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BUILDING TYPES STUDY: PLANNING AIRPORTS FOR THE NEW REQUIREMENTS

FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

AUGUST 1968 **8** A McGRAW-HILL PUBLICATION TWO DOLLARS PER COPY

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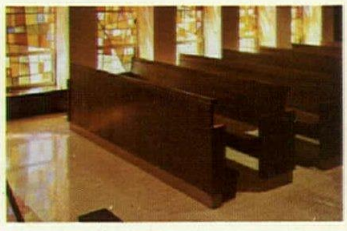

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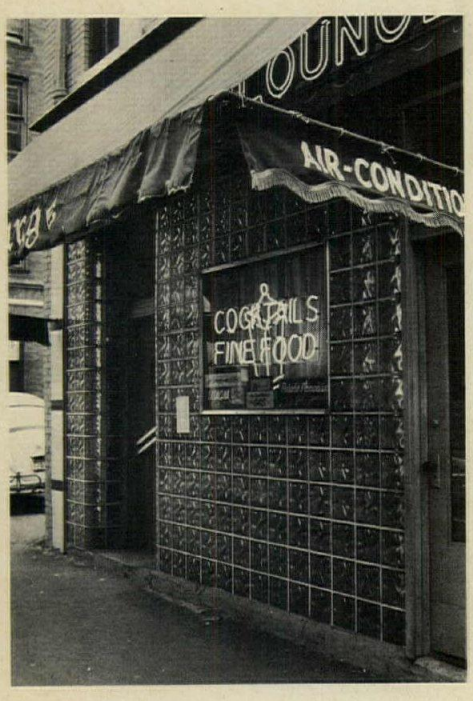

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Get a closer look at new Chiaro glass blocks, PC Intaglio units and any others you may have missed. Write for our catalog: Pittsburgh Corning Corp., Dept. AR-88G, One Gateway Center, Pittsburgh, Pa. 15222.

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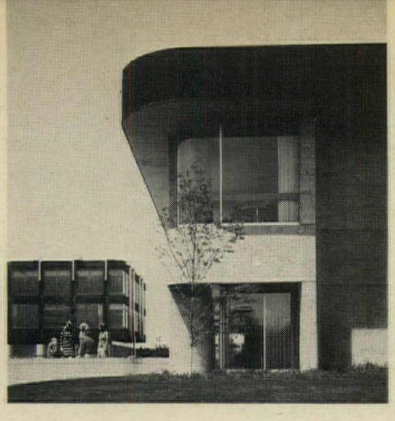

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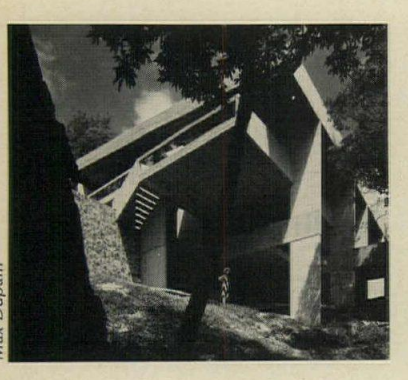

Max Dupain

BUILDING TYPES STUDY 387

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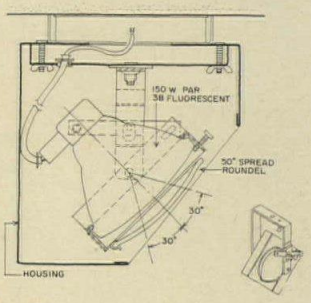

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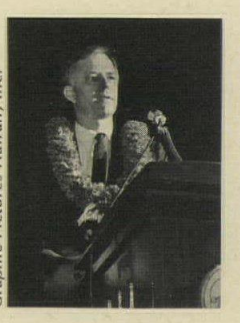

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COMING IN THE RECORD

BUILDING TYPES STUDY: COLLEGE BUILDINGS

Many of the best buildings now being constructed in the United States are for college and university clients. The immense total volume of campus construction offers more opportunities for good architects to do their best work. In addition, the administrator-educator client is more likely to favor fresh approaches and innovative design than his counterpart in business or government. For these reasons, next month's collection of distinguished campus work is worth careful study.

YAMASAKI DESIGNS HIS OWN OFFICE BUILDING

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The wrong criticism, in the wrong place, at the wrong time

If all the criticisms directed during the last month at the proposed 55-story tower above Grand Central Station were to be stacked up and baled, they would make a 55-story tower. Professional critics, many of the architects assembled at their annual convention, a host of professional planners, and much of the city's corps of commuters and subway riders have joined in a roar of protest at developer Morris Saady, the Penn Central Railroad and architect Marcel Breuer in particular, and at our whole overcrowded world in general.

I happen to think that the new building will make a positive contribution to the overcrowded hub of New York City's transportation systems. Further, there is a fact of life involved here which, in my view, makes much of the criticism of Breuer's tower unreasonable, and some of the criticism irresponsible.

The fact is that as long as a projected building meets a city's building codes, zoning ordinances, and other laws, and as long as it does not otherwise endanger the public health and safety, any developer who is smart enough to assemble the land and put together the financing has the right and privilege to build his building. If that's not the way it ought to be (and often it is not), we should change the rules.

Further, it is not the business of developer Morris Saady to worry about general conditions in the Grand Central area except as they affect his project—though it should be noted that Saady has done a great deal more worrying than most developers do, and certainly more worrying than would seem to benefit his commercial interests and profit.

Nor is it the business of the Penn Central Railroad. Their business is to keep a financially troubled, badly needed railroad running; and it is hard to argue that they should turn down $3 million a year for 50 years in return for the use of their air rights.

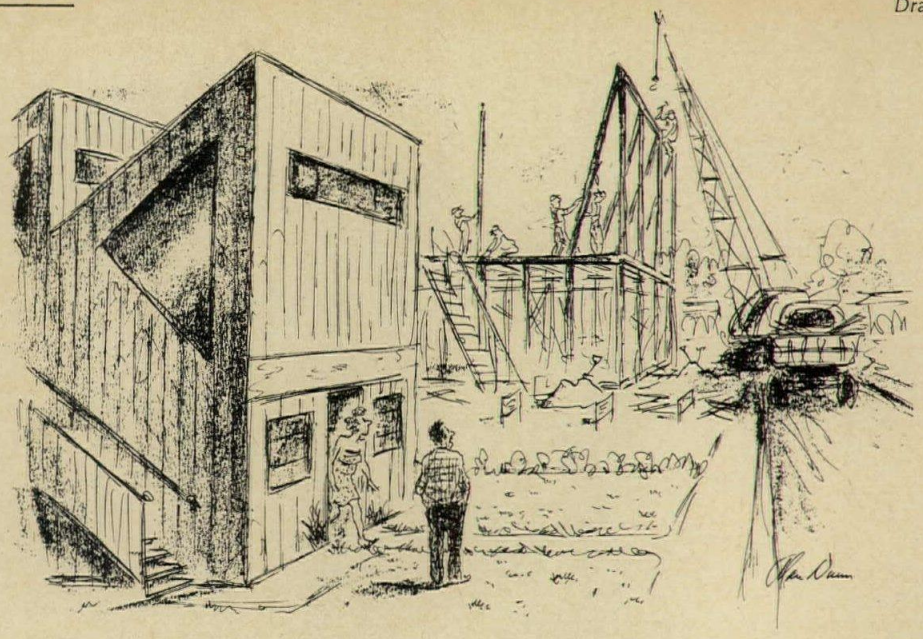
It is, of course, the business of any architect—consistent with his responsibility to the client—to safeguard the general good of the people. And Breuer has gone to great lengths, used great technical skill, and persuaded his client to accept a great deal of extra cost, to minimize the adverse effects of the new building and indeed to create some considerable advantages for the area.

But mostly, safeguarding the general good of the people is the business of the people, through the agency of their elected government. Don Elliott, chairman of the City Planning Commission and a man for whom I have great respect, says the new tower is "the wrong building, in the wrong place, at the wrong time." If that is true, then his commission hasn't done its planning job. And where have all the professional critics, architects, planners, landmark preservers, commuters and other folk-experts been? Nobody can be surprised about the new building—with land values (and therefore air rights) at New York City prices, anyone who could not foresee this building is probably also unsure as to where the sun comes up. Readers of this magazine have less excuse, for in May 1962 Emerson Goble argued the case for the highly dense development of areas above transportation intersections, especially the Grand Central area; and in May 1963, Mildred Schmertz' thoughtful analysis of the Pan Am building flatly predicted this new neighbor.

While admiration for Breuer's engineering solution is, and rightly, almost universal, there has been much articulate negative criticism of the esthetics of composing the two so-differing facades. Given any problem, there are of course alternate solutions; but I suggest that others join me in being thankful that Saady had the good sense to ask Breuer to do the job, and even more thankful that Breuer had the courage to take it. (There has been some suggestion that Saady retained Breuer as "an architect of reputation" to help "sell" the project. This is a disservice to Saady, for surely we must be in favor of any developer getting the best architect he can to do any building. And the suggestion that Breuer would lend his name to give distinction to a dubious project is of course outrageous.)

What about landmark preservation? I'm not sure I'd fling myself in front of the wrecking ball to save Grand Central Station, but I'd argue with those who would that the terminal will, all things considered, be better off in the shade of the new tower. For one thing, the merits of its exterior have long since been buried by the row of stores and bright signs stuffed under the elevated roadway—and these will, as part of the project, be removed. Those approaching from the south up Park Avenue have long since had to accept the Pan Am building as a backdrop for its ornate form; and it is my view that the new building will be a calmer and more pleasant backdrop. The part of the station that cannot fail to stir even the most sullen subway rider is its great concourse, which will not be affected visu-

Drawn for the RECORD *by Alan Dunn*



"Leave it to the Joneses—75-degree angles!"

ally by the new construction. Indeed, both Saady and Breuer have explained that—as part of the deal with the railroad—the architect has been commissioned to "clean up" the huge animated signs and corporate exhibits that now clutter the great space. The supporting spine of the new building will pass through the adjacent waiting room, but this unpleasant space—crowded with newsstands, ugly black oak benches, phone booths and lockers—is no loss.

Circulation? As a twice-a-day user of the station, I see no reason not to believe the consulting engineer's view that "the result [of the building project] will be a more even distribution of people over a greater number of passageways and a net increase in reserve corridor capacity of about five per cent." I must agree with critics of the proposed building that it will add—despite some proposed changes in subway passages—to the already unbearable crowding of the subways. But the crowding in the midtown subways has been excessive for years, and perhaps this new straw will hasten the development of the long-needed subway line proposed for Second Avenue.

The furor over 175 Park Avenue will die down in time, as did the furor over the Pan Am building. But for the long run: If you think it's a bad idea to put still another dense concentration of space and people on 42nd Street (or Waikiki beach, or downtown Nashville, Tennessee) that's your right. But don't act surprised and/or outraged when it happens. Don't go on wishing that our free-enterprise, profit-oriented society would only build things that you like on sites of your choosing. Instead, do something about it. Start with your mayor and your planning commission.

—Walter F. Wagner, Jr.

"You are not a profession that has distinguished itself . . ."

At the opening session of the convention in Portland (see also Record Reports, page 35), Whitney Young of the Urban League told it like it is: "You are not a profession that has distinguished itself by your social and civic contributions to the cause of civil rights, and I am sure this has not come to you as any shock. You are most distinguished by your thunderous silence and your complete irrelevance.

"I have read about architects who had courage, who had a social sensitivity, and I can't help but wonder about an architect who builds some of the public housing that I see in the cities of this country—how he could even compromise his own profession and his own sense of values to have built . . . these vertical slums . . . That architects as a profession wouldn't as a group stand up and say something about this is disturbing to me.

"You are employers, you are key people in the planning of our cities today. You share the responsibility for the mess we are in in terms of the white noose around the central city. . . .

"As a profession you ought to be taking stands. . . . If you don't as architects stand up and endorse model cities and appropriations, if you don't speak out for the rent supplements or housing bill calling for a million houses, if you don't speak out for some kind of scholarship program that will enable you to consciously and deliberately seek to bring in minority people who have been discriminated against . . . then you will have done a disservice to the memory of John Kennedy, Martin Luther King, Bob Kennedy, and most of all, to yourselves."

Young said much more, and talked well beyond his alloted time. I'm sure he did it because he sensed that a large body of members of a profession that has not "distinguished itself by its social and civic contributions to the cause of civil rights" was being moved by what he said. He was right, for he got a standing ovation (and some of the oldest residents couldn't recall many times when that happened), and his criticisms of architects—as professionals and citizens—were talked about throughout the convention and will—hopefully—be thought about for a long time by most of those who listened.

Part 1 of a series of comments on Kassabaum

I've got a feeling that there is going to be a lot of discussion on these pages about the activities of the A.I.A.'s new president, George E. Kassabaum, FAIA. Reason: He really makes sense when he talks and I'd just bet that he gets done this year a lot of the things he's talking about. His inaugural talk was some of the straightest talk I've heard in a while. Sample: "We must make sure that we deserve the rating of 'Professional.' As our age defines it, it means the man who can not only do more than others, but also do it more skillfully and efficiently. Just because of this ability he earns the respect and admiration of his fellow men—he doesn't have to ask for it, demand or plead for it. If he deserves such recognition, he gets it. If it is only a term that he wants applied because once upon a time others in his field earned the title, he will soon be forgotten. Are you the best qualified man in your community to be the leader of the process that transforms a dream into a physical reality?" And that's a good question for any architect to ask himself these days. *—W.W.*

Columbian Elementary School, Kokomo, Indiana. Three additional school buldings in Kokomo by same architect, general contractor and masonry contractor: Maple Crest School, Haworth High School and Sycamore Jr. High School Addition.

Architect: Everett I. Brown & Co., Indianapolis
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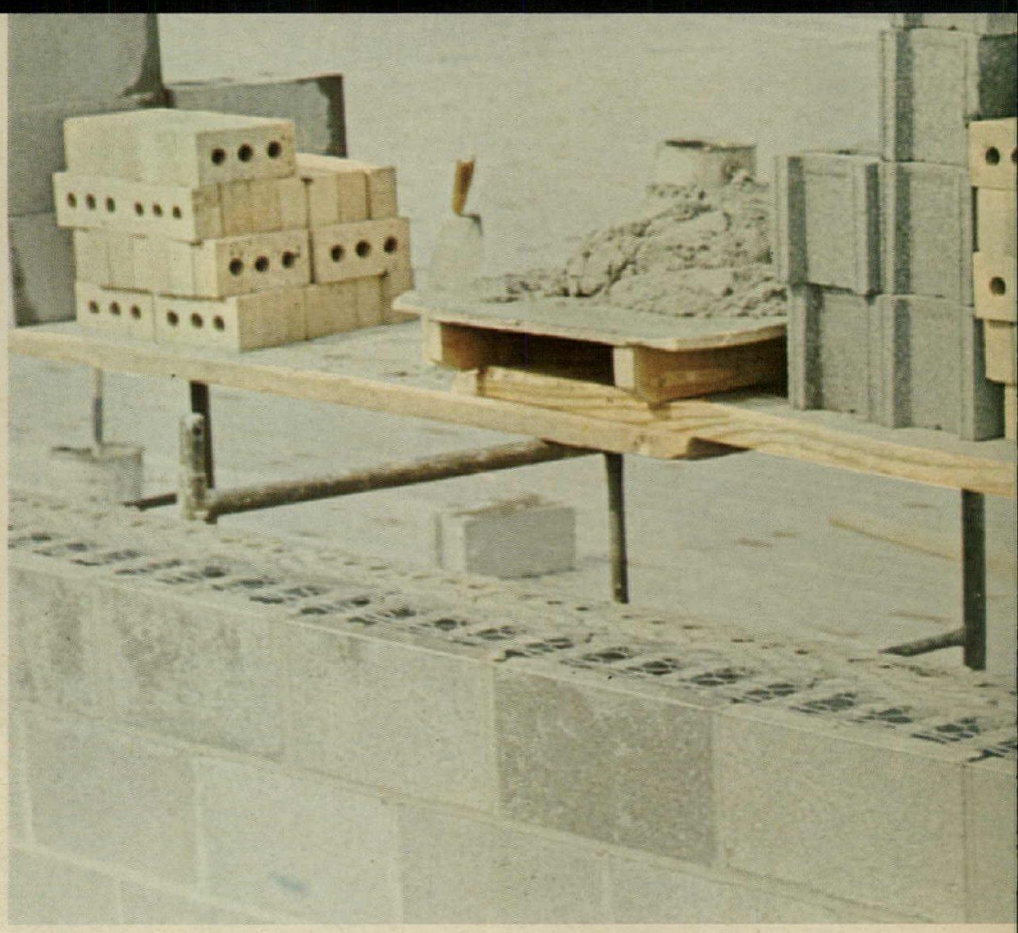

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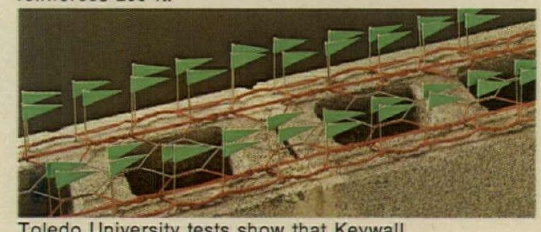

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Owner-conducted wear test at United Fuel Gas Company Headquarters proves so outstanding, vinyl asbestos tile now specified for over 50 branch offices.

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.014" wear in 5 years! United Fuel Gas Company installed Kentile® Vinyl Asbestos Tile in its 11-story headquarters building in Charleston, West Virginia. Five heavy-wear years later, tiles were removed for testing from areas bearing the roughest, toughest, most abrasive wear—and compared with new, unused tiles by micrometer. The difference in thickness: an amazingly small .014"!

30-year life projected. According to Mr. Charles S. Knowles, maintenance supervisor of the UFG Headquarters Office Building: "Based on this test, we expect the majority of this tile to give service for a period of 30 years before replacement should be necessary."

Floor a perfect "Public Relations" image. In all twelve years this Kentile Vinyl Floor has been down, it has maintained the attractive appearance so consistent with the "clean fuel" image of this utility. Daily sweeping, twice-a-week damp mopping, and a buffing every two weeks are the only care required. Cost of upkeep: 3¢ per square foot per year!

Vinyl asbestos tile now specified. On the basis of this superb performance, UFG has specified the use of vinyl asbestos tile in over 50 branch offices. As one official noted: "It has performed well, even in heavy-traffic areas such as at counters where people pay their bills and in showrooms. You couldn't ask for a better floor tile."

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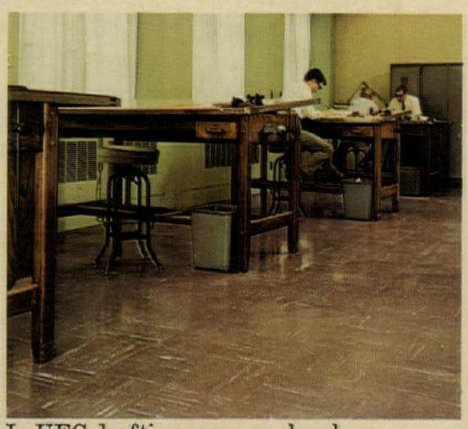
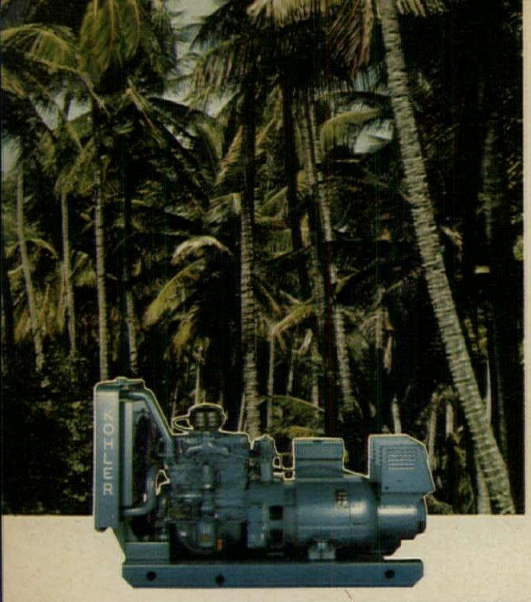
UFG cafeteria, serving 700 employees daily, features a 12-year-old Kentile Vinyl Floor that gets plenty of heavy traffic. Yet it looks brand-new! Note: All photographs were taken April 1968 and are unretouched.

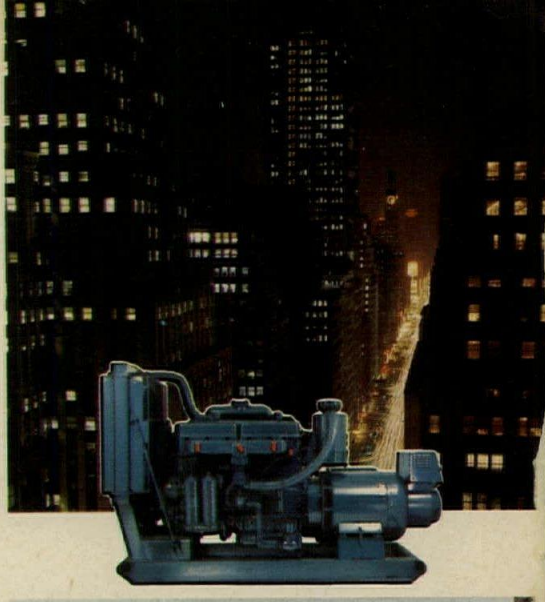
24-hour communications area, where the clean, glossy appearance of vinyl asbestos tile reflects the "clean fuel" image of UFG.

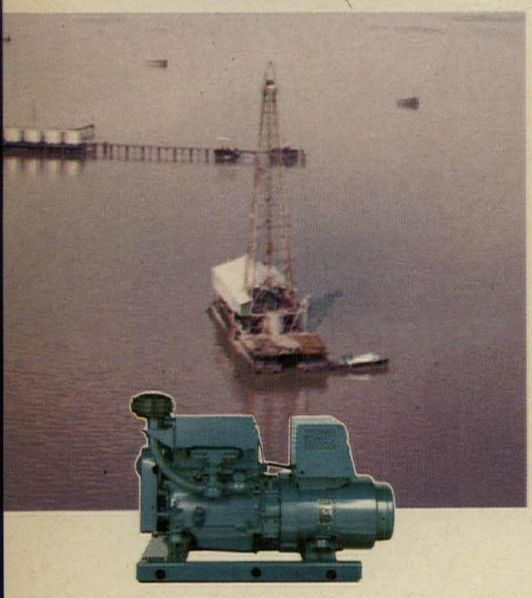


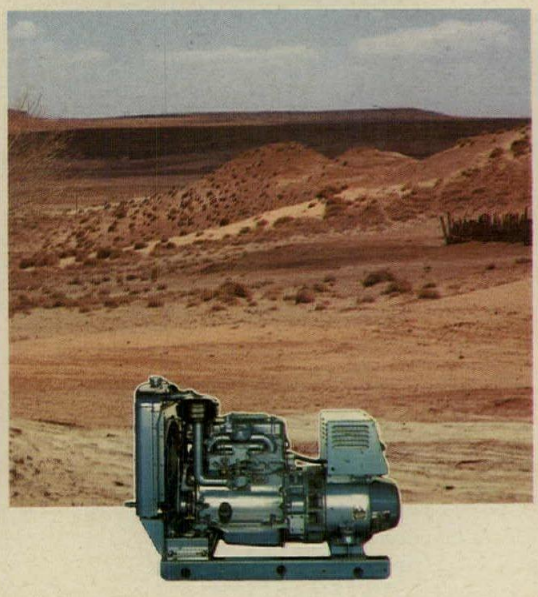
In UFG drafting room, as elsewhere, cost of upkeep for floors is an amazingly low 3¢ per square foot per year.

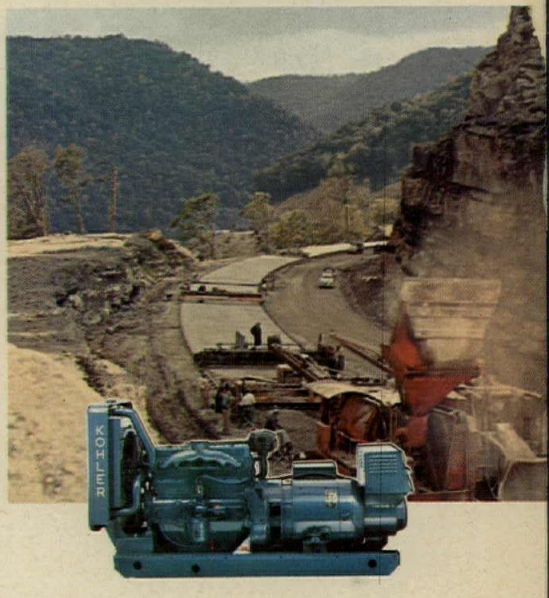
Advanced look of UFG Headquarters, Charleston, W. Va., is complemented beautifully by modern Kentile Floors.











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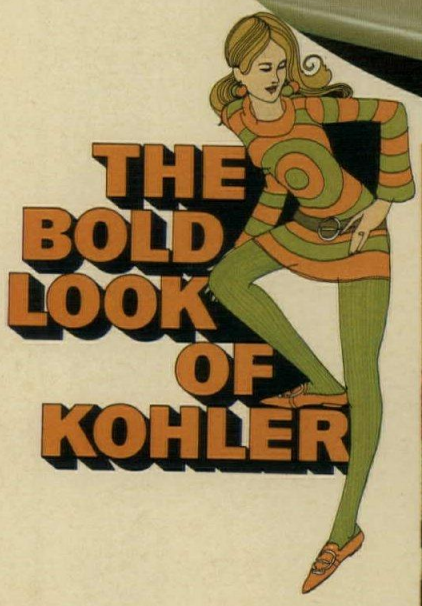

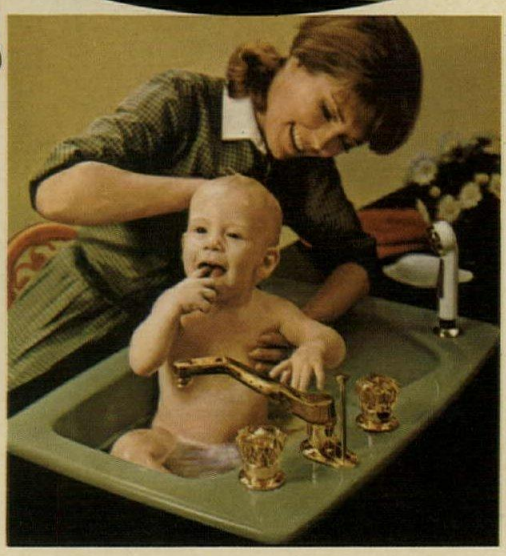

This is our new Lady Fair lavatory in vitreous china: Avocado, with gold electroplated fittings. Frankly, we designed it as a shampoo center: that's why the big, wide basin, the built-in spray arm. But now our test families tell us it makes an ideal baby bath. Pop grabs it for shaving ...the twins use it side by side. Seems it's a bathroom laundry, too: just the thing for washing out lingerie. One woman writes that she and hubby snack by the bedroom TV—and guess where she rinses the plates! (Wonder if it would take a Volkswagen?)

KOHLER OF KOHLER
Kohler Co., Kohler, Wisconsin

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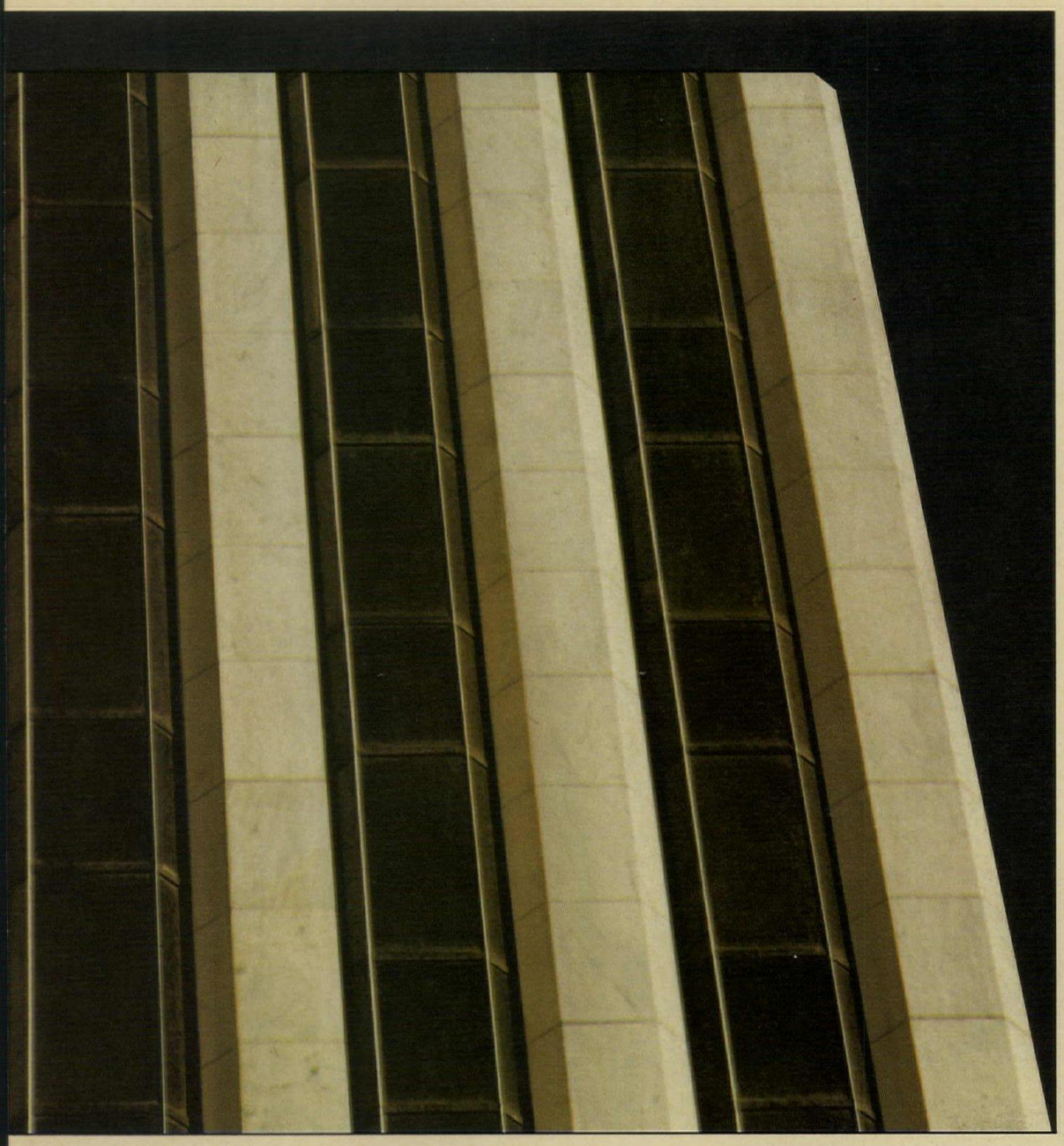
through the Duranodic* 300 process. Total quality control: the key element planned and executed by Alcoa.
The metal: Alcoa® Aluminum with an Alcoa Duranodic 300 finish in medium bronze tones, carefully complementing the bronze solar glass.
(b) Duranodic 300 was specified because the *original* color and beauty must last with a minimum of maintenance. The rich Duranodic color is an integral part of the metal oxide that permeates its cell structure, and provides natural protection of up to 1.2 mils. Corrosion and abrasion resistance is greatly increased.
At the General Motors building, Alcoa was there from the planning stages—the best time to call in Alcoa. We have the capabilities to work with you from concept to conclusion. Alcoa stands ready to supply you with a whole lot more than aluminum. Call your local Alcoa sales office, and talk to Alcoa at the tissue talking stage.

*Trade Name of Aluminum Company of America

Architect: Edward Durell Stone and Emery Roth and Sons
General Contractor: George A. Fuller Co.
Aluminum Wall Fabricator: General Bronze Corp.
Aluminum Finisher: Hankins & Johann
Aluminum Louver Fabricator: Arrow Louver and Damper Corp.



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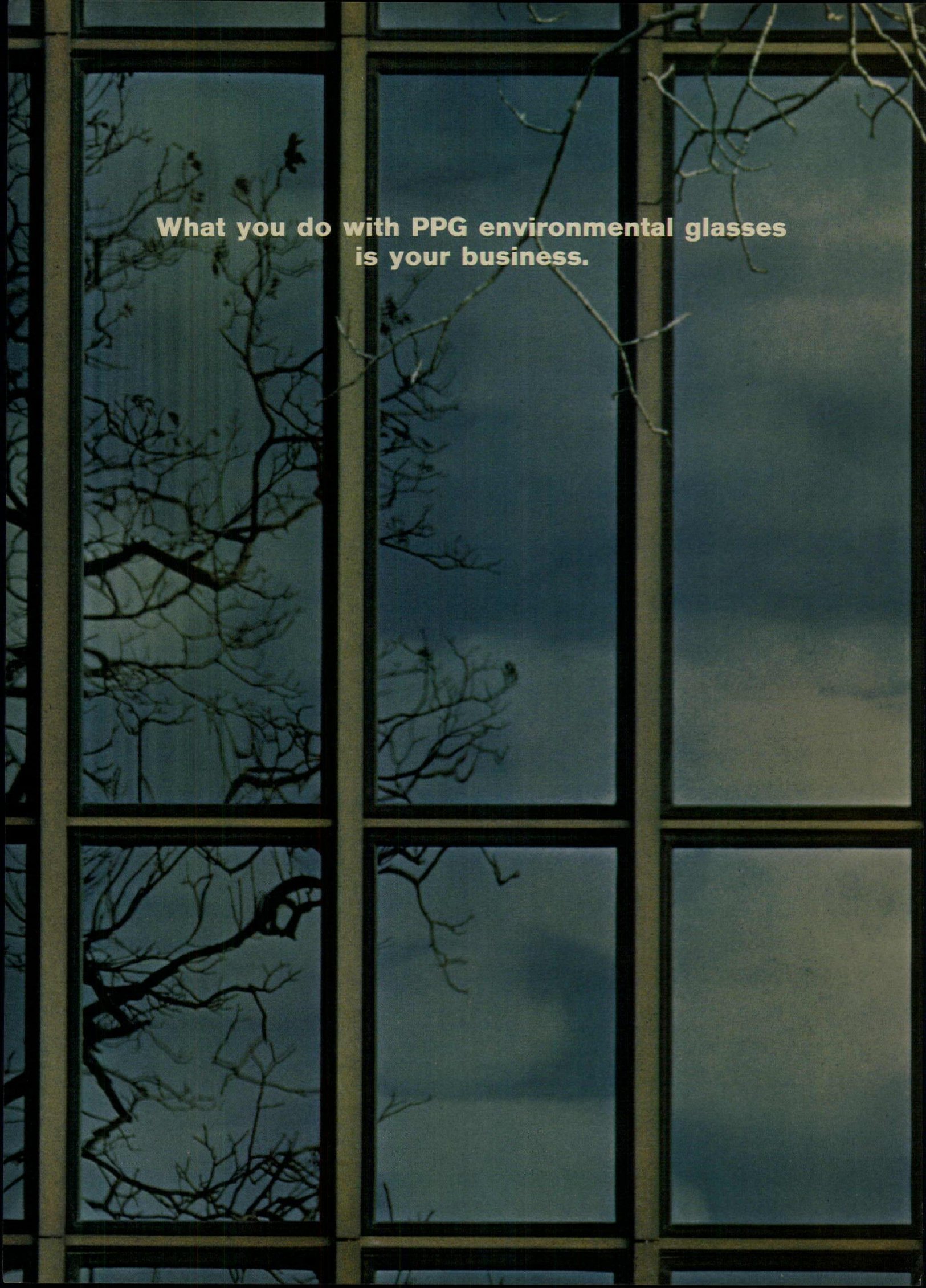
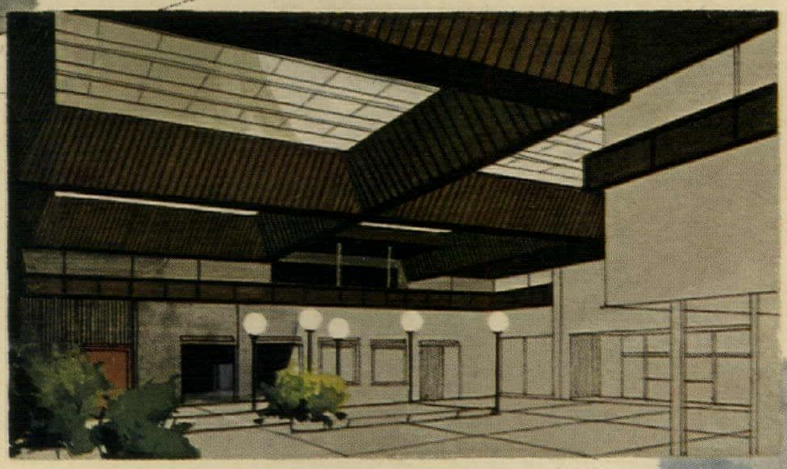
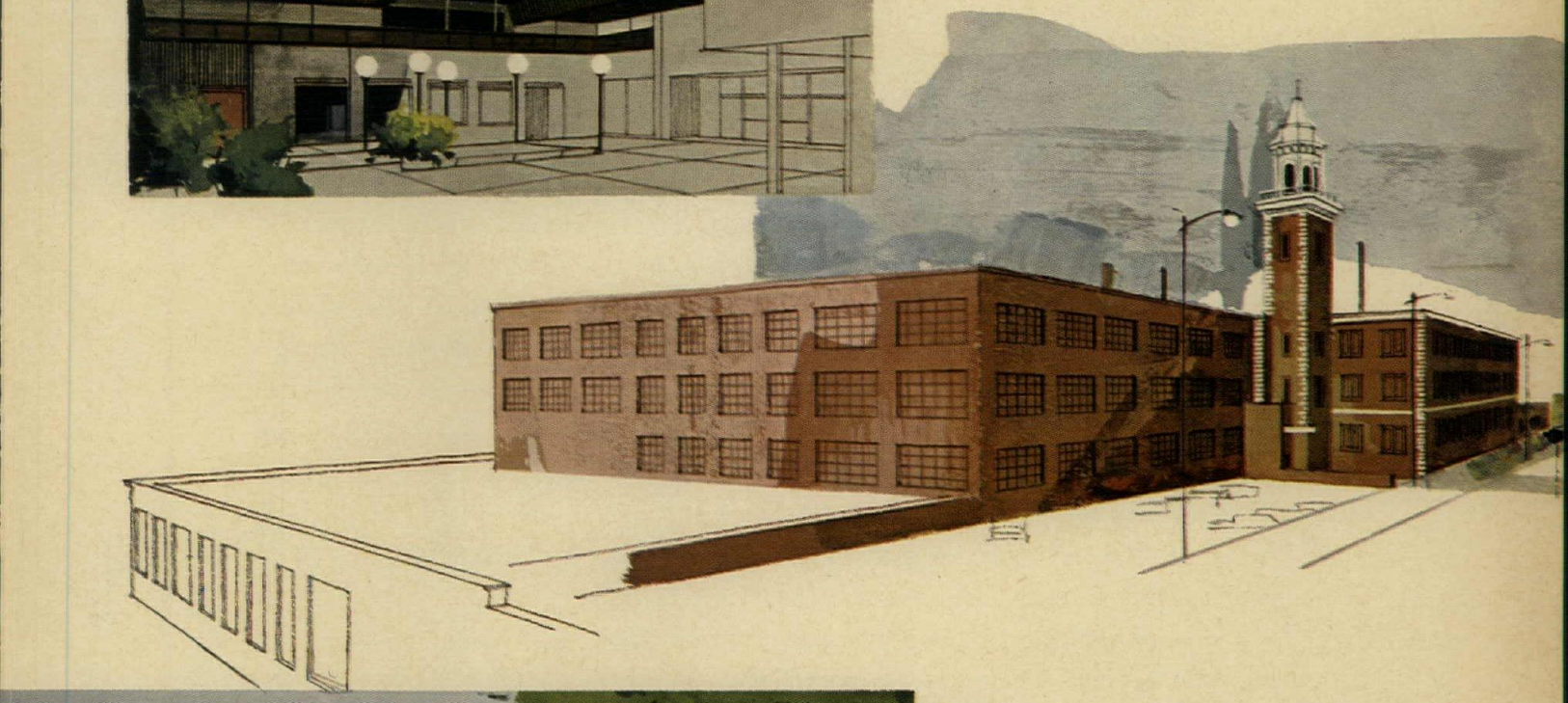
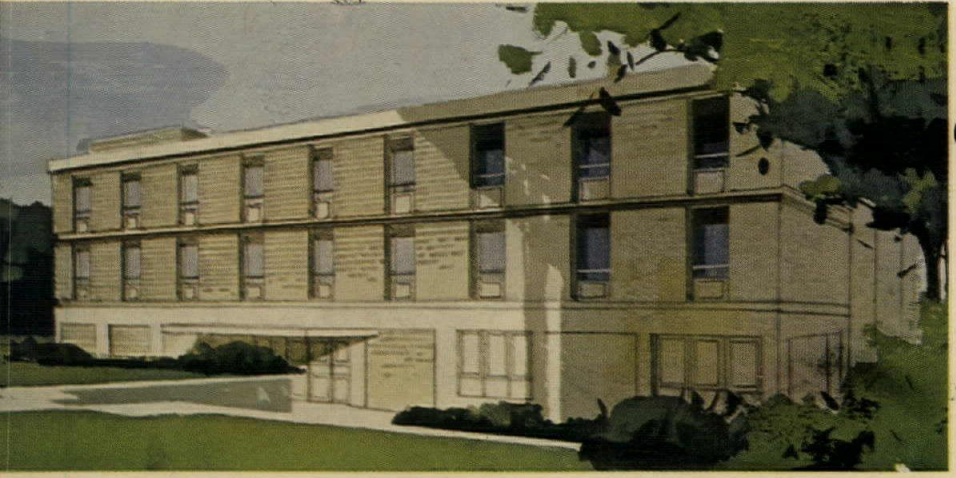

What you do with PPG environmental glasses
is your business.



Lennox modular central systems:





the "micro-climates" concept for any building

For more data, circle 12 on inquiry card

Lennox systems' flexibility protects design freedom, boosts comfort performance, holds cost line

We air condition people in schools, offices, apartments, motels, plants, clinics, shopping centers, homes. And the people problems often can be as complex as the buildings themselves.

For instance: fat people and thin ones. Younger ones and older. Active and quiet. Emotional and calm. Crowded together or apart. Doing all manner of different things . . . at the same moment . . . in the same building. On the sunny side. Or the shady. Hot days or cold. Bright or cloudy. Windy or still.

No wonder that only the most sophisticated air conditioning systems can create the infinite variety of "micro-climates" to meet the people problems. Lennox modular central systems have that sophistication. Whatever the number and size of the "micro-climates" required for your planning, Lennox has the system—or combination of systems—to match.

Examples: the Lennox Direct Multizone System (DMS) for either rooftop or multi-story installation; DMS with dual ducts and mixing damper boxes for an infinite number of "micro-climate" comfort zones. And for single-zone areas, the Lennox GCS3 combination gas-heating/electric-cooling system; Model CHA air conditioning, with add-on heating; and Lennox condensing units combined with coil-blower units.

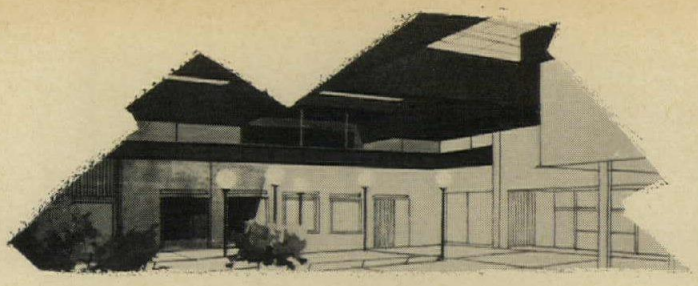
All Lennox multizone and single-zone systems are compatible, and may be combined easily where such requirements exist.

Lennox systems are factory-assembled, wired and tested, including controls. And they offer Lennox single-source responsibility.

Whatever the building you're planning, consider the people problems . . . and the "micro-climate" advantages provided by Lennox modular central systems.

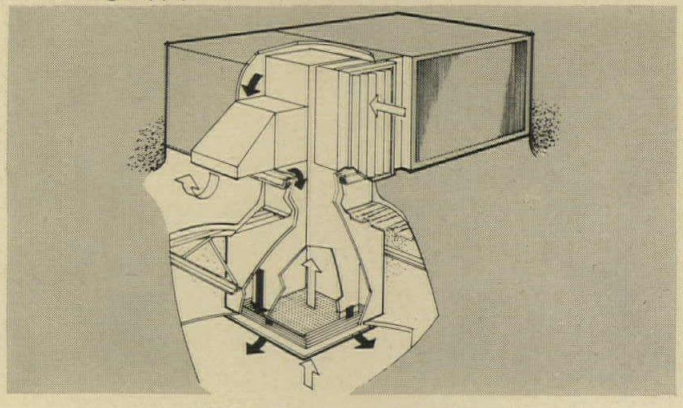
For details, see Sweet's—or write Lennox Industries Inc., 331 South 12th Avenue, Marshalltown, Iowa 50158.

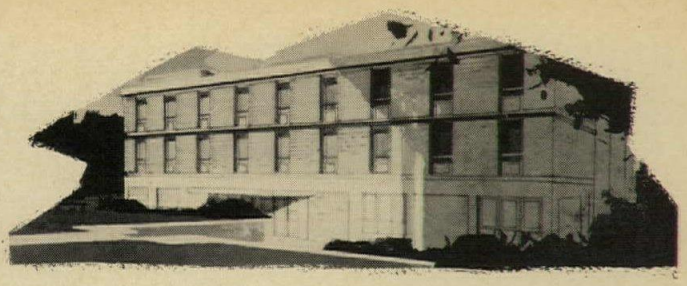
LENNOX®
AIR CONDITIONING • HEATING



Example: This modern shopping center, where single-package Lennox Model CHA rooftop air conditioning units provide "micro-climates" required for the varied comfort control zones. Stores, bakeries, music shops, drugstores, restaurants and malls are among the relatively large, undivided areas with high-occupancy people problems. The versatile, simple-to-install CHA is available in cooling capacities ranging from 25,000 to 273,000 Btuh. Easy to add either electric or gas heating.

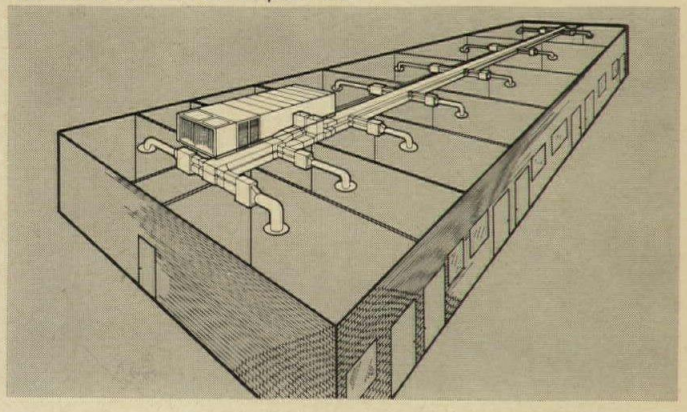
Rooftop unit with POWER SAVER™ fresh air dampers and combination ceiling supply and return air.

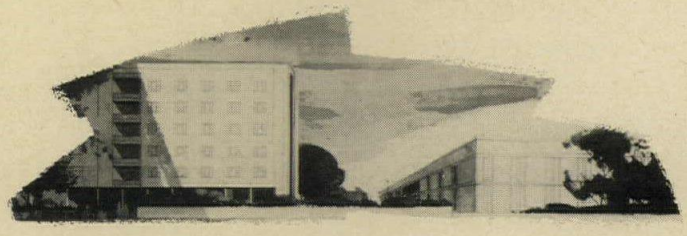




Example: Efficiency in a nurses' dormitory. This entire 3-story building is heated, cooled and ventilated by just two Lennox DMS rooftop units. Use of dual ducts and individual mixing damper boxes make possible a precise individual temperature control—hot-and-cold-running air for 57 separate "micro-climate" zones, including nurses' rooms, lounges and housemother's apartment. The DMS can ventilate with 100% outside air, cools free when that air is below 57°F. And it permits inside walls to be changed —moved, added or eliminated—as needs change.

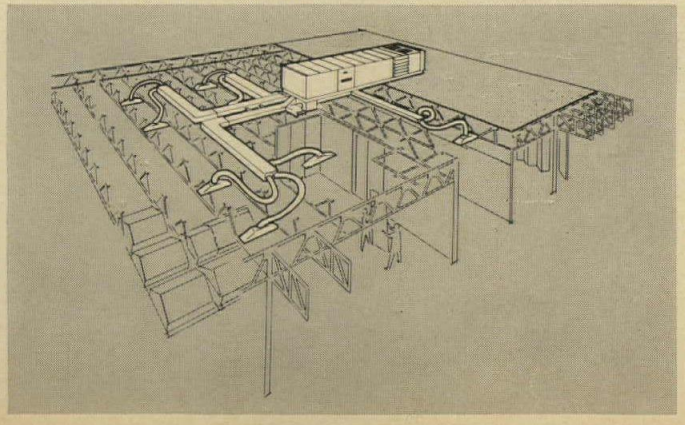
Dual-duct system with Lennox DMS rooftop unit adds to number of individual comfort zones possible.

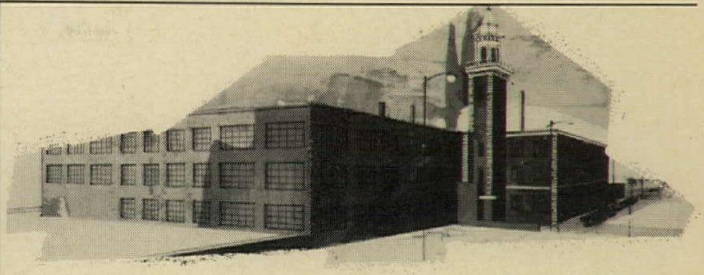




Example: This new junior college, where 20 DMS (Direct Multizone System) units provide comfort for 94 zones of individual temperature control. Here are 409 tons of cooling and 7,000,000 Btuh heating for a 135,000-sq. ft., 208-room area that includes classrooms, lecture halls, laboratories, vocational shops, library and offices. The Lennox DMS can heat some areas while cooling others, with up to 12 "micro-climate" zones per unit. Thermal response is instantaneous, compensating for changes in weather, occupancy or activity.

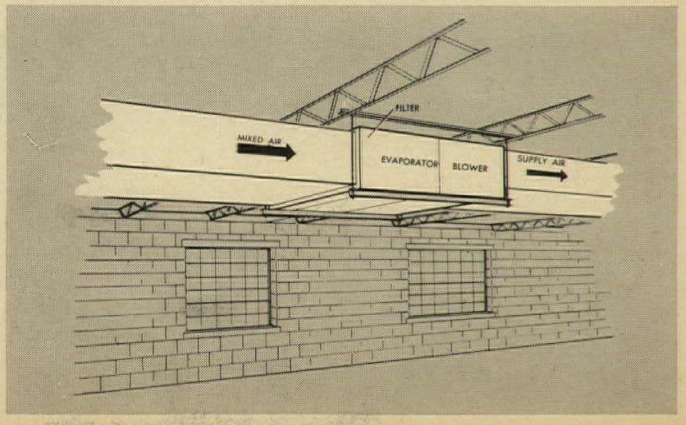
Ceiling distribution system from rooftop unit serves top floor, also can be ducted to floors below.

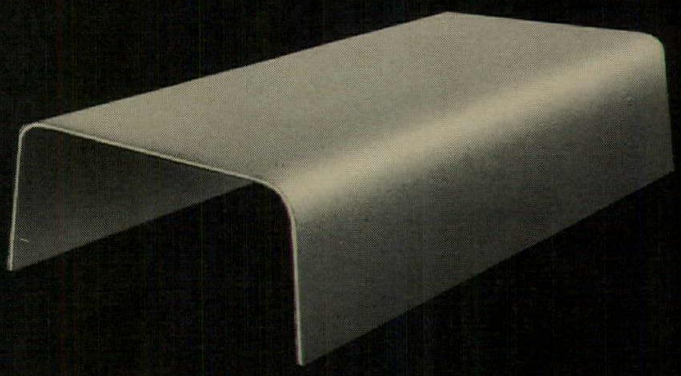




Example: Offices of a large publishing company. Lennox unitary systems—rooftop condensing units coupled with coil-blower units—were chosen as the most efficient means of installing nearly 400 tons of air conditioning for the 600-plus people in this 55-year-old building. Total comfort zones: 23—each served by a separate unitary system. Individual condenser capacities: 7½ to 25 tons. Unitary Lennox systems have definite maintenance advantages over the large central system: servicing is simpler, and affects only a single "micro-climate" zone each time.

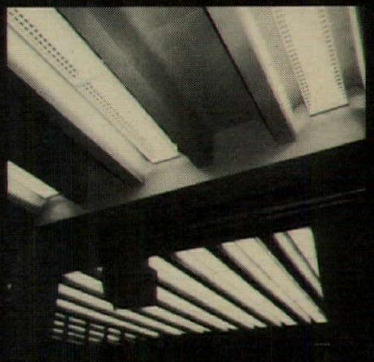
Indoor fan-coil unit is mounted in ductwork and coupled with outdoor condensing unit.

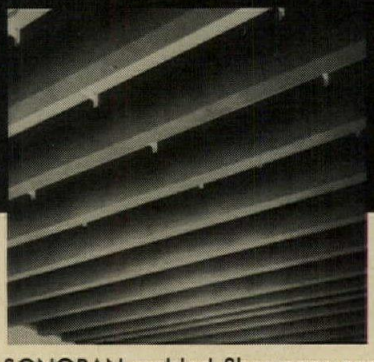


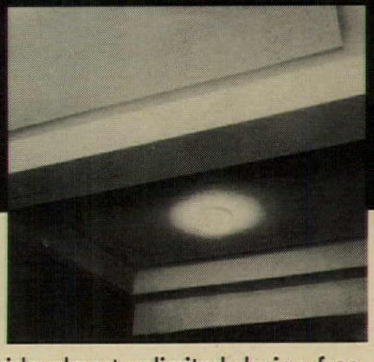


Here is a lightweight Sonopan® Molded Fibre Pan.

Here are some of the things you can do with it.







SONOPAN molded fibre pans provide almost unlimited design freedom. What you see here are only examples of what you can do in concrete joist construction.

In the first place, the pans are available in a wide variety of standard and special sizes — in depths, widths and lengths. This variety means that you can design with new space dimensions and retain the aesthetic qualities desired.

Because of the texture of the material from which the pans are made, you get an acceptable concrete finish which can be left exposed or painted. Dome and tapered pans also available, and all pans are economically priced.

For more details, write for our illustrated brochure.

SONOCO®

SONOCO PRODUCTS COMPANY, Akron, Indiana. Main plant and general offices, Hartsville, South Carolina.

SO 284

For more data, circle 13 on inquiry card

You don't have to specify JAMISON

but if you value VALUE, you will

The value of a Jamison cold storage door goes beyond the degree of excellence of the door itself. Materials, design and workmanship are of unquestioned superiority. But beyond that is the value to you of the technical assistance and engineering help we provide. It is evident in our plant layout sheets, food service layout sheets and architect data sheets. All available without cost. Of great value is our book "How to Select and Specify Doors for Cold Storage Warehouses and Food Processing Plants." (Send for free copy.) And how do you measure the value of experience? Jamison is the most experienced company in the business. No, you don't have to specify JAMISON. But if you value VALUE, you will.

COLD STORAGE DOORS BY
JAMISON
JAMISON DOOR COMPANY · HAGERSTOWN, MD.

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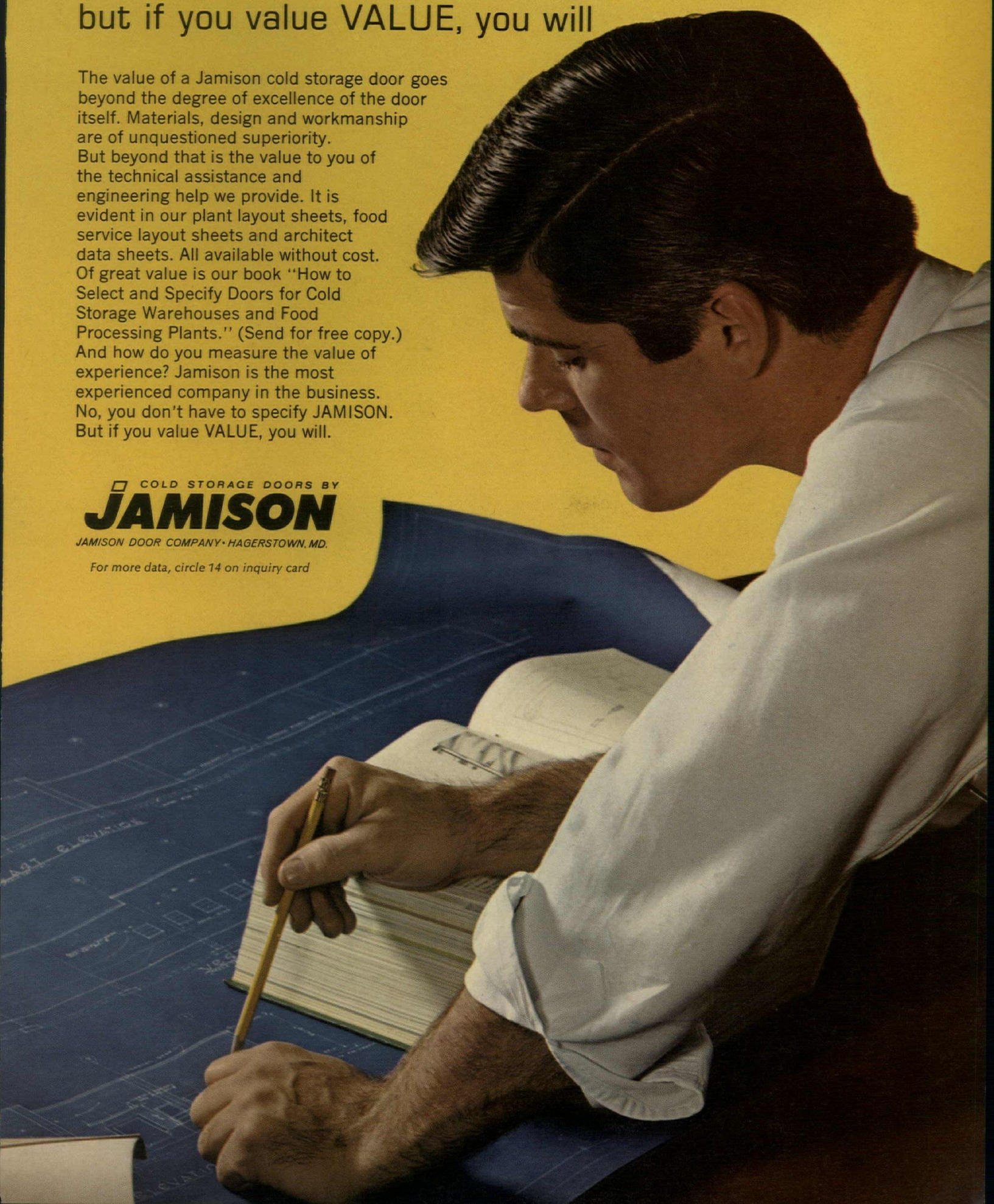

To design the best building possible, start by specifying the best door possible.

Fully transistorized, portable transmitter with color-coded selector, controls up to 8 doors individually by radio control.

To us—and to thousands of quality-conscious architects around the country—that means starting with The "OVERHEAD DOOR".

The reasons are many. You doubtless know most of them. Superior craftsmanship heads the list, probably. You can't specify any door better than The "OVERHEAD DOOR". There aren't any. Then consider the vast selection of doors from which you can choose. Regardless of the kind of building on your drawing board, we have the door or doors that can help make it the ideal design you envision. (It's made even more ideal by the fact that we install and service every door we sell.)

Next, consider that sweetheart of a warranty our distributors offer. Every door carries a full one-year warranty on both parts and workmanship.

And let's not forget those gallant men in the trenches. Our distributors are factory-trained, razor-sharp door specialists who can sit down with you and talk doors like no other man in your community. This holds true wherever you live. Because we have a nationwide network of these experts.

Quality doors and plenty of them, an unbeatable warranty, unquestioned leadership in the door business for nearly half a century, authoritative local advice on any commercial, industrial, or residential specifications—solid reasons all for specifying The "OVERHEAD DOOR". At least we think so.

Talk to your nearby "OVERHEAD DOOR" distributor and you'll think so, too.

He's listed in the *white* pages of your phone book under "OVERHEAD DOOR". Or, look us up in Sweet's File.

Nationwide
Sales • Installation • Service

THE OVERHEAD DOOR
TRADE MARK
SINCE *the original* 1921

OVERHEAD DOOR CORPORATION
General Offices: Dallas, Texas 75202
Manufacturers of The "OVERHEAD DOOR" and electric operators for residential and commercial buildings

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This new school uses Gas Energy for heating, cooling and electric power and saves $1,000 a month.

When the architects designed Catholic Central High School in Greater Muskegon, Michigan, they chose a Gas Total Energy system. The result has been savings estimated at $6,300 on power and heat generation in just six months.

One of the big ways this system saves is in the recovery of by-product heat. Heat from the combustion engines is recovered for absorption cooling, space and water heating. This efficient use of Gas Energy helped make this one of Michigan's most economically built and operated high schools.

Consider Gas Total Energy for your new buildings. Your local Gas Company Sales Engineer can give you more information.

AMERICAN GAS ASSOCIATION, INC.

Gas makes the big difference.

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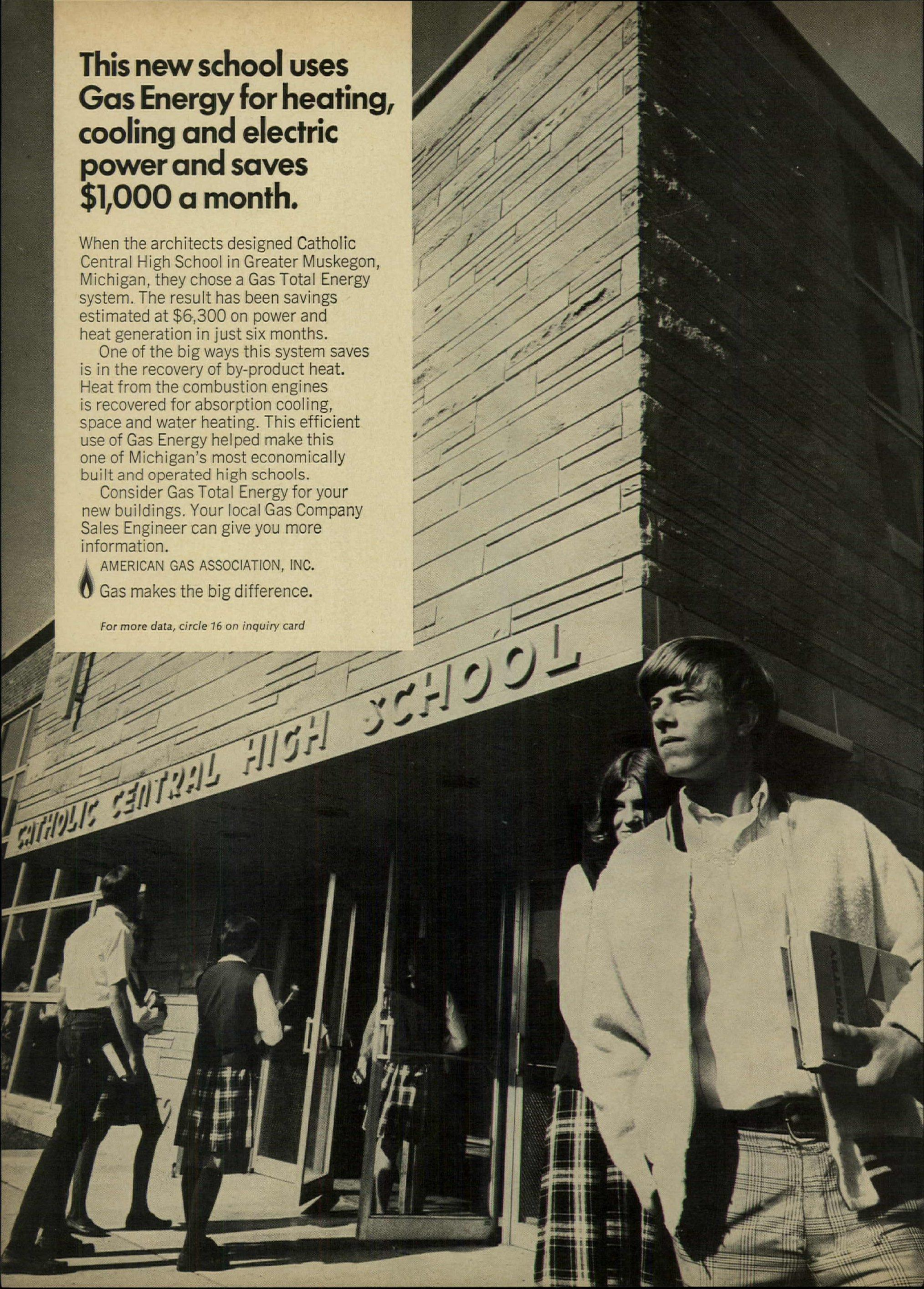

Ready to talk Electric Heat? Talk to an Electrical Contractor.

One reason: the qualified electrical contractor has plenty of experience with electrical heating systems. But that's only part of the story. Electric heat is an electric function and should be the responsibility of an electrical contractor. He's the one man who can furnish, install, connect and inspect electric heating equipment—and see the job all the way through from plans to permit to operating guarantee. So talk to a qualified electrical contractor. Then put the heating specs into the electrical section of your building plan. That way your electric heating system will be furnished and installed by the man able to take single responsibility for the single best heating system.

Your Qualified Electrical Contractor

NECA—National Electrical Contractors Association, 1730 Rhode Island Ave., N.W., Washington, D.C. 20036

. . . and not a student has entered its halls.

Oh, it's well designed. Every possible construction concept, every possible environmental detail, every possible comfort variable was investigated before the plans were completed.

But they took communications for granted. And, especially in a school, if communications aren't the most modern available, the building's obsolete before it's even begun.

Coming are carrels with direct phone access to a resource center. Closed-circuit TV areas. Direct access by teletypewriters to a computer. Theatres that will use multi media to instruct.

Many of these education communications concepts will influence the actual shape of tomorrow's schools.

All will require forethought as to capacity and flexibility.

And that's where a Bell System Architect and Builder Service Representative comes in. He can make your next school—and every building—as modern as modern communications can make it. And insure that communications needs of the future will fit in without expensive alterations.

Just call 212-393-4537 collect. We will send you a complete list of our Architect and Builder Service Representatives.

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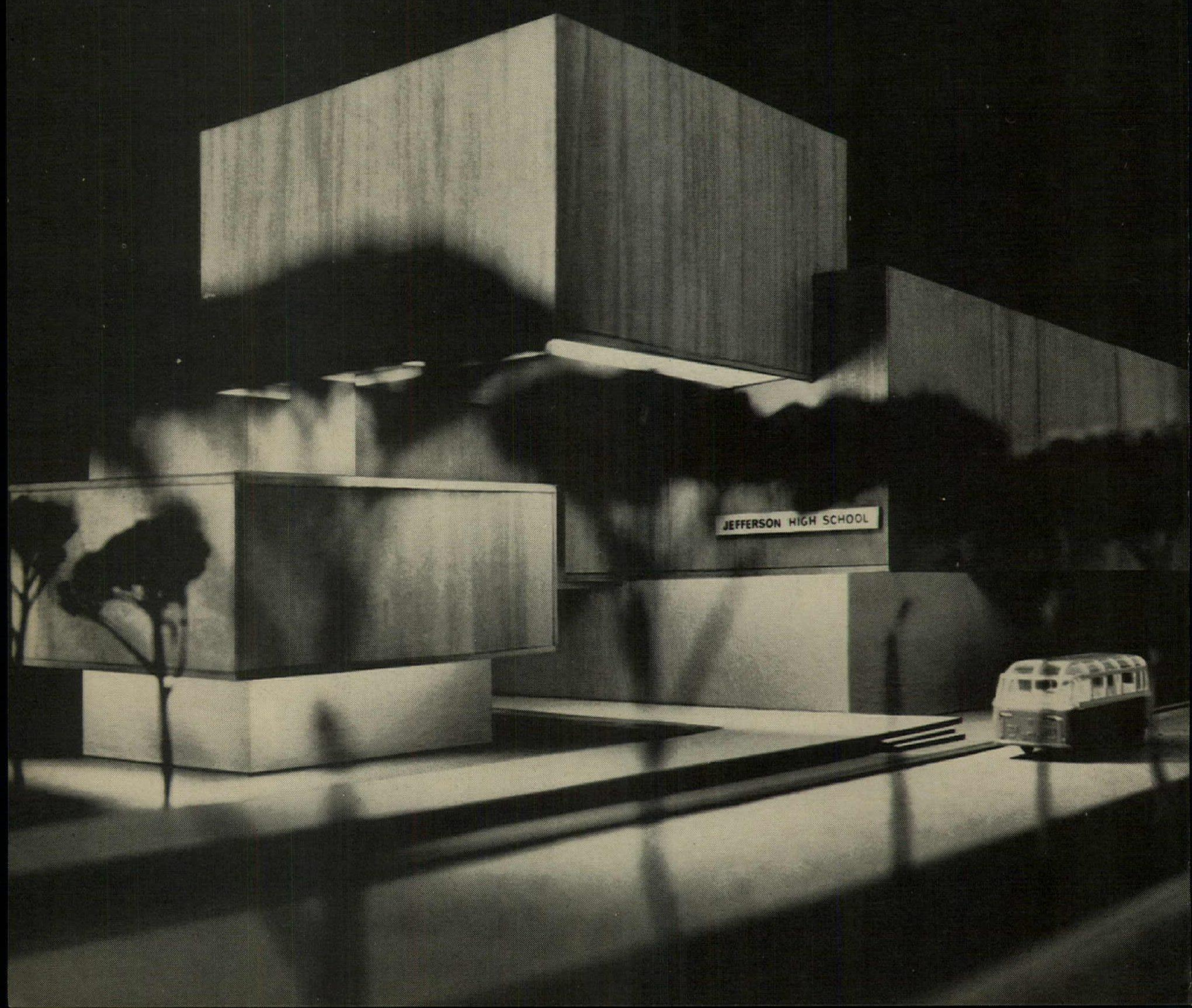
OBSOLETE



Workshops: The theme "Architecture" was discussed in a series of seven panel discussions. Pictured above is the workshop on "Design for Preservation" which included, from left, John Diehl, Princeton, New Jersey, Charles Peterson, Philadelphia, and featured speaker, landscape architect Lawrence Halprin, San Francisco.

Participants in the workshop session "Unwrapping the Package Deal" included, from left, David N. Yerkes, Washington, D.C., Robert L. Durham, Seattle, David F. M. Todd, New York City, moderator, Jack M. Roehm, director of building and construction market planning for Reynolds Metals Company, and Dan Davis, president of Dan Davis Corporation of Portland.

Hawaii session on "Architecture for Leisure and Recreation" included, from left: Alfred Boeke, Oceanic Properties, Inc.; John S. Kay, C. Brewer & Company; Edward Brownlee, sculptor; Kenneth Grant, deputy director, Oahu Development Conference; Walter K. Collins, planner; George F. Wimberly, F.A.I.A., moderator; and architect Thomas H. Creighton, all from Honolulu.

Gold Medalist: Marcel Breuer of New York City receives the Gold Medal, the Institute's highest honor, from A.I.A. President Robert L. Durham. The citation read: "The American Institute of Architects awards the Gold Medal of Honor to Marcel Breuer, F.A.I.A., Architect, Designer, Teacher, Planner, who, through the pursuit of excellence in a broad spectrum of activities, has succeeded in uniting within his person the many disciplines that form our environment: *as an architect,* he has pioneered in diverse fields such as the design of private houses, the design of religious and educational buildings, and the design of public buildings such as the headquarters of UNESCO in Paris and departmental buildings of the United States government in Washington; *as a designer,* especially of furniture, during the past half century he has been a most influential innovator in this country and Europe; *as a teacher,* he has inspired entire generations of architects who came under his influence . . .; *as a planner,* he has made outstanding contributions to development of new communities. . . ."

Keynote speakers: The main speakers at the convention included Whitney M. Young, Jr., executive director, The Urban League, who spoke at the theme session on "Man"; Barbara Ward, English author and economist, who delivered the Fourth Annual Purves Memorial Lecture; and Mrs. Lyndon B. Johnson, whose speech highlighted the theme session on "Nature."

New President: At the annual dinner and dance held in Portland, Oregon, outgoing President Robert L. Durham of Seattle places the President's Medal on his successor, George E. Kassabaum of St. Louis. At left, newly elected First Vice President and President-elect Rex Whitaker Allen and Mrs. Allen of San Francisco are introduced at the gala occasion.

A.I.A. ASSESSES NEW SOCIAL RESPONSIBILITIES

"M.A.N." —for "Man/Architecture/Nature"—was the theme of the 100th annual convention of the American Institute of Architects held in Portland, Oregon, from June 23 to 27, and in Honolulu from June 28 to 29.

George E. Kassabaum of St. Louis succeeded Robert L. Durham of Seattle as president of the Institute, and in the contested elections Rex Whitaker Allen of San Francisco became first vice president and president-elect, Preston M. Bolton of Houston became secretary, and Daniel Schwartzman of New York City, David N. Yerkes of Washington, D.C., and Jules Gregory of Lambertville, New Jersey, became vice presidents. In the single business session, A.I.A. dues for corporate members were, almost without discussion, increased $25, to $75 per year.

The theme "Man" seemed to have the greatest impact on the 3431 Portland registrants and 650 Honolulu registrants —the architect "Man" as private citizen, as public citizen and as professional.

Whitney Young's Challenge

The highlight of the convention was the keynote address at the theme session on "Man," delivered on the first day of the convention by Whitney M. Young, Jr., executive director of The Urban League. Mr. Young's impassioned plea to architects to dedicate themselves to major involvement in the solution of the great public issues of the day moved his audience to a standing ovation at the conclusion of a remarkable, and extemporaneous, address.

As professionals and as citizens, Mr. Young declared, architects have both a great opportunity and a great responsibility to contribute to bridging the gap between the standard of living of the "disinherited" and that of the large majority of Americans.

Mr. Young pointed out that today's disinherited are fully aware of the extent of that gap, and that the urgency of their demands is reinforced by the active sup-

The President's reception was held this year at the convention hotel, the Portland Hilton, immediately following the Investiture of Fellows and Honorary Fellows ceremony on June 24, and therefore turned into a reception in honor of the new Fellows as well. On the receiving line, above from left, were A.I.A. Executive Director William H. Scheick, President-elect George E. Kassabaum and Mrs. Kassabaum, and President Robert L. Durham and Mrs. Durham.

The annual party of the F. W. Dodge Division, McGraw-Hill Information Systems Company, was a gala affair for the entire convention, and was held on the campus of Reed College outside of Portland. In the receiving line, above, were Wallace F. Traendly, president of McGraw-Hill Information Systems Company, Mrs. Traendly, and John L. McGraw, chairman of the board of McGraw-Hill, Inc.

The host chapter party was held at Alderbrook, a private park in the southern part of the state of Washington, about an hour from Portland. Highlights of the event included: various tents containing refreshments as well as contrasting types of musical groups—folk dancers, Hawaiian, country and western, and Dixieland musicians. Other events included a sumptuous outdoor cookout featuring salmon and roast beef, a full complement of bagpipers and dancers, and various athletic events like log rolling, related to the traditions of the lumber country. Chairman of the party was Joseph H. Rudd, Jr.

N.C.A.R.B. incoming officers (standing, from left) Howard T. Blanchard, Garden City, Kansas—president; Dean L. Gustafson, Salt Lake City—first vice president; William J. Geddis, Boston—second vice president; Harry E. Rodman, Troy, New York—secretary; and Daniel Boone, Abilene, Texas—treasurer; and (seated from left) George F. Shatz, Cincinnati—outgoing president; Mrs. George E. Kassabaum, St. Louis; Mrs. Hayden Mims, Washington, D.C.; and Ernest Hara, Honolulu.

port as well as encouragement of their "strong allies"—"the young people of this country and of the world."

Mr. Young charged a pervasive and tacit racism in the history of the nation, a phenomenon which, he said, assumed white superiority. "The crisis is not in our cities, . . ." said Mr. Young, "the crisis is in our hearts, the kind of human beings we are." The key to finding a solution to this crisis, Mr. Young declared, is involvement and active concern by the majority of Americans.

As a profession, Mr. Young challenged architects to take stands on issues. "If you don't as architects stand up and endorse model cities and appropriations, if you don't speak out for the rent supplements or housing bill calling for a million houses, if you don't speak out for some kind of scholarship program that will enable you to consciously and deliberately seek to bring in minority people who have been discriminated against in many cases—either kept out because of your indifference or because they couldn't make it (it takes seven to 10 years to become an architect)—then you will have done a disservice to the memory of John Kennedy, Martin Luther King, Bob Kennedy, and most of all, to yourselves.

"You are part of this society. It is not easy. I am not suggesting the easy road, but the time has come that no longer the kooks and crackpots speak for America. The decent people have to learn to speak up, and you shouldn't have to be the victim to feel for other people. I make no pretense that it is easy."

The architects' response

The architects' response to Whitney Young's challenge was quick in forthcoming. At the business session held the next day, a resolution by the Philadelphia Chapter was passed, applauding and endorsing the general spirit and specific recommendations made by Whitney Young. The resolution further urged "that we not adjourn until, as architects, we take a positive stand and become per-

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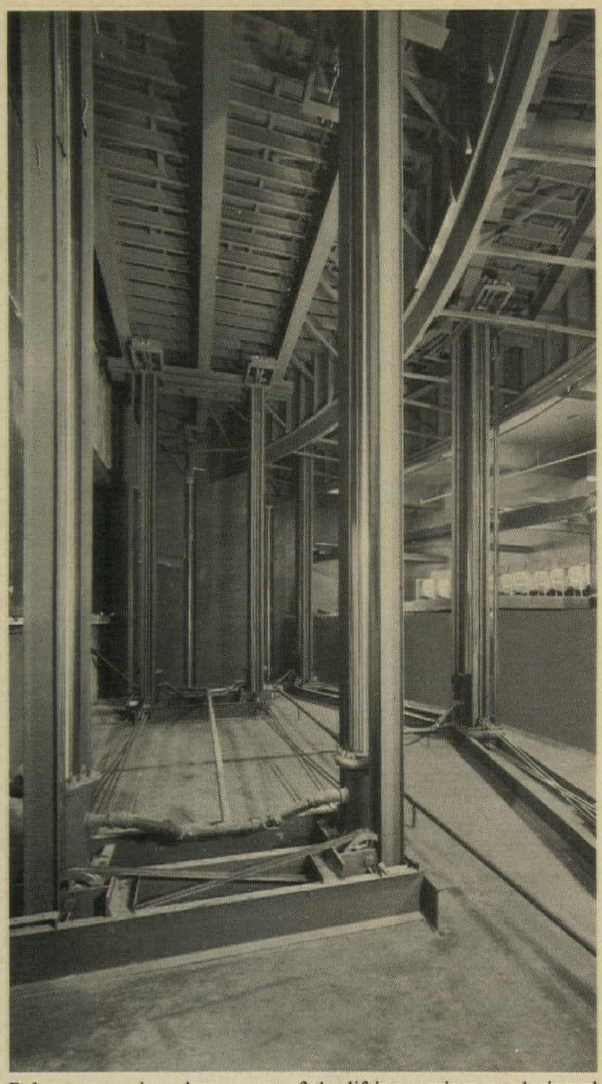

Below-stage view shows part of the lifting equipment designed and built by Dover for the Jesse H. Jones Hall for the Performing Arts, Houston, Texas.

Dover plays the best supporting role in the theater

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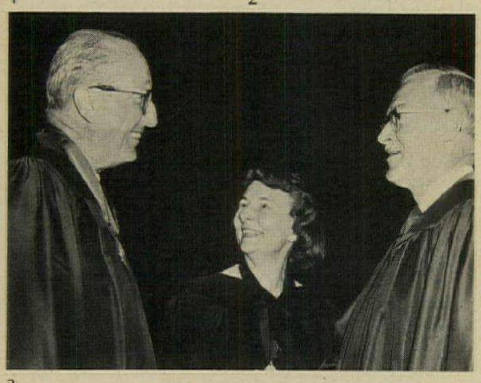

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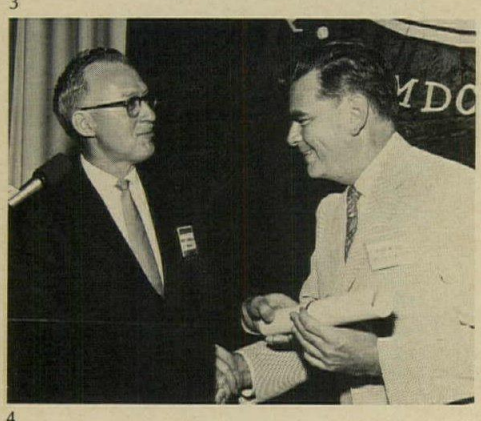

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Among the award recipients were: (1) Industrial Arts Medalist Paul Grotz and Mrs. Grotz of New York City; (2) Mrs. Mabel S. Day, secretary to the Executive Director of the A.I.A., receiving her Honorary Membership from President Robert L. Durham; (3) RECORD Senior Editor Elisabeth Kendall Thompson receiving her fellowship for "Literature" and "Service to the Profession" at the Investiture of Fellows and Honorary Fellows Ceremony, flanked by Norman Schlossman, Chicago, Chancellor of the College of Fellows (left) and President Durham; (4) George McCue, art and urban critic for the St. Louis "Post-Dispatch," receiving the first Architectural Critic's Citation from President Durham. The Architectural Critic's Medal was presented to Lewis Mumford of Amenia, New York, in a pre-convention ceremony in New York City; (5) E. James Gambaro of New York receiving the Edward C. Kemper Award for an "A.I.A. member who has contributed significantly to The Institute and to the profession"; (6) James Reed, assistant staff director of the Community Design Center of the University of California Extension in San Francisco, acknowledging receipt of a $2500 check given by the A.I.A. in the name of Mrs. Johnson; (7) I. M. Pei accepting the 1968 Architectural Firm Award for I. M. Pei & Partners, New York City, from President Durham; (8) Five of Mr. Pei's associates present at the ceremony: (from left) partners Eason H. Leonard, Henry N. Cobb, and Araldo A. Cossuta, and senior associates Werner Wandelmaier and Leonard Jacobson.

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(1) Mr. and Mrs. William Vick and J. A. Gillem of Sacramento; (2) Mr. and Mrs. Harold T. Spitznagel of Sioux Falls, South Dakota; (3) RECORD Senior Editor Mildred F. Schmertz and Benjamin Thompson, Cambridge, Massachusetts; (4) Outgoing Northwest Regional Director Robert B. Martin, Lincoln City, Oregon, East Central Regional Director A. Bailey Ryan, Louisville, Kentucky, Mrs. Sanders, Mrs. Ryan, and new Michigan Regional Director Walter B. Sanders, Ann Arbor; (5) new Vice President Jules Gregory and Mrs. Gregory, Lambertville, New Jersey.

sonally involved in these vital issues of our day; that when we individually return to our particular communities we shall support these principles and programs in our professional commitments and our daily lives."

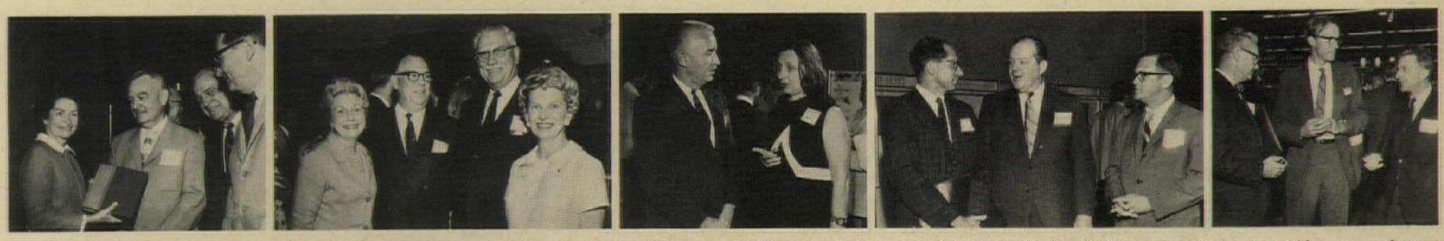
Another resolution, sponsored by the Northern California and East Bay Chapters and passed by the convention, directly responded to one of Mr. Young's challenges by calling for the A.I.A. to establish a national scholarship program to provide scholarships to members of disadvantaged minority groups for the study of architecture. The scholarship program is to be funded by voluntary contributions from A.I.A. chapters and members and from other concerned citizens and organizations.

Other resolutions called for endorsement of the Housing and Urban Development Act of 1968, which has been amended by the House Banking and Currency Committee to recognize the need for Federally-supported housing which will not only be safe and sanitary but which will also improve the quality of life for the inhabitants. A fourth resolution—which called for use of Design Concept Teams, creation of Community Design Centers and use by public authorities of the A.I.A.'s Urban Design Assistance Teams—urged "all architects as citizens and employers to contribute to the improvement of education, job training, and employment opportunities for the disadvantaged as essential to the improvement of the human condition."

President Kassabaum's response

At the same business session, George E. Kassabaum, then president-elect, announced that an interracial task force was being formed to implement Mr. Young's suggestions. The first meeting of the task force was to have been held at the Octagon on July 25. And when Mr. Kassabaum assumed the presidency at the annual dinner on June 26, he once again acknowledged Whitney Young's challenge, and then called for architects

(1) RECORD Publisher Blake Hughes and new Vice President Daniel Schwartzman, New York City; (2) Mr. and Mrs. Paul A. Thiry, Seattle; (3) Alan Y. Taniguchi, director, School of Architecture, University of Texas and John Lyon Reid and Alexander Tarics of San Francisco; (4) William H. Scheick and Marcel Breuer; (5) new Fellow Huson Jackson, Cambridge, Massachusetts, Daniel Schwartzman, and Mrs. Jackson.



(1) Mrs. Johnson receiving the lavishly bound proceedings of the Texas Conference on Natural Beauty held in Austin in November 1966, with Philip D. Creer, Austin, Texas, Regional Director George F. Harrell, Dallas, and new Fellow R. Gommel Roessner, Austin; (2) Past A.I.A. Presidents J. Roy Carroll, Jr. and Mrs. Carroll, Philadelphia, and Leon Chatelain, Jr., and Mrs. Chatelain, Washington, D.C.; (3) Treasurer Dean F. Hilfinger and Mrs. Hilfinger, Bloomington, Illinois; (4) Al Sayler, Gene Cunningham and Thomas A. Flesher, all from Oklahoma City; (5) Charles MacMahon, Bloomfield Hills, Michigan, Edward V. Olencki, Ann Arbor, and Mark J. Jaroszewicz, Bloomfield Hills.

(1) Mrs. Johnson, Robert L. Durham, and Walter F. Wagner, Jr., of the RECORD; (2) Honorary Member J. Winfield Rankin, administrator, A.I.A. Institute Services, and Margaret Huelskamp, "Queen of Rosaria", Portland, Oregon; (3) DeVon M. Carlson, dean, School of Architecture, University of Colorado, and Harold C. Rose, dean, Professional Schools, Montana State University; (4) New England Regional Director Philip W. Bourne, Boston, and Thorne Sherwood, Stamford, Connecticut; (5) George Hellmuth and Mr. and Mrs. E. G. Hamilton, Dallas.

(1) A.I.A. staff members Neal English, director, Information Services, Assistant Director Mary M. Grant, and M. Elliott Carroll, administrator, Public Services; (2) Mrs. Hauf, Kenneth A. Smith, dean, School of Architecture, Columbia University, and new Fellow Harold D. Hauf, Los Angeles; (3) RECORD Assistant Editor John S. Margolies and Knox Griffin, Atlanta; (4) Donald Q. Faragher, Rochester, New York, Walter B. Sanders, and Charles DuBose, Hartford; (5) Mr. and Mrs. George E. Kassabaum with his parents, Mr. and Mrs. George A. Kassabaum, Atchison, Kansas.

to re-examine their professionalism. Mr. Kassabaum said the primary concern of a professional must always remain the best interest of the public. "Therefore, as our environment faces rebuilding, we must quickly determine the architect's proper role."

To make sure that tomorrow will be better if the architect is on the spot when basic decisions are made, said Mr. Kassabaum, ". . . you and I and the A.I.A. must find the time and make the effort to become more involved in the world beyond architecture so that we can influence the thinking that will determine the development of tomorrow's physical environment. . . .

"We have reached a point in history when an efficient staff, dedicated officers and a hard-working Board is no longer enough. More effort across the land is absolutely essential. What will count is what each architect is willing to do this year that he didn't *want* to do last year."

Allen becomes president-elect

Rex Whitaker Allen defeated H. Samuel Krusé of Miami in the election contest for the office of first vice president and president elect. In another contested election, three vice presidents were selected for one-year terms from a field of five nominees. The new vice presidents are Daniel Schwartzman, David N. Yerkes, and Jules Gregory, defeating Leslie N. Boney, Jr. of Wilmington, North Carolina, and Robert G. Cerny of Minneapolis. In a three-way contest for secretary, Preston M. Bolton was elected for a two-year term over Jeffrey Ellis Aronin of New York City, and G. Harold W. Haag of Jenkintown, Pennsylvania. Dean F. Hilfinger of Bloomington, Illinois, continues his two-year term as treasurer.

Six new regional directors were unanimously elected: Robert R. Cueman of Summit—*New Jersey;* S. Scott Ferebee, Jr. of Charlotte, North Carolina—*South Atlantic;* Milton R. Grigg of Charlottesville, Virginia—*Middle Atlantic;*

(1) Charles P. Graves, dean, School of Architecture, University of Kentucky, Gerald M. McCue, chairman, Department of Architecture, College of Environmental Design, University of California, Berkeley, and Philip J. Daniel, Los Angeles; (2) Edward C. Mathes, president of the Association of Student Chapters, A.I.A., from the University of Southwestern Louisiana, and Mrs. Mathes; (3) George F. Hellmuth, St. Louis, Past Presidents Henry L. Wright, Los Angeles, and Arthur Gould Odell, Jr., and Robert Elkington, St. Louis; (4) New Secretary Preston M. Bolton and Mrs. Bolton, Houston; (5) Mrs. Johnson and President Durham greeting Honorary Fellows Rafael Norma and Hilario Galguera, both from Mexico City.

(1) Glenn Fowler, Real Estate Editor, The New York Times, Walter F. Wagner, Jr., and Honorary Member Ernest Mickel, industry consultant to the RECORD; (2) Robert B. Martin and outgoing South Atlantic Regional Director Bernard B. Rothschild, Atlanta; (3) Richard Kidwell, secretary-treasurer of the Association of Student Chapters, from Arizona State University, and Raymond L. Gaio, director of A.I.A. State, Chapter and Student Affairs; (4) Robert Bliss, president, Association of Collegiate Schools of Architecture, and Mrs. Bliss, Salt Lake City; (5) Florida Regional Director H. Samuel Kruse, Mr. and Mrs. Robert G. Cerny, Minneapolis, and North Central Regional Director Joseph H. Flad and Mrs. Flad, Madison, Wis.

(1) Past President John Noble Richards and Mrs. Richards, Toledo, Ohio; (2) Mr. and Mrs. Linn Smith, Birmingham, Michigan; (3) Robert L. Durham, Secretary of Agriculture Orville L. Freeman, panelist in theme session on "Nature", William H. Scheick, and George E. Kassabaum; (4) H. Griffith Edwards and John Portman of Atlanta; (5) R. A. Zambrand and President-elect Rex Whitaker Allen of San Francisco.

(1) Charles W. Moore, chairman, Department of Architecture, Yale University, and Mr. and Mrs. William Turnbull, San Francisco; (2) Mr. and Mrs. George F. Harrell and A.I.A. Executive Director William H. Scheick; (3) Western Mountain Regional Director Sidney W. Little and Mrs. Little, Tucson, Arizona; (4) New Vice President David N. Yerkes, Washington, D.C., and Mr. and Mrs. Samuel E. Homsey, Wilmington, Delaware; (5) O. Jack Mitchell, Houston, and E. Keith McPheeters, dean, School of Architecture, Rensselaer Polytechnic Institute.

Walter B. Sanders of Ann Arbor—*Michigan;* Arch R. Winter of Mobile, Alabama —*Gulf States;* and John L. Wright of Seattle—*Northwest.*

Honor Awards were presented to the architects of 20 buildings (June, pages 40-43) at a luncheon on June 24. Other awards which were presented at, before, or after the convention (and previously reported in the RECORD) included: the Gold Medal to Marcel Breuer of New York City; 76 Fellowships; six Honorary Memberships; 10 Honorary Fellowships; five medals to practitioners in the allied arts; the 1968 Citation of Honor; the new Architectural Critic's Medal and Citation; the Architectural Firm Award; the Citation of an Organization; and the Edward C. Kemper Award.

Peace at the business session

In a single, elongated business session (instead of the usual two sessions) amiability and agreement prevailed. A series of 12 resolutions was passed, while a resolution calling for implementation of the A.I.A.'s "Study of Education for Environmental Design," prepared by Dean Robert Geddes and Bernard Spring of the School of Architecture at Princeton University, was tabled. It was argued that approval was premature, since A.I.A. members generally had not had an opportunity to study the report, and since some reservations about the report had been expressed in a resolution passed by the Association of Collegiate Schools of Architecture at its convention just preceding the A.I.A. Convention.

The approved resolutions:

- supported passage of the Federal Fine Arts and Architecture Act.
- supported the Georgetown Planning Council, Washington, D.C., in its efforts to develop its waterfront in character with the rest of the district.
- opposed provisions of the Federal-Aid Highway Act that would allow construction of highways without public hearings and would permit construction in parks if there were no "feasible" alternative.

Photographs by: Art Center Studio, Convention Photographers Northwest, Allan J. de Lay, Graphic Pictures Hawaii, Inc., and John Samuel Margolies.

(1) Mrs. Tuchman and Ohio Regional Director Joseph Tuchman, Akron, and Past President Arthur Gould Odell, Jr. (with special A.I.A. citation for his work as chairman, President's Potomac Planning Task Force) and Mrs. Odell, Charlotte, North Carolina; (2) Harry M. Griffin, Daytona Beach, Florida, and Frank H. Fisher, Kansas City, Missouri; (3) Past President Morris Ketchum, Jr., and Mrs. Ketchum, New York City, and Marcel Breuer; (4) Rex Whitaker Allen and RECORD Editor Walter F. Wagner, Jr.; (5) Clyde Dorsett, Bethesda, Maryland, Bill N. Lacy, dean, School of Architecture, University of Tennessee, and E. Fay Jones, chairman, Department of Architecture, University of Arkansas.

(1) William Bain, Jr., Seattle, outgoing Michigan Regional Director Philip J. Meathe, Grosse Pointe, conservationist Marvin B. Durning, panelist in "Nature" theme session, new Northwest Regional Director John L. Wright, Seattle, and Mrs. Durning; (2) Honorary Member Melton Ferris and George A. Dudley, New York City; (3) Robert F. Hastings and Mrs. Libby Kaye, official stenographic reporter for every A.I.A. convention (except one) since 1935, from Haddam, Connecticut; (4) Past President Glenn Stanton, Portland, Oregon, and David L. Eggers, New York City; (5) Honorary Fellow Hector Mestre and Juan Von Bertrab, both from Mexico City, and George T. Rockrise, San Francisco.

(1) Mr. and Mrs. Marcel Breuer and Mr. and Mrs. Max O. Urbahn; (2) Arthur Rigolo, Clifton, New Jersey, and Eugene De Martin, Nutley, New Jersey; (3) H. Curtis Finch, vice chairman, and David A. Pugh, general chairman of Portland convention; (4) James M. Hunter, Boulder, Colorado, and William S. Kinne, Jr., Madison, Wisconsin; (5) RECORD Senior Editors Herbert L. Smith, Jr. and Elisabeth Kendall Thompson.

(1) New York Regional Director Max O. Urbahn, New York City, Walter F. Wagner, Jr., and Robert F. Hastings, Detroit; (2) Sidney L. Katz, New York City, and Mr. and Mrs. Donald F. Burr, Tacoma, Washington; (3) Paul Blanton and Charles G. Bartell of Moscow, Idaho; (4) George J. Hasslein, head, Department of Architecture/Architectural Engineering, California State Polytechnic College, and Claude Stoller, San Francisco, founder of the Community Design Center (see page 40); (5) I. M. Pei, New York City, and RECORD Managing Editor Jeanne Davern.

- urged Congress to create a National Transportation Fund for programs using, where appropriate, a variety of transportation modes.
- urged Congress to aid development of complete communities or new towns by giving financial incentives to these developers for inclusion of community amenities as "public works".

Still another resolution called upon Presidential candidates to present as part of their election platforms programs pertaining to programs of research and action to improve our cities, transportation, land conservation programs, and development of the nation's natural and urban environment.

In addition to the bylaw change increasing dues, a second bylaw was passed which will permit interested chapters to establish a classification of professional affiliate (including engineers, planners, landscape architects, and other artists and professionals related to the practice of architecture), an issue argued and opposed at many conventions and tabled at last year's convention. A third bylaw change pertaining to contingency and ethics was not acted upon at that time at the suggestion of the Executive Committee of the Board, because of the fact that the A.I.A., various engineering societies, planners and landscape architects are in the midst of a major effort to coordinate and interrelate their ethical standards.

Other theme sessions

The theme session on "Nature" was highlighted by an address by Mrs. Lyndon Baines Johnson: the First Lady delivered the first B. Y. Morrison Lecture, sponsored by the Department of Agriculture's Research Service "to recognize and encourage outstanding accomplishments in the science and practice of ornamental horticulture." The theme sessions on "Architecture" were a series of seven workshops (May, page 35). The Purves Memorial Lecture was given by English author and economist Barbara Ward.

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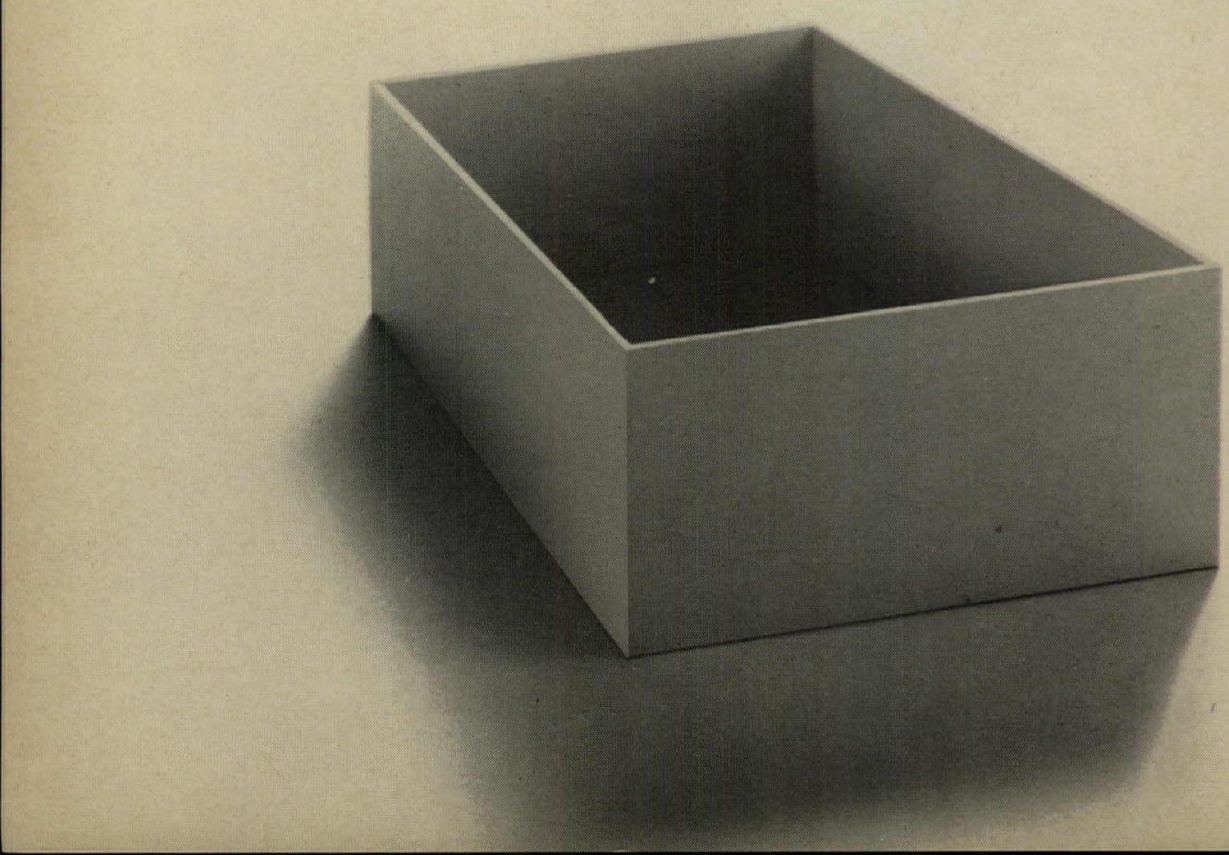

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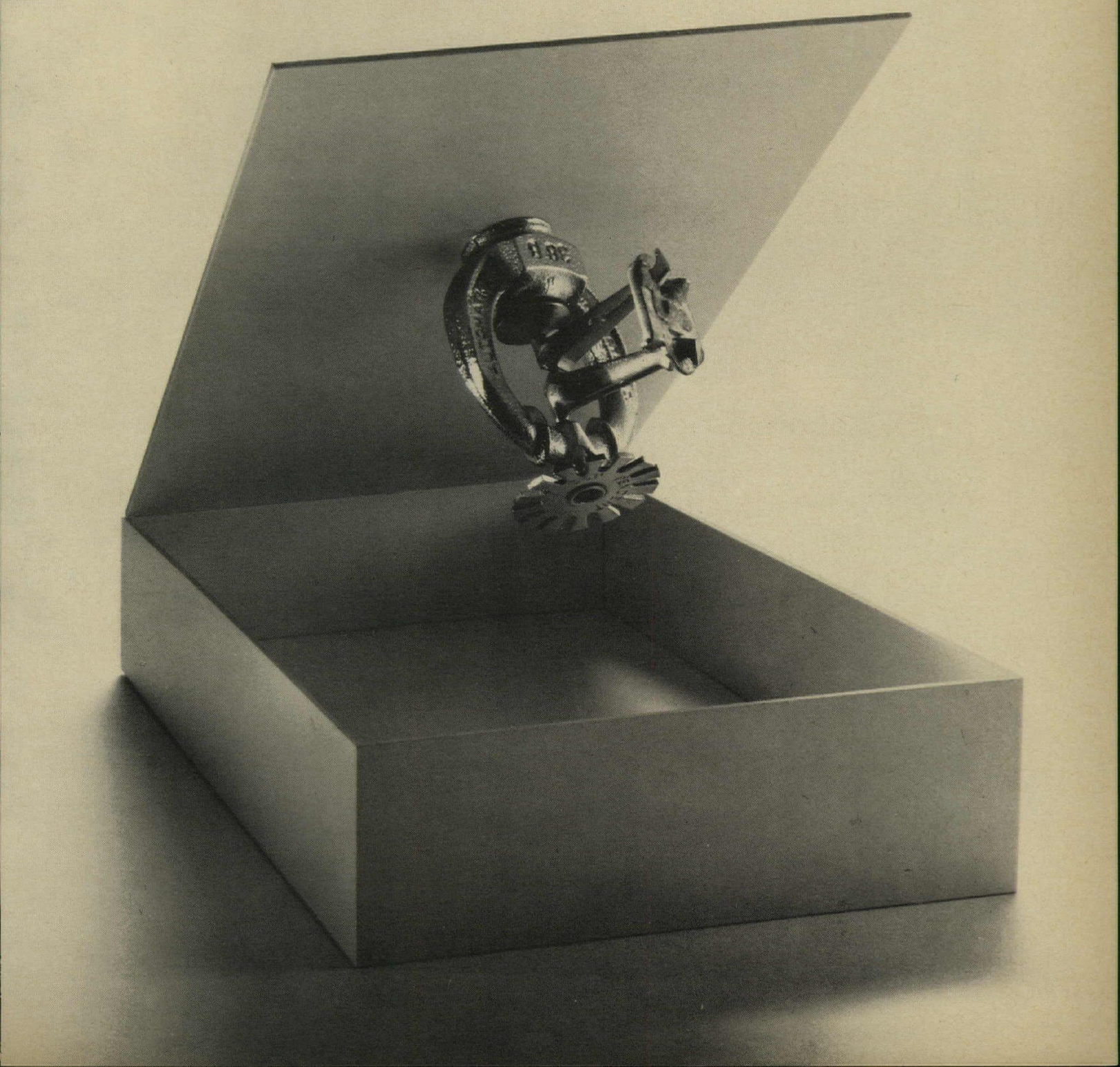
The National Building Code: (SEC. 401.3) "When a building is equipped with an approved automatic sprinkler, the floor area limits for any story may be increased by 200 per cent; where the average height to the roof, or to a fire retardant ceiling does not exceed 25 feet in a one story building, the floor area limits may be increased by 300 per cent."

The Southern Standard Building Code: (SEC. 403.6) "The maximum allowable floor and attic area may be increased by 200% for one story buildings, and by 100% for buildings over one story in height if the building is provided with automatic sprinklers throughout."

The Basic Building Code: (SEC. 308.2) "When a building of low hazard or moderate hazard storage, or mercantile, industrial, business or assembly (use group F-4) use group is equipped with an approved one-source automatic sprinkler system, unless such sprinkler system is required by the provisions of article 4 or article 12 for structures of special use and occupancy, the tabular areas may be increased by two hundred (200) per cent for one (1) story buildings and one hundred (100) per cent for buildings more than one (1) story in height."

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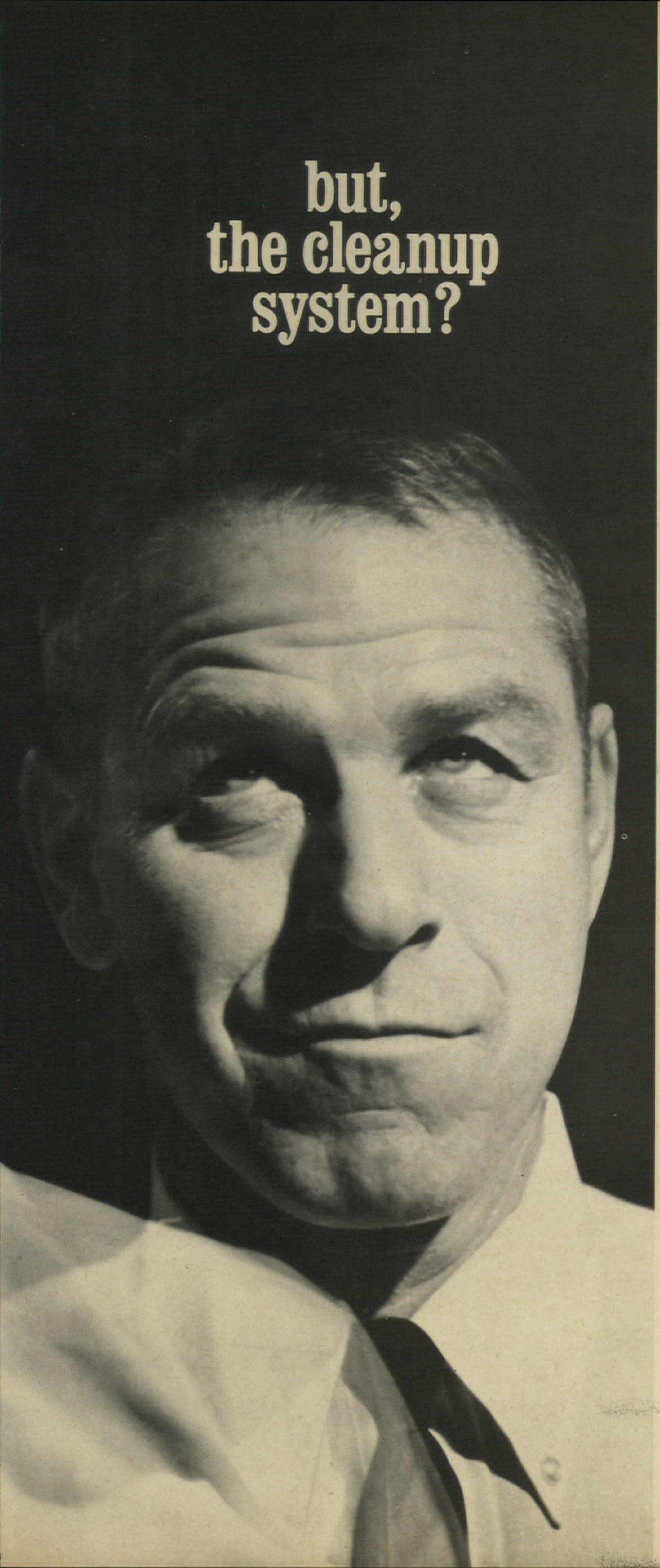

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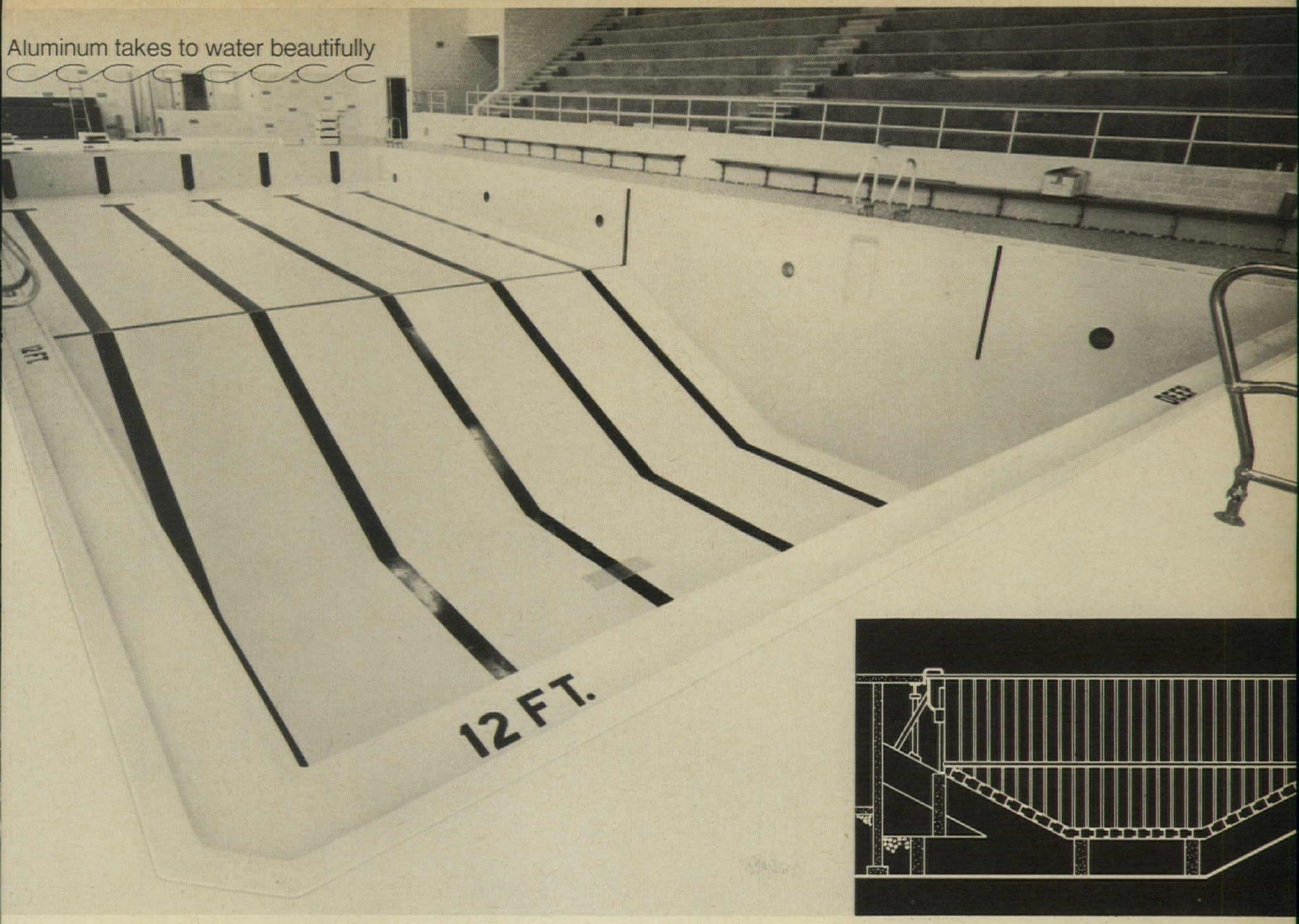

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LETTERS

"A far better stage"

It is my feeling that the architect's responsibility and efforts should be devoted to finding solutions on a socio-aesthetic scale, which means updating the definition of the architect. The special report on the urban crisis is important and appropriate. It is a picture of the challenging world which will offer the architect a far better stage than he ever has had from which to display his talents. If the profession does not accept this premise, architecture will truly become another minor art form.

I hope that this is the beginning of a continuing trend for the RECORD. Without it, you and your audience will not be with it.

Rolf Myller, A.I.A.
New York City

Good, but hazardous, design?

Your April 1968 issue, page 36, contains a number of projects which have been awarded citations for "excellence in design" at the annual banquet of the Hawaii Chapter, A.I.A. One of the projects is an infirmary of the Good Shepherd Girl's Town, Hannella. An imposing part of the illustration is a stairway in the foreground having a rise of 15 steps. The conspicuous absence of stair railings, especially on the lower flight which is exposed on both sides, was apparently a contributing factor to the "excellence in design."

Much ado has been made recently about "architectural barriers." Inasmuch as this building is an infirmary, could it be that the exterior stairway is intended to convert non-handicapped people into prospective patients, or is the inclusion of hazard considered to be a necessary adjunct of good design?

Arthur Deimel, A.I.A.
Department of Health, Education, and Welfare

Performance design, of course!

We are currently hearing of performance design, systems analysis, value engineering, etc. as though they are new discoveries—never before encountered by the wooly-headed architect. If my interpretation of Webster's is correct, these terms are bright, shiny ways of saying the solution of an architectural problem should evolve from orderly analysis, research and programming. So what's new? With the exception of the geniuses of sales and artistry, we were weaned on performance design and have been practicing it ever since. Admittedly, any number of circumstances comprise our efforts, but the approach is the same

more letters on page 64

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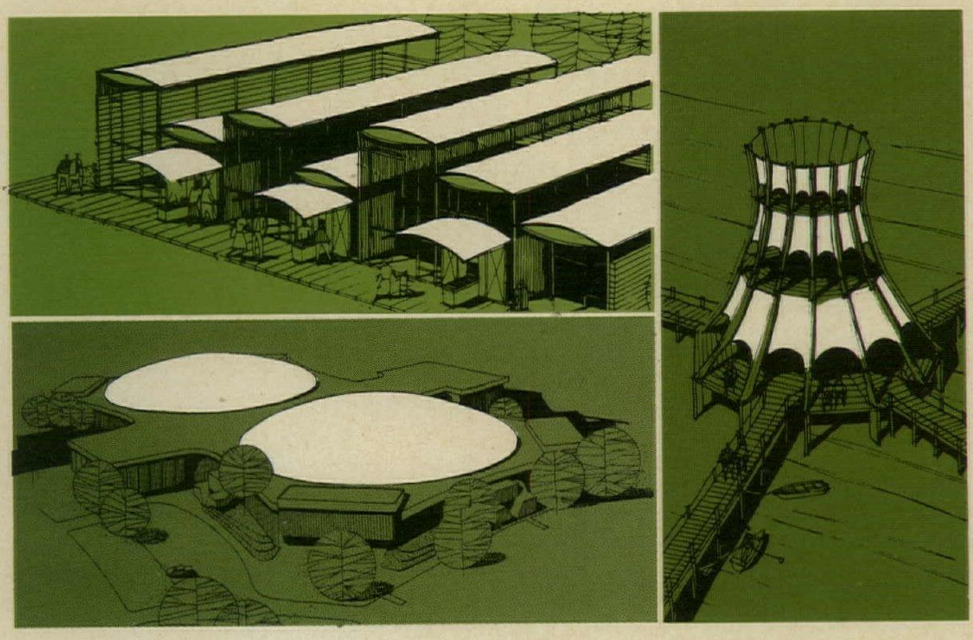

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Design flexibility is inherent in Barrett Chem-Ply — a true one-ply system. The roofing sheet is made of heavy-duty chlorinated polyethylene reinforced with glass fiber and laminated to flexible urethane foam. It follows any line you can draw — can be applied to any roof shape or slope from dead level to vertical.

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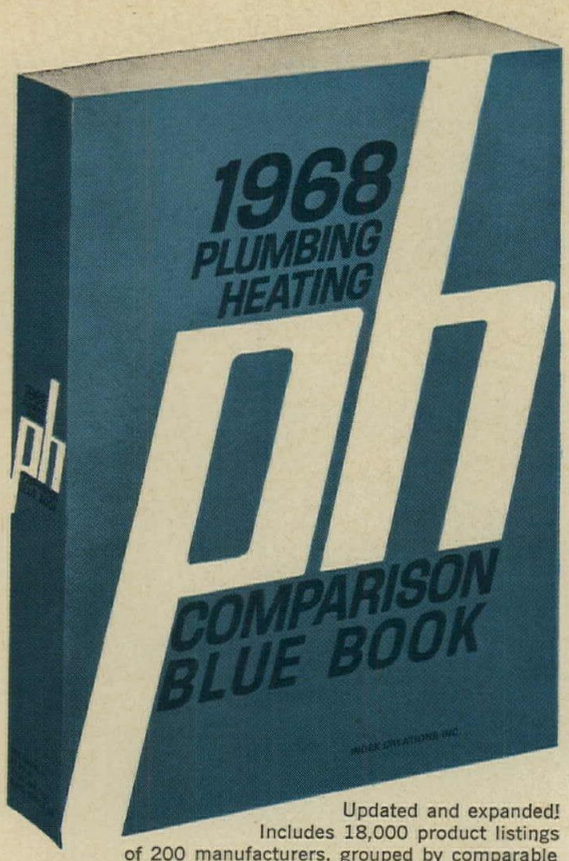
BUILDING PRODUCTS

CONTRIBUTING TO THE PROGRESS OF MAN THE BUILDER

THE CELOTEX CORPORATION
1500 North Dale Mabry • Tampa, Florida 33607
Subsidiary of Jim Walter Corporation

*Trademark

For more data, circle 32 on inquiry card



Updated and expanded!
Includes 18,000 product listings of 200 manufacturers, grouped by comparable specifications (accepted equals) in 34 product categories.

"Saved us two days in writing specs!"

The new Blue Book, developed for engineers, architects, designers and government officials combines both plumbing and heating in one convenient cross-reference guide. Acclaimed nation wide as the industry's authoritative source of product comparison data, the Blue Book is a money maker for any firm writing mechanical specifications.

For example, an architect-engineer firm recently wrote us: "We use at least three names as well as numbers in our specifications. Your 1967 manuals saved us over two days in writing the specifications for one job!"

New this year: 16,000 updated listings; 2,000 new listings; AGA, IBR and other accepted ratings; ASTM pipe specs, size and weight charts, and briefs of government specifications.

Order the Blue Book now and eliminate paging through dozens of individual catalogs. Single copy $20; two for $35; four for $50; quantity prices on request.

Satisfaction guaranteed or your money back!

INDEX CREATIONS, INC. AR
P. O. Box 110
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Send _____ copy(ies) of 1968 Blue Book on 10 day trial.

Check enclosed ____ (You pay postage). Bill me ____ (I pay postage)

Name _____ Title _____

Company _____

Address _____

City, State, Zip Code _____

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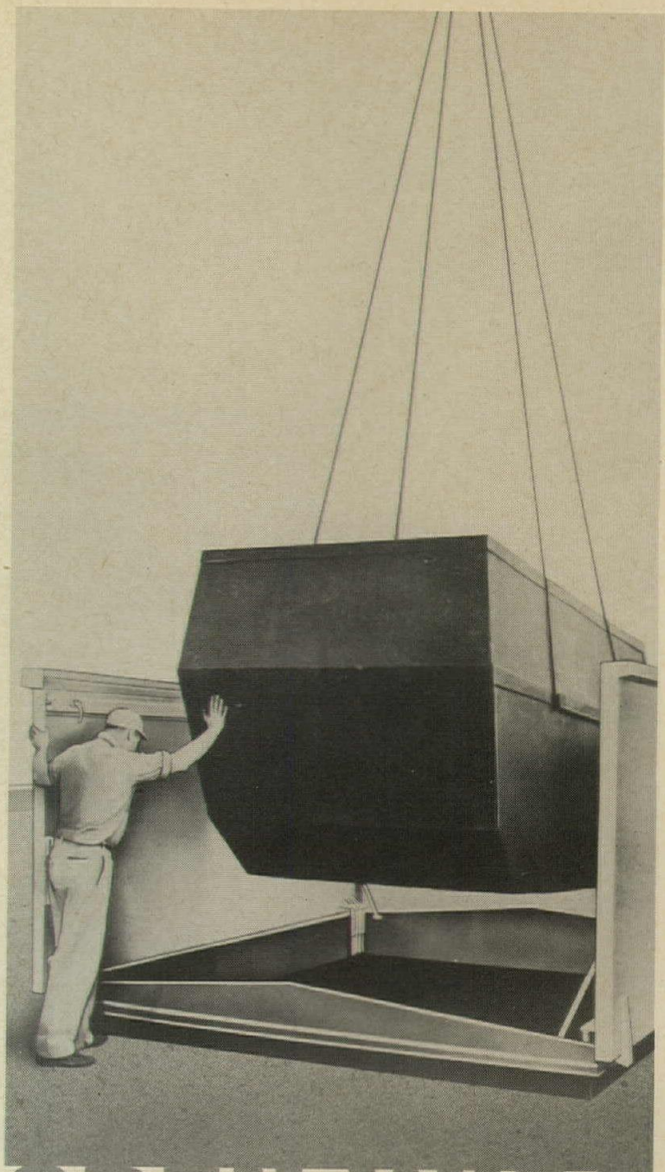
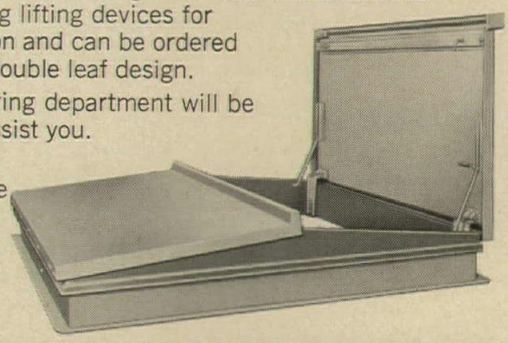


OPEN WIDE

There's no need to design "wider than necessary" corridors, elevators or stair towers to accommodate extra-wide equipment for top floors of buildings. Bilco Roof Scuttles can be made in large sizes to provide the necessary access for installation of heavy, bulky items through the roof. These scuttles feature spring lifting devices for easy operation and can be ordered in single or double leaf design.

Our engineering department will be pleased to assist you.

Complete data available on request.



Bilco® THE FINEST IN ROOF SCUTTLES

THE BILCO COMPANY Dept. A-338, New Haven, Conn. 06505

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Stone on plywood

Factory-finished for quick installation

■ You can install Sanspray stone-on-plywood panels at about the cost of ordinary frame construction! And use less material! Sanspray panels combine the benefits of plywood construction with the beauty, the lasting value of natural stone. ■ Saw it, nail it into place . . . and all of a sudden, in a matter of minutes, 32 sq. ft. of beautiful stone-on-plywood finished wall is up. Who needs subcontractors? (You don't; not with Sanspray.) ■ Sanspray panels are ready for use as siding, roofing, soffits, spandrels, interior walls, porch and house skirting, decorative fencing, and even for decking. Practically unlimited uses . . . commercial, residential, industrial. ■ And the results last. Sanspray panels are completely weatherproof. (What's more, they can be installed in any weather—no costly delays!) The epoxy-sealed stone surface requires no painting, no maintenance . . . ever. ■ Sanspray is available in six attractive natural aggregate colors and textures. ■ Like to know more? Return the coupon.

Sanspray INDUSTRIES, INC.

515 Madison Avenue / New York, N.Y. 10022 AR

☐ Have Representative call with samples.

☐ Send me the facts on Sanspray stone-on-plywood panels.

I am considering Sanspray for the following:

☐ Residential ☐ Commercial

☐ Industrial ☐ Other _____

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Firm _____

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DFPA QUALIFIED FOR EXTERIOR USE.
FHA ACCEPTED WITHOUT SHEATHING.

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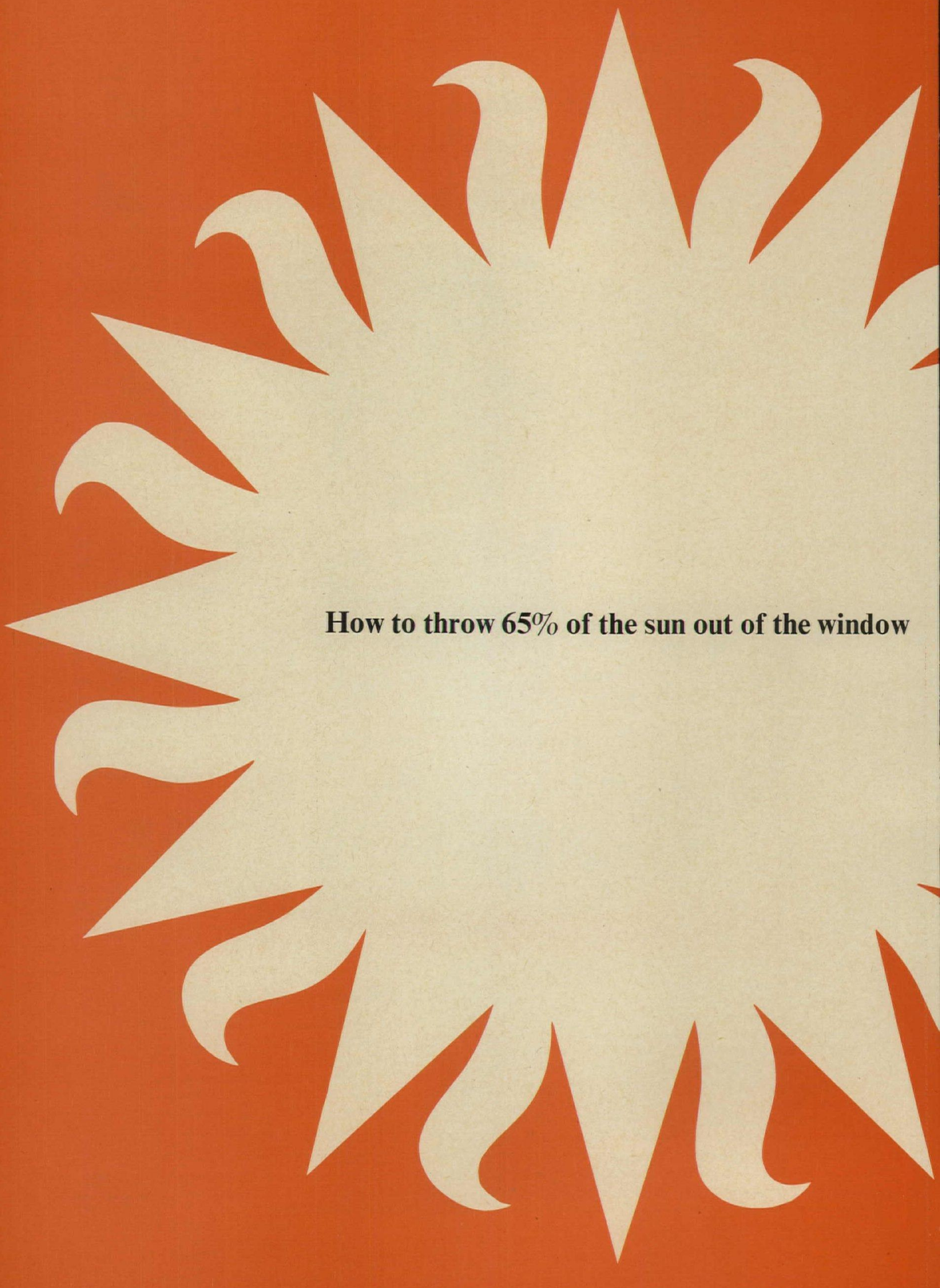

How to throw 65% of the sun out of the window

PPG Feneshield® fabrics: the environmental-control drapery system

With scientifically-rated FENESHIELD fiber glass drapery fabrics and a clear glass window, you can bounce up to 65% of the solar heat right out of the room before it can affect interior temperature. Combine these fabrics with a high-performance glass like PPG SOLARBAN® TWINDOW,® and you can eliminate up to 80%. People sitting near the window remain comfortable, because there is little reradiation from FENESHIELD fabrics. Natural light filters through. Air conditioning systems carry less load.

The FENESHIELD fabric rating system helps you choose fabrics scientifically to reduce glare, modify or enhance a view and improve interior sound control. Your building will retain the clean lines of your original design concept. In addition, FENESHIELD fabrics cost less to maintain than mechanical shading devices.

For documentation and additional data, read our new book about FENESHIELD fabrics. Mail coupon.

PPG makes the yarns only, not the fabric.

PPG INDUSTRIES, Fiber Glass Division
One Gateway Center, Pittsburgh, Pa. 15222

Fiber Glass PPG INDUSTRIES

DEPT. 101, PPG INDUSTRIES, FIBER GLASS DIVISION
One Gateway Center, Pittsburgh, Pennsylvania 15222

I'd like to know more about PPG Feneshield fabrics.

☐ Please send me your new booklet.

☐ Please send me names of authorized Feneshield fabric representatives.

NAME

TITLE

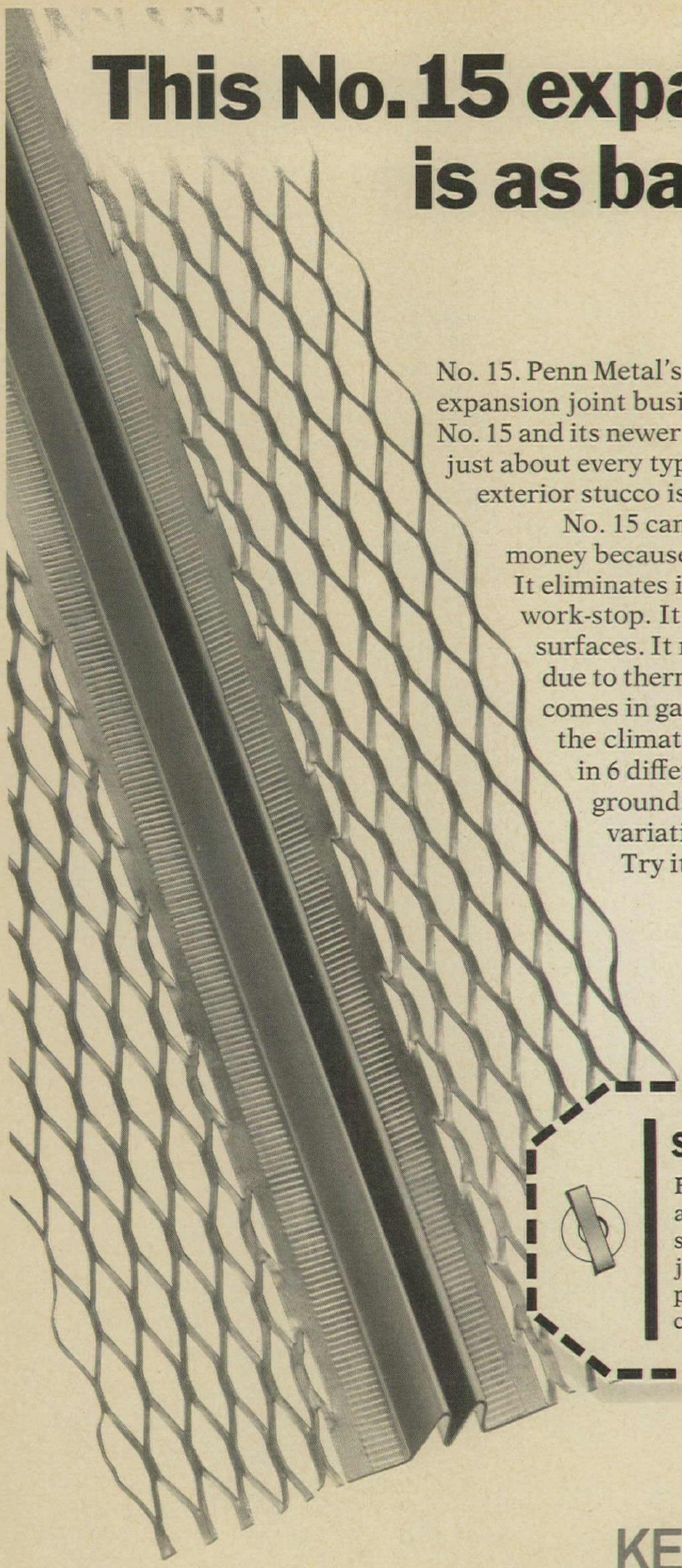
STREET

CITY

STATE

ZIP

This No. 15 expansion joint is as basic as nails.



No. 15. Penn Metal's idea that started the whole expansion joint business way back in 1955. Since then, No. 15 and its newer corner cousin No. 30, have gone into just about every type of building where plaster or exterior stucco is used.

No. 15 can do plenty for you, too. It saves you money because it saves time and labor on-the-job. It eliminates improvising. It makes a perfect work-stop. It breaks up monotonous wall surfaces. It resists breaking up of wall surfaces due to thermal and structural movement. It comes in galvanized steel or zinc, depending on the climate in which you're building. It comes in 6 different grounds, too. Some of the grounds are new. But they're really still only variations of our No. 15 expansion joint. Try it.

Send for free sample.

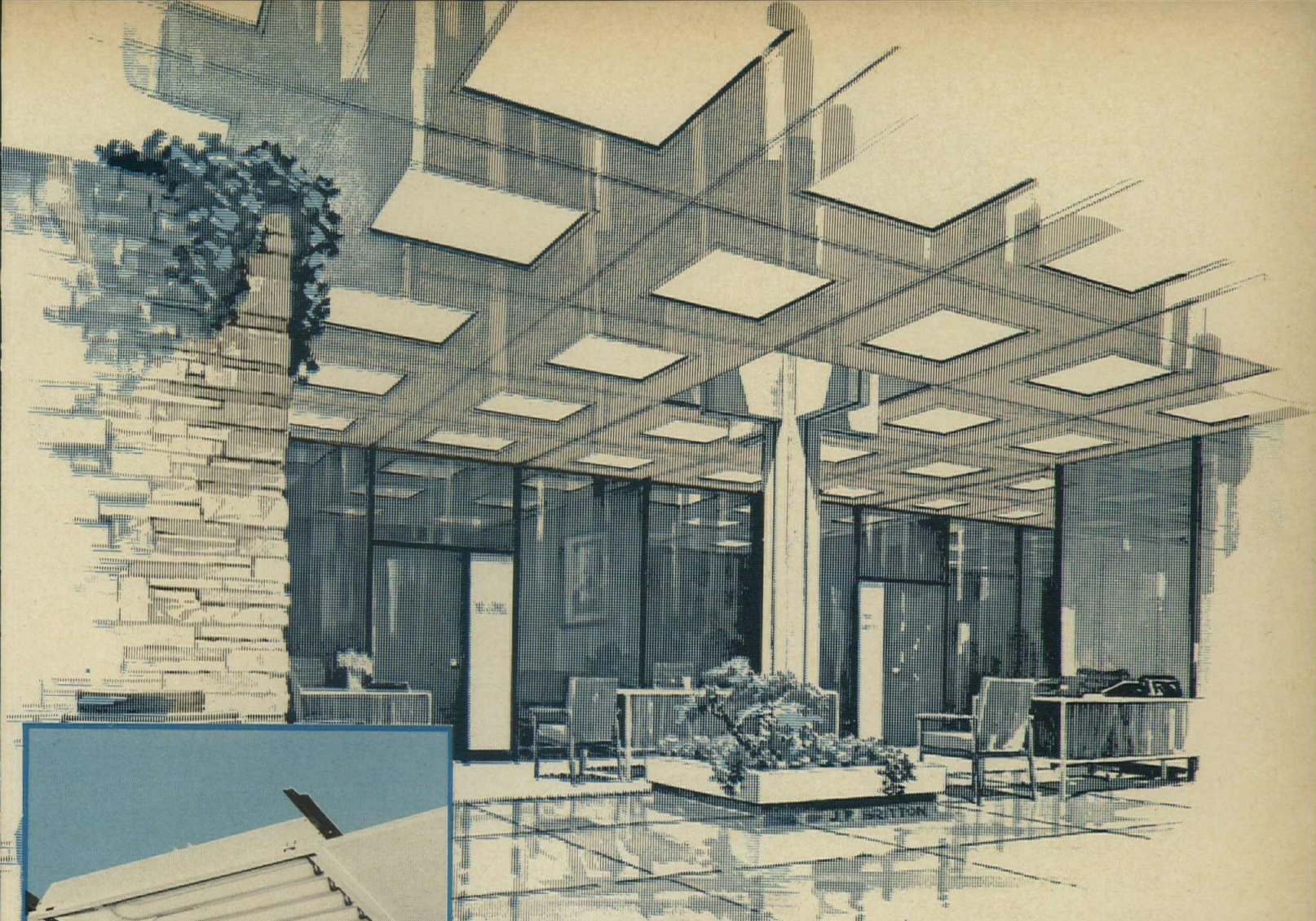
For all our data sheets on the No. 15 and No. 30 expansion joints, and a free sample of No. 15 for your very own, just write our Al Smith on your company letterhead. Ask for No. 15. You couldn't ask for anything better.

See our catalog in Sweets

KEENE CORPORATION PENN METAL DIVISION

Parkersburg, West Virginia 26101

For more data, circle 36 on inquiry card



Sechrist recessed troffers for the 40 Watt U-shaped lamp feature a unique unitized electrical assembly. Ballasts and sockets are lined up to a common housing which can be hinged and removed for easy installation and maintenance. Positive supporting brackets hold the curved end of the lamp so that positive contact is made with the telescopic lampholders.

5′ Module?

Yes...with the New 30-30 from Sechrist, featuring 40 watt U shaped lamps

What could relate better to a 60″ square than a 30″ square? The 40 Watt Lamp has been bent and now fits into a 2′—or better yet, 30″ package. No longer is the 4′ lighting fixture length the only economically feasible one for office construction. Sechrist realizes that the U-shaped lamp offers you wholly new dimensions in design flexibility. We are anxious to work with you in selecting the proper-sized square fixture for your next job. Our complete testing facilities enable us to work with your engineers to assure satisfactory air supply, air return, and lighting performance. See your nearest Sechrist representative or give us a call.

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the Air-Lite Specialists

SECHRIST MANUFACTURING COMPANY

P.O. BOX 16775, DEPT. 86 / DENVER, COLORADO 80216 / (303) 534-0141

For more data, circle 37 on inquiry card

continued from page 53

and probably always will be, even with our new electronic tools. With the exception of designing a Memorial to the Space-Age, I would guess it is the very rare architect who has "gotten by" with the intuitive approach.

However, these new terms are certainly cute and will no doubt help architects keep pace with the latest TV commercials. Personally, I feel Bill Caudill's "earthy" comments may help save us from becoming too overly-serious about ourselves, or too pedantic to communicate with our clients.

Harry J. Harman, A.I.A.
Port Huron, Michigan

Age of blue sky thinking

Every time I pick up your fine magazine and read the editorial, "Behind the Record," I determine to tell you how much I agree with your general approach to the subjects you discuss. I am particularly impressed with the one in the May issue, which attempts to bring some reason into the vastly blue sky thinking of HUD and others. This is exactly what many of us have tried to say, but you have articulated it outstandingly.

Charles S. LeCraw, Jr.
United States Steel Corporation

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If you're moving, please let us know five weeks before changing your address. Use form below for new address and attach present mailing label in space provided.

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Quick Change* Movable Partitions let you direct traffic, remodel with ease. Simple to install with a minimum of disturbance. Beautiful, economical Masonite Royalcote prefinished hardboard panels come in many colors or simulated wood panel surfaces. Factory finished with built-in hardener for long wear, low maintenance, lasting beauty. Choose low rail, cornice or ceiling height partitions, with or without glass inserts.

You'll meet your completion promises, too. Our nationwide network of 90 installers—local people, working from local inventory—assures fast installation. For details, see Sweet's Architectural File 13A. Or write to us. MASONITE CORPORATION, Dept. AR-8 Box 777, Chicago, Illinois 60690.

*Quick Change is a registered trademark of Glen O'Brien Movable Partition Company, Inc.

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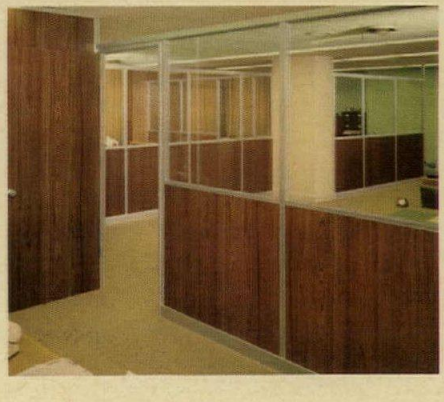
MASONITE CORPORATION



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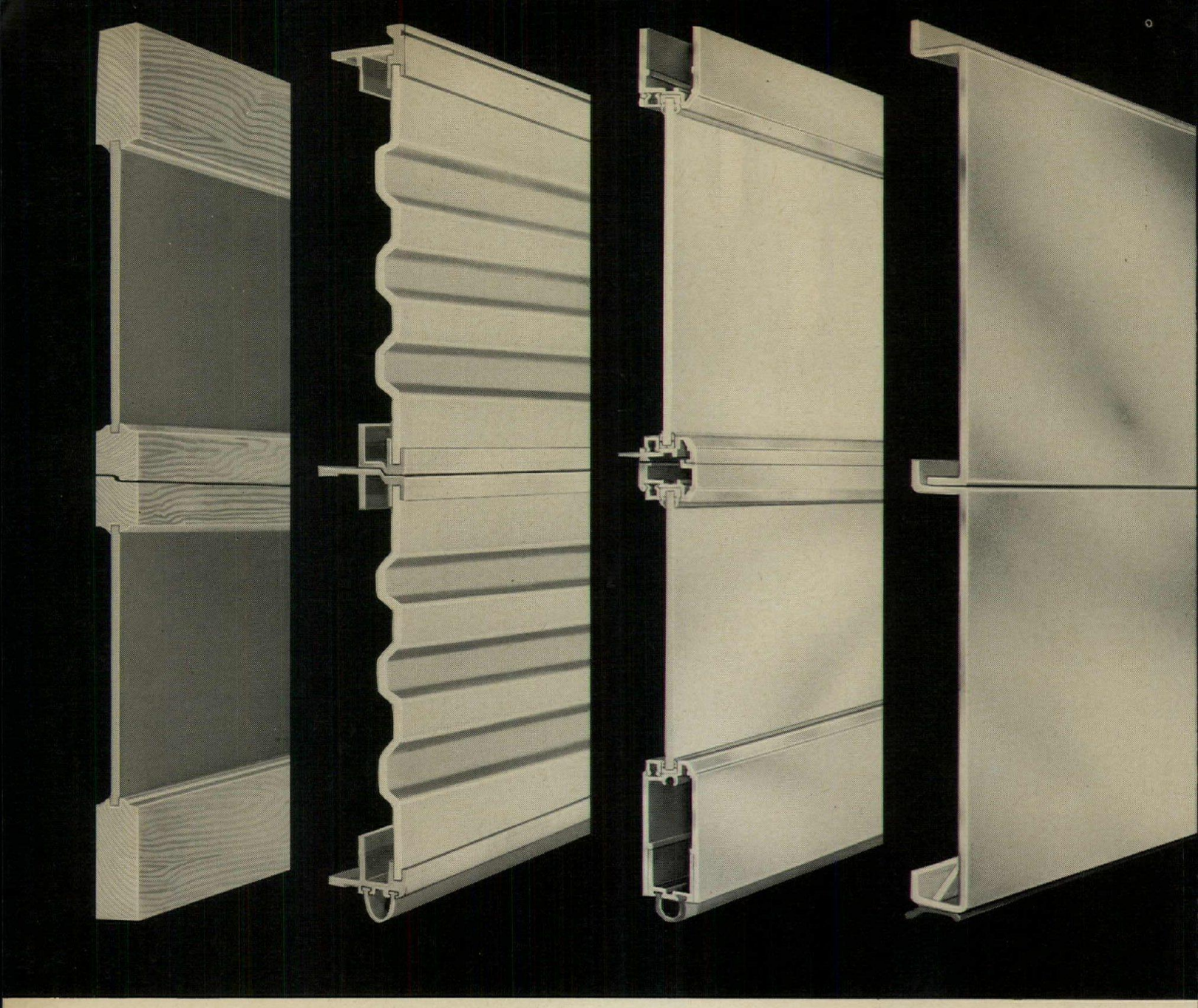

Garage doors.
Wood. Fiberglass. Aluminum. Steel.
Commercial. Residential. Industrial.
Raynor makes them all.

Raynor builds fine quality garage doors in all four popular materials . . . wood, aluminum, Raylon (fiberglass), and steel. For residential, commercial and industrial uses. All from one source. And what a source! The industry's finest guarantees coupled with such advantages as data film registration for permanent parts-list records.

Custom-wound springs. Extra-heavy tracks. Customized hardware to fit all installation situations. TEDLAR®-protected Raylon (fiberglass). Electric operators for every door. You name it, Raynor has it. For selection, delivery, and quality, depend on Raynor. Send for literature. Raynor Manufacturing Company, Dixon, Illinois.

RAYNOR

RAYNOR™

The Brand You Can Depend On

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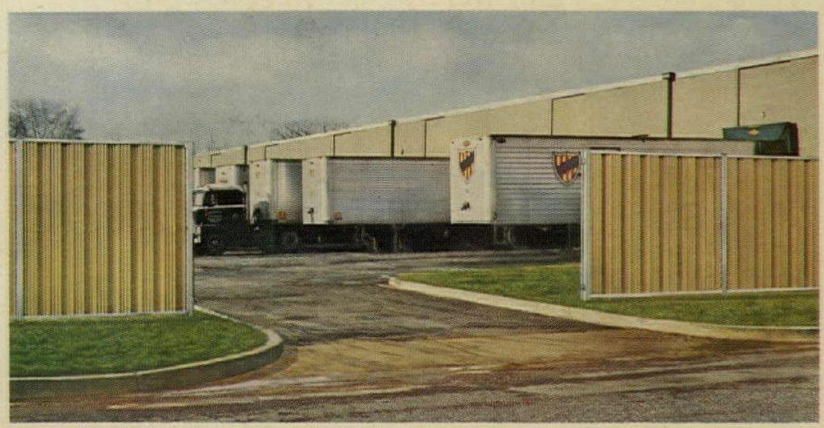
*TEDLAR IS A DU PONT REGISTERED TRADEMARK.

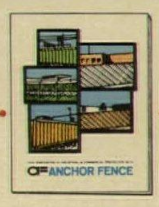
Anchor®: New Dimensions in total protection

Anchor Permafused Chain Link. Forest green vinyl coating fused to steel wire. Exclusive square construction, with *no* top rail, provides total protection.

If you've been told all chain link fences look alike, look again. Anchor, the best possible protection for industry and commerce for over 75 years, now offers the best possible *look* in chain link: new Anchor Permafused® . . . with its handsome forest green vinyl coating *bonded* to tough steel wire. Permafused fabric is impervious to acid and alkali atmospheres. Anchor's rugged, clean-cut framework eliminates all wrap-around bands —and without top rail, there's no place for a potential trespasser to get a convenient hand or toehold for climbing. No doubt about it . . . Anchor's new Permafused is the toughest, best looking, most protective, lowest maintenance chain link on the market. Permafused is only one of the many Anchor products that bring you total protection. Our new booklet tells all; send for it.



Anchor Privacy fence attractively protects and conceals. Baked-on colors, such as polar white, dawn blue, terrace green, mocha tan and rich ranch maroon.



Anchor Fence, Dept. C-08 6500 Eastern Ave.,
Baltimore, Maryland 21224
Please send 1968 "New Dimensions" color booklet.

Name_____ Title_____

Firm_____

Street_____

City_____ State_____ Zip_____

Please check Anchor products which interest you: Chain link, Permafused___, galvanized steel___, aluminum___, All-aluminum Privacy board-on-board___, All-aluminum Anchor-weave privacy strips___. Thank you.

ANCHOR FENCE

ANCHOR FENCE DIVISION
ANCHOR POST PRODUCTS, Inc.
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Plants in Baltimore, Houston, Los Angeles;
48 branch offices.

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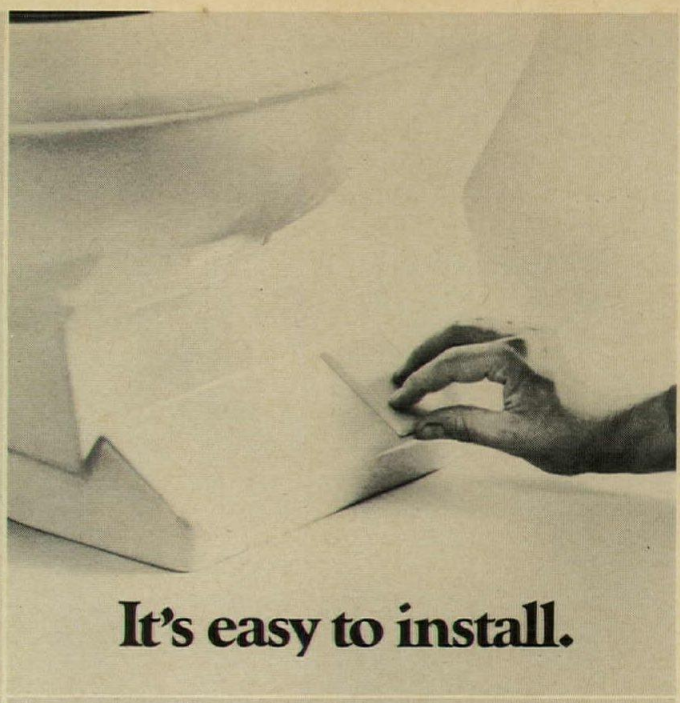
This is a flat bolt cover.



It's easy to install.

It's easy to clean.

It will stay put.

It's an Eljer original.

From a design standpoint, you can't top the Eljer toilet with its patented flat bolt cover. But there's more to the story. Because it takes less time to install, it reduces your total project costs. And it keeps saving money for your client because it reduces maintenance time in cleaning, since dirt and bacteria won't collect around the cover as they do around other bolt caps.

Specify and design washrooms with Eljer floor-mounted toilets that have flat bolt covers. For more, call your Eljer representative or write Eljer, Dept. AR8, P.O. Box 836, Pittsburgh, Pa. 15230.

MASTER CRAFTED ELJER® SINCE 1904 FINE PLUMBING FIXTURES

Eljer Plumbingware Division / Wallace-Murray Corporation

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Bally Walk-Ins help meet rising standards of kitchen cleanliness.

Kitchen cleanliness is a fine old American custom. This admirable tradition is being carried on today in mass feeding kitchens where the level of spic and span neatness is higher than ever before. It is a wholesome kitchen practice which pleases and attracts diners while meeting the rigid sanitation requirements now imposed by health authorities everywhere.

Efficient food handling that utilizes proper refrigeration is a requisite for kitchen cleanliness. And the big refrigeration job everywhere is being done by Walk-In Coolers and Walk-In Freezers which perform their critical function 24 hours each day. When properly sized and located, Walk-Ins provide the space needed to preserve and protect prepared and uncooked meats, dairy products, fruits and vegetables, and frozen foods. Walk-Ins are a constant guardian against spoilage, waste, unfresh foods.

The modern emphasis on kitchen sanitation exerted an important influence in the design of Bally prefab Walk-In Coolers and Freezers. They can be assembled in any size or shape from standard modular panels with interiors and exteriors clad in gleaming stainless steel, attractive lifetime aluminum, or rugged galvanized steel. Their metal surfaces are surgically clean . . . free of pores, crevices or joints where food scraps or juices can accumulate. With Bally Walk-Ins there is no need to worry about unpleasant odors, insects and vermin.

Cleanliness is but one important Bally Walk-In characteristic for mass feeding operators. We will gladly tell you of the many other fine design features which will be of equal benefit. Write Bally Case and Cooler, Inc., Bally, Pa. 19503, for free 32-page catalog and sample of urethane wall insulation.

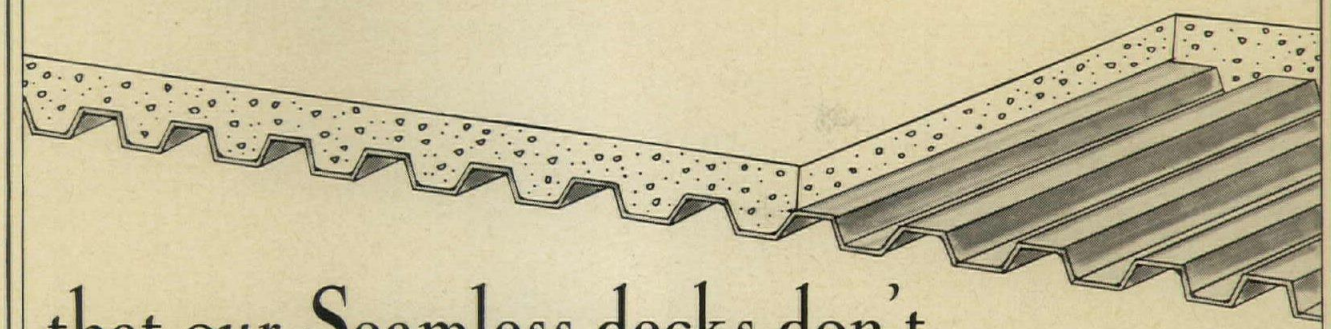
There's an evolution in the kitchen

Bally

Address all correspondence to Dept. AR-8.

Seamy decks have problems

Incidentally, for the literal-minded among you, the horrid characters above represent (left to right) Miss Vegetable Matter, Mr. Fire and Monsieur Rot.



that our Seamless decks don't

Zonolite® is the name. Our seamless, lightweight insulating concrete systems require no taping, have no heat leaks, and are permanent. You can't say that about seamy systems.

Slopes for drainage are easy and economical to build in with our seamless systems. They are difficult and costly with seamy systems.

The economical insulation range for our seamless systems is from U.24 to U.05. For seamy systems it is from U.39 to U.19.

In addition, our seamless systems provide potential fire insurance advantages, conform to curvilinear designs, meet the toughest hurricane and load requirements in the country, are certified internationally, and are supplied and installed by approved applicators. Seamy systems don't, can't, won't, aren't, and aren't.

Our seamless systems can be applied over galvanized metal, form board, structural or precast concrete.

Normally at less cost than seamy systems.

Why don't you mail the coupon to find out more about them?

GRACE

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Dept. AR-08 Merchandise Mart Plaza,
Chicago, Ill. 60654

Gentlemen: Please send me your latest Zonolite Roof Deck Catalog describing economical, seamless roof deck systems for all structures.

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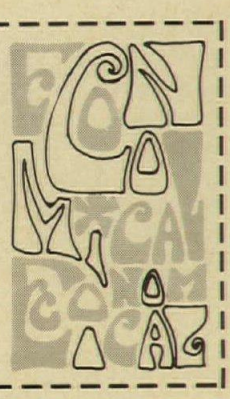
TITLE_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____



For more data, circle 48 on inquiry card

ON THE CALENDAR

SEPTEMBER

8-13 Seminar on Acoustics and Noise Control in Buildings—Pennsylvania State University College of Engineering, Department of Architectural Engineering, University Park.

23-25 Conference on "Man and his Shelter: Performance of Buildings—Concept and Measurement" sponsored by National Bureau of Standards—Gaithersburg, Maryland. For information write: Dr. W. W. Walton, Room B268, Building 226, National Bureau of Standards, Washington, D.C. 20234.

24-27 Producers' Council annual meeting—Hotel Ambassador, Chicago.

OCTOBER

3-5 Pennsylvania Region A.I.A. conference—Bellevue-Stratford Hotel, Philadelphia.

3-6 Northwest Region A.I.A. conference—Sun Valley Lodge, Sun Valley, Idaho.

7-9 California Council A.I.A. conference—Fairmont Hotel, San Francisco.

9-12 South Atlantic Region A.I.A. conference—Marriott Motor Hotel, Atlanta.

9-13 New York Region A.I.A. conference—Whiteface Inn, Lake Placid.

9-16 International Council for Building Research Studies and Documentation (C.I.B.) fourth triennial congress. Theme: "World Building 1968—Cost and Quality"—Skyline Hotel, Ottawa (October 9-11) and Willard Hotel, Washington, D.C. (October 14-16). For information, write: Mr. M. K. Ward, Secretary, Fourth C.I.B. Congress, c/o National Research Council, Ottawa 7.

10-12 Louisiana Architects Association A.I.A. conference—Jung Hotel, New Orleans.

10-12 Central States Region A.I.A. conference—Tan-Tar-A Resort, Osage Beach, Missouri.

10-12 Illinois Region A.I.A. conference—Urbana Lincoln Hotel, Champaign.

11-12 Alabama Council of Architects A.I.A. conference, Carriage Inn, Huntsville.

17-19 Ohio Region A.I.A. conference—Sheraton Biltmore Hotel, Dayton.

23-25 Indiana Society of Architects conference—Stouffers Indianapolis Inn, Indianapolis.

25-27 Florida Region A.I.A. conference—Daytona Plaza Hotel, Daytona Beach.

30-November 1 Architectural Woodwork Institute annual convention—Sheraton-Boston Hotel, Boston.

For more data, circle 49 on inquiry card

FMC Corporation, Packaging Machinery Division, Philadelphia Plant, Horsham, Pa.; Architects & Engineers: Alexander Ewing & Associates, Philadelphia, Pa.; General Contractor: Irwin & Leighton Inc., Philadelphia, Pa.

These SMITH WALLS show architectural ingenuity

The contrasting colors . . . the different panel profiles . . . are tastefully combined with each other. And with other building components of masonry and glass. The result shows architectural ingenuity. It also shows the design freedom you can exercise with Smith Walls.

So let your imagination be your guide. We'll custom-engineer Smith Metal Walls to your design . . . and your exacting specifications.

But custom-engineering is only the beginning of our Single Responsibility concept. Smith Walls are fabricated, delivered and erected by our own people . . . on a firm schedule . . . under rigid experience-established procedures that assure customer satisfaction. We control every sequence of the operation. This guarantees a smooth, efficient installation. Cuts erection time and holds down costs.

Smith Walls can fit into your plans.

Specify Smith Walls in place for your next project . . . whether it's a single building or complete complex . . . new construction or remodeling.

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SMITH

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The only time you'll find ripples and rivulets on our window glass is when a cloud lets go. Glaverbel drawn sheet glass is the clear one. No waves. Fewer surface defects. Flat. The above-average glass at below-average prices. When the architects of Chicago's enchanting Lake Point Tower wanted a glass with all these properties, they saw their way clearly: they chose Glaverbel.

Glaverbel

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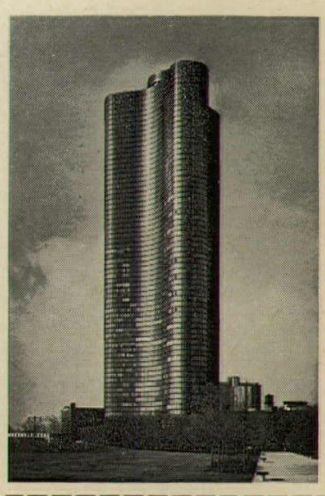
See Sweet's Architectural File 4a/GL.



LAKE POINT TOWER
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Schipporeit-Heinrich
General Contractor:
Crane Construction Company
Glazing
Sub-Contractor:
National-Hamilton
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City_____ State_____ Zip_____
By_____ Title_____ AR-8

For more data, circle 51 on inquiry card

New from Ozite...lowest priced pattern carpet ever!

It's Ozite Outdoor-Indoor Pattern Carpet! Now get all the proven features of original Ozite Outdoor-Indoor Carpet made with Vectra fiber...and striking patterns, too! These aren't burned-in designs that catch and hold dirt. They're actual patterns...three in all...*Brick, Wrought Iron* and *Mosaic*...and each pattern comes in different colors. We call it Ozite Fiesta Carpet. Amazing Vectra fiber is colorfast...won't rot. Dense, firm surface resists soiling, is not affected by mildew. Low-cost installation. Seams beautifully. Face yarn will not ravel or sprout. There's no finer decorative carpet value for commercial and residential installations...indoors or out!

Solid colors with rubber back! There isn't a more solid carpet value than Ozite Town-Aire Carpet! All the durability of Ozite Outdoor-Indoor Carpet, but with built-in high density foam rubber back for indoor use. Outstanding dimensional stability. Easy to install and maintain. See new Ozite Fiesta Carpet and Town-Aire Carpet at your Ozite dealer now.

Good Housekeeping GUARANTEES REPLACEMENT OR REFUND TO CONSUMER IF PRODUCT OR PERFORMANCE DEFECTIVE

Ozite® CARPET PRODUCTS made with **Vectra®** OLEFIN FIBER

Ozite® is the registered trademark of the Ozite Corporation, Merchandise Mart, Chicago, Illinois.
Vectra® olefin fiber is manufactured by Enjay Fibers and Laminates Company, Odenton, Maryland, a division of Enjay Chemical Company. Enjay makes fiber, not carpets.

For more data, circle 52 on inquiry card

Kaiser Engineers gets $4.9-million HUD research contract

Kaiser Engineers has been awarded the contract for Phase II of the Department of Housing and Urban Development's national "In-Cities" experimental low-cost housing research and development project.

The contract is for $2.9 million, with a provision for an increase of $2 million in the next fiscal year.

Phase II will recommend the specific housing experiments and cities in which these projects will be constructed. The contractor also will carry out the housing experiments in cities selected by HUD.

Phase I enlisted varied array of talents

The first phase of the experimental project was conducted by Abt Associates, Inc., Cambridge, Massachusetts, with Daniel, Mann, Johnson and Mendenhall, Los Angeles; Building Systems Development Inc., San Francisco, with the Kaiser Engineers Division and others; and Westinghouse Electric Corp., Pittsburgh.

Kaiser Engineers was one of an association of six firms selected by HUD to participate in launching the national "In-City" experimental low cost housing project. Building Systems Development, Inc., headed by Ezra Ehrenkrantz, led the team effort. Along with Kaiser Engineers, other associated firms were OSTI (Organization for Social and Technical Innovation), Massachusetts; Turner Construction Company, New York; General Research Corporation of Santa Barbara, California; and Real Estate Research Corporation of Chicago.

T. F. Rogers, Director of HUD's Office of Urban Technology and Research, explained that Building Systems Development, Inc., proposed that if its team were selected to carry out Phase II, Kaiser Engineers would become the prime contractor, and BSDI would become a subcontractor.

The "In-City" program is aimed toward the creation of new design and construction concepts, new materials, and new management techniques, which can be used in producing a large volume of low-cost housing more rapidly than ever before at costs well below current levels. Various model cities including New York, San Juan, Puerto Rico, Miami, Washington, D.C., Boston, Denver and Toledo will be studied to establish specific criteria for the final selection of candidate cities for the housing sub-experiments. Each city selected may receive from 20 to 200, or even more, dwelling units which could qualify as prototypes for the 6 million new or rehabilitated, Federally-assisted housing units for lower-income families over the next ten years.

According to Mr. Rogers, Kaiser Engineers will now promptly review all of the reports submitted to HUD by all of the Phase I contractors. Within a month, Kaiser will recommend to HUD the specific housing experiments and the cities and experiments reviewed by all contractors in Phase I will be considered. HUD will make the final selection of cities, based upon these recommendations, and reach agreements with the cities it selects.

Following city selection, the contractor will initiate detailed planning for new and rehabilitation construction, exploring a wide range of building types such as single-family, townhouse, detached unit, and high-rise.

The construction will be carried out by local sponsors in each of the selected cities, using various HUD-assisted programs, such as public housing, experimental housing, below-market interest rate and rent supplement housing.

Construction consultants obtaining cost data on low-cost housing

McKee-Berger-Mansueto, Inc., Construction Consultants and Engineers, has been awarded a $48,900 contract to provide the U.S. Department of Housing and Urban Development with data on the construction costs of low-rent public housing in 200 localities.

HUD is seeking to develop a system for data collection and reporting on square foot costs of dwelling construction, to allow realistic judgments on proposed development costs.

The New York firm will compile figures which will include overhead and builders' fees and other costs as follows: general (excavation, backfill, foundations and other structural costs), plumbing (including gas and water meters), heating, electrical, elevators and dwelling equipment (including ranges and refrigerators with normal built-in items).

Building types covered by the construction data will range from one-story buildings to high-rise family structures, and from efficiencies for the elderly to six-bedroom units for large families.

Cost guidelines will be provided for a project of 10 or 15 units in an isolated locale or one with as many as 600 units in a metropolitan area.

Rice University students to spend a year apprenticed to leading architects

In Rice University's School of Architecture "preceptorship" program, selected students spend two weeks working with architect "preceptors" around the country. This summer, eight Rice students spent their two weeks with architects in San Francisco, St. Louis, Atlanta, Little Rock, San Antonio, Dallas and Tyler, Texas. In the coming school year, the program is expanding, with five fifth-year students spending a full 12 months in the offices of their individual preceptors.

When these five students return to campus, they will not only have had a year's experience of working under some of the country's top architects, but their 12 months will be counted as one of the three years apprenticeship required to register in Texas.

Schools of Architecture from as far as Australia have requested details of the program from Rice's William W. Caudill, director of the School of Architecture and partner in Houston's Caudill, Rowlett, Scott.

Four of the Rice students are apprenticing this year with Eason Leonard of I. M. Pei and Associates; Kevin Roche of Kevin Roche, John Dinkeloo and Associates; Walter Netsch of Skidmore, Owings & Merrill; and William Geddis of The Architects Collaborative.

The fifth student is working with Dominican Republic architects on a master plan for the Universidad Catolica Madre y Maestra at Santiago de los Caballeros.

The Rice preceptorship program, initiated by Caudill, is designed to "keep would-be architects from falling in love with sexy paper renderings and cardboard models. Students don't realize that paper-love is not going to help them become even moderately successful workaday-world architects."

Portland Cement Association offers variety of structural computer programs

The Portland Cement Association is preparing a series of computer programs to facilitate the design and reduce design costs for plain and reinforced concrete structures, according to W. Burr Bennett, director of P.C.A.'s Engineering Design and Standards Department.

The computer design aids, intended for use by consulting engineers, universities and Federal and municipal design agencies, are available now on the following topics: airport pavement design, biaxial bending in columns, flat plate analysis and design, and simple-span precast-prestressed bridges.

Additional programs are being developed for staggered wall beams for multi-story buildings, edge loading for concrete pavements, lateral load analysis of frames with shearwalls, and a general multi-story frame program for vertical and lateral loads, Bennett said.

The specialized P.C.A. programs were developed for use by consultants having an IBM 1130 in their offices and by computer service bureaus. Specially developed input sheets for specific P.C.A. programs will be distributed to consulting engineers.

The input sheets, which are designed for use by engineering personnel with no prior knowledge of computer applications, will include the geometry of the structural elements, the design method, and the material specifications. Computer personnel can use the sheets to punch the card and process the appropriate program.

Program in development to solve any structural configuration

Bennett reported that the Portland Cement Association and the Concrete Reinforcing Steel Institute are involved in "a very ambitious development in the field of computer software" at the Massachusetts Institute of Technology. In M.I.T.'s Department of Civil Engineering, for example, the capabilities for computer solutions of a large variety of civil engineering problems are being brought under the control of one master computer system called ICES (Integrated Civil Engineering System). The system is made up of subsystems, such as STRUDL (Structural Design Language) for structural engineering, and several others.

The P.C.A.-sponsored work at M.I.T. is a two-year program to expand the scope of the STRUDL subsystem to cover analysis and design of reinforced concrete structures. It will provide the facility, in one system, to analyze framed structures of any configuration and concurrently to investigate or design the elements of the structure.

Briefs

Environmental consultants offer aid in work with Federal agencies

Environmental Consultants, Incorporated, headed by former Congressman Walter B. Huber, has been organized to provide advice and assistance to engineering, architectural and planning firms on Federal programs relating to environmental problems. The new firm will be based in Rockville, Maryland, with offices in Washington, D.C.

Environmental Consultants, Incorporated, will assist A-E firms and others interested in such areas as urban rehabilitation, urban development, air and water pollution control, solid waste disposal, highways and transportation, water resources, and oceanography.

Huber, president of E.C.I., has been serving as vice president of Environmental Research and Development Corporation, in charge of government relations. He has been a special consultant to the House Committee on Science and Astronautics, working primarily on environmental programs.

Purpose of the new firm, according to Huber, is to advise and guide A-E firms, businesses, industries and local governments in their dealings with the various Federal departments and agencies; to help them with special problems; and to keep them abreast of developments. Huber said the new firm would have available recognized experts in the social and physical sciences.

New guide developed for housing physically handicapped

Information on planning and designing housing for physically impaired persons is contained in a guide recently issued by the U.S. Department of Housing and Urban Development.

The publication, "Housing for the Physically Impaired", was prepared especially for the use of local housing authorities, architects, and others in designing low-rent housing projects. The booklet also is of interest to those building housing for the elderly or impaired, regardless of financing methods.

The illustrated guide contains recommended specifications for outdoor ramps, hallways, doors, kitchens and bathrooms. Emphasis is on designing living quarters where the handicapped person can live most independently.

Copies of the guide, "Housing for the Physically Impaired", may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., for 45 cents a copy.

CURRENT TRENDS IN CONSTRUCTION

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

Shifting patterns in hotel building

If you live in New York City and spend any time observing the demolitions and new building going on in the mid-town area, you are probably convinced that the overnight lodging business is in a decline with no end in sight. One by one, the grand old hotels (and many of the not-so-grand flophouses) are giving way to office buildings or are being converted into apartment houses. This year alone, an estimated 2500 hotel rooms will yield to the wrecking crews, and no new hotels have been announced.

On the other hand, residents of Ft. Lauderdale, Atlanta, Las Vegas and numerous other cities are probably equally sure that innkeeping is enjoying a period of unparalleled prosperity. They see beaches, expressways and "the Strip" being lined with one hotel, motel (or that hybrid of the 1960's, the motor hotel) after another.

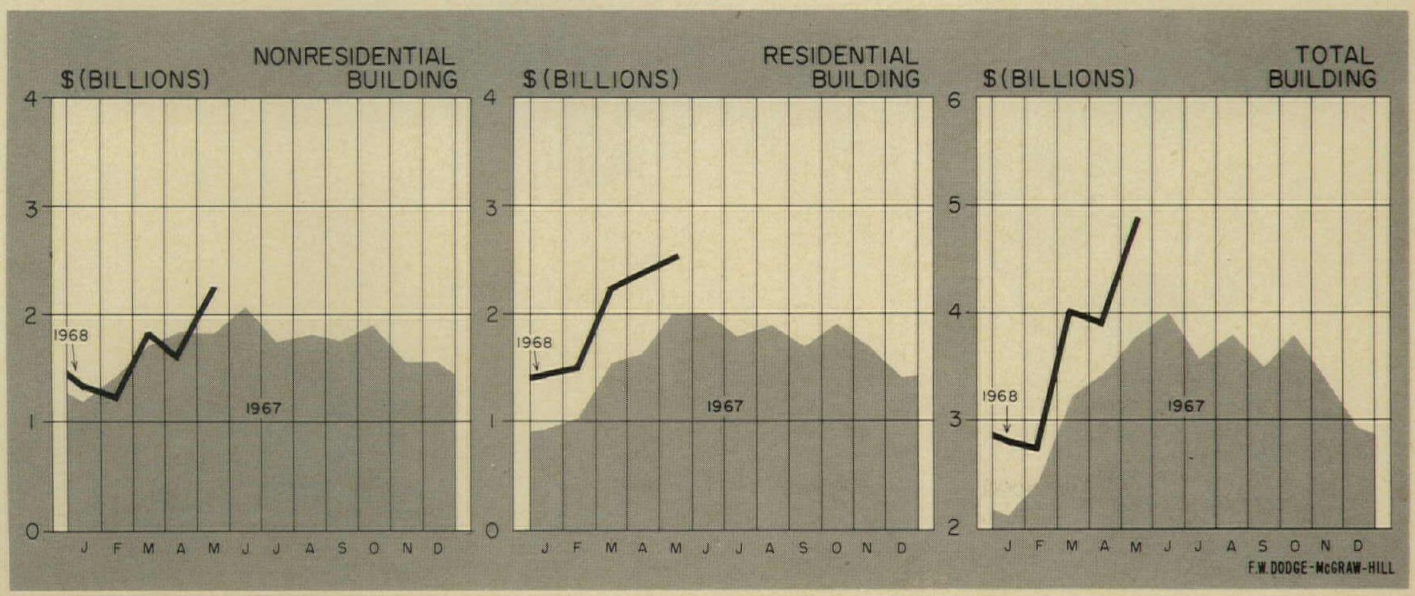
The truth of the matter lies someplace between these extremes. Total contract value for construction of motels and hotels reached a peak in 1962 from which it declined, with minor interruptions, through 1966. Since then, a rebound pushed valuations up 11 per cent in 1967 and in excess of another 15 per cent in the first half of the current year. If the present rate of contracting were to continue through the second half, 1968 would come in as a record year for hotel and motel construction.

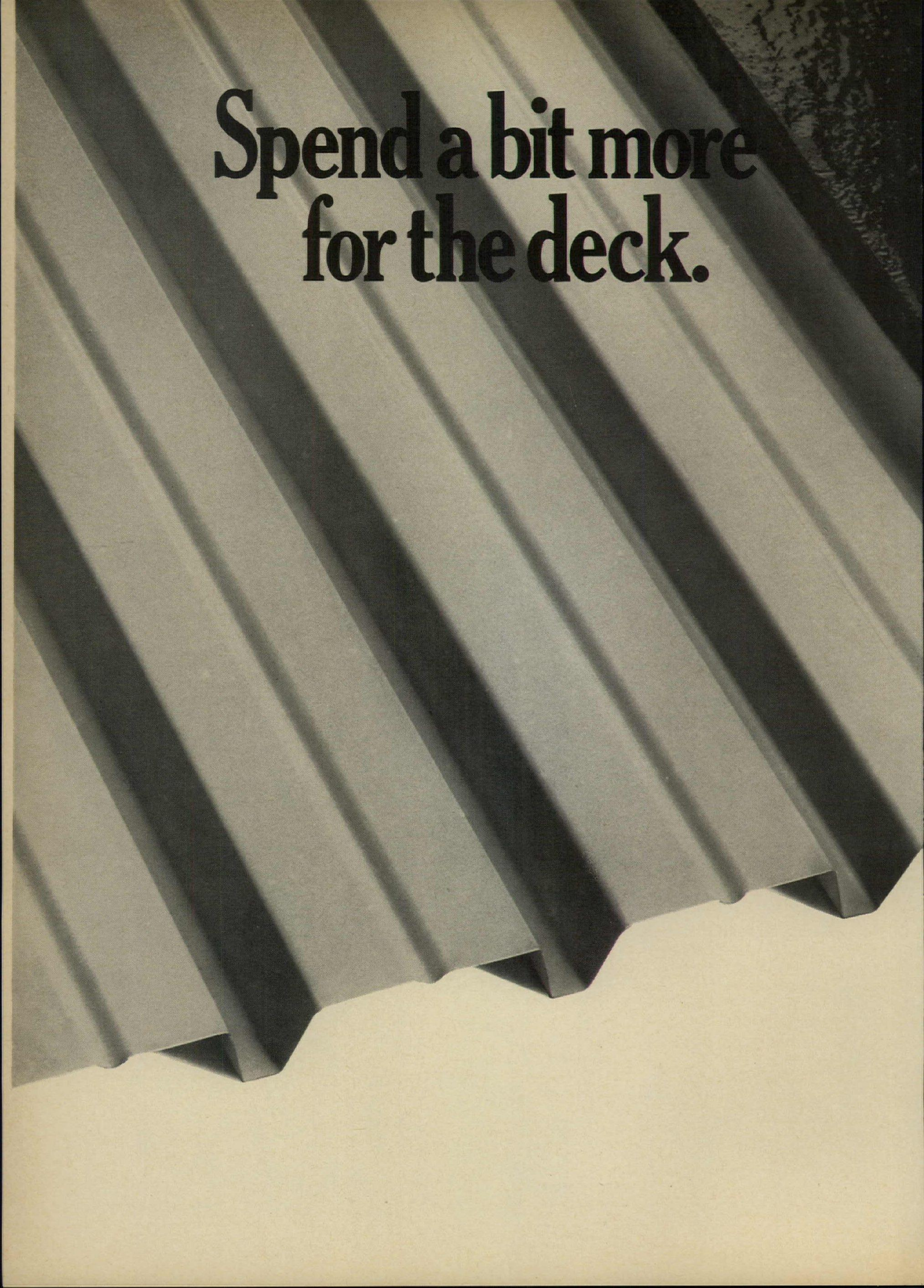
The sharply divergent views of the New Yorker and the Las Vegan actually reflect fairly accurately the trends that are taking place in the industry. The large city hotels were built primarily to accommodate the businessman who arrived by train and planned a lengthy stay to justify his time spent traveling. Today, the high-speed jet means that the weary executive can finish his business, have a leisurely meal on the plane back home, and arrive in time for a few hands of bridge. Even if he weren't in a hurry to get home, the watchful eye of the Internal Revenue Service has reduced his incentive to have a night on the town at company expense.

The same jet that allows the salesman or executive to cut short his stay in the big city also makes it possible for him to get to conventions in the more out-of-the-way places that also provide him with sun, surf or action at the roulette wheel, or to regional convention centers for more frequent sales meetings. Finally, longer vacations and higher paychecks are sending an increasing number of Americans to seek fun and relaxation in resort settings. The result of all these trends has been a sharp decline in new construction of central city hotels and an equally spectacular rise in motels and, more recently, in motor hotels with both resort and convention facilities.

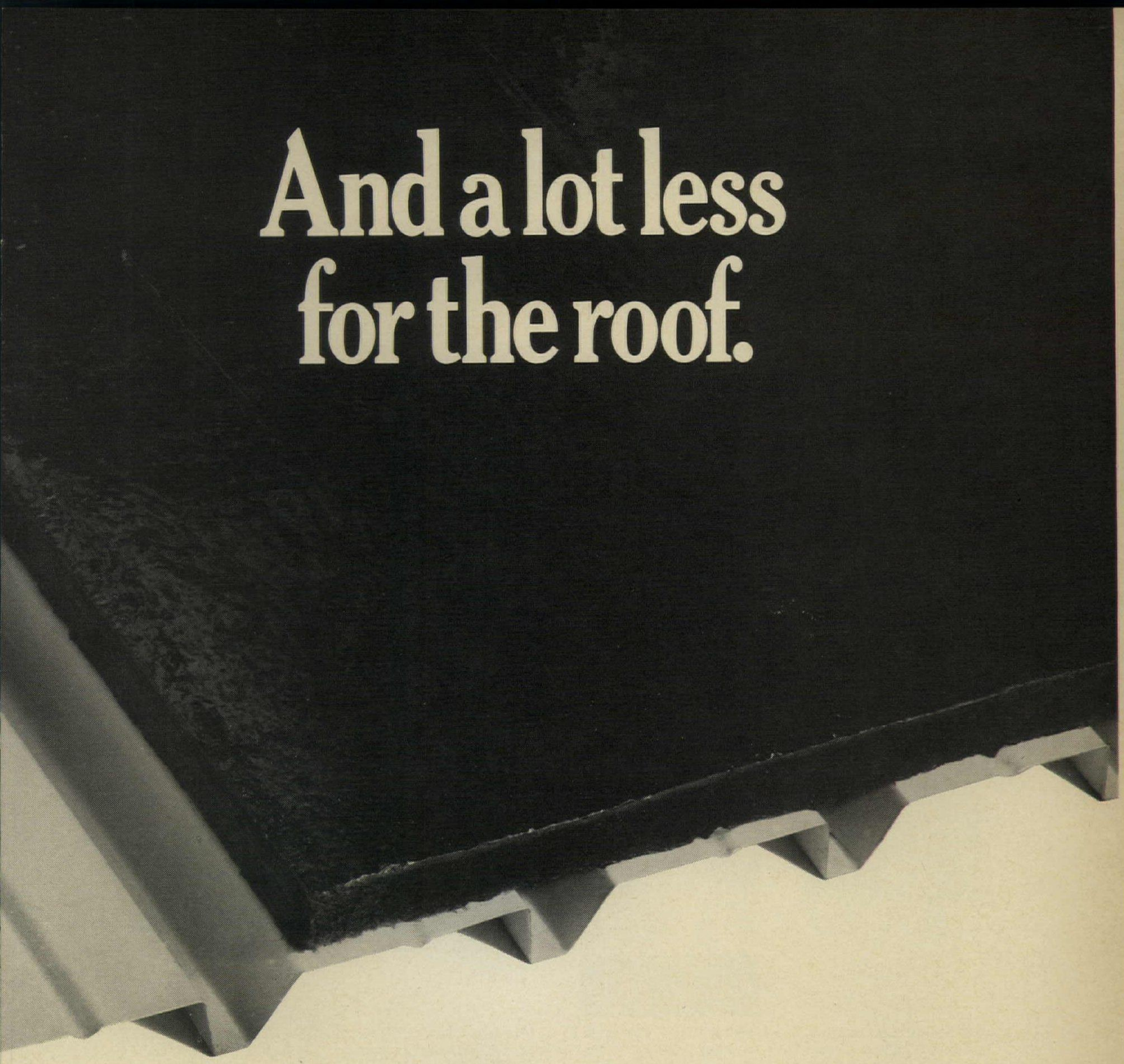
The shifting pattern of hotel construction is vividly illustrated by regional activity. As recently as 1960, the Northeastern region, dominated by New York City, accounted for almost 30 per cent of all new lodging facilities. By 1967, its share had fallen below 15 per cent and was still dropping. Meanwhile, the deep South has increased its proportion of new building from 12 to 23 per cent and has maintained its number one position in hotel and motel construction for over three years. The Ohio Valley, New England and far Western regions have also improved their shares in recent years, due both to resort developments and the growth of regional convention centers. Patterns change, but growth goes on.

Building activity: monthly contract tabulations




Spend a bit more
for the deck.

And a lot less for the roof.



Our Type F roof deck may be the only roof deck actually designed to be used in a roof.

No kidding.

As far as we know, it's the only one designed specifically to complement the insulation, the bitumen and the felts.

Take our flute opening for example:

It's just under 1¾″ wide. Any larger and you'd need heavier, more expensive insulation to bridge the gap and to get your .26U factor. Any smaller and you'd lose rigidity.

See those perfectly flat top edges? You can't ask for a better adhesion surface.

We have full side laps. Without them, bitumen could come through and leak all over your reputation.

And those flange stiffeners. They help minimize deflection and eliminate dishpanning.

We make Type F roof deck 30 inches wide and up to 50 feet long. It's light, nestable, and comes galvanized or with a high quality paint primer.

Every ounce is certified grade C steel.

It costs a bit more.

But it can save you up to $3.00 per square of finished roof.

Would you like the full story? Drop us a note.

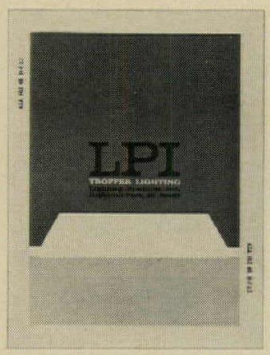
Ready, Wheeling and Able

Wheeling Corrugating Co., Div. Wheeling Steel Corp., Wheeling, West Virginia

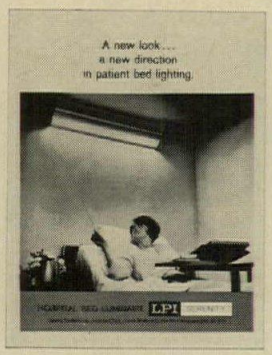
For more data, circle 56 on inquiry card

LPI's Best Seller List.

May we bring your file up-to-date with all the information you'll need about LPI's most popular fluorescent luminaires? Free, of course.

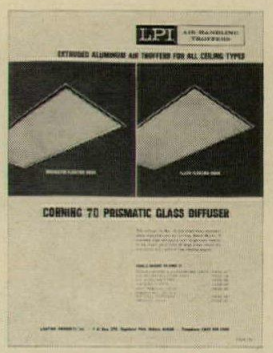


Comprehensive Line of Troffers. Catalog shows in seconds which LPI troffer will fit your mechanical ceiling or roof deck system. Contains specifications for U.L. listed troffers, photometric data on wide variety of diffusers, plus Ordering Guide.



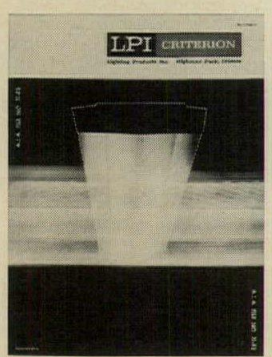
"Serenity" luminaire for complete patient bed lighting. Two separate lamp/lens compartments. Bottom compartment provides reading light exceeding IES hospital standards. Top light is suitable for routine medical examinations. U. L. listed.

7100 Series luminaire uses Holophane's finest injection-molded, clear acrylic lens. No visible hinges on diffuser—swings open either side. U.L. listed for surface mounting without spacers on combustible cellulose fiberboard ceilings.



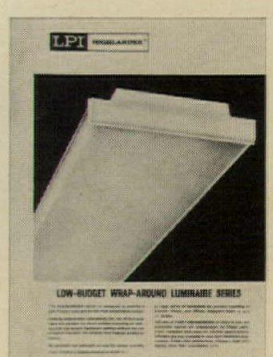
Extruded Aluminum Air Troffers. Catalog covers all technical data needed for specifying and ordering the new extruded aluminum troffers with architectural "floating door." Catalog also available for extruded aluminum non-air troffers. U.L. listed.

EG Series (enclosed and gasketed) industrial luminaire. Dust-tight, water-resistant. May be hosed down. Heavy, gasketed acrylic diffuser also resists breakage. Suitable for use outdoors in sheltered areas. Listed by Underwriters' Laboratories.



Criterion I surface-mounted luminaire. Complies with brightness limitations of the "scissor curve" recommended by IES. Criterion II provides higher footcandle levels and excellent brightness control. Both listed by Underwriters' Laboratories.

Vee-Lens luminaire for corridors, stockroom aisles, etc. Clear prismatic lens directs the greatest part of the light onto vertical surfaces. U.L. listed for surface mounting without spacers on combustible cellulose fiberboard ceilings.



Highlander economy luminaire. Tedlar® laminated polystyrene diffuser guaranteed 15 years not to discolor. Apparent depth only 1⅝". U.L. listed for surface mounting without spacers on combustible cellulose fiberboard ceilings.

Lighting Products Inc., Post Office Box 370, Highland Park, Illinois 60035

LPI-7-218

Please send me LPI product literature as checked: ☐ TROFFERS. ☐ SERENITY. ☐ 7100 SERIES.
☐ EXTRUDED ALUMINUM AIR TROFFERS. ☐ EXTRUDED ALUMINUM NON-AIR TROFFERS. ☐ EG SERIES.
☐ CRITERION. ☐ VEE-LENS. ☐ HIGHLANDER.

LPI FLUORESCENT LIGHTING

Lighting Products Inc., P.O. Box 370, Highland Park, Ill. 60035

Name

Company

Title/Dept.

Address

City State Zip

For more data, circle 57 on inquiry card

INDEXES AND INDICATORS

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

AUG. 1968 BUILDING COST INDEXES

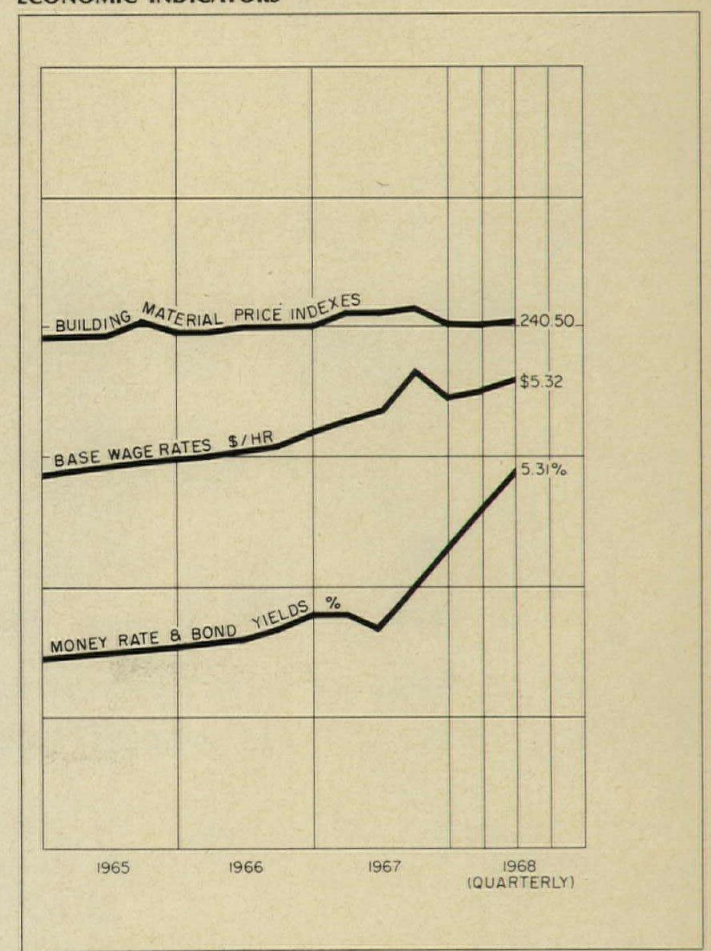
1941 averages for each city = 100.0

Metropolitan area	Cost differential	Current Dow Index residential	Current Dow Index non-res.	% change year ago res. & non-res.
U.S. Average	8.5	288.8	307.7	+3.05
Atlanta	7.2	331.5	351.6	+3.98
Baltimore	7.9	291.4	310.0	+4.32
Birmingham	7.3	263.8	283.7	+2.01
Boston	8.5	259.3	274.5	+2.46
Chicago	8.9	319.1	335.7	+2.83
Cincinnati	8.8	279.3	296.9	+4.61
Cleveland	9.6	304.3	323.5	+5.63
Dallas	7.5	267.7	276.4	+1.82
Denver	8.1	291.6	310.0	+2.51
Detroit	9.2	299.6	314.5	+3.81
Kansas City	8.2	257.6	272.7	+2.55
Los Angeles	8.3	293.1	320.7	+2.79
Miami	8.4	284.3	298.4	+3.55
Minneapolis	8.7	286.8	304.9	+2.73
New Orleans	7.8	260.2	275.7	+3.11
New York	10.0	302.2	325.0	+2.09
Philadelphia	8.5	283.9	298.0	+2.11
Pittsburgh	9.1	270.8	287.9	+4.06
St. Louis	9.1	282.3	299.1	+1.16
San Francisco	8.5	372.6	407.7	+2.34
Seattle	8.4	264.2	295.3	+3.49

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	2nd	3rd	4th	1968 (Quarterly) 1st	2nd	3rd	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	303.0	—
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	347.1	—
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	304.5	—
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	279.8	—
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	270.7	—
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	330.7	—
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	292.8	—
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	318.7	—
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	273.7	—
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	306.3	—
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	310.8	—
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	268.9	—
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	313.5	—
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	294.6	—
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	301.3	—
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	271.9	—
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	317.4	—
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	294.5	—
Pittsburgh	204.0	250.9	251.8	258.2	263.8	267.0	271.7	272.2	273.1	274.1	275.0	283.0	284.2	284.5	—
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	295.0	—
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	398.5	—
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	287.5	—

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.

TCS

a major breakthrough in the technology of architectural metals

The Follansbee Steel Corporation announces with pride the first commercial production of Terne-Coated Stainless Steel (TCS).

Expressly created for the architectural market, in our considered judgment this is the finest material ever developed for a broad range of applications including roofing and weather-sealing.

As such, we believe it deserves immediate and careful evaluation by every architect.

TCS: TERNE-COATED STAINLESS STEEL

what it is

TCS is 304 nickel-chrome stainless steel sheet covered on both sides with Terne alloy (80% lead, 20% tin). The former is the highest quality stainless available for this purpose, while Terne itself as a protective coating has a performance record confirmed by three centuries of continuous use.

what it does

Terne-Coated Stainless Steel (TCS) should never need maintenance if properly installed.

With a durability that can be measured in decades rather than years, TCS should outlast virtually any building on which it is specified.

The color of unpainted TCS will be predictable under all atmospheric conditions with the surface normally weathering to an architecturally attractive and uniform dark grey.

The anodic (sacrificial) action of the Terne coating on TCS prevents deterioration of the stainless steel under practically all conditions.

Unlike certain other metals, TCS will not produce unsightly discoloration as the result of wash-off on other building surfaces.

TCS solders perfectly without the necessity of pre-tinning or other special preparation. Only a rosin flux is required, and the need for any subsequent neutralization is thereby eliminated.

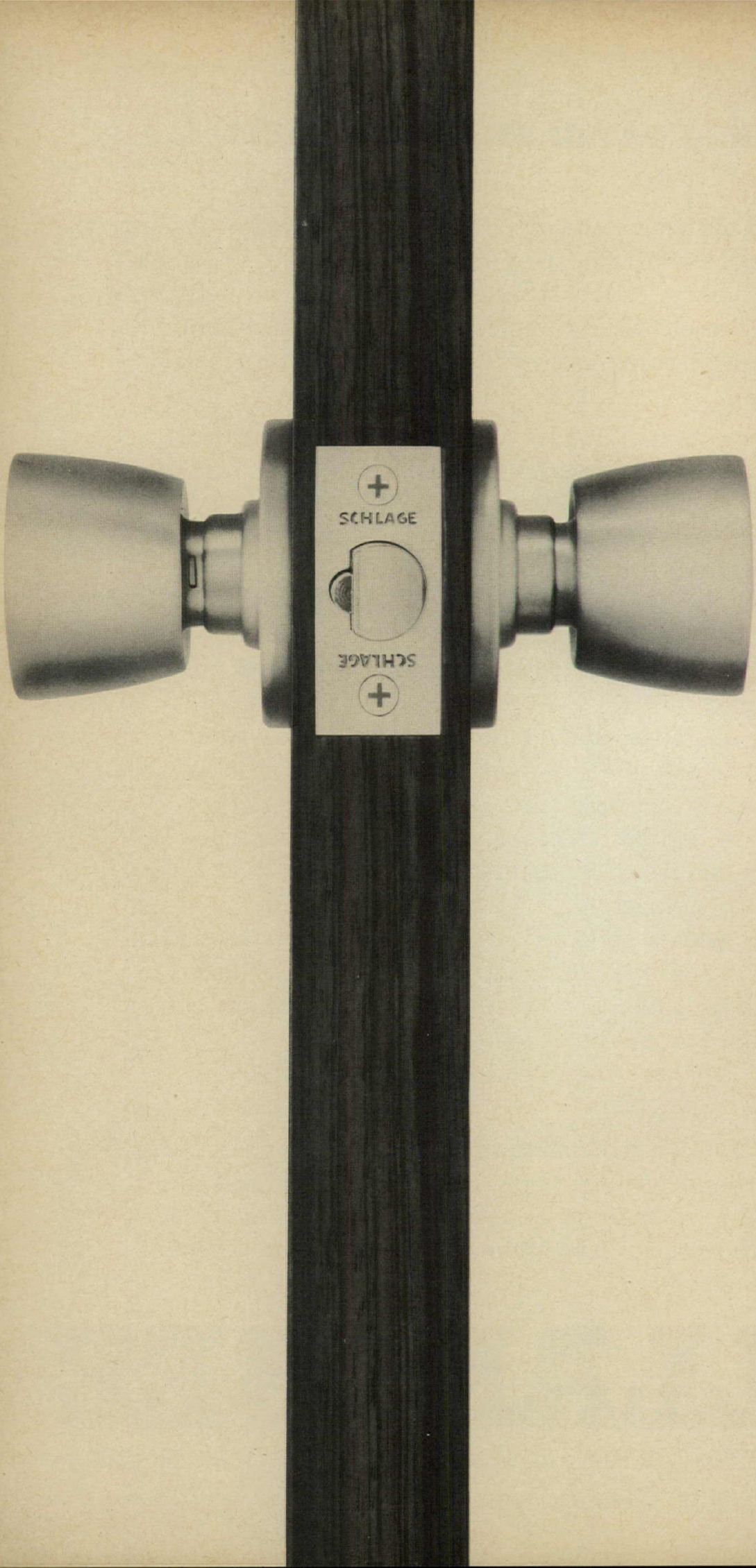
TCS is among the most easily worked metals.

what it costs

Terne-Coated Stainless Steel (TCS) will always be basically competitive in price, and in most instances its use should result in a less expensive application after allowance is made for both original cost and subsequent maintenance.

FOLLANSBEE

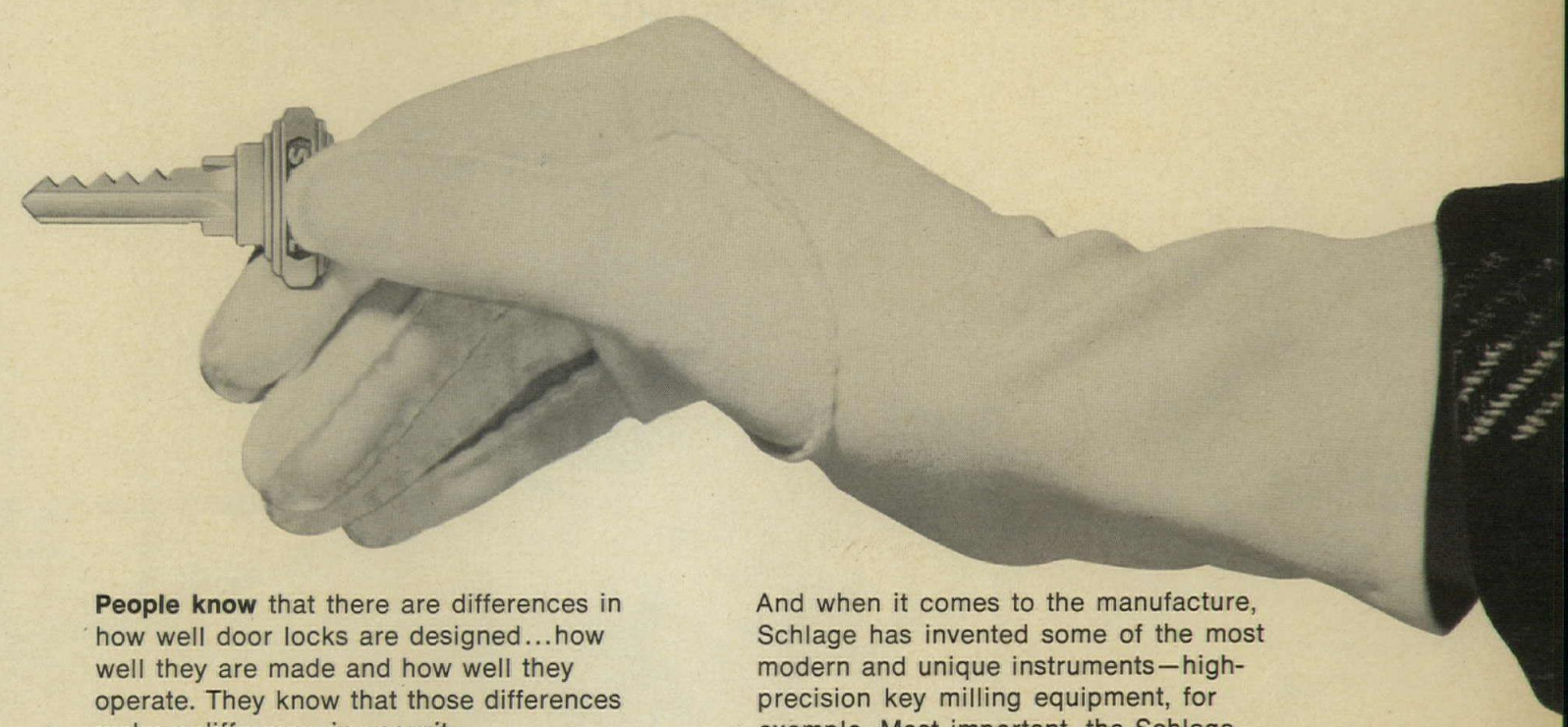
FOLLANSBEE STEEL CORPORATION • FOLLANSBEE, WEST VIRGINIA



Door locks,
to most people,
mean security

Will people pay a little more for something much better?

Obviously they will. But just as obviously, they want to be certain that what they *get* is much better. Door locks for instance. They are something we really know about.



People know that there are differences in how well door locks are designed...how well they are made and how well they operate. They know that those differences make a difference in *security.*

What about Schlage Door Locks? They generally cost a little more. Yet they outsell all other door locks. So they must offer a "difference" in security.

Is the design much better? Schlage invented the cylindrical lock...made it so good that others have tried to imitate the design for years. But Schlage has kept improving and perfecting it. Still does—as the latest models reveal.

Is the quality much better? There is better quality in the design, of course. But Schlage goes further. For example, Schlage expends more for raw materials. How else would it be possible to make a better lock? Schlage picks out and spends more for special strip steels rolled to rigid specifications...spends more for assuring the most precise tolerances in the industry...spends more for constant and rigid inspection.

And when it comes to the manufacture, Schlage has invented some of the most modern and unique instruments—high-precision key milling equipment, for example. Most important, the Schlage craftsmen are men of talent as well as pride. Naturally, Schlage pays them more, too.

Do Schlage Locks work much better? That is the result of better quality—better workmanship. It has made Schlage the largest selling door lock in the world. Over the years, Schlage has proven itself the one lock that apparently never wears out. And it is virtually free of maintenance cost.

Aren't they WORTH a little more? More than a little more. So much more goes into Schlage Locks that they actually *do more* for people—provide a feeling of dependability and reliance. The Schlage sense of security.

SCHLAGE
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INTRODUCING THE NEW...

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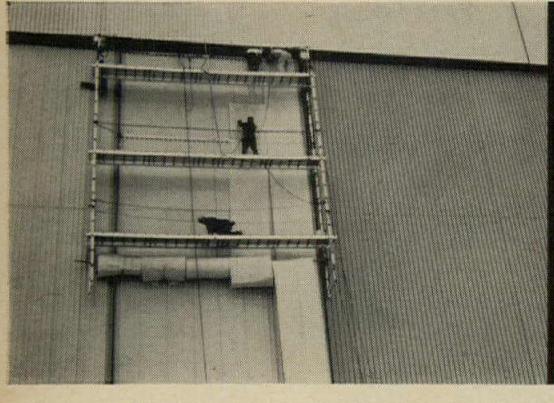
CONSTRUCTION PRODUCTS COMPANY

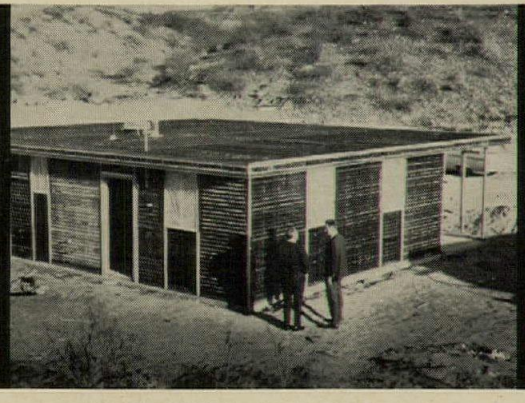


INLAND WALL SYSTEMS—Insulated steel panels in 10 profiles and wide range of colors. Long-life Duofinish™ or Duofinish 500™. Economical, quick to install, weather-tight. Can be supplied in-place.

INLAND FLOOR SYSTEMS—Hi-Bond® Steel Floor Deck, cellular or plain, speeds construction, reduces building weight and height. In-floor space for electrification and ventilating systems. Installation service.

INLAND ROOF SYSTEMS—offer largest selection to cover all roof spans economically. In-place service where desired. Also available as Acoustideck® which serves as both roof-deck and acoustical ceiling.

MILCOR ROOF DRAINAGE PRODUCTS—include rain-carrying and flashing products used to help waterproof a roof. Two-coat baked enamel on galvanized rain gutter and pipe guaranteed for 10 years.



STEELCOR BUILDING SYSTEMS—provide fully reinforced concrete residential structures without forms. Metal lath and steel trusses are supporting framework. Concrete application completes building.

STRUCTURAL FABRICATING—operating one of the largest shops in the midwest (Melrose Park, Ill.) has provided framework for many outstanding structures, can meet virtually any requirement

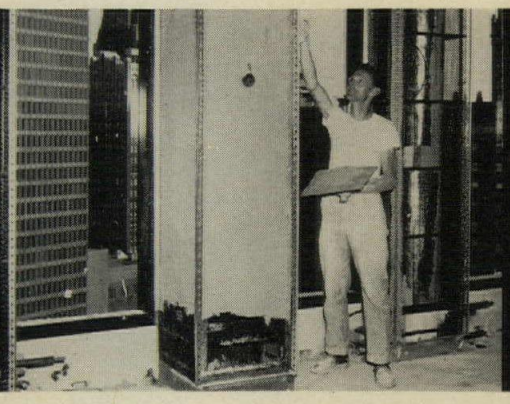
Combining for greater service power Inland Steel Products Co. and the construction products divisions of Joseph T. Ryerson & Son, Inc.

This merging of two great construction industry suppliers creates one of the nation's largest and most diversified sources for construction products and services. More than a century of successful experience will be pooled, resulting in a company more-than-ever able to give you the assured quality and the schedule performance you require.

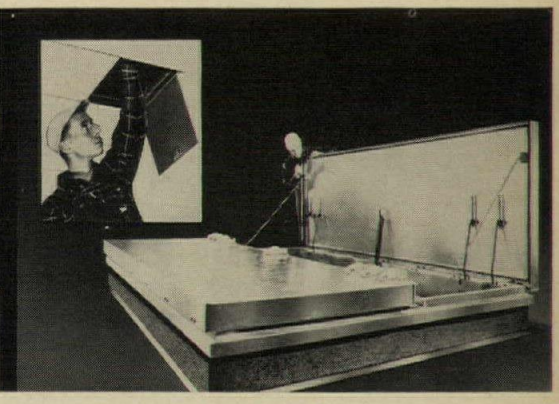
You deal with a single, responsible organization supplying fabricated structural steel . . . floor, wall and roof systems . . . reinforcing steel service . . . post-tensioning assemblies and scores of other construction requirements. And you will find here depth of staff, capability and continuity of interest to live with your projects from the design stage through completed installation.

As the new organization evolves, we will, of course, keep you informed. In the meantime, we'll continue to serve you with the same people at the same locations. Or, if you don't know where to direct your questions, inquiries or orders, write Weaver E. Falberg, President, Inland-Ryerson Construction Products Company, Box 5532, Chicago, Illinois 60680.

INLAND BUILDING SYSTEMS—Pre-engineered buildings in any length, widths up to 400 ft., combine mass fabrication and custom design for most any nonresidential use. Economical. Earlier occupancy.

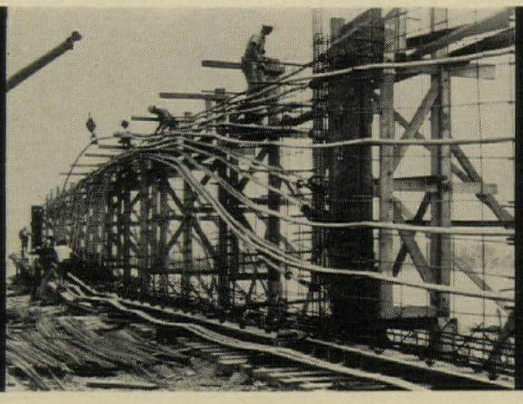


MILCOR® METAL LATH PRODUCTS—are widely used in the construction of fire resistant walls and ceilings. They hold and reinforce the plaster and afford positive protection at corners and openings.



MILCOR METAL ACCESS DOORS—cover service openings to plumbing, heating, electrical, etc. systems. 7 styles available. **ROOF HATCHES AND DOORS** available in standard or custom designs.

REINFORCING STEEL—complete service—detailing, fabrication, on-time delivery, a few tons or thousands. Experience on many of nation's biggest projects qualifies us to meet special problems.



POST-TENSIONING for prestressed concrete. Service includes fabricated tendons placing plans, force computations, stressing data, job-site equipment and assistance or tendons furnished in place.

MISCELLANEOUS CONSTRUCTION METALS. Anchor bolts, curb angles, grating, stair treads, railings, weldments, bar joists—virtually any fabricated metal requirement plus plain material cut to size.

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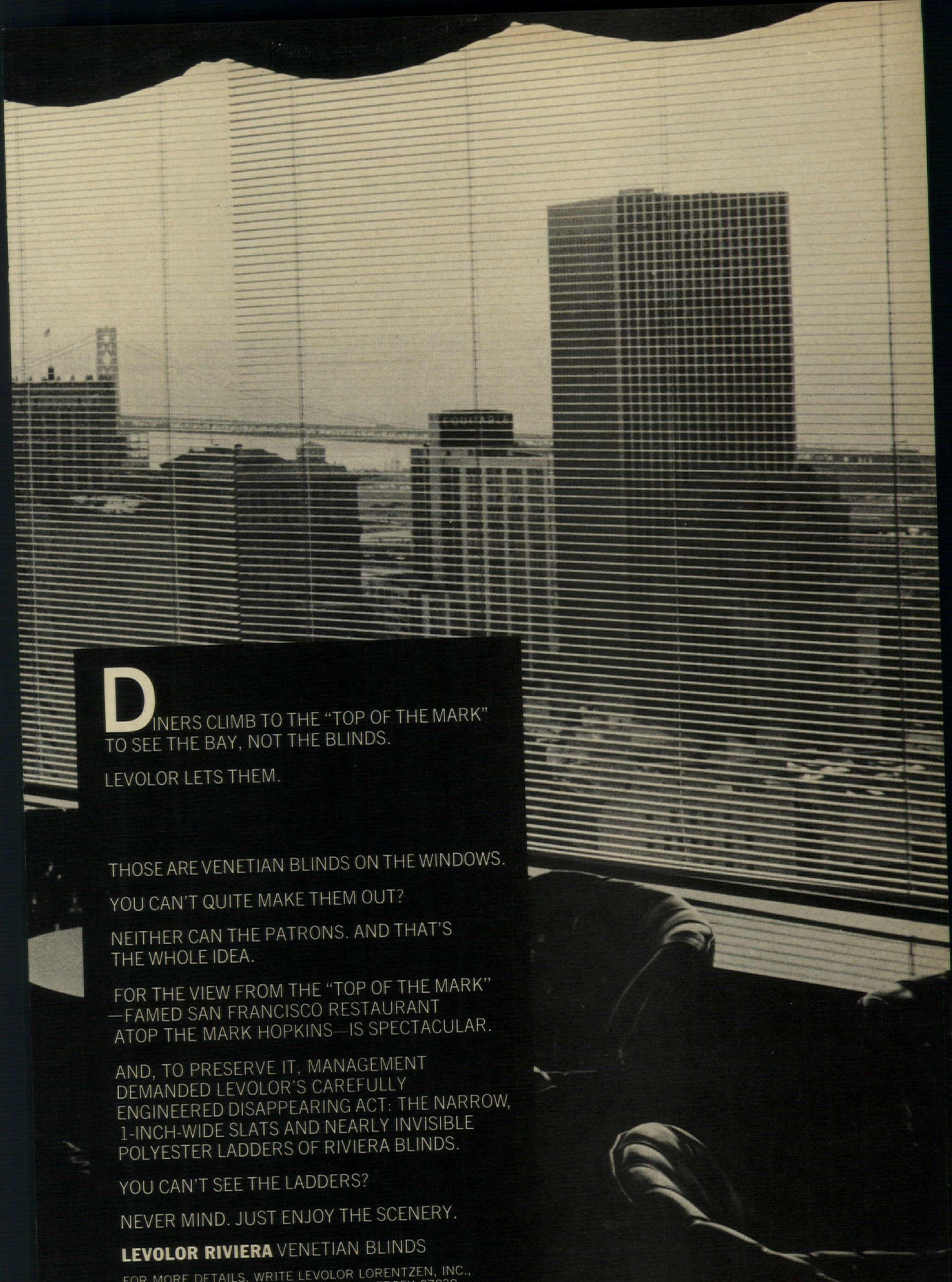

DINERS CLIMB TO THE "TOP OF THE MARK" TO SEE THE BAY, NOT THE BLINDS.

LEVOLOR LETS THEM.

THOSE ARE VENETIAN BLINDS ON THE WINDOWS.

YOU CAN'T QUITE MAKE THEM OUT?

NEITHER CAN THE PATRONS. AND THAT'S THE WHOLE IDEA.

FOR THE VIEW FROM THE "TOP OF THE MARK" —FAMED SAN FRANCISCO RESTAURANT ATOP THE MARK HOPKINS—IS SPECTACULAR.

AND, TO PRESERVE IT, MANAGEMENT DEMANDED LEVOLOR'S CAREFULLY ENGINEERED DISAPPEARING ACT: THE NARROW, 1-INCH-WIDE SLATS AND NEARLY INVISIBLE POLYESTER LADDERS OF RIVIERA BLINDS.

YOU CAN'T SEE THE LADDERS?

NEVER MIND. JUST ENJOY THE SCENERY.

LEVOLOR RIVIERA VENETIAN BLINDS

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A. All of them!

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Another exclusive advantage of WacoFloors is their complete accessibility without loss of stability. The secret is our Snap-Lok Rigid Grid System, far superior to any other. Stringers in our grid system provide rigidity, strength and stability, yet they're easily removed and replaced.

Stringers are easily removed from the exclusive Snap-Lok Rigid Grid System.

Now you know how we can make this flat statement: "There is no equal to a WacoFloor"

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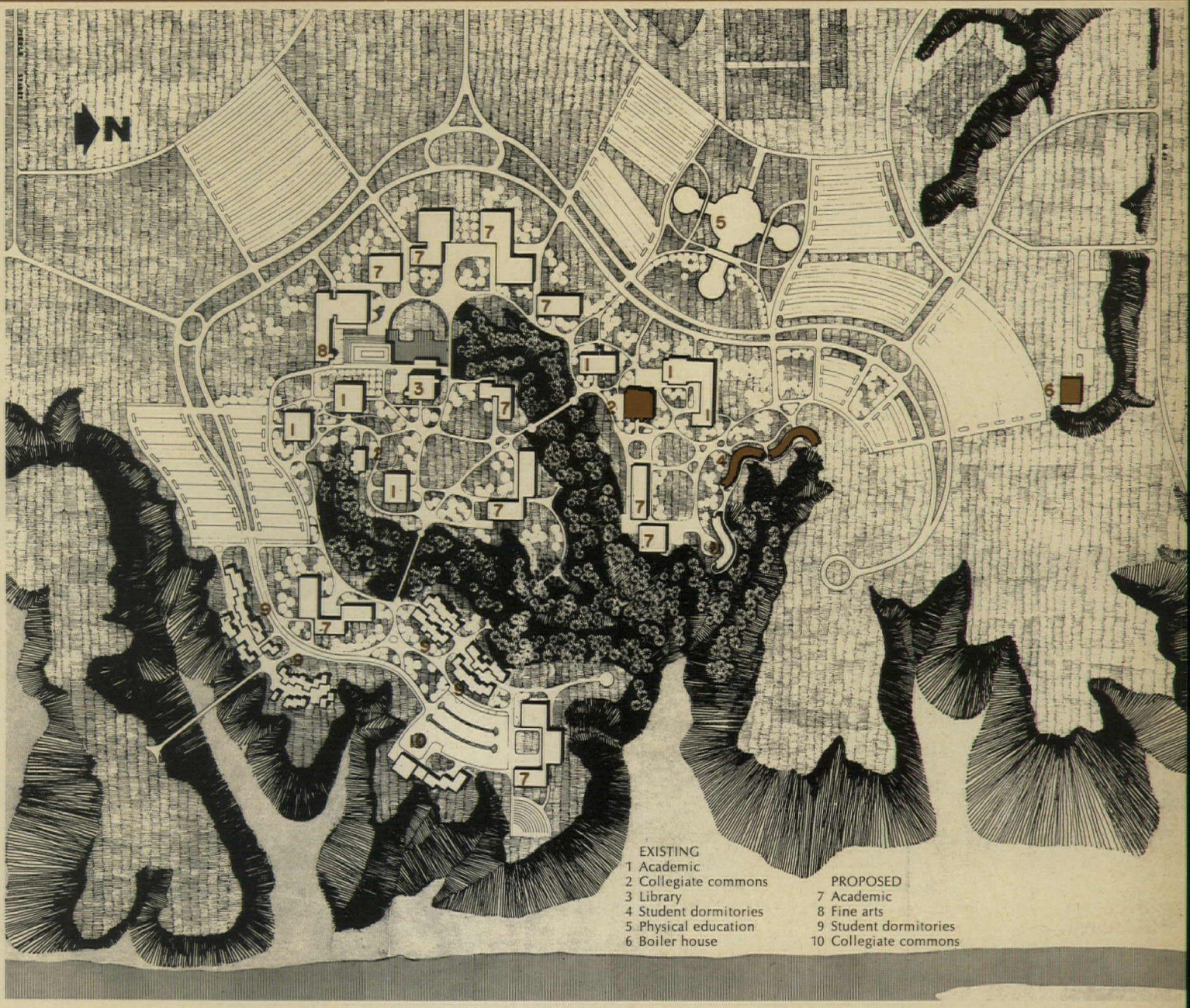


Hedrich-Blessing photos

Collegiate commons

Student dormitories

Boiler house

Three new campus buildings, shaped by site and function, reinforce the master plan

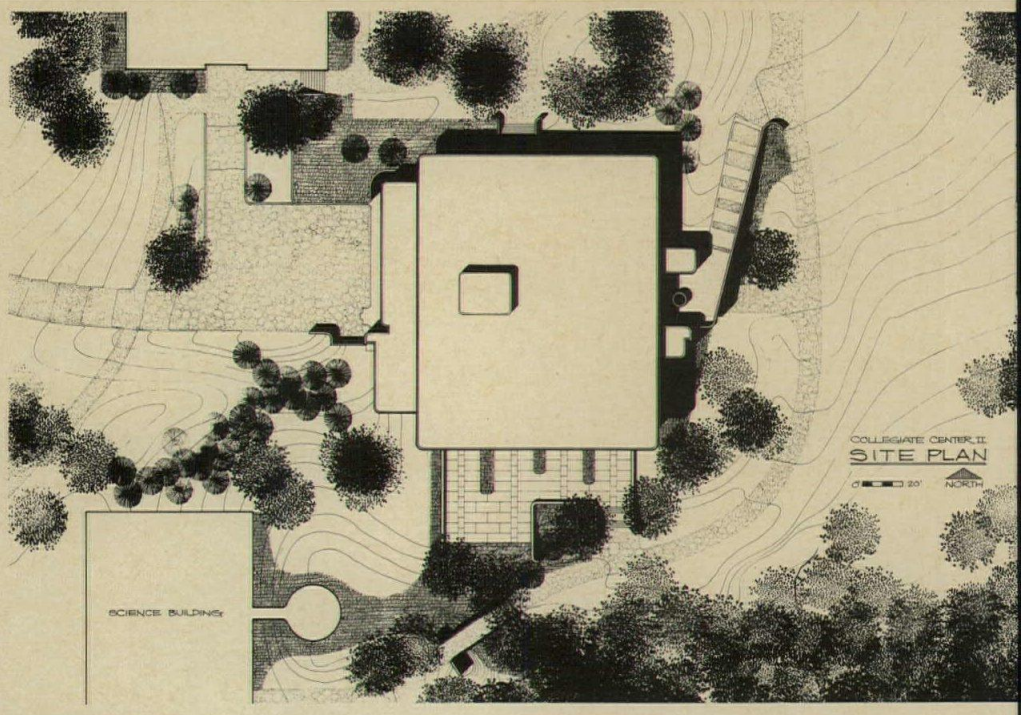
Often, even the best conceived campus master plans eventually fall into disuse. In adapting long-range physical plans to the challenges of growth and change, administrators and architects will frequently make short-range, crisis-oriented decisions which fail to implement the strong ideas embodied in a good plan. Architects Meathe, Kessler and Associates think highly of the master plan for Grand Valley State College, near Grand Rapids in western Michigan. This scheme (shown above), which links three plateaus by long footbridges spanning broad ravines, was established in its essentials eight years ago by landscape architects Johnson, Johnson and Roy. Meathe and Kessler have designed 11 buildings for this college—each carefully planned to strengthen and further the campus design structure. The three most recently constructed are shown at left and on the pages which follow.

A TOPOGRAPHY OF PLATEAUS AND RAVINES

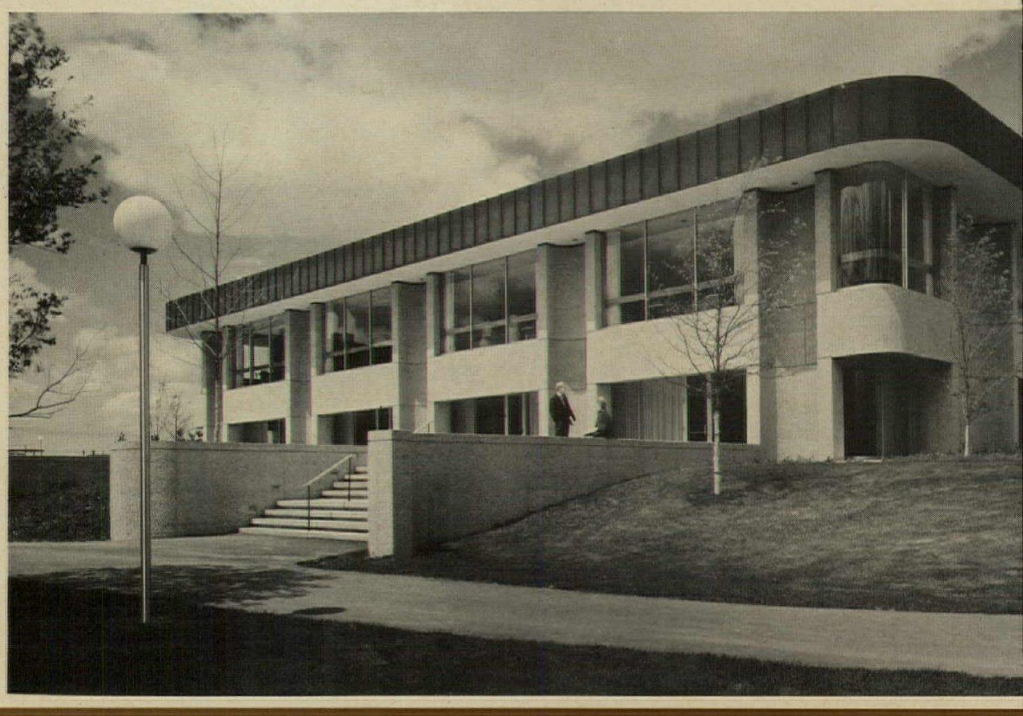
Grand Valley State College, the youngest of Michigan's institutions of higher learning, is located on an 876-acre site, one-fifth of which comprises three gently rolling plateaus, defined by broad and deep ravines descending to the flood plain at the river's edge. Beyond the plateaus the land continues to be rural in character. The plateaus are 20 to 40 acres in extent and are ideally suited to clusters of small buildings. Since the educational concepts of the college call for a relatively decentralized campus, each plateau accommodates a mix of college facilities. The outer plateaus include dormitories adjacent to the academic structures. When the third student commons is built to the south, each plateau will have a collegiate center. Now under construction at the heart of the campus is the library, which will eventually be surrounded by academic structures, several of which will be located across the broad ravines.

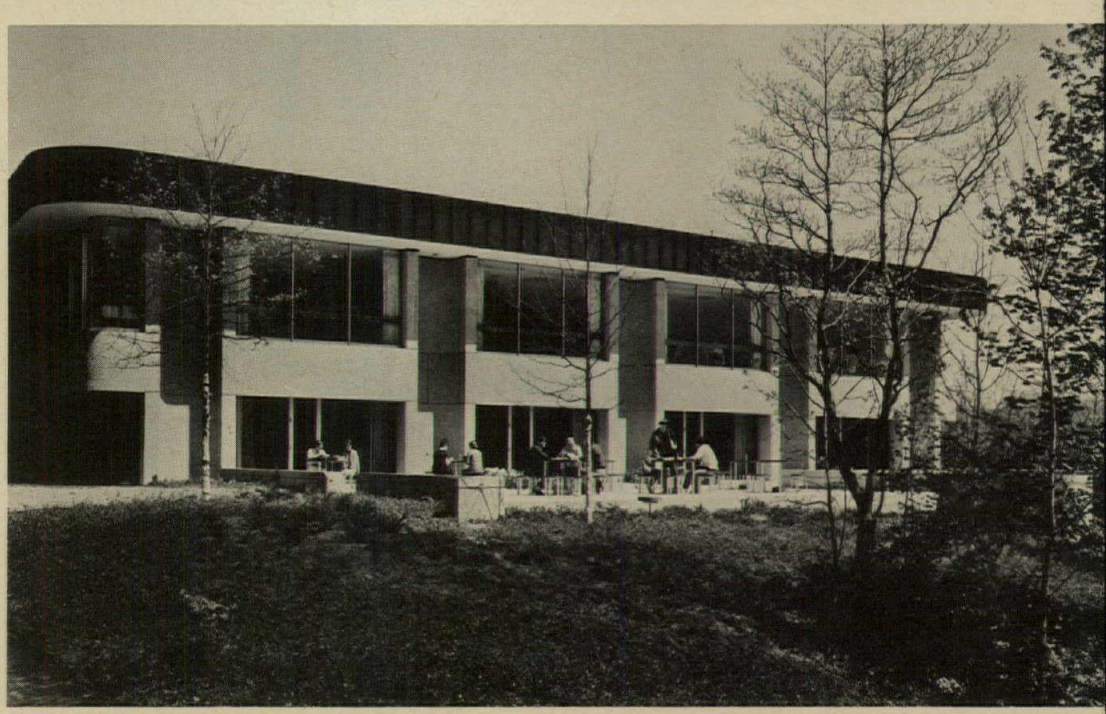
The key to the growth of this campus along the lines proposed by landscape architects Johnson, Johnson and Roy are the ravine footbridges which form part of the major north-south pedestrian spine. Without them the campus would tend to grow to the west of the major vehicular access road, thus destroying the essential framework of the master plan, dividing it by a roadway, and under-utilizing the great natural amenities provided by the ravines. The 220-foot-long footbridge (shown at right) was constructed as part of the budget of the science building (at near edge of photo opposite page). Meathe and Kessler, architects of both science building and bridge, assert that by insisting upon the bridge at an early stage they demonstrated that it was possible, and even economically feasible, to cross the ravine when and where necessary. The bridge is a simple arch span supported at quarter points on concrete cylinders sunk into the steeply sloping sides of the ravine.

COLLEGIATE COMMONS, STUDENT DORMITORIES, BOILER HOUSE, Grand Valley State College, Allendale, Michigan. Architects: *Meathe, Kessler and Associates, Inc.;* structural engineers: *McClurg, McClurg, Paxton and Mikle, Inc.;* landscape architects: *Johnson, Johnson and Roy, Inc.;* mechanical and electrical engineers for Boiler House: *Hyde and Bobbio, Inc.;* contractor for Collegiate Commons: *George Datema and Sons, Inc.;* contractor for Student Dormitories: *George Datema and Sons, Inc.* and *DeYoung and Bagin Construction Co.;* contractor for Boiler House: *George Datema and Sons, Inc.*

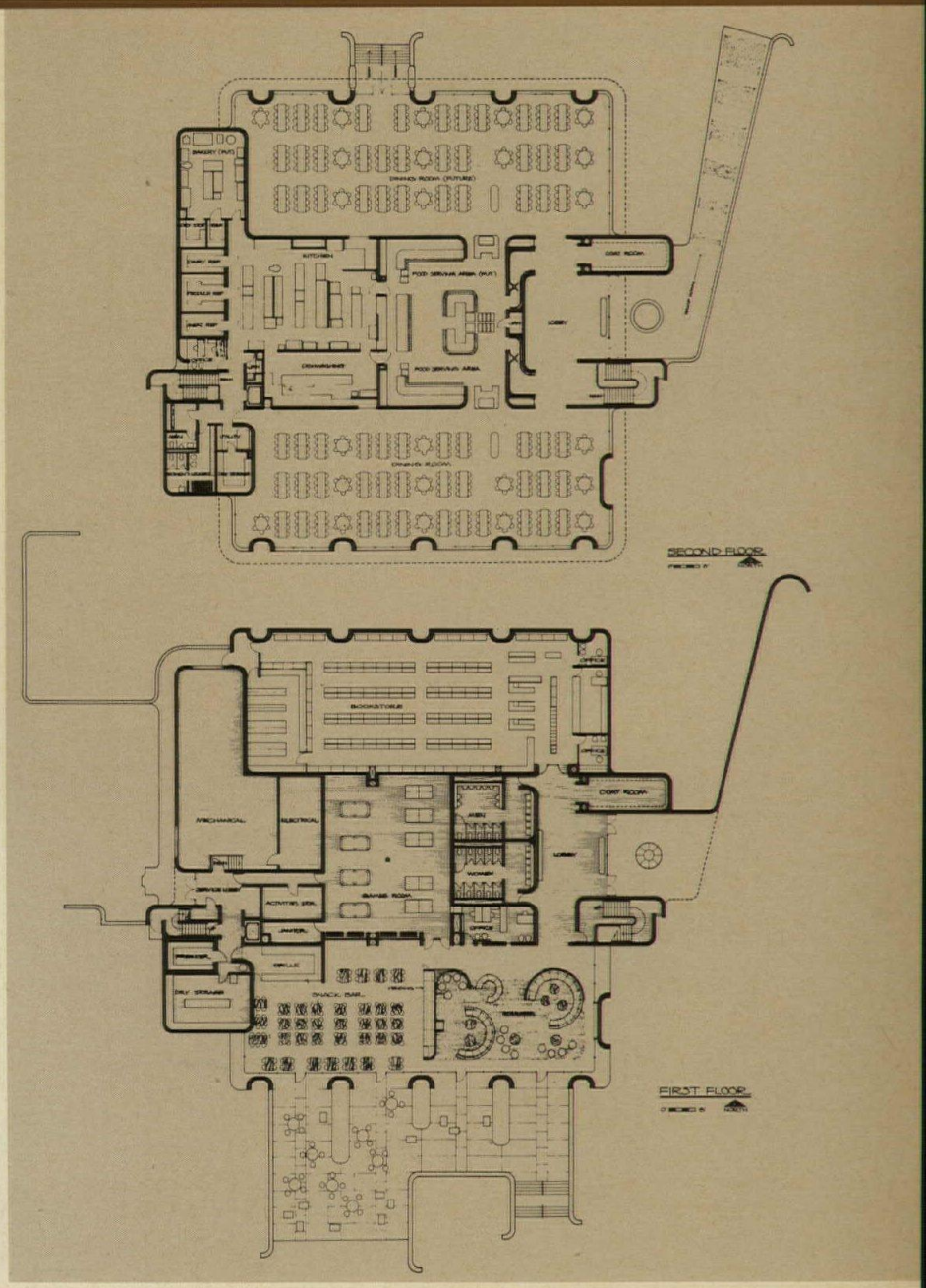


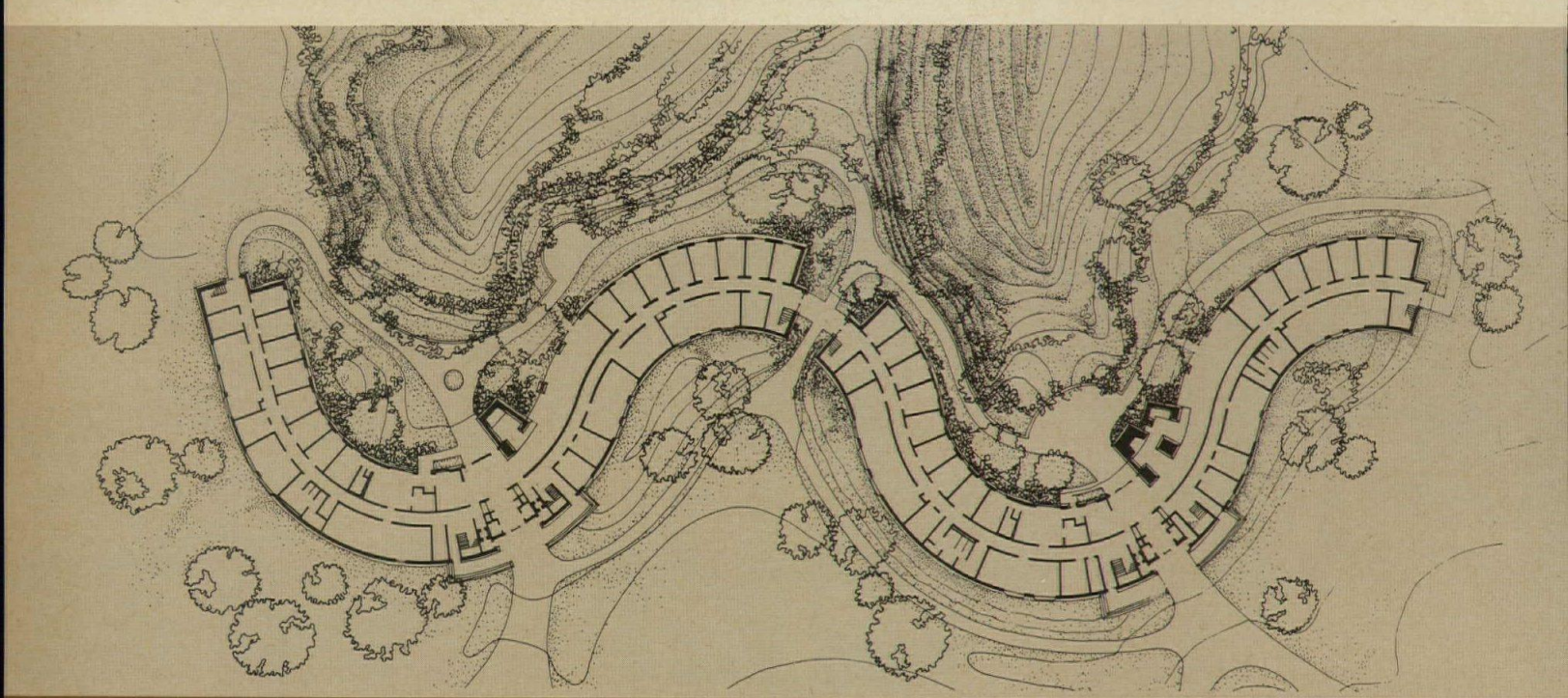
THE COLLEGIATE COMMONS has been designed to relate in its architectural expression to the previously constructed science building which is immediately to the southwest as shown in the photo opposite. (The latter can be seen in more detail in the November 1966 issue.) According to architect Kessler, the designer of both buildings: "An effort was made here to reflect the organic qualities of the portion of the science building that was constructed of concrete, through the use of similar material in repetitive and reflective forms. After we established a reasonable structural system for the commons, we then set about to free it up, making it less rigid to conform to what we consider to be organic characteristics. Curvilinear forms have been used wherever possible—as in the corner windows and roof fascia. The latter is of limited-corrosion steel, matching that used in the main portion of the science building. The use of the ramp to the second floor as well as the short footbridge across a small draw of the ravine [both shown in the plot plan above] help preserve the organic qualities of the landscape." The secondary entrance facade is shown below.

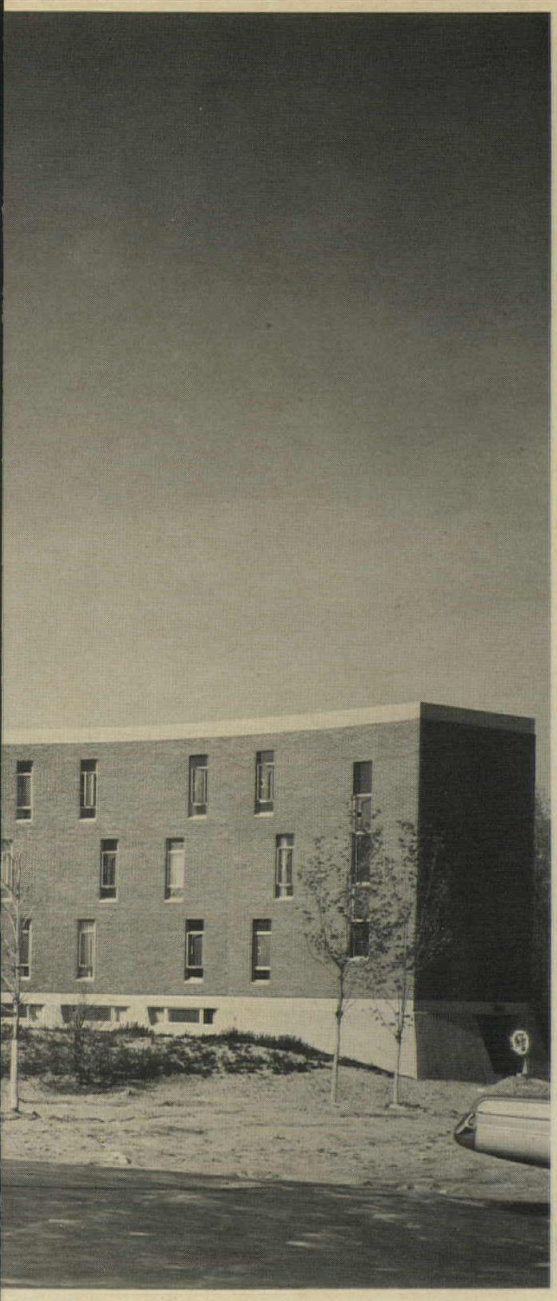


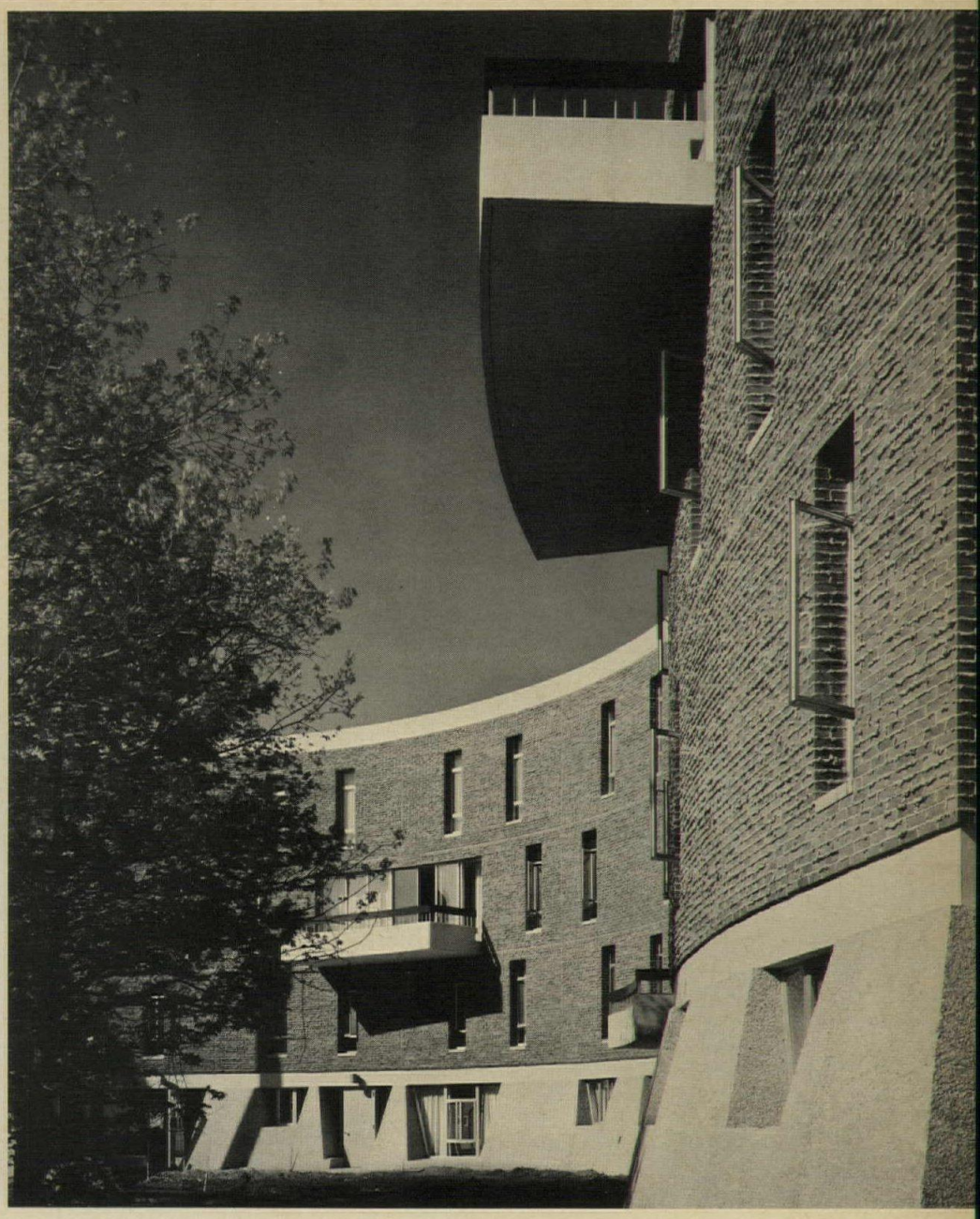


The collegiate commons has been designed to house kitchen and food service facilities for approximately 3,000 students. Game areas, a snack bar, lounge facilities and a temporary bookstore have been included. Because funds were limited, one large dining room remains unfinished, to be converted later to dining use, and the bookstore in the lower level will be converted later into additional games and recreational spaces. The building has been tucked into a hillside, thus creating a one-level facade at the top of the entrance ramp (see photo, lower right). Dining rooms and kitchen are on the second level. Lounge, snack bar areas and recreational spaces are placed on the lower level so that they may be used in conjunction with the outdoor terrace (shown at left, below). These congenial activities are visible from the main pedestrian path. This division of functions allows the entire upper floor to be closed off when food is not being served.

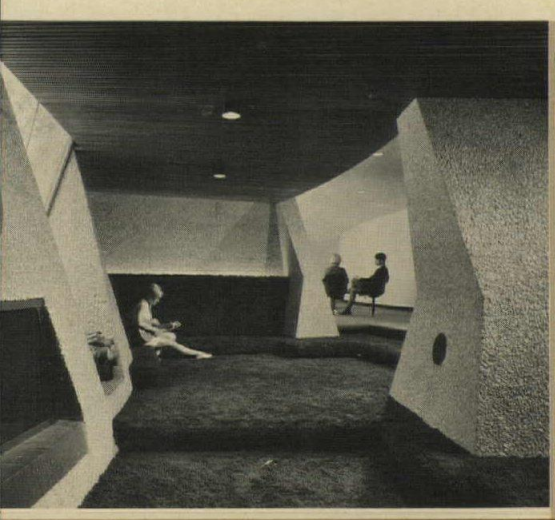


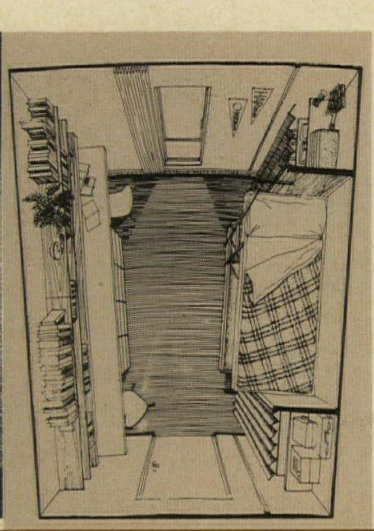


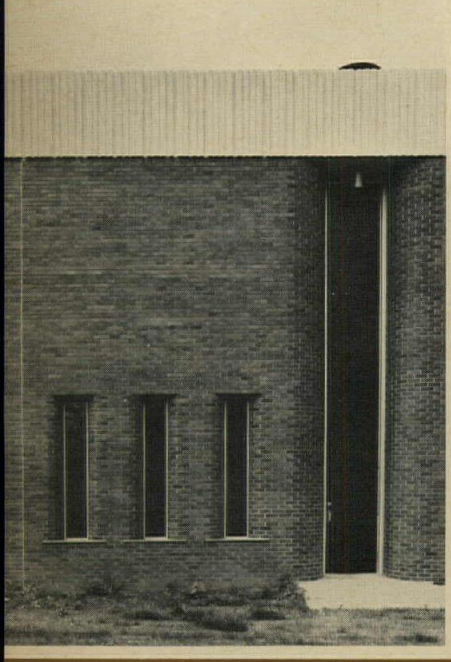


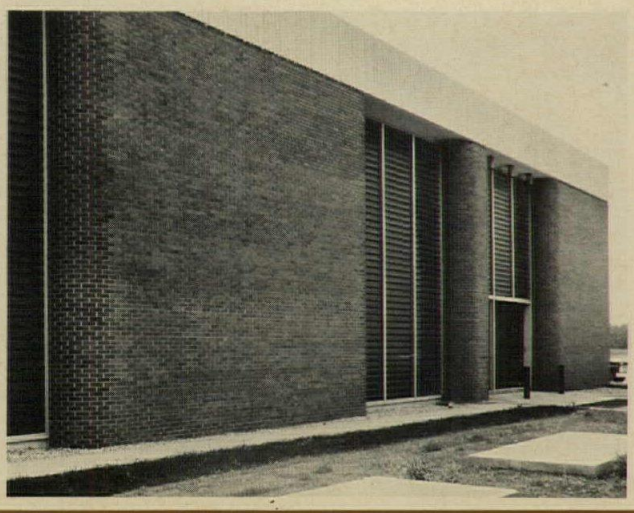


THE STUDENT DORMITORIES have been located on the northernmost plateau right on the edge of one of the heavily wooded campus ravines. "It seemed appropriate," said architect Kessler, "to make the most of the ravine site, tracing its edge by means of a curvilinear scheme with the emphasis upon quiet residential living oriented toward the woods." Federal financing was not used, and the construction cost had to be kept as low as possible—it came to approximately $4,300 per student—and therefore the architects felt that they should not experiment in the development of new student housing concepts. Both buildings are almost identical in their design and house a total of 500. One-half of each dormitory is for men, and the other half for women. Both sexes share a common entrance, lounge and fireplace area on the first floor. Each sex, however, has, on the first floor, its own storage and laundry facilities and a few dormitory rooms primarily for handicapped students. The upper floors are devoted entirely to student rooms and lounges which have balconies overlooking the wooded ravine. The dormitory rooms were given careful study by the architects to try to arrive at a livable solution in the minimum amount of square footage. By resorting to bunk type beds—which the students so far seem to find acceptable—a rather liberal work surface and shelf area could be included to be shared by the two students per room.







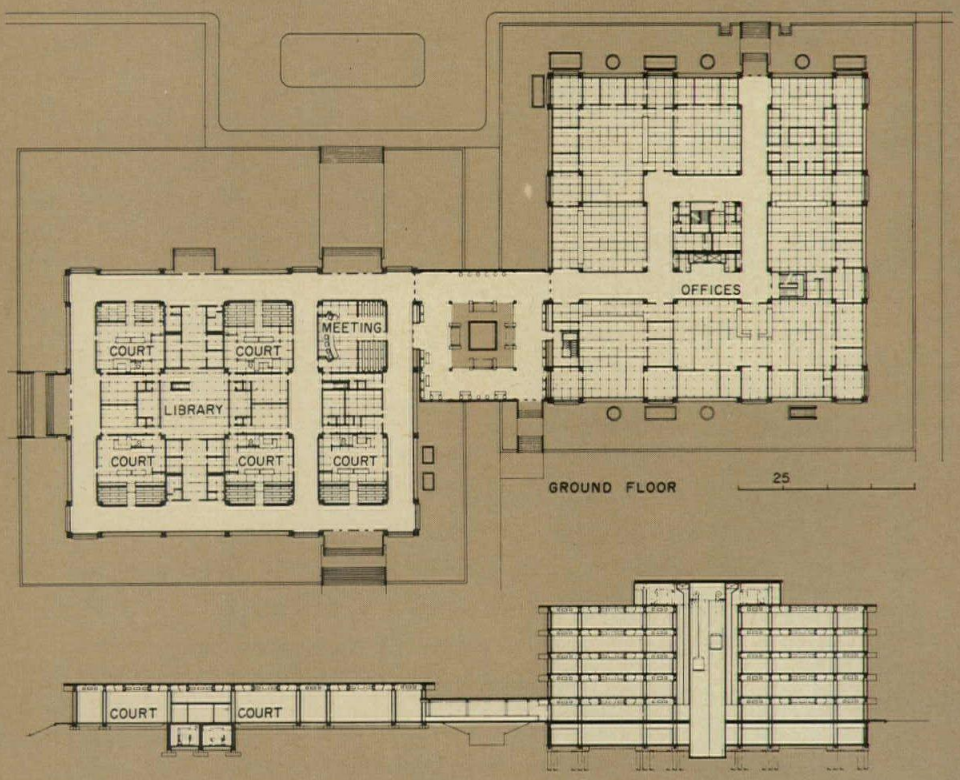


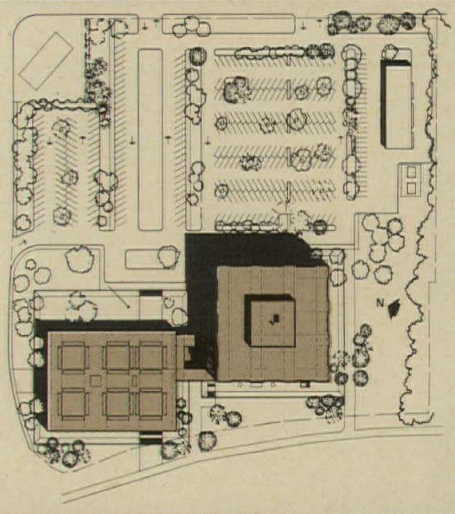
THE BOILER HOUSE has been carefully designed as a background building. According to architect Kessler: "We made a deliberate attempt to de-emphasize the importance of this structure in terms of the whole campus development. We did not feel that we should in any way imply that the mechanical aspects of this campus have any significance whatsoever. Therefore we dug this facility into the hillside and placed a major portion of its workings underground in order to try and minimize its visual effect. Had it not been for the number of air intake, exhaust and blowout louvers and the need for vehicular access, we would have put the building entirely below ground." The structure is steel frame with brick and block exterior walls. It houses all of the basic mechanical and electrical facilities necessary to heat, cool, and illuminate the existing buildings and those planned for the future. The boiler house has been located on the campus periphery.

Santa Cruz County Governmental Center

In these two buildings for Santa Cruz County, California, the unusual architectural statement results in a lively and highly articulated exterior whose directness and honesty is further expressed in the interior. There, mechanical and electrical systems are treated as elements in the design and are forthrightly left exposed throughout virtually the entire complex. What might have been an uncompromising principle of ruggedness is turned, by precise and elegant detail, into a clear statement of strong conviction. Precast and prestressed elements are used repetitively to achieve an unusual degree of economy.

Roger Sturtevant photos

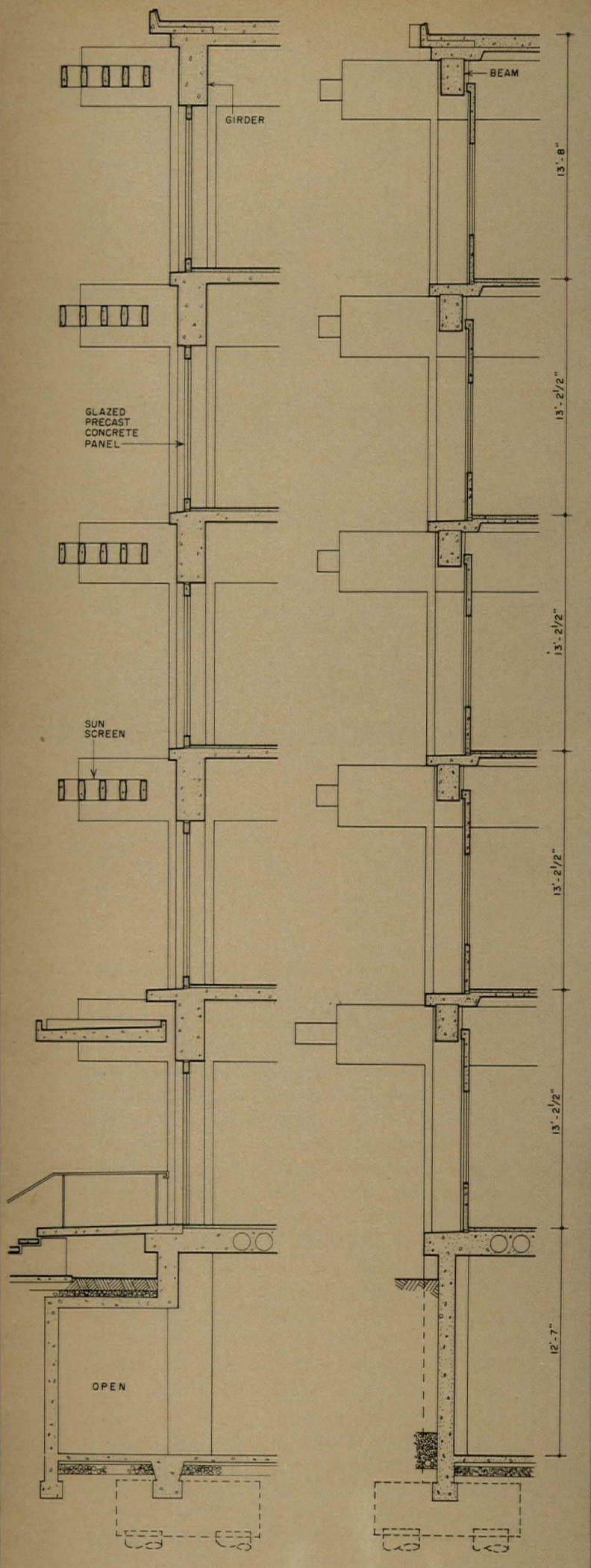


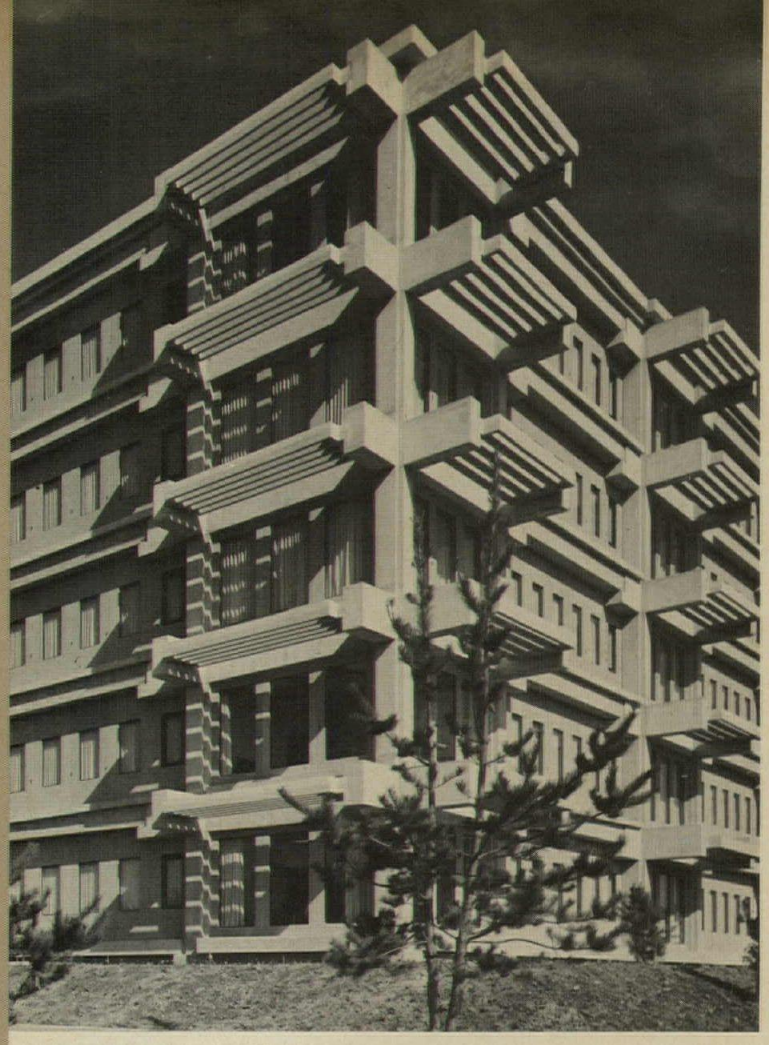


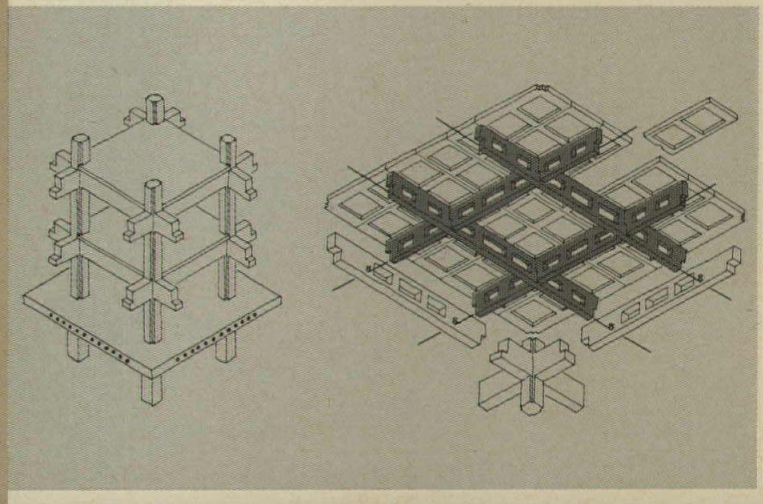
The site is a 10.3-acre plot beside a river which meanders through the city of Santa Cruz. The openness of the site gives the new complex exceptional prominence in the community, a town destined to grow with the development of the University of California's new campus in the hills above town. The architects had design control of site details such as lighting in parking areas. The bridge between office and courthouse buildings (below, right) forms a sheltered open-air courtyard with benches and potted shrubs. Total cost of the center was $6.7 million.

SANTA CRUZ GOVERNMENTAL CENTER

The county governmental center in Santa Cruz, California, consists of two buildings: the five-story administrative office building and a one-story courthouse, linked by a glass-walled bridge open to the sky. The center stands free of other buildings in a redevelopment area along the San Lorenzo river. The highly articulated exterior of the office building, and the dignified courthouse, rely on precast concrete elements, used repetitively and with great success, to achieve union of design scheme and structure. The interiors of both buildings deal with mechanical and electrical systems on their own terms, but treat them openly as elements of the design. These unusual and individual buildings are at once elegant in the precision of their detail and rugged in their over-all appearance. They achieve exceptional flexibility in use of space through long clear spans and the elimination of suspended ceilings, and are economical in cost: $24 per square foot, $4 less than comparable county buildings in the state. The unusual structural system uses 17.5-foot-square towers of poured-in-place concrete, set 55 feet on center, and exposed Vierendeel trusses (some prestressed, some conventionally reinforced) which carry the mechanical and electrical systems. A five foot module, respected throughout, permitted extensive repetitive procedures.


GIRDER
BEAM
GLAZED PRECAST CONCRETE PANEL
SUN SCREEN
OPEN
13'-8"
13'-2½"
13'-2½"
13'-2½"
13'-2½"
12'-7"





The four cruciform columns that make up each tower are tied together by girders whose cantilevered brackets are designed to support the Vierendeel trusses that are widely used in both buildings to carry the precast concrete panels of the floor slab. The stub ends of girders project beyond the face of the building in an unusual architectural expression of the structural system, and carry sunscreens to shield the large corner offices and conference rooms. Suspended light fixtures (below) define the ceiling line in public offices (left) and conference rooms (right).

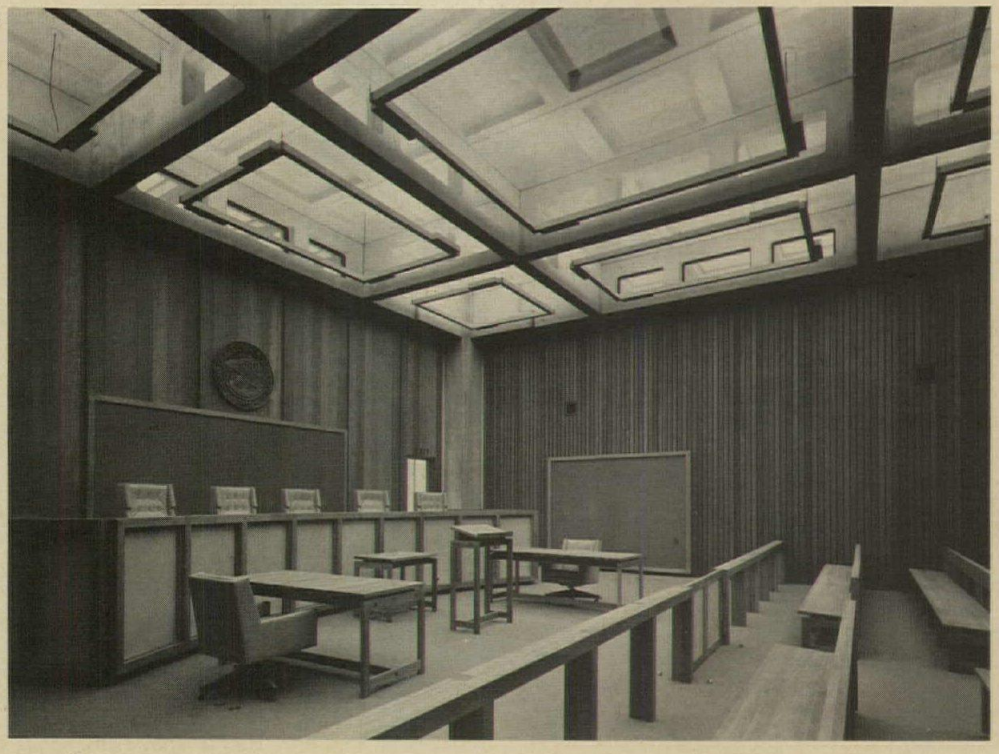
SANTA CRUZ GOVERNMENTAL CENTER

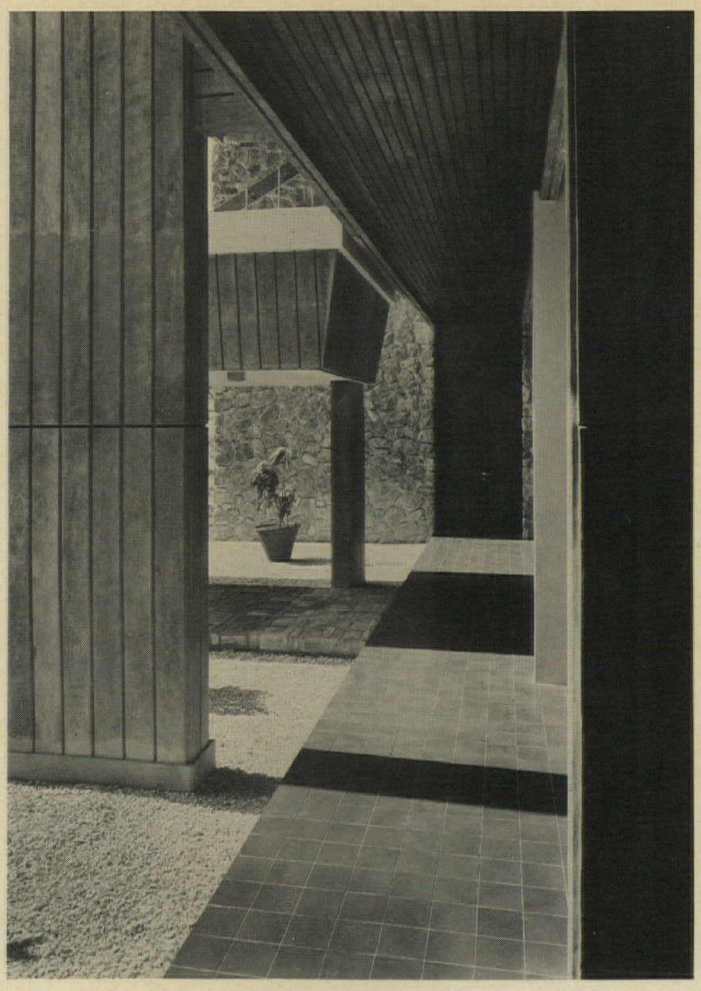
Dignified and handsome, the courthouse uses the same structural concept, varied to permit the courtroom arrangement. Its exterior is a window wall of precast concrete elements, repeated on all four sides. It is the interior, however, that tells the story of the building. The courtrooms are surrounded by a spacious gallery which acts as public lobby as well as circulation. This pleasant space, broad and high, is daylighted by the windows on the building's periphery. The courtrooms, in contrast, have no windows but are daylighted from above by an ingenious and subtle means: skylights, set in a pattern that follows the wall line of the courtrooms, transmit light to the corridors which reaches the courtrooms through glass filler panels in the Vierendeel trusses. The quality of the light so diffused is exceptional, both for general use and for reading. On dark days and at night, indirect lighting comes from simple and straightforward light fixtures suspended in a square pattern.

SANTA CRUZ COUNTY GOVERNMENTAL CENTER, Santa Cruz, California. Architects: *Rockwell and Banwell—Charles Hanf, project architect, Charles Holcomb, field supervision;* structural engineers: *Nicholas Forell & Associates;* mechanical engineers: *Kasin, Guttman & Associates;* electrical engineers: *Smith & Garthorne;* acoustical engineer: *Dariel Fitzroy;* landscape architects: *Royston, Hanamoto, Beck & Abby;* contractor: *Jasper Construction.*

Daylighting of the courthouse is unusual and exceptionally pleasant: corridors receive direct light from skylights (as well as from peripheral windows) that surround each courtroom. Courtrooms are daylighted from the same source, but indirectly, since light is transmitted to them through glazed openings in the Vierendeel trusses above the courtroom walls.

SANTA CRUZ GOVERNMENTAL CENTER





TWO CONCRETE HOUSES:

1

Sprawling pavilions on beach in Jamaica

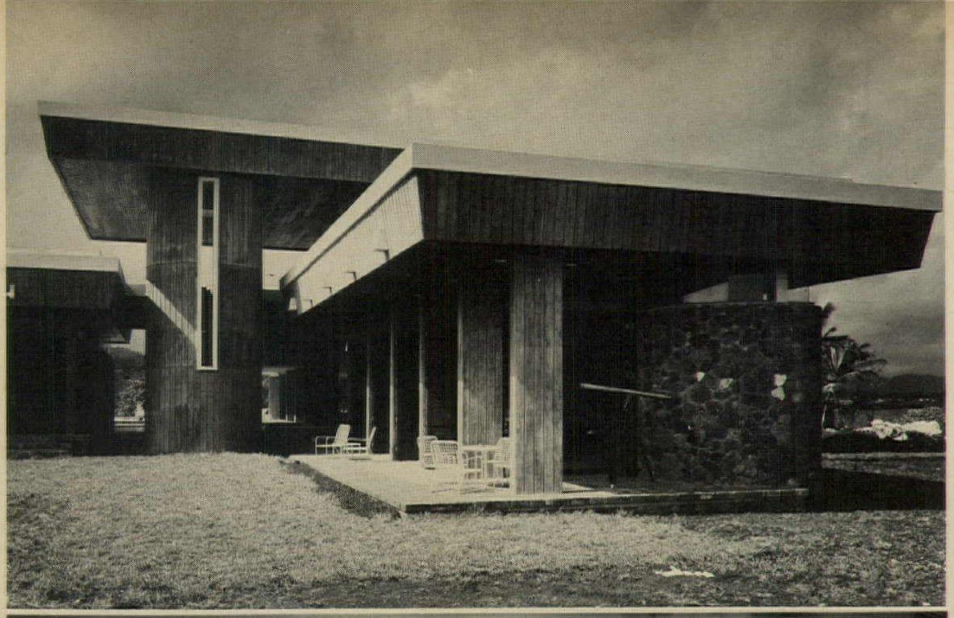
The influence of its spectacular 10-acre site in Jamaica has resulted here in a very outdoors-oriented house, where each room opens onto either the ground level or one of the vast roof terraces. Openness, to the north and east, was achieved by using sliding and folding louvered doors to virtually eliminate walls to provide for natural cooling by the prevailing winds. To the south and west, split river-stone walls resist the heat of the tropical sun and give that side of the house shade and coolness.

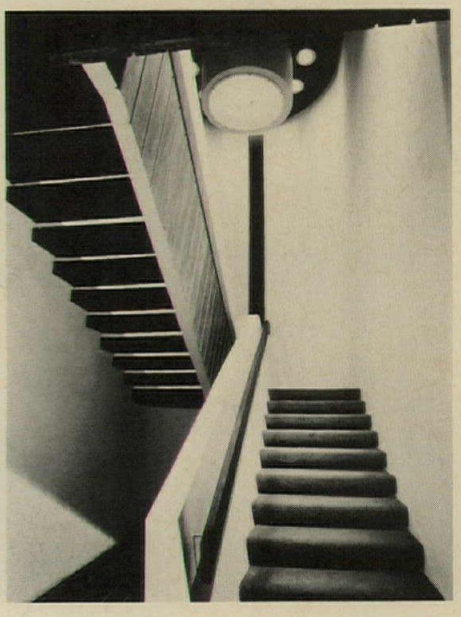
Resistance to the elements—corrosive sea air, blistering heat, hurricanes, and earthquakes—was of course an important aspect of the design, and led the architect to use board-formed reinforced concrete for the basic structure. Concrete also made possible deep overhangs on various levels which appear a chiaroscuro of solid and void in the brilliant sunlight.

Inside, the interpenetration of many levels of space, centered around a 24-feet-high foyer, creates much visual excitement. A trip through this house would provide many carefully controlled views of the Caribbean, surrounding cliffs, and inland mountains.

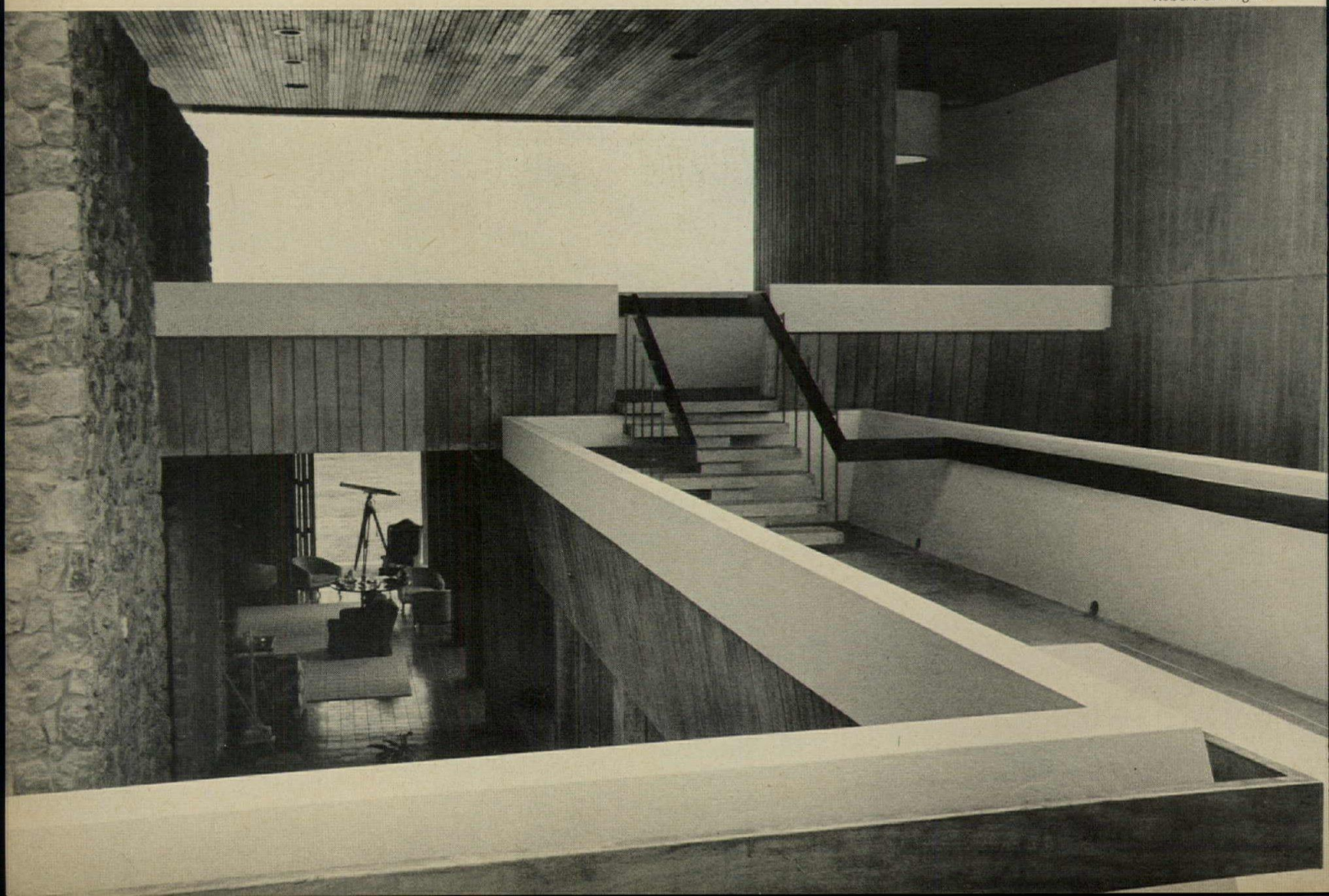
RESIDENCE IN JAMAICA, The West Indies. Architect: *Charles P. Parker;* engineers: *Firth Cleveland, Limited;* quantity surveyor: *Alexander Twyman;* contractor: *V. E. Templer, Limited.*

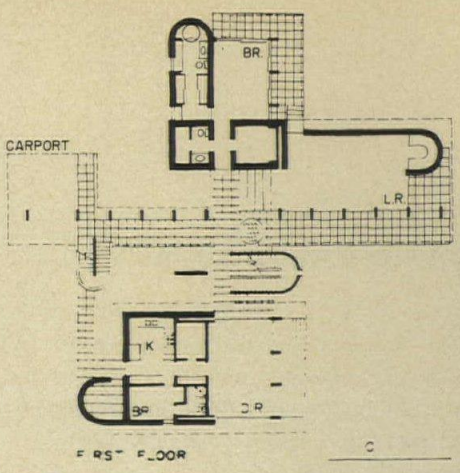
Henry Fullerton photos, except as noted



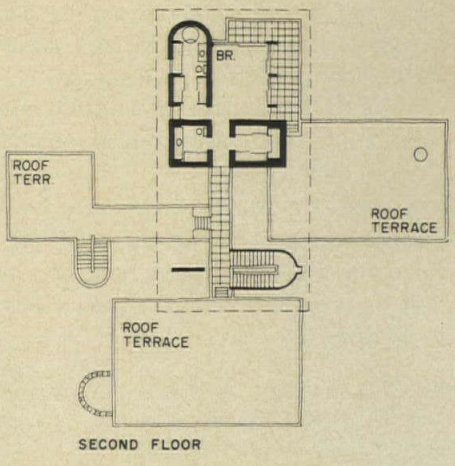


Robert Carrington

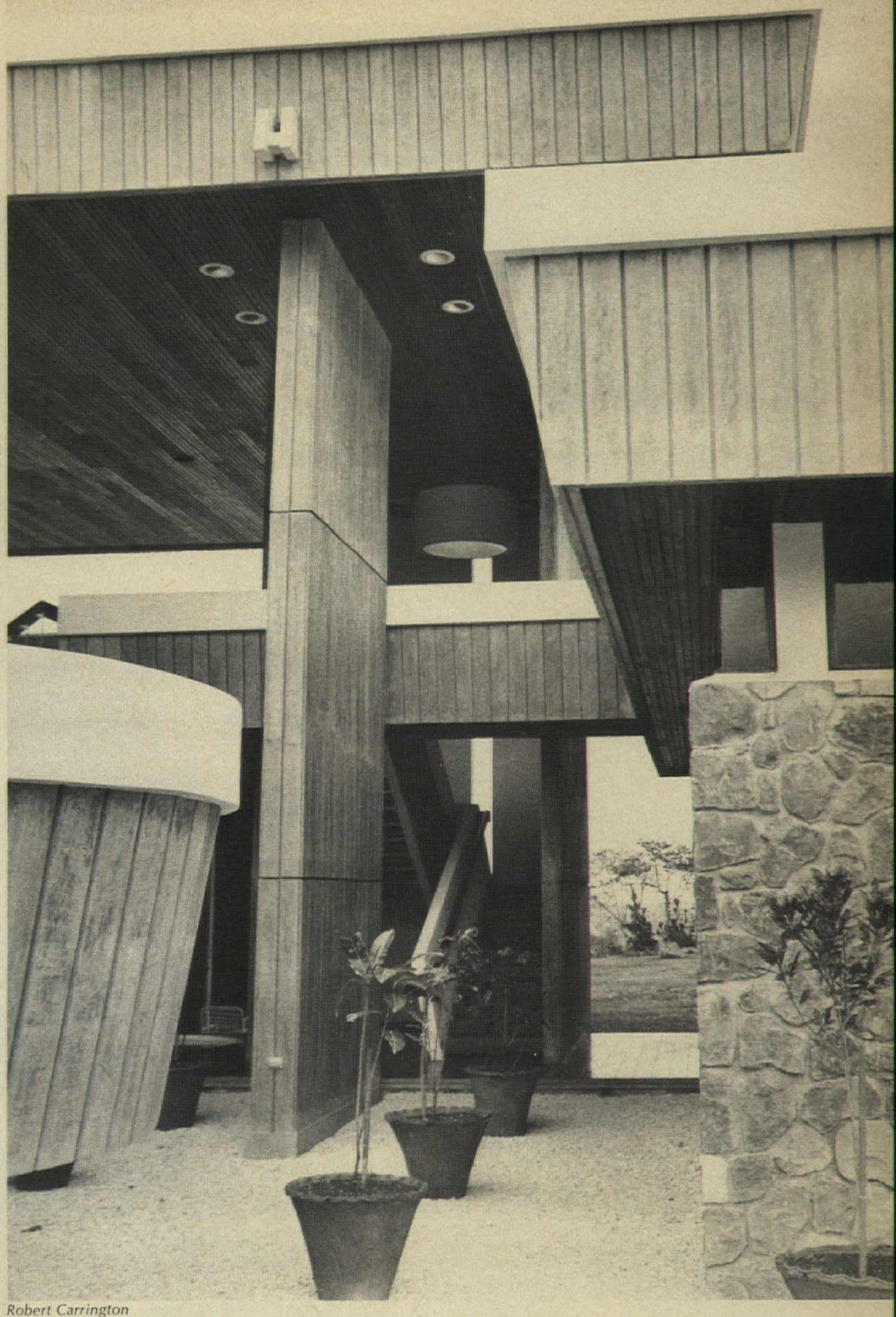




FIRST FLOOR



SECOND FLOOR

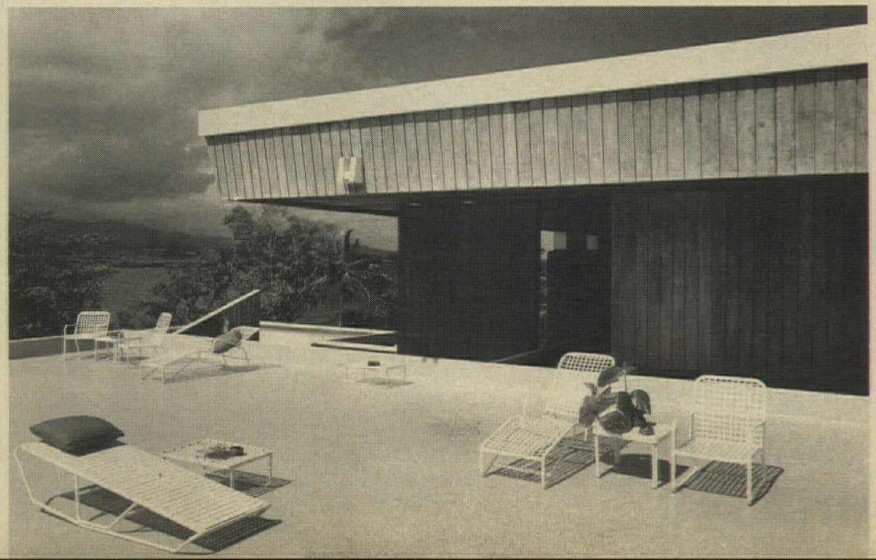


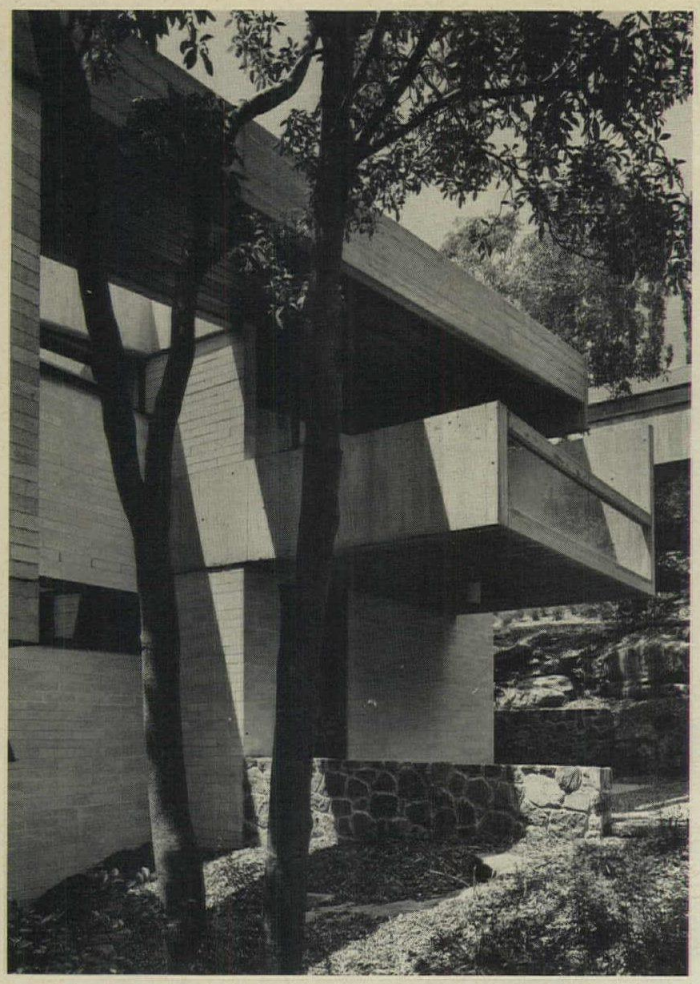
Robert Carrington

The photos, upper left, clearly show how the individual pavilions overlap and radiate from the central stair tower. Deep concrete piers on 8-foot centers are important elements in containing the many views from these pavilions. The piers also relate the interior to the exterior concrete.

The photo, lower right, is of one of the three roof terraces which will eventually be lushly planted to form roof gardens. The roofs are sandwiches of concrete and mahogany separated by two-foot plenums containing pipes, ducts, and lighting fixtures. These plenums are also convectors for wind to carry off heat from the concrete above.

Used red brick for the exterior terracing blends well with the interior quarry tile floors. The boldness of line, as well as the use of materials, gives the house a strong, rugged quality which contrasts nicely with the spectacular site.





2
Vertical design for steep site in Australia

Concrete, because of its ability to span long distances, is the material architect Harry Seidler chose for his own house. Although this house has a very different character from the preceding one, some aspects of the design, such as deep overhangs, many levels of flowing space, and materials, are comparable.

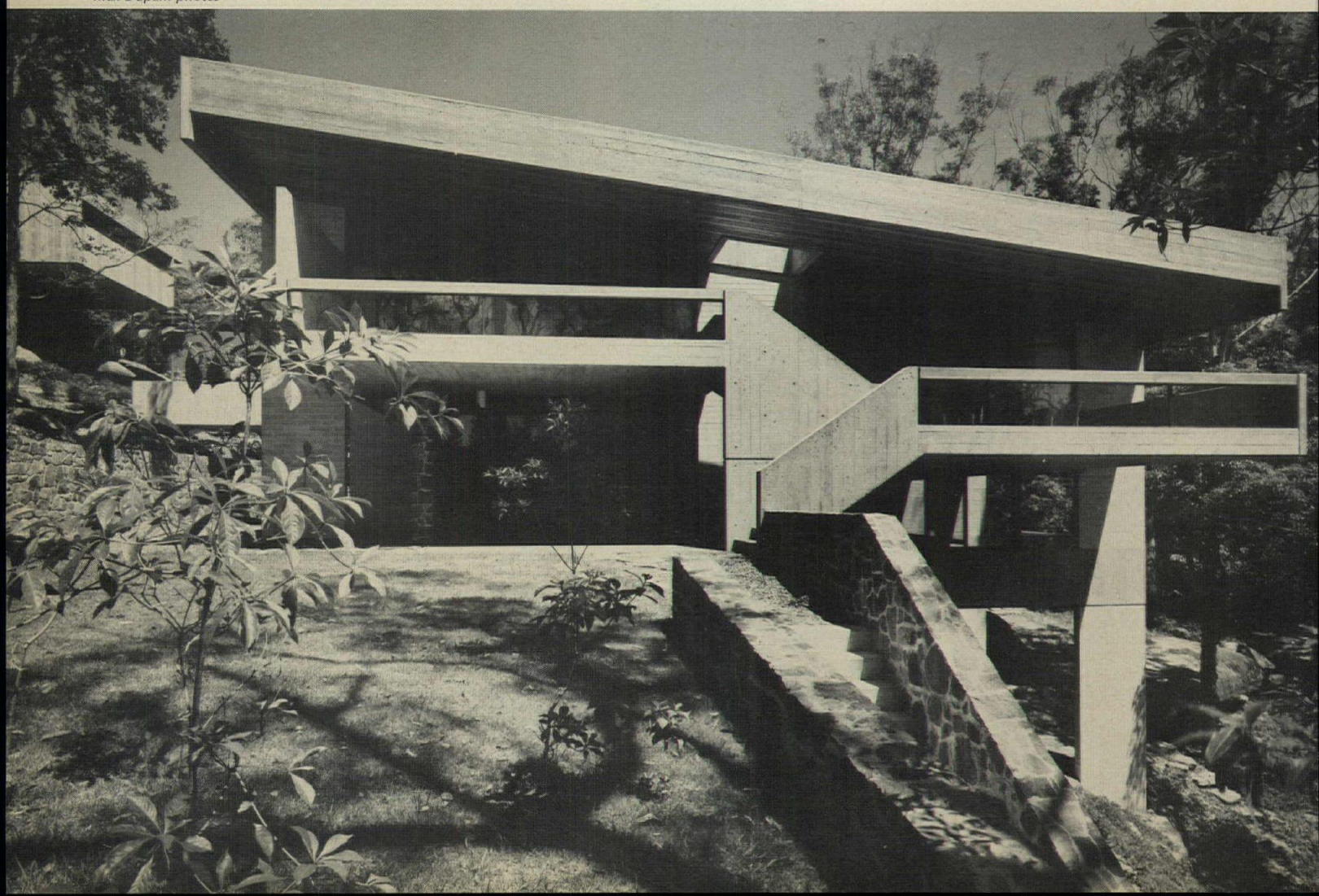
Because of the rugged site's beauty, the architect wanted to preserve it intact. Therefore, the house took on a primarily vertical dimension in order to follow the contour of the steep hill. The garage (seen in upper left of photo below) was placed at the top of the hill to avoid landscaping for a driveway.

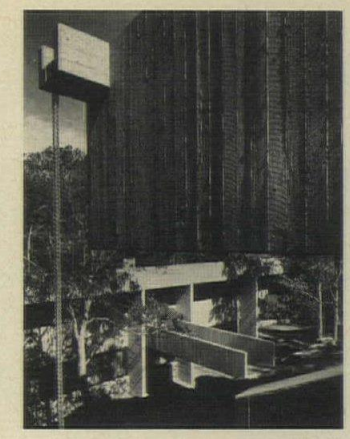
After leaving cars above, the approach is down steps and across a suspended entrance bridge into the top one of the four levels of the house (see photo right, center).

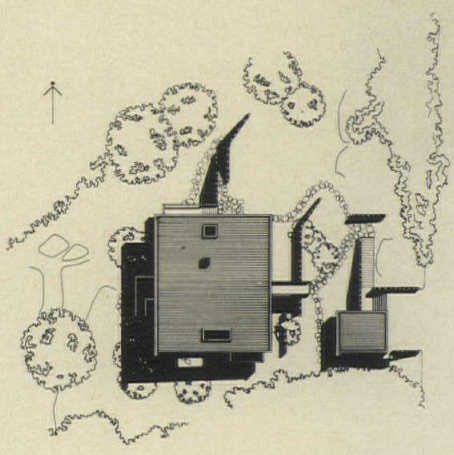
In the center of the house is an open two-and-one-half-story space from which all levels begin. The plan is a simple rectangular one, but is divided into a sunny northern part for daytime activities, and a shady southern part for quiet, passive uses, separated by half-flights of steps.

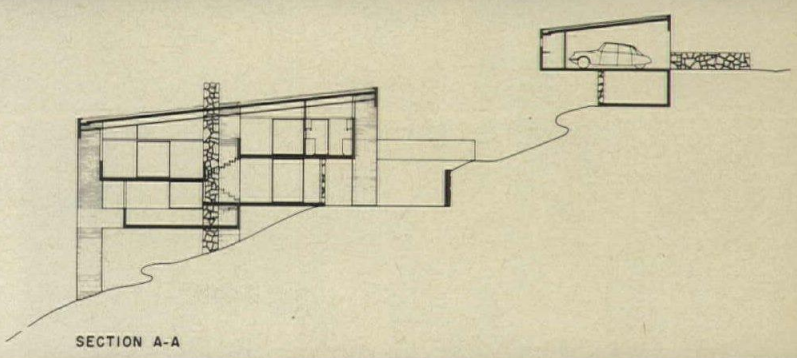
RESIDENCE FOR MR. AND MRS. H. SEIDLER, Killara, Australia. Architect: *Harry Seidler;* engineers: *P. O. Miller, Milstone & Ferris;* lighting: *Edison Price;* landscaping: *Bruce Mackenzie;* contractor: *Peter Cussel.*

Max Dupain photos

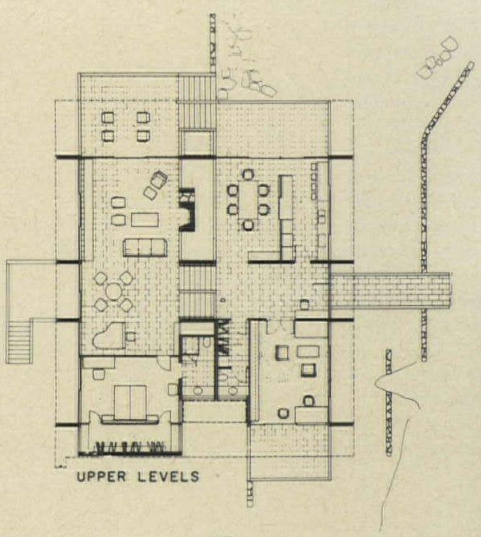




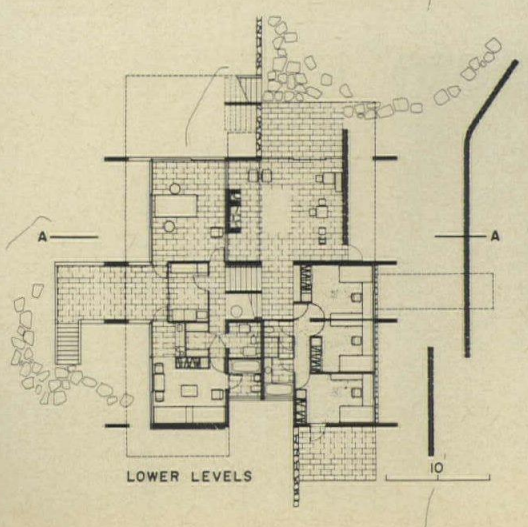


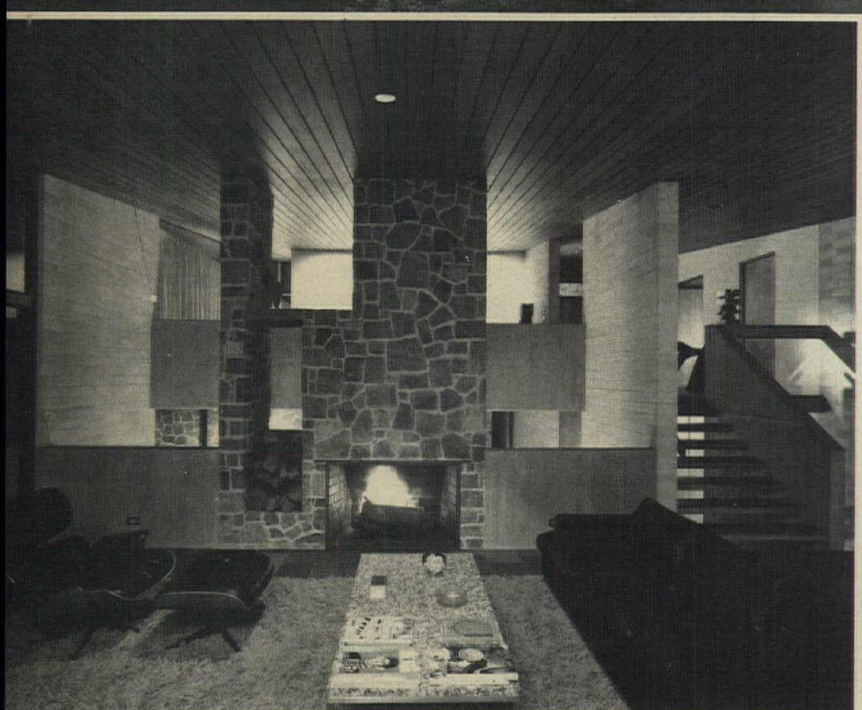


SECTION A-A



UPPER LEVELS



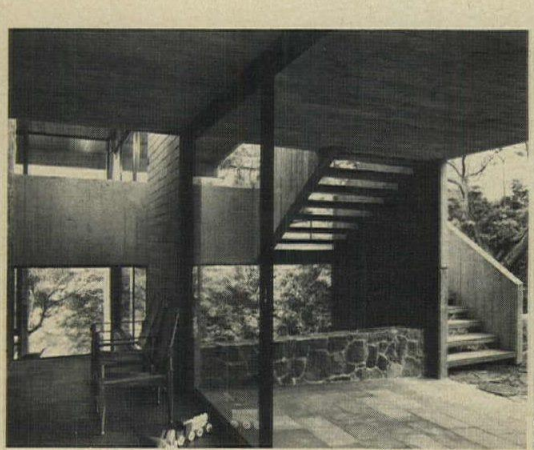


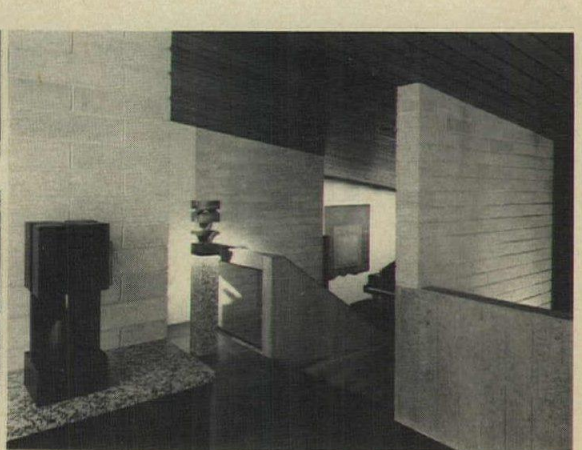
The photo, left, shows a glimpse of a through view from the living room level which gives a sense of the areas beyond without blunt openness of planning. The structural piers, the fireplace, and the concrete parapets define these through spaces.

All levels open onto ample covered outdoor living areas and suspended terraces. These create good shading and assure coolness in the hot summer months.

The five-bedroom house is constructed of rough-sawn board-formed concrete and other maintenance-free masonry. Three rows of reinforced concrete piers support suspended and cantilevered floors —stiffened by rail-height parapets that make the long projections possible.

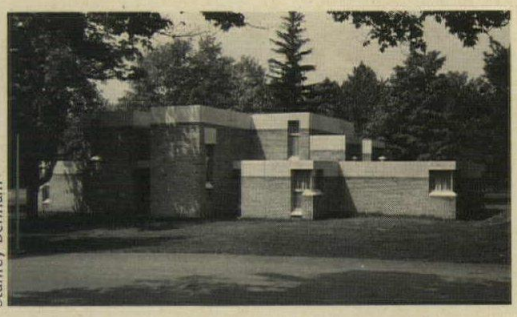
Floors in all living areas are of quartzite stone; only the bedrooms and the library-study are carpeted. The main sloping ceiling is Tasmanian oak boarding.





FIVE SMALL CLINICS

Clinics and group practice medical facilities are growing in scope and variety as new support programs by government, research institutes and private sources provide opportunities for development. The five facilities on following pages demonstrate some of the diversity of recent commissions in this field.

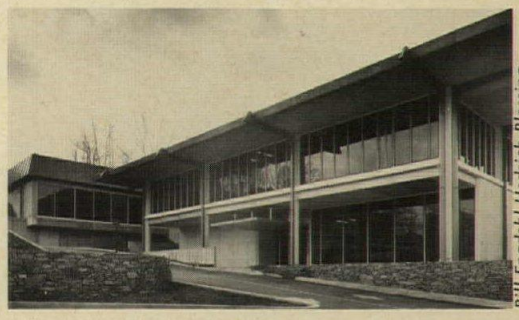


Stanley Benham

Clinic for a special school
Architects: *Gary Lindstrom & Associates*

Frank Lotz Miller

Group practice in a neighborhood
Architects: *Neuhaus & Taylor*

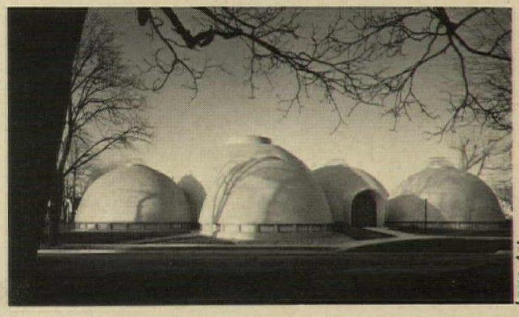


Bill Engdahl Hedrich-Blessing

A regional co-op clinic
Architects: *E. Todd Wheeler* and *The Perkins & Will Partnership*

Louis Reens

A labor union clinic
Architect: *Bernard A. Marson*



Lens-Art

Domed clinic for women
Architect: *E. H. Brenner*

VISUAL CONTROL IN A CLINIC FOR A SPECIAL SCHOOL

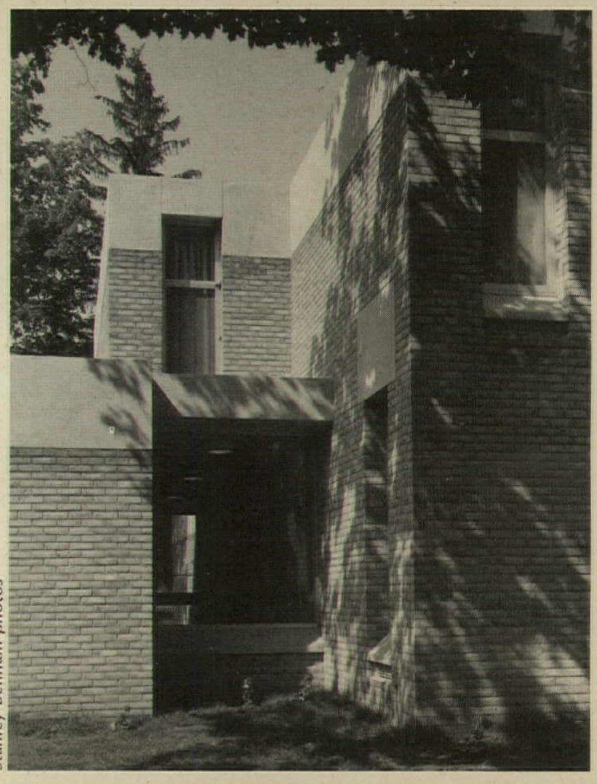
A series of open rooms surrounding a glass-enclosed central clinic solved visual control requirements for the Greer School Infirmary in Millbrook, New York. Greer is a 60-year-old charity-run institution which cares for approximately 175 children from broken homes. With nurses hard to find in the area, it was necessary that the design permit a single nurse complete visual contact with all rooms at night. Two full-time nurses and visiting pediatricians and dentists staff the facility days, serving as many as 1000 outpatients a month. Serious illnesses are transferred to the local hospital, but some 25 to 50 bed patients per month stay overnight at the infirmary in single-, double- and three-bed rooms.

High large windows have under-sill slots running down to the floor which are integrated into the fresh air intake for the air conditioning. When drapes are opened, the upper windows offer patients a pleasant view of the 1500-acre forested site. Lower windows are draped to assure privacy from outside.

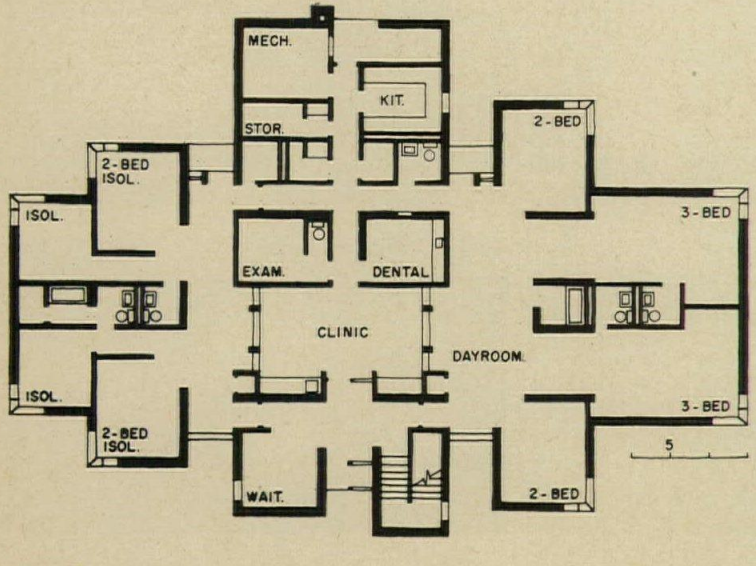
The building is fully carpeted, air conditioned, and equipped for various medical equipment support systems.

GREER SCHOOL INFIRMARY, Millbrook, New YORK. Architects: *Gary Lindstrom & Associates;* mechanical engineer: *Isidore Shiffman;* general construction: *Unitec Corp.*

The infirmary is centrally sited on the Greer Campus directly across from the Administration Building. Interior glass wall in the clinic (shown below) permits visual control of patient rooms, and allows sunlight and view from windows to penetrate the windowless area. Wards, single and isolation rooms can accommodate 16 students.



Stanley Benham photos



GROUP PRACTICE CLINIC FITS RESIDENTIAL LOCALE

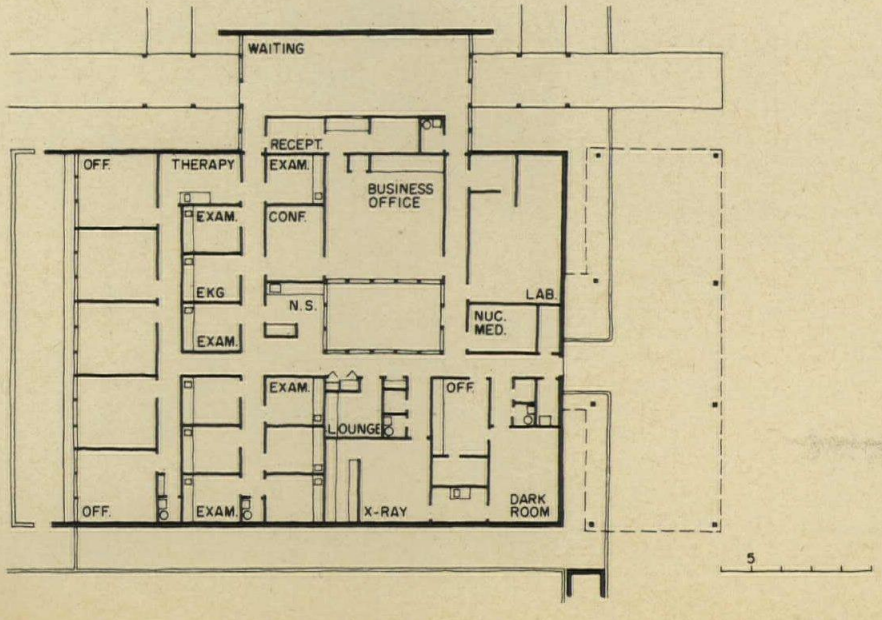
Subtle horizontal pattern in the brick wall, and a wide, sloping copper fascia, visually reduce the height of the Levy Clinic, a group practice facility designed by architects Neuhaus and Taylor for five doctors specializing in diagnostics and internal medicine. Though considerably larger than adjacent residences, the 5400-square-foot building projects an image of quiet and warmth.

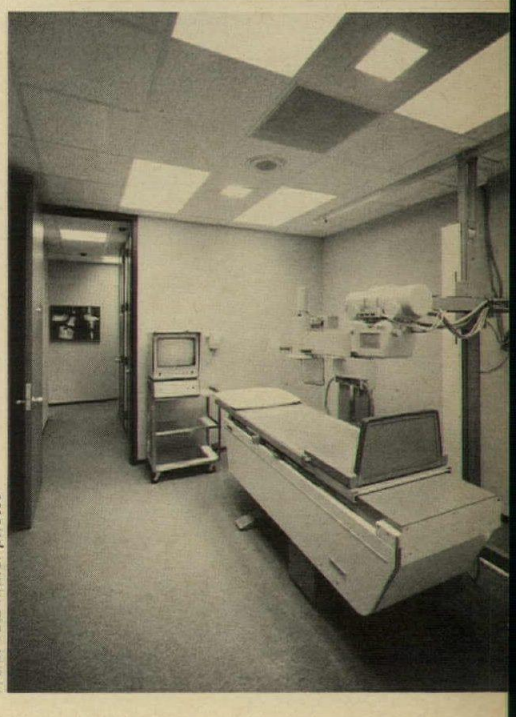
Doctors' offices are located along the bronzed-glass west wall of the building, which overlooks a private high-walled court and oak trees beyond. A short corridor separates the offices from the main body of the clinic to provide a quiet, somewhat remote area for work not involving routine patient consultation. Patients needing lab or X-ray services can enter those areas without going through examination areas.

Walls are vinyl fabric except for wood panelling used to accent walls in several of the doctors' private offices and in the conference room. Ceilings are accessible acoustic tile or acoustic plaster. All interiors, lighting, landscaping and furnishings were designed by the architect.

LEVY CLINIC, Houston, Texas. Architects: *Neuhaus & Taylor;* structural engineer: *Karl A. Krause;* electrical and mechanical engineers: *Chenault Engineering Company.*

While labs, examining rooms and X-ray areas are windowless, a small center courtyard gives light to the business office and corridors. The waiting room, which provides separate access to examination and treatment areas, is floored with brick pavers (photo above). The rest of the building is carpeted.





Frank Lotz Miller photos

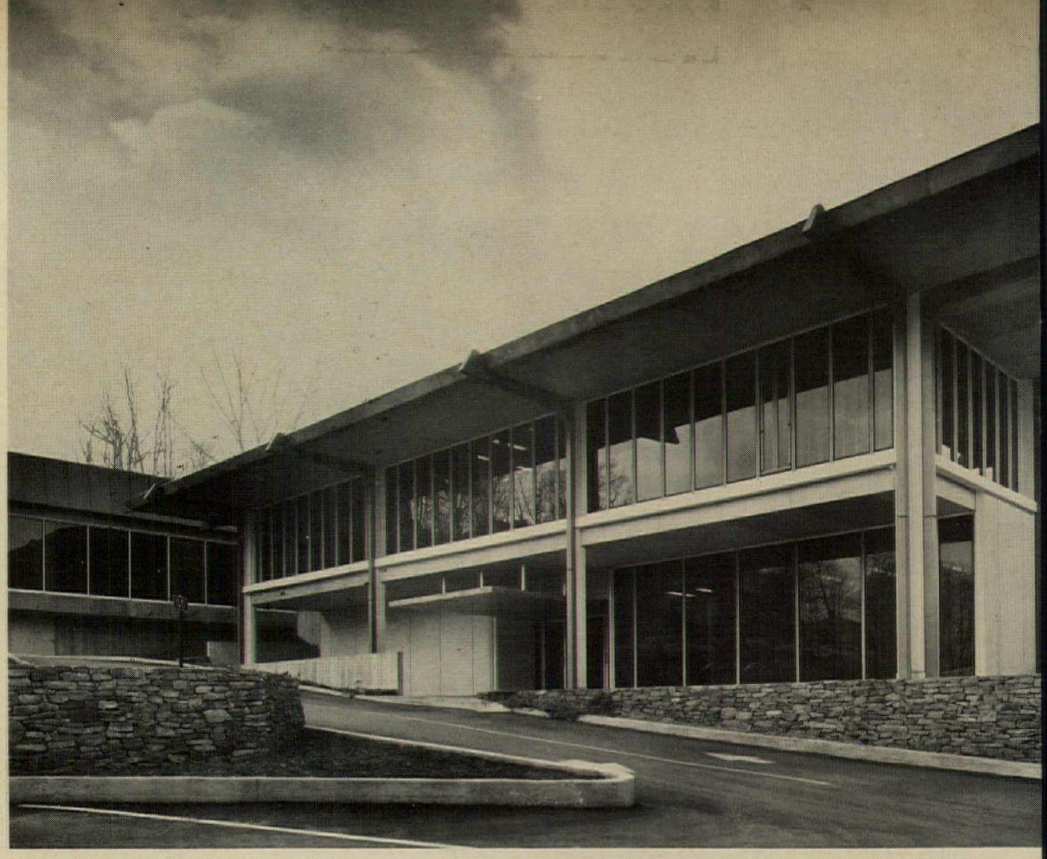
CO-OP CLINIC IS PLANNED FOR AUTO TRAFFIC

Most patients, doctors, and staff will arrive by car at this community clinic owned and operated by the non-profit Monongahela Valley Association of Health Centers. Hence, three categories of parking area are provided. Doctors' and patients' areas are placed on the highway level because of the quick turnover; but to accommodate staff cars on the two-acre site, the roof of the rear wing was designed for parking. A 30-foot rise in the ground level made this possible (see site plan).

Sixteen doctor's offices are grouped on the upper level, along with nurses' stations and treatment rooms. On the ground level are patient facilities and an emergency area. Overnight patients are treated in the general hospital across the street. Administrative offices are in the rear wing.

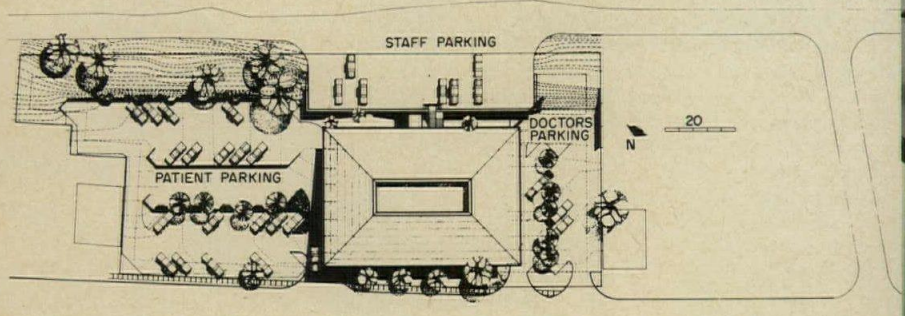
Because the building can be observed from the highway and from above on the hillside, the architects designed a terne-covered hip roof to avoid an unattractive large, flat plane. Materials are a steel skeleton with walls of marble-chip precast panels and steel-framed glass.

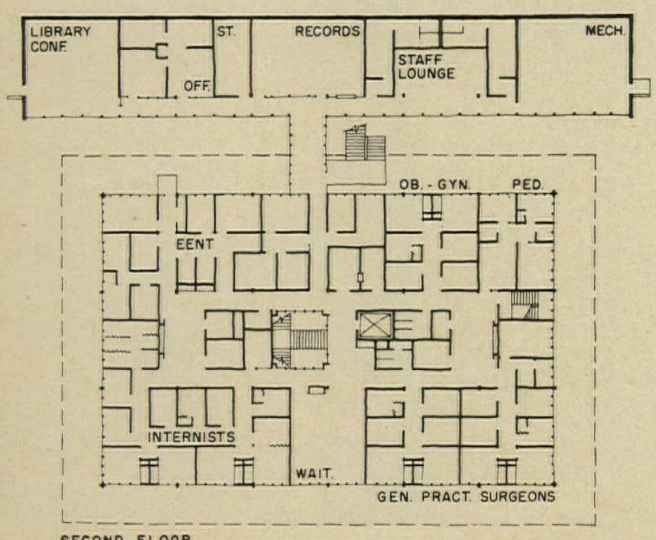
FAIRMONT CLINIC, Fairmont, West Virginia. Architects: *E. Todd Wheeler* and *The Perkins and Will Partnership*—partner-in-charge: *A. Whitney Murphy; contractor: Baker & Coombs.*



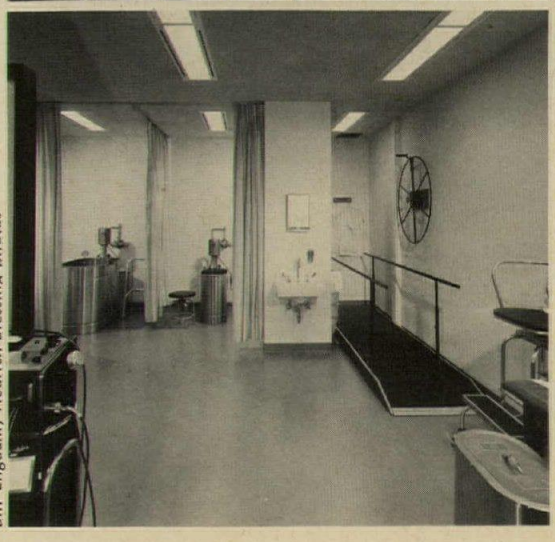
The attic created by the hip roof is used for air conditioning equipment and elevator machinery. Overhanging sides of the roof reduce solar heat gain.

Total land, equipment and building cost is approximately $1.1 million. The interior area is about 25,000 square feet.





SECOND FLOOR



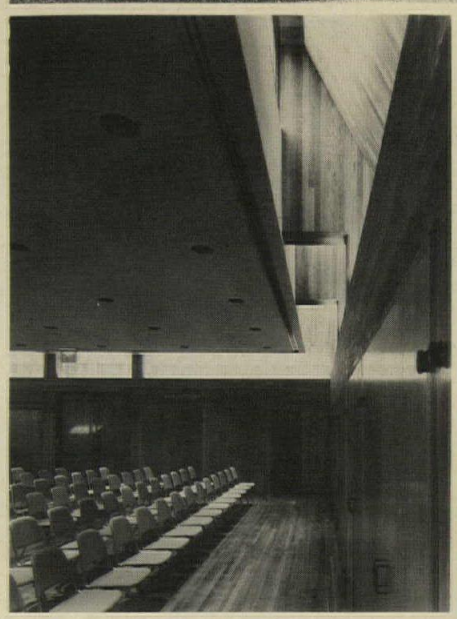
Bill Engdahl, Hedrich-Blessing photos

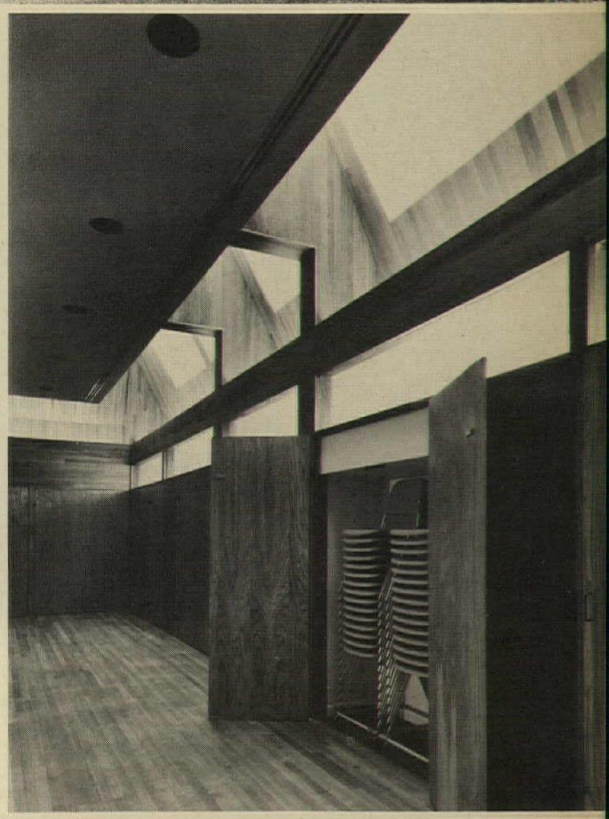
CLINIC IS PART OF A LABOR UNION CENTER

This medical and administration center for the International Production Service and Sales Employees' Union in Islip, Long Island, is a composite of three units —a medical center, an administration office and a meeting hall—all linked by a skylighted central lobby area. A bronze-colored mansard-shaped terne metal fascia conceals roof-mounted mechanical equipment, clerestory lighting, skylights, and varying ceiling heights.

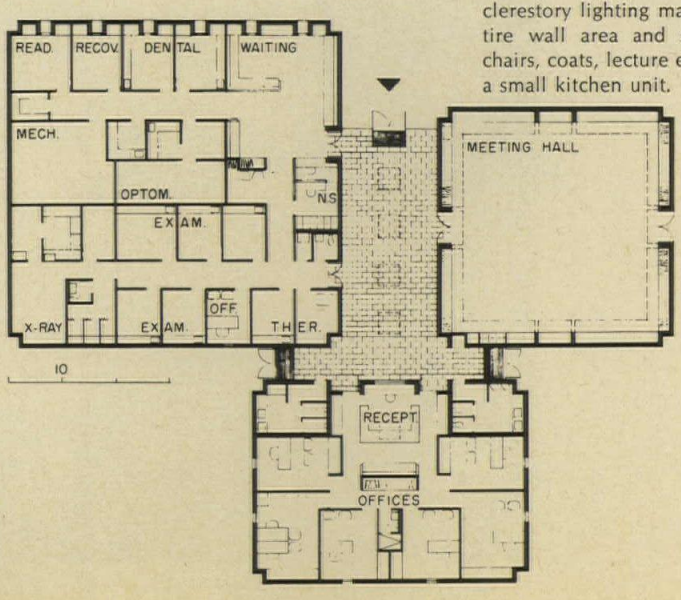
Bronze and buff shades dominate throughout the building, with blue and red used for accent. Exterior brick (carried into the lobby area as well) is buff; all glass and metal trim is bronze colored. Exterior walks and lobby floors are bluestone. Interior design is centered on maintenance-free materials. Built-in seating and specially designed oak desks were designed by the architect. Walls of administration offices, meeting hall and medical waiting room are of oak flooring, carpets are beige, and seating of built-in areas is bright red. Ceilings are acoustic plaster or acoustic tile throughout.

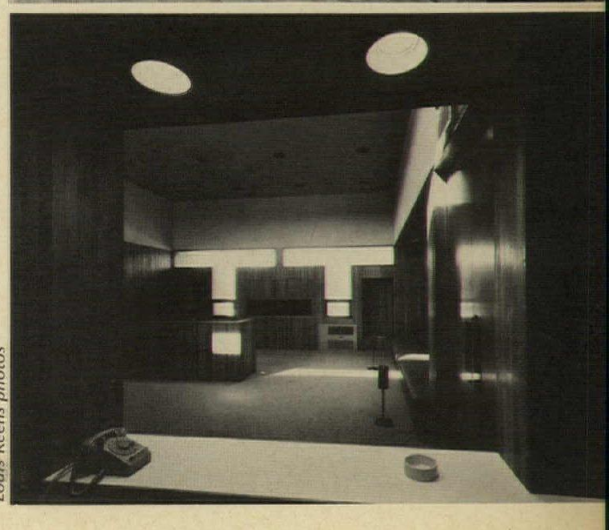
MEDICAL AND ADMINISTRATION CENTER, Islip, New York. Architect: *Bernard A. Marson;* associate architect: *Arthur Lutzker;* consulting engineer: *William Kaplan;* construction: *Stone Construction Corporation.*





Recessed T-shaped windows glazed with solar bronze provide natural light but maintain privacy in the medical wing (right). In the meeting room (center), closets below clerestory lighting make up the entire wall area and store stacking chairs, coats, lecture equipment and a small kitchen unit.





Louis Reens photos

SEVEN-DOMED CLINIC SERVES FOUR PRACTICES

Four doctors share some areas of this clinic for obstetrics and gynecology, while maintaining separate practices in private office units located under each of four domes.

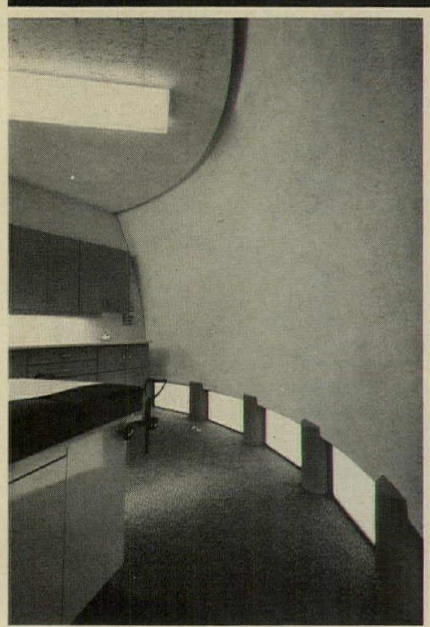
The shared area, under three domes of the seven-domed clinic, contains common pre-natal examination, business and waiting room facilities. Each private office unit consists of consultation room, two examination rooms, nurse's area, waiting room and toilet.

Since each day one of the doctors will examine all pre-natal patients, the four private offices radiate around the 22-foot radius, two-story pre-natal dome, giving the doctors equal access to the facilities. The resulting curved circulation pattern suggested the grouping of hemisphere shapes for the structures.

The domes are self-supporting units consisting of thermally bonded hemispheres of expanded polystyrene, constructed on the site by a spirally-generating technique. Each dome is covered on the exterior by a reinforced coating of concrete applied over wire mesh. Acoustic plaster coats the interior.

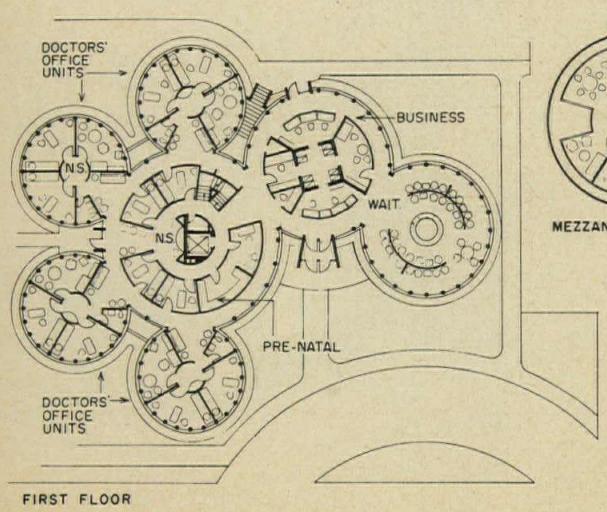
In order to allow natural light to enter, the domes were raised off the ground on short columns and the interstices were filled with translucent glass. Also, skylights were placed on the top of each dome.

CLINIC FOR PROFESSIONAL CENTER INC., Lafayette, Indiana. Architect: *E. H. Brenner;* structural engineer: *F. E. Burroughs;* mechanical engineers: *Fennig & Weir;* contractor: *Kemmer Construction Co.*

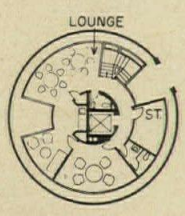


Lens-Art photos

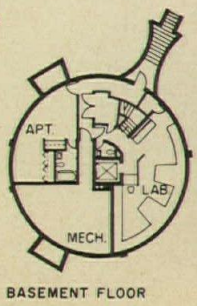
Wherever possible the furnishings were built into the walls to save space. The photos above show how the windows at the base of the domes seem to lighten the mass of the concrete domes and make them appear to float above the ground. The interior is carpeted throughout.



FIRST FLOOR



MEZZANINE FLOOR



BASEMENT FLOOR

Airports

How can architects and engineers of airports respond to the following problems?

- An airplane six stories high—due next year
- A ten-fold increase in passengers per gate
- A $2-billion construction need
- A doubling of the nation's jet fleet

Expert opinion on these and other problems—and a scanning of significant current solutions—are marshalled here as follows:

—William B. Foxhall

Airport and terminal planning and design: proving ground for comprehensive services

by Arnold W. Thompson

The passenger terminal at a commercial carrier airport has an ambivalent character. On one hand it is a public building, the gateway to a community, replete with civic pride. On the other, it is a commercial venture in which success will be measured in efficiency and revenue potential. Add to this mix the ever-changing requirements of a dynamic airline industry with its incredible growth in traffic, and it is evident that the design of airport terminals is indeed a proving ground for the comprehensive services of architects.

Arnold W. Thompson, president of Arnold Thompson Associates, Inc. of White Plains, New York, is a Member of the A.I.A. Committee on Architecture for Commerce and Industry and the A.S.C.E. Terminal Facilities Committee.

The airport architect deals with a multi-client

The design process required for a terminal can best be understood by describing the roles of various participants involved. Historically, the Federal Government represented by the Civil Aeronautics Administration, and later the FAA, had a significant role. Aside from financing airport development, many terminal standards and procedures were evolved at this time. In the late 1950s, terminals were no longer eligible for Federal aid and under these conditions the FAA role has subsided. One aspect does remain, how-

ever, and this is the influence of control tower personnel on sight lines, on clearances, and on their tenant requirements. In addition, at international airports the Federal inspection personnel require substantial space.

The airline as client or tenant has strong design influence

The airlines continue to have a very influential role in terminal design and financing. They have constructed their own terminals; for example, at New York's John F. Kennedy Airport. However, their ownership is limited due to the heavy demands on their capital and credit for aircraft and equipment. Their most important contribution to terminal development will be (a) as prime tenant in financing, and (b) as innovators of aircraft and passenger procedures and baggage systems which shape terminal concepts. Their participation in terminal development is carried out by various committees such as negotiating and technical coordinating committees. The following is a tabulation of technical staffs in the major trunk airlines as of May, 1968, working on airport projects:

	Architects	Engineers	Other Technical
United Air Lines	11	12	5
American Airlines	19	13	1
Trans World Airlines	6	27	3
Eastern Airlines	20	8	8
Pan American World Airways	10	11	9
Delta Air Lines	2	14	4
National Airlines	8	10	6
Northwest Airlines	—	2	2
Northeast Airlines	1	½	1
Braniff International	1	—	2
Continental Air Lines	—	—	4
Western Air Lines	1	—	3

There are, in addition, many other local airline committees, such as: operations, snow removal, ground transportation, etc. These are, however, largely line activities while the preceding list is from the executive office staff, where financial decisions are made.

The importance of these committees varies from airport to airport but their very existence and number is a major consideration to the architect in any airport terminal project.

The role of other terminal tenants is significant in the design as well. While most of the concessions are leased *after* the terminal is designed, a working knowledge of burgeoning car rental and private auto parking requirements will greatly affect design decisions. Likewise, the size and location of food facilities and shops have an extremely important role in the financial success of the operation. In recent years some terminal financing has come directly from major non-airline tenants and the effect on design control should be self evident.

The airport owner coordinates terminal development

The owner of an airport is normally a municipality or an airport authority. The funding of such an enterprise comes from operating grants, general-obligation and revenue bonds, Federal aid, and airport revenues. Airport management, as the owner's representative, directs and coordinates the terminal development and influences the design concept and, to use Philip Johnson's expression, the "level of elegance".

At larger airports there are staff architects and engineers, or other technical or negotiating personnel, as shown on the following survey:

	Architects	Engineers	Other Technical
New York Port Authority	55	150	105
Chicago, Dept. of Aviation	—	9	7
Los Angeles, Dept. of Airports	1	14	11
Atlanta Airport	1	2	1
Washington, FAA	2	11	6
San Francisco Airport	10	5	15
Massachusetts Port Authority	—	5½	14
Detroit Metropolitan Airport	2	6	4
Philadelphia, Div. of Aviation	2	4	8

The airport operators almost always rely on the professional assistance of A & E firms in their terminal projects to attain the design and structural characteristics appropriate to their city. The heaviest burden on the airport management is its financing, operating and coordinating role. As the intermediary between the public and the aviation industry, its position can be difficult and delicate, to say the least.

Gigantic complex flexibility on time and in the budget

The airport terminal is a true megastructure, reflecting many disciplines. Civil and structural engineering particularly has an extremely important part in roadway, parking and aircraft ramp design, as well as site utility and drainage work. In addition, project management during construction and fit-up is frequently in the control of an experienced civil engineer. Exotic terminal structures are generally not appropriate, as the trend is away from the monumental types to those which can be readily modified. Flexibility is the key, as a contemporary terminal will be altered extensively before it reaches its tenth anniversary. Electrical distribution for aircraft ground power and the potential changes in demand, present a challenge in each terminal. Similarly, mechanical engineers must design ventilating systems that respond to rapid surges of people for peak hour demand on arrival of jumbo jets. Most terminals are built with severe time restrictions which require the use of CPM and, on occasion, a construction management consultant. It has been quicker to design and build a new airplane than to design and build a major terminal.

The airport consultant: a catalyst at the interface

The airport consultant, a relative newcomer in terminal design, is essentially a catalyst between airport management, the aviation industry and the design profession. He helps to interpret the community's need through forecasted traffic demand, and reflects a knowledge of aircraft technology, terminal functions and procedures; and he recognizes the revenue potential in location and size of concessions to be rented.

Contract procedures on a major terminal are a severe test for the architects' administrative staff. Because of the emergence of new aircraft, changes in airline routes and evolving passenger procedures, the program will always change during design. Careful recording of time and prompt, orderly billing procedures are essential. In addition to the program changes, the architect will encounter a multitude of quasi-clients. At Chicago's O'Hare Airport, for example, there were 16 signatory airlines plus international carriers, each airline with a multiplicity of representatives; Federal agencies; concessionaires; etc. A clear channel of authority must be established to avoid endless debate on responsibility for change. The employment by the airlines or the city of a technical coordinator can be of considerable help.

This matter is further complicated by the airlines and concessionaires having contracts with the airport's A & E for fit-up work, i.e., completion of the exclusive tenant improvements. Separate accounts should be kept on this work, and when possible, the work should be done by a completely separate team in the A & E's office. Some airport operators are restricting the A & E's work to only their own account to avoid this problem.

With all of its design intricacies and multiplicity of inputs, an airport terminal project can be satisfying and profitable if properly managed. The architect who is experienced at working for industrial clients on "crash construction" schedules will be particularly well equipped to offer the quality and efficiency of professional service so vital in this fast-moving field. Aviation is a time-oriented business and the architect to properly serve this client sector must be fully conscious of the importance of this fourth dimension in his practice.

The architect the airport and the industry: opportunity and challenge

by Simon V. Waitzman

The explosive expansion of the air transport industry over the last decade is rapidly becoming a revolution which will affect the next ten years. Commercial and general aviation forecasts for the next decade indicate steady growth in the thousands of airplanes taking to the sky, the millions of passengers and millions of tons of cargo transported in them, and the expanded or new airport facilities required to accommodate all of that increase. With this growth, support facilities and access systems will have to provide efficient and economical traffic of planes, people, and cargo to and through the airport, and beyond to their divergent destinations.

Architects already cope with Megalopolis

Architecture itself, in the meanwhile, is undergoing metamorphosis generated by extending involvement with urban planning, revised zoning statutes, diminishing available real estate, financing requirements, new building materials, an advancing state of the art of structural systems and construction techniques, as well as the demands dictated by a more populous and complex society. The development and integration of multi-function structures on a grand scale, with transportation and ancillary requisites, are manifested in the evolution of the airport as part of the megametropolis. Amalgamation of all the disciplines of the profession is required to accomplish this sophisticated and complex end; this can only be realized by the orderly fusion of individual solutions in a systems approach to the unification of inseparable components.

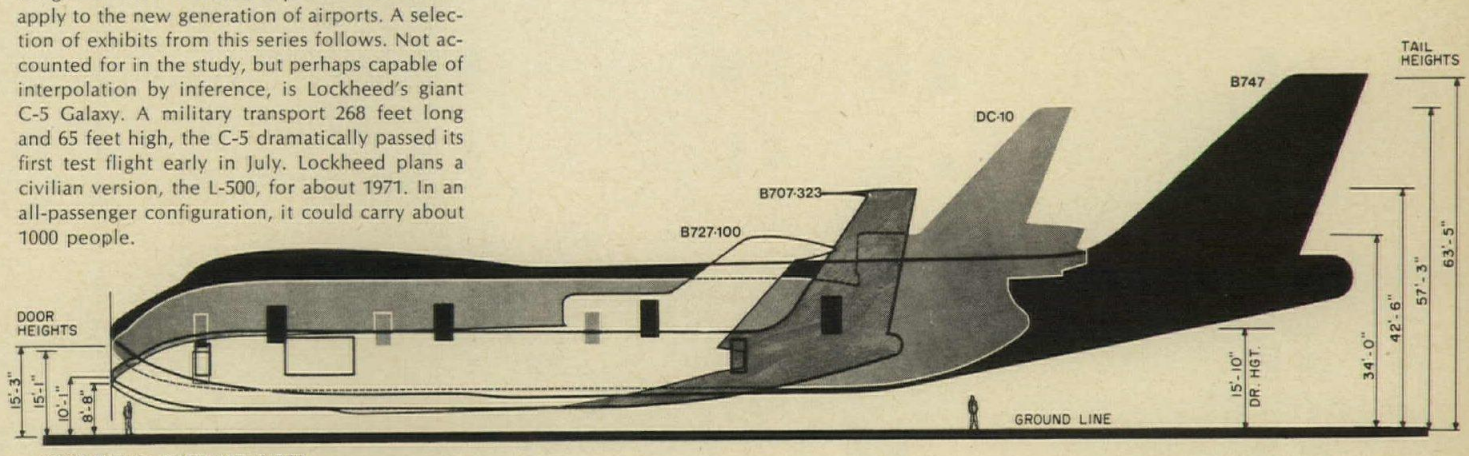
Simon V. Waitzman is director of facilities planning for American Airlines. He is a registered architect, formerly a project designer with Skidmore Owings and Merrill.

Growth of scheduled travel is rapid, will continue so

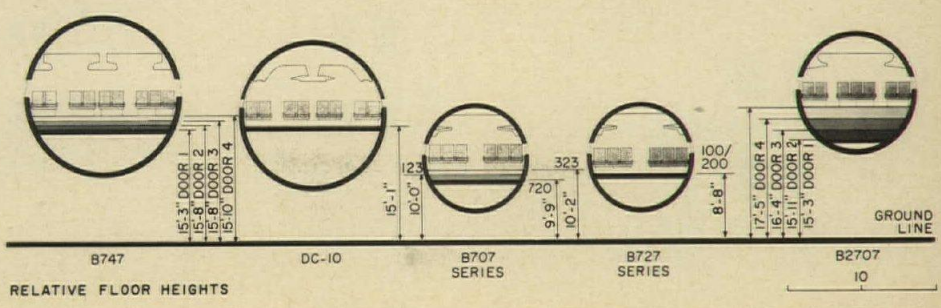
The growth of the air transportation industry is being augmented by the retention of constant fare structures made possible by the utilization of newer and more efficient aircraft, by increase of population with more disposable income, and by industry's reliance upon face-to-face communication. It has been determined, for example, that approximately 30 per cent of all scheduled airline and general aviation passengers are travelling on a business mission. Also, while air travel in 1950 was responsible for 13 per cent of all ticketed domestic travellers, it carried over 66 per cent of the total in 1966. In 1967, a total of 128,479,000 persons were carried by the domestic airlines, and it is anticipated that by 1970, this figure will expand to 167,-

Impact of new planes on terminal design

A study by American Airlines of the dimensions and capacities of new and developing aircraft, combined with projections of future traffic, resulted in a series of charts and diagrams visualizing new limits and area requirements that will apply to the new generation of airports. A selection of exhibits from this series follows. Not accounted for in the study, but perhaps capable of interpolation by inference, is Lockheed's giant C-5 Galaxy. A military transport 268 feet long and 65 feet high, the C-5 dramatically passed its first test flight early in July. Lockheed plans a civilian version, the L-500, for about 1971. In an all-passenger configuration, it could carry about 1000 people.

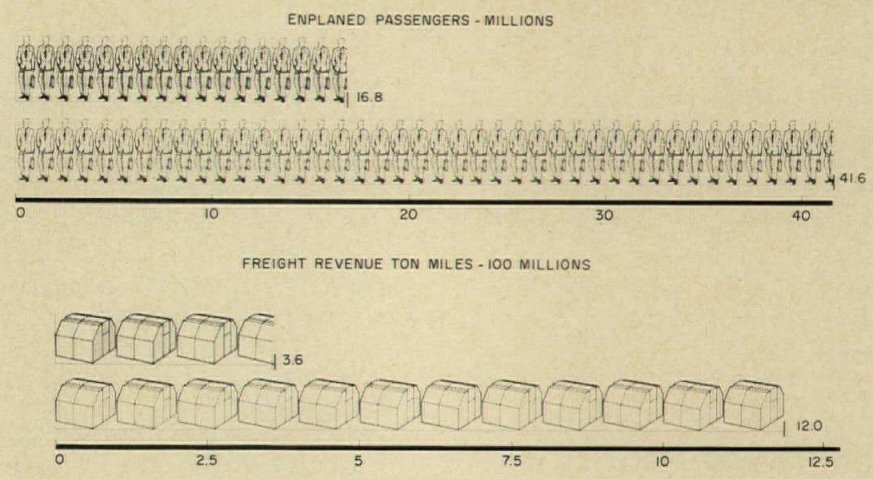


COMPARATIVE FUSELAGE SIZES



RELATIVE FLOOR HEIGHTS

700,000, and in 1980 will approach 400,000,000. The combined fleets of scheduled airline jet planes will soar from approximately 1,600 today to over 3,600 jets by 1980, including the large high-density types exemplified by the B-747 and DC-10/L-1011 (airbus). The growth factor of the industry, described as between 15 per cent and 20 per cent annually for both passengers and cargo, is confidently projected to continue unabated for the next decade. Its significance can be appreciated when compared with the annual growth of the Gross National Product, which is represented as 2.6 per cent in constant dollars or 5.6 per cent in current dollars.



Increase in passengers and cargo—1967 to 1975

General aviation will triple by 1985

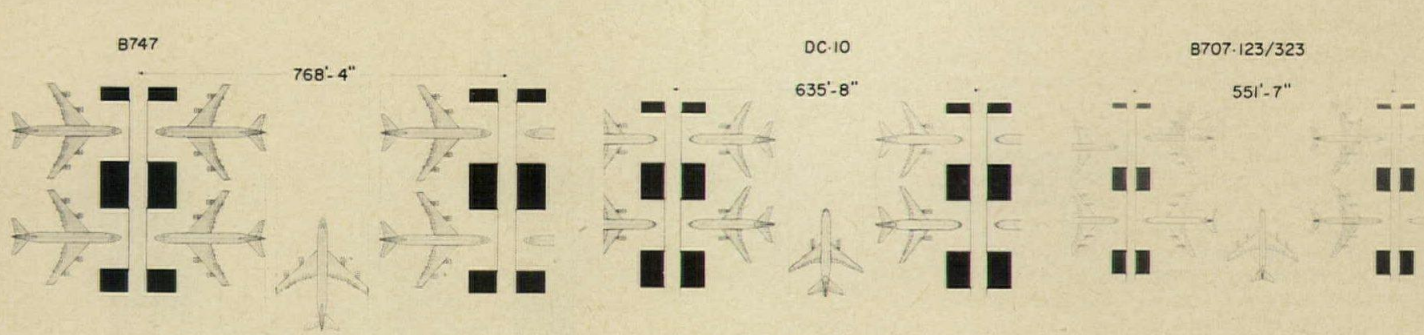
General aviation, the component of the air transport industry other than scheduled airline operations, but including air taxis, helicopters and V/STOL vehicles, is also experiencing an unprecedented growth of 15 to 20 per cent annually. The fleet inventory of approximately 100,000 aircraft of varying types and sizes is expected to approach 300,000 units by 1985. This will necessitate design and planning to increase the existing number of general aviation airports from 10,000 to approximately 16,000 by 1985. These projections are also considered conservative because there will be a far greater number of V/STOL aircraft in operation at an earlier date than anticipated a few years ago.

Airport construction to 1975 will cost more than $3 billion

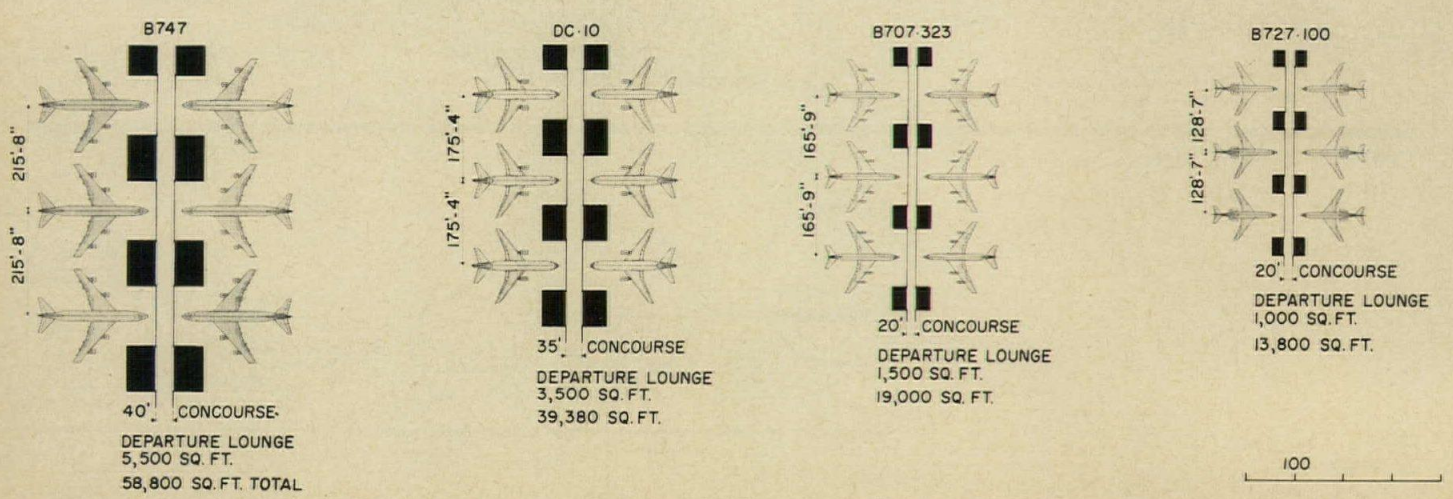
Further quantifying the work which must be executed for the expansion of the air transport industry is its translation into dollars of construction. It has been projected that expanded facilities for the 20 major airports in the United States, together with their respective satellite or alternate airports, will require more than $1,031,300,000 for the 1968-1970 period and that an additional $2,405,100,000 will be required for expansion construction during 1971-1975. These figures indicate a conservative quantity, as they were formalized prior to knowledge of total B-747 types that were to be ordered by the airlines, and at a time when the DC-10/L-1011 type airplanes were still in the design phase.

These growth projections re-define the responsibility and the challenges that confront the architect, and illustrate

CONCOURSE SPACING COMPARISON



RELATIVE TERMINAL SIZES



clearly that the complexity of the total problem necessitates a systems approach to planning and design. The multi-function of the airport, together with the inter-acting modes of surface circulation, problems of noise, community relations, financing, diminishing availability of real estate, jurisdictional disputes and Federal regulations mandate that the airport can no longer be successfully planned if it is done as a series of isolated, fragmentary solutions.

Ground access acts as limit on capacity

Los Angeles International Airport, although reflecting some of the best thinking for contemporary airport planning, and an inspired concept for future expansion, still typifies an airport confronted with the plaguing problems related to the rapidity of the growth of the industry and ancillary requisites. In 1967, the airport handled 20 million passengers. By 1980, however, this number is expected to exceed 80 million passengers annually. At the same time, surface access and parking facilities will be able to accommodate only about 40- to 50-million passengers. Access capability here is defined as both on and off airport arterial systems. The Department of Airports, collaborating with the airport architects, is currently devoting its efforts to master-plan a total regional airport system. It will integrate advanced forms of surface transportation, and V/STOL aircraft types, with several airports. This regional system will relieve the acuteness of the access problem confronting Los Angeles International Airport, as well as making air transportation more readily available to a broader segment of the population.

John F. Kennedy International Airport fares no better, and is confronted with equally staggering logistical projections. In 1967, the facility handled 19,900,000 passengers, and by 1975, this number will be about 35 million persons. These people, together with airline employes, will generate some 400,000 ground vehicular movements daily, compared to the present average of 134,000 movements. According to the FAA, a broad evaluation indicates that the enclosed floor area required by all present functions will increase from 4,200,000 gross square feet to 8,800,000 gross square feet by 1975, at the same time increasing the International Terminal alone by an additional 500,000 square feet.

O'Hare International Airport in Chicago handled 27,300,000 passengers in 1967 and will handle about 55,200,000 passengers in 1975.

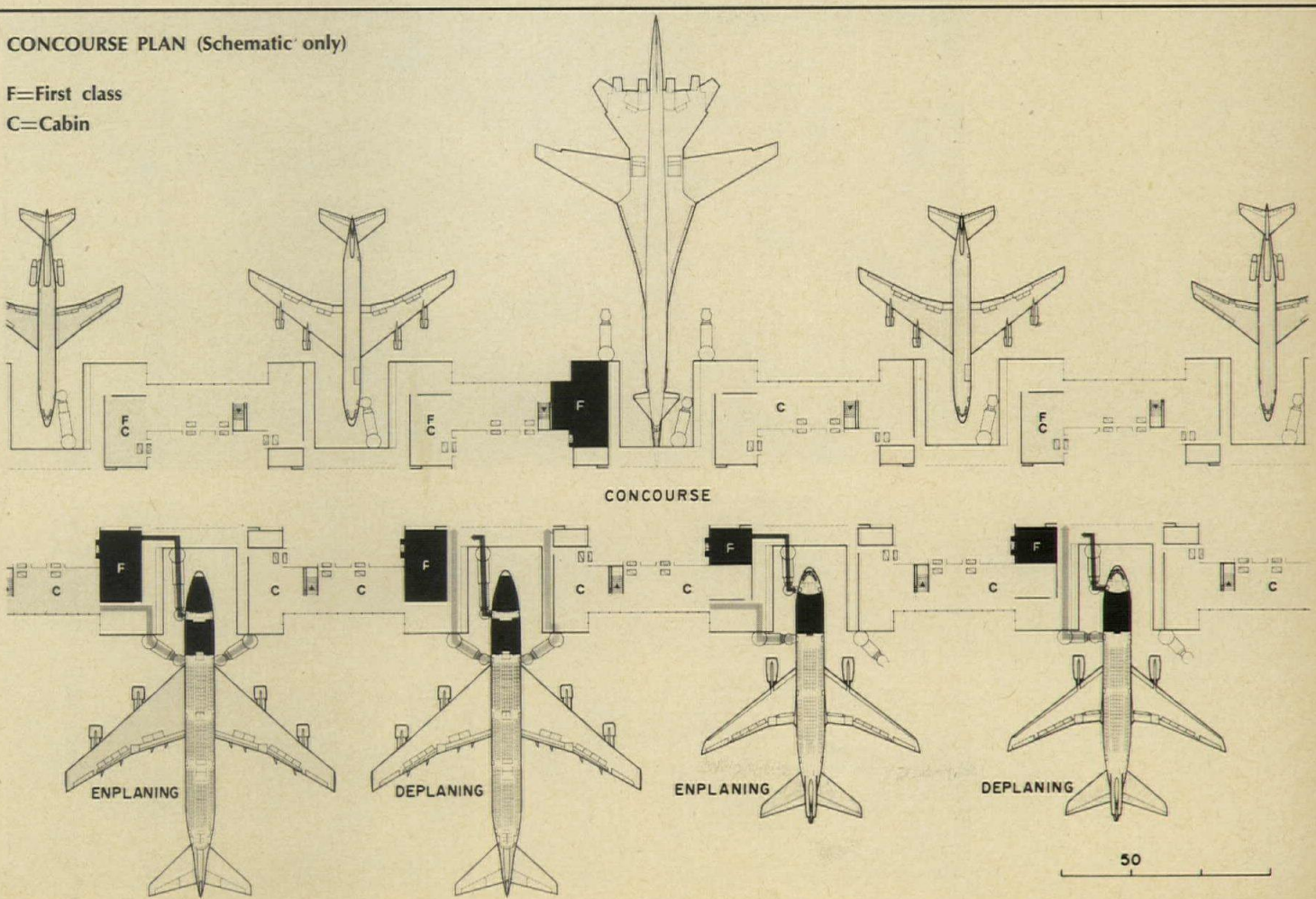
Another demanding challenge related to air transport expansion has two important features integrally associated with it. One is the increased numbers of employes of the facility and its peripheral industry; the other is the need for skillfully planned housing and community developments. Proximity to the airport is desirable, but the noise problem cannot be ignored. Astute planning will employ the best demographic thinking, for it emphasizes the need for improving the fluidity of access to and from the airport proper. In the New York hub, consisting of LaGuardia, Newark, and the JFK International Airport, it is anticipated that by 1970 the industry will employ over 170,000 persons with an earning capacity of more than $1 billion annually. At Los Angeles International Airport, one airline alone estimates that the total number of its salaried personnel would perhaps reach 15,000 persons earning $113,100,000 annually.

Architects must make new, broad approaches

The planning and design of airports is, by the very fact of its vitality, demanding that architects and engineers both take a fresh look at solutions developed during the recent past. The architect must identify, define, and organize a truly wise design accounting for the multitude of human, technical and socio-economic facets of the whole problem, and guard against premature obsolescence.

CONCOURSE PLAN (Schematic only)

F=First class
C=Cabin



The financial facts of life pertaining to air transportation and its indispensible services require that the new generation of airports achieve a degree of efficiency, flexibility and economy unexcelled in any other form of architecture; *this is a mandate to the architectural profession.*

Four basic requirements: gates, access, flow and balance

Analyses of factors paramount to the survival and continuous growth of any of the 20 major commercial airports in the United States reveal four basic requisites to which planners must adhere:

1. The ability to develop increased numbers of gates without impairing abilities of airplanes around them, and without requiring unacceptable walking distances for passengers. The enlargement of ramp and maneuvering areas is not only attributed to increased scheduling, but more importantly is due to the particular geometry and ground operating characteristics of the larger airplanes. The inauguration of the B-747 has had an almost cataclysmic impact on present day facilities, although in the near future these high density types will alleviate the problems inherent in transporting great numbers of people without creating a paralyzing number of flights.

2. The need to develop appropriate surface and air access to and from the airport required for more passengers, baggage, employees and freight vehicles poses a critical problem.

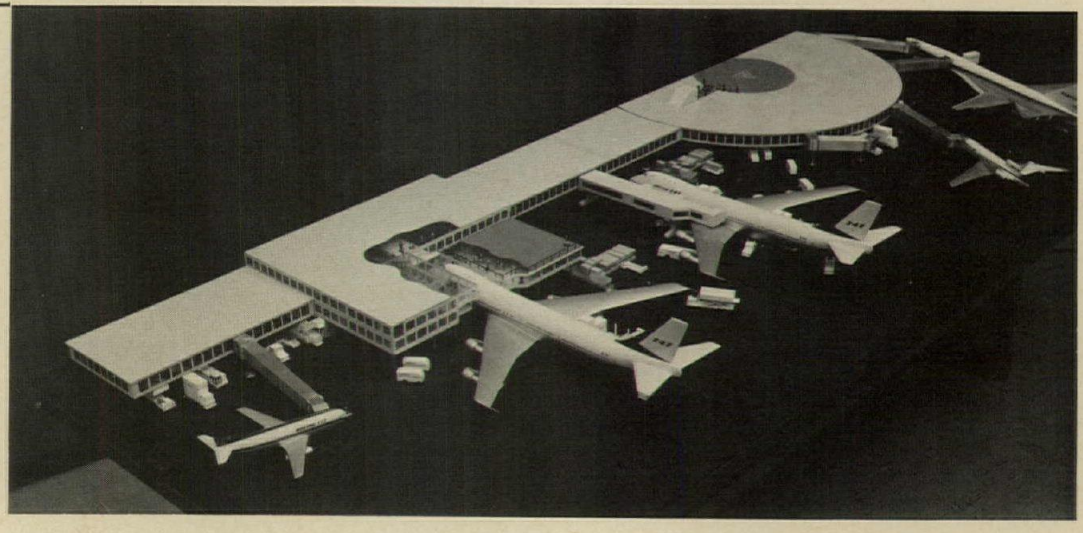
3. The ability to cope with the staggering logistics of receiving, processing and circulating the great numbers of peak hour passengers and their baggage, together with well-wishers and visitors. Key airports are already encountering the difficulties which are inherent in handling 10,000 passengers per peak hour, and this number is expected to expand to more than 30,000 peak-hour passengers when the B-747, with a capacity of 400 persons, enters operation in the last quarter of 1969. The DC-10/L-1011, each with a capacity of about 250 persons, will be inaugurated into service during the last quarter of 1971. The challenge of conceptualizing a system for orienting and directing these densities of persons, together with the hundreds of thousands of pieces of baggage, is an imposing one. It requires the expertise of all the professions involved.

4. The ability to achieve a balance between available or proposed runway capacity and corresponding approach airspace operations and gates that are being or will be developed.

The recognition of these criteria is essential. The public utilizes air transportation to save time; delays resulting from airspace, runway, and access congestion have already reached critical proportions. Delays during 1967 cost the major airlines more than $40 million, and businessmen lost over 50 million working hours for the same year. Speed is the life-blood of the industry and this has become anemic as a result of air/surface congestion. The short-term remedy has taken form in the construction of additional runways, but long-term solutions will rely upon either new airports, or the development of more sophisticated navigational and ground control techniques. These solutions will permit a greater compaction of aircraft, either in the ascending or descending configuration of air space.

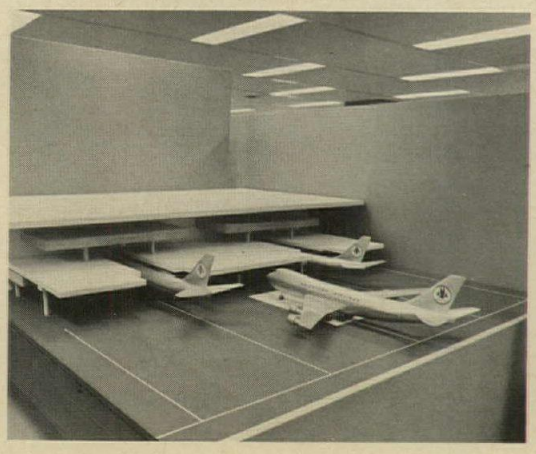
Airport planning and design need talents basically architectural

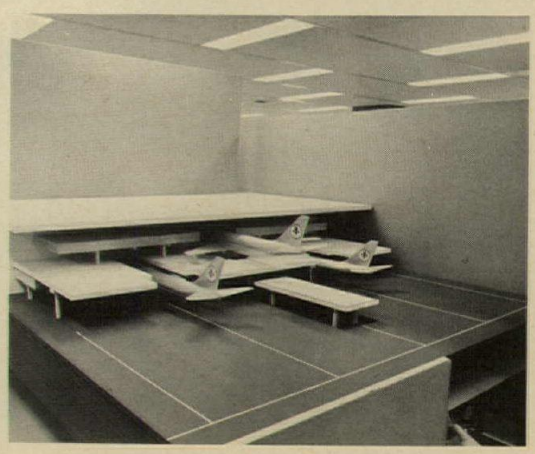
The primacy of the architect and his acumen in interpreting the socio-economic and environmental ramifications of all functions related to architectural solutions requires that his responsible participation not be forfeited because of the highly technical and complex nature of the problems, or by not being fully cognizant of the total scope of the job which must be executed during the next decade. The architectural profession should be the matrix in which the systems solution can be programmed, conceived, planned and implemented.



Airport terminal concepts to handle any mix of aircraft, present and projected, have had the attention of producers and carriers alike in their efforts to provide guidelines for architects who will be faced with final design of the facilities.

The model photo at right shows a Boeing demonstration—*not* an architectural prototype—of the kinds of structures that can be assembled for various planes. The elevated, two-level cutaway, for example, shows how a B727 might be nosed into a structure and loaded or unloaded through four doors via short connecting bridges. Other models can be handled by jetways from other parts of the terminal.





Concept at right shows one American Airlines suggestion—that huge planes might be overlapped in line by raising alternate planes hydraulically to nose in and unload or load at an upper lever. Actual construction of such a scheme must await code adjustments and further study of its economic and programing feasibility.

The systems approach: a working tool for airport design

by H. P. Daniel van Ginkel

The design of the master plan of an airport has become a problem of such complexity that an intuitive design approach can no longer serve to obtain appropriate solutions.

The airport for a city of a million people and more may have 15 million passengers. Total employment at such an airport may be 30,000. These employees together with induced employment and their families may make up a total population of some 250,000.

Noise and danger from accidents are factors of increasing importance.

The technology of the large-capacity aircraft will help to offset the increase in numbers of aircraft but, on the other hand, will require mass-handling techniques thus far unknown, rendering almost all present airports obsolete.

Airports have grown to be major urban complexes in themselves within the metropolitan area, generating huge volumes of traffic internally as well as externally.

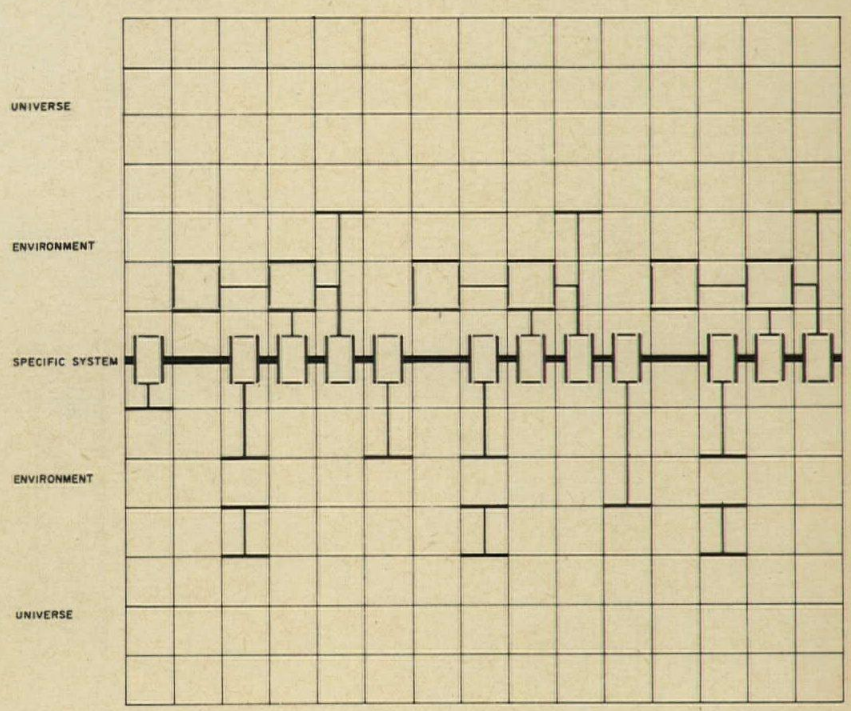
In designing the master plan of the airport one deals with a complexity of components which have different and often conflicting requirements. Ideally all major activities would be located immediately adjacent to the runways and to each other, but they require large tracts of land in the hundreds of acres. Flexibility and space is required for growth and expansion. Therefore the relative importance of each activity must be carefully measured so as to achieve the greatest over-all efficiency. All these factors are of great significance socially, economically and technically in designing the master plan of an airport.

The only possible means of arriving at a reasonable solution is by a systematic approach that involves examining each activity to find out to what system it belongs and to determine its place within the sequence of that system. Then if all systems are known and examined, the interaction of one system on another is considered. Thus one arrives at logical solutions to what first seemed an excessively complicated problem.

This systems approach is, of course, not exclusively for airports. Any build-

Introduction to the systems technique

Van Ginkel Associates, architects and planning consultants of Winnipeg and Montreal, and Kates, Peat, Marwick & Co., management and technical consultants, have recently made a number of major airport studies for the Canadian Department of Transport. The work was done by a multi-discipline team of planners, architects, economists, transportation engineers, mechanical and civil engineers—members of both firms and of the client. The approach outlined here is drawn from these studies, but is generally the responsibility of van Ginkel Associates.



Concept of a system. An airport is a specific system operating within an immediate environment—the city—and against a broader background of a universe—the world air travel system. The airport system consists of a sequence of physical nodes at which change occurs; for example, the point at which an automobile driver becomes a pedestrian. It interlocks with other systems of transport, holding and supply.

ing may require such examination whether it is a school, a hospital or an office building. And on an even larger scale, all of this applies to the city.

This working method upsets a few current assumptions. First it recognizes that a client can supply only a partial program at the outset. Requirements and standards are created through analysis of the systems, and the client's participation is essential in this analysis. The program therefore becomes an intrinsic part of the total design process—in other words, program and physical design no longer exist in isolation nor do they follow each other sequentially, but are in fact parts of one process, developing simultaneously.

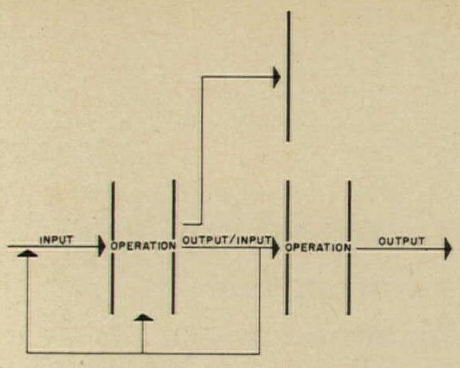
Systems approach finds that some jobs are not needed

Van Ginkel Associates has already been working with this method on airports and the design of new towns as well as regional plans for a number of years. In many instances this has led to surprising consequences. In one study it was discovered that the construction of schools, which had been an assumed necessity, was an irrational requirement from many points of view; in another study it was discovered that a proposed new town was wasteful as well as meaningless. In both cases, solutions were evolved which were not only economically more realistic but also socially and esthetically superior to purely intuitive solutions.

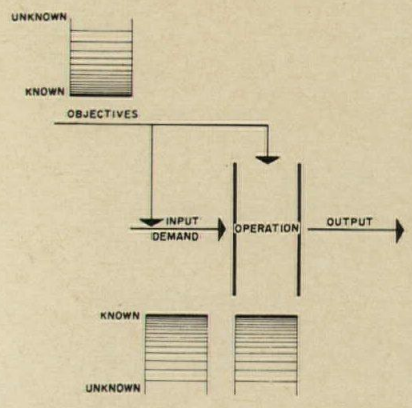
In the design of a concept plan for 1985 for Montreal International Airport for the Government of Canada, several alternative solutions presented themselves. From the inception of the study constant communication took place among consultants, officials of the Department of Transport and the airlines. The result of this interchange was a constantly changing program, determined by all the requirements of the airport and the metropolitan area as well as the design requirements.

There is little doubt that the imaginative and skillful designer will have an intuitive sense of the solution to a complex problem from the outset. And there is little doubt that this solution will, in the end, prove to be the correct one. However, it is the process from the intuitive answer to the final solution which is the hazardous one. Every architect knows the nagging feeling of an arbitrary choice between alternatives. These alternatives will cease to be arbitrary as soon as program and design are developed as a simultaneous process.

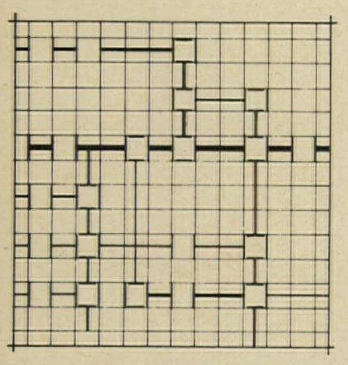
Great architecture cannot be created solely through such a systems approach, but the approach will help the designer to understand his problem thoroughly and to design accordingly.



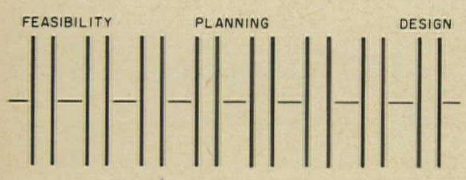
Technique. Basic to the systems approach is identity of the interfaces (places in time and space at which action or change occurs) and separate analysis of each as to input, operations and output elements. Output then becomes input for following operations unless it is an end product of the process.



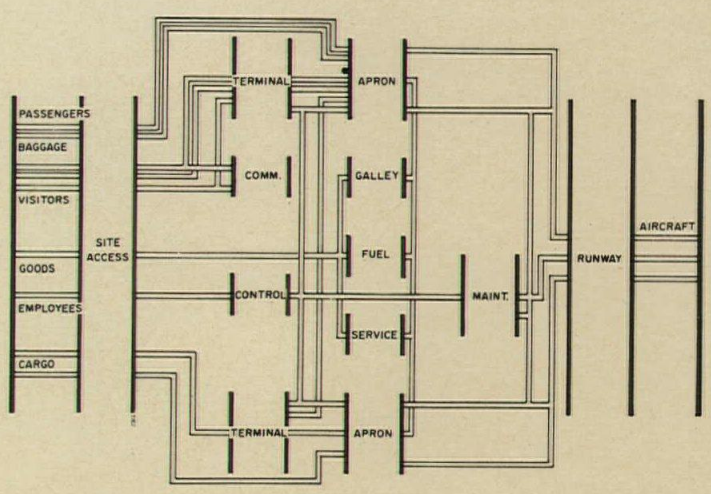
Departure point. Demand, operation and objectives are the basic components of each interface. *Demand* might be the number of passengers or the number of aircraft to be serviced in a given time. *Operation* is the analysis of ways of accommodation. *Objectives* are the standards that determine the manner in which the demand is to be satisfied. The extent to which these three are known or unknown is used as the definition of the point of departure of the problem, the basic frame of reference.



Condition. The airport system interlocks with, and has areas of overlap with, other systems such as the metropolitan transportation system.



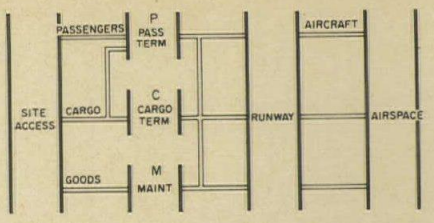
Feasibility, planning and design are the three areas of the system. Feasibility involves social questions such as noise, traffic demand, optimum capacity, and the like. Planning and design are in the conventional sense but extended in this case by multi-disciplined approaches.



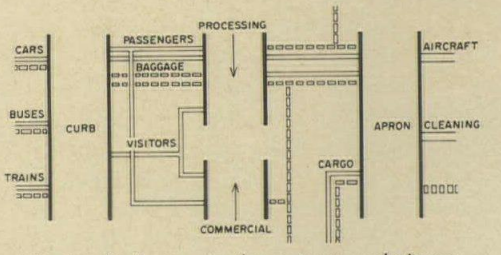
Airport operation. The airport system consists of a number of elements—passengers, baggage, visitors, employees, cargo, aircraft—each of which is processed through a series of interfaces where changes of state occur.

For example, the passenger arrives from the metropolitan region, passes through the site access system, proceeds to the passenger terminal, then to the passenger apron, and then boards the aircraft.

This drawing identifies all of the major airport elements and interfaces.

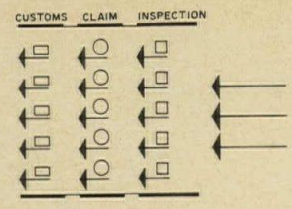


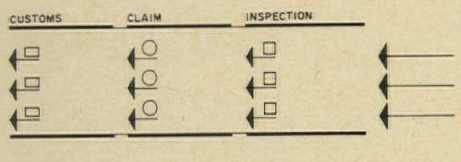
Basic categories of operations. This multitude of interfaces can be grouped into four basic categories: airspace, runway, ground facilities and site access. The airport master plan considers factors significant to each of the basic categories. For example, the orientation and location of runways is influenced by land use adjacent the airport, by wind conditions, by land availability, by airport land use. The location of ground facilities is influenced by runways, by the site access system, by requirements for future flexibility and of course by functional relationships. On this basis a series of site alternates is prepared. The operating efficiency of alternates is measured by simulating the movements of aircraft, passengers and cargo. The unit costs of these movements are calculated and operating efficiency is measured in dollars.

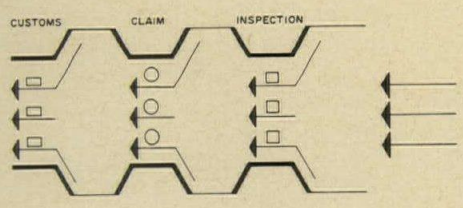


The terminal area. As the systems analysis proceeds, the elements are further articulated. Passengers, for example, are enplaning, deplaning, connecting, inter-line, intra-line, and direct-transit passengers. Each group has distinct characteristics. In addition, business travellers and tourists display different travel habits.

To deal with this variation, a charting technique was developed to show the sequence of operation from the passenger's home to the moment of boarding the aircraft, and the sequence of operation from arrival of the aircraft to departure. This latter sequence is called the turnaround, to which all other sequences key.



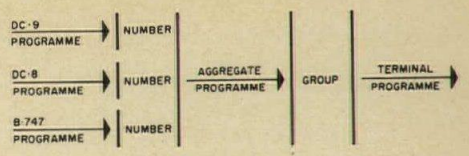




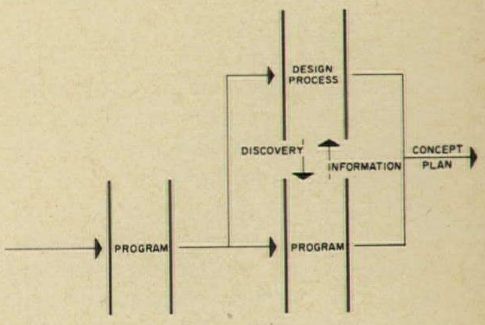
Time, method and distance. The standards used to analyze each operation within the sequences are time, method and distance. For example, in the upper case shown, the processing rate of inspection, claim and customs approximates the flow rate of passengers to inspection. Little queuing space is required.

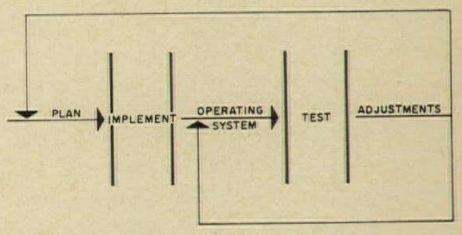
In the middle case, the processing rate is slower, large queues result and the space functions as a series of bottlenecks. However, less staff is required.

But people require time and distance to orient themselves. People queuing for 15 minutes cannot be expected to remain as quietly as those queuing for five or less minutes. Washrooms and small waiting areas are required, and therefore, the total square footage per person waiting increases, as shown in the lower diagram case. The choice of processing and waiting spaces is determined through a cost-effectiveness analysis. (See right, below).

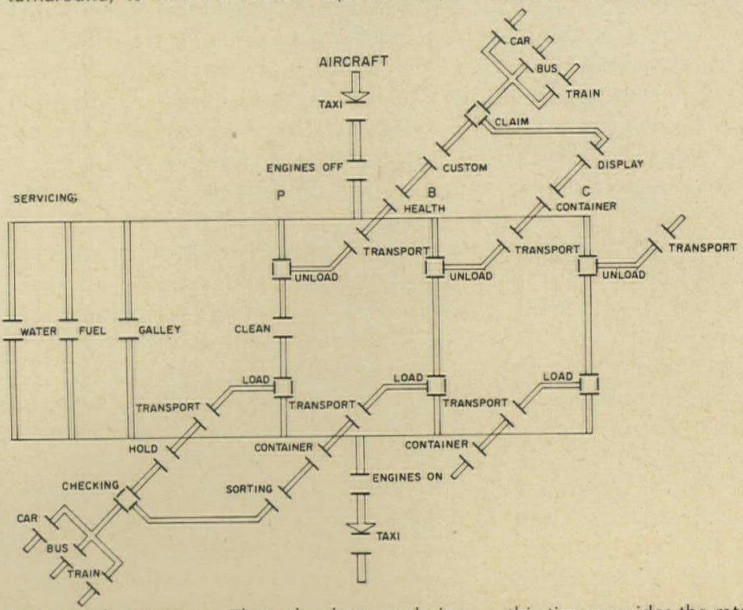


Terminal program. The individual program of each aircraft type (as illustrated for the B747 at bottom) is multiplied by the number of aircraft of that type. The combined programs of the several types, grouped by like requirements so as to permit the multiple use and/or interuse of facilities, are related to total traffic in developing the overall terminal program.

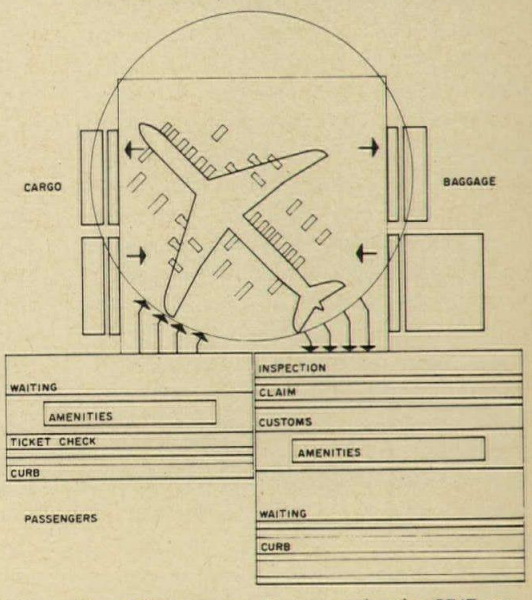




Design process. Terminal program and design proceed simultaneously in developing a concept plan for a facility. The concept plan is tested and refinements studied in relation to the existing operating system, to the future, or in some cases, to adjustments in the program.



Integrated sequence. Through chart analysis, any given aircraft can be translated into the loading that it generates on all parts of the terminal. Each individual operation within the sequence is then proportioned as a part of the turnaround time. The payload—i.e. amount of passengers, baggage, cargo, etc.—divided by this time provides the rate of handling required. Existing and new methods of operation are tested against the criteria of the rate of handling. Equipment and staff requirements are a part of this analysis. Distance requirements between operations, allowing for the queuing and storage, can then be calculated.



The B747 program. For example, the B747 program consists of the aggregate requirements of all the operations related to turnaround time. Programs can be developed for a range of turnaround times and given cost-effectiveness analysis. The analysis is performed for each aircraft type in the mix and for the peak hour.

People movers: an appraisal of secondary transportation systems and a guide to their selection

by William C. Gabrielsen

Because of the anticipated passenger volume implicit in the new generation of giant aircraft, even the newest terminal designs will be subject to severe tests. One aspect of terminal design in which architects will be called upon for more technological leadership in performing their traditional role is that of inter- or intra-terminal passenger handling or, to use the current improvised term, "people movers." Already, architects are stimulating research and development in this field, as in the battery-operated electronic train adapted from warehouse equipment for the Houston Intercontinental Airport (page 134).

It is not uncommon to find the term "people mover" on architects' preliminary drawings and, increasingly, on final drawings. For definition of the term, one generally hears: "a system of undefined specifications which will transport passengers from A to B to C, etc." To provide the architect with a clear definition of what it is he is seeking, we must place this term in its proper perspective.

Architects have pointed out that an airport or terminal complex is in fact a "non-terminal." This recognition of the fact that the terminal is a dynamic element in a transportation system is the first step in a rational approach to evaluating people movers as part of an over-all distribution network. The transportation systems approach deals with airside primary people movers (the planes) and groundside movers which may consist of rapid transit railways, monorails, combination road and rail riding buses, conventional buses or, of course, the automobile, which seems to be here to stay.

The present search is for secondary people movers

What the architect is really seeking, then, is a secondary people mover that will fit into his passenger handling system in proper balance. Whereas logistics and distance were once the sole design criteria for a secondary people mover at an airport, the problem now is handling mass passenger flow with a positive control to prevent imbalance or bottlenecks anywhere in the system.

Some knowledge is available

The in-city transit industry for decades has applied the science of passenger handling systems. Once the transit car capacities are known, a related square footage of platform is designed with a formulated width of access tunnels, stairs, moving stairs or elevators. For example, the New York Transit Authority calculates a horizontal tunnel has a capacity of 2000 people per hour per foot of width. When only an 8 per cent grade is introduced this capacity is calculated to decrease to 1500 people per hour per foot of width. Obviously every turnstile area must be designed to receive the mass flow required to prevent bottlenecks.

By reviewing secondary people movers at some current airports we can begin to define the problems and anticipated solutions.

Toronto: One early solution to eliminating the need of a secondary people mover is to reduce walking distances to a minimum. Toronto airport incorporates a basic design with deck parking in the center. Elevators provide the vertical transportation to transport people and their baggage or wheeled vehicles. This is, of course, the "batch" system of people transport that department stores confronted in a recent era before the general acceptance of moving stairways.

Houston: Inasmuch as the Toronto design becomes saturated at both the airside and the parking facilities, due to larger aircraft capacities, Houston expands the design to include a series of similar terminal modules each with four short concourses connecting each terminal to its flight stations. Distance from ticketing to flight stations is only 350 feet, eliminating a secondary people mover, but terminal modules are now at least 1400 feet apart with future provisions for two more terminals separated from the initial two by a central hotel and shopping complex. To connect the terminals underground, the secondary people mover will consist of four trains, each consisting of one battery powered unit and three passenger cars. Each car has a capacity of eight passengers with the four trains designed to handle more than 200 passengers in a peak 10 minute period. Their maximum capacity will be 23,000 passengers a day. (See page 134.)

Newark: The new Newark terminal consists of three terminal buildings each with three satellites connected by fingers, ranging in length from 300 to 500 feet. To close the distances and to separate arrivals and departures, and to eliminate congestion, each finger is designed to receive moving sidewalks with an exposed treadway width of 44 inches, travelling at 150 fpm to provide a capacity of 12,000 people per hour in each direction. A design similar to the Newark concept will be TWA's new flight wing at their JFK terminal where a new remote satellite unit will be connected by a moving sidewalk approximately 220 feet in length. This will transport 10,000 people per hour in both directions. International Arrivals Building at JFK is being designed to transport arrivals over 500 feet of moving walks into the central customs area.

Tampa: Tampa Airport has a design similar to Houston, however, the distance from the main terminal building to the airside satellites or flight stations is expanded to 1000 feet. To transport the passengers and their baggage between the distant flight stations, Tampa will use horizontal elevatoring consisting of eight 100-passenger cars which can cover the 1000-foot distance in about 40 seconds. The capacity will be 840 people in a single direction in a 10 minute period.

Dallas: At Dallas' Love Field, two different secondary people movers have been selected. A monorail will connect the Braniff terminal to a remote parking lot 3630 feet distant. The system will consist of 10 passenger cars capable of seating 10 passengers each, plus two all-baggage cars, for a capacity of 2000 passengers per hour in each direction.

At the newly expanded American

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Airlines terminal, passengers will be carried from the ticketing areas to the gates on a 260-foot moving sidewalk. This moving sidewalk will have an exposed treadway width of 44 inches, travel at 120 fpm, with a capacity of 12,000 people per hour. Provisions have been made at this installation to increase the speed of the moving sidewalk to 150 fpm once the public has accepted the initial speed. This increase in speed will become possible because of improved technique which extends the handrails at entrance and exit positions to ease the public on and off safely at greater speeds. Dimensions permit easy passing for walking passengers.

Trends abroad: At Geneva's Cointrin terminal which was opened in June, access to the satellites from the terminal building is via two parallel moving sidewalks 358 feet long in the main tunnel. Transverse tunnels connect the main tunnel to outboard satellites also with moving sidewalks 424 feet in length.

Amsterdam's new Schiphal International Airport will handle passengers on two moving sidewalks which are 800 feet in length connecting ticketing areas, customs and immigration.

Basic selection criteria are: distance, elevation and capacity

It is apparent that a significant need for secondary people mover systems varies considerably within two fundamental concepts: 1) the moving sidewalk and 2) the vehicle system.

Moving sidewalks have three basic applications: 1) to close extended walking distances, 2) to eliminate congestion, or 3) to transport wheeled vehicles such as baby strollers, luggage carts and wheel chairs from one level to another. The trend toward vehicle systems appears to be for distances that are considered restrictive for moving walks and where very large capacities are not required, i.e. inter-terminal or parking service for a smaller percent of the public. In the horizontal plane, vehicle systems are analogous to elevatoring, while moving walks are analogous to the moving stair.

While moving stairs can be applied for a six- or even ten-story department store, they are obviously not the right choice for a high rise office building. Similarly, moving sidewalks provide adequate and constant mass flow for distances of not more than 900 feet per unit. Also, combinations of multiple moving walks can provide a satisfactory secondary system if the total distance between extremities is moderate and each unit in the system will carry only a nominal percentage of the total traffic. That is, for segmented, heavy duty traffic flow, the moving sidewalk is a distance closer, especially where convenience and not time is the determining factor.

Applications of vehicle transport systems

At many airports, the distance from parking to terminal or between terminal modules is too great for conventional moving walks. In most such situations, the secondary people mover will be called upon to transport less than 100 per cent of the public. It will handle only those passengers changing planes or retrieving parked cars in a distant lot. Hence, vehicle systems are the better application to connect these terminals where 8000 feet between two gates is not uncommon.

How many vehicles? How many walks?

For problems in elevatoring high rise buildings (except for routine projects), architects are accustomed to calling in consultants or experts from the major manufacturers to develop vertical transportation specifications. For secondary people movers at airports, however, the architect will have to play a stronger role in the selection of his mini-system for two reasons: 1) it will play a more diverse and significant role in the overall transport system, i.e. capacity relationships must be a system consideration, and 2) the state of the art is not so universally developed among manufacturers and consultants in the secondary passenger handling fields, and calculations will have to be tested in theory as well as practice. Both moving walks and vehicle systems have gained wide experience in recent years, however, and many companies stand ready with real data.

An architect knows that the peak elevator demand in his office high rise is a down peak at 5 p.m. Considering the total people deposited by only two 747's and two airbuses to be 1300 people (conceivably in a five minute period at almost any time of day), one can see extreme peak demands will be prevalent. Using specific figures to suit each airport, estimated peak traffic will require the people mover be designed for multiple peak situations, rather than day-long averages of two-way traffic.

For example, what happens if a vehicle is filled with departures going to gate C and a load of arrivals stops the loaded car at an intermediate gate B in a closed loop? With peak demands, all cars may be required at only one or two gates. This car bunching means that a call placed behind the last vehicle will have a longer waiting time than would occur with perfectly spaced cars in the loop. Can the gate or flight station handle the waiting period? The architect's solution at present is more cars per loop, greater car capacity and, someday, refined systems that express or by-pass when loaded as does an elevator in down peak at 5 p.m. The latter may prove restrictive in space and economics requiring multiple systems or smaller semi-loops handling fewer gates or flight stations.

More speed and sophistication seen for future systems

Present technology still lags behind the ideal system. A high speed, continuous system with seats may be the final solution. Accelerating moving sidewalks or a vehicle system with continuous cars may be the intermediate step. Already the marriage of the two mini systems has been successfully applied at the Ford ride at the New York World's Fair or the New York Pavilion ride still in operation. At Disneyland, designers have accomplished a somewhat continuous vehicle system by loading moving vehicles from a revolving disc platform which is fed by moving walks.

In spite of a current trend to compete between moving walks and vehicle systems, it is becoming readily apparent these systems should and will complement each other. Because each airport will have its own specific passenger flow requirements, secondary systems will continue to vary from airport to airport.

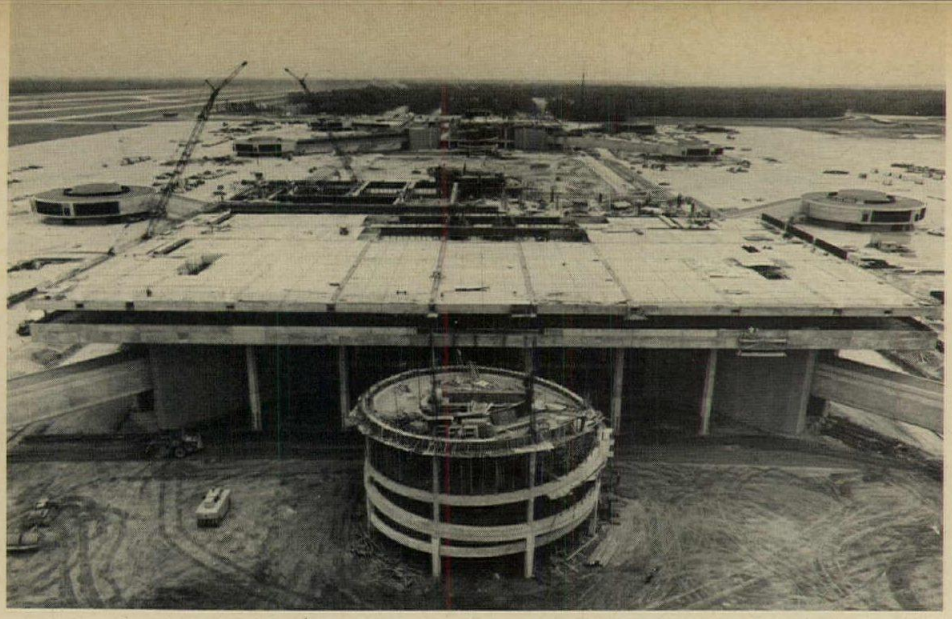
Air Transportation 1975 and Beyond

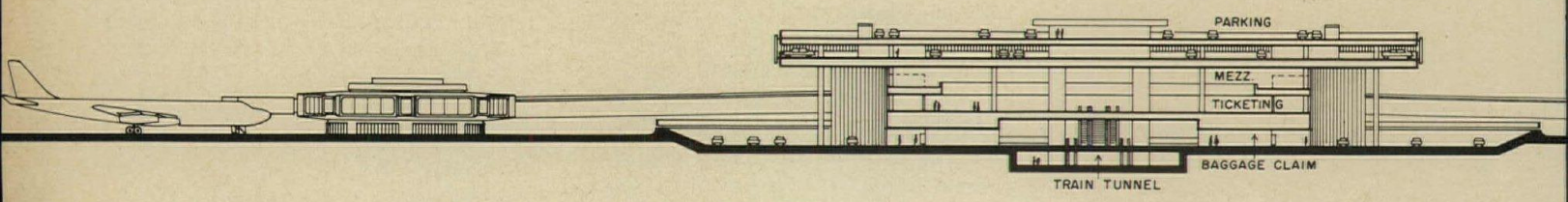
The material presented in this Building Types Study provides a general scanning of problems which will be immediate with the advent of the super-jet transports. Unresolved at this point are many other problems which must await assembly of data and equipment now in early phases of development. Short-haul facilities, V/STOL, electronic baggage retrieval systems, and many other problems will need the attention of architects and planners. A baggage system, for example, is now under test in Detroit. Many other projects are also in phases too early for definition here.

A report of the Transportation Workshop, 1967, entitled "Air Transportation 1975 and Beyond: a Systems Approach" has been compiled and edited by Bernard A. Schriever and William W. Seifert, and published as a 516-page indexed book at $20, by the MIT Press in Cambridge. This book offers seven chapters reporting the findings of selected groups of specialists.

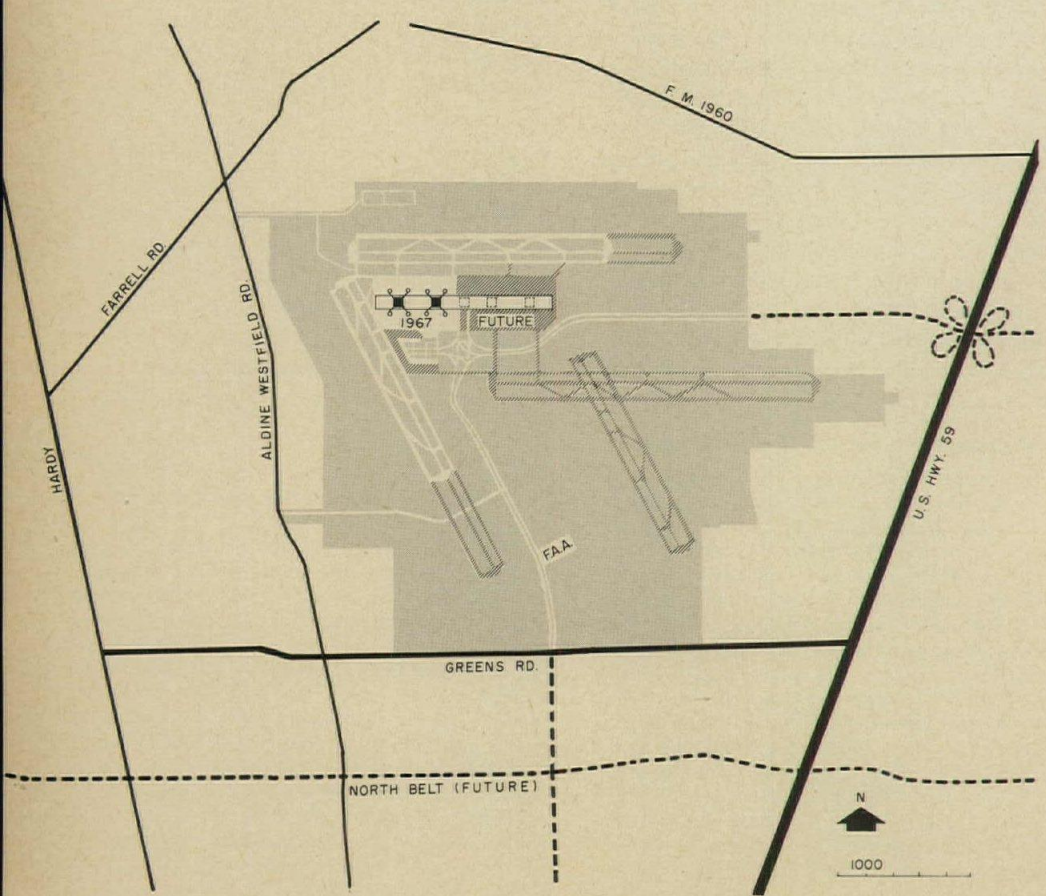
One group deals with socio-economic factors affecting air transportation, including those of population, education, leisure, other transportation systems and cargo transportation trends.

The technology of developing air vehicles is another aspect covered in the book, with detailed dimensional drawings and projected capacities. The section on emerging V/STOL planes and their associated roles and facilities is particularly detailed. Other chapters deal with air traffic control, airports and terminals, collection and distribution of passengers and air freight, and government policies and trends.





Houston Intercontinental Airport brings people and planes together in a straight-line series of terminals

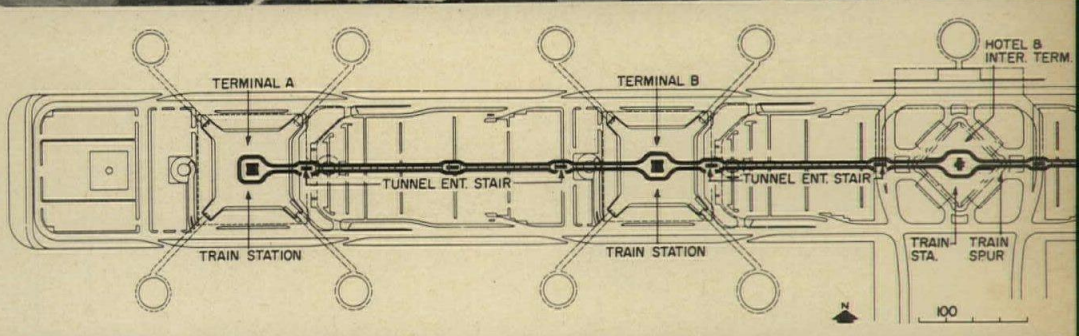


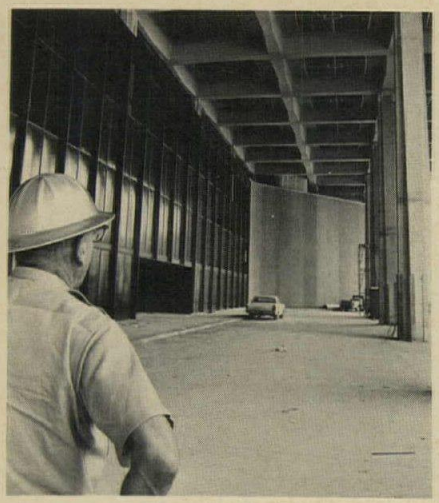
Houston's completely new airport—on a giant site (more than 6000 acres) with all-around access—offered airport architects Golemon & Rolfe and Pierce & Pierce a virtually unprecedented opportunity to take a new look at airport planning and design criteria, with the passenger at the focal point of consideration.

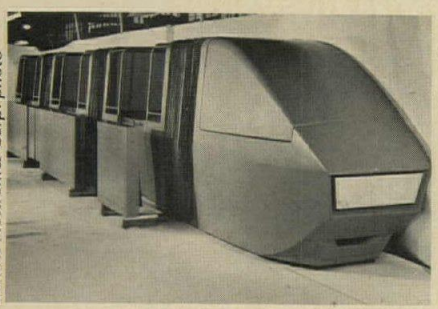
Out of their researches came the growing conviction that the natural evolution of airports from their earliest pasture-and-barn beginnings has been a series of geometric expedients to cope with increasing numbers of planes and airlines. Barns became terminals which grew fingers and then satellites while more and more of bigger and bigger pastures was assigned as holding area for automobiles. The result was a seemingly limitless stretching of distances between the groundside and the airside of terminals through which passengers were challenged to wend their weary ways.

With the Saarinen concept of the mobile lounge at Dulles striking an early blow for passenger relief (RECORD, March 1960), the logic of shortening walking distances became basic to the approaches of many airport planners and terminal designers. Most of these, however, were faced with the restrictions, physical and economic, of redeveloping existing facilities. The Houston airport architects were not so constrained—although, of course, they faced the usual complexities of dealing with the multi-faced client typical of the city-owned, multi-line, international airport. And they had to deal with those problems in a city where other airports, municipal, military and commercial, were already demand-

The unit terminal concept is not a spine concept, as Harry Golemon points out. It creates integral nodes of related ground and air activities and provides opportunity for full access to air space from all sides of each unit terminal. For those occasions (less than 20 per cent of passengers) when travel between terminals is required, a battery-operated electronically-controlled train has been developed, under the architect's direction, by a manufacturer of equipment already in use in warehouses. Track loop is shown at right.

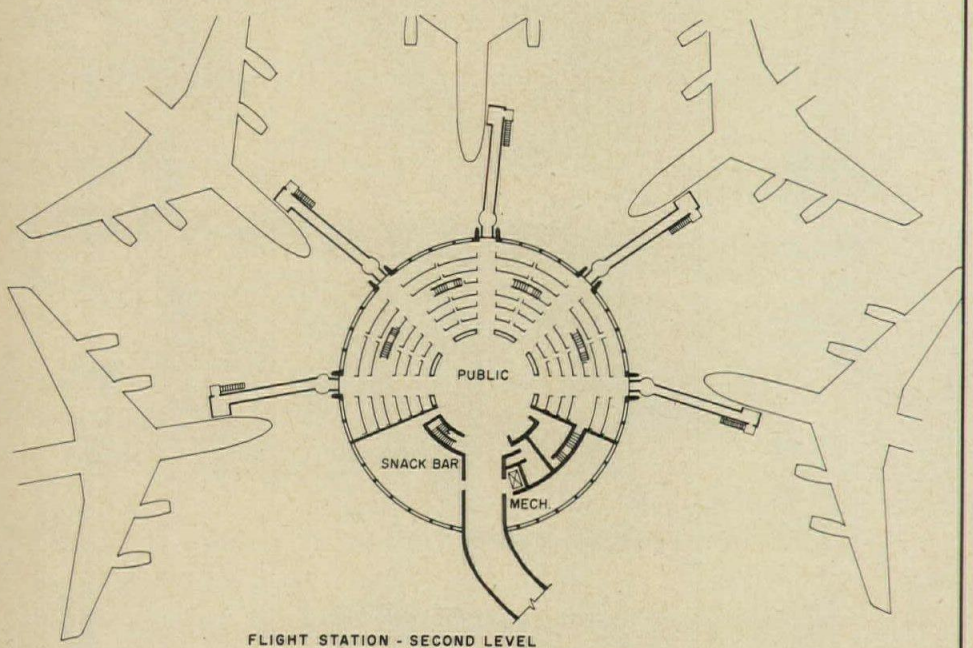




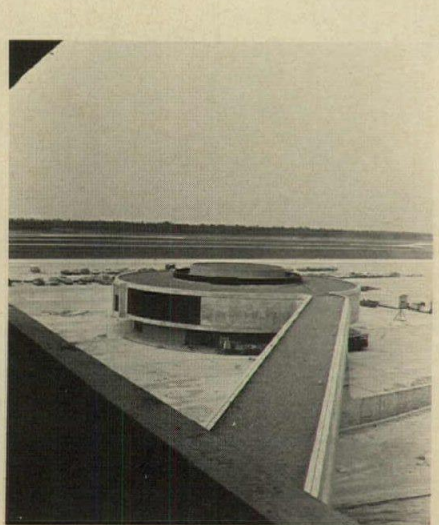


Barrett Electronics Corp. photo

Construction photos show scale of the departure curb area and the spiral ramp to parking. Control tower in the background is designed by I. M. Pei Associates. Electronically controlled, battery-driven train connects all buildings and inter-building parking.



FLIGHT STATION - SECOND LEVEL



Two-level plan of airside satellites provides holding areas and limited public facilities for passengers entering and leaving planes at the upper level, with baggage handling and airport operations below. In the first phase of construction comprising two completed terminal nodes, one satellite will be assigned to handle international traffic and will temporarily house customs inspection areas.

ing increased air space all around them.

The earliest terminal area plans presented for approval through the multiple channels of the airport situation were very general. But six important criteria were established at this phase, and provided a firm basis for all subsequent developments. They were: (1) ease of use by passengers; (2) minimum walking distance; (3) in-house parking; (4) simple operation; (5) flexibility; (6) expansibility.

The first terminal considered was a single central terminal with radiating piers and an underground parking garage. This concept proved restrictive of several of the criteria, especially those of walking distances and expansibility. Further, a firm program requirement for hotel facilities in the hub generated complex traffic and building height problems in developing the single-terminal concept.

Starting with the preliminary budget of about $16 million for terminal construction, the architects studied costs at 17 comparable airports and established a general order of about $25 per square foot for terminal areas and $8 per square foot for parking garage area. With this yardstick they were able to examine various types of terminal solutions.

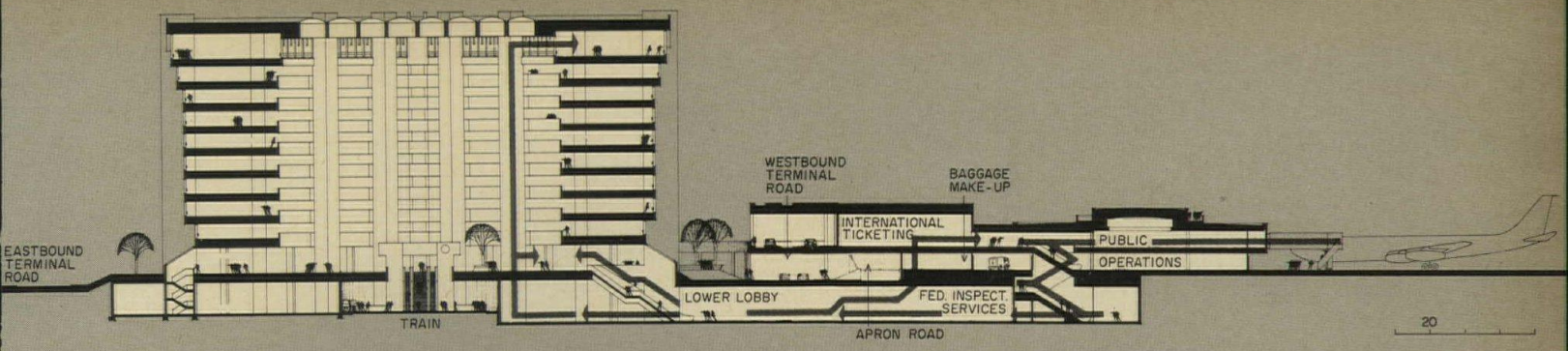
In July 1963, four terminal concepts were presented to the city. These envisioned using (1) mobile lounges, (2) pier or finger construction, (3) satellite enplaning structures and (4) a series of unit terminals.

The unit terminal with drive-in parking was a new concept at that time and was the one that best complied with the six original criteria.

Based on an analysis of ultimate air space capacities and probable airline use, a series of four unit terminals, basically square in configuration, was planned. Each will have four corner concourses, leading a maximum of 500 feet from ticketing area to circular structures housing five gate positions each. There will be two such terminals on each side of a central hotel which will eventually house the international customs and inspection areas in a terminal annex, reached through a single concourse.

The whole series of terminals and hotel will be connected underground by a continuously running battery-operated electronically-guided train. The train, an adaptation of equipment now used in warehouses, will be noiseles, fumeless, operatorless and safe for public use. It will serve each terminal and the hotel, as well as outdoor parking between the terminal buildings.

The City of Houston adopted the unit terminal concept on September 9, 1963. "If it is as attractive as it appears and as functional as you promise," Mayor Louie Welch told the architects, "it will



The Central Hotel (above) planned for phase two of construction will have a three-level terminal annex to handle international passengers. It will connect, through customs areas, directly with the hotel lobby and, via electronic train, to other parts of the airport. The connection between terminal and hotel will be penetrated by the peripheral terminal roads and the blast-protected apron road.

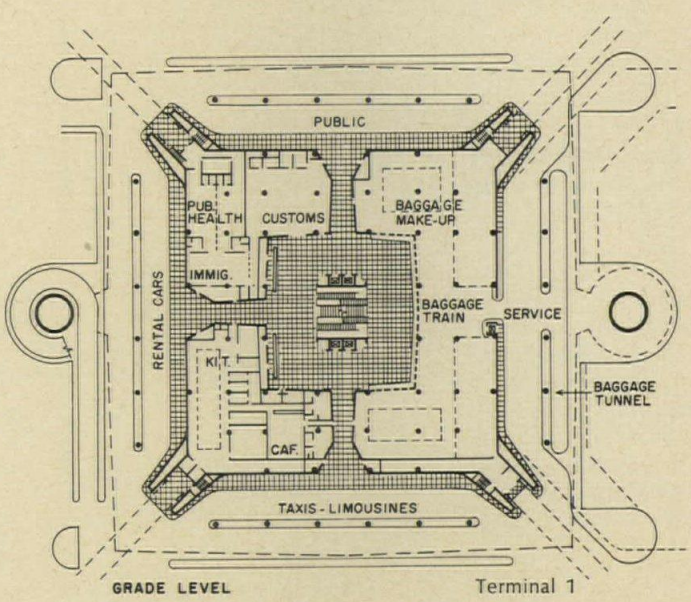
Plans below show arrangement of spaces on three levels of terminal buildings with temporary spaces for customs and immigration.

Area Tabulation: Terminal Buildings

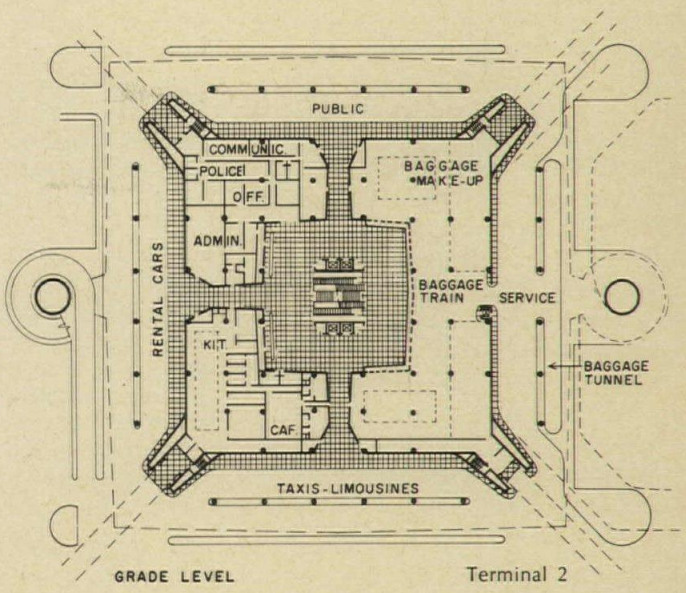
	sq. ft.
Total terminal buildings and flight stations less items below	605,592
Garage floors (3 + roof)	565,592
Spiral ramps	70,515
U-ramps	101,900
Baggage tunnels	36,258
Service tunnels	5,265
Train tunnel	35,034

Parking Tabulation

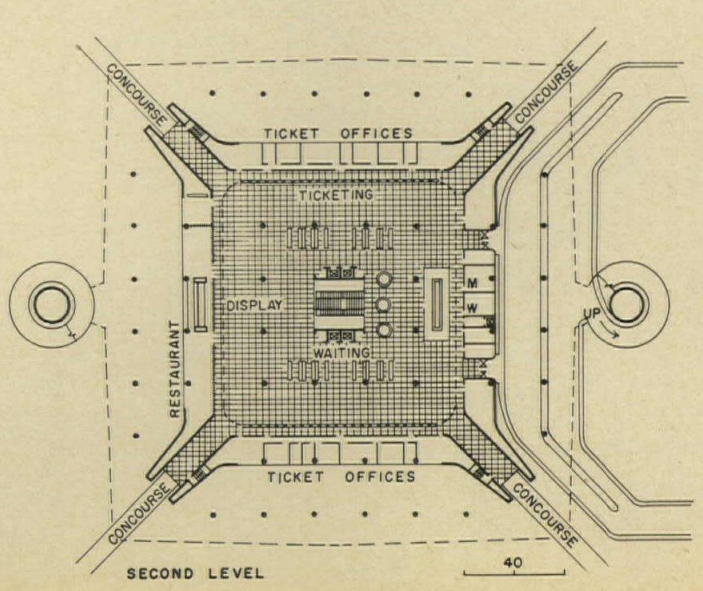
	Cars
Garage (two terminals)	
3rd levels	692
Roofs	830
	1522
Surface Parking	
Contract parking N & S of control tower	192
Rental cars/limousines	247
Short term	317
Center lot	739
East of tower	417
	1911



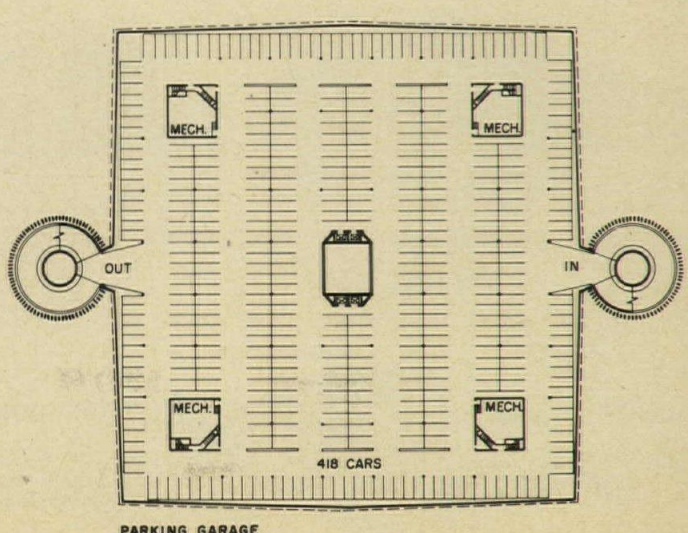
GRADE LEVEL Terminal 1



GRADE LEVEL Terminal 2



SECOND LEVEL



PARKING GARAGE

be the greatest airport in the world." City Aviation Director Joseph A. Foster (now vice president for airport facilities of the Air Transport Association) said, "The unit terminal concept is a new approach to air terminal design. We believe that for the first time in the world we have a design that deals successfully with the basic humanties of public conveniences."

The concept of the buildings, Mr. Foster observed, is based on telescoping the parking, walking and baggage-lugging of the air passengers to a minimum. Upon reaching the terminal, the passengers' movements will be mostly vertical by way of elevators and escalators, instead of lateral along lengthy walkways through wings and fingers.

The vertical movement will be achieved by stacking parking facilities, ticket counters and baggage checking centers on top of each other and connecting them with central elevators and moving stairs.

During the design evolution of the study, it was determined that 35 gate positions would be required for 1970, 45 for 1975, and ultimately about 80. Four million passengers are expected by 1970. Predictions are that by 1975 six million passengers annually will pass through the Houston Intercontinental Airport.

Two of the terminals will be built in the first phase of construction. Each terminal will be identical, with two exceptions: one terminal contains the international area which includes customs, public health and immigration, while the other terminal is planned with administrative offices. Ultimately, the immigration gate positions and related areas will adjoin the hotel.

Each terminal has two passenger-handling floors plus two garage floors, with structure for one additional garage floor. Enplaning passengers will arrive by car, taxi or limousine, and possibly in the future by helicopter. If the passenger arrives by car he will drive to the parking garage, enter an elevator on the third or fourth floor, leave the elevator at the ticket counter (second floor), obtain his ticket, partake of concessions and walk approximately 500 feet to his plane. If the passenger arrives by taxi or limo, he will leave the vehicle at the second floor, obtain his ticket, and board his plane.

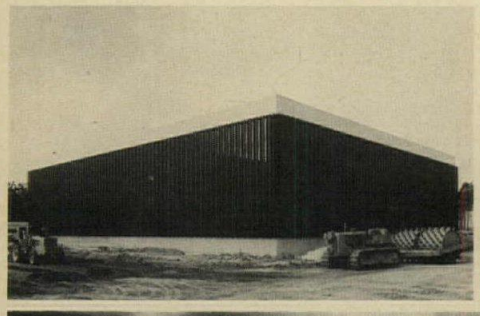
Deplaning passengers will leave planes at the second level, take a moving stair or elevator to the first floor, receive baggage, and leave the terminal by private automobile, taxi or limousine.

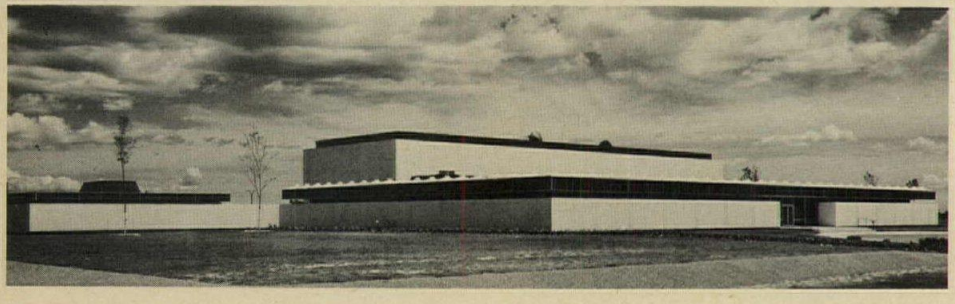
The deplaning passenger enters his taxi, limousine or private transportation at the first floor or baggage claim level. If he has parked his car in the terminal, he takes an elevator to the parking garage. The inter-terminal transportation system will be used by those passengers wishing to go from one terminal to another, to the hotel, or to adjacent outdoor parking.

Perimeter roads encircle the terminal area complex and are protected from jet engine blasts by being six feet below the plane ramp and having a blast protector built between the road and the ramp.

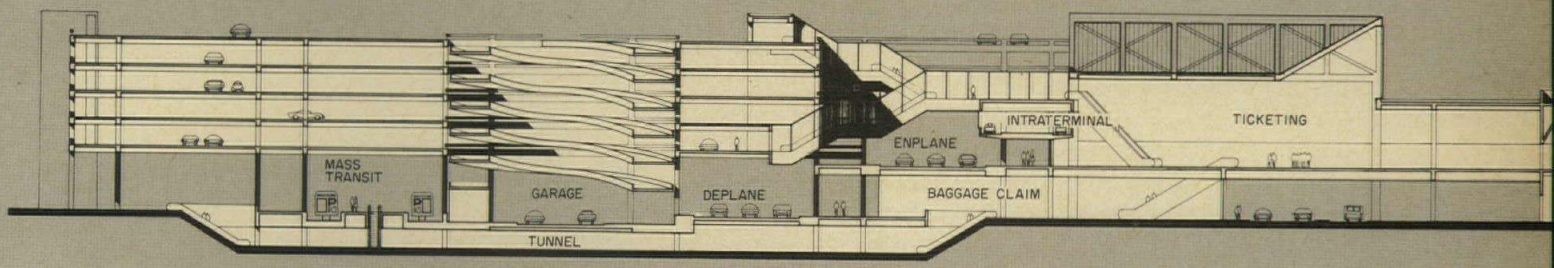
As design work proceeded over a three-year period, the architects developed, and the city accepted, written design guidelines of all leased ancillary facilities at the airport. These guidelines specified the use of concrete and glass as major materials and provided for other criteria of quality and construction.

HOUSTON INTERCONTINENTAL AIRPORT. Airport architects: *Goleman & Rolfe and Pierce & Pierce;* engineers: *Engineers of the Southwest, a joint venture of Lockwood, Andrews & Newman, Inc; Bovay Engineers, Inc.; and Turner, Collie & Braden, Inc.;* landscape architects: *Bishop & Walker and Fred Buxton;* lighting consultant: *Seymour Evans;* graphic consultant: *Architectural Graphics;* contractor: *R. F. Ball Construction Company.*

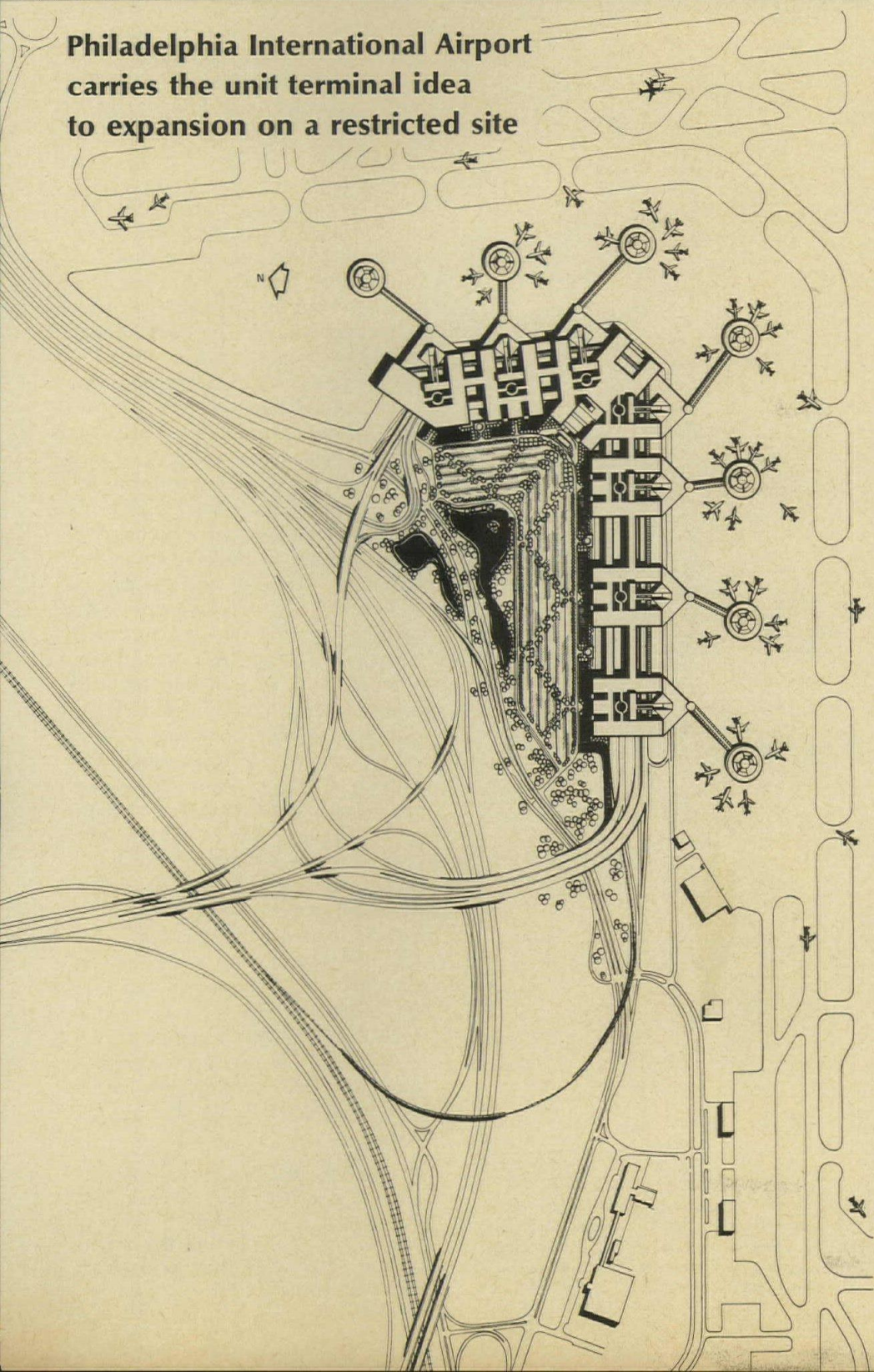




Buildings at left are ancillary to the airport spaces. Bottom is building housing the Federal Aviation Agency's regional control facilities, which comprise computerized communication equipment for a nationwide network of Federal and airport traffic centers. Buildings at top are a fire station (right) and a maintenance building. All are designed by the airport architects.



Philadelphia International Airport carries the unit terminal idea to expansion on a restricted site



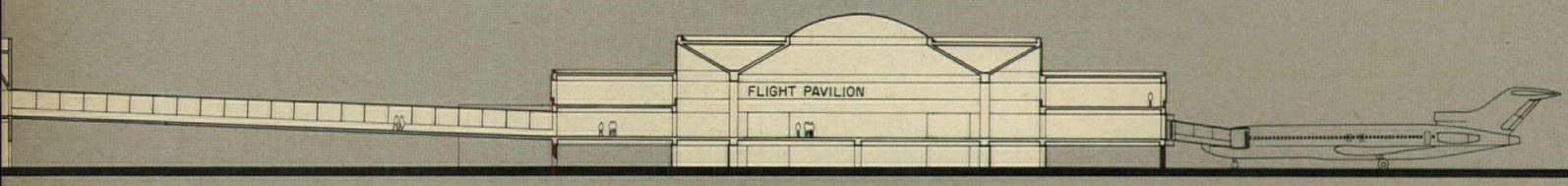
Expansion of the Philadelphia International Airport terminal facilities must be done within the limited space bounded by present runways, and on the same site as the present terminal. In addition, a new 10,000-foot runway must be built on the far side of the present east-west runway; and a whole new multi-level interchange of access highways and transit tunnels must be constructed. There will also be a new cargo facility on the western part of the airport. All of this presents a difficult problem of phasing construction since no functions of the airport can cease while building goes on.

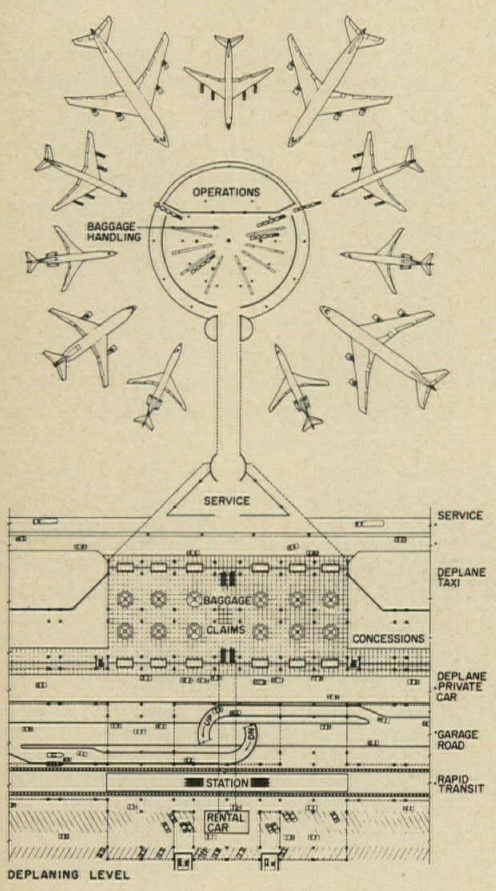
Architects Vincent G. Kling and Associates have come up with a terminal solution that condenses even further the ground-to-air concepts of Houston, although the architects were forced to live with the one-direction, highway-to-runway flow that prevails at so many airports.

Each of the six terminals connects to a round pavilion which can dock 11 aircraft, including 747's and SST's. Also linked with each terminal is a five-level parking garage, each for 2,000 cars.

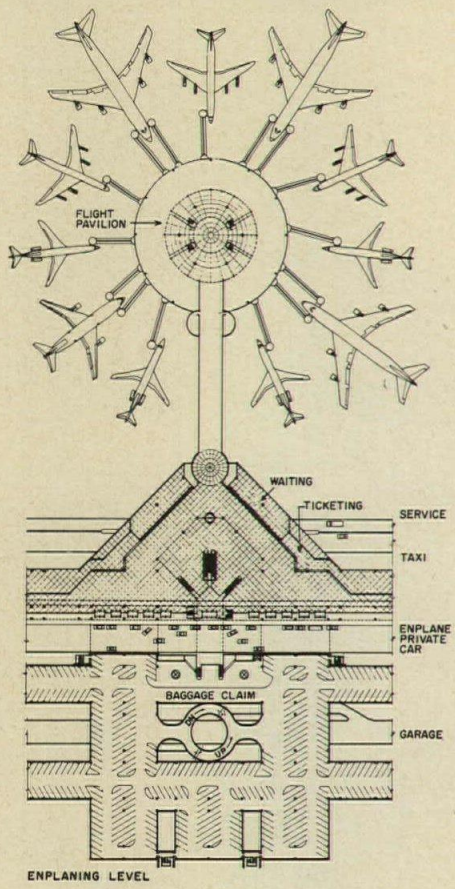
The first phase of the program consists of expanding present airport facilities from 30 gates to 41 (see phasing diagrams on page 141). Additional holding rooms are also being constructed of light steel framing and metal walls. These will go alongside existing concourses and holding rooms. Larger public waiting areas, expanded ticket sales space, medical facilities and concession spaces are included. Construction of all-new terminals will begin shortly after these improvements are completed next year.

The architect states, "Each terminal in the new plan is conceived as a funnel leading from its parking garages and drop-off curb, through a linear concourse directly to its pavilion." The lowest or deplaning level (see section above) is primarily a baggage claim area with private vehicle pickup lanes on one side and taxi lanes on the other. Each element lends itself to growth in that the terminals can be expanded along the interconnect-

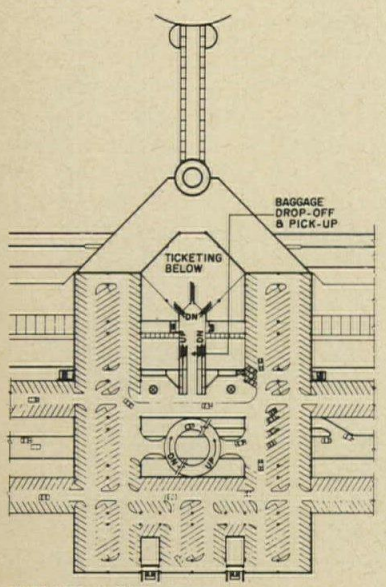




DEPLANING LEVEL



ENPLANING LEVEL



THIRD LEVEL GARAGE

The plans at left are of the ground or deplaning level, the boarding level and the third level of the garage. The average walk from garage to enplaning pavilion is 800 feet; from curb to pavilion is 600 feet.

ing walkways. A moving stair system is used to collect passengers from garage levels and transport them to the terminals. The average walk from garage to pavilion is 800 feet; from curb to pavilion, 600 feet.

Each pavilion is designed as a highly flexible hub which will accept different sizes of holding rooms at its outer ring, and have major circulation and some concessions in the center. If it is found more feasible to load the 747's from a higher level, mezzanines can be built in later.

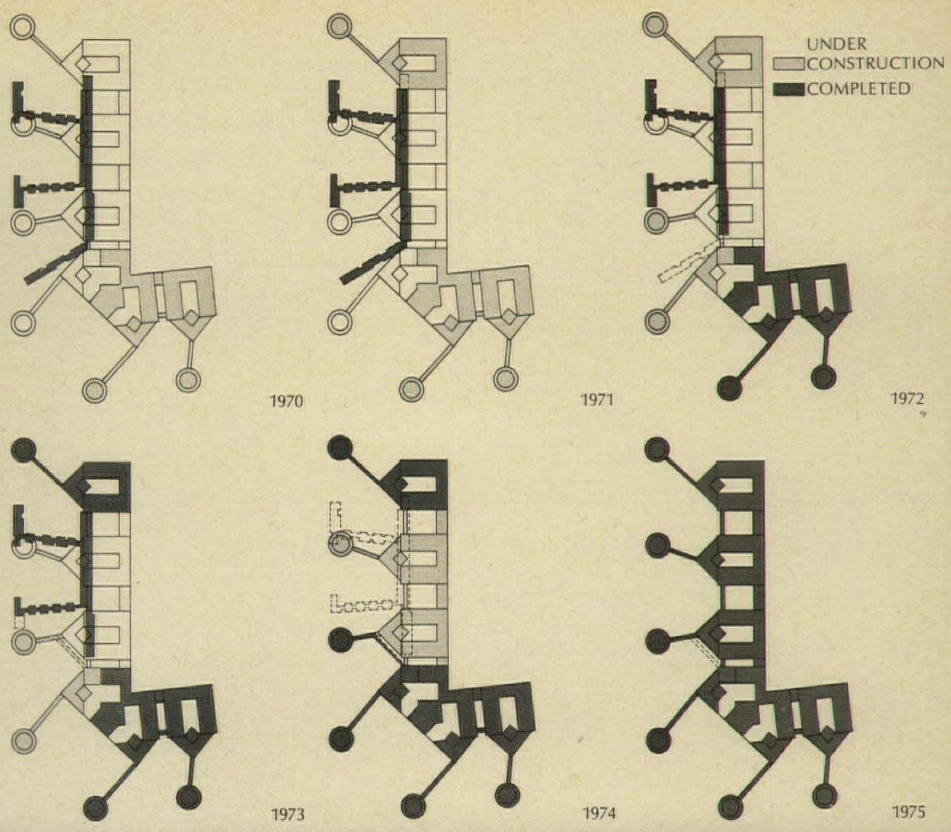
The five-level garages are served by large diameter, helical ramps and interconnected at all levels to increase flexibility. In order to handle baggage check-in more efficiently and quickly, baggage delivery and claim areas are being designed into each garage level. Sufficiently sophisticated baggage delivery and recall systems may not be available at the time the first two terminals and garages are completed, but right-of-way for these systems is being built into the structures. Ultimately, the garages will have a 14,000 car capacity. Three thousand on-grade parking spaces will be available for employes and car rental companies.

To accommodate the passenger who arrives on one airline and is scheduled to leave on another, an intra-terminal transit system, initially a right-of-way for small electric vehicles, is being constructed. In later development a more sophisticated people-moving system may be employed.

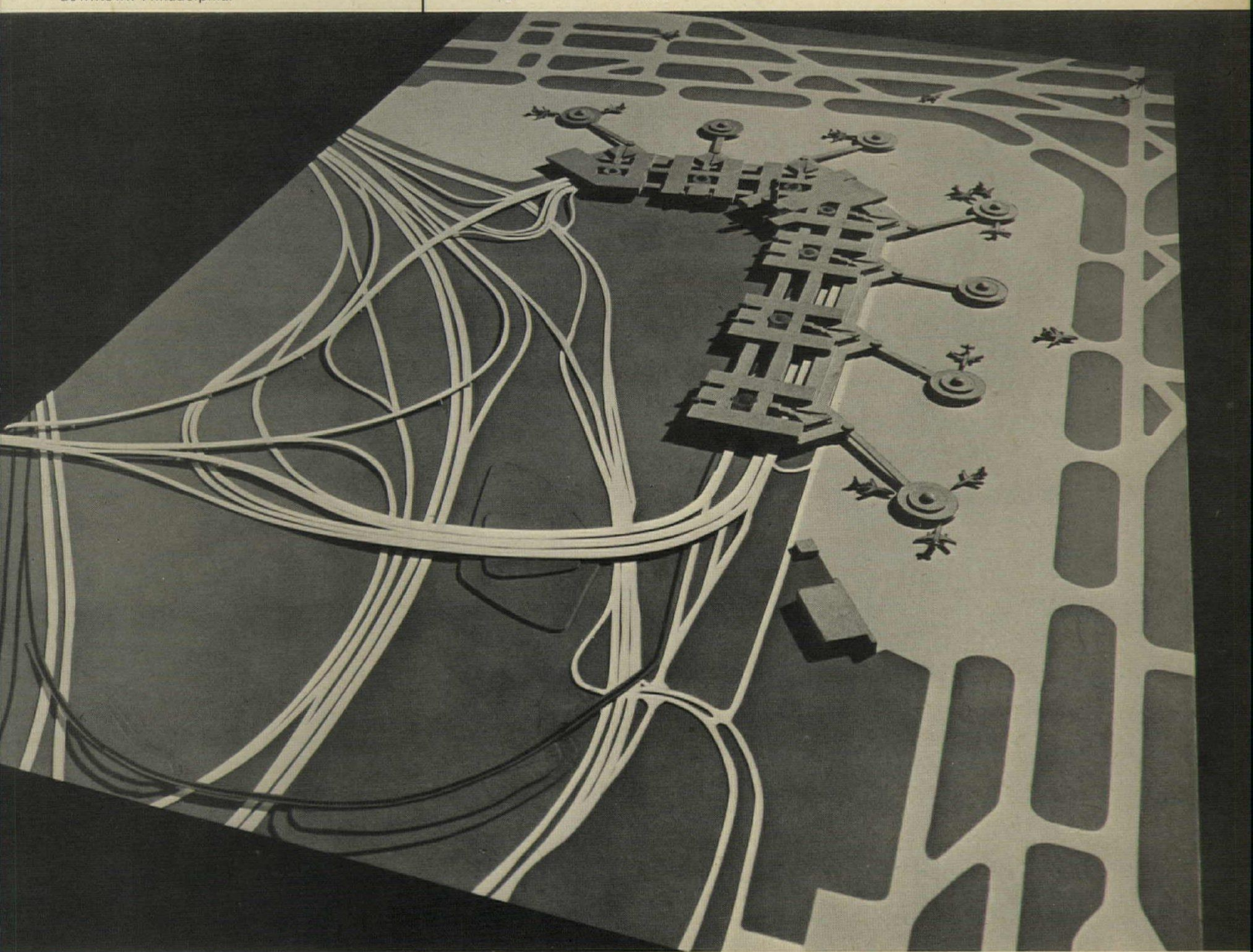
Incorporated in the structure of each garage unit, and looping through the entire complex, is a right-of-way for a mass transit system which will take people directly to downtown Philadelphia.

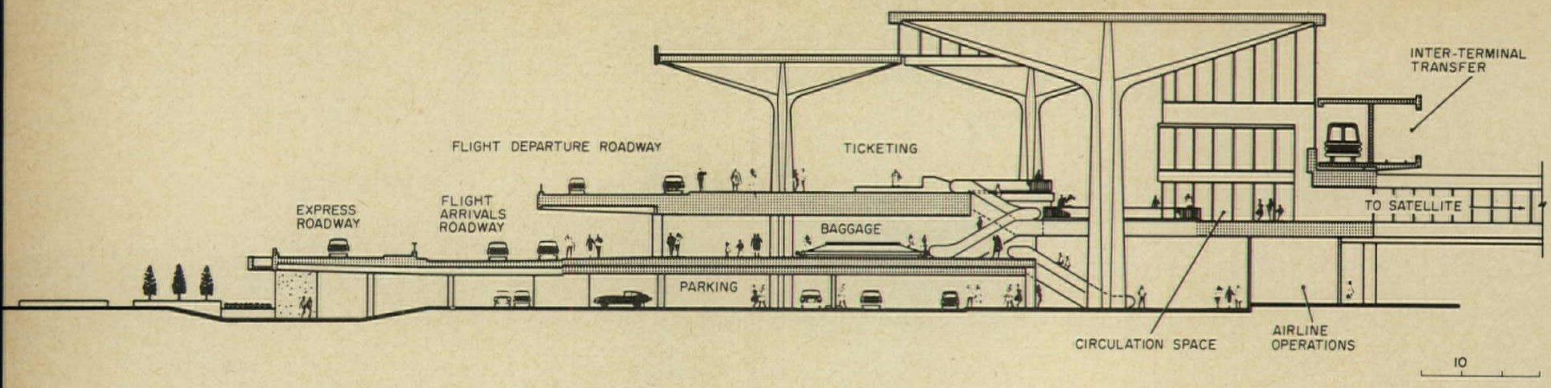
Current estimates of the complete project are about $204 million for the terminal, related roadways, site work and aprons.

PHILADELPHIA INTERNATIONAL AIRPORT. Architects: *Vincent G. Kling and Associates;* master planning and consultation: *Arnold W. Thompson and Associates* with *Paul Stafford Associates;* engineers: *A. Ernest D'Ambly and Urban Engineers, Inc.*

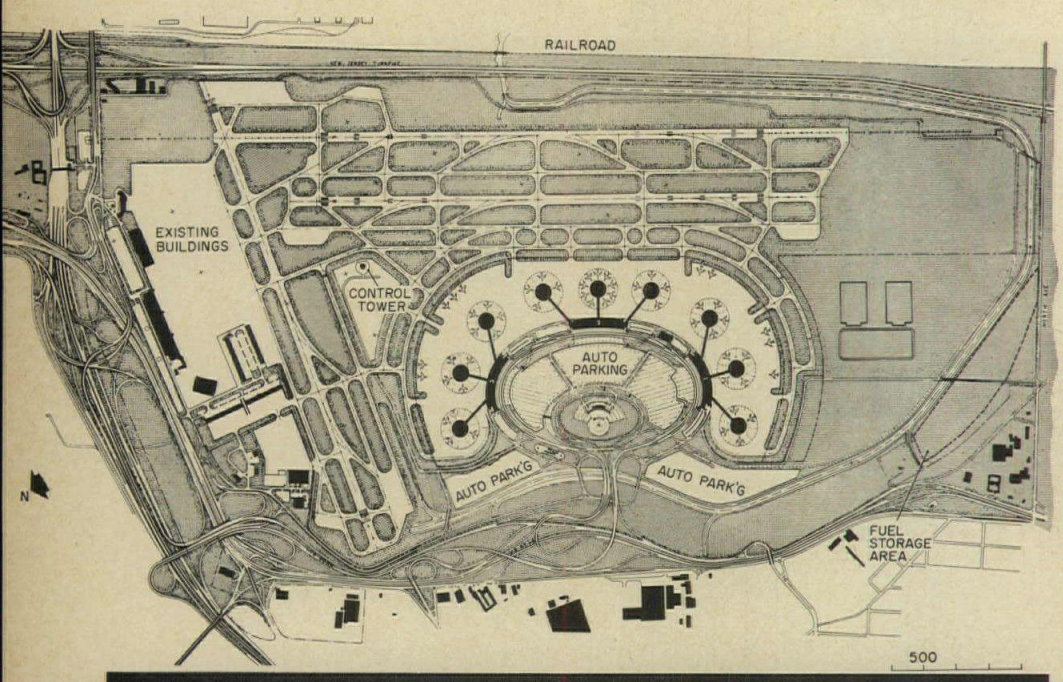


The diagrams at right show the annual construction phasing of the terminals, pavilions and garages from 1970 through 1975. Expansion of the present terminal must be completed by 1970 before work can begin on the all-new one. Below, the model photograph shows the overall plan with the connecting arteries to downtown Philadelphia.





Newark Airport redevelopment program combines layered operation with close-coupled parking

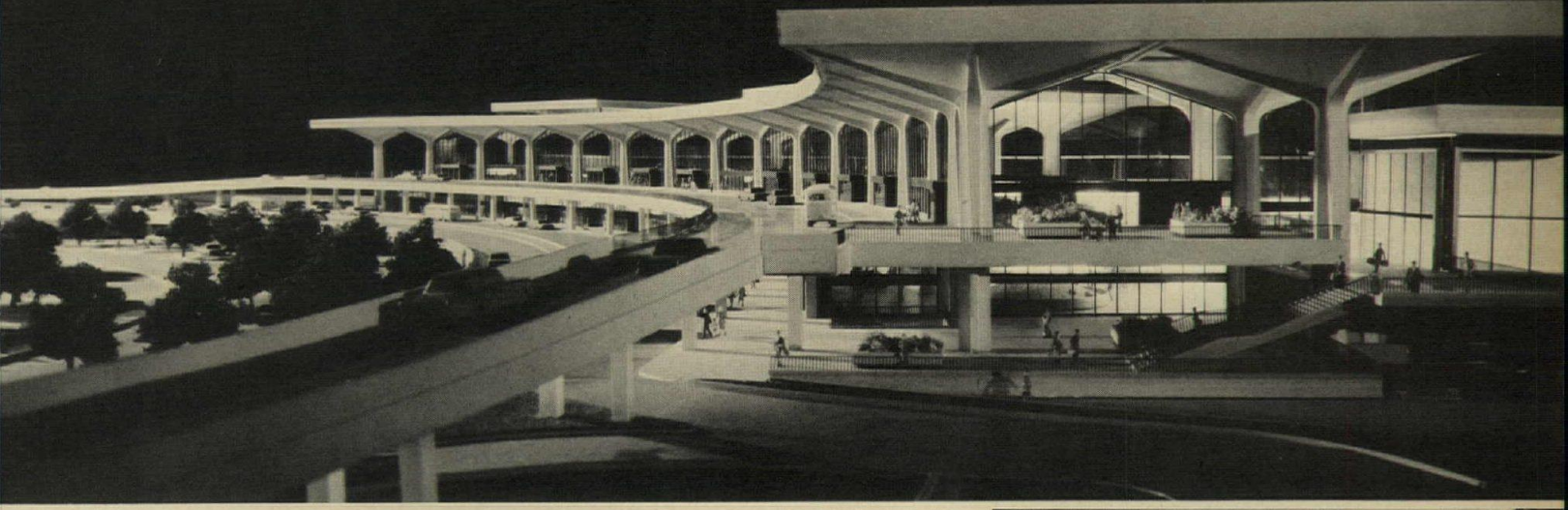


The Port of New York Authority expects air travel at Newark Airport to grow some 150 per cent during the next decade, and will spend more than $200 million to expand ground facilities and construct a new passenger terminal complex. There will be a new 8200-foot runway parallel to the existing instrument runway, plus a secondary general aviation runway and extensions of existing runways.

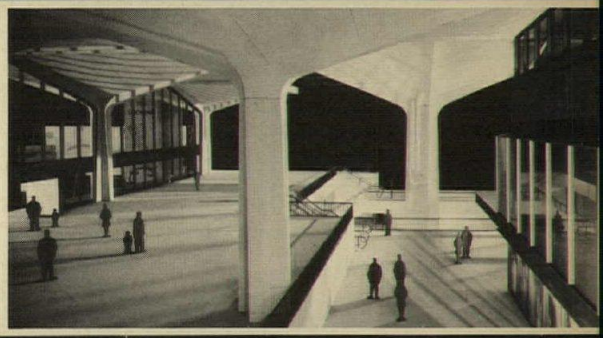
The terminal area will consist of three new terminal buildings disposed around an oval pattern of access roadways. Each of the terminal buildings will be a split-level main structure to which three circular two-level satellite gate-buildings will be attached by 600-ft arcades. Of the nine satellites, seven will accommodate nine DC-8-type aircraft loading positions each, and two will have ten positions each for smaller craft—a total of 83 positions serving 14 airlines carrying a projected 12,000,000 passengers yearly. Only domestic flights are contemplated from the Newark airport.

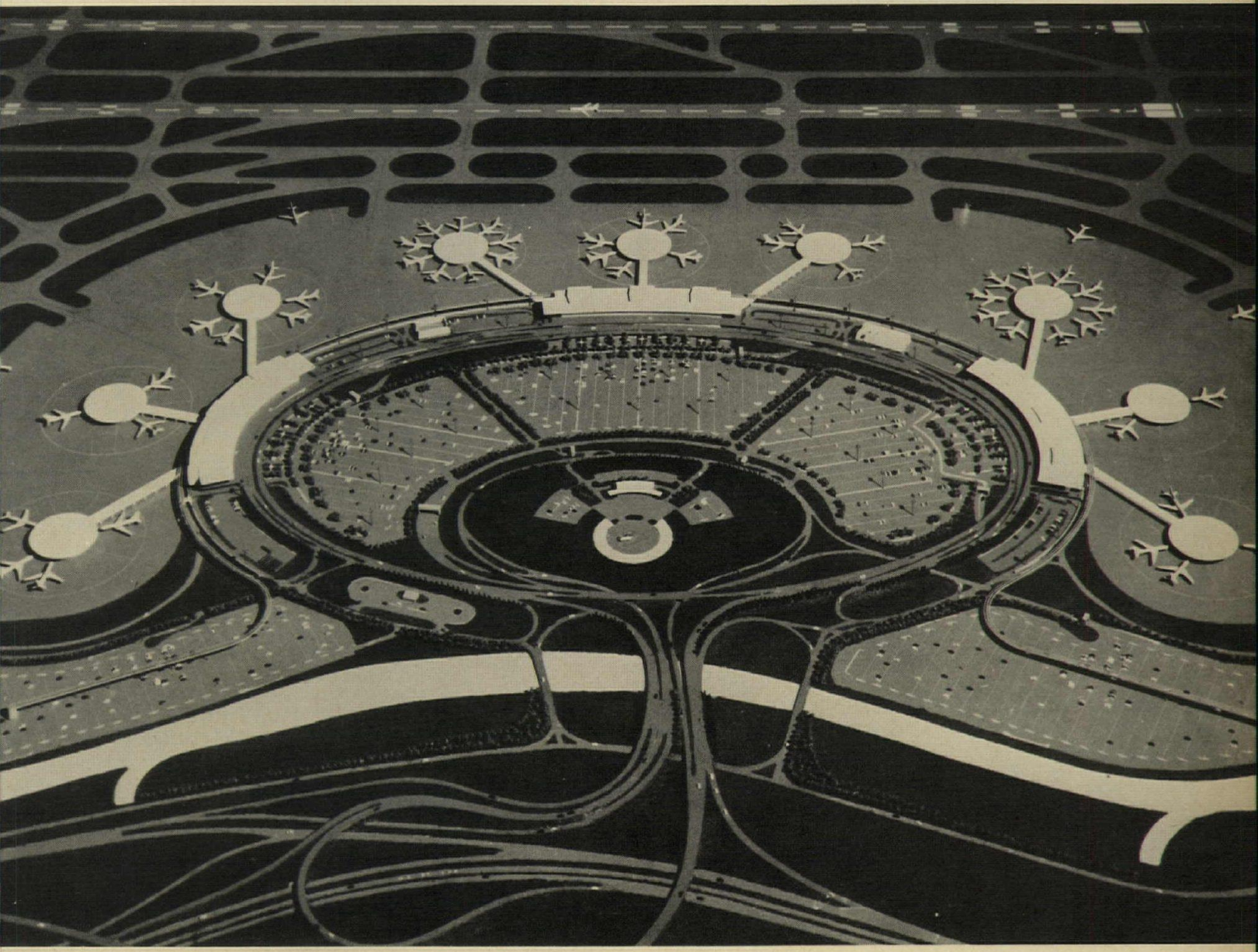
"In the abstract," says John Veerling, PNYA project director, "the single or centralized terminal building concept is the simplest for a passenger to understand. But here, where the aircraft apron extends through 83 positions representing a linear frontage of some three miles . . . the funneling of passengers through one building would mean tremendous walking distances or unduly extensive mechanization [for people moving]. . . . At the other extreme, extensive multiplication of individual terminals is confusing to passengers because of multiplicity of choice and direction and inefficient splintering of supporting facilities. Bearing these factors in mind, the terminal design team selected an optimum terminal unit comprising three satellite buildings connected to a main building."

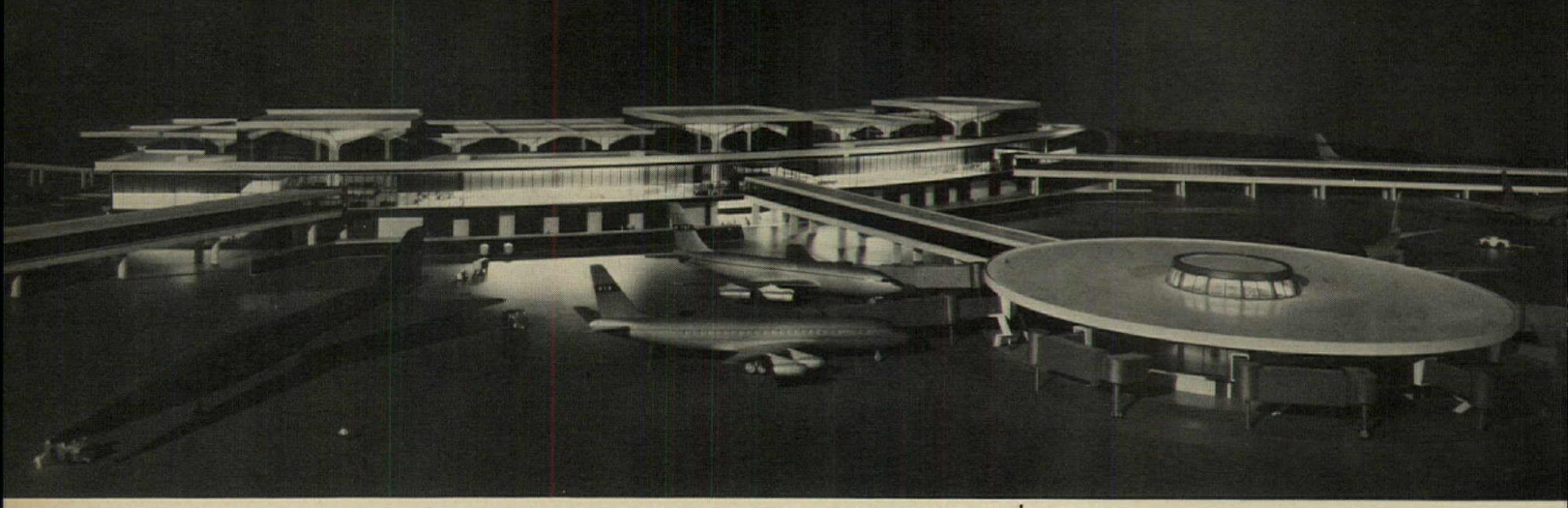
There will be parking facilities for over 10,000 automobiles, mostly within the oval, and some in covered areas adjacent to the terminal. These covered areas will be created by an elevated two-level system of access roadways for ar-

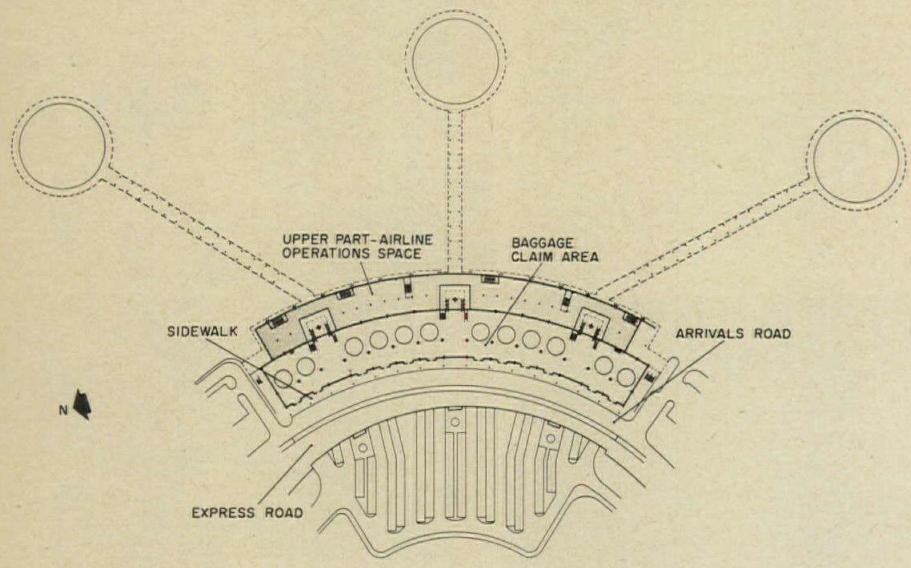


The blending of the three roadside levels and the two apron levels yields a 3/2 split-level design. In the cross section (opposite) passengers move only level or downward in traversing the building, except for the departing passenger at the parking lot level. For this exception, and for general passenger convenience, moving stairs are intended. Furthermore, the connectors between terminal buildings and their satellites are scaled to accept moving sidewalks. At three traffic nodes in each terminal, raised parabolic umbrellas create deeper spaces to give passengers a sense of place and function at circulation crossroads.



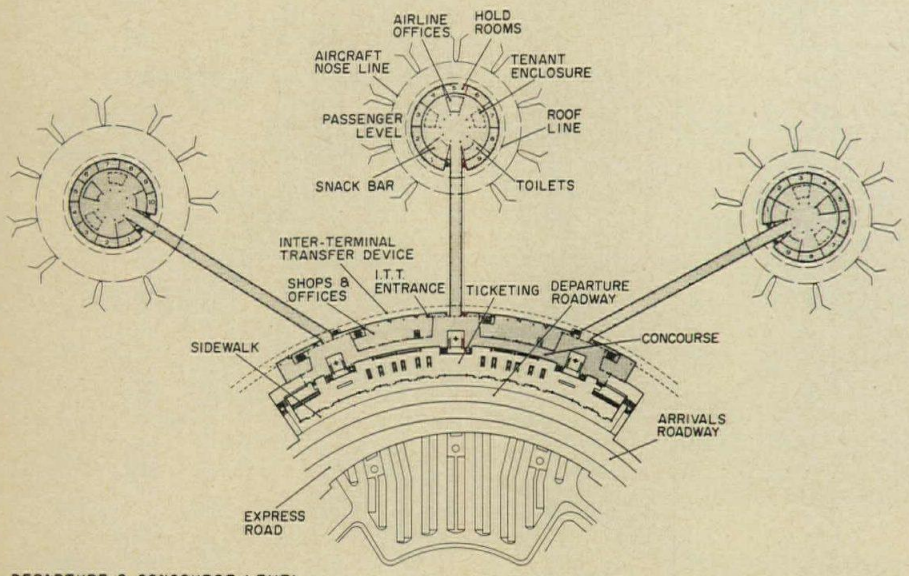






ARRIVAL LEVEL

50



DEPARTURE & CONCOURSE LEVEL

In plan, the terminal buildings are simply a functional expression of interface between air and ground transportation. The aircraft side of the terminal buildings, as well as their satellites and connectors, are two-level—(1) airline operations at grade, and (2) passengers above. The interior heights of the airline operations areas are held well up to permit hanging conveyor systems (as well as essential building services), which can be extended along the underside of the connector to the satellite.

rivals, departures, and rental car pickup. Surface parking in the center of the oval will accommodate long-term parkers, while covered parking permits access without crossing any major roads. The three-level arrangement also allows for about 4,000 linear feet of curb frontage, a pressing need at air terminals. If jumbo jets push passenger loading beyond estimates, parking and curb frontage can be expanded.

On the plane side of the terminals a blast-protected system of perimeter service roadways will handle baggage and supplies.

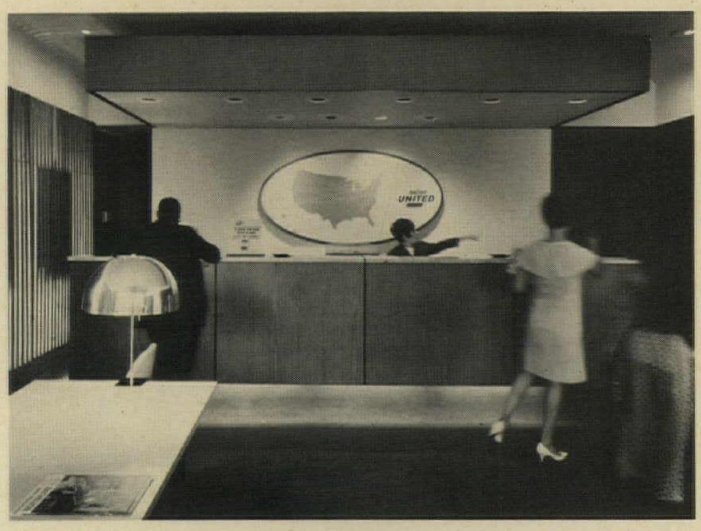
Approaches to the terminals consist of an express roadway running completely around the oval, with signalled take-off points for arrival driveways and entries from departure roadways serving the individual terminals.

Provision is made in the master plan and terminal structures for an automatic transportation system (for passengers) to provide inter-terminal services to passengers with connecting flights and to the long term parking lot. Present plans also envision, and structure is provided for, connection to the municipal transit system at a nearby station.

The basic design element is a series of concrete hyperbolic paraboloids on tapered columns. This unit follows through the architectural scheme of the terminal area oval and modest concavity of the individual terminal plans.

NEWARK AIRPORT, New Jersey. Architects and engineers: *The Port of New York Authority—John P. Veerling, project director; Gordon A. Lorrimer, Sheldon D. Wander and George E. Ralph, PNYA architects.*

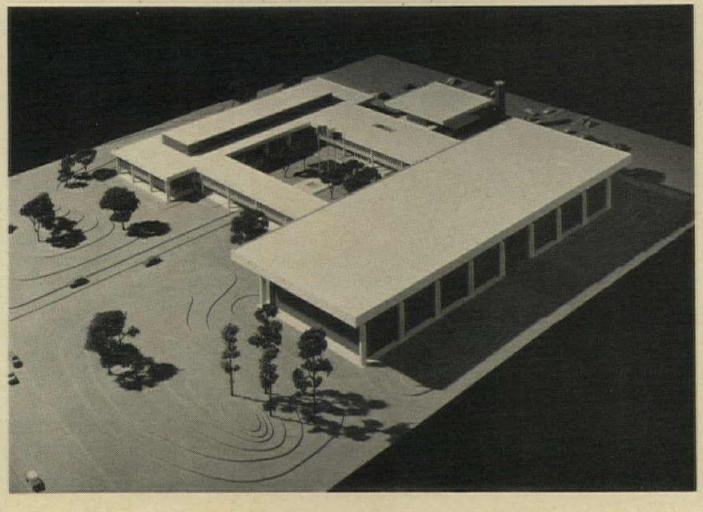
Ancillary commissions large and small grow out of airport development



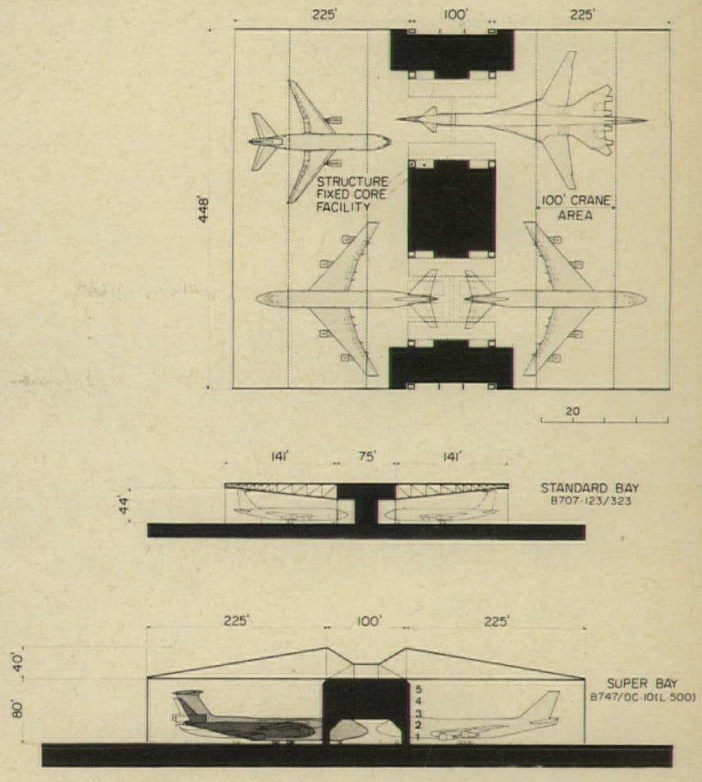
United Airlines retained Kent Cooper & Associates to undertake a broad program of renovation and expansion for United's Customer Service Facilities in the Washington, D.C. area. The photo above is of the ticket office in a downtown hotel. Below is the ticketing, waiting and check-in facility at Washington National Airport.

Commissions such as these are available at new airports like Newark, in this article, since the terminal buildings are constructed as shells in which the individual airlines create their own images.

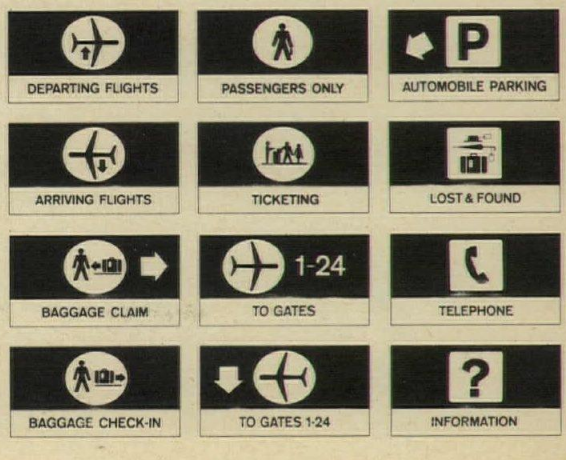
The flight training center below for United Airlines at the Denver Airport was designed by The Perkins & Will Partnership.

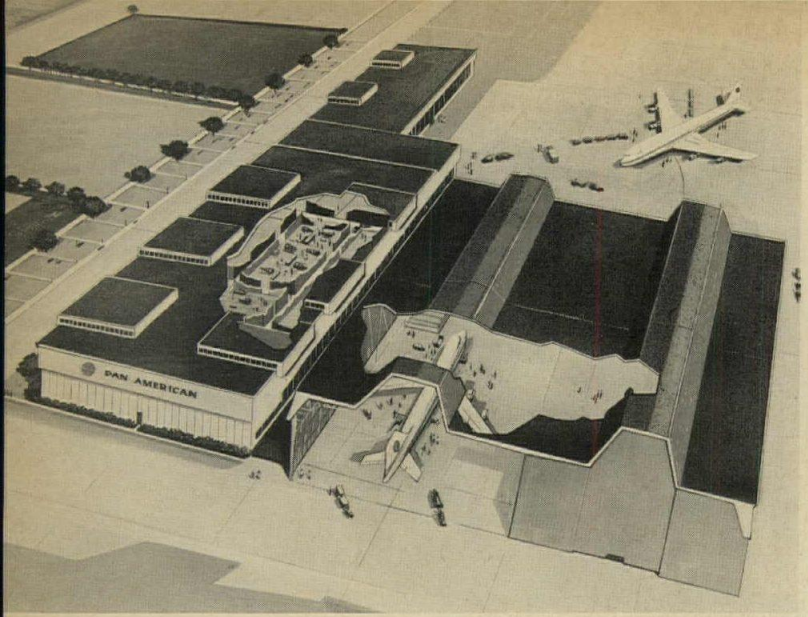


A prototype super-hangar designed for American Airlines by Zetlin, De Simone, Chaplin & Associates jointly with Conklin & Rossant, will cover an area the size of seven football fields. The design will be used at seven airports around the country. A roof of high-strength steel cables and sheet steel was designed to form an integral part of the structure, and support a suspended grid of rails on which travelling cranes will be installed. To be used to maintain any combination of present aircraft, 747s and SSTs, each hangar will cost about $2 million.



The graphics below were designed by Arnold Thompson Associates for the Air Transport Association of America as a study to explore ways of developing better airport signs and identifying their proper use.

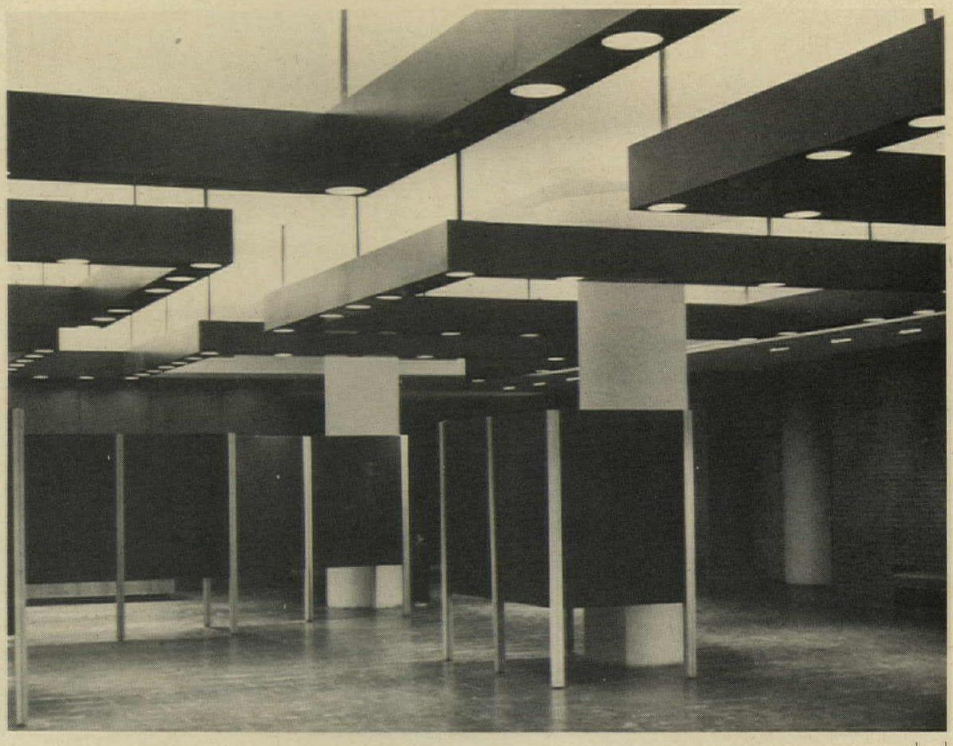




Pan Am's new maintenance base at Kennedy Airport in New York is being designed by Ammann & Whitney in association with Burns & McDonnell Engineering Company. The base will consist of a component overhaul building 1200 feet long and 450 feet wide, two huge new hangars, an engine test cell and a power plant. The cut-away drawing above shows the overhaul center.

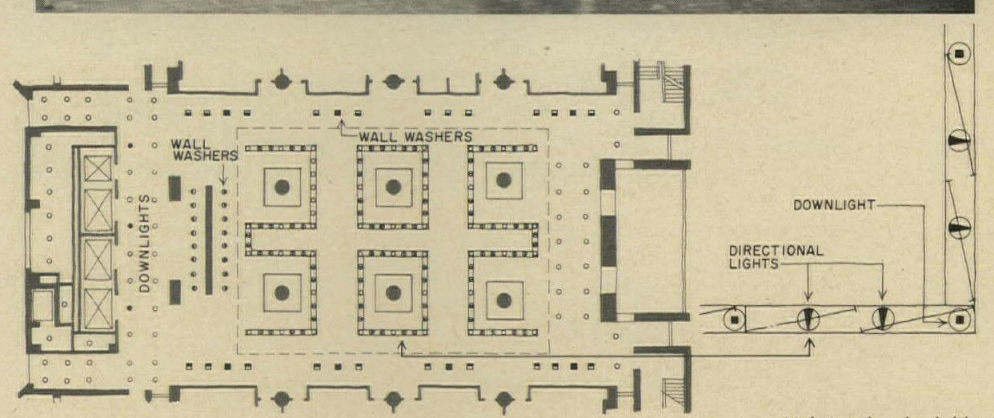
The base will be a prime overhaul center for Pan Am's next-generation fleets of jumbo-jets and supersonic transports. The two hangars each will be 284 feet long and 263 feet wide. They will be 90 feet high to accommodate the tails of the new aircraft. Special craneway systems will be suspended from the ceilings to provide a portable platform for mechanics working on the high tails.

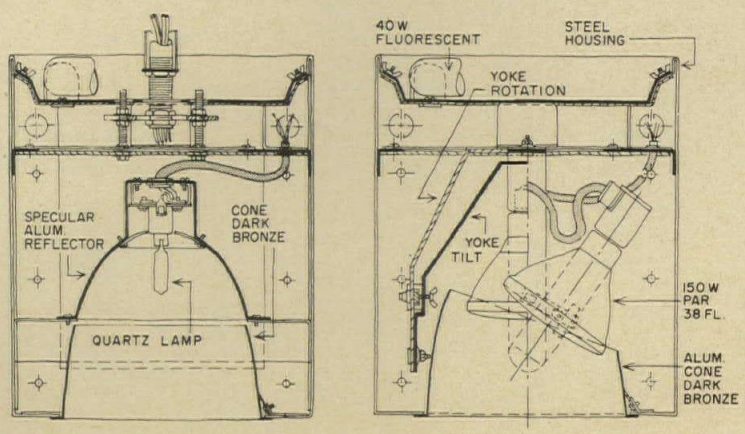
Lighting that does much more than provide illumination



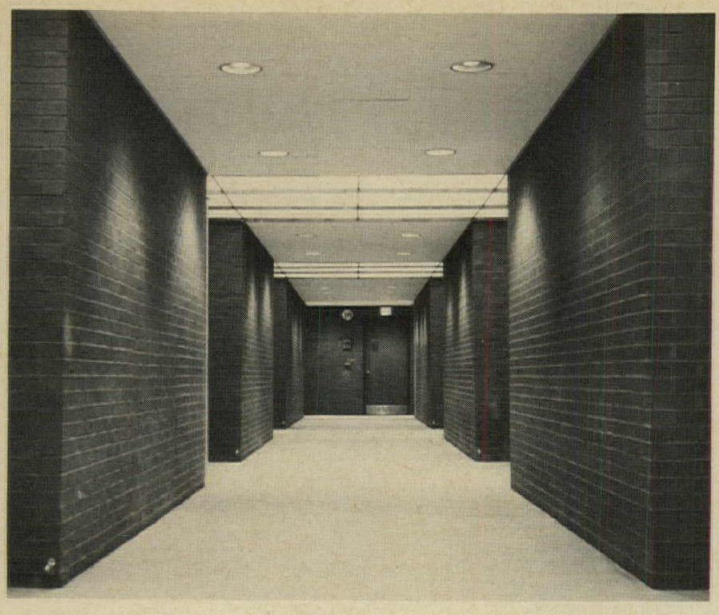
Increasingly, architects are realizing the integral role that good lighting can play in the success of an architectural scheme. Lighting for the recently reconverted building for the Social Science and Humanities Center at Long Island University's Brooklyn campus is a case in point.

Both the architects—Davis, Brody and Associates, and Horowitz and Chun—and their lighting consultant, David Mintz, were faced with the special limitations imposed by a pre-existing structural frame that was to be saved, reclad in brick and organized for academic use. Bulky columns of the flat slab system had to be neutralized. The uncompromising structure, moreover, left no room for recessed fixtures. But these limitations did not block good solutions to what lighting might accomplish. Fixed elements, as the columns in lobby at left, in fact serve as natural ordering devices for lighting patterns that work in turn—promoting circulation, and articulating and diversifying spatial functions—to achieve basic architectural objectives. Though most of the fixtures were specially designed for each situation, "custom-made" fussiness was avoided. Yet behind the confident simplicity that marks the five different schemes shown on these pages lies a thorough knowledge of lighting techniques and components, with exacting attention to each detail.

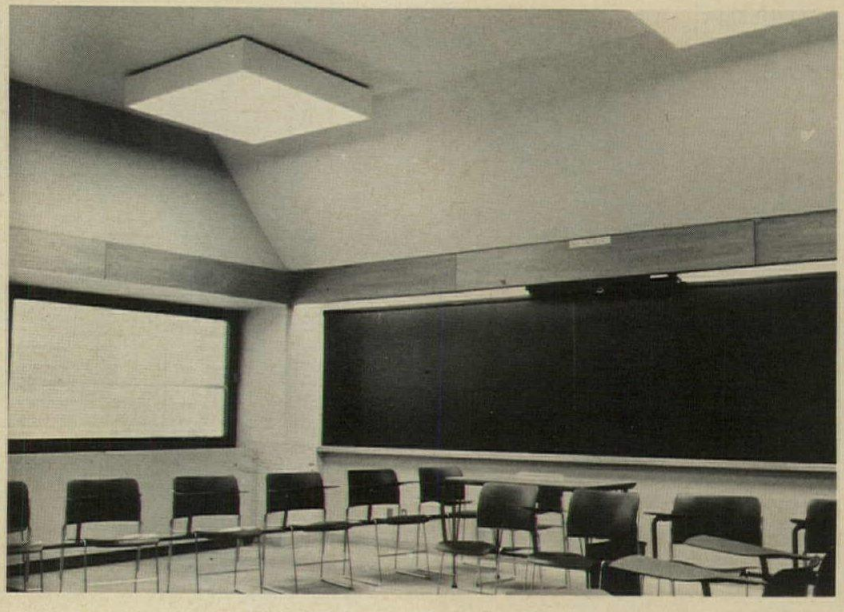




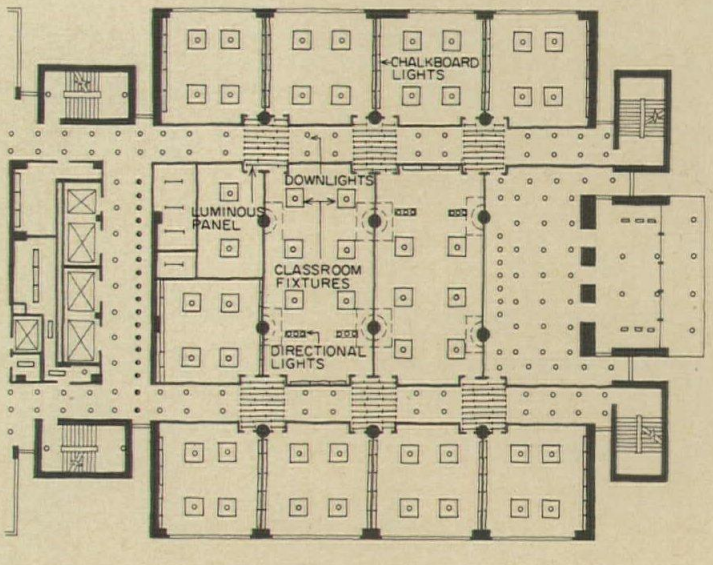
Lighting for the lobby had to provide both general illumination and flexible accent lighting for the space's secondary function, a temporary exhibit and display area. The suspended trough fixtures, shown in photo above left and in the lobby floor plan, housing three kinds of lamps, were chosen to provide both lighting flexibility and a single, unifying lighting pattern. Quartz lamps set in conical reflectors provide low-brightness downlighting for general illumination, and alternate with flood-type lamps for accenting displays. These flood lamps can be rotated and tilted as noted in the detail for directional adjustment. Fluorescent tubes at the top of the troughs uplight the white ceilings. These tubes are angled to allow room for trough hangers (which also double as conduits) while avoiding shadows that would have occurred if there had been gaps between tubes. Space is further expanded by wall washers, recessed in the soffits of the peripheral dropped ceiling, which brighten the dark purple brick walls and slate space divider. The lobby scheme suggests circulation from entry to rear banks of elevators, themselves marked by downlights. The powerful (250 watt) quartz lamps were used in the trough downlights for better light control, longer life and smaller size.

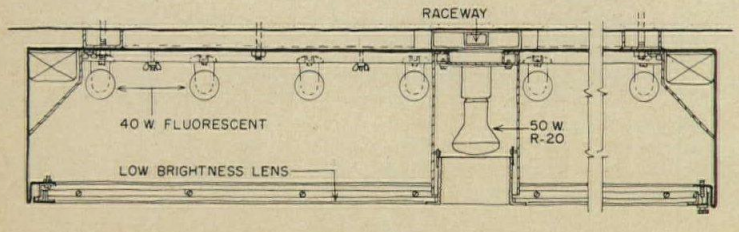


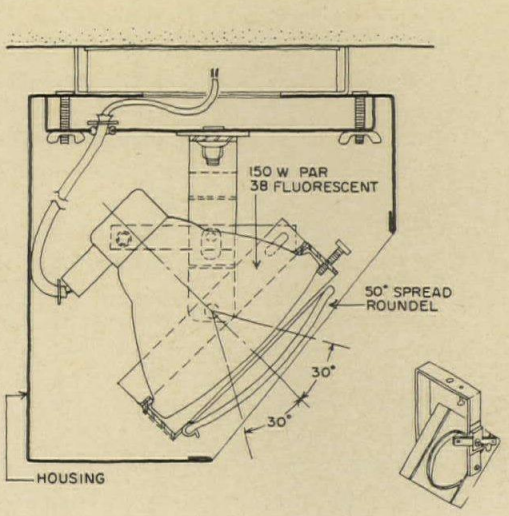
The dropped ceiling of the corridors serving classrooms and seminar rooms contain ductwork and wiring and permit two kinds of lighting fixtures to be recessed. Downlights provide general illumination for much of the corridor. Luminous ceiling panels mark doorways, both anticipating entries and creating "places" for gathering before class. The transverse illumination prevents the monotonous linearity so characteristic of much corridor lighting. Light splashed by downlights on to the walls is deliberate, intended to brighten the dark brick surfaces. The luminous panels were designed to assure a shadowless, uniform light surface. The modular coordination of column, doors and ceiling fixture, shown in the photo of the entry recess (right), is typical of the carefull integration of lighting as an architectural element.

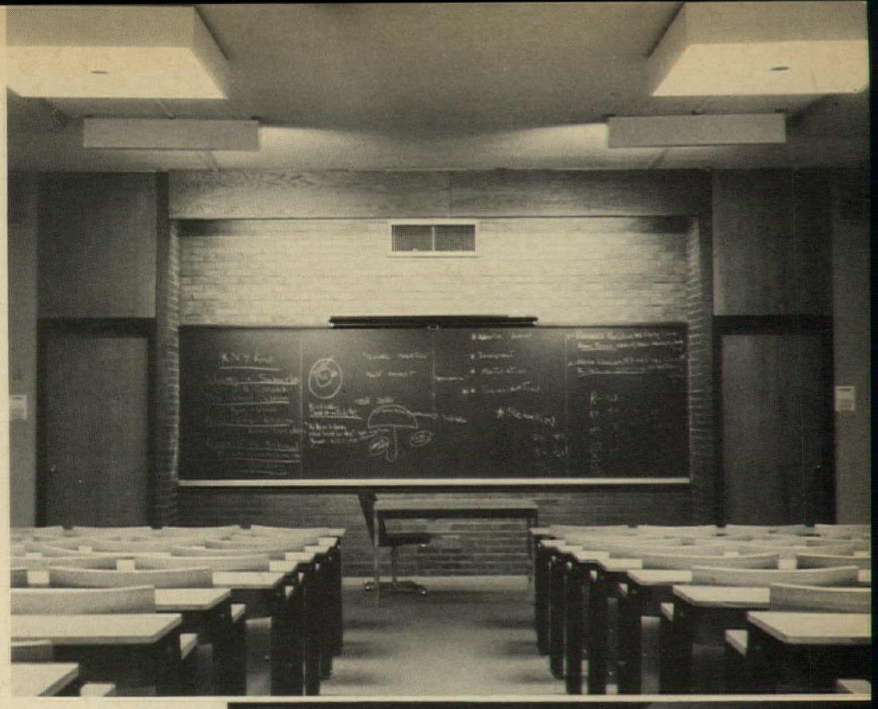


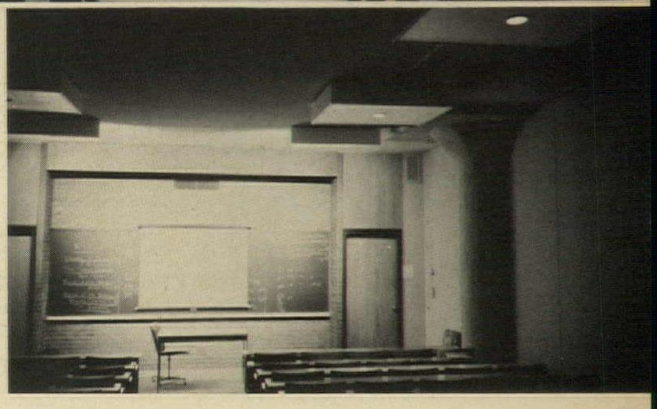
The varied illumination needs of classrooms are met by specially-designed surface-mounted ceiling fixtures and by fluorescent wall washers. Square ceiling luminaires for general illumination use low-brightness-lens panels to control light from fluorescent lamps. The glass panels have circular cut-outs in the center into which are set small downlights that provide low-level illumination for note-taking when visual aids are being used. Classrooms have sloped soffits at two ends of the rooms to house ducts and wiring fed in from the corridors. Cornices below these soffits shield the fluorescent wall washers that illuminate the chalkboards on the front wall and accent light the rear wall. Another wall contains coat-rack recesses, and the exterior wall has double-glazed units with self-contained venetian blinds for regulating daylight.



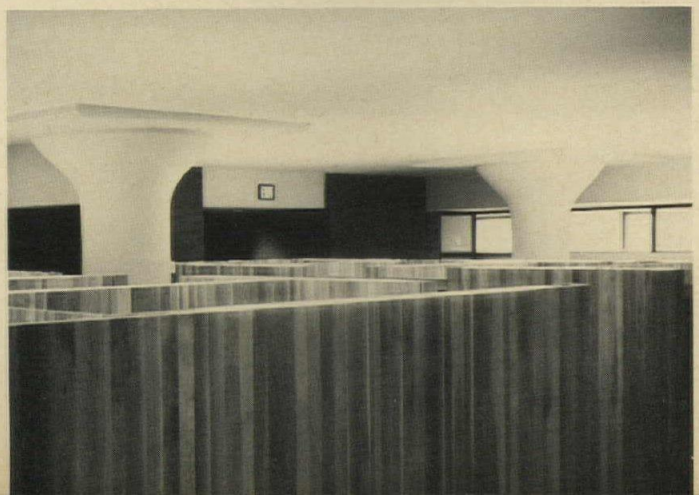


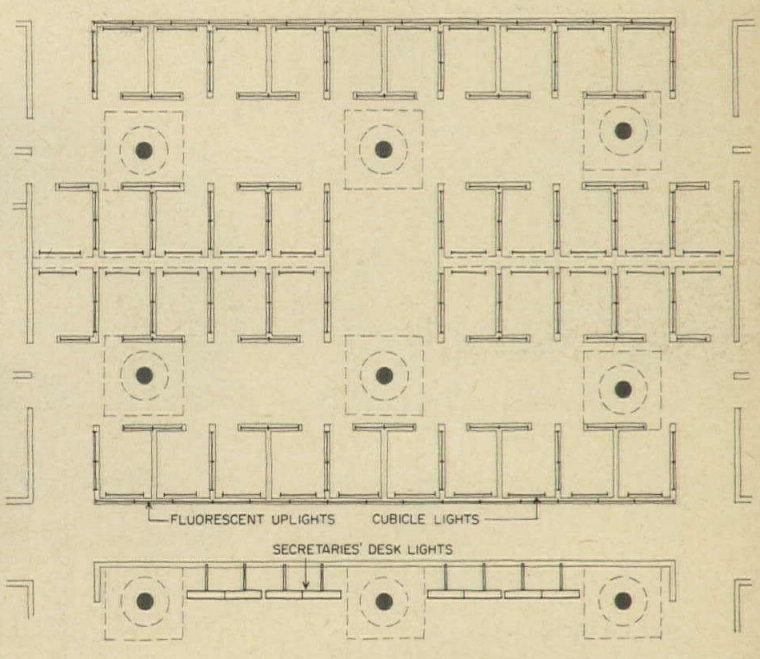






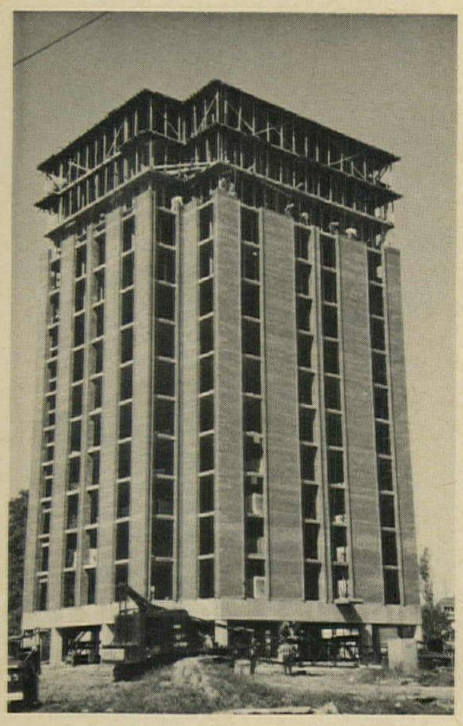
Seminar rooms, like classrooms, contain surface-mounted luminaires that provide both fluorescent general lighting (top) and downlighting for lights-out use during audio-visual presentations or table demonstrations (below). Special adjustable surface-mounted floodlights are located behind shields to light the lectern or table-top exhibits. These have roundel lenses to change the beam spread of the PAR lamps from a circle to an ellipse, in order to most nearly cover a rectangular table surface. The lamp is adjustable, tilting within a rotatable yoke.

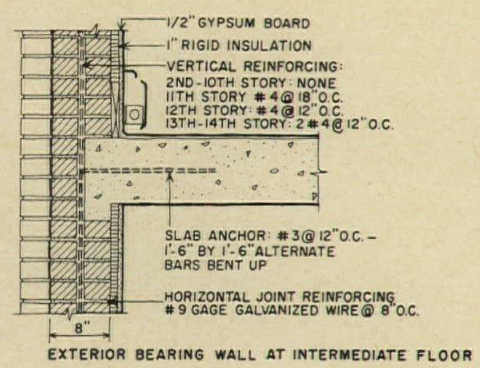




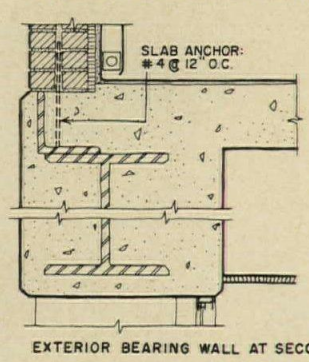
The faculty study area is a large open room with two-thirds ceiling-height study cubicles flanked by secretary desks, as shown in the plan above. Since many individual and frequently prolonged tasks would take place here, an overall pattern of surface-mounted fixtures was feared to be too distracting. The inventive solution makes use of the partition tops to house unnoticed ceiling washers that bathe the white-painted ceiling with pleasant and uniform indirect light. To supplement this overall scheme, efficient rows of stem-mounted fluorescent lamps provide local lighting at secretary desks (top photo), while faculty cubicles contain local fixtures. Here, as in each area of the building, lighting is designed to suit varied functions and to express or exploit special characteristics of varied spaces. Yet in its common theme of uncluttered and trim simplicity, a design continuity is preserved throughout.

Brick bearing walls keep costs in line for low-cost housing



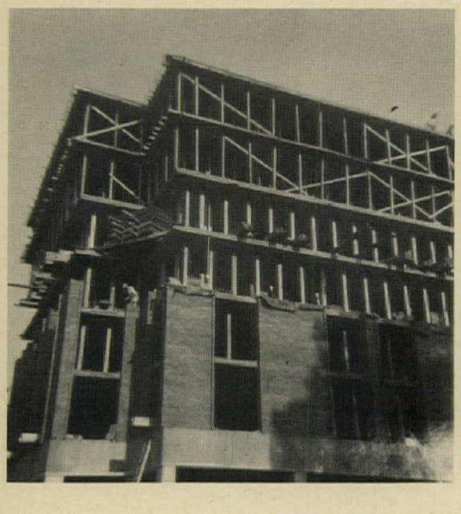


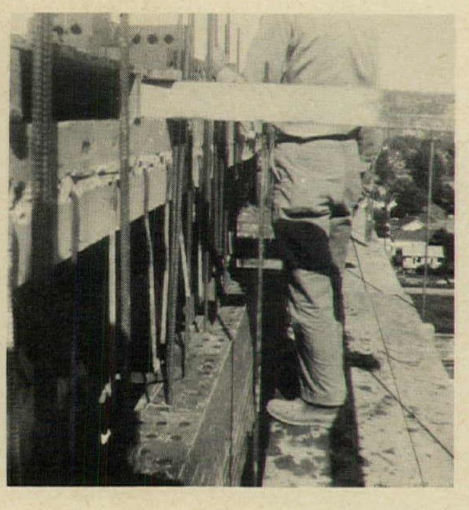
EXTERIOR BEARING WALL AT INTERMEDIATE FLOOR

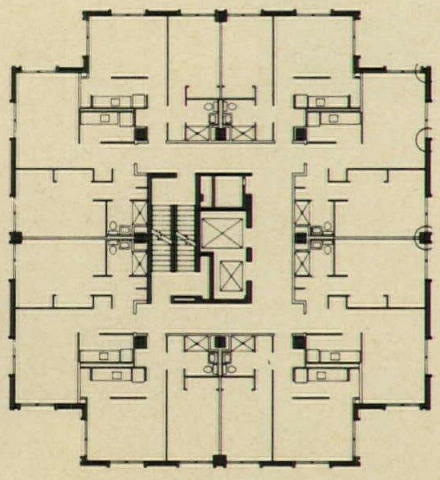


EXTERIOR BEARING WALL AT SECOND FLOOR

This 14-story housing project turned to brick bearing walls in place of load-bearing precast panels to save on costs while providing an attractive facade. The bearing walls were reinforced from 11th through 14th stories to give added strength for wind loads. Floors were shored to allow concrete work to proceed ahead of brick, and reshored to keep load off brick walls while mortar cured.






TYPICAL FLOOR PLAN

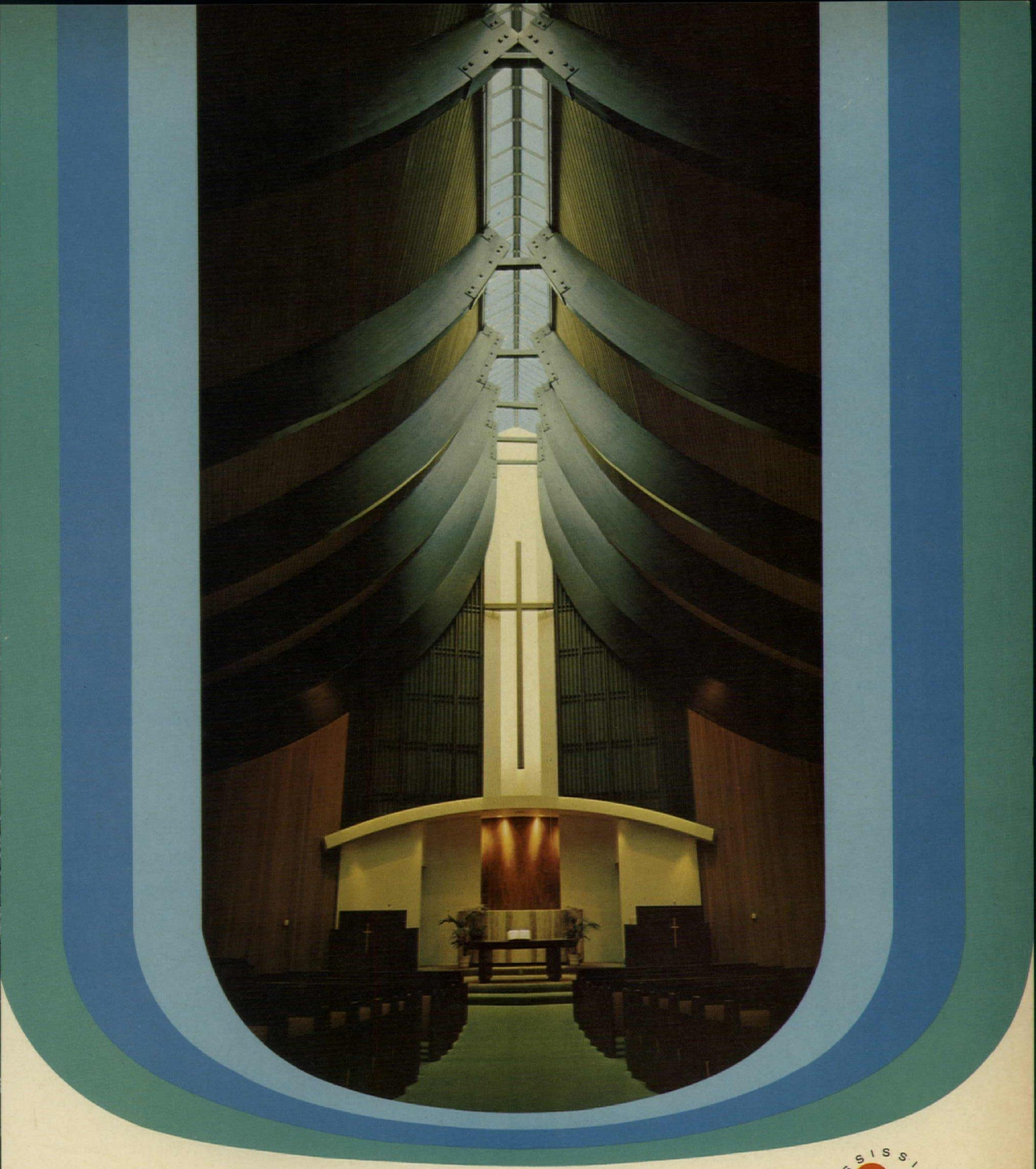
Brick bearing walls have been used quite a bit in Switzerland for high-rise apartment buildings, and more are being built in the U.S. The question of whether or not brick bearing walls are chosen for application in this country generally boils down to plain economics, presuming that the architect likes brick as a wall material. The design and construction methods are straightforward enough, though the brick has to be selected for proper bearing capacity, and the mortar has to have a high enough compressive strength as well. In a few cases, however, codes require walls to be excessively thick, throwing costs out of line.

This 14-story structure, designed as housing for the elderly in Springfield, Illinois by architects Ferry and Henderson, has 8-in. brick bearing walls comprised of two wythes of brick masonry; the interior structure is a reinforced concrete core with eight concrete columns.

Structural engineers Collins & Rice, Inc., originally designed the whole structure in concrete—concrete center core and interior columns, and precast concrete bearing wall panels at the exterior. But when the cost of the precast panels was found to be too high for this HUD-supported public housing project, the architects and engineers looked for an alternate that would serve the same functions. Both the architects and the public housing authority wanted to avoid the institutional quality that had faulted some of the earlier public housing in Springfield. They achieved warmth with the reddish-brown color of the brick, and design interest by projecting the brick 4 in. at window jambs and at the corners.

Besides taking gravity load, the brick bearing walls transmit wind loads to the core via the floor slabs. The space between inner and outer wythes of brick is grouted the full height of the building. The 11th through 14th story walls are reinforced, each higher story being reinforced more heavily than the preceding one (see section). This reinforcement increases the resistance of these upper walls to wind loads. These loads are resisted by the reinforced concrete core and by the moment-resisting columns.

The core and floors could be constructed without regard to the rate at which the brick bearing walls were erected—concrete sometimes being four floors ahead of the masonry. (One floor was enclosed every four days.) The floor slabs were re-shored at the perimeter so that there would be no floor slab load imposed on the walls, permitting the mortar to cure undisturbed for at least 28 days to reach full compressive strength.



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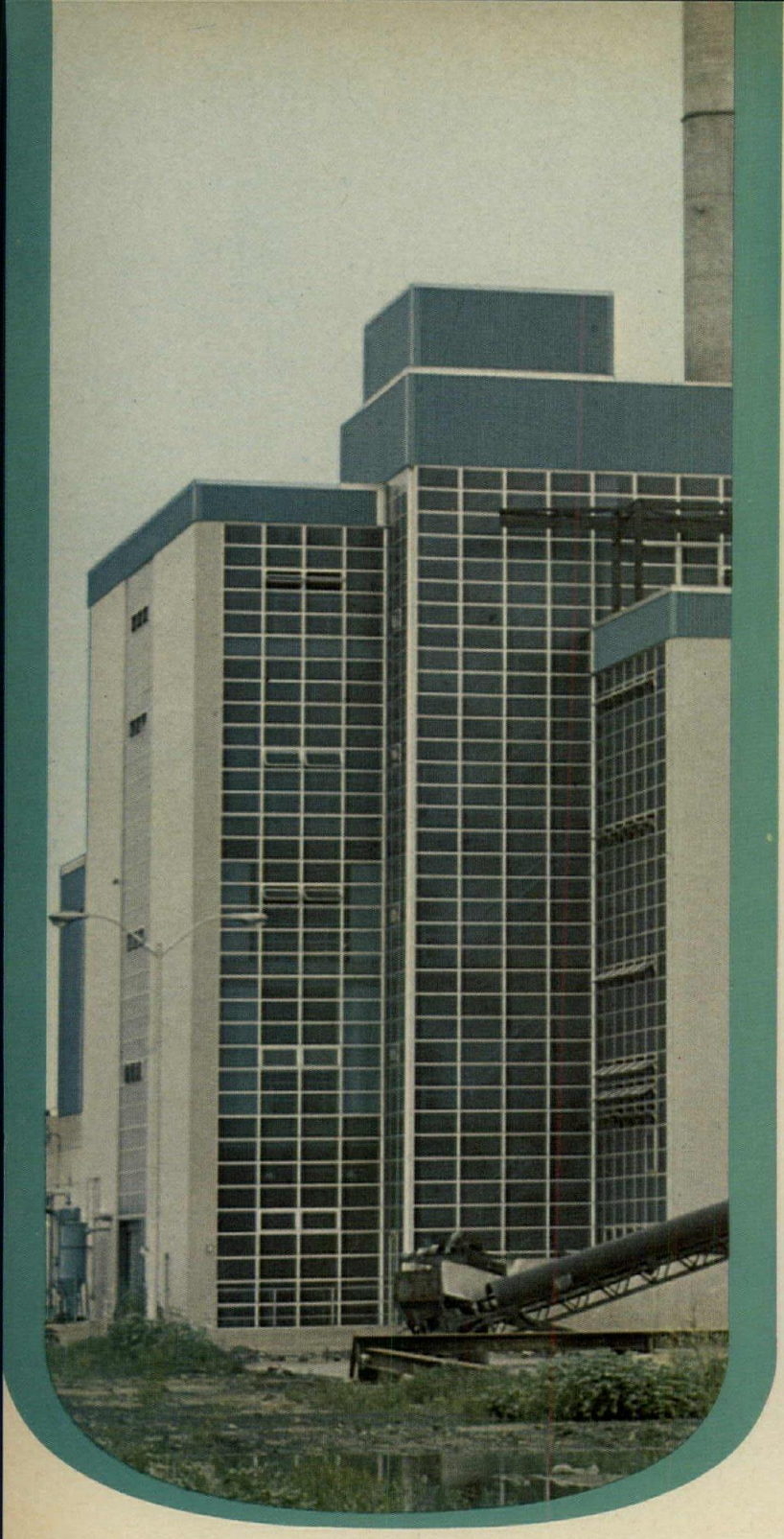

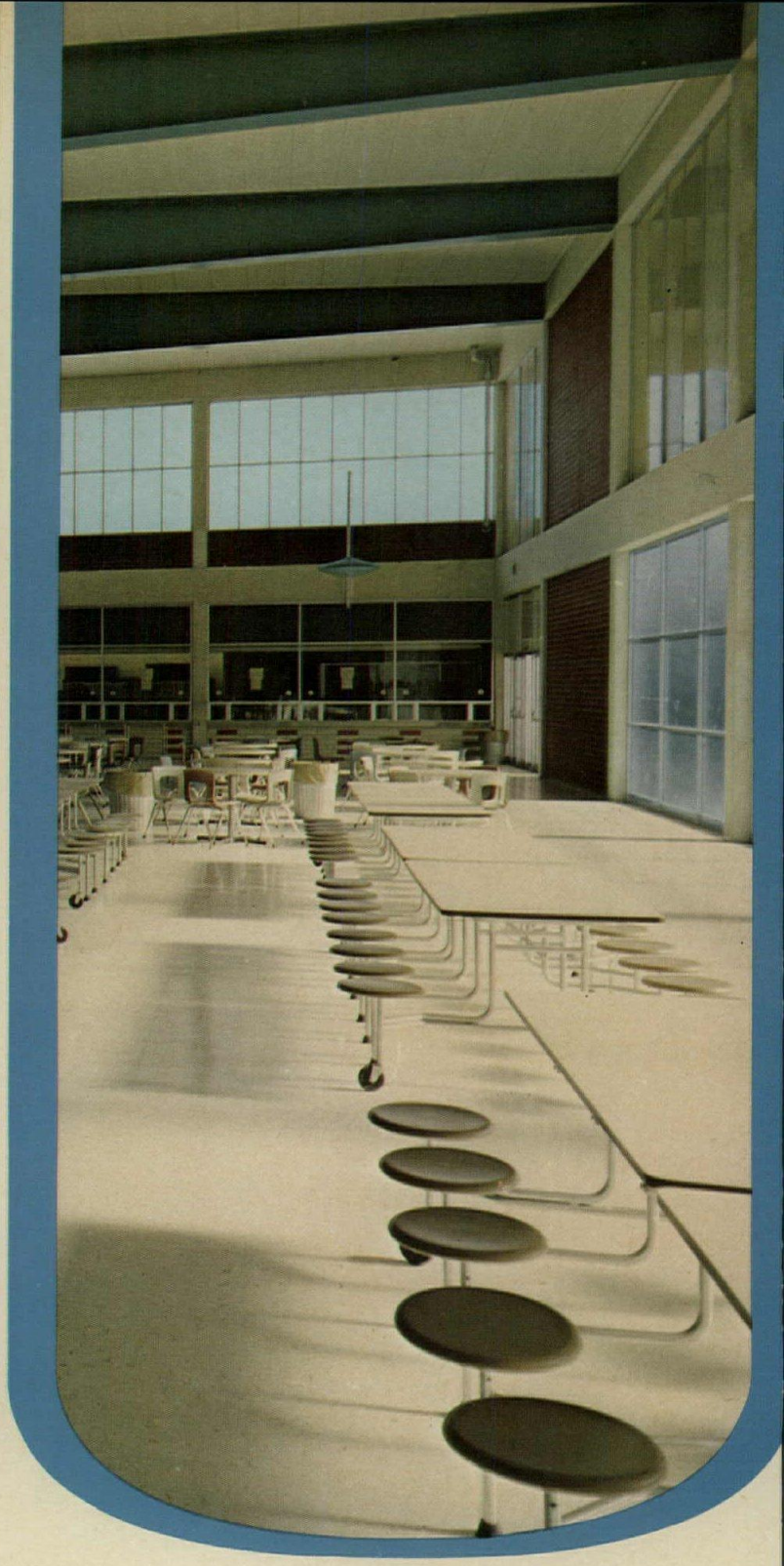

COOLITE *absorbs sun heat... reduces glare*

Keep one-third of the sun's heat out of a plant and cooling loads can start with a five to seven degree advantage in the sun area. Multiply that by 12 or 15 stories of sunside exposure and you cut down power strain on equipment . . . may even be able to figure in smaller capacity and still have plenty reserve cooling.

Coolite favors air conditioning. It lets daylight through but keeps much of the sun's heat out. Special ingredients structured into Coolite keep one-third or more of the solar energy from interiors.

When figuring air conditioning for your project, let your Mississippi Glass distributor interpret Coolite in terms of the Btu savings.

This school cafeteria (above) lets students enjoy the open and spacious feel of natural light yet screens out glare and so much of the sun's heat that service tables can be kept in use right through the time when sun is hottest.

In a Coolite-glazed area of 300 square feet, cooling demands on air-conditioning in conventional environments are almost two tons less (24,000 Btu) than that needed to compensate for heat gain through the same area glazed with ordinary glass. This is based on data from ASHRAE Guide.

On a test of two identical enclosures exposed to direct thermal radiation, air temperature inside the enclosure glazed with ordinary flat glass increased 21 degrees; that glazed with Coolite increased only 14 degrees.

GLARE-REDUCING COOLITE IMPROVES WORKER MORALE

The Glare Reducing Finish applied to either or both sides of Coolite thoroughly diffuses the light with an even spread of adequate illumination.

Windows and skylights glazed with ordinary glass let through beams of glaring light that reflect off bright surfaces inside. This can cause costly visual errors by plant workmen and can annoy students until they become far less proficient. Attempts to correct such installations by painting the glass, installing blinds or constructing makeshift shields usually shut out too much light and increase maintenance costs.

Coolite Glare Reducing Finish is permanent. It is not affected by time or weather and will not have to be renewed, and, of course, should never be painted.

COLOR TINT GIVES DECORATIVE FLAIR

The clean blue-green cast of Coolite is color that finds preference in factories, schools, churches and other architectural applications.

Coolite, functionally located to reduce heat gain from the sun, coordinates beautifully in churches with the art glass of altar and sanctuary areas.

The blue-green tint of the glass blends attractively with stainless steel and anodized aluminum in today's curtain wall construction.

Coolite offers the architect opportunity to relieve vast stretches of fenestration with the pleasing touch of subdued color in glass with the built-in heat shield.

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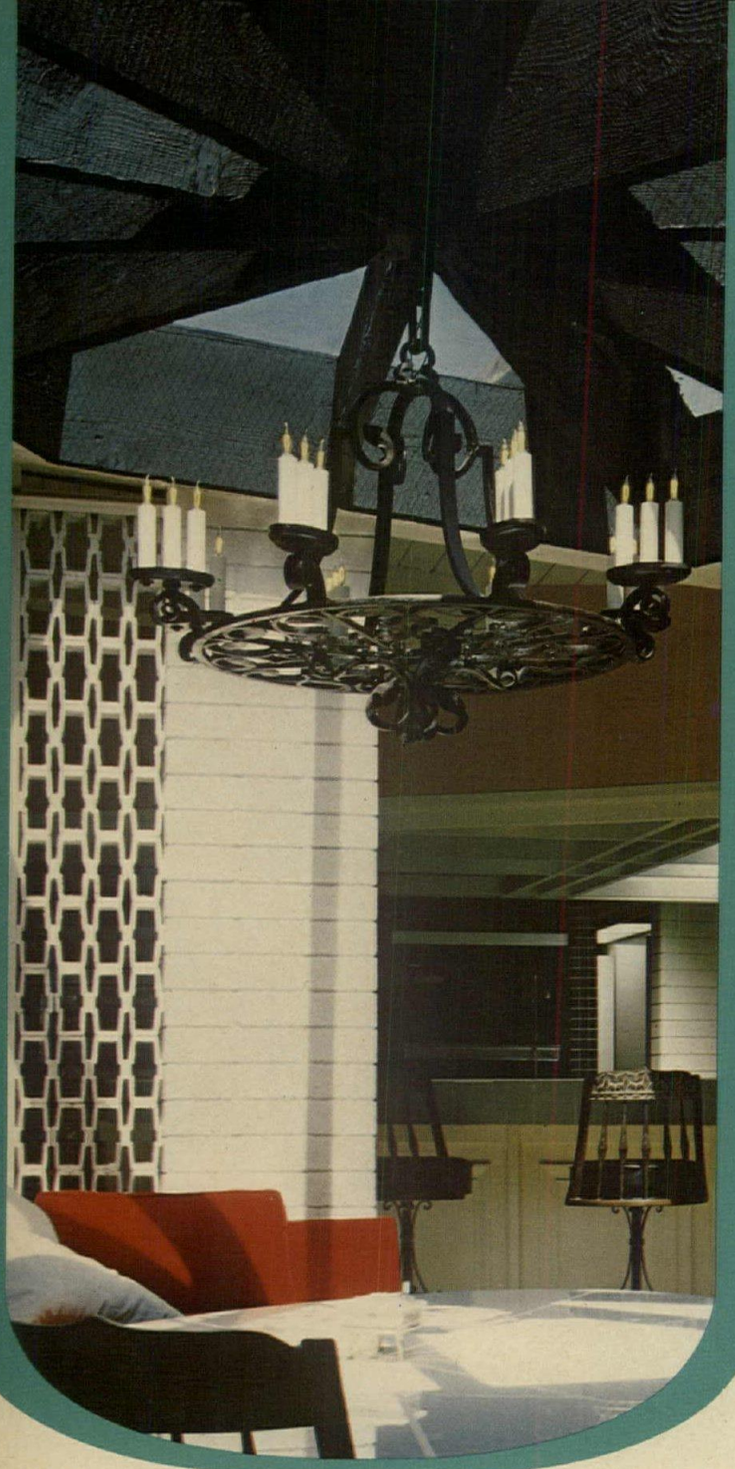

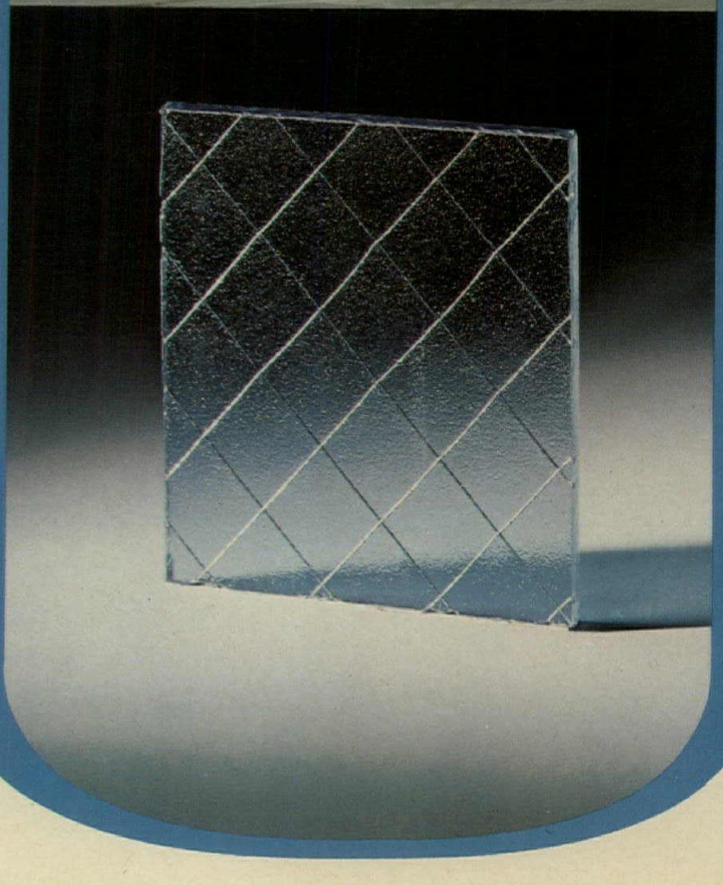

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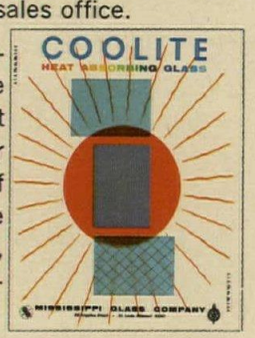

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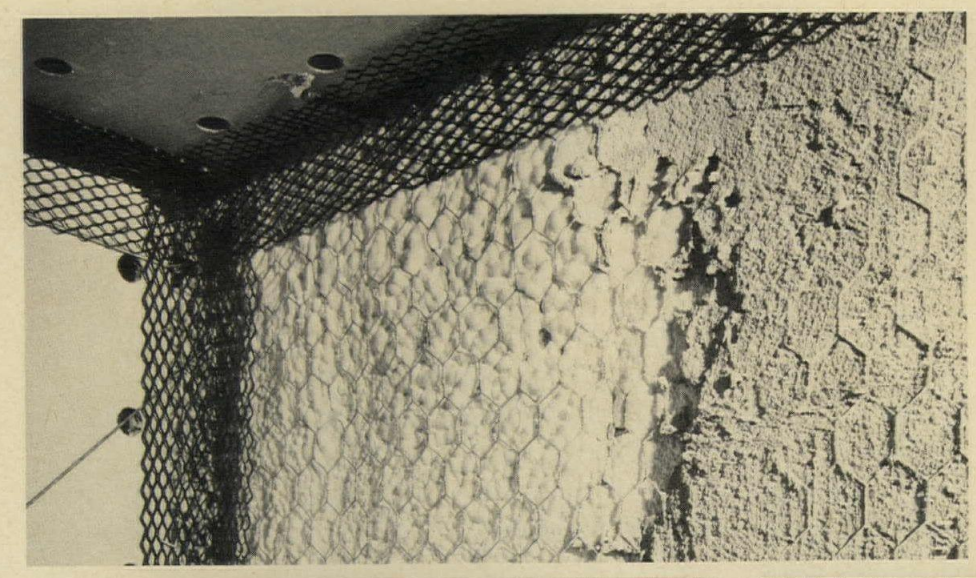
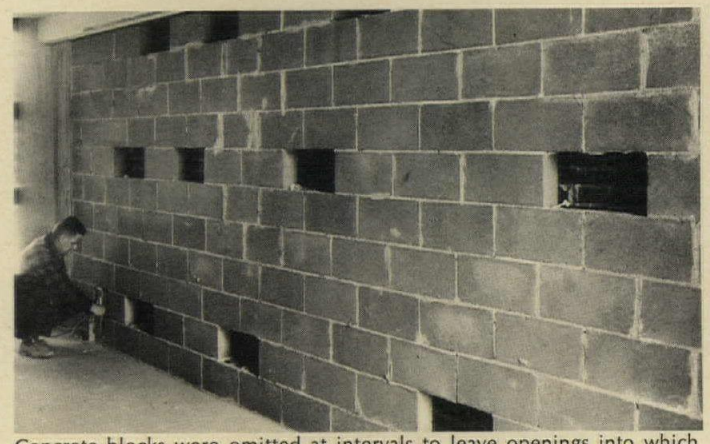


The two components of urethane foam insulation are introduced into the cavity of the exterior wall through hoses attached to a nozzle.

In a different application, left, urethane has been applied directly to concrete block. Wire mesh has been attatched to the insulation to provide mechanical bond for the wet plaster.



Concrete blocks were omitted at intervals to leave openings into which the urethane could be poured and to allow inspection of work.

The foam expands so as to not only fill the wall cavity but the openings as well, assuring that the cavity was completely filled.

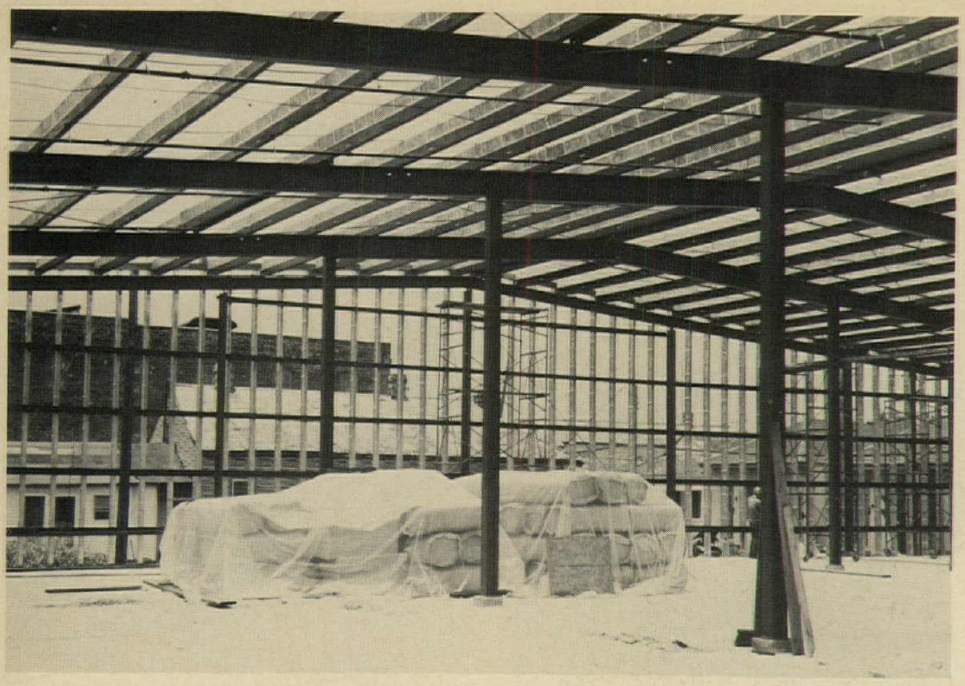
Urethane foam insulation suits electrically-conditioned apartments

Versatility of application and the many desirable attributes of urethane foam for thermal insulation have won this material many applications in the apartment house field, particularly those buildings being electrically heated and cooled.

For one thing, the chemical components of urethane can be sprayed onto a surface or poured into a cavity and almost immediately foam to 30 times the original volume of the liquid materials. Also, the high insulating value of the foam means that the insulating layer need not be nearly as thick as fibrous insulations for the same insulating value, or, conversely, much higher insulating value can be provided in the same amount of space. Further, the urethane foam serves as a vapor barrier.

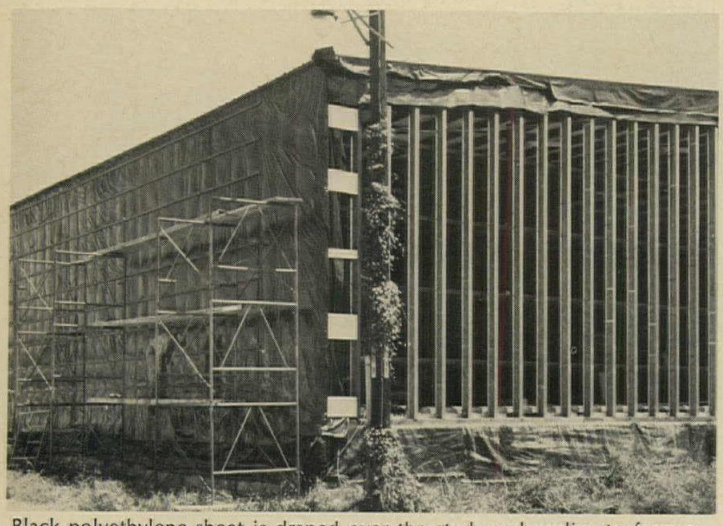
Two apartment house applications are shown in these photos. One of these applications is in two 13-story electrically heated structures providing 200 housing units for the elderly in Springfield, Massachusetts. The liquid urethane components are poured into 2¼-in. cavity between the exterior brick wythe and the interior concrete block wythe through openings left at 4-ft intervals in the block wall. Initial cost of the all-electric installation for heating and for utilities was a little over $2,000 a dwelling unit, and operating cost is estimated at $27 per month per apartment unit. Architects were Caolo & Bieniek and consulting engineers were Greenleaf Associates.

The other application, a 16-story air-conditioned apartment house in Alexandria, Virginia, employed sprayed-on urethane insulation. The foam was applied directly to the cinder block side of an 8-in. wall that had 4-in. split rock for the exterior facing. The foam was sprayed to a depth of ¾ to 1 in., adhering to the block by means of a chemical bond. Next, fine 1-in. wire mesh was attached to the foam insulation to serve as a mechanical bond for the two layers of wet plaster that were to follow. Architects were Vosbeck-Ward & Associates.



Semi-rigid batts of fiberglass fit neatly between the flanges of the insulated studs.

Insulated purlins that carry the metal roofing are seen at the top of the photo, left.



Black polyethylene sheet is draped over the studs and purlins to form a barrier. If any holes occur in the sheet they can be seen and fixed.

Interior finish frequently used with the system is a heavy-density insulation board painted on one side for appearance and easy maintenance.

Structure thermally isolated in cold-storage warehouse design

A new system for simple cold-storage buildings comprises a lightweight steel structure and metal siding and roof with insulated studs and purlins, a free-hanging vapor barrier, and wall and ceiling insulation. The insulated studs and purlins prevent through conduction of heat from the siding and roof, but more than this, provide a highly efficient thermal shield to protect the steel frame against thermal shock, a common cause of building movement. Because these elements are insulated on the outdoor side, they will remain fairly close to the inside temperature at all times. The studs and purlins use high-density fiberglass insulation board as the web member. They are attached to the structural frame after wood members have been attached to the ends of roof beams and a wood sill has been secured to the foundation.

Next, polyethylene sheet is freely draped on the roof and walls to form a vapor barier. This sheet, which is amply overlapped and provided with expansion loops, is isolated from the exterior metal skin to prevent transmission of thermal movements that might cause ruptures of the barrier.

After the vapor barrier has been installed, batts of semi-rigid fiberglass insulation are placed between the flanges of the studs and the purlins. Finally, rigid, heavy-density insulation boards are snapped into place behind the flanges for interior finish.

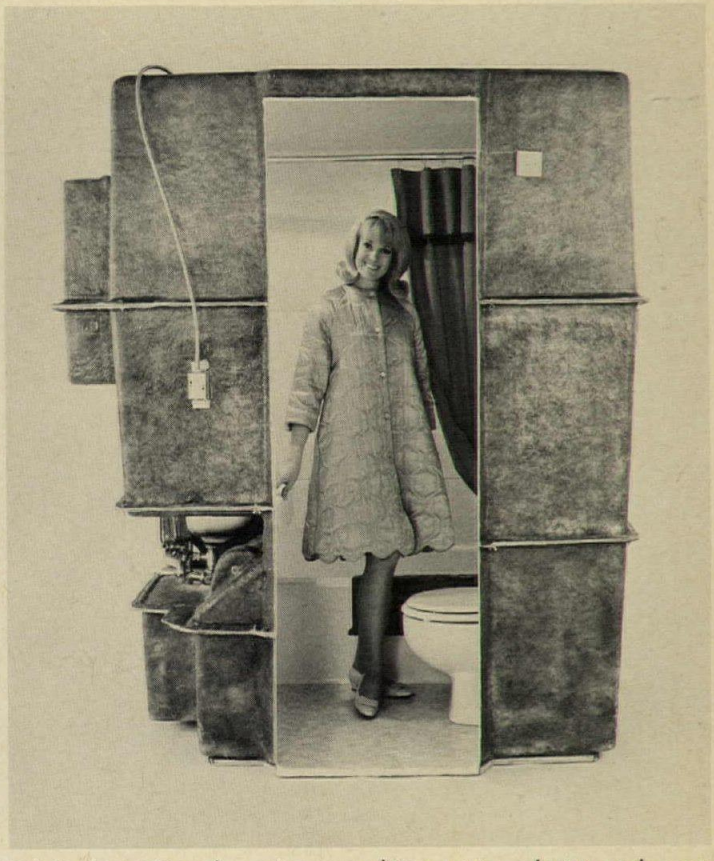
This system, developed by Owens-Corning Fiberglas, incorporates the flow-through principle for cold-storage construction. That is, moisture that might somehow penetrate the system's vapor barrier can pass through the insulation and interior finish to condense on refrigeration coils. This avoids moisture traps within the wall construction that could reduce insulation efficiency, and possibly result in ice accumulation, which could damage the building shell.

Full moisture flow-through is assured also by the porosity of the interior finish insulation board. These boards are composed of glass fibers firmly bonded with inert resin and finished in a light-reflective surface. If a better quality surface is desired, then a fiberglass reinforced polyester panel can be used that has a white, washable surface, especially useful where sanitation is important.

A further advantage of this new system, called *Glas-Gard*, is that its lighter structure can reduce total building weight as much as 80 per cent of that of a masonry building.

For more information circle selected item numbers on Reader Service Inquiry Card, pages 235-236

Prefab baths and kitchen make for neat packages and speedy installation

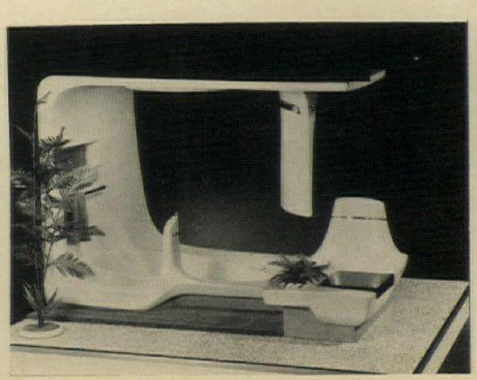


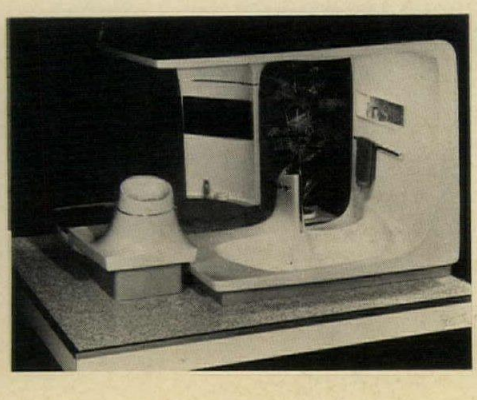
A one-piece bathroom-kitchen core offers quicker rehabilitation of substandard dwellings of up to 15 floors. The complete unit includes all bathroom fixtures installed (enameled cast-iron lavatory, tub, shower, wall-hung water closet and medicine cabinet) and kitchen fixtures (stainless steel sink, *Norge* range and refrigerator, and counter top and cabinets) which are shipped in the unit and installed after it is in place. ▪ Borg-Warner Corporation.

Circle 300 on inquiry card

A 5-ft 8-in.-square packaged bathroom for any type of building construction has gel-coated fiberglass-reinforced polyester floors, walls and ceilings. Included are a molded-in tub or shower receptor, vitreous china water closet and seat, porcelain enameled steel lavatory, all trim, supply and waste fittings, medicine cabinet and mirror, lighting, accessory hardware and factory-installed vinyl floor covering. The unit can be bolted together, and piping and wiring connections made in an afternoon. ▪ Crane Company. *Circle 301 on inquiry card*

Futuristic model dramatizes what can be done

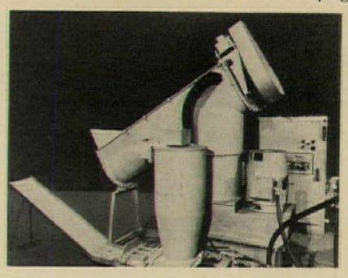




Fiberglass-reinforced plastics, which encourage the design of one-piece bathrooms, promise still more exciting changes. James Fulton created this model based on recommendations of the American-Standard and Cornell University bathroom study. Its aims: good looks, safety and convenience. The toilet and sink are integrated with vertical partition walls. ▪ Owens-Corning Fiberglas Corporation. *Circle 302 on inquiry card*

more products on page 158

continued from page 157



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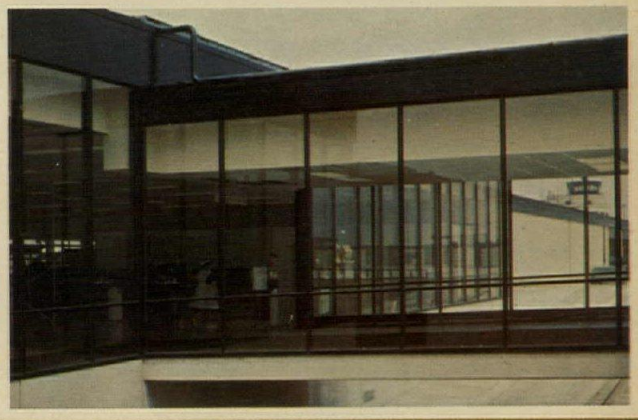
more products on page 184

ARCHITECTS: C. F. MURPHY & ASSOCIATES
Project developed in cooperation with the Department of Aviation, City of Chicago



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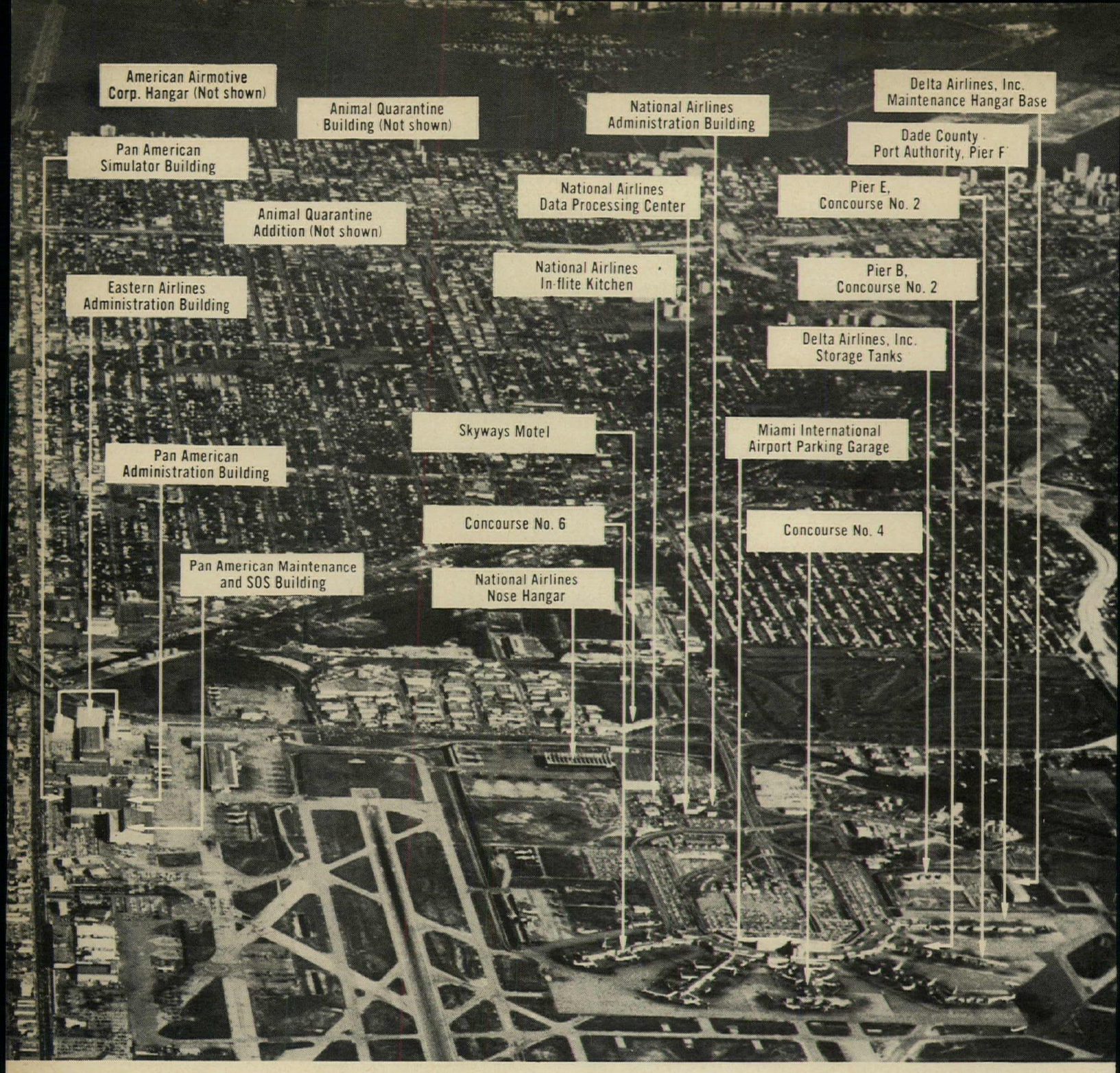

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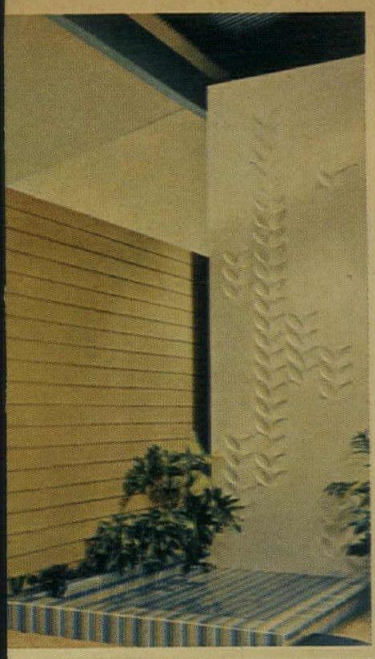

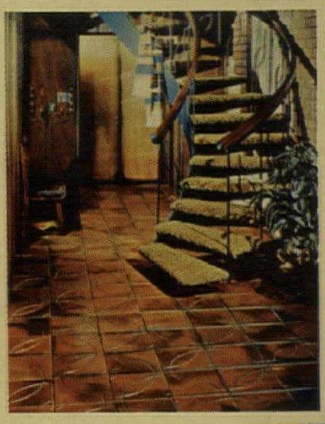

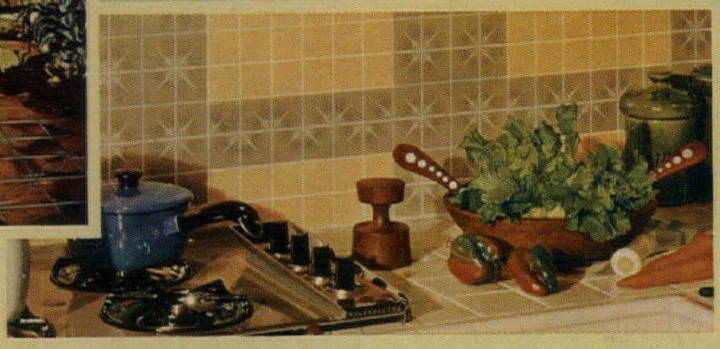

Should a house be just a house when it can be a villa, a chalet, or a chateau?

The cool elegance of a moorish floor. The echo of nature in a finely detailed kitchen. The sweep of a dressing room refined to an individual personality. The artistry of a sculptured entrance.

The timeless beauty of ceramic tile makes all these possible—in homes that give the pleasure of dreams turned real.

Ceramic tile continues to lend its unique qualities to more and more areas of the modern home. For good reasons. A seemingly endless choice of colors and textures. More investment than expense, it will last as long as any home in which it's used, enhancing its appearance and value. All the while eliminating the drudgery and expense of constant care.

Some of what's new in ceramic tile is contained in "Designs For Gracious Living." Sixteen pages of information plus illustrations of actual designs. For what's best in ceramic tile, ask for "Certified Quality Tile" bearing the mark shown here. Tile Council of America, Inc., 800 Second Ave., New York, N.Y. 10017.

TILE COUNCIL MEMBER COMPANIES: American Olean Tile Co., Inc. • Cambridge Tile Manufacturing Co. • Continental Ceramic Corporation • Florida Tile Industries, Inc. • Gulf States Ceramic Tile Co. • Keystone Ridgeway Company, Inc. • Lone Star Ceramics Co. Ludowici-Celadon Company • Marshall Tiles, Inc. • Mid-State Tile Company • Monarch Tile Manufacturing Inc. • Pomona Tile Manufacturing Co. • Sparta Ceramic Co. • Summitville Tiles, Inc. • Texeramics Inc. • United States Ceramic Tile Co. • Wenczel Tile Company

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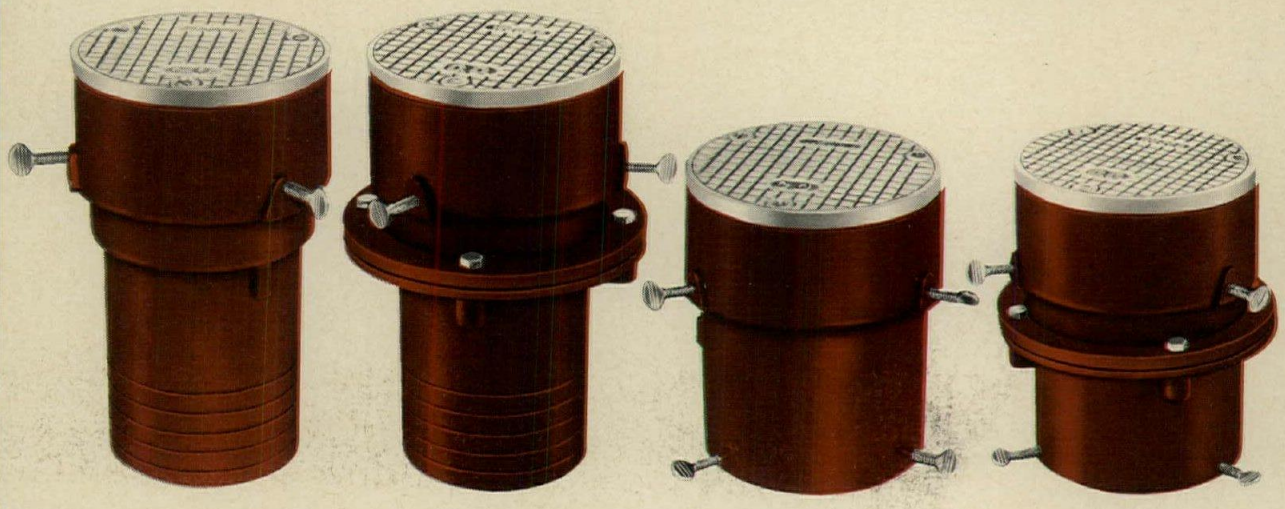
Wade
SINCE 1867

WADE CLEANOUTS...

dependable performance for all piping and floor construction requirements.



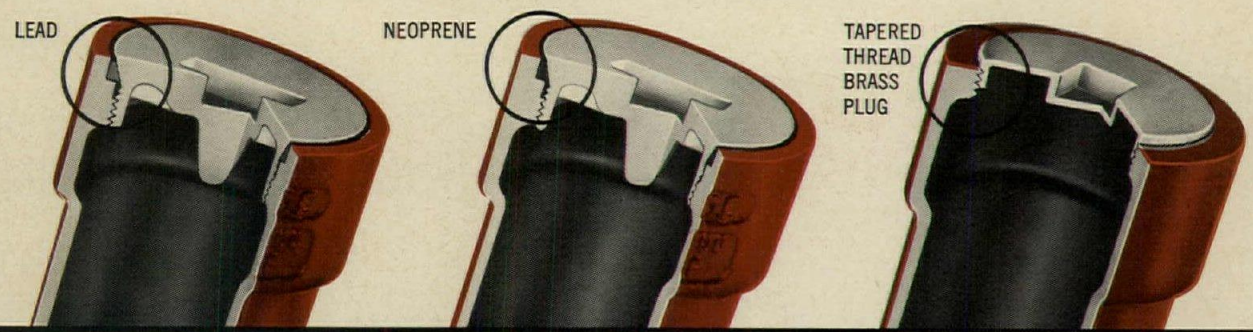
W-7000
SPIGOT TYPE
LESS FLANGE

W-7000-F/C
SPIGOT TYPE
WITH FLANGE
(Clamp device optional)

W-7010
INSIDE CAULK TYPE
LESS FLANGE
(Threaded outlet optional)

W-7010-F/C
INSIDE CAULK TYPE
WITH FLANGE
(Clamp device and threaded outlet optional)

YOU HAVE A CHOICE OF THREE SEALS FOR THE ADJUSTABLE WADE CLEANOUTS SHOWN ABOVE



There is a WADE cleanout for any spec — any code. With over 100 years of know-how backing every Wade cleanout, you can depend on better than equal quality and the most complete selection. No matter what the requirements, you can specify Wade for ALL your plumbing-drainage needs with complete confidence.

TYLER PIPE INDUSTRIES

WADE DIVISION
TYLER PLANT, TYLER, TEXAS
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Member, Plumbing and Drainage Institute

Tyler PIPE

TPI makes Tyler cast iron soil pipe and fittings • Wade plumbing-drainage products • Tyler water main fittings and municipal castings.

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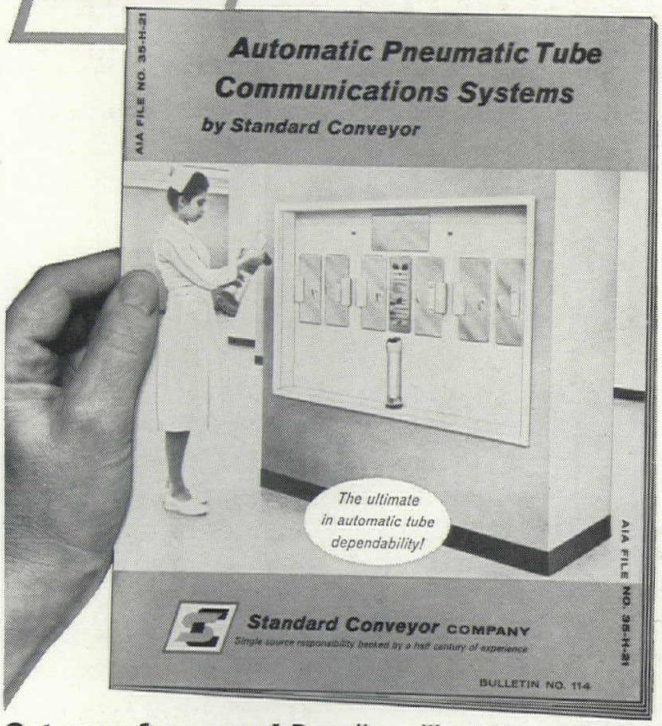
NEW ***All you need to know about***



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

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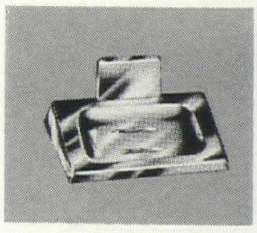
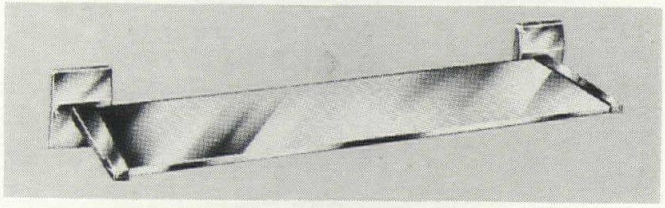
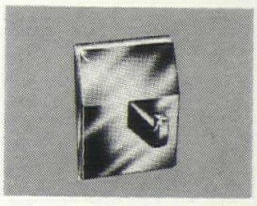
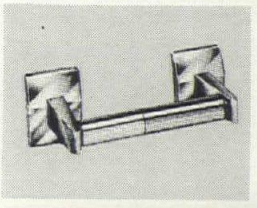


Stainless Steel Accessories by Parker







ANOTHER 1st BY PARKER

Two complete lines are available with either rectangular or round flanges. Manufactured completely of type 302 bright lustre or satin finish stainless steel (including concealed fastening device).

Write for brochure on complete information and specifications!

The CHARLES PARKER CO.
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For more data, circle 70 on inquiry card

This Landmark Flood will still be an advanced design when they change the lamp ...7 years from now

With Mercury Vapor lamps rated 24,000 hours, today's floods must be as esthetically pleasing in years to come as when they are installed. Landmark's contoured design, cast aluminum "Recta-Flood" is created for the future. Its versatility appeals to the specifier, easy installation pleases the contractor, elimination of service problems makes a hit with the owner. Also available with Metallic Vapor lamp. Write Dept. HH for photometric data, specifications, and name of Landmark representative. Our condensed catalog is in Sweet's.

LANDMARK LIGHTING
Division of American Electric Manufacturing Corp.
Southaven, Mississippi 38671

The best new designs include the New Andersen Perma-Shield

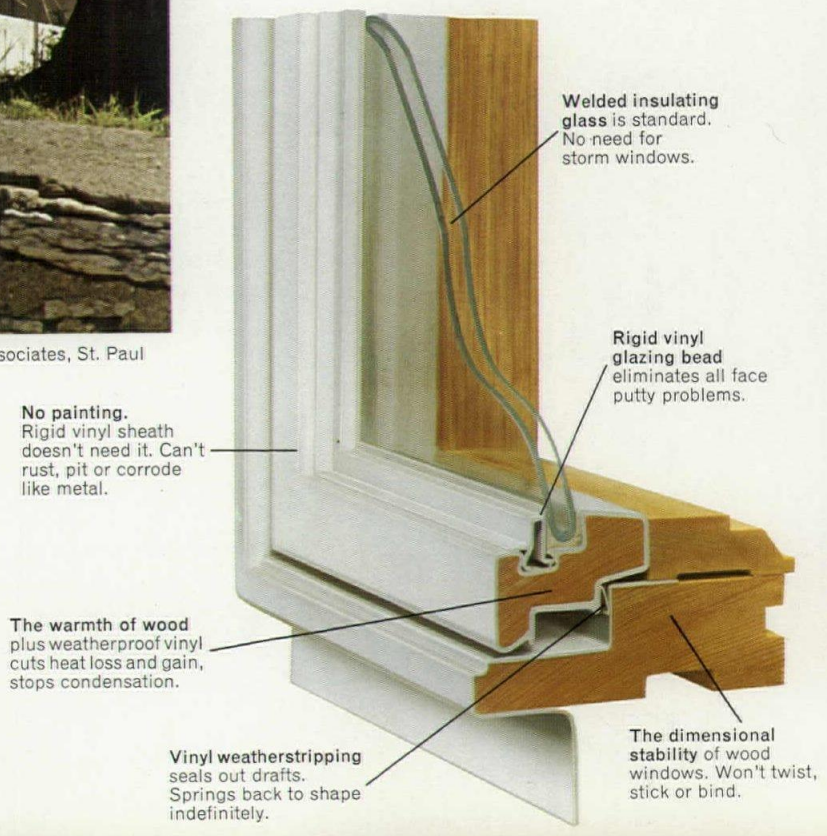
Emma Norton Methodist Girls' Residence, St. Paul Architect: Progressive Design Associates, St. Paul

The building is a design triumph over a restrictive site. But even though the space was limited, the view wasn't. And the 72 girls who live at the Emma Norton Residence have an impressive view of St. Paul through the most **maintenance-free** windows ever developed: New Andersen Perma-Shield.

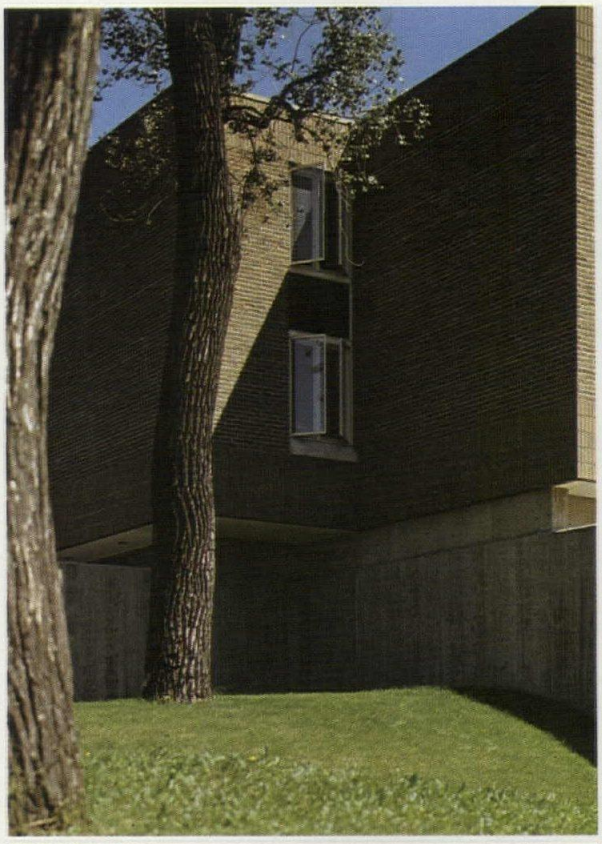
Perma-Shield combines the warmth and good looks of **wood** with the maintenance-free features of **rigid vinyl.** They won't need painting. Can't rust or corrode. They're easy to install, and have all the dimensional **stability** of the finest wood windows. Custom-designed hardware and welded **insulating glass** (Thermopane® and Twindow®) are standard with Perma-Shield.

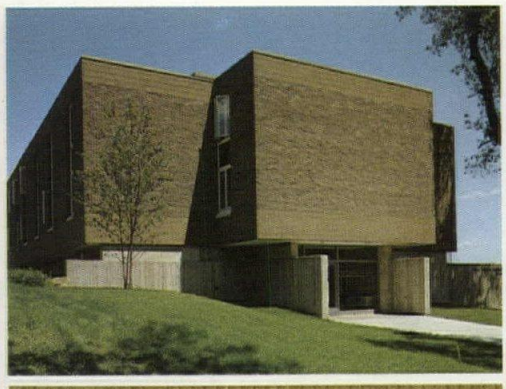
Choose casements, awning style, fixed types, single or multiples, right from stock. There are **26 basic Perma-Shield sizes** and 3 sizes of gliding doors.

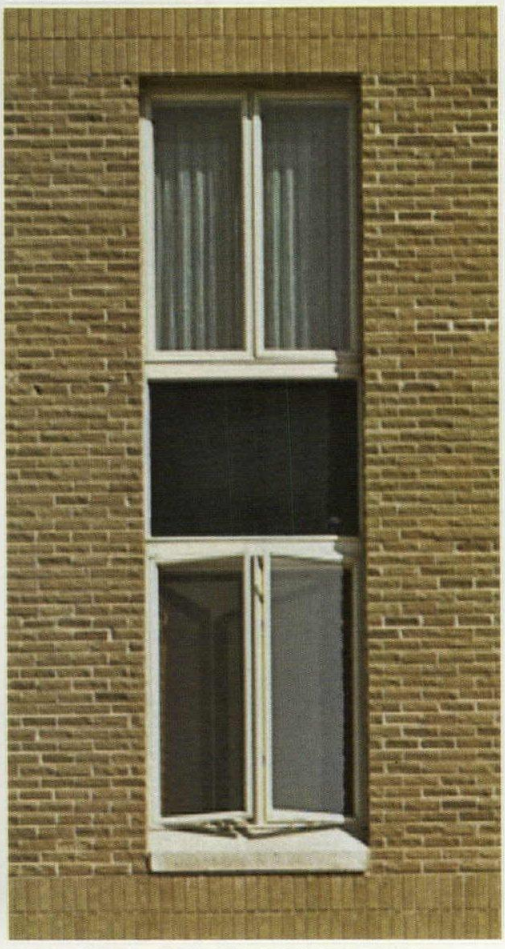
The perfect window? You decide. We're pleased that they're being specified for some of the *best* new buildings. For more information, check Sweets file. Or, mail coupon at right for literature or a Perma-Shield demonstration in your office.

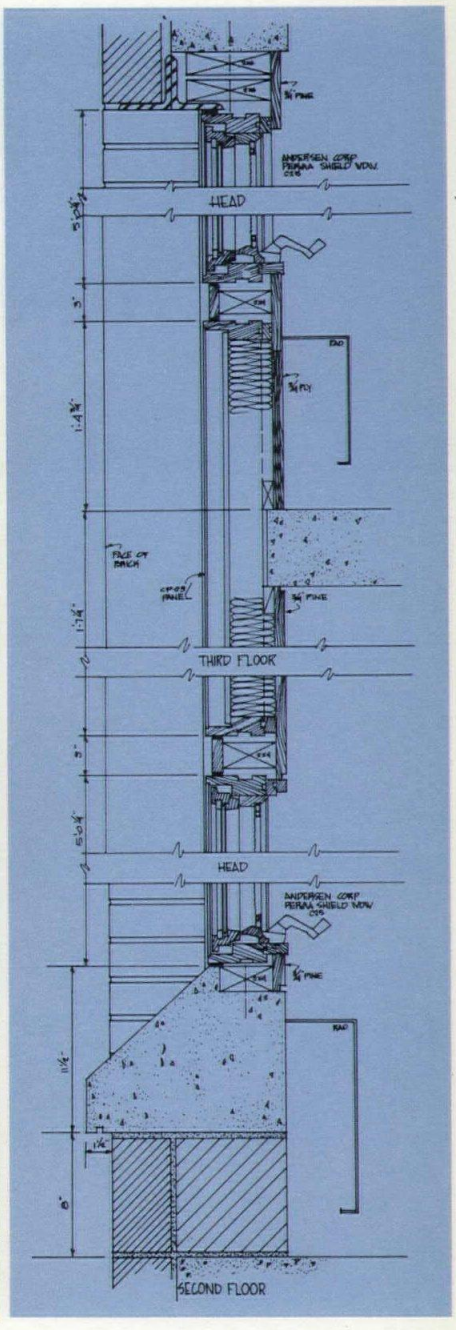


latest in low-maintenance windows...









Difficult elevation could make window maintenance a nightmare, but there's little or no maintenance with Perma-Shield.

New Andersen Perma-Shield® Windows

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Andersen Corporation
Bayport, Minnesota 55003

☐ Please send complete Perma-Shield Literature.

☐ I'd like a Perma-Shield demonstration in my office. Please have an Andersen Distributor call me for an appointment.

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Firm_____

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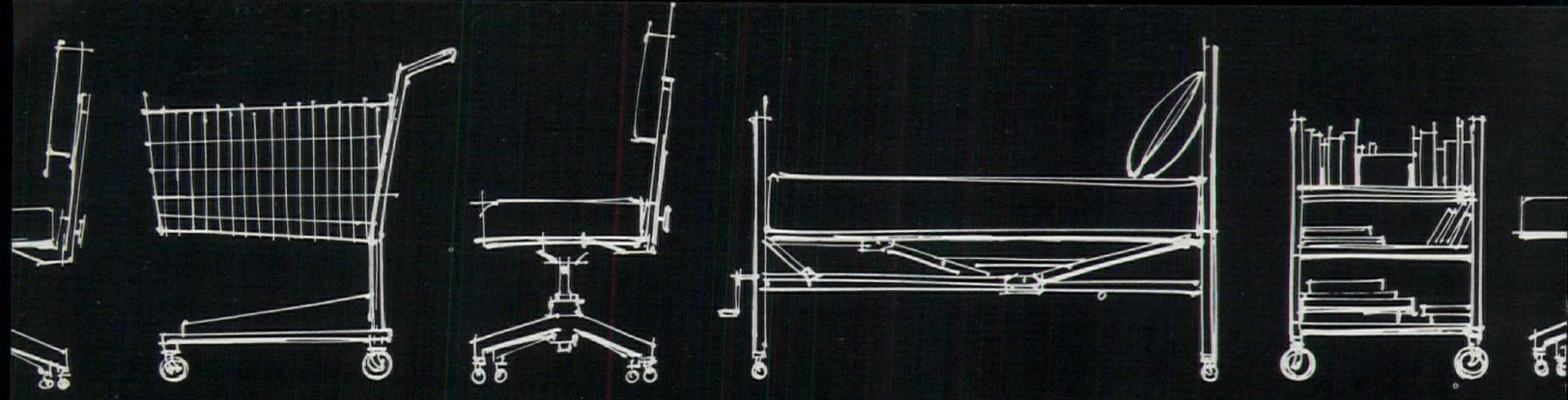

Proven perfect answer for specifiers for carpeting areas with wheel activity...

Direct glue-down installation of double Jute-backed carpets

Nothing could be simpler. Double Jute-backed carpet cemented directly to the floor . . . new or old concrete or wood. Or over previously installed resilient flooring. No cushion back on the carpet. No padding under it.

Works perfectly, as Ford Motor Co. proved in a two-year test in Dearborn. Ford is now practically standardized on this technique in new office building construction and for replacements in existing structures.

Benefits

The acoustical qualities, esthetics, luxury and thermal advantages of carpet . . . *plus* easy wheel and caster movement. Conventional wheels and casters can be used. Pads are unnecessary under chair casters if carpet pile is of good commercial grade.

Savings

Double Jute-backed carpets cost substantially less than cushion-backed carpets with equal pile specifications . . . or equivalent carpets plus separate underlayment. Installation is greatly simplified.

Jute's function

Jute secondary backing is vital because it provides maximum floor bond. This quality also guards against delamination of the secondary backing from the basic carpet. Jute's greater stability prevents carpets from shifting, which can misalign floor outlets with cut-outs in carpets.

Applications

Use in any location where free movement of conventional wheels and casters is desired. General offices, hospitals, libraries, supermarkets, computer areas, restaurants, etc.

Taking up

When replacement is necessary, Jute backing comes off easily with solvents or fast-operating scrapers. None of the removal problems common with cushion backing, such as crumbling and sticking.

Write for complete copies of editorial features shown, plus outline of glue-down installation technique and additional material.

Left, from Installation Specialist
Below, from Floor Covering Weekly

JUTE

JUTE CARPET BACKING COUNCIL, INC.

25 Broadway, New York, N.Y. 10004 • American Industries, Inc. • Bemis Co., Inc. • BMT Commodity Corp. • C. G. Trading Corp. • Delca International Corp. • Dennard & Pritchard Company, Ltd. • A. de Swaan, Inc. • Robert F. Fitzpatrick & Co. • Gillespie & Co. of New York, Inc. • Hanson & Orth, Inc. • O. G. Innes Corp. • Iselin-Jefferson Co., Inc. • Jute Industries, Ltd. • Lou Meltzer Co. • Pak-Am Inc. • William E. Peck & Co. of N. Y. Inc. • R. L. Pritchard & Co. • Revonah Spinning Mills • Stein, Hall & Co., Inc. • White Lamb Finlay Inc. • Willcox Enterprises, Inc.

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OASIS water coolers bend over backwards to avoid being noticed.

We deliberately make our water coolers to go unnoticed by virtually everybody.

Maintenance men shower us with neglect. That's because the OASIS heavy-duty cooling system is built to be neglected.

Cleaning women ignore us. Since we eliminated "oversquirt" they don't have to mop around an OASIS.

Even thirsty people hardly notice an OASIS. Because they never get a blast in the eye or frustrating dribble.

Architects *do* notice us. But only to pick the OASIS model that blends most inconspicuously with their scheme.

Since we make more water coolers than anyone, it's satisfying to know OASIS quality is perfected to the point of anonymity.

But still, it's nice to be noticed once in a while. Won't you send for our informative booklet which shows all the features of all 29 OASIS water coolers?

Quality you take for granted

OASIS® WATER COOLERS · HUMIDIFIERS · DEHUMIDIFIERS

See Sweet's, or write Dept. AR-13, 265 North Hamilton Road, Columbus, Ohio 43213

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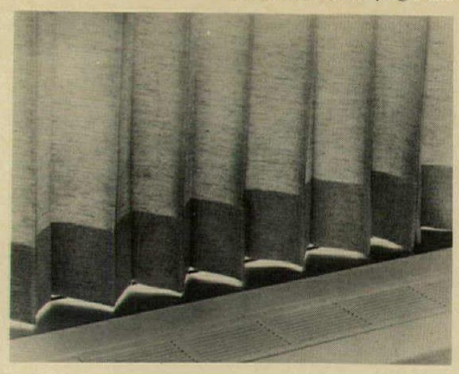
continued from page 158



DRAPERY SYSTEM / *Permaneat* vertical pleats or accordion folds, arranged in evenly-spaced modules, hang from a track with carrier and interval components that permit unfolding and stacking of the fabric while maintaining even pleating. The system, originally developed for Minor Yamasaki's Northwestern National Insurance Company, Minneapolis, allows compact stacking and maximum glass exposure when draperies are open. It can be installed in window pockets directly from the ceiling and the fabric, which hangs in straight 4-in. pleated panels, is returned to a narrow pocket and takes up a minimum of wall hanging space. ▪ Isabel Scott Fabrics Corporation, New York City.

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OAK LOUNGE SERIES / Emphasis in the construction of this solid white oak series is on strength and long life. Expected to be of particular interest to schools, resort areas and in similar applications, the series includes a chair, two-seat sofa and three-seat sofa, plus round and rectangular tables in several heights and sizes. ▪ Harter Corporation, Sturgis, Mich.

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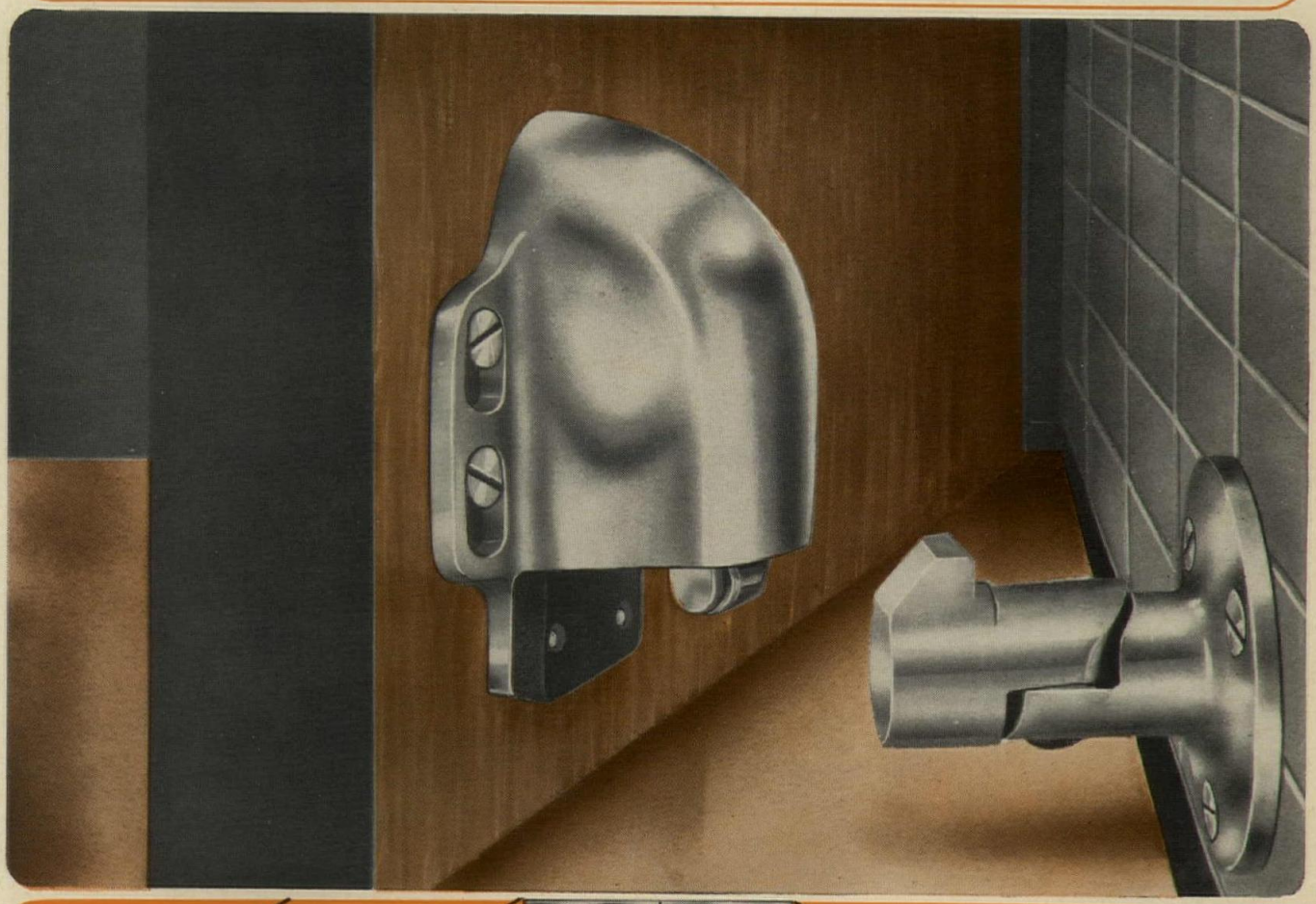
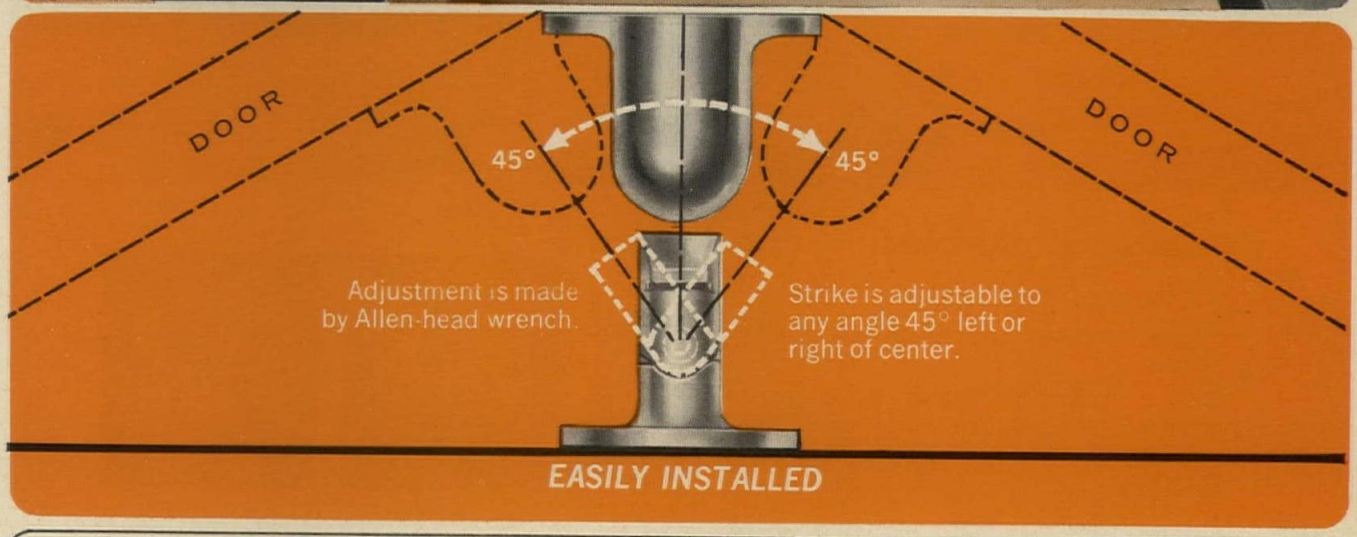
NEW • GJ W45A • DOOR HOLDER

is now engageable to *wall mounted* strike





EASILY INSTALLED

GJ is the only manufacturer designing and producing door control hardware exclusively.

GLYNN-JOHNSON CORPORATION / 4422 NORTH RAVENSWOOD AVENUE CHICAGO, ILLINOIS 60640

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Put CHF Tables in the Plans

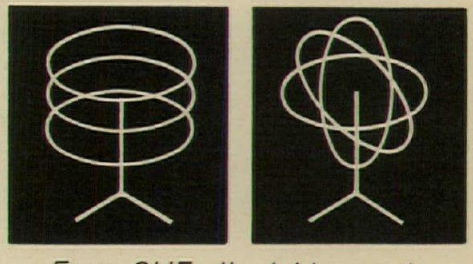
A complete line for every need.

Flip top, adjustable, standard in all shapes and sizes.

Cast iron, cast aluminum, solid bronze, porcelain enamel, painted, chrome, baked enamel bases.

Exclusive patented ROCKEDGE® for the life of the table.

Custom designs, too—yours or ours.



From CHF—the table people.

CHF

CHICAGO HARDWARE FOUNDRY COMPANY / NORTH CHICAGO, ILLINOIS 60064

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HUDEE Sink and Lavatory Frames the PERFECT SEAL... for Bowls installed in Vanities and Countertops

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OVER 40 MILLION HUDEE INSTALLATIONS PROVE IT!

- No call backs - Easy to install - Trouble-free
- Available in all types and sizes for immediate delivery everywhere
- And now you can even get Hudee Stainless Steel lavatory frames in 24K gold plated and chrome plated too!

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SELCK

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7136 W. GUNNISON ST. • CHICAGO, ILL. 60656
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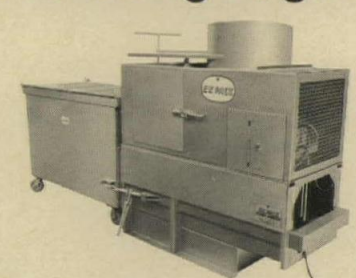
Include an E-Z Pack Fixed Packer in the apartment you're designing now.



Our Fixed Packer compacts refuse to a fraction of its original size . . . automatically. Much simpler than incineration, much less expensive. No air pollution, no unsightly collection areas.

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PRIME 'n FILL

BUILDING BLOCK COATER

Perfect paint base, perfect moisture barrier for concrete block. In one operation, PRIME 'n FILL primes, fills, and surfaces the block. Moisture cannot get through this impenetrable barrier; PRIME 'n FILL seals every void in the block. The surface becomes hard, dense, and non-porous – a perfect base for all vinyl, acrylic, or oil-base coatings. The basic economy of block construction is extended right to the finish, when you use this low cost, high quality, time-tested product on exterior and interior surfaces. Paint goes farther – usually covers perfectly with one finish coat.
So forget the problems and high cost of painting concrete block. Just PRIME 'n FILL... then paint.

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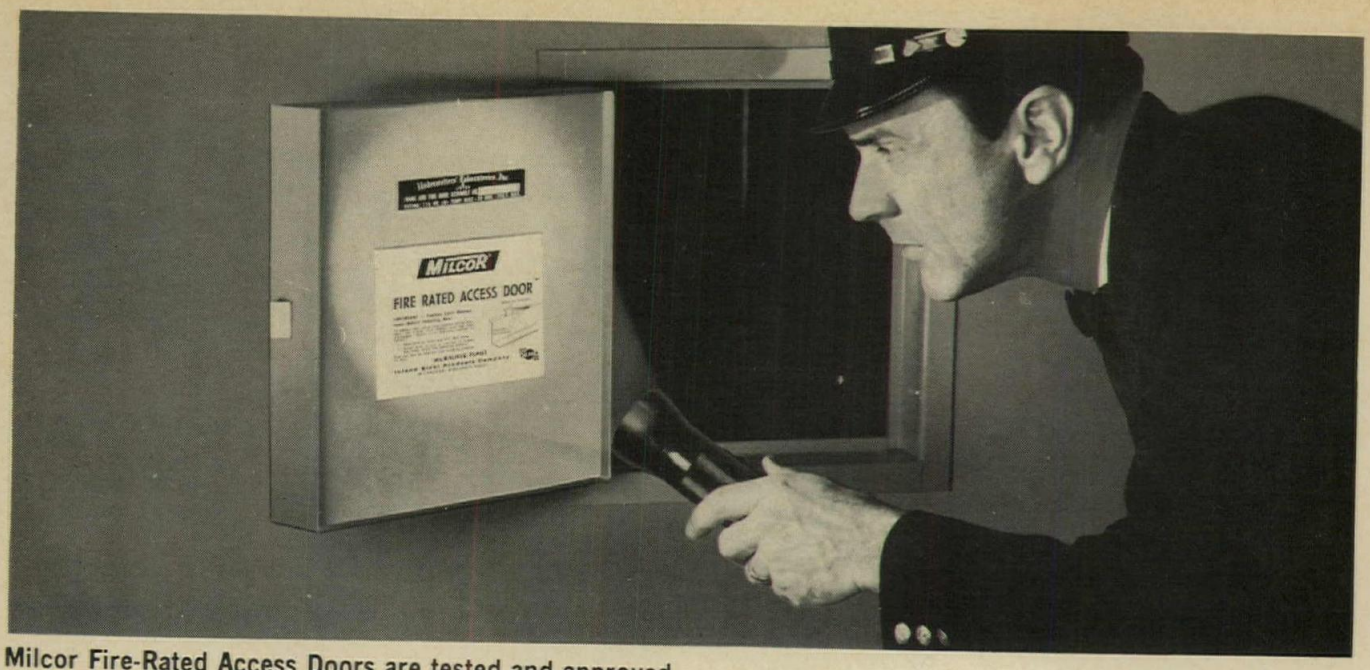

Milcor Fire-Rated Access Doors are tested and approved. Building codes require fire-rated doors for openings in all vertical shafts.* You can meet code requirements easily and safely. Specify the door with the Underwriters' Laboratories label—the Milcor Fire-Rated Access Door.

Why is it vital that every shaft opening, in every building, be properly covered to meet this code provision? The tragic 1963 Jacksonville Hotel fire provides one grim example of its importance. In that fire, which started in a utility shaft, inadequate closure panels were the contributing cause that led to the needless loss of 21 lives.

These labels guarantee code compliance

Milcor Fire-Rated Access Doors are incombustible and latch securely to prevent the spread of fire. Tested and approved, they carry the Underwriters' Laboratories 1½-hour "B" label, 250° rating (temp. rise less than 250° in 30 minutes). They're completely framed; easily installed. You can specify them with confidence.

Milcor Metal Access Doors are also offered in other styles for all types of building conditions. See Sweet's, section 17L/InL, or write for catalog 210. Inland Steel Products Company, Dept. H, 4033 W. Burnham Street, Milwaukee, Wisconsin 53201.

MILCOR® Metal Access Doors

Inland Steel Products

*BOCA Basic Building Codes: sections 911.2; 911.7; 917.1; 917.2 and 917.21.
National Building Code: sections 604.2; 605.6; 609; 702.7 and 805.
Southern Standard Building Code: section 701.1.
Uniform Building Code: sections 1706 and 4306; table 17-A; chapters 30 and 33.

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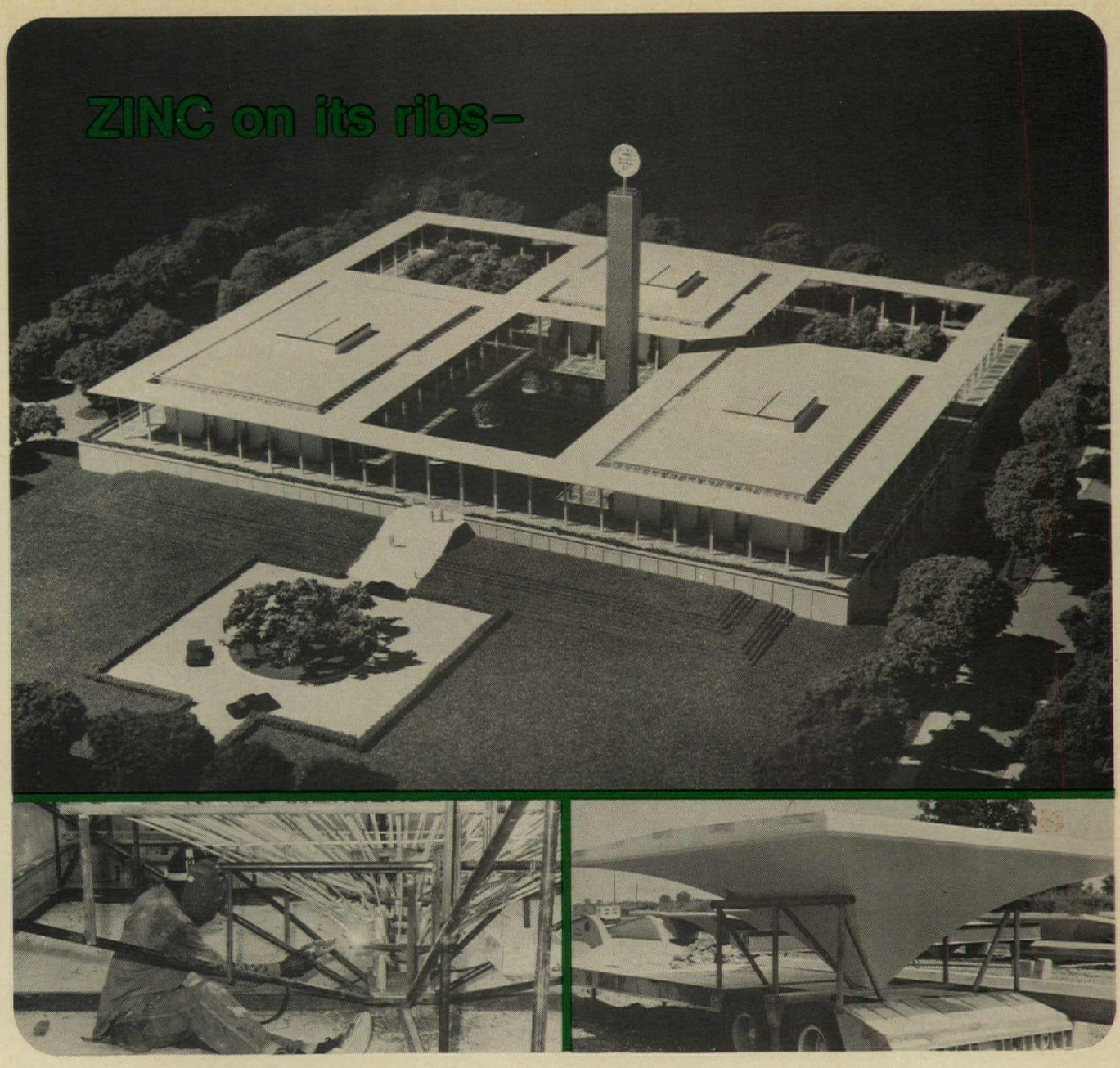


insures this building's lasting beauty

The zinc on over 100 tons of hot dip galvanized reinforcing steel will prevent "undercover corrosion" from defacing the new Civic Center designed by Edward Durell Stone for Pine Bluff, Arkansas. ☐ The galvanized reinforcing rod is being used in 130 giant umbrellas of pre-cast concrete. These umbrellas are interconnected to form a colonnade around and through the complex, dividing the three buildings, a reflecting pool and two garden courts. Each umbrella is comprised of a 12″ square x 19′ high column, a 16′ square x 4′ deep cap and a 7′ square x 4″ thick slab cover. ☐ Galvanized steel rod was specified for the entire umbrella structure by Engineering Consultants, Inc. of Little Rock to prevent subsurface rusting which could cause staining, cracking and spalling of the concrete surface. ☐ When you specify materials remember that no other material gives you the combination of strength, corrosion resistance and economy found in galvanized steel.

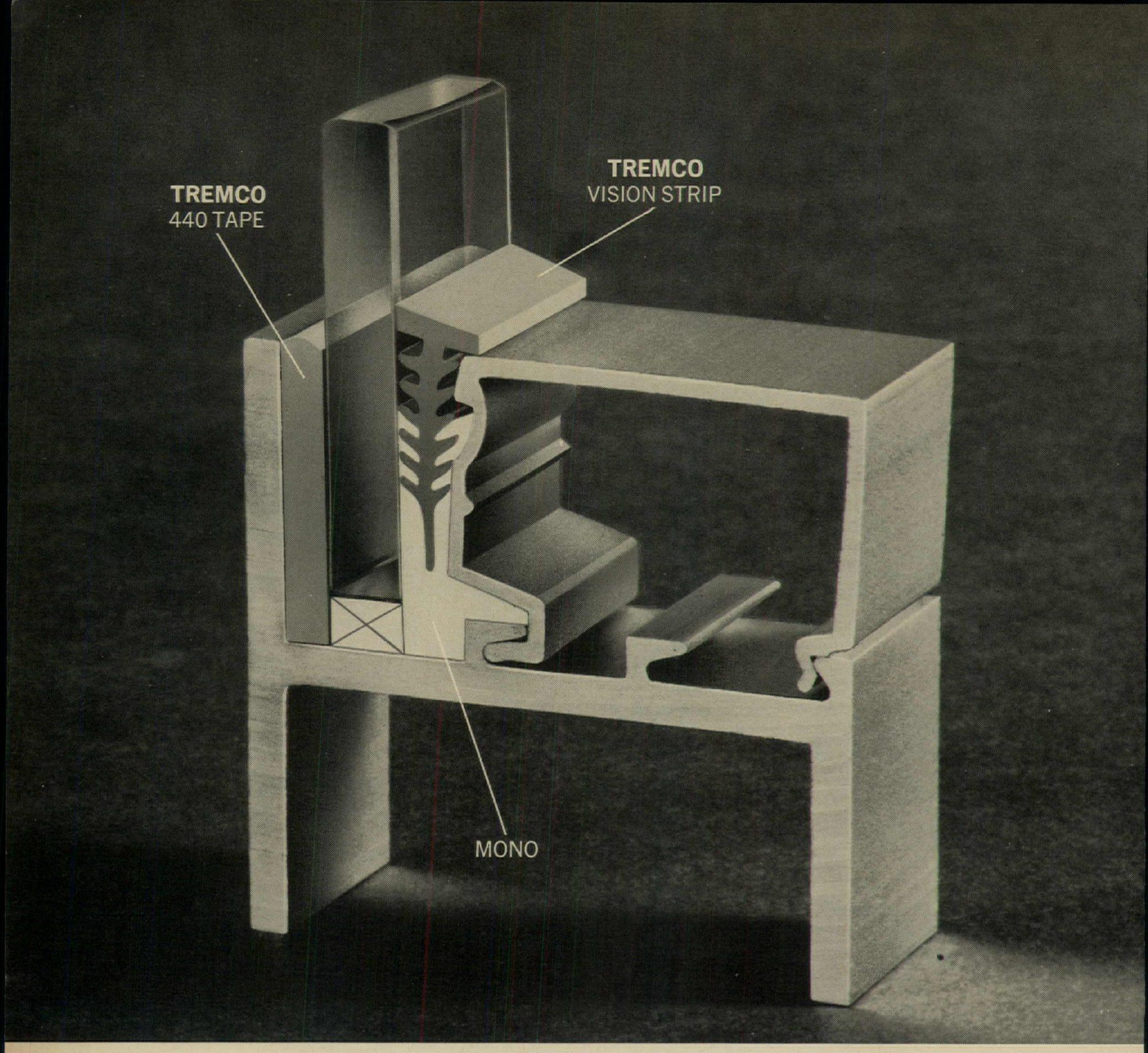
ST. JOE

ST. JOSEPH LEAD COMPANY

250 Park Avenue, New York, New York 10017

St. Joe is a Major Supplier of Zinc to the Galvanizing Industry

ZN-312



Can Tremco promise good looks in leak-proof glazing?

Sure, we've got a system.

The Tremco Glazing System.

It combines the economy of tape, the security of a sealant and the attractiveness of gasketing for almost any sash you choose.

Sight-lines stay clean and uniform with tape and vision strip in a choice of colors to match your sash.

The tremendous adhesion and exclusive re-sealing properties of Mono sealant keep on sealing and re-sealing—long after the glazier has left the job.

There's *invisible* beauty in the Tremco glazing system, too. You get one-source responsibility for the glazing materials. That's backed up by the job-site presence of the Tremco representative to instruct installers and check job progress.

Because we make so many different sealants, Tremco can promise you an impartial recommendation of the right combination for each of your vision-glass and construction-joint needs. Check us out in Sweet's or invite your Tremco man in: ask him to bring your color-sample kit of the Tremco Glazing System.

TREMCO
PRODUCTS AND TECHNICAL SERVICES FOR BUILDING MAINTENANCE & CONSTRUCTION

THE TREMCO MANUFACTURING COMPANY
Cleveland, Ohio 44104
Also available in Canada

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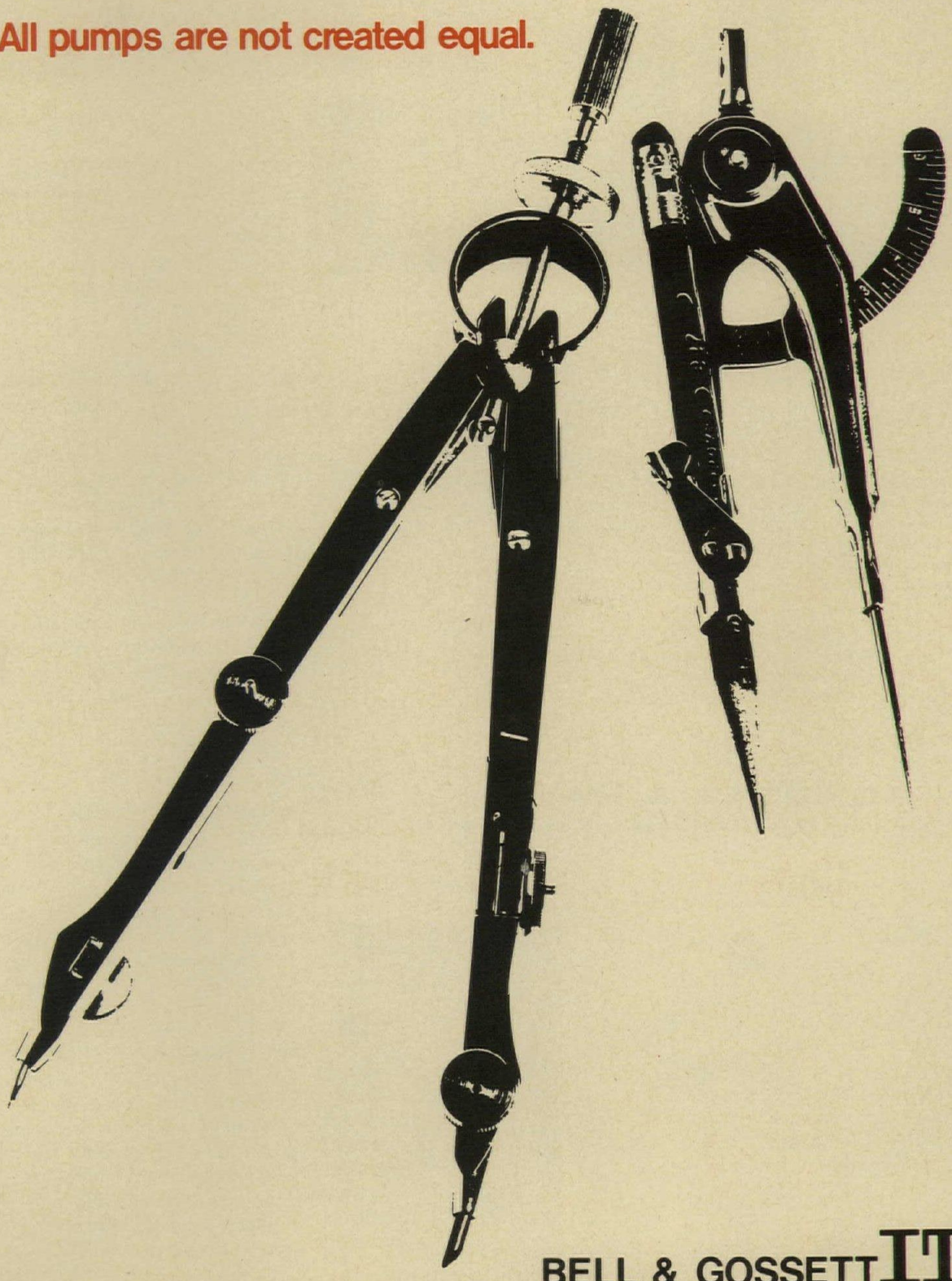
All pumps are not created equal.

In the beginning, there's design, and design engineering. If a pump isn't right then, it never will be. No matter how you build it, what you call it, or what color you paint it.

A lot of pumps hope to grow up and become a Bell & Gossett. But they start off on a different design... then overlook the features that made B&G pumps the industry standard. Features like motors built especially for pumps, bronze sleeve bearings, spring-type coupler, a balanced impeller, leakproof seals, and many other factors that contribute to quiet, dependable operation.

At B&G, design doesn't stand alone. Around it is a network of hydronics experts, the B&G Representatives. Experts ready to help with hydronic products for a seven room house—or a 100 unit high rise. Call today, or write to Bell & Gossett, ITT Fluid Handling Division, International Telephone and Telegraph Corp., Morton Grove, Ill. 60053, Dept. H-55-1.

In Canada, contact ITT Industries of Canada, Ltd., Guelph, Ont.



BELL & GOSSETT ITT

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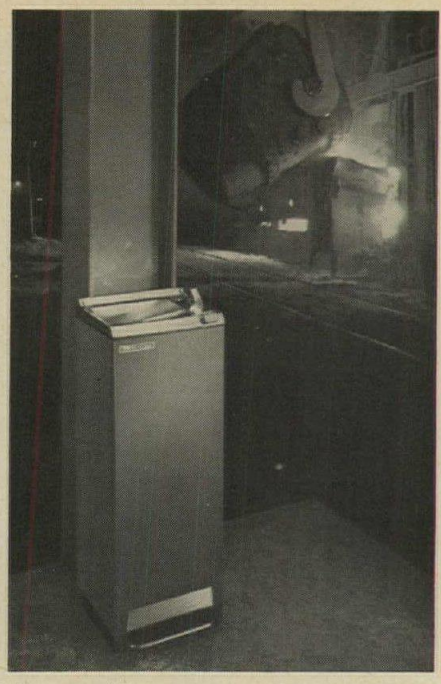
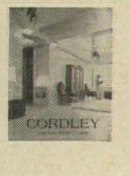


(Left) Cordley Water Coolers fit into a school like an "all-A" student; smaller companion fountains serve the little fellows. (Right) Heavy-duty model serves hot and heavy industry.

School, Hospital, Office or Factory... there's a Cordley Cooler that fits!

ANY TYPE of busy building is a better place to be in . . . a better place to work in . . . with a Cordley Cooler close at hand. Select from more than 50 styles, many sizes, many types, and be as meticulous as you will. Plan for today's traffic or for the years ahead. Plan for style-hungry clients or "nuts and bolts" executives. You can do more with a Cordley than you may have dreamed of. The Cordley lends itself to creative planning.

You'll find detailed specifications on the complete line of Cordley quality water coolers in Sweet's Architectural and Industrial Files. Or, we'll send you our complete new Catalog No. C-150.

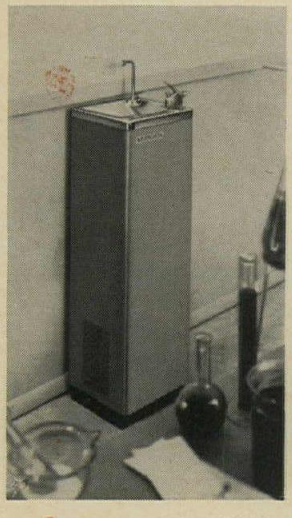


Over 75 years of specialized water cooling experience

CORDLEY & HAYES

2345 West Maple Road • Troy, Michigan 48084 • Telephone 313/644-5700

Compact units fit small space. Budget priced, light weight.



"Wall-hung" in all stainless steel is an ideal hospital unit.

"Semi-recessed" water coolers save space, look smart!

For more data, circle 100 on inquiry card

continued from page 190

STRUCTURAL GASKETS / *Stanlock Neoprene Structural Gaskets* are shown in a 24-page catalog that features several building projects. Detailed drawings present 50 cross-section configurations, in addition to a line of glazing channels and setting blocks. ▪ The Standard Products Co., Port Clinton, Ohio.*

Circle 405 on inquiry card

STERILE AIR / Manual provides information on a means of sterilizing air in entire air supply systems. ▪ American Ultraviolet Co., Chatham, N.J.

Circle 406 on inquiry card

CONCRETE TREATMENTS / A 12-page booklet discusses concrete floor treatments, patchers, resurfacing compounds, admixtures and grouts. A selector chart lists applications for the 17 basic products. ▪ Sonneborn Building Products, Inc., Des Plaines, Ill.

Circle 407 on inquiry card

ACOUSTICAL SEALANTS / How a non-hardening, non-drying, non-bleeding acoustical sealant reduces sound transmission and helps approach designed Sound Transmission Class values is the subject of a 4-page guide to effective acoustical sealing. ▪ The Tremco Manufacturing Company, Cleveland.*

Circle 408 on inquiry card

SHELVING / "Five Point Guide to More Profitable Shelving" is an 8-page reprinted article on how to increase efficiency and lower costs through proper planning of storage shelving. ▪ Penco Products, Inc., Oaks, Pa.*

Circle 409 on inquiry card

POLLUTION CONTROL / An 8-page brochure describes several systems for control of industrial pollution. The brochure illustrates systems installed in a variety of applications including a liquid waste destruction system and a fume destruction and heat recovery unit. ▪ Bigelow-Liptak Corp., Detroit.

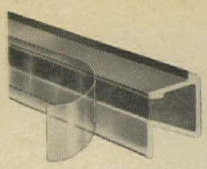
Circle 410 on inquiry card

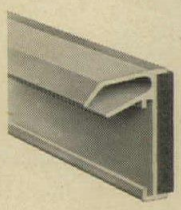
WALL AND ROOF SYSTEMS / Companion catalogs include a 12-page booklet of detailed drawings for the wall systems and an 8-page booklet on the panel-purlin-structural systems for roofs on beam-and-column, tapered-beam, truss-type and self-framing structures. ▪ Metal Products Division, Armco Steel Corporation, Middletown, Ohio.*

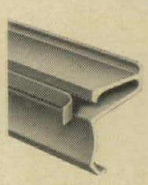
Circle 411 on inquiry card

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

more literature on page 220







Why Not Design in ZERO LEAKAGE?

Specify **SUPERIOR**

Cushion-Lock® REGLETS

For Counterflashing and Metal Window Frames

You can be assured of permanently leak-proof joints when you specify SUPERIOR Cushion-Lock Reglets, so why gamble with inadequate or unspecified substitutes that may cause serious problems at a later date. Installation is fast and because of the labor-saving advantages, total "in-place" cost is lower. *There's no on-the-job caulking.* Shipped ready for application. Five types available—extruded PVC or aluminum.

SEE
Sweet's Catalog 21g/Su or,

WRITE
for Bulletin CL-3 and "On-The-Job" 4-page brochure.

SUPERIOR Concrete Accessories, Inc.

9301 King St., Franklin Park, Ill. Phone (312) 678-3373
2100 Williams St., San Leandro, Cal. Phone (415) 352-2830
New York • Houston • Los Angeles • San Diego

For more data, circle 125 on inquiry card

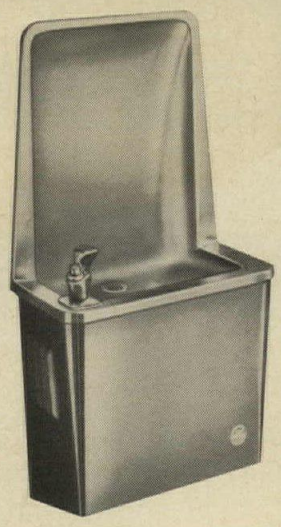
3 WAYS to BUG the BAD GUYS

1. The W & F No. 6000 Series Deadlock offers TRIPLE point
2. Entrance Door SECURITY.
3. This versatile mechanism will actuate any combination of jamb bolt, header bolt, and threshold bolt to meet the Single, Double, or Triple locking point requirements of your entrance.

We invite inquiries regarding our product line and welcome the opportunity of working with you on specific requirements.

W. & F. MFG., INC.
811 AIR WAY, P.O. BOX 30, GLENDALE, CALIF. 91209 • PHONE (213) 245-7441

For more data, circle 126 on inquiry card



is the finishing touch . . . because:

Sunroc leads with innovations in engineering and design features acknowledged by imitators . . .

Is first with designs like the semi-recessed and fully recessed drinking fountains . . .

And first with engineering features such as lefthand bubbler, package cooling, and vandal proof drain . . .

With realistic pricing to meet most any construction budget . . .

With constant attention to the small as well as large engineering details, to assure lasting satisfaction for your most exacting client.

See Sweet's Architectural File or Mechanical Products Catalog for basic specification data, or write for A.I.A. Catalog.

SUNROC Box 38
Glen Riddle, Pa. 19037 S-800

For more data, circle 107 on inquiry card

continued from page 208

CAST IRON BOILERS / "An Ironclad Case for Cast Iron Boilers" is a 12-page publication that discusses five fundamental questions. ▪ Weil-McLain Company, Inc., Michigan City, Ind.*

Circle 412 on inquiry card

WALK-IN COOLERS / A 12-page booklet presents units that "may convert from a cooler to a freezer simply by changing the package refrigeration unit or the remote refrigeration equipment." ▪ Vollrath, Sheboygan, Wisc.

Circle 413 on inquiry card

ELEVATED FLOORING / A 20-page booklet includes information on systems for computer rooms, communication centers, offices, laboratories, and other areas where convenient access to utilities and wiring under the floor is desired. ▪ Liskey Aluminum, Inc., Glen Burnie, Md.*

Circle 414 on inquiry card

DESIGNING BANKS / An 18-page booklet puts many of the latest ideas and trends for modern banks into an "idea tour." Photos show how customer service can be enhanced through proper design of financial furniture, counters, drive-in and walk-up windows and related equipment. ▪ Mosler, Hamilton, Ohio.*

Circle 415 on inquiry card

ACOUSTICAL PACKAGE SYSTEMS / Recent developments in providing controlled acoustical environments are featured in a 4-page bulletin. The "package" systems concept makes possible controlled acoustical environments in any structure through installation of a system of sound controls coordinated with vibration/r.f./temperature/humidity controls especially tailored to the design of the facility. ▪ Industrial Acoustics Company, Inc., Bronx, N.Y.*

Circle 416 on inquiry card

INDUSTRIAL LAB FURNITURE / A 25-page catalog presents plastic wood laminate furniture in three basic wood colors. ▪ Carayne Industries, Inc., South Plainfield, N.J.

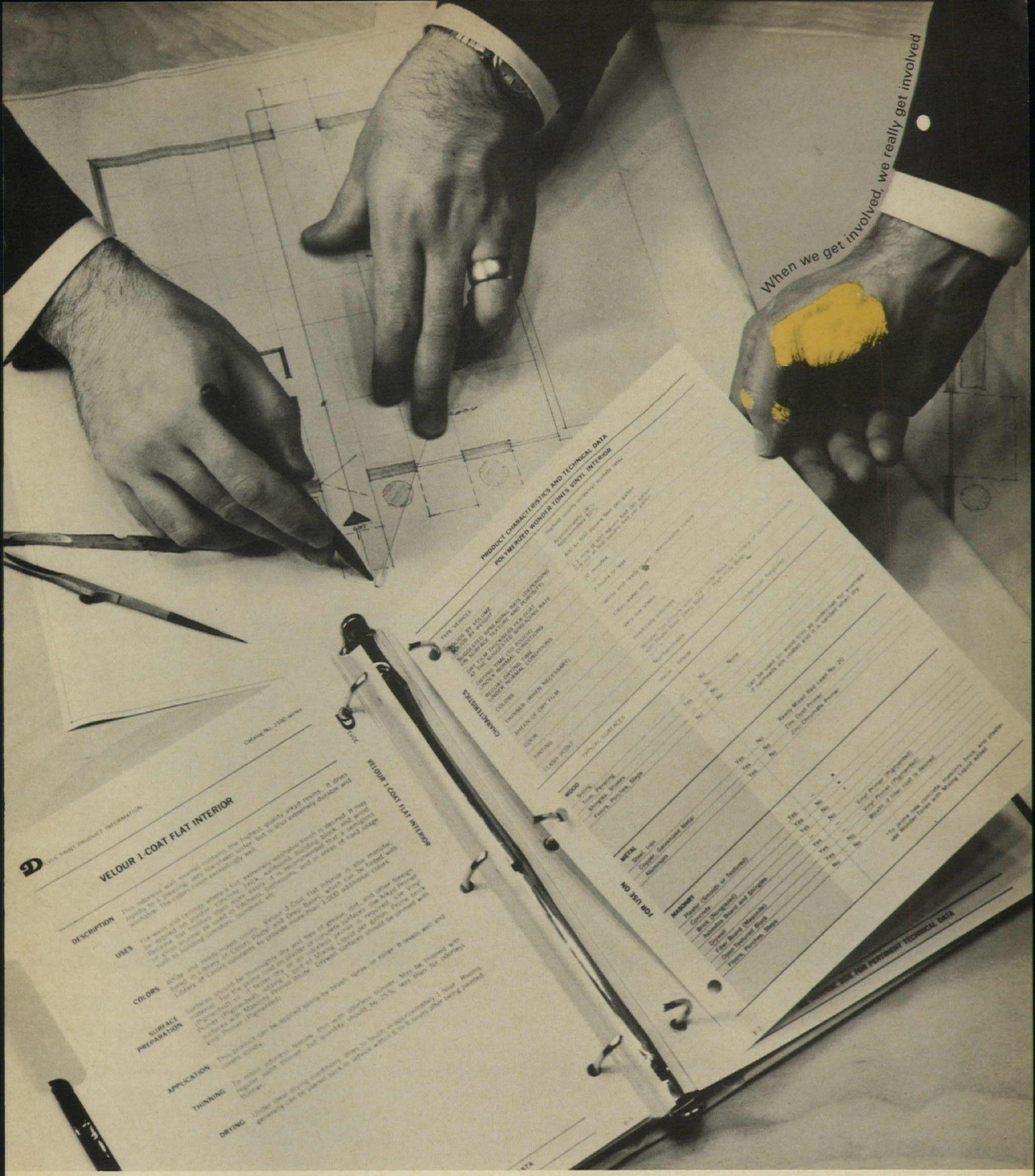
Circle 417 on inquiry card

MODELS / A 4-page data sheet tells how to make topographical models. Besides step-by-step instructions for making the model, the sheet tells how long it takes and how much it costs. ▪ The Cutawl Corporation, Bethel, Conn.

Circle 418 on inquiry card

* Additional product information in Sweet's Architectural File

more literature on page 225



What you need is another free hand.

Somebody you can count on to make sure the specs you write are based on the latest product information available.

With a zillion paint products constantly moving on—and off—the market, your files have to be as up-to-date as this morning's paper.

When there's a change in our line, you're one of the first to know.

That's where we come on fast. We've got the products—a full line of paints and coatings for every surface and every kind of application. And we've got them close to where you need them. Once the painting job gets started, there's a Devoe man on the spot to keep it moving.

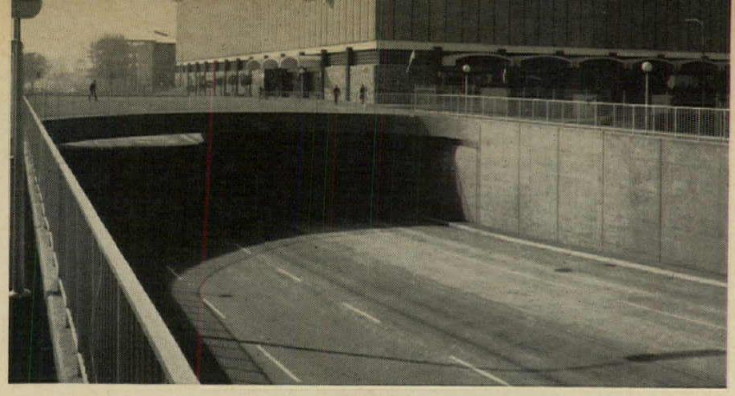
When you get us involved in your job, we really get involved. That's why . . .

Architects who know Devoe

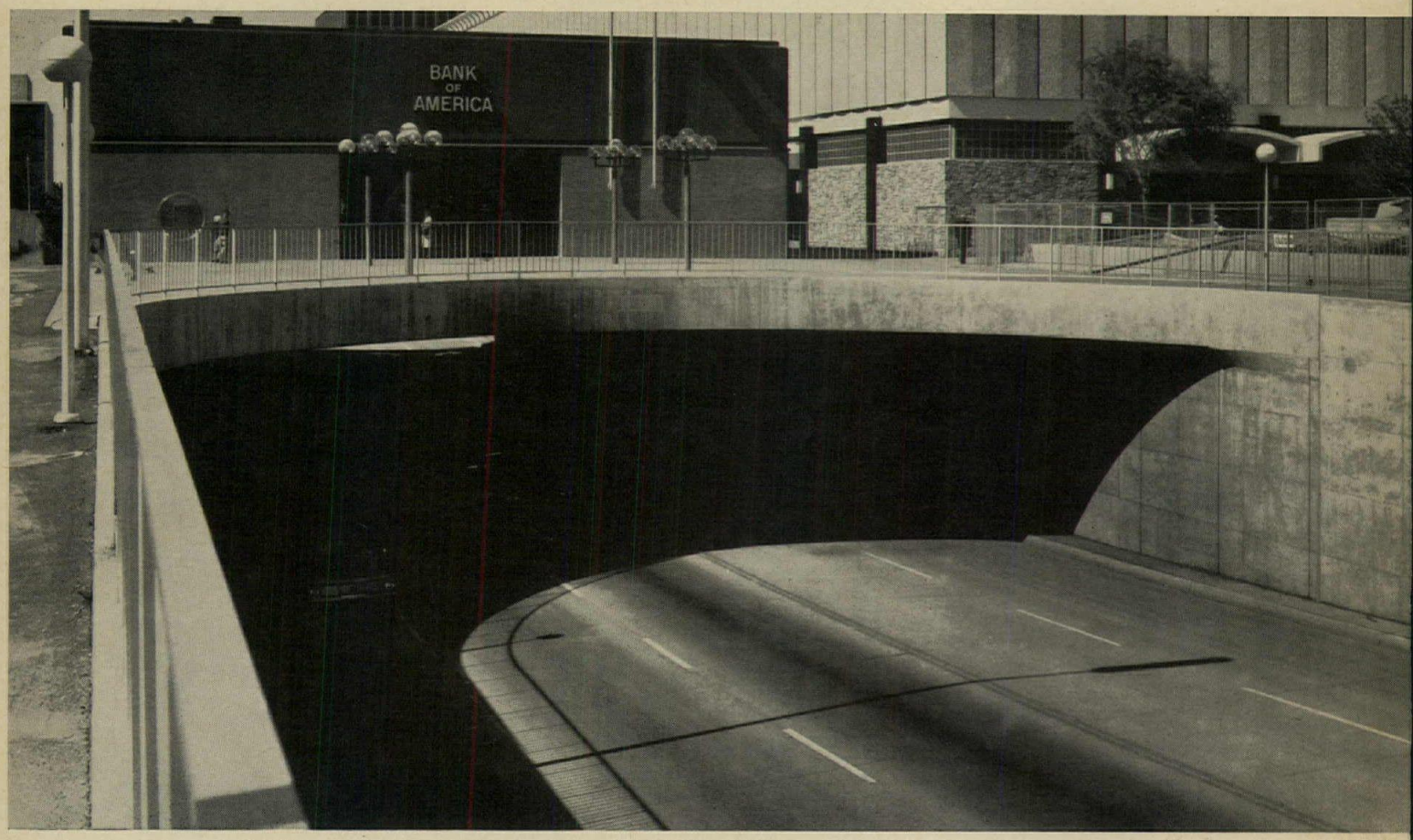
GO DEVOE

DIVISION OF CELANESE COATINGS COMPANY
Louisville, Kentucky 40202

For more data, circle 109 on inquiry card



Once this was just a prestressed concrete overpass. Today it also supports a bank.



The ability to meet future needs is a versatile feature of prestressed concrete.

Back in 1963, the 5th Street Overpass was built as part of a downtown redevelopment project in Sacramento, California.

Prestressed concrete tee girders, each 3 feet deep with a 4-foot-wide top flange, were used to span the 74-foot roadway. Each tee was pretensioned using Union Wire Rope's TUFWIRE® Strand, with forty-one ½-inch diameter 7-wire strands per tee.

Today a new building housing a branch of the Bank of America sits atop the overpass. Valuable "air space" is put to efficient use while convenient access to establishments on either side of the street is preserved.

This is another project pointing out the proved-in-service dependability of TUFWIRE Strand. To see more of these projects, write for our booklet **Prestressed Concrete: a Growing Concept in Construction.** TUFWIRE Strand, TUFWIRE, and other Union Wire Rope products are made by Armco Steel Corporation, Dept. W-838, 7000 Roberts Street, Kansas City, Missouri 64125.

Bank of America Building
Architects and Engineers: Victor Gruen Associates, Los Angeles, California

5th Street Overpass
Owner: City of Sacramento, California
Architects: Skidmore, Owings & Merrill, San Francisco, California
Engineers: McCreary • Koretsky • Engineers, San Francisco, California
General Contractor: Stolte, Inc., Oakland, California
Prestressed Concrete Supplier:
Delta Prestress Concrete, Incorporated, Sacramento, California

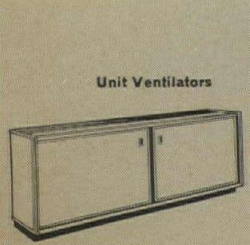
ARMCO STEEL ARMCO

For more data, circle 110 on inquiry card

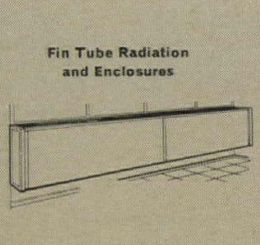
naturally it's **SCHEMENAUER**

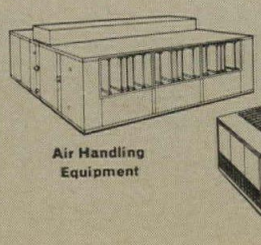
We took longer to produce our new "Benchmark" series Multizone-Rooftop Unit because we wanted to offer superior Schemenauer quality. And now you have it . . . handsome on the outside, unique on the inside. Constructed of weather-tight aluminum and fiberglass, the attractive, low silhouette air processing unit offers complete temperature/sound insulation. It features our unique "now or later cooling," enabling you, if you wish, to add a cooling and dehumidification package **within** the existing cabinet at a later date. Cooling system provides redistribution of heat to cooler zones—providing "free-heat" during the cooling cycle. All air is dehumidified to assure positive humidity control in all areas. Oversize dampers move just 45° to open and close, admitting air with greater accuracy. If you want to cool, heat and ventilate simultaneously, write for our new catalog No. 1500—it'll be like a breath of fresh air.
Schemenauer Manufacturing Company, Holland, Ohio 43528

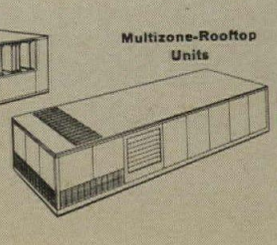
For assurance of quality in heating, air conditioning and ventilating equipment, insist on this Schemenauer benchmark.


Unit Ventilators


Cabinet Heaters and Air Conditioners


Fin Tube Radiation and Enclosures


Air Handling Equipment


Multizone-Rooftop Units

Quality panelboards can also be attractive —without any price premium!

Until now, panelboard fronts like the one above were built only on special order. They cost more, and it took longer to get them. Even then, only the hinges were concealed.

Now Square D conceals both hinges and trim clamps and furnishes a flush lock as well. There's no extra cost, no waiting for delivery—this neatest, best-looking lighting panelboard front is available from stock.

The new Mono-Flat front gives you more than just eye appeal. It is the only design which gives positive security. The panelboard front cannot be removed while the door is locked. What's more, the flush-mounted lock can't be pried open.

Get the complete story on Mono-Flat panelboard fronts from your Square D Field Engineer or distributor. Or write Square D Company, Dept. SA, Lexington, Kentucky 40501.

SQUARE D COMPANY

wherever electricity is distributed and controlled

For more data, circle 112 on inquiry card

continued from page 220

FLUSH VALVE / A 4-page color brochure presents a handsome decorative flush valve available for all types of water closets as well as urinals. The valves are designed for use in executive toilet rooms, clubs, restaurants, hotels and office buildings. ▪ Watrous Incorporated, Bensenville, Ill.*

Circle 419 on inquiry card

STEEL LOCKERS / A 20-page catalog offers help in designing locker installations for schools, plants, offices and institutions. ▪ Penco Products Inc., Oaks., Pa.*

Circle 420 on inquiry card

INSULATED PANELS / An 8-page brochure describes urethane pour-in-place insulated panels for complete roof systems. The system includes foamed-in-place joints for joint-free construction, and also eliminates a built-up roof application on refrigerated structures as well as on conventional building construction. ▪ Armstrong Contracting and Supply Corporation, Lancaster, Pa.

Circle 421 on inquiry card

ARCHITECTURAL TRIMS / A 12-page booklet provides illustrations on bronzed aluminum trim including fascias, copings, and soffits. ▪ Construction Specialties, Inc., Cranford, N.J.*

Circle 422 on inquiry card

REVOLVING DOORS / A 20-page catalog presents revolving doors with *Revolvomatic* power control. Details on custom-built models are included. ▪ International Steel Company, Evansville, Ind.

Circle 423 on inquiry card

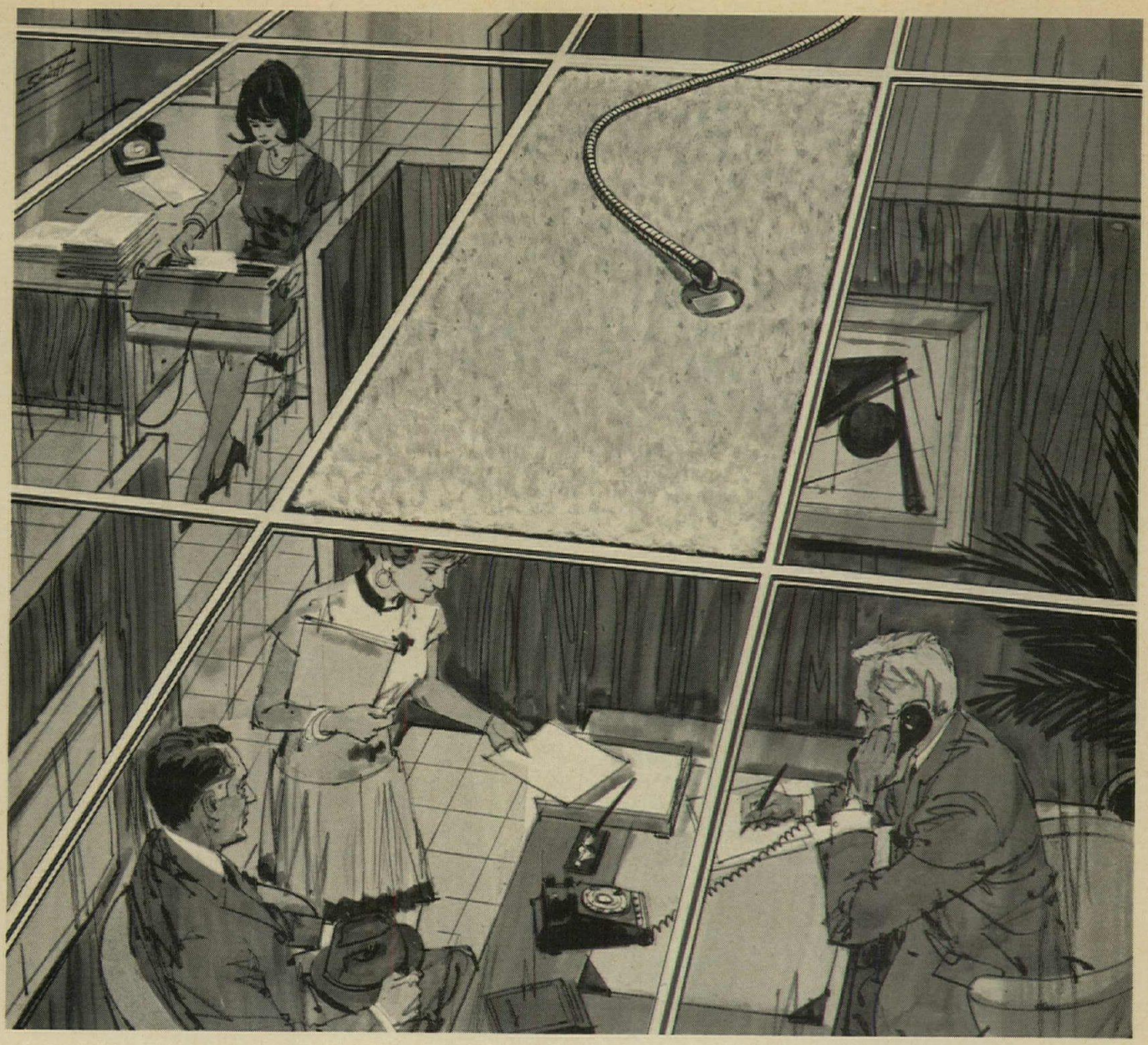
SUB-PURLINS / An 8-page catalog describes steel sub-purlins made from billet steel conforming to the ASTM specifications. The catalog includes schematic drawings and properties of the eight types, tables on deflection limits, and a load span table. ▪ Connors Steel Division, H. K. Porter Company, Inc., Huntington, W. Va.*

Circle 424 on inquiry card

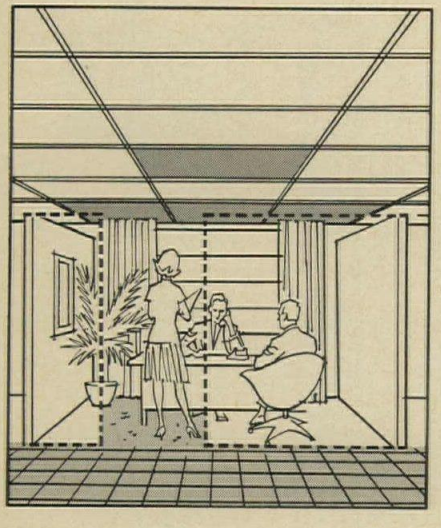
STEEL DUCTS / The strength and weldability of galvanized steel ductwork in the new Madison Square Garden and in Cleveland's new Federal Office Building are described in the first two of a series of case histories of commercial and industrial buildings. ▪ American Iron and Steel Institute, New York City.

Circle 425 on inquiry card

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



Office needs can change overnight, so drop in a heating system that can change, too.



3M Brand Radiant Electric Heating Panels, in T-bar ceilings, combine comfort... flexibility

3M Heating Panels are designed specifically for drop ceilings. They radiate gentle, comforting, warmth from above like the sun. There are no drafts. The floor stays warm. Each room is thermostatically controlled to suit the activity.

And 3M Heating Panels give you complete freedom of design. Won't interfere with ductwork, utilities or structural members. Only one-inch thick, the panels fit into standard 2′ x 4′ T-Bar modules. To install, simply drop them in and wire them up. Removal and relocation is just as easy.

Safe, practical and efficient, 3M Heating Panels have no moving parts to whir, rattle or wear out. Cycle on and off without a sound. Ideal for use as a total heating system or for supplementary heat in high heat loss areas.

3M Heating Panels are supplied in an off white color to blend with surrounding acoustical or translucent lighting panels. They can also be painted to suit decorating needs.

For more information, write: Dept. EEK-88 , 3M Company, 3M Center, St. Paul, Minn. 55101.

"3M" IS A REGISTERED TRADEMARK OF 3M CO.

Electro-Products Division 3M COMPANY

For more data, circle 115 on inquiry card

Our new prefinished fire-retardant panel now has a Class 1 rating.

(No wonder it's such a hot new architectural panel)

Weyerhaeuser Prefinished Siding/Panel 15 (with fire-retardant plywood core) is becoming the hottest architectural panel around. Primarily, because you can do so many things with it: curtain walls, siding, interior walls, soffits, mansard roofs, spandrels or you name it.

Standard non fire-retardant panels are also available. All are guaranteed not to need refinishing for 15 years.

Here's the unique construction:

1. A 10-mil textured aluminum sheet with prefinished baked-on enamel in 8 standard and 10 special-order colors.

2. 5/16" exterior grade plywood core (fire-retardant treated).

3. 2-mil reflective insulating foil or double-faced with 10-mil prefinished aluminum surface.

It's about as stable and as durable as a panel can get. Like more facts on the complete Panel 15 system?

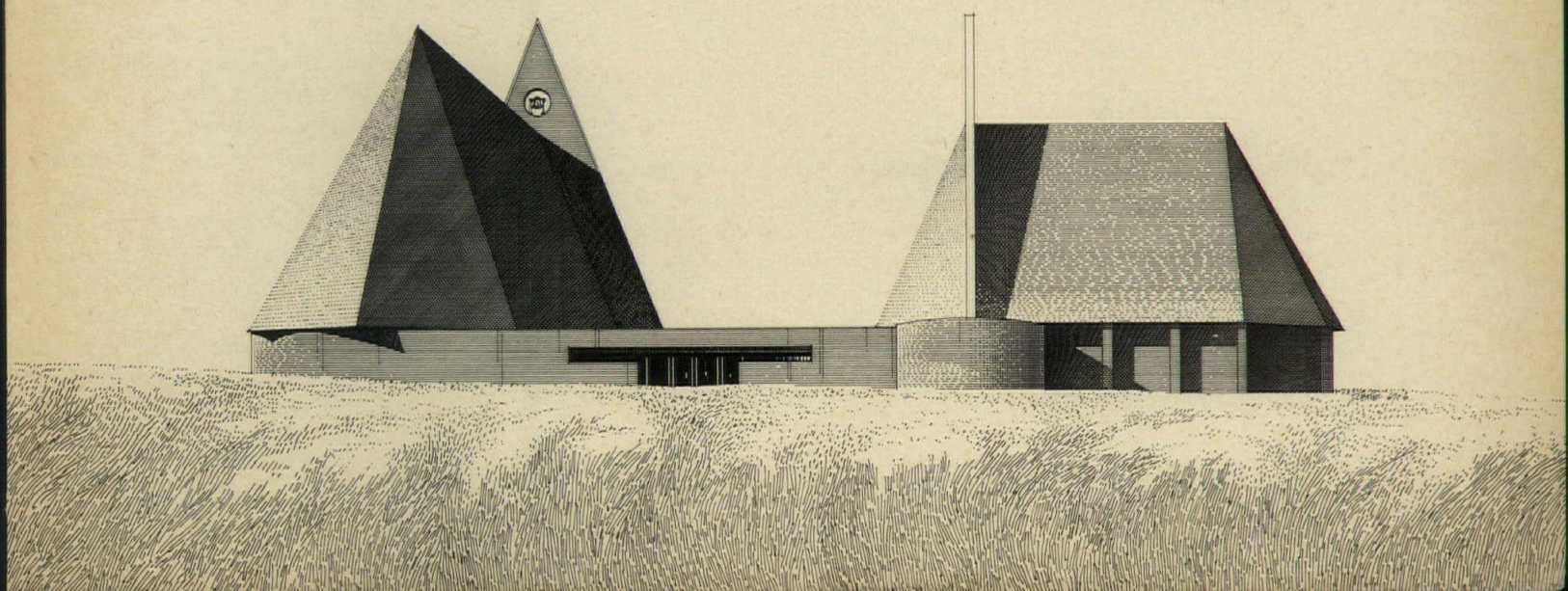
Write Weyerhaeuser Company, Box B-2735, Tacoma, Washington 98401.

Weyerhaeuser

For more data, circle 117 on inquiry card

if you were sure that one publication best served the interest of your prospects...

wouldn't it make sense to place all your advertising there?



if your prospects' interest is architecture...it makes sense to place all your advertising in Architectural Record

WHY RECORD?

Architectural Record best serves the interest of architects and engineers. This is a fact documented in two ways. Both are significant to advertisers.

First . . . Architectural Record publishes more in the relevant areas of buildings, houses, architects, photographs, drawings and four-color than other architectural publications. And by a wide margin. In 1967...70 per cent more buildings than the second publication...192 per cent more houses...88 per cent more architects...85 per cent more pages of four-color than the second publication.

The second way to document the Record's editorial leadership is to go to the architects and engineers themselves as hundreds of building product manufacturers and their agencies have done in independent studies to determine the reading preferences of these key specifiers of building products. In seventeen studies conducted since January 1966, the Record has been the consistent first choice, winning all seventeen studies and usually by a 50 per cent margin over the second place publication.

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.

WHY USE JUST ONE PUBLICATION?

The real question to ask yourself is why use more than one publication if one is strong enough to do the job alone.

Let's consider 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.

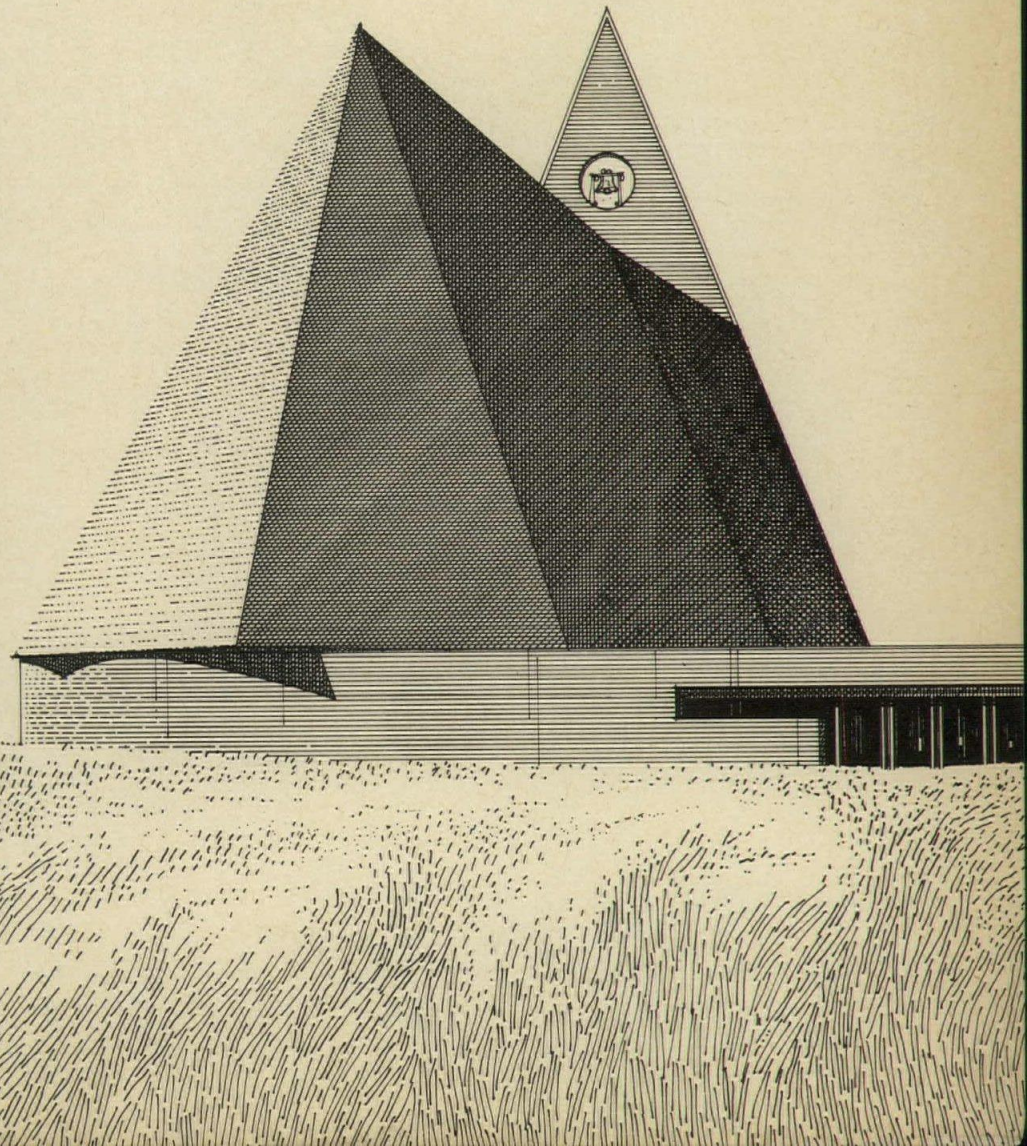
START NOW

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



First Baptist Church of Columbus, Indiana
Architect: Harry Weese & Associates
Structural Engineers: The Engineers Collaborative
Drawing by Davis Bité

ADVERTISING INDEX

Pre-filed catalogs of the manufacturers listed below are available in the 1968 Sweet's Catalog File as follows.

A Architectural File (green)
I Industrial Construction File (blue)
L Light Construction File (yellow)

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

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, Tom Brown, Edward R. Novak, 645 N. Michigan Ave., (312) 664-5800

Cleveland 44113 — Louis F. Kutscher, 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

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

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

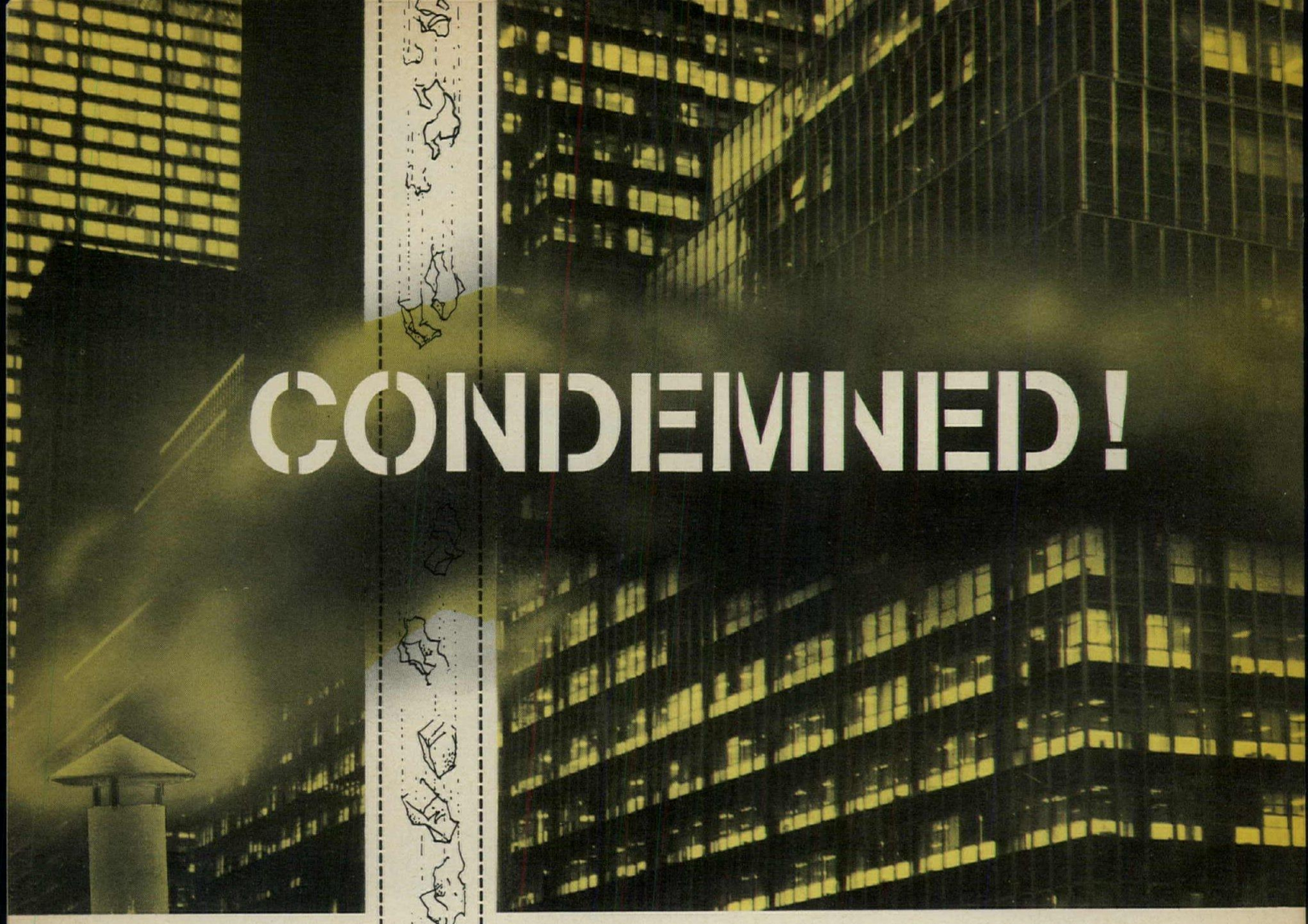
New York 10036 — Donald T. Lock, Ted Roscoe, John S. Renouard, 500 Fifth Ave. (212) 971-3583

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



CONDEMNED!

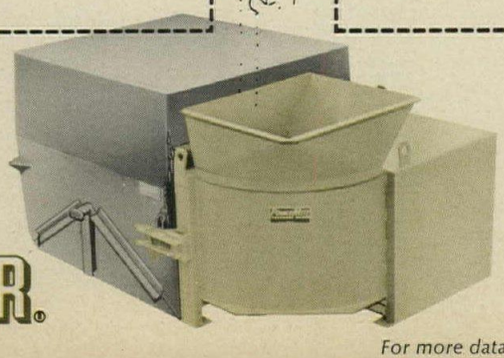
Here's a $3,500 replacement !

Here's a low-cost way to replace incinerators and still handle large volumes of trash from high-rise buildings.
Simply place this small, powerful packer under an existing incinerator chute, attach a container, and drop refuse into PowerMite's charging box.

USE EXISTING INCINERATOR CHUTES AND DROP REFUSE INTO THE POWERMITE

Over 42,000 pounds of hydraulic pressure crushes waste to a fraction of its former volume inside a detachable container. Bottles, paper, boxes, tin cans, garbage . . . PowerMite handles it all. Waste is reduced as much as four to one, EVEN MORE, depending on the material.
When container is full, a truck-mounted handling unit picks up, hauls, empties, and returns the container to its original packing position.
When a space is tight, PowerMite saves the day. The packer takes up a little over 44 square feet of space and can be fitted with a variety of hoppers and chute connections. Small, detachable containers can fit out through narrow hallways and roll under low ceilings.

Your Dempster Consultant will help you design a refuse disposal system at no obligation. Write today for his name and for more information on the PowerMite!



ONE OF THE DEMPSTER DUMPSTER® SYSTEMS

To: Dempster Brothers, Inc. • Knoxville, Tennessee 37917 • Dept. AR-8

☐ Send me name of Dempster Refuse Consultant.
☐ Send more PowerMite information.

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

For more data, circle 118 on inquiry card