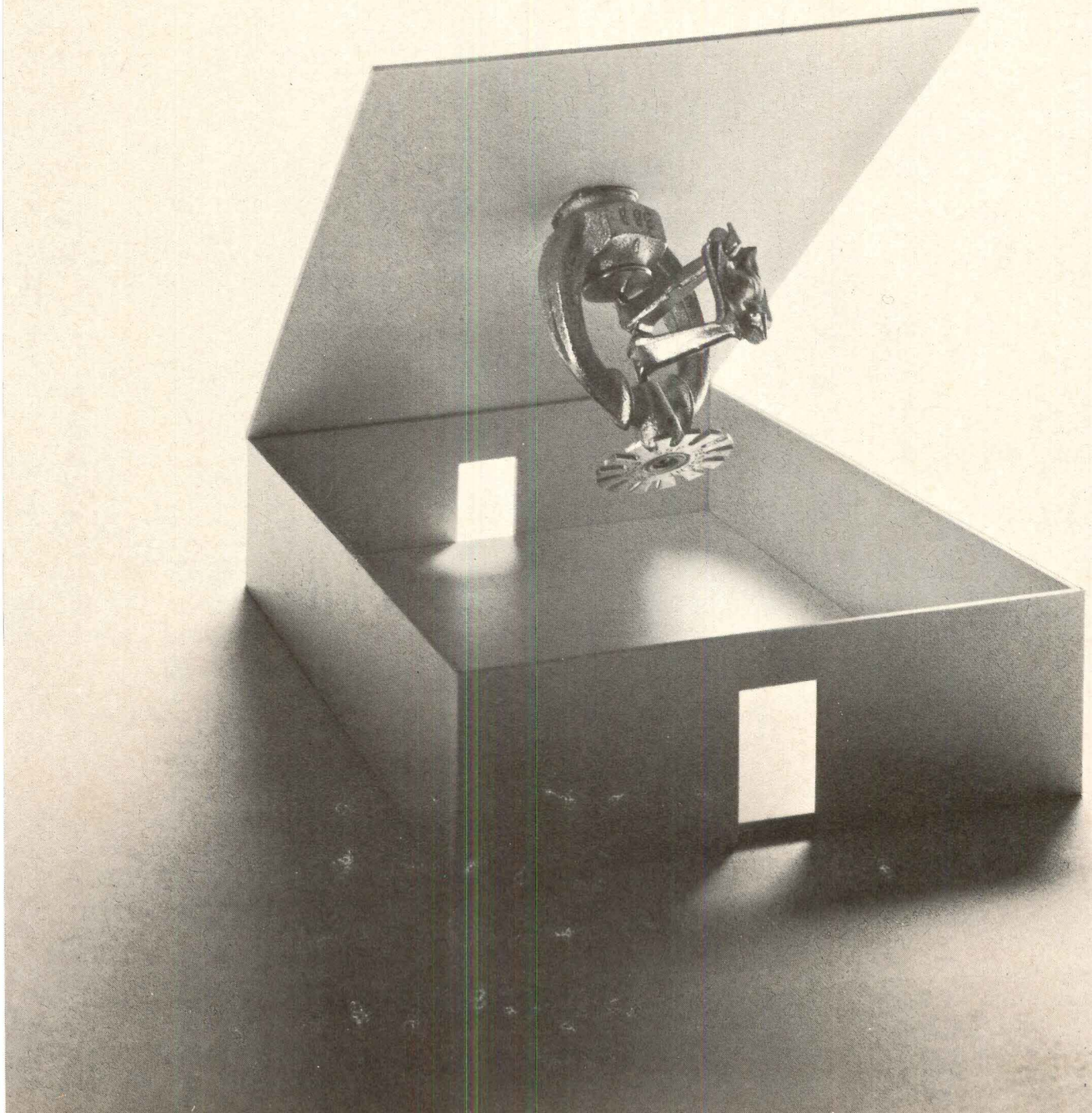
150 feet for assembly and business occupancies.

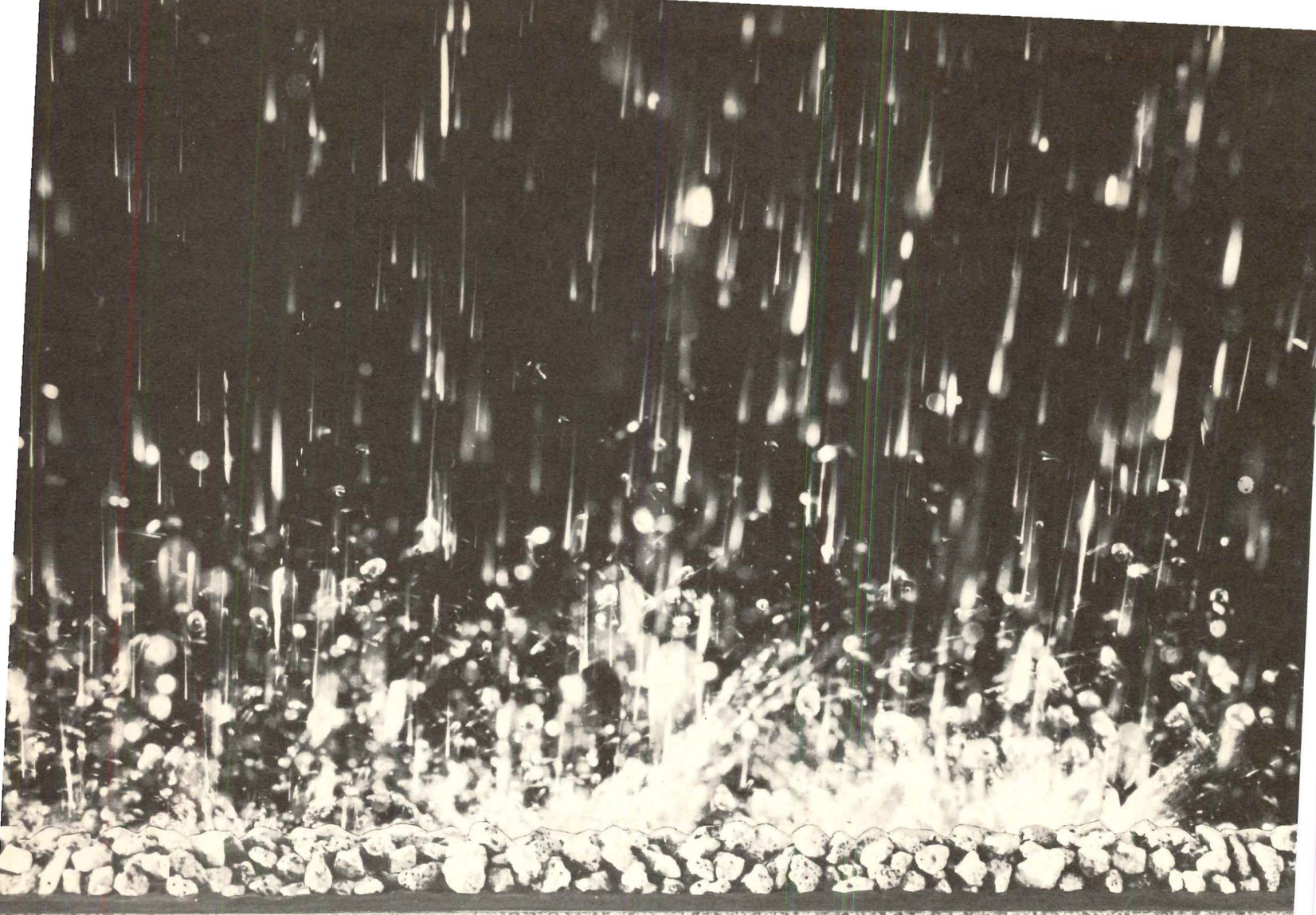
Where the building is sprinklered . . . the above distances to an exit doorway may be increased 50 per cent."

The Southern Standard Building Code: (SEC. 1103.1) "Exits shall be so located that the distance from the most remote point in the floor area, room or space served by them to the nearest exit, measured along the line of travel, shall be no more than specified below, except that where sprinklers are installed throughout a building, maximum distance of travel to an exit may be fifty (50) per cent greater than these tabular values:" (Check code for actual distances).

The Basic Building Code: (SEC. 609.5) "In storage, mercantile and industrial buildings equipped with an approved two-source automatic sprinkler system, the permissible length of travel to the exit may be increased by fifty (50) per cent."

For more data, circle 47 on inquiry card





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For more data, circle 49 on inquiry card

Business predictions for 1969: mixed optimism

Five forecasters of 1969 business conditions vary in degree of cautious optimism, but unite in fear of inflation. A regional construction outlook is on page 71.

▪ **American business plans to spend $69.2-billion** for new plants and equipment in 1969, an eight per cent increase over the $64.3-billion estimated for 1968. This is the major finding of the 15th Fall Survey of Preliminary Plans for Capital Spending, released in November by the Economics Department of McGraw-Hill Publications.

"The strength in capital spending indicated in this survey is widespread," said Douglas Greenwald, chief economist for McGraw-Hill Publications. "Every major manufacturing industry plans to spend more in 1969 than in 1968." Mr. Greenwald pointed out that, as always, the plans reported in the fall survey are preliminary. A change in administration, as well as its economic policies, will have some bearing on the course of capital investment during 1969 and in later years. Plans will also be reviewed depending on the expiration or extension of the tax surcharge next June 30.

▪ **Economist warns of possible slowdown:** At present, monetary policy is so restrictive, a strong downturn in the economy can be expected if it continues. This is the warning given by Dr. Merle T. Welshans, consulting economist of the National Association of Credit Management, in the Association's December Credit and Financial Newsletter. Dr. Welshans believes, however, that the country's fiscal and monetary authorities are not planning to continue their present restrictive policies—and observes that short-term reversals in the movement of the money supply have already prompted Senator William Proxmire (D.-Wis.) to request legislation to force the Federal Reserve authorities to explain to Congress why the money supply is permitted to fall outside a growth range of two to six per cent.

▪ **Non-residential building record forecast.** A seven per cent increase in non-residential construction activity will bring dollar volume to an all-time high of about $31 billion in 1969, a controls-industry executive has predicted. Total volume of commercial, industrial and institutional building will reach about $29 billion in 1969, according to Ralph Crysler, vice president of marketing for Honeywell's Commercial division.

A big chunk of this projected seven per cent increase in dollar volume comes from inflation, Crysler said. Because costs are rocketing every year, industry is turning to new techniques and technologies to help hold the cost line.

▪ **The gross national product will rise** to $915 billion in 1969, up 6.5 per cent over 1968, according to the Prudential Insurance Company's annual economic forecast. The forecast says a slowdown of economic activity is now in progress and will continue for several months. However, the slowdown is not expected to deteriorate into a recession, and Prudential forecasts that economic growth will become more rapid after mid-year. The present slowdown "should be reflected in a gradually diminishing rate of inflation," the forecast says. But this diminution must not lead to complacency, the forecast warns. The rate of inflation "still will be unacceptably high at year-end." More than half of the 1969 gain in GNP will reflect price increases rather than real growth in output of goods and services.

▪ **A facility cost index** computed by Lester B. Knight & Associates on an annual basis is projected to reach a 1969 level of 352.0 representing a 9.9 per cent gain over the 1968 level of 320.10 (1945=100). The increase for 1969 is the third highest increase in any year since 1945.

Unions and employee relations explored at A-E conclave

Architect-engineer employment practices were subjected to close examination in December, when more than 200 professionals in design and land survey work assembled to discuss particular alternatives to unionization of their offices.

The meeting in St. Louis was a follow-up conference to one held a year ago in Chicago where the professionals "faced the union problem," outlining its dimensions and possible effects on their office operations and profits.

Seven organizations have pooled their interests on this subject of office unionization by forming the Joint Committee on Employment Practices. Involved are the American Institute of Architects, American Congress on Surveying & Mapping, American Society of Civil Engineers, Consulting Engineers Council/USA, Council for Photogrammetry, Professional Engineers in Private Practice and National Society of Professional Engineers.

The "how" of the unionizing effort was detailed at the outset by Gary Crites, Illinois Society of Professional Engineers, Springfield. He told of a new approach being taken by union agents which emphasizes status rather than salary. Union members

ARCHITECTURAL BUSINESS THIS MONTH

are pictured as having a better chance of getting their ideas across to management.

Crites said if the professionals do not stay alert, they may find themselves "legislated right into union shops," since "the unions are becoming more and more adept at pressuring the lawmakers."

Throughout the national seminar, delegates were urged to give more time and attention to improving employee relations. This can be done more effectively, it was indicated, by closer communication with subprofessionals and technicians to learn their true problems. Employee benefit programs should be constantly reviewed and improved where warranted, it was said. Matters involving the selection and indoctrination of new employees, delineation of personnel policies, pension plans, sounding boards, advancement, salaries and contractual relations were discussed.

A.I.A. contract document adopted by U.S. Office of Education

The U.S. Office of Education Construction Service will suspend use of its own contract documents and use a new edition of American Institute of Architects Document A201 that differs from the basic version only in requirements which have been added to cover minimum wages, equal employment opportunity, and other conditions the contracting parties must meet under Federal law.

Currently, the Office of Education has about $2 billion a year under construction, mostly on the nation's college and university campuses.

George E. Kassabaum, president of the A.I.A., said that his group and the Associated General Contractors of America have been working with OE on details of the new procedure since last February. He added that the special Federal edition of the document A201 will be made available to all parties interested in OE Federally-assisted construction projects.

"Aside from achieving some apparent savings in time and money," Mr. Kassabaum said, "there is another characteristic of this plan that makes it notable. Our procedural agreement with the Office of Education is so informal, uncomplicated, and devoid of unneeded paperwork that it must be considered a bench-mark for similar agreements to be achieved with other Federal agencies."

The president of A.G.C., Fred W. Mast, pointed out additional advantages of the new procedure. "Combining the OE contractual specifications with a document that has been familiar to the construction industry for many years should certainly provide an incentive for more building contractors to bid on Federally-assisted projects," he commented.

"And, I believe the procedure will eliminate the types of controversy or delays in construction that sometimes developed in the past when there was a lack of familiarity with Government contract specifications," the A.G.C. president said.

The Office of Education administers approximately 50 per cent of the Federally-assisted construction projects within the U.S. Department of Health, Education and Welfare. Other components of the Department are studying the procedure.

Architectural library of catalogs and microfilm on trial at SOM

A comprehensive library of product information, in both the printed page and a microfilm alternative, was installed last month at the New York offices of Skidmore, Owings & Merrill. Developed through the collaboration of Sweet's Construction Catalog Services and SOM, the new system is a working prototype consisting of a general architectural library plus auxiliary libraries serving specialized design functions such as hospital, laboratory and food service facilities. It contains 150,000 pages of printed product information from 1500 major manufacturers of building products and materials. The paper library is organized in 172 binder volumes.

All literature is classified and indexed according to a new system, developed especially for the library and based on a systems approach to design. Maintenance and updating of content will be carried out on a quarterly basis by Sweet's staff of visiting librarians.

The microfilm component allows for automatic push-button search of all microfiche images housed within the viewer/printer, eliminating any direct handling of film and other problems associated with loose microfiche cards.

Coordinators of the project are Joseph D'Amelio, product planning manager of Sweet's, and W. A. Rutes and Harold Rosen, both of Skidmore, Owings & Merrill. After a trial run of undetermined length, the system will be made available to other architectural offices.

Team of experts plans to speed airport development

Kidde Constructors, creator of the "Satell-Air" concept of special-purpose airports and interconnecting ground transportation systems (RECORD, September 1967, page 93), has engaged John Carl Warnecke as a principal member of a new airport development team.

"If we continue to develop airports with existing procedures, we might just as well keep the jumbo jets, air buses and supersonic transports under wraps for another 10 years. It will take at least that long to build the airports we need to handle them."

This warning was issued by Charles E. DeAngelis, vice president of Walter Kidde Constructors, Inc., in announcing the formation of a planning, design and construction team set up to handle the expansion of existing airports and the building of new ones. He emphasized that the team approach can work under open bidding regulations, and owners will be able to deal efficiently with one source.

A. Eugene Kohn, director of the New York office of John Carl Warnecke, said: "We have run out of time. Our airports are 10 to 20 years behind our aircraft, and we have less than two years to catch up before the new, large-capacity planes are on the scene."

Abrams joins national council on health facilities

Charles Abrams, chairman of the Department of City Planning at Columbia University, New York City, was appointed to the National Advisory Council on Health Research Facilities for a term ending June 30, 1971. Mr. Abrams has been the recipient of numerous awards, among them awards from both the New York Chapter and the national body of the American Institute of Architects.

The 12-member council, composed of scientists, scientific administrators, and civic leaders, provides advice to the director of the National Institutes of Health on broad program policies and on grant applications relating to the construction and equipping of health research facilities. The program has awarded 1462 matching grants.

CURRENT TRENDS IN CONSTRUCTION

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

F. W. Dodge 1969 Regional Construction Outlook

This year, for the first time, the McGraw-Hill Information Systems Company has prepared four regional forecasts to supplement the annual construction outlook, which appeared in the October issue of ARCHITECTURAL RECORD.

Regions respond to varying conditions

As the table below indicates, it is diversity rather than similarity in regional trends that results in broad national changes in construction activity. All parts of the country are affected by developments in the money markets, changes in general business conditions, and shifts in government spending programs. But all are not affected equally, and each region has its own special problems and opportunities that help shape its construction market.

Western region spurs residential gains

Take residential construction, for example. Conditions appear to be ripe for the long-awaited housing boom to begin taking off. Easier credit and a backlog of demand extending back to 1966 are expected to generate a 13 per cent increase in contract values for the nation as a whole. Much of this will be concentrated in the *West*, which suffered the sharpest cutback in the mid-Sixties and where renewed vigor in migration trends is creating a rapidly expanding new housing market.

Northeast may decline after utilities surge

The *West* also stands to gain the most from a continued upturn in non-building construction, since a large share of this type is tied closely to trends in housing activity. The *Northeast* is expected to post a small decline in this category, reflecting a return to normal conditions from the high level of utilities contracting in 1968.

Manufacturing construction will recover

A three per cent increase for the nation in manufacturing construction will make up for a small decline in 1968, and mark the continuation of the high level of investment in new factory building that has pushed contract values 70 per cent above the average of the early 1960's. A good bit of next year's outlay is earmarked for replacing obsolete structures and equipment. The *Midwest* and *Northeast*, where much of the older manufacturing capacity is located, stand to benefit the most from this trend, while the other two regions will just hold their own.

Commercial buildings to show over-all gain

A four per cent national increase in commercial contracting hides sharply divergent regional activity. A substantial decline in the *Northeast*, where a spurt in office building inflated 1968 values, will be offset by good gains in other regions, topped by a 15 per cent jump in the *West*. That region is expected to show an upturn in store building, to match its gains in new housing, as well as a sharp gain in office contracting.

Trade center gives Northeast a boost

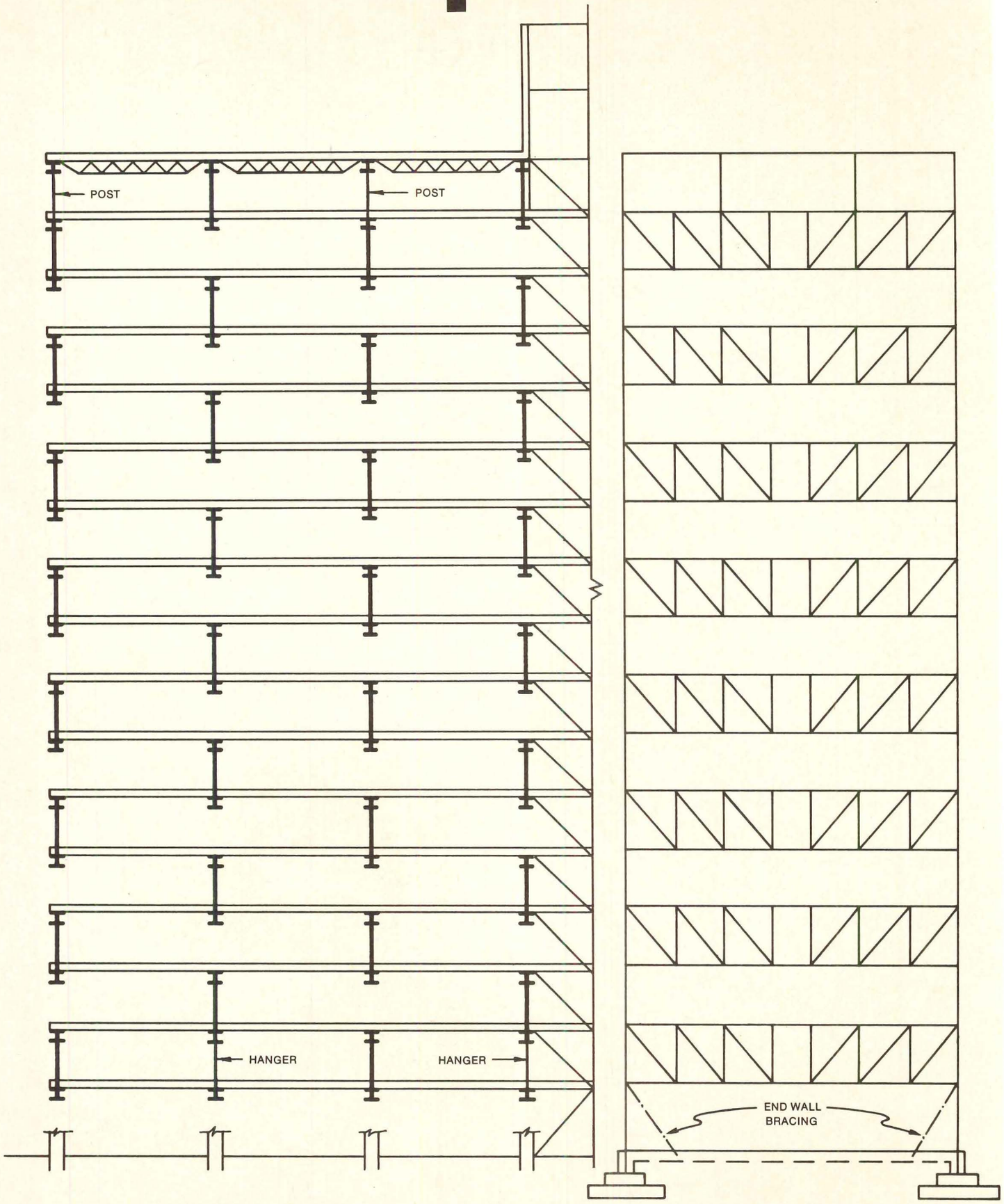
Public building, nationally, will be depressed by cutbacks in Federal spending programs. Contract values in the *Northeast*, however, should more than double, as work gets underway on New York City's mammoth World Trade Center. All of the regions are expected to post good gains in institutional building, as easier credit stimulates construction on postponed projects.

(Detailed forecasts for each region are available from McGraw-Hill Information Systems Company upon request.)

DODGE REGIONAL CONSTRUCTION OUTLOOK FOR 1969

	Northeast		Midwest		South		West	
	Contract Value $ millions	Per Cent Change 1969/1968	Contract Value $ millions	Per Cent Change 1969/1968	Contract Value $ millions	Per Cent Change 1969/1968	Contract Value $ millions	Per Cent Change 1969/1968
non-residential building								
Commercial	2145	− 10	1865	+ 11	1855	+ 11	1385	+ 15
Manufacturing	740	+ 5	1230	+ 7	1185	+ 1	545	+ 1
Educational	1920	+ 4	1565	+ 4	1170	+ 5	770	+ 6
Hospitals	625	+ 5	645	+ 12	620	+ 12	335	+ 3
Public buildings	765	+104	185	− 12	200	− 15	150	− 3
Religious	195	+ 3	270	+ 6	265	+ 6	120	+ 14
Recreational	255	− 11	245	− 4	250	+ 11	175	+ 9
Miscellaneous	200	+ 3	160	+ 7	180	+ 9	210	+ 11
TOTAL	6845	+ 4	6165	+ 7	5725	+ 6	3690	+ 9
residential building								
One- and two-family	3675	+ 9	4840	+ 11	6770	+ 15	4065	+ 27
Apartment	1475	+ 6	1605	+ 2	2010	+ 10	1610	+ 26
Nonhousekeeping	375	+ 9	355	− 1	505	+ 10	240	− 8
TOTAL	5525	+ 8	6800	+ 8	9285	+ 14	5915	+ 25
nonbuilding construction	3320	− 7	3835	+ 6	4735	+ 7	3160	+ 13
TOTAL CONSTRUCTION	15690	+ 3	16800	+ 7	19745	+ 10	12765	+ 17

Apartments:



Half longitudinal section:
staggered trusses.

Cross section:
(Note corridor space in center of truss.)

when steel goes up costs come down.

First cost is just one of the ways to save with steel. This 186-unit apartment building shows how imaginative design with steel brought a project in at $59,580 below budget.

The building is a low rent housing project for the elderly. Two 17-story towers flank a service core. Each apartment contains 455 sq. ft. The assignment was to design a building for pleasant living within a modest budget.

After evaluating several structural systems, the architects found their answer in a *staggered steel truss system.* This is the first use of the staggered truss system, which was developed at MIT in a research program sponsored by U. S. Steel.

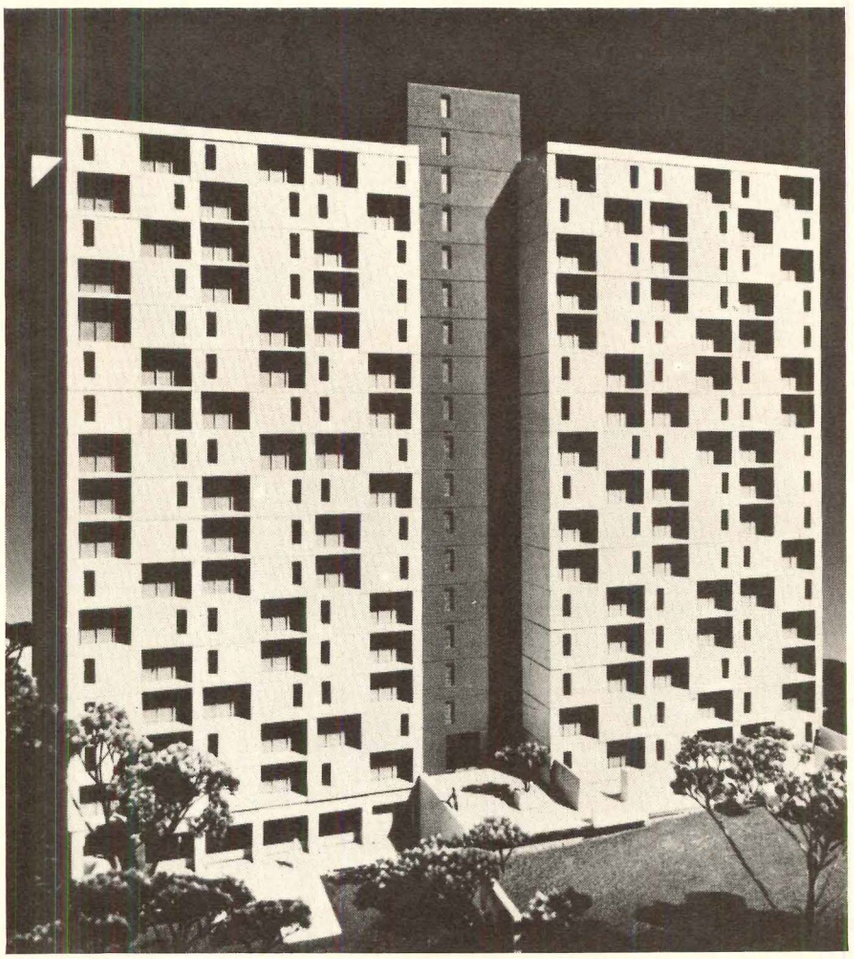
Story-high trusses, spanning the building's 52′0″ width, are set in a staggered pattern (see diagram). They are located within the separating walls of alternate apartment units. Precast concrete floors rest on the top chord of one truss and on the bottom chord of another truss. The floor slabs act as diaphragms together with the trusses to effectively resist wind loads.

Total steel requirement for the building was about 480 tons for an average weight of 6.8 lbs. per sq. ft. The A572 steels used in the welded trusses are USS Ex-Ten 50 and 60 High-Strength Low-Alloy Steels (50,000 and 60,000 psi min. yield points respectively). Construction cost, including mechanical and electrical bids, was $2,282,870. Sq. ft. cost: $16.31.

Structural Report

This is one of many ways to keep costs down with steel. Used imaginatively, steel usually wins out in first cost compared with other building materials. In the long run, there's no question. Only steel-framed buildings can be altered at low cost when it comes time for major remodeling.

If you're planning a new building, look into the staggered truss system. Get a copy of our "Structural Report," which details its use in this building, by contacting a USS Construction Marketing Representative through the nearest USS sales office. Or write U. S. Steel, P. O. Box 86 (USS 5893), Pittsburgh, Pennsylvania 15230. USS and Ex-Ten are registered trademarks.



HOUSING FOR THE ELDERLY, 1300 Wilson Ave., St. Paul, Minn. Owners: Housing and Redevelopment Authority of the City of St. Paul. Architects: Bergstedt, Wahlberg & Wold, Inc. Structural Designers: Bakke & Kopp. Structural Engineers: Schuett-Meier Co. General Contractor: Knutson Construction Co. Structural Fabricator: The Maxson Corporation. Structural Erector: Sandberg Erectors.

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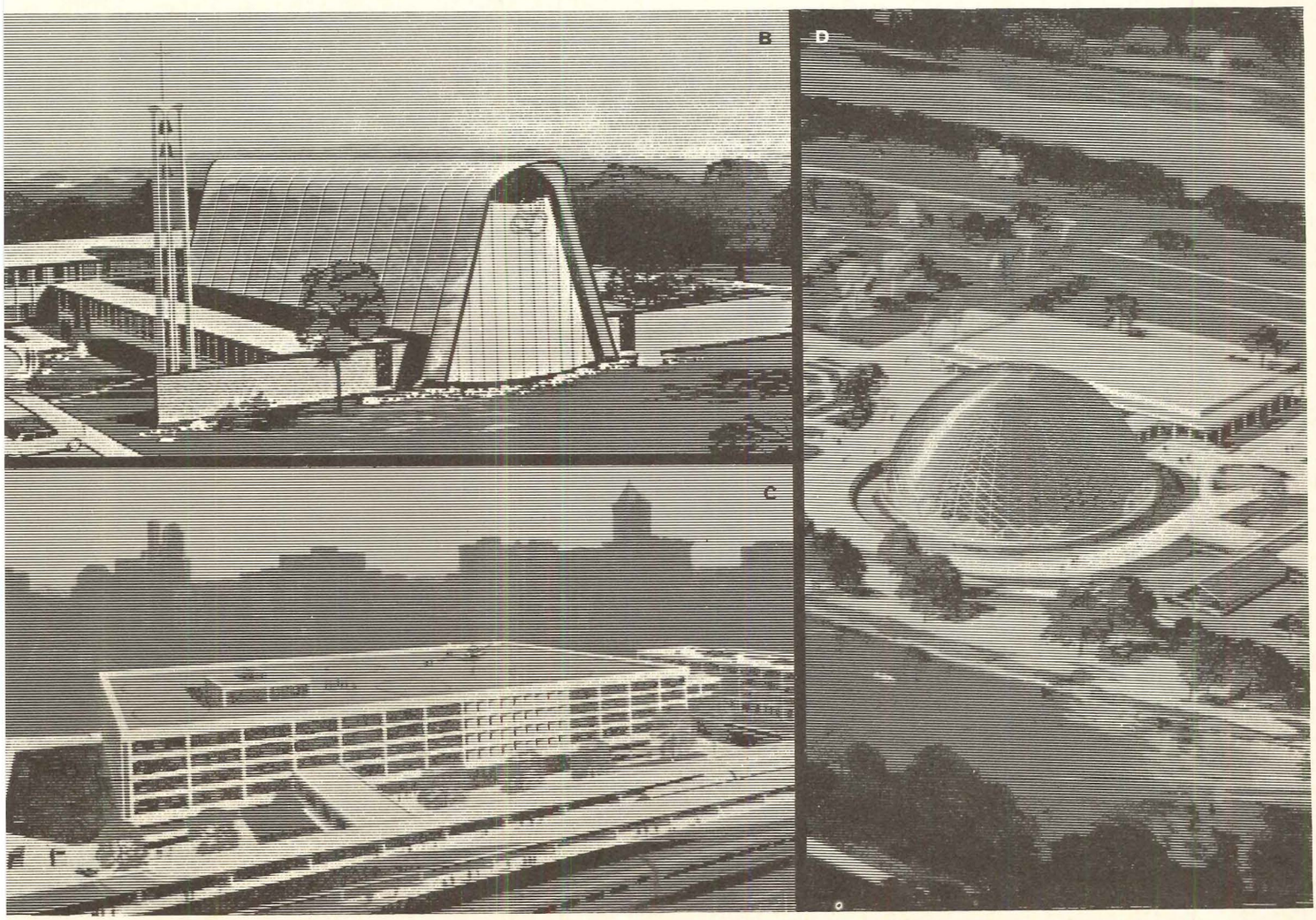

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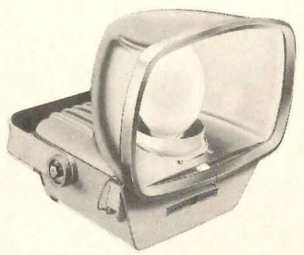

FEATURED PERFORMER this month is the Landmark "Recta-Flood." The smallest integral ballast floodlight of its type on the market. Mercury or Metallic vapor up to 1000 watts.

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Computers: how they really serve today's practice

COMPUTER APPLICATIONS IN ARCHITECTURE AND ENGINEERING. Edited by G. Neil Harper, associate partner, Skidmore, Owings & Merrill. McGraw-Hill Book Company, 330 West 42nd Street, New York, N.Y. 10036. xii+238 pp. $12.50

For architects and engineers with any curiosity about the practical applications of computers to their work, this book offers more than a scanning and less than a treatise in depth. It is specific about actual programs now at work and gives detail sufficient for the reader to judge applicability to his own problems. It does not pretend to tell him how to set up his own programs for computers.

Directed to the serious professional, the book nevertheless requires no prior grounding in the special jargon of computers. Illustrations, for example, zero in on bite-size, black-and-white segments of print-out, removing them from the overwhelming reams of same-seeming gray that so inhibit the newcomer to the computer's printed output.

Editor Harper, whose firm has been in the vanguard of computer users in the A/E professions, wrote four of the ten chapters, including a hard look at the near future. Other contributors were: Charles F. Beck of Sargent & Lundy Engineers; Richard I. Krauss of Ashley, Myer and Associates; Richard C. La Velle of Arthur Anderson & Co.; William Hines Linder of the University of South Carolina; Theodore H. Myer of Bolt Beranek and Newman; Lavette C. Teague Jr. of M. I. T.; and Charles B. Thomsen of Caudill Rowlett Scott.

Subjects covered include all of the expected applications in engineering, specifications, CPM and office management. Thomsen's chapter on architecture and the computer is particularly apropos for those in search of design-related applications in the real world. A summary follows.

While architects, for many reasons, have lagged behind other professions in applying computer techniques, those reasons are dissolving rapidly through energetic work in many offices across the country.

If architects are to retain their customary role as artists, it will be only within the constraints of functional performance and realistic cost restrictions. As an attitude of optimization and efficiency, the concept of economy itself is becoming a valid esthetic expression.

A primary role for computers: cost criteria for design

The computer promises to give architects mastery over the constraints of function and cost. This he requires to perform his art, just as a sculptor must understand the limits of his clay or the strata of his marble block. Cost is so intimately woven into all design thinking that architects often fail to recognize its prevailing influence. Yet its unwelcome surprises continue to plague them. At the root of this problem is the fact that most cost-estimating systems, even the first computer-implemented systems, are adequate for estimating the cost of a project only after it is completely designed and all decisions have been made. That is too late. Needed is a system which could be used in the late programming or early design stages, not only to define initial cost limitations, but to produce comparative information for design decisions in preliminary phases.

The first approach of Caudill Rowlett Scott to solving these problems is a computer version of its old manual techniques. It produces costs based on a given design. Quantities and definitions of materials are input. The computer retrieves cost data from a file, extends quantities, multiplies quantity times unit cost, and keeps the total. Advantages are time saving and a finer breakdown of costs. However, this is still an "after-the-fact" system.

A second, more complicated approach has engineering and geometry routines built in, so that an operator can request cost differences based on design-decision variables or performance criteria such as "How much will I save if I reduce the structural span from 50 to 30 feet?" or "How much more would it cost to increase the handling capacity of the elevator system by 3 per cent?" This approach is far more helpful but is accordingly more difficult to create.

A third approach that holds much promise is used in early schematic design stages before much is known about the design. It is a rudimentary conversation mode which allows a designer or project manager to peck away at the typewriter console for twenty to thirty minutes, winding up not only with a reasonably accurate cost estimate, but also with a clear understanding of the relative cost of the various building components.

The process still has many weaknesses. The accuracy of the calculations exceeds the precision of the assumptions. It is still necessary for the operator to understand basic price data. A quicker technique would have the machine retrieve cost data from an internal file. (Presumably these would be systems data—not the simple itemized data used in the first take-off approach mentioned above—ed.) Better yet, performance criteria should be input which would call forth a list of systems from which one could be selected.

Another basic weakness is that the building geometry must be input in some form that permits the quantity of materials to be internally calculated. Measuring this takes time. Hopefully, graphic data processing may soon ease this procedure.

In spite of these weaknesses, this last program can help a conscientious designer spend budgeted funds more effectively. Still, such programs are only fragments of a broader program which will become a true design system.

Man-machine dialogue needed for design systems

It is not yet clear how architects will construct their computer-implemented design systems. Early approaches resulted in "black-box programs" with all possible design conditions described and all possible solutions anticipated. Input is gathered and entered, all processes are automatic, and the answer results without operator intervention. Yet there will always be considerations fundamental to the most cherished human values which cannot be rendered in forms acceptable for computation, but which cannot be left out of the design process. If architecture is to continue to express these changing values, architects must find truly new solutions.

Therefore, the black-box routine can be no more than partially successful. More promising are techniques which engage high speed machine precision with the intuitive and random-access capability of the human mind. We are still designing for people, and as long as people react to their environment intuitively, architects cannot subordinate intuitive capabilities to the sequential precision of computer logic. A symbiosis of man and machine is needed, and programs which properly engage the two are required.

A design system based on this bilateral approach is evolving in architectural offices. It attempts to optimize subsystems independently for economy but allows the architect to guide and restrict the design. The program envisions six sections. At this time, several pieces are operational, but some are still "blue sky."

1. Architectural systems. Performance criteria (acoustics, flexibility, etc.) retrieve acceptable systems. Selection of systems determines initial and maintenance costs.

2. Mechanical systems. Performance criteria (control, flexibility, etc.) define alternate systems. Selection of systems determines initial, maintenance, and operational costs.

3. Structural systems. Performance criteria (span, fireproofing, etc.) define acceptable system. Selection of system determines initial cost.

4. Vertical circulation. Design standards and zoning define acceptable solutions and cost.

5. Operation economics. Construction costs, site, fees, etc., define costs. Operational costs and other economic criteria produce expected income.

6. Building geometry. Total building areas and volumes are computed, and income-producing space is compared to total with code restrictions implied.

The program can be set up in such a way that the operator/architect can range from one section to another at will, pursuing both his esthetic inclinations and the implications of each new bit of information he gleans from the calculations.

Here is how an architect might make it work. Assume he has a client who wants to build a high-quality office building in a prestigious area. While the builder will not be interested in spending money for corporate image, he realizes that his tenants will expect quality and durability. The land costs are high; so maximum site development is appropriate.

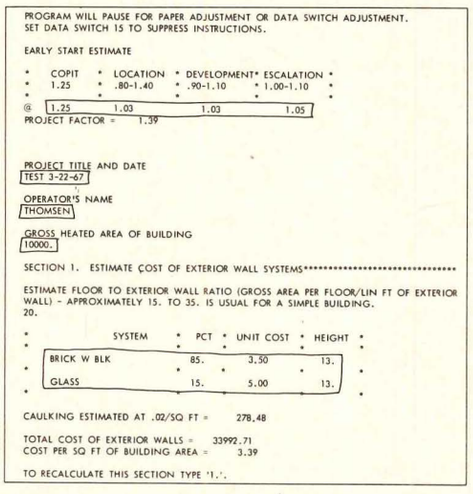
In order to solve this general problem, the architect uses this complex of programs. He might first begin with the geometry routines. He inputs core dimensions, overall plan size and floor-to-floor dimensions, and includes basic code restrictions on maximum height and volume limitations. With the computer's help, he calculates the maximum number of floors, the total net rentable area, and the total gross area.

The next step might be to call the mechanical routine and, based on the net areas and applicable codes, calculate with more precision the core size based on actual toilet-room sizes (fixture ratios from the code would be part of the program), duct spaces, electrical spaces, etc. The decisions are made on the location of mechanical floors, chases, and basic mechanical systems. Outputs are required dimensions, mechanical spaces, and projected costs of mechanical systems.

At this point the architect may go back to the geometry program to refine his earlier assumptions on core size and net and gross areas. From there he might call the structural program, which will output the required depth of the structural sections and their costs. After he evaluates this information, he calls the elevator program and sizes vertical circulation. He computes architectural costs and makes a trial run with the economics program computing the investor's return on the investment as projected.

Now, this is the point where the design really begins. The architect has a prototype building designed on common approaches to office buildings. But he is hardly satisfied. The objective is to continue jumping from one program to another following hunches and exploring possibilities. For instance, he knows that the code's height and volume restrictions limit income-producing space, but if he can squeeze in another floor or two within those restrictions he may help his client. Using the geometry program and the structural program together, he discovers that, if he goes to a slightly more expensive but shallower floor beam, he can save enough inches in each floor-to-floor dimension to add additional floors. With the economics program he determines that the increased rent from the additional area more than compensates for the additional structural cost. Of course he must now re-analyze the elevators since the number of stops has increased. He does so, and finds that slight increases in speed for little more money solve his problem.

The same comparisons might be made with alternate core arrangements, mechanical systems, elevators, and so forth.



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PROGRAM WILL PAUSE FOR PAPER ADJUSTMENT OR DATA SWITCH ADJUSTMENT.
SET DATA SWITCH 15 TO SUPPRESS INSTRUCTIONS.

EARLY START ESTIMATE

*   COPIT   *  LOCATION  *  DEVELOPMENT*  ESCALATION  *
*   1.25    *  .80-1.40  *  .90-1.10    *  1.00-1.10   *
*           *            *              *              *
@  1.25          1.03          1.03          1.05
PROJECT FACTOR =   1.39


PROJECT TITLE AND DATE
TEST 3-22-67

OPERATOR'S NAME
THOMSEN

GROSS HEATED AREA OF BUILDING
10000.

SECTION 1.  ESTIMATE COST OF EXTERIOR WALL SYSTEMS**********************

ESTIMATE FLOOR TO EXTERIOR WALL RATIO (GROSS AREA PER FLOOR/LIN FT OF EXTERIOR
WALL) - APPROXIMATELY 15. TO 35. IS USUAL FOR A SIMPLE BUILDING.
20.

*          SYSTEM        *  PCT  *  UNIT COST  *  HEIGHT  *
*                        *       *             *          *
.  BRICK W BLK           *  85.  *     3.50    *   13.    .
.                        *       *             *          .
.  GLASS                 *  15.  *     5.00    *   13.    .

CAULKING ESTIMATED AT .02/SQ FT =      278.48

TOTAL COST OF EXTERIOR WALLS =      33992.71
COST PER SQ FT OF BUILDING AREA =       3.39

TO RECALCULATE THIS SECTION TYPE '1,'.
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A cost estimate for early design stages works as follows: The operator drops two cards in the card reader. The program is called off a magnetic disk, and the console typewriter types the above. COPIT is a factor entered for contractor's overhead, profit, insurance, and taxes. LOCATION anticipates regional cost changes from national average price data. DEVELOPMENT includes site contracts, taxes, bidding climate, etc. ESCALATION anticipates price fluctuations from design to bidding time. The designer types the circled factors, and the computer computes and prints the project factor, which is used as a multiplier on the remainder of the building costs. The program continues to estimate the cost of the basic building systems. Shown above is the section for exterior walls. The designer inputs the circled information; the machine does the rest.

While he is working with the elevators, he tries another hunch. He goes to more expensive and faster elevators but saves one cab. The total cost of the elevators is greater, but the cab space is picked up for income-producing space throughout all floors of the building. Again, it more than compensates for the additional cost, and the faster system is selected.

This program is not complete yet, and it may not develop in the precise form described. However, 80 per cent of the pieces now run in various forms. Gaps need to be filled in, and the control executive system to coordinate the group of programs must be written. Inevitably it will be, not only by Caudill Rowlett Scott, but also by many architects across the nation. It is intolerable to try to do a precision job of design with today's antiquated, clumsy arrangement of consultants. The above routines could be done in a few minutes. The same work, if dependent on today's awkward techniques of communication among structural, mechanical, and elevator consultants, cost estimators, economists, land planners, and architects, might never get done.

Another approach to "design systems" is under way at Computer Service, Inc., and Reynolds, Smith and Hills, Architects and Engineers, both of Jacksonville, Florida, who are jointly developing an Architectural Building Design System (ADS). ADS will also provide the design team with cost estimates and design information for the civil, mechanical, electrical, and structural disciplines as the design progresses from preliminary concept to final plans and specifications. ADS is also being developed in a modular-building-block fashion not only to achieve flexibility but also to produce usable computer programs during the development period. The total development effort will span several years and will be highly sensitive to advances in the state of the art of computer technology.

One of the old saws among computer aficionados is that one always overestimates what can be accomplished in the near future but underestimates the opportunities of the next decade. This is particularly true in architecture. Even if the profession remained as it is today, computers would be useful in many ways. At Caudill Rowlett Scott, every department has found useful applications. In only two years, over a hundred programs have been written, a computer has been leased which is now running overtime, and many staff members have developed the attitude that the machine is indispensable.

Computers alone will not mitigate all architecture's contemporary ills, but they will surely help architects face the future's increasing complexities with more assurance and skill. And assuming that architecture continues to attract intelligent, energetic youth and equip them with technology's newest and most effective tools, it just may succeed in hammering tomorrow's megalopolis into a viable evironment.

INDEXES AND INDICATORS

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

JANUARY 1969 BUILDING COST INDEXES

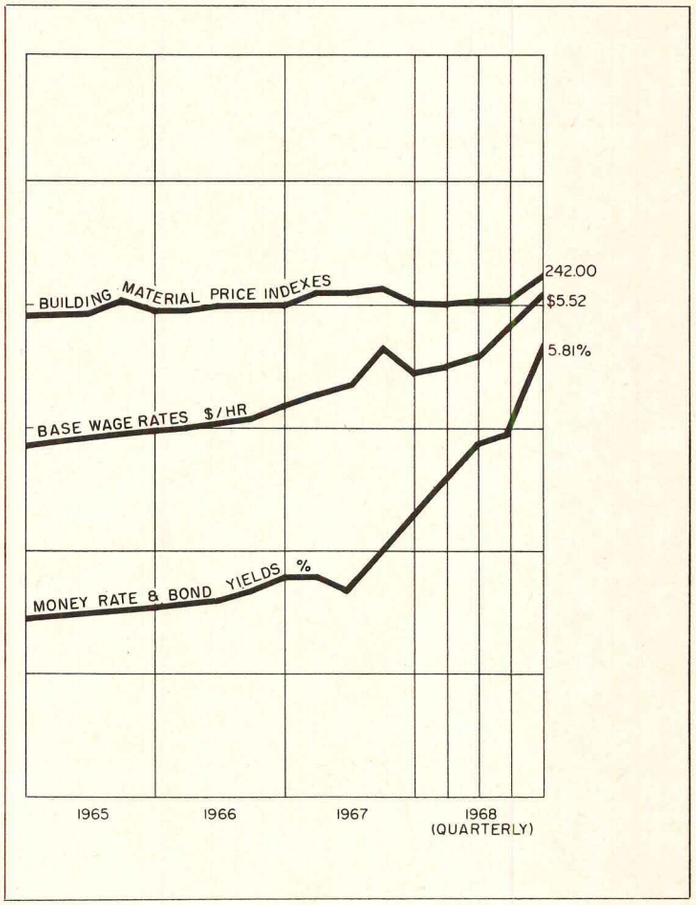
1941 averages for each city = 100.0

Metropolitan area	Cost differential	Current Dow Index residential	Current Dow Index non-res.	% change year ago res. & non-res.
U.S. Average	8.6	295.2	314.5	+4.11
Atlanta	7.3	336.8	357.3	+5.06
Baltimore	7.9	295.0	313.8	+4.22
Birmingham	7.3	267.8	288.0	+3.38
Boston	8.5	265.1	280.6	+4.14
Chicago	9.0	327.2	344.2	+3.26
Cincinnati	9.0	288.3	306.4	+4.86
Cleveland	9.8	316.2	336.1	+9.02
Dallas	7.7	275.2	284.2	+4.07
Denver	8.2	297.1	315.8	+2.29
Detroit	9.2	304.5	319.7	+4.88
Kansas City	8.3	265.9	281.5	+5.03
Los Angeles	8.4	298.9	327.0	+3.09
Miami	8.5	294.2	308.9	+6.57
Minneapolis	8.8	294.2	312.7	+2.93
New Orleans	7.8	262.1	277.7	+2.35
New York	10.0	305.6	328.7	+2.36
Philadelphia	8.6	290.4	304.9	+2.59
Pittsburgh	9.2	279.3	296.9	+6.69
St. Louis	9.1	290.9	308.2	+3.68
San Francisco	8.6	376.2	411.6	+2.97
Seattle	8.5	268.2	299.8	+2.96

Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in the first city are 25% higher than costs in the second. Also, costs in the second city are 80% of those in the first (8.0÷10.00=80%) or they are 20% lower in the second city.

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

ECONOMIC INDICATORS

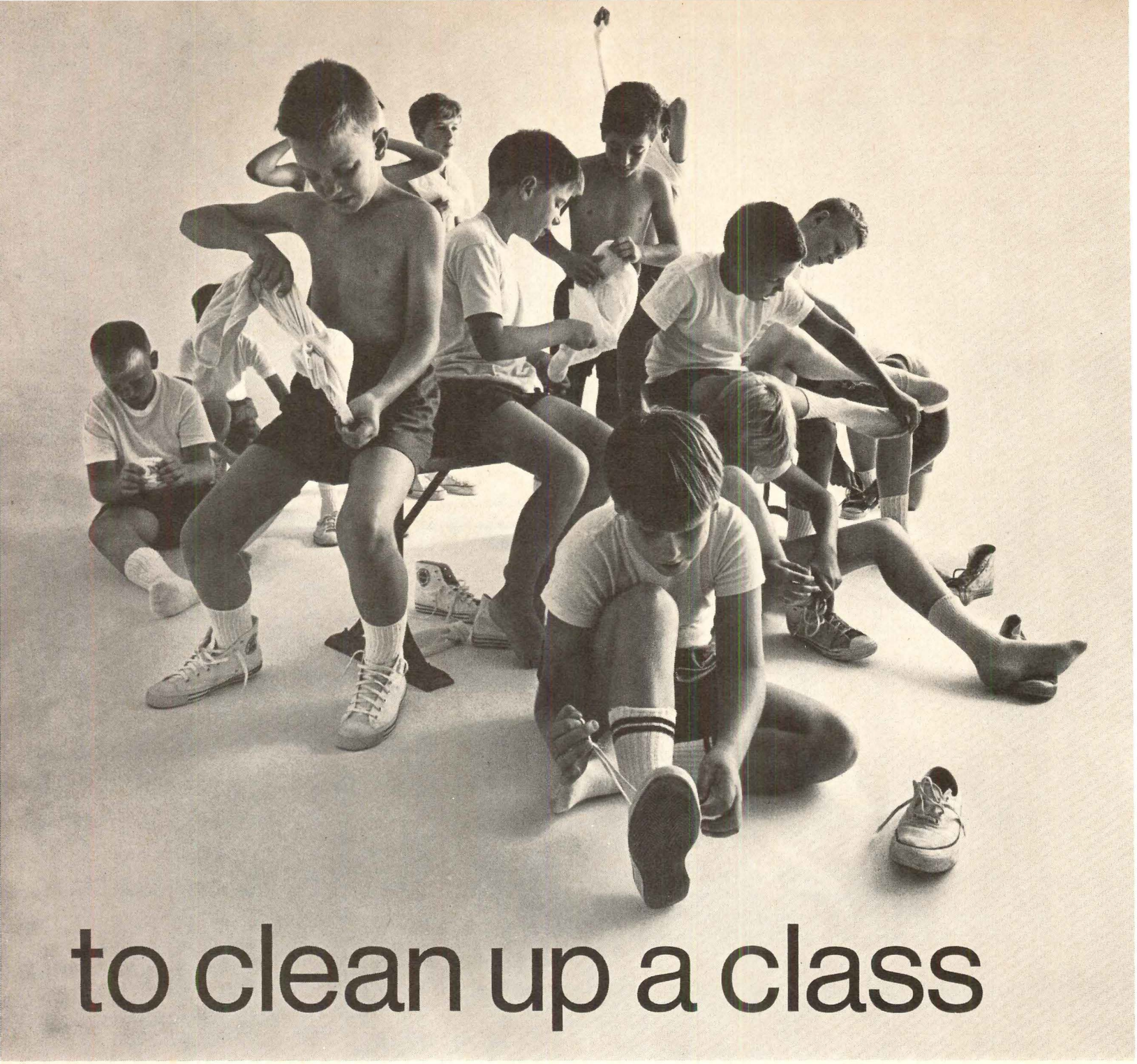


HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

1941 average for each city = 100.00

Metropolitan area	1960	1961	1962	1963	1964	1965	1966	1967 (Quarterly) 1st	1967 (Quarterly) 2nd	1967 (Quarterly) 3rd	1967 (Quarterly) 4th	1968 (Quarterly) 1st	1968 (Quarterly) 2nd	1968 (Quarterly) 3rd	1968 (Quarterly) 4th
U.S. Average	213.5	264.6	266.8	273.4	279.3	284.9	286.6	292.7	293.7	295.5	297.5	301.5	302.6	309.3	309.6
Atlanta	223.5	294.7	298.2	305.7	313.7	321.5	329.8	332.4	333.4	334.6	335.7	345.6	346.7	352.3	352.7
Baltimore	213.3	269.9	271.8	275.5	280.6	285.7	290.9	290.4	291.5	294.9	295.8	302.9	304.1	307.9	308.3
Birmingham	208.1	249.9	250.0	256.3	260.9	265.6	270.7	272.9	274.0	273.8	274.7	278.5	279.5	283.6	284.0
Boston	199.0	237.5	239.8	244.1	252.1	257.8	262.0	262.9	263.9	264.8	265.7	269.3	270.3	276.3	276.7
Chicago	231.2	289.9	292.0	301.0	306.6	311.7	320.4	320.4	321.3	327.3	328.4	329.4	330.0	338.7	339.1
Cincinnati	207.7	257.6	258.8	263.9	269.5	274.0	278.3	278.7	279.6	287.3	288.2	291.4	292.5	301.8	302.2
Cleveland	220.7	265.7	268.5	275.8	283.0	292.3	300.7	300.0	301.3	302.6	303.7	316.5	318.3	330.7	331.1
Dallas	221.9	244.7	246.9	253.0	256.4	260.8	266.9	267.6	268.5	269.5	270.4	272.3	273.4	281.0	281.4
Denver	211.8	270.9	274.9	282.5	287.3	294.0	297.5	297.6	298.5	304.0	305.1	304.9	306.0	311.7	312.1
Detroit	197.8	264.7	265.9	272.2	277.7	284.7	296.9	298.0	299.1	300.1	301.2	309.2	310.4	315.5	315.9
Kansas City	213.3	237.1	240.1	247.8	250.5	256.4	261.0	260.8	261.9	263.4	264.3	267.5	268.5	277.2	277.6
Los Angeles	210.3	274.3	276.3	282.5	288.2	297.1	302.7	303.6	304.7	309.0	310.1	312.0	313.1	319.3	319.7
Miami	199.4	259.1	260.3	269.3	274.4	277.5	284.0	283.4	284.2	285.2	286.1	293.1	294.3	304.5	304.9
Minneapolis	213.5	267.9	269.0	275.3	282.4	285.0	289.4	292.0	293.1	299.2	300.2	300.0	301.0	309.0	309.0
New Orleans	207.1	244.7	245.1	248.3	249.9	256.3	259.8	262.3	263.4	266.7	267.6	270.6	271.6	273.9	273.9
New York	207.4	270.8	276.0	282.3	289.4	297.1	304.0	309.4	310.6	312.5	313.6	315.9	317.0	320.6	321.0
Philadelphia	228.3	265.4	265.2	271.2	275.2	280.8	286.6	287.1	288.1	292.8	293.7	293.3	294.2	300.9	301.3
Pittsburgh	204.0	250.9	251.8	258.2	263.8	267.0	271.7	272.2	273.1	274.1	275.0	293.0	284.2	293.1	293.4
St. Louis	213.1	256.9	255.4	263.4	272.1	280.9	288.3	290.3	291.3	292.3	293.2	293.7	294.7	303.6	304.0
San Francisco	266.4	337.4	343.3	352.4	365.4	368.6	386.0	388.1	389.2	389.6	390.8	396.4	398.0	401.9	402.4
Seattle	191.8	247.0	252.5	260.6	266.6	268.9	275.0	276.5	277.5	282.6	283.5	286.2	287.2	291.6	291.9

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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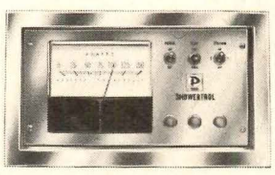

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OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Card, page 217-218.

COMPUTER CLIMATE CONTROL / A paper prepared for the technical meetings held in conjunction with the Climate Control Equipment Show in Frankfurt, Germany, last month covers air purification, reliability, performance and space economies relevant to computer climate control. ▪ Liebert Corporation, Columbus, Ohio.

Circle 400 on inquiry card

JOIST SPECIFICATION / The 1969 edition of *Standard Specifications and Load Tables* for high-strength open-web steel joists provides all technical data needed for specification of joists to carry uniform loads on spans up to 96 feet. ▪ Steel Joist Institute, Washington, D. C.

Circle 401 on inquiry card

METAL SCULPTURE / An eight-page catalog presents 28 wall and standing sculptures designed by William Bowie in polished stainless steel, bronze, brass or gold-leafed steel. ▪ The Sculpture Studio Inc., New York City.

Circle 402 on inquiry card

ON-SITE WASTE DISPOSAL / Literature explains the advantages of disposing of wastes where they are created. The basic unit, a moveable, self-contained, multi-chambered incinerator, would prove convenient, for instance, in eliminating wastes in the surgical wing of a hospital. ▪ The Silent Glow Corporation, Hartford, Conn.

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CURVED ROOF PANELS / Revisions of design specifications for plywood curved roof panels and glued plywood beams are covered in a booklet that supplements the 1966 *Design Specifications* manual and replaces design sections in the 1964 *Design and Fabrication* manuals. ▪ American Plywood Association, Tacoma, Wash.*

Circle 404 on inquiry card

ALUMINUM WINDOWS / An eight-page color catalog on *NAARCO* aluminum monumental windows in color anodic finishes covers projected and casement windows, vertically-pivoted and top-hung windows, and custom application windows. ▪ North American Aluminum Corporation, Kalamazoo, Mich.*

Circle 405 on inquiry card

WATERPROOFING AND ROOFING / The *1968 Waterproofing and Dampproofing Manual* and the *1968 Built-up Roofing Manual* include detail drawings of suggested methods of handling typical critical areas. ▪ Koppers, Pittsburgh.*

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

more literature on page 94

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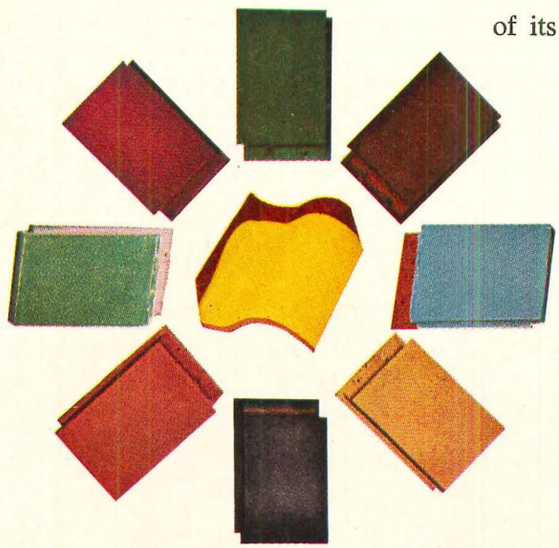

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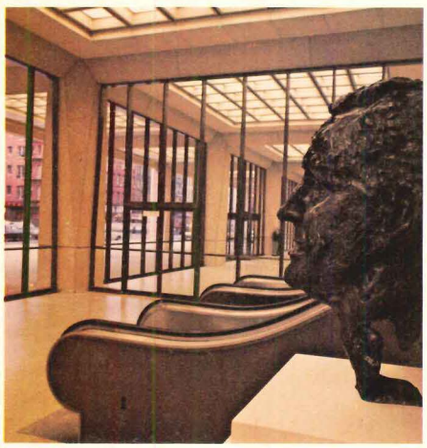

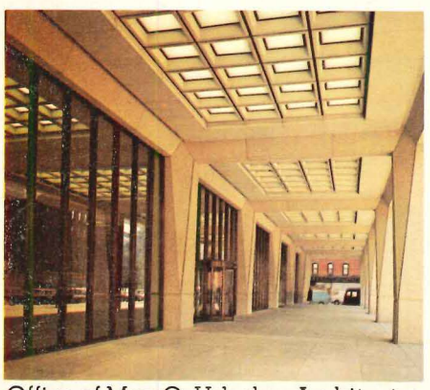

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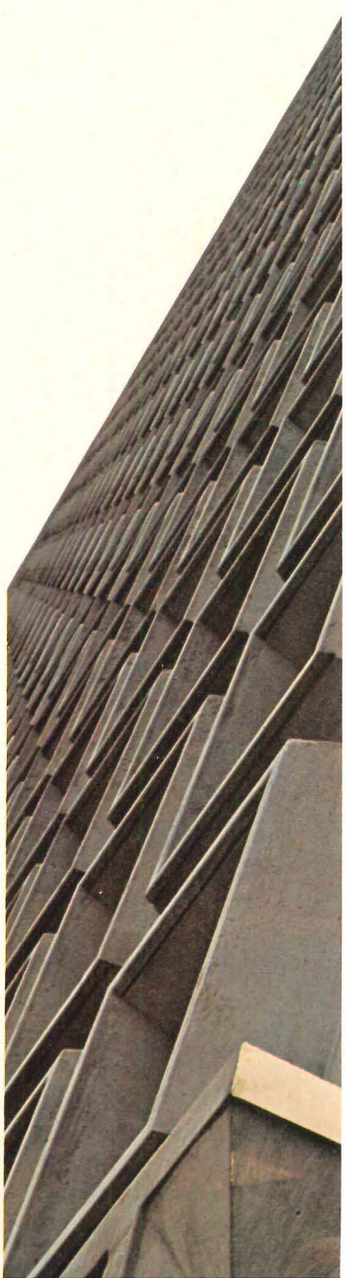

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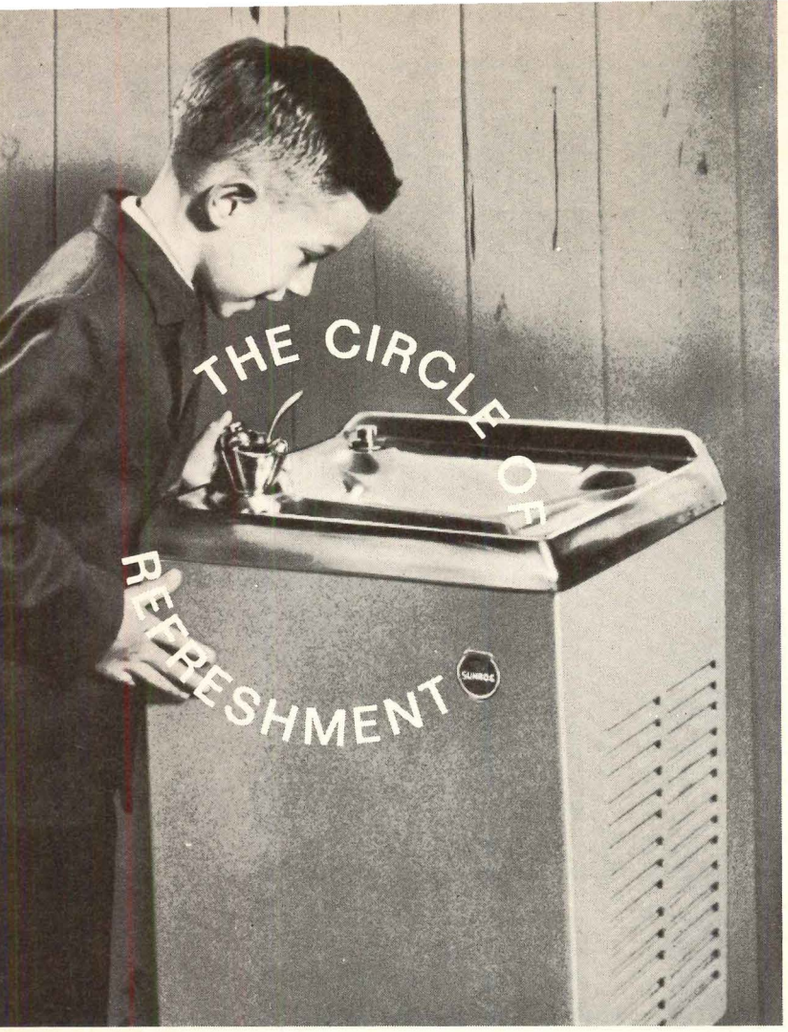

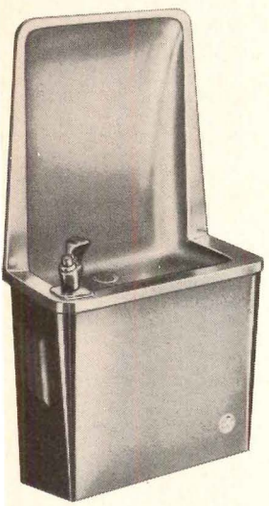

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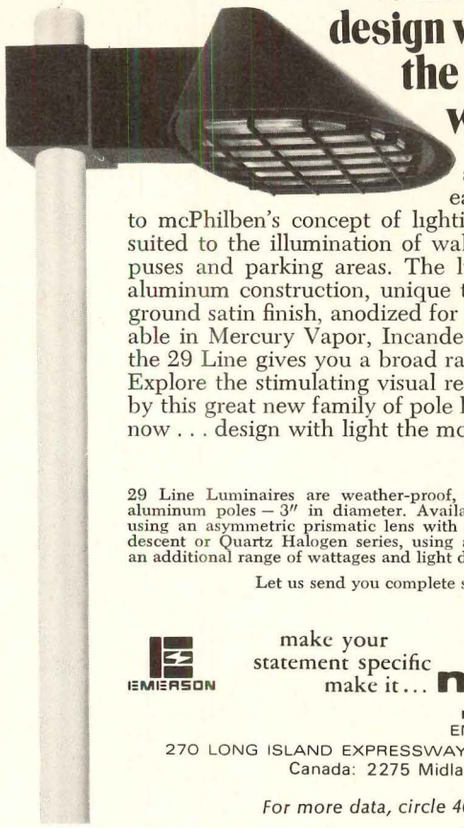

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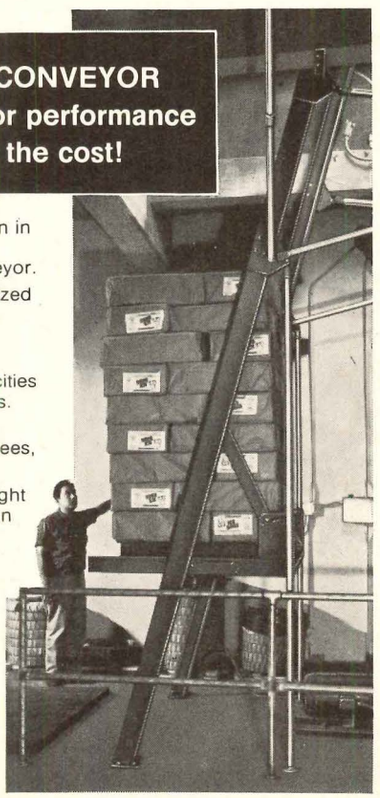

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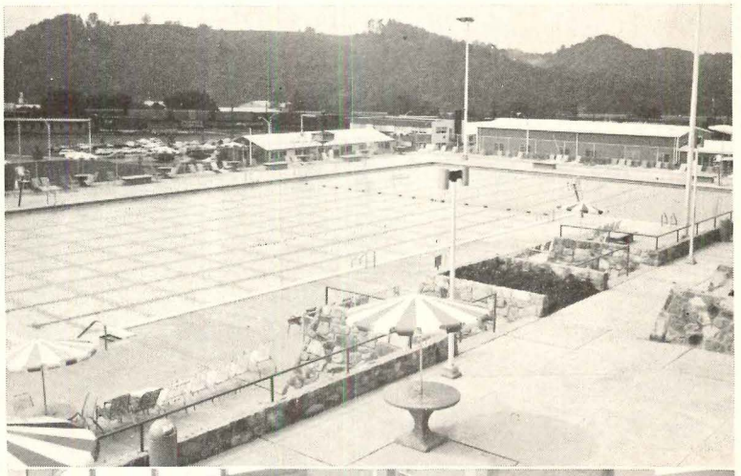

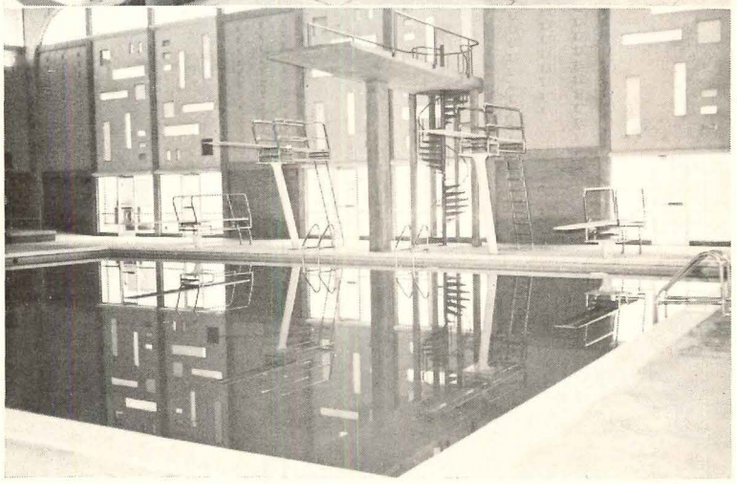

"Fun for Everyone" (the official motto) is the best description of the oustanding new $1.7 million Student Aquatic Center at the University of Tennessee. Consisting of two 50 meter Olympic pools (indoor and outdoor), a separate 15 foot deep indoor diving well, sundeck area, weight room, sauna baths, dance area, game rooms and lounges, the new center has been described as the most advanced in the nation.

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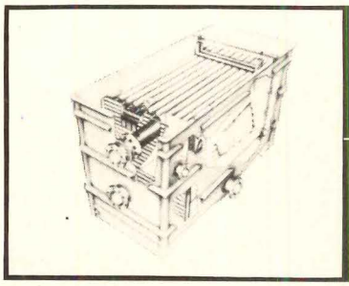

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For more data, circle 61 on inquiry card ▸

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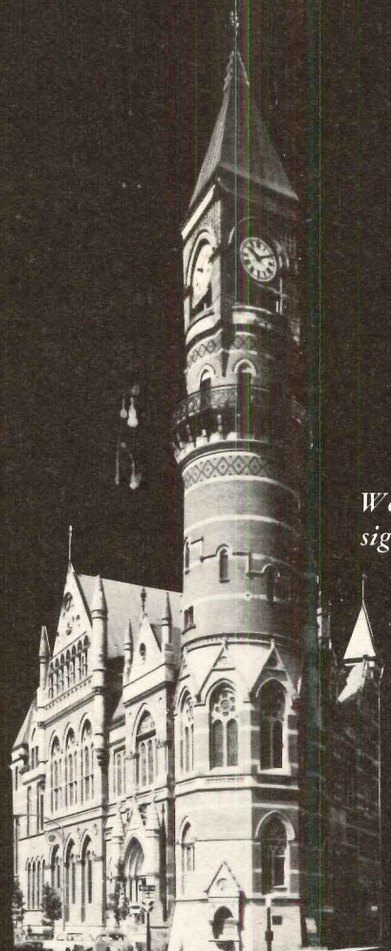
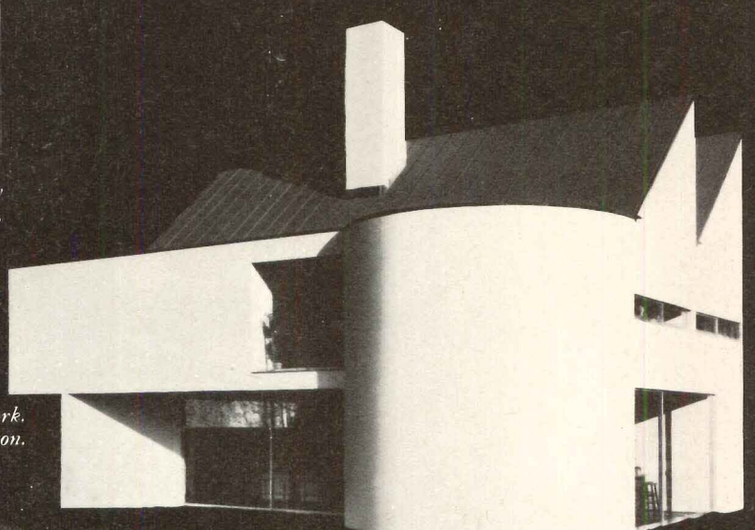
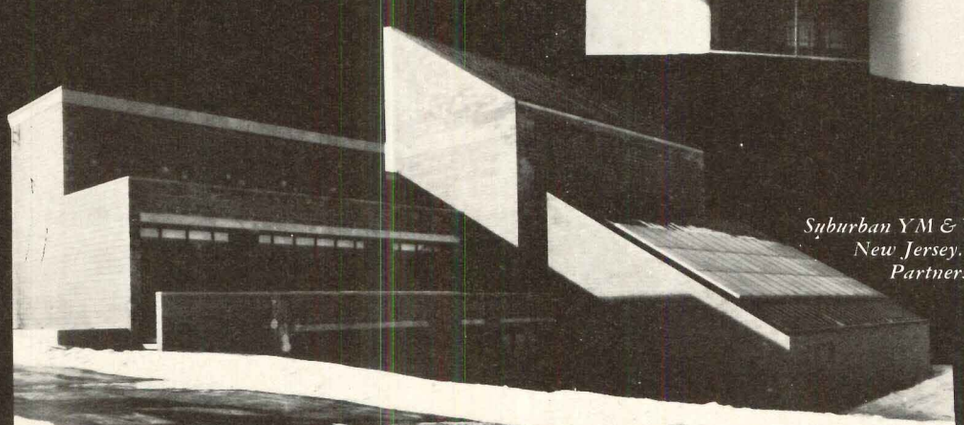


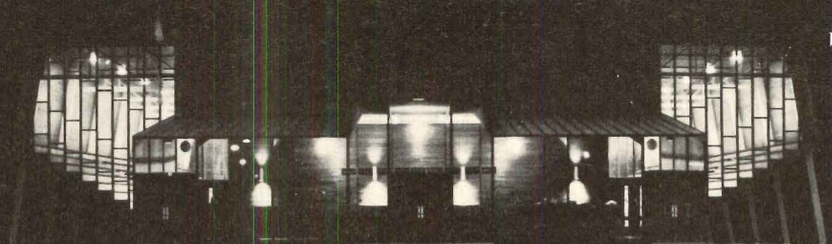
Jefferson Market Branch Library (Restoration) New York, New York. Architect: Giorgio Cavaglieri, FAIA.



Residence. Purchase, New York. Architects: Gwathmey & Henderson.



Suburban YM & YWHA, West Orange, New Jersey. Architects: Gruzen & Partners. Consulting Architect: Abraham W. Geller.



Washington and Lee High School Gymnasium, Montross, Virginia. Associated Architects: Stevenson Flemer, Waitsfield, Vt., Eason Cross and Harry Adreon, Washington, D.C.

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YOUR WAY
NEXT
MID-MAY . . .

RECORD HOUSES

America's 20 best-planned houses of the year will be featured in RECORD HOUSES OF 1969. A year in preparation, the mid-May annual will present to Record subscribers the work of a wide variety of architects ranging from the well-known to those talented architects new to the ranks of major innovators.

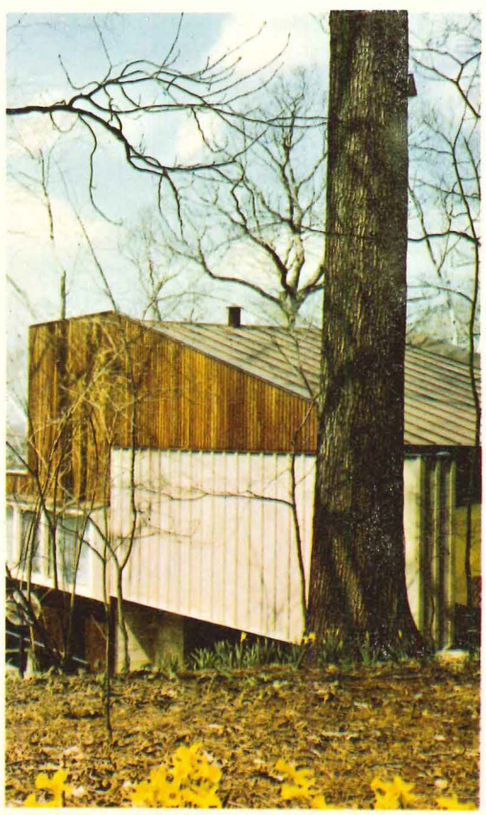
The houses will win for their architects and owners Architectural Record's coveted ANNUAL AWARD OF EXCELLENCE FOR HOUSE DESIGN. All 20 award-winning houses will be fully detailed with photographs (many in full color) plans, schematics. This highly visual presentation of each house, coupled with a clear statement of the problems and purposes behind it's planning, will make RECORD HOUSES OF 1969 an ideal tool for opening your clients' eyes to ways in which architecture can serve their individual needs, aspirations and way of life.

To contribute further to this goal, selected editions of RECORD HOUSES OF 1969 will be placed in the hands of the nation's most productive "Sweet's-qualified" interior designers, in addition to "Sweet's-qualified" builders.

The distribution of RECORD HOUSES annuals to architects, engineers, interior designers and builders is dedicated to mutual understanding among all, in the interest of better housing.

The house building and buying public will find it on sale at leading bookstores.

Note: The houses shown here are from RECORD HOUSES OF 1968.

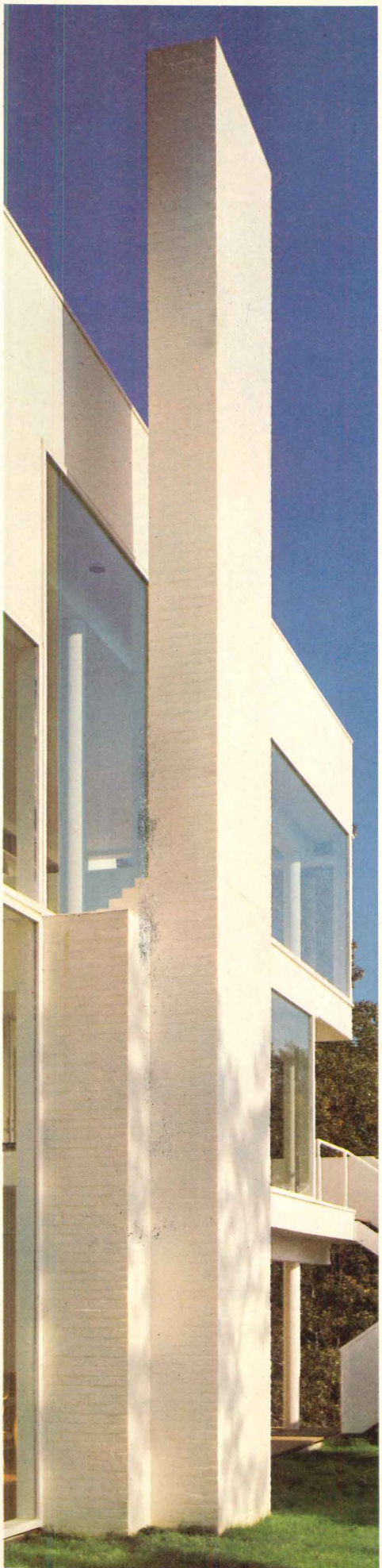


Hillside House, Baltimore, Maryland.
Architect: J. William Ilmanen.
Photo by Norman McGrath.

Suburban House, Purchase, New York.
Architects: Charles Gwathmey and Richard Henderson of Gwathmey & Henderson.
Photo by Bill Maris.

OF 1969

Woodland House, New York State.
Architect: Edward L. Barnes.
Photo by Green © (ESTO).



Woodland House, New York State.
Architect: Edward L. Barnes.
Photo by Green © (ESTO).

Smith House, Darien, Conn.
Architect: Richard Meier.
Photo by © Ezra Stoller (ESTO).

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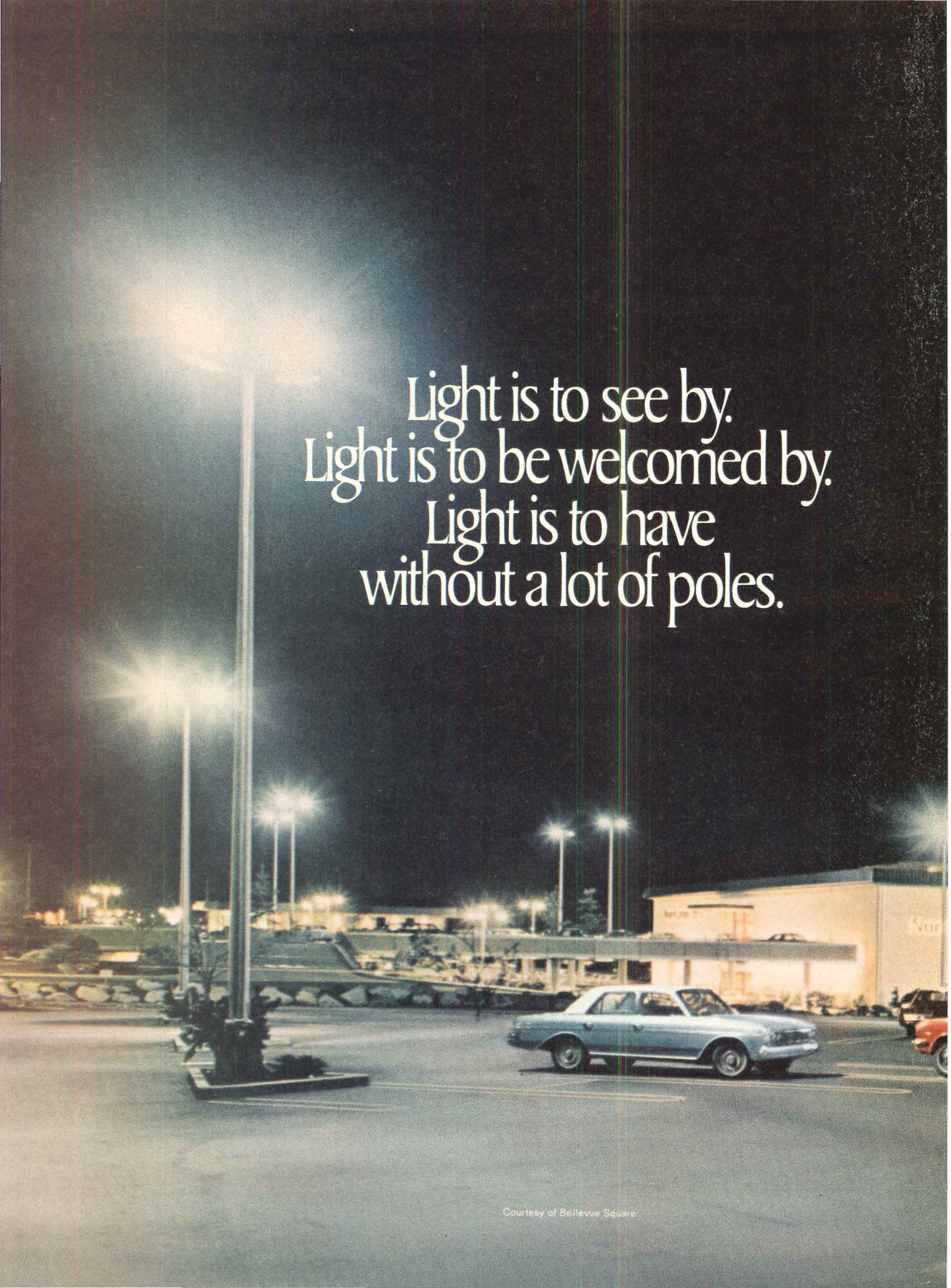
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without a lot of poles.
Courtesy of Bellevue Square

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CROUSE-HINDS

CROUSE-HINDS

continued from page 82

ROOF DECK INSULATION / A 12-page booklet gives complete information on *All-Weather Crete* with a special section on plaza systems. ▪ Silbrico Corporation, Chicago.*

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VINYL WALLCOVERING / *A Practical Guide to Specification, Selections, Use and Care of Vicrtrex Vinyl Wallcovering* is "designed to help the specifier with building codes, fire classifications and government regulations." ▪ L. E. Carpenter & Company, New York City.*

Circle 408 on inquiry card

HEALTH CARE COMMUNICATION / *Complete Communications for Health Care* is a four-page folder describing various types of communications systems especially designed for hospitals, nursing homes and retirement centers. ▪ DuKane Corporation, St. Charles, Ill.

Circle 409 on inquiry card

ACOUSTICAL TILES AND PANELS / Three folders describe different ceiling tiles and panels for sound control. *Temper-Tone 360* tiles have "closely-spaced fissures and tiny perforations in a non-directional pattern." *Spintone 360* panels, though similar, are designed for exposed grid ceiling systems. And *Spintone 360 Quadrette* panels are lay-in units with rabbeted edges that achieve a three-dimensional effect. ▪ Johns-Manville, New York City.*

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ADMIXTURES / A 16-page booklet gives data on the following: *Pozzolith,* a water reducing, set-controlling agent; *MB-VR,* an air-entraining agent; *Stearox,* an integral water-repellent for concrete and mortar; *MB-HC,* a water-reducing retarder; and *Omicron Mortarproofing,* a water-reducing, plasticizing admixture for masonry mortar. Besides charts and graphs showing performance of products, there are photos of buildings in which the products have been used. ▪ Master Builders, Cleveland.*

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WATERPROOFING / An eight-page brochure describes five long-term waterproofing products and includes architectural specifying guides and coverage tables. ▪ Chemstop Manufacturing Corporation, Burbank, Calif.

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MARBLE PRODUCTS / A 12-page color catalog introduces new columns, doorways and desks, among an extensive line of 100 per cent fortified marble products. ▪ Venetian International, Inc., Dallas.*

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

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URBAN HOUSING: A COMPREHENSIVE APPROACH TO QUALITY

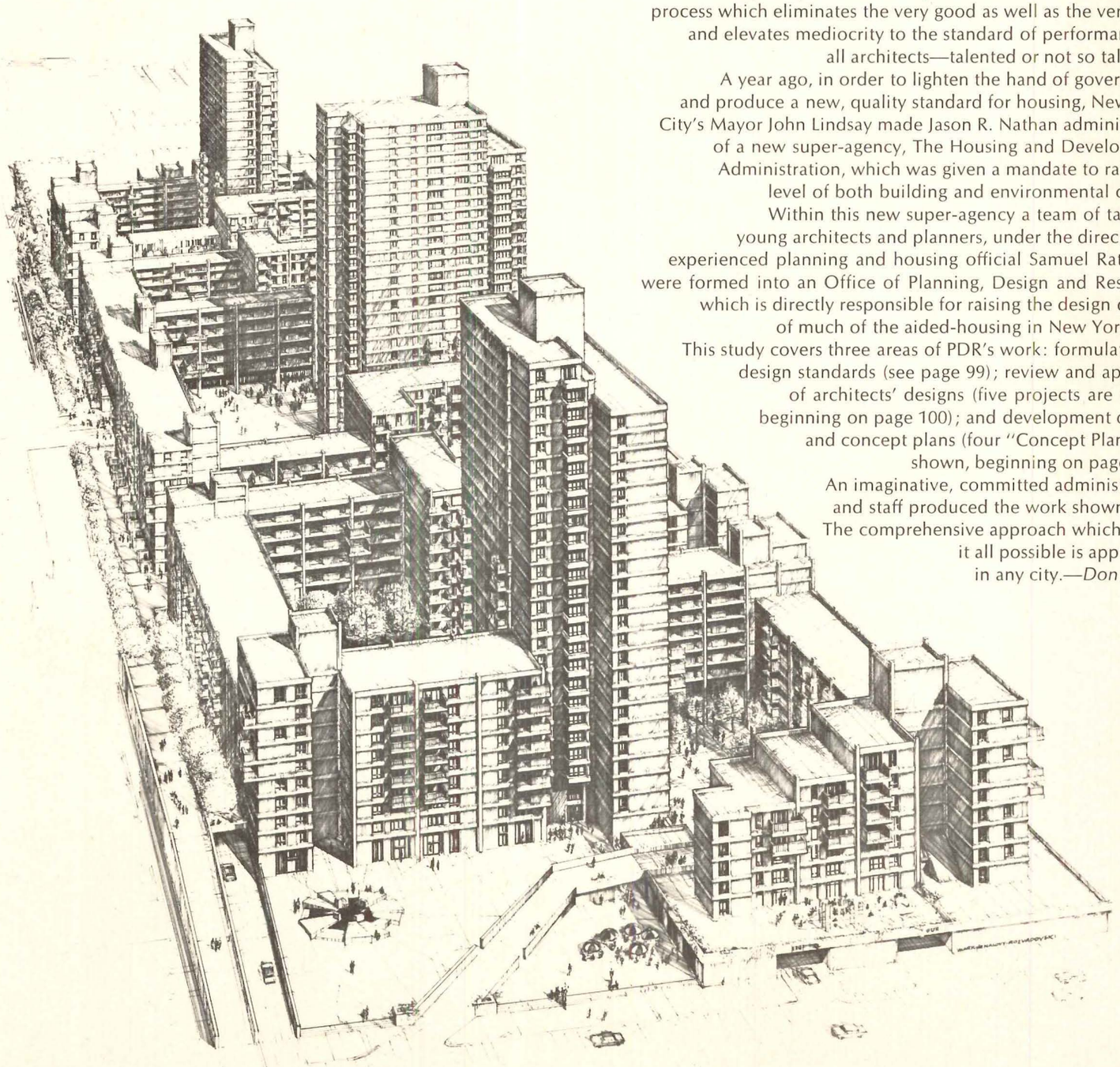
Housing, particularly Government-aided housing, is created under a plethora of Federal and/or state and city standards, under regulations and sometimes overwhelming statutory requirements, under rigid cost constraints, and, frequently, under a heavy-handed, bureaucratic review process which eliminates the very good as well as the very bad, and elevates mediocrity to the standard of performance by all architects—talented or not so talented.

A year ago, in order to lighten the hand of government and produce a new, quality standard for housing, New York City's Mayor John Lindsay made Jason R. Nathan administrator of a new super-agency, The Housing and Development Administration, which was given a mandate to raise the level of both building and environmental design.

Within this new super-agency a team of talented young architects and planners, under the direction of experienced planning and housing official Samuel Ratensky, were formed into an Office of Planning, Design and Research, which is directly responsible for raising the design quality of much of the aided-housing in New York City.

This study covers three areas of PDR's work: formulation of design standards (see page 99); review and approval of architects' designs (five projects are shown beginning on page 100); and development of area and concept plans (four "Concept Plans" are shown, beginning on page 110).

An imaginative, committed administration and staff produced the work shown here. The comprehensive approach which made it all possible is applicable in any city.—*Don Raney*



RAISING THE DESIGN QUALITY OF URBAN HOUSING TOOK COMMITMENT, AND TALENT, AND EXPERIENCE

How did the office of Planning, Design and Research, which is responsible for the work shown in this study, accomplish something that others had talked about for years? Obviously good design is not created by fiat, and in a time of sharply and continuously rising costs the problems of creating good design get harder. What is possible during the design of preliminaries or schematics may no longer be feasible at the time construction contracts are signed and the mortgage closed. There is always the suspicion on the part of the "numbers" people that good design is somehow exotic, costs more, takes more time, and interferes with production; also that good design can somehow be added and subtracted.

In the past, in New York City, this thinking has led to housing with standard eight foot ceilings, and flatplate construction faced with common brick—a brick-box-punched-full-of-holes with L-shaped living rooms. Luxury housing added somewhat larger rooms, carpeting in the public halls, some jazz in the lobbies, and face brick in place of common brick.

Setting the new standard in New York involved some acceptance of new costs. But there are offsets. A good example is architect Herbert Mandell's design for Harbor House (page 102) where his innovation in use of materials and construction has greatly reduced the cost differential. The problem has been how to get the innovative and concerned architect involved in government-aided housing.

Good design can't happen unless the Mayor really wants it

Mayor Lindsay and his top administrators have deep and intelligent concern with the City's physical pattern, evolution, and growth. Under Lindsay, design departments have been created, strengthened and upgraded in many city agencies, and design quality and style have been established as critical goals. This has been implemented through creation of the Urban Design Council, the Urban Design Group within the City Planning Commission (see RECORD, January 1968), the office of PDR in HDA (covered in this story), and a deputy administrator for design in the new Parks, Recreation and Cultural Affairs Administration. It has been implemented through a re-structure of fee scales in the HDA's Mitchell-Lama Program by an average increase of approximately 30 percent in the basic fee plus a premium (rather than a penalty) for diversity, and it has been implemented through a consistent effort to attract the best talent to the program, especially young and not yet renowned talent, and to deal with it sensitively and respectfully. Much has been accomplished; it has been an educational experience for all those involved, and out of it has come the kind of administrative fabric which could be applied elsewhere, to the good of any urban area.

But crucial to establishing such an administrative fabric is the development of a design staff that is talented and realistic enough to command respect both in the architectural profession and in the complex bureaucracy which produces government-aided-housing. This is also no small task, but . . .

A genuine call for urban quality brings out talented designers

And this is what the PDR has had going for it during its first year. First, and probably most important, many younger people are increasingly involved in the urban crisis and clearly less interested in the beautiful but socially irrelevant building. The opportunity to have a voice, or possibly a hand, in rebuilding New York has been a compelling motivation. Second, the Lindsay style, and that of his top officials who are genuinely responsive to design quality, has acted as a powerful magnet. Third, the creation of a separate design office whose sole objective is the pursuit of design quality within agreed-upon time and cost goals gives a status to design which it does not have as one of the multiple functions in the development process.

In setting up this office, its delegated responsibilities were "to act on behalf of the HDA Administrator in all matters of physical planning, building and environmental design." Specifically, PDR "includes the formulation and maintenance of design standards (see next page), the development of area and concept plans (see page 110), the conduct of design review, the selection of architectural planning and other related professional consultants (see page 100). It shall also undertake a program of experimental design, endeavoring to produce through the use of advanced technology, coupled with creative planning and design, more and better housing in the public sector and to set new and higher standards of achievement in the private sector (see next page). Finally, it shall serve as a liaison with the City Planning Commission and other City Departments with respect to the City's overall design goals and their fulfillment."

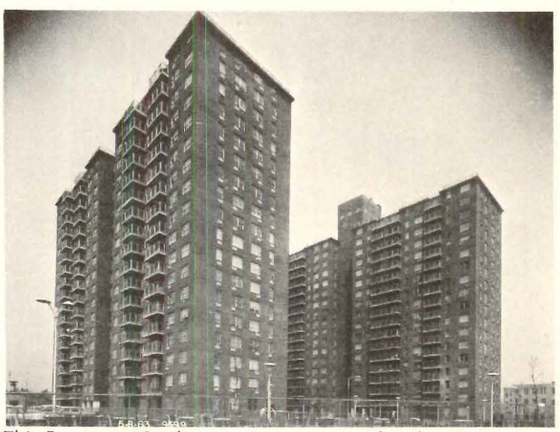
Thus the Office of Planning, Design and Research has been constituted to attract some gifted young people, and has had the great leavening of their aspiration, enthusiasm and faith.

But, of course, there is always the danger of too much aspiration and too little experience in or knowledge of the parameters of the achievable. For this reason several members of the PDR staff were selected for their long-time exposure to the hard realities of building government-aided programs in New York City, as well as for their receptivity to new patterns. The objective has been for them to function together creatively and productively.

PDR also coordinated design for New York's Model Cities program

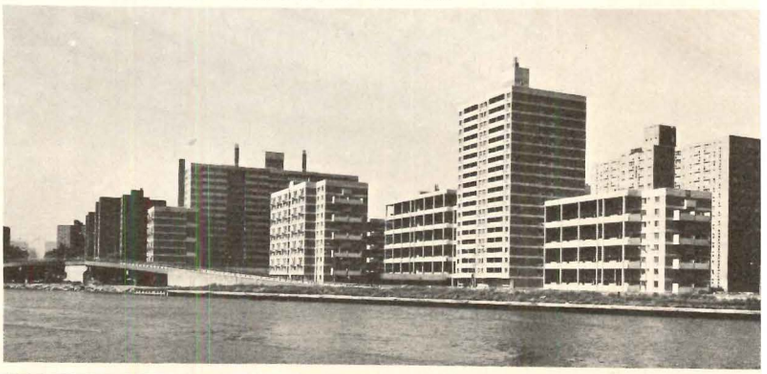
The City's three Model Cities areas are: Harlem-East Harlem; South Bronx; Central Brooklyn, including Bedford Stuyvesant, Brownsville and East New York.

Harlem-East Harlem is comprised of old- and new-law tenements crowded together on narrow, bleak blocks. Central Brooklyn is much less homogeneous, with Bedford Stuyvesant distinguished by the wide tree-lined avenues and row houses that have



This Evergreen Gardens project was completed in 1962.

Riverbend, designed by Davis, Brody & Associates.



made it a desirable middle class residential area since the first third of this century. These communities therefore required housing that differed in terms of height and density. Different also was the amount of clearance or rehabilitation appropriate to each neighborhood and the sizes of parcels that could realistically be assembled.

Sites were selected by the community acting through its planners. The City reserved to itself discretionary powers of review. Certain inherent problems in the program included the high percentage of cars required by the Zoning Resolution to be parked on the site (affecting both open space and economics) as well as the stringent cost factors associated with the programs available to finance the housing itself (the City's principal financial contribution was the land write-down—the housing was to be built under two Federal programs—low-cost public housing and 221 (d)(3)).

Under PDR's guidance, Gruzen and Partners coordinated the seventeen architects selected by the Housing Authority for the low-cost housing. PDR concerned itself with the establishment of overall design criteria. Particular emphasis was placed on architecture that respected the existing character of the streets. Close adhesion to street lines permitted maximum use of rear yards as open space available to the tenants of each building, and emphasis on the street as a place of public importance. Every attempt was made to respect the existing scale of the neighborhood and to foster a feeling for renewal that would be associated with new life for the whole community and not just for the few destined to live in the new buildings.

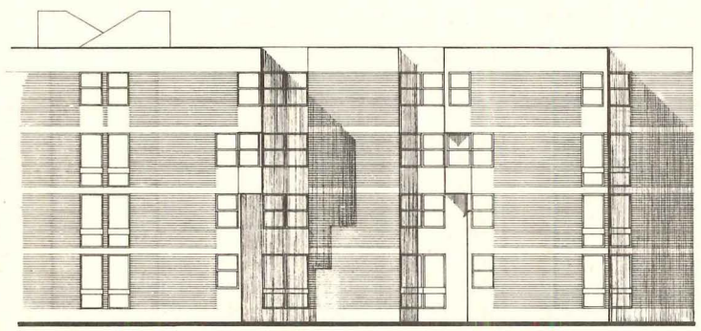
Individual architects were encouraged to experiment with siting and parking solutions to maximize the open space available on each site. PDR prepared site plans for each site. Architects were encouraged to modify basic building types on a site by site basis, introducing such design variations as bay windows and French doors (both for the first time in this type of publicly-assisted housing in New York).

Anticipating the lack of familiarity of many of the architects with the 221(d)(3) program in relationship to the above factors, PDR developed two prototypical buildings. One of these, based on a close reading of the Multiple Dwelling law, eliminates outside fire escapes in Class 3 (semi-fireproof) construction—chosen because it was believed to have economic advantages in a vest-pocket program of this kind. Both prototypes sought to demonstrate that this class of construction, traditionally confined to speculative low-density housing in the utilized areas, had within it considerable design possibilities. The design for one of these prototypes is shown below. The PDR design team consisted of Romin Koebel, Edward L. LaMura, and Alanne Baerson, assisted by Milton R. Newman. Paul Mauch was the technical advisor.

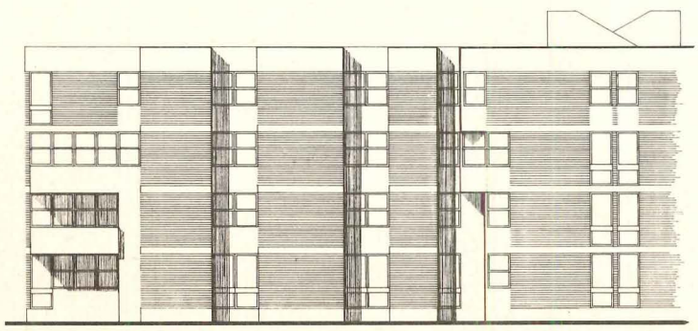
The subtle ambience in which good design can flourish has been created in New York City. The pages which follow depict a part of the work in which HDA's Office of Planning, Design and Research under the direction of Ratensky has been involved over the past year. The five projects shown are the work of contract architects. Here, PDR's role has been to demand and encourage the architect's best and to run interference for him where necessary. Equally distinguished and precedent breaking work, such as Davis, Brody & Associates' Riverbend Houses (see photo below), and Waterside (in final working drawing stage and pending construction), which were begun and largely formulated under the previous administration, are not included, nor are major projects—Ruppert Renewal Area, Washington Street Renewal Area, Brooklyn Bridge SE—which are in too early a stage to merit publication. Also shown below is an early Mitchell-Lama, government-aid-project, completed in New York in 1962, Evergreen Gardens.

Throughout this study credits are given to individual staff members who contributed directly to specific projects. However, general credits are due to architect Paul Mauch, for advice on all middle-income housing developments; architect Hugh McClellan, who contributed to the detailed development of urban renewal concept plans, and to architects James Steward Polshek, Richard Meier and Bernard Spring, who are serving as consultants to Planning, Design and Research.

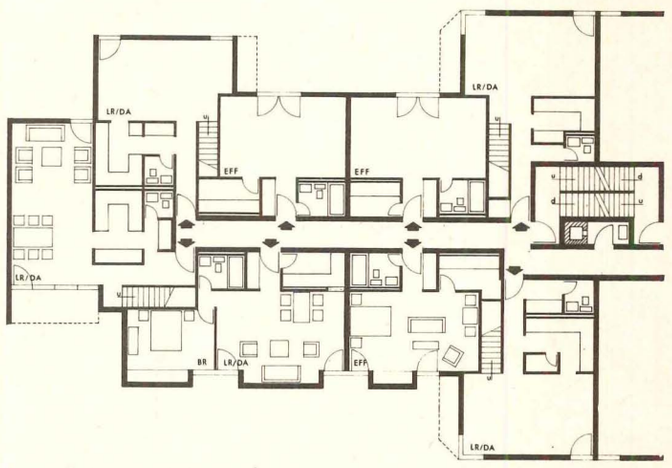
Two basic levels of design are illustrated in the following pages: actual projects designed by contract architects, both within and outside of renewal areas, are on the next ten pages, and "Concept Planning" for urban renewal areas begins on page 110.



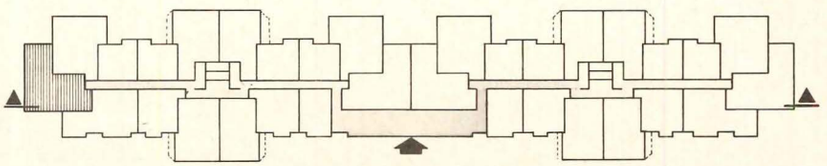
REAR ELEVATION

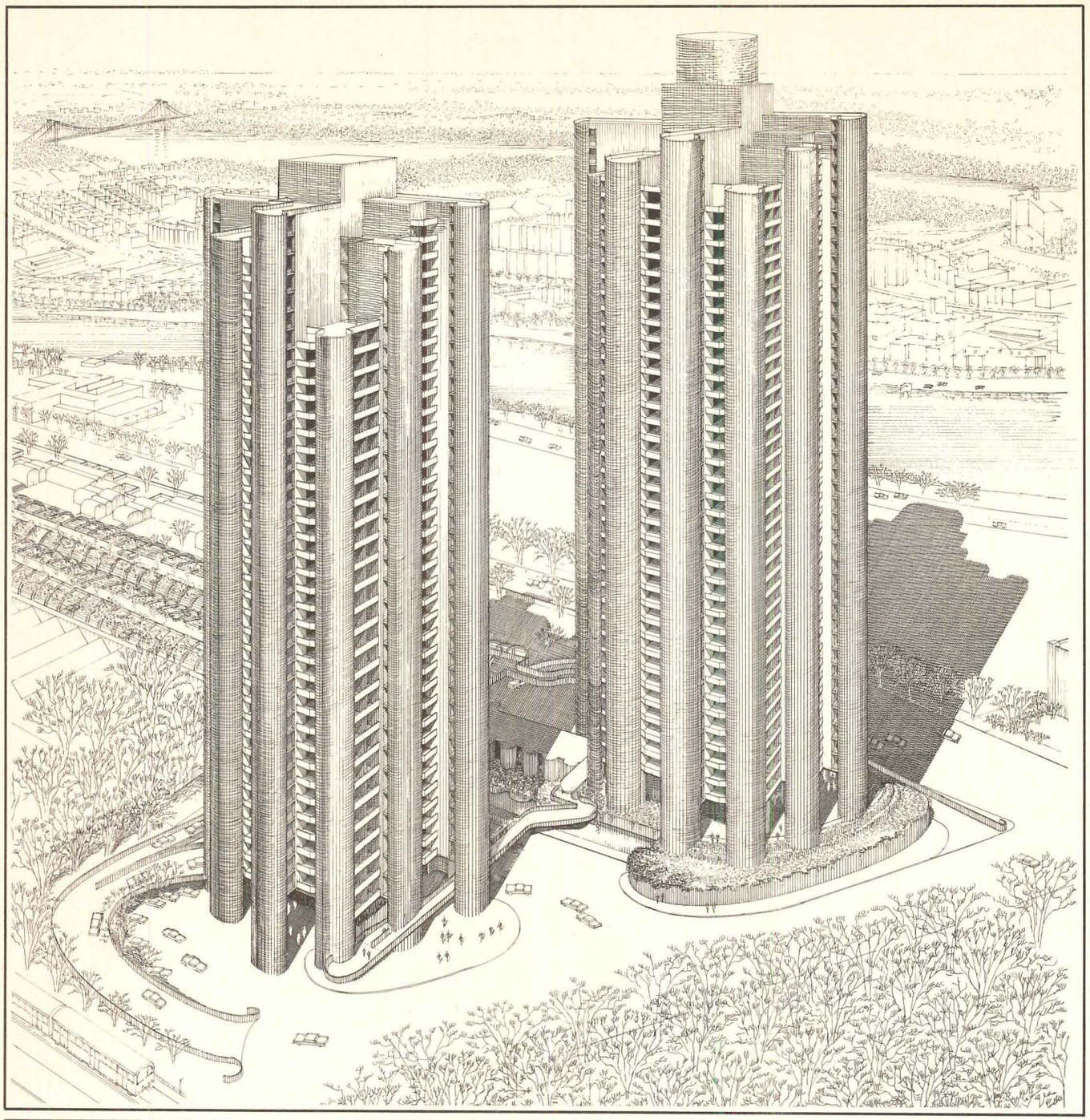


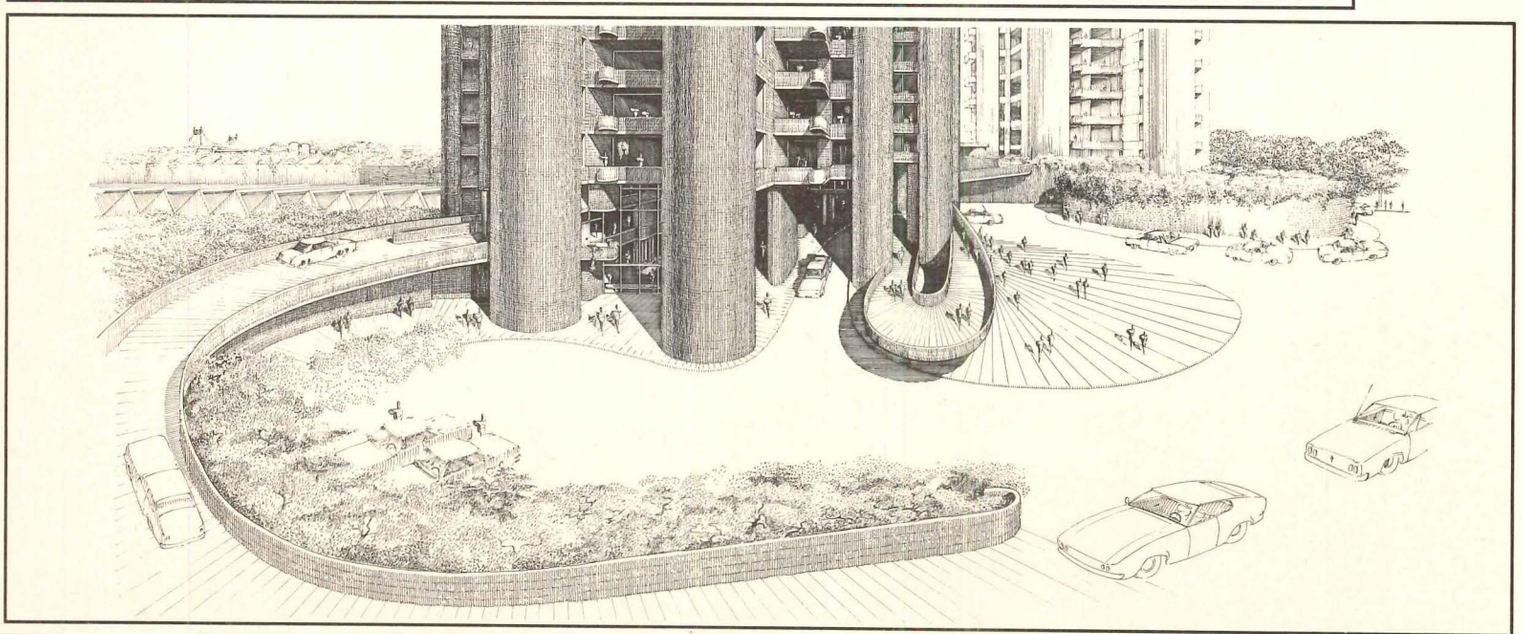
FRONT ELEVATION



One of two prototypes designed as a guide to architects unfamiliar with the 221(d)(3) program as it will be applied to the three Model Cities areas in New York City. The design is based on a close reading of the multiple dwelling law, and is intended only as a guide.







TRACEY TOWERS: WIDER DESIGN VOCABULARY FOR HIGH-RISE HOUSING

This project marks the entrance of Paul Rudolph into the aided-housing field in New York City, and the unique design reflects his usual fresh approach to architectural problems.

Given a site adjacent to and over the Jerome Subway Yards in the Bronx, the design includes one 40-story building, one 42-story building, and 36 townhouses. The plan is inherently economic, with the bulk of the units placed on solid ground, and an air-rights platform used for townhouses, parking, recreation, and open space.

The varied shape of the towers enlarges the vocabulary of housing in New York City, and is an innovative compromise to the circular tower the sponsor desired at first (Rudolph was opposed to pie-shaped rooms).

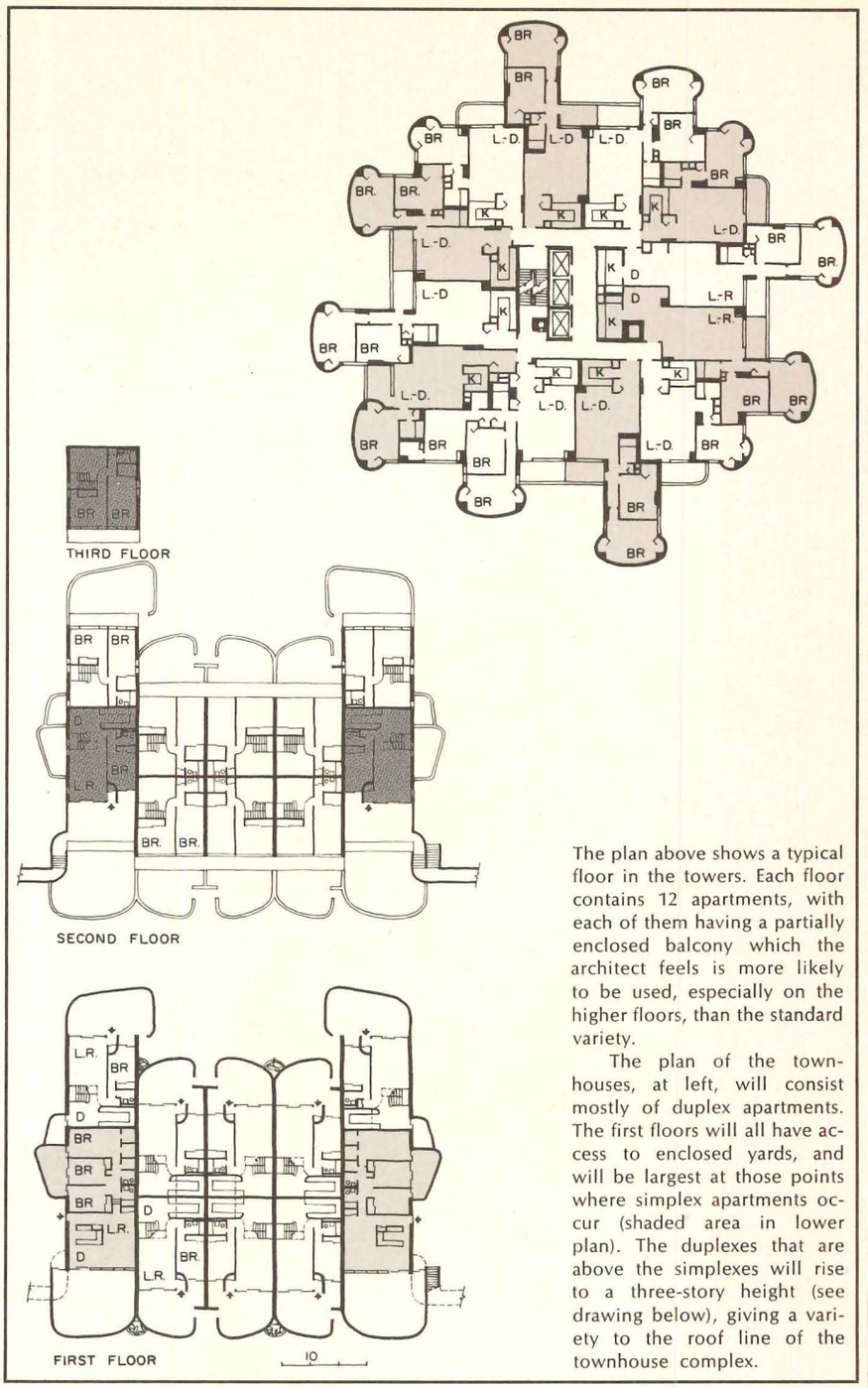
The townhouses will vary in height from two to three stories, and will contain mostly duplex apartments, each having its own enclosed court (see plan).

Parking will be on grade but covered by a trellis upon which vines will be planted to shield the autos from view.

Facades of all the buildings will be the split-faced concrete block Rudolph designed to achieve at modest cost the striated surface of his Arts and Architecture Building.

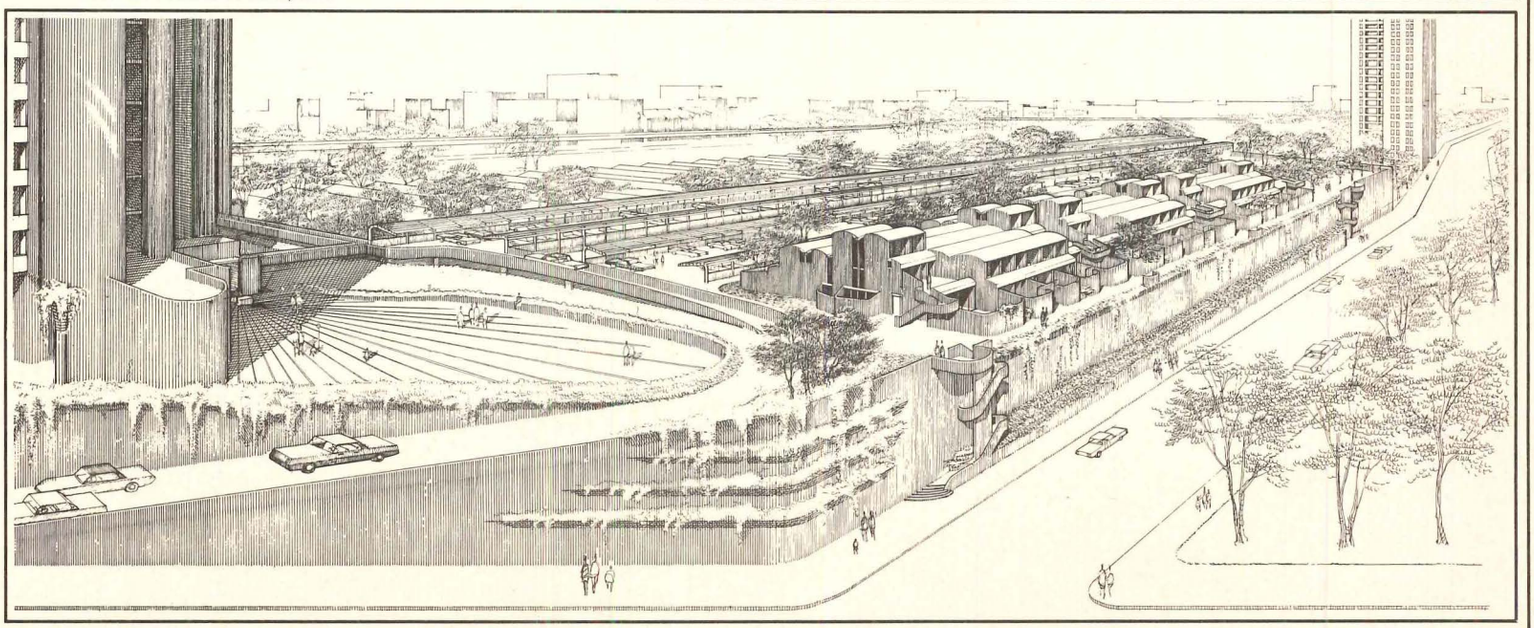
The curvilinear quality of the total project was intended to reflect the street patterns of the area, which presently consists of educational, park, and reservoir facilities. Since the area remains so park-like, views from the partially enclosed terraces will be spectacular.

TRACEY TOWERS, New York City. Architect: *Jerald L. Karlan;* Design Architect: *Paul Rudolph;* engineers: *Robert Rosenwasser (structural); Herbert Pomerantz & Associates (mechanical);* sponsor: *De Matteis Development Corporation;* contractor: *Leon D. Matteis & Sons, Inc.*

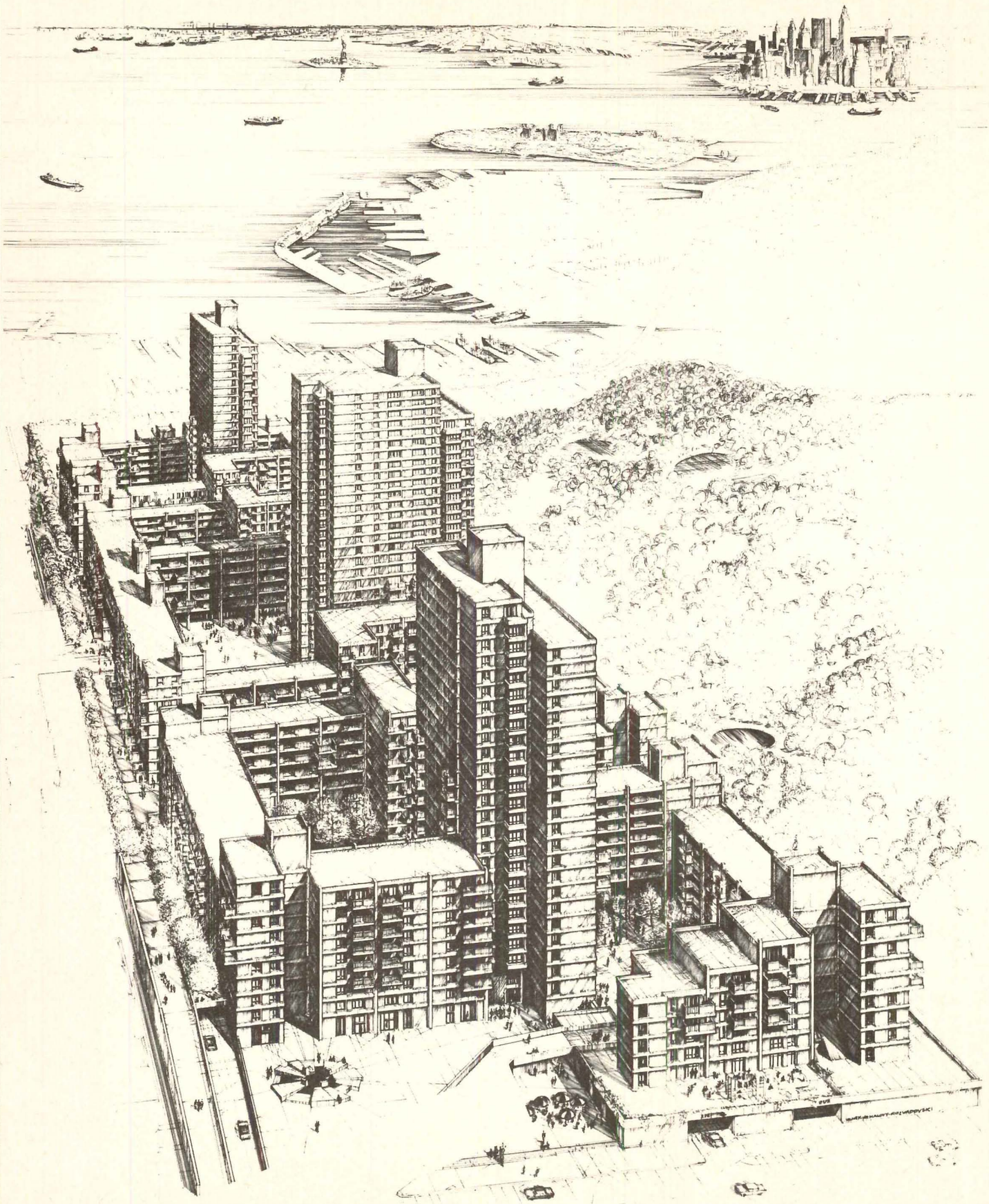


The plan above shows a typical floor in the towers. Each floor contains 12 apartments, with each of them having a partially enclosed balcony which the architect feels is more likely to be used, especially on the higher floors, than the standard variety.

The plan of the townhouses, at left, will consist mostly of duplex apartments. The first floors will all have access to enclosed yards, and will be largest at those points where simplex apartments occur (shaded area in lower plan). The duplexes that are above the simplexes will rise to a three-story height (see drawing below), giving a variety to the roof line of the townhouse complex.



Sited on a gentle slope many apartments have spectacular views of Upper New York Bay and Manhattan.



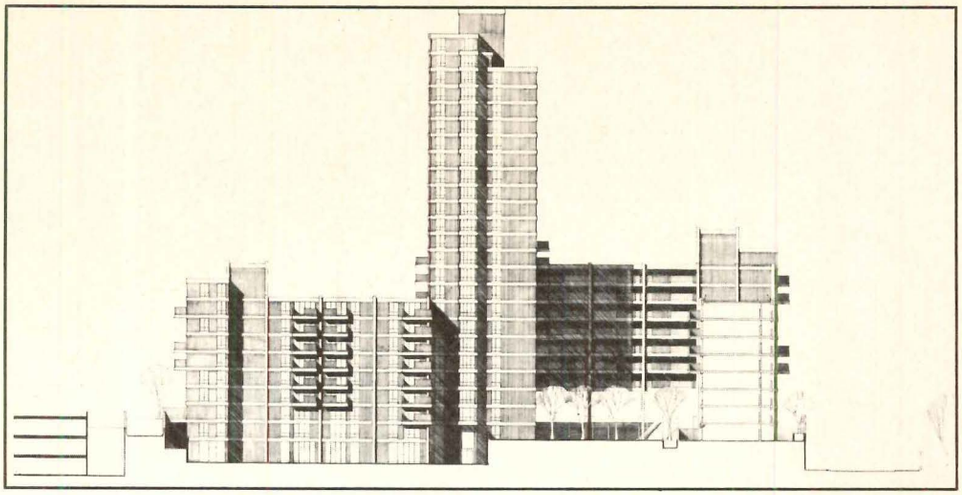
HARBOR HOUSES: COMPLEX FORMS WITH OFFSETTING SAVINGS

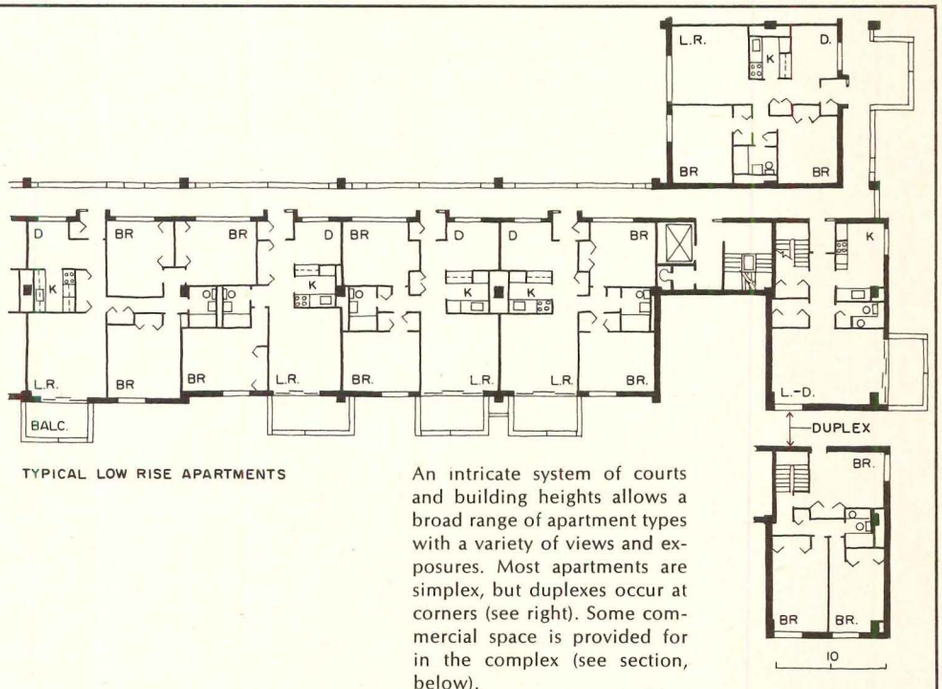
Design complexity, previously something to shy away from in government-aided housing, was made possible here by the architect's innovative mind, as well as the revised fee structure (see page 98).

The air-rights site over a train yard posed many problems, because some areas required more head room than others. Frequent changes in site elevation resulted, which have been used advantageously to include an exciting set of alternatives in the circulation system, and a visually stimulating series of varying roof elevations. The intricate massing of the buildings is sensitive though, of course, it adds to construction costs. Savings from a unique wall system are expected to substantially offset the costs of air-rights structures, underground parking, and non-repetitive design.

Walls between spandrels will be hollow-core, eight-inch concrete block (3500-pound) constructed so that the cores form a vertical air shaft, open at the base, to allow water to weep. The interior will be waterproofed, and two-inch-thick sheets of expanded polystyrene attached by brackets. Wall-board will be laminated to the insulation. The whole process is expected to greatly reduce construction time.

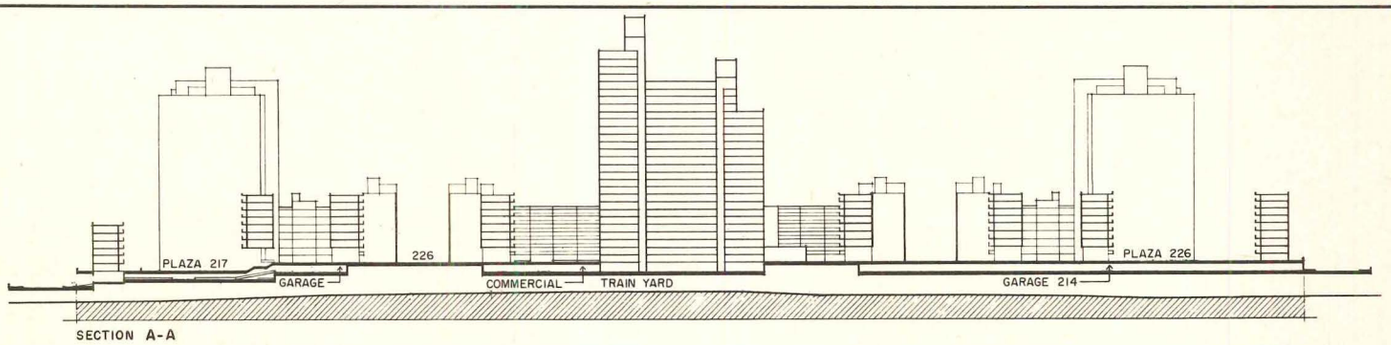
HARBOR HOUSES, New York City. Architect: *George A. Diamond Associates;* consulting architect: *Herbert L. Mandel;* engineers: *Goldreich, Page, and Thropp (structural); Arthur D. Benjamin (electrical, mechanical);* landscape architect: *M. Paul Friedberg and Associates;* sponsor: *Local 1814, International Longshoremen's Association;* contractor: *Bonwit Building Corporation.*



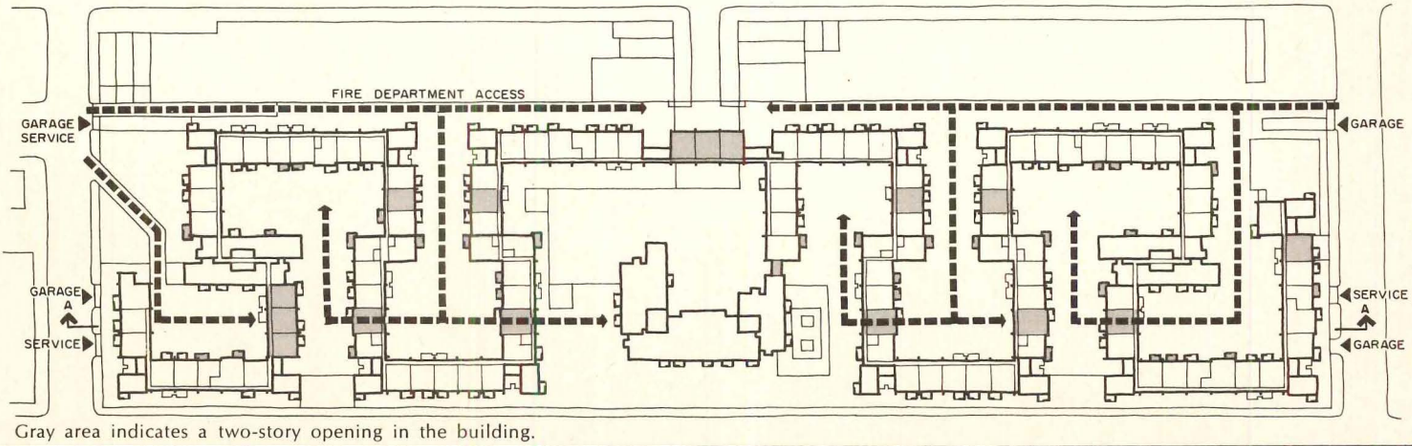


TYPICAL LOW RISE APARTMENTS

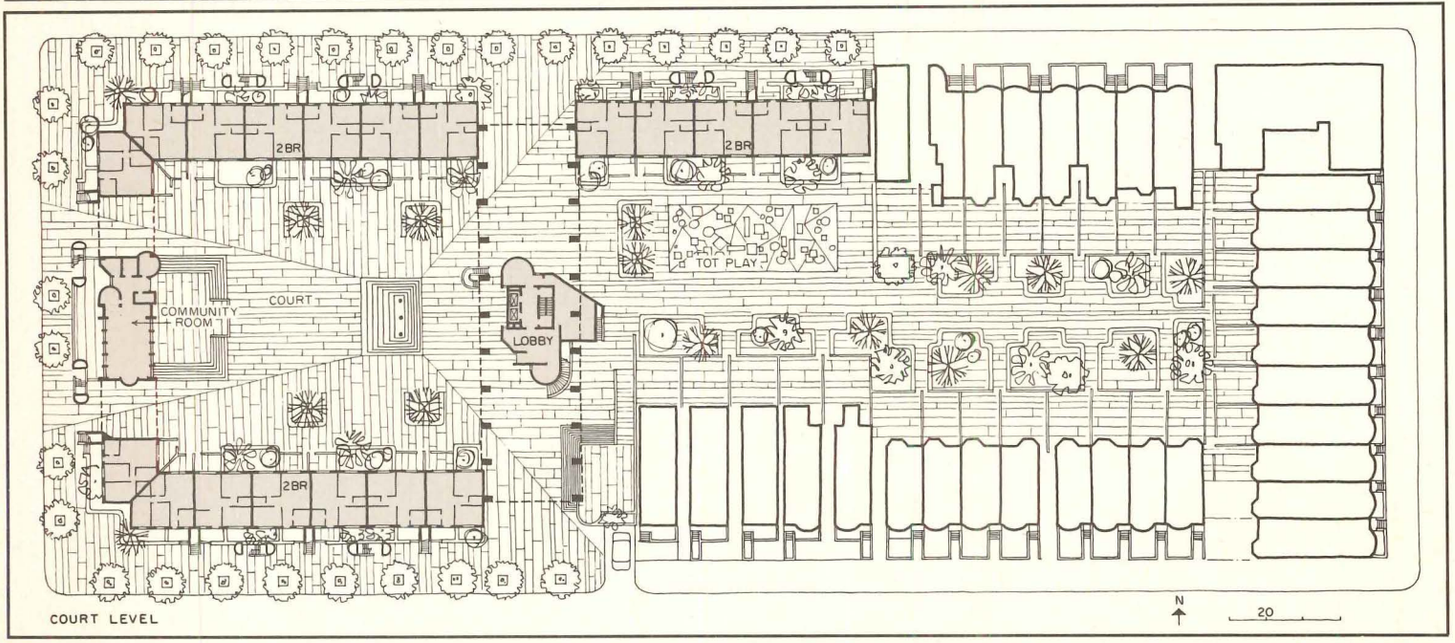
An intricate system of courts and building heights allows a broad range of apartment types with a variety of views and exposures. Most apartments are simplex, but duplexes occur at corners (see right). Some commercial space is provided for in the complex (see section, below).



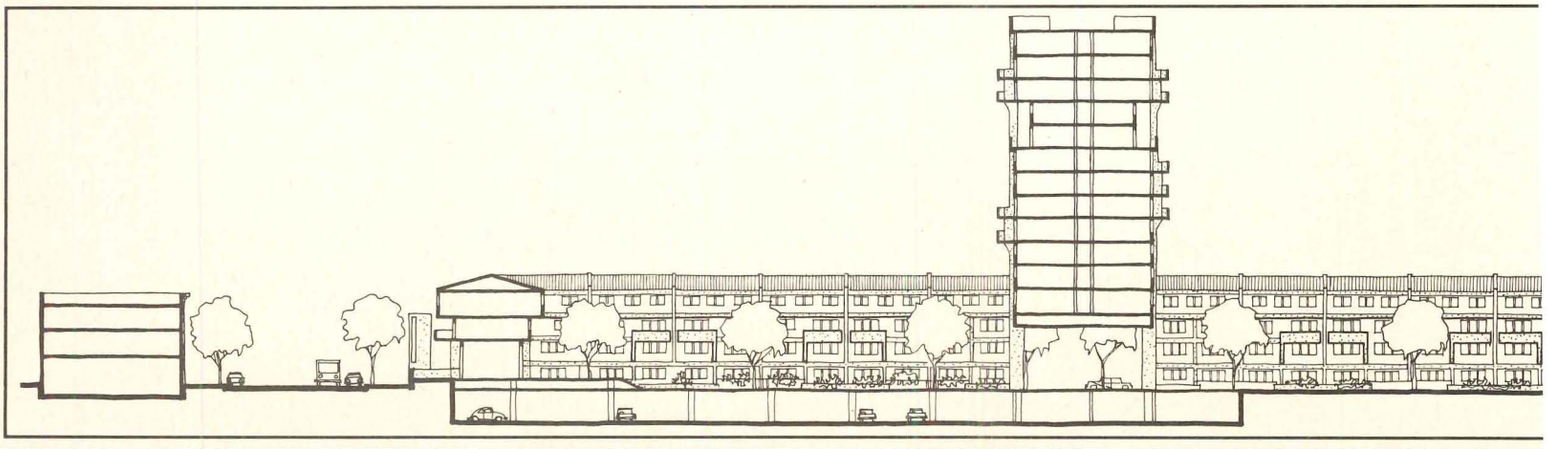
SECTION A-A



Gray area indicates a two-story opening in the building.



COURT LEVEL



CROWN GARDENS: DESIGN TO REVERSE THE SPREAD OF BLIGHT

Typically, areas on the edges of slums tend to become the next slums, and in Crown Heights—which is adjacent to the hard-core slum area of Bedford Stuyvesant—the signs of this decay are already visible. The construction of Crown Gardens (cooperative housing requiring tenants to become financially committed to their neighborhood) will, it is hoped, spark an internal and private redevelopment of the area.

The site is presently an unused, City-owned trolley-car barn, a blight to the neighborhood. A problem was to add to the housing supply in a way that would not make the existing housing obsolete. Within the remainder of the block, to the degree that the cooperation of owners can be secured, the rear yards of the existing dwellings will be integrated into the overall site plan of this new project.

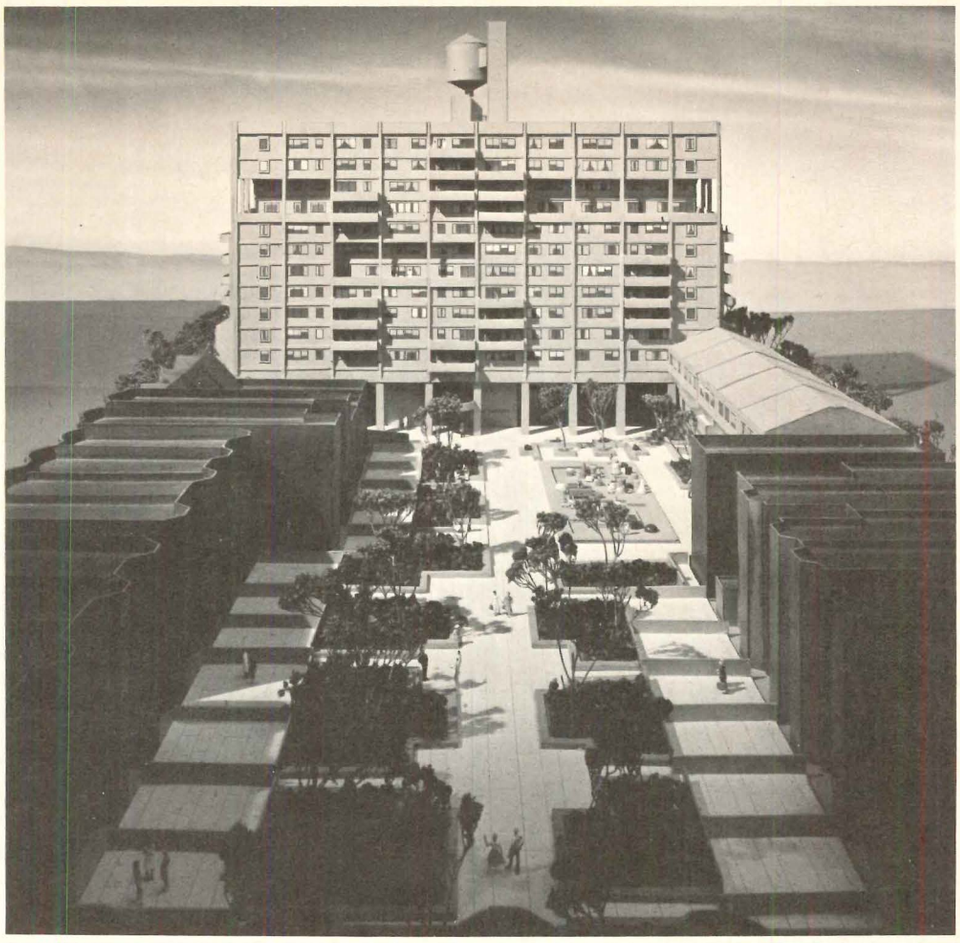
The high-rise apartment building is located near the middle of the block, and raised 30 feet off the ground on a platform. Along the periphery of the site, four-story buildings will enclose a semi-public court and reinforce the street scale. All parking will be underground, below the court, freeing all open spaces to the pedestrian.

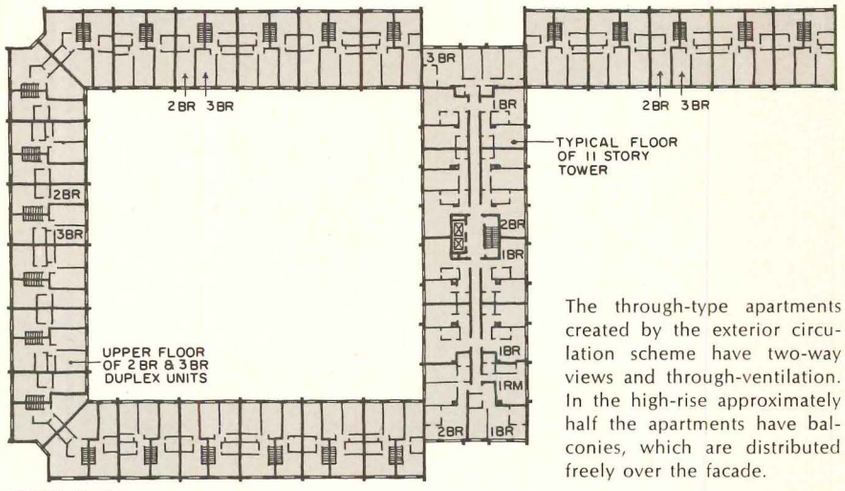
Access to the interior court will be through openings in the low buildings and under the platform of the high-rise. A community room located near the street, with terraces overlooking the street and the court, links the project and neighborhood.

The low-rise buildings will have duplex units on the upper two floors, above two floors of simplex units. Because the lower floor is set four feet below grade, the maximum climb is one-and-a-half floors.

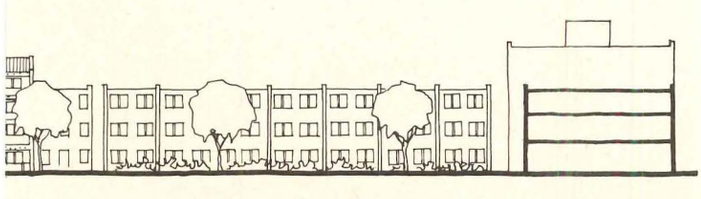
The high-rise has two non-typical floors of apartments for the elderly. These apartments have continuous balconies so that the older people can share this common facility if they wish.

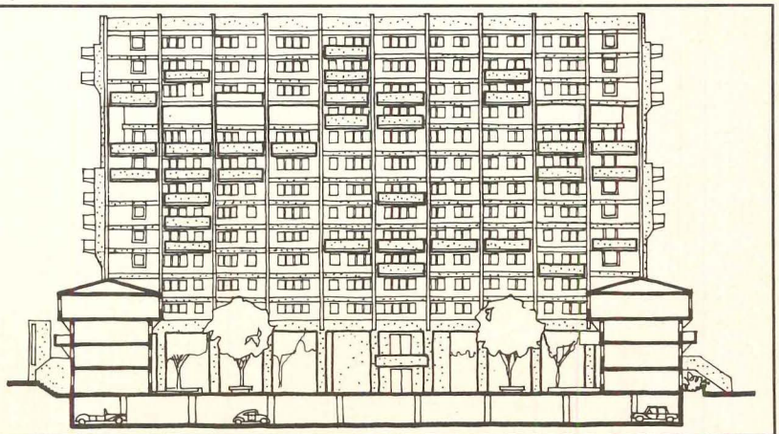
CROWN GARDENS, New York City. Architect: *Richard D. Kaplan;* engineers: *Robert Silman* (structural); *Peter Flack* (mechanical); landscape architect: *M. Paul Friedberg & Associates;* sponsor: *Crown Heights Neighborhood Conservation Corporation;* developer: *Association for Middle Income Housing.*

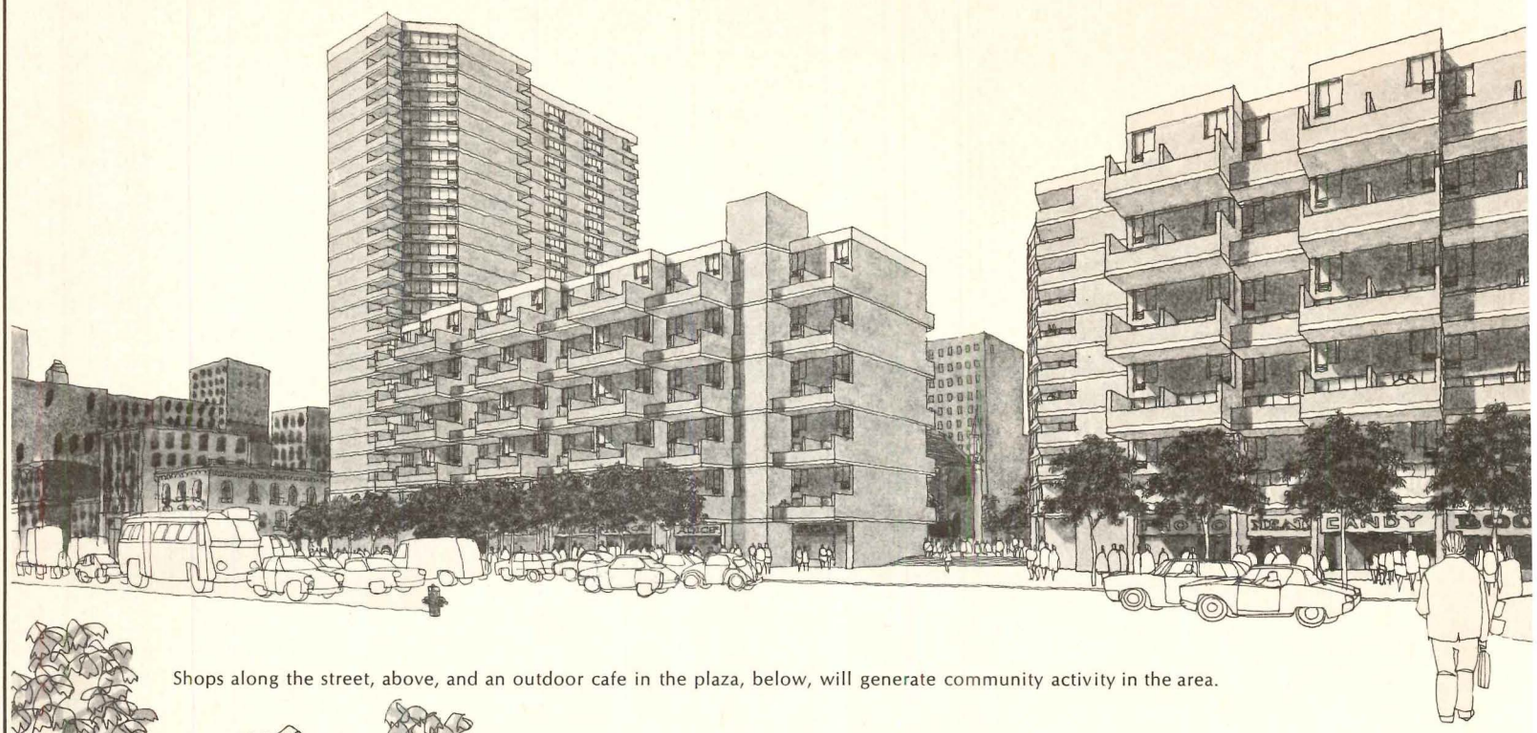




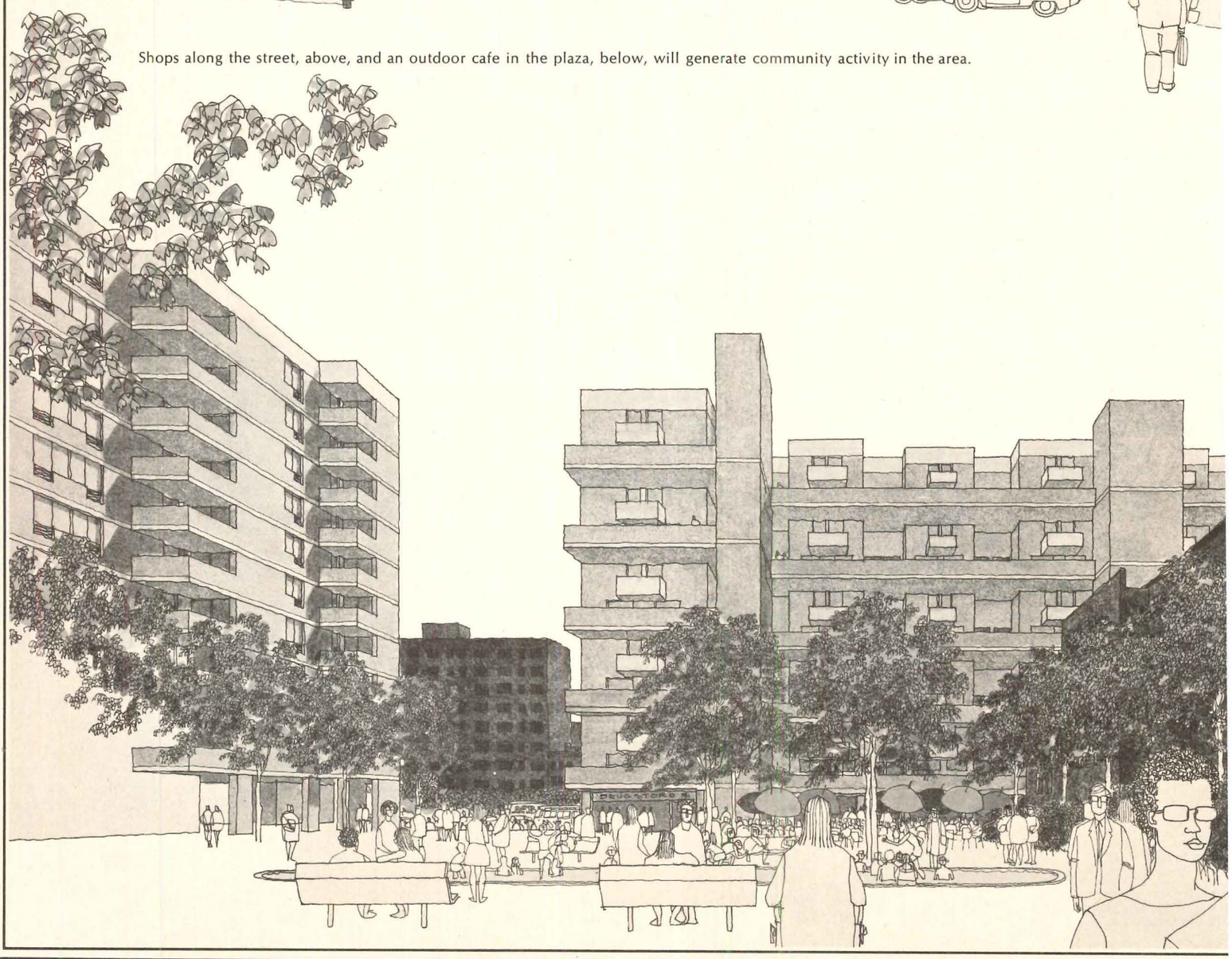
The through-type apartments created by the exterior circulation scheme have two-way views and through-ventilation. In the high-rise approximately half the apartments have balconies, which are distributed freely over the facade.

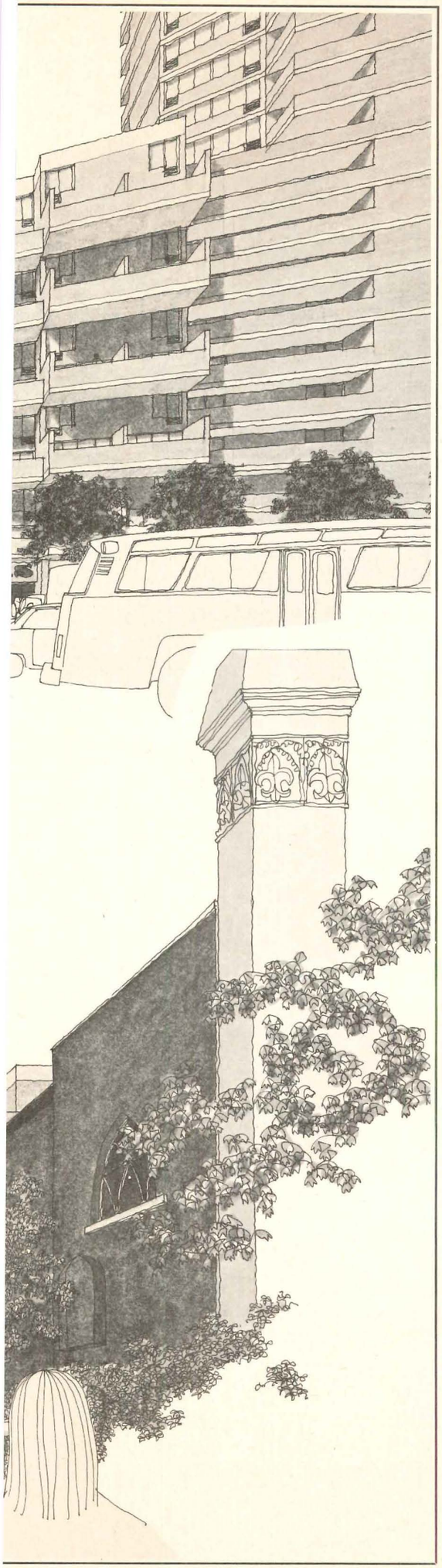






Shops along the street, above, and an outdoor cafe in the plaza, below, will generate community activity in the area.





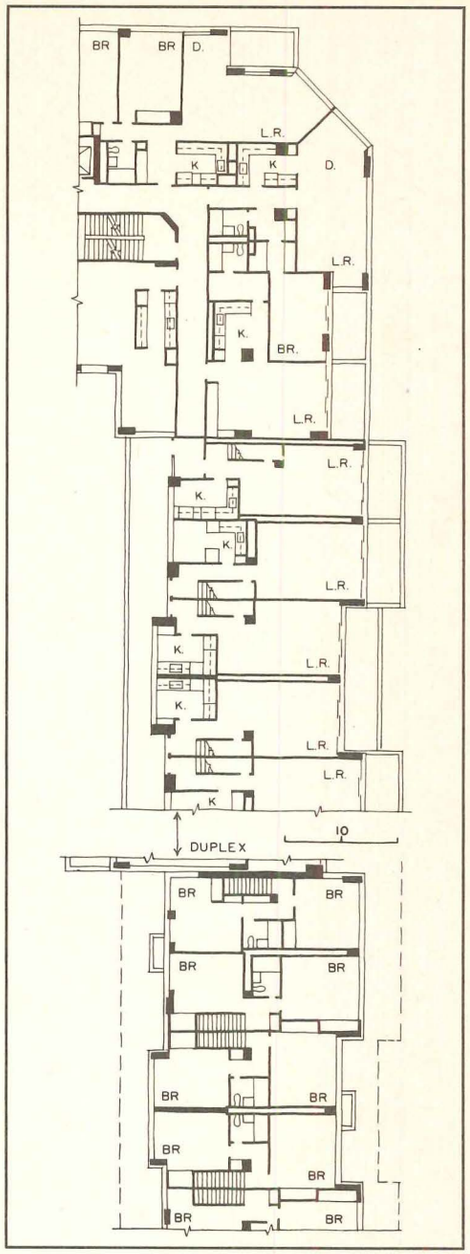
EAST MIDTOWN PLAZA: A MEETING GROUND FOR THE COMMUNITY

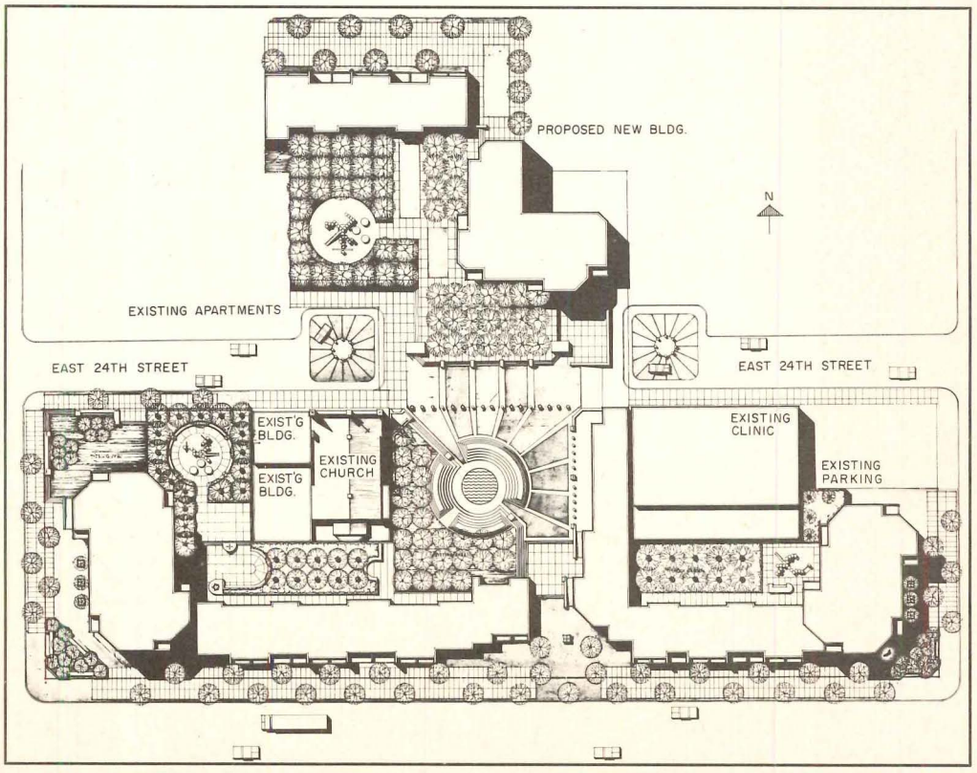
The east side of central Manhattan is becoming increasingly institutionalized with the rapid expansion of the many medical facilities located there. In order to bring people—a residential kind of vitality—back to the area, Davis, Brody & Associates have produced the kind of thoughtful design which hopefully will become typical in government-backed urban housing.

The site defines the southern end of an urban renewal area, faces onto a major crosstown street, and covers much of two square blocks. By convincing the City to close 24th Street (see plan, below), a through-block plaza was created, containing facilities for community participation. This space, along with the shops planned for the street side, will infuse the area with enough people to make it essentially self-policing and safe for the residents.

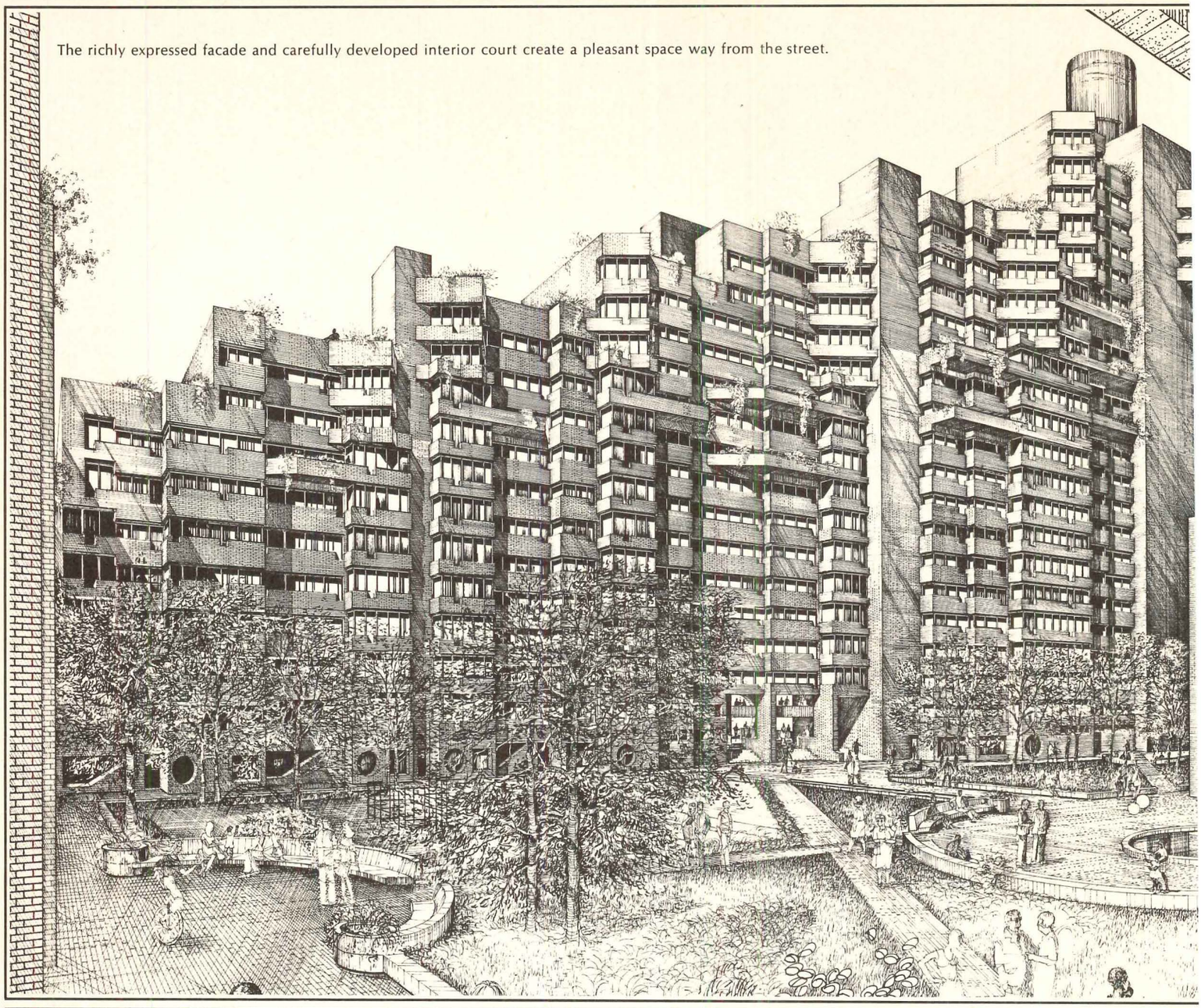
A series of ten-story buildings each contain five layers of duplex apartments. Two high-rise buildings, of 22 and 27 stories, flank the low-rises and establish the city scale. These two buildings were designed with cut-off corners to soften their visual effect, and also to give better views of the surrounding city from the living rooms, which were placed at the corners. With this scheme, the architects have respected the city's grid system, but softened it somewhat.

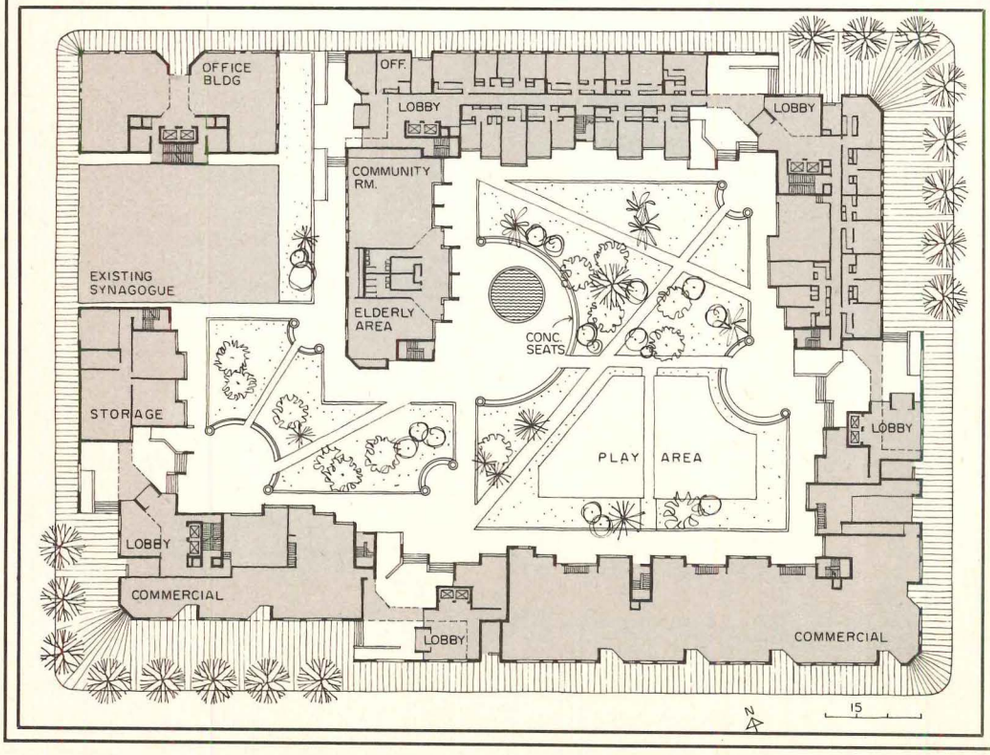
EAST MIDTOWN PLAZA, New York City. Architects: *Davis, Brody & Associates;* engineers: *Robert Rosenwasser (structural); Cosentini Associates (mechanical);* landscape architect: *M. Paul Friedberg & Associates;* sponsor: *East Midtown Community Housing Corporation;* contractor: *Cauldwell-Wingate;* lighting consultant: *David Mintz.*

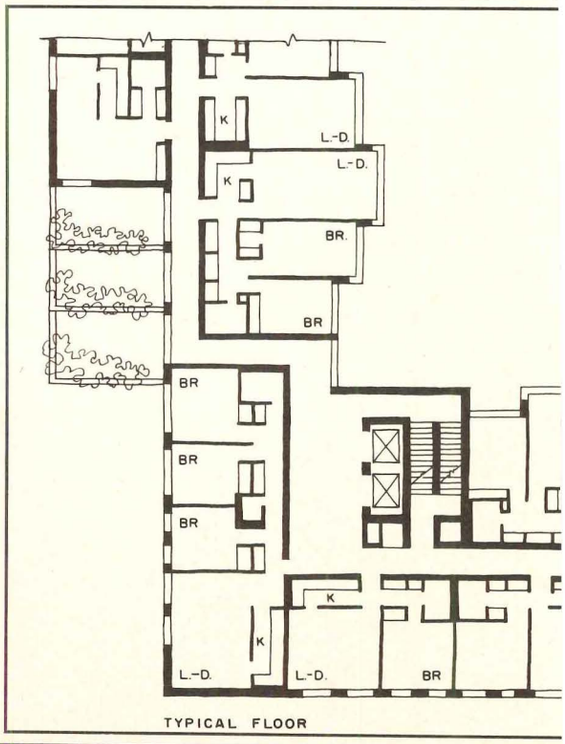




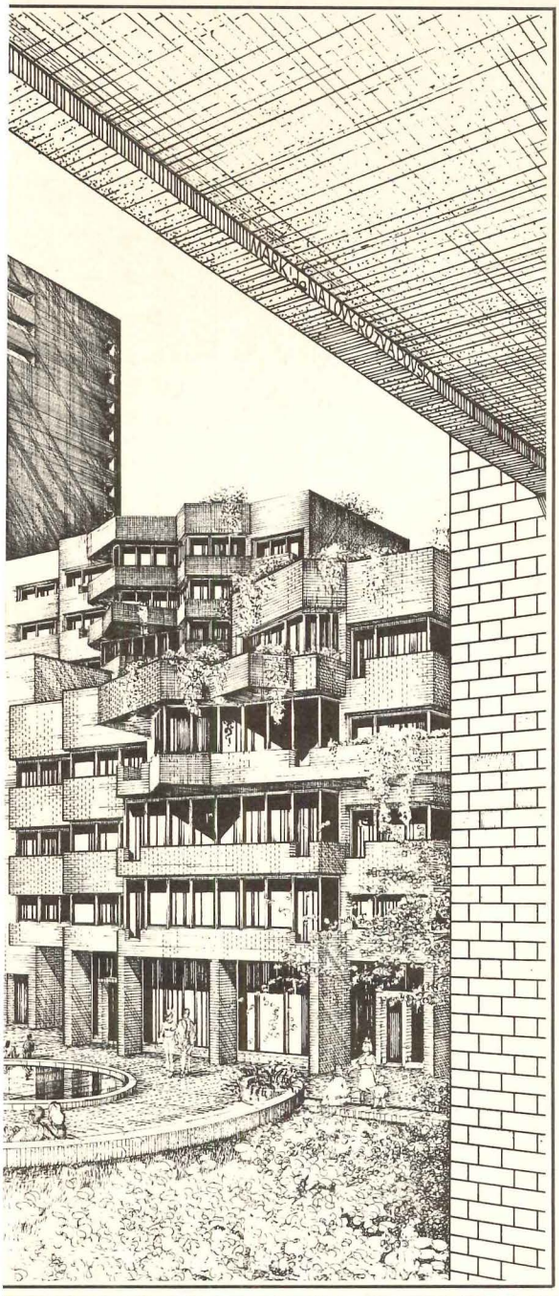
The richly expressed facade and carefully developed interior court create a pleasant space way from the street.







TYPICAL FLOOR



SEWARD PARK EXTENSION: AN ENCLAVE AWAY FROM URBAN DIN

An older project many years in the making, Seward Park Extension has reflected in its design evolution a virtual revolution in design philosophy. Originally designed as a cookie-cutter type of structure (by another architect) repeated over the site in parallel, and, in its original form, disregarding existing neighborhood social and religious institutions (which, in the present site plan, survive), it became the first urban renewal project in New York City for which a "concept plan" was developed.

William Pedersen's fine design holds the lines of the streets and forms a serene enclave, away from urban inundations, surrounded by the project. Also within this fabric, an existing synagogue and a small office building have been included (see site plan, lower left).

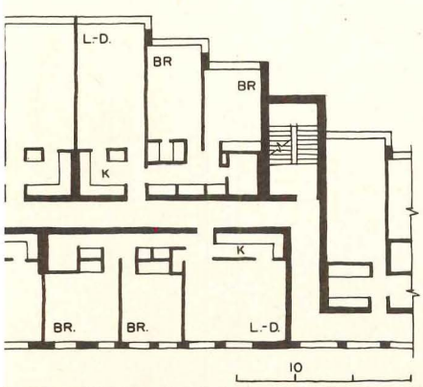
A carefully balanced mixture of townhouses and terraced high-rise buildings allows the complex to build slowly up to city scale. Terraces will be planted as roof gardens, and, in effect, will retrieve the total land area for open space.

At maximum height the buildings will be 22-stories high, with an average of 14-stories. Terraces will occur approximately every two floors. Parking will be handled in a garage adjacent to the site.

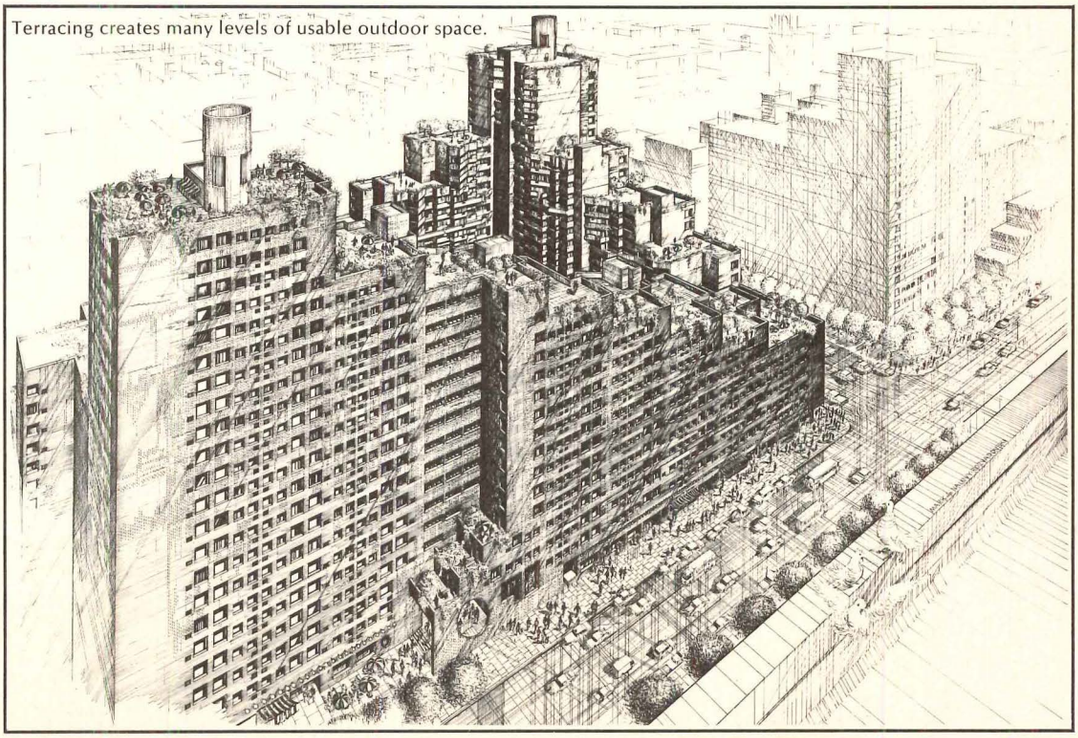
Constructed of reinforced concrete, the facades will be dark red brick, and faceted to allow each apartment maximum sunlight.

SEWARD PARK EXTENSION, New York City. Architects: *William F. Pedersen & Associates;* engineers: *Hertzberg & Cantor (structural); Herman Scherr & Associates (mechanical, electrical);* landscape architect: *James Fanning;* sponsor: *Hegeman-Harris Co., Inc.;* contractor: *Hegeman-Harris Co.*

Many types of flats are included in the 560 units planned. The scheme is double-loaded corridors, with the maximum number of apartments oriented to receive sun, resulting in the interesting broken facade shown in the rendering above.



Terracing creates many levels of usable outdoor space.



THE "CONCEPT PLAN": A THREE-DIMENSIONAL LAND-USE ANALYSIS, A THEME OF URBAN DEVELOPMENT

The final section of this study deals with PDR's formulation of "Concept Plans" for New York City's urban renewal areas.

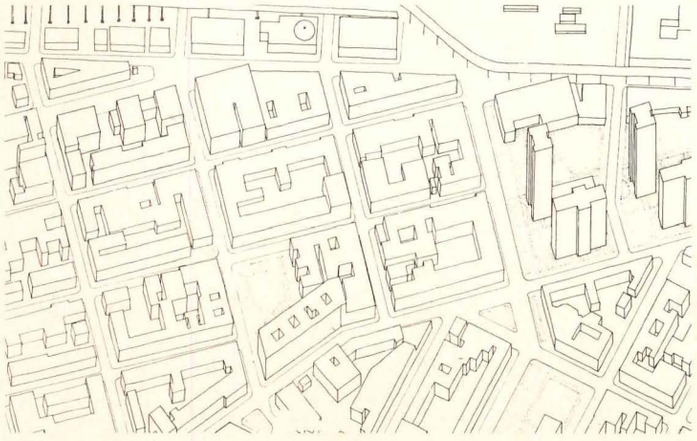
The "Concept Plan" serves a variety of functions. Primarily, it delineates a feasible program and defines a "theme" of development, relating what is proposed by the Office of Planning, Design and Research for the specific site to the surrounding neighborhood, and to program resources. It serves to determine those elements of the plan —park, playground or plaza, distribution of building masses (other than a straight zoning interpretation), and the interrelationship of these to each other and to circulation and servicing systems— which are then translated into requirements of the urban renewal plan. It is a three-dimensional land-use plan developed to the point where land uses are given form, and the hierarchy of forms, open spaces and servicing systems is studied together, but not given architectural expression. The PDR urban renewal concept study is not an "architectural study" per se, but is more of a "three-dimensional land-use" analysis (see below).

Urban design is essentially a volumetric problem, i.e. a series of forms in space (connected by movement systems); PDR is interested in getting away from the purely "map-coloring" type of urban design. The design seeks to guide the locations of "major masses" and "major voids," and key them to suggest the design of the specific buildings. The "essence" of the proposal lies in the arrangement of the varying densities (bulk) and open spaces (voids) together with the interweaving of diverse uses, all connected by the required complexities of movement.

The Williamsburgh Renewal area (see page 112) is a good example of the application of these principles to a pre-existing tower-in-the-park project, Independence Houses. PDR's solution introduces low "in-fill" buildings which define the spaces and provide the whole of Independence Houses with a greater relationship to the surrounding building stock. PDR has used this technique in other of their designs as a way of solidifying the existing and proposed city fabric.

The concept plan provides a visualization, sometimes even an idealization, of the potential of the site. It is an excellent aid for officials who must approve actions involved, for the community, and for potential sponsors or developers. It provides the basis for interaction with these groups. And, finally, during project execution, especially where multiple sponsors and multiple architects are involved, it serves as a guide for developing the detailed design interrelationship of the parts.

In particular, the first example in this study (see right) shows how a "Concept Plan" has functioned to guide an architect's design for a high school from a localized success to a success for the whole urban fabric surrounding it. This is what concept planning is about; it can function anywhere. The work shown on the following pages contains "Concept Plans" for four New York City urban renewal areas.

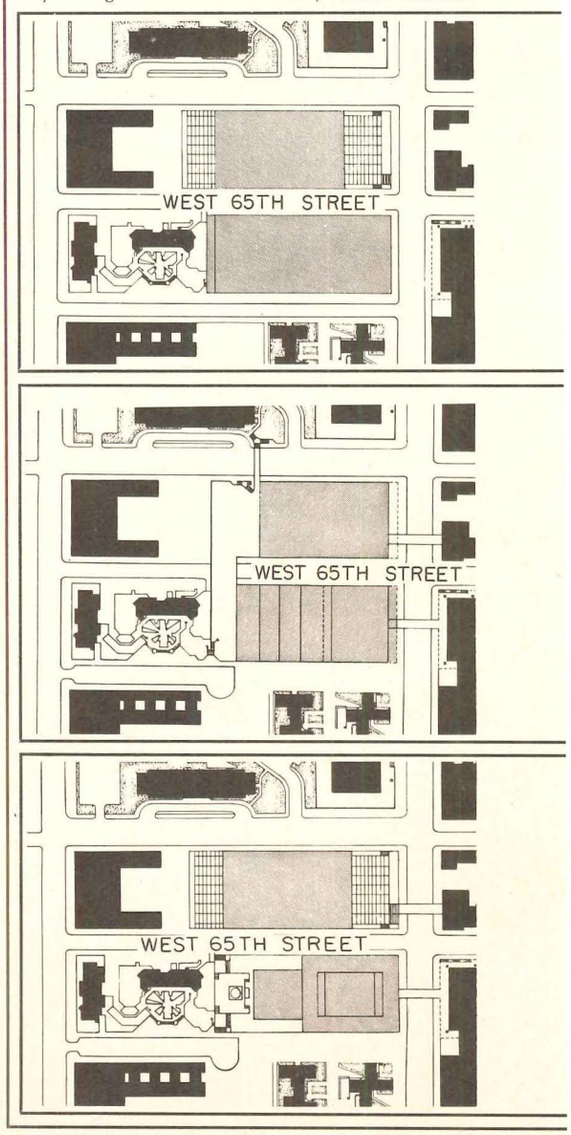


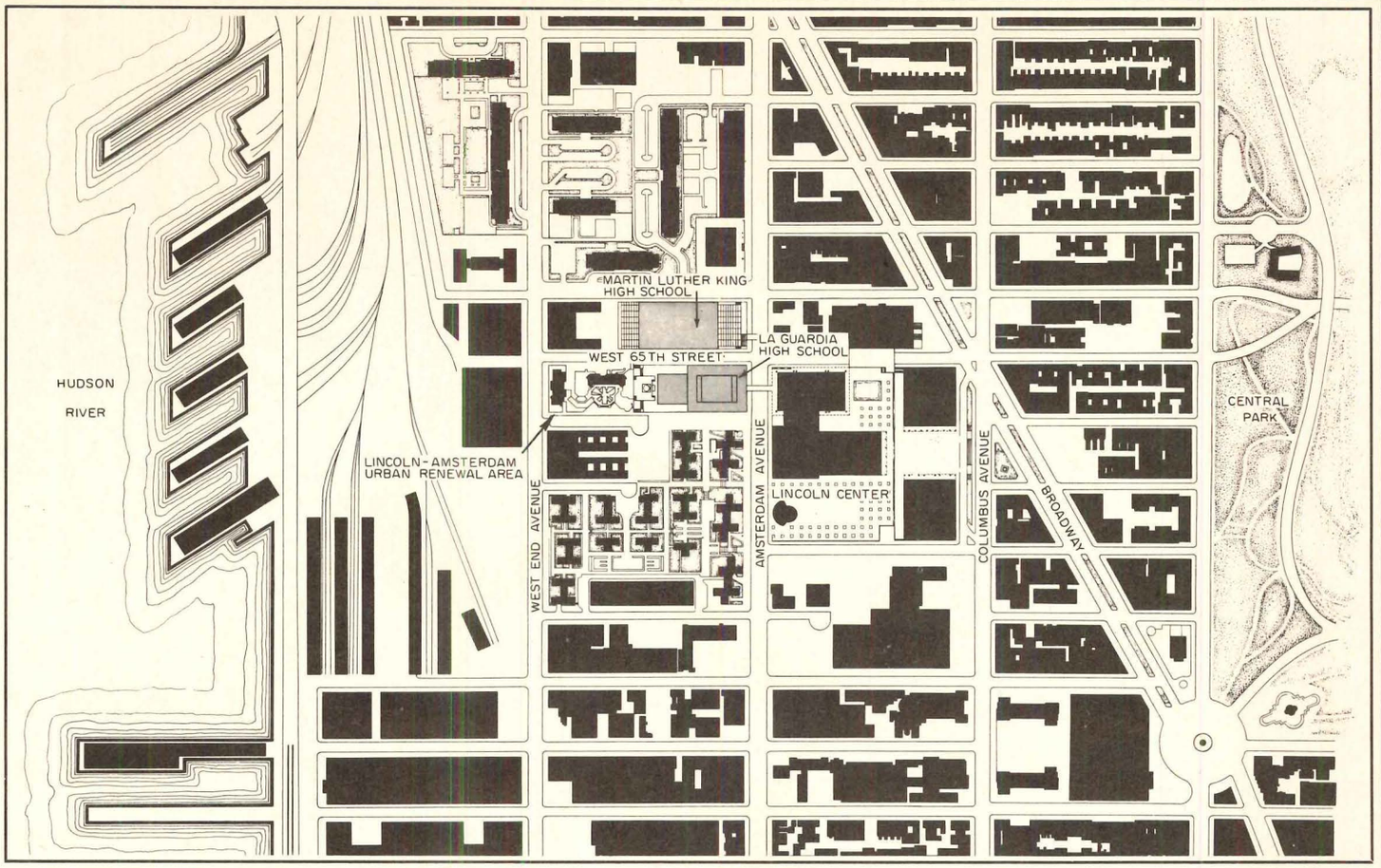
LINCOLN CENTER RENEWAL: "CONCEPT PLANNING" AIDS IN IMPROVING A DESIGN

This mini urban-renewal area, west of Lincoln Center, was established to create a site for the LaGuardia High School of Music and Art, a community center, a low-income apartment house and some retail shopping. Subsequently, the Board of Education designated property immediately to the north for the Martin Luther King High School. West 65th Street separates the two sites.

No provision was made in the early design proposal (see below, 1) for getting students safely to Lincoln Center, which provides direct access to the subway, nor was an area provided for them to congregate in. Also, the plaza of the Martin Luther King School seemed of questionable usefulness, sited as it was along Amsterdam Avenue, divorced from the overall pedestrian circulation pattern of the area. It was felt that a drastic redesign was needed, and the plans below show how close the final Belluschi-Catalano design (3) came to HDA's recommended design (2).

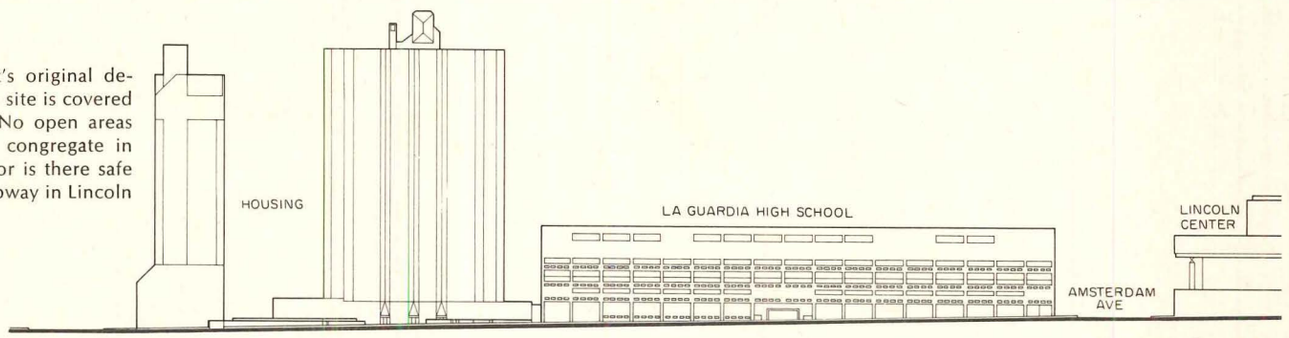
LINCOLN-AMSTERDAM URBAN RENEWAL AREA (redesign of LaGuardia High School), New York City. Design: *Robert A. M. Stern, Alanne Baerson.*





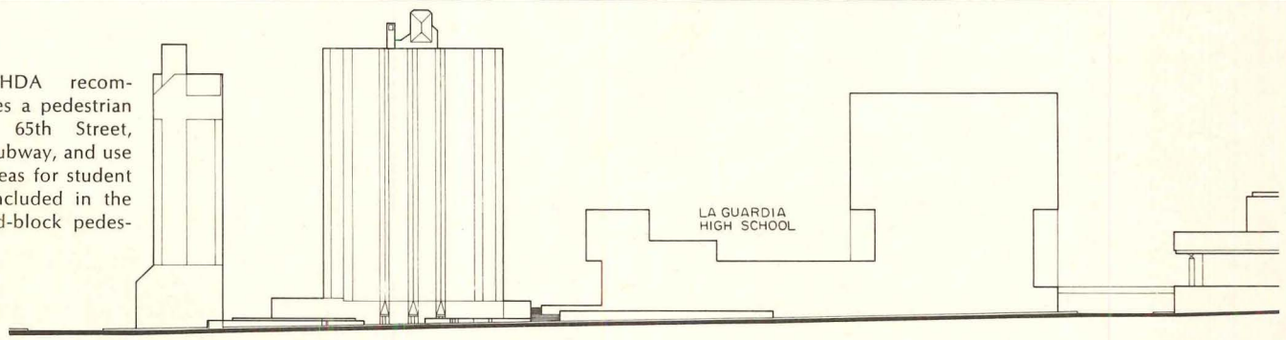
1

In the architect's original design most of the site is covered by the school. No open areas for students to congregate in are provided, nor is there safe access to the subway in Lincoln Center.



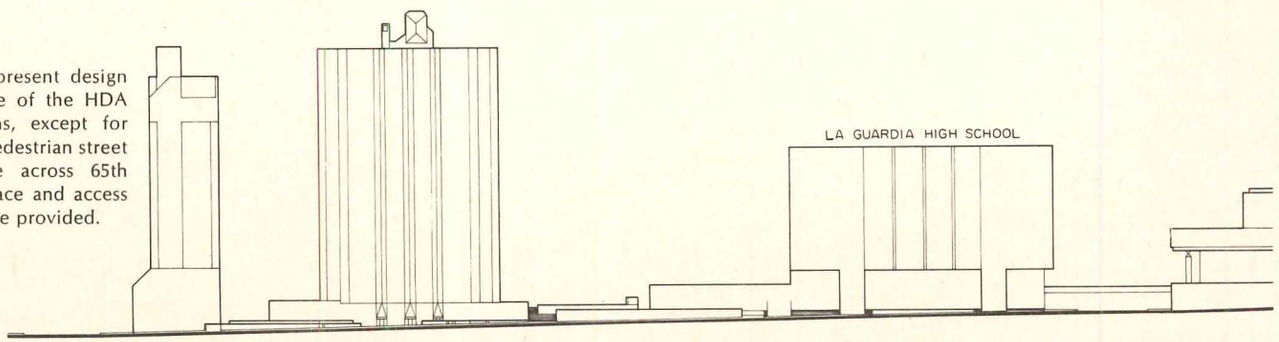
2

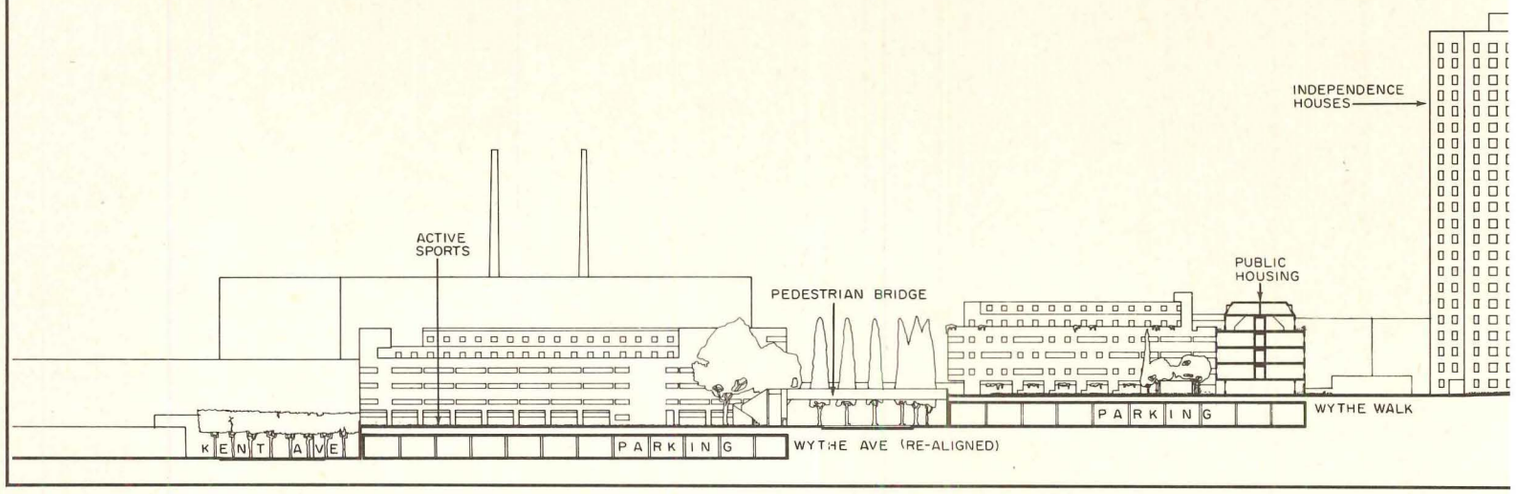
The design HDA recommended includes a pedestrian bridge across 65th Street, bridges to the subway, and use of open roof areas for student activity. Also included in the design is a mid-block pedestrian street.

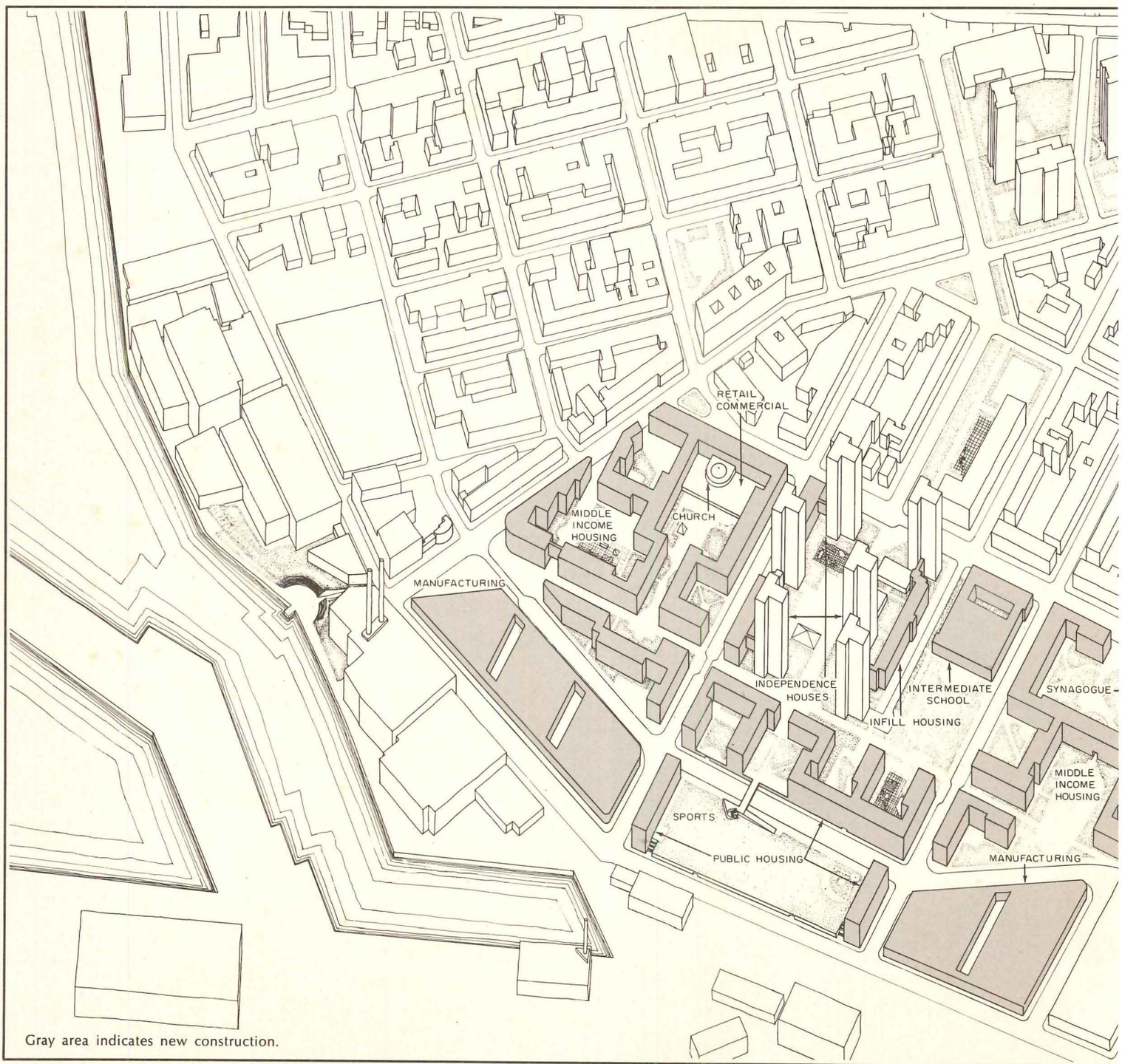


3

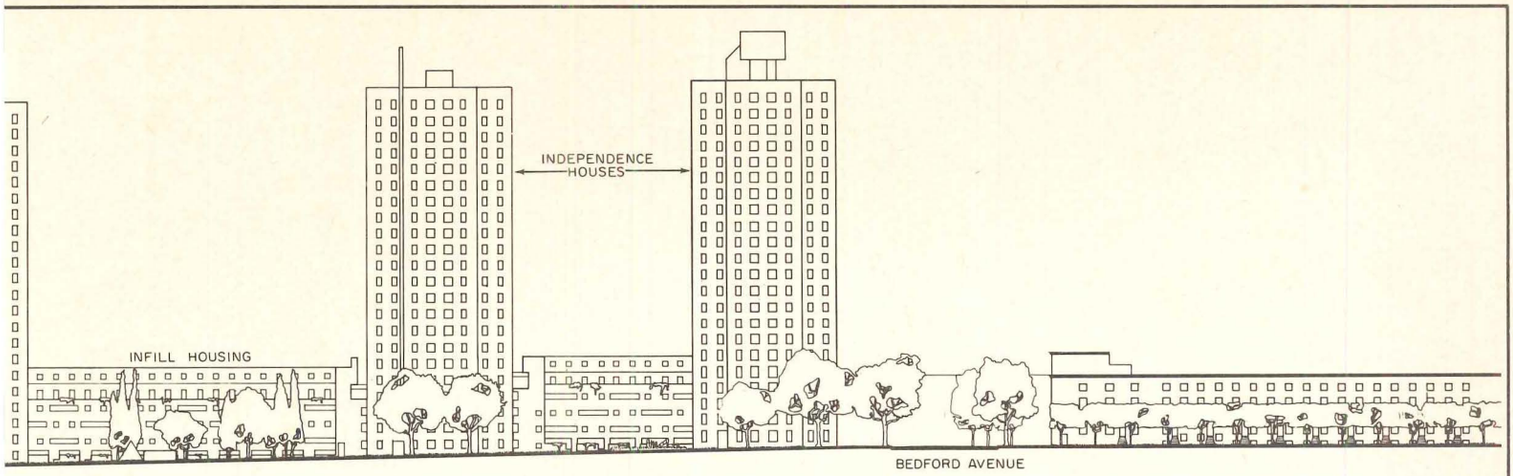
The architect's present design takes cognizance of the HDA recommendations, except for the mid-block pedestrian street and the bridge across 65th Street. Open space and access to the subway are provided.

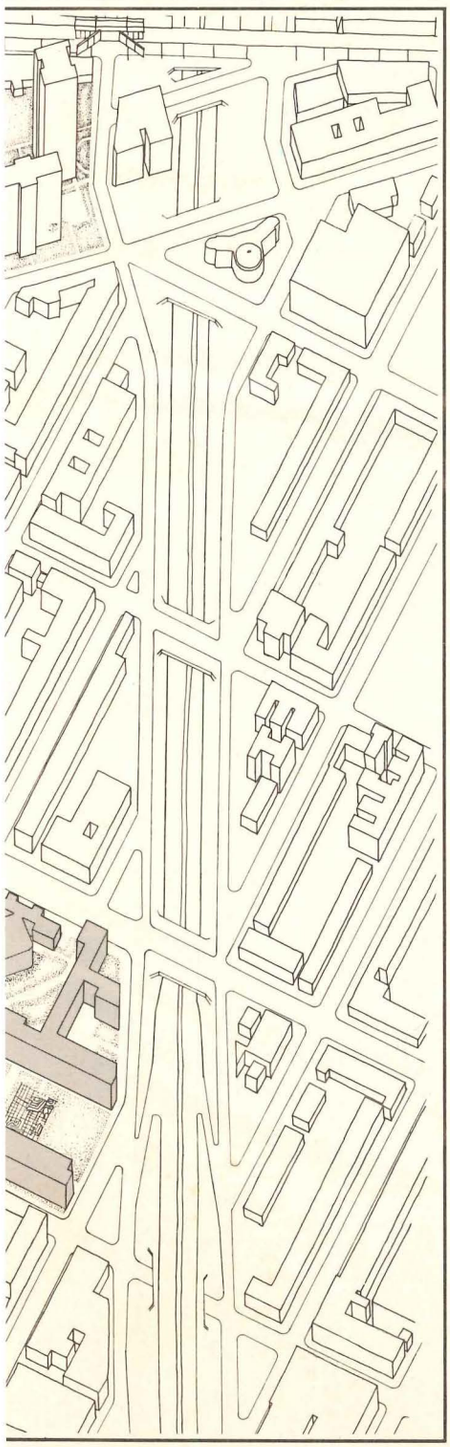






Gray area indicates new construction.





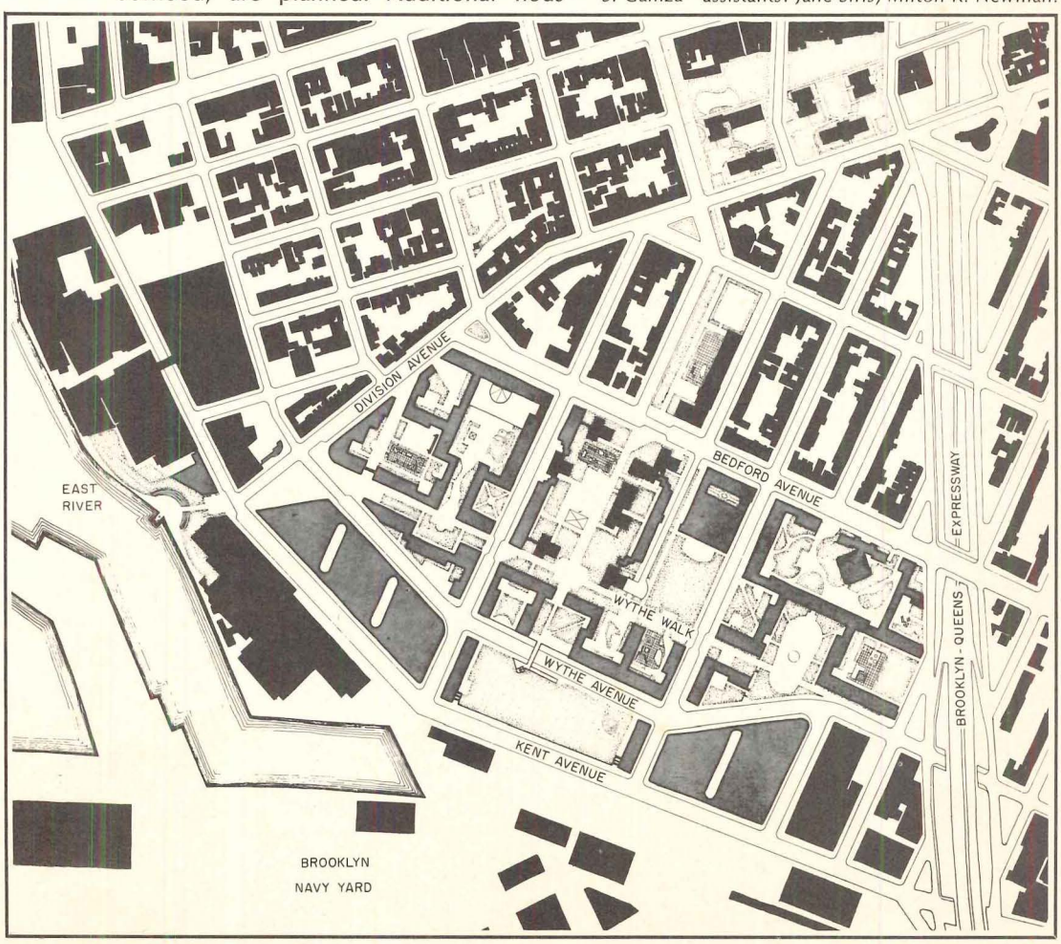
WILLIAMSBURG: NEW LIFE FOR AN AREA "BEYOND REPAIR"

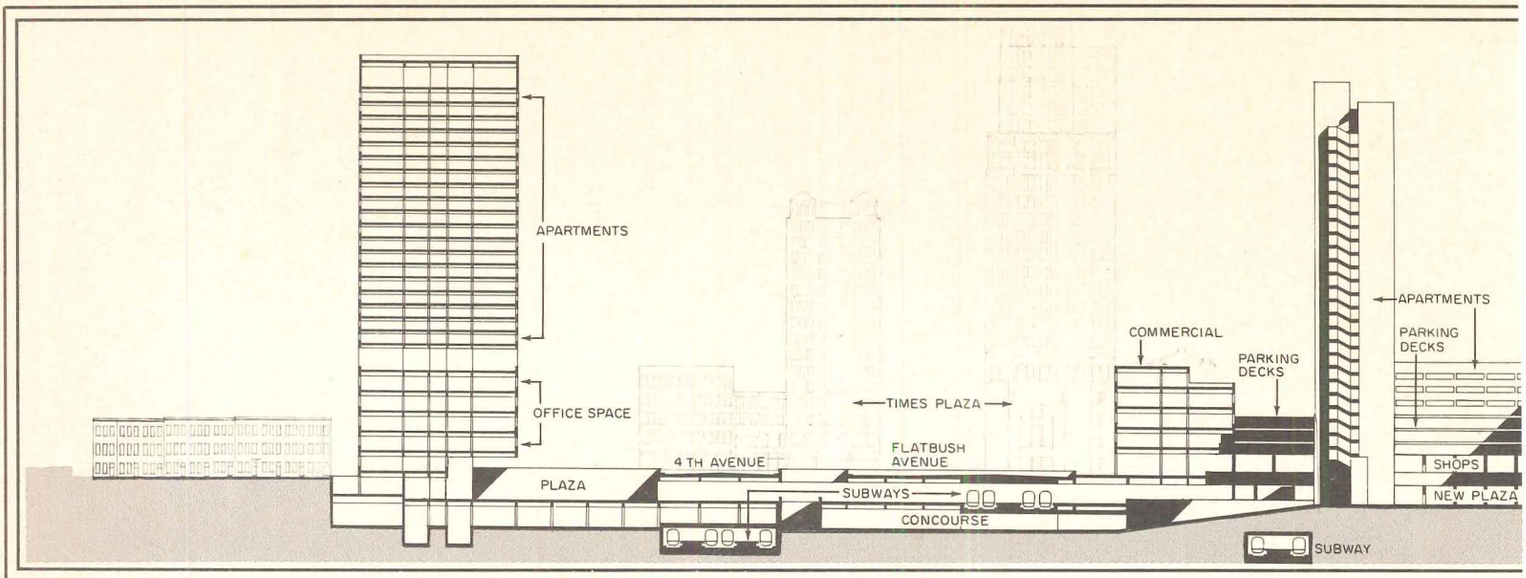
One of New York's first suburbs, the one-time elegance of this section of Brooklyn has faded—only its 100-year-old buildings remain, dilapidated and beyond repair.

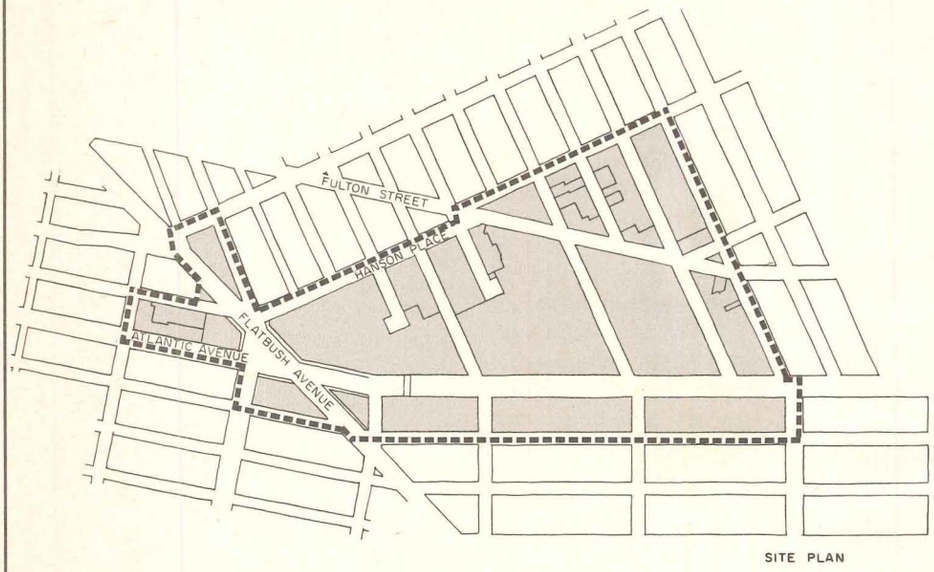
The renewal plan calls for replacing about 1250 substandard units with 2500 low- and middle-income housing units and clearing a major recreation space and sites for a new synagogue, church, intermediate school, retail shops, and some low-density industrial space. Low-rise buildings, compatible with the existing scale of the neighborhood, are planned. Additional housing for the edges of the recreational fields and as "infill" in Independence Houses, an existing public housing project, is also considered. A pedestrian bridge will connect the recreational area with the rest of the community.

Bedford Avenue will be reinforced as the important civic "spine" with the synagogue, church, school and shopping area concentrated along its path. The gentle slope down from Bedford Avenue to the East River will allow covered parking at grade. In addition a waterfront park is pointed out in the plan.

WILLIAMSBURG URBAN RENEWAL AREA, New York City. Design team: *Robert A. M. Stern, Jonathan Stoumen, Edward L. LaMura;* infill housing: *Arleen S. Gamza*—assistants: *Jane Siris, Milton R. Newman.*







SITE PLAN

The Atlantic Terminal Renewal area is outlined above.

The area is on axis with the major bridges to Manhattan.

ATLANTIC TERMINAL: REPLANNING OF A DENSE AND COMPLEX CORE AREA

Located at Brooklyn's hub, a geographic and transportation center where neighborhoods, streets, avenues, three subway lines, and the Long Island Railroad converge, this renewal area lies between the downtown business center and Prospect Park, a huge and handsome open space planned by Olmstead. But despite the positive influences of its location, the area has stagnated for several decades, due to an open railroad cut along Atlantic Avenue and four blocks of unsightly wholesale meat markets.

The plan seeks to strengthen the area as a "hub of activity," by covering the open cut with air-rights buildings and plazas, creating new business and institutional functions concentrated around a plaza at the high-intensity Atlantic-Flatbush Avenue intersection, and adding 2400 units of low- and middle-income housing arranged in low-, medium-, and high-rise buildings throughout the project. New low-rise housing will be placed amidst brownstones, preserving the neighborhood fabric.

New indoor and outdoor recreational facilities are to be provided for the three educational facilities in the area, and the library, auditorium, and student union will be located around the neighborhood plaza where they can be reached easily and shared by the community.

The north side of Atlantic Avenue (see plan) is designed as a fluctuating edge of open spaces acting functionally as buffers against auto pollution and noise. Hospitals, clinics, churches, and other existing community institutions will be retained both as "ties to the past" and to serve the modern needs of the community as well. Some light industrial facilities are proposed to expand job opportunities in the area.

ATLANTIC TERMINAL URBAN RENEWAL AREA, New York City. Design team: *Kenneth Shimer Wood, Anthony Thompson, Arleen S. Gamza*—assistants: *William T. Almestica, Richard Coffman.*

Benjamin Thompson designs "the space between and the space within" for Amherst College's Music Building

Architect Thompson has once again employed his now familiar structural system, materials vocabulary and method of plan organization to define the exterior campus space created by Amherst's new building and to shape its interior space for the study of music. Thompson has been designing buildings in this consistent vein for almost ten years now, and ARCHITECTURAL RECORD has been publishing almost all of them. There are several important reasons why we like his work so much. While we have featured Thompson's quiet architecture, at least six widely copied architectural fashions (some might say nine or even twelve), a number of highly publicized parodies and many revivals have come and gone. Much of this work is already beginning to look sadly dated. Thompson's buildings, like the Volkswagen and Rolls Royce, do not. His steadfast refusal to accommodate critical jargon by "generating new forms," "developing new spatial concepts" and "launching stylistic breakthroughs" is best expressed in his own words: "It is perhaps predictable that in an age of general social conformity, large corporations, institutions and the designers who create their images overcompensate with violent expressionism. This is harmless in the hands of an artist working on canvas, but in the hands of today's builders and supposedly responsible architects, it is often a disastrous blow to the fabric of our environment—witness Harvard, Yale and Princeton with their famous collections of modern 'name' buildings. I await the historians' verdict on the past twenty years and its cult of architectural autograph collecting. So far most historians and critics have sat back, confused, wondering if this muscle-flexing originality isn't supposed to be the mark of creative genius. Nowhere has even a timid cry for unity or humility sounded among the professionals. Rather, with Ouija board mysticism, they ponder the question—what does the building 'want' to be? An airplane? O.K., let it fly—to hell with the ground traffic. One famous building is still trying to fly out of Kennedy Airport, but alas it is grounded by eight million tons of concrete. There are, of course, some great buildings that are actually beautiful in the city context. Seagram and C.B.S. stand out because they don't try to stand out. They show the civility and humility to the city that most others lack. We have only begun to recognize architecture's real importance and function in modern life. The space between buildings and the space within buildings may be more important than the photographable facades that preoccupy designers and critics alike. While many professionals continue to design for the static vision of the camera, others are beginning to realize that the dynamics of life and people, the nature of the whole human habitat is their task. After all, we spend our lives in and around buildings, and more than we know our lives are shaped by their qualities—for better or worse."

Thompson has built so many good buildings because instead of taking the muscle-flexing originality route, he expends his talents and energies on what he really wants to do. The time he saves by avoiding the complications engendered by experimentation with structure and form is devoted to a broad spectrum of architectural concerns. These range from consideration of the psychological, sociological and philosophic dimensions of architectural problems, to the development of finely worked out functional relationships within the building and its site. Of great interest is the fact that Thompson never loses control of his interiors—somehow he always persuades his clients to let him do them right. The spaces within the Amherst Music Building have been meticulously detailed to properly perform their acoustic function. The rooms are warm yet spare and as beautiful in their way as the instruments which they hold. Says Thompson: "We think this building will help to make musicians."

—Mildred F. Schmertz.

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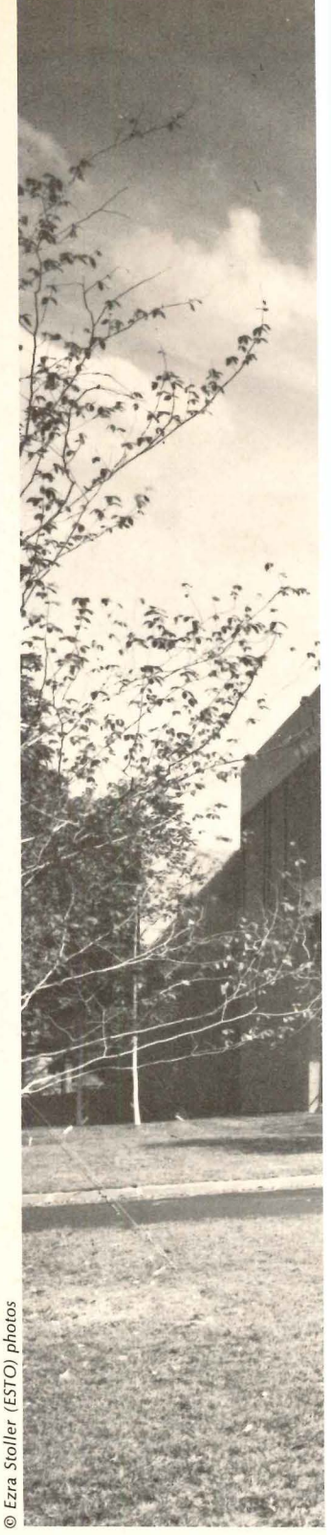
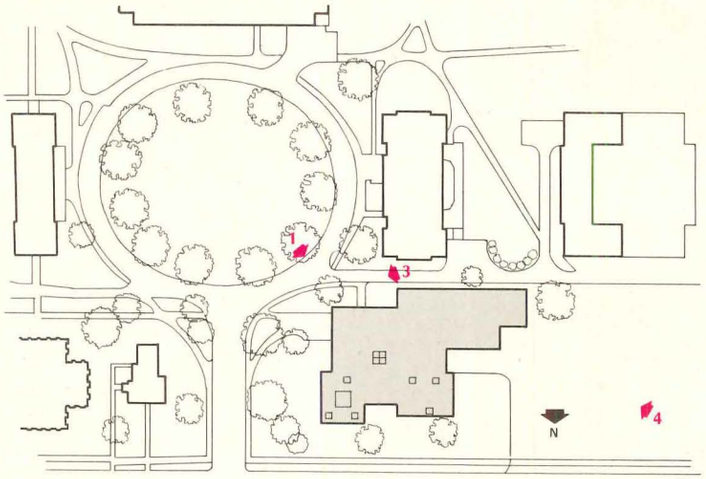


© Ezra Stoller (ESTO) photos

The spaces between at Amherst College are grassy and elm-shaded. The buildings by McKim, Mead and White are stately, and the newer of the two libraries, which is located to the south of the oval campus green, has been designed in a contemporary manner. The new Music Building defers to the older building traditions of this New England campus. It takes its place quietly and anonymously on a gently sloping site and completes the enclosure of the oval. The entrance lobby faces upon the green and the corner of the second floor library overlooks it. The lobby and library (3) adjoin the large recital hall (4) which is shown in its relationship to one of the two equal-sized wings. The vertical slots illuminate second floor rooms.



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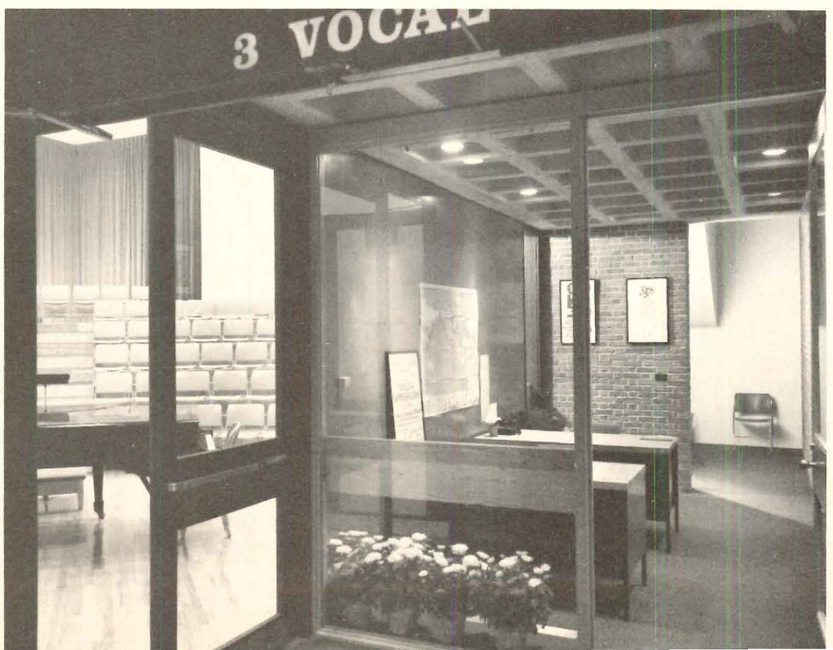
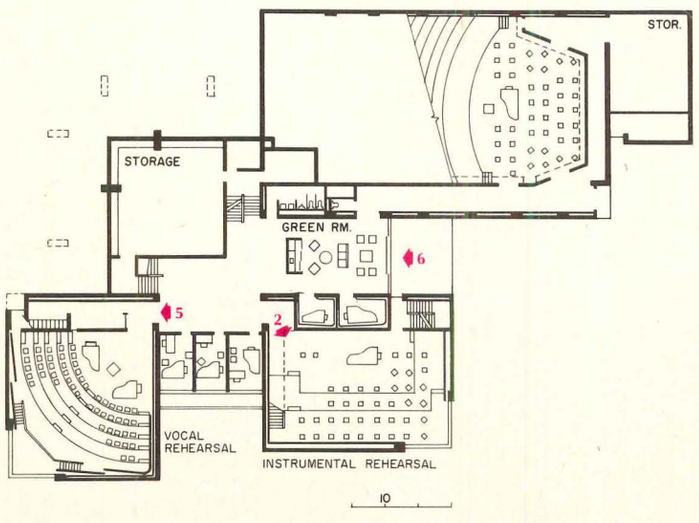
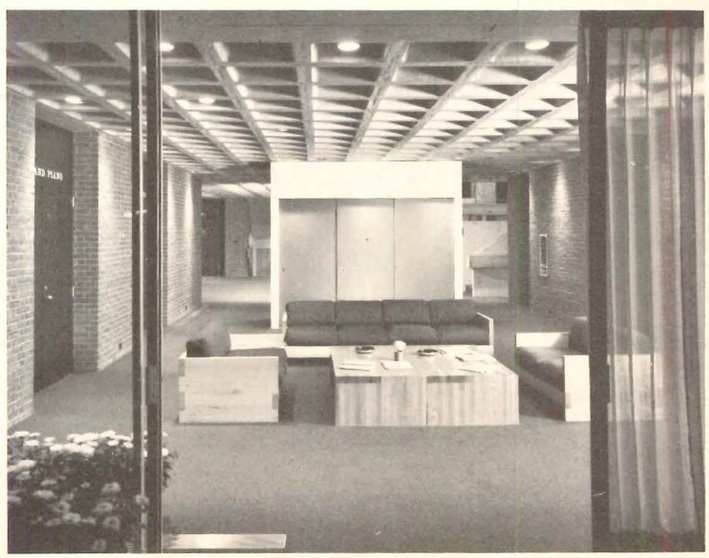


The ground floor spaces within, shown in the two interior photos and the plan, establish the building's configuration, which is consistent on each floor. Virtually all the spaces in which music is performed, with the exception of the teachers' offices and two small classrooms on other floors, have been contained within the three main blocks. These have been designed as brick bearing wall structures to isolate them acoustically from the quieter functions within the central interconnecting element. The latter includes a Green Room with kitchenette, (6) which is joined to the recital hall stage by means of a private corridor with its own outside entrance at the foot of the slope. The bottom level of the two-story vocal rehearsal room (5) is defined by semi-circular tiers, shown on the plan, which can just be seen to the left of the photo.



GROUND FLOOR



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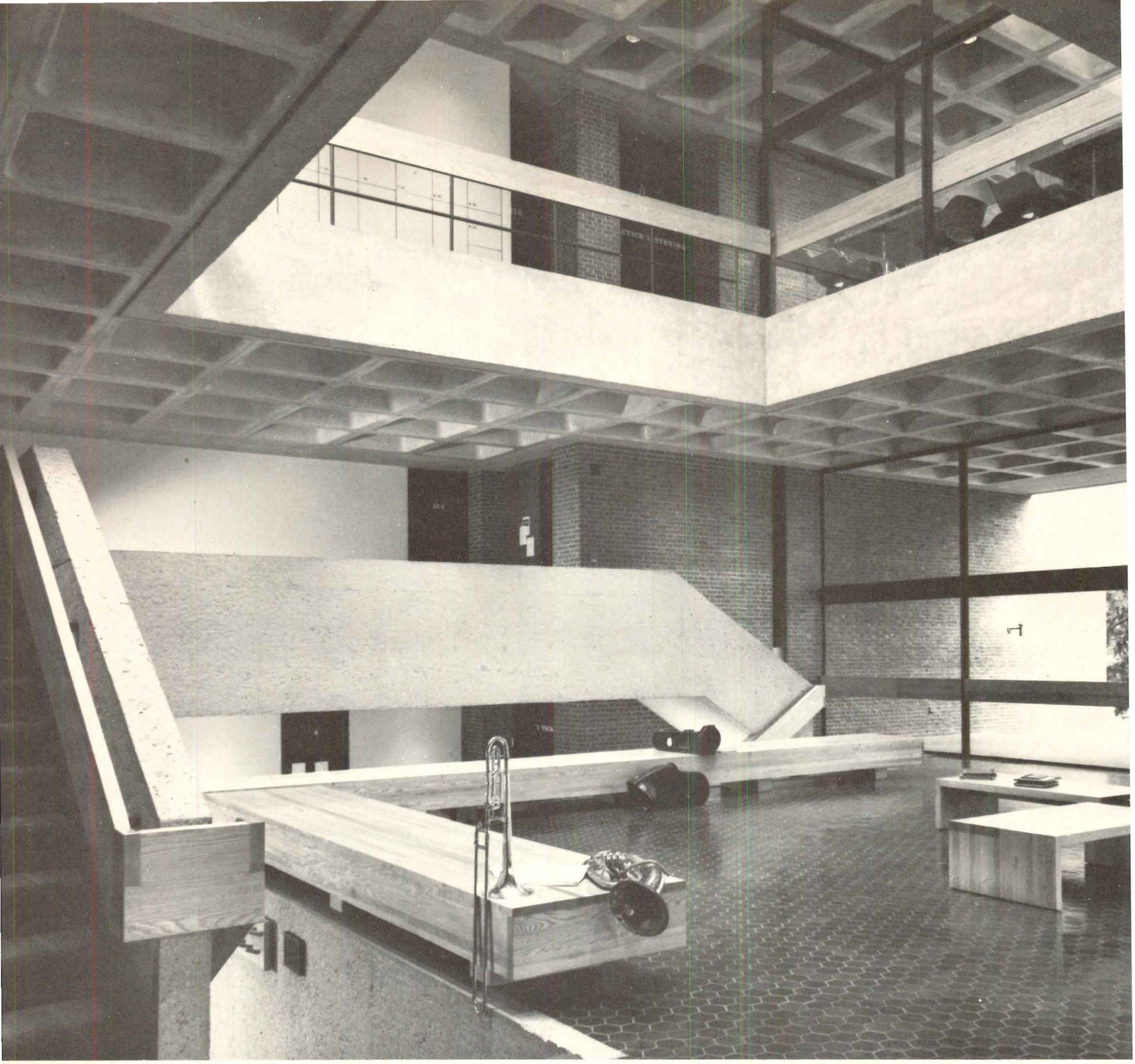

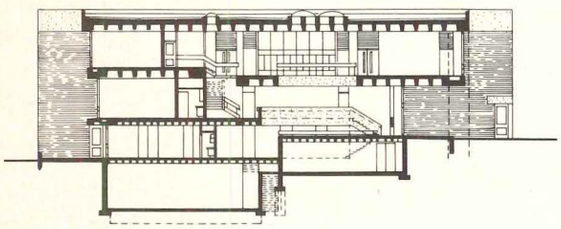

SECTION A-A

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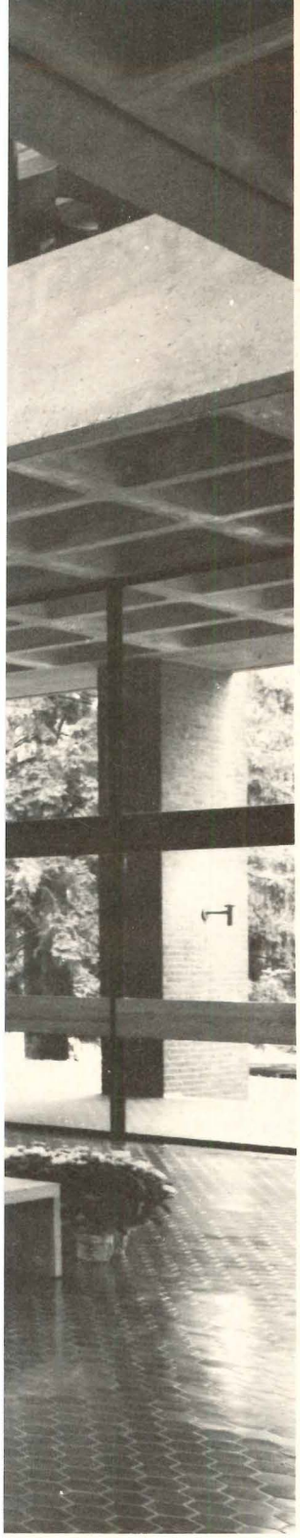

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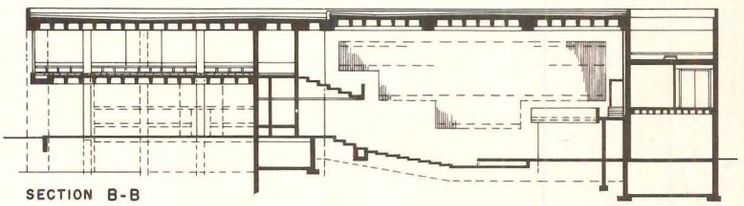
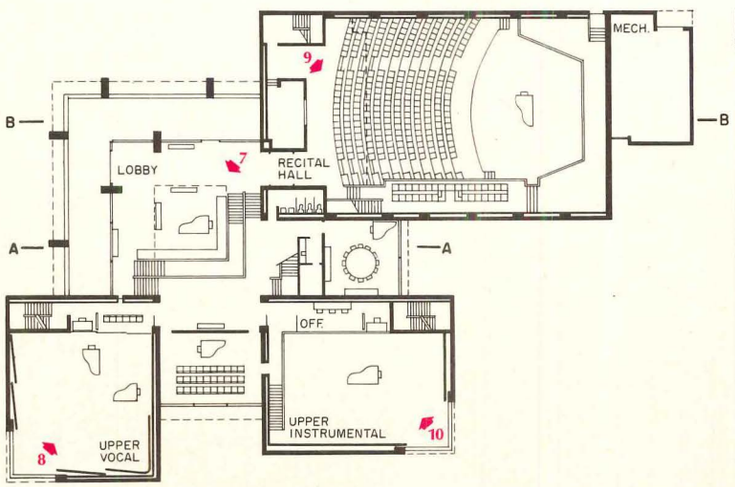
The first floor and mezzanine levels include the two-story skylit main lobby (7) with its 4-foot module waffle-slab ceilings which span an impressive maximum of 60 feet and cantilever as much as 16 feet. One enters the 450-seat recital hall from the lobby at an elevation 6 feet above that of the stage. This difference accommodates the slope of the orchestra seats. Floors of the two-story vocal rehearsal room (8) and the instrumental rehearsal room (10) have wooden floors for greater resonance. In the vocal room the splayed walls conceal slots for adjustable acoustic curtains to be used for sound dampening. The recital hall (9) has an adjustable acoustic curtain behind the wooden screens on the side walls.





FIRST FLOOR

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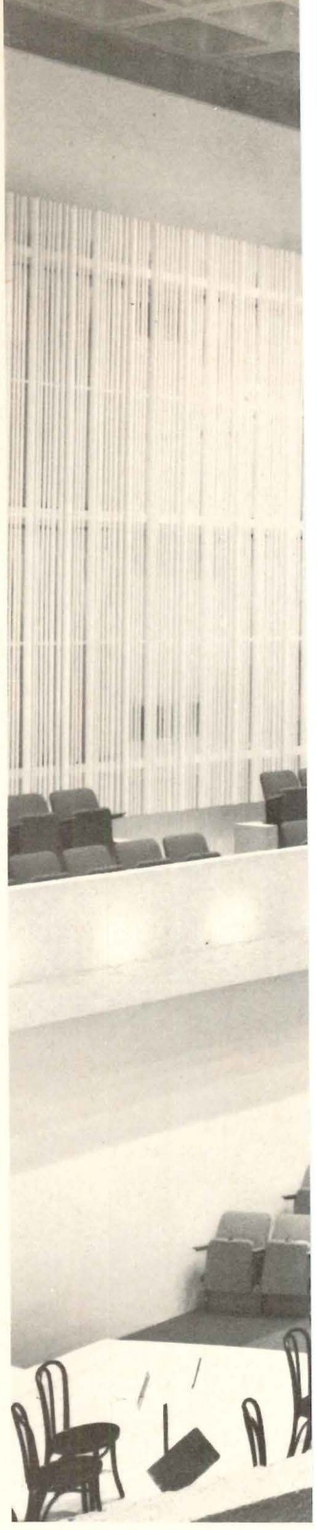

The second floor level contains the library (11) (13), a classroom (14) and offices in the central interconnecting element, listening and practice rooms in the two smaller wings (15) and the upper reaches of the recital hall (12). All rooms in which music is performed are acoustically isolated. Smaller spaces have their own separate plaster ceilings as well as walls. Where wood floors have not been used, special 4-inch-thick concrete floors have been set within the structural floor on a sound insulated surface to prevent sound transmission through the structural frame. All of the smaller rooms have a specially designed picture molding permitting panels of shredded fiber board to be hung for sound absorption.

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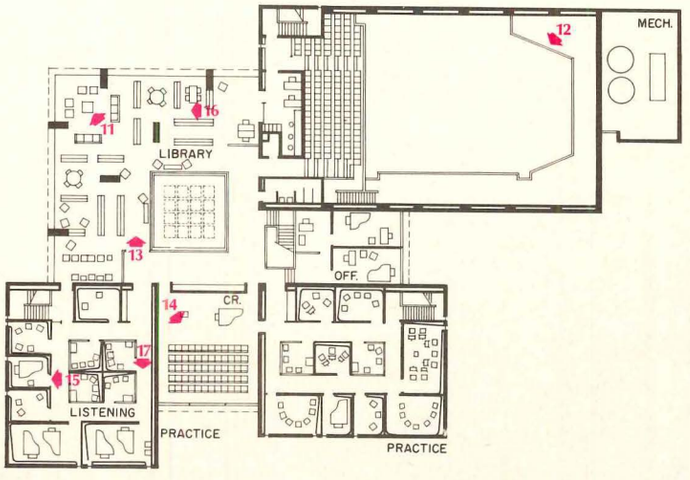
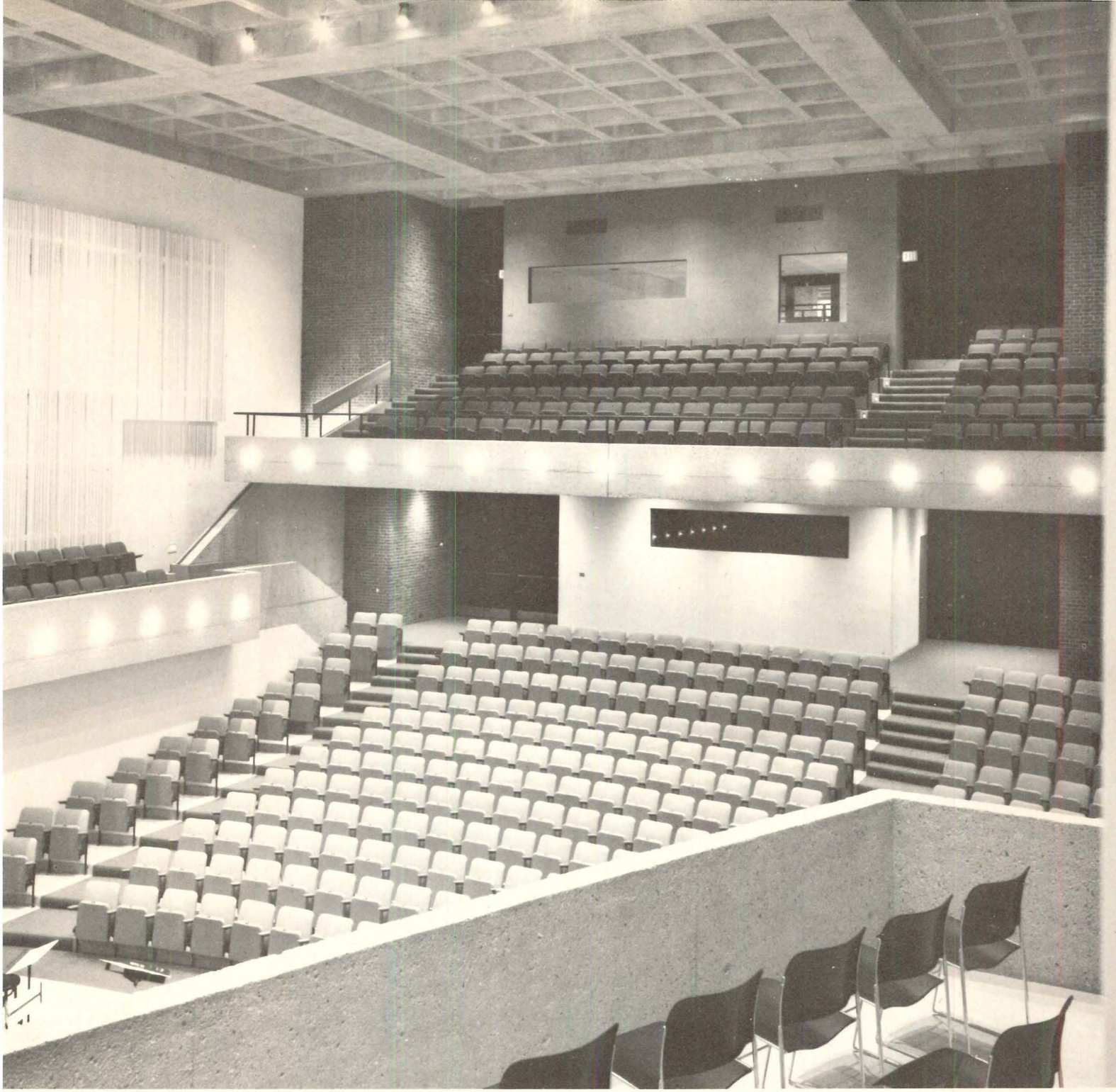


SECOND FLOOR



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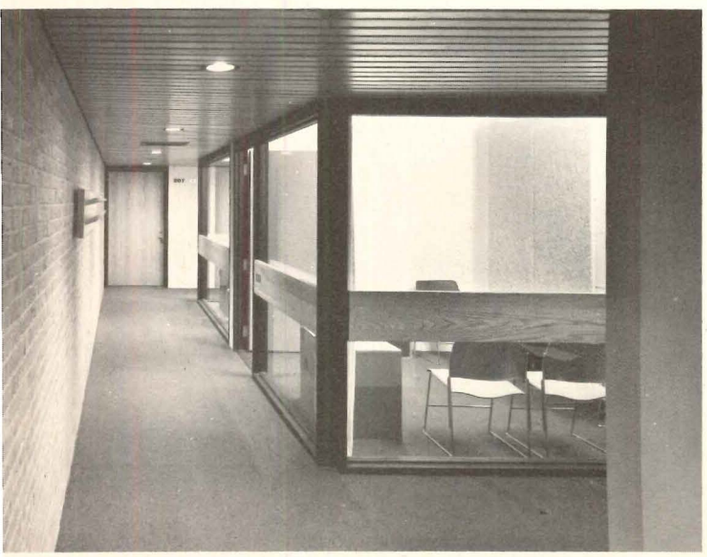

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The library (16) is the most colorful space in the building. Bright red chairs and yellow curtains accent the neutral woods, the soft pink brick and the slate grey trim. Listening rooms (17) enclosed in glass increase the sense of openness in the interior corridors. Second-floor interior rooms are illuminated by dome skylights.

AMHERST MUSIC BUILDING, Amherst College, Amherst, Massachusetts. Architects: *Benjamin Thompson & Associates—Thomas Green, associate in charge, Peter Giesemann, project architect;* structural engineers: *LeMessurier Associates, Inc.;* mechanical and electrical engineers: *Francis Associates;* landscape architect: *Carol R. Johnson;* acoustical consultants: *Bolt Beranek and Newman, Inc.;* site utilities engineers: *Lockwood-Greene Engineers, Inc.;* contractor: *Daniel O'Connells Sons, Inc.*

ARCHITECTURE IN THE CAUSE OF PEOPLE: YESTERDAY, TODAY AND TOMORROW

By William W. Caudill

If the architecture of the early Fifties seemed often too absorbed in stylistic polemicism to be much aware of "humanity, our client," the architecture of the late Sixties seems more likely to be seduced by non-architecture, or even anti-architecture. At least there actually appear to be doubts in some architectural circles that the visual ordering of the environment is any longer an appropriate cause. (If people are the cause, does architecture matter?) The great issues of our time concern the architect, and the architect-to-be, as never before. This architectural generation is aware of human problems, all right, and wants to be, in fact sometimes rudely demands to be, involved in their solution. But how? This is the great debate that engages the profession: practitioners, teachers and students. In a time that cries for reason and reflection as well as passion, the RECORD begins a new series of critical articles on "Issues in Architecture."—Jeanne M. Davern

Architecture is architecture regardless in what century it happens, or where. The intent of architecture is timeless—always valid. So simple, yet so profound. Why architecture? To help people. To satisfy human needs—physical needs and emotional needs, generally through provision of space. Wasn't it Eero Saarinen who said, "Architecture is not just to fulfill man's need for shelter, but also to fulfill man's belief in the nobility of his existence on earth"? Architecture has always been and always will be the fulfillment of man's needs as measured by his values. As needs and values change, naturally architectural *forms* with their related functions will have to change to respond to new demands. But architecture, for what is real, stays put.

Am I just playing with semantics? I don't think so. (I refuse to agree with the Miami hotel owner who, after a hurricane, said, "It blew off my architecture, but it didn't hurt my building.") If architecture is the inner stuff necessary to raise a mere functional building to a higher plateau where it becomes, in a sense, an art form, exuding inspiration and aspiration, then architecture is as permanent as man.

Architectural *form* by itself is not architecture. Forms come and go. Some forms, reeking of architectural fug, will be interpreted by some people as architecture itself. In architecture, the forms must *do* something, *be* something, responding constantly to new demands, not just try to look like they *ain't*. (I use that word advisedly.) That's why forms get tired. That's why we get tired of them. We continually search for new forms which are more adequate and more expressive to meet current human needs and values. Musicians, mixing electronic sounds with colored films, are doing the same thing. There will always be the search for new and more expressive forms.

But forms will change; their functions will change. The economical aspect of both function and form will change. But not architecture. It is here to stay. Don't let these preachers of doom scare you. Architecture is not dead. It's not even sick.

Do you think people will give up architecture? Will they give up medicine? Give up law? With more people needing medical care and more bodies on the crust running over each other morally as well as physically, both medicine and law must be raised to a higher state of sophistication. So must architecture.

Mr. Caudill, a Fellow of the American Institute of Architects, is a partner in the firm of Caudill Rowlett Scott, Architects-Engineers, which started as Caudill & Rowlett in Austin, Texas in 1945 and now has offices in Houston, New York and Hartford, Connecticut. He is also director of the School of Architecture of Rice University. This article is adapted from his 1968 convention address to the Michigan Society of Architects.

This crowded world has to have architectural care, if you please. I agree with Richard Neutra—the world's very survival depends upon architecture. That's why there is so much talk about cleaning up the cities. Architectural space pollution is just as dangerous as water and air pollution. The traffic jams are no worse than the building jams. Ordered space is the architect's business, and the architect of ordered space is the key to a livable future.

"Architectural form by itself is not architecture .... In architecture, the forms must be and do something, responding constantly to new demands..."

It might well be that many architects cannot create architecture. I am not denying this, but I contend there are simply not enough good ones to do the job. If we are going to make any headway at all in improving the physical environment, there must be an increasing number of architects and all kinds of architects. So here is a point: the future will depend upon the schools, not only qualitatively, but quantitatively. Many of them are using or will use various firms as extensions of school. That's the way it should be. The school alone cannot make an architect.

What the future will be like depends upon how the schools and firms are preparing our youths to understand and deal with people problems. There cannot be architecture without people. The Parthenon *isn't* architecture. It *was*. It is now a symbol; at best, an architectural monument. A school without children is not architecture. Life is the catalyst of architecture. Le Corbusier's Savoye House full of hay isn't architecture. It was architecture only when the Savoyes were living in it. Chipboard models are not architecture. Architecture becomes alive with use.

Serve the user—that is the intent. Architecture has to *do* something and *be* something. *Do* is the function; *be* is the form. Both *do* and *be* relate to intent. The intent concerns users. The intent is lost when we design spaces more to impress other architects than people who use them. To want to be an architect's architect is fine, but a much more noble thought is the desire to be a people's architect.

"... Space pollution is just as dangerous as water and air pollution .... The architect of ordered space is the key to a livable future..."

As a practitioner, I confess that often I become more enthralled with the approach to architectural design and with the techniques of construction than in serving the user. I'm not alone. There are lots of us guilty of people neglect.

We rank means over ends. We smother intent with techniques. As formalists we are more interested in current architectural forms than in architecture itself, which goes way beyond form, way beyond function, way beyond economy. As functionalists we are more interested in efficiency than in the amenities. As "practical" practitioners we are more interested in saving a few bucks than saving people from being bored to death.

These ailments have always been with us. Hopefully, the next generation of architects will have the knowledge and skill to equilibrate function, form and economy successfully so that the majority of spaces fall within the realm of architecture. But each of the elements of this triad must be related realistically to the needs of the users or the balancing act is in vain.

So it seems architects must love people. A lot don't. We even exclude people from our published photographs and sales slides, if you pardon the expression. They mess up the architecture. As the old castle builders used to say, "The containers must equal the contained." In our zeal to use the most advanced technology and to improve office practice techniques, we often forget the contained—these poor devils who must use our buildings. Buildings might be for horses, or for machines for canning tomatoes, but architecture is for people; the student in the carrel, the baldheaded guy in the fifth pew, mama taking out the garbage, and dad in the office feeding the computer. Now if a horse barn or a hangar for a plane provokes an emotional response satisfying both to the eye and to the heart, architecture probably exists. One doesn't have to be contained to be contented.

The architects of the future unquestionably will have to have greater sensitivity to human needs and values. And they *will* have.

What are these architects-to-be like? They are serious. They want social change. They can think. They can talk. There will not be too many really good designers, I am afraid. But take it from me, they'll cause change. Change for the better.

The new form-givers will seek *meaningful* form, not form for form's sake. But form, be it art, literature, music or architecture, is created *by* man *for* man. Now consider the *by* man part—the designer—separately from *for* man—the people.

Form reflects the man behind it. Impregnated in the form and easily detected can be found his values, his goals, his knowledge and his skills. Even more important can be seen or sensed what he thinks of people. Form is shaped by what a man believes in. And what a man believes in stems from the environment in which he grew up.

My values and goals unquestionably were established early in life not only by strong family influence, but by the fact that I managed to flourish in the Depression milieu. I still value the dollar; still like big bands; still appreciate Steinbeck and Will Rogers; still consider Wright, Le Corbusier, and straightlaced Mies as the greats. And just to show you what an old fogy I am, I have an "analytique" on my wall done with ink which I ground myself. How far back can you get? I'm the image of a tired old architect. But don't count me out. I drink Beatle tonic to regulate my intellectual digestion and I look at the mini-skirts for inspiration, if not aspiration. Also I know that in this profession longevity is the key. (I'm a slow learner. Took twenty years to learn to talk. Thirty to swim. And forty to fly. I am expecting great things from me in my old age. Maybe I can learn to design?)

Back from me to the future architects—serious young people who are now in school and on the boards in the offices. Quite frankly, I am betting on them. I would be not at Rice University right now if I did not believe youth has the stuff to handle the future.

But compare their backgrounds to mine. Completely different. What's a breadline? What is Chinese ink? Who was Fletcher Henderson? Who were the Boswell Sisters? Who was John L. Lewis? What's an Esquisse Esquisse? Who wants light, floating buildings? He-man rugged concrete is in, Man! "Less is more" is a bore. Isn't doing a Frug House really more realistic than designing a monastery in Tibet conjured up by some square in New York connected with the Beaux Arts establishment?

When I was in school at Oklahoma State, culture was only for the rich. Who had money for a concert? To most of us culture was pretty stuffy. Today anyone who wants culture can have it. Students not only are getting it, but they find that culture is fun. What they see, what they read, what they hear, and what they experience set their values and goals: and these, in turn, will shape their architecture.

These young people have a social consciousness and feel a social obligation that no other generation has had, certainly not mine. (A young man in our office made a serious effort to try to convince a banker-client to buy up land and restore small old houses instead of building a magnificent office building we were commissioned to do.) This kind of thinking is going to affect architecture. Reading Marshall McLuhan, seeing a Frank Stella high art painting, or experiencing the low art of Kienholz' "assemblages" or Oldenburg's "soft sculpture" will affect his architecture. Going to the ballet Don Quixote, seeing movies such as "Blow-Up" and "The President's Analyst," not to mention "Tom Jones" on TV, cannot help but cause change in values which will somehow get into his architecture.

Just hearing an old Benny Goodman record recreates the mood of my college days. Twenty-five years from now, my students will be brought back to their day by an old Beatle record. And if they are practicing architecture at that time, there will be a trace of Beatle music in their architecture. My partners Wallie Scott and Tom Bullock insist that there is big band stuff in our architecture, because all three of us played in professional dance orchestras. On the other hand, a CRS design team is very much like a Dixieland band which thrives on the ad lib and on spontaneity of group action. This type of band does not interest the young people. Their taste is the 95-decibel electronic sound of Thursday's Children [a musical group from Rice] or the Animals. Watch it! The Bed Bugs will surely creep into tomorrow's architecture.

An interesting plowing-under phenomenon is happening. Where new forms of painting and sculpture seem to have always had their effect on architecture in the past, today there is evidence of a reversal. Sculptors and painters like Tony Smith and Larry Bell, for example, seem to draw their strength from architecture and they in turn influence the young architect who seeks fresh form to express his architecture. A young architect publicly admitted his chapel design was inspired by the Chillida sculpture on the lawn of the Houston Museum of Fine Art, which was inspired by architecture.

Culturally, things are moving fast. New forms, new attitudes, new freedom, and new materials are either distorting or expanding our traditional values and changing subsequent goals.

Today's architect-to-be is a different breed than in my day. He will produce different architectural forms. Now what those forms will be is pure speculation. But I repeat: architecture (in my definition) won't change. It will always concern that *plus* something that raises mere buildings to a plateau of human dignity and personal enjoyment.

Of course the *functional* aspect of architecture will change. It will have to. And so will the *economic* aspect. And unquestionably, the *formal* (form) aspect of architecture will change; changes in technology will see to that. But since function, form and economy in architecture are in reality totally inseparable, they will all change together, but will make up architecture, Gestalt-like. Regardless of change in this triad—function, form and economy—architecture will remain the same, the intent of which is to fulfill the needs of people. So much for the *intent* of tomorrow's architecture. Now what will be the extent? It seems clear that:

1. There will be more concern for groups of buildings than for individual buildings. The one-building projects are already beginning to fade. Even the single client is becoming a rarity, at least in our practice. Architects will have to think in terms of the civic client concerned with city building. I. M. Pei said at an A.I.A. seminar in Houston: "The single building cannot stand alone. It has neighbors. There is no such thing as a single-building problem."

"To want to be an architect's architect is fine, but a much more noble thought is the desire to be a people's architect. . ."

2. More people will have the opportunity to experience architecture. Previous cultures had architecture only for the privileged few. Tomorrow's architecture will be people-centered—for great masses.

3. There will be a different scale, if not more encompassing architectural scales. Speed scale, for example, will be part of the future's architect's vocabulary. He may refer to buildings as a "10-mile-an-hour building", or an "80-mile-an-hour building," implying that these buildings are to be seen and appreciated at different speeds. Rice University, through its research team led by Bob Sobel and Rick Gardner, has developed methods for studying the new scale with the use of a TV camera attached to snorkels and video tape, which might even replace the yellow studies which I cherish. Another dimension—time—is introduced into the design process. At the Houston A.I.A. seminar, Kevin Roche said: "If you stand under the Golden Gate Bridge you have a sense of what the future will be like." However, my partners Tom Bullock and Chuck Thomsen recently stood under the Staten Island bridge without receiving a vision of the future. Wrong bridge?

4. Architects will be confronted with bigger problems and it will take a big team to solve them. The schools now are hitting hard to turn out big-problem-solvers. The University of Washington this semester has 97 candidates for Masters and Ph.D.s in urban planning and urban design, not to mention the 75 in the undergraduate program taking urban design as a speciality. Robert Durham, A.I.A. immediate past president, says: "One of the most promising ways of solving the big problems that are to come is through multi-disciplinary design teams." He points out, however, that there will be a need for small firms. The fact remains: giant teams will be required for giant projects.

"So it seems architects must love people. . . . Buildings might be for horses, or for machines for canning tomatoes, but architecture is for people. . ."

5. Architecture will have a closer tie with technology. Although most of the young architects today have more interest in the social purpose of architecture than in the technological aspects, technology will prevail. There will be more activities in computer science thought for efficiency and functional and construction expediency. Bucky Fuller's dome at Expo 67 is a hint of the future, as are Zachary's San Antonio hotel of stacked blocks and architect Jullian

de la Fuente and his concern for computer technology.

6. The architecture of privacy will be given special attention. Packing people into megastructures may be necessary in the future to conserve precious nature; but architects with the help of sociologists and psychologists will of necessity learn to put a man in a crowded high-rise crate with success. He may even like it, provided he has space which affords privacy and which will serve as his territorial domain. Edwin P. Willems, Professor of Psychology, Rice University, predicts that "a society that is able to maintain privacy in the midst of congestion will be noted for its capacity to remain calm under stress."

7. The paradox that faces the architecture schools today may be resolved. This paradox is clear: In trying to obtain breadth to solve the problems of urbanization, the schools are losing depth by spreading the curriculum too thin. Both depth and breadth will be achieved when the word "architect" takes on a new meaning. The future will bring specialists such as architects of programing, architects of psychological space, architects of illumination, architects with or without computers: as well as architects of design. Ed Romieniec, chairman of the School of Architecture at Texas A & M University, recently removed the drafting tables from the senior labs, insisting you can do architecture on a coffee table in a hotel room. He wanted to place an emphasis on programing as a speciality. According to Romieniec, "The student must realize that he is more than a drafting machine; he must learn what makes architecture." Unquestionably the schools are changing. But like the surgeons of today's medicine, the architects who perfect their design skill will be the surgeons of tomorrow's architecture. There won't be enough the way the schools are moving now. I am not saying we need all surgeons. But I hope Rice and CRS will continue to produce more than their share of highly skilled designers.

8. Architectural practice will become more integrated with business management. Gyo Obata says, "Architecture itself is becoming big business and is extending its responsibilities beyond the design and organization of bricks and mortar." The architect may soon become a key member of the management team responsible for efficiency and profit as well as esthetic structures. Design won't be everything, as some of us would like to have it, but design is one very important leg of the tripod. Design must take on a broader meaning, requiring many kinds of specialists on the design team, including efficiency experts and business consultants. Charles Nes, another past president of A.I.A., feels that architects and contractors must be far more closely allied and might even end up as a single organization, but certainly not under the present ethical standards. However, he points out that a safer approach for preserving the profession is "a future organizational setup in which architects, builders, real estate experts, and financiers would work together as an interdisciplinary team to initiate, plan and build large projects."

9. The architect and the behavorial scientist will be more closely aligned. In our office we have already developed our first social-psychological specifications for an architecture. Professor Thomas E. Lasswell, University of California, served as consultant. Earlier he had been engaged in a similar pioneering project with the Los Angeles firm of architects Deasy and Bolling. Along with Edward T. Hall, A. E. Parr is becoming the most quoted person by the younger architects relating to what might be called architectural psychology, or if you insist, psychological architecture. He points out that psychologists cannot design buildings but they can contribute "concrete and applicable information concerning specifically human demands upon structural configuration of space . . . to replace fatuous esthetic doctrine as a tool of the designer's art." The architecture-psychology marriage is tomorrow's reality.

10. The architect's position as the liaison between arts-humanities and science-engineering will become more important. We will continue to practice on the beach. Like the beach where water overlaps land, architecture flourishes where these two worlds join: where science-engineering overlaps the arts-humanities. *Warning!* Whether or not we practice as a profession will depend upon how well we not only preserve but clarify this uniqueness. Regardless of our specialty on the spectrum of architectural practice we must be the liaison between art and science, and not be completely submerged in either. In a war between science and art we remain neutral. We must have increased sensitivity to protect and enrich human endeavor through both science and art. We do this by staying on the beach. We are amphibians. If we go too far out we'll end up fish. If we go too far inland, we'll forget how to swim.

". . . We must be the liaison between art and science, and not be completely submerged in either. . ."

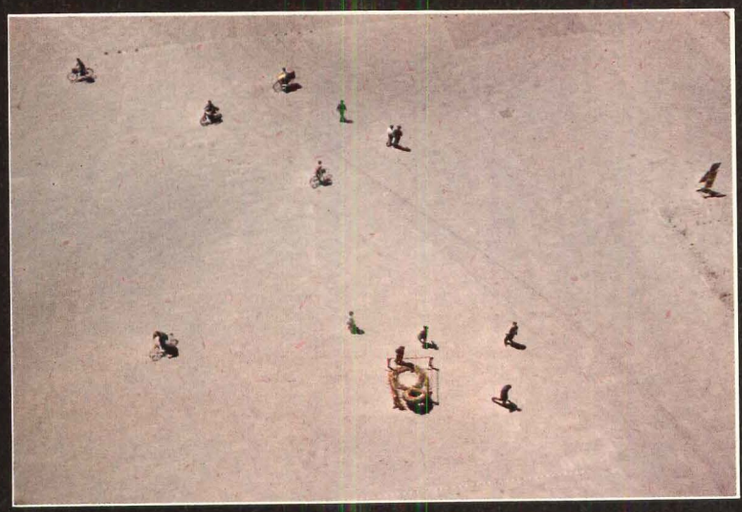
Let me tell you an ancient story. There was a prince who loved his wife so deeply that when she died he built a magnificent tomb as a perfect memorial to her. But when the tomb was built, the prince was not satisfied—he had to do more to show his enduring love for his dead wife. So he built a most elegant and costly shell to enclose the tomb. Yet perfection had not been reached: Still the prince was dissatisfied. Again he called back his architects and men of science to build a still more sumptuous and spacious dome to surround the tomb. When at last the structure was complete, the prince was shown into the first of the great concentric spaces. Every detail was perfect. Then he passed into the shell of marble. All was perfect. But when he spied the tomb which held the beautiful woman he had loved, he fell into a fit of petulance. Turning to his minions he said, "Remove the thing."

So went the wife. And so goes architecture if we forget people. So can go the architects if we forget the intent of architecture. We build containers around containers around containers until we forget what is the contained. As architect-practitioners we seem to be more interested in techniques of both practice and products so that we forget why they were developed in the first place—for people. *(What wife?)* As architects-educators, we seem to have a lot more interest in closed circuit television, prospects of dial access retrieval, urbanizing the curriculum, and computer-assisted instruction than we do in the student. *(What wife?)* We get more excitement playing with technology and its tools than in developing architecture for people. *(What wife?)*

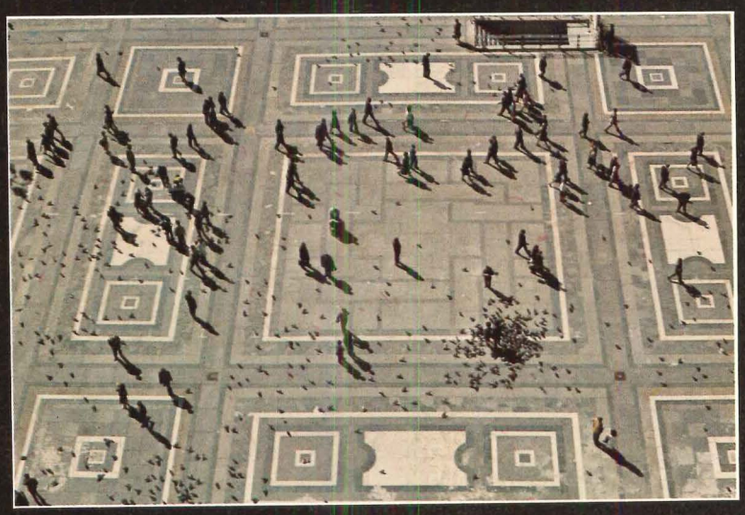
Tomorrow will be a great day for architects if we are dedicated to the intent of architecture—fulfilling man's belief in the nobility of his existence.

What makes people like places? David Kenneth Specter, now a practicing architect in New York, used an Arnold W. Brunner Scholarship of the Architectural League of New York to look for design guidelines in some of Europe's great places, and took hundreds of photographs to show how people react to them. His photographs and commentary in this presentation suggest

SOME ESSENTIALS OF SUCCESSFUL URBAN SPACE



BARE, BARREN, UNCROSSABLE, MERELY EXISTING AS THE "SPACE BETWEEN" . . .



BECOMES SOMEHOW HUMAN, APPROACHABLE, LIVE, URBAN . . .

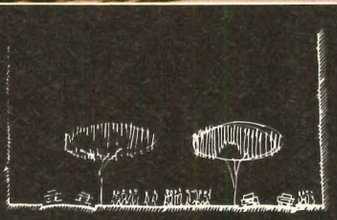
AND MAY EVEN ACHIEVE A SENSE OF PLACE.

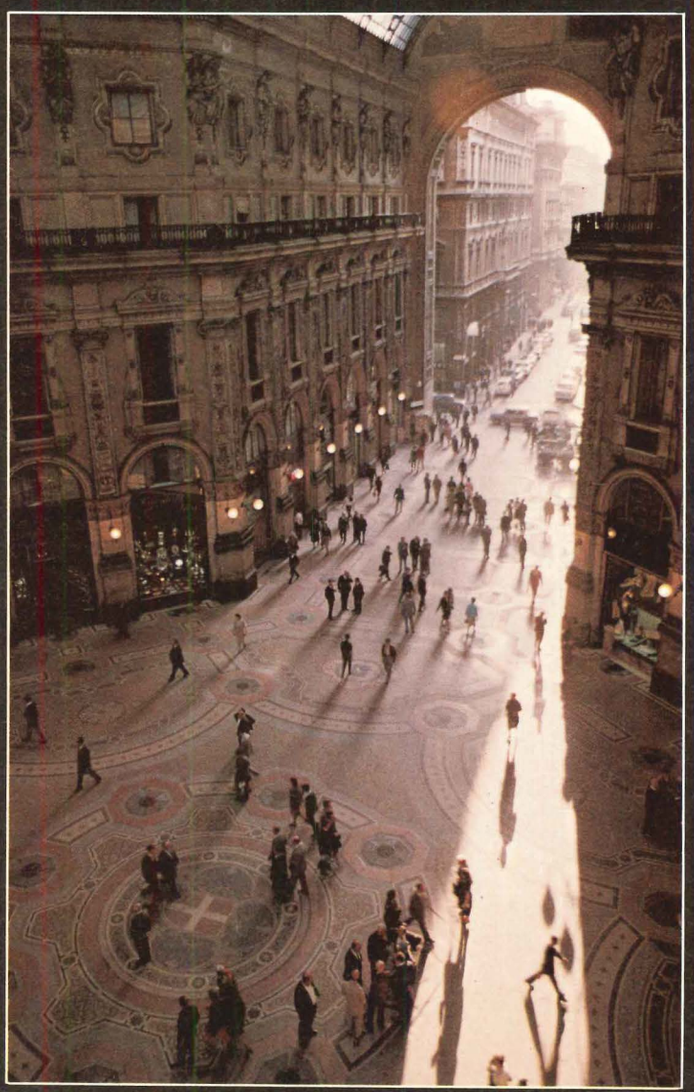
The art of making this happen requires manipulation of both intangible and tangible elements of the urban environment. These elements—though often occurring accidentally—function in predictable and positive ways, and are a legitimate concern of the designer.

Since it is for him that we manipulate these elements—the force of anticipation, the mystery of lighting, the pull of a waterfront, the surfaces and objects of the city—any meaningful discussion of urban space assumes the point of view of

THE PEDESTRIAN

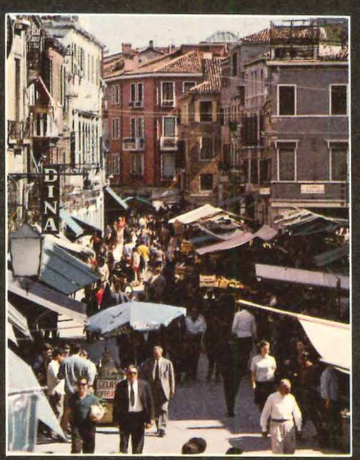
ABSOLUTE AND TOTAL SEPARATION OF PEOPLE AND CARS IS THE IDEAL, but changes of level (above), organization into parallel but separate avenues of activity (right) and subtle barriers (left) can filter out one from the other to their mutual advantage.



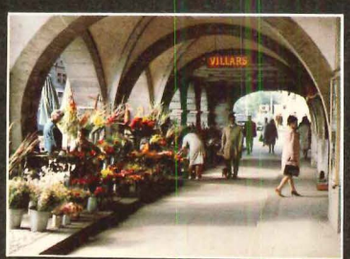


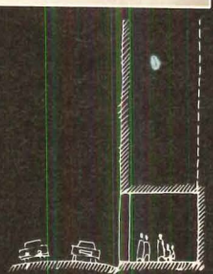
SIMPLY BARRING VEHICLES FROM PARTICULAR STREETS is a more drastic solution which can create sudden explosions of pedestrian activity, especially on an established thoroughfare. That Milan's Galeria (left) is roofed contributes less to its popularity than the fact that it interconnects several points of major urban traffic.

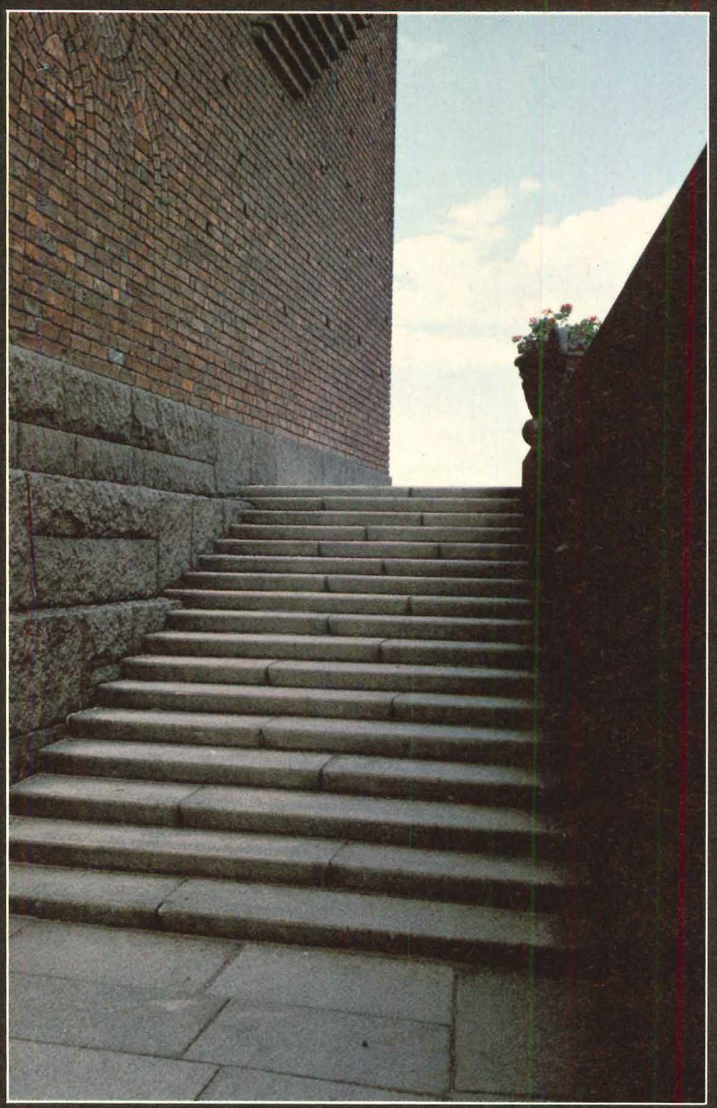
Designers planning the separation of pedestrian and motor traffic should examine the width of Venetian streets (right), determined by human activity, not automobile turning radii.



THOUGH "AIR RIGHTS" SCHEMES SEEM CONTEMPORARY, arcades are ancient. Some of the earliest—in medieval Swiss cities—involved private purchase of such rights over a public thoroughfare. Hence the arcade. Not only is vehicular traffic visually excluded, but also an apparent intensification of pedestrian traffic takes place, along with the sense of something happening.





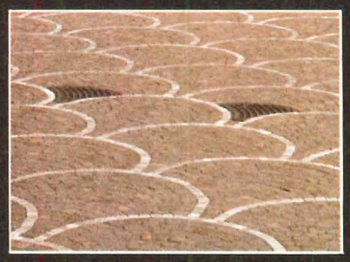


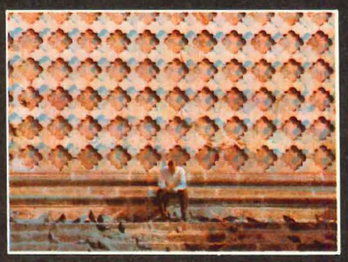
ANTICIPATION:
SURPRISE: **EACH DRAWS US THROUGH SPACE.**
CURIOSITY:

A glimpse of spaces
beyond and as yet unseen;
a curving street
with its continuous
revelations;
the cliche of
a stairway to the unknown;
the fascination of boxes
within boxes
within boxes . . .
the intuitive sense
of the imminence
of a different experience.

The spaces through which we move are shaped by real and implied surfaces. We walk on, between, and under them. They enclose buildings, guide us, and carry away the rain. As decoration, information, and a means to create a human scale, we respond to

SURFACE ENRICHMENT

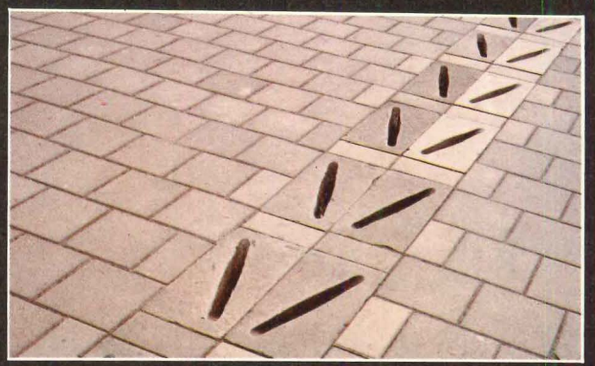


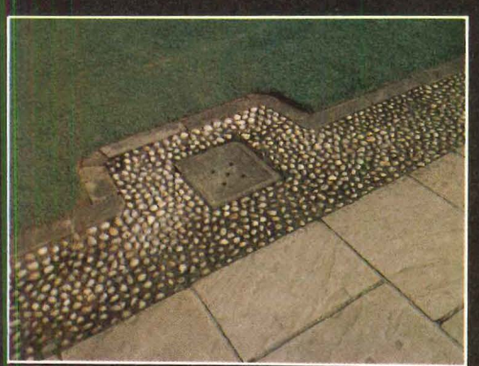


VISUALLY BREAKING DOWN LARGE AREAS into more manageable bits is a reason for designing strong paving patterns, which help to "occupy" an area and render it more approachable. It's also good if storm drains, gutters, and crosswalks can be integrated into the inherent decorative patterns of the material used. Better still if children discover they have a new toy, and best of all if the designer thought of it too.

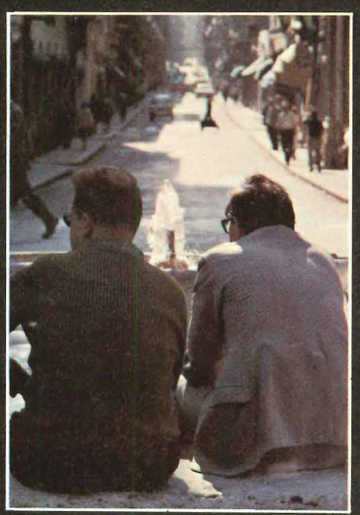
SIGNS CAN DECORATE AS WELL AS INFORM, and may be literal or symbolic. The round sign is part of a European system of traffic control symbols whose meanings have become as clear and immediate as red equals stop. More literal announcements should always be as much a part of the total picture as this street banner (center right). The gutter ad gets some credit for brash ingenuity.

TWO QUIETLY INVENTIVE USES FOR THE URBAN FLOOR: a precast trough to carry water across a sidewalk from roof leader to gutter; and an indestructible bicycle rack.



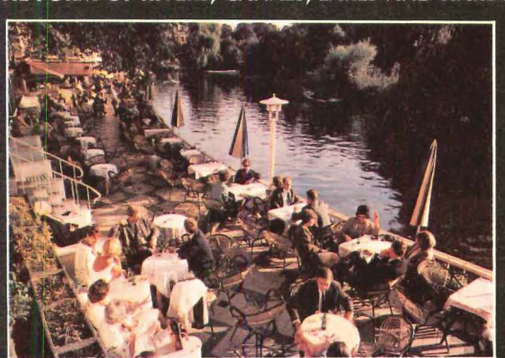


WATER IS CLOSEST TO BEING A UNIVERSAL SOURCE OF PLEASURE



of all elements available to the designer. At any scale, the sound and the look of water, as fountain or pool, can create a mood, an oasis in the urban fabric that delights and enriches the soul, and even invites participation. Unlike other urban surfaces, water creates its own scale, constantly changing its color and texture in response to sky and wind. Nothing —except perhaps fire, whose use in the urban environment is understandably rather limited— is as universally fascinating to man.

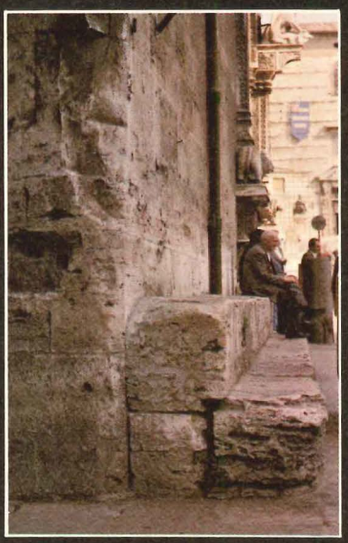
WATER IN THE FORM OF RIVERS, CANALS, LAKES AND HARBORS IS THE BEST EDGE



a city can have. They create at the same time a barrier and a sense of unlimited space. To cross them by bridge inevitably introduces an exciting change of perspective. They reflect by night and cool by day. Waterfront is any city's most valuable natural amenity.

The tangible objects of the environment: the seating, lighting fixtures, signs, trash baskets, kiosks, all are elements with which the designer may work in

FURNISHING THE SPACE



DESIGNERS SHOULD REMEMBER PEOPLE WILL SIT ON ANYTHING
to become a member of the audience,
so the seats or steps
or building foundation or flower urn
might as well be
the correct height for it.
The Spanish Steps—
the world's most elaborate continuous bench—
not only finds place for performers,
audience and catnappers,
but brilliantly connects
two levels of the city.
The two-by-two design
for this sea wall (below right)
shows an unusual degree
of sophistication
and human understanding.
Where a movable seat is called for,
appropriateness rather than
attention-getting design
should be the criterion.

REPETITION OF A SINGLE ELEMENT IS THE KEY to the successful design of many lighting fixtures, and—not irrelevantly—of some jewelry as well. Both day and nighttime appearance must be considered equally when fixtures per se have been chosen as the source of light.

UNANTICIPATED TACTILE AND VISUAL EXCITEMENT can be provided even on the smallest scale by a handrail or fence.

SMALLER MEETING POINTS HELP ESTABLISH A HIERARCHY OF SPACES within the city. Information kiosk, bus shelters and small shops are minor foci of pedestrian movement. An otherwise ordinary newsstand by day achieves at night an entirely unexpected quality of warmth, a welcome hearth in a dark city.

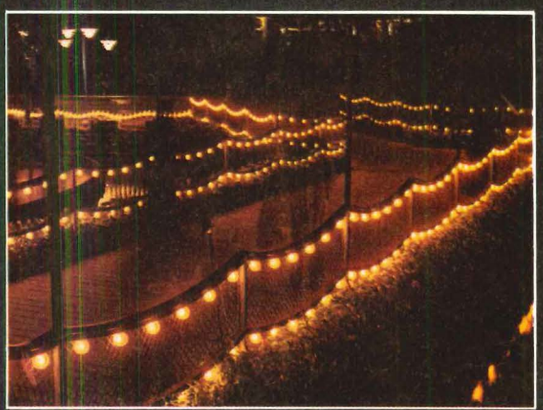
People like to go where the action is, and a sense of such liveliness is the essence of the successful urban space, a place to watch or be watched, a kind of

VARIABLE PARTICIPATION

THE IDEAL POINT OF VANTAGE,
protected above
and behind,
is an abstraction
fulfilling a need
for security
probably
of primeval origin.

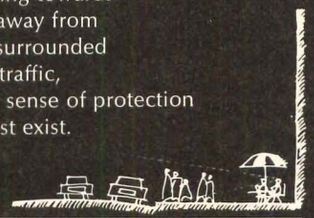
BACKLIGHTING IS POETIC
but not necessarily
accidental,
if the designer
keeps orientation in mind.

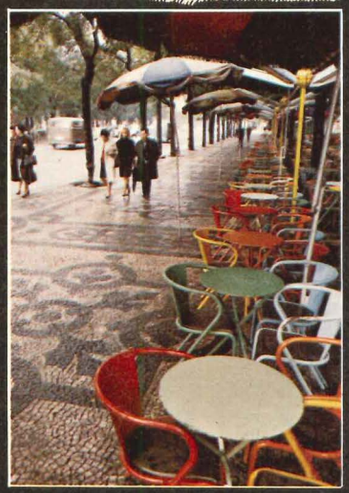
TRANSFORMATION OF SPACE THROUGH LIGHTING
It is remarkable
how much more
festive and magical
the use of many
small low-lumen
light sources is
than the more obvious
floodlighting
so often used
in public places.



SIDEWALK CAFES
offer a sheltered point
of vantage along with
a pleasant pretext for
being there as a watcher.

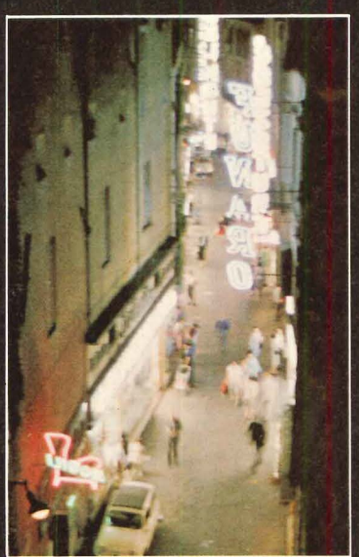
Facing towards
or away from
or surrounded
by traffic,
the sense of protection
must exist.





And even the deserted cafe
can be a colorful accent
in the urban landscape.

MAINTAINING THE DESIRABLE SENSE OF LIVELINESS
in daytime in downtown areas
raises a problem
with only a few people.
Without going
to the extreme of painting
life-size people
on a wall (above),
lighting, repetitive signs
and imaginative advertising
can help to
"populate" the space.



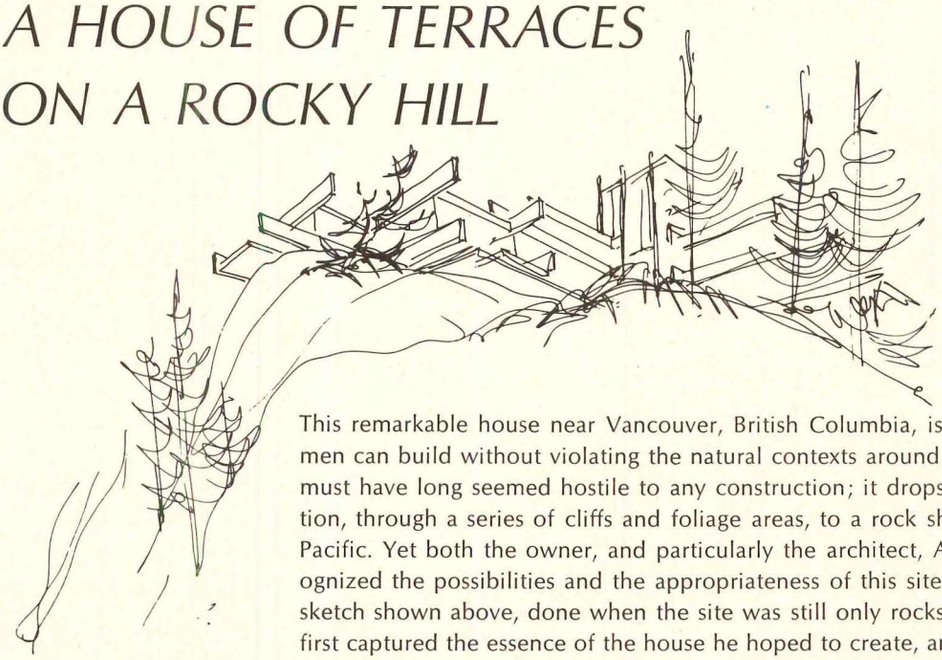
A hole in the fabric of the city; a public living room; a breathing place; a node of activity; Italians call it "space for beautiful to do nothing"; for others it is

THE PLACE TO GO

THE SUCCESSFUL URBAN SPACE DOESN'T STAND STILL to be photographed or have its virtues discussed in isolation. It is a dynamic and complex blend of the rational and irrational, the planned and the unintentional. Its size and shape seem to be noticeably less important than its relation to the city's generators of activity. Its universal constant is its essential humanity, its accommodation of the need of people to be at once individuals and part of their city.

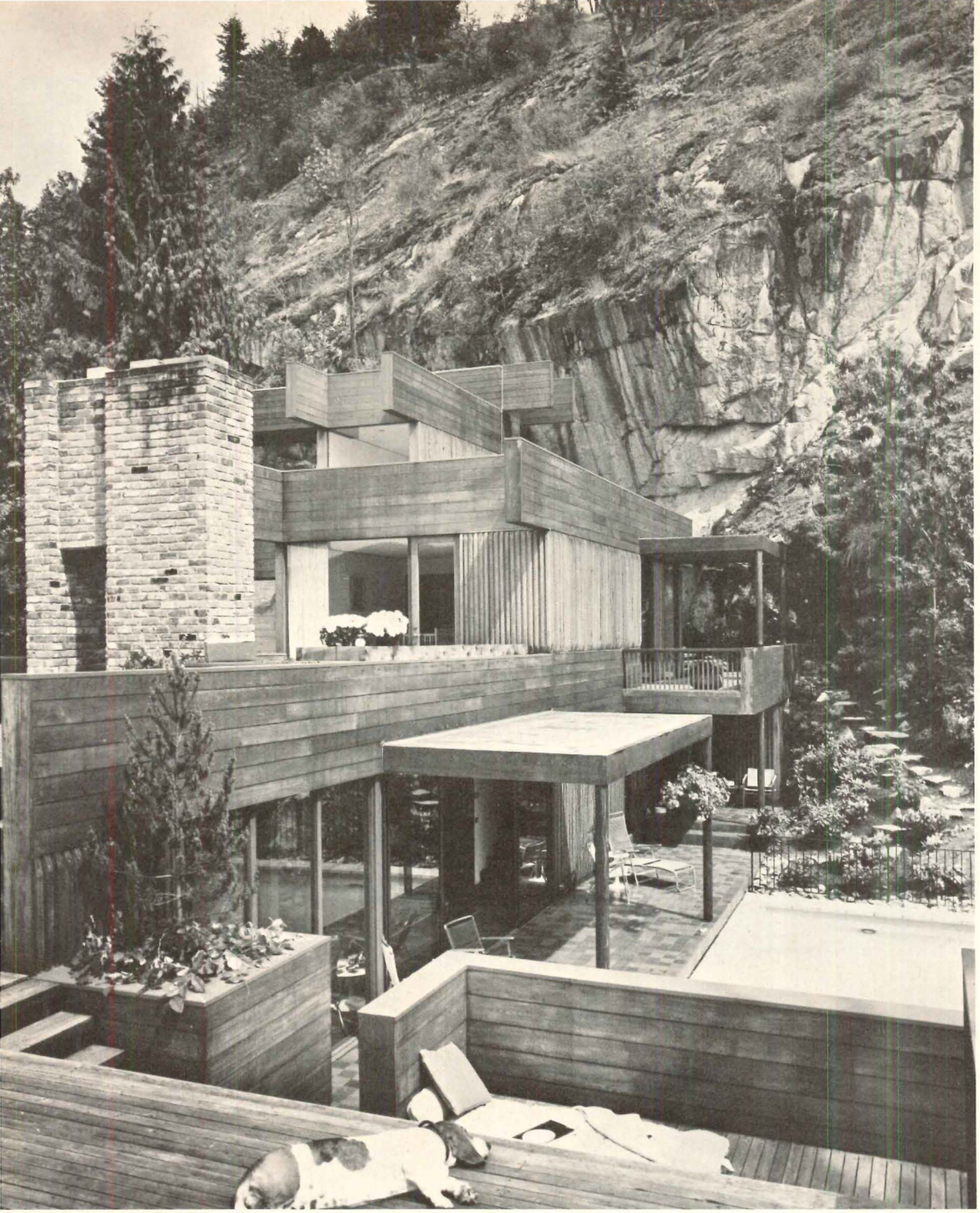
written and photographed by David Kenneth Specter

A HOUSE OF TERRACES ON A ROCKY HILL



This remarkable house near Vancouver, British Columbia, is an affirmation that men can build without violating the natural contexts around them. The property must have long seemed hostile to any construction; it drops forty feet in elevation, through a series of cliffs and foliage areas, to a rock shelf overlooking the Pacific. Yet both the owner, and particularly the architect, Arthur Erickson, recognized the possibilities and the appropriateness of this site for a home. In the sketch shown above, done when the site was still only rocks and trees, Erickson first captured the essence of the house he hoped to create, and it bears a striking affinity to the finished design. The rocks and the vertical pines are of course there in the sketch, but also present are the series of hovering horizontal planes (which has remained the organizing principle of the composition), the cantilevered beams, and even the vertical massing of the stair tower and the masonry fireplace. Erickson's conception provided a logical and encompassing format for his subsequent achievement: a significant example of residential architecture.

HOUSE FOR MR. AND MRS. DAVID GRAHAM, West Vancouver, British Columbia. Architects: *Erickson/Massey*—designer and partner-in-charge: *Arthur Erickson;* job captain: *Garry C. A. Hanson;* landscape: *Erickson/Massey;* contractor: *Sjogren Construction Co.*

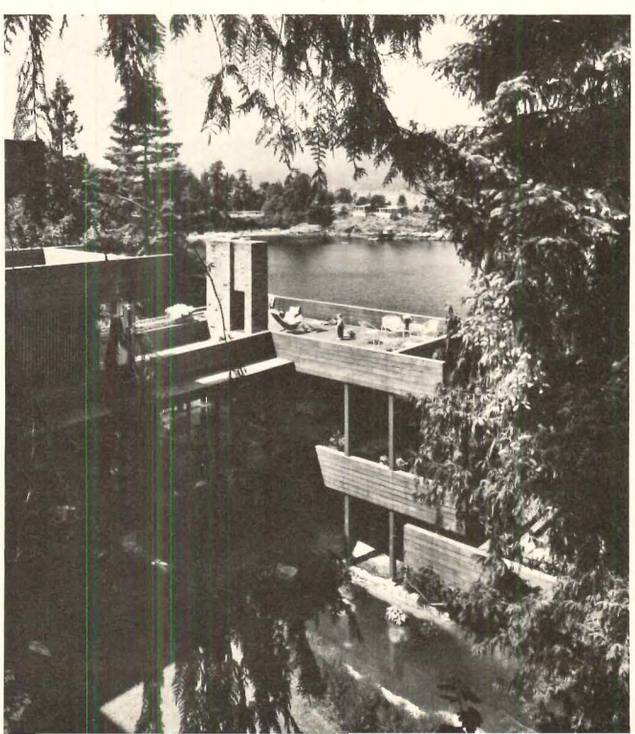


© Ezra Stoller (ESTO) photos

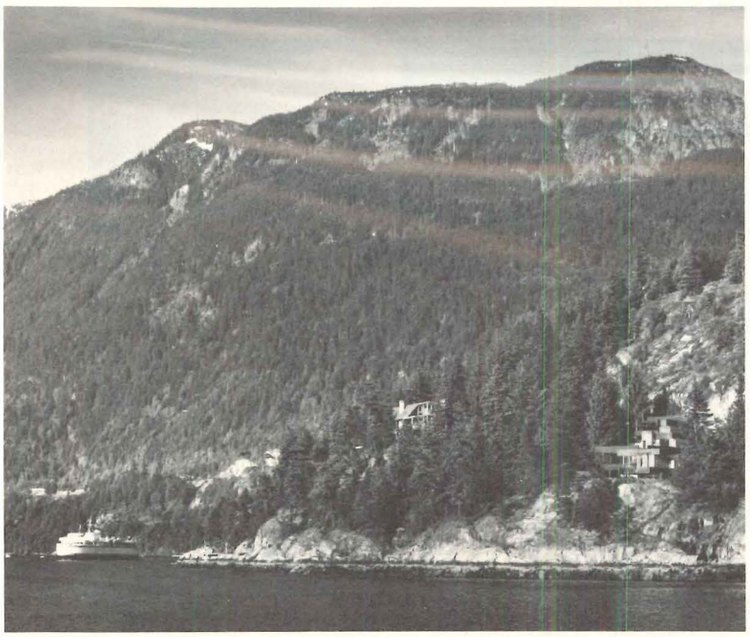
The Graham house is insistently horizontal, rectilinear, and rather polished in contrast to the verticals, the random diagonals and roughness of the landscape. Within this fabric, the house at first seems complicated, yet there is an immediately apparent visual organization to it. Simply stated, the house is composed of a series of horizontal terraces stacked along a jagged slope. The terraces, rather than being carved out of the land, were created and expressed by the horizontal box beams which surround each floor. These wooden rectangles seem to jut out from the sloping rock, floating above each other to create the exterior and interior spaces. The box beams are clearly articulated from the walls and glass which they support. The points of transition between walls and beam are kept absolutely horizontal, and the walls are either glass or strongly textured cedar board and batten, which contrasts with the smooth surface of the beams themselves.

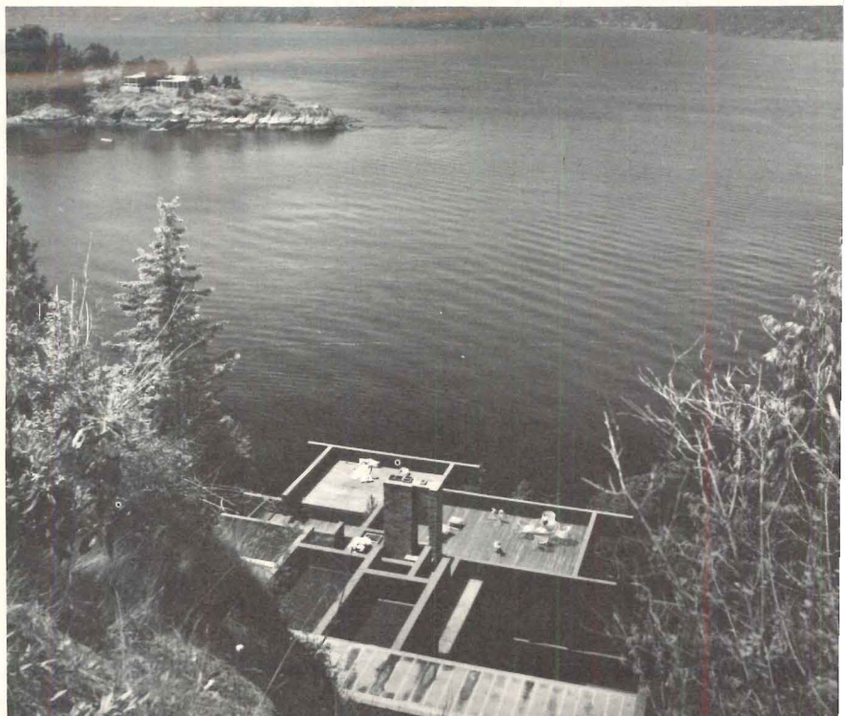
The principal material of the house is cedar, with a simple oiled finish which expresses both the color and texture of the wood. Accent materials are an earthen-colored used brick and a dark quarry tile. It is through materials and color that the house seems to join with the site, producing a balance with nature and an ordered setting for daily life.

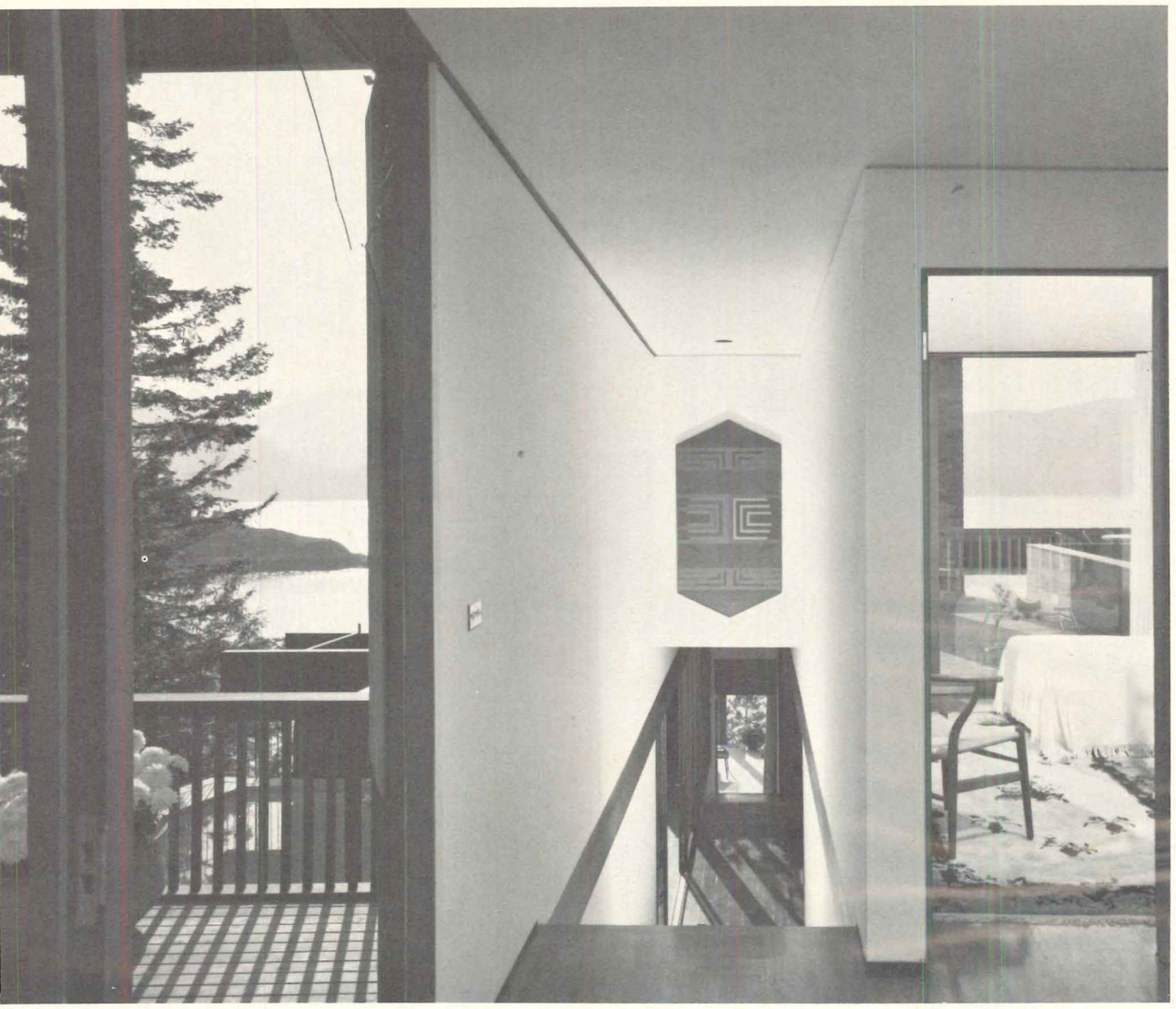
The structural concept of the Graham residence might at first appear to be based on a series of strong cantilevers, yet there is only one within the house: a small balcony off the master bedroom. The projecting ends of the box beams carry only their own weight, and each terrace of beams is supported at its corners by wood posts which carry through to the ground. The box beams provide horizontal support for the ceilings, floors, and stairs, but structural action does not take place through their total depth: they act also as parapet guard rails at the glass lines and around the outside decks.



The several decks and series of rectangles formed by the box beams are readily apparent when seen from above the approach road to the house (photo below). From the water, one can see most of the rugged site and the mountain which towers behind it. Though the site appears to be far from any urban area, the house is supplied with fresh water from a city main about 150 feet away.







A person standing at the entry to the house (above) can see into the guest bedroom and through it to the large terrace over the living room, or he may look down the stairs into the dining room and finally into the living room itself, or he may glance to his left through an entryway window towards the swimming pool, the trees, and the ocean beyond. There is a strong sense of transparency throughout the house, of standing in one room and being able to see through it to several others, yet there is complete privacy from the public eye. The den on the lowest floor, however, provides a feeling of enclosure from the rest of the house, and is the only living space on that floor.

The detailing of these interior surfaces is worth noting. Where sand float plaster is used, there is an integral coloring added, but no paint. Where the floors and ceilings meet the walls, there is always a grooved inset that separates one plane from the other. The recessed down lights and ventilation grilles have specially designed plaster stops; there is no exposed trim piece around them.

SPECIAL REPORT NO. 9

Systems building: what it really means

First in a series of articles examining the implications of the systems approach for architect, engineer, manufacturer and owner. Its purpose is to explore what the systems approach is, and what it is not; what it might be expected to accomplish; why and how practicing professionals should get involved; and how manufacturer participation can be increased—*Robert E. Fischer*

Today, the words "systems building," or "systems approach" to building are on the tongues of almost everyone involved in the building industry—and clients as well. The client's imperative is for improved performance in a building completed in less time for less cost—or at least known performance in known time for known cost with someone being assigned the responsibility for "guaranteeing" these goals. Surprises are not allowed.

But what does "systems approach" really mean, and what is it really accomplishing?

Systems approach in general terms is an orderly think-through reduced to an analytical procedure put in writing. To explain "systems engineering" is a story in itself; depending on how it is handled it can be effectively or ineffectively administered.

The key word in the definition of systems approach to building is *performance*. Performance implies, first of all, identification and definition of users' needs and translation of these needs into performance specifications for interrelated building components. These components must be produced within certain cost limits. Advocates of the systems approach feel that it strongly encourages greater manufacturer involvement in research and development on building components, as well as in the physical and perhaps functional coordination of components of different disciplines—structure, air conditioning, lighting, sound control, and so on. While performance is the key word in systems approach, interpretation varies from one user to another. But ultimately, in all cases, performance implies measurement and evaluation.

The Public Building Service of the General Services Administration has taken a classical and comprehensive view of what the systems approach is in their research program, at the National Bureau of Standards, undertaken to demonstrate feasibility of this approach in designing, specifying and constructing complex buildings. The project is to be applied to one million square feet of office space in the PBS program, using the interior partition system and the "floor-ceiling" sandwich (suspended ceiling, lighting, air supply, floor, electrical service, sound absorption, etc.) to demonstrate the approach.

PBS takes the systems approach to mean the application of "new intellectual techniques of systems analysis, simulation and operations research to problem solving." In its view, the systems approach has two main features: 1) Objectives are stated in performance terms rather than in particular technologies or pre-existing models, and 2) Interrelations within a system are emphasized. With the systems approach, the effects of any set of choices and decisions upon other relevant decisions are determined. The systems approach is intended to give greater assurance of success, through formalization of feedback through a model or simulation for pre-testing of alternative solutions. Of particular importance, says PBS, is validation feedback during use to be applied to the next cycle of building.

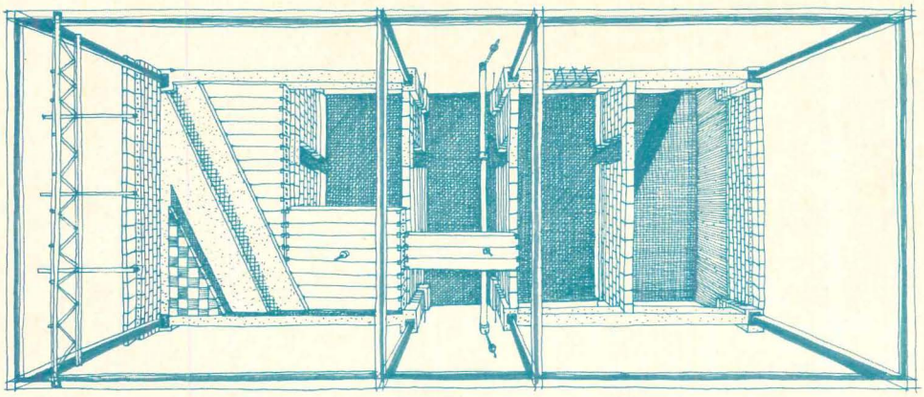
The difference between a "building system" and the "systems approach," PBS avers, is that building system is hardware, rules, people and energy working to produce some desired function, while systems approach is a way of looking at problems in a new light.

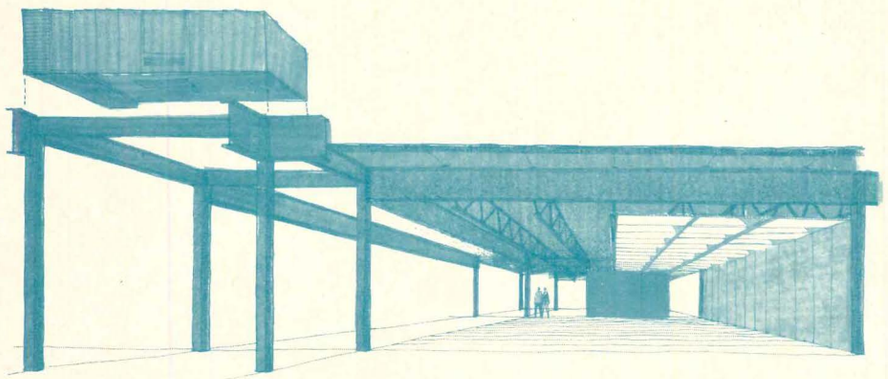
Varied "systems approaches" have much in common

PBS is just one of a number of agencies and organizations with an interest in improved building performance trying the systems approach in a formalized manner, utilizing special staffs to do research and prepare performance specifications.

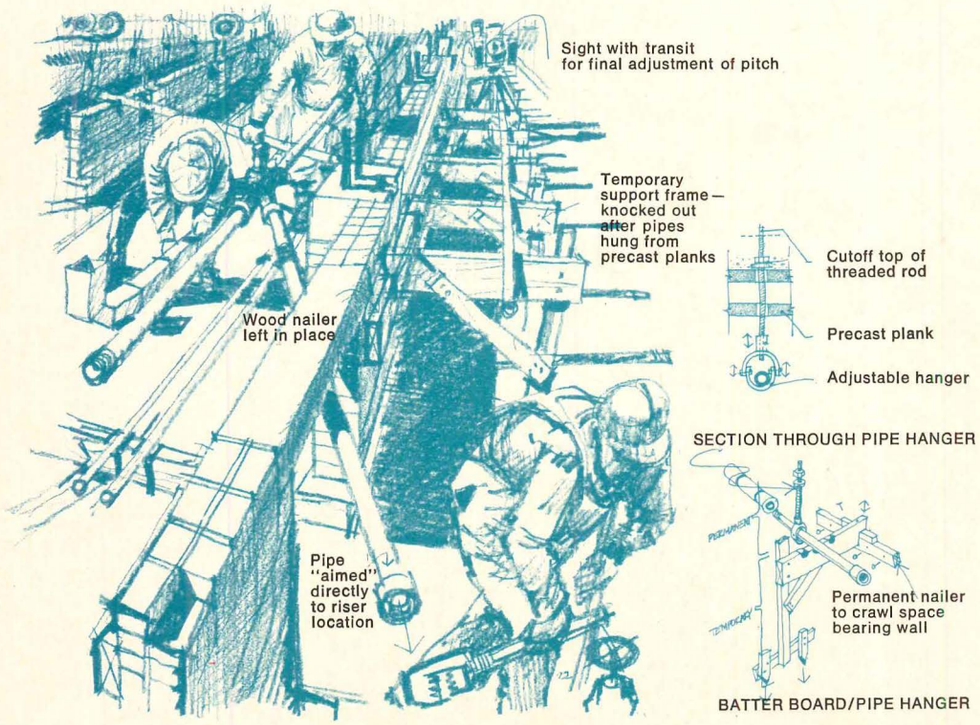
The first program to attract architects' attention was the School Construction Systems Development project in California. More recent is the University Residential Building Systems (URBS) project of the University of California. Just about ready to re-

Baltimore architects take a pragmatic approach to systems building: "foolproof" details, rationalized construction





To cut construction time as well as improve overall building performance of elementary schools in Anne Arundel County, Maryland, architects-planners Rogers, Taliaferro, Kostritsky, Lamb evolved an approach that, of necessity, had to concentrate on the problem of improving the productivity of local labor. They worked on detailing the various building elements and organizing the construction process to reduce labor's errors to a minimum, and, recognizing how materials work in practice, to increase building performance to a maximum. Example: RTKL developed a procedure for plumbers to install piping in a crawl space that made their work easier (no interferences) and installation more economical. Elements shown at top are concrete block foundation walls, precast floor planks, primary and secondary steel framing. First schools (conventional curriculum) had 28- by 28-ft bays. New schools (team teaching) will have 60- by 60-ft bays (above).



ceive bids for 10 different building components is the Study of Educational Facilities (SEF) for a minimum of one million square feet of elementary schools by The Metropolitan Toronto School Board. And commited to a similar systems program is the Montreal school system.

Elements common to all of these programs are: 1) determination of performance desired for some aggregation of components of a building; 2) establishment of a minimum dollar volume of building deemed necessary to attract manufacturers and the technical-legal-managerial effort required to make possible procurement of components by performance specification.

In its analysis of the systems approach, PBS states that the first step is the statement of *performance requirements* without regard to the specific means to be employed. These performance requirements are quantified in *performance criteria. Performance evaluation techniques* must be developed to judge whether or not criteria are met. Evaluation may involve physical tests, simulation, or judgment of knowledgeable technical advisors. In combination, performance requirements, criteria and evaluative techniques become a performance specification. When, in addition, cost parameters are given, the specification is a bid document.

Is innovation implied? PBS thinks so, but not necessarily in the form of innovative hardware. For example, stating the performance and not specific materials or equipment enlarges, they believe, the possible range of solutions for a certain set of requirements, stimulating hardware innovation. Also, it is felt that by developing performance requirements for a large enough portion of juxtaposed components, integration of function may be possible (for example, to receive demountable partitions or structure serving as air ducting) and tradeoffs between subsystems might be possible.

Finally, innovations are possible in financing and construction management.

Hopefully, industry will be motivated to make innovative responses to performance specifications, or to combine existing elements in new ways. But innovation is not necessary if the specifications can be met by existing means.

Toronto's SEF: the difference is mainly semantics

While Toronto's concept of systems approach is similar to that just discussed, in its Study of Educational Facilities (SEF) project, the definitions are slightly different. In Toronto's context, "systems approach" to building refers to a more inclusive definition of the total building process, a greater *coordination* of the work activities, and a more intensive degree of *planning* of each phase of the job than is achieved by traditional building methods. The building process is defined as extending from the moment a need arises for a building through to the complete physical satisfaction of that need. Extensive analysis in the planning state is intended to simplify the building process and

reduce the complexity of organization and execution.

Other aspects of the SEF program include industrialization, bulk purchasing, competitive bidding on components, and testing of components in a building—as was done with SCSD in California.

The degree of industrialization can vary in any systems approach

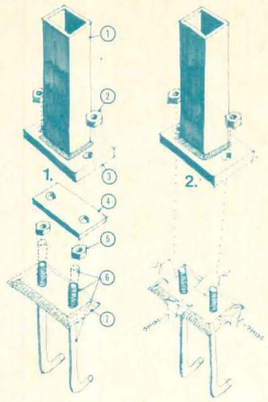
Industrialization, SEF says, could refer to everything from a carefully organized, traditional, semi-mechanized, on-site trade operation which requires considerable on-site labor, to the production and installation of large, complex, prefinished building components. In the latter case, the labor force would be small, but the individual workers would require multiple skills. With one subsystem industrialization might involve the use of a carefully planned, manual building operation which has been semi-mechanized, such as brick or block laying. With another sub-system, industrialization might mean the use of components that arrive at the site in a highly finished state, involving the simplest and smallest number of activities to be carried out by on-site personnel. Industrialization has been defined as, "Continuity of production implying a steady flow of demand, standardization, integration of the different stages of the whole production process; a high degree of organization of work; mechanization to replace manual labor wherever possible; research and organized experimentation integrated with the process."

To insure the widest possible application of the industrialized process, SEF points out, all components used on the project must be dimensionally coordinated. And in order that components of diverse origin integrate in a finished building and be at the same time interchangeable with other components, a common standard of performance must be established among the contributing industries. SEF suggests that manufacturers should examine the best means of satisfying the performance specifications for the first SEF Building System within the context of their existing plant, methods of organization and work skills. The mixture of traditional and new building techniques should be considered, SEF says. Thus industrialization is not intended to refer only to dry, precast, preformed, pre-engineered or prefabricated construction.

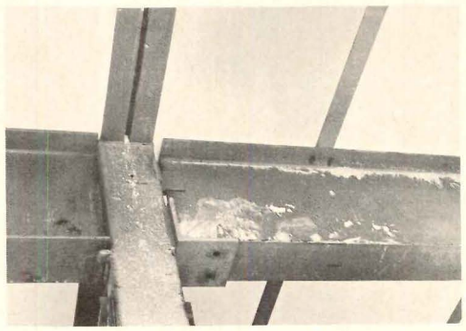
SEF wants a building system that will offer: flexibility (quick and inexpensive rearrangement of interiors, mechanical and electrical equipment, and provision for expansion); quality and speed of construction; long-term reduction of school building costs; architectural freedom of design; stimulation of interest among users in exploiting the creative potential of buildings that can be readily changed.

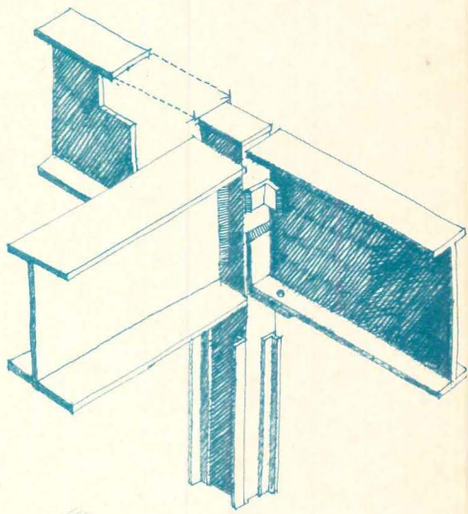
The SEF program is asking for bids on 10 sub-systems

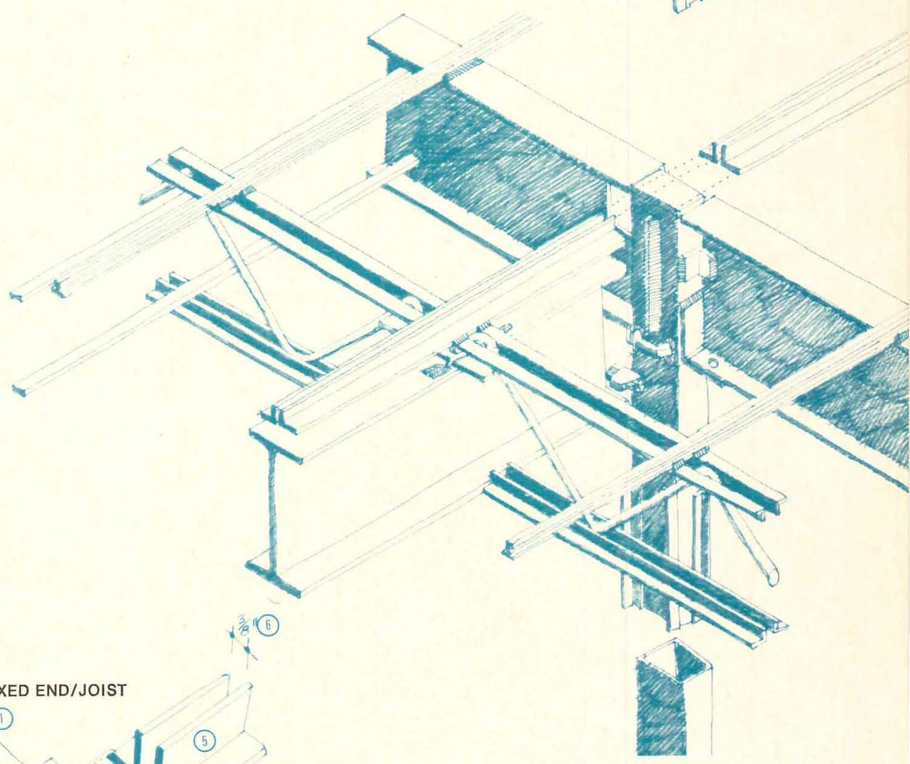
These subsystems are defined as an identifiable, complete, physically integrated, di-

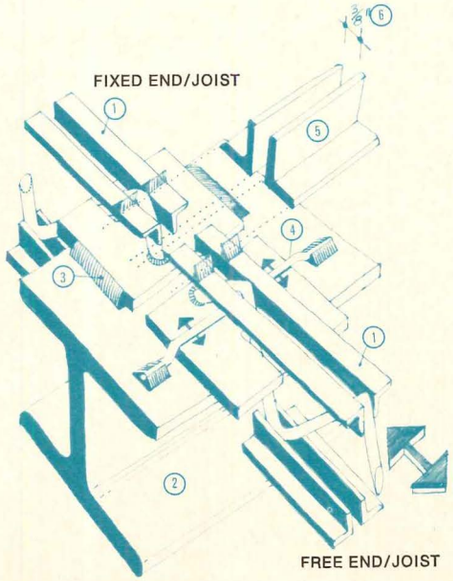


RTKL developed a series of "fail-safe" details designed to speed construction and to avoid costly maintenance problems caused by uncontrolled expansion and contraction. The drawing, left, shows RTKL detail, 1, for plumbing tubular columns, contrasted with the conventional method, 2. Leveling nuts (5) are adjusted to appropriate elevation as determined by transit. Then when columns arrive on the job (with bearing plates attached) they are simply set on top, and nuts (2) are turned down; grout fills space between leveling plate and floor slab. Primary steel was detailed for simple erection for alternate fixed and free spans. Expansion and contraction is taken up by sliding joints, keeping the overall dimension of the structure constant, minimizing roofing failures, cracked walls, etc. Primary steel is welded to one side of the tubular column, set on an angle seat on the other side (clip angles prevent rotation of the beam).









Bar joists are welded to a plate on one side of the girder's top flange, and on the other side they are allowed to slide on a bearing plate. The joist is held down by a bent bar welded to the bearing plate. Control joints are provided in the roof deck by angles field-welded to girders and joists.

cided that bonds should be floated for a little over half the original amount, $18.5 million—equivalent to 2,000 units. The maximum program would be for approximately 4,200 units instead of the original 9,000.

Over 200 representatives from 140 different manufacturers attended a pre-bid conference in California on the URBS program. This number dropped down to about 20 organizations serious in bidding, and finally down to only eight that actually bid. Structure-ceiling had three bids; furnishings, two bids; and hvc, partitions and bathrooms, one bid each.

After bids came in, the decision of whether or not to go ahead was delayed about four months because it appeared that the bids were 38 per cent above the estimate. The lowest aggregate bid was over $24.5 million, instead of a hoped-for bid of $17.7. BSD then asked bidders to submit unit prices, which originally had been due six months after bid opening. Using these unit prices applied to four existing student housing projects, BSD showed that these existing projects would have cost 8.6 per cent less if they had been built with URBS components. The unit prices from manufacturers were derived from "the most economical use of URBS components," based upon working drawings and specifications of the four housing projects.

The Regents of the University decided at their October meeting to accept the bids for structure-ceiling, hvc and partitions as recommended by BSD and the University architect. The bathroom and furnishings components were turned down because of cost; it is reported, however, that the furnishings component is being renegotiated.

One reason for high bids in URBS: possibly too much flexibility

Undoubtedly a factor in the higher-than-hoped-for bids on structure and hvc was the unusual degree of flexibility required for structure, and the range of occupancies and degree of individual temperature control required for hvc. The horizontal planning module, for example, was 20 in., and the specifications called for as many as 14 different lengths of main spanning members and 12 of transverse spanning members. Prime reason for this requirement was that the University wanted the system to be capable of duplicating practically any student housing in its system in order not to curtail architectural freedom. Nearly 180 buildings had to be surveyed, and, when all were considered, a 20-in. module resulted.

The University also wanted to provide a substantial improvement in the thermal environment for student housing. Existing practice, outside of a few exceptions, was to provide heating only, with no mechanical ventilation or cooling. The specifications went beyond merely requiring the option of cooling. The specifications said that "Each individual occupied space requiring thermal treatment, except bathroom units and public corridors, stairways, and toilets shall consist of one local control zone." However, heating and cooling were not required to be available simultaneously among local control zones within a given exposure zone. But, since buildings had to be convertible from single-student occupancy to married-student occupancy, the hvc bidder had to provide components in such a way that each apartment would be a unit unto itself. Reason: the code did not permit recirculation among any spaces having cooking odors, unless deodorizers were provided. This meant that with the multi-zone system, which was picked, there had to be a single (though smaller) multi-zone unit for each apartment, requiring perhaps three multi-zone units for about every 2,000 sq ft. The specifications anticipated not more than 12 local control zones for any 2,000 sq ft of building at any one time. This 2,000 sq ft of space was called a Flexible Living Area (FLA), consisting of a one-hour fire-protected envelope defined by floor, partitions and ceiling up to 2,000 sq ft in area, designed for a maximum of 10 students. These same 2,000 sq ft might accommodate three apartments. It was believed possible to reduce fresh air requirements for apartments by "encapsulating" the kitchen fan system —i.e., fresh air could be brought directly to the range hood from outdoors untreated, and exhausted by the hood.

SCSD and URBS were both developed by team efforts

In both the SCSD and the URBS programs industry chose to enlist the assistance of professional technical consultants. With SCSD, the winning structural system was devised by a team of The Engineers Collaborative and architect Robertson Ward, and the ceiling-lighting system was developed by Robertson Ward—both components produced by Inland Steel Products. With URBS, the Portland Cement Association contracted with Hellmuth, Obata & Kassabaum Inc. and Paul Weidlinger, consulting engineer, to develop both a poured-in-place flat slab plate system and a precast-prestressed system. I. A. Naman & Associates were engaged as mechanical consultants. The winning bidder was Interpace Corporation, whom PCA had enlisted as precast system contractor. The American Iron and Steel Institute used Reid & Tarics, Architects and Engineers to develop a very elegant steel-framed system. The Airtemp Division of Chrysler Corporation, which was sole bidder on mechanical component, associated with mechanical engineers Ayres & Hayakawa. Reported reasons for other manufacturers not bidding: They couldn't meet stiff noise criteria (NC-30); couldn't find suitable contractors to associate with; and were reluctant to spend money on R and D because of time, and the fact they had no off-the-shelf components that could be modified for this project.

Available on a consulting basis to Building Systems Development were S. B. Barnes on structure, T. R. Simonson on mechanical systems, and Dr. Vern C. Knudsen on acoustics. But the URBS National Advisory Committee had only two practicing architects and one consulting structural engineer out of a total of 15 members. No mechanical or electrical engineers were included.

The University's project director for URBS said he was "tickled pink" with the winning components. And despite some reservations about the criteria themselves and the bidding process, individuals close to the URBS program think the components turned out pretty well.

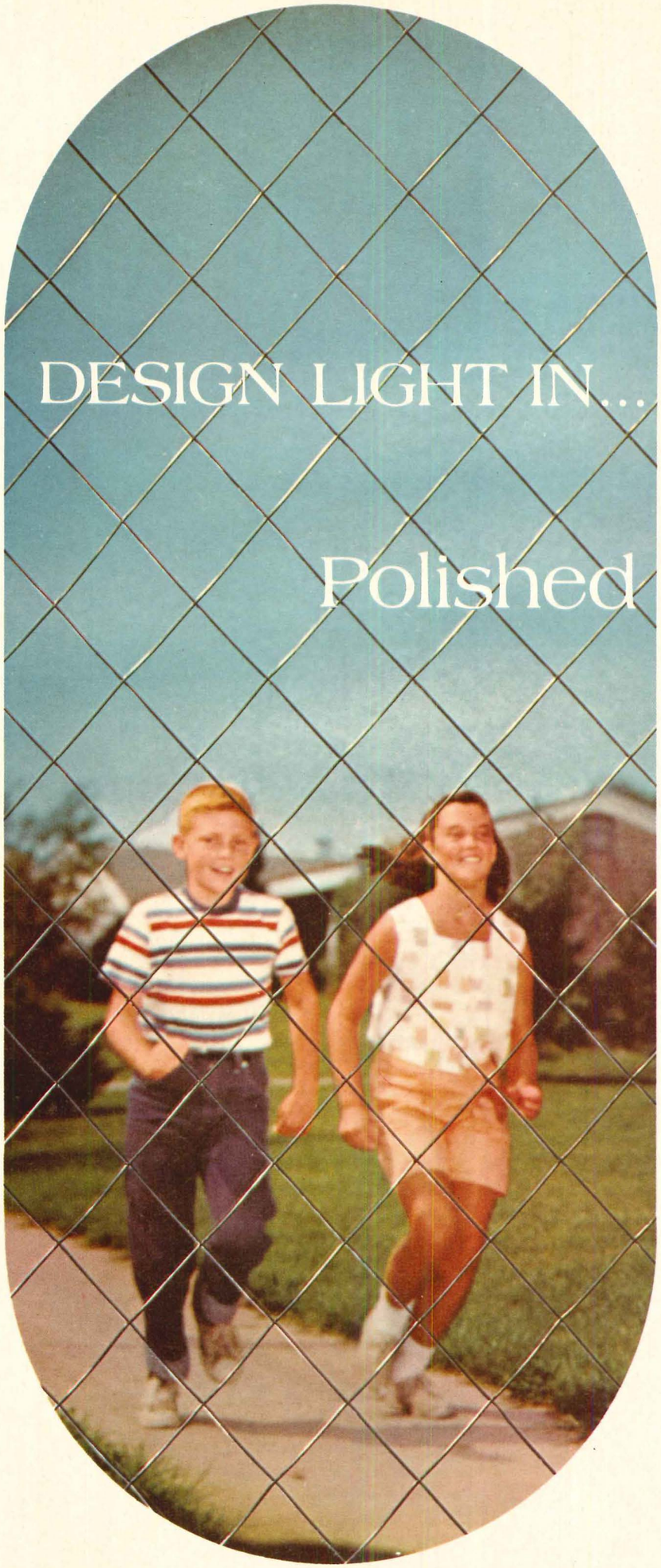
One disappointment among the bid components was bathrooms. Degree of unitization of the bathroom as well as the bid price did not come out as hoped. Some manufacturers drew back from the single responsibility concept, preferring to sell fixtures. Part of the overage of the bid has been attributed to the plumbing contractor's uncertainty, from the labor union standpoint, as to whether the fittings would be installed in the factory or the field.

It is reported that remarkable rapport has been established among the winning bidders in working out details of integration. However, interchange of information among the 12 organizations qualified to bid prior to bidding time was said by some of the participants to be not as free as would have been preferred in the sense of exploiting integration possibilities. Of course this is natural in a competitive situation, but obviously it does put a limit on industry's capacity to provide "innovative" design.

University of California's Planning and Construction department, far from being unnerved by the URBS experience, is looking forward to a much larger anticipated program, Academic Building Systems (ABS). This would involve the normal run of academic buildings, probably all except for medical (including health sciences) facilities. Purpose: to promote a definite increase in environmental quality, while reducing initial and maintenance costs. Current thinking is that certain components would form a "loft" building to start. Up to a certain point in the combination of components, the building could be used for a variety of purposes. Then with the addition of specialized plug-in components, a building might become, say, math-science, bioscience, and so on. There might be basic mechanical components for comfort space conditioning, and specialized mechanical components for fume hoods.

The University provided an initial funding of $50,000 in April of last year to initiate study of the project. Questionnaires on user wants were sent to 75,000 academicians; they also were asked to name the five most objectionable features of their present physical environment. This fall the University was at work completing a PERT network for the first group of buildings.

Coming in an early issue: Heating and Air-Conditioning Plants, Components and Sub-Systems



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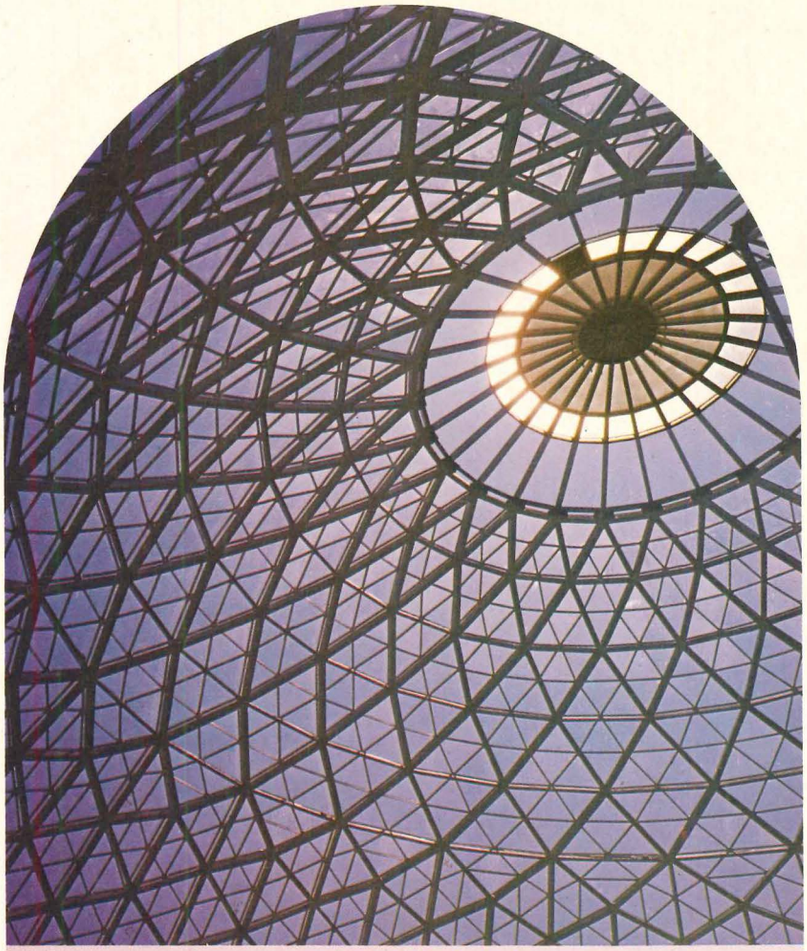

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*To qualify for this "Fire Retardant" listing, Mississippi Wire Glass had to withstand the furnace test given by Underwriters' Laboratories, Inc., Wire glass windows in a removable wall are placed in a gas-fired furnace. Temperature is raised to 1600° F. in 45 minutes and held at this point for 15 minutes. The wall is then removed and the glass is subjected to a 1⅛" stream from a fire hose at 35 to 40 lbs. of pressure. The glass must remain in the sash, substantially unchanged except for any cracking due to thermal shock. Actual test scenes are shown in our 30 minute film "Rolled Glass by Mississippi."

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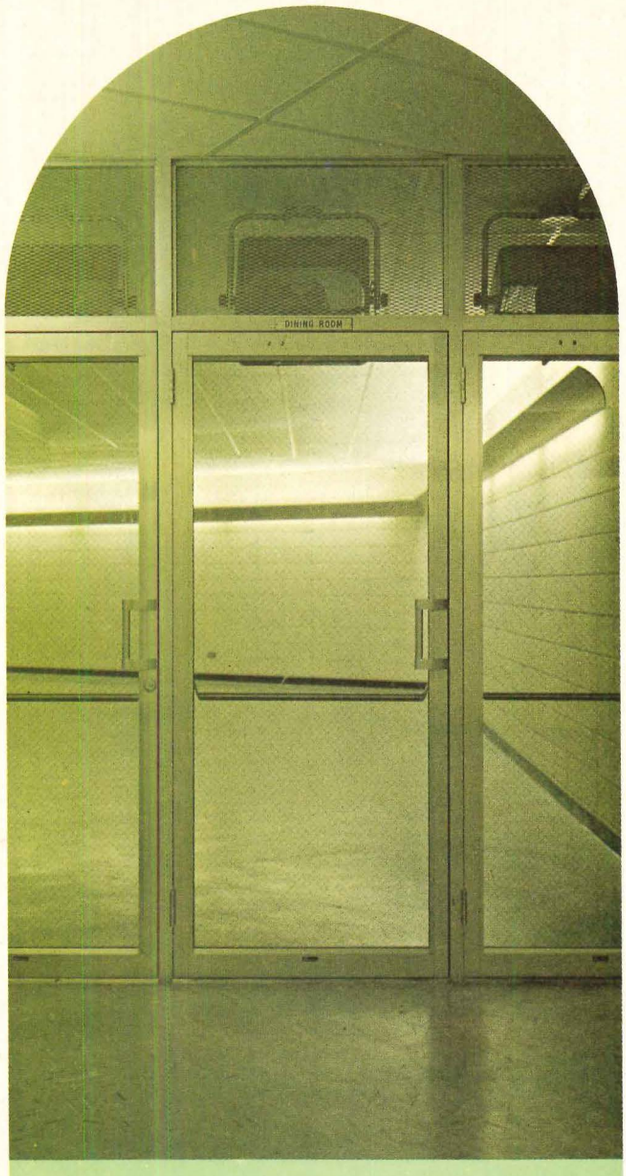
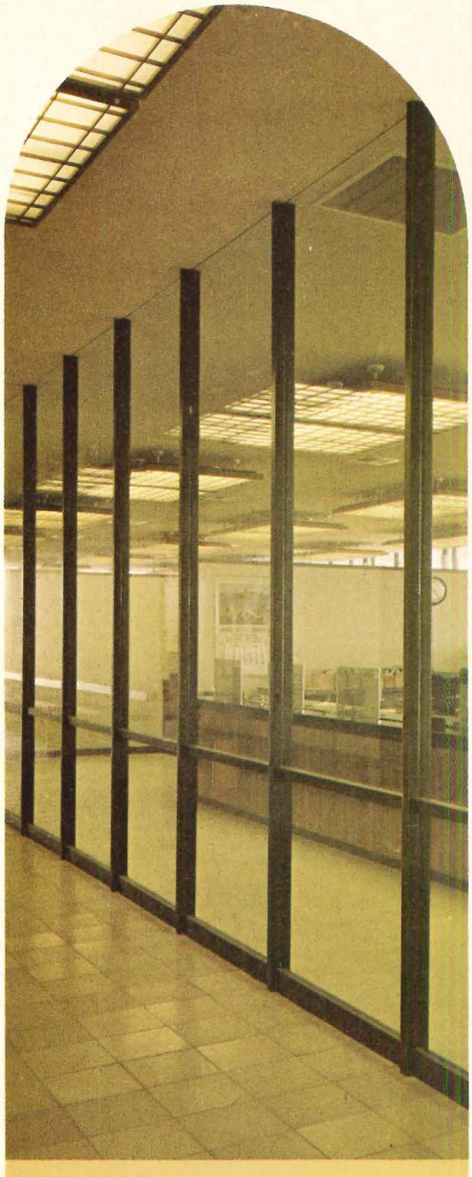


FULL-VIEW DOORS

with fire retardant glass

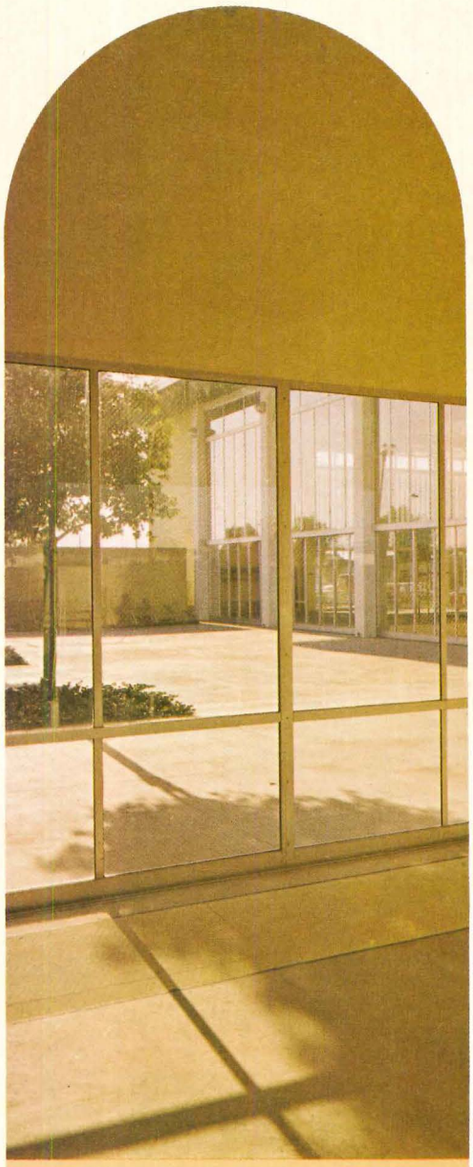
Polished MISCO gives clear vision, so important to safety at busy doorways. It can take abuse and still stand by, ready to fulfill its complete fire retardant function. The way it holds against intense heat seals the doorway against drafts that speed through any openings and spread the smoke and flame. The wire webbing is unobtrusive yet it subtly blends with entrance areas so the glazing adds an interesting design feature as well as a safety function.



ATTRACTIVE WALL SECTIONS

with full-vision range

Give the "open" feel to interiors through walls that make full use of natural light. The smooth surface of Polished MISCO makes attractive wall sections that are easy to keep that way. The diamond-shaped mesh is inconspicuous . . . just visible enough to ward off floor traffic accidents from unawareness of glazed openings. Its basic fire retardant ability checks smoke and flame. The sturdy steel webbing holds glazing fast in its frame under prolonged heat exposure.



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that give clear view

Transmit natural daylight through windows that are glazed sentinels against fire, breakage, vandalism, and forced entry. Polished MISCO provides window areas with fire retardant protection, while maintaining clear vision and the sense of spaciousness that comes from greater light transmittance. Mississippi Wire Glass has been looked to by architects and engineers as the approved fire retardant glazing through more than 60 years.

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Patterned MISCO

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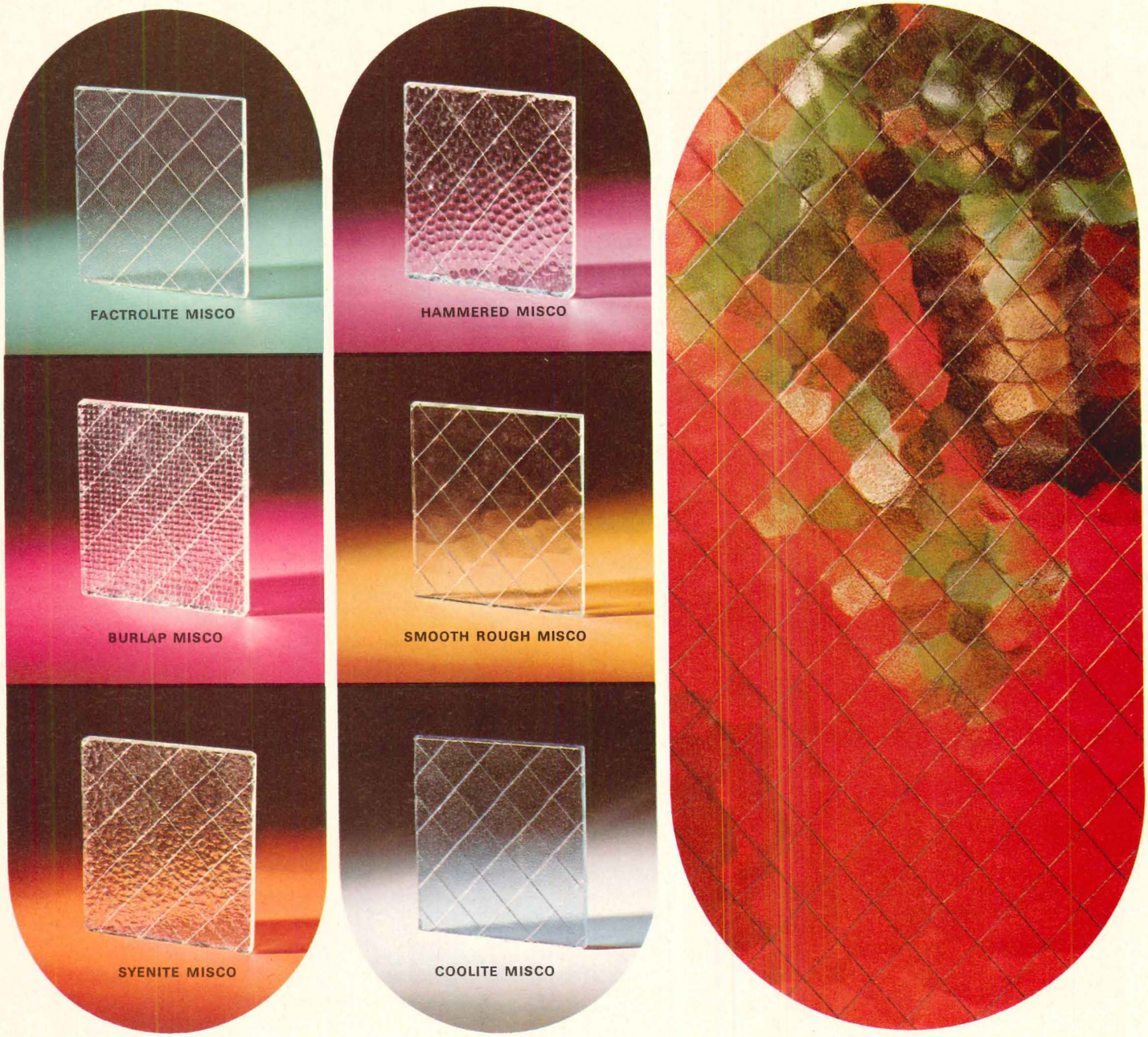

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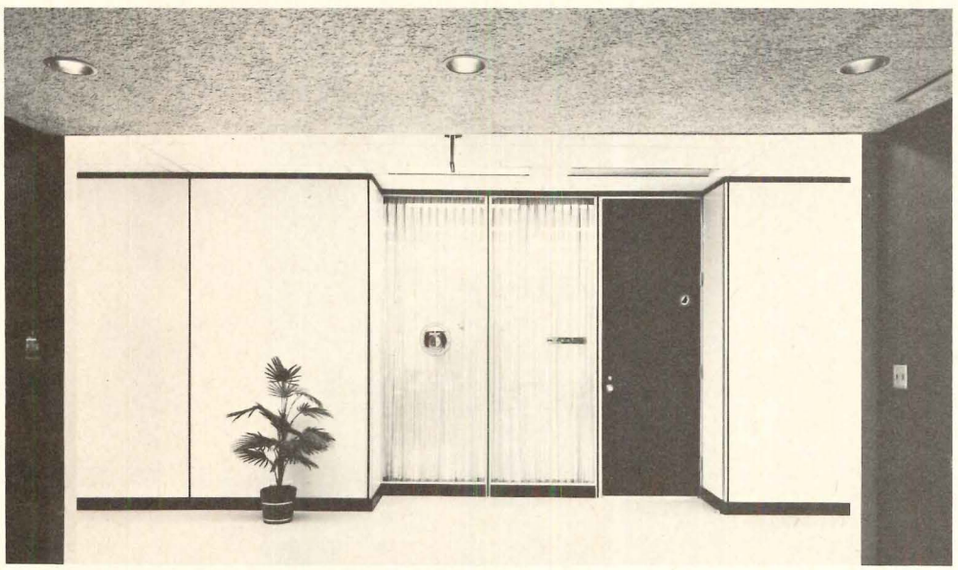

MOVABLE PARTITIONS / Approximately two miles of *Quick-Change* recessed feature post partitions were used to accomplish a flexible layout in the award-winning State of Missouri office building, Kansas City, designed by Kivett and Myers. The partitions are a five-foot modular design with panels weighing less than four pounds per square foot. ▪ Masonite Corporation, Chicago.

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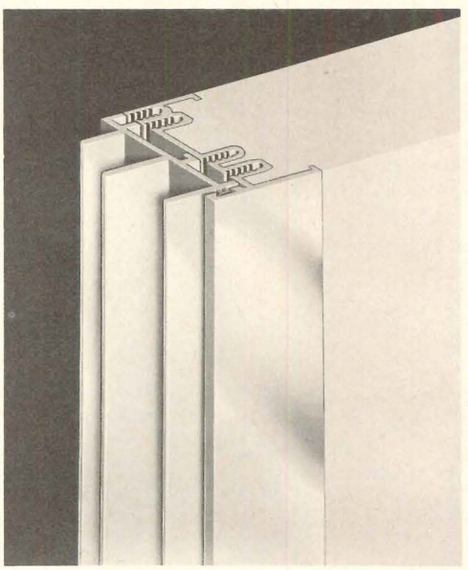

PRECASTING FRAMES / A method of precasting aluminum subframes in concrete walls at ground level provides a "perfect" configuration for a variety of window and door frames. The first demonstration, the six-story Uniment Apartments in Richmond, California, is an example of how such assembly-line methods could aid housing production. ▪ Ador/Hilite Corp., Fullerton, Calif.

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TEAK / Soaring teak *Flexwood* (thin wood veneer laminated to cloth) walls and floating canopies in the auditorium of the Jewish Home & Hospital for Aged in New York City create a non-institutional environment while contributing to the acoustical system. *Flexwood* is adaptable to curved construction. ▪ U. S. Plywood, New York City.

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FLOCKING / The *Suede-Tron* process of electrostatically flocked surfaces assures that all fibers are perpendicular to the surface. Results are a longer life, acoustical control and great versatility. ▪ Co-Polymer Chemicals, Inc., Livonia, Mich.

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COLLEGE CARPETING / *Four Seasons* indoor-outdoor carpet is used wall-to-wall in kitchens, bathrooms, living rooms and closets of 52 apartments adjacent to Western Michigan University. The carpet resists staining and is shock-free. ▪ General Felt Industries, Inc., Chicago.

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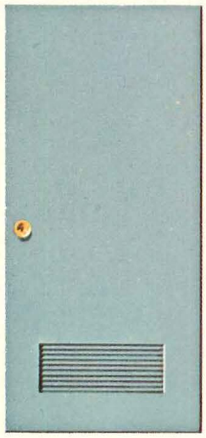
more products on page 162

You can style Republic doors to "go" almost anywhere



Example: Modifications to create the light or louvre treatment you need for a specific architectural success can be applied to Republic *standard* doors right at our warehouse in your area!

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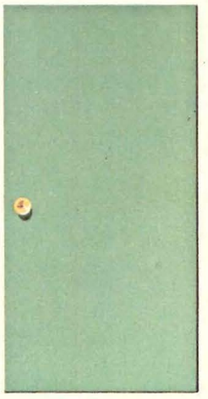

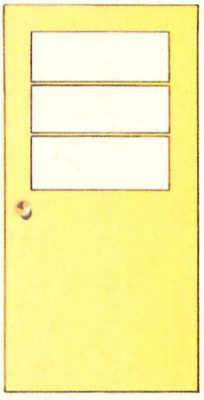

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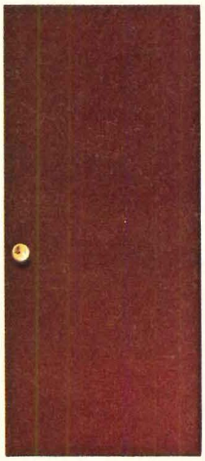

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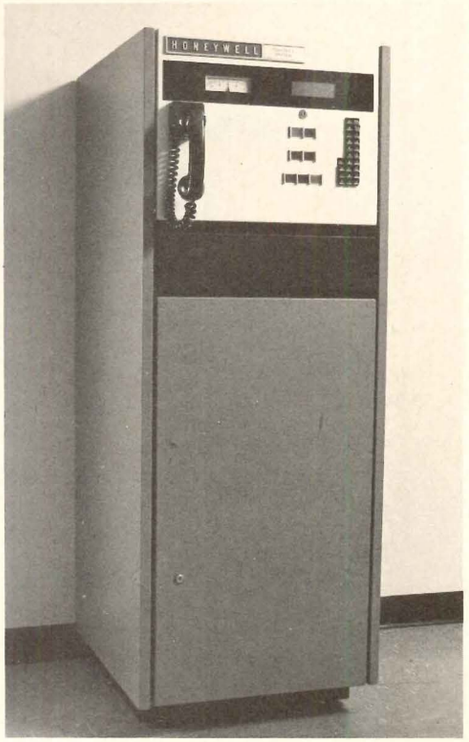
continued from page 159



SCHOOL CONTROL CENTER / A compact console, which continuously monitors up to 400 separate functions and controls 200 mechanical operations, is priced "to be practical for even the most limited school construction budgets." By touching buttons the operator can start or stop motors, raise or lower temperatures, open or close dampers, fire or shut down boilers, control chillers and compressors, and handle many other tasks. ▪ Honeywell's Commercial Division, Minneapolis.

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COLORED CURTAINWALL COMPONENTS / The *Ultimet* wall framing system, developed initially in stainless steel, is now available in a variety of steels and colors. The additional decorative color coating of high quality fluorocarbon polymeric material is reported durable and fade-resistant. The integrated components make on-site installation of the system a matter of locking members into place, without exposed fasteners. ▪ United States Steel Corporation, Pittsburgh.

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more products on page 180

Until now, standard lay-in ceilings have been just that. Standard.

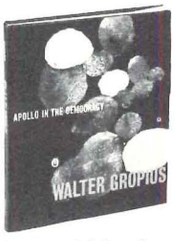
Now there's Luminaire VGM. A simple, vaulted lighting module that makes any standard lay-in ceiling something more. More dramatic. More impressive and interesting. And since each module delivers glare-free light, the result is a brighter, more pleasant atmosphere. Luminaire VGM fits any lay-in ceiling plan, installs quickly and shifts easily to meet new lighting needs. Our folio describes VGM and other ceiling innovations. Please write for a copy. Armstrong, 4201 Rock Street, Lancaster, Pa. 17604.

Armstrong
Ceiling Systems that work

Or for more data, circle 1 on inquiry card.

GROPIUS

APOLLO IN THE DEMOCRACY



In this book, Walter Gropius, one of the true giants of modern architecture, father of modern design, founder of the Bauhaus, leader of The Architects Collaborative —discusses our environment and his own rigorous, constructive views on its revitalization. All concerned with the modern physical and cultural scene will want to read his observations on Japanese architecture, theater design, museums, cityscapes and the buildings that make them; and, of course, his intimate notes on Wright, Mies, Behrens, Stravinsky, Corbusier. A book for every architect's and designer's shelf. **7½ x 9¼, 240 pp., $12.50**

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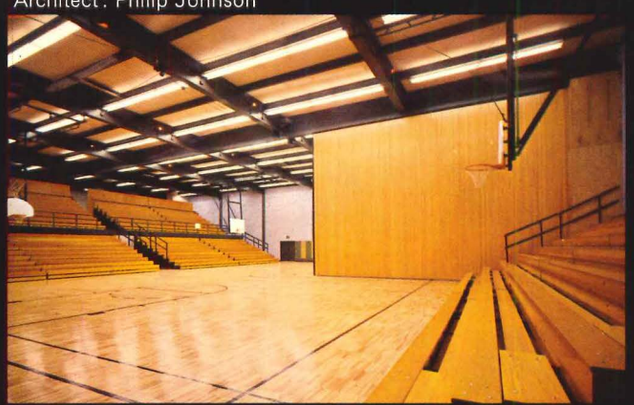
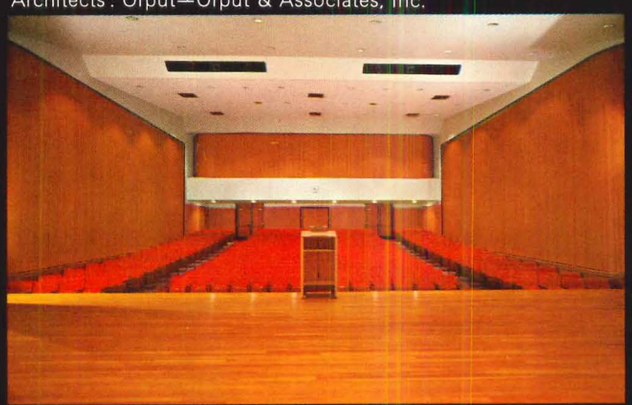
Architect: Philip Johnson

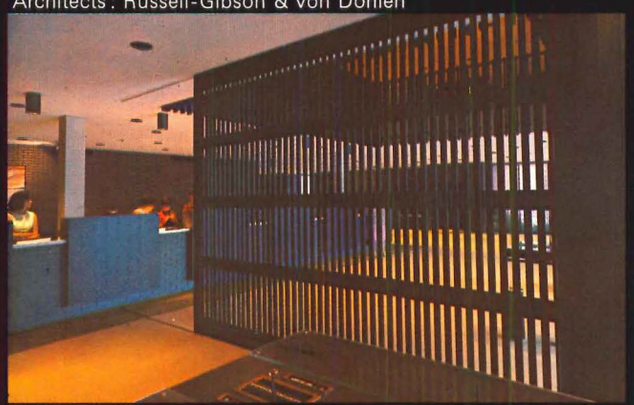
Architects: Orput—Orput & Associates, Inc.



Architects: Russell-Gibson & von Dohlen

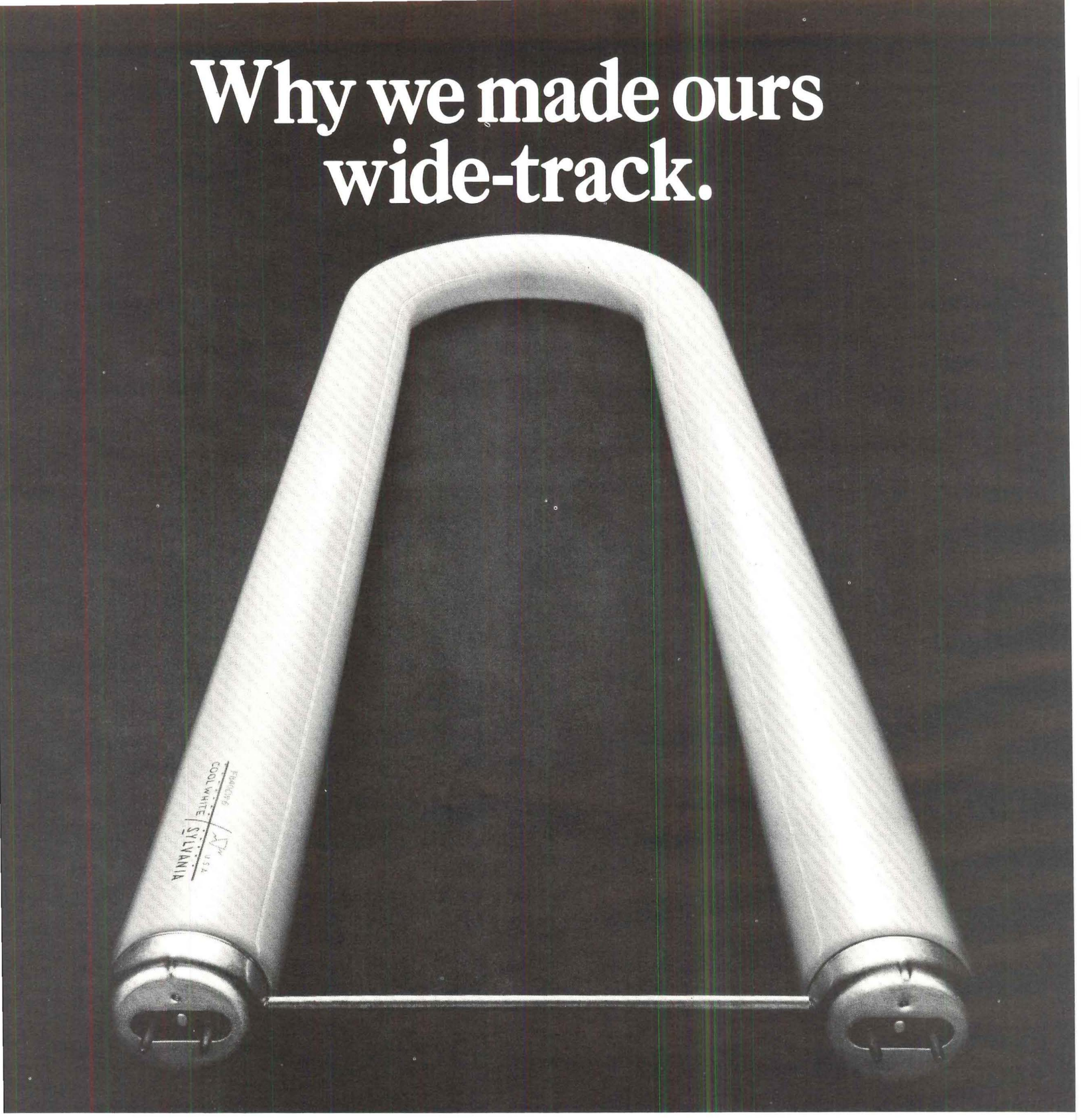


Architects: Lyons & Mather



Architect: Joseph Stein

Why we made ours wide-track.



We set the legs of our 40-watt Curvalume bent fluorescent a full six inches apart.

Because when they're this far apart, the legs of two lamps can be nicely spaced out inside a standard 2-by-2-foot lighting fixture.

But if you think about it—it's possible to stuff three bent lamps into a fixture this size if you just bend the legs closer together.

Our engineers thought about it. And turned thumbs down on the idea.

But others rushed in and made a narrow-gauge lamp with smaller leg spacing. With the following results:

The tighter bend calls for thicker glass. Their lamp is twice as heavy as ours.

It costs you a whole dollar more than ours.

And it puts out 15% less light than ours.

So when you jam three of these lamps into a fixture, you're jamming in a lot more dollars. And short-changing yourself on light.

Which makes us glad we didn't go on a bending bender.

For details, write to: Sylvania Lighting Center, Curvalume Fluorescents, Danvers, Mass. 01923.

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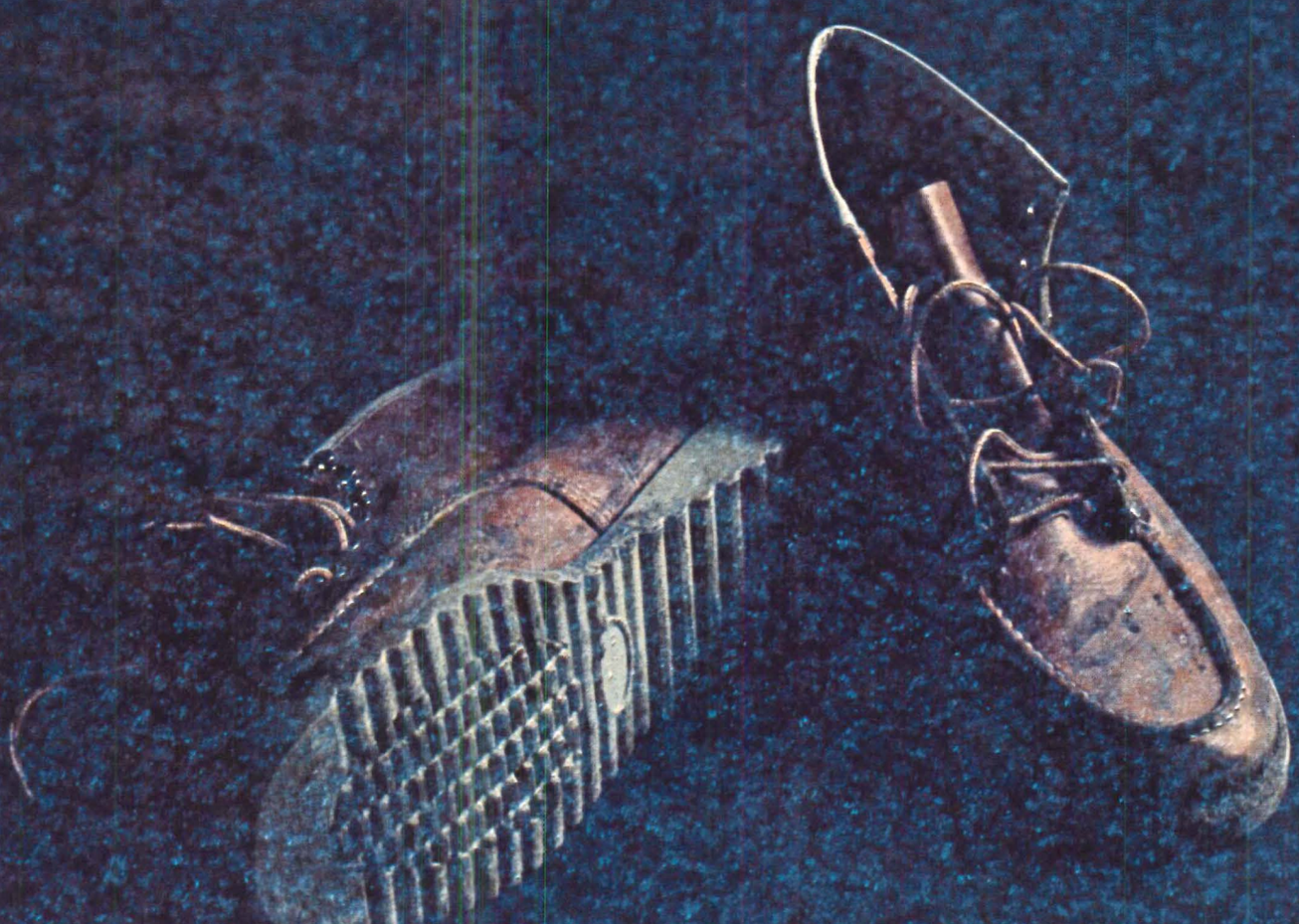
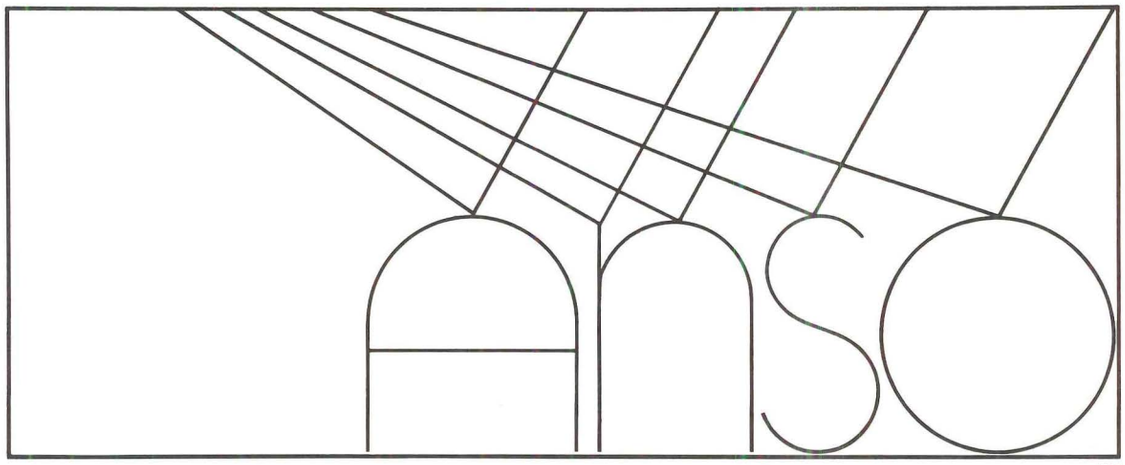
For more data, circle 71 on inquiry card

Allied Chemical announces the carpet fiber that makes dirt seem to disappear.

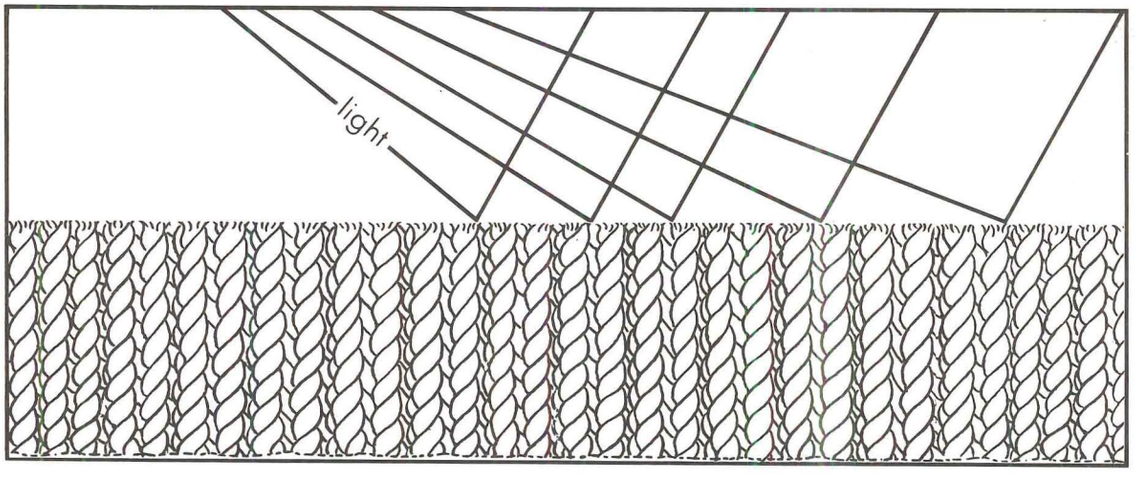




The nylon fiber that makes dirt seem to disappear.™

Why ANSO™ nylon? Because ANSO does strange things with light . . . turns it around, reflects the color and texture of the carpet but not the common dirt a carpet has to live with. ANSO is specially engineered to resist ugly soiling and extreme wear, that's why it's so perfect for commercial carpeting. ANSO offers the same rich colors, high durability, and low maintenance that have already made carpeting of A.C.E.® (Allied Chemical Engineered) nylon a recognized leader in commercial carpet fibers. ANSO costs more but it's worth it, because ANSO looks new ..... longer.

Allied Chemical



TenMain Center Office Building and Parking Facility, Kansas City, Mo. Monolithic reinforced concrete design/Robert P. Ingram, developer/ Charles Luckman Associates, architects/Marshall & Brown, associate architects/Howard, Needles, Tammen & Bergendoff, engineers/Winn-Senter Construction Company, general contractor/506,354 sq ft of standard Ceco steelform services/ 2,900 tons of fabricated reinforcing bars by Ceco.

Use Ceco's Steelform

experience

for your next monolithic concrete floor system

There's a practical way to design buildings that have two wanted attributes: visual variety and built-in rigidity. First, choose monolithic concrete construction, just now being rediscovered by architects for its versatility. Then design fluidly. As you sculpt and mold, call in Ceco to carry out your floor framing ideas with dependable Steelform Service.

Ceco offers cooperation by analyzing equipment requirements, furnishing cost data and coordinating form work on the project. All developed through more than fifty-six years of *specialized experience* . . . kept current for your benefit.

Ceco's trained crews and knowledgeable supervision can make your building come alive promptly. Ceco steelform service is nationwide. It is backed by vast experience, making Ceco the No. 1 supplier of steelform floor framing. Construction is fast. Forming equipment, rebars and concrete are available nearby—no long waits. Construction is economical—often $1.00/sq. ft. less than other types. The Ceco Corporation, general offices: 5601 West 26th Street, Chicago, Illinois 60650.

CECO

For more data, circle 72 on inquiry card

Kawneer Entrances
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Why is a Kawneer entrance on the 50 yard line in Notre Dame Stadium? What better way to indicate rugged strength? Remember, the doors you specify must perform or you have an unhappy client.

Kawneer doors are engineered and constructed for superior performance, so essential where traffic is heavy . . . for example, the new Notre Dame Athletic and Convocation Center, where thousands of athletes, students, faculty and fans pass through 176 Kawneer aluminum doors.

The door features Dual Moment corner construction, with four sigma-deep penetration welds plus mechanical fastening at each corner.

Beauty? Your own eyes tell you best what we would like to say. The styling, hardware options and abrasion-resistant non-fading Permanodic® hard color finishes are all good reasons why more Kawneer entrances grace more buildings than those of any other manufacturer.

For details, write Kawneer Product Information, 1105 N. Front Street, Niles, Michigan 49120.

Notre Dame Athletic and Convocation Center, South Bend, Indiana. 176 Kawneer doors in Permanodic Bronze No. 28 hard color finish. Architects: Ellerbe Architects, St. Paul, Minn. Contractor: Schumacker, South Bend, Ind.

KAWNEER
ARCHITECTURAL PRODUCTS
AMAX
ALUMINUM

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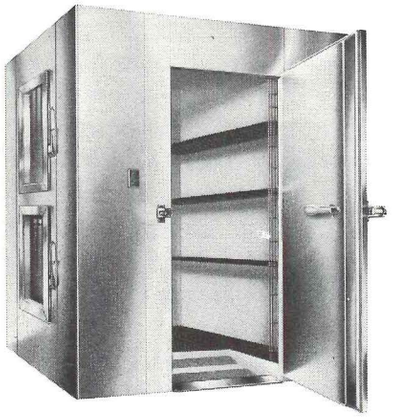
Terrific for traffic! The rugged entrances are designed to deliver precision performance even when the treatment is bruising—as symbolized by model at left or in actual use as shown above.

No matter which of 10 Kawneer entrance styles you specify—be they swinging doors, sliding mall fronts, or sliding high rise apartment doors—you are assured of the highest quality construction and handsome styling.

I want a walk-in with one full-length stainless steel door and a steel plate, Ramp-In floor and adjustable wire shelving and an Automatic Defrost-Vaporizer and two half-length glass service doors and an Alarm System and I want it yesterday.

You want Nor-Lake. With a full range of components and options, the only thing we won't change is the quality.



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Phone: 715-386-2323 Dept. 3160
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Over 270 models—all designed to NSF configurations.
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KP #21560 Ad #60 Pubs: Architectural Record, January 1969
Hospitality (Restaurant) February 1969

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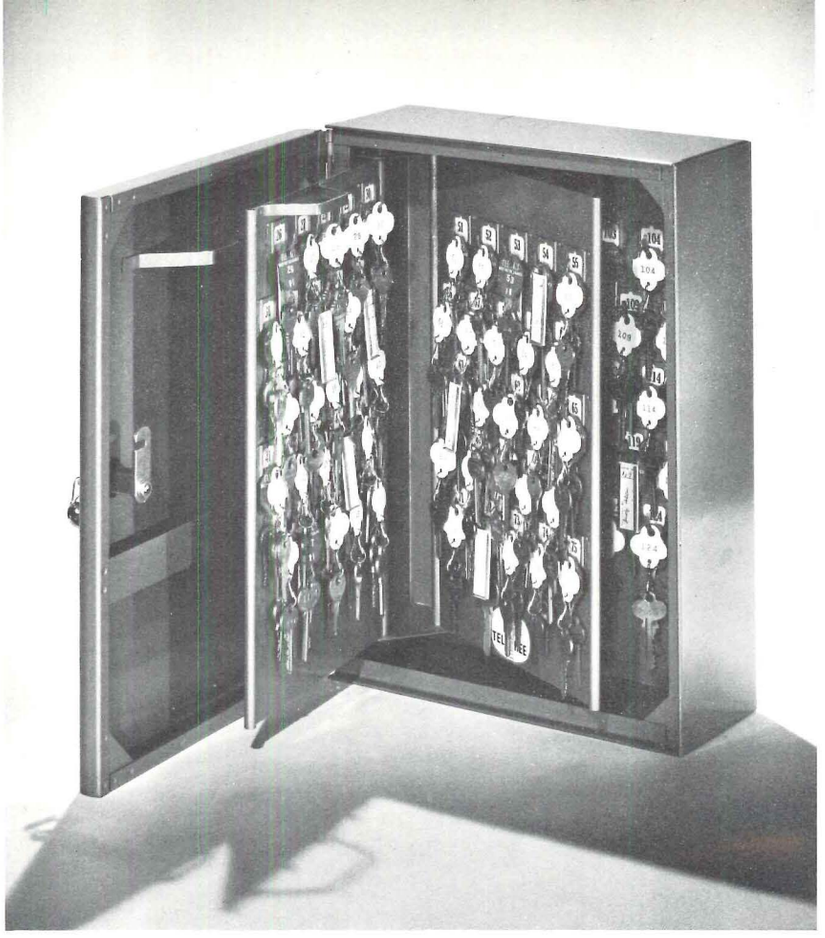

Should all your clients' security be your concern?

You may be specifying a TELKEE key control system for some hospitals, schools and industrial complexes; but overlooking it on buildings where there are only a few locks.

A TELKEE system of key control is so simple, so relatively inexpensive, with so many advantages for your client, that it ought to be included whenever your hardware specifications call for 20 locks or more.

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Specify a

TELKEE

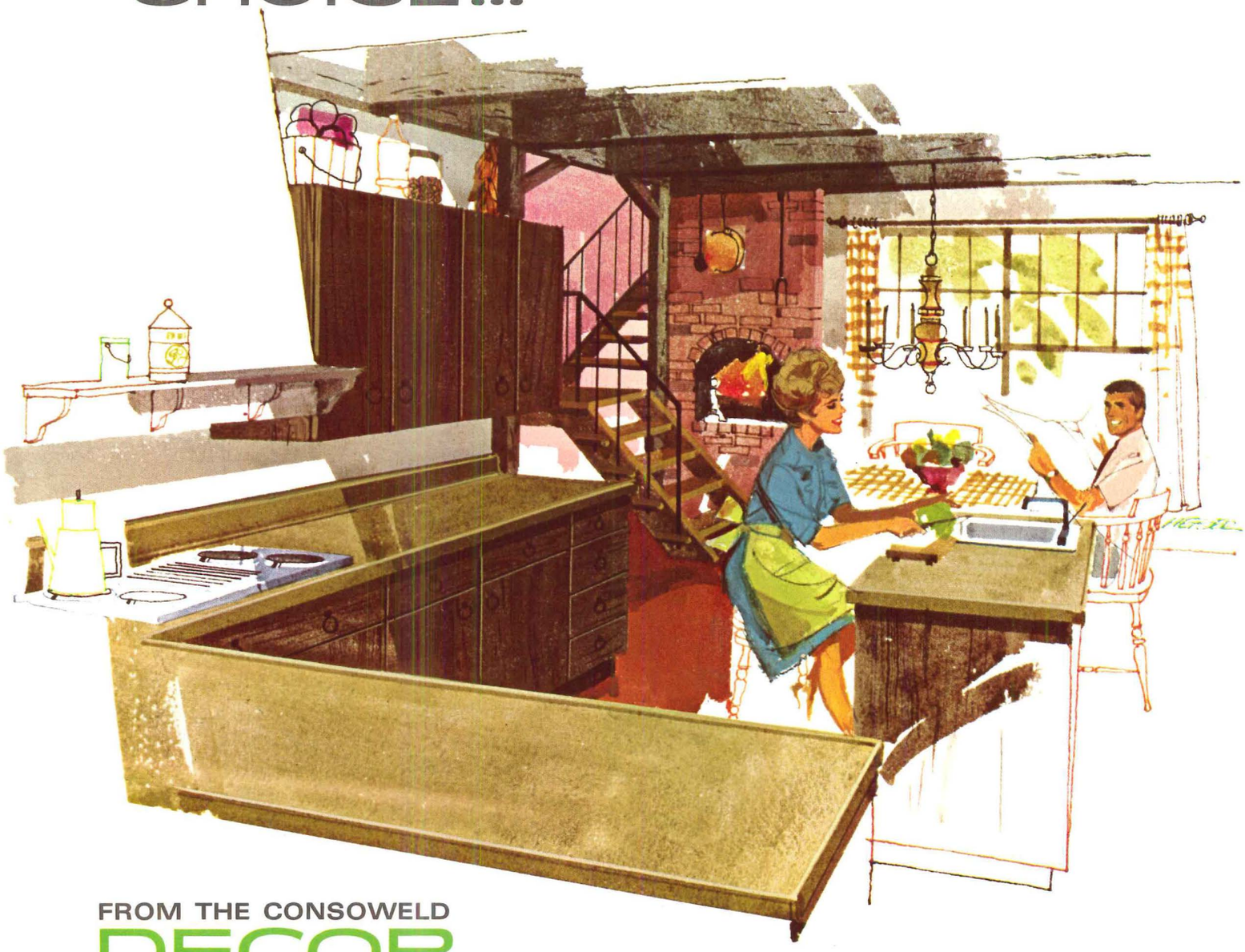
SYSTEM OF KEY CONTROL

T-704

For more data, circle 90 on inquiry card

For more data, circle 75 on inquiry card

DESIGNER'S CHOICE...



FROM THE CONSOWELD

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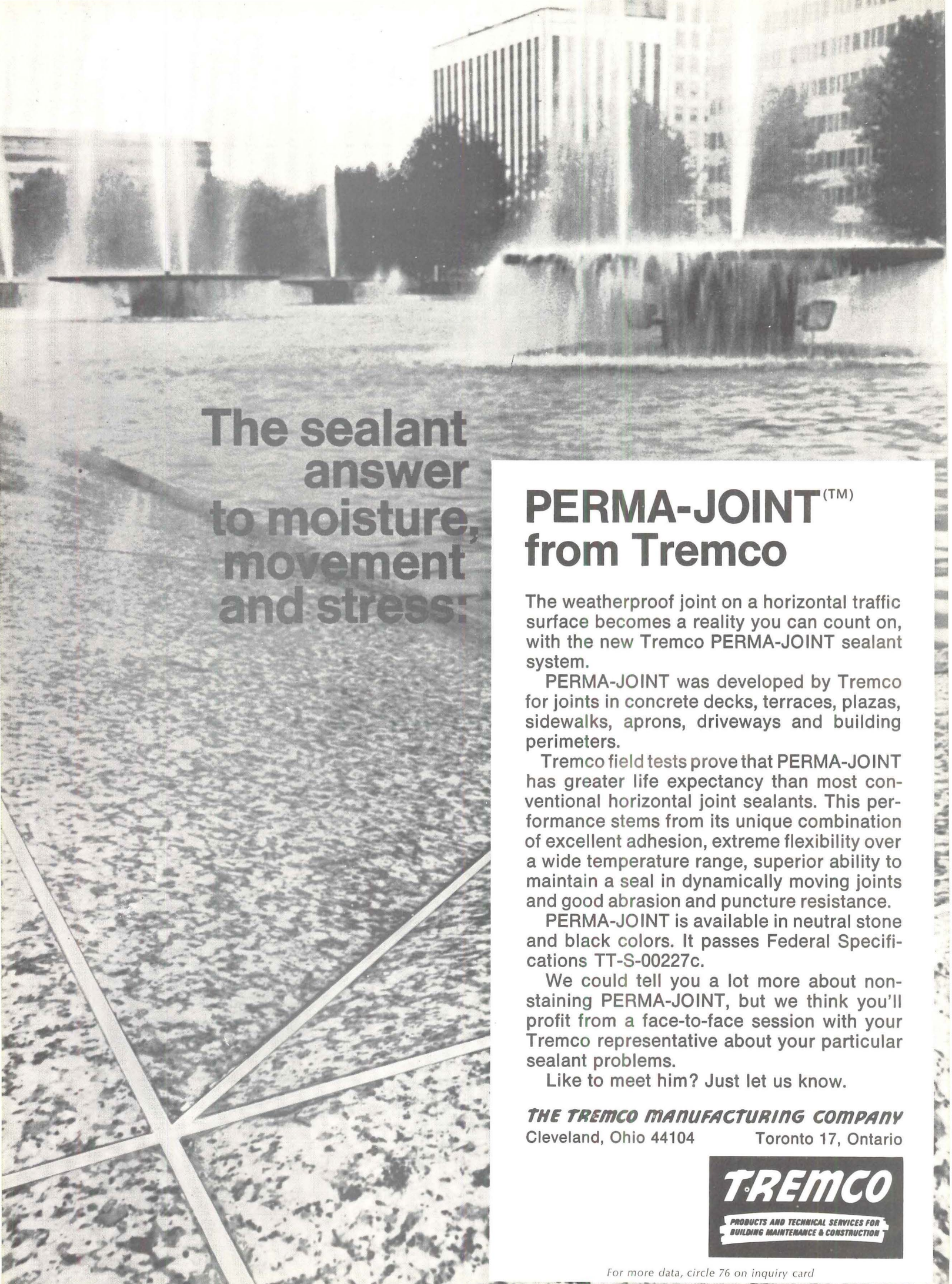

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The weatherproof joint on a horizontal traffic surface becomes a reality you can count on, with the new Tremco PERMA-JOINT sealant system.

PERMA-JOINT was developed by Tremco for joints in concrete decks, terraces, plazas, sidewalks, aprons, driveways and building perimeters.

Tremco field tests prove that PERMA-JOINT has greater life expectancy than most conventional horizontal joint sealants. This performance stems from its unique combination of excellent adhesion, extreme flexibility over a wide temperature range, superior ability to maintain a seal in dynamically moving joints and good abrasion and puncture resistance.

PERMA-JOINT is available in neutral stone and black colors. It passes Federal Specifications TT-S-00227c.

We could tell you a lot more about non-staining PERMA-JOINT, but we think you'll profit from a face-to-face session with your Tremco representative about your particular sealant problems.

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The fire stoppers

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At Steelcraft, you'll find dozens of door designs for label situations. Our broad range of doors and frames come in Underwriters' Laboratories A, B, C, D, and E label classifications.

We even offer *Double-egress A-label* doors like the pair shown. Also, A-label transom frames and panels, labeled transom-sidelite frames, labeled drywall frames and temperature rise doors.

Like to know more about the "fire stoppers"? Get our FACT FILE ON FIRE DOORS AND FRAMES. For your copy, write Steelcraft, 9017 Blue Ash Road, Cincinnati, Ohio 45242 U.S.A.

STEEL Craft **Steelcraft**®
finest name in metal doors and frames

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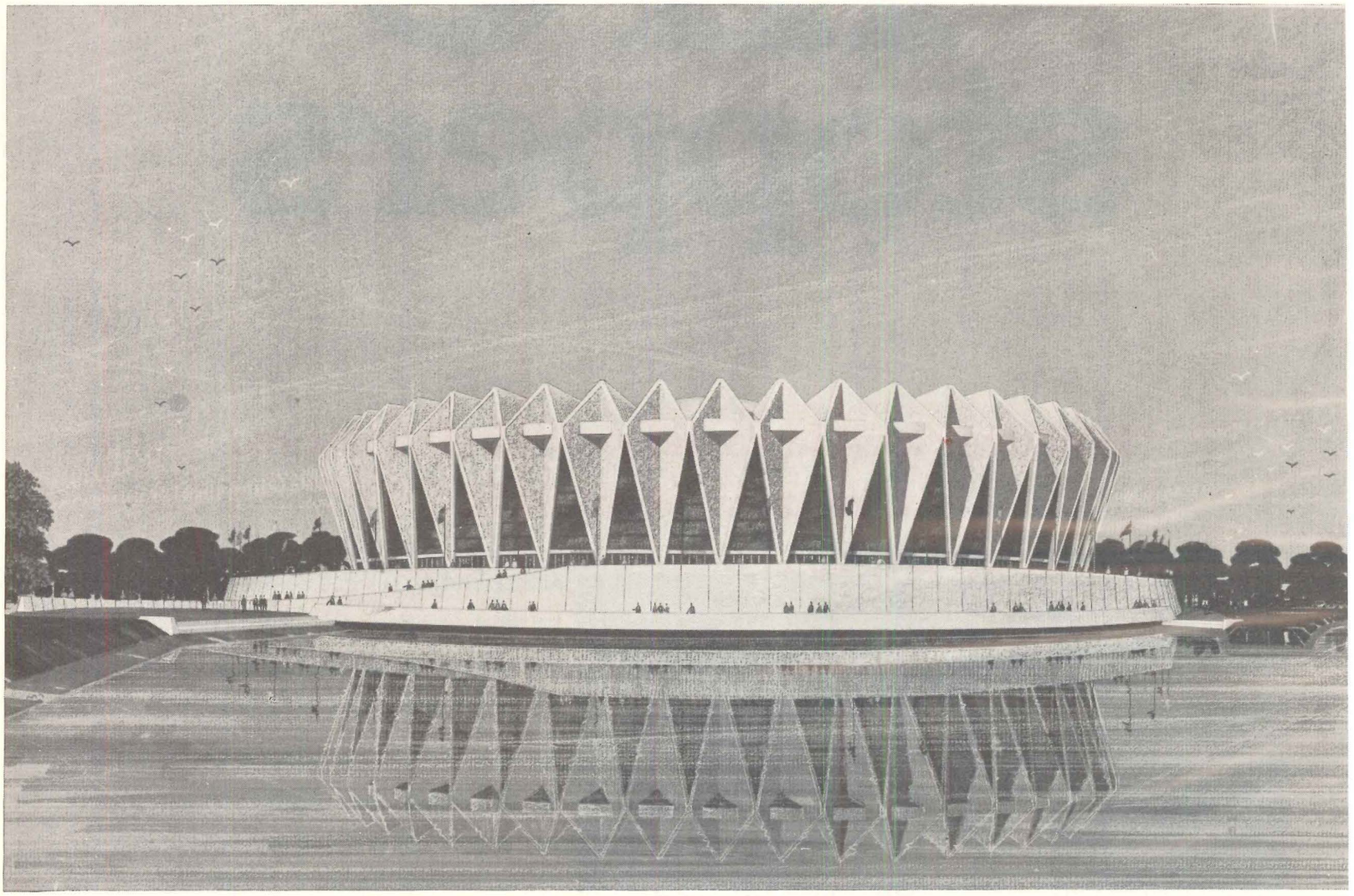
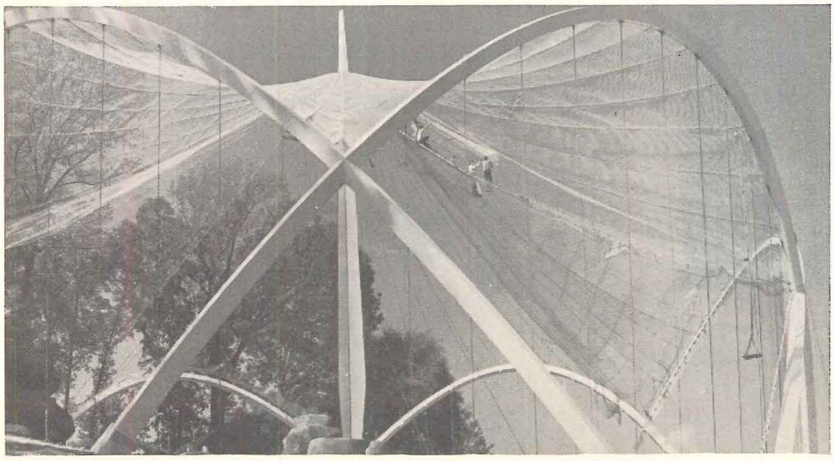
Ohio University Convocation Center, Athens, Ohio
Architect: Brubaker & Brandt, **Engineer:** Fling & Eeman, Inc.
Steelwork: Bristol Steel & Iron Works, Inc.
General Contractor: Knowlton Construction Co.

Stargets Golf Game, Hanover, Massachusetts
Designer-Owner: Family Leisure, Inc., **Engineering Consultant:** Simpson, Gumpertz & Heger, Inc., **Project Engineer:** John F. Notemeyer, **Steelwork:** Chestnut Welding & Iron, Inc., **General Contractor:** Taverna Brothers

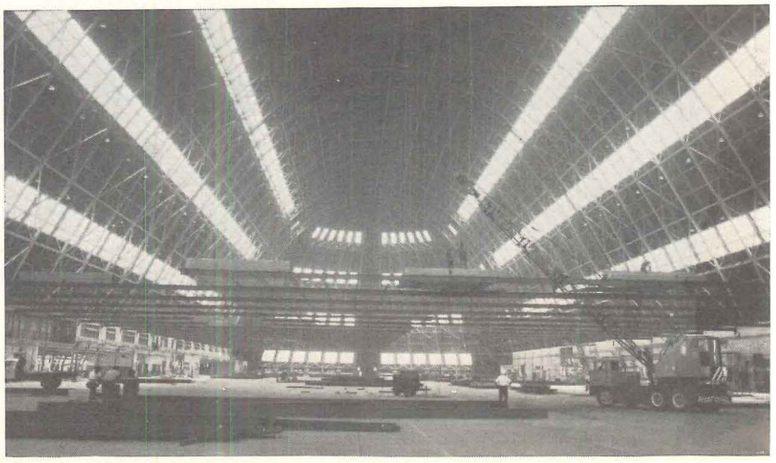


Hampton Roads Coliseum, Hampton, Virginia, **Architect:** A. G. Odell, Jr. & Associates
Structural Engineer: Severud, Perrone, Sturm, Conlin, Bandel, **Steelwork:** Bristol Steel & Iron Works, Inc.. **General Contractor:** McDevitt & Street

Great Flight Cage, Washington, D. C.
Architect: Daniel Johnson and Mendenhall, **Structural Engineer:** Donald J. Neubauer
Consulting Detailer: Rick Engineering, **Fabricator:** Fabricator's Steel Corporation
General Contractor: Edrow Engineering Co., Inc.



I-XL Furniture Co. Plant, Elizabeth City, North Carolina
Architect-Engineer: Wiley & Wilson
General Contractor: Basic Construction Co.



Brandywine Raceway Clubhouse, Wilmington, Delaware
Architect: Lionel K. Levy, **Engineer:** Robert Rosenwasser
Fabricator: Belmont Iron Works, **Erector:** McCormick Construction Co., Inc.
General Contractor: Ernest DiSabatino & Sons

Museum of Automobiles Petit, Jean Mountain, Arkansas
Architect: Ginocchio, Cromwell, Carter & Neyland
Structural Engineer: Severud, Perrone, Sturm, Conlin, Bandel
General Contractor: Dickens-Bond Construction Co.

We work closely with architects and engineers on cable applications like these

Bethlehem has furnished the steel strand, wire rope, and end-fittings for many of the nation's cable roofs. It all began with Raleigh Arena, the country's first major cable-roof structure, built in 1953. Since then, we've been involved in a wide variety of cable roofs and related cable applications.

Some of the structures we've been associated with in recent years are shown on these pages. Each combines the bold approach of cable construction with a low-cost column-free interior.

Over the years, we've gained much experience in this field. And we've assembled a considerable amount of data. Because of this, we've been able to cooperate with designers in furnishing information on cables, end-fittings, and complete assemblies. We've also worked closely with them in detailing the cables and supplying them to precise specifications.

Our library of technical and design data on this subject is one of the most complete in the industry. If you'd like to receive any of these materials, just write to: *Room 1049A, Bethlehem Steel Corporation, Bethlehem, PA 18016.*

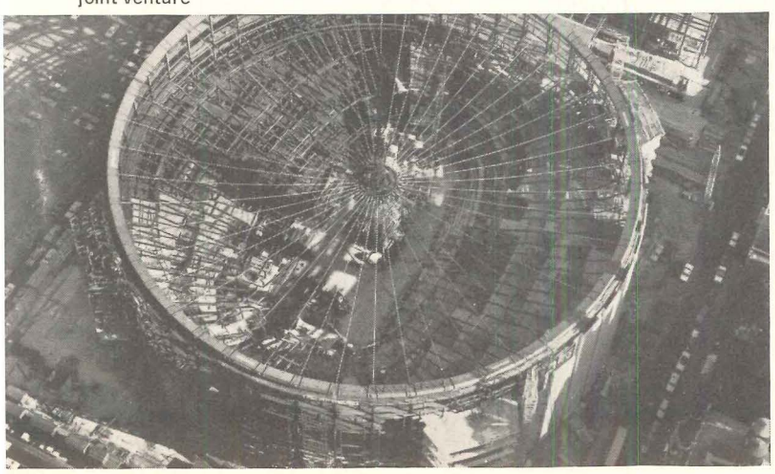
BETHLEHEM STEEL

BETHLEHEM STEEL

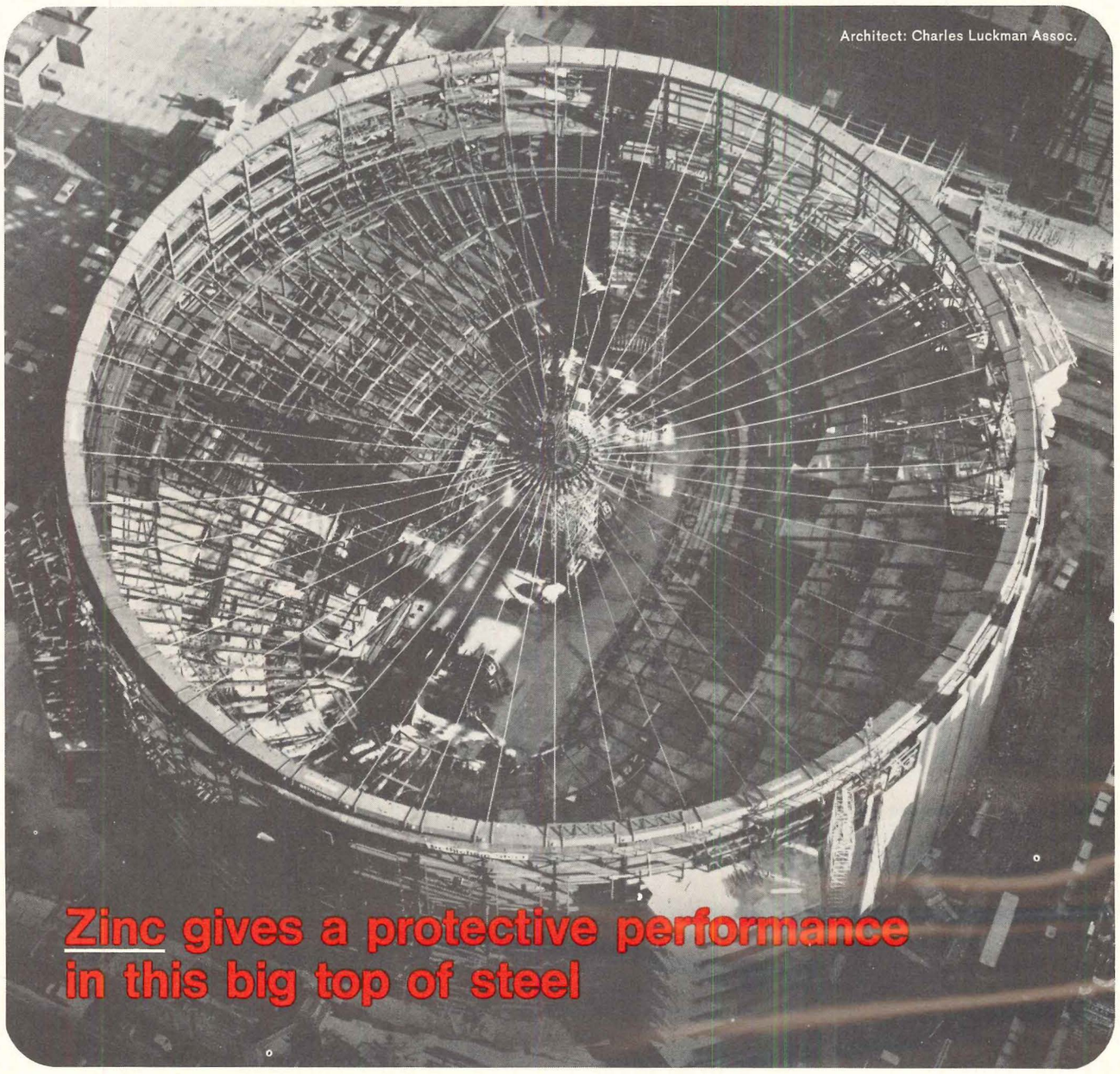
Steel

Steel for Strength

Madison Square Garden Center, New York City
Architect: Charles Luckman Associates
Engineer: Severud, Perrone, Sturm, Conlin, Bandel, **Steelwork:** Bethlehem Steel
General Contractor: Turner Construction Co.—Del Webb Corporation, a joint venture



Travelers Insurance Pavilion (World's Fair—dismantled), Flushing, New York
Architect: Kahn & Jacobs, **Designer:** Donald Desky Associates, Inc.
Structural Engineer: Lev Zetlin & Associates, **Steelwork:** Bethlehem Steel
General Contractor: George A. Fuller Corporation



Rising over New York's Pennsylvania Station is the new Madison Square Garden Sports and Entertainment Center with a 404 foot diameter roof suspended on galvanized steel cables to allow over 20,000 spectators an unobstructed view of the action. It will be the first permanent suspension roof in New York City and one of the largest in the U.S. ☐ This giant steel web is made up of 48 separate cable assemblies produced by Bethlehem Steel Corporation. The cables are 3¾" bridge strands approximately 195 feet long. Each strand contains 271 cold drawn, galvanized steel wires and has an ultimate strength of 1,644,000 lbs. ☐ A portion of each of these giant cables around the perimeter of the roof will be exposed to the weather and the extremely corrosive industrial atmosphere of New York. To meet this corrosive challenge, specifiers called for zinc-coated steel. ☐ And zinc protects steel's strength in other key places throughout the structure: galvanized steel clip angles that hold the pre-cast stone panels to the outside of the building, galvanized steel decking, galvanized steel beams that support the brine tank used in ice-making and many more. ☐ No other material provides the proven combination of strength, corrosion resistance, and economy found in galvanized steel.

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ZN-321

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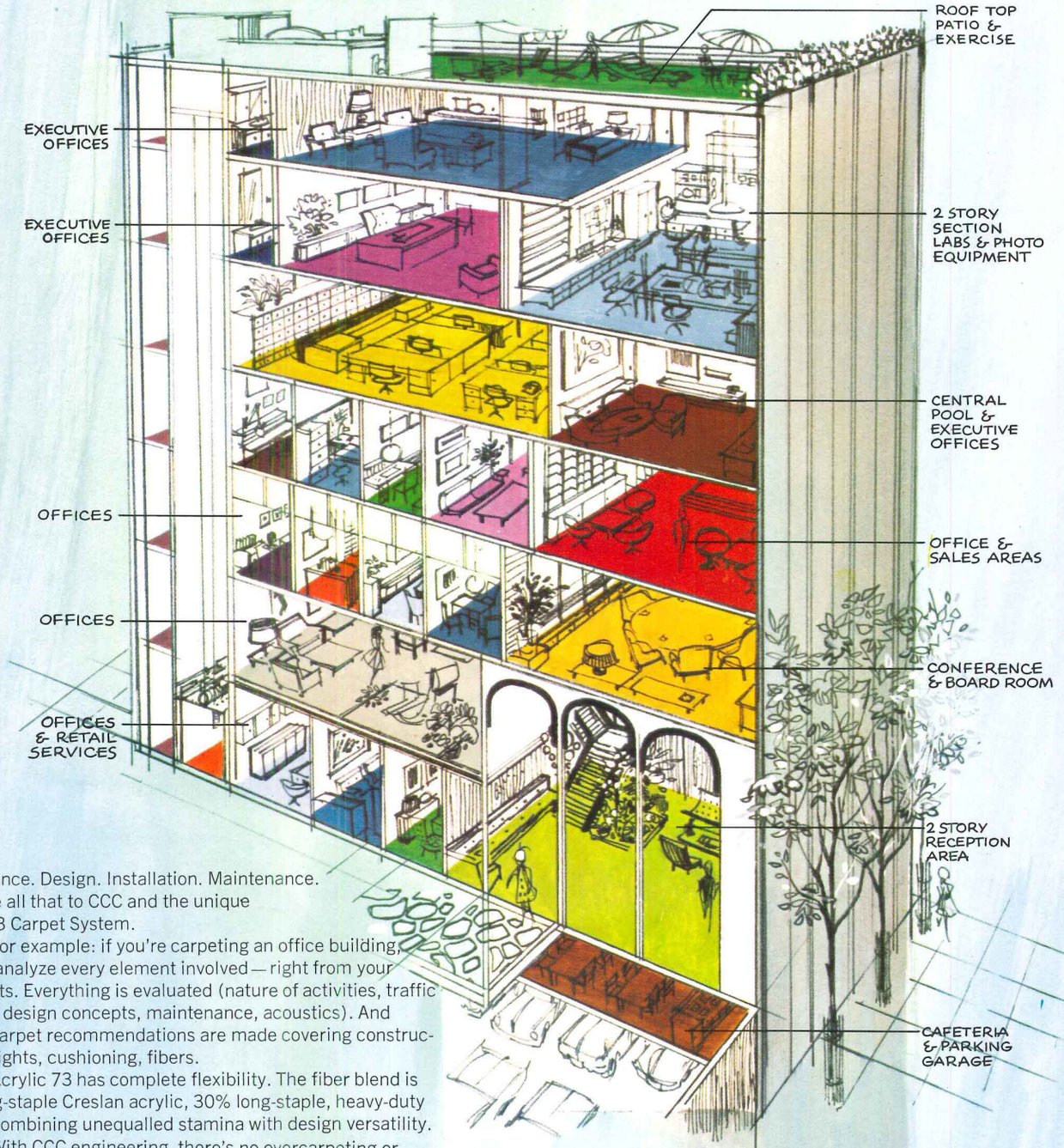
Carpet System from CCC with Acrylic 73

Engineered to cover every detail of your carpet project. The benefits are yours. The responsibility is CCC's.



Performance. Design. Installation. Maintenance. You leave all that to CCC and the unique Acrylic 73 Carpet System.

For example: if you're carpeting an office building, CCC will analyze every element involved—right from your blue-prints. Everything is evaluated (nature of activities, traffic patterns, design concepts, maintenance, acoustics). And precise carpet recommendations are made covering constructions, weights, cushioning, fibers.

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With CCC engineering, there's no overcarpeting or undercarpeting—each area gets exactly what's needed. And the carpet is produced in appropriate widths—minimizing waste and installation costs.

CCC will arrange for certified installation, warrant it, and set up a complete carpet maintenance schedule.

CCC is the world's largest manufacturer of commercial and institutional carpet systems. That's why if you're after top-to-bottom carpet coverage, all you do is send in the coupon. CCC experts will do the rest.

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Commercial Carpet Corporation
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10 West 33rd Street
New York, New York 10001

Attention: Mr. Walter Brooks
Please send me a copy of the booklet, "Office Carpet Systems, with Acrylic 73". ☐ Please have a CCC consultant contact me. ☐

Name_____

Company_____

Address_____

City_____ State_____ Zip Code_____

For more data, circle 91 on inquiry card

PRECAST GOES WITH THE GREAT OUTDOORS . . . WHEN THE WHITENESS IS ATLAS WHITE.

General Headquarters Corn Products Company, Englewood Cliffs, N. J. This new headquarters building represents a bold use of precast. The setting is a wooded area, and the straight, powerful lines of the building offer a striking contrast to the rustic surroundings. The uniformly white precast panels are made with ATLAS White Cement and exposed arctic quartz aggregate. Uniform whiteness and uniform physical properties are important and ATLAS White Cement was used because it supplied both. Precast Contractor: Pre Cast Concrete Co., Inc., Fairfield, N. J. Designer, Engineer and Builder: Walter Kidde Constructors, Inc., New York, N. Y. Write Universal Atlas Cement Division of U. S. Steel, Room 5799, Chatham Center, Pittsburgh, Pa. 15230. ATLAS is a registered trademark.

MEMBER PCA

Atlas
WHITE CEMENT

CAST-IN-PLACE GOES GREAT INDOORS . . . WHEN THE WHITENESS IS ATLAS WHITE.

Rabb Graduate Center, Brandeis University, Waltham, Mass. This cast-in-place building is the newest addition to the Brandeis University Graduate School complex. The exposed concrete, made with ATLAS White Cement and washed stone aggregate, was lightly bushhammered. Since the architects specified white cement for this building and the other four which surround it, the buildings had to be uniform in color. ATLAS White Cement was used because in the words of the general contractor, "It's the only way you can be sure of a uniform white color." Ready-Mix Supplier: Rosenfeld Concrete Co., Milford, Mass. Architect: Benjamin Thompson & Assoc., Cambridge, Mass. General Contractor: George B. H. Macomber Company, Boston, Mass. Write Universal Atlas Cement Division of U. S. Steel, Room 5799, Chatham Center, Pittsburgh, Pa. 15230. ATLAS is a registered trademark.

MEMBER PCA

Atlas
WHITE CEMENT

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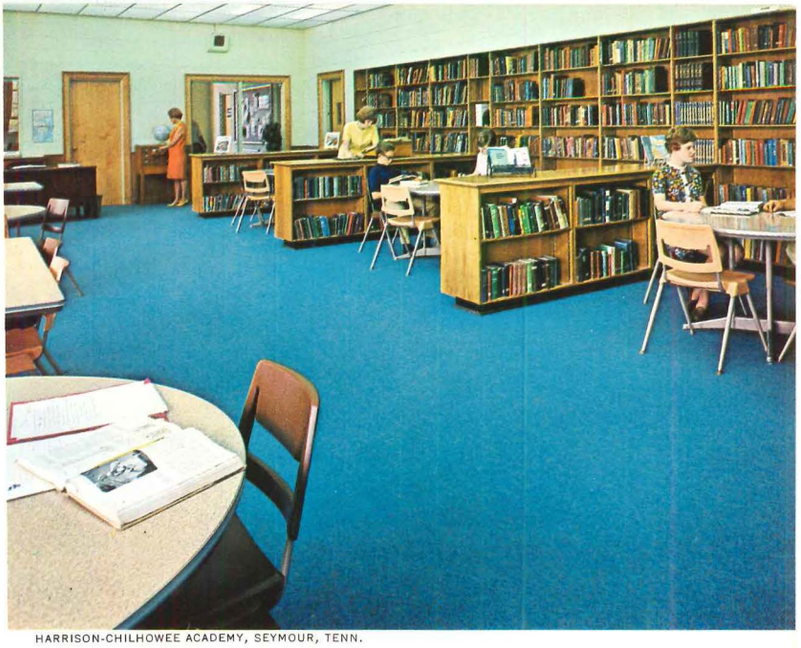
For more data, circle 95 on inquiry card

For more data, circle 94 on inquiry card

FIRST NATIONAL BANK, WESTMINSTER, COLO.*



HARRISON-CHILHOWEE ACADEMY, SEYMOUR, TENN.

O'MEARA FORD CENTER, DENVER COLO.

When you get right down to installations, Patcraft has the answer for your wall-to-wall problems. Two special constructions... Torque and Royal Torque. Carpets so rich looking you can easily imagine them beneath a Thunderbird.

So tough even a run on a bank won't faze them. So smartly designed they lend themselves to a school library. Carpets of Creslan acrylic fiber stifle sound, come clean with daily vacuumings and retain their color-fresh look for years.

And Creslan is remarkably resilient. Bounces back into shape even after a car exerts thousands of pounds of pressure on it.

But no matter what your floor covering needs are, turn to Patcraft for carpets that cover a lot of ground.

CYANAMID Creslan® LUXURY ACRYLIC FIBER

Creslan is a product of American Cyanamid Company, New York.

Can a carpet that's luxurious enough for an auto showroom withstand the traffic in a bank and still look right in a school library?

Patcraft Mills, Inc., Commercial Carpet Division,
295 Fifth Avenue, New York, N.Y. 10016

Gentlemen: Please send me specifications and samples of Torque and Royal Torque commercial carpeting.

Type of installation: _____

Approximate yardage: _____

NAME _____ TITLE _____

ADDRESS _____

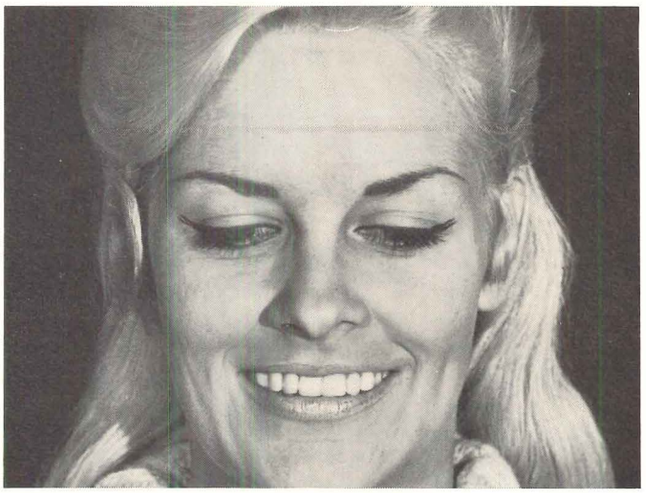
CITY _____ STATE _____ ZIP _____

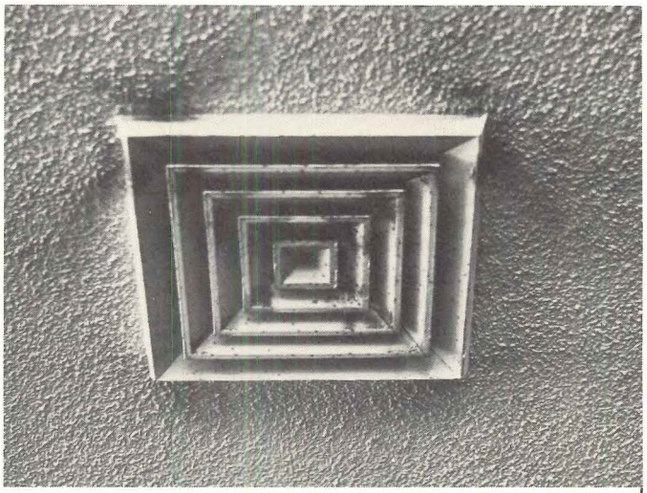
*INTERIOR DESIGNERS-CLAUS HEPPNER ASSOCIATES, INC., DENVER, COLO.

First in Fashion

Patcraft

CARPETS OF DISTINCTION





Look Up
To Krueger clean ceilings

Look Down
On high maintenance costs

Here's an example of how Krueger engineering keeps working to deliver lower overall maintenance costs along with the most efficient air diffusion.

Left: Model 1100 series diffusers require simple damp cloth wipe off to keep dust and smudge free. Ceiling maintenance cost: None. Right: Conventional diffuser with smudging caused by secondary air. Ceiling maintenance requires repaint of ceiling or replacement of panels surrounding diffuser. Ceiling maintenance cost: Approximately 50¢ per sq. ft.

Actual demonstration of KRUEGER'S NEW CONCEPTS IN AIR DISTRIBUTION.

See our seventy feet of functioning air system in operation at the INTERNATIONAL HEATING & AIR CONDITIONING EXPOSITION BOOTH 301, CHICAGO, JAN. 27 - 30, 1969

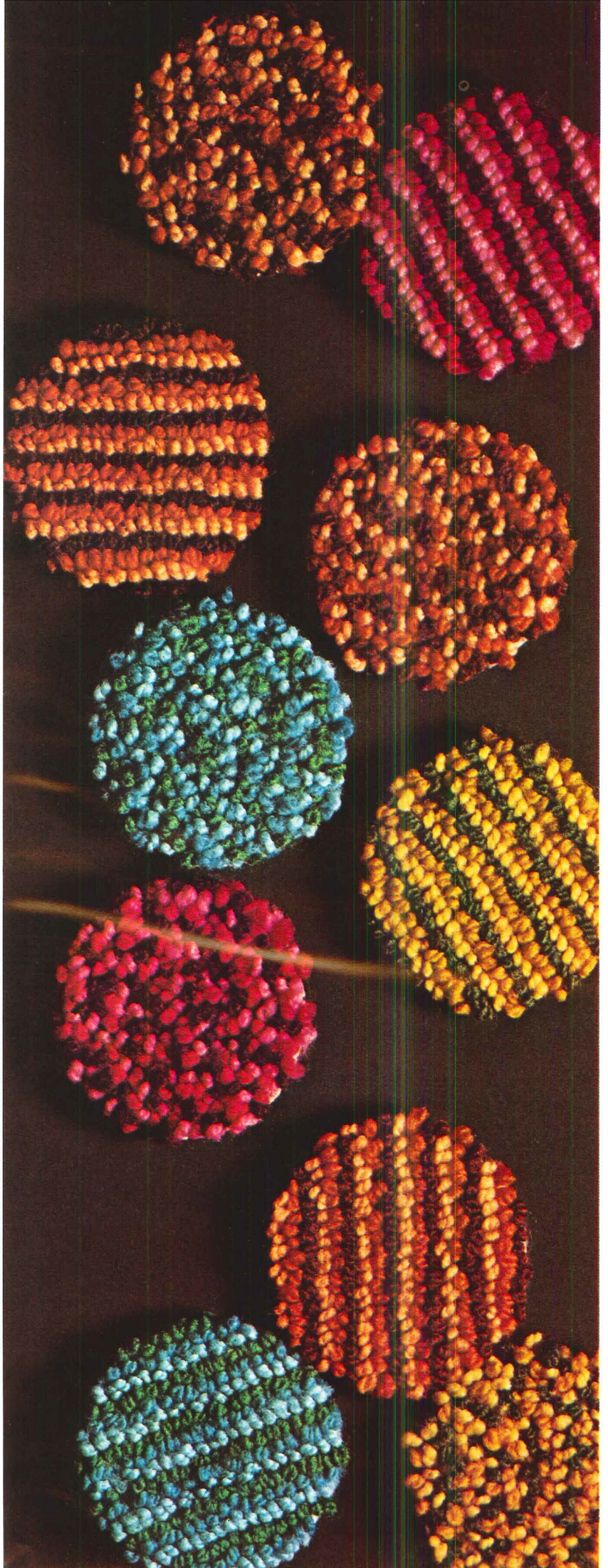
P.O. Box 5155 • Tucson, Arizona • (602) 622-7601

KRUEGER MANUFACTURING CO., INC.

TUCSON • DETROIT • TORONTO

For more data, circle 109 on inquiry card

For more data, circle 96 on inquiry card



A technical breakthrough!

Cationic dyeable polyester carpeting. Naturally, Fortrel is first with this big competitive edge.

It's the most important new development in carpeting. Fortrel polyester cationic dyeing permits exciting new versatility in styling. Economically adds rich multi-tone color effects to polyester carpet. It's another big first for Fortrel. (Remember deep dye polyester carpeting—that was a Fortrel first, too.) It's profitable news for you—and big news for the home-fashions conscious public!

For complete resource information regarding cationic dyeable carpets, write Celanese Home Fashions, Retail Service Dept., 522 Fifth Avenue, N.Y.C. 10036

CELANESE FORTREL
The tested name in fibers

More profitable news from Fortrel

A polyester for contract carpeting. Fortrel is first with this big competitive edge! Who else?

Is there a competitive edge because contract carpeting of Fortrel delivers outstanding durability and cleanability? Or maybe it's the low static field? Or could it be the good looks of Fortrel contract carpeting? Or maybe it's something else....

CELANESE FORTREL
The tested name in fibers
Fortrel® is a trademark of Fiber Industries, Inc. Celanese®

SPECIFY

safety, durability... and beauty

FLAMESHIELD®

CERAMIC-LIKE WALL COATING

- Incombustible glazed wall coating with the beauty of ceramic tile . . . at a fraction of its cost.
- U.L. rated. **Smoke developed: Zero.** Won't contribute smoke . . . the number one cause of death in fires.
- Meets Class "A" flame-spread requirements established by many code authorities.
- Tough, seamless surface resists abrasion, scuffing and staining . . . provides virtually maintenance-free service.
- Available in a wide range of decorative colors.

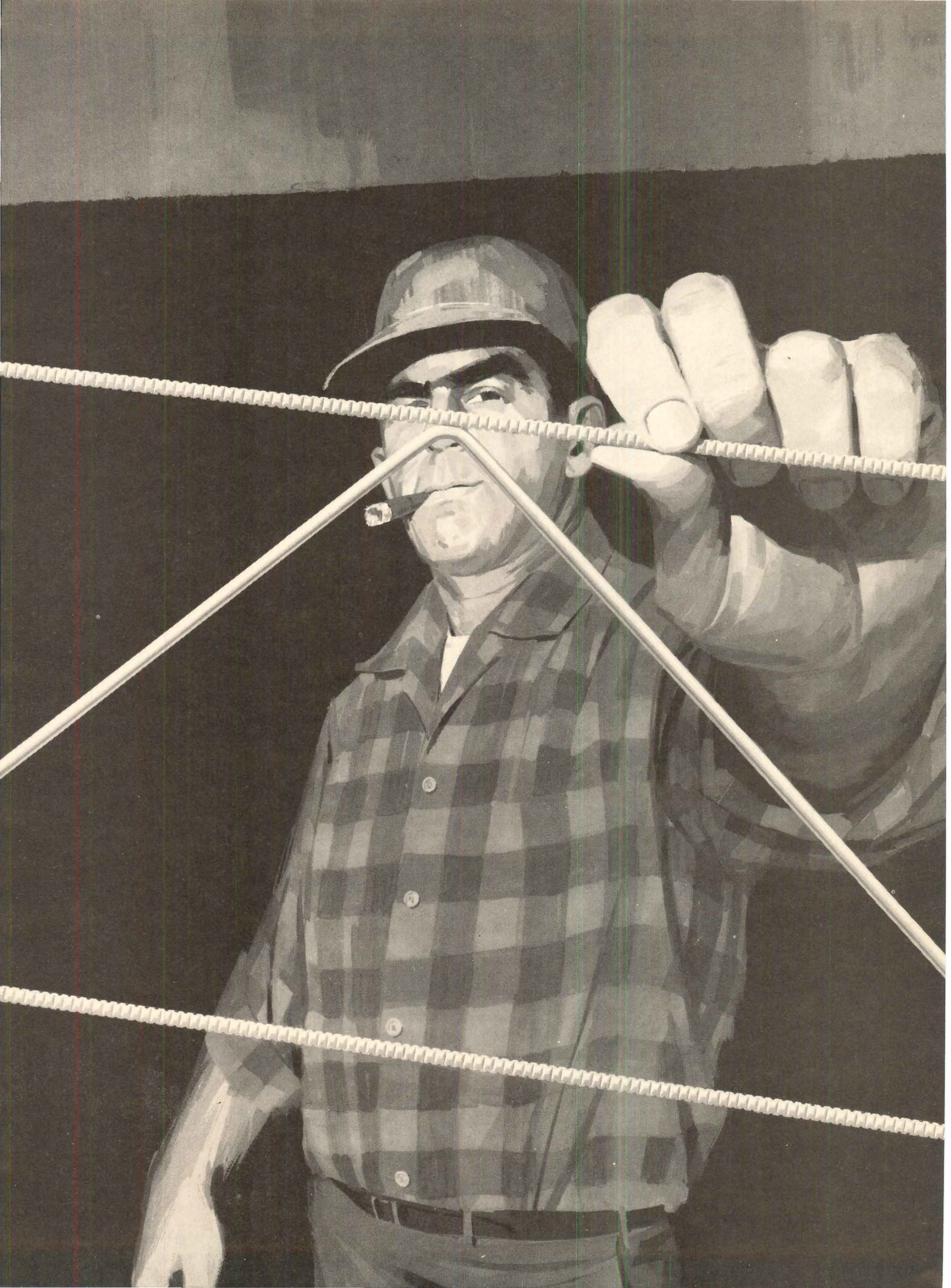
For information on FLAME SHIELD ceramic-like wall coating and FLAME SHIELD fire-retardant intumescent coatings, technical assistance and names of authorized distributors, write to our Architectural Division.

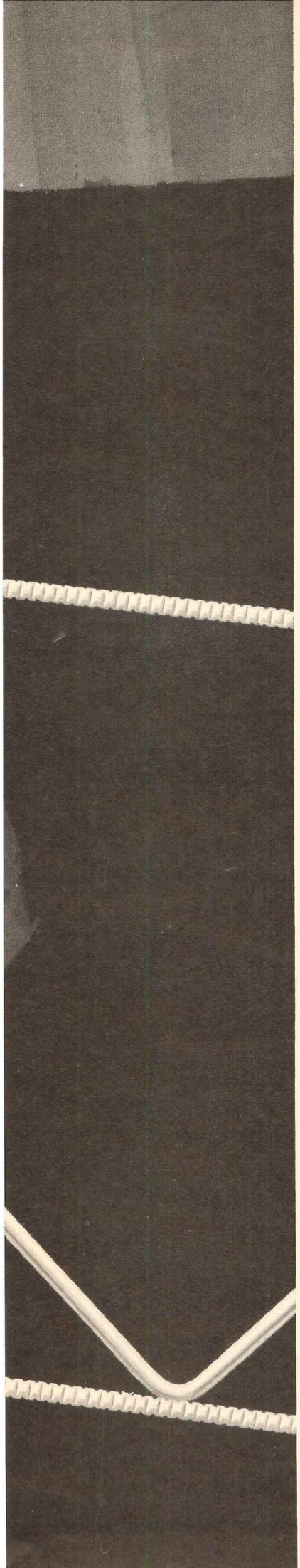
J 1095

M. A. BRUDER & SONS, Incorporated
52nd & Grays Avenue
Philadelphia, Pa. 19143

For more data, circle 97 on inquiry card

Aston Vo.-Tch. School, Aston, Pa./H. A. Kuljian & Company, Engineers and Architects





Knurling, Smurling who needs it?

You do, sir, it's one of ten good reasons to use Dur-O-waL® Truss masonry wall reinforcement.

You're looking at the most efficient masonry wall reinforcement ever devised, Dur-O-waL Truss Design.

1. Special knurling deformation in side rods means maximum bond with mortar—nearly double that of smooth side rods.

2. Dur-O-waL Truss is the original masonry wall reinforcement and is used in more masonry walls than any other brand.

3. Dur-O-waL Truss carries material approvals from three important building codes: BOCA, ICBO, SBCC and many state and local codes.

4. Dur-O-waL Truss is available in a wide selection of shapes, sizes and finishes. You can reinforce almost any masonry wall—single wythe, cavity or composite.

5. Dur-O-waL research is the most extensive in the business. We back up every claim for our product with independent research.

6. When you need Dur-O-waL Truss you can get it. Over eight thousand dealers stock and sell our product.

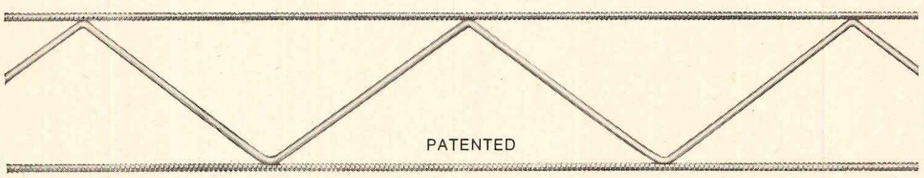
7. Dur-O-waL Truss is nationally distributed.

8. Dur-O-waL has trained factory representatives who can help you with reinforcing problems.

9. A constant supply of technical literature based on current research is available to you.

10. Dur-O-waL offers additional products exclusively for masonry construction, all backed by the same reputation for quality.

Questions on masonry wall reinforcing applications? Just write to Dur-O-waL, P.O. Box 368, Cedar Rapids, Iowa 52406.



DUR-O-WAL®

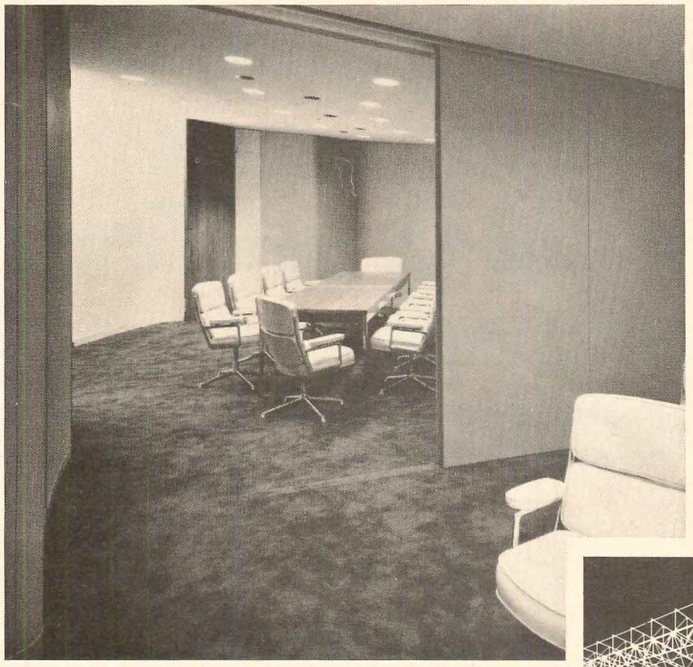
THE ORIGINAL MASONRY WALL REINFORCEMENT WITH THE TRUSS DESIGN

DUR-O-WAL MANUFACTURING PLANTS • ALABAMA, P.O. Box 5446, Birmingham, Ala. 35207 • **ARIZONA,** 213 South Alma School Road, Mesa, Ariz. 85201 • **COLORADO,** 29th & Court St., Pueblo, Colo. 81001 • **ILLINOIS,** 625 Crane St., Aurora, Ill. 60505 • **IOWA,** P.O. Box 368, Cedar Rapids, Iowa 52406 • **MARYLAND,** 4500 E. Lombard St., Baltimore, Md. 21224 • **MINNESOTA,** 2653 37th Ave. S., Minneapolis, Minn. 55406 • **NEW YORK,** P.O. Box 628, Syracuse, N.Y. 13201 • **OHIO,** 1678 Norwood Ave., Toledo, Ohio 43607 • **WASHINGTON,** 3310 Wallingford Ave., Seattle, Wash. 98103 • Also manufactured in Canada.

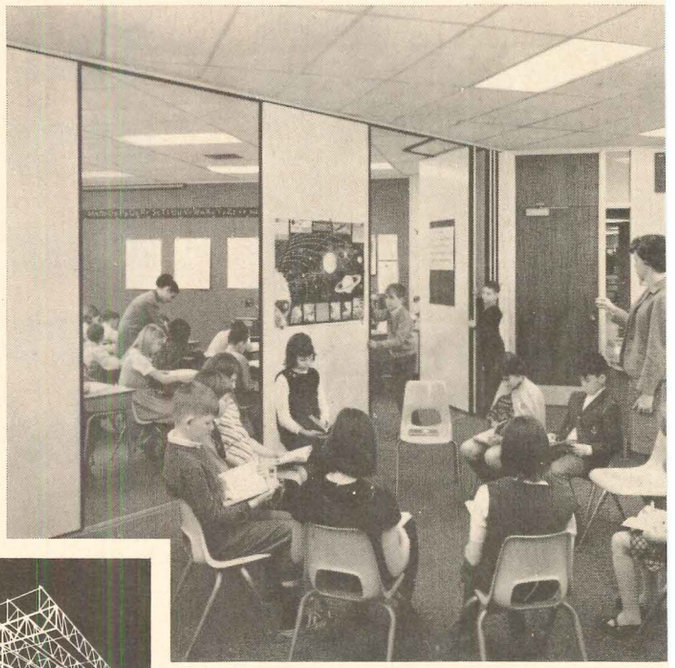
For more data, circle 98 on inquiry card

THE MACOMBER V-LOK® MODULAR COMPONENT SYSTEM:

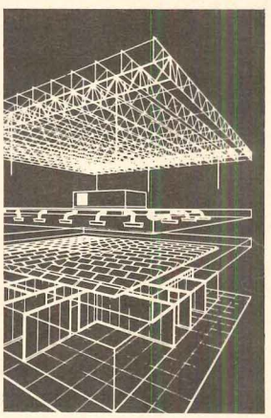
Advanced partitions



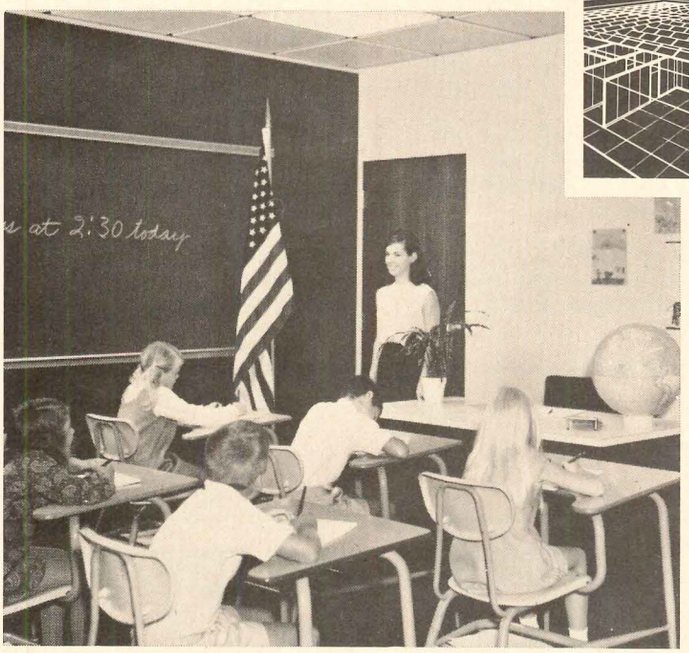
AETNA STEEL PRODUCTS CORPORATION



THE E. F. HAUSERMAN COMPANY



DONN PRODUCTS, INC.



The Macomber V-LOK Modular Component System offers you true economy in a superior building—a building that will stay both superior and economical for years to come.

Superior quality comes from the use of top-quality components. Economy comes from substantial savings in time during planning and construction, quicker occupancy, easier maintenance, and lasting adaptability to the changing needs of the occupants.

The Macomber V-LOK steel frame is produced under a rigid system of quality control, supervised by inspectors from an independent testing laboratory. The other major building components — air handling equipment, lighting-ceiling system and interior partitions — are available from suppliers who have built their reputations on top-grade materials and workmanship.

The lasting economy of a VLMC building stems from the ease with which it can be expanded or remodeled to create entirely new space configurations whenever the need arises.

add to VLMC quality, flexibility, economy

Finally, the VLMC building offers the opportunity for profitable resale after it has served its initial owner. It will be readily adaptable to the needs of a new owner.

PARTITION SYSTEMS

Interior partitions are engineered to fit the basic 5-foot module of the VLMC system. Whether they are demountable, moving or folding, they are all relocatable within the building. For this reason, they are built to meet — but not penetrate — the ceiling grid. Walls are joined to the steel grid by means of specially-designed heads that allow full deflection under live and dead loads.

The three partition systems described below illustrate the variety of products available to the designer.

THE E. F. HAUSERMAN COMPANY

Both Hauserman Operable Wall and Double Wall enlarge the advantages of the VLMC system in school construction. Hauserman Operable Wall provides instant flexibility in dividing space; while Hauserman Double Wall permits virtual "overnight" rearrangement of interior walls within the VLMC grid.

Both systems incorporate Hauserman's superior quality, easy maintenance and long-range economy. Either provides a magnetic floor-to-ceiling teaching aid, with a variety of available accessories.

Hauserman Operable Wall is engineered to be moved easily, even by a small child. Panels are steel, with either baked enamel or chalkboard finish in a choice of colors. Sound attenuation is comparable to a fixed wall up to seven times its weight and twice its thickness.

Hauserman Double Wall is a most economical demountable wall. It is easily installed and finished on the site; and creates a 3" thick rigid wall accommodating wiring and utilities.

DONN PRODUCTS, INC.

Donn Products panels are supplied in four finishes: prime finish, baked enamel, factory-coated vinyls (including wood grain) and fired-on porcelain enamel. A special feature for classrooms is an exclusive porcelain enamel chalkboard furnished as an integral part of the wall.

The standard wall panel is 30 inches wide, so that two panels fit exactly on the 5-foot VLMC module. The 60-inch door unit allows 6 different door locations within any 10-foot run. Door frames, base and ceiling mold are all of the same dimensions, eliminating the need to discard used doors and buy new ones when room arrangements are changed.

Standard thickness for Donn Products partitions is 3 inches. However, the company also makes a 5-inch partition with a one-piece stud for use in laboratories.

AETNA STEEL PRODUCTS CORPORATION

The Aetnawall Type "T" is ideally suited for VLMC construction. It has the advantage of a single hairline joint at the panel connections and the ability to provide panels of any width up to and including 5 feet. This produces larger areas for chalkboards and other marking surfaces with minimum interruptions from joint conditions.

Panels are three inches thick, fully insulated with fiber glass. Any panel unit may be readily removed without disturbing the adjacent panels. Panels are supplied with a factory baked enamel finish for lasting beauty and minimum maintenance.

Doors are also insulated with fiber glass and are sealed against light and sound leaks by integral, cushion-type gaskets around the jambs and head.

For more information on the Macomber V-LOK Modular Component System, contact your local Macomber Representative, or write to *Macomber Incorporated, Canton, Ohio 44701.*

MEMBER AISC

MACOMBER INCORPORATED

CANTON, OHIO 44701

SUBSIDIARY OF SHARON STEEL CORPORATION

Licensee in Canada: Anthes Steel Products Limited, Toronto 9, Ontario.

For more data, circle 99 on inquiry card

When an Omaha hospital wanted economical comfort, they naturally chose Gas-powered Carrier air conditioning.

It was the natural choice for more than one reason. Of course, Archbishop Bergan Mercy Hospital wanted the most comfortable and restful atmosphere they could provide for patients in the 500-bed institution. But they also wanted economy.

With Gas-powered Carrier air conditioning, it was easy to get both.

A Carrier absorption central cooling plant of four machines provides the hospital with low owning and operating costs. And it does it quietly and dependably.

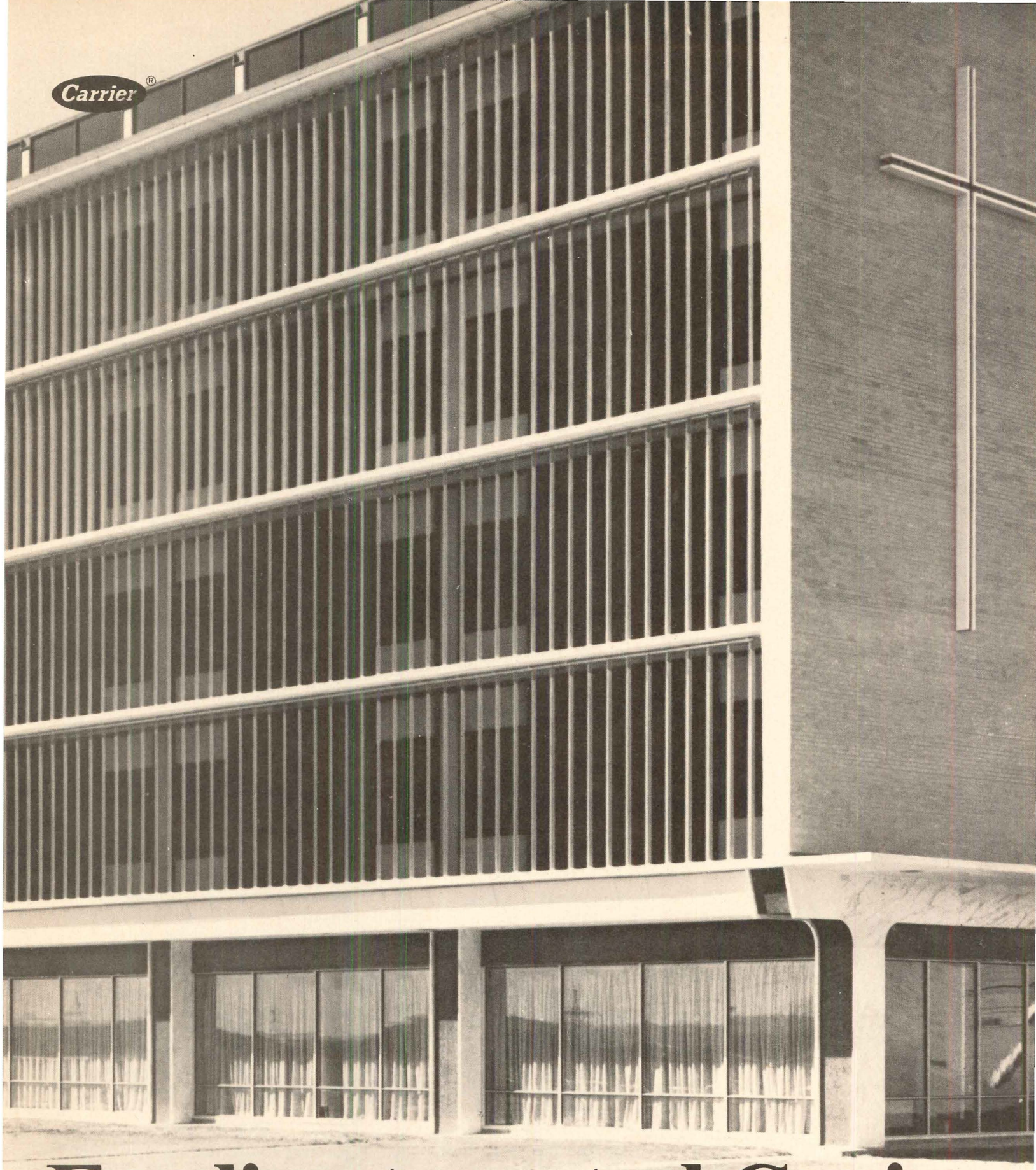
Gas absorption cooling is economical because the refrigeration unit gets its energy from the same source that delivers steam for heating, sterilizers, laundry and other hospital needs.

And you get quiet, durable operation because there are no major moving parts. That means fewer maintenance bills.

Shouldn't you find out how much you can save with Gas absorption cooling? It's easy. Just write: Carrier Air Conditioning Company, Syracuse, New York 13201. Or call your local Gas Company Sales Engineer.

AMERICAN GAS ASSOCIATION, INC.

Architect/Consulting Engineers:
Leo A. Daly Company.
General Contractor:
A. Borchman Sons.
Mechanical Contractor:
B. Grunwald, Inc.
Omaha, Nebraska.



For climate control, Gas is the natural energy source.

if you were sure that one publication delivered over 90% of your market potential, would it make sense to place all your advertising there?

It would... if you can't answer "Yes" to this question... "Am I doing the job I ought to be doing in the one publication that's strong enough to do the job alone?"

THE PROBLEM YOU FACE

Typically the prime objective of advertising in the building market is to get architects and engineers to specify certain products into the buildings they design. One of the hurdles advertisers must overcome is that architects and engineers are among the busiest and most sought after groups of people in this country. Small in number they control through their specification practices, the selection of virtually every product that goes into our nation's buildings. As a result they are deluged with magazines of all shapes, sizes and quality. Direct mail, catalogs, folders, brochures and salesmen flood into their offices. They can't and don't pay attention to them all. Under these circumstances how can you hope to get their attention? It's simple. Do what they do and cut out waste and duplication. Go where they find value. Take the available dollars and do your advertising in Architectural Record. Our editors already have their full attention and this cuts your work in half. Make the rapport we've spent 76 years building with the profession work for you.

WHAT ARE THE BENEFITS?

The major benefit of using just one magazine in a field rather than two or more is that it frees money to do some of the other things that are necessary to attract the attention of busy, involved people. Achieving a measure of impact in your advertising is a relatively simple thing to do. Let's take a look at some of the elements of impact advertising and see how putting the same dollars to work in a single publication will help you achieve that goal.

Dominant space units... it's a fact that, on the average, larger space units get better readership than smaller ones. The advantages of 12 pages or 12 spreads in one strong magazine over six halves or six pages in each of several magazines is readily apparent. In short you can look bigger, seem more important and increase readership scores at the same time.

Maximum frequency... every available piece of research indicates that advertising readership scores also increase with frequency of insertion. The advertiser who runs in every issue of a publication gets higher scores than those who do not.

Strong copy and layout... while the basic strength of your copy and layout depends on the talent of your specialists, it's possible to enhance these elements through the use of four-color. Architectural Record is now offering substantial color premium discounts, similar to the traditional frequency discounts.

Thus by buying only the Record you get a double barrelled discount, your ads look better and you get the higher readership scores that come with color.

Consistency... the concept of consistency in impact advertising involves planning over a period of years not just months. Although the benefits seem obvious it is one of the hardest elements to sell to top management. In our experience the best way to achieve its acceptance is through the careful application of the other three elements — dominant space units, maximum frequency and strong copy and layout. Apply these three principles effectively and the advantages of consistency follow naturally and rewardingly.

WHY RECORD?

That's where you'll find the active architects and engineers. Record subscribers handle over 90 per cent of the dollar volume of all architect-designed nonresidential and large residential building. This is a fact documented by a continuing state-by-state check of the activity of architectural

firms. We compile the number of projects, the types of projects and the dollar volume as reported by F. W. Dodge. Then we compare this construction activity to the Record's subscriber galleys to determine our market coverage.

Thirty-eight such state-wide checks during a recent 12-month period reveal a coverage of the market that has great significance for advertisers. Here are some of the key findings... over 95 per cent of school dollar volume is in the hands of Record subscribers... over 90 per cent of the apartments... over 95 per cent of the hospital market. The significance to advertisers is that there is a single publication in the architectural field which alone is strong enough to carry their advertising message. Clearly one publication is enough if it's the Record.

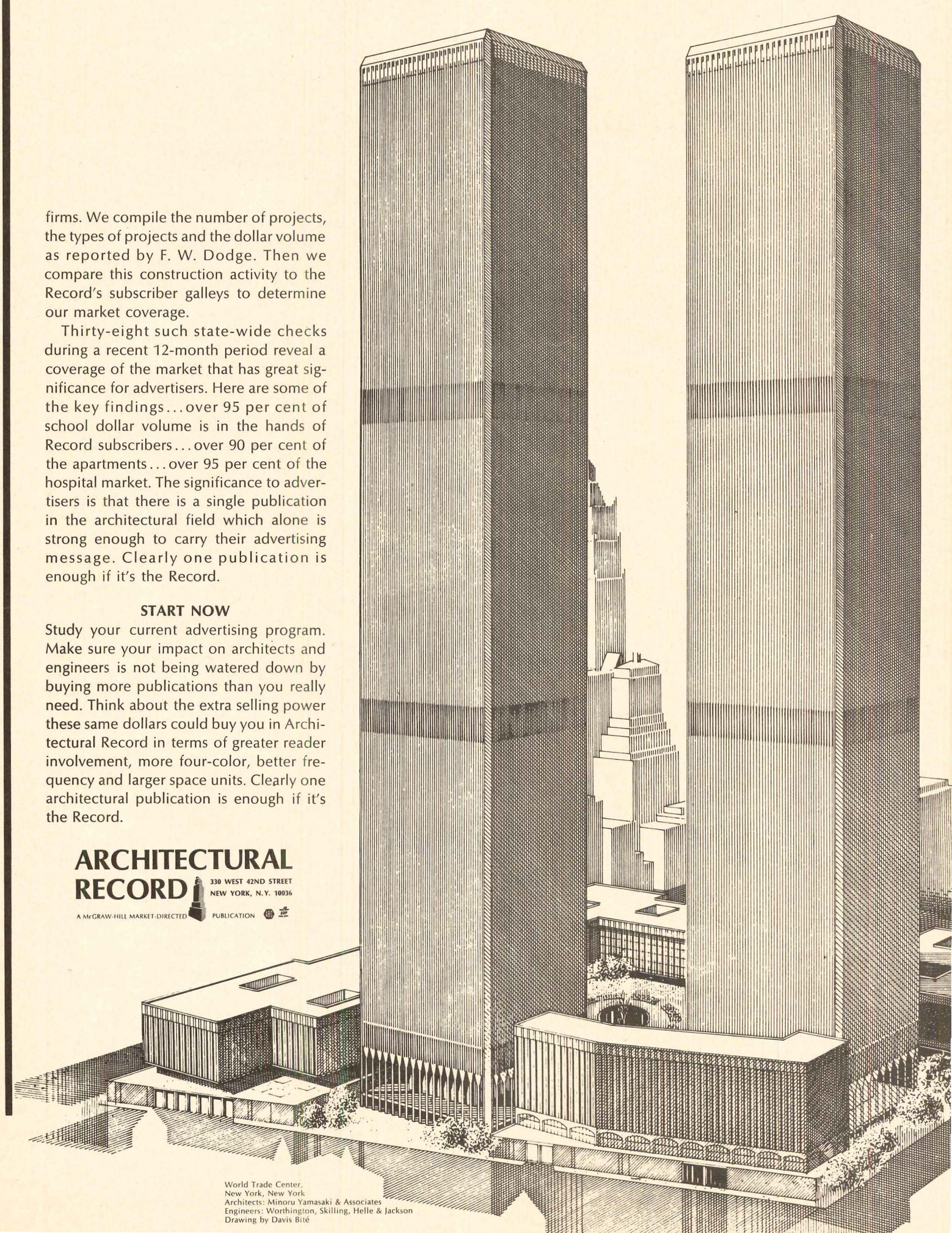
START NOW

Study your current advertising program. Make sure your impact on architects and engineers is not being watered down by buying more publications than you really need. Think about the extra selling power these same dollars could buy you in Architectural Record in terms of greater reader involvement, more four-color, better frequency and larger space units. Clearly one architectural publication is enough if it's the Record.

ARCHITECTURAL RECORD

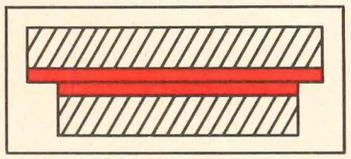
330 WEST 42ND STREET
NEW YORK, N.Y. 10036

A McGRAW-HILL MARKET-DIRECTED PUBLICATION

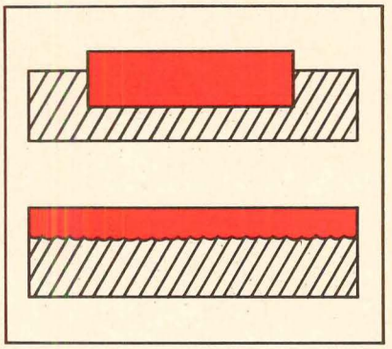


World Trade Center,
New York, New York
Architects: Minoru Yamasaki & Associates
Engineers: Worthington, Skilling, Helle & Jackson
Drawing by Davis Bité

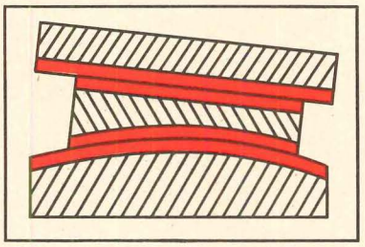
Six ways to use the world's most slippery solid to solve your sliding and expansion bearing problems:



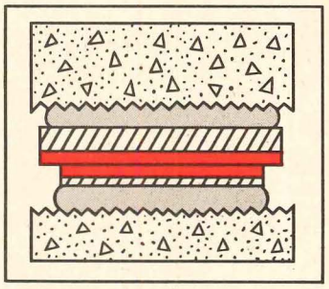
Simplest standard construction: sheet of TEFLON TFE resin bonded by adhesive to steel plates (see exploded view below).



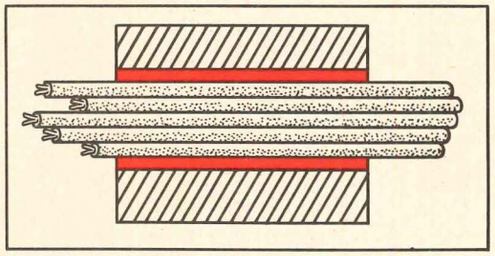
Pad of TEFLON can also be attached by recessing or use of embossed metal plate.



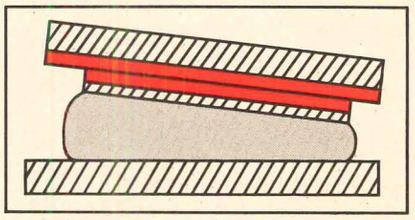
Curved bearing surfaced with TEFLON permits rotational movement, while standard flat bearing accommodates horizontal movement.



Sliding bearing uses two slabs of an elastomer to conform to rough concrete surfaces.



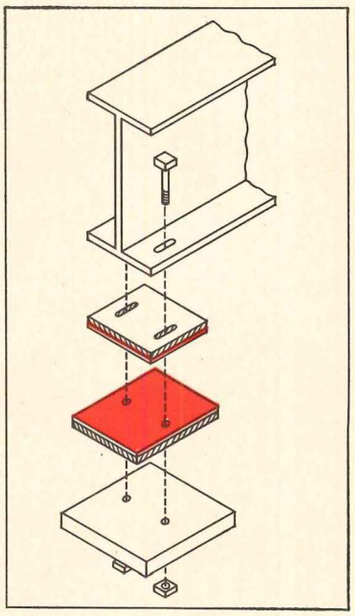
Sleeve-type bearing of TEFLON permits thermal expansion and contraction of steel cables.



An elastomeric pad bonded to smaller pad permits rotational movement.

Du Pont TEFLON* fluorocarbon resins have the lowest coefficient of friction of any sheet materials—even lower than graphite or molybdenum sulfide. Sheets of TEFLON make ideal "lubricating materials" to surface a sliding or expansion bearing—because in addition to this lowest friction, they offer the necessary wear resistance, creep resistance and weather resistance. Most chemicals don't affect TEFLON, nor does a wide range of temperatures.

Economical bearing pads surfaced with TEFLON are used in a variety of architectural applications, including bridges and roads, and in tank supports and pipe slides. Shown above are some examples of the design versatility offered by these bearings. Filled compositions of TEFLON



may be used where exceptional resistance to creep and wear are required.

If you are faced with any design problem involving accommodation to thermal expansion or contraction, or to movement caused by wind and weather, get in touch with an experienced fabricator of bearing pads made with TEFLON. For complete information on bearing pads with TEFLON write: Du Pont Company, Room 7223, Wilmington, Delaware 19898.

*Reg. U. S. Pat. Off. for Du Pont's fluorocarbon resins and film.

DU PONT
REG U S PAT OFF
TEFLON®
fluorocarbon resins

For more data, circle 20 on inquiry card

to keep our speed skaters on ice in 60° weather...

they chose Waukesha energy systems

This is the famous Olympic Skating Rink at State Fair Park in West Allis, Wisconsin. Last winter it drew the cream of the nation's speed skaters, for it is the only rink in the United States on which Olympic team candidates could train under authentic Olympic conditions.

Being the only rink of its kind during an Olympic year put even more stress than usual on the selection of dependable refrigeration equipment. It was the kind of climate that so often leads to the choice of Waukesha Engines. It did. A battery of Waukesha gas engines powers the huge compressors day and night at surprisingly low fuel and maintenance costs, even in balmy 60° weather.

Let your Waukesha distributor explain why, when the choice is especially important, engineers choose Waukesha gas energy systems.

Waukesha Motor Company

WAUKESHA, WISCONSIN 53186

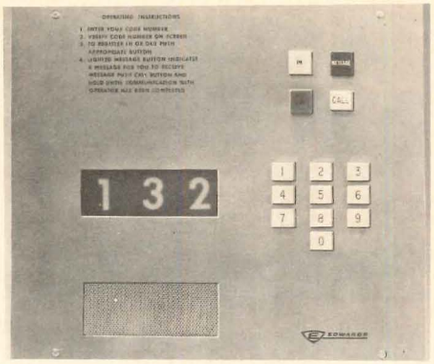
Carlstadt, N. J. 07072 • Tulsa, Okla. 74107 • Los Angeles, Calif. 90058 • Anchorage, Alaska 99502

VISIT US AT ASHRAE, BOOTH 1315, INTERNATIONAL AMPHITHEATRE, CHICAGO, JAN. 27-30. 691

Wisconsin's 400-meter Olympic Ice Skating Rink, State Fair Grounds, West Allis, Wisconsin.
Designing Engineers: Holland & Kurtz, Inc. and Ahrendt Engineering Company, Chicago, Illinois

For more data, circle 106 on inquiry card

continued from page 180

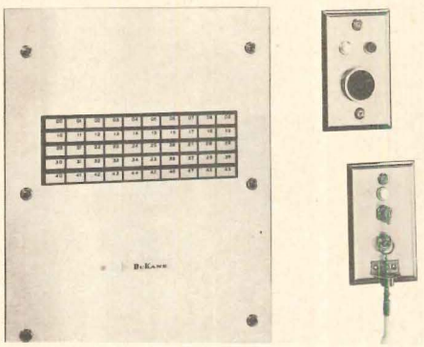


HOSPITAL STAFF REGISTER / The *Memory Register* is a six-channel system that records the "in," "out," and "message status" for staffs ranging from 100 to 1000 persons. As many as five persons can register at different locations throughout the building at the same time. ▪ Edwards Company, Inc., Norwalk, Conn.

Circle 311 on inquiry card

DORMITORY CALL SYSTEM / Amplified voice communication from a central point to individual rooms is possible with push button dialing. ▪ S.H. Couch Company, Inc., North Quincy, Mass.

Circle 312 on inquiry card



CALL SYSTEM / A solid-state, visual nurse call system, serving from 10 to 100 stations, operates on only 24 volts A.C. Conduits are unnecessary, and because it requires only three circulating conductor wires throughout the building, plus a single home-run line from each station back to the console, the manufacturer says that "it can be installed in new structures at minimum cost, and can replace most worn-out or obsolescent systems without any re-wiring." ▪ DuKane Corporation, St. Charles, Ill.

Circle 313 on inquiry card

WHY

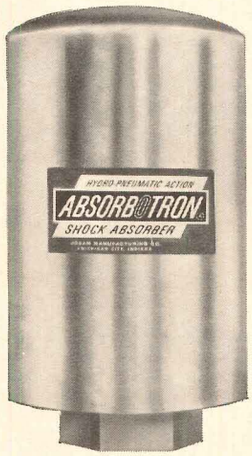
are air chambers like "Ice boxes"?

...because they are obsolete, inefficient and need constant attention...

MEETS A.S.S.E. STANDARD 1010
AND P.D.I. STANDARD WH-201

the MODERN WAY to eliminate water hammer is to install

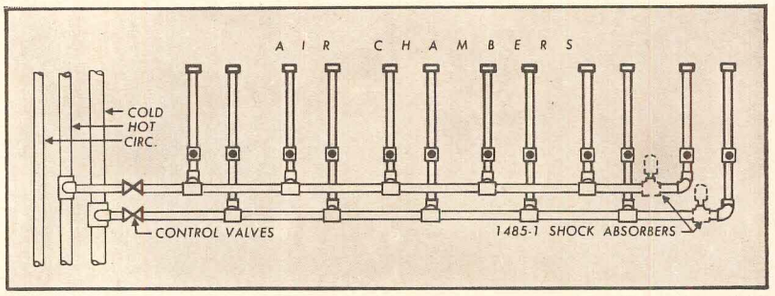
JOSAM ABSORBOTRON® shock absorbers



Prove it yourself . . . using an established test*. You will find that a huge air chamber 57" high will fail to perform when it approaches 5,000 cycles, while a small 8" high Absorbotron Shock Absorber continues to perform indefinitely. The shock absorbers, moreover, may even cost less! The installation below indicates a typical placement of air chambers for hot and cold water branch lines serving 6 lavatories. The twelve air chambers, from 12" to 24" high, take up excessive space. Yet, two small shock absorbers can provide the same service.

Moreover, the air in an air chamber is absorbed by the water . . . and the air chamber becomes ineffective unless constantly recharged. Why use obsolete products requiring costly maintenance when you can use Absorbotron Shock Absorbers and end the problem for all time?

* Test: 50' of 1" pipe, water at 60 p.s.i., flow pressure at a velocity of 10' per second.



2 shock absorbers	$35	12 air chambers @ $2	$24
Installation @ $2.50	5	Installation @ $2.50	30
	$40		$54

(Costs are approximate, depending on area)

JOSAM MANUFACTURING CO.
Michigan City, Indiana

REPRESENTATIVES IN ALL PRINCIPAL CITIES

For more data, circle 102 on inquiry card

ADVERTISING INDEX

Pre-filed catalogs of the manufacturers listed below are available in the 1969 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
Production Mgr.: Joseph R. Wunk (212) 971-2793
Promotion Mgr.: Sam H. Patterson, Jr. (212) 971-2858
Research Mgr.: Elizabeth Hayman (212) 971-2814

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 — David B. McCourt
55 Public Square, (216) 781-7000

Dallas 75201 — Wayne L. Loving
1800 Republic National Bank Tower, (214) 747-9721

Denver 80202 — Richard W. Carpenter
1700 Broadway, (303) 255-5483

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

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

Minneapolis 55402 — Edward C. Weil
1104 Northstar Center, (612) 332-7425

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

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

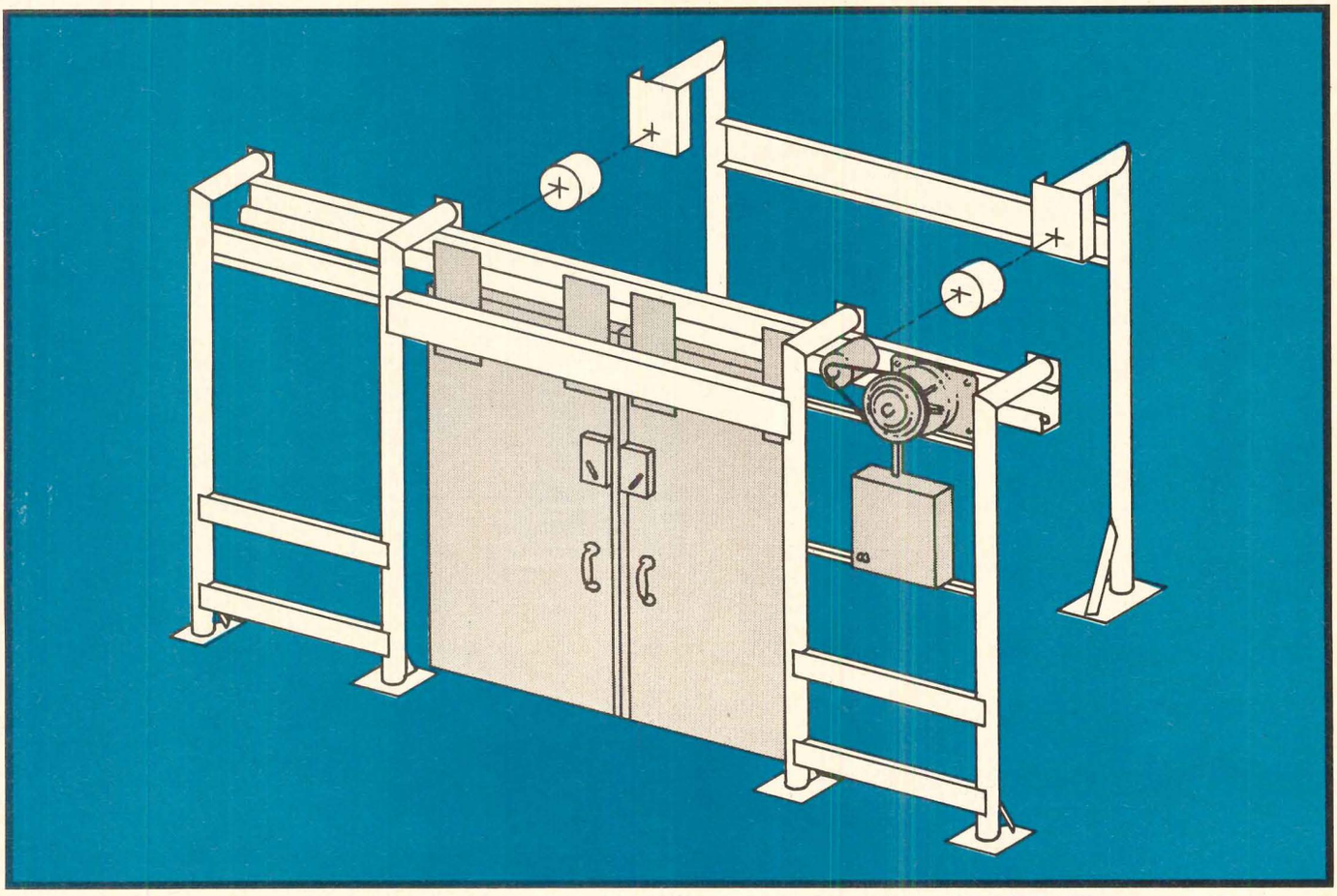
Pittsburgh 15222 — Bradley K. Jones
4 Gateway Center, (412) 391-1314

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

San Francisco 94111 — Wayne C. Carter
255 California St., (415) 362-4600

THE NEW JAMISON SS DOOR SYSTEM

...Self-Suspended Horizontal Sliding Doors



Jamison has scored another first with a brand new revolutionary development: The SS Door System offers an entirely new method of installing horizontal sliding cold storage and industrial doors. It eliminates forever the hazards of installing doors in walls that give inadequate support and are not built to withstand the combined stresses of door weight, rapid opening and closing, and abuse from hand and fork lift trucks.

Eliminates Need For Bucks. In addition, the SS Door System makes bucks and buck support unnecessary, thus saving costs and eliminating the common risk of incorrect buck installation.

Unique, New Development. The Jamison SS Door System provides a suspension system that takes the entire weight of the door from the wall and transfers it to the floor! Moreover, the rigid support system offers ample protection to door panels, track, and operating mechanism. Installation is easier and faster. The complete door, along with the self-suspension system, is factory assembled and tested. Shipped in major components for easy field erection. This establishes a single source and responsibility for the total doorway requirements. This combination of door, protecting and supporting system reduces overall cost.

The door is the Jamison lightweight, power-operated bi-parting door, and can be furnished for cooler, freezer, or industrial use. Call your Jamison representative for details, or write for SS bulletin to Jamison Door Company, Hagerstown, Md. 21740.

COLD STORAGE DOORS BY

JAMISON

JAMISON DOOR COMPANY • HAGERSTOWN, MD.

For more data, circle 103 on inquiry card

U.S. Patent No. 3,239,035

TAB LOCK 281

DOUBLE-WEB CONCEALED SUSPENSION SYSTEM

Now, a concealed suspension system with lay-in tile convenience.

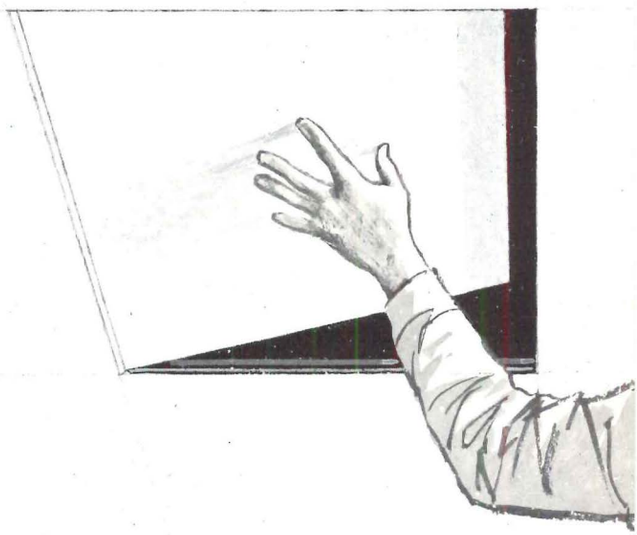
Monolithic ceilings as convenient and functional as exposed grid ceilings are now possible with Eastern's new Tab-Lock 281 concealed suspension system. As in exposed systems, a structurally stable grid is erected before the tiles are put in place. The finished ceiling is accessible in every module without dismantling or damaging tiles. Any standard kerfed and rabbeted tile may be used. System is U.L. listed.* Write for brochure. See also Sweets (1969) 14c/ea.

Eastern Products Corporation

Subsidiary of ROPER CORP.

EASTERN PRODUCTS CORP. Architectural Metal Products Division
1601 Wicomico Street, Baltimore, Maryland 21230
* Steel Framing Member Design 281 — 2 hrs. Tested with U.S. Gypsum Co. "Auratone" panels.

For more data, circle 104 on inquiry card



Tab-Lock 281 incorporates Eastern's patented manual Tab-Lock attachment, brings the advantages of interlocking tees to concealed grid systems.