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BUILDING TYPES STUDY: SCHOOLS

THE NEW McCORMICK PLACE—AND OTHER WORK BY C. F. MURPHY ASSOCIATES

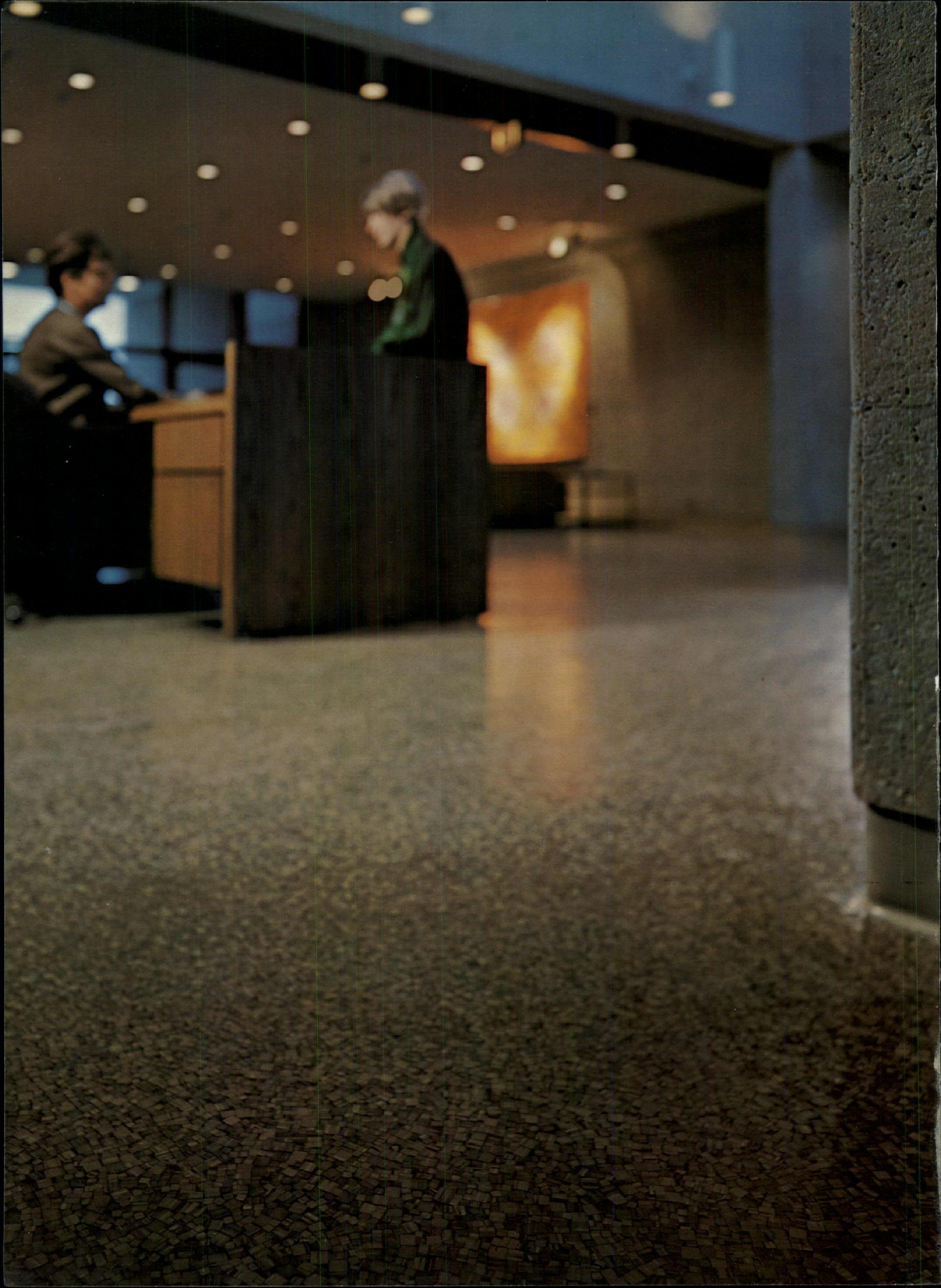
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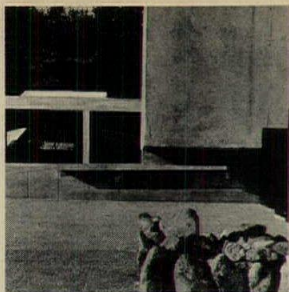
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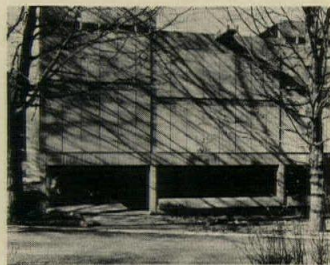
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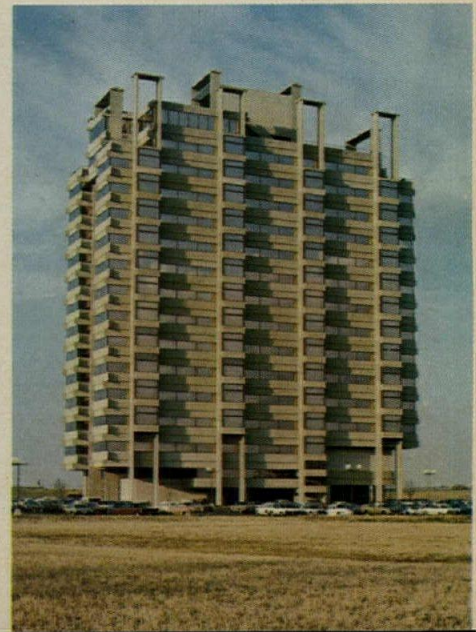
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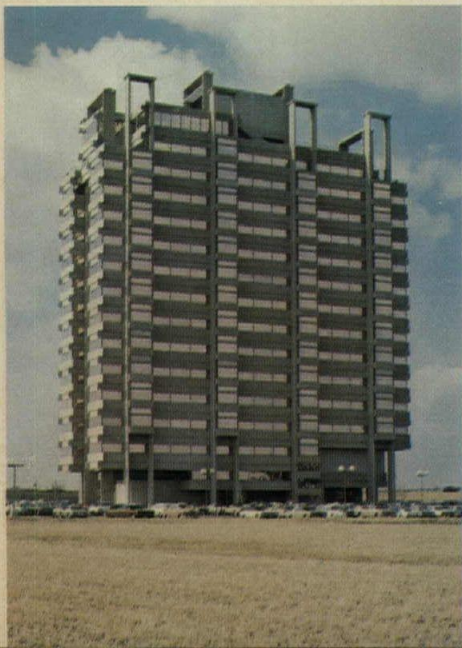




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The student and the practitioner: communication, accomplishment

We've come a long way since the Chicago convention, when for the first time the architectural students of the country effectively demanded a voice in establishing the profession's (or at least the A.I.A.'s) goals. While many—students and practicing architects alike—had been involved long before Chicago, for the A.I.A. and the Association of Student Chapters/A.I.A., as groups, Chicago was a beginning.

Joseph Siff of Rice, this year's president of ASC, long-haired and level-headed, says that "ASC is now going to assume that things can get done within the system—unless the system breaks down."

Siff and the other student leaders have in fact set up their own system—and it's a good one:

In a paper called "The Turning Point," Siff writes: "At the National Student Forum held this year at the University of California in Berkeley, the Association of Student Chapters/A.I.A. reached what, I hope in twelve months, we can look back upon as a turning point.

"Students and young people in general have, for the last 10 years, been identifying problems. The young have helped to bring to the forefront issues and ideas of primary importance—social injustice, the environment, urban ills, the suggestion of a reversal in national priorities, the war. . . . Problems have been identified, the needs of a nation have been articulated." (And indeed they have, though I suspect a few other 44-year-olds and former students of all ages would like a share of the credit for problem identification). Siff goes on:

"Now comes the turning point: the reduction of concepts to operational terms. At the ASC/A.I.A. National Forum, where

80 schools were represented by more than 400 participants, it became obvious that young people were ready, willing and able to shift gears from problem identification to problem solving. The ASC recognized this direction and structured to meet it."

How has ASC organized? Sensibly and effectively. There are 12 regional directors and four vice-presidents—one for each of the students' four major concerns:

- At Berkeley, the students voted to establish a director of finance, and elected to this post "a person . . . with extensive experience in writing foundation grant and government grant applications, Mark J. Maves, a fourth-year student at University of California-Berkeley." Which seems a level-headed way to pick a vice president, right? Further, "the director of finance is not simply a treasurer. . . . The major effort of his program is to generate new sources of revenue for the organization and its programs. . . . We believe that if our organization is to have real legitimacy, we must shoulder much more of the financial burden of our programs than we have in the past." And that's the kind of communication your typical average Establishmentarian can accept—and respect.

- The Public Education Program (headed for the ASC by Bruce Webb, 5th year student at Montana State University in Bozeman) is a concept all can agree with: "The development of a constituency responsive to the issues we, as architects, feel are most important." Such a program has, of course, been underway for some years within the A.I.A., and most effectively at that. But Siff, in "The Turning Point," adds a refreshing line: "Maybe then in 10 to 20 years, we might have public officials—city council-

men, school board members, even state legislators—who would understand the planning process and, therefore, would not be afraid to fund planning projects."

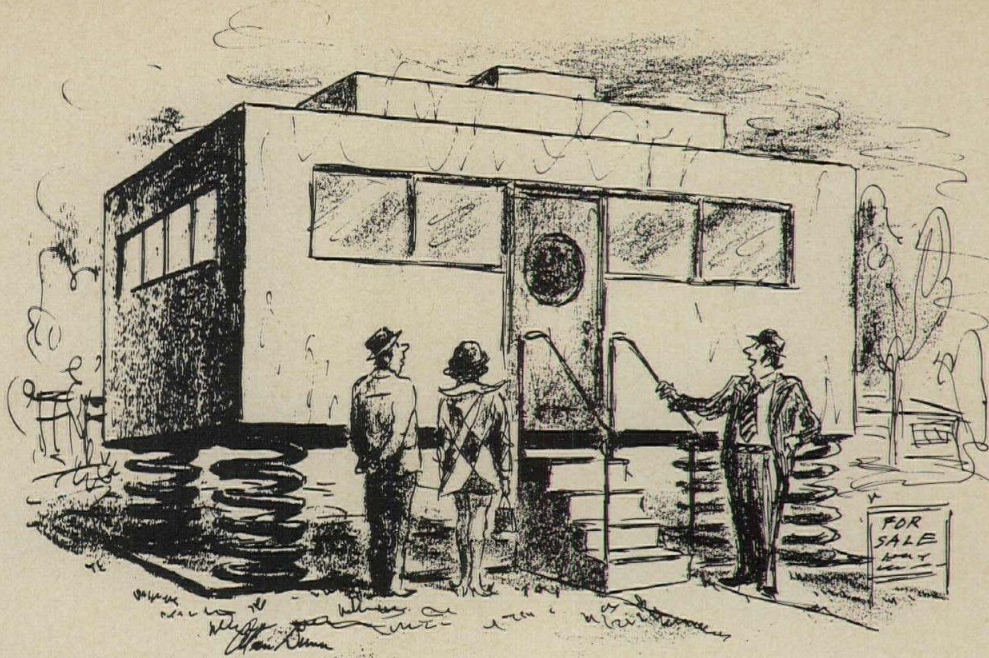
- Architectural education—another of the ASC's four major programs, headed by Bob Graham of Howard—has, of course, been in a very special turmoil of its own. But consider this thought from "Turning Point": "[The student] must be a generalist before he can creditably narrow his view. When he begins to specialize, he should have some fix on the implication to the profession of his specialization. He must know how his activities will or should fit into the profession as it is practiced today. If he defines for himself a role that does not relate to the traditional practice of architecture, he should . . . be prepared to defend articulately the way in which his personal definition of architecture will contribute to the future of the profession." Fair enough? Fair enough.

- The Community Design Centers are the fourth area of major commitment by the students. The major effort by ASC vice president Jim Miller, another Berkeley senior, will be to increase the liaison between the schools, the CDCs, and the practitioners who are involved. (CDCs have, of course, been increasingly effective across the country, and they will be reported on in an early issue).

Finally—certainly the most symbolic and potentially the most effective evidence of student-practitioner collaboration—students have been named to the steering committee of 37 of the A.I.A.'s 45 standing committees. Which seems a "turning point" of great merit on the part of the A.I.A. board.

Thus, some communication and some accomplishment—steps in the right direction towards real communication and accomplishment—architects and future architects working together on the real problems of architecture.

—Walter F. Wagner, Jr.



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Are architectural employees headed for unionism?

There is no question that many personnel practices in architecture are far behind the times and have no place in a profession whose stock in trade is the forward look. Yet there they are, relics of a day long gone and an almost Dickensian way of running an office and handling people. No matter how good those old days may look to some old-timers, they look terrible to a lot of younger architects.

Employers, on the other hand, have a fairly natural resistance to change: if their practices are going concerns, the instinct is to continue what contributes to the success, however moderate it may be. Yet the situation is not a stalemate between adversaries, though it sometimes borders on that. Change is in the air, and change from some of the outmoded ways of architectural practice can only be for the good.

The matter of employer-employee relations is no easy, simple one to resolve. But it won't disappear just by wishing it weren't there.

A few months ago the Organization of Architectural Employees, a California group, tired of waiting for answers to its requests for improved working conditions, took action itself. It petitioned the National Labor Relations Board for elections in five San Francisco offices in the hope of becoming the bargaining agent for their employees. (News Reports, March 1971, page 36.)

The regional NLRB, sensing a precedent-setting outcome, passed the case along to Washington where it now waits its turn on the National Board's agenda. Thus, OAE, and the whole smouldering matter of employer-employee relations, and unionism, became a national concern.

It is not only money, although money is an important part of the problem. Architectural employees are paid less, despite their years of professional training, than many

workers in construction. There is the matter of benefits—health and life insurance, retirement, pensions—and, very significantly, the matter of professional status. They are not recognized, they say, in their work situations or in A.I.A., as members of the profession, and they want a part in determining the future of their profession. They want to be part of the boards and commissions and committees that set up the conditions of practice, and they feel that since these boards and committees are determining the conditions under which they have to work, they should be represented when the decisions are made. It must be remembered that these employees are a new breed—they are not the old apprentices, expecting to go out on their own as soon as they had enough experience and a license. Many of today's employees do not expect to open an office of their own. They want to find opportunities for advancement within an office.

Employees—and employers—however, can take heart at recent events which show that attention is being given to their complaints. The standards of practice which the Northern California Chapter, A.I.A., proposed to its members have been adopted, and a task force is presently exploring means of enforcing the mandatory clause on which they are based. This first set of practice standards should make it easier for both employer and employee to know where they stand and what they need to do. It is no perfect document, says Elmer Botsai, chapter president, but it is a first step and, as he says, a "necessary one if we are to remain a viable professional organization representing employee and the employer."

The same concern for retaining and strengthening the Institute's position as an organization of both employers and employees underlies action by the Institute's board of directors at its March meeting in Beverly Hills. A strong resolution of intent, drafted by the national task force on employer-employee relations, of which James

Carroll is chairman, was passed by the board. It reads: "Resolved that the American Institute of Architects develop recommended standards of employment within the profession, including, but not limited to, basic compensation, employment benefits such as health, life, accident and liability insurance, and personnel practices including vacation and sick leave, with portability where applicable, and that the Institute study such internal changes as may be necessary to insure and encourage participation and representation by employee architects on chapter, regional and national boards of directors and policy committees."

Another first step, and a good one. The board hopes to have a draft of national standards of practice for review at its June meeting and for adoption in October.

Incidentally, if that word "portability" has you guessing, it refers to transfer of benefits from job to job. Loss of benefits on leaving a job has been a major source of irritation and frustration. As for the suggested internal structure change implied in the resolution, the A.I.A. feels this is an essential recognition of the employee member. And anyone who has served on committees with some of these members will testify to the vitality of their input. You may not agree with them, their ideas may be all black and white and no gray, but there is no denying their stimulus or their energy.

If out of discontent and controversy can come mutual understanding as well as better working conditions, better professional and human rapport as well as more efficient performance, the turmoil and effort will have been worthwhile. The months ahead will be crucial ones, with opportunity for each side to learn about the other and to act with flexibility and sensitivity to find a way which will preserve the unique professional character of architecture at the same time that it brings its practice up to present-day standards in personnel matters.

—E.K.T.



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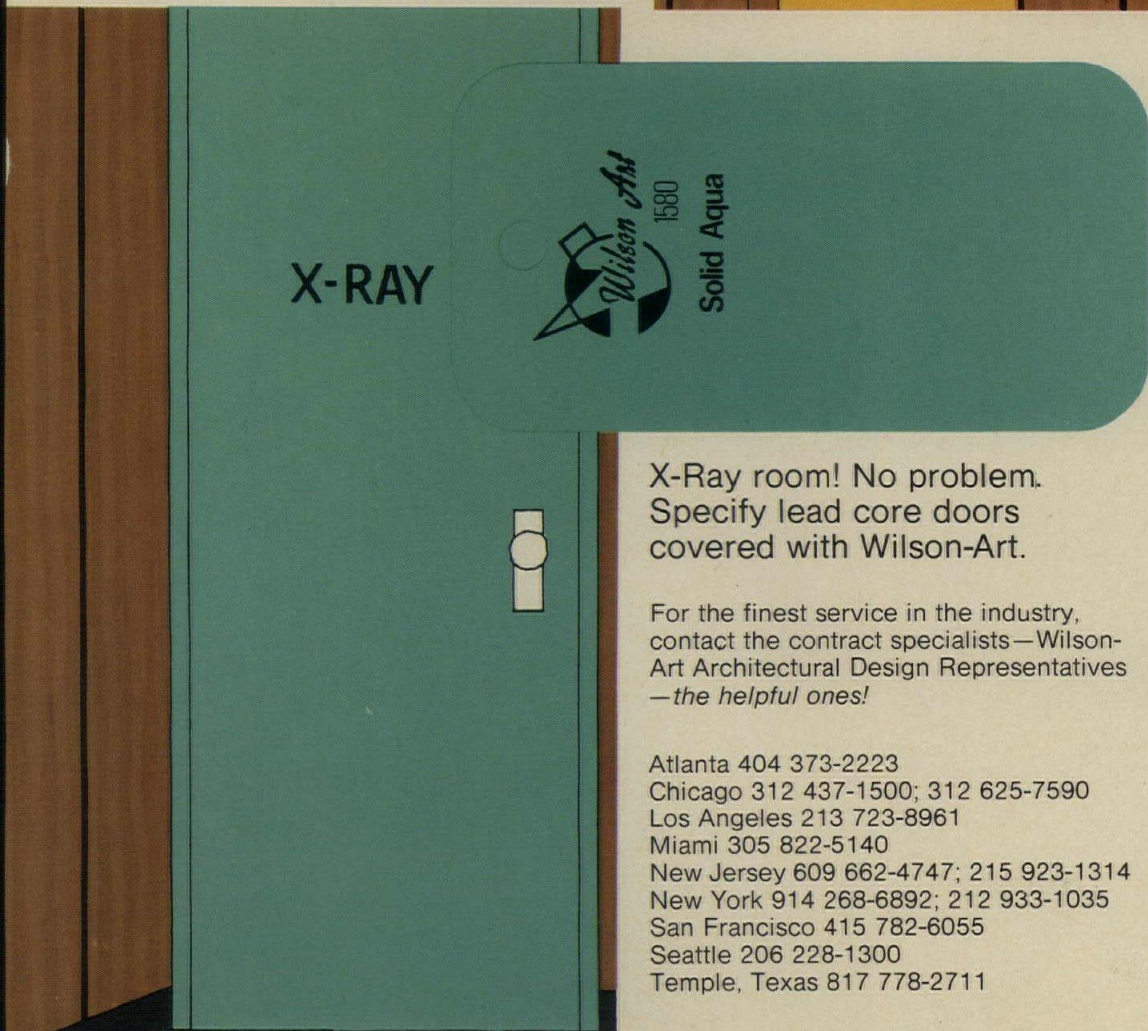
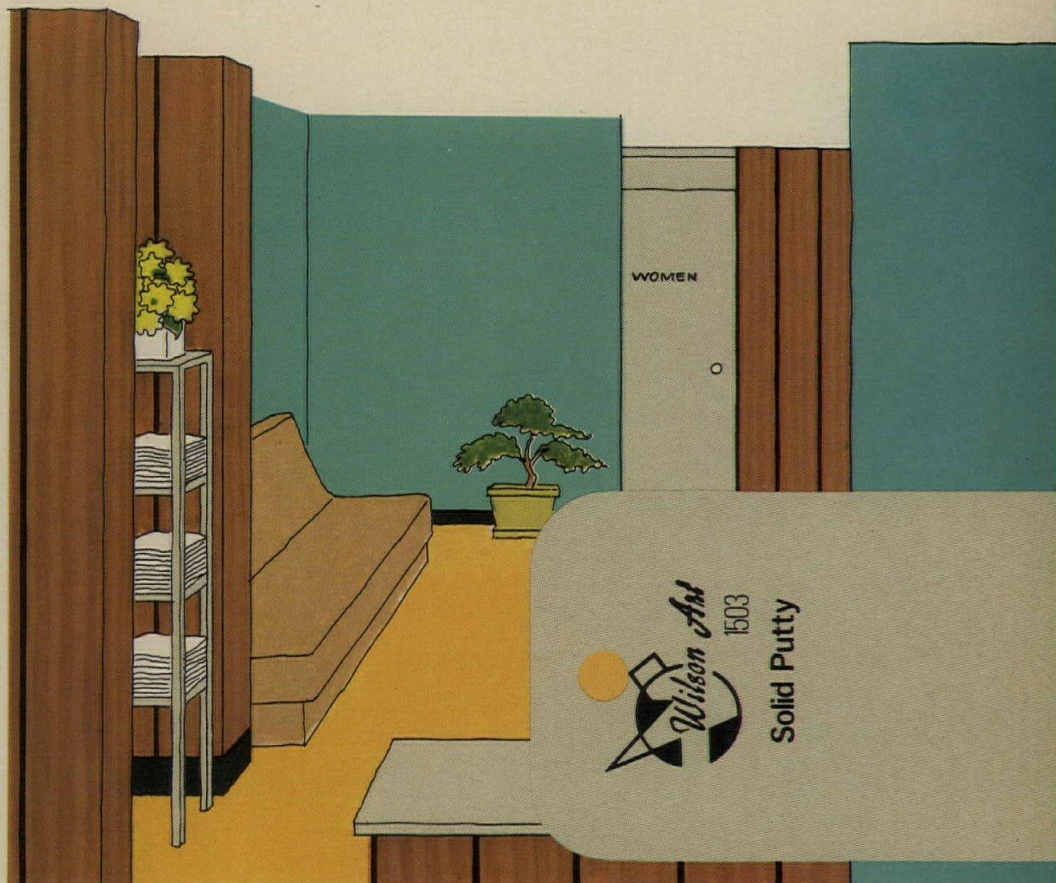

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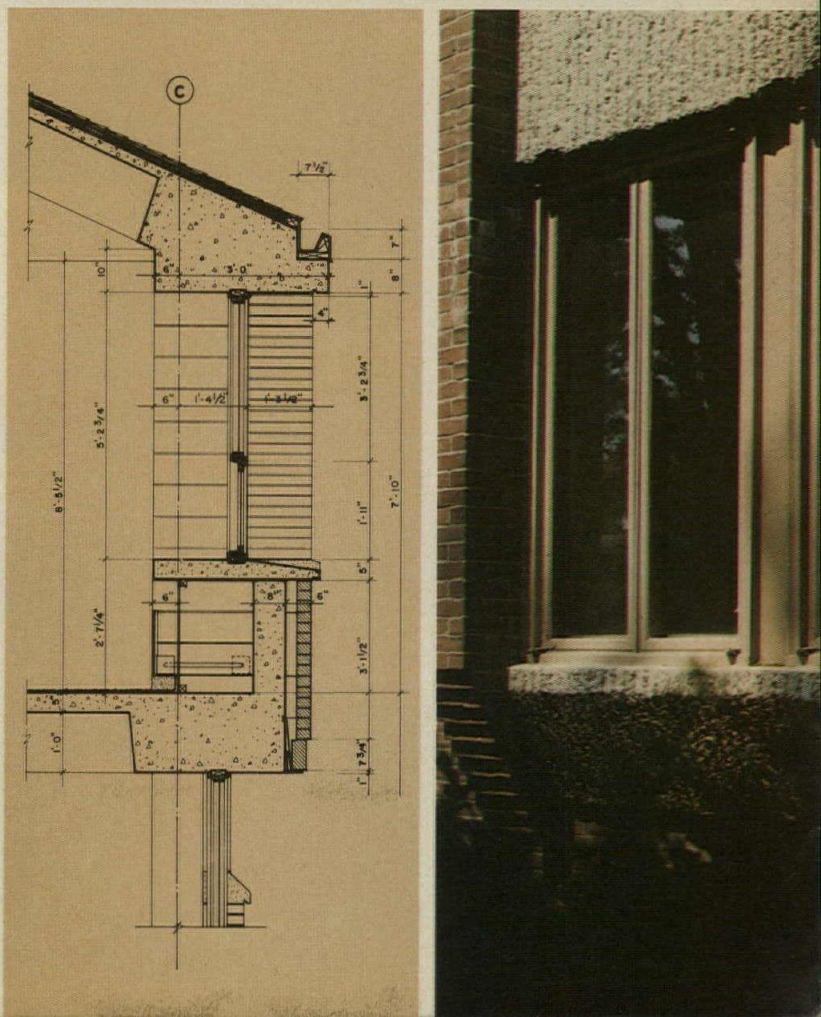
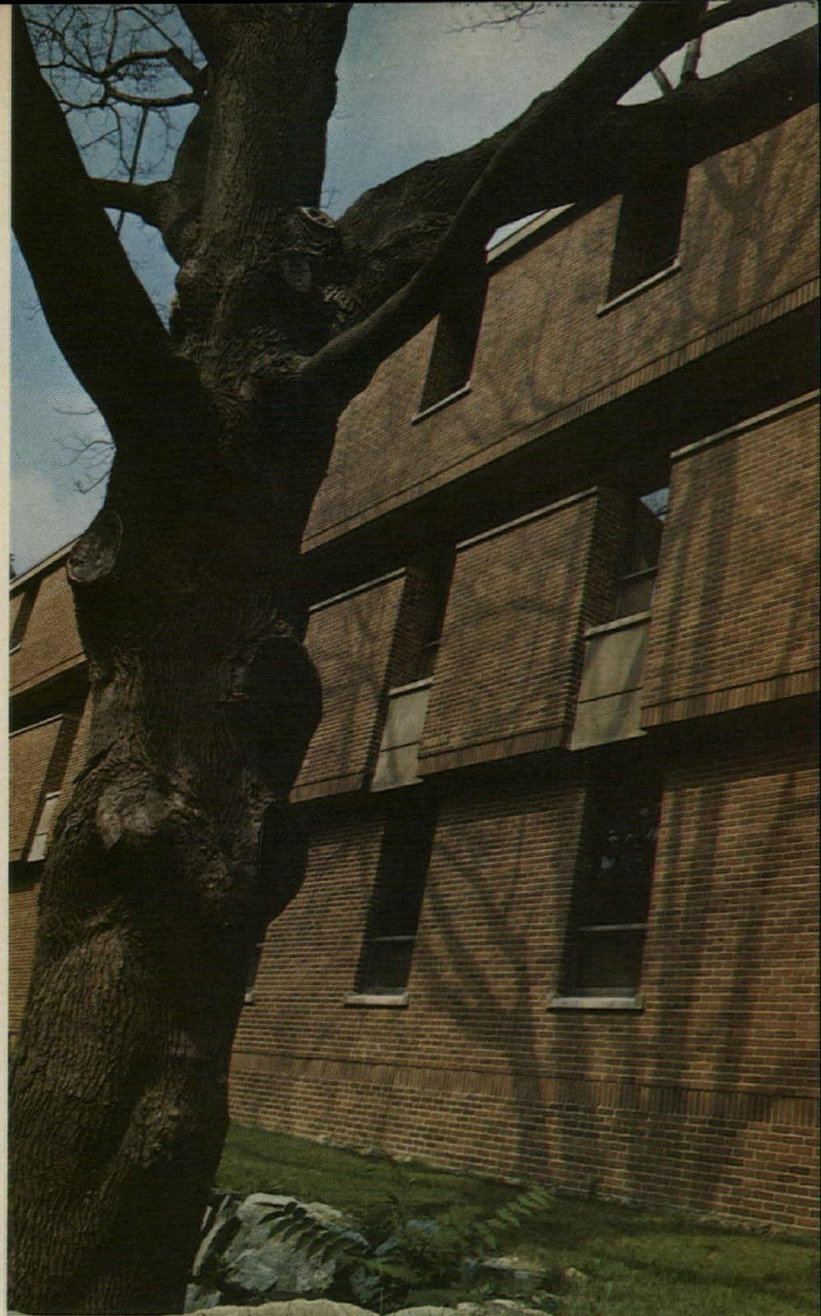
Architects: Steffian, Steffian and Bradley, Inc., Boston, Massachusetts
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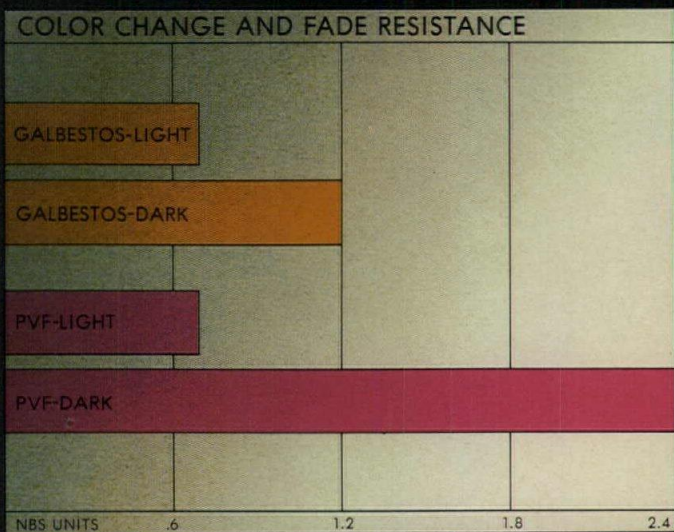


Andersen Windowalls™

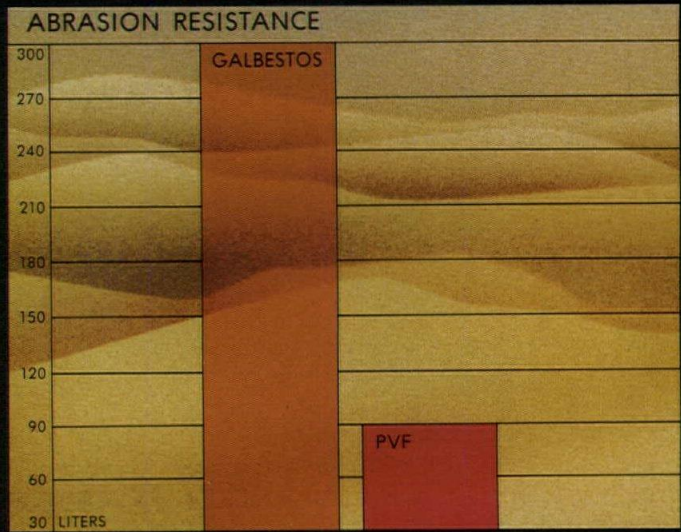
Window Beauty is Andersen

ANDERSEN CORPORATION • BAYPORT, MINNESOTA 55003

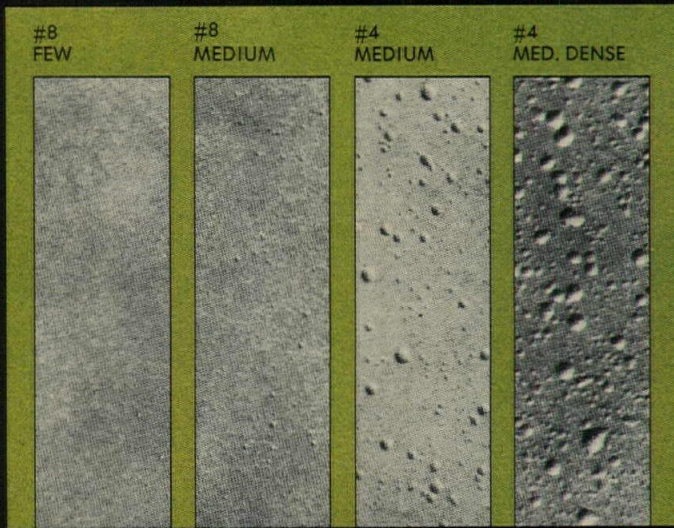




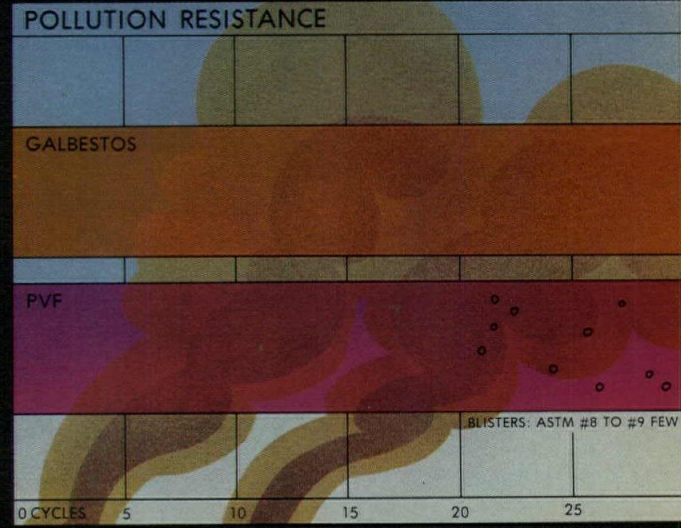
EMMAQUA TEST PROCEDURE. To determine color change, measured in NBS units, specimens were exposed to 205,000 Langley's of UV equivalent to 18 months in Florida at a 45° angle South. Results: Light-colored PVF and Galbestos both registered the same color change. Dark PVF changed 2.4 NBS units. Dark Galbestos changed 1.2 NBS units.



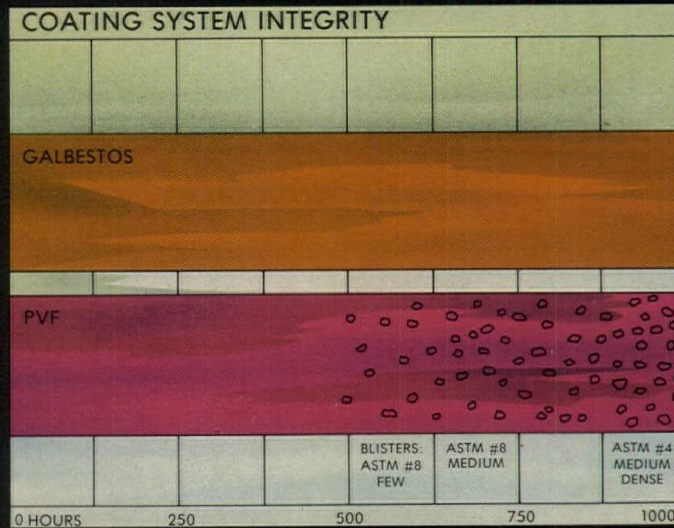
ASTM D-968-51 TEST PROCEDURE. Determine number of liters of falling sand required to wear through coating to expose metal. Results: PVF test samples averaged 90 liters to metal. Galbestos not worn through to metal after 300 liters.



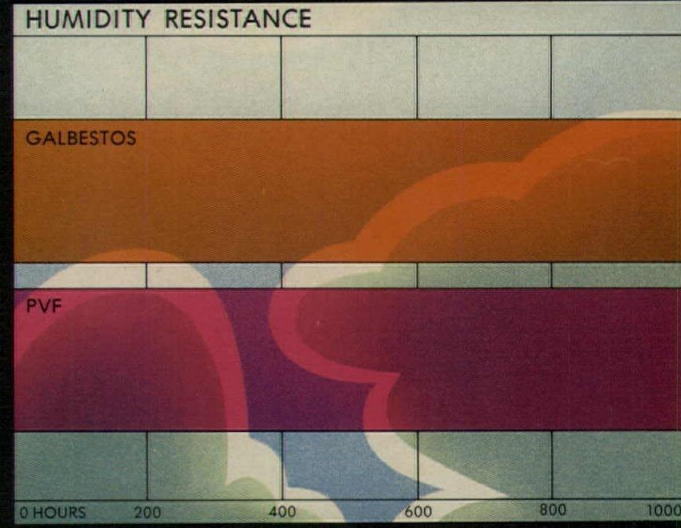
ASTM D-714 is a photographic reference standard that evaluates the degree of blistering under test conditions. Two scales are used: Size, from 10 (no blisters) to 2 (the largest blisters) and Dense, Medium Dense, Medium and Few, to designate frequency. Illustrated above, at actual size, are selected examples of ASTM photo standards.



KESTERNICH TEST PROCEDURE. Expose panels to a specified number of cycles, each consisting of 8 hours in enclosed cabinet holding 2 liters distilled water and 2 liters each of dry sulphur dioxide (SO₂) and dry carbon dioxide (CO₂) at 104°F (40°C) followed by 16 hours of drying at ambient temperature. Results: After 30 cycles PVF showed blistering ASTM #8 to #9, Few. No blisters on Galbestos.



ASTM B-117-64 SALT FOG TEST PROCEDURE. Samples continuously exposed to 5% salt fog at 95°F for 1000 hours. Results: PVF showed Few ASTM #8 blisters at 500 hours, and ASTM #4 blisters, Medium to Medium Dense at 1000 hours. No blisters on Galbestos.



ASTM D-2247-68 TEST PROCEDURE. Expose samples of PVF and Galbestos to 100% relative humidity at 100°F for 1000 hours. Result: All samples tested showed no significant change.

Improved Galbestos® outperforms PVF paints in independent tests.

Robertson produces wall systems using both products; however, independent test results conclusively prove that improved Galbestos is superior to fluorocarbon (PVF₂) paint finishes applied to galvanized steel. Conducted by the United States Testing Company and the Norwegian Institute of Technology, the results show that Galbestos has far better resistance to abrasion, pollution and corrosion than PVF finishes, and is equivalent to PVF in color change and humidity resistance.

This means that Galbestos walls and roofs will require much less maintenance and will far outlast finishes "guaranteed" for 20 years. Your buildings will get years of extra protection from sun, rain, pollutants, abrasives, wind and dirt. The reason: Galbestos' combination of zinc-coated steel, impregnated asbestos felt, and a new, tough, weather-resistant polymeric outer coating. This multilayer protection system is 15 times thicker than PVF paint.

H. H. Robertson is now offering and recommending a new type of performance specification for metal walls and roofs with Quality Assurance Provisions based on these independent tests. Briefly, this specification calls for random samples from the job site, mutually selected by the specifier and the manufacturer, to be subjected to specified independent tests. Failure of the samples to pass this testing will be cause for the entire lot of material to be replaced at the expense of the manufacturer. This is real Quality Assurance! We would like to send you the complete recommended performance specification, copies of the independent test reports, and product data file. Write H. H. Robertson Company, Two Gateway Center, Room 1115, Pittsburgh, Pa. 15222. Or, call your local Robertson representative.

ROBERTSON

For more data, circle 8 on inquiry card

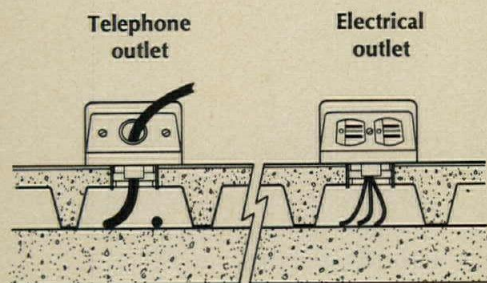
Access flooring solves office remodeling problems

...economically and for years to come.

By using Weber access flooring Caterpillar Tractor Co. found an economical solution to a number of familiar remodeling problems. While a comparison of initial costs with other methods favored the access flooring, future cost savings were the real deciding factor.

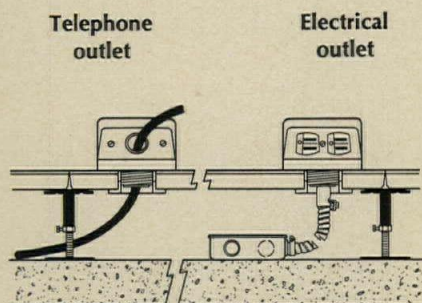
Caterpillar's Building TT in East Peoria, Illinois was built in the 1930's. Its solid concrete floor contained no electrical raceways and, by 1970, was as much as 3 inches out of level in places. Remodeling of the building entailed two requirements: (1) sufficient underfloor capacity for electrical and telephone services, both present and future, and (2) a level surface for economical installation of movable wall partitions.

Both requirements could have been achieved by pouring a new concrete slab with raceway over the old one but only at the loss of flexibility of future office rearrangement and probable wiring changes. Caterpillar records show that relocation of just one desk telephone costs from \$17 to \$25 when a tiled concrete floor must be drilled to reach a conventional raceway.



Slab-on-slab, with raceways

A Weber access flooring system with 27" x 27" panels, surfaced with one-piece vinyl asbestos tiles and supported on 6" adjustable pedestals, proved to be the bet-



Access Flooring on old slab

ter solution. The raised floor provides adequate space for present and future wiring. Floor outlets can be located practically anywhere in a matter of minutes and, when necessary, a floor panel and outlet often can be moved as a unit when a desk is relocated. Further, installation of the system produces a level floor—one to which wall partitions can be quickly fastened.

This floor system fills another Caterpillar requirement, resistance to water penetrating the underfloor area. The automatic floor scrubbers used at Caterpillar dispense a detergent solution as they operate. To prevent the possibility of waste water build-up in the underfloor cavity that might damage electrical wiring and telephone lines, Weber developed a special Dual-Durometer edge molding for the

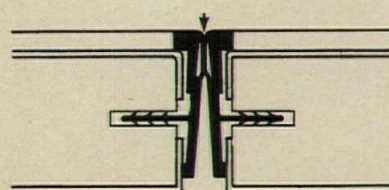
modular floor panels. It incorporates a soft, flexible vinyl rib that effectively seals the joints between panels and restricts leakage of water and air.

Detailed cost comparisons were made at Caterpillar between the alternative methods of floor renovation. It was found that the access flooring system, even with the Dual-Durometer edge, cost only 2% more than the conventional method. Considering the unlimited flexibility of office layout, the savings in future wiring changes, and the economies in partition installation, Caterpillar will realize significant long-range savings from the Weber access flooring system. (Installations of this type range from \$2.65 to \$2.95 per sq. ft., exclusive of electrical and telephone services.)

The application of access flooring in both new and remodeled buildings—including offices, schools and laboratories—is the subject of some informative literature that's yours for the asking. Write or call Weber Technical Products, Division of Walter Kidde & Company, Inc., 1340 Monroe N.W., Grand Rapids, Michigan 49502. Phone 616-361-7341.

See our catalog, No. 13.16/We, in Sweet's Architectural File.

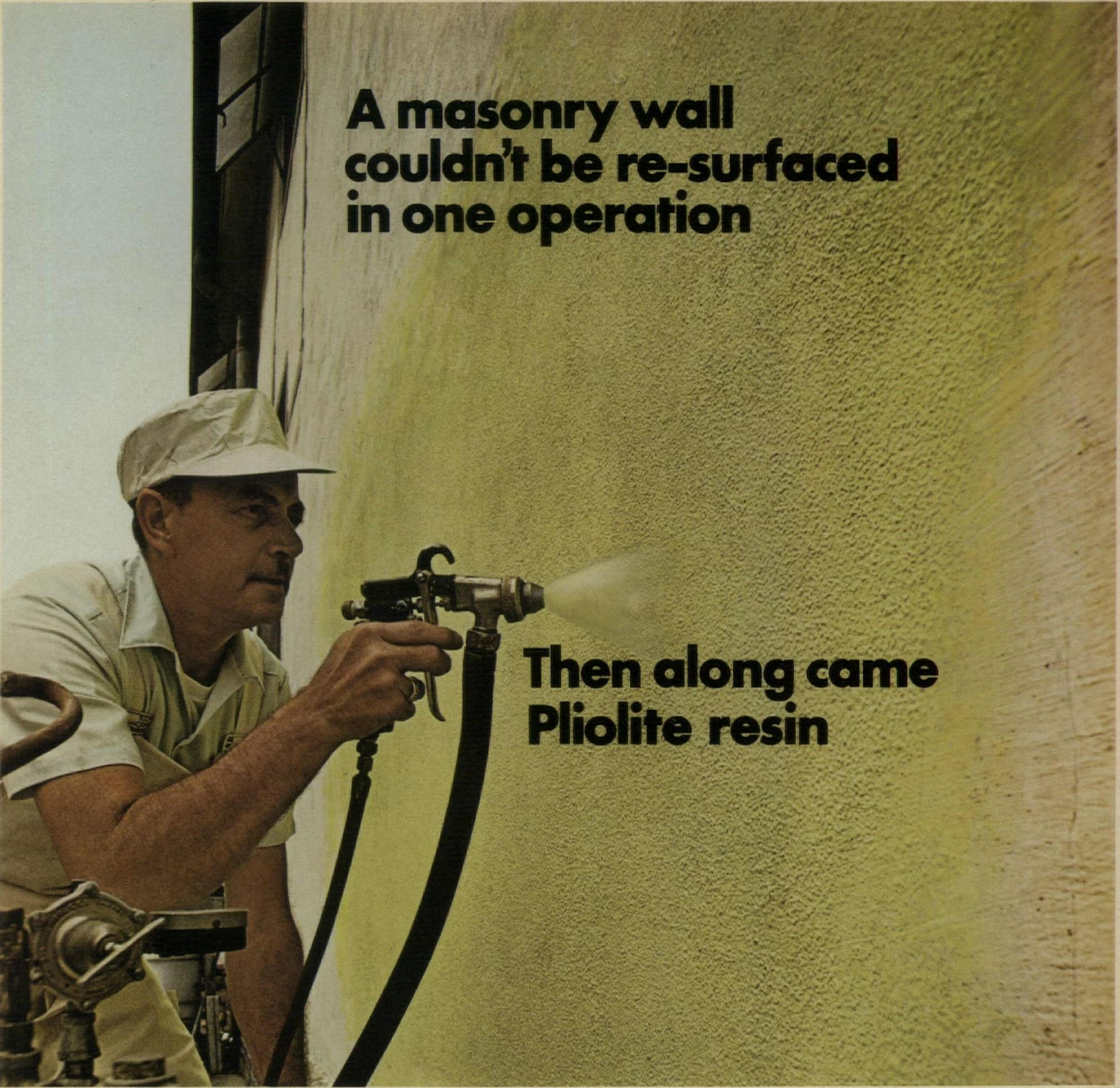
Compressed seals prevent seepage water



Patent applied for

Dual-Durometer Panel Molding

For more data, circle 9 on inquiry card



**A masonry wall
couldn't be re-surfaced
in one operation**

**Then along came
Pliolite resin**

Re-surfacing of masonry walls was a tedious, multi-step operation of plastering, stuccoing or re-siding.

One paint company had an idea for a surfacing compound that would do the entire job in one step. And also result in a textured surface.

They came to Goodyear Chemicals to get the resin to serve as the vehicle for the paint. We recommended PLIOLITE® resin.

As a base, PLIOLITE helped the paint spray on readily—to a coat ten times the thickness of a coat of regular paint. PLIOLITE resin prevents the new finish from chipping or peeling itself. It stands exposure well enough for exterior surfaces and looks good enough for interiors.

With their new texture paint, that company now has a considerable selling edge in their market.

As a market-oriented company, we've built our reputation on turning a chemical breakthrough into a selling edge for our customers.

If you think PLIOLITE resin can be the answer to an idea you have, the man to speak to is Bill Smith, Product Manager, at 216-794-4867.

Or write: Goodyear Chemicals Data Center, Dept. E-84, Box 9115, Akron, Ohio 44305.

**Get your selling edge from
Goodyear Chemicals**



can this really be porcelain-enameled steel?

every graceful square foot of it.

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

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

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

BETHLEHEM STEEL



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



DYEABILITY

For more than ten years, Cyanamid has been constantly adapting Creslan® acrylic to fit the many and varying needs of the carpet industry. The result

is a complete range of Creslan fiber types engineered for specific dyeing methods.

Whether your carpet supplier uses package-dyeing, stockdyeing, tow-dyeing, skein-

dyeing, piece-dyeing, continuous dyeing, cross-piece-dyeing or even printing, we have a Creslan fiber type precisely right for the mill's method and equipment.

The mill that serves you may need only one of these types, but *we have the one they need.*

This means you have the widest possible choice of colors in carpet lines made with Creslan acrylic fiber, because we have gone further in the development of special carpet fiber types than anybody else in the acrylic business.

CYANAMID
Creslan®
LUXURY ACRYLIC FIBER

Dyeability is only one of the qualities that make Creslan acrylic the balanced fiber. Look for further reports on: FIRE RETARDANCE · LIGHT FASTNESS · RESILIENCE · BULKING · ANTI-STATIC.

Creslan acrylic fiber is a product of American Cyanamid Company, Wayne, New Jersey.

For more data, circle 11 on inquiry card

New Delta 2000 lets you scale down specs now... and scale up later...without costly rework. Brings in building automation on a tight budget.

You know what can happen with ordinary building automation systems when the total construction bid comes in too high. Back to the drawing board!... redesigning the whole job.

But *not* with Delta 2000! It has *downward* capability...lets you drop out modules cut back functions, with


no tedious rework of your initial plans.

And it can grow later...all the way to a full computer-based system, without ever scrapping a single piece of original hardware!

Only Delta lets you scale up/down this easily, economically. Contact Honeywell, G2118, Minneapolis, Minn. 55408.

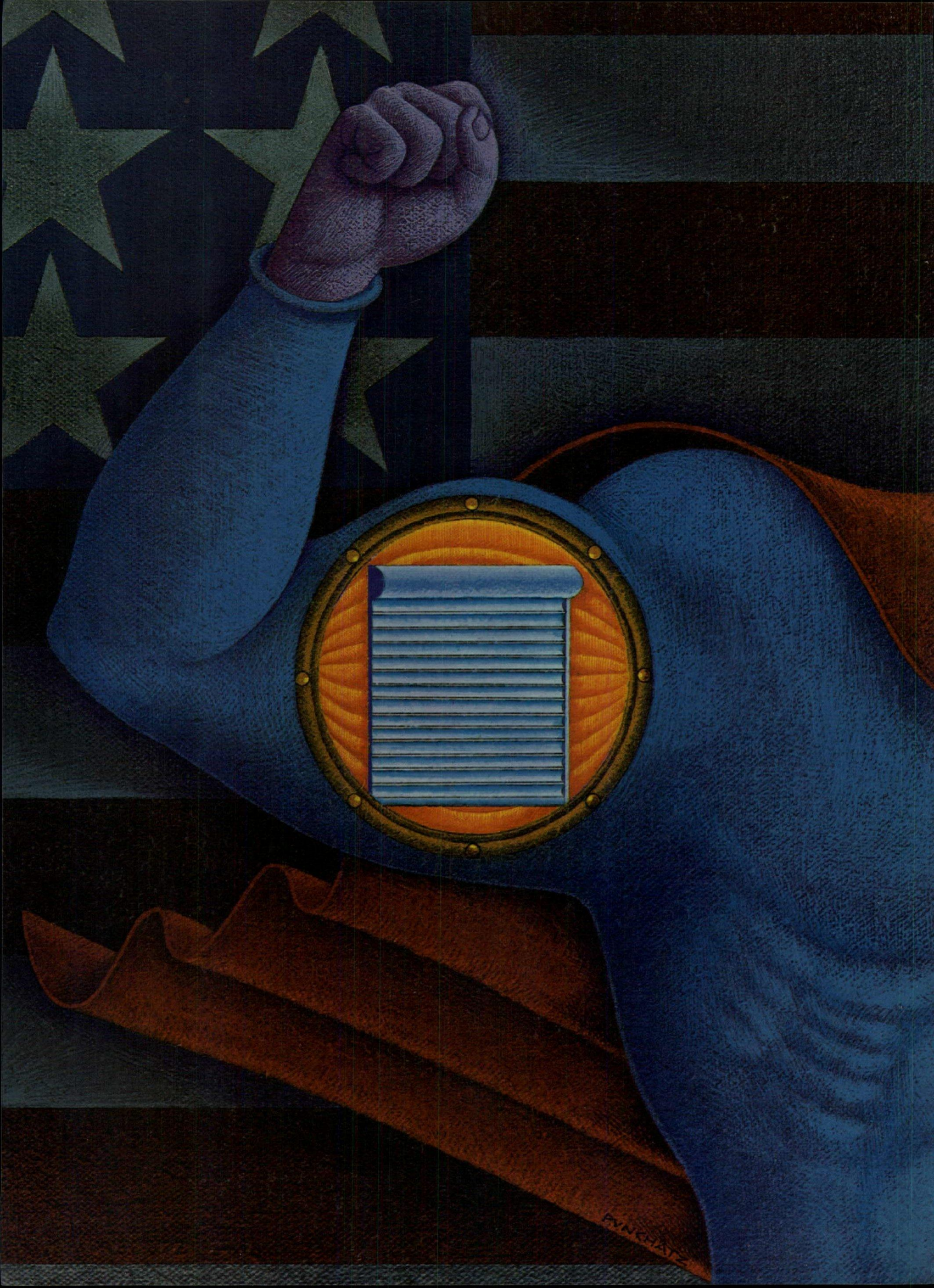
Honeywell

The Automation Company



The tight-budget machine.

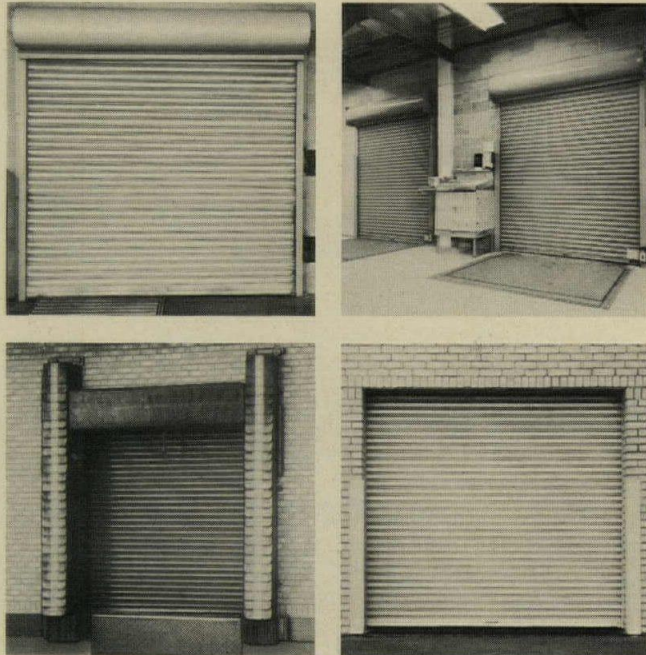
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BYNOR

Super Door

That's what our Rolling Metal Doors are. They're versatile. Durable. Long-lasting. In short, Super. □ Rolling Metal Doors and Grilles are part of the vast array of doors and related equipment offered by our nationwide network of factory-trained distributors. When you specify any Overhead Door product, you do so with the utmost assurance that it will be delivered to your jobsite on time. □ Special Engineering and Design Service. . . new product development. . . full one-year warranty on all products. . . consistently top-drawer quality — these characteristics reflect our basic business outlook at Overhead Door. We market the greatest variety of door designs, functions, and materials from one source in America. And we've been doing it for 50 years. □ Specify Overhead Door products. You can live with them. Because they're Super.



THE
"OVERHEAD DOOR"
TRADE MARK

The electrical promise of tomorrow...



needs
the electrical
contractor of today

The integrated electrical ceiling. Offering great design flexibility, it promises comfort and efficiency for years to come. It heats, cools, lights, and carries communications . . . thanks to electricity.

Your buildings need a lot of power — electrical power — to sustain a modern Electro-environment. An environment properly heated. Properly cooled. Properly lighted. An environment where intercoms and business machines and background music can all get along together in harmony . . . thanks to a qualified electrical contractor.

He, and he alone, possesses the theoretical and technical skills to translate new designs and concepts of electrical technology into working, functioning realities. Trust the qualified electrical contractor to wire your building safely. To anticipate future as well as initial power needs. To coordinate the work of other specialists — carpenters, sheet metal men, heating and refrigeration experts — while he himself handles everything electrical in such installations as integrated ceilings.

Remember: your qualified electrical contractor guarantees performance not only on the electrical functions, but on the entire ceiling installation he oversees as well.



National Electrical Contractors Association
Washington, D. C. 20036

Concrete now comes two ways, warm and cold.



The architect is now freed from the bonds of cold gray concrete. Because Trinity Warmtone now gives you warm, tan concrete, naturally. Use local aggregates. You still get warm concrete.

Looks good without special finishing treatments. Trinity Warmtone derives its rich natural tan color from the manufacturing process. Contains no pigment. Color consistency is guaranteed. The price of Trinity Warmtone varies due to freight, but completed construction cost is less than most alternative design solutions.

Also investigate Trinity Warmtone for color consistent stucco and masonry finishes.

Write for your Trinity Warmtone information kit. Trinity Warmtone. The warmest thing in concrete today.




warmtone™

The New Cement for Creativity in Concrete.
From the People Who Make Trinity White.

Trinity Division/General Portland Cement Company
P. O. Box 2698 • Dallas, Texas 75221 • (214) 638-4700

Visit The Trinity Warmtone Exhibit / 1971 AIA Convention / Detroit

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Whatever you've
had in mind
about
integrated ceilings

...forget it.

Now there is **COMPAC** the ceiling of the 70's.



Compac is the *complete* ceiling that comes in a carton. It arrives completely assembled ready for quick installation by one contractor.

Other ceilings, which may perform some of the functions of Compac, require a diversity of products and materials, and take as many as six steps to install... with responsibility divided among several sources.

Compac is a total system of pre-engineered modules, each including all the ceiling functions... air supply and return, heat transfer, sound absorption/attenuation, and audio communication. Plus, of course, the high-quality lighting

Day-Brite is famous for.

The versatile Compac modules easily cope with columns, and permit complete freedom in the use of movable walls.

When you include Compac in your building plans, you're assured single-source responsibility for the entire installation. And Compac goes up so fast, it literally can pare weeks from a construction timetable, for earlier occupancy and dramatic savings in interim financing.

The earlier you write for the complete story, the sooner you and your clients can start realizing its benefits.



MISSISSIPPI STATE COLLEGE FOR WOMEN, Columbus, Mississippi
ARCHITECT: Fred L. Harrison, William I. Rosamond & Associates, Architects

These 3 alternate "faces" further expand Compac's design capabilities



Flat-Regressed

Architectural
Downlighting

Decorative

COMPAC

... the ceiling of the 70's.



EMERSON
DAY-BRITE LIGHTING DIVISION
EMERSON ELECTRIC CO.
5411 BULWER
ST. LOUIS, MO. 63147

For more data, circle 15 on inquiry card

This advertisement has no headline. It is merely a factual statement, but one that we believe is of vital import to every architect and engineer.

TCS is stainless steel coated on both sides with a terne alloy of 80% lead and 20% tin.

TCS has no equal among standard architectural metals in resistance to atmospheric corrosion.

TCS solders perfectly without the need for expensive pre-tinning, acid fluxes or neutralizing agents.

TCS weathers naturally to a uniform dark gray.

TCS provides built-in safeguards against failure which no competitive roofing or weathersealing material can match.

TCS is a product of the Follansbee Steel Corporation, Follansbee, W. Va.

For more data, circle 16 on inquiry card

Flow-Matic by  PRICE PFISTER



**american
beauty**

PRICE PFISTER

Manufacturers of Plumbing Brass • Pacoima, Calif. 91331
• Subsidiary of Norris Industries •

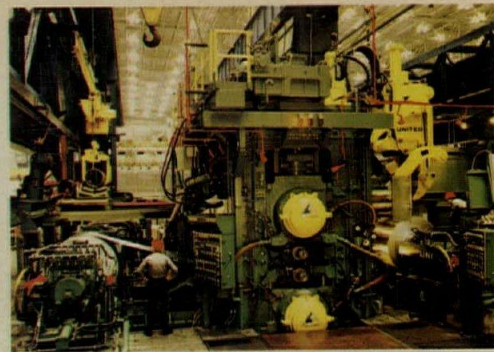
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**COLOR
DYNAMICS®**
makes the
most of
existing light
in an
industrial
plant...

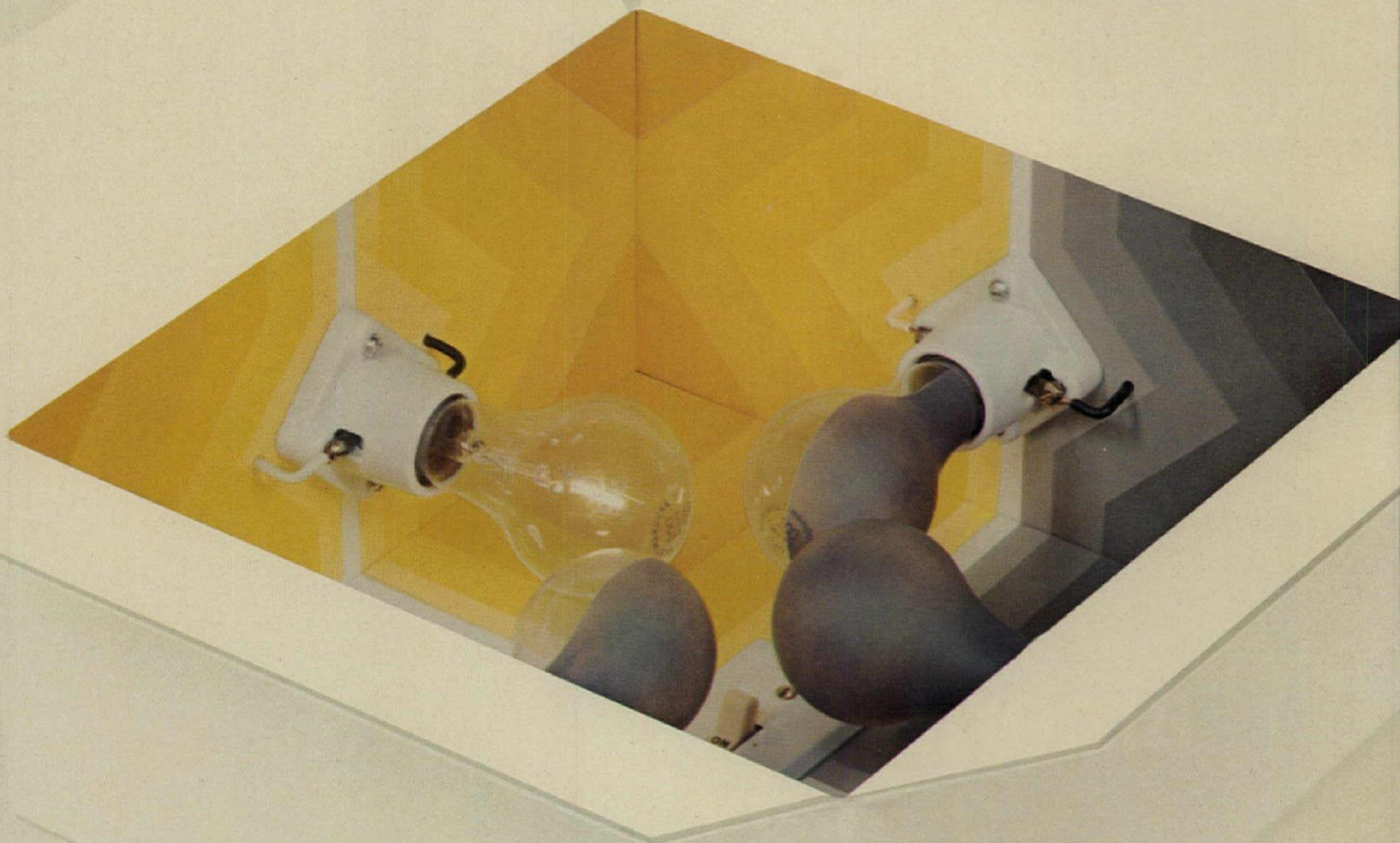
**for greater
productivity.**

All too often, no more thought is given to painting the inside of a plant than to painting the inside of a cardboard box . . .

In a remodeling project, cost considerations may dictate the retention of existing lighting facilities. The *Color Dynamics* system provides the right colors to properly utilize the available light—which could result in improved production, both in quality and quantity. This is one of the advantages of the *Color Dynamics* system. Yet, *Color Dynamics* does much more. It enables you, the architect, to select and specify a color system that could also result in fewer accidents, less absenteeism, greater efficiency and reduced eye fatigue. It's a valuable aid in servicing your clients. When you specify *Pittsburgh Paints* for renovation, or new construction, you also provide economical, long-lasting paint protection. Write for free 16-page booklet on *Color Dynamics*. PPG Industries, One Gateway Center, 3W, Pittsburgh, Pa. 15222. PPG: a Concern for the Future



PITTSBURGH® PAINTS



**COLOR
DYNAMICS®**
the
inside
story

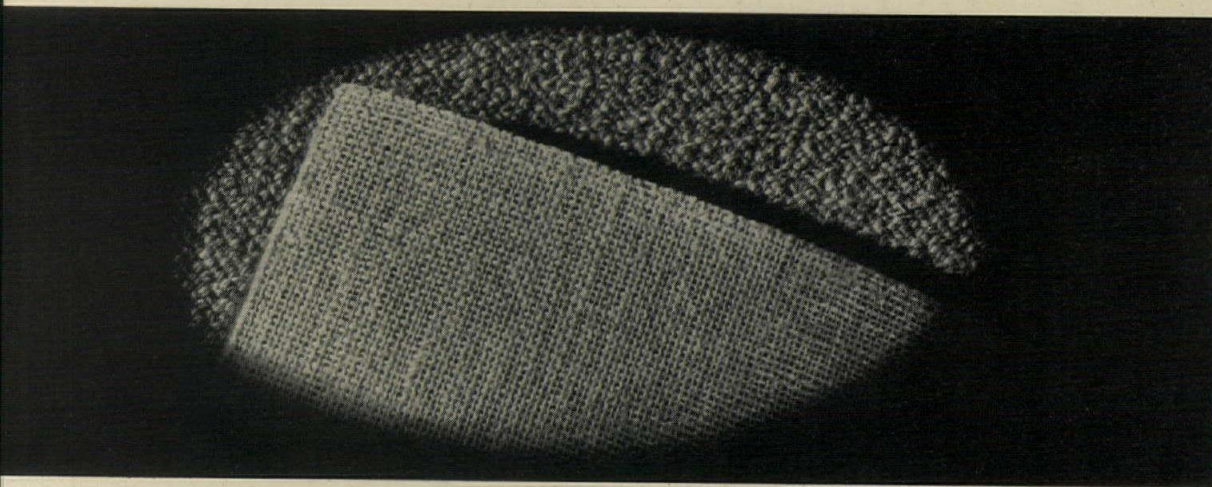


For more data, circle 18 on inquiry card

Key to successful glue-down carpet installations...

JUTE

double carpet backing



The benefits of this system with double jute-backed carpets are well known:

- Easy wheel and caster mobility (no pads needed under secretarial chairs.)
- Lower cost than same carpet plus separate underlayment, or cushion-backed carpet with equal pile specifications.
- Protection against seams opening, with no lateral stress under traffic.
- Sound absorption, low-cost maintenance, aesthetics, insulation, comfort underfoot, improved morale.

But why only jute backing? For many reasons, including:

- Jute's interstices and fibrous qualities assure secure bond with minimum adhesive, fully absorbing compound on the surface.

- Adheres to any sub-floor, or over previously installed hard-surface flooring.
- Unmatched dimensional stability, vital with cut-outs for outlets and junction boxes.
- Jute's thickness, over double that of other non-cushion backings, provides extra area for beading with adhesive at seams.
- When pulled up, carpet is generally intact for re-installation.
- Helps meet fire safety codes, if carpet otherwise qualifies.
- When installed over padding in selected areas, jute hooks over tackless strip gripper pins without loosening up and buckling later.

Write for Architectural Guide Specification
by William E. Lunt, C.S.I.

JUTE CARPET BACKING COUNCIL, INC.

25 Broadway • New York, N. Y. 10004

American Industries, Inc. • BMT Commodity Corp. • C. G. Trading Corp. • Delca International Corp. • Dennard & Pritchard Co., Ltd. • A. de Swaan, Inc. • Robert F. Fitzpatrick & Co. • Gillespie & Co. of N. Y., Inc. • Hanson & Orth, Inc. • O. G. Innes Corp. • 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.

For more data, circle 23 on inquiry card

Editorial reports on double jute-backed carpet glue-down



Jute installations proven successes

"The only case studies documented to date have been of no-pad installations with double jute-backed carpeting — with success reported in each instance."

—from BUILDINGS, February, 1971



Hospital's experience a guide for any site

"Does direct jute glue-down really work? To get the answers . . . an earlier installation was revisited that has received grueling treatment . . . It is a large and exceptionally active general hospital — St. Luke's in Duluth, Minn. St. Luke's added a sizeable new wing and carpeted throughout all patient rooms, nursing stations, corridors, lounges and reception areas with the direct jute glue-down system.

"Richard K. Fox, administrator of the hospital reported: 'Our experience has been a satisfactory one. So much so that we are using exactly the same carpet and direct glue-down installation method in an older wing now being completely renovated. The carpet . . . has jute primary and secondary backings.

"I have been asked many questions about cleaning problems with carpet, especially with normal hospital spillage situations. We have had no difficulties that could not be resolved with ordinary effort.

"The direct jute glue-down system gives us practically as much wheel and caster mobility as we enjoy in our areas with hard-surface flooring. The difference is hardly noticeable . . ."

—from BUILDING OPERATING
MANAGEMENT, November, 1970



J-M gambles on your built-up roof. You get a sure thing.

With our built-up roofing experts, you really can't lose.

We'll gamble one of our built-up roofing specialists to come and advise you on your roof. Whether you're planning a new building, with a new built-up roof, or are faced with an actual or potential problem in an existing roof, it will pay to call in one of the more than seventy J-M roofing specialists right in the beginning.

He is a man who has been trained in all aspects of built-up roofing and he knows his business (otherwise we don't let him loose).

If our roofing specialist is stumped (it happens), one of our 11 district engineers or research men, who have amongst them over 250 years of intensive experience in built-up roofing, is consulted. And behind them stand the total resources of one of the world's largest producers of built-up roofing materials. A company which has produced roofing materials and solved roofing problems for well over 100 years.

If you're planning a new structure, we will work with you with recommendations for the built-up roof as well as the proper structure and substrate for the roof.

If you follow our recommendations, we'll be delighted to put you in touch with qualified contractors who will use quality J-M roofing materials to install your new roof or bring your old roof up to snuff.

Maybe you'll want to do business with someone else.


Maybe you have a nephew who sells roofing. Naturally, we'll be disappointed. But we won't cry. And, whether you use J-M roofing materials or something else, there is no charge for our inspection and recommendation.

Why no charge? Because we get a lot of business this way. And we believe that even if some jobs go elsewhere, in the end what helps the roof owner eventually helps J-M.

We gamble our time and knowledge. But you have a sure thing in knowing that you have gotten the best possible advice on your roofing problems. Advice which no amount of money can top.

And when we issue a J-M Roof Bond on a finished roof, we gamble again. We match our unequalled experience, our top-quality materials and our engineering know-how against 10-15-20 years of punishment from the elements. And you get a sure thing, a secure roof for a specified period of time.

We like this kind of gamble. To latch on to your sure thing, call your J-M district sales office, or write: Johns-Manville, Box 290 B-1, New York, New York 10016.

Johns-Manville 

For more data, circle 24 on inquiry card

News in brief

The Dodge Index of architect-designed construction held steady in February at 135 (1967 equals 100), showing little change from the level that has prevailed since last November. Right now, the index is running flat at a rate slightly above the average for all of 1970. The temporary suspension of the Davis-Bacon Act is not expected to have any lasting effect on publicly financed construction work.

Building trades are resisting the President's latest wage-price move in construction. AFL-CIO spokesman C. J. Haggerty said the AFL-CIO will use "all legal powers at our command" to fight Mr. Nixon's new wage stabilization plan. On March 29, the Administration reinstated the Davis-Bacon Act, giving labor back its coveted law, which requires payment of pre-determined wages on all government-assisted work. But labor has objected to complicated new wage settlement review procedures. The new Administration order also imposes, with certain exceptions, a six per cent ceiling on wage increases. The newly-installed president of the Associated General Contractors of America, John E. Healy II, has called for a wage and price freeze in the construction industry retroactive to the end of last year. He called for renegotiation of all "inflationary settlements" effective through 1973.

Operation Breakthrough has received some serious criticism from the American Institute of Architects and from the Joint Economic Committee of Congress. In the view of the A.I.A.'s committee set up to evaluate the HUD program, the extremely compressed time schedule "seriously limits attainable levels of the program's objectives and restricts it to merely an implementation program for new techniques." The A.I.A. committee also objected to the avoidance of major metropolitan urban problem areas in site selection and condemned the imposition of several different systems on each site. In no case, it said, was there opportunity to demonstrate a particular system on a scale large enough to be compelling. The Congressional committee complains the program needs to be speeded and that some Breakthrough projects should be expanded to "more realistically simulate mass production". The committee has expressed concern that after almost two years, HUD is only now negotiating contracts to begin production, and also pointed to a "growing belief" that the program is too limited to be meaningful.

A resolution honoring the memory of Whitney M. Young, Jr., executive director of the National Urban League, was passed by the board of directors of the American Institute of Architects last month. It was introduced by A.I.A. vice president Robert Nash and recalled Mr. Young's attack on the A.I.A.'s "thunderous silence" on civil rights in the speech he gave at the A.I.A.'s 1968 national convention. In response to that attack, the A.I.A. undertook its program of Professional Responsibility to Society.

Senate hearings on a new environmental protection bill have been begun. The bill, prepared by the Administration, would increase the power of the Environmental Protection Agency and provide more money for environmental construction. It would, for example, double current Federal spending for waste treatment facility construction.

William Marshall, Jr., a Norfolk, Va. architect, has been elected a national vice president of the American Institute of Architects, replacing George M. White, who recently became Architect of the Capitol (March, page 37). Mr. Marshall has been heavily involved in national policy-making activities of the A.I.A. **Architect and educator Jose Luis Sert received the Thomas Jefferson Memorial Foundation medal** in architecture at the University of Virginia April 13. **Albert Bush-Brown, an architect and former president of the Rhode Island School of Design, has been appointed chancellor of Long Island University.** The university's third chancellor in the last two years, he is the first to assume L.I.U.'s highest administrative office after being recommended by a committee of students, faculty and alumni. **Architect-sculptor Anthony Smith has been named recipient of the 1971 Fine Arts Medal by the A.I.A.** **Bernd Foerster has been appointed Dean, College of Architecture and Design at Kansas State University.**

A conference on air structures, organized by the Building Research Institute, is scheduled to be held at Chicago's Regency Hyatt House May 26. **A program of seminars and lectures on Systems Building and Industrialization** in the United States will be held at M.I.T. June 28-July 2. **A major conference in environmental pollution** as a world problem will be held at London's Olympia Hall June 22-25. **The International Design Conference in Aspen, Colorado** will be held June 20-25. Emphasis this year will be more on ideas than on builders. Speakers will include Buckminster Fuller, Esalen founder Michael Murphy and media critic Gene Youngblood.

New York City A.I.A. bans political contributions by member firms

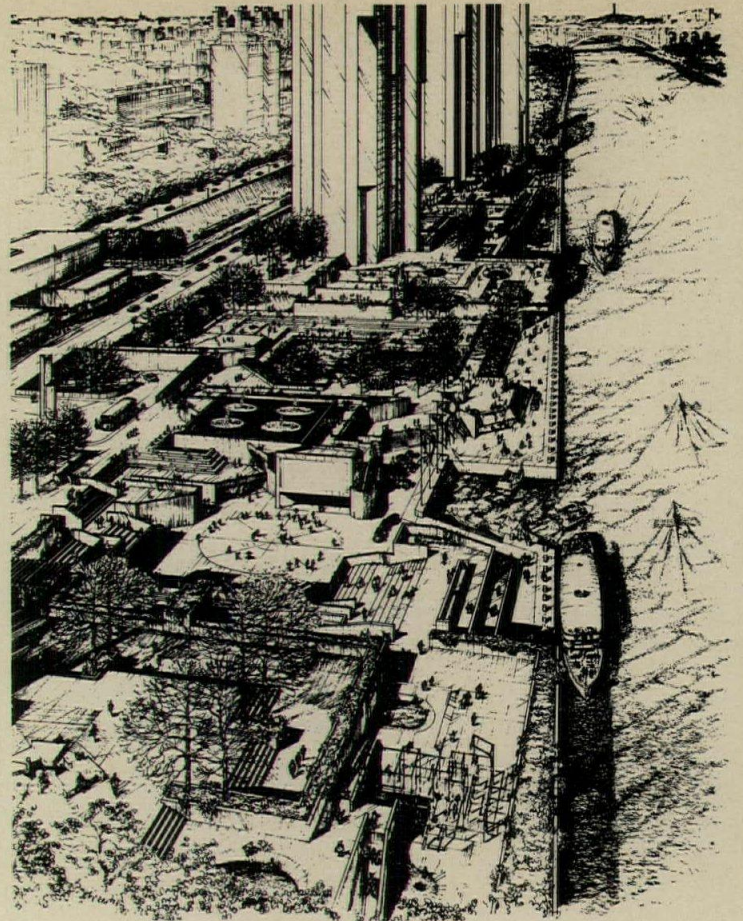
The New York City chapter of the American Institute of Architects, the largest chapter in the country, has banned political contributions by firms whose principals are members. It is believed to be the first instance of a professional society's adoption of self-imposed controls on such contributions. Members of the chapter have also been requested to limit personal political donations to \$500 annually for all candidates of any one party within a state.

The action was sparked by a series of articles published last fall in the Long Island daily, "Newsday" concerning donations by some chapter members. It was reported in the series that architects, engineers and planners were the "targets of a highly systemized collection apparatus operated by top Nassau County (Long Island) Democratic leaders with the cooperation of key officials in the Nassau County Department of Public Works." Under the sys-

tem, contracts for professional services were reported to have been given in consideration of a variety of kinds of political contributions including some demanded and received in advance of the award of contracts for specific projects within the state.

The chapter will work for state legislation to place the same restrictions on political contributions by architectural firms that already exist in Federal laws on corporations and labor unions. It also intends to present resolutions on political donations at the A.I.A.'s national convention in June. A chapter spokesman called this "the real hope for conclusion of our first tentative step. But we would all hope the matter will finally be resolved by Congress." President Nixon vetoed a bill reforming political contributions last year.

The chapter did not reach its decision without considerable disagreement from some members, many of whom were among the larger firms. "Certain political leaders" have also made their discontent known.



High-density park planned for narrow riverbank site

A park which will be "an urban service, not just benches and trees," according to its sponsors, has begun construction on a narrow site along New York City's Harlem River in the Bronx. It was designed by M. Paul Friedberg Associates of New York City.

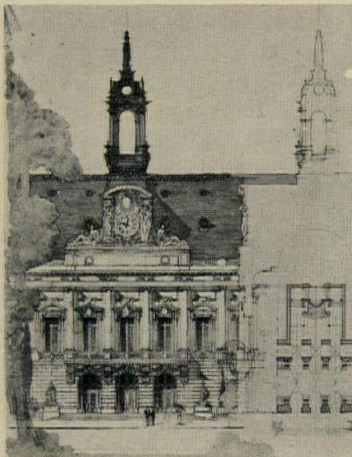
The park will contain facilities for sports, swimming, drama, music, craft work and environmental education, and it will abut an apartment complex (April, page 126) and a school. Organized activities and entertainment will encourage use of the park and make the best of a site which is better suited to action than quiet contemplation, in the

view of its backers, the new State Park Commission for the City of New York.

The park will be in use day and night and all year. A bubble-enclosed swimming pool for 2,000 is planned to be included in the second phase.

The park is meant to have a stabilizing influence on its community, and it is intended to serve far more than the residents of the 1600 units of housing it adjoins. In fact, underprivileged children from other parts of the Bronx will be bussed in during the summer.

Eventually, the park's developers hope to extend it on both sides of the river to transform the riverbanks into closely related residential and recreational areas.



Carl I. Warnecke is dead at 80

Architect Carl I. Warnecke died March 27 in San Francisco. His son,

John Carl Warnecke, continues the international practice they had shared. Carl I. Warnecke was born in Montreal and grew up in the San Francisco Bay area. He studied at the Ecole des Beaux Arts, and upon his return to California, was apprenticed to Bernard Maybeck, among others. In a practice which began in 1918 with the formation of the firm Miller and Warnecke, he designed numerous private residences, public and low-rent housing, civic buildings, schools, and commercial buildings. Mr. Warnecke was well-known for his drawings of architecture. An example from his Beaux Arts days appears left. The firm recently presented a retrospective exhibition in New York of his work.

New design criteria for a changing society stressed at Steel Awards lectures

Architect Paolo Soleri, author Alvin Toffler, architect Richard Saul Wurman and product designer Jay Doblin were the principal speakers at a widely-attended series of lectures recently on United States urban problems sponsored by the American Iron & Steel Institute. The day-long lecture series was held in San Francisco on March 16th, and repeated in New York City on April 1st, the latter session being held in conjunction with the Institute's 1971 Design in Steel Awards Program, in which 24 top awards were presented for steel

design excellence in fields ranging from architecture and sculpture through furniture and small product designs. (See also page 41.)

At the early lecture Thursday morning in New York, Paolo Soleri drew twice the number of 300 registrants allowed in the lecture hall, and the following sessions had to be moved to a larger space. He showed slides illustrating his work over the last ten years, the empirical development of his earth-cast techniques, and the beginning of construction on Arcosanti, Soleri's city for 3,000 people now underway north of Phoenix.

Product designer Jay Doblin's discussion of the roots of the de-

sign process also generated an enthusiastic response from the audience. Doblin emphasized that design in the future—unlike much present and past design—will have to be based on an understanding of user needs, and generate most of its performance criteria from this source, rather than from "clients," or from style traditions.

All of the five lectures in the seminar were organized around the title "America: Two hundred years later" which refers to the development of American design from 1776 through today, and what the future holds as we approach the 1976 bicentennial.

At the awards banquet Thurs-

day evening in New York, 24 top prizes for design in steel were presented, and citations for excellence were given to 55 other entries. Among the architectural prizes awarded were *Best Design in Housing*: Harry Weese & Associates for a residence in Door County, Wisconsin; *Best Design in Low-Rise Construction*: joint venture of Muchow Associates, Haller & Larson, James Ream & Associates, for the Currihan Exhibition Hall in Denver; *Best Design in High-Rise Construction*: Wurster Bernardi and Emmons, Inc., Skidmore, Owings & Merrill, and Pietro Belluschi, for the Bank of America World Headquarters Building in San Francisco.



Multi-level mobile homes rise in Minnesota

A lot of people saw it coming, but somehow they didn't think it would look like this. Yet, while Operation Breakthrough still struggles along, the first "SkyeRise" multi-level facility for mobile

homes, has opened outside St. Paul. When the success of this pilot version is established, say its backers, Mobile Americana Corp. and SkyeRise Terrace, Inc., developments capable of accommodating 100 or more mobile homes will be built in major metropolitan areas—if they don't see it coming.

New high-rise fire safety standards called for by GSA

"Recent fires in modern, well-built, code conforming high-rise buildings have pointed out that existing life-safety standards and approaches are not adequate to handle the problem," according to General Services Administrator Robert L. Kunzig. Because of concern following last year's skyscraper fires (September, 1970, page 36; January, 1971, page 37), the United States General Services Administration held a conference on the subject

last month in Washington, D.C.

At the meeting, GSA's Arthur F. Sampson called for an overhaul of present standards, not only for new construction but also for existing structures, and he called for new analytical approaches to fire safety: "Building design, use, and operational concepts must change and change rapidly and dramatically . . . restatement of old concepts—even to re-emphasize the many values in former methods and systems—will not meet the needs or demands of the general public."

Architect Birkerts begins study of underground planning

Michigan architect Gunnar Birkerts has begun a study of subterranean structures with the aim of proposing some solutions for urban and regional planning. The study, under a grant from the Graham Foundation, will begin by putting down a "manifesto" outlining his philosophy, then head into specific design suggestions with models.

Blasting and tunneling technology is highly developed and comparatively cheap, so it is a field where far-reaching plans can be realized rapidly and realistically, according to Mr. Birkerts. His underground infrastructure within and among urban centers would include nearly half of all transportation, as well as storage and the more automated factories.

Sometimes the infrastructure would surface, and at no time would the city itself be buried underground. Far from it: the underground systems would be designed to unclog some of the present constricting problems but keep and strengthen the basic central cities

we now have, as well as provide outlines for future cities.

Within the central city, similar functions would be concentrated in single structures flexible enough to change with changing needs, rather than in individual buildings constantly going obsolete. Constant destruction and reconstruction of buildings would cease to be part of the city pattern.

Mr. Birkerts is keeping an open mind, and if his research seems to indicate it, he'll throw out his present faith in the high-density city. However, his research is not likely to change his opinion of urban sprawl. He is strongly opposed to megalopolis, a trend he hopes can still be checked. In his new city plan, he would eliminate the "speculative no-man's land" of suburbia, bringing home and work closer together, but also increasing contact with farmland. The pattern would work back to the old center from the new areas.

Many of Mr. Birkerts' urban concepts appear in his master plan for a three-level campus at Tougaloo College, near Jackson, Miss. (October, 1968 page 129).

Chicago Stock Exchange reprieved—for now

Mayor Richard Daley, under strong citizen pressure, has given Chicago's Old Stock Exchange a reprieve, but its fate is not yet determined. Mr. Daley told the Chicago Building Commission not to grant a permit to demolish the 1893 Sullivan-designed structure, and he also appointed a five-member committee to study how the building can be restored and preserved. The recently-formed Landmarks Preservation Council, a private group including many prominent Chicagoans, has proposed transferring development rights to compensate the owners (April, page 41). However, Jerome Whiston, president of Frank M. Whiston and Company,

owners of the building, says he hasn't changed his plans to tear the building down and replace it with a 40-plus-story office building.

"The Stock Exchange Building has become a symbol of where Chicago goes from here," says William Hasbrouck, executive director of the American Institute of Architect's Chicago chapter. Mr. Hasbrouck is optimistic about the building's future, and he believes that all five members of the commission are in favor of saving it. But he warns, "When the commission's report is in, if the mayor agrees that the building can be saved, it will be. If he simply says nothing, the issue may founder on the slippery crags of the finance committee of the city council."

Anthony Adinolfi head of SUCF is dead at 40

"One of the most knowledgeable and strongest advocates of good architecture ever to have the fiscal power to accomplish it [January, page 105]", Anthony G. Adinolfi, died March 31 at 40 of cancer.

Dr. Adinolfi was general manager and chief executive officer of the New York State University Construction Fund. He had guided the state's \$4.5 billion higher education expansion program, said to be the largest in the world, since 1962, starting as manager of planning. He engaged leading architects and planners in his efforts to provide the best possible designs, and he made sure those designs were built and stayed within budget.

Many of the buildings have

won awards, including Edward Durell Stone and Associates' Albany campus and I. M. Pei and Partners' Fredonia campus (January, pages 117; 112).

In 1969, New York's Governor Rockefeller asked Dr. Adinolfi to develop an equal opportunity program in the Buffalo construction industry. This was particularly related to the vast projects planned for western New York, such as the \$650 million Amherst, N.Y. campus (February, 1970, page 101; January, 1971, page 124).

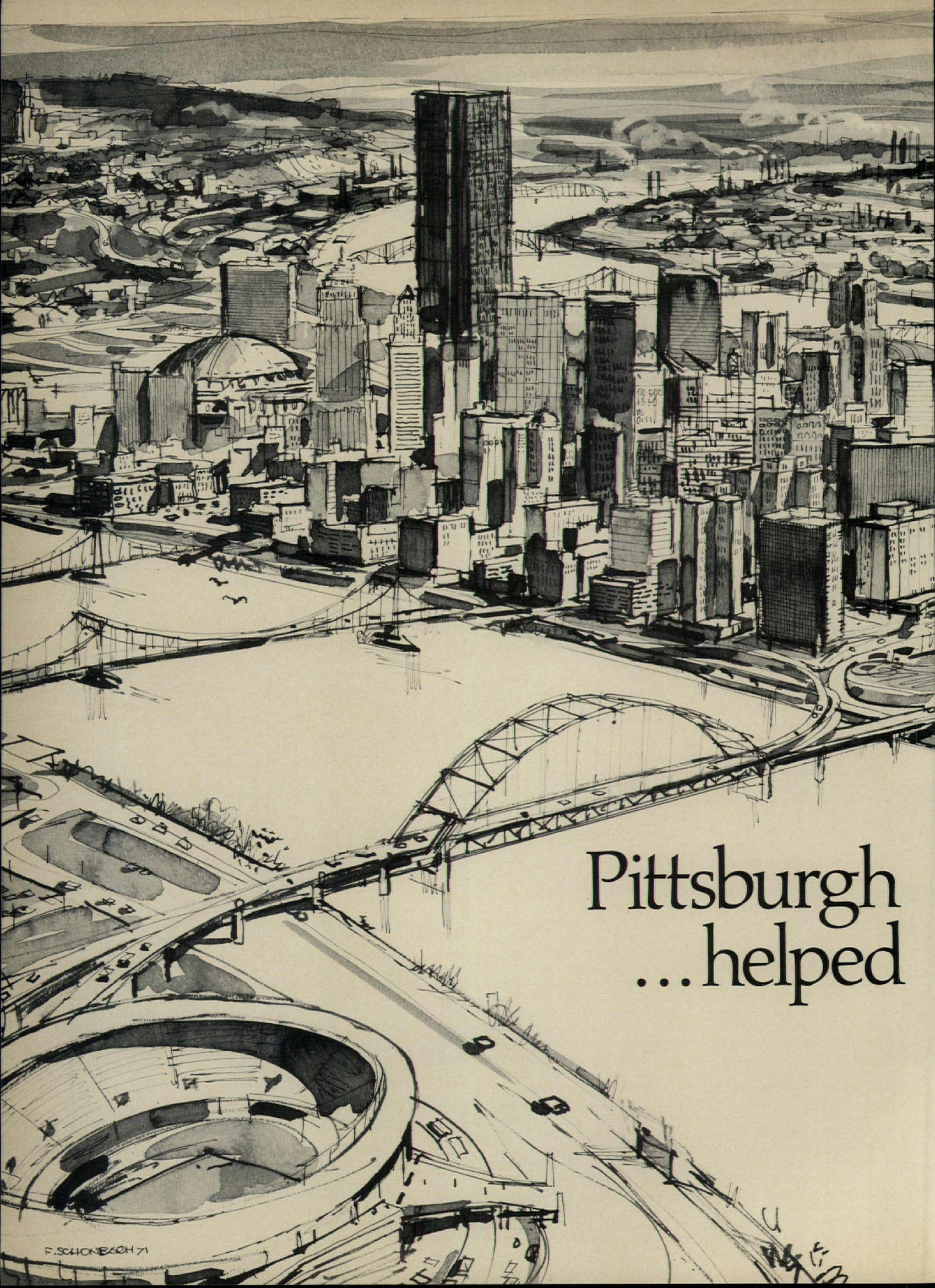
Dr. Adinolfi was made an honorary member of the American Institute of Architects in 1964; and the New York State University Construction-Fund received the A.I.A.'s Citation of an Organization in 1969. The A.I.A. board has passed a resolution honoring his memory.



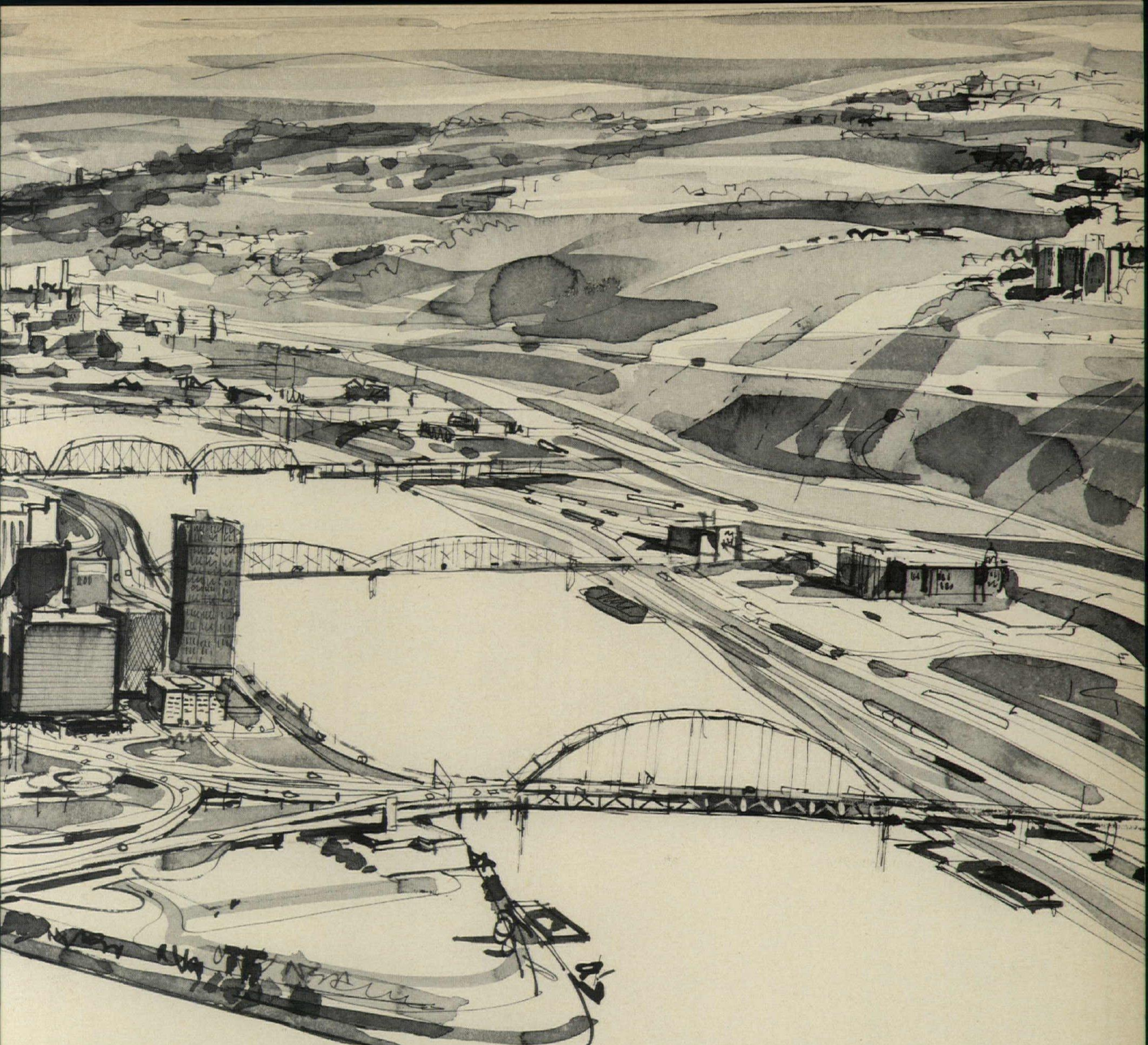
Will they ever finish it? Who cares?

Architecture critic Ada Louise Huxtable asks in the title of her recent book, "Will They Ever Finish Bruckner Boulevard?" If they don't,

it will be O.K. with architect Malcolm Holzman of New York City, who thinks the Boulevard, north of Manhattan, "looks like one of the most fantastic Greek or Roman ruins I've ever seen."



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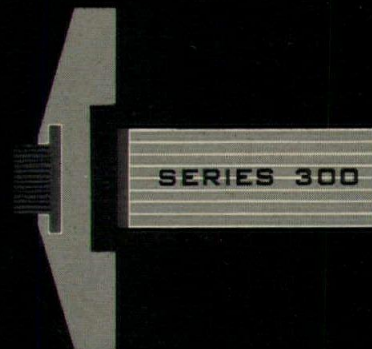
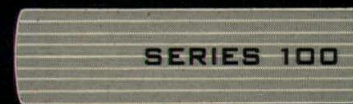
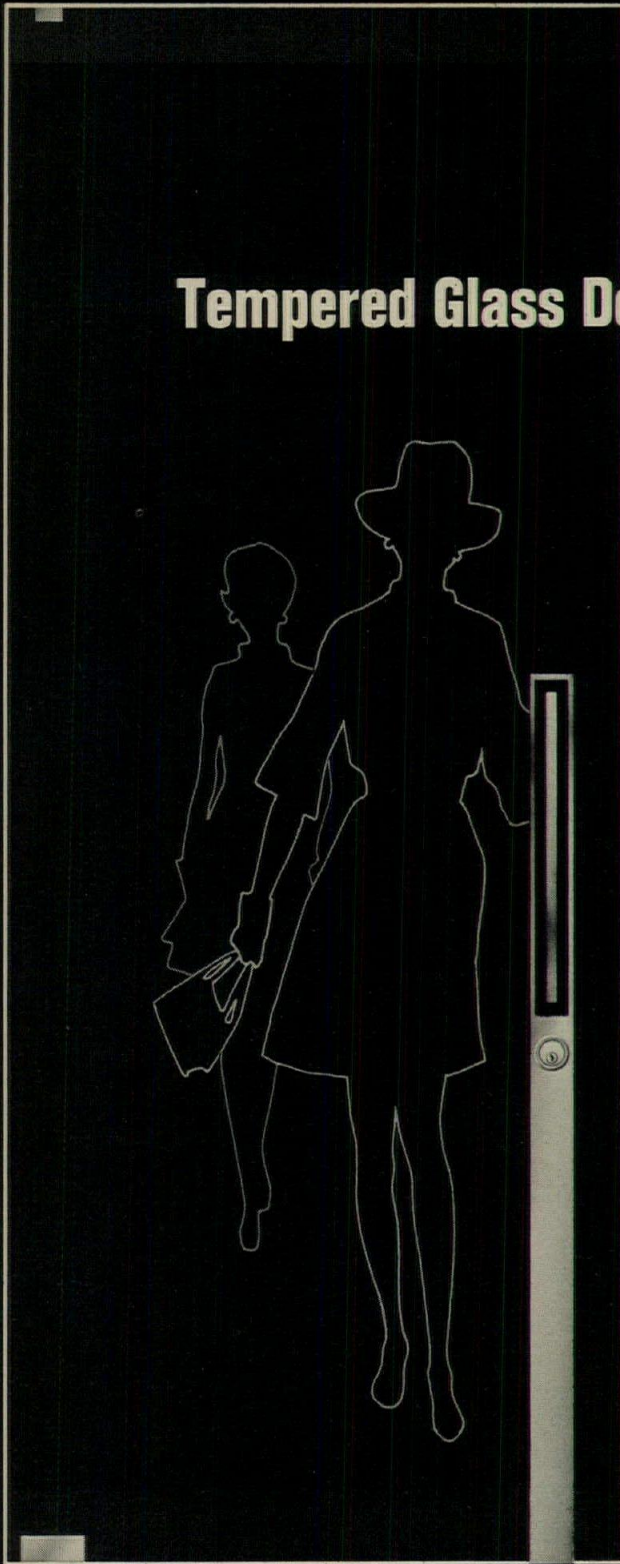
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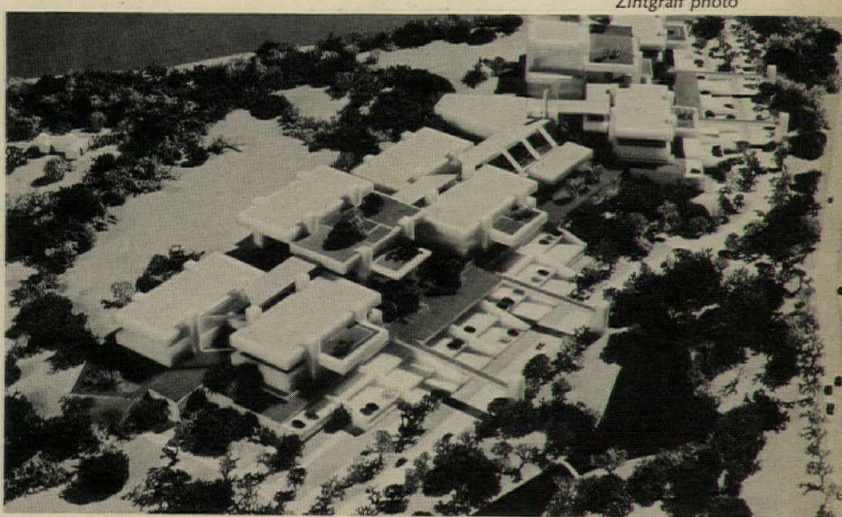
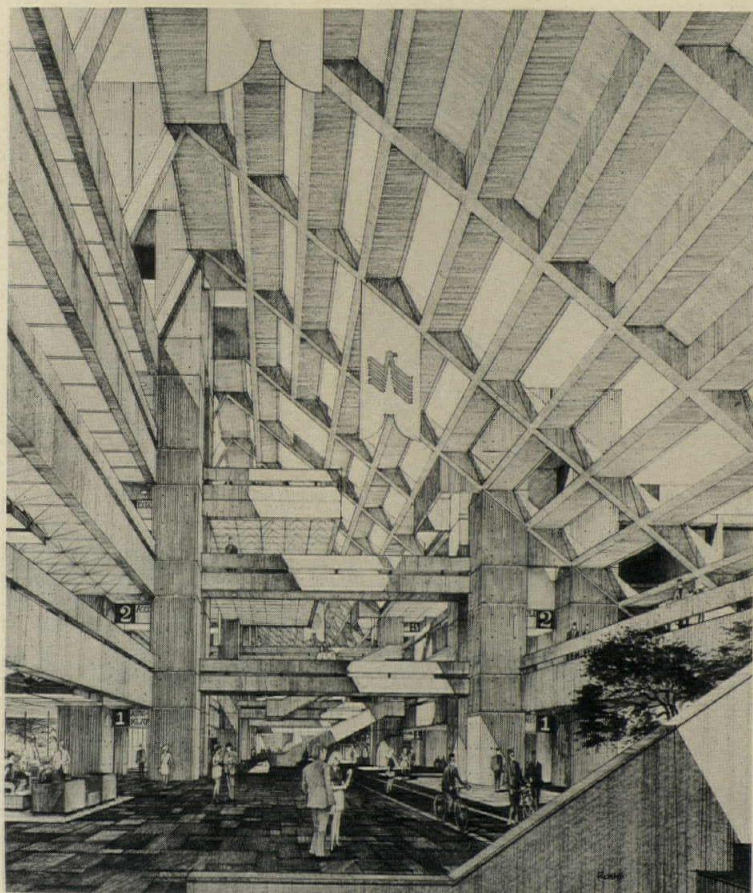
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Home office complex for United Services Automobile Association, San Antonio, Texas, Benham-Blair & Affiliates, Inc., architects and engineers, is designed for rapid expansion. Its central spine will be an enclosed pedestrian street (left), a "multi-level linear concourse" with services and utilities below. All departments and functions of the Association will be located on either side of the spine. Office structures will have three levels. The complex is designed to preserve the natural site as much as possible. Design and construction will proceed together.

Westcoast Building, Vancouver, B.C., Canada, Rhone and Iredale, architects, Bogue Babicki & Associates, structural engineers, received the award for best engineering in high-rise construction in the 1970-71 Design in Steel Award Program of the American Iron and Steel Institute (see also page 36). The 12 floors of the building are suspended from continuous steel bridge cables over a central core. Suspension of office floors opened a large plaza below.

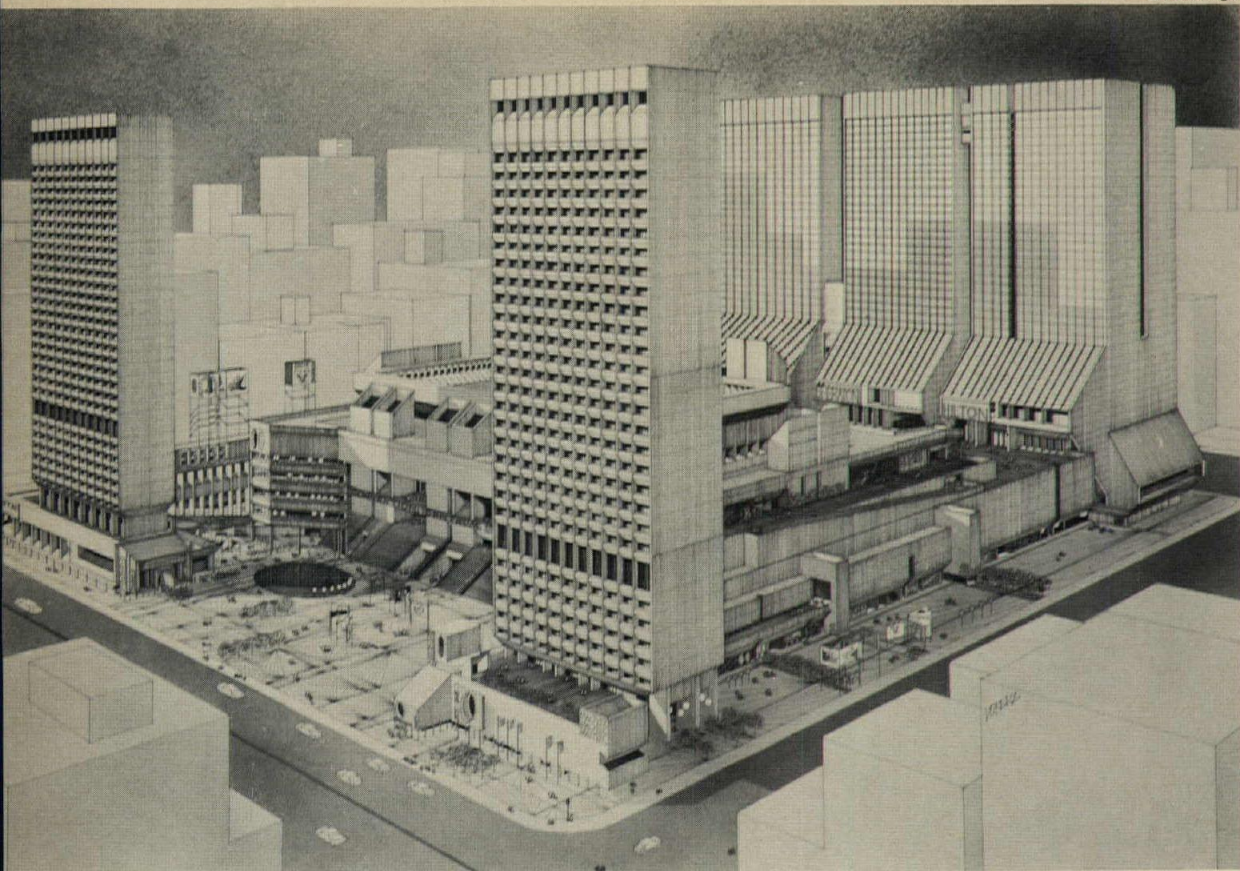


Bundy Corporation office building, Warren, Mich., William Kessler and Associates, architects, received the 1970-71 Design in Steel award citation for excellence in design in high rise construction from the

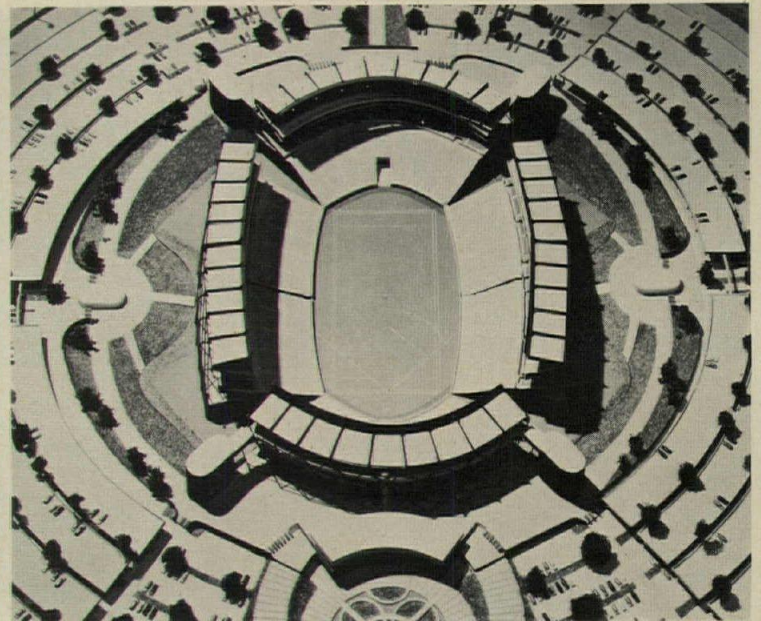
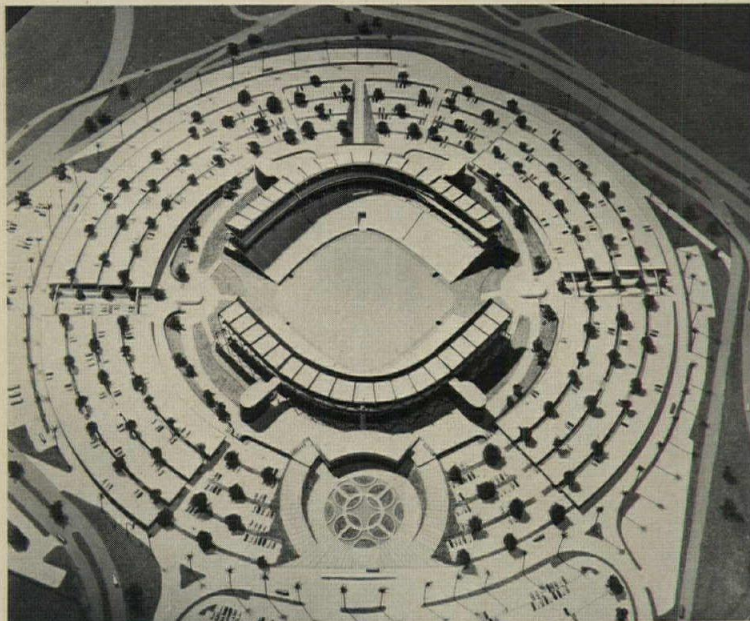
American Iron and Steel Institute. Weathering-steel-sheathed poured concrete columns alternate on the exterior with identical riser tubes for utilities. Column sheathing serves as permanent form-work.



Gil Amiaga



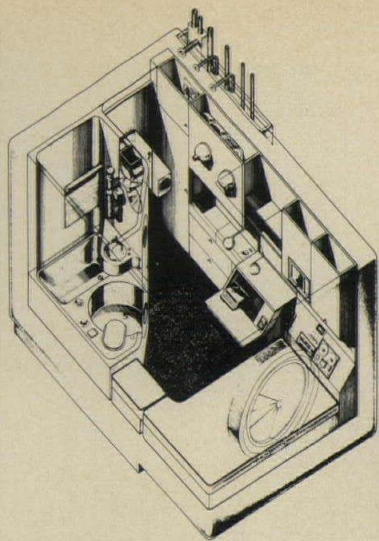
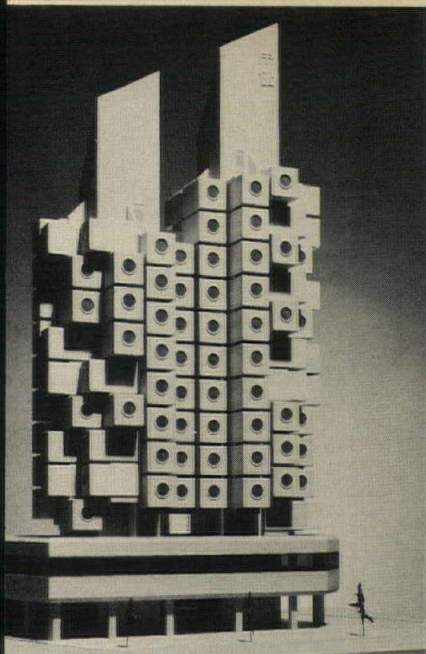
Merchants Convention City, New York City, Katz Waisman Weber Strauss, architects, provides for a 50,000-seat convention hall, two 40-story office buildings, three hotels, and entertainment and shopping facilities. There are to be four large legitimate theaters and two smaller ones as well as two movie theaters. The site is three blocks west of Rockefeller Center in Manhattan. The project is "dedicated to the return of big business in all of its exciting aspects to the City."



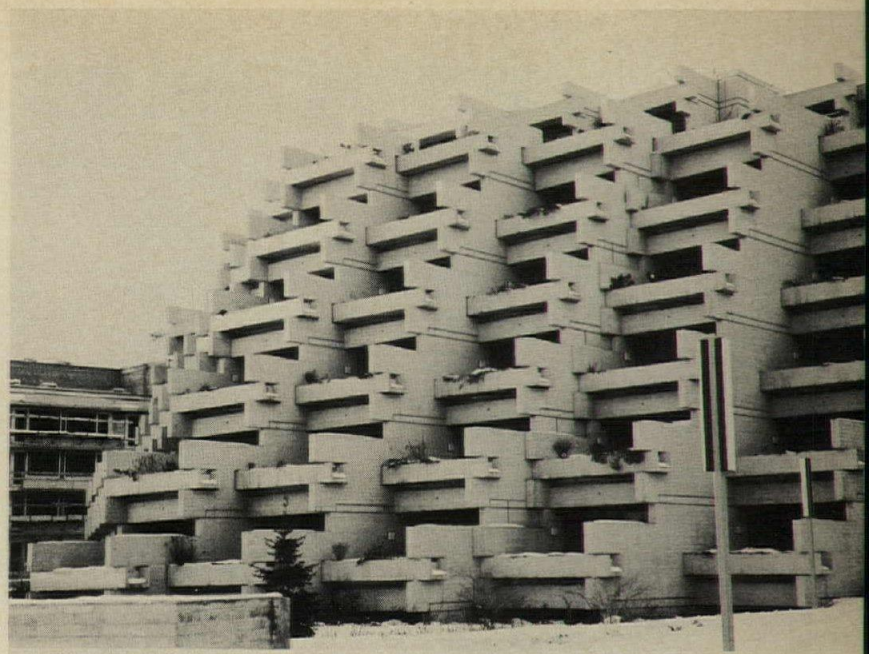
Oahu Stadium, Hawaii, Charles Luckman Associates, architects and engineers, uses an air-cushion system to move four seating sections into the required seating patterns for baseball and football and can take other shapes for other events. The stadium will also provide ten acres of landscaped public areas. Exposed weathering steel will form the basic structure. Phase II will add 16,000 seats to Phase I's 34,000.



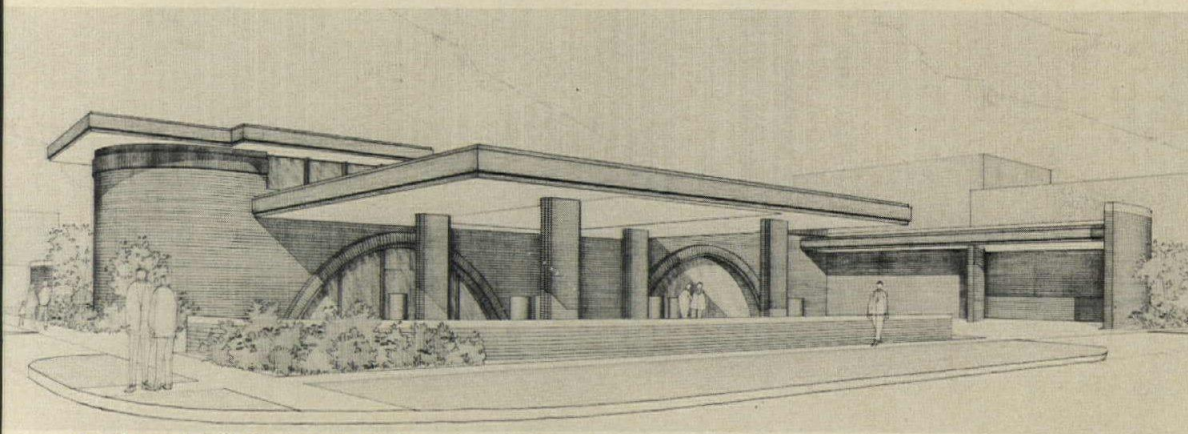
Office building for the International Union of Pulp, Sulphite, and Paper Mill Workers, Queens, New York City, Freidin, Kleiman, Kelleher, architects, is designed to harmonize with its residential surroundings, and provide offices, printing and storage facilities, a cafeteria, and an employee terrace and roof garden. It is designed with expansion in mind.



Capsule office-apartment building, Tokyo, Japan, Noriaki Kurokawa, architect, will nest factory-made capsulated apartment units onto 175-foot shaft frames. Each of 140 steel capsules will have built-in furniture, bathroom, air conditioning and will contain 10.8 square yards of space. They'll sell for \$10,000-\$13,000 apiece.

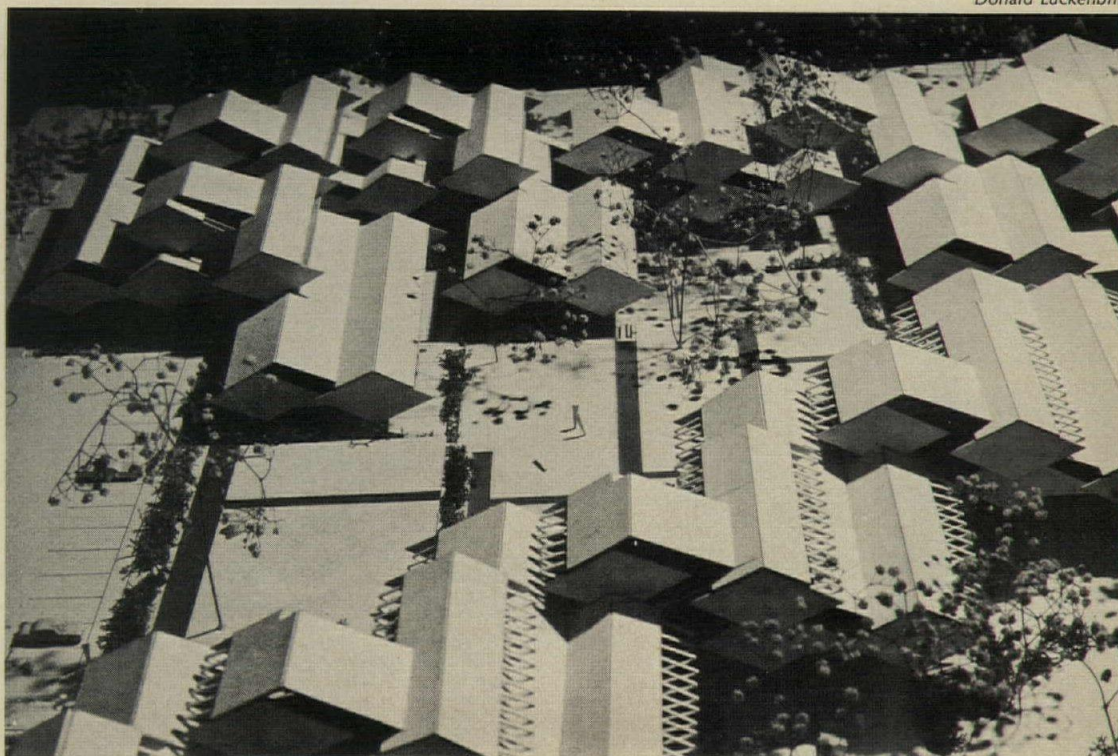


Wohnhugel ("apartment hill"), Munich, West Germany, Walter Ebert, architect, contains 60 units plus a community room. It was built for resident and visiting professors and families of the University of Munich using identical wall elements of exposed concrete fitting together with identical cross-beam supports which double as planters.

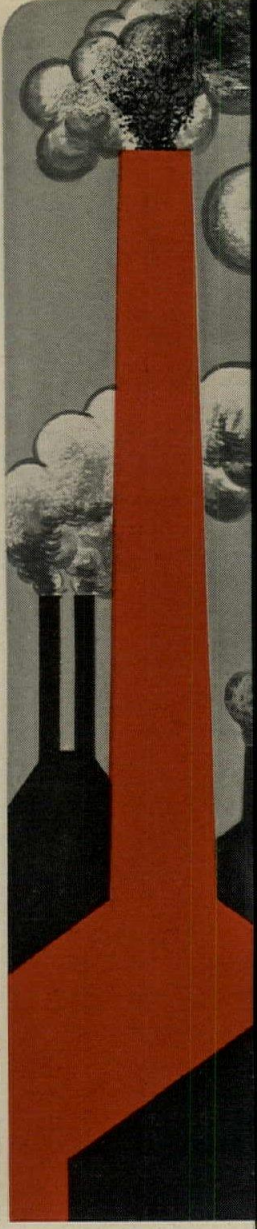
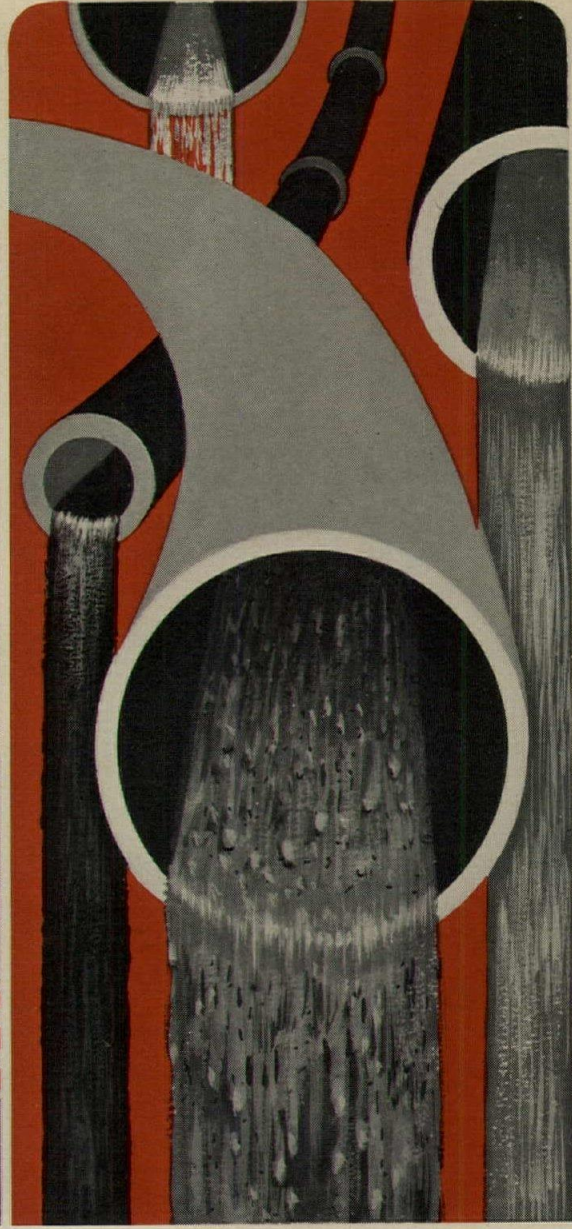


Continental Oil Company service station, Aspen, Colo., Walls & Sterling, architects, is conceived as a step towards elimination of "the usual visual pollution" caused by service stations. Close co-operation from the client and tight controls by the city made the design possible. Building exterior is dark brown brick and amber-tinted glass. Interior includes a carpeted TV lounge. Signs, lighting, and traffic control were all architect-designed.

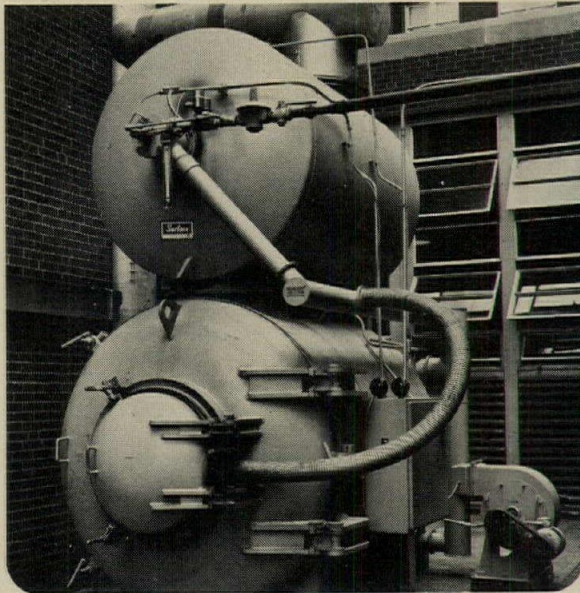
Office complex, Hauppauge, Long Island, New York, Paul Rudolph, architect, is closely tied to the availability of parking. Office units are raised from the ground on thin columns above a 360-car lot. Each 6,000-square-foot office unit will have a pitched roof, and there will be an abundance of trellises in order to sympathize with residential areas on two sides. Exteriors will be of rusting steel and relatively little glass. Units step down along the sloped site, and can be interconnected.



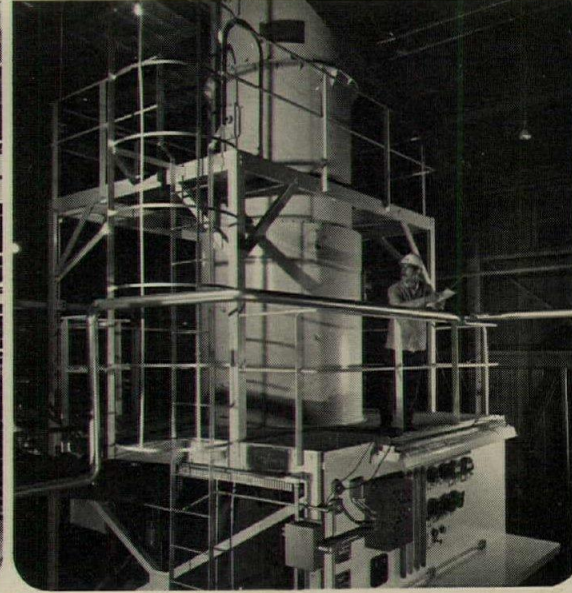
Donald Luckenbill



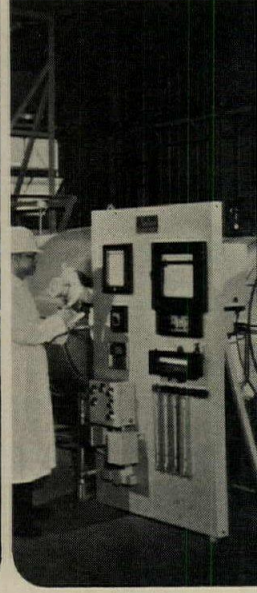
how's that for changing something pretty dirty



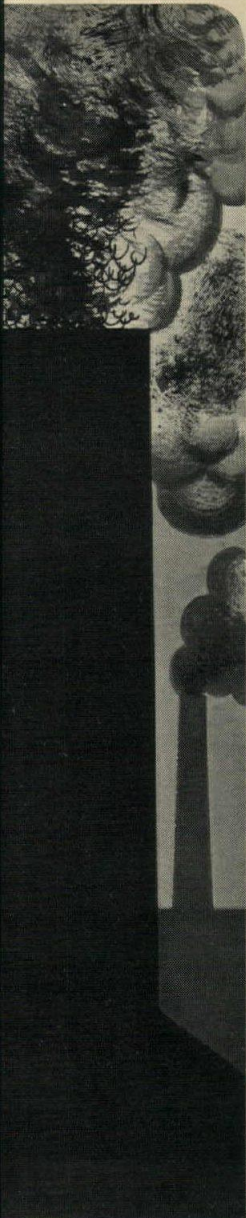
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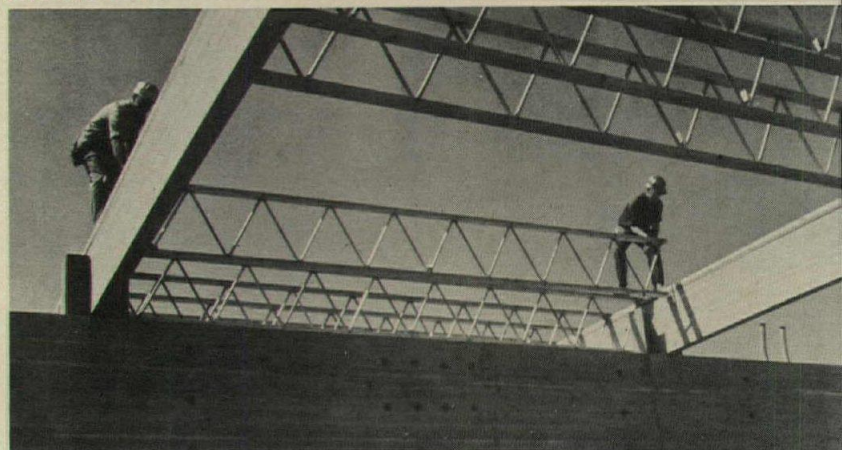
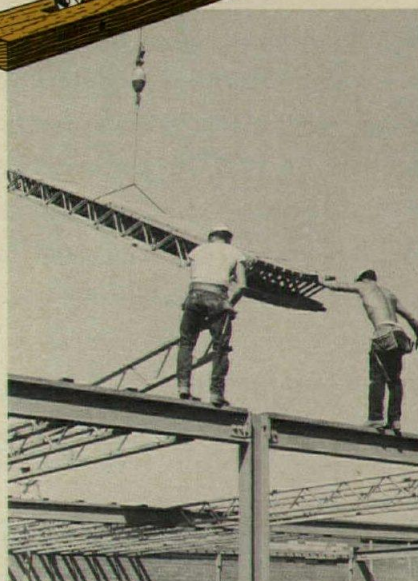
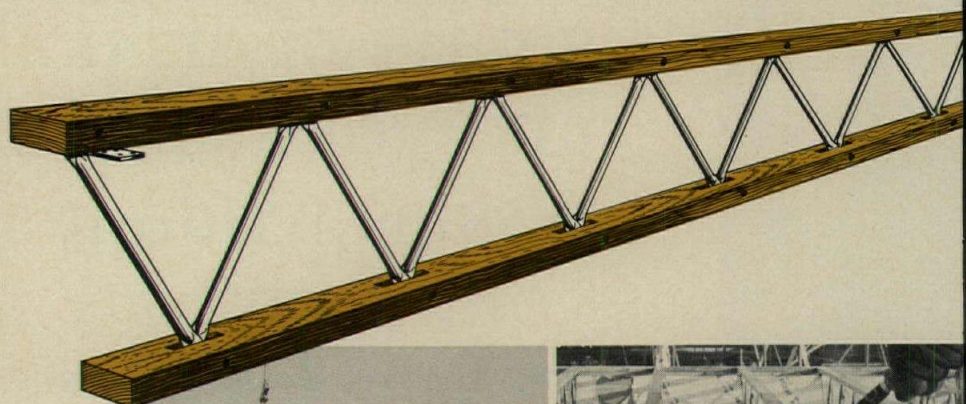
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Because 3¢ is all it normally takes to give a worker 100 footcandles of light—and yet far too many factories fail to give

their workers even the minimum amount of light required for critical seeing tasks.

The haves versus the have-nots.

In factory after factory, it has been shown that better lighting brings improvements in productivity. And a dramatic drop in accidents. In a machine shop that was brought up to modern lighting standards, production was increased by 16%. In a small-parts assembly plant, the installation of new lighting increased production up to 28%. In each case the cost was a small fraction of the production gain.

How to buy a lamp.

When you buy a GE lamp, not only are you buying light, but you're buying low operating costs, low maintenance and dependable life.

Take our Lucalox® lamp. One ten-inch lamp gives the light of fifteen four-foot fluorescents. That's impressive—but the savings are what really count.



The GE Lucalox lamp. The end of sad-looking factories.

First, you need fewer lamps to do the job. Down go installation and maintenance costs. In an average 32,000-square-foot factory you can count on total lighting costs of a mere dollar an hour. Peanuts.



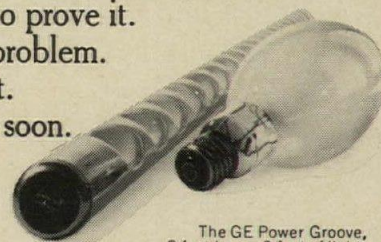
GE Power Groove fluorescents boosted the light in this textile factory. And production shot up 15%.

Or consider our De Luxe White Mercury. It has all the cost savings of a mercury lamp—plus good looks. Its excellent color takes the hard edge off a tough factory job.

And if you have 1500 MA fluorescent fixtures, then we have the world's most powerful fluorescent to go in them.

The Power Groove®. Makes eight feet stretch to nine feet of light. And we have efficiency figures to prove it.

You have the problem. We have the light. Let's get together soon.



The GE Power Groove, 8 feet long—9 feet of light. The bright and cheery De Luxe White Mercury lamp.

General Electric—so America can see.

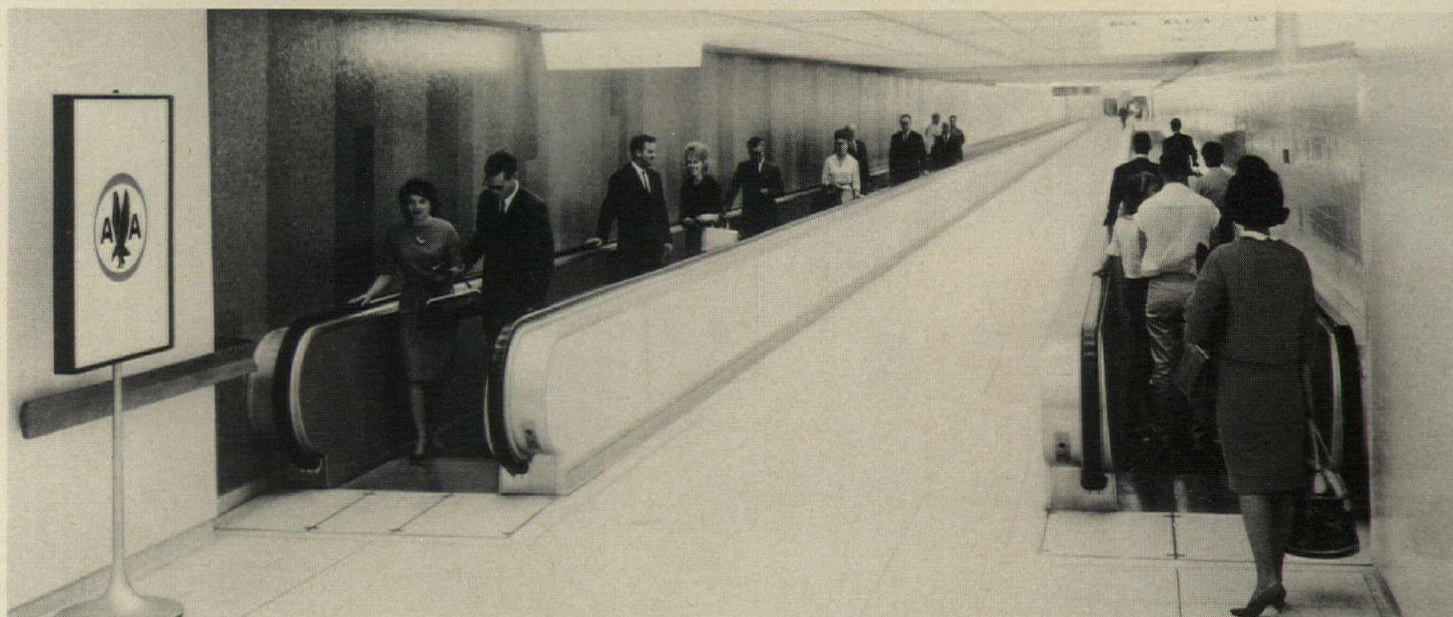
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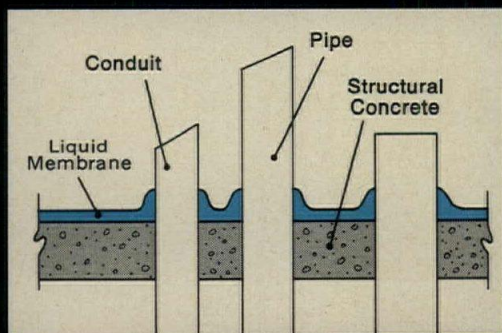
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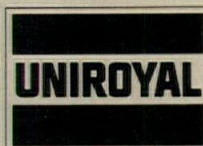
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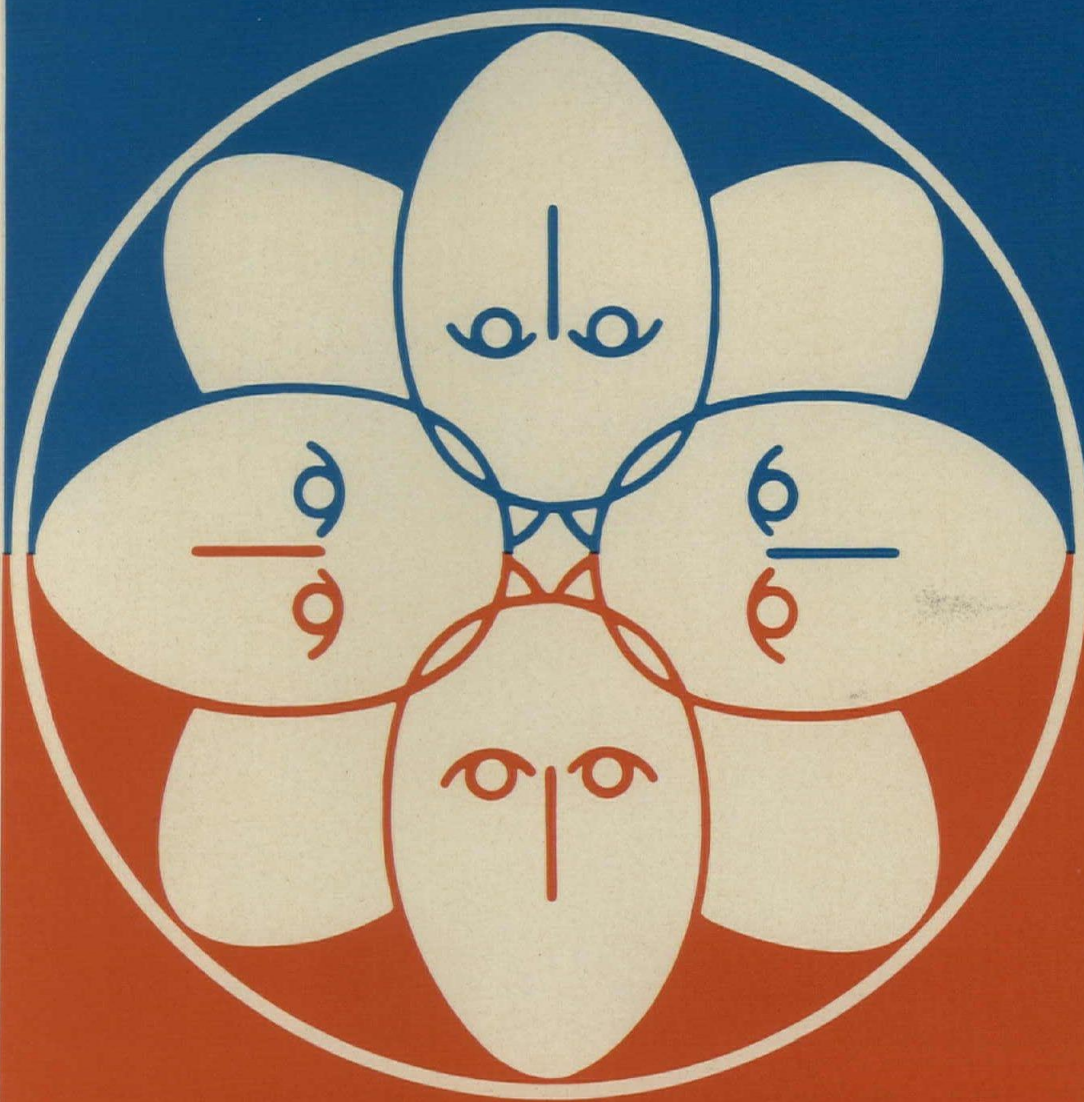
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Just say Grace!

State registration laws can trip you

by John Warren Giles, attorney, Washington, D.C.

State courts vary at key points in their interpretations of the intent of their legislatures in setting up registration requirements or in defining architectural practice. Architects may win or lose at some of the points cited in following cases.

If an architect provides any architectural service (whether consultation or design) on a job outside the state where he is licensed, he may not get paid—even though he does the work in his home office. Some states are more lenient than others in this regard, but at best there are legal points that should be checked before work is undertaken.

The Supreme Court of Vermont has recently considered a suit by a Massachusetts architect against a Vermont architect for consultation fees. The defendant was the principal architect on a project involving an addition to a hospital in Burlington, Vermont. The hospital directed the defendant to engage the services of the plaintiff firm as consulting architects. The plaintiff was a Massachusetts architectural firm specializing in hospital design. The arrangement was accomplished, and evidenced by an exchange of letters between the parties.

The project with which the plaintiff was connected involved the development of an out-patient department, emergency department laboratory, and X-ray departments. The duties of the plaintiff included inspection of the premises, consultation with the hospital staff, preparation of construction and equipment estimates, drawings of specialized rooms and provision of specifications for cost and bid purposes. For some of this work, the plaintiff's staff made numerous trips to Burlington.

As the matter finally wound up, the design recommendations of the plaintiff were not accepted by the hospital staff, and the new expansion was finally put out to bid and constructed on the basis of working drawings and specifications of the defendant. The compensation of the plaintiff was to be 1 per cent of construction costs plus travel expenses, and this was the basis of the judgment in favor of the plaintiff awarded in the lower court. The Supreme Court, however, observed that these activities were carried on in connection with construction to be under-

taken in Vermont. The facts showed that the plans and sketches were developed on the basis of information obtained from visits to the Vermont hospital. The work done under the contract had no other relevance than to this Vermont project on its Vermont site. The court further noted that architectural contracts entered into in violation of registration statutes are held to be illegal, and the provisions for payment of commissions are unenforceable.

Of course, the underlying policy is one of protecting the citizens of the state from untrained, unqualified, and unauthorized practitioners. This policy has been applied to many professions and special occupations for similar protective purposes. But the plea of demonstrable professional competence by an out-of-state architect was considered irrelevant to specifics of the protective law.

The court did mention a case where a single, isolated act by an out-of-state architect did not defeat his rights, even though he failed to register in the state. This case involved a Massachusetts architect who prepared plans for a building to be built in New Jersey. The client had a summer home in Massachusetts and consulted the architect there. The plans and specifications were drawn in Massachusetts but were taken to New Jersey for the client's approval. The construction was on land owned by the client in New Jersey, and supervised there by the architect. The Massachusetts District Court submitted to the jury the question of whether or not the actions of the architect constituted practice in New Jersey, in violation of the statute of that state. A verdict in favor of the architect was upheld by the Circuit Court.

The issue was stated to be the narrow one of whether supervision of construction of the building in New Jersey violated the New Jersey law. That statute, unlike the Vermont statute, did not enumerate supervision of construction as an architectural service. The New Jersey court did say that it felt the New Jersey statute was directed

against "practicing architecture" in the sense of engaging in or pursuing that profession. From that, it would not rule as a matter of law that a single isolated incident was an illegal act under the New Jersey statute. The Vermont court could not accept this view as appropriate to the legislative policy demonstrated by the positive provisions of the Vermont law.

Vermont does not contain any law authorizing consulting architectural services unless the out-of-state architect is registered. On the other hand, it has a law granting a certificate without examination, to anyone who has been certified by any authority outside the state whose architectural standards are not below those of Vermont. There is no requirement of residency to obtain such a certificate and there is no distinction as to fees between residents and non-residents.

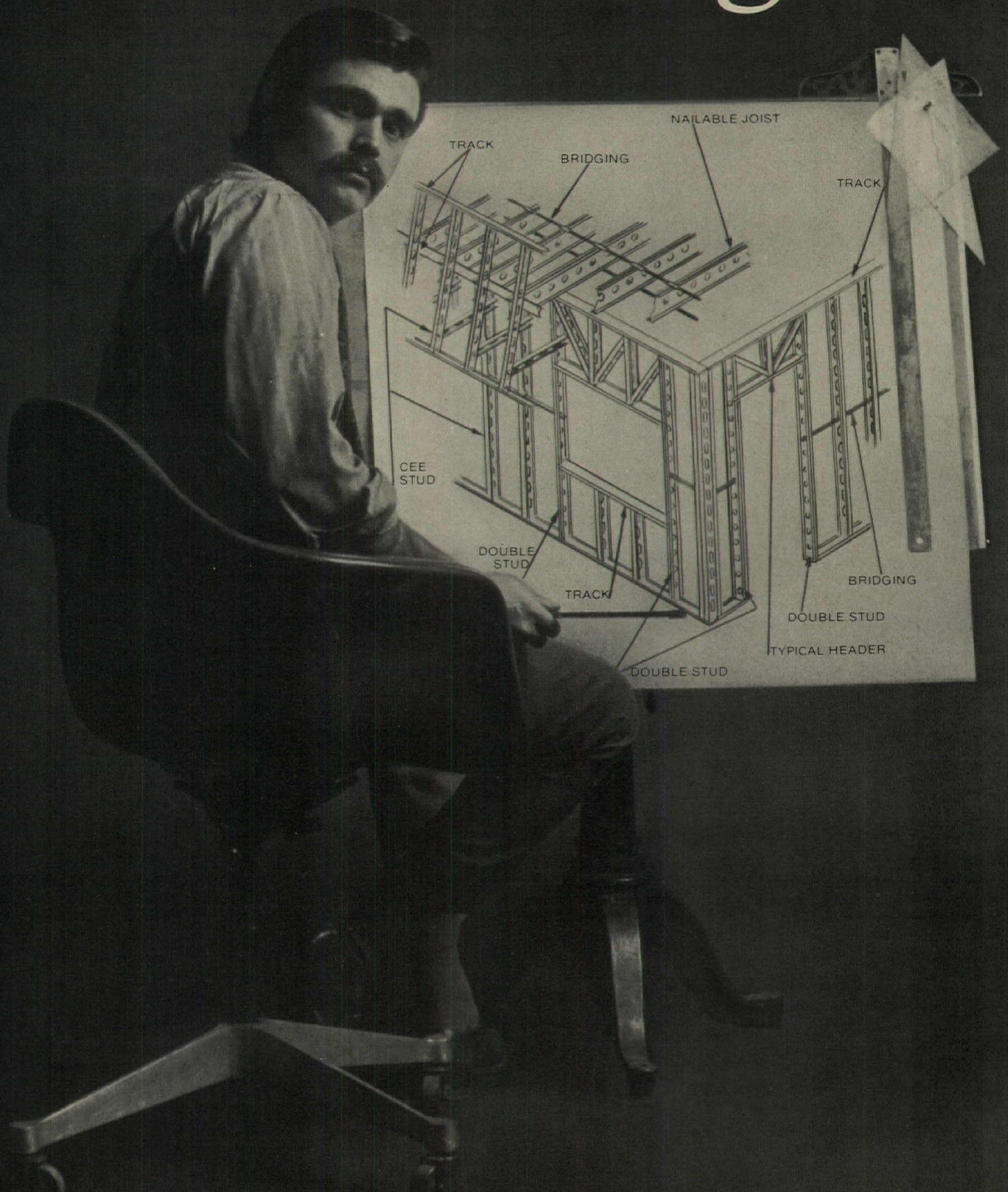
The Vermont court says that it seems clear that the legislature intended to require registration as a prerequisite, in all cases, to architectural practice. The court further said the Vermont statute does mean that when the non-resident architect presumes to consult, advise and service, in some direct measure, a Vermont client relative to Vermont construction, he is putting himself within the scope of the Vermont architectural registration law. Nothing in the law suggests that the services must be somehow repetitive (in the sense of continuous practice) to be prohibited. The court's final word: "No basis for excusing this plaintiff from express provisions of the statute appears here."

And so, the consultant got nothing for his efforts because he failed to consult the state law.

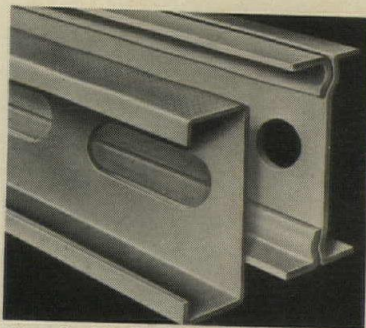
This same philosophy has been followed in a recent case decided by the U.S. Court of Appeals for the 8th Circuit. There, an Iowa contracting corporation gathered data within the state of Iowa while fulfilling a contract whereby it was to design and supervise construction of an Iowa meat-packing plant. This, said the court, constituted a part of the practice of "architecture" for which registration was required. The court said that the firm's failure to register as architects rendered the design portion of the contract relating to architectural work illegal.

There is ample authority to the effect that architectural and professional engineering contracts which violate registration statutes are generally unenforceable.

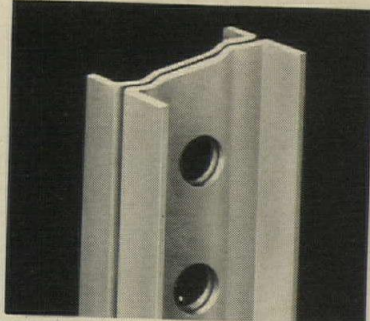
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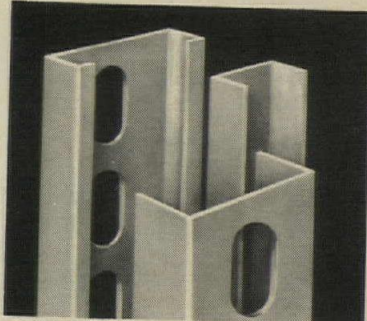
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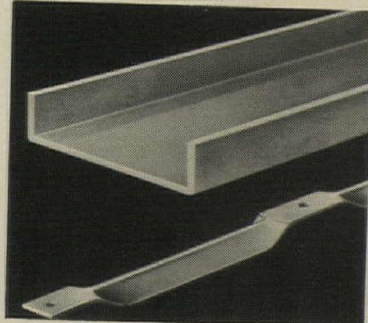
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Architectural firm uses half-size system

graphic reduction of drawings to half size,
automatic equipment for reproduction, save time and money
one large mid-western architectural firm.

sheer size and number of architectural engineering drawings and renderings make them bulky to store, costly to mail, awkward to work with in the field, and expensive to reproduce. Ellerbe Architects of Paul is one of several firms who are trying to reduce these problems by using half-size photo-reproductions of their normal-size originals for all distributions.

To maintain consistent quality without distortion, the full-size drawings are reduced to half-size on a 20- by 24-inch negative film using a special process camera. These negatives are then used for contact prints on a variety of film and paper products, selection of which depends on the job need.

"Major jobs require a large number of drawings," notes Dean Stoven, Ellerbe's office services manager. "One recent example ran up to 300 pages, and the average 150 or more. When these are reproduced half-size by the diazo process, each set will weigh 50 pounds or more, and a construction project may require as many as

150 sets for various phases of the work."

By a conservative estimate, reducing such drawings to half-size cuts at least 25 per cent from the cost of mailing drawings to Ellerbe projects throughout the United States and Canada.

At present, the firm still retains its originals, but Mr. Stoven looks forward to a day when additional savings will be realized through reduced storage space needed for the half-size reproductions—perhaps even further reduced to 35 mm film as legal and retrieval problems are solved. An important advantage of the present half-size sheets, he says, is that they are much easier to handle by crews out on the job. The few initial complaints about readability of the reduced prints have been eliminated by minor adjustments in drafting technique—slightly heavier finest line, slightly larger minimum lettering size, sharper definition, etc.

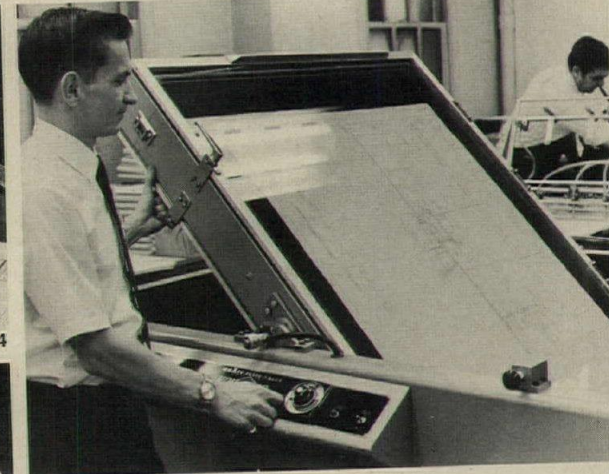
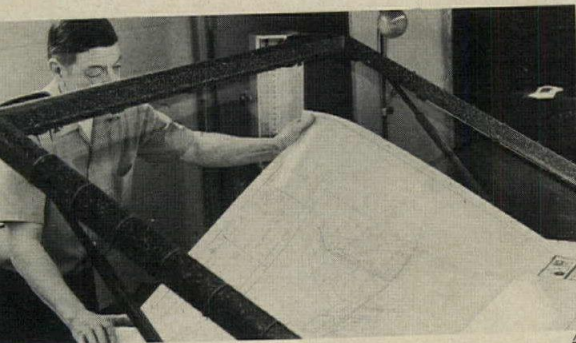
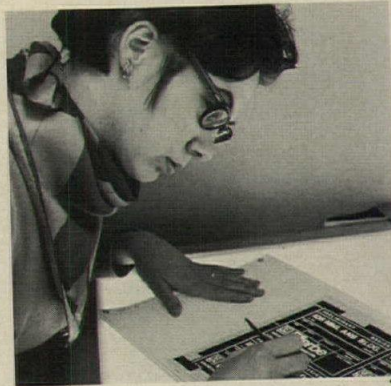
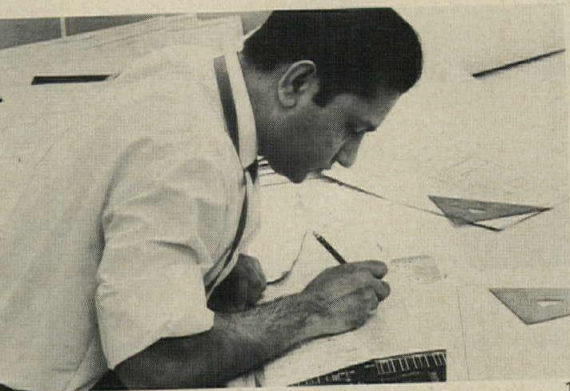
Ellerbe uses an automatic processor to develop the negatives. The processor eliminates any need for a conventional dark-

room and delivers developed and dried films in 60 to 90 seconds. It operates with pre-mixed chemicals and requires a 4-gpm water supply and periodic drainage. The processor handles four kinds of film for Ellerbe's system: a negative, a positive and the projection variants of each. Films are exposed either with the process camera or in a contact frame.

Prints of drawings are produced with a matte finish suitable for pencil and ink additions, corrections and retouchings.

The contact printer can produce size-for-size reproductions of exposed negative images on metal plates for offset printing. Ellerbe's press can turn out 4,500 copies an hour, in contrast to the 120 copies of full-size drawings that can be produced in an hour on its diazo-process duplicator.

Cost of all cameras and equipment installed was about \$40,000. The whole system occupies about 480 square feet of space. Dean Stoven thinks the savings in time, space, postage and convenience more than offset the cost.



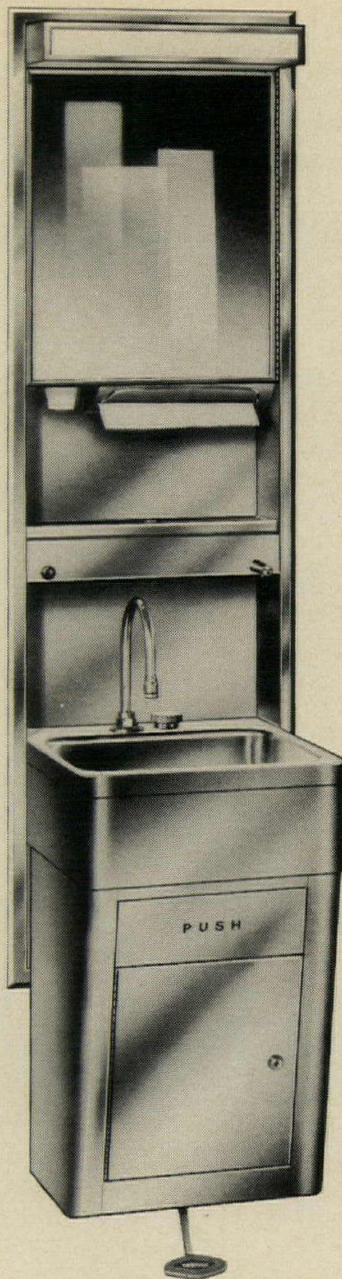
1. Ellerbe draftsmen make sharp drawings for reduction
2. Care is taken with lettering for size and quality
3. Cameraman checks image on ground glass screen
4. Full-size drawings are put in holder for process camera
5. Film is developed and dried in an automatic processor
6. Offset printing plates are exposed to film negatives in a mechanized contact printer.
7. Equipment includes distortion-free enlarger.

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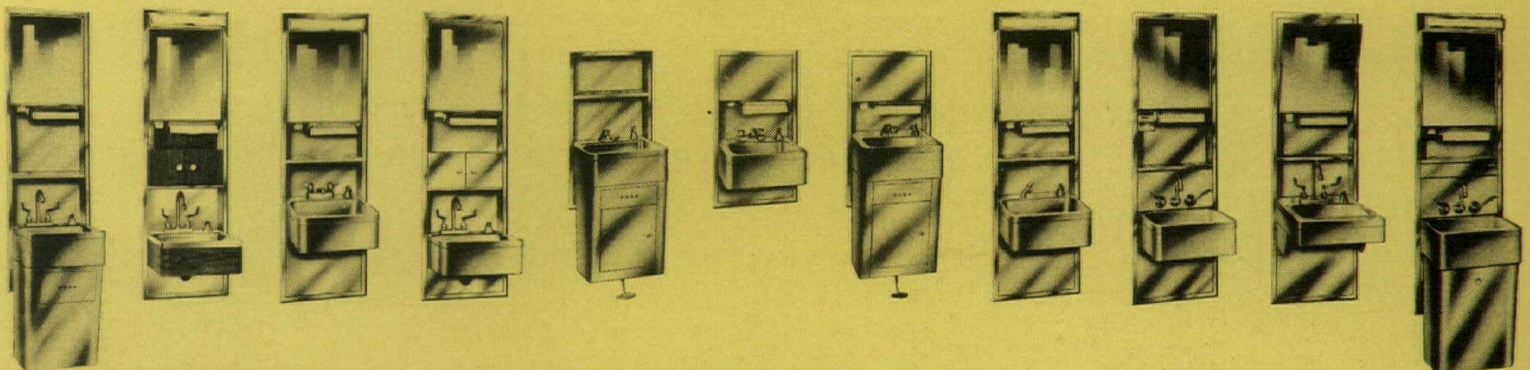
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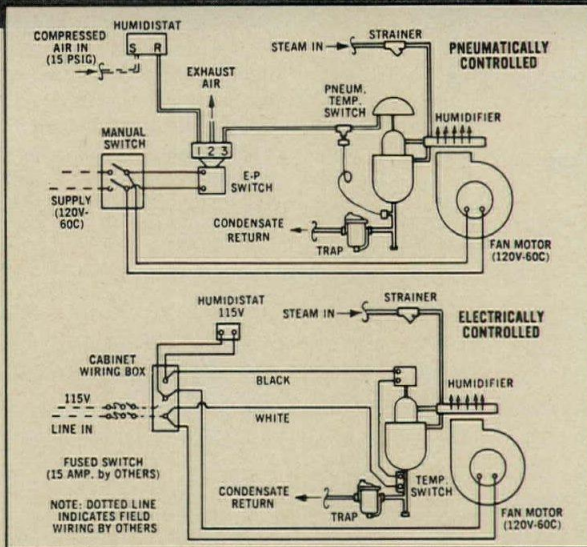
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with high sensible heat loads
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THE ARMSTRONG *Humidifan* SYSTEM



Shown is a horizontal floor model of the Humidifan System. It is also available in vertical floor models and suspended models which may be hung from a wall or overhead or concealed with remote ducting.

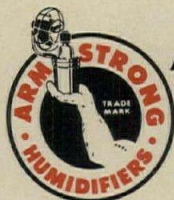


The Armstrong Humidifan System may be controlled pneumatically or electrically. These schematic drawings show the integral components of each type.

The Armstrong Humidifan System is designed to add water vapor, in the form of dry steam, directly to the atmosphere of the area humidified *after* the air has achieved its controlled temperature. The unit draws in room air, humidifies it and discharges it back into the room.

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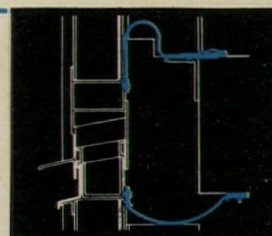
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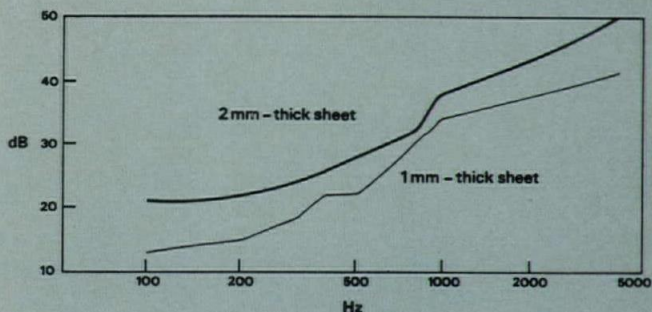
Lead-filled natural rubber sheet prevents noise leaks from one floor to another in the new Pirelli Centre in Milan. It forms a flexible sound barrier sealing the gap left between the floors and the curtain wall to allow for thermal movement.

- Known as Gade (Gomma Alta DEnsita = high density rubber) the material contains a high proportion of a lead compound. It was developed by Societa Applicazioni Gomma Antivibranti and, as shown in the graph, a sheet only 1mm thick can provide 30 decibels reduction at 1000 Hz.
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- This is another example of how architects and designers are using lead to improve the quality of life by keeping things quiet.
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At right—Section through curtain wall showing position of lead-filled rubber sheet seals.



Below—Effect of different thicknesses of lead-filled rubber sheet on sound attenuation.



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CURRENT TRENDS IN CONSTRUCTION

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

Construction completion schedules: the experience of the Sixties

It takes longer to build a dollar's worth of nonresidential building today than it did ten years ago. That's the implication of a recent sampling of projects by the Department of Commerce.

Beating the clock has always been of more than passing interest to man. In business, how fast things get done can mean the difference between turning a profit or dipping into the red. And, this is as true for the construction business as it is for any other. Construction has seen some significant breakthroughs in reducing the time interval between work start and project completion over the past few years. But, most of them have occurred in the residential area. Despite productivity gains, breakthroughs in on-site time reduction in nonresidential building have occurred pretty much on a project by project basis. In the aggregate, performance in this area over the past decade has not been good.

A recently released Commerce Department study of almost 13,000 nonresidential building projects measured the total elapsed time from work start to project completion. The projects were ranked according to their construction cost, and were further broken down into three categories: industrial, commercial, and other nonresidential building. As you would expect, the larger projects (measured in dollar terms) took longer to build than the smaller ones. Projects costing under \$50,000 took less than four months to complete, on the average, for instance, while those costing over \$5 million took more than two years.

More important, though, the sample included buildings started over the past ten years, so that the historical time dimension could be gauged too. The sample was broken down into three time periods: projects completed between 1961 and 1963, projects completed between 1964 and 1966, and projects completed between 1967 and 1969. In every category but one (the \$1 million to \$3 million group, which accounts for roughly 20 per cent of the value of all nonresidential projects, on the average) these projects took more time to complete

in the 1964-1966 period than in the 1961-1963 period, and more time to complete in the 1967-1969 period than in the two-year period of 1964-1966.

As near as can be determined, a typical project costing the same amount of money took 15 per cent longer to build in 1967, 1968, or 1969 than it did in the 1961-1963 period.

Since all measurements were in current dollars, though, a project costing the same amount of money in both periods was probably close to 25 per cent larger in real terms if it was built in 1961, '62, or '63, than it was if it was built in 1967, '68, or '69. (That's how much costs went up between the two periods, anyway.) In effect, the real start-to-completion differential has to be significantly greater than 15 per cent.

A number of explanations are possible here:

To a degree, structures built today are more complex than those built five to ten years ago. The increasing incidence of "extras" like air conditioning would add to construction time.

Also, there was slightly more public building in the 1967-69 period than in the 1961-63 period. A given dollar amount of public building takes longer to complete, on the average, than an equal dollar amount of industrial or commercial building.

To the extent that more building was carried out in central cities during the latter period than the earlier one, construction time would be lengthened. A number of aspects of central city construction; congestion, the need to demolish first, and the like, make it less efficient.

Labor hoarding by builders slowed rates in peak years

The prime reason for what happened to project completion times during the past

decade appears to rest with construction labor, though. More specifically, construction labor became extremely scarce as the nonresidential building boom of the sixties gathered steam. So scarce, in fact, that terms like "rationing" and "labor-hoarding" are probably most descriptive of market conditions. During the 1961-1963 period, the unemployment rate for experienced wage and salary workers in construction averaged 12.7 per cent. Full work crews were maintained without much difficulty, and construction projects proceeded unhampered, more or less. As the volume of activity picked up in the mid-sixties, the construction labor market began to tighten. The unemployment rate dropped to 8.7 per cent. Local shortages made the maintenance of full work crews difficult, and completion times suffered.

By the 1967-1969 period, the unemployment rate was down to 6.1 per cent, (this is extremely low, considering the seasonal nature of the business) and the ranks of many work crews were thinned out as contractors rationed their scarce craftsmen over several jobs. Since periods of peak demand are economically the best times to win concessions from management, the construction unions added to the problem by pressing for stiff wage demands. Mandays idle due to labor disputes were one-and-a-half times greater in this last period than during 1961-1963.

Studies of on-site labor and materials requirements for specific building types completed during the sixties show significant declines in the amount of on-site labor used. It has been standard practice to attribute this fact to gains in productivity. But, it seems likely that some of these productivity "gains" are the result of rationing scarce labor resources. And, to the extent that the projects measured took longer to build than they would have under "normal" conditions, a more precise measure of productivity of labor would show smaller gains.

Given the alternative of bidding away scarce—hence very expensive—labor from their competitors to maintain work schedules, market conditions dictated that it was more economical for contractors to work with smaller crews and extend completion times of the jobs.

A look at the construction labor-construction completion problem in the years ahead will be the topic of an article in the future.

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

THE COST OF CLEAN AIR

The Clean Air Bill of 1970 will soon begin to affect building costs, especially for industrial construction. Reliable estimates indicate that proper attention to airborne emissions from factory buildings will add 10 to 15 per cent to the cost of such buildings in addition to normal cost escalation. Filters, precipitators and necessary instrumentation—together with the space to house this equipment—will be the chief causes of the cost increase.

Building cost indexes

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

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

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

1941 average for each city = 100.00

Metropolitan area	Cost differential	Current Indexes				% change year ago res. & non-res.
		non-res.	residential	masonry	steel	
MAY 1971						
U.S. Average	8.3	349.1	327.7	342.4	334.2	+ 8.26
Atlanta	7.9	450.3	424.5	439.0	430.6	+ 10.98
Baltimore	7.9	366.5	344.5	358.7	350.2	+ 11.08
Birmingham	7.4	318.5	296.2	310.3	304.5	+ 3.36
Boston	8.7	343.1	324.2	339.3	330.3	+ 12.42
Buffalo	9.0	382.3	359.0	376.7	365.8	+ 7.20
Chicago	8.3	396.3	376.8	384.3	378.4	+ 7.63
Cincinnati	8.8	377.0	354.7	369.7	360.5	+ 11.55
Cleveland	9.5	396.5	373.0	388.4	379.5	+ 8.44
Columbus, Ohio	8.4	376.8	353.7	367.3	360.7	+ 9.27
Dallas	7.6	344.4	333.5	337.8	330.3	+ 9.68
Denver	8.3	381.1	358.5	378.5	365.8	+ 9.51
Detroit	9.4	388.7	370.3	388.2	374.7	+ 7.95
Houston	7.7	340.8	320.0	332.5	326.4	+ 8.04
Indianapolis	8.0	330.3	310.1	322.6	316.0	+ 7.86
Kansas City, Mo.	8.2	333.7	315.3	325.8	318.3	+ 8.90
Los Angeles	8.0	382.3	349.4	370.5	364.7	+ 7.73
Louisville, Ky.	7.6	344.7	323.6	336.7	329.9	+ 8.22
Memphis	7.7	334.5	314.1	325.7	320.2	+ 8.46
Miami	8.1	371.1	353.5	362.8	354.4	+ 8.15
Milwaukee	8.6	403.8	379.1	399.8	387.0	+ 6.05
Minneapolis	8.7	369.9	348.0	363.4	353.7	+ 6.84
Newark	8.9	349.7	328.3	345.1	336.5	+ 10.06
New Orleans	7.3	332.1	313.4	327.9	320.0	+ 7.06
New York	10.0	387.5	360.2	375.5	367.5	+ 7.59
Philadelphia	8.4	360.2	343.1	354.5	346.1	+ 8.04
Phoenix	7.7	194.7	182.8	188.1	185.2	+ 8.61
Pittsburgh	8.7	341.6	321.4	336.7	327.5	+ 6.36
St. Louis	8.7	364.5	344.0	359.6	349.1	+ 7.09
San Antonio	8.0	142.0	133.3	139.0	135.4	+ 9.13
San Diego	8.1	139.2	130.6	136.2	133.6	+ 6.55
San Francisco	8.9	491.1	448.9	486.3	472.1	+ 5.31
Seattle	8.8	355.9	318.5	353.6	339.4	+ 6.35
Washington, D.C.	7.8	328.9	308.8	319.3	313.8	+ 11.03

Cost differentials compare current local costs, not indexes.

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

1941 average for each city = 100.00

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

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.



Sanspray. The Great Stone Facing.

Imagine an exterior wall cladding with all the beauty and durability of stone. Plus the low cost, easy installation and maintenance freedom of plywood. And you're into Sanspray®. A natural stone aggregate bonded to plywood. The most exciting thing to happen to exteriors in a long, long time.

That's Sanspray's large aggregate pictured above. There's also a small aggregate (equally distinctive). And a

range of colors you have to see to appreciate; like Tangerine, Pearl Gray, Gaelic Green, Monterey Sand . . . and others.

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

versatility

Delivering top sealant performance without imposing limitations on architectural design is a job for DAP Flexiseal®. It's not unreasonable to expect 20 years' service without failure from this outstanding polysulfide polymer system—even in moving joints once considered marginal. Now available in two-part and one-part systems. Both feature *balanced modulus*—adhesion always exceeds cohesion. Both have received the Thiokol* Seal of Security. For catalog on the complete line of DAP architectural sealants, please write: DAP Inc., General Offices: Dayton, Ohio 45401. Subsidiary of *Plough, Inc.*

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DESIGN CONCEPT: The featured apartment tower is the focal point of a high density commercial and residential complex set in a suburban locale. The tower is supported on four massive U-shaped columns housing vertical transportation. Lower area of the structure, less desirable for living space than upper floors, is used as a 5-story atrium garden for year 'round greenery.



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ARCHITECTURAL
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Also available in Canada



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Howard Associates

*You can give a
doctor's office
a tranquil
effect with
"La Strada"
on the walls.*



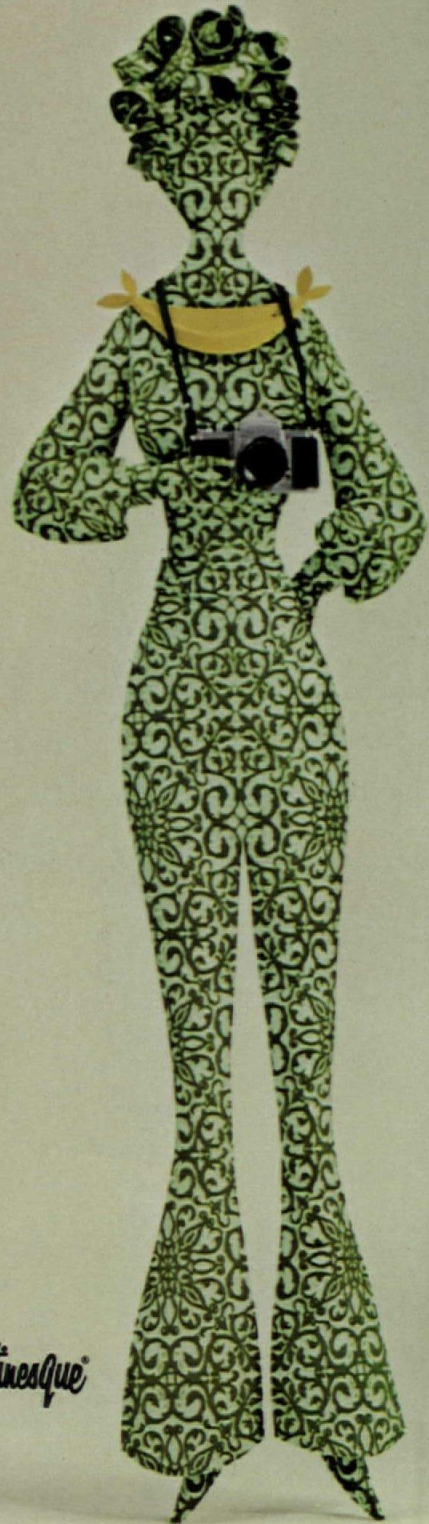
GUARD

*You can give
an ad agency
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effect with
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Wall-Tex

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Satinesque

Our wallcoverings can give your interiors tranquility, drama, elegance...and more.

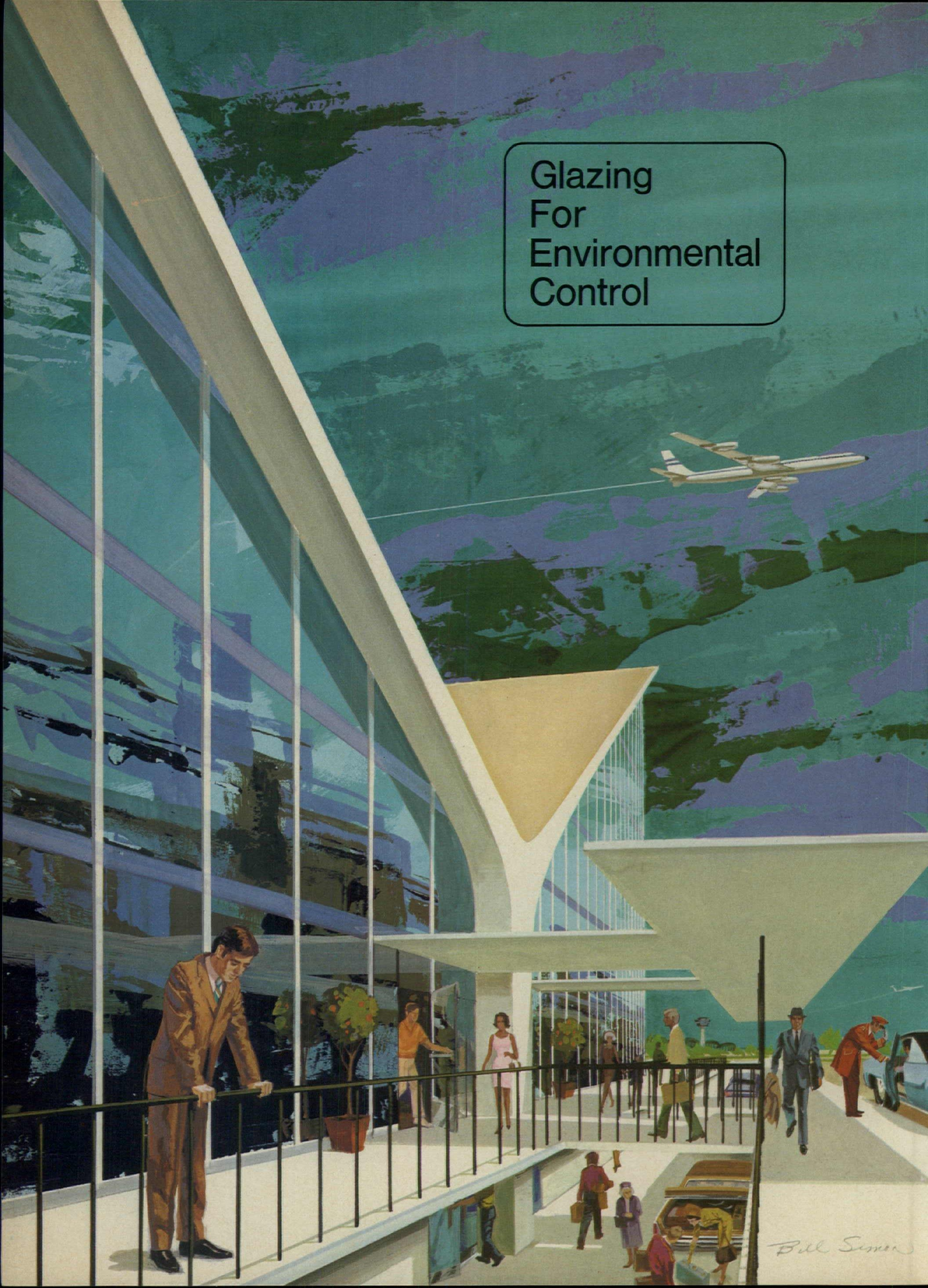


When you want an interior to have a special mood or sense or feel, turn to the special offerings of Columbus Coated Fabrics. Throughout our three basic lines—Guard®, Satin-esque®, Wall-Tex®—you'll see over 1200 fabric-backed vinyl wallcoverings, each with a special statement of its own. And special practicalities: all our wallcoverings are pre-trimmed for perfect matches, easy to put up, easy to clean, easy to take down when it's time for a change. They'll also hide wall blemishes in renovation projects and keep their good looks for years. You know, offering more patterns than anyone in the industry ought to be enough, but it isn't. So we have a Custom Design Center to come up with anything else you might have in mind. We'll also go on site making sure everything's right before, during, and after installation. We meet building codes and are UL listed. Write for further specifications. You'll find we've got a lot to give, too.



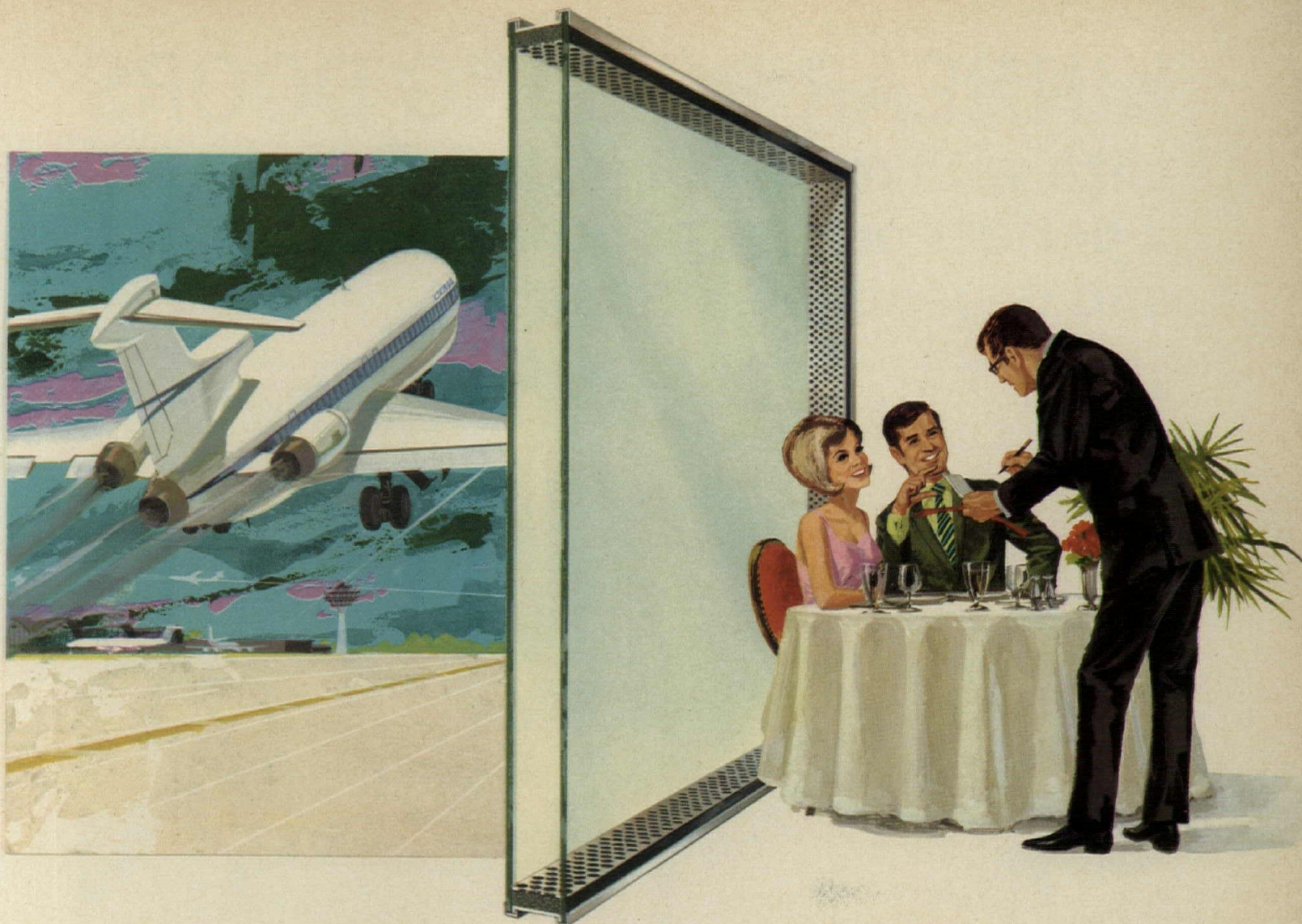
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Glazing
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Clearly the way to dampen sound Polarpane[®] Sound Control

Lets light in, shuts noise out. It's the beautiful way to tune down the decibels to a perfect comfort level.

Two glass sheets of different thicknesses handle resonance frequencies for better overall sound reduction. The basic unit with $\frac{3}{16}$ " and $\frac{3}{8}$ " glass and 2" air space has a U value of .48 . . . shuts out as much sound as a 6" concrete block wall. An acoustically absorbent separator affords additional noise reduction.

Glass edges are hermetically sealed with two separate all-weather sealants and are protected with an aluminum edge band.

Polarpane Sound Control carries a 10-year warranty against vision obstruction from inside dust, film, or moisture collection.

C-E Glass engineering and testing capabilities can develop units of higher STC ratings if needed.

Send for our Polarpane Brochure or consult C-E Glass specialists for sound control guidance through advanced glazing methods and materials. C-E Glass, 825 Hylton Road, Pennsauken, N. J. 08110.

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For more data, circle 42 on inquiry card

KINNEAR ROLLING DOORS

click with modern building design...
a perfect picture of economy, efficiency
and dependable protection.

At Polaroid Corporation's new Waltham, Massachusetts plant, the clean, uncluttered look of Kinnear Rolling Doors blends beautifully with the long, low modern lines of the building's design. But behind that trim facade stands a door engineered to survive time, trucks, weather, fire, wear, and crow bars.

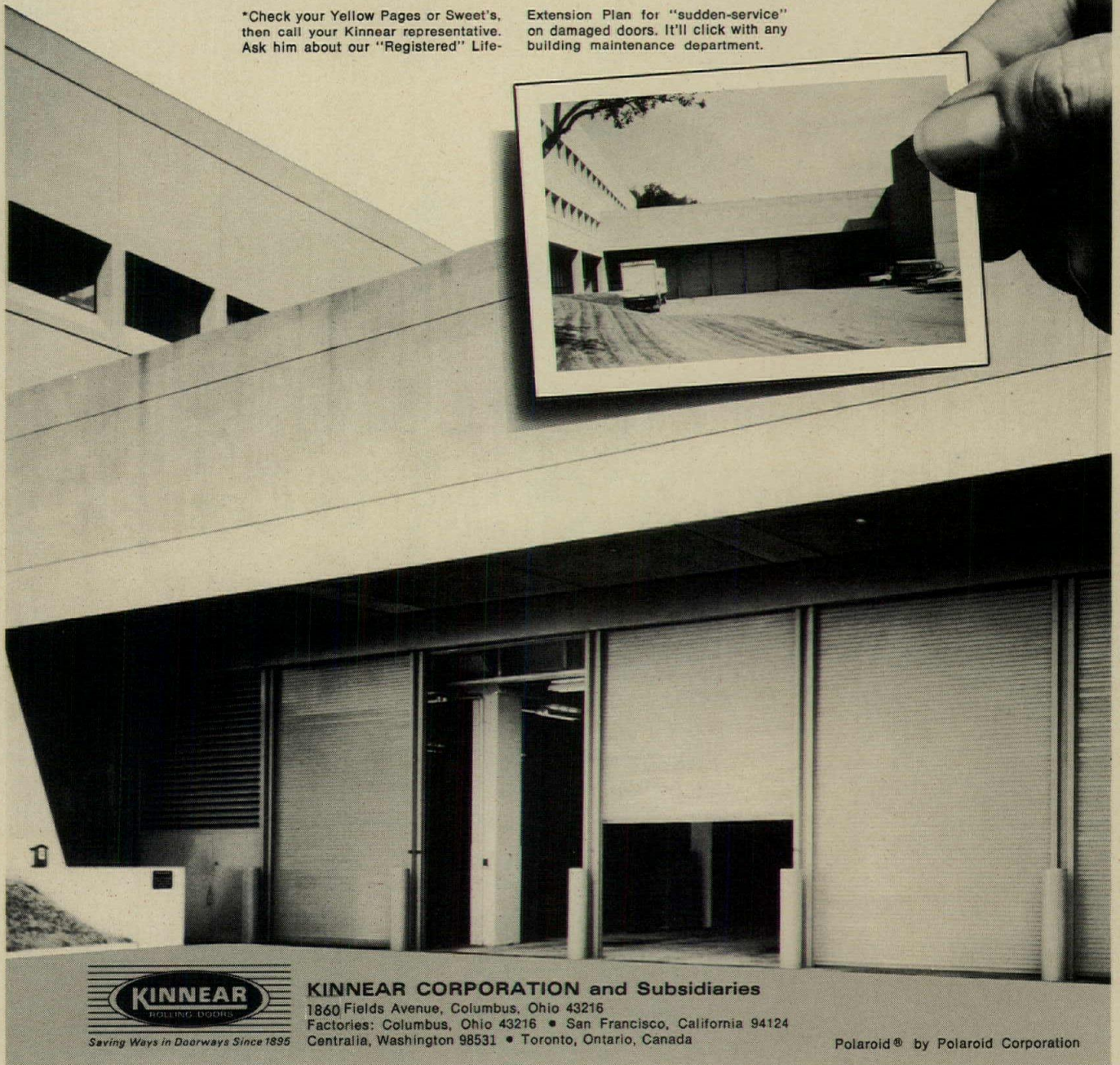
Kinnear developed the interlocking metal slat rolling door over 75 years ago. Today we have perfected it to give years of carefree service,* coil compactly above the opening, withstand wind, snow and rain, block the spread

of fire, and provide a tough barricade against riot and crime. And for extra efficiency especially suited for electric motor operation! A few of the good reasons many companies from coast to coast turn to Kinnear for dependable rolling doors.

For a better focus on how Kinnear Rolling Doors will look on your next project, request our complete catalog showing: Rolling Doors, Fire Doors, Grilles, Counter Shutters, Over-head Doors, and Electric Openers. They will fit any opening, building type, or architectural design harmoniously.

*Check your Yellow Pages or Sweet's, then call your Kinnear representative. Ask him about our "Registered" Life-

Extension Plan for "sudden-service" on damaged doors. It'll click with any building maintenance department.



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Columbus Carpet of Herculon® got dressed up with Roka by Kraft...



...then got undressed.

Columbus Mills "Graduate" made with HERCULON* olefin fiber took quite a dressing down. With a load of wet lettuce, juicy tomatoes and good, rich, Roka Blue Cheese Dressing. Result? The "Graduate" passed with flying colors . . . cleaned up quickly and easily.

The stain resistance of HERCULON coupled with uncommon resistance to abrasion and fading, gives you the perfect carpet for any commercial installation.

Roka dressing by Kraft couldn't make a lasting impression on Columbus Mills 5/64th gauge carpet of HERCULON. But

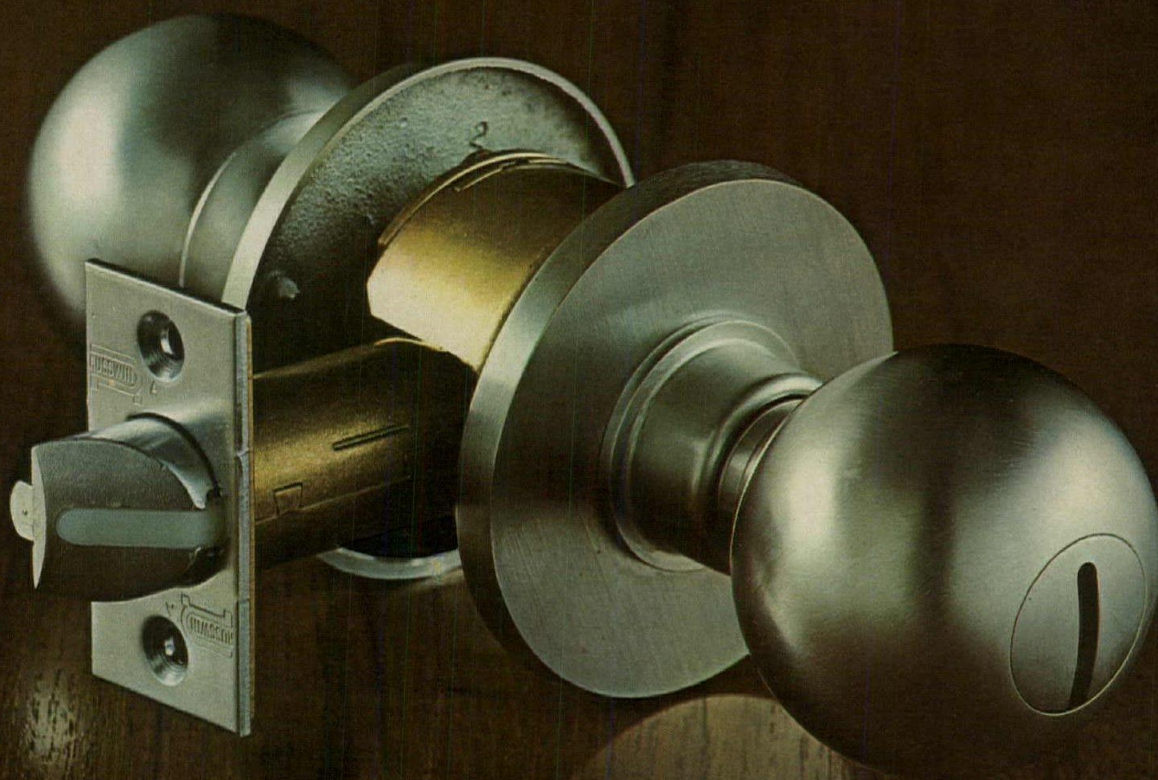
"Graduate" will make a wonderful impression on your clients. For more information contact Fibers Merchandising, Dept. 104, Hercules Incorporated, Wilmington, Delaware 19899.

Specify carpet of Herculon® by Columbus Mills, Inc.



*Hercules registered trademark.

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Well rounded

Smoothly sculpted to please as well as protect, the STILEMAKER® lockset is a beauty for all-around heavy duty service in schools, apartments, and office buildings. Unmistakably Russwin.

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QUICK

name the elevator that helps B.O.A.C. get off the ground at Kennedy International



Right...it's Armor. B.O.A.C.'s terminal has our elevators...and since the Kennedy control tower does too, we could just as easily have said we help bring B.O.A.C. down to earth. Which is exactly the approach we take to vertical transportation, an approach more and more architects have come to respect. To find out what we can do to help get your buildings off the ground, send for our "Guide for Elevator Planning" or refer to the Armor Catalog in Sweet's. Armor Elevator Company, Inc., 3533 N. 27 Street, Milwaukee, Wisconsin 53216. Plants in Louisville, New York, Los Angeles, Toronto, and Vancouver. Offices everywhere.

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A SUBSIDIARY OF **Smith** CORPORATION

For more data, circle 46 on inquiry card

OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry card, pages 205-206

CEILINGS / Five sound-control ceiling units designed for school construction are described in a 6-page booklet. All units meet Class I Flame Spread Classification. Brief specifications are included. ■ Johns-Manville, New York City.

Circle 400 on inquiry card

CORK WALL COVERINGS / Thirty-one designs, as well as additional data on the company's cork flooring, tile, bulletin boards and chalkboards, are shown in a sample kit. The wall coverings are available in their natural state, or varnished to give the appearance of leather. ■ Expanko Cork Co., West Chester, Pa.

Circle 401 on inquiry card

METAL ROOFING / Materials and specifications for three roof systems are listed in a 4-page brochure. ■ Overly Mfg. Co., Greensburg, Pa.*

Circle 402 on inquiry card

INSULATION / Sound conditioning for outside walls, plus bracing and thermal insulation, are described in an 8-page brochure. Insulation board sheathing is discussed in detail. Heat-resistance factors for typical sheathing materials are compared. ■ Acoustical and Insulating Materials Assn., Park Ridge, Ill.

Circle 403 on inquiry card

PATIO POTS / Two lines of pots, planters and garden furniture are described in a catalog and brochure. Twenty-one styles in pots, used primarily in residential areas, and 39 styles in planters, for commercial use, are available. Hand-molded of asbestos and cement, the pots and planters, when properly drained, are guaranteed not to crack or chip due to frost. ■ Atlas Asbestos Co., Ambler, Pa.

Circle 404 on inquiry card

FOAM CASTING PROCESS / A process which produces by chemical means a hard self-skin plastic surface and cellular-core sandwich construction is described in a 4-page bulletin. Furniture, cabinet housings and molded seating can be cast by this process. ■ Uniroyal Chemical, Inc., Naugatuck, Conn.

Circle 405 on inquiry card

STEEL DOORS / "Recommended Standard Details—Steel Doors & Frames," is a guide to understanding the breadth of details available from standard steel door and frame manufacturers. ■ The Steel Door Institute, Cleveland.

Circle 406 on inquiry card

AUDIOMETRIC ROOMS / Design and construction features that provide effective noise reduction for conducting hearing tests as well as basic research are described in a technical bulletin. Standard items included in the rooms are a pre-wired jack panel, observation window, and a ventilation system. ■ Eckel Industries, Inc., Cambridge, Mass.

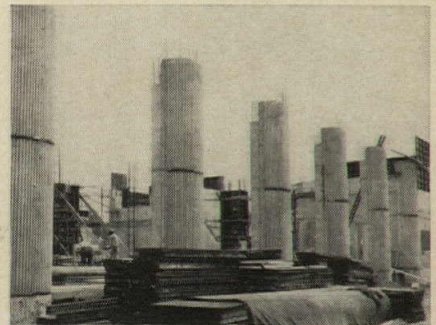
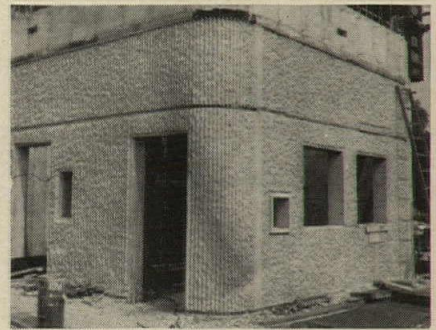
Circle 407 on inquiry card

FANS / Two centrifugal air curtain fans, one furnishing an air insect barrier and the other a thermal barrier for refrigeration doorways, are described in a 4-page bulletin. ■ ILG Industries Inc., Chicago.

Circle 408 on inquiry card

* Additional product information in Sweet's Architectural File

ARCHITECTURAL CONCRETE WITH RIBBED LINER



The Calumet Construction Co., Hammond, Ind., used Symons Steel-Ply Forms with Symons 1½" Deep Rib Plastic Liner for all bearing walls and columns on the First National Bank of Lansing, Ill. The liners were handset for each re-use.

These deep, architecturally dramatic ribs can be easily cast into any concrete surface. As the sun revolves through the day, distinctive shadows appear within the ribs, giving the concrete surface strong, clean lines. Several different finishes are possible with this liner. Concrete can be left smooth, sandblasted or roughened by hammer blows and bush hammering. The rough finish shown was obtained by bush hammering. Liner life is high and not affected by the number of concrete casts.

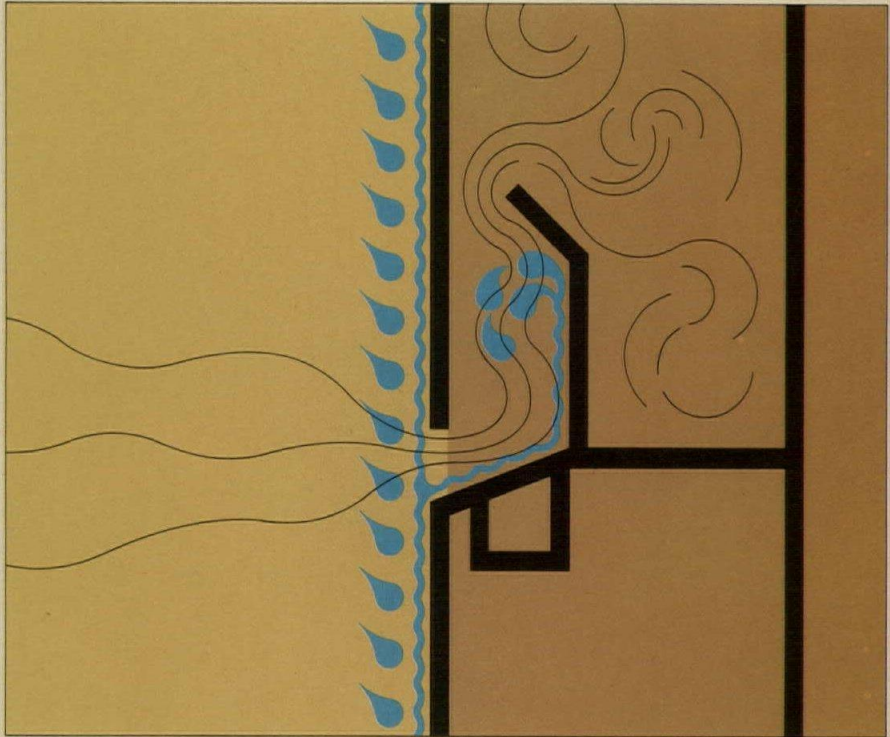
Symons architectural form liner brochure is available upon request.

SYMONS MFG. COMPANY
DIVISION OF  SYMONS CORPORATION
122 E. Touhy Ave., Des Plaines, Ill. 60018

For more data, circle 47 on inquiry card



Hundreds of tests were required to determine the most efficient baffle configuration for separating water from air entering the wall cavity, in order to achieve pressure equalization.



From the fabricator's standpoint, Jim Davis (Vice President of Engineering, Cupples Products*) discusses the development of the World Trade Center's wall system:

"Working from performance specifications changes your entire approach. For example, take one of the basic specifications—'to avoid primary reliance on sealants.' On a

building the size of the Trade Center, with a performance specification of 125 lb of static wind loading, avoiding the use of sealants in a dynamic condition led to the pressure-equalization system we finally developed. "I use the words 'finally developed' because designing a pressure-equalization system for the Trade Center—a process which took approximately three years and hundreds of tests—involved a great deal more than merely opening joints and baffling air. "It involved building a glass-enclosed chamber that allowed us to study the effects of an airplane motor driving water against mock-ups of wall systems. It involved our realization that the *crucial* factor was the velocity of the air . . . and that we would have to find the baffle configuration that would separate the

water from the air, yet still allow the air to penetrate the aluminum skin *fast enough to achieve pressure equalization*. Which meant we also had to know the speed of air-pressure changes in the environment so we could design a system that would balance natural pressures. "For seven years, the Port Authority, architects, general contractor, structural engineer, erector and Alcoa worked together as a building team that was totally involved at all times. Without such total involvement, the Trade Center, as we will soon know it, would have been impossible."

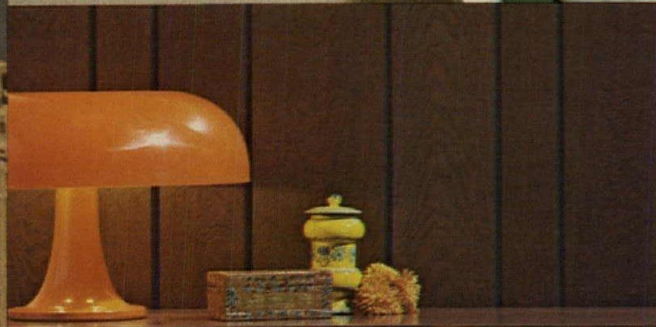
*Cupples Product Division, H. H. Robertson Company

The World Trade Center is a project of the Port of New York Authority. Engineering and development was carried out under the Authority's World Trade Center Planning and Construction Division.

Change for the better with Alcoa® Aluminum



Dimension ∇ ™



Dimension ∇ ™: Patent Pending

Paneling with the bold look for Modern America

Dimension ∇ ™ paneling has grooves deeper and wider than any other. The effect is modern. Smart. Dramatic. This is the look for now homes. Flat walls are definitely out.

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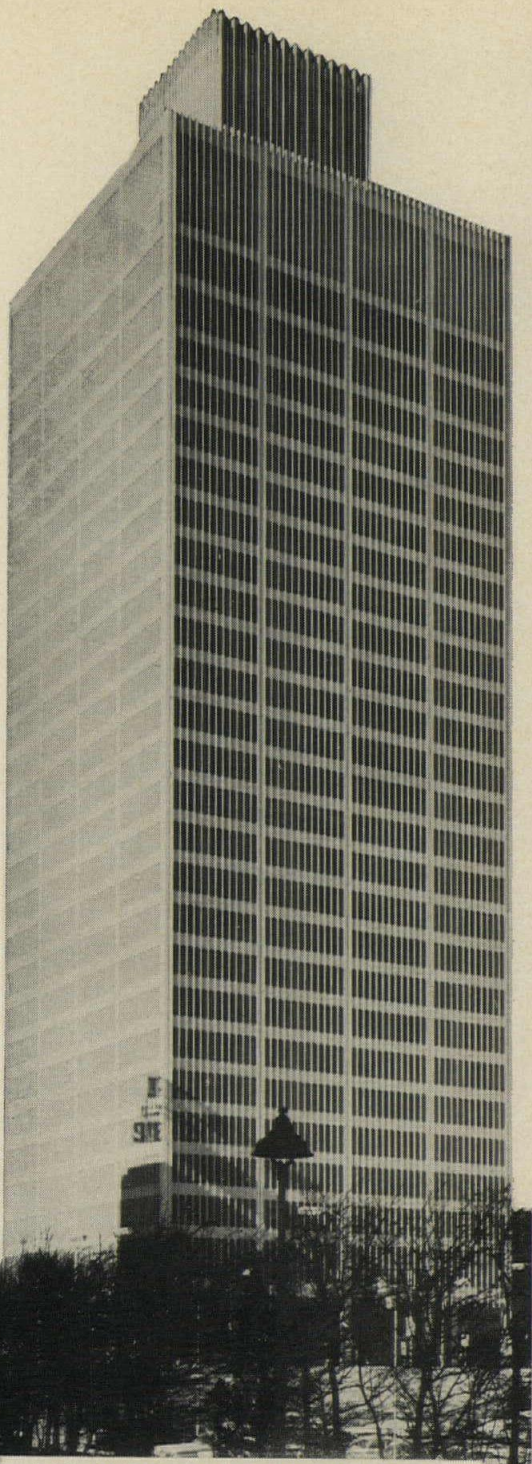
For details check Sweet's Architectural File Division 6. Or wire Georgia-Pacific Corporation, Instant Sample MA Portland, Oregon 97204. We'll get Dimension ∇ paneling samples to you within 48 hours.



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MICHIGAN CONSOLIDATED GAS COMPANY, Detroit, Mich. ARCHITECTS: Minoru Yamasaki-Smith, Hynchman & Grylls Associated Architects and Engineers. GENERAL CONTRACTOR: Bryant & Detwiler Company. AUTOMATIC CONVEYOR SYSTEM: Standard Conveyor.



Mail room clerk sends basket to designated floor simply by pushing a button. Each tote box carries up to 32 lbs. of payload... the conveyor accepts up to 12 loads a minute.



At proper floor, the box is automatically shunted off vertical conveyor. "Magnetic memory" control system has no moving parts, levers, or between-station wiring... nothing to wear out.

New Michigan Consolidated Gas Co. Building features

28-story Recordlift mail conveying system

A recent publication from the U. S. Post Office Department recommends that "in the large office building the owner and his architect should assure that proper consideration has been given to the mail collection and delivery needs of tenants." It suggests further that the use of vertical tray conveyors is "most effective."

An outstanding supplier of this type of high-speed mail distribution equipment is STANDARD CONVEYOR COMPANY... and STANDARD's Recordlift system in Detroit's new 28-story Consolidated Gas Company Building is an outstanding recent installation.

Mail can be sent from any floor to any other floor on the system in a matter of minutes—simply by pushing the proper address button. During rush hours, the Recordlift can deliver 384 lbs. of mail a minute to or from the mail room.

A complete Recordlift Data File can prove most useful in designing your next multi-story building. Request one today.

Other typical Standard Conveyor Recordlift Installations

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Oakland, California
- Western Electric Co., New York, N.Y.
- Atlantic Coast Line Railroad Company
Jacksonville, Florida
- Ontario Hospital Services Commission
Toronto, Ontario, Canada
- Bank of America Service Center Bldg.
San Francisco, California
- Bankers Life Company
Des Moines, Iowa
- State of Oregon, Salem, Oregon
- First National Bank
Minneapolis, Minn.
- Lincoln National Life Insurance Co.
Fort Wayne, Indiana
- Time-Life Building, New York, N.Y.
- Mutual Service Insurance Company
St. Paul, Minnesota
- State of Texas Employment Comm.
Austin, Texas
- Ohio Oil Company, Findlay, Ohio
- California State Teachers Association
Burlingame, California
- Los Angeles County Hospital
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- Zurich Insurance Co., Chicago, Illinois
- Seattle First National Bank
Seattle, Washington
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"We've never had to replace one single faucet during the entire 8-year history of Marina City"

Robert R. Butler

Building Superintendent

And he's talking about more than 5000 faucets. Delta faucets.

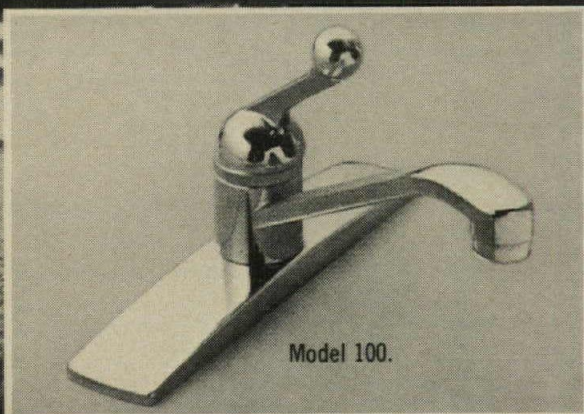
The success of Chicago's famous Marina City is no accident. It's the result of specifying Delta single-handle faucets exclusively in the building complex.

Mr. Butler, who's been at Marina City from its beginning, figures that in 8 years less than \$200 was spent to maintain over 5000 faucets. But low maintenance cost is just one of the advantages you get when you specify Delta single-handle faucets.

Delta's also simply beautiful . . . simply beautiful to look at, beautifully convenient to operate. And that prompted many Marina City tenants building new homes to ask where and how they can get Delta faucets.

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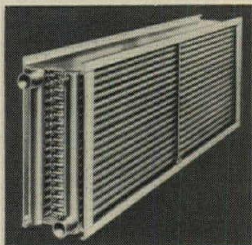
San Francisco's skyline is introduced to a striking structural bracing system in the new Alcoa Building, earning it an AISC architectural award of excellence.

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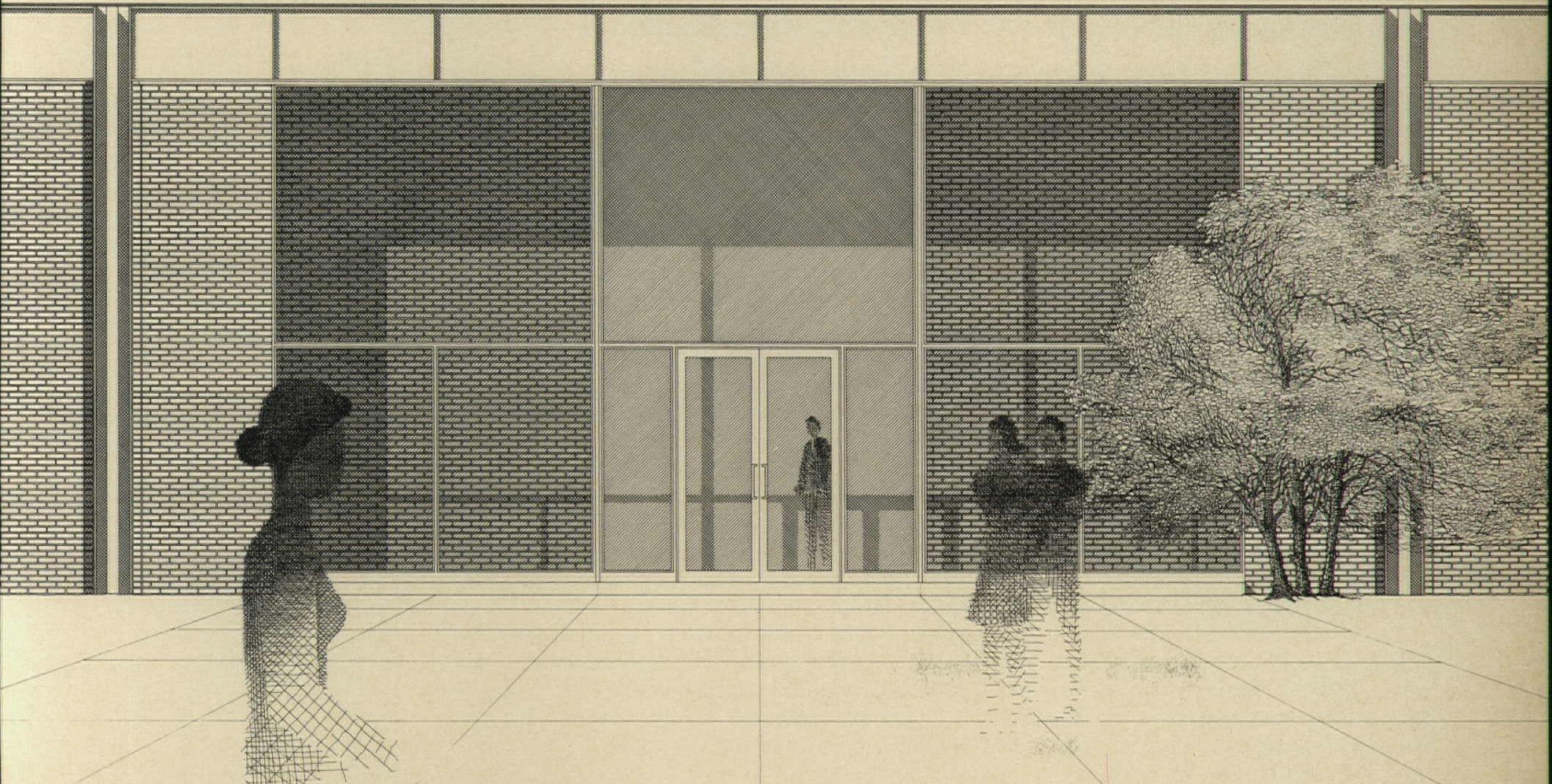
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DESIGN IN THE MIESIAN TRADITION: THE CURRENT WORK OF C. F. MURPHY ASSOCIATES

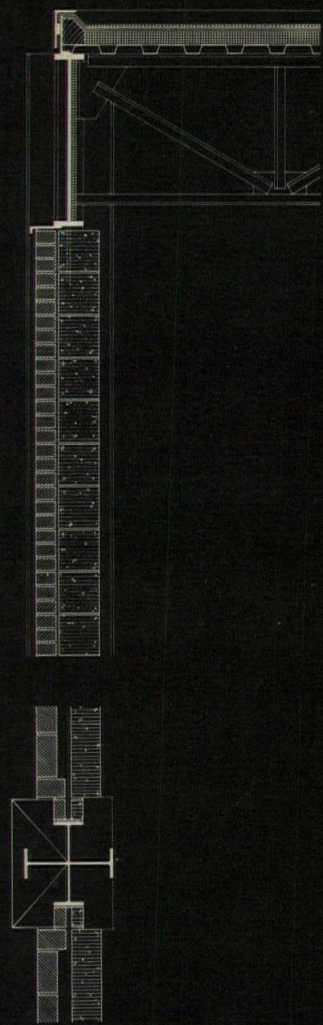
C. F. Murphy Associates is one of the largest and most successful architectural firms in Chicago. Alone or in collaboration with other leading firms, it has been responsible for a good share of the major buildings erected in that city within the last two decades. Many of the firm's most distinguished buildings constructed during this period have been designed within the esthetic of Mies van der Rohe. One of Mies' most gifted associates, Gene Summers, is now partner-in-charge of design at C. F. Murphy Associates, and the buildings shown on the following pages have been done under his direction.

The work of Summers and his fellow architects must be measured by how well they do it, rather than by the novelty of what they are doing. The work is novel only in that it is conservative, that it focuses upon architecture as structure, created as a process of construction. As buildings change in kind, and as technology develops, the work of good architects within the Miesian tradition will change, for that tradition is not a fixed esthetic, but a design process. Thus the work of firms like C. F. Murphy Associates will change, but they are in no hurry. Like Mies, they refuse to invent a new architecture every Monday morning.

—Mildred F. Schmertz



Entrance detail for the Skil Corporation Manufacturing Building



A MANUFACTURING BUILDING FOR SKIL CORPORATION, WHEELING, ILLINOIS

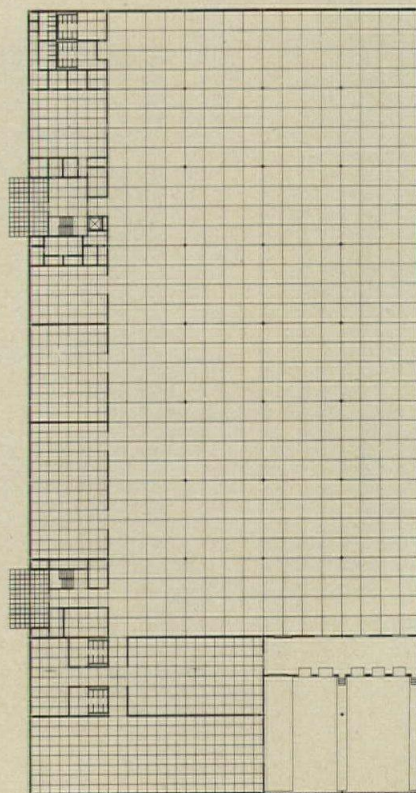
A manufacturing plant for the production of hand tools, this long, one-story structure proves once again that an industrial building can become a work of art if designed in the Miesian manner by architects who have mastered the genre. Buildings of this type should possess straightforwardness, clarity and simplicity—as this one does—and it can be argued that these qualities are still best attained within the Miesian discipline. There are many plants which superficially resemble the Skil Corporation's new structure in that they consist of great ribbons of windowless wall punctuated at precise intervals by the vertical members of the structural system and by points of access. Few, except those designed by Mies himself, are as elegant as this. The difference is indeed in the details.

The structural steel frame has a gray glazed brick infill. The building's two entrances on the north are defined with wide panels of glass forming the exterior wall of the vestibules. The building was designed as a rigid structure to support an intricate conveyor system in addition to

normal wind and snow loads. Open-web steel joists in adjoining bays are perpendicular to one another, providing a rigid roof and uniform column and girder loading. The 48-foot square bays allow for complete flexibility in organizing the manufacturing process within the 119,000 square feet of interior space. The columns, as can be seen in the detail above, are cruciform in shape.

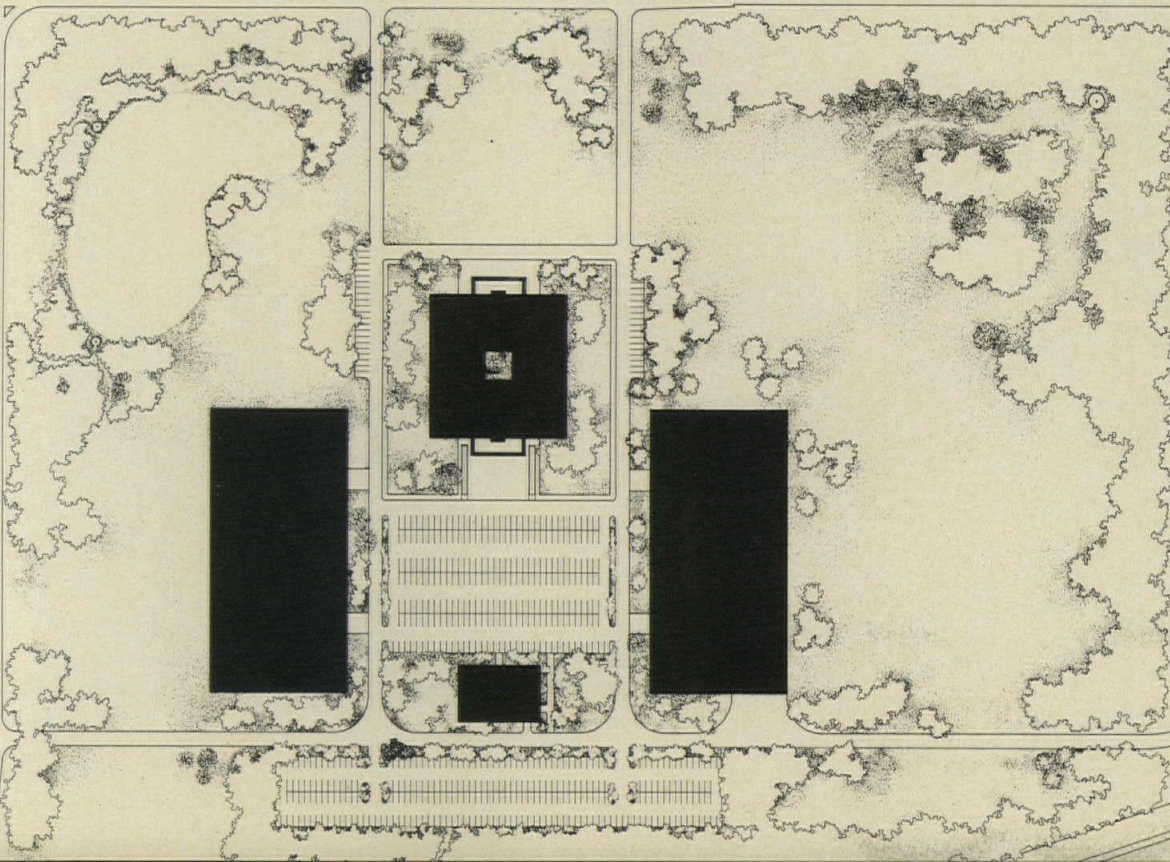
The small, rectangular structure which can be seen on the plot plan (right) houses mechanical and electrical equipment and supplies all utilities to the plant. Centrally located and connected to the manufacturing building by a personnel and service tunnel, it will also serve the future office building and engineering and research building shown on the site. The latter will be similar to the manufacturing plant in its over-all dimensions, structural module and materials within an over-all site plan which is formal, balanced and symmetrical.

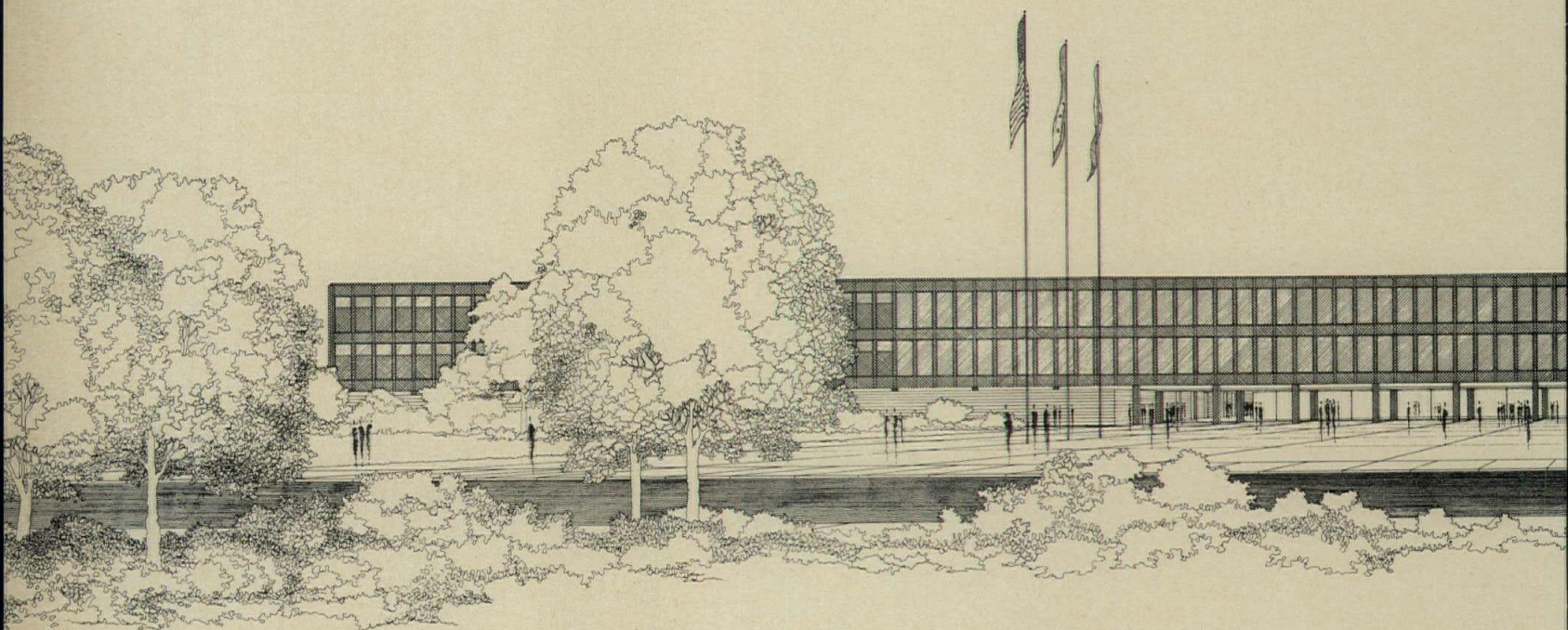
The total cost of the manufacturing building, completed in November 1968, was \$3,500,000.





Hedrich-Blessing





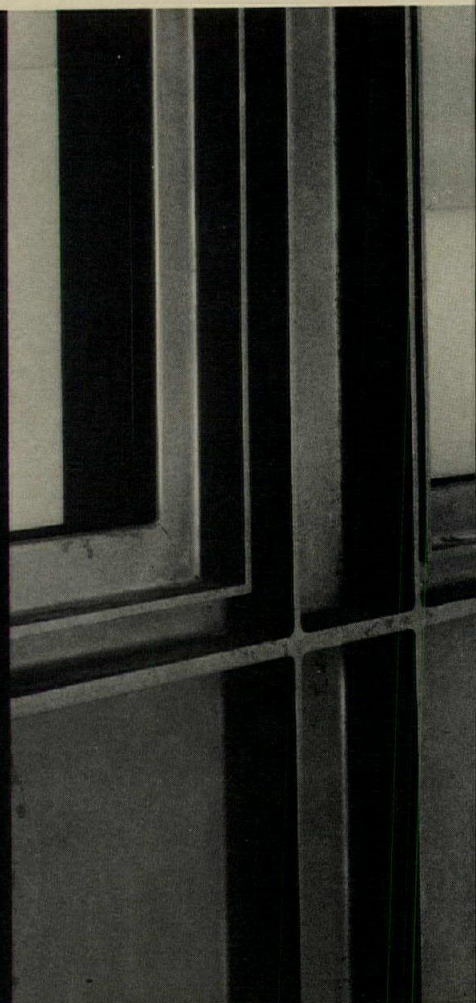
MALCOLM X COMMUNITY COLLEGE, CHICAGO, ILLINOIS

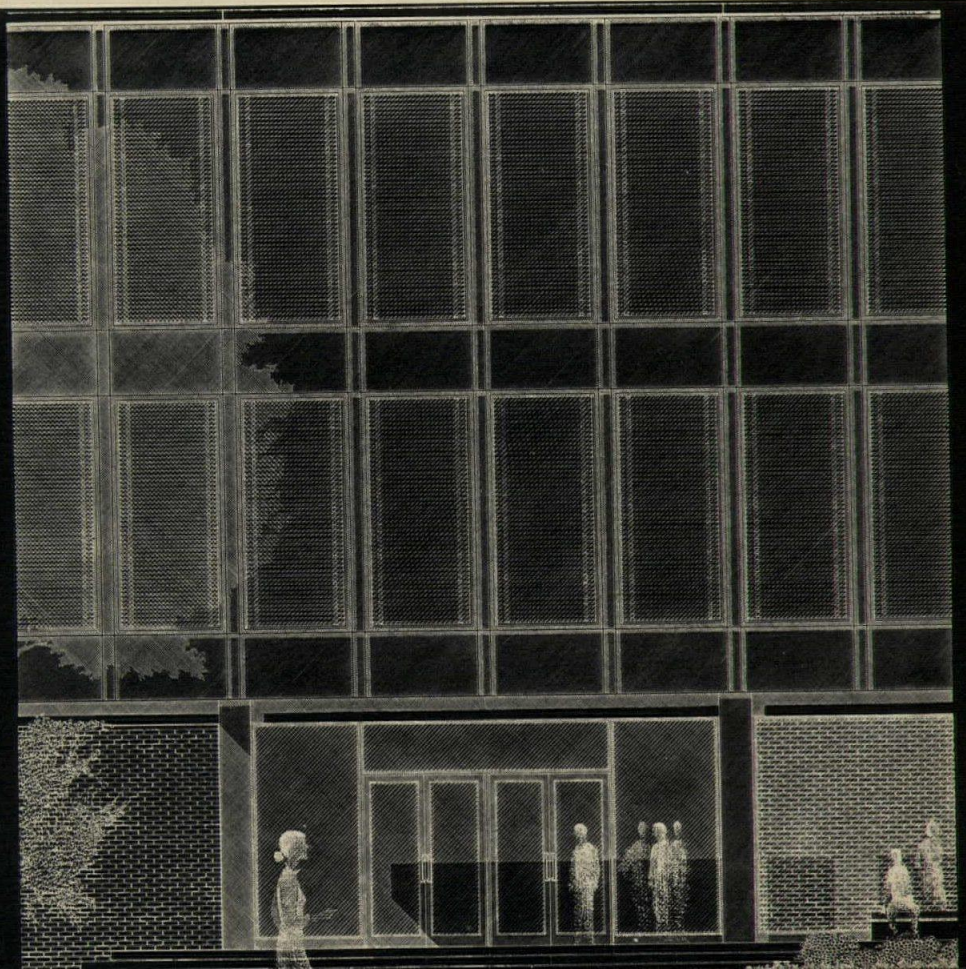
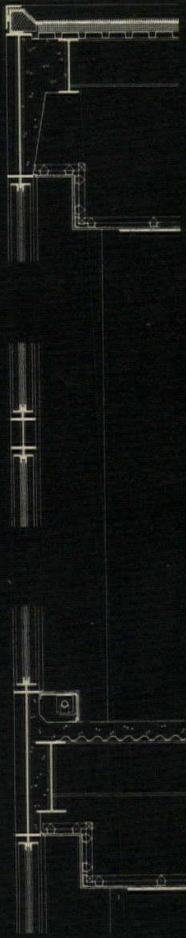
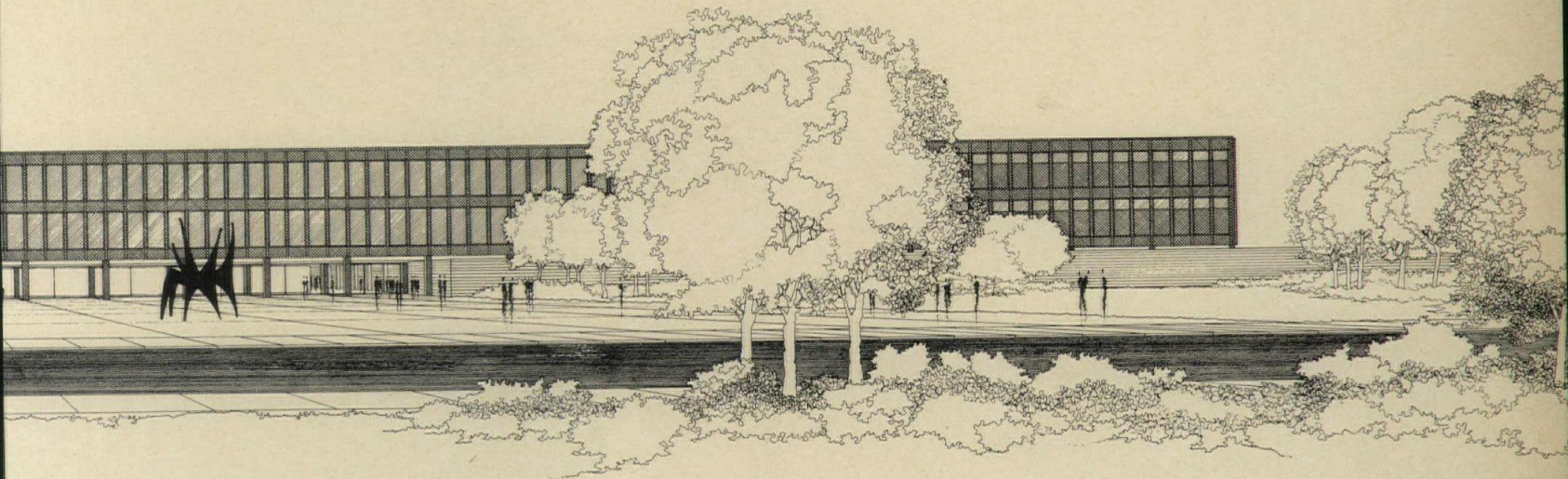
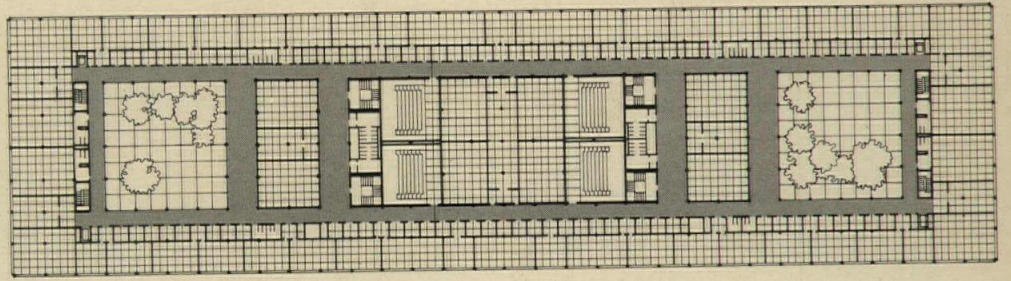
Malcolm X College is a new two-year junior college, part of the Chicago City College, and located in the Near West Side of Chicago. The site is two miles west of the Loop and immediately north of the Eisenhower Expressway and the West Side Medical Center. In addition to offering a complete junior college program including health and nursing courses, the college facilities will also serve the neighborhood through night vocational courses, a child care center, speech improvement programs, theater and sports activities.

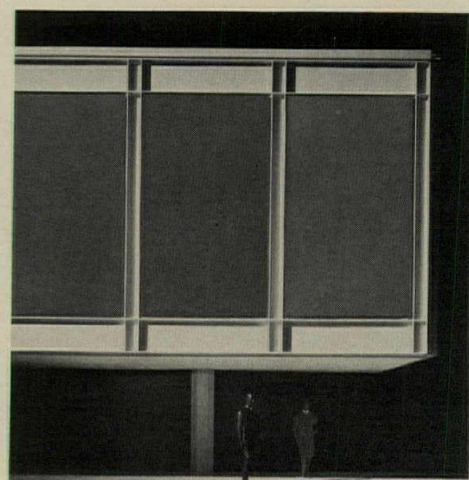
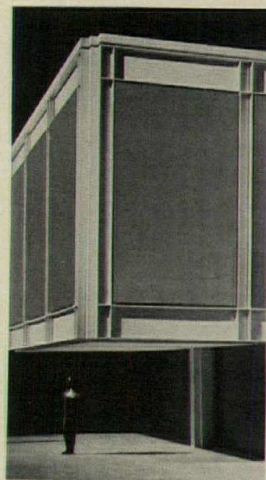
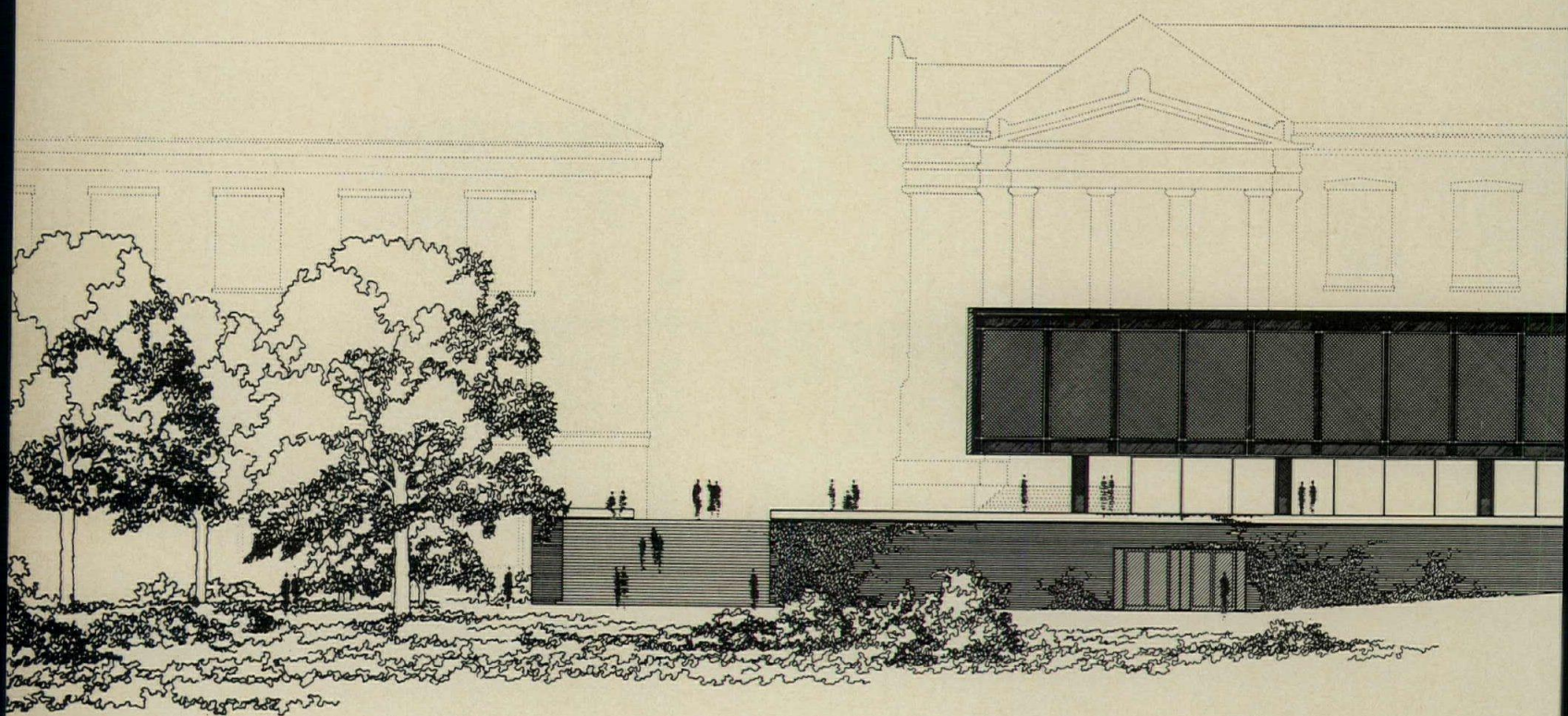
The three-block-long steel frame building is designed to accommodate 10,000 students. Because Malcolm X College is essentially an urban campus on a relatively small site of 24 acres, the architects decided to concentrate all facilities in one large building. They provided large lounge and internal circulation areas to create as pleasant an environment as possible for the students and community. Two open court areas where students may relax between classes are located on the top floor at either end of the building as shown in the plan of

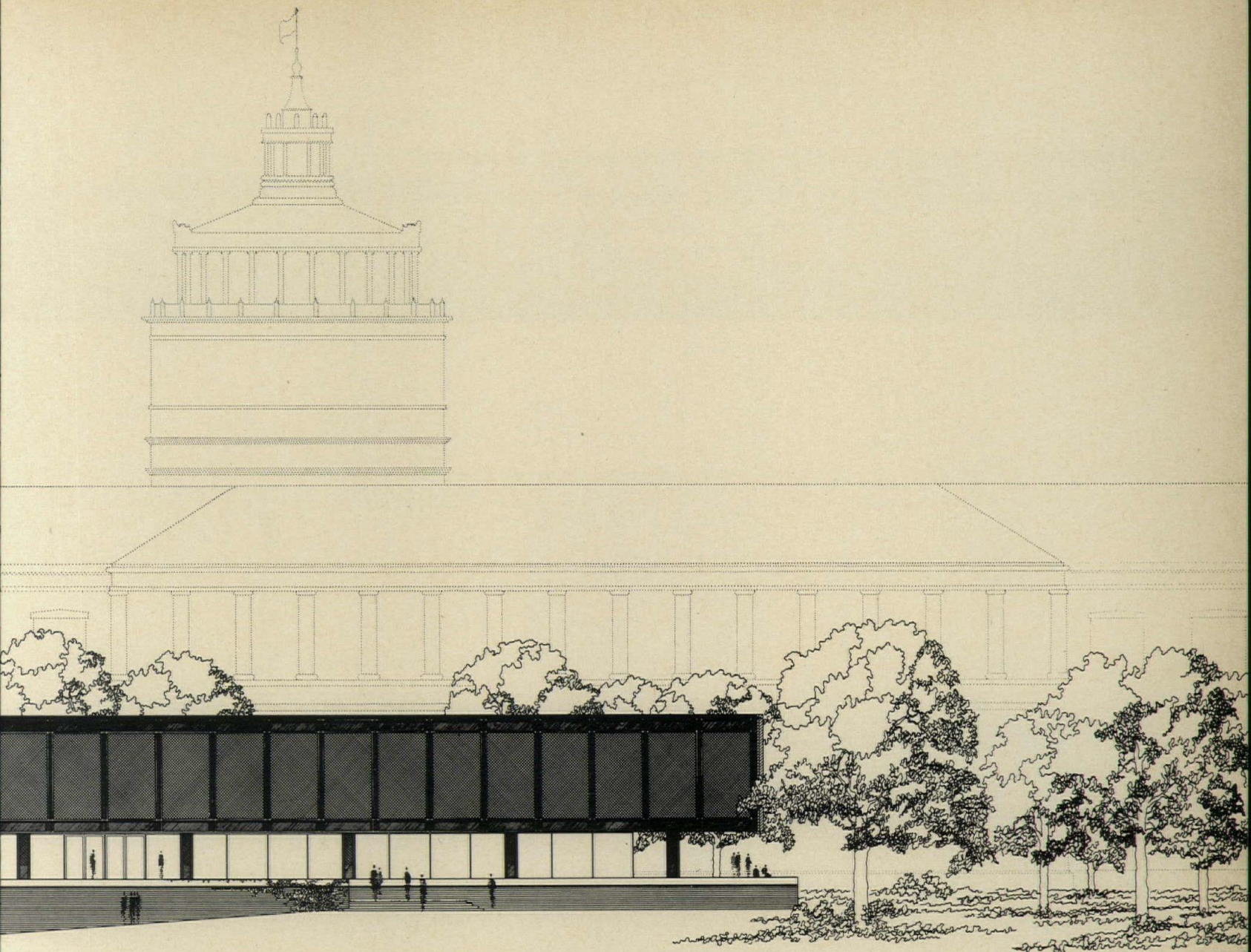
a typical floor. Included at various levels within the structure are a 450-seat theater, similar to a round sunken amphitheater in the center of the building, a gymnasium and pool, a library and the student union. The building also contains 72 classrooms, 13 science labs, four lecture halls, two lecture rooms, a music department, audio-visual space, a television studio, administrative areas and 140 faculty offices. These elements are contained within 523,000 square feet of gross floor area at a cost of \$27.50 per square foot for the building, excluding equipment. The total cost of the building and site development was \$15,032,500.

The structure consists of three stories plus basement, 42 feet above grade. Floor-to-floor height is 14 feet. The structural system is steel frame with 24- by 24-foot bays. The exterior skin is painted steel and solar bronze glass. The interior partitions are face brick. The floors are terrazzo in all major circulation areas with resilient floors and carpet in student and faculty areas. The building is now complete.









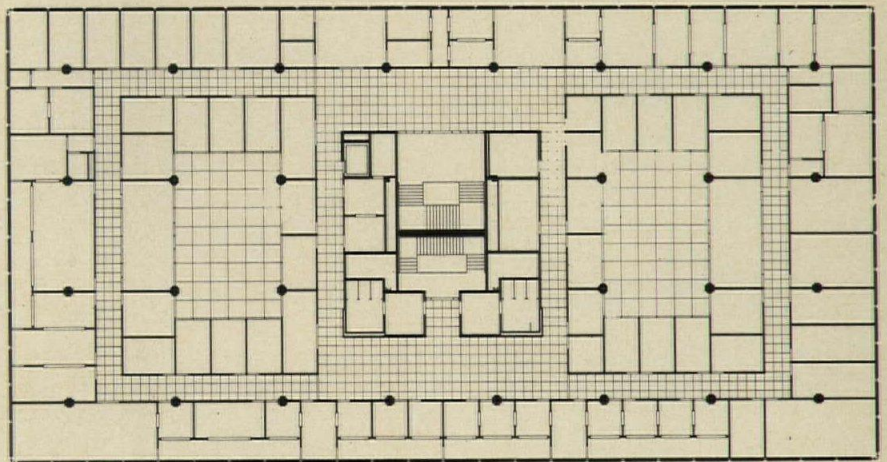
UNIVERSITY OF ROCHESTER PSYCHOLOGY BUILDING, ROCHESTER, NEW YORK

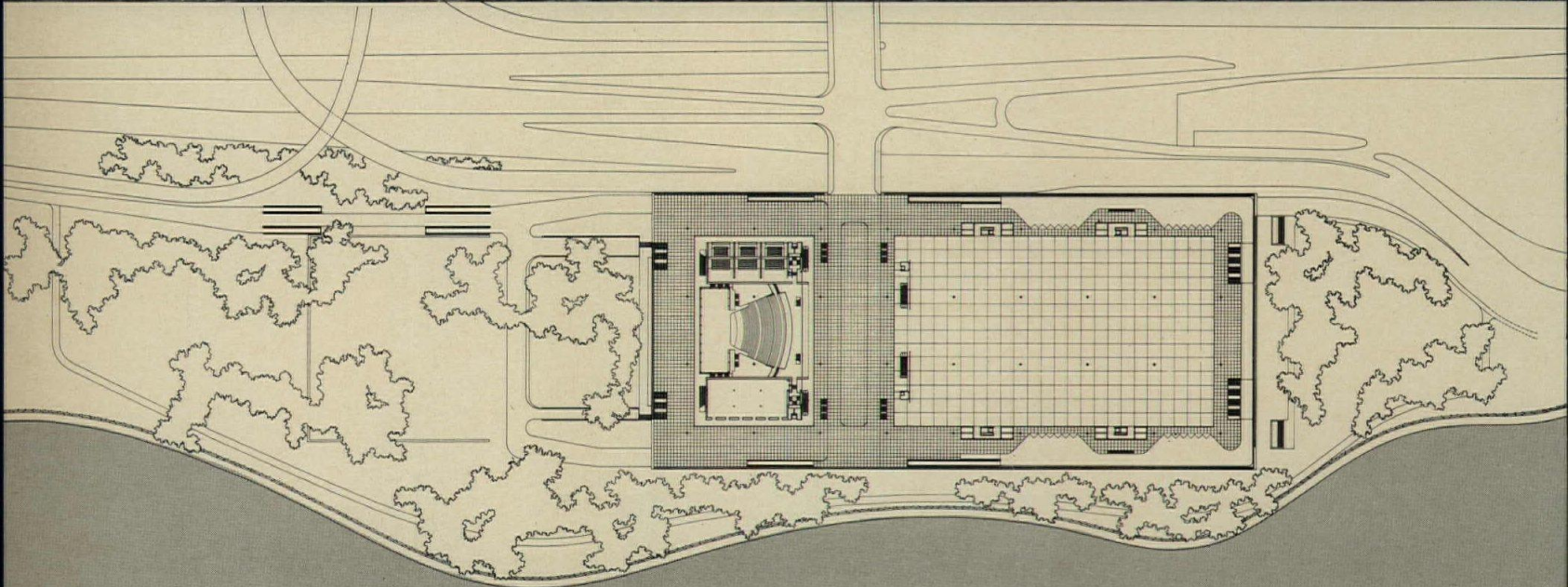
Still in the planning phase, this four-level building will provide a controlled environment for graduate and faculty research in addition to lecture halls, demonstration rooms, classrooms, space for animal colonies and offices.

The program calls for 110,000 square feet of enclosed space on a limited and confined site. Because a number of the required facilities do not require natural light and can therefore be accommodated underground, and because the architects do not wish the building to appear overly massive above grade, a major portion of the two lower levels are below grade.

The upper two levels which rise from the plaza form a smaller building unit in good scale with the site and the surrounding structures. A tunnel will connect the new structure with other campus buildings and the nearby library.

The building will be a steel frame structure with granite infill. The plaza will be largely of granite. The structural bays are 29- by 29-feet based upon a 4-foot-10-inch-module. The cost will be \$5 million.





MC CORMICK PLACE ON-THE-LAKE, CHICAGO, ILLINOIS

The reconstructed McCormick Place complex replaces the building which was destroyed by fire in January, 1967. It consists of two buildings separated by a mall and set on a platform at the same elevation as the exhibition level of the original building. As the plans indicate, one structure contains an exhibition area of 302,000 square feet with a clear and uniform ceiling height of 50 feet. The other houses a 4,451-seat theater flanked by restaurants and meeting rooms. Both buildings are enclosed by glass walls and covered by a single roof structure forming a protected pedestrian and vehicular mall between the buildings.

The roof structure is a two-way steel truss system painted black, with members 30 feet on center and a structural depth of 15 feet. The cross shaped columns, spaced 150 feet on centers, are of reinforced concrete poured into a steel shell. The design load of the roof is 80 pounds per square foot. A 74-foot cantilever on the perimeter of the building provides protection for the loading areas to the east and west of the

exhibit area and for the pedestrian and vehicular passages around the theater complex and its auxiliary spaces to the south.

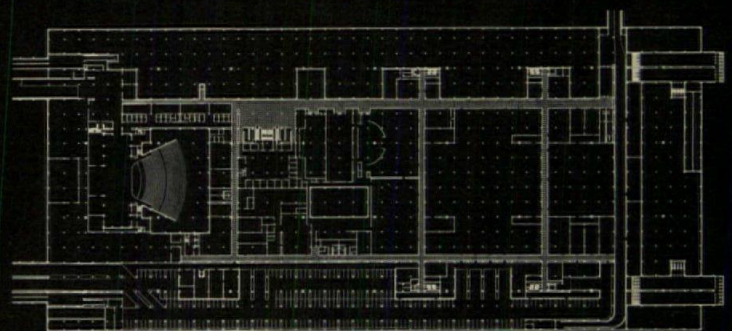
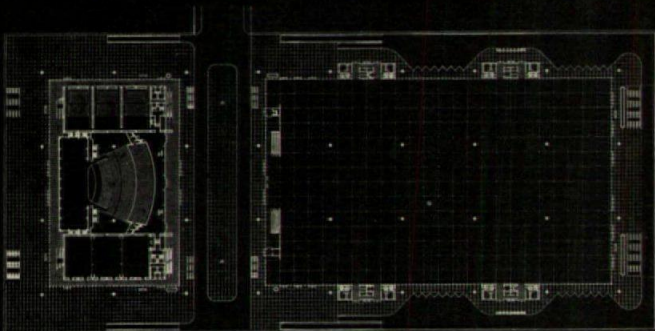
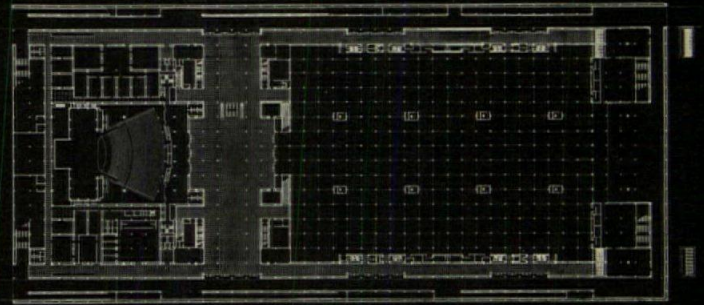
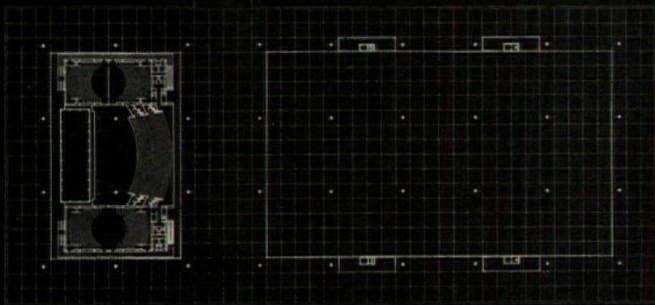
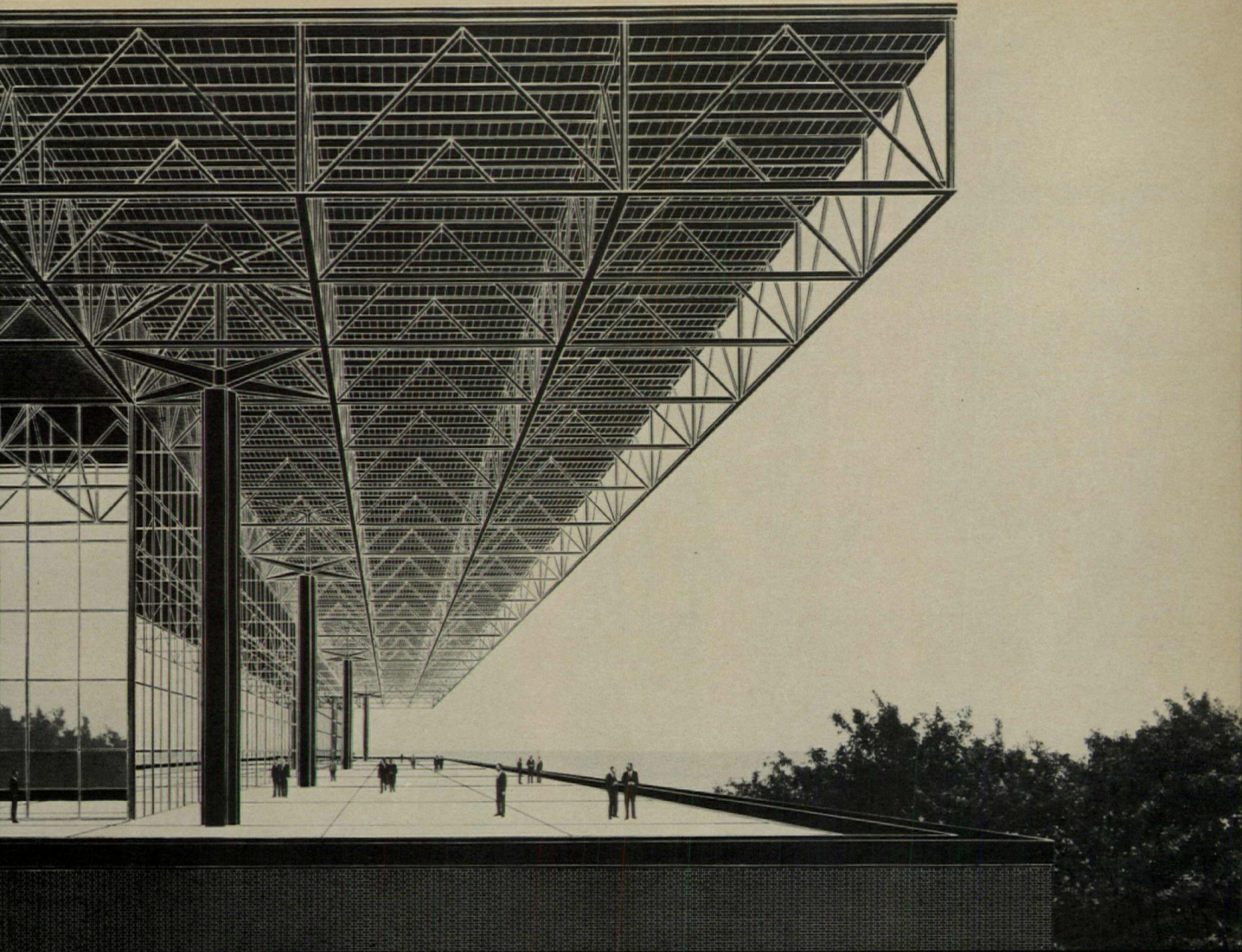
The two levels below the main exhibition level have been designed within the original construction which remained partially intact after the fire. These have been expanded to provide additional facilities. The level directly below the platform contains a 60,000 square feet registration lobby and main entrance to the theater, an exhibition area of 291,000 square feet, meeting rooms, restaurants and a vehicular tunnel loop. This secondary exhibition level is served by its own dock facilities to the north and is connected to the hall directly above by stairs, escalators and elevators.

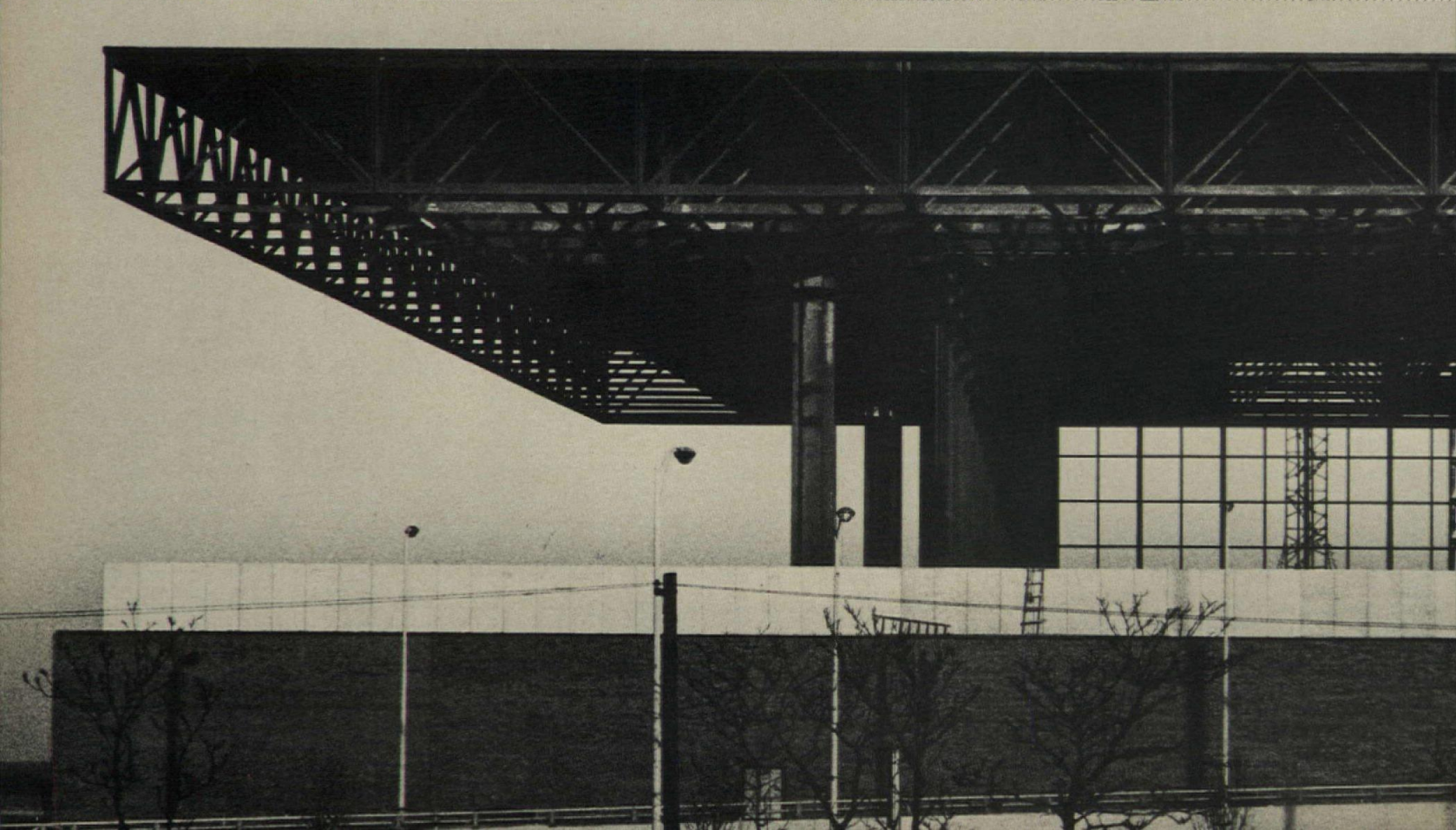
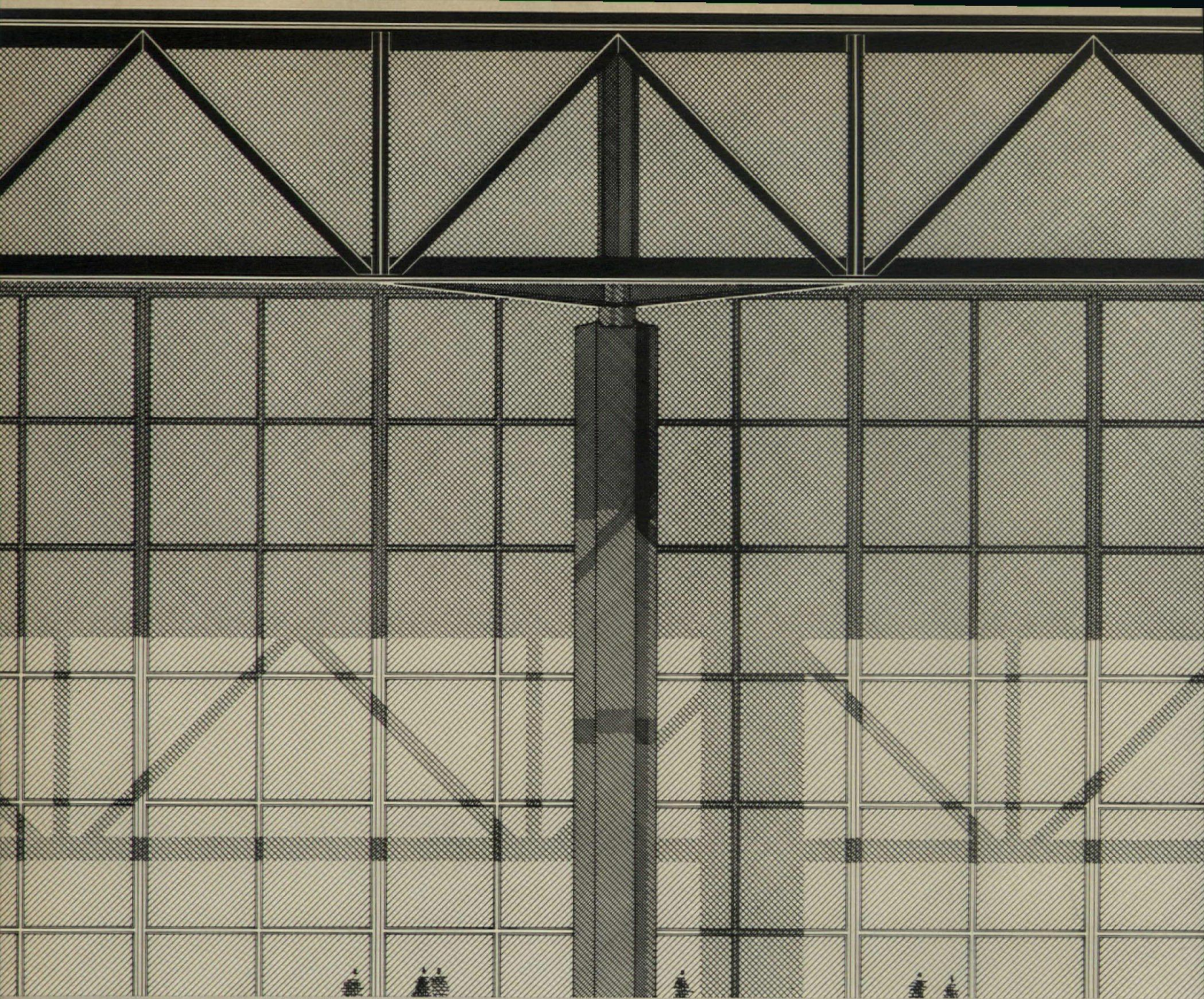
The lowest level contains cafeterias, a snack bar, beverage service, office space, shops, mechanical rooms, employee locker and toilet facilities, the main kitchen for the restaurants, storage and dock facilities. This level is connected to the Soldier Field parking lot by tunnel and eventually there will be a tunnel connection to a proposed rapid transit station.

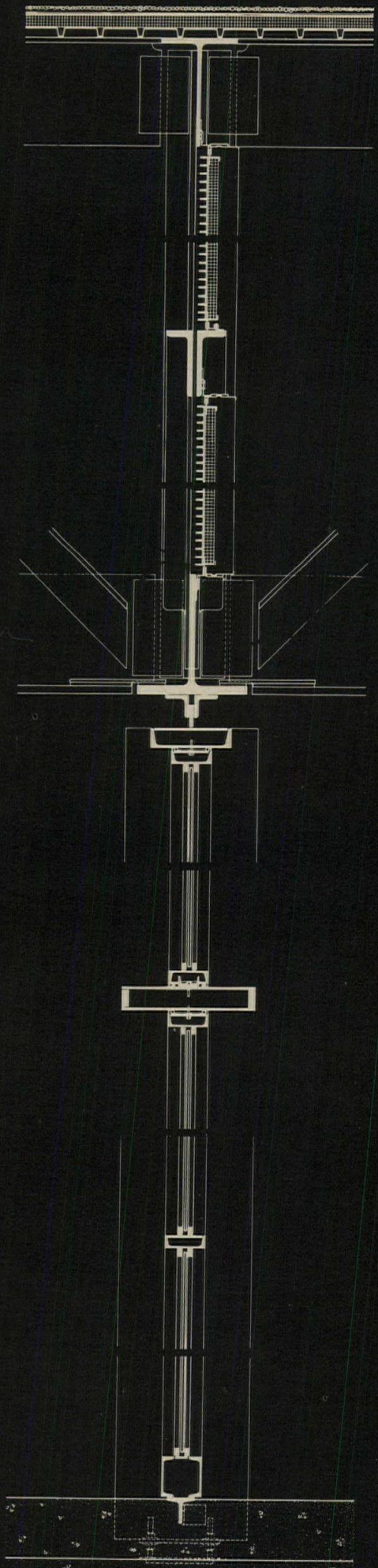
The project contains a gross floor area of 1.8 million square feet within the limits of the 30-acre site. Of this total, 600,000 square feet are devoted to exhibition area, 100,000 square feet to meeting rooms and 42,000 square feet to restaurant and cafeteria facilities. The building also contains 7 auditoriums with sloped seating areas of 8,000 seats each and 16 combination meeting and private dining rooms. South of the building is an enclosed parking lot for 2,000 cars.

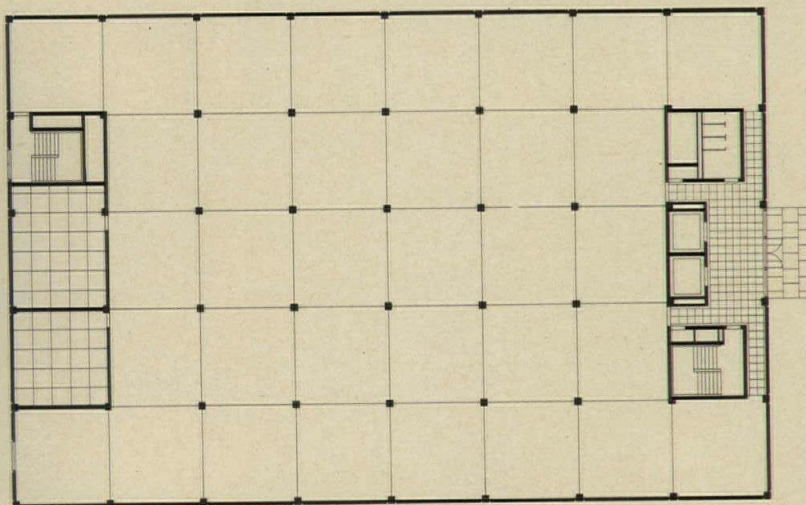
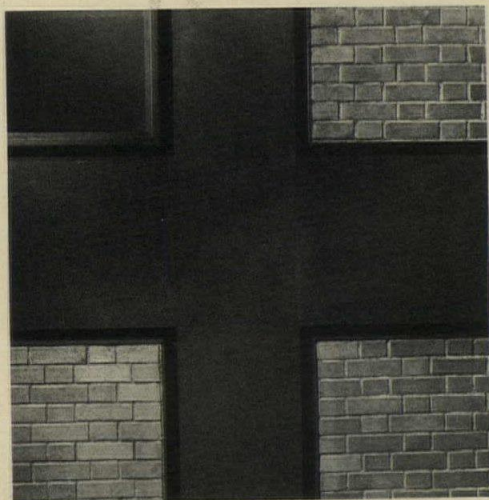
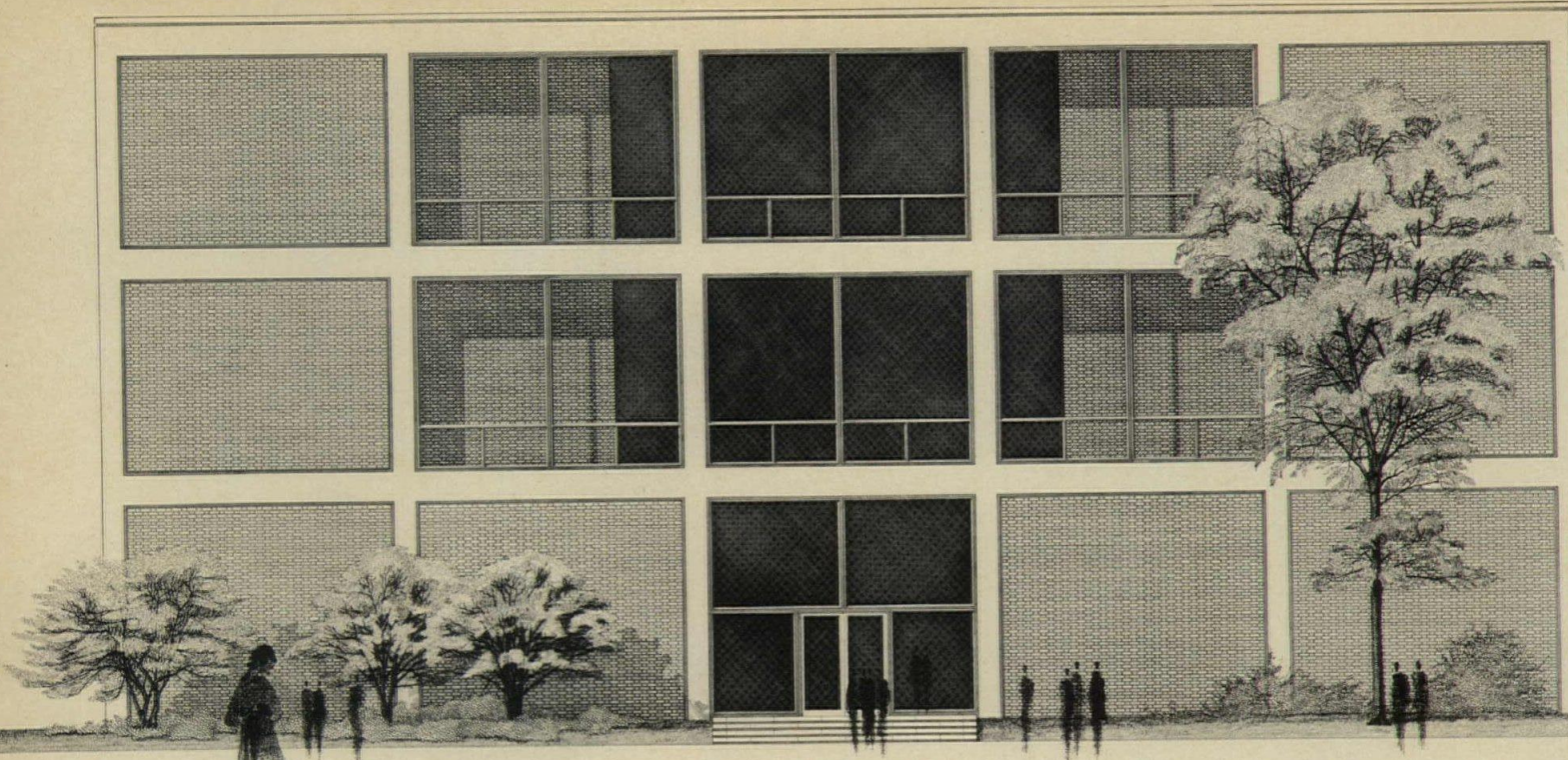
All spaces provided for human use are air-conditioned. Spaces for mechanical equipment, storage, etc., are ventilated. All areas of the building are equipped with an automatic sprinkler system. Mechanical equipment is located throughout the lower levels and in the truss space at the perimeter of the curtain-wall.

Completed late in 1970, the approximate construction cost was \$83 million. The vast complex, begun in May 1968, took less than two years to complete—a testament to the construction management skills of the C.F. Murphy team.









ILLINOIS BELL TELEPHONE COMPANY, DORCHESTER BUILDING, CHICAGO, ILLINOIS

A dial central office building located on the south campus of the University of Chicago, this building handles both mechanical and electrical switching equipment for use by the University of Chicago and the surrounding residential community. The building is three stories high, but the structure has been designed to accommodate an additional three stories. The structure is of reinforced concrete on 20-foot bays designed to accommodate the Western Electric switching equipment. The exterior columns are clad with steel as the detail above indicates and the walls are brick infill layed in a Flemish cross bond coursing.

The gross floor area is 69,878 square feet. The total cost of the building was \$2,471,298.

ILLINOIS BELL TELEPHONE COMPANY DORCHESTER BUILDING, Chicago, Illinois. Owner: *Illinois Bell Telephone Company*. Architects and engineers: *C.F. Murphy Associates*; mechanical and electrical engineers: *Howell-Stiggleman Associates*; general contractor: *B.H. Janda Construction, Inc.*

SKIL CORPORATION MANUFACTURING BUILDING, Wheeling, Illinois. Owner: *Skil Corporation, Chicago, Illinois*. Architects and engineers: *C.F. Murphy Associates*; general contractor: *Bulley & Andrews*.

MALCOLM X COMMUNITY COLLEGE, Chicago, Illinois. Owner: *Chicago City College*. Architects: *C.F. Murphy Associates*; structural engineers: *The Engineers Collaborative*; mechanical and electrical engineers: *Cosentini Associates*; landscape architect: *Alfred Caldwell*; cost consultant: *McKee, Berger, Mansueto, Inc.*; general contractor: *W.E. O'Neil Construction Company*.

UNIVERSITY OF ROCHESTER PSYCHOLOGY BUILDING, Rochester, New York. Owner: *University of Rochester*. Architects and Engineers: *C.F. Murphy Associates*.

MC CORMICK PLACE ON-THE-LAKE, Chicago, Illinois. Owner: *Metropolitan Fair and Exposition Authority*. Architects, engineers and landscape architects: *C.F. Murphy Associates*; acoustical consultants: *Bolt, Beranek, Newman, Inc.*; graphics consultants: *Uni-Mark*; cost consultants: *McKee Berger, Mansueto, Inc.*; stage consultant: *John Dittamore*; general contractor: *Newberg-Paschen*.

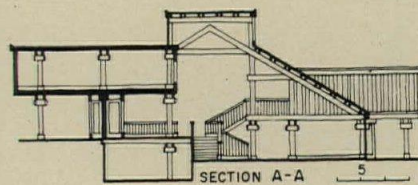
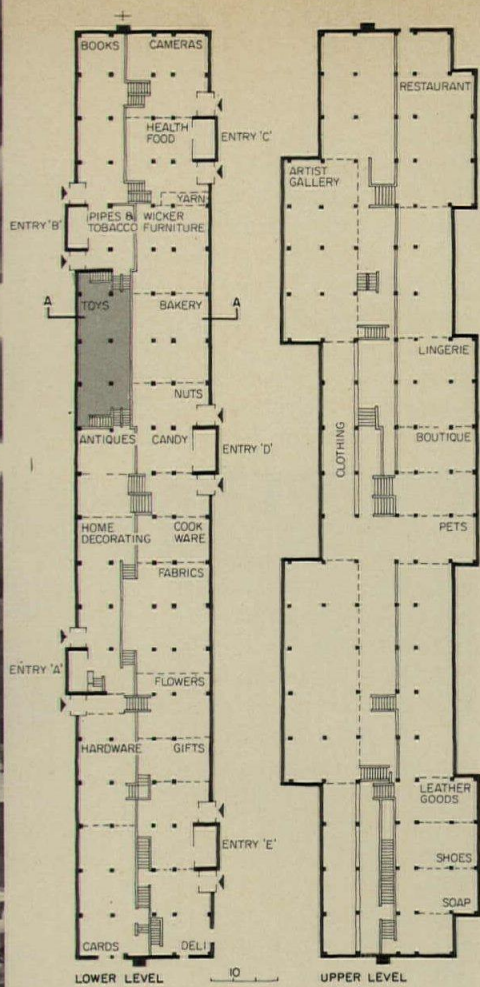
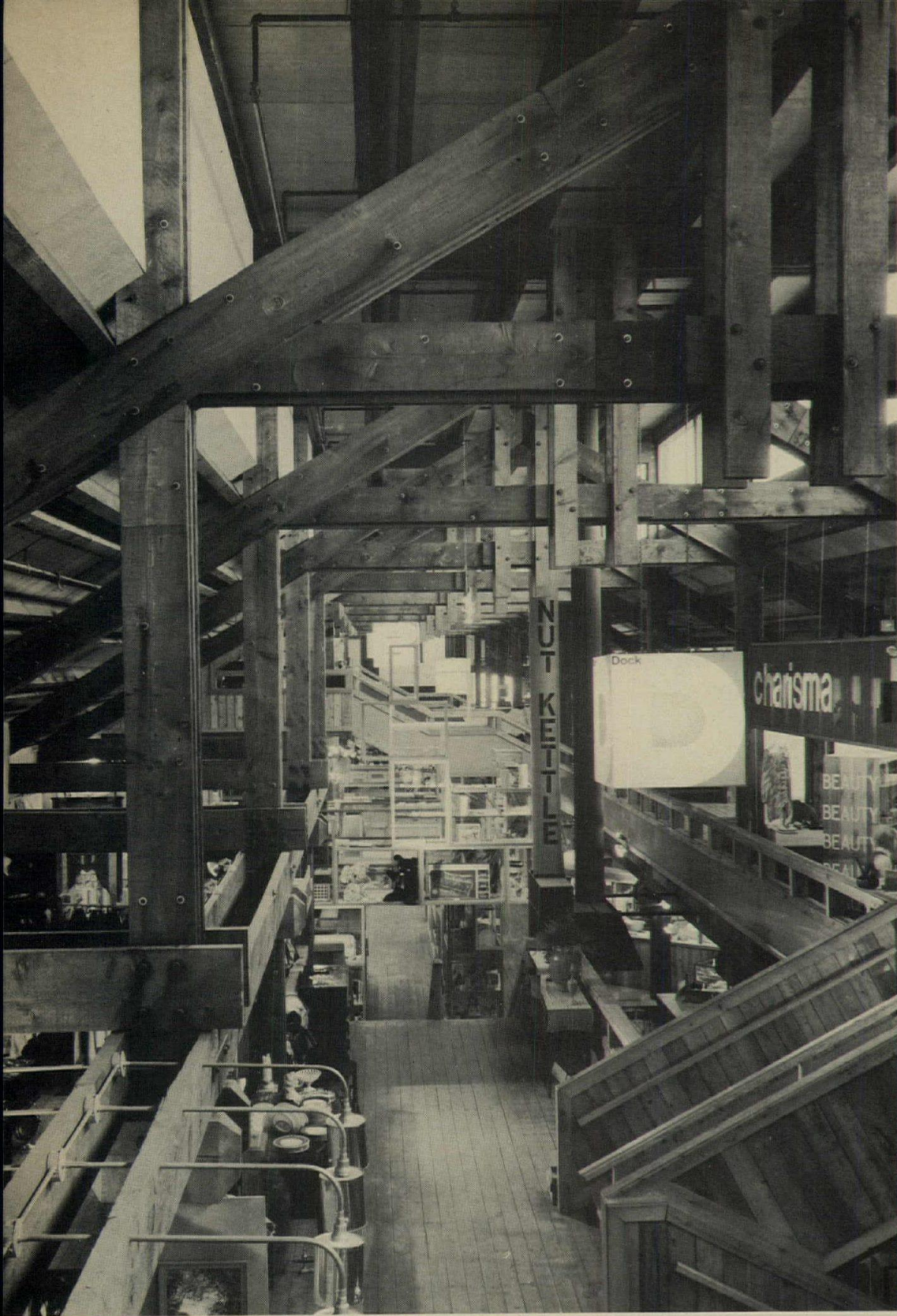
Heritage Village Bazaar



Otto Baitz photos

Is this the shopping center of the future? The first shopping centers, twenty-five years ago, were a strip of stores along the highway. Next another strip of stores was placed across a mall. Then, the last word it seemed, a roof was added. Now, what if you threw out all the plastic shrubbery and filled those empty malls with small shops so close together that you'd have to walk through one to get to the next? Voila! That's Heritage Village Bazaar.

In his latest project for the retirement community in Southbury, Connecticut, Warren Callister has combined the ancient concept of the bazaar with a 19th century system of construction, heavy timber. The result is definitely up-to-date, in effect, the Miesian "Universal Space" enriched with vibrant color, form and activity.



In addition to two half levels at grade, mezzanines in each projecting bay provide lively spatial interplay in the 420-foot long building. The four different levels are joined across the tall central spine (clerestory faces east) by frequent stairways, above.



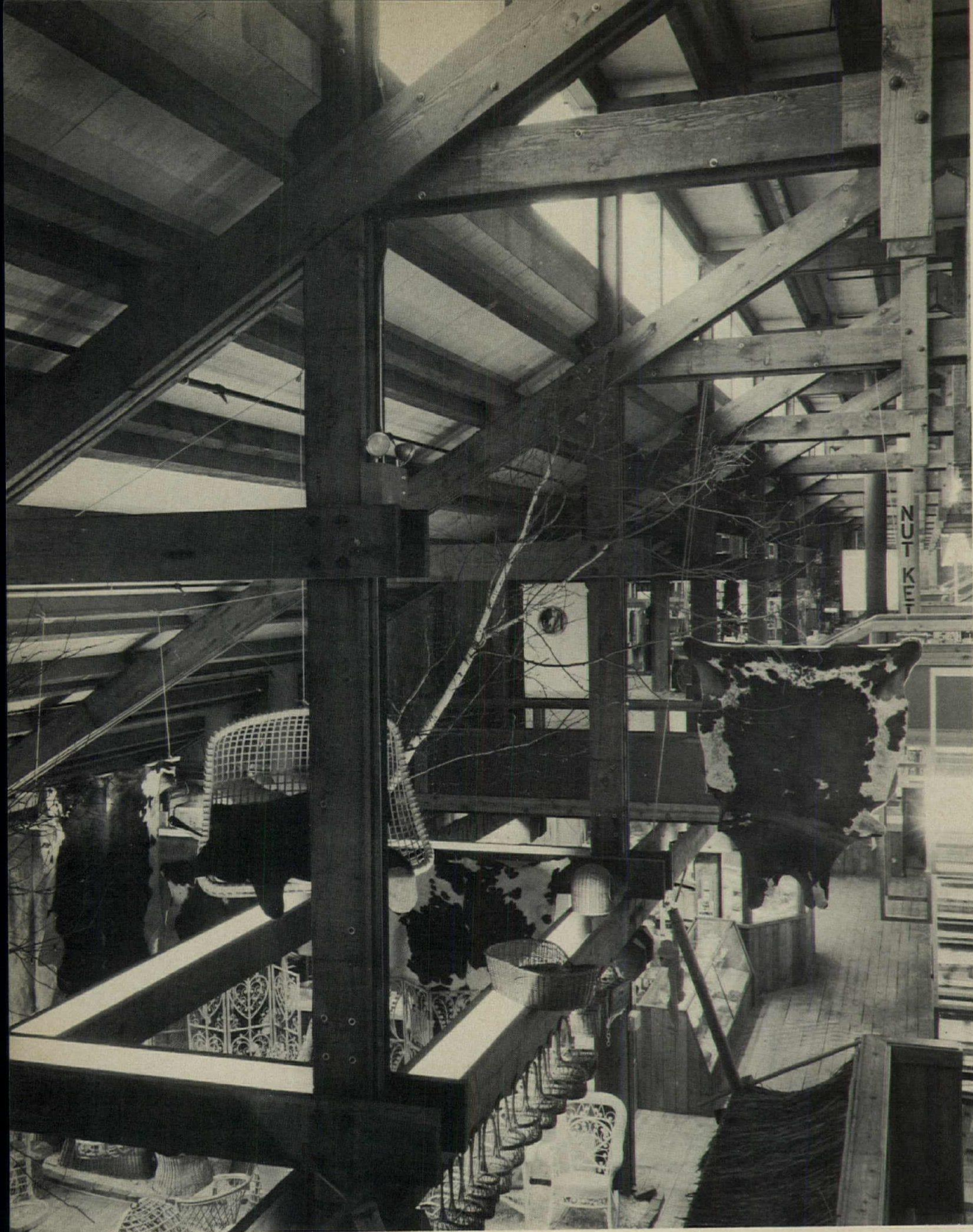
Since Heritage Village Bazaar opened last August, more than twenty small businesses selected by the Paparazzo Development Corporation staff have set up on the various levels of the building. Five boldly-lettered cubes hang in the space, and divide it into sections. Frequent maps key the various shops to the appropriate section. One of the most elusive charms of the building is the pleasant sense of confusion, of being overwhelmed with choice of things to see, samples to nibble, and crannies to explore.

Some of the shops, like the Nut Kettle with its orange roasting chimney, left, have modulated the entire space although most have fitted into the space with a minimum of additional construction. The most outstanding exception is the Carousel toy shop, right, by New Haven architect Caswell Cooke. Built of 150 brightly-painted 2x2 frame modules (18 by 36 by 54 inches) bolted together, the shop has an internal walkway which takes grandparents and others on a lengthy tour of the available gifts. At times the walkway rises twelve feet above the floor on which it is built. Conceived entirely in model form, the store was built within the Bazaar a module at a time. Except for a few specially reinforced sections such as the main stairway, the stacked modules support their own weight. A film was made of the one-day erection process including the reactions of several children turned loose on the newly-built structure. Perhaps the best test of the flexibility of Callister's building is that another architect has been able to provide such an appropriate counterpoint within the framework.

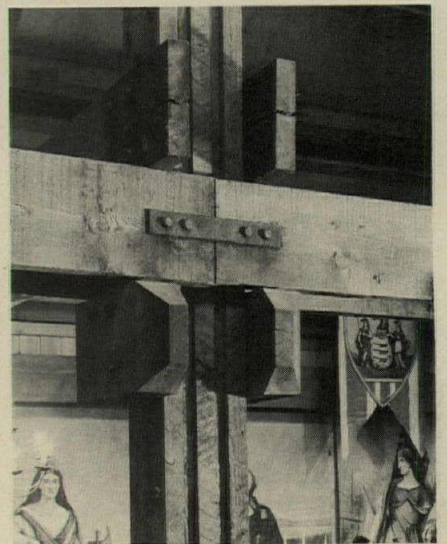
The exterior of the Bazaar, designed in the now-familiar esthetic of the rest of Heritage Village, combines solidness and good scale with careful siting. The west side, right, forms one side of the Village Green while the east elevation, opposite, faces large parking lots.

THE BAZAAR AT THE VILLAGE GREEN, Heritage Village, Southbury, Connecticut. Owner: Paparazzo Development Corporation. Architects: Callister and Payne; associated architects: August Rath; structural engineer: Glenn R. Nelson; graphics consultant: Barbara Stauffacher; contractor: Paparazzo Development Corp.





The virile heavy timber construction of the Bazaar is especially evident at those places where the roof begins at the first floor eave and continues right up to the clerestory, above. Here, in the wicker furniture shop adjacent to the toy store, light bounces off the sloping ceiling from fixtures boxed into the beams bracing the central columns. Rising 32 feet, these columns, three 3x12's and two 2x12's bolted together, evoke memories of the past for Heritage Villagers while providing solid support. The lateral bracing is accented by 6x14 bolsters.



AALTO'S SECOND AMERICAN BUILDING: AN ABBEY LIBRARY FOR A HILLSIDE IN OREGON

Mount Angel Abbey Library, Saint Benedict, Oregon

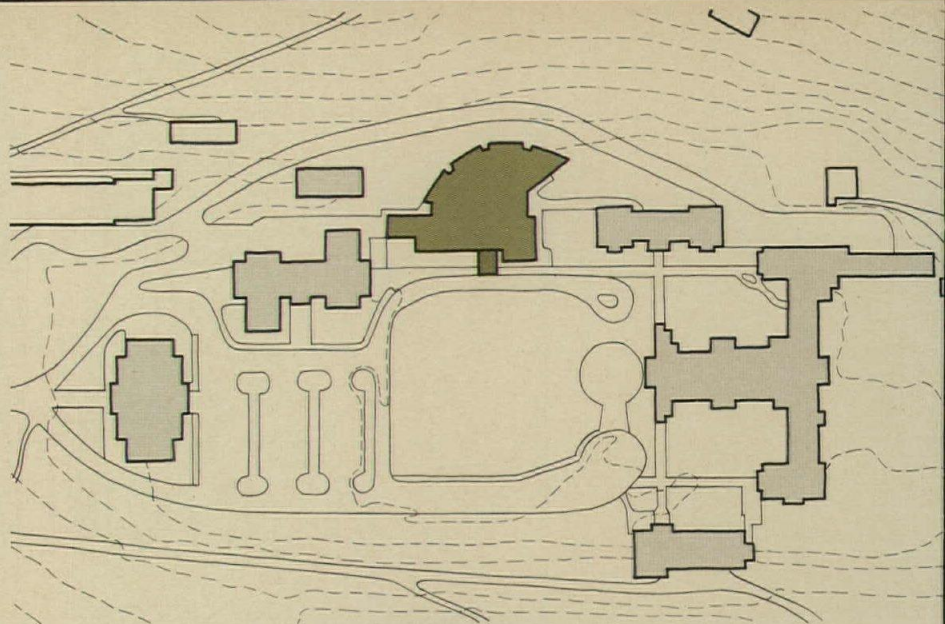


Morley Baer photos

"... We need you. We have a magnificent monastic site. We don't want to spoil it. . . Give us a building that will fill our needs in a beautiful and intelligent way."—Letter to Alvar Aalto from the monks of Mount Angel Abbey

Alvar Aalto's second American building is a library for a Benedictine monastery on a knoll in a quiet Oregon valley—far from his Finnish home and office, and from his other American building, Baker House at M.I.T., completed in 1947. The library at Mount Angel Abbey is, nevertheless, unmistakable Aalto. In the Aalto manner, there are recognizable trademarks: the visually simple handling of complex relationships; forms, like the fan shaped plan of the library's reading rooms and stacks, and the curved skylight that floods this three-story space by day; details, like the parabolic roof wells which are light sources by day and by night; the use of natural wood in small-sectioned strips; and the white interior surfaces. But most characteristic of all is the complete individuality of the solution based on the uniqueness of the building's requirements and of its site.

The site is remarkable and beautiful, an epitome of the ideal monastic situation. It is a wooded knoll (not unlike some of Finland's low wooded hills) rising several hundred feet above the farming fields of a peaceful valley, looking over the Willamette River valley to Mounts Hood, Adams, St. Helens and Rainier and, on the horizon, to the Coast Range on one side and the Cascade Range on the other. The monastery is, in effect, removed from the world but with and in full view of it. The site fits the Benedictine program of teaching and study (the Abbey includes a college and a seminary) but its location within a few miles of Oregon's capital city, Salem, and within 50 miles of Portland, makes it accessible to a variety of cultural interests for which the Abbey hopes to become a focus. The new library building makes available for the first time its full collection of rare books, unique in the Northwest region, and through its planned audio-visual tape system brings discourses taped at distant places to scholars sitting in Mount Angel's carrels. It was the site, and the monks' appreciation of their responsibility for its sensitive development, along with the Benedictines' emphasis on a con-



Edmund Y. Lee

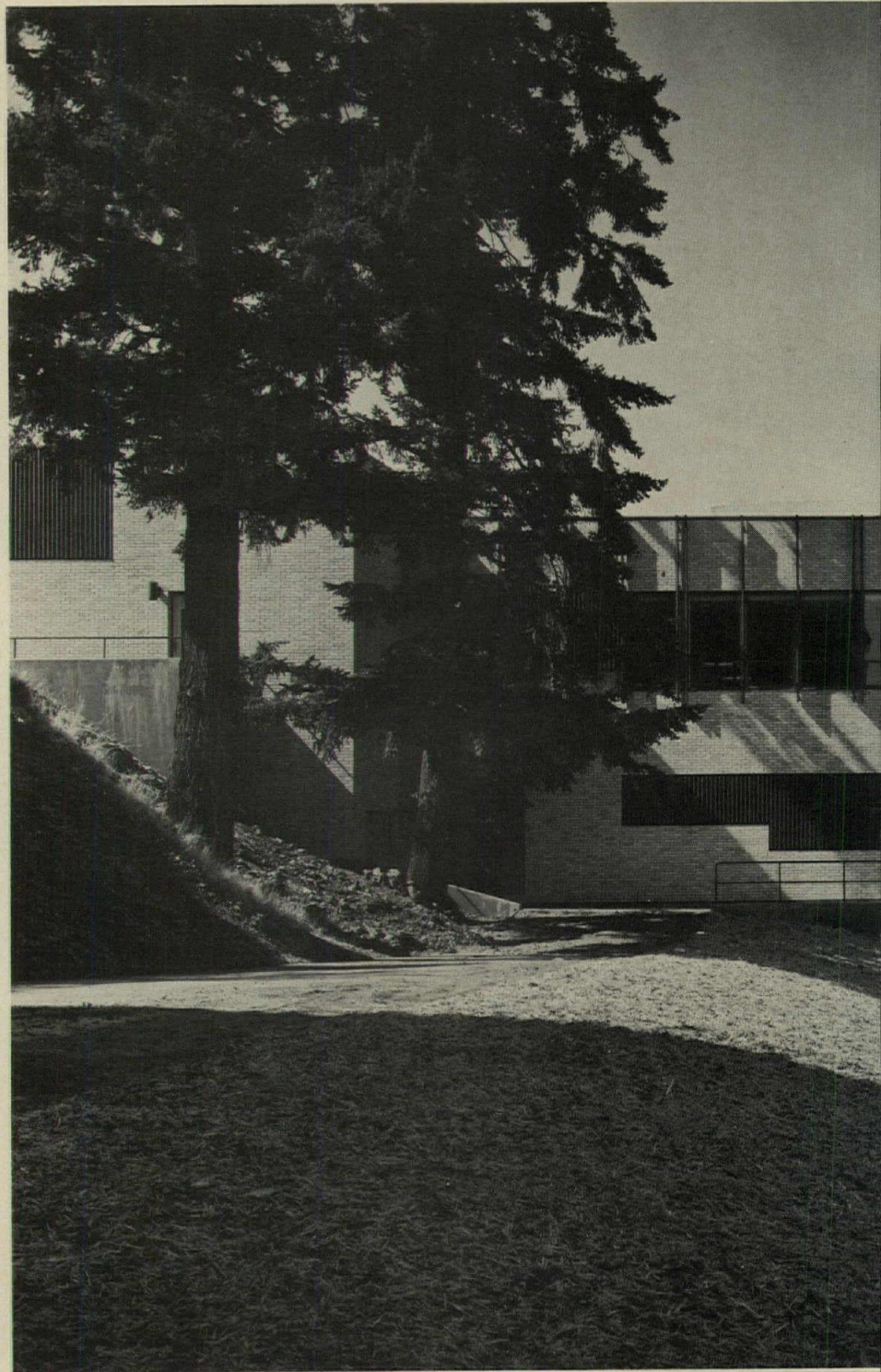
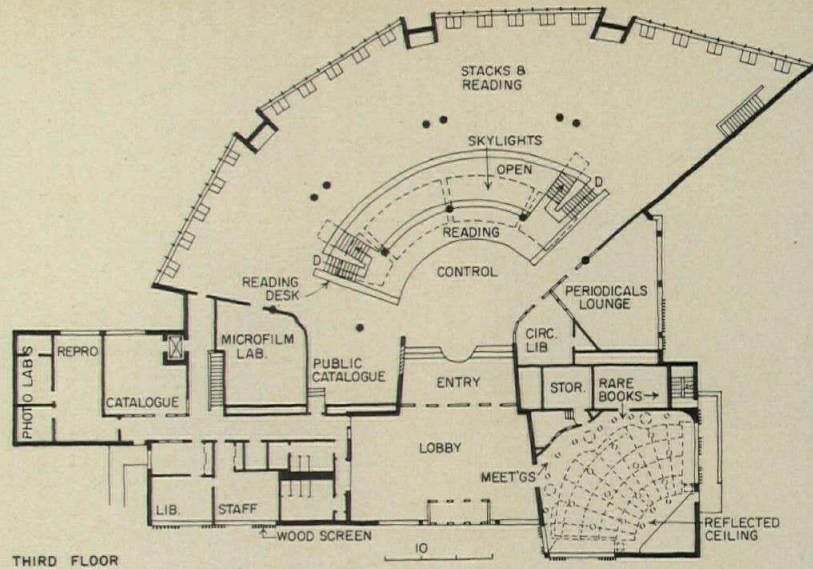


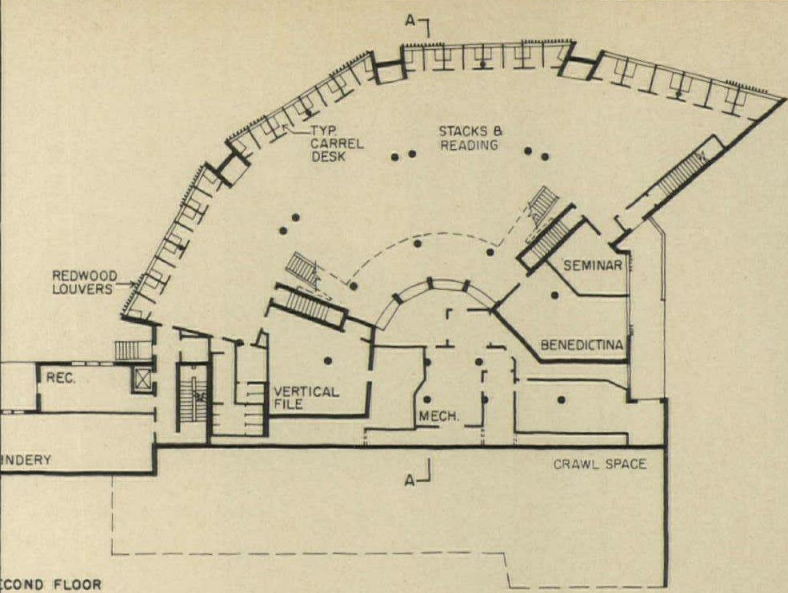
temporary approach to the world, that led the monks to Aalto. His understanding of nature and his emphasis on man, exemplified in his statement of some years ago that "true architecture—the real thing—is only to be found when man stands at the center," was the basis on which they wrote to him in 1963, and in 1964 approved his appointment as architect for the library. At the time it seemed a rash act—or an act of faith—by both parties: neither knew where the money to build the building could come from. But in 1967 an anonymous donor gave a million dollars for its construction. With the Abbey's own funds, this made the \$1,272,000 building a reality.

The important Abbey buildings are located on the crest of the knoll, and the library is entered from this level. Unlike the other buildings (designed in pseudo-romanescque) only the library's top floor is visible from the campus; the other two floors descend the hill into which the building fits. Approached from the campus, the library seems unpretentious and small scaled. Its calm and simple facade conflicts in no way with its neighbor buildings, recognizing only the color of their stone in its buff-colored brick. The tempered restraint of the exterior, however, gives no hint of the drama of the building's interior. The great three-story reading and stack area, flooded with daylight from a curving skylight at the roof, opens directly from the entry area. The carefully controlled light (from Aalto's familiar parabolic roof wells) in the lobby and entry emphasize the white walls and the quality of light in the multi-story space. From the control area there is visual surveillance of every part of this space. The line of the exterior wall is repeated in softened form by the curved balconies, and below the control area, on which reading and stack areas are located. Study carrels line the wall; reading desks, each with an Aalto-designed stool and lamp, range along the curve of the balcony. Stacks radiate like spokes from the center toward the outside wall. All furnishings are Aalto-designed.

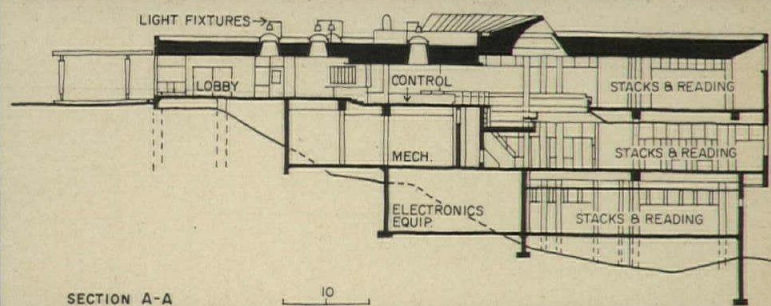
The process of executing Aalto's design was considerably simplified by the appointment of DeMars and Wells of Berkeley, California, as executive architects, responsible for carrying out Aalto's concept and developing working drawings, and of American designer Erik Vartiainen who had worked for Aalto in Finland while schematics were being developed. Vartiainen represented Aalto in Berkeley during preparation of final drawings, and DeMars and Wells in Mount Angel during construction. In charge for the Abbey was Father Barnabas Reasoner, the Abbey librarian.

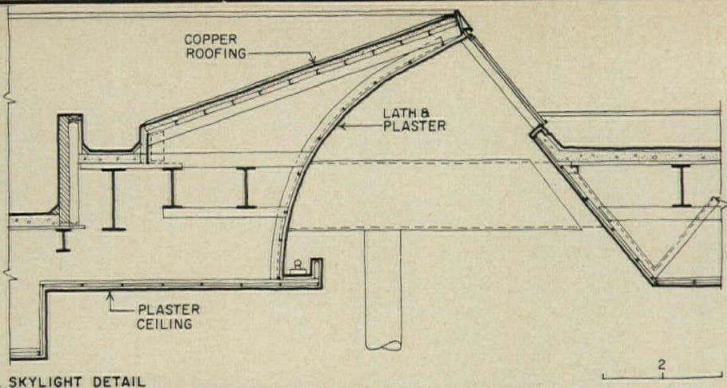
MOUNT ANGEL ABBEY LIBRARY, Saint Benedict, Oregon. Architects: Alvar Aalto, Helsinki, Finland; Erik T. Vartiainen, designer in charge for Alvar Aalto; DeMars and Wells, executive architects. Engineers: S. J. Medwadowski, structural; Cooper-Clark & Associates, foundation; O'Kelly & Schoenlank, electrical; Walter Soroka, acoustical consultant. Contractor: Reimers & Jolivette.





SECOND FLOOR

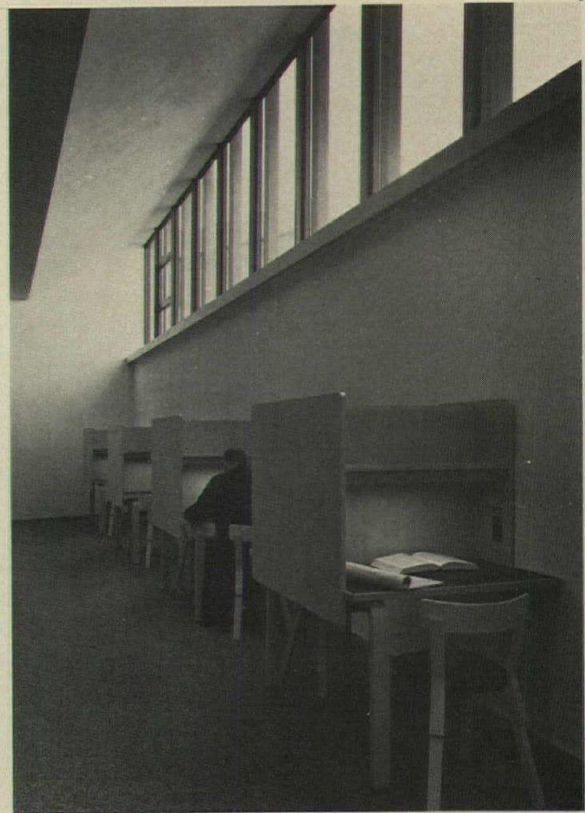




SKYLIGHT DETAIL



A free and natural use of wood was an early Aalto trademark, and at Mount Angel Library the tradition is continued. The furnishings, from study desks (right) and stack ends to radiant ceilings, make use of fir, birch, hemlock and oak. Wood window guard strips on the exterior, however, are of redwood. The door handles (left) of brass, like the desks and chairs, are Aalto-designed. Above the two story stacks and reading room area light from the curving skylight bounces off the deep cove to fill the area with daylight (detail above). Off the lobby, easily accessible to the public, is the rare book and meeting room, the Abbey's special means of inviting the world to its cultural events. Its undulating wall and ceiling of radiating fir strips recall such details in other Aalto buildings (below).



Beginning the Debate on a National Planning Policy

by Jonathan Barnett, A.I.A.

We need a National Planning Policy because, as John Cage told an Aspen Conference some years ago, we have to stop acting like an octopus constantly stepping on its own feet—an apt description of the disastrous side effects and unintended consequences created by government programs that were perfectly successful in achieving their original objectives.

Federal farm price supports helped the farm owner; but, by encouraging land to stand idle, accelerated the movement of agricultural workers to the cities—thus depleting the rural economy and overburdening the cities with people unprepared for urban life.

Federally funded interstate highways cut travel time dramatically; but caused wasteful land development and ecological disturbance by suddenly opening vast new areas to the builder. When these highways passed through cities, they eliminated traffic bottlenecks; but they also destroyed homes and jobs, and sometimes raised levels of air pollution.

Federal mortgage subsidies enabled hundreds of thousands of veterans to own their own homes; but, by encouraging home ownership over apartments, this policy became a primary cause of suburban sprawl, undermining the economic balance of the cities by encouraging middle-income families to move elsewhere.

Farm, mortgage and highway policies were formulated in isolation, without regard for their potential interrelationships, or their connections with other needs and programs. To have done otherwise would have been a difficult task for which the methodology does not yet really exist; but the true reason behind our failure to plan was the feeling that such a co-ordinated use of government power was un-American.

It is only recently that we have begun to realize that we are suffering all the disadvantages of extensive government control, without the benefits that could result if these powers were used to implement a comprehensive plan.

To the surprise of many of us, it has been President Nixon's Administration that has done a great deal to further the concept of a National Planning Policy, despite frequent promises to reduce the role of the Federal establishment, and real reductions in the Federal programs that could give immediate aid to the cities.

An early sign that the Federal govern-

ment is moving towards a wider policy context for national programs was contained in the Nixon Administration's proposals for welfare assistance. By establishing uniform assistance levels and job training possibilities, this legislation represents an encouraging step toward a national welfare policy. A reference to a national growth policy in President Nixon's 1970 State of the Union Address was another sign of change, in fact it was rather like the code signal that all the radio astronomers are waiting for. Could there be intelligent life somewhere in Washington? Were there people somewhere in official circles who were thinking about solving problems as part of a national plan?

These speculations were strengthened last summer when the White House issued a mysterious, pale blue book entitled "Toward Balanced Growth: Quantity with Quality." The authors were a group of White House staff members, called the National Goals Research Staff, no less, working under the direction of Leonard Garment. There is a somewhat Delphic preface by Daniel P. Moynihan in which he remarks that the failure to create a growth policy is in itself a policy.

Of course, a national growth policy and a national planning policy are not the same thing. A growth policy implies a resolve to do better in the future, but takes no responsibility for rectifying the mistakes of the past. Nevertheless, this report represented the first major government statement on national planning since the days of the National Resources Planning Board.

This does not mean that the report can be described as a forthright document. It manages to avoid extended discussion of some vital issues, such as the domestic effect of foreign policy, the problems of cities, and the effects of racial prejudice on education and employment opportunities. There is considerable internal evidence that the authors redirected the basic intent of the report, possibly without their superiors being aware of what they were up to. Some interesting ideas emerge, however, which repay close study.

The report is organized around six areas of public concern: population, environment, education, basic science, technology and consumerism.

The first and most basic topic considered is population growth and population distribution. The authors of the report have a generally unalarmed attitude toward population growth and see three alternatives for future government policies in relation to population distribution. One is simply to let current trends continue, with more and more people leaving the rural areas and concentrating in the metropolitan regions. The choice of no change in public policy would, the authors feel, run a high risk of bringing about further deterioration of both rural and urban areas.

A second alternative would be to promote the return of population to rural areas both directly and by the creation of new towns, but the authors have a refreshingly

skeptical view of the ability of new towns to channel population growth without being supplemented by other actions.

The alternative the report clearly favors is to encourage the growth of middle-sized existing communities that are outside of major metropolitan areas. It is possible to view this as a highly political concept in which the government favors the growth of precisely those areas which furnish the present Administration with its basic support. The authors say that they are seeking a means of decreasing the sharp lines of demarcation between rural and urban life.

Although the language of the report is dispassionate, such a decentralization policy would mean sweeping changes in every aspect of American life. It is no wonder that the authors downplay the controversial nature of the proposal, as it does not take much of a leap of the imagination to see it as an abandonment of the cities. The Federal government probably already has the powers required to channel growth away from urban areas, and, if it chose to do so without public discussion, it might be years before the public, or the Congress, woke up to what was going on.

The report's proposals in relation to the environment are, if possible, even more sweeping. If the interconnections and relationships between action are important in formulating government policy, they are of course most important in formulating policies about the environment.

The authors point out that the limitations that the environment places on the United States are no longer the limitations of natural resources, but the inability of nature to absorb the waste products of our way of life. No mention is made of conservation, or of the disproportionate share of the world's resources that the United States consumes.

Instead the authors make, and reject, two extreme formulations which they call "the doomsday model" and "the paradise regained model," and assert that it is not realistic to assume basic changes in our industrial and technological economy, but that these processes can be sensitively adjusted to bring them into harmony with the natural environment.

This may be a rather over-confident concept, as nature arrives at an ecological balance through a process of trial and error; and the disappearance of a few species or the submergence of a continent or two are all part of the game. If we reject ecological conservatism ("paradise regained") and seek a dynamic, self-adjusting technological system, we'd better get it right the first time.

Whatever our reservations, however, we must bear in mind that it is a fairly sensational development when a White House document states that the solution to environmental problems is a balanced technological system achieved through the medium of government policy and control. It will be interesting to see what various industry groups will have to say about this

Jonathan Barnett is Director of Urban Design for the New York City Planning Department.

concept, once they grasp its implications.

The topics of education and of basic research in the physical sciences, which this report treats separately, are related by the issue of their "relevance" to society. Their inclusion in this report is a useful extension of the frame of reference for discussions about planning policy. The report does not go much farther than inclusion, however. The authors are willing to state some unpleasant viewpoints. For example, they foresee no speedy end to de facto segregation. Their central point seems to be that current demands for "relevance" threaten basic research and quality education; and both must adjust their point of view somewhat to stay abreast of society's changing needs (and assure continuing public support for government funding). At the same time, basic standards must be maintained. All very statesmanlike, but not much help.

The addition of "technology assessment" and consumerism also benefit this report, because these topics, particularly the latter, are not usually part of discussions of planning policy. "Technology assessment" is the as yet undiscovered mechanism for deciding whether a technological improvement does in fact confer a social benefit. Although this report does not say so, the supersonic airliner represents a perfect example of this type of issue. We have become used to the concept that each step up the technological ladder represents an improvement. The supersonic passenger plane represents a situation where the secondary effects on the environment more than cancel the advantages of increased speed. Fortunately, the Congress now seems to have grasped this point.

Consumerism becomes a relevant issue because growth in a market-oriented economy will be affected if a substantial number of consumers come to the conclusion that they are being swindled. The policy issue this report raises is whether government policies to protect the consumer will in fact end by inhibiting growth.

Again, the report raises the issues and fixes them in context, but it leaves decisions and new policies for future discussion. The tentative and equivocal nature of so many aspects of this report may lead the reader to wonder about its significance; but the origin of the statements is at least as important as what is said. When executive staffs this close to the sources of power are permitted to discuss such complex and politically dangerous issues, it generally means that important decisions about them are in the process of being made. As a context for this report, it is worth keeping in mind the recommendations of the Ash Commission on government re-organization, which the President has now sent to the Congress. The Ash proposal recasts the executive branch into four functional areas—Human Resources, Community Development, Natural Resources, and Economic Development—leaving only the State, Treasury, Justice

and Defense Departments in their traditional form. This reorganization, plus the little-publicized regrouping of the Federal Government's regional districts, could provide a co-ordinative mechanism for carrying out a National Planning Policy—should such a policy ever be established.

In accordance with other Ash Commission recommendations, the White House has already created a Domestic Policy Council, which could become the place where national planning policies are worked out; and established a President's Council on Environmental Quality.

The first Annual Report of this Environmental Quality Council has been published. Much of it consists of a badly needed catalogue of the ways in which public policy affects the environment, and the report also explicitly endorses a national land use policy, the first use of this term in recent official documents. Land use is the key to national planning, and those countries—Great Britain, the Netherlands, and the Scandinavian nations—which have successful national planning policies have achieved them by sorting out and allocating land use—and not just by talking about growth.

The legislative branch has also taken initiatives towards national planning. Legislation for a national growth policy was introduced into the last Congress by Representative Thomas Ashley (D. Ohio); and planning requirements are being added to appropriations bills for national programs. In particular, the Federal Aid Highway Act of 1970 contains language which could help provide the legal framework for a national land use plan.

This act explicitly recognizes the role that highways play in promoting development, and authorizes the Secretary of the Department of Transportation to make demonstration grants for roads planned to promote development of cities or areas that "shall have a population not in excess of 100,000."

It also is the first highway legislation in this country to call explicitly for local consultation and approval, although consultation by itself certainly does not guarantee planning.

The President's 1971 State of the Union Message repeated his previous reference to a national growth policy, and mentioned a national land use policy for the first time, thus reflecting the formulation of this approach by The Environmental Quality Council:

"I will propose programs to make better use of our land, and to encourage a balanced national growth—growth that will revitalize our rural heartland and enhance the quality of life throughout America."

This kind of rhetoric isn't easy to interpret; but the reference to rural heartland sounds as if the National Goals Report concept for directing growth away from the cities is being taken seriously.

Then in February, the President sent to the Congress his version (as contrasted to

Congressman Ashley's proposals) of legislation for a National Land Use Policy:

"I propose legislation to establish a National Land Use Policy which will encourage the States, in cooperation with local government, to plan for and regulate major developments affecting growth and the use of critical land areas. This should be done by establishing methods for protecting lands of critical environmental concern, methods for controlling large-scale development, and improving use of land around key facilities and new communities."

Interestingly enough, although these proposals, if enacted, would go much farther than any previous Federal legislation, a *Life* magazine editorial stated that "the most disappointing aspect of the environmental message is Nixon's toothless approach to national land-use policy." A few years ago, this subject would have been much too esoteric to rate a mention in a national magazine of mass circulation. Now, the *Life* editorial implies that all right-thinking people recognize the need for a strong national land use policy, and the President's proposals do not go far enough, which, in fact, they do not, as they represent little more than grants in aid to finance planning programs.

The philosophy behind this "toothless" policy was explained by Leonard Garment, who appears to be one of the President's top advisers in this area, to a recent convention of the American Society of Planning Officials.

A national land use policy, said Garment, should be interpreted as a call for institutional reform; because government, particularly the Federal government, is more a part of the problem than of the solution. He added that it is a delusion to think that any one group can prescribe the nation's future when the problems are too many and too diverse to be encompassed by Washington's reach.

Of course, there is some point to what Mr. Garment is saying, but it is hard to envisage how a decentralized governmental process will help focus the country on inescapable national issues.

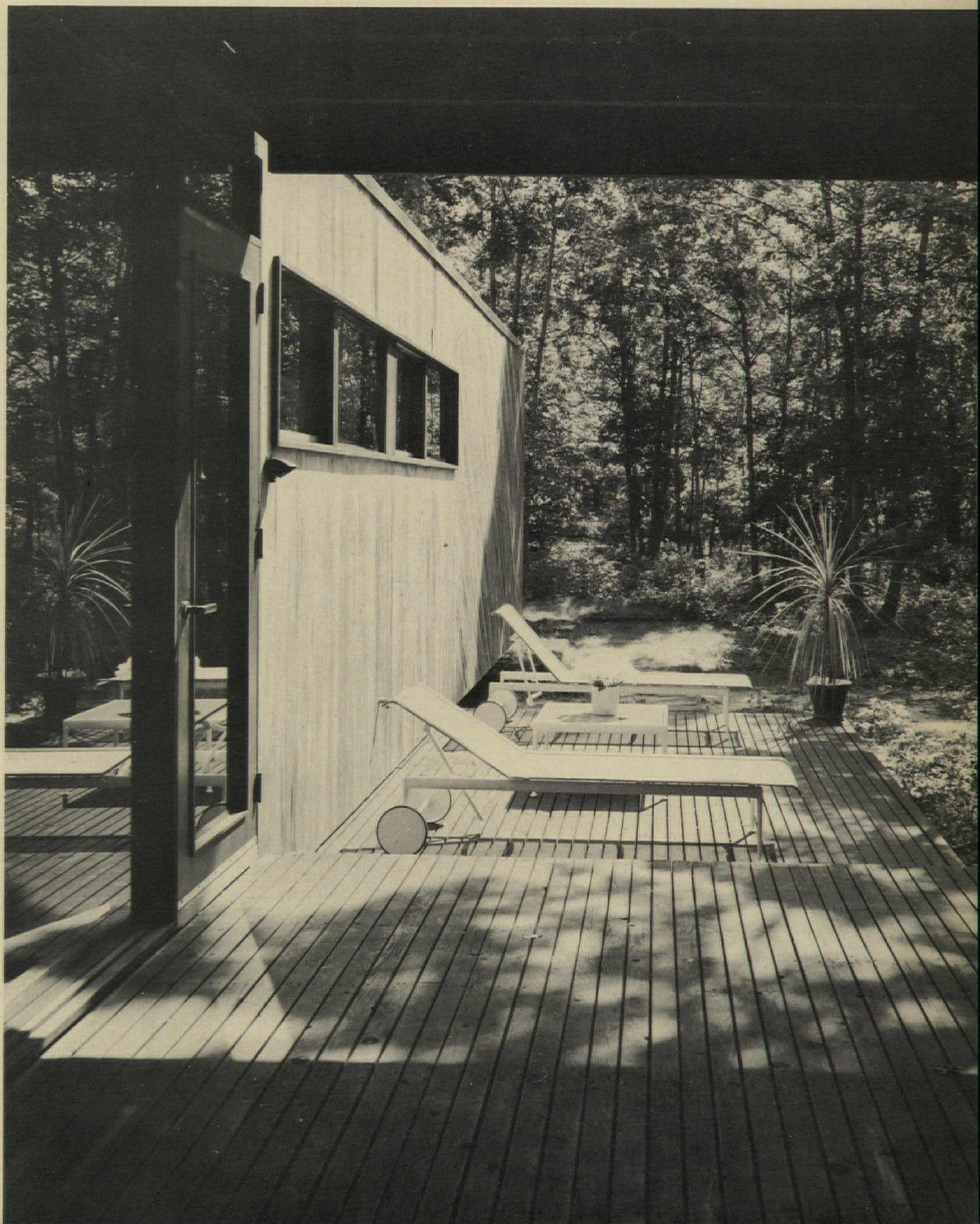
Take, for example, a recent speech by David Rockefeller in which he advocated the creation of two nationwide corporations, one a public corporation to acquire land for new towns, the other a private or quasi-public corporation to develop them. The agency that acquired the sites would, in effect, be doing national planning. Where is the Federal policy to direct this important expression of interest by the private sector in the possibilities of nationally directed growth and change?

In any event, public attitudes are certainly changing, and the process of public hearings on the land use policy bill is beginning. A National Planning Policy may not be as far away as it looked a few years ago.

Keeping an eye on the Federal government is no small task, and I would not have written this article without the assistance of my colleagues in the New York City government, Jaquelin Robertson and Richard Weinstein. I also wish to thank Martin Baker for his elucidation of the 1970 Highway Act; and Gregory Matviak. —J.B.

TWO HOUSES BY HERBERT BECKHARD

The houses shown on the following pages clearly demonstrate how Herbert Beckhard, of Marcel Breuer and Associates, continues to use highly sophisticated talents and techniques, where each texture, color, shade and shadow combines to create deceptively simple, extremely livable and enjoyable houses. The photograph below of the Rosenberg house (see overleaf) gives a clue to his search for a synthesis of structure, art, nature and man's pleasures.



A SECLUDED WEEKEND HOUSE FOR CITY DWELLERS

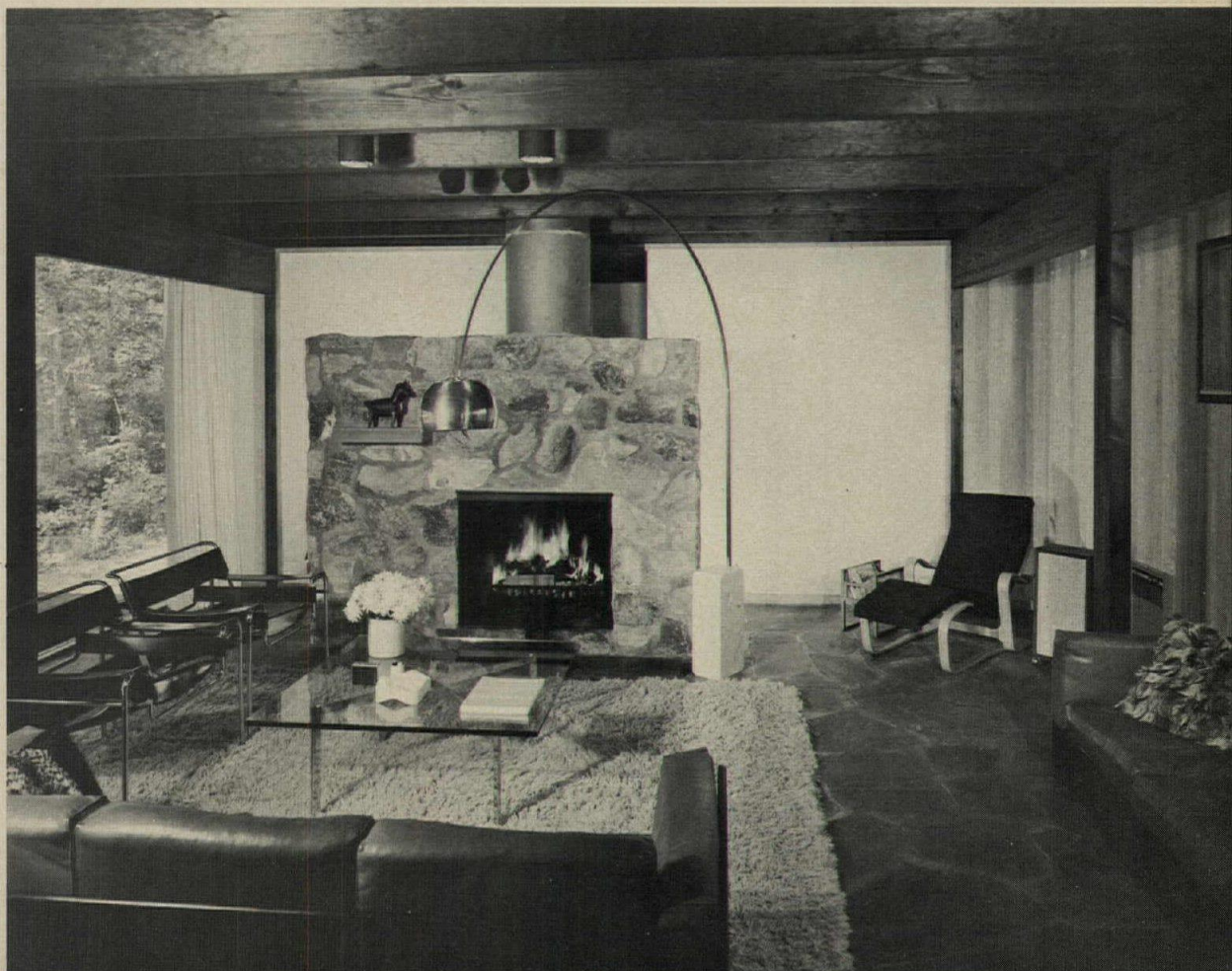
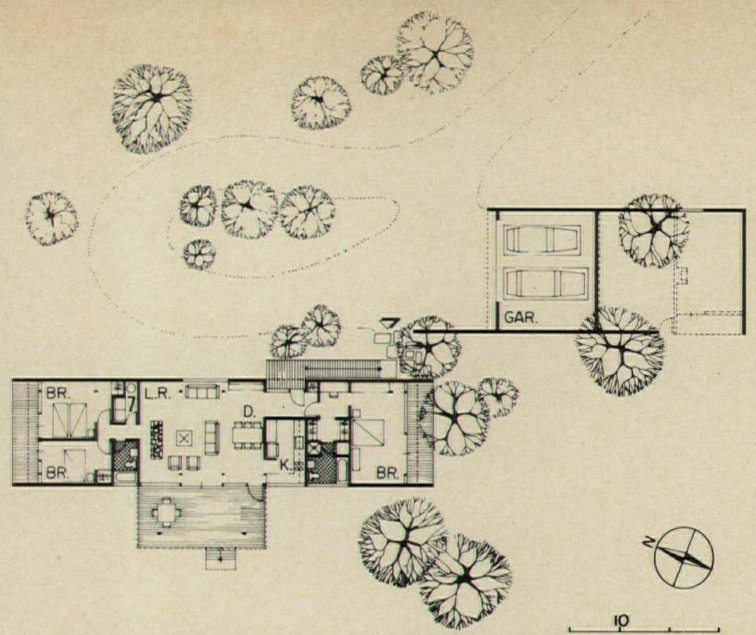
This serene, comfortable house was specifically planned as a secluded, informal and easy-to-keep retreat from weekdays in a New York City apartment. The site is about 100 miles from the city in a wooded area with four-acre minimum tracts, which helps assure privacy and quiet.

The plan of the house divides two sleeping areas, for owners and for guests, with a living, dining and kitchen zone. All bedrooms have large floor-to-ceiling glass areas opening to small decks at the ends of the house. The living areas have a large deck to expand the spaces for entertaining. All materials

were chosen for easy maintenance for, as Herbert Beckhard observes, "heavy housekeeping chores after exposure to 100 miles of weekend traffic would be intolerable for a two or three day stay." The structure of the house uses exposed laminated columns and beams, and is sheathed with vertical and diagonal cypress siding. Interior walls are cypress or gypsum board; floors are bluestone or carpet.

RESIDENCE FOR MR. AND MRS. ARNOLD ROSENBERG, East Hampton, Long Island, New York. Architect: *Herbert Beckhard*; interior design: *Herbert Beckhard*; contractor: *Frank Johnson*.





A SPECIAL HOUSE FOR A HANDICAPPED OWNER

The use of double cantilevers from the four corners of the fieldstone base gives this house the appearance of floating over its rocky, wooded site. In addition to adapting the house uncommonly well to the irregularities of the terrain, this device was a major design consideration to minimize any "earth-bound" feeling of the owner, who is confined to a wheelchair. Ramps, planned dimensions to accommodate easy access to all areas, and a series of contained decks for outdoor living were all carefully designed to facilitate the wheelchair's use. All major rooms open to decks and have

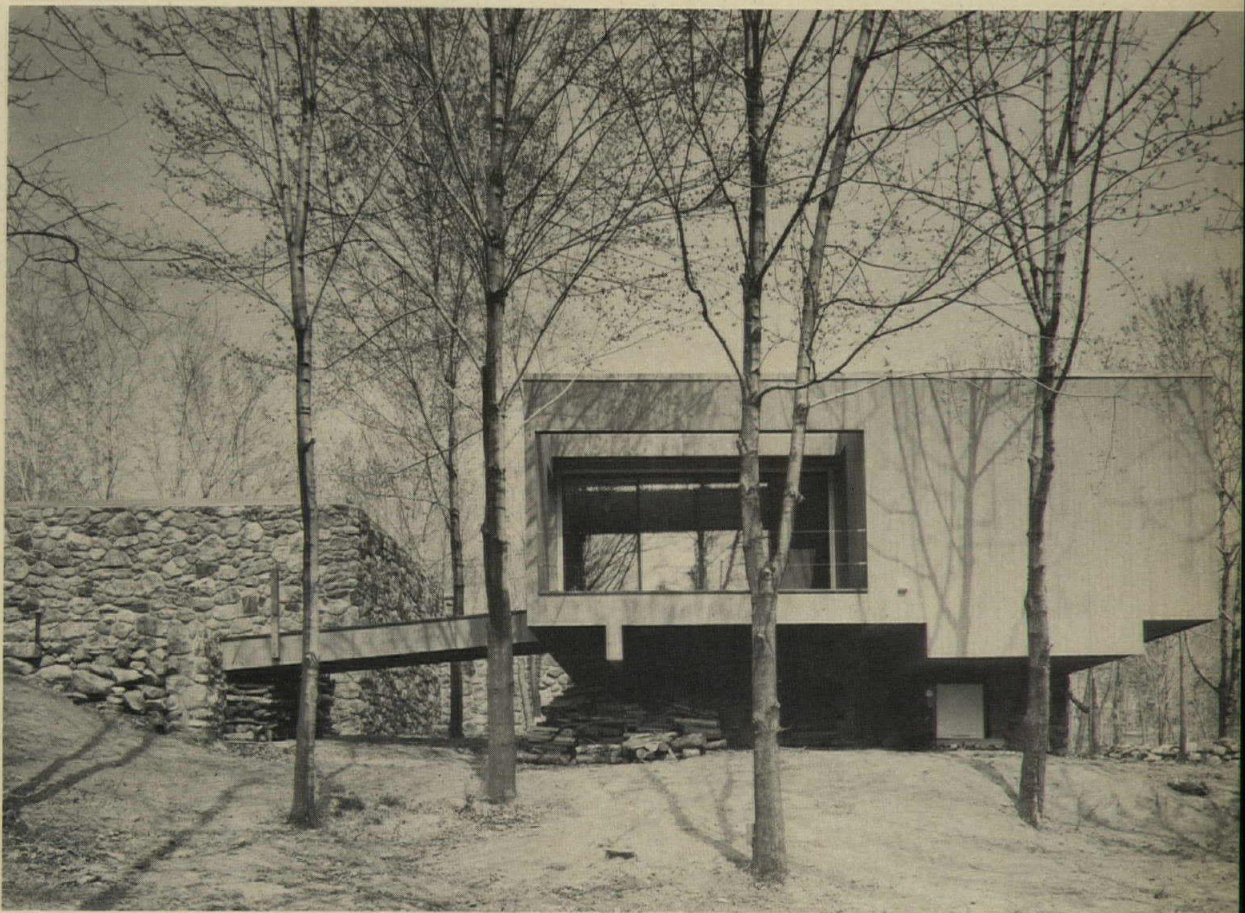
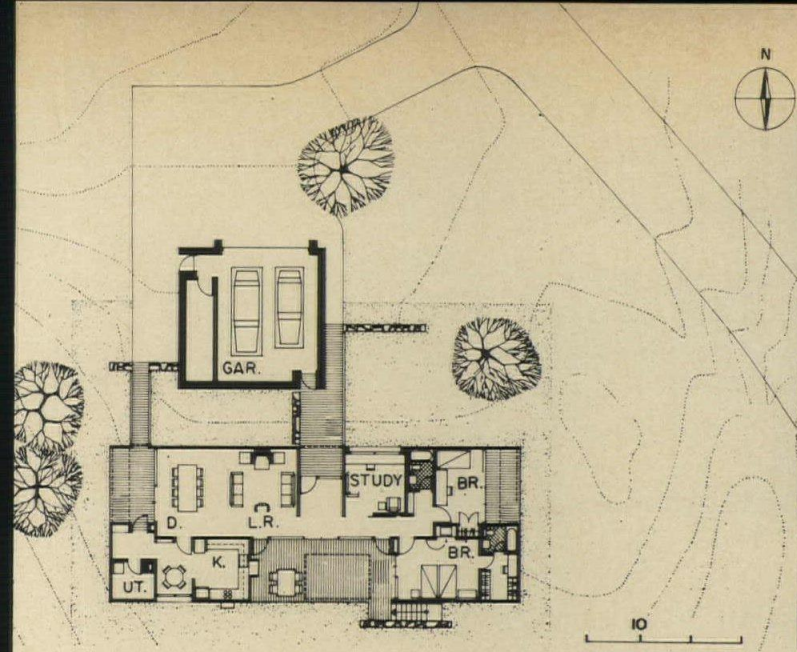
floor-to-ceiling sliding windows to increase the sense of space.

The house is visually anchored to the site by the garage structure, which is the same rough stone as the house foundation. Wood studs and joists are used to frame the house, which is surfaced with stained cedar. The house is fully air conditioned, with ducts run through the partial basement and crawl space to floor registers along all glass areas.

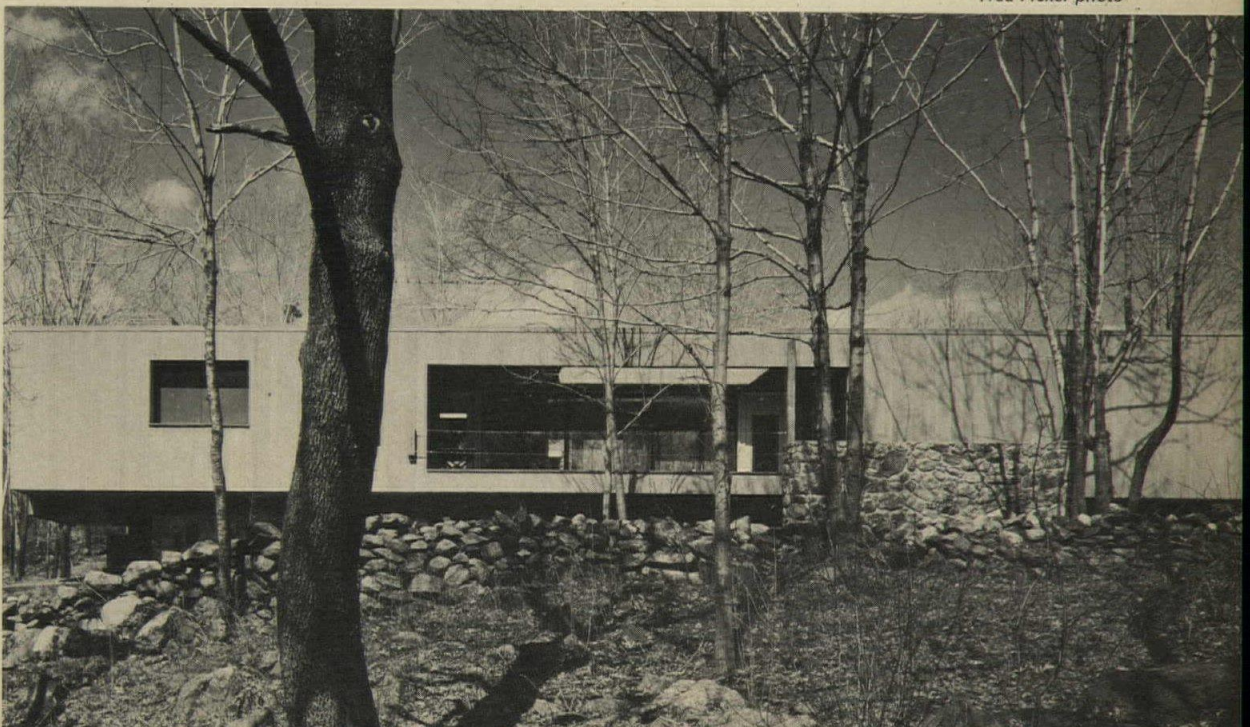
RESIDENCE FOR MR. AND MRS. GEORGE REED, Danbury, Connecticut. Architect: Herbert Beckhard; interior design: Herbert Beckhard; contractor: Lester Havens.

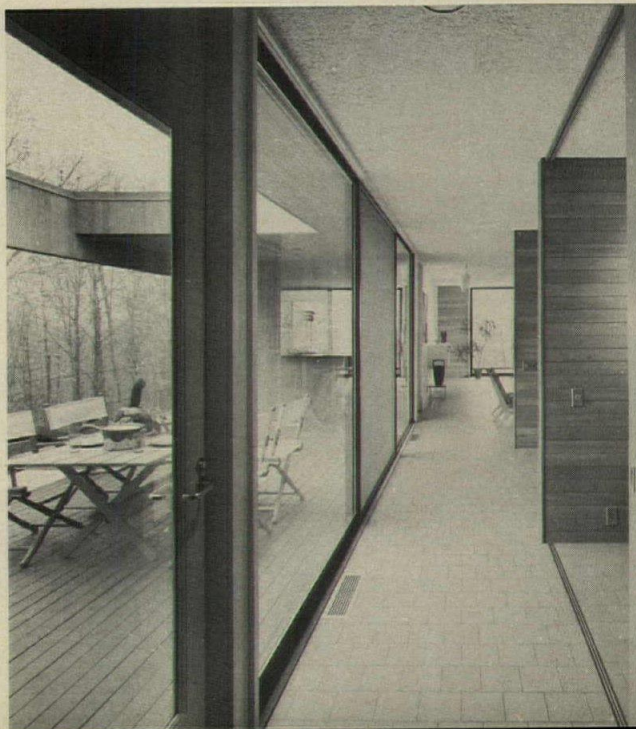
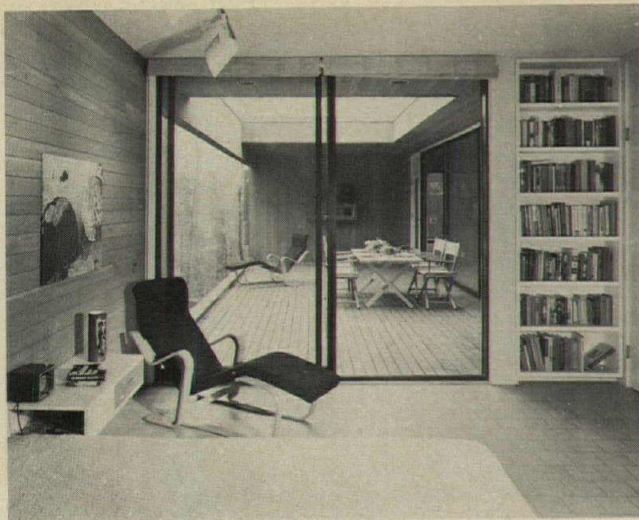
Ben Schnall photos



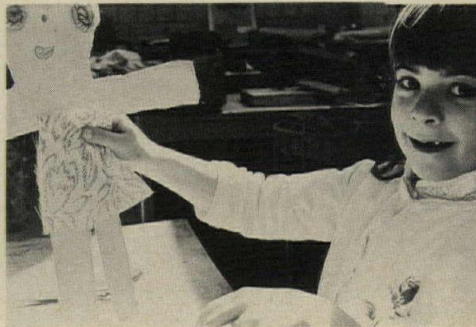
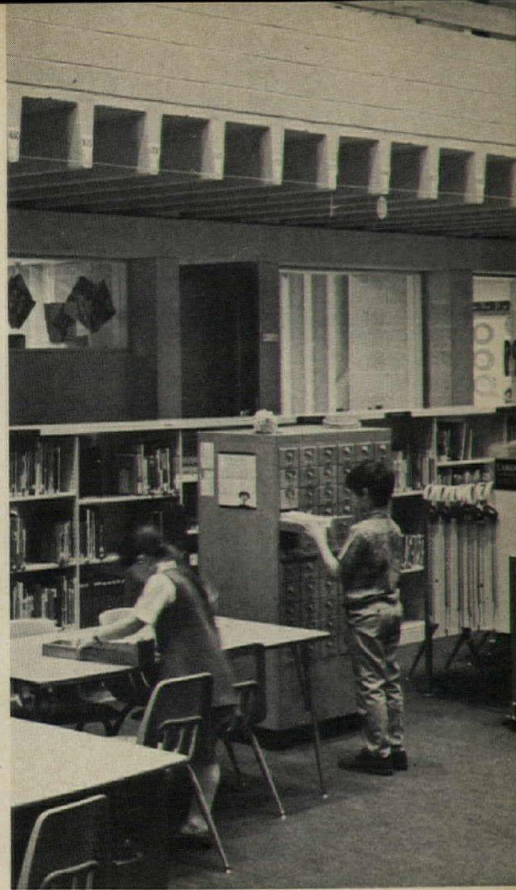
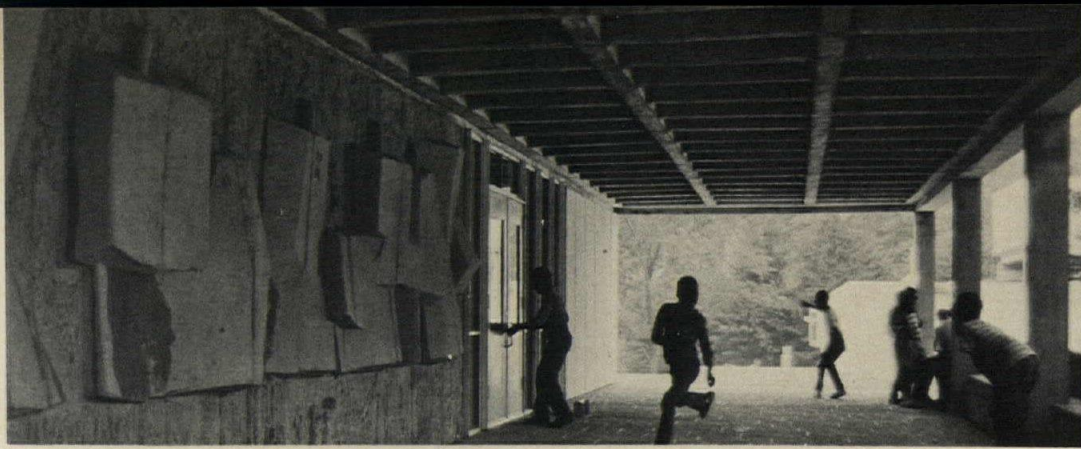


Fred Picker photo





Herbert Beckhard used a sort of small-scale "palace plan," with living spaces forming alcoves off a circulation spine, for the Reed house. This, together with floors of light gray quarry tile, was planned for greater ease of wheelchair movement. The interior walls are either the same siding as the exterior or painted gypsum board; ceilings are strongly textured white acoustic tile. The living room fireplace is of cast-in-place concrete which has been hammered to achieve a special texture and expose the aggregate.



FIVE CONTEMPORARY SCHOOLS

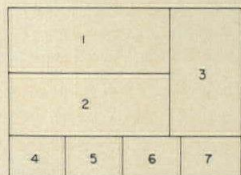
BUILDING TYPES STUDY 421

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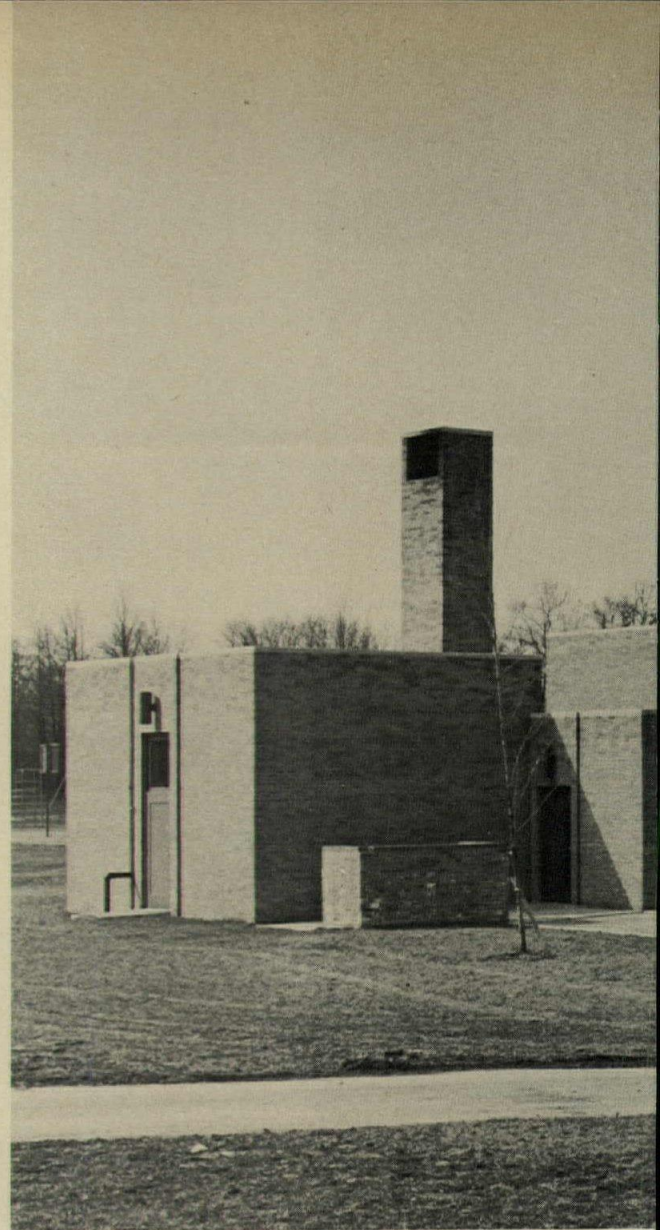
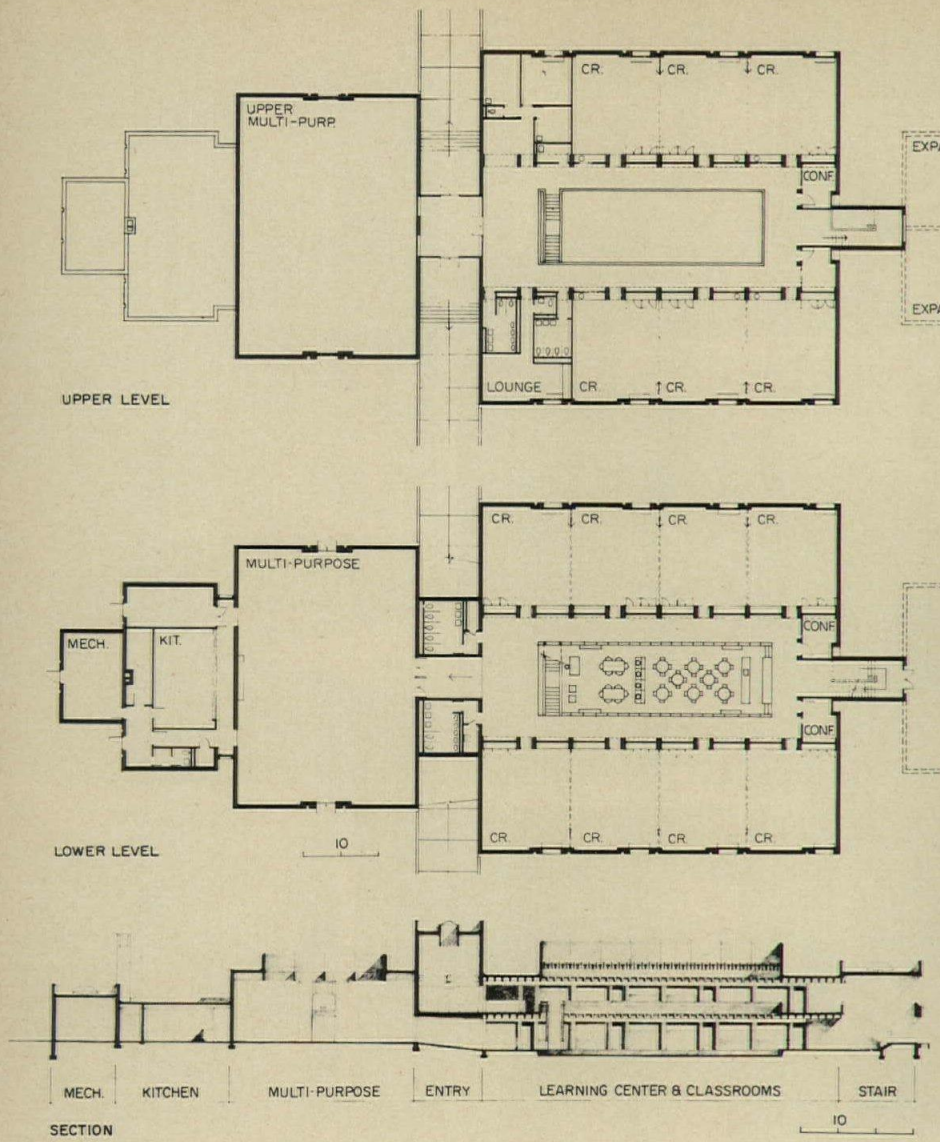
The children in the photo-mosaic above are students in several of the schools that appear in this study. The pressures toward success in later life are already being applied. Success or failure will depend, in large part, on the positive forces these schools can exert. The architects involved are keenly aware that the stakes are high. The schools they have designed reflect that concern.

Three of these schools, one by Don Hisaka and two by Earl Flansburgh, respond to the shifting educational needs of normal children. Two of the schools are special in that they are designed for children with reasonably severe disabilities. At the Wiltwyck School for Boys, the staff strives to ensure that emotionally disturbed children do not become emotionally chaotic adults. Richard Stein's planning is a non-verbal reinforcement of the school's therapeutic principles. At a School for Exceptional Children by William Morgan in Jacksonville, Florida, mentally retarded youngsters are confronted with an environment that deliberately includes some mildly confusing elements that may help a child free himself from a marginal, institutionalized future. His parents, at the same school, may learn to come to grips with a deeply discouraging reality.

Schools, whether for normal or exceptional children, are less and less containers and more and more educational tools. It seems increasingly important, therefore, that they be, like these five, visually stimulating, non-authoritarian and adaptable to various educational futures. —Barclay F. Gordon

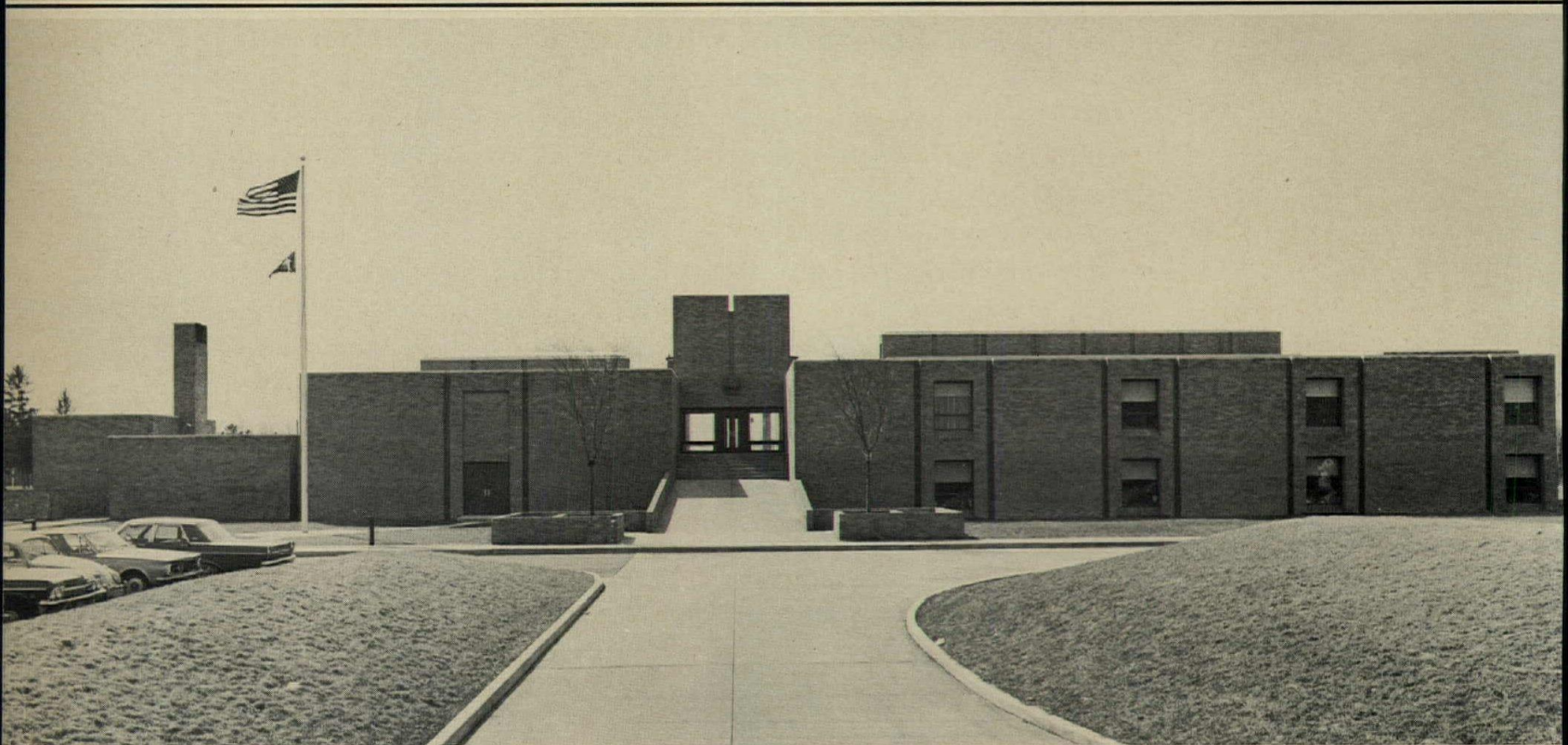


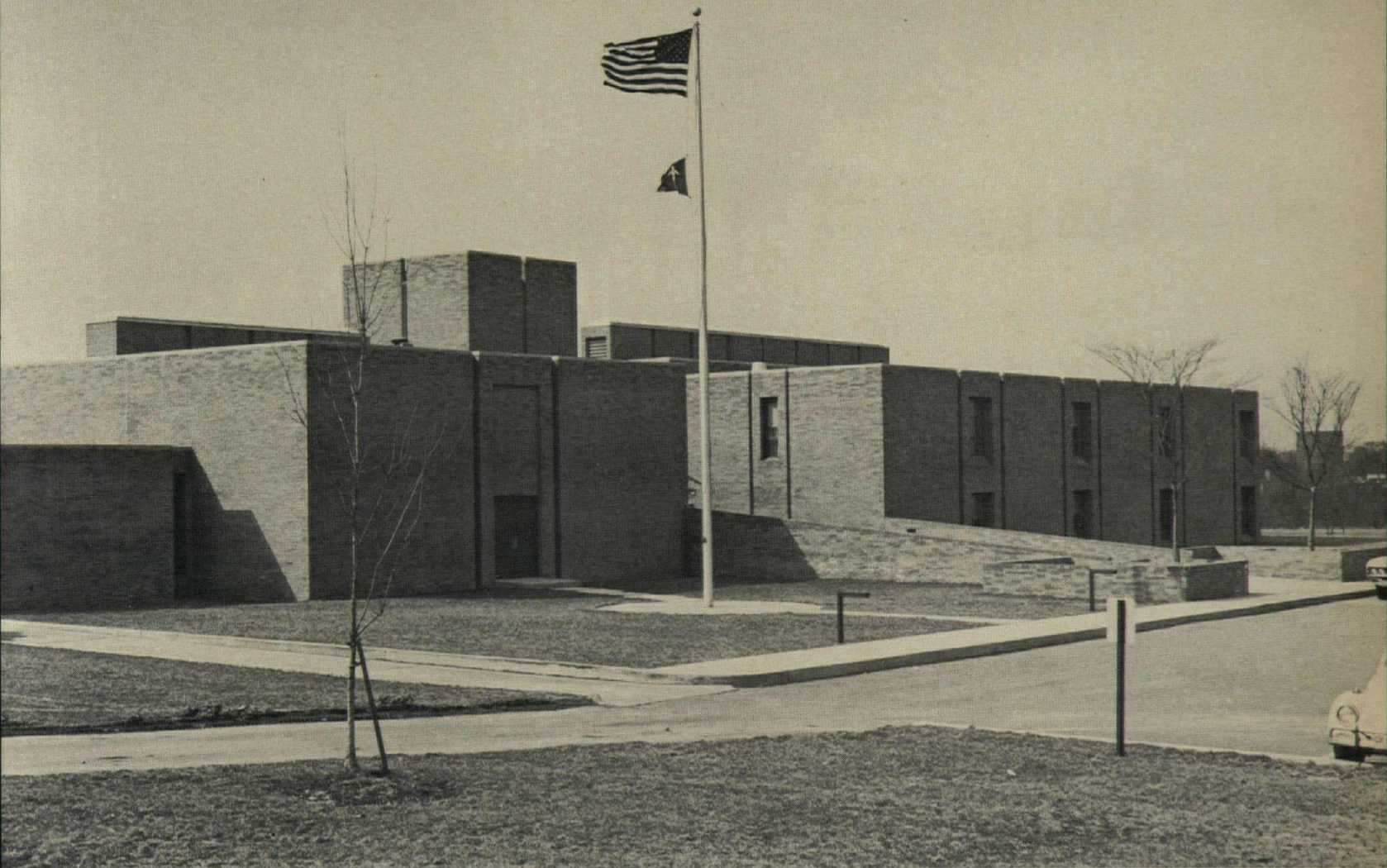
1-2 Wiltwyck School for Boys
Richard Stein photos
3 Crile Elementary School
Thom Abel photo
4-7 Ripley Elementary School
Michael O'Brien photos



Thom Abel photos

AWARD-WINNING ELEMENTARY SCHOOL STACKS CLASSROOM



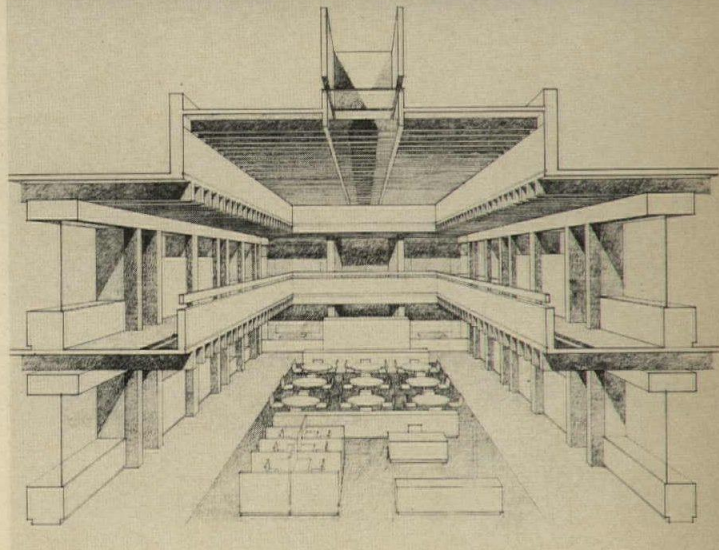
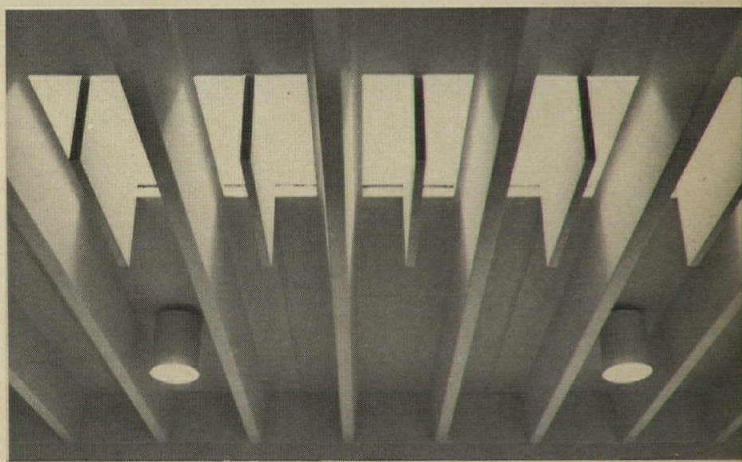


AROUND DOUBLE-HEIGHT RESOURCE CENTER

This elementary school for a Cleveland suburb by Don M. Hisaka and Associates is a persuasive example of what can be accomplished when architectural inventiveness is brought to bear on a traditional school program. Growing out of a program that called for a single-story, 14-classroom school with an orthodox library, the plan that finally evolved is far from conventional. Through a continuous dialogue with the client and with the sympathetic help of school superintendent Dr. Stuart Openlander, Hisaka was permitted to expand the library into a double height resource center flanked by two levels of classrooms. Lower level classrooms are assigned to older children whose use of the resource center is more continual. The main entrance is ramped (see photo left) so that entry is at the upper level near the administrative and staff spaces. A multi-purpose room, kitchen, mechanical space and shop complete the plan.

Imaginative planning, coupled with thoughtful attention to detail, brought this school in under budget—and contributed to its receiving a First Honor Award from the Ohio Chapter of the American Institute of Architects.

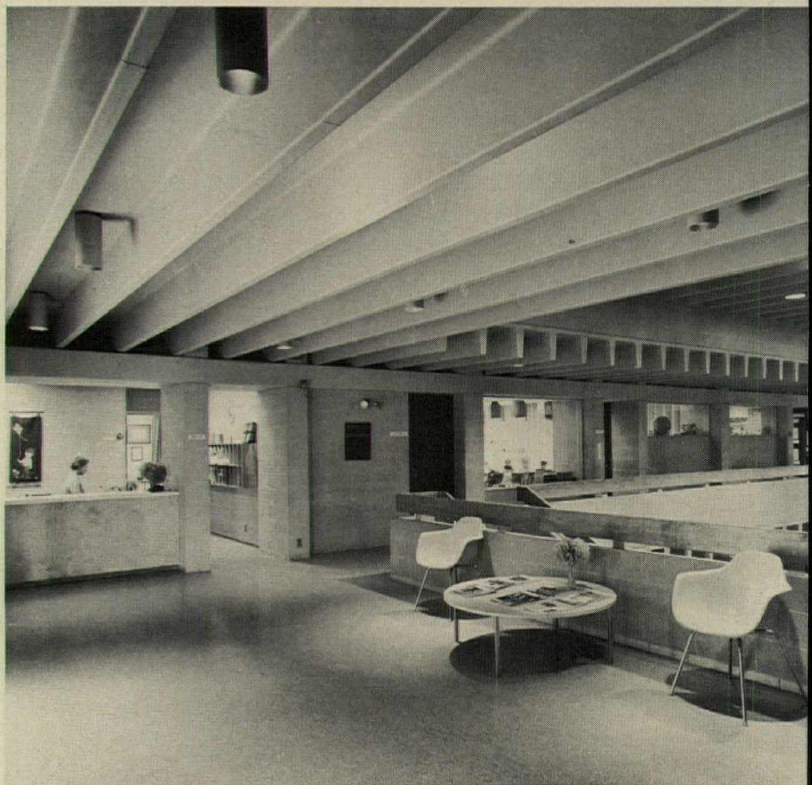
CRILE ELEMENTARY SCHOOL, Parma, Ohio. Architects: *Don M. Hisaka and Associates* (Robert Barclay, project manager); structural engineers: *R. M. Gensert & Associates*; mechanical engineers: *George Evans & Associates*; electrical engineers: *William Ferguson & Associates*.





CRILE ELEMENTARY SCHOOL

Resource center (above) is both physically and symbolically the school's nucleus. Conceived as a one-room schoolhouse, this exceptionally handsome space is defined by classrooms and daylighted by a clerestory above. Balcony and roof soffits are formed by cantilevered double tees supported on masonry piers. Materials are simple: load-bearing masonry for walls and piers, concrete block, trimmed with wood, for parapets and stair. Detailing throughout is simple and appealing. Rich brown carpeting contrasts warmly with buff-colored masonry. Color accents are provided freely by books, artwork and the children themselves.







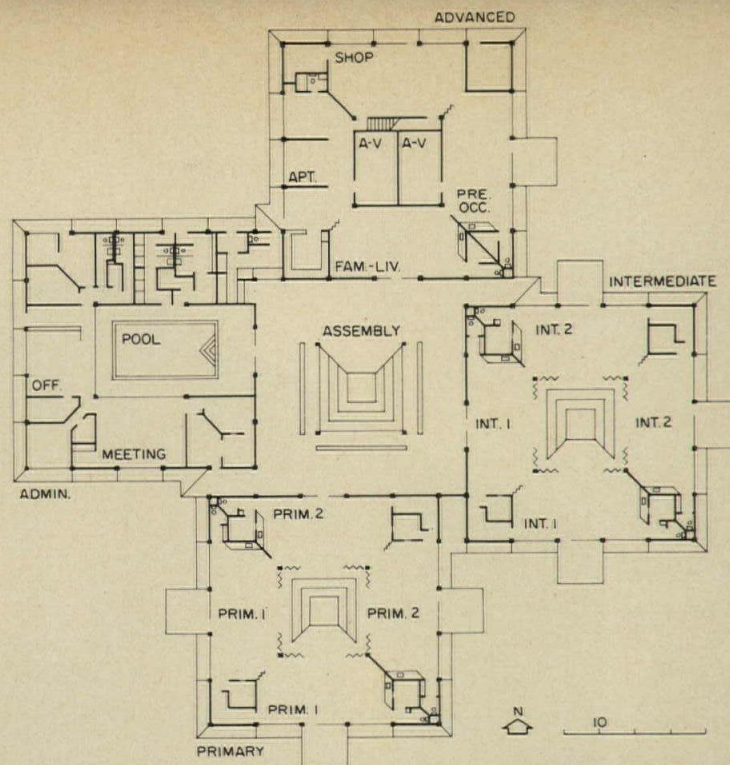
Alexandre Georges photos

JACKSONVILLE BUILDS FOR ITS EXCEPTIONAL CHILDREN

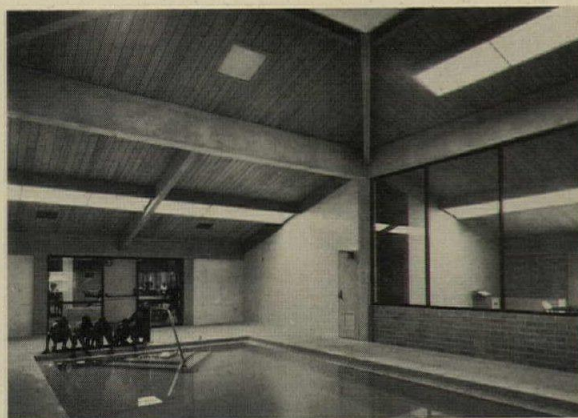


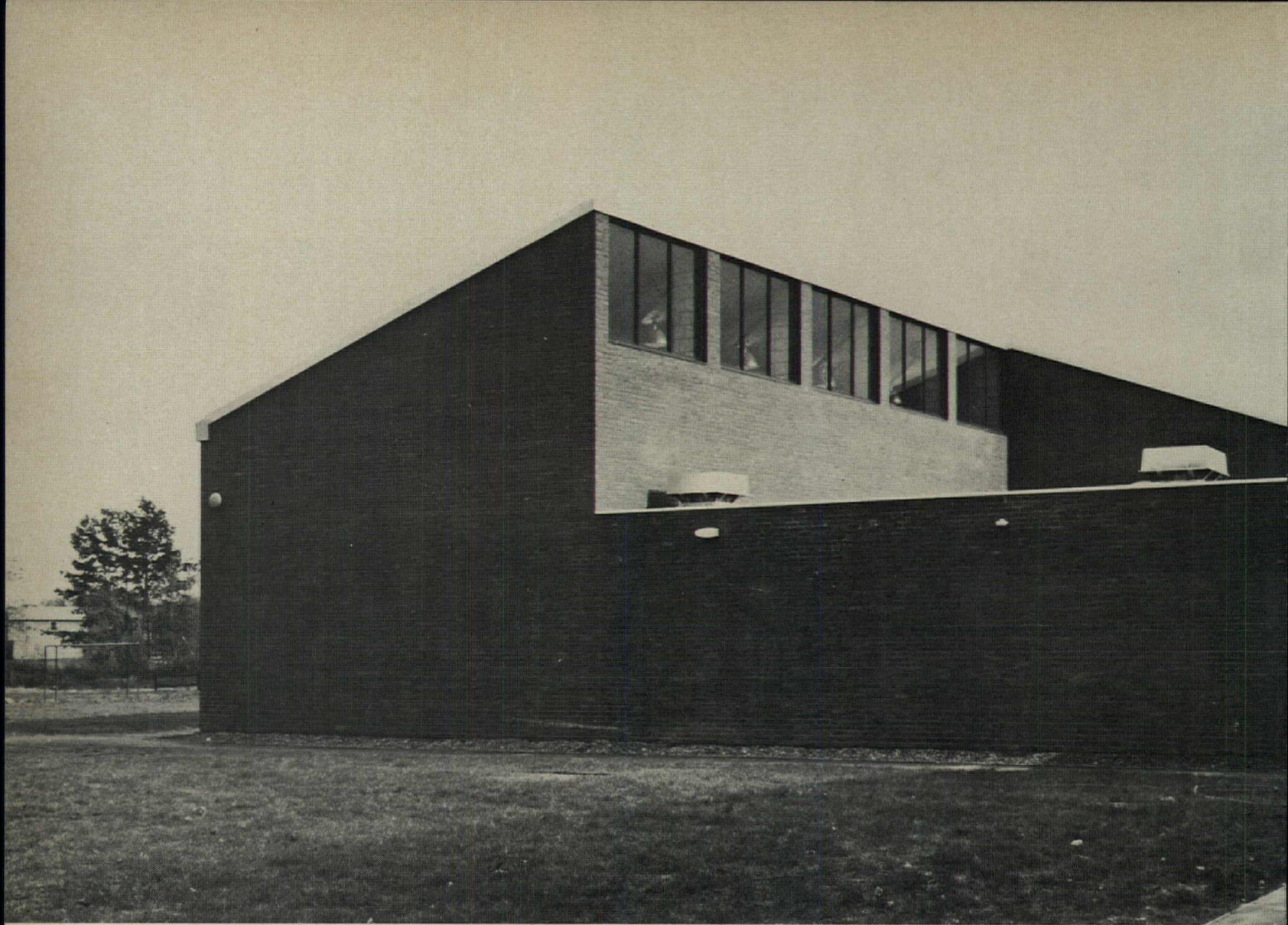
Because mental retardation occurs with predictable frequency and cuts impartially across all racial and socio-economic lines, every large community can predict with surprising accuracy the incidence of retardation it can expect among its young. Jacksonville's school authorities, intent on helping such unlucky youngsters, commissioned a separate facility for 150 children to replace the special classes they had previously attended at various dispersed locations. Utilizing a heavily wooded site, set well back from the road, William Morgan developed a plan that pivots four classroom clusters around a central assembly area. Most of the children suffer from hypertension. They are easily excited by unexpected sights or sounds. And because such hypertension is infectious, each classroom is fitted with a small "time-out" room (see plan) where an excited youngster can be isolated until he regains his composure. Other special adaptations include a therapy pool centered in the administration spaces and the deliberate installation of a wide variety of door and window hardware. The advanced pavilion includes a family living area and model apartment where girls learn domestic skills and a shop where older boys receive pre-occupational training.

SCHOOL FOR EXCEPTIONAL CHILDREN, Jacksonville, Florida. Architect: William Morgan; structural engineer: H. W. Keister; mechanical and electrical engineers: Evans & Hammond, Inc.; contractor: Newman Construction Company.



The classroom clusters, each with its pyramid roof, give the plan its visual order and reflect the school's domestic, non-institutional character. The central assembly area (photo right) doubles as a cafeteria and is used in the evening for adult education. The structure is concrete frame, exterior walls are light brown brick, ceilings and soffits are heavy pine plank. Orange carpeting, set against a generally neutral background gives these spaces an uncommon warmth and unity.



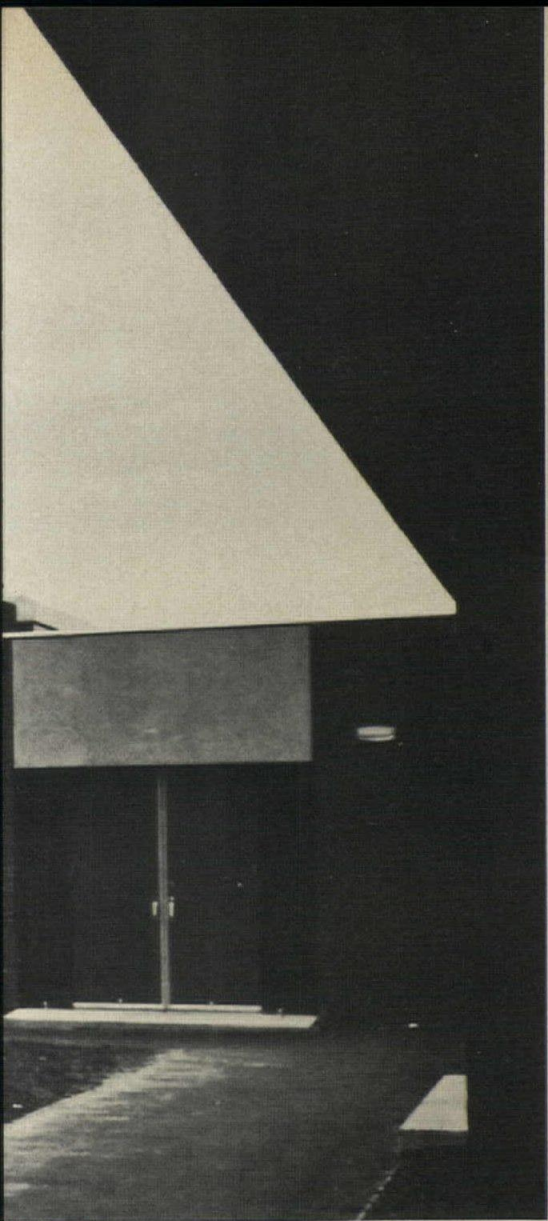


ELEMENTARY SCHOOL DESIGNED FOR EITHER

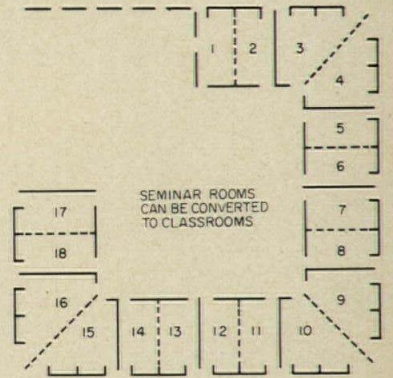
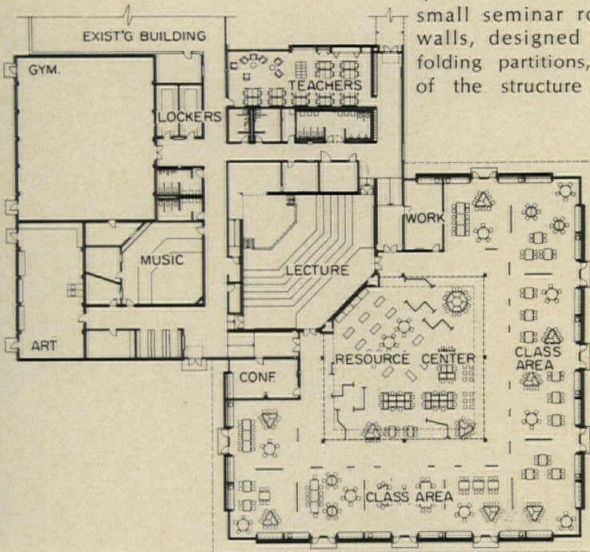
Earl Flansburgh's addition to a Massachusetts elementary school stretches a perimeter of open teaching spaces around a resource center—itsself open on all sides. A simple column line marks the transition. The teaching spaces, nine classrooms worth, have no floor to ceiling partitions and can be organized with furniture to serve classes of all sizes. Just as important, partitions, bought when the addition was built, can be inserted as necessary to create isolated classrooms. The school's modular system, including lighting and mechanicals, can adapt to either open or closed planning. When the teachers moved in, eight were prepared to accept the open plan principle. The ninth wanted—and got—partitions. After six months, and at her request, the partitions were taken down and she now operates quite comfortably in the open environment.

The school's flexibility comes at no loss to the interior spaces which are lively and treated with Flansburgh's sure hand for simple but appealing detail. A raised ceiling over the resource center (photo left) introduces clerestory light and exposes the building's handsome, structural ligaments.

RIPLBY ELEMENTARY SCHOOL, Concord, Massachusetts. Architect: *Earl R. Flansburgh and Associates*; structural engineers: *Souza and True*; mechanical engineers: *Fitzmeyer and Tocci*; electrical engineers: *Hersoy Lottero-Mason*; landscape architects: *Mason and Frey*; contractor: *Francis Piermarocchi, Inc.*

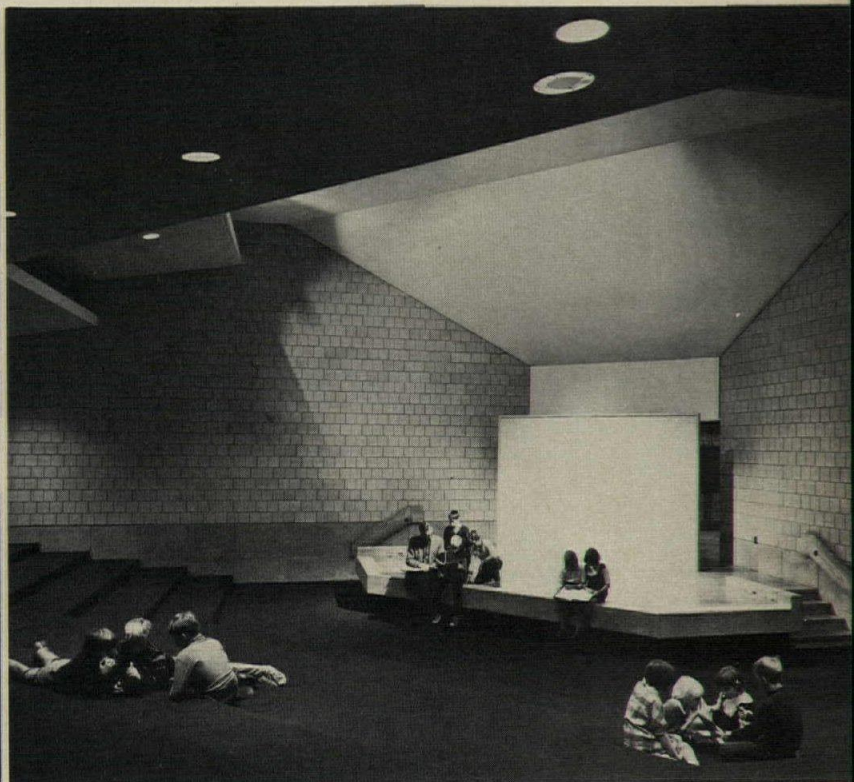


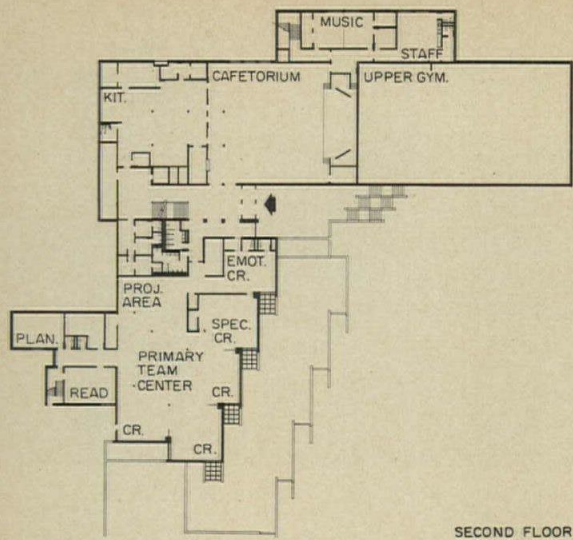
Perimeter teaching spaces can be subdivided either into nine classrooms (each with a required exit) or into eighteen small seminar rooms. Subwalls, designed to receive folding partitions, form part of the structure at outside walls. A special stepped lecture room is carpeted and equipped with a small stage or speaker's platform. A teachers' workroom and lounge, a small gymnasium and music and art rooms complete the addition to this 1956 school.



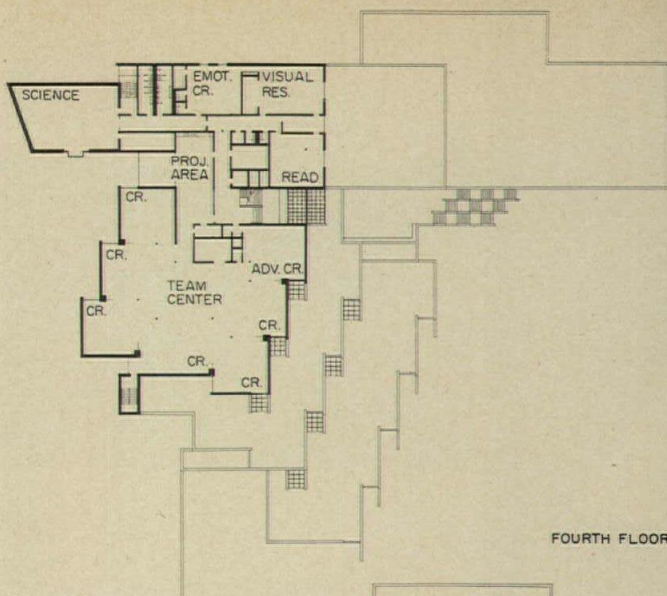
Louis Reens photos

OPEN OR CLOSED TEACHING SPACES

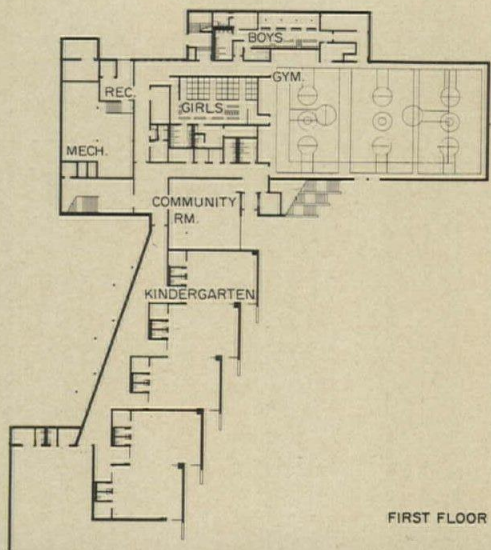




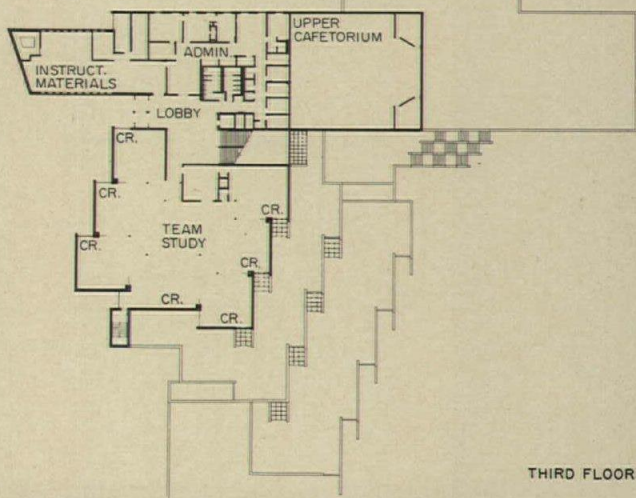
SECOND FLOOR



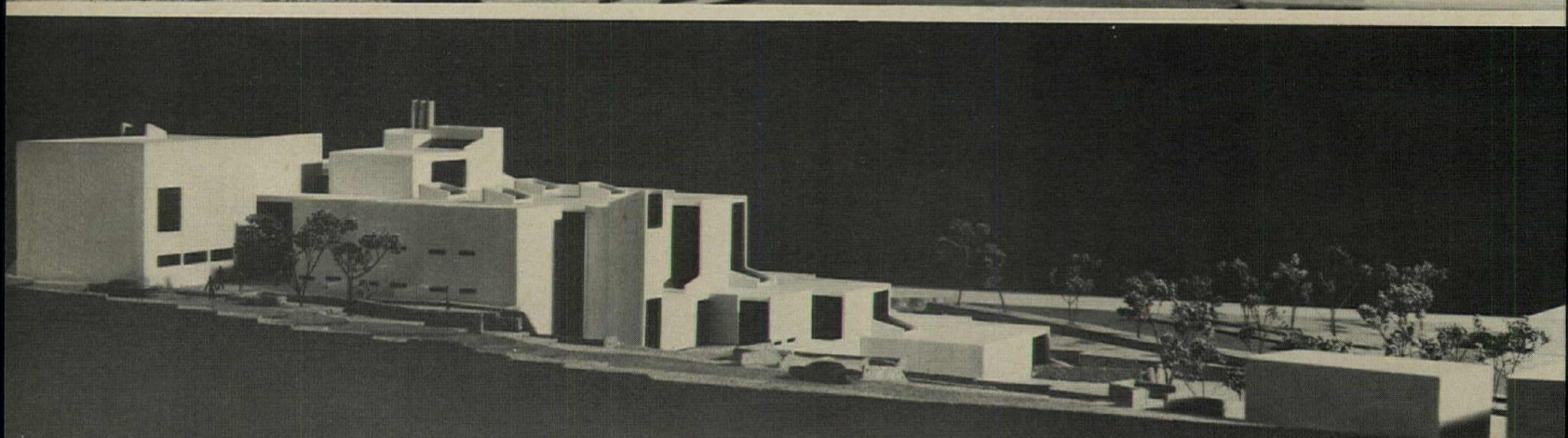
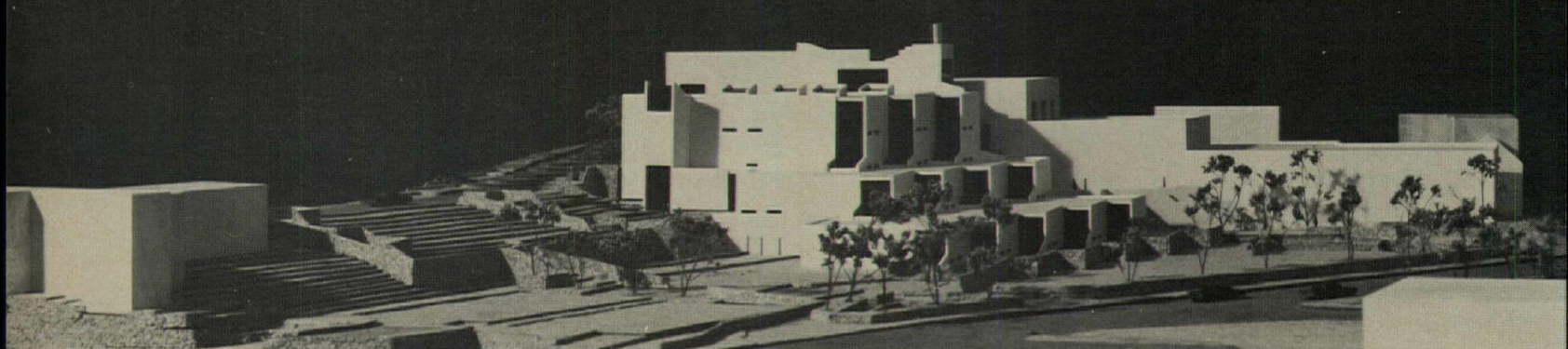
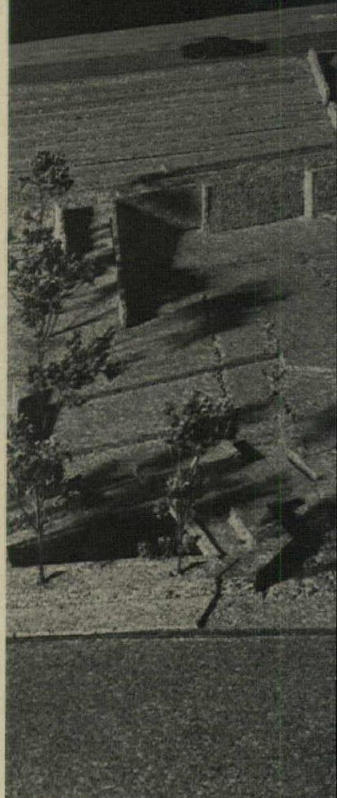
FOURTH FLOOR

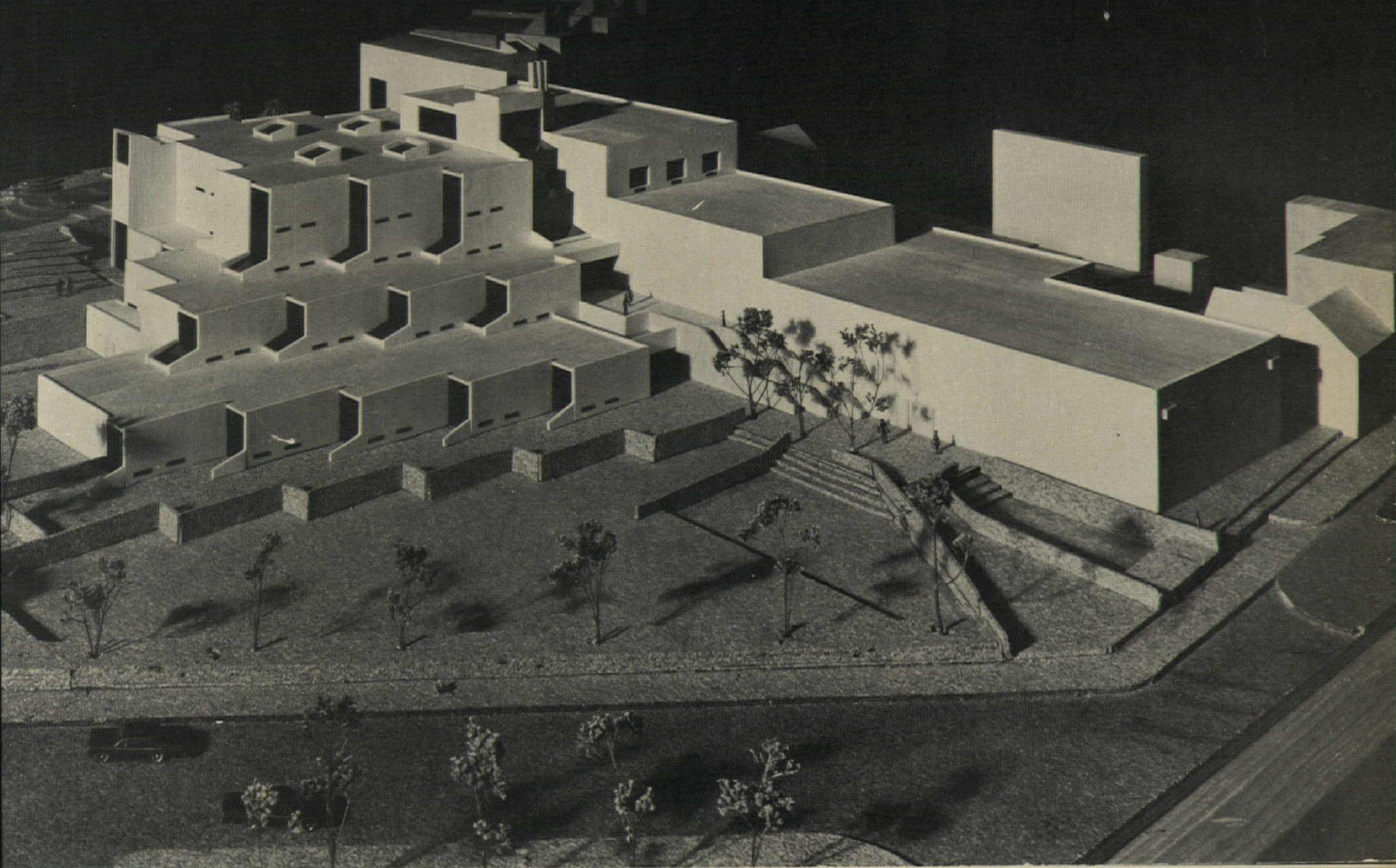


FIRST FLOOR



THIRD FLOOR





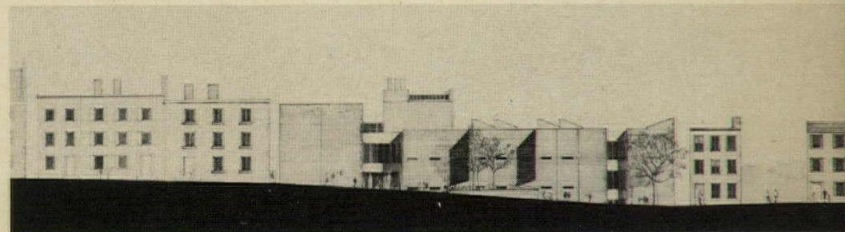
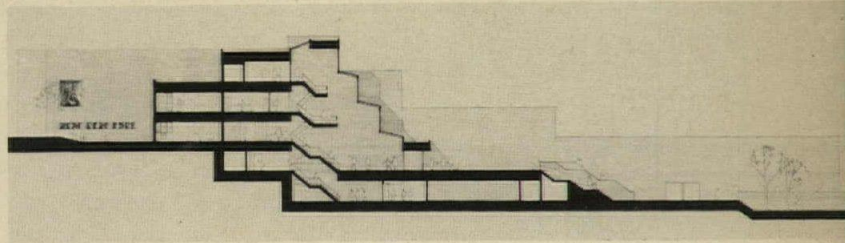
Michael O'Brien photos

NEW ELEMENTARY SCHOOL WILL SETTLE COMFORTABLY IN OLD BOSTON

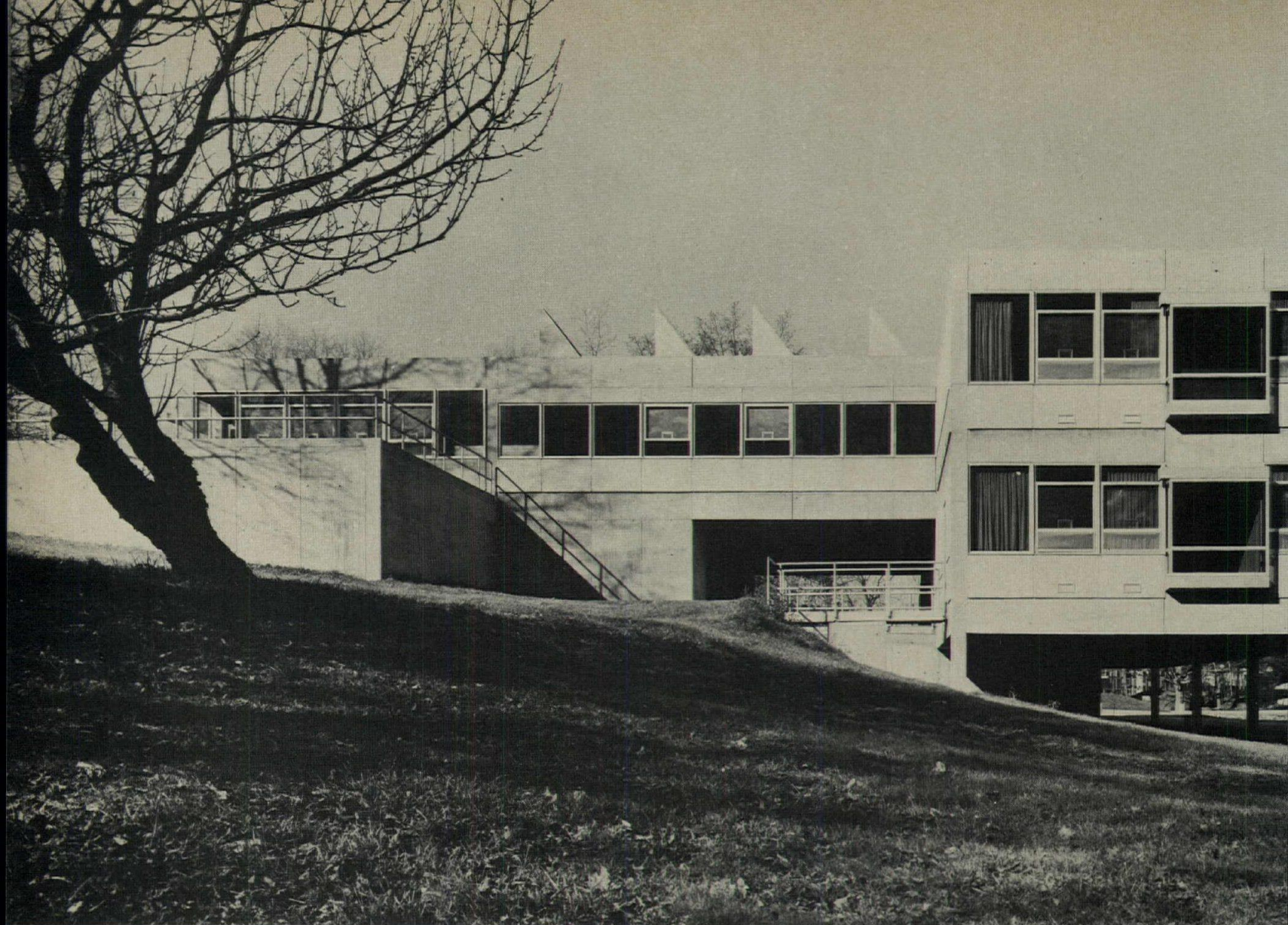
Unlike the suburban setting of the Ripley School (pages 132-133), Kent Elementary School, by the same architect, will take its place on a 2.7 acre site amid historic row houses in the Charlestown section of Boston. Because of its setting and unusual viewing angles—it will be seen from the Mystic River Bridge—the architect was careful to respect the cornice heights of adjacent houses (see elevation at right) and to employ a classroom module that, by stepping back at each level, conformed to the twenty-foot width that is typical in these houses.

Classroom equivalency spaces are grouped on each of several levels around team centers. But unlike the standard open plan, each teaching space has two fixed walls and may be closed off completely by operable walls when desired. Resource center, gym and science facility are closed in plan.

The design constraints imposed by the site and its surroundings have generated a rational building premise. The inventive massing, devised to break down the scale, and obvious concern for spatial interest are never allowed to get in the way of the program. All the elements grow convincingly from a sound design discipline and flow together into a strongly united, legible—and sculpturally exciting—scheme.



KENT ELEMENTARY SCHOOL, Boston, Massachusetts. Architects: Earl R. Flansburgh and Associates, Inc.



Richard Stein photos

WILTWYCK SCHOOL: A NEW CAMPUS BUT A CONTINUING, VITAL COMMUNITY SERVICE

Long associated with the name of Eleanor Roosevelt who helped found the school on an interracial basis in 1939, Wiltwyck School for Boys has recently completed its new campus in Yorktown Heights—about forty miles north of New York City. The student body is composed of emotionally troubled youngsters from underprivileged urban backgrounds who have been referred to the school by the courts or other state agencies. Wiltwyck's program is centered on "milieu therapy" and aims at overcoming the cognitive deficiencies that handicap most of its students. When they arrived, few of the boys were able to perceive fundamental time, space or color relationships with any clarity. They had not made the essential distinctions that life requires of even a pre-adolescent. Because they cannot effectively relate past experience to present or future, yesterday can offer little guidance for tomorrow's actions. Beyond the development of these cognitive tools, Wiltwyck tries, according to its director George Silcott, "to give some useful structure to lives that too often have been chaotic." In its therapy center, the staff works with both boys and their families who make regular visits for the purpose.

Richard Stein's planning is a non-verbal expression of this therapeutic policy. Buildings are grouped purposefully in clusters that are clearly defined but not rigid or authoritarian. Site undu-

lations have been exploited wherever possible for natural boundaries and visual richness. Each different activity is deliberately given its own special context and a variety of building vocabularies reinforces these distinctions. The residential buildings are single story brick structures, domestic in scale and detail, while dining hall, therapy building and gym are concrete frame and faced with modular, precast panels. The individual buildings are designed with intelligence. They are not rustic or retiring. They are sufficiently urban in character to form some link with the boys' city background, but impose a visual order vastly different from the ghetto. Structures for emotionally disturbed boys must be durable because unfocused resentments are often directed against windows and walls. The large expanses of glass at Wiltwyck have been especially vulnerable in this respect. But to have designed these buildings windowless or fortress-like would have betrayed Wiltwyck's essential purpose.

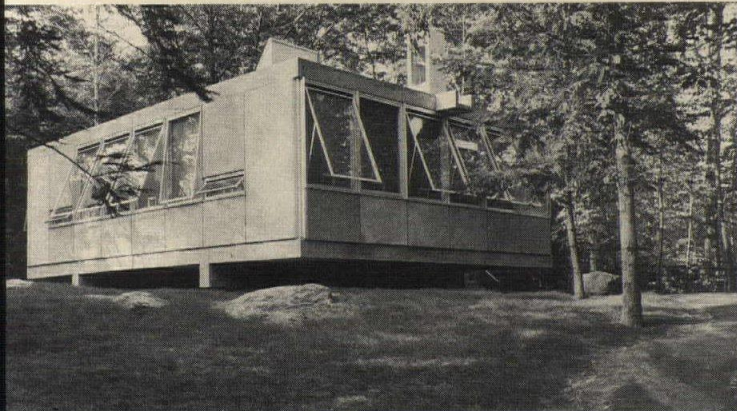
WILTWYCK SCHOOL FOR BOYS, INC., Yorktown, New York. Architects: Richard C. Stein and Associates; owner: Wiltwyck School for Boys, Inc.; structural engineers: Fraioli Blum Yesselman; mechanical engineers: S. A. Bogen Engineers; acoustical engineers: Michael J. Kodaras, Inc.; estimating: McKee-Berger-Mansueto, Inc.; food service: John C. Mason; graphics: Appelbaum & Curtis; specifications: Leon A. Langner.

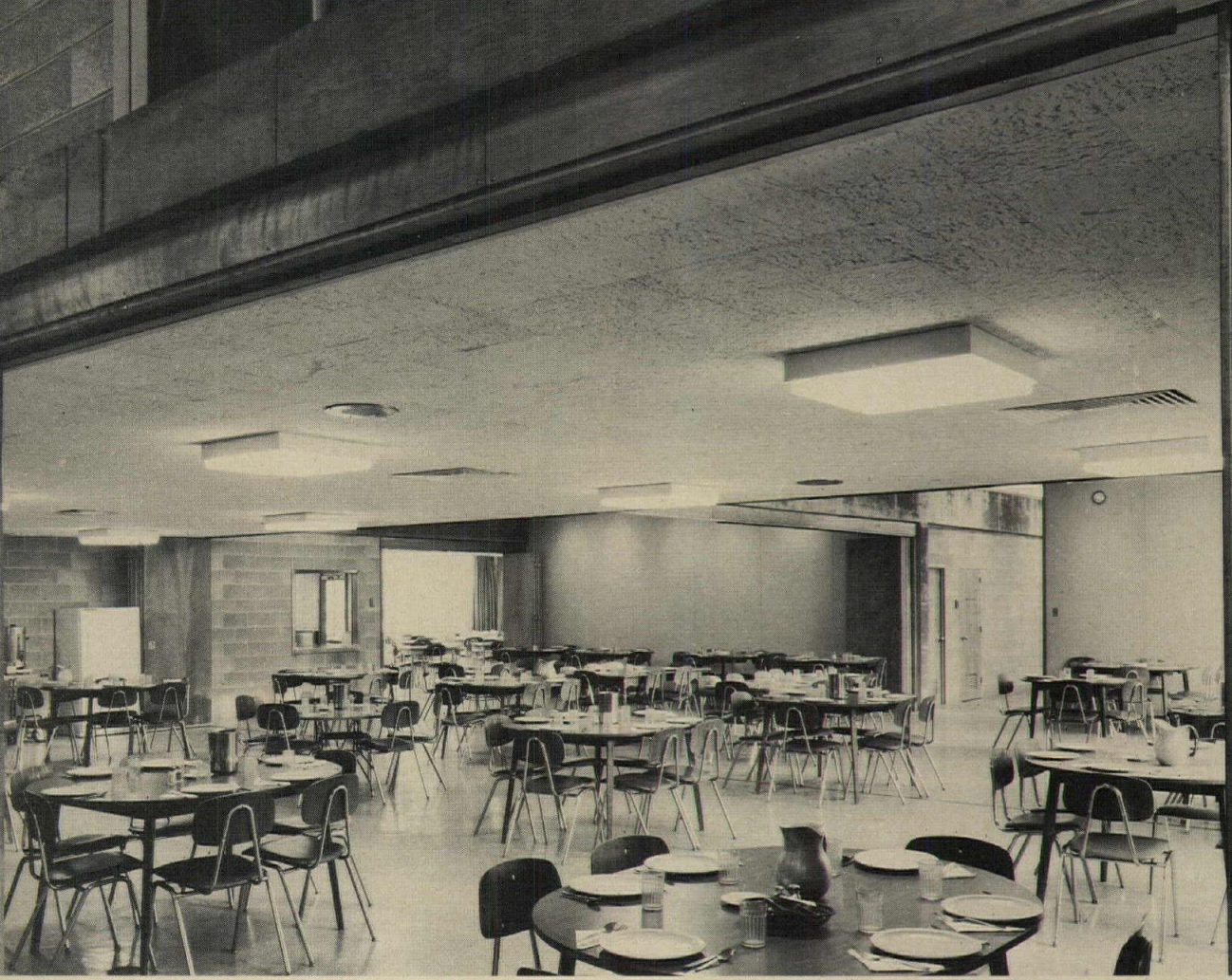


The buildings, by their very diversity, tend to reinforce the school's therapeutic message a hundred times a day. But in spite of this diversity, the visitor has no trouble perceiving the campus as a unified, comprehensible entity.



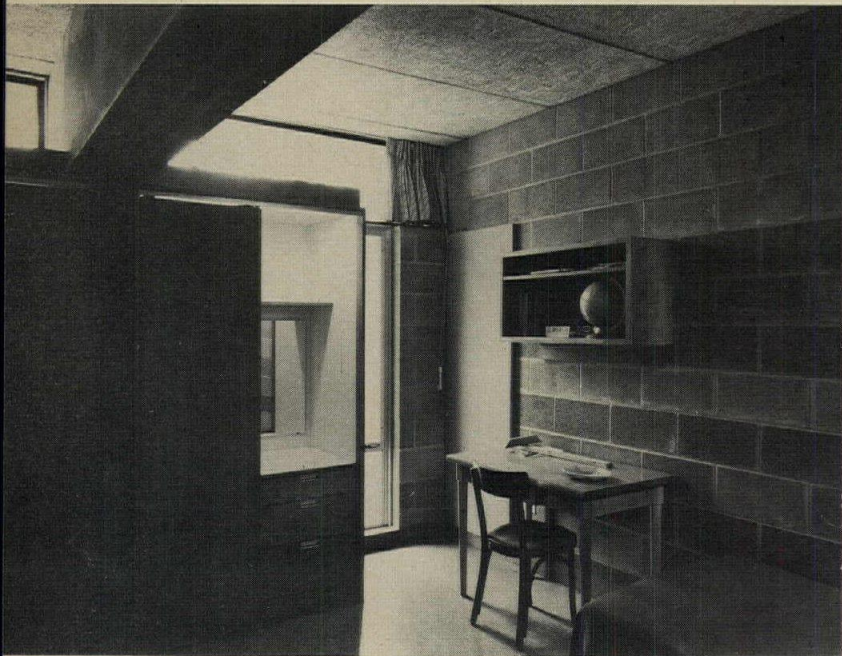
- 1 Academic school
- 2 Dining and activities
- 3 Medical and dental
- 4 Clinical and research
- 5 Gymnasium
- 6 Child care administration
- 7 Children's residence
- 8 Storage and issue
- 9 Administration
- 10 Garage and staff quarters
- 11 Staff apartments
- 12 Garage and storage
- 13 Storage
- 14 Activities building





WILTYCK SCHOOL FOR BOYS

Dining hall (above) can be partitioned by operable walls for large or small group use. Round tables were selected for dining to avoid all "hierarchical" implications. Inexpensive, but fresh and inventive detailing, as in the pipe railing for the stair (right) enrich the spaces throughout. Boy's sleeping quarters (below) are carried out in much the same straightforward and somewhat spartan spirit.



PREDICTING BALLAST NOISE FROM H.I.D. LIGHTING SYSTEMS

New mercury-vapor and sodium-vapor lamps render colors more naturally than earlier ones—so they have moved indoors. But ballast noise must be properly specified. Here is a method for doing this.

by A. C. McNamara, Jr.



High-intensity discharge lamp lighting systems are finding increasing use in building interiors. These lamps, once used principally for outdoor and factory lighting, have moved indoors, not only for application in sports facilities, but for stores, offices and even libraries. Use of H.I.D. lamps—mercury-vapor and high-pressure sodium-vapor—is advantageous because of their high efficiency, long life, and high output in a small “package.” Formerly, color of mercury- and sodium-vapor lamps was a problem, but now color-corrected versions make them suitable for interiors.

Architects and engineers have recognized that fluorescent lamp ballasts can occasionally cause noise problems unless they are properly selected with regard to the types of spaces in which they are to be used—particularly when background noise level is low. But, because of the newness of application of H.I.D. lamps to interiors, the potential noise problem of H.I.D. lamp ballasts has frequently been neglected, to the later chagrin of the designers—and the installations have been very costly to correct. H.I.D. lamps come in much higher wattages than fluorescent lamps, thus their ballasts are larger, and they produce more noise per ballast. Some recent H.I.D. lighting installations, while performing satisfactorily with respect to illumination level, brightness, maintainability, etc., have failed badly with respect to

noise—but they need not have.

Ballast noise from H.I.D. fixtures can be predicted using proven and accepted engineering test procedures. Further, ballast construction and mounting to fixtures can be selected to help reduce noise output. In general, the test procedures call for making acoustical measurements of a sound source (ballast) in a reverberation room at 1/3 octave band levels (viz., 63, 125, 250 . . . 8000 cycles—now called Hertz, abbreviated Hz). Correction is made for “pure tones” because this affects occupant annoyance. Ballast noise may be broad band, but more likely will be concentrated at one or two frequencies. For a given total sound-energy level, the latter will be much more annoying. Reverberation room testing is performed according to ASHRAE Standard 36-62 and “pure tone” corrections are made to the recorded data according to ARI Standard 443. Does the mounting of a ballast change its noise output? In most cases the answer is definitely yes—and the change may be good or bad. Mounting is especially important if the ballast is integral with the luminaire. If the luminaire enclosure exhibits a mechanical resonance at some frequency harmonically related to principal ballast-noise output, enclosure resonance can make what might appear

The author is vice-president and director of research, Wide-Lite Corporation, a division of Esquire, Inc.

to be a quiet ballast (i.e. measured by itself) into a very annoying ballast-fixture combination. In other words, meaningful data can be obtained only by testing integral ballasts in their fixtures as complete units.

Why not use a letter-rating system similar to that that has been used for many years with fluorescent ballasts? First of all there are a number of deficiencies with the fluorescent letter-rating system, per se. There is no industry standard for testing fluorescent ballasts. One manufacturer does not necessarily classify his ballasts the same way another manufacturer does. Letter grades make inadequate allowance for frequency distribution. Methods used to obtain data sometimes fail to take into account fully the difference between direct and reverberant sound energy. Letter-grade ratings apply to ballasts only, not as mounted in a luminaire. Finally, the letter ratings (A-F) cannot be used to predict the resulting noise level in a room. Clearly, the letter-grade ratings, as currently presented, do not provide sufficient information upon which to base valid and meaningful total system acoustical analysis.

What we need to know to find out how much ballast sound the occupant hears

The procedures given in the ASHRAE and ARI standards, however, will yield repeatable, reproducible noise data. The meas-

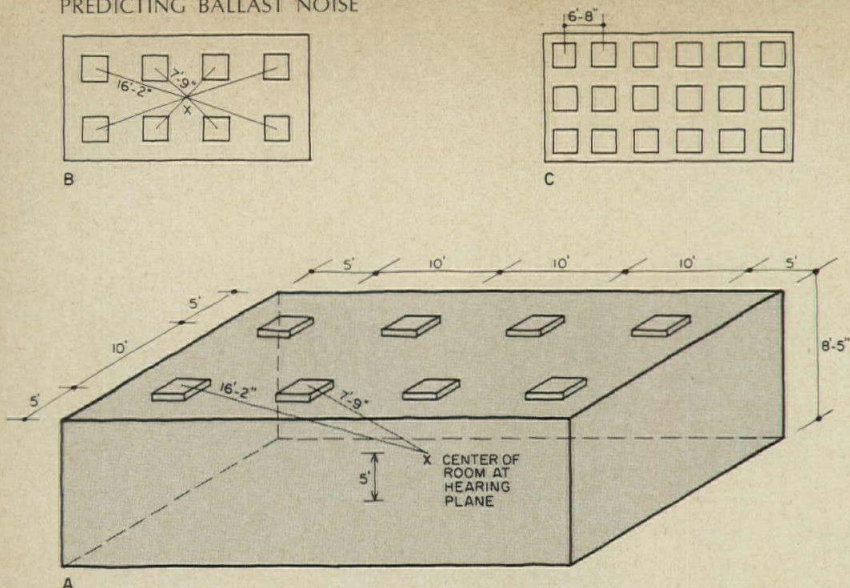


Figure 1: hypothetical room with 100 footcandles of illumination used as example to compare relative noise levels of mercury- and fluorescent-luminaire-installations—a) mercury installation showing room proportions and location X where noise level is to be determined; b) mercury luminaire layout showing distances from point X to luminaires; c) fluorescent luminaire layout providing 100 footcandles.

SOUND PRESSURE LEVEL DATA

SR-400-FWRB-B 100-FOOTCANDLES"

AREA	ROOM SURFACE ABSORPTION						TYPE
	125HZ	250HZ	500HZ	1000HZ	2000HZ	4000HZ	
800.0	544.0	536.0	520.0	672.0	696.0	592.0	CEILING
800.0	40.0	80.0	136.0	400.0	440.0	480.0	FLOOR
340.0	61.2	20.4	13.6	10.2	6.8	6.8	WALL1
680.0	20.4	20.4	20.4	27.2	34.0	47.6	WALL2

QUANTITY	SOUND ABSORBING OBJECTS						TYPE
	125HZ	250HZ	500HZ	1000HZ	2000HZ	4000HZ	
10.0	20.0	20.0	30.0	40.0	40.0	40.0	PEOPLE
6.8	.0	.0	.0	6.1	15.6	49.0	AIR
30.0	3.0	6.0	6.0	12.0	15.0	18.0	CHAIRS

TOTAL ABSORPTION IN SABIN UNITS						
125HZ	250HZ	500HZ	1000HZ	2000HZ	4000HZ	
688.6	682.8	726.0	1167.5	1247.4	1233.4	

ROOM CONSTANT						
125HZ	250HZ	500HZ	1000HZ	2000HZ	4000HZ	
934.1	923.5	1004.3	2106.0	2381.2	2330.4	

SOUND PRESSURE LEVEL						
125HZ	250HZ	500HZ	1000HZ	2000HZ	4000HZ	
46.2	40.2	45.0	27.9	22.7	27.7	

Figure 2: portion of computer print-out for program that solves for sound pressure levels at point X in the room above. Solution is for mercury installation; fluorescent installation was similarly investigated. Sound pressure levels for both were plotted on the NC graph given in Figure 6.

urements obtained following the ASHRAE standard give sound power levels for 1/3 octave bands, plotted at center frequencies. Sound power is the total amount of acoustic energy that a source radiates. But the amount of sound energy we hear decreases the farther we are from the source and the more sound absorption there is in the space (air, people, furnishings, acoustical materials, etc.). Further, the amount of sound we hear is affected by the position of the source in the room—at the ceiling, in the open air, etc. This factor is called directivity (Q). The index of what we hear is called sound pressure level.

For us to know whether or not a given sound source(s) will produce annoyance (noise), the sound power level (L_w) data—which remains the same for a given luminaire installed in a given way—must be used to determine sound pressure level (L_p) data for the room in question because

sound pressure levels will vary from room to room. In determining sound pressure levels in a space, the power level produced by the total number of sources must be used.

It should be pointed out here that the sound power level data must be taken with the luminaire mounted comparably to the way in which it will be installed. For example, if the luminaire is to be recessed above an acoustical tile ceiling, then the data should be taken simulating this situation because, obviously, some of the sound energy will be attenuated by the ceiling.

A comparison of sound output of a mercury and a fluorescent installation
 We have had a number of our H.I.D. luminaires tested by the Kodaras Acoustical Laboratories. Figure 4 shows sound power data for a 400-watt mercury luminaire with integral ballast corrected for discrete fre-

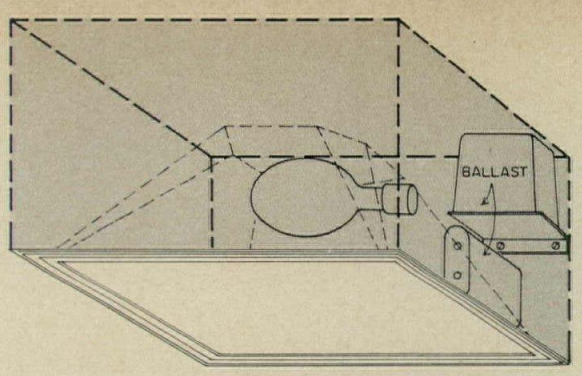


Figure 3: drawing of mercury luminaire; note ballast attached to luminaire (this can affect nature of sound output).

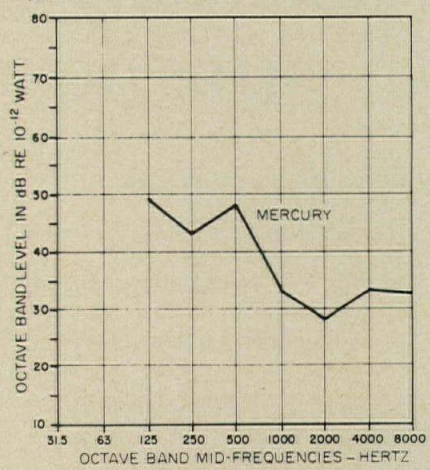


Figure 4: sound power levels for 400-w mercury luminaire plotted by testing laboratory (ballast integral with luminaire).

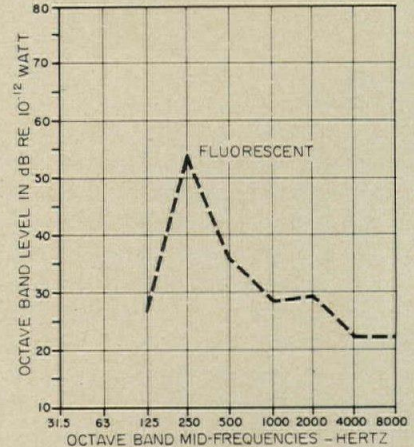


Figure 5: sound power levels for fluorescent luminaire (four 40-w lamps and two ballasts) plotted by testing laboratory.

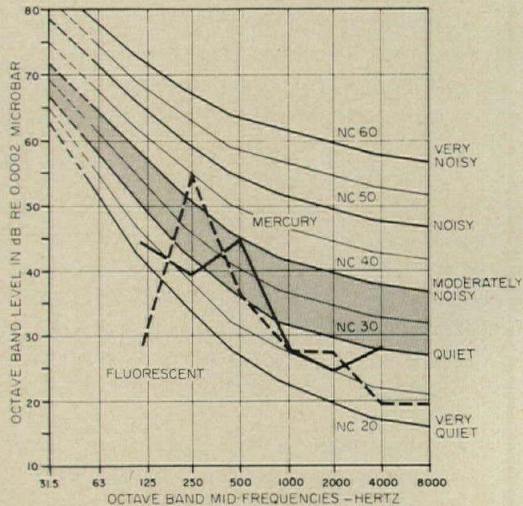


Figure 6: sound pressure levels for mercury-luminaire and fluorescent-luminaire examples (Figure 1) plotted on NC (noise criterion) curve graph.

quencies (pure-tone correction) according to ARI standard 443 and converted from 1/3 octave band data to octave band data. How might a fluorescent installation compare with a mercury installation? To find out we had the Kodaras laboratories determine the sound power characteristics (shown in Figure 5) of a four-lamp fluorescent fixture operated by two "A" sound-rated ballasts. It can be seen that for the particular ballasts tested, sound power output from the fluorescent fixture peaks higher than the mercury fixture.

To show how these two different fixtures would fare in an actual installation we have assumed a room with the dimensions and absorption characteristics indicated in Figure 1. In order to compare relative noise outputs the sound power level data must be converted to sound pressure level data, and the calculations must consider the total number of noise sources. To provide 100 footcandles of illumination, the room was found to require eight mercury luminaires or 18 fluorescent luminaires because the mercury lamps have almost twice as much lumen output as the fluorescent lamps.

Sound pressure levels are determined from sound power level data by the following formula:

$$L_p = L_w + 10.5 + 10 \log_{10} (Q/4\pi r^2 + 4/R)$$

where,

L_p = sound pressure level, dB re 0.0002 microbar

L_w = sound power level, dB re 10^{-12} watt

Q = directivity factor

r = distance from sound source, ft

R = room constant, square feet (index of room sound absorption)

The factor $Q/4\pi r^2$ is an index of direct sound and the $4/R$ is an index of reverberant sound.

This formula gives sound pressure levels for a single noise source. To determine what the sound pressure level is at a particular point in a room, the sound pressure levels for all of the luminaires must be determined and these values combined. Final step: the resulting data is plotted on a graph containing a series of NC (noise criterion) curves. This set of criteria is used for general acoustical comfort specifications.

We have developed a computer program that takes the octave-band sound power levels along with sound absorption data of the room and then calculates the sound pressure levels at the listener's ear for six octave bands. The NC level can be found by plotting the calculated sound

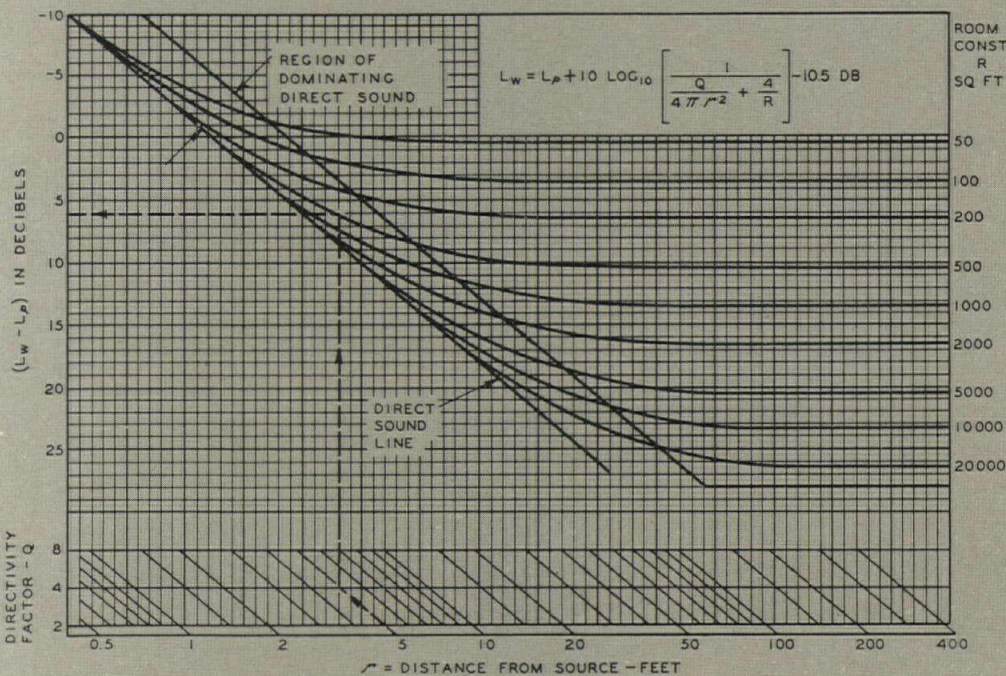
pressure levels versus frequency on the NC-curve graph. The highest NC contour reached at any frequency is the NC rating for that installation. These ratings indicate relative annoyance of the sound.

Figure 6 shows the NC plots for the mercury installation and for the fluorescent installation given in Figure 1. Assume that the space is a classroom or library which calls for NC values of 30-40. The plots show that the mercury installation meets the criteria but the fluorescent installation does not. It can be seen that the fluorescent installation peaks at the NC 45 curve, whereas the mercury installation peaks lower at NC 40. There might very well be some "A-rated" ballasts that could meet the NC 30-40 criterion of this example, but the lack of standardization in testing with the letter-grade system makes it difficult to know.

For maximum reliability, sound ballast data should be provided by independent sound testing laboratories. By using ballast noise (or total luminaire noise for integrally ballasted units) as part of the input for an acoustical analysis based upon accepted standards, complete lighting system noise can be calculated and evaluated in order to provide a basis for valid, rational specification.

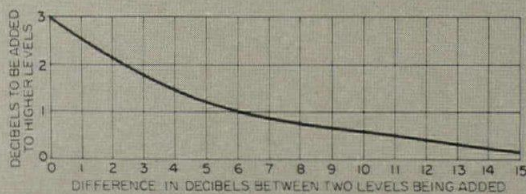
GRAPHICAL METHOD FOR DETERMINING LEVELS FROM BALLASTS

A method is presented—not as rigorous, nor as fast as computer solution—that ordinarily will provide a reasonably accurate basis for specification. Critical spaces, however, may require special attention to acoustical design—Robert E. Fischer, senior editor



1. Graph for determining sound pressure level when sound power level is known

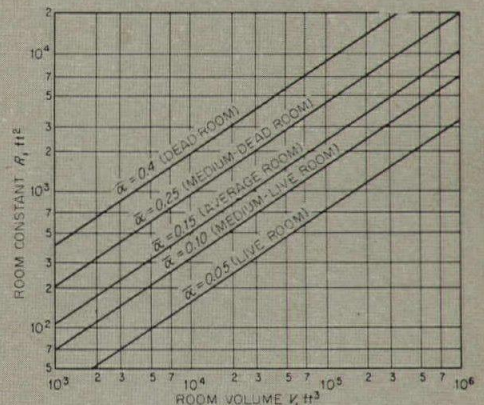
Reprinted by permission from ASHRAE Guide and Data Book, Systems, 1970.



3. Graph for adding decibels of different magnitudes

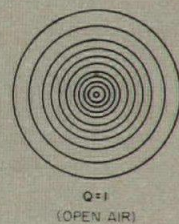
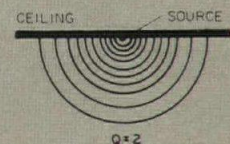
NUMBER OF BALLASTS OF EQUAL SOUND POWER RATING	2	3	4	8	10	20	40	100
DECIBELS TO BE ADDED TO PRESSURE LEVEL OF ONE BALLAST TO GET TOTAL SOUND PRESSURE LEVEL	3	5	6	9	10	13	16	20

4. Table for determining sound pressure from "n" sources



2. Room constants for rooms of various volumes and absorptivities

Knowing the sound power level data for an H.I.D. ballast (tested with luminaire, if integral) the designer can determine the total sound from ballasts by use of the graphs and table (see examples next page).



5. Directivity factor Q

The sound-producing characteristics of a piece of manufacturer's equipment generally will be presented as the sound power level calculations for eight octave bands, based upon reverberation room measurements taken for 1/3 octave bands. In order to find out how much noise is produced within a given space the designer must determine how much of this power reaches the occupant's ear, and this will depend upon the number of sources, location of the source(s), distance from the source(s) to the occupant, and the amount of sound absorption within the room. The sound output of the equipment is called sound power level, and the sound reaching the occupant is called sound pressure level.

To determine whether or not a particular sound producing system (air conditioning, ballasts, etc.) will cause annoyance (noise) the designer can take the manufacturer's sound power level data and, with the knowledge of room characteristics and the system layout and design, calculate the sound pressure levels using the formula below. Done arithmetically, the process is time consuming. A computer program can circumvent this. Also there are graphical methods based upon the formula which will give results with sufficient accuracy for the general run of applications. The methods are explained in detail in the ASHRAE Guide and Data Book, Systems, 1970, pages 498-502.

The formula for determining sound pressure level is:

$$L_p = L_w + 10.5 + 10 \log_{10} (Q/4\pi r^2 + 4R)$$

where,

L_p = sound pressure level

L_w = sound power level

Q = directivity factor

r = distance from sound source

R = room constant (index of absorption)

Graph number 1 on page 141 is a plot of this equation. The accuracy of its use will depend upon how detailed the designer is in his analysis of room characteristics and system layout. Two examples of using this graph for determining the noise from the mercury ballasts in Figure 4 are given here.

To use the graph, the designer must determine room constant(s), R , the distance from the source(s), r , and the directivity factor, Q (see previous page).

The room constant(s), R , can be calculated from the formula:

$$R = S\bar{\alpha}/1 - \bar{\alpha}$$

where,

S = total area of all room surfaces,

$\bar{\alpha}$ = average sound absorption coefficient.

Absorption can be most accurately calculated by the formula:

$$S\bar{\alpha} = S_1\alpha_1 + S_2\alpha_2 + \dots + A_1 + A_2 + \dots + 4mV$$

where,

S_1, S_2 , etc. = area of each type of room surface,

α_1, α_2 , etc. = absorption coefficient for each type of surface at a frequency typical for the band of sound being considered,

A_1, A_2 , etc. = absorption units of occupants, furnishings, etc.

m = factor for absorption of sound in air.

Room constants can be determined accurately enough, however, for ballast noise calculations using average absorption coefficients and graphs such as number 2, previous page.

EXAMPLE 1 (most detailed) using graph number 1, for room with mercury luminaires (Figure 1, page 140)

Step 1: Determine sound pressure levels produced by each ballast at the occupant's location for each octave band. To use the graph we must know the room constant(s), R , and the distance to the sound source(s).

The room constants, R , as determined by computer program are:
 R at 125 Hz = 934.1; at 250 Hz = 923.5; at 500 Hz = 1004.3; at 1000 Hz = 2106.0; at 2000 Hz = 2381.2; at 4000 Hz = 2330.4

The distance from an occupant in the center of the room to the nearest fixture is 7.9 ft, and to the farthest fixture, 16.2 ft. Directivity, Q , = 2.

Example 1 continued

Octave band center frequency, Hz	125	250	500	1000	2000	4000
1. Sound power levels, L_w (from Figure 4, p. 140)	49	43	48	33	28	33
2. $L_w - L_p$ for 7.9 ft (from graph number 1)	11	11	11	13	13	13
3. $L_w - L_p$ for 16.2 ft	13	13	13	15	15	15
4. L_p for 7.9 ft	38	32	37	20	15	20
5. L_p for 16.2 ft	36	30	35	18	13	18

Step 2: Determine total sound pressure levels at each frequency

Octave band center frequency, Hz	125	250	500	1000	2000	4000
1. L_p for four ballasts at 7.9 ft (use table for determining the L_w of "n" sources)	44	38	43	26	21	26
2. L_p for four ballasts at 16.2 ft	42	36	41	24	19	24
3. Total L_p for all eight mercury ballasts (use graph 4 for adding decibels of different magnitudes)	46	40	45	28	23	28

Step 3: Plot L_p (sound pressure levels) on NC chart (see Figure 6, page 140).

EXAMPLE 2 (less detailed) for room with mercury luminaires


Step 1: Determine an average room constant, R , using graph number 2. The average absorption coefficient, α , is probably between 0.2 and 0.4 because of the large amount of absorptive materials; therefore, assume $\bar{\alpha} = 0.3$. The volume of the room is 6800 cu. ft. The graph indicates a room constant, R , of about 1000. Directivity, Q , = 2.

Step 2: Determine sound pressure levels for each octave band for all eight mercury ballasts.

Octave band center frequency, Hz	125	250	500	1000	2000	4000
1. Sound power levels, L_w (from Figure 4)	49	43	48	33	28	33
2. $L_w - L_p$ for 7.9 ft (with $R = 1000$)	11	11	11	11	11	11
3. L_p for 7.9 ft	38	32	37	22	17	22
4. $L_w - L_p$ for 16.2 ft	13	13	13	13	13	13
5. L_p for 16.2 ft	36	30	35	20	15	20
6. Total L_p for all eight mercury ballasts (done in the same way as Example 1)	46	40	45	30	25	30

Step 3: Plot Total L_p (sound pressure levels) on NC chart

Acknowledgements: Suggestions regarding use of a graphical approach for determining sound pressure levels were made by Michael J. Kodaras of M. J. Kodaras and Associates. Comments on the ballast noise problem were provided by Robert D. Bruce of Bolt, Beranek and Newman, Inc.



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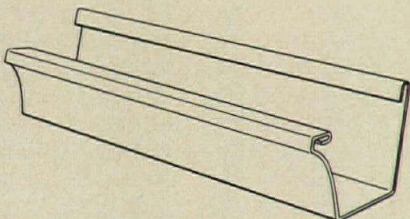
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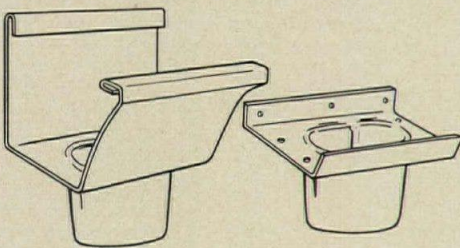
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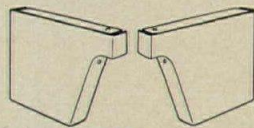


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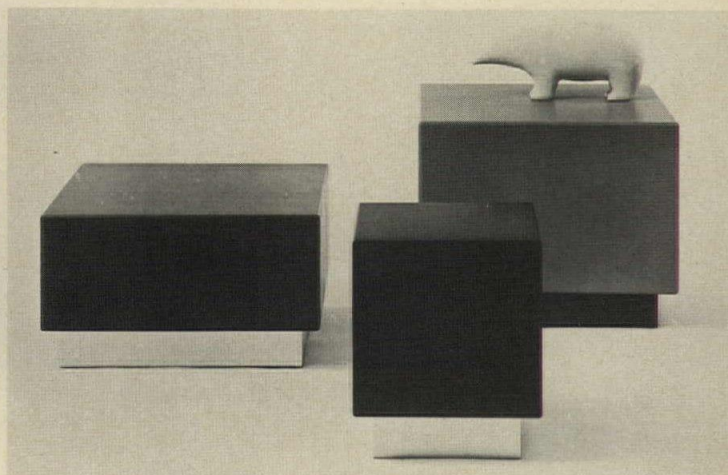
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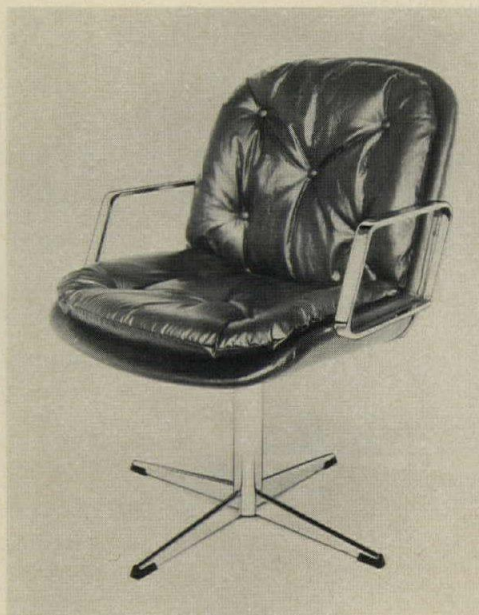
CUBE TABLES / Made of polyester resin with soft edges, the cube tops rest on plinth bases of polished aluminum, oiled walnut or oiled oak. Tops are available in six colors. ■ Metropolitan Furniture Corp., San Francisco.

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ARM CHAIR / Rugged in appearance, this design in molded foam rubber, by the team of DeCursu, DePas, D'Urbino and Lomazzi, is made of cushions of identical size which form the seat, back and arms. Additional seat and back units can be added on with a simple joining method so that this model can be lengthened for multi-seating purposes in any commercial application. The upholstery is in Italian wool. ■ Stendig Inc., New York City.

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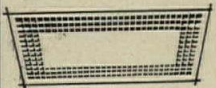
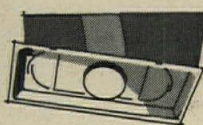
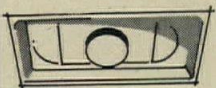
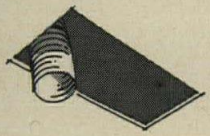
ARM CHAIR / Featuring weltless sewing on arms and cushions with reversible poly-dacron seat and back cushions, this model rests on a chrome-finished steel base. It is available in a wide range of woven and vinyl covers. ■ Silver Craft Furniture Co., High Point, N.C.

Circle 304 on inquiry card

More products on page 150

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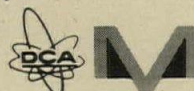
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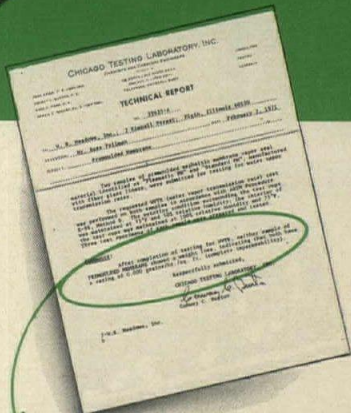
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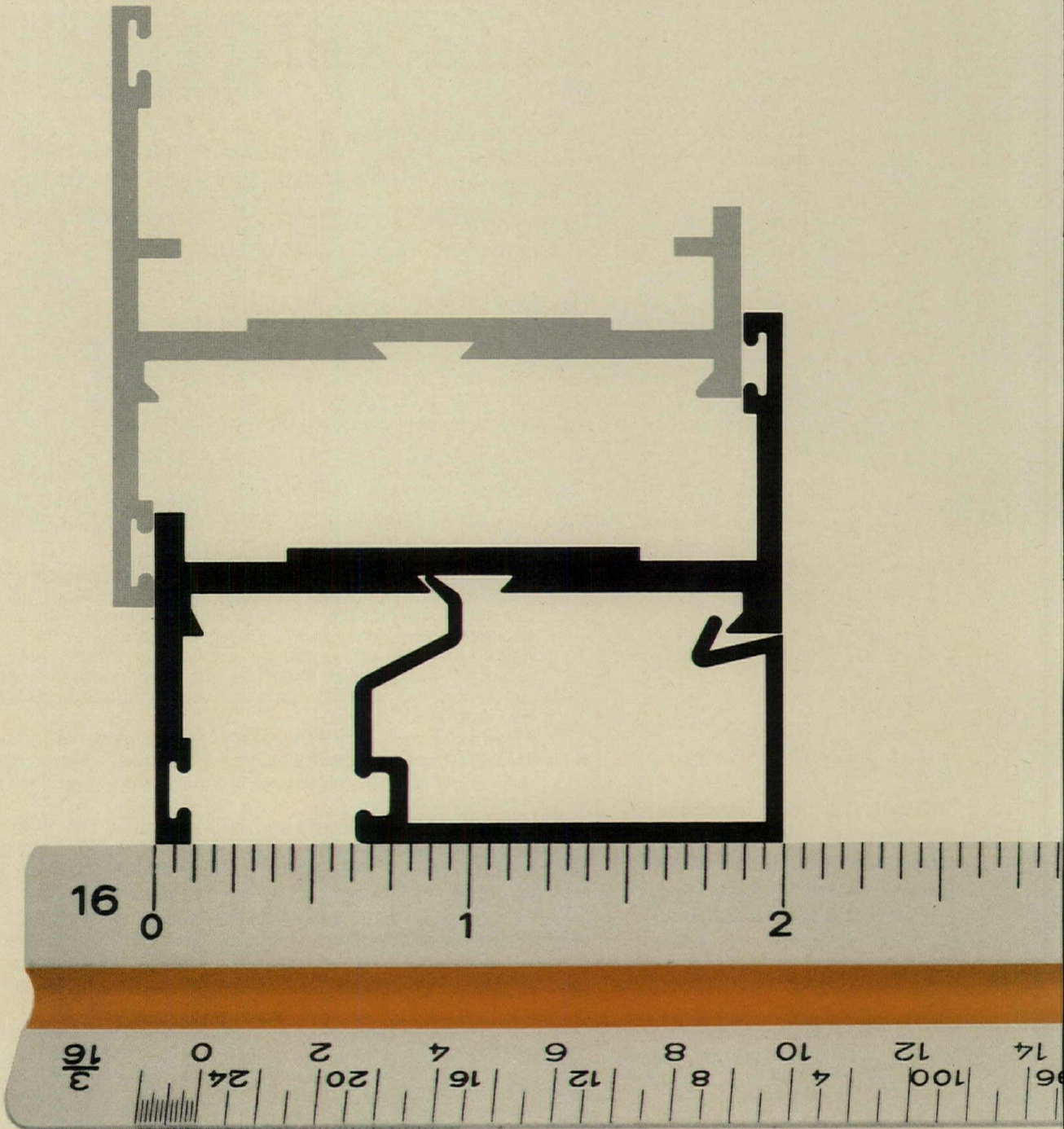
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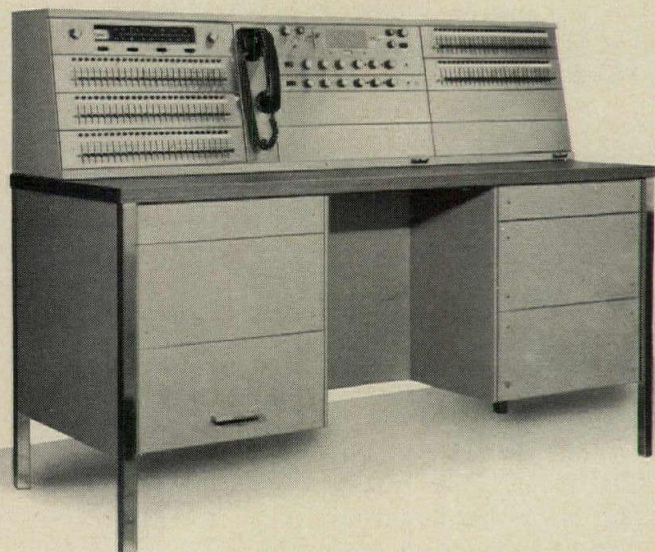
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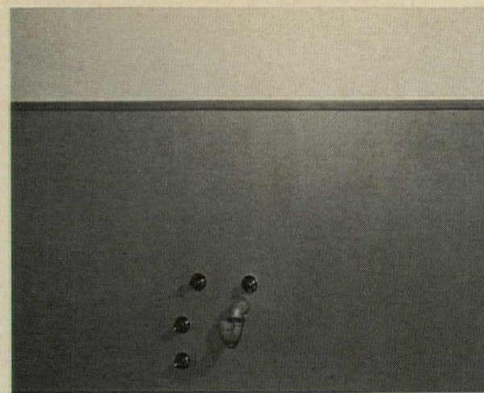
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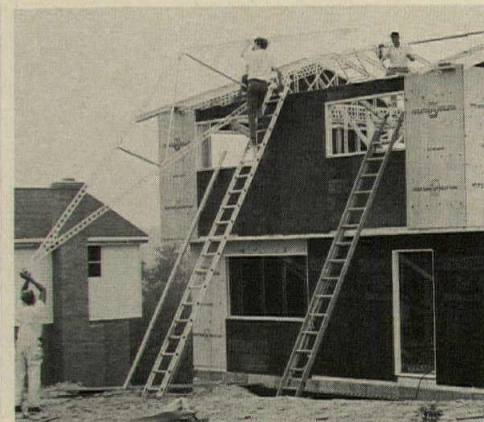
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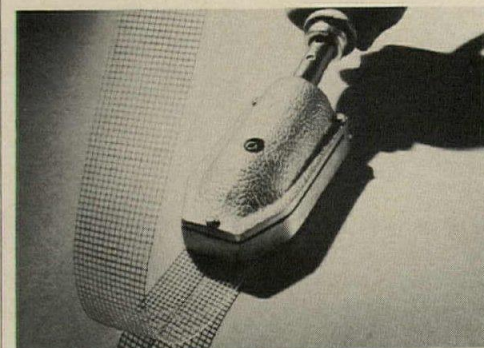
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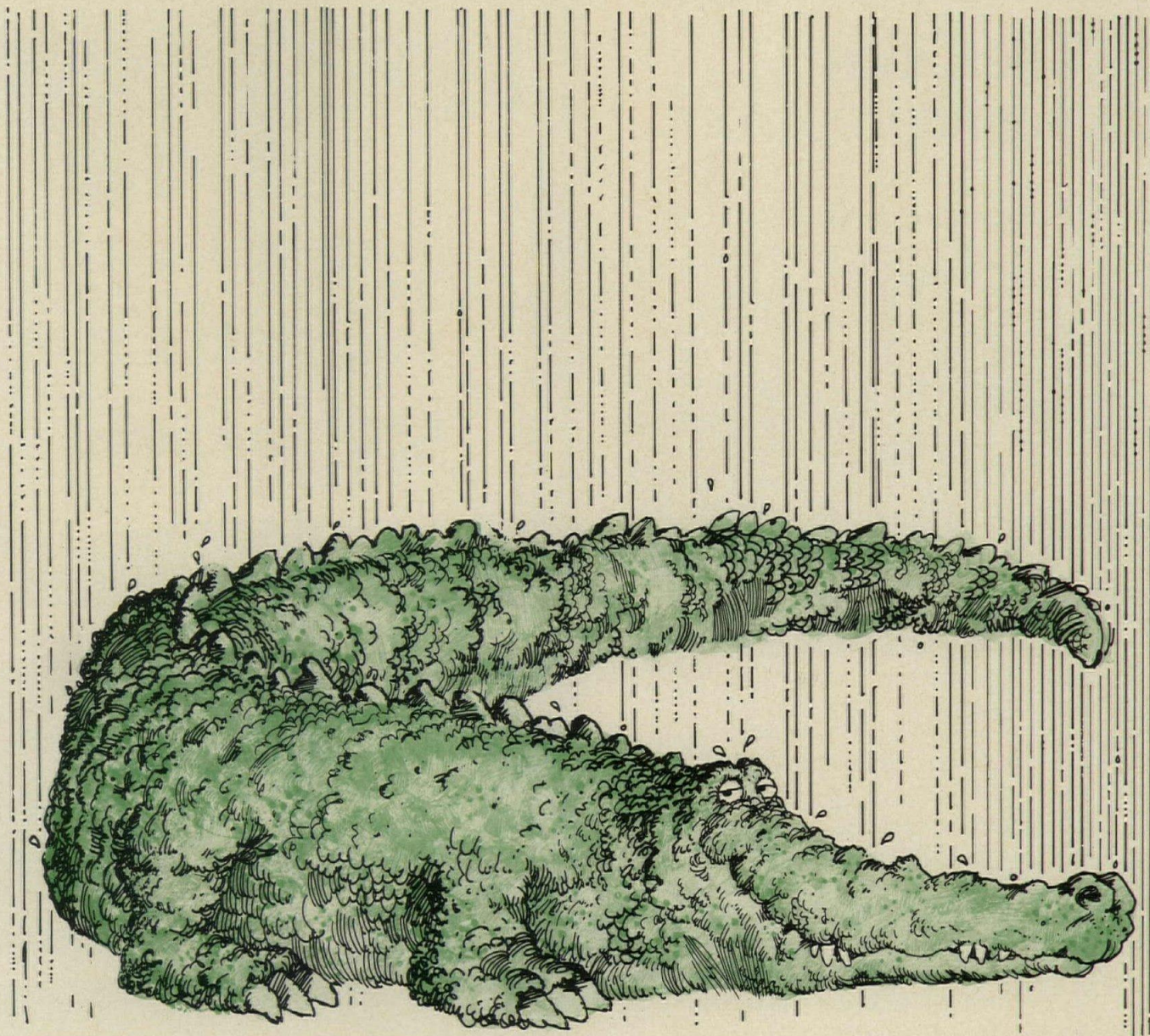


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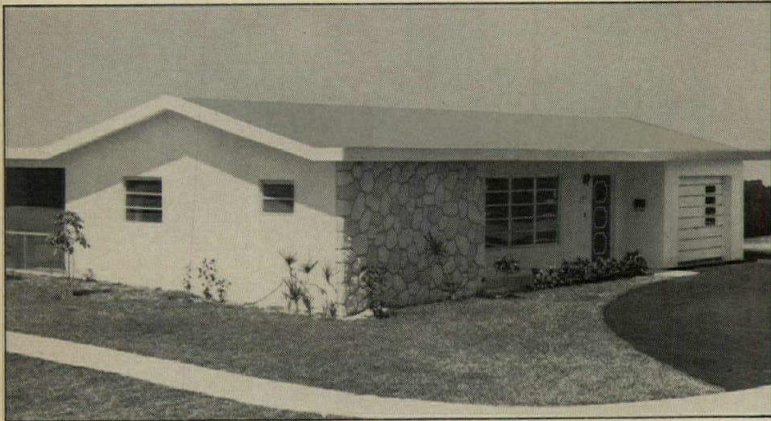
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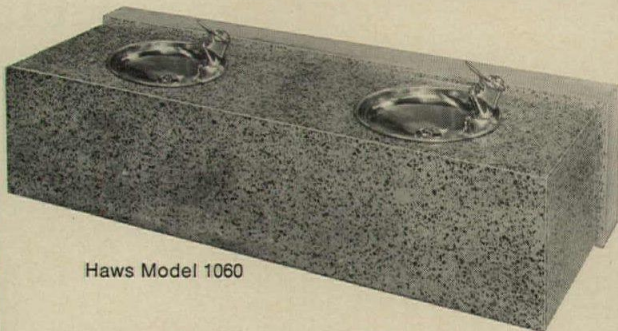
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Nature of Business: _____

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Make yours a double...
on the rocks.



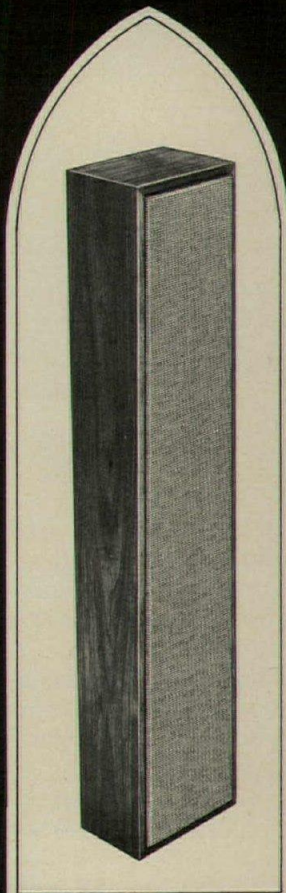
Haws Model 1060

Single receptor or double, our new fountain of precast stone has clean, simple lines, handy deck space, five colors in three distinctive finishes. For details and all the facts, write: HAWS DRINKING FAUCET CO., 1441 Fourth St., Berkeley, Calif. 94710.



DRINKING FOUNTAINS

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Every architect
should read
our 12-page sermon
on sound columns.

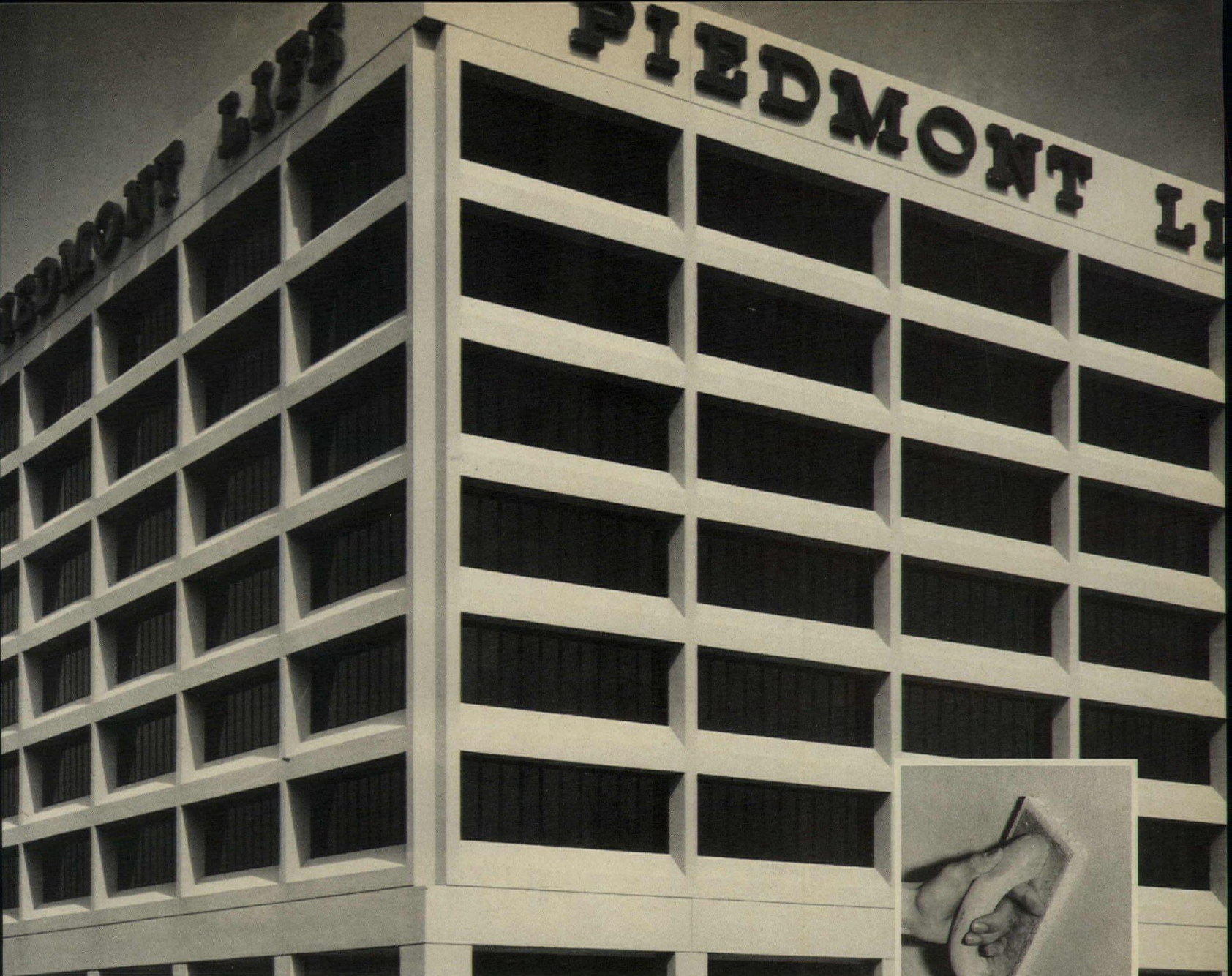
It's an ear opener.

Free illustrated booklet tells all about sound columns . . . how they can increase effective power of sound reproduction by 75% or more . . . even in most difficult structures. Write today!

Argos
PRODUCTS COMPANY

600 So. Sycamore, Genoa, Illinois 60135

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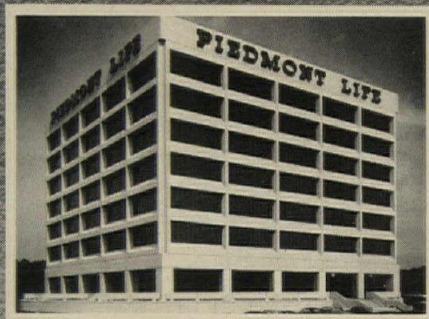
Piedmont Life Insurance Bldg., Atlanta, Ga.; P. C. Dinkens, Jr., Cont.; Stevens & Wilkerson, Arch.; Charles Johnson, Plasterer



It's a wise builder who discovers this invaluable method of finishing and waterproofing buildings while saving time and money for all concerned. An outstanding example is this Insurance building that was coated inside and out with over 160,000 lbs. of cement-base THOROSEAL PLASTER MIX with ACRYL 60 (for a tough, lasting bond) applied by trowel and float method. Attractive protection—for as long as the building stands!

STOP RUBBING CONCRETE!

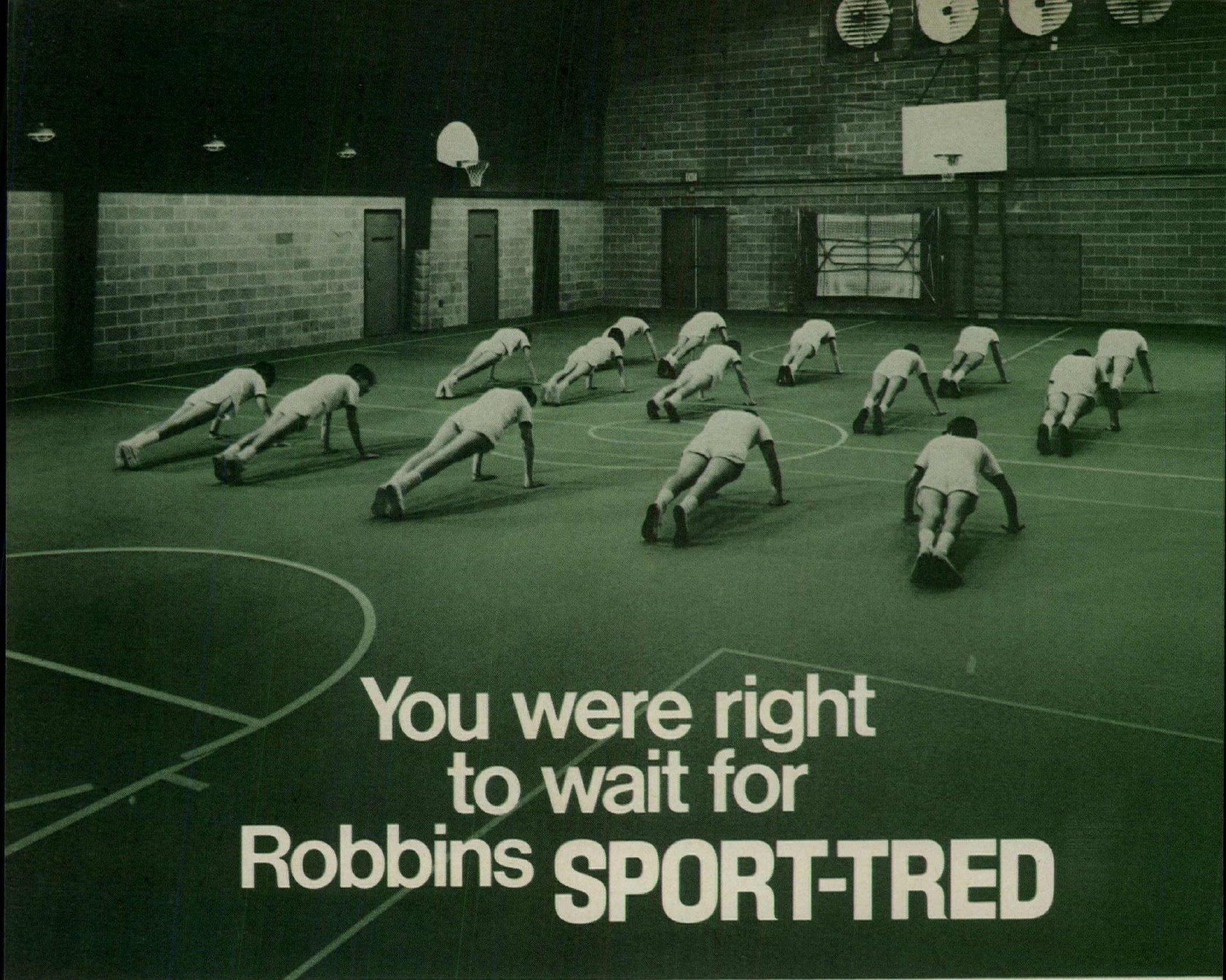
THOROSEAL PLASTER MIX finishes and waterproofs concrete quickly and economically!



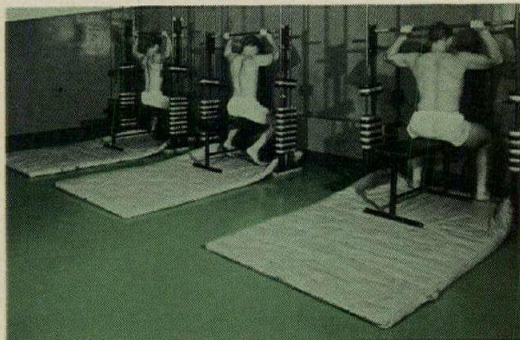
STANDARD DRY WALL PRODUCTS, INC.

DEPT. 71-AR-2 7800 N.W. 38TH ST., MIAMI, FLA. 33166

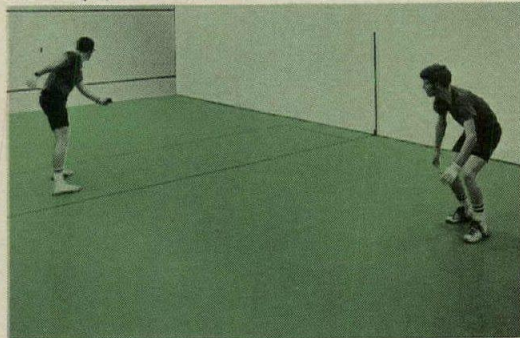
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You were right to wait for Robbins **SPORT-TRED**



Also ideal for tennis, track, baseball, soccer, lacrosse; and ramps, walkways, roof decks, locker rooms.



Robbins' new indoor/outdoor synthetic floor can be customized to your own unique specifications for color, length, thickness and formulation. What's more, Robbins has solved many of the problems plaguing other synthetics. As the leader in athletic floors of all types, Robbins was determined to have the best synthetic, too. It takes a little longer to bring out the best, but the wait was worth it. New Robbins SPORT-TRED is solid vinyl. Unlike laminated vinyls and filled urethanes, it won't fade, change color, shrink, absorb stains or show undue wear patterns under normal use. Specially compounded paints stay on without scuffing or smearing.

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Split block makes a powerful architectural statement at Lake Erie College...when it's made with ATLAS White.

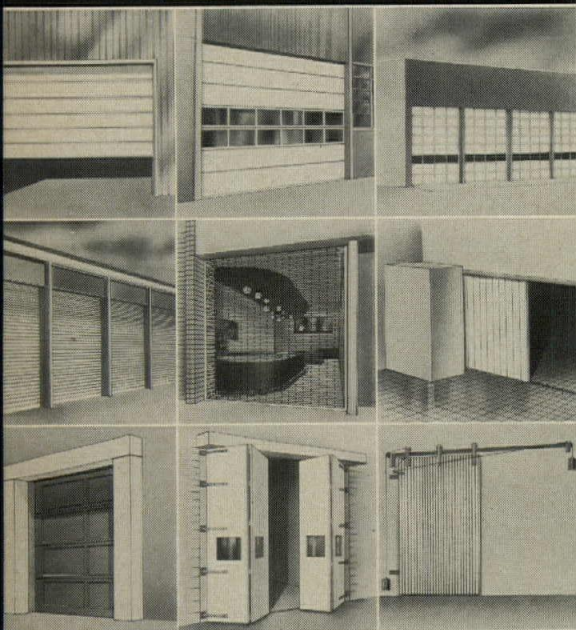
The Fine Arts Center at Lake Erie College, Painesville, Ohio, makes a dramatic appearance with its handsome, rough textured white exterior of white split block masonry—made with ATLAS White Cement and a white sparkling aggregate. Inside, the inspired arrangement of form and space encompasses the C. K. Rickel Theatre, the B. K. Smith Gallery, and the J. J. Lincoln Studios. Work areas and studios offer functional facilities for expression of ideas and skills. Here one may attend plays, view contemporary art or receive instruction in the fine arts. Architect: Victor Christ-Janer & Assoc., New Canaan, Conn. General Contractor: George Payne Construction Co., Painesville, Ohio. Split block manufacturer: Union Sand & Supply Corp., Painesville, Ohio. ATLAS White is only one of the many cements produced by the Universal Atlas Cement Division of United States Steel.

ATLAS is a registered trademark



Atlas
WHITE CEMENT

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



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CRAWFORD

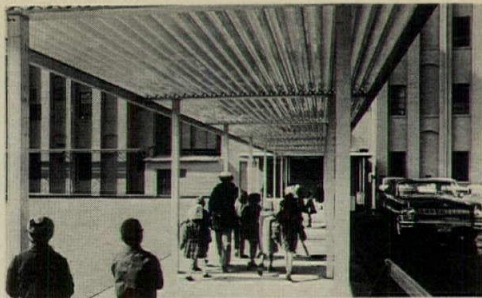
Crawford Door Company, 4270
High Street, Ecorse, Michigan

48229

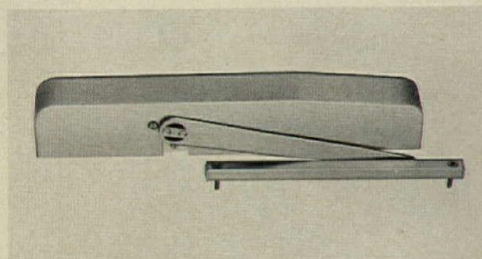
Division of The Celotex Corp.

PRODUCT REPORTS

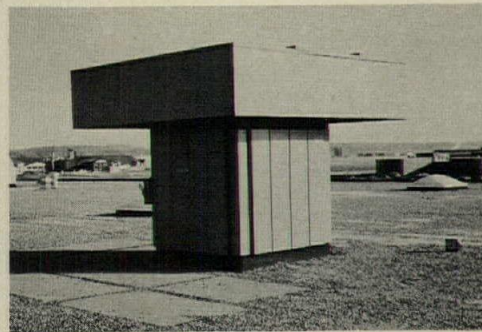
continued from page 150



WALKWAY COVER / Modular in design with roll-formed aluminum fascia construction, this cover system designed for school applications is available in a variety of widths, and can be extended to any length required. ■ Alcan Aluminum Corp., Building Products Div., Cleveland.
Circle 308 on inquiry card

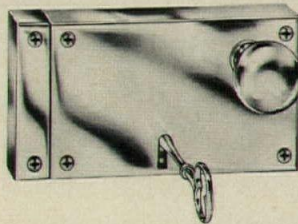


DOOR RELEASE / This unit reportedly eliminates the need for separate electromagnetic release and door closer installations on smoke barrier doors. The device may be used for independent control or incorporated into a fire alarm system. ■ Firemark, Div. of Rixson, Franklin Park, Ill.
Circle 309 on inquiry card



ROOFTOP AIR HEATER / Pre-piped, wired and fired, this packaged unit can be quickly installed. It is available in three standard sizes with 120-degree-rise heating capacities. ■ Weather-Rite, Inc., St. Paul, Minn.

Circle 310 on inquiry card



BRASS LOCKS / Designed for use with modern cylinder mechanisms, every component part is made of precision brass forgings, providing accurate fitting and smooth operation of all parts. This is one of a group of reproductions of locks originally handcrafted by Colonial locksmiths. ■ Baldwin Hardware Mfg. Co., Reading, Pa.

Circle 311 on inquiry card

more products on page 180

In Montgomery Ward's parking ramp on the west coast



this is how they seal expansion joints...

Permanently, with ACMASEAL Compression Seals of Neoprene. The compartmented elastomeric extrusions are available in sizes to maintain a watertight seal through joint movements ranging from a minimum of 3/32" to a maximum of 3". Resisting weather, abrasion, oils, salt solutions, heat and low temperatures, ACMASEALS have performed in similar situations for over 10 years without drying out or breaking up. In pavements, bridge decks and structural concrete wall surfaces throughout the world, they represent real economy in maintenance free expansion joint sealing. For complete specifications, send for your Data File #107-71.



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*Krueger Sequence Seating at Mascenic Regional High School; New Ipswich, N. H.
Designer: Frank Torrey, Silver Spring, Md.*

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NEOCON-3
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**Classroom and lecture hall seating . . .
in arrangements to fit your most versatile needs**

Tablet-arm seating, beam-mounted for floor or riser applications, or floor-mounted pedestals . . . plain or upholstered fiberglass shells . . . fixed or folding tablet. Arrangements in rows, staggered, curved in-line or other configurations to fit your needs. Floor-mounted units adaptable to floor pitch. Posture curved, durable, fiberglass shells. Comprehensive room planning and consulting engineer services are available without charge. *Write for details.*

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Gorilla under glass.

In safety glass, variety is the name of the game at ASG. Variety in tempered, wired or laminated. Patterned, clear or tinted, for indoors or out.

No matter how wild your safety problem, ASG comes through. Like we did for Como Park Zoo in St. Paul, where Don and Donna, the gorillas, stay safe and happy in a cage of laminated tempered plate sides and polished Nuweld® top. It's an everyday business with us across the country.

This wide world of safety comes to you from a single source, shipped in one lot from one factory. You get exactly what you want, when you want it, in one economical shipment. You save time. You

save bothersome handling. You save money!

ASG tempered, laminated and polished wired glasses qualify as safety glass under USAS Z97.1-1966. And Armor-Gard® burglar-resistant and Armorlite® bullet-resistant glasses are UL approved. Nuweld wired glasses are approved by the National Board of Fire Underwriters as fire retardant glasses. All meet FHA standards.

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ASG Industries Inc.

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And they're well into their second five years. But all that wear, and exposure to the sun, have had no effect on the olive. It's a Baskalon olive, test sample of a new Roxbury carpet that adds up to a lot of firsts.

We've translated the test into terms of actual use, because we're pretty sure you will. In fact, we're betting you'll use it for most interiors where you need the best and have to figure on the worst conditions.

Including a very tight budget. It's not just a bet, it's a 5 year guarantee.

The color is guaranteed because it's solution-dyed right into the

Sunlon nylon fiber. The wear is guaranteed because there's nothing tougher than this nylon.

And we've given it a dense, through-the-back construction that treats traffic as if it didn't exist. We've even added Brunslon for real static control. And recommend it for cement down installation. Whatever happens, you won't be stuck with it.

500 people went five years on one olive.

Carpet by Roxbury

Framingham, Massachusetts



SUNLON

**For the past 17 years,
LP[®] polysulfide polymer and
the Lever House
have been through a lot
together.**

**720.29 inches of rain.
508.30 inches of snow.
7 air pollution warnings.
And a trillion jarring vibrations.**

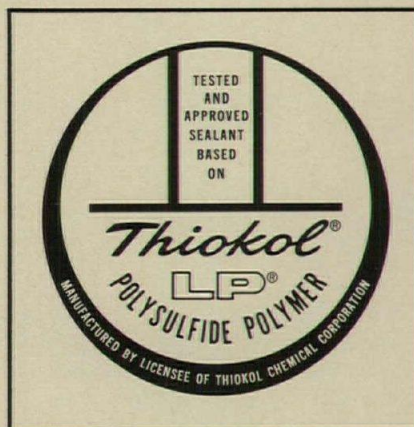
But through it all, the two have stuck together. The result: everything's warmer in the winter, cooler in the summer, and drier all year long at 425 Park Avenue, New York.

That's because LP polysulfide polymer has sealed this skyscraper tighter than a drum.

In spite of the chemical pollutants in the city air. The savage storms. The baking sun. And the eternal rumbles of the BMT Subway.

Because of its consistent performance over long periods of time, a sealant based on LP polysulfide polymer is a sealant you can depend on.

To prove the point, The Grenadier Corporation recently removed a sample of



the sealant at the Lever House. And the results were excellent.

It still had excellent elasticity. For instance, it could be twisted 180 degrees around a 1/2" spike without snapping.

If you want this kind of long life protection, always insist on sealants bearing Thiokol's Seal of Security. It's your assurance of product performance. Thiokol Chemical Corporation, P. O. Box 1296, Trenton, N.J. 08607.

Thiokol

For more data, circle 78 on inquiry card

**This is a fine looking
exit device. But that's the last
reason for specifying it.**



The first reason is that it's
the only completely drop-forged
bronze exit device made.

It's our 77 device,
unsurpassed for tensile strength
and resistance to shock and wear.
Write for literature!



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HOPE'S ALUMINUM WINDOWS

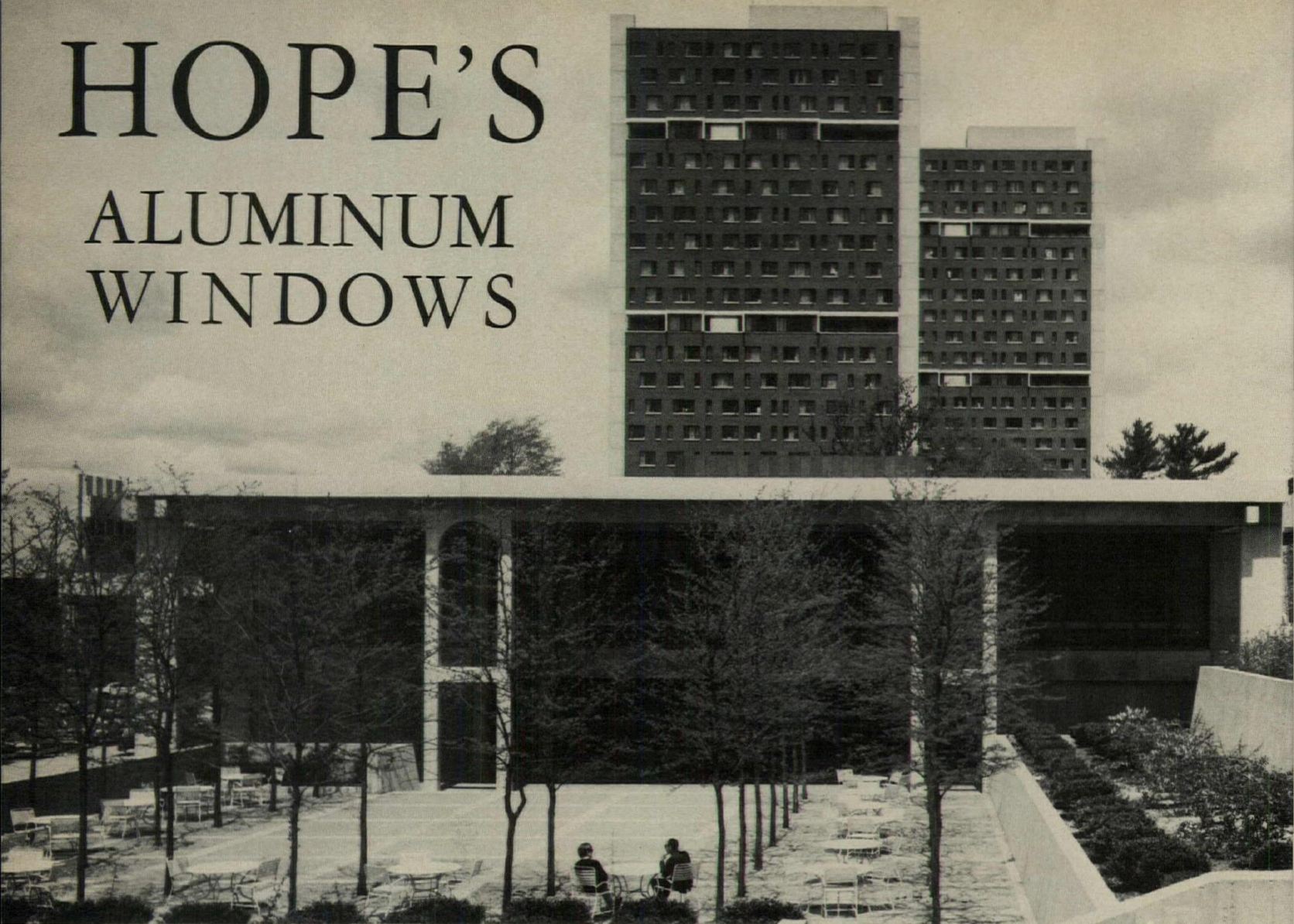


Photo by Ezra Stoller (ESTO)

University of Massachusetts, Southwest Quadrangle, Amherst, Massachusetts • Hugh Stubbins and Associates, Architects • Daniel O'Connell's Sons, Inc., and George F. Driscoll Company, Joint Venture General Contractors

For the 22-floor dormitory towers in this striking complex of modern university buildings, the architects selected Hope's field-proven Series 220 Aluminum Casement Windows. Series 220 frames and weatherstripped ventilators are custom-made from strong tubular aluminum extrusions, 2" deep front-to-back, having $\frac{3}{4}$ " high glazing legs. All frame and ventilator corners are miter cut and electrically flash welded throughout the entire section profiles. Pile-type weatherstrip interlocked into both inside and outside ventilator contacts is standard as are snap-in type glazing beads. Casement ventilators are hung on rugged aluminum cleaning hinges with extruded leaves solidly welded to both ventilator and frame. Finish is Duranodic* 313 Dark Bronze, processed in Hope's own licensed facilities. Series 220 windows are designed and recommended for conditions where top quality units with unusually high strength are required. In this instance, as in all Hope's installations, erection by Hope's own erection crews eliminated the problem of divided responsibility and assured proper installation of materials. Architects have been specifying Hope's windows for buildings at leading universities for more than half a century. This role in the expansion of American higher education is one that Hope's Windows is proud to play.

* Trade name of Aluminum Company of America.

HOPE'S WINDOWS

Jamestown, New York 14701

A DIVISION OF ROBLIN HOPE'S INDUSTRIES, INC.

A GAF Timberline roof gives a building the rugged, prestigious look of wood shake shingles.

But Timberline also provides the safety and maintenance-free convenience of modern asphalt shingles.

Simply put, Timberline gives homeowners the best of both worlds.

Timberline won't rot, crack, warp or split. It's fire-resistant. And Timberline has a special self-sealing adhesive that helps to keep it down in high winds.

As for beauty, you have to see Timberline to really appreciate it. Its unique double-layer, staggered-cut de-

sign remarkably duplicates the deep uneven shadow pattern of a wood shingle roof. And it comes in six subtle wood tone colors. All with the rich varied shadow line that can do wonders for the appearance of a building.

Timberline roof shingles are fast and easy to apply. Warranted for 25 years by GAF, one of America's leading manufacturers of building materials.

For further details, call your GAF Building Products dealer or send the coupon. In Sweet's, see GAF Building Materials insert.

For more data, circle 81 on inquiry card

GAF Corporation
Building Products Division, Dept. AR-5
140 West 51 Street
New York, New York 10020

Yes, I'd like more information on
GAF Timberline Roof Shingles.

- Please send further details, including specifications and application data.
 Please have your representative call.

 **Timberline**TM
ROOF SHINGLES

Name _____

Address _____

City _____ State _____ Zip _____

A GAF TimberlineTM roof. The only thing better than the way it looks is the way it lasts.





Introducing flame resistant carpet of NOMEX.[®]

Two reasons for carpet of NOMEX high-temperature-resistant nylon: fire and smoke. NOMEX* fiber is permanently flame-resistant. Properly constructed carpet of NOMEX is rated Class A under the NFPA's Life Safety Code and exceeds all known and currently proposed flammability requirements. Carpet construction combining NOMEX

fiber with fire-resistant backings provides maximum protection against flame spread and smoke.

NOMEX has the lowest smoke generation of any carpet fiber on the market. And that protection is permanent. Both the flame and smoke resistance of NOMEX are inherent in the fiber. They'll last the life

of the carpet.

And that'll be a long life, because NOMEX is nylon-tough and long-wearing. It's highly resistant to stains and soiling — yet easy to clean. For more information, write: Du Pont Company, Room CRB 3156, Wilmington, Delaware 19898.

*Du Pont registered trademark.



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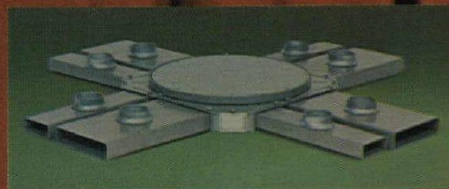
Even a small communications gap can be a problem.

The communications explosion can drop some real problems in your lap. For instance, how to take care of the extra phones and sophisticated new equipment that's coming soon. Act now. Put a

Walkerduct Underfloor System in your building specs. It will keep the building new, keep you from muttering to yourself.

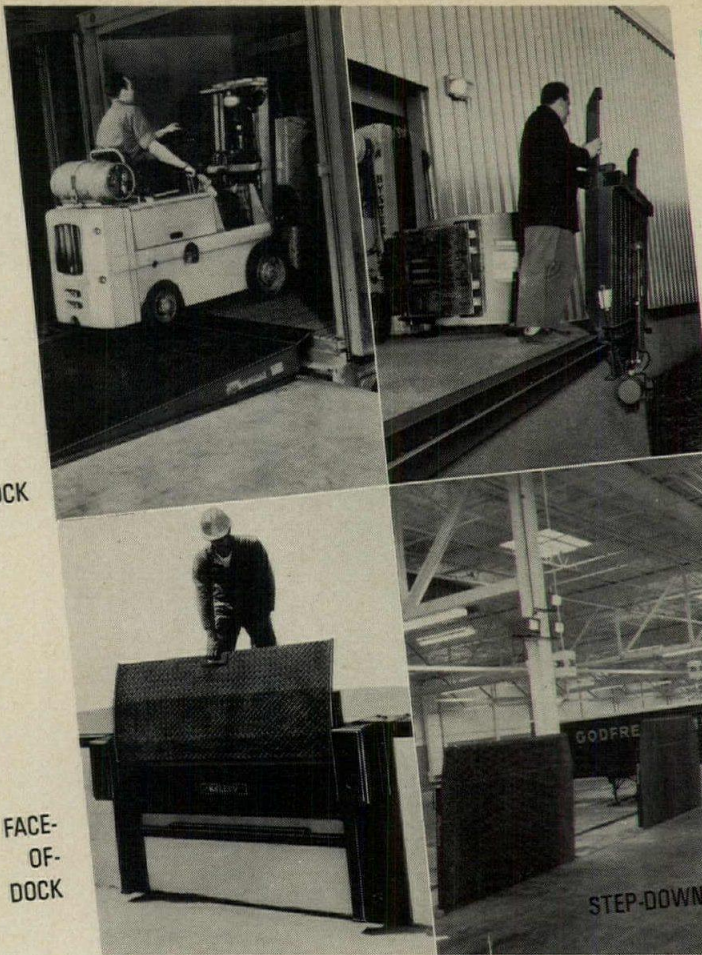
By running all the communication, power and signal requirements under the floor inside Walkerduct, you've got nothing to worry about. The building is safer, more efficient and able to handle any future needs quickly, easily and neatly. Without tearing up the floors. Without spending a small fortune.

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If dockboards are inadequate, even the best designed loading dock can't work at top efficiency. To insure continued user satisfaction, Kelley, as the leader in the industry, maintains the highest standards in the design, manufacture, application, installation and service of their equipment.

Your Kelley Representative can help you specify the proper dockboard, without prejudice, from Kelley's complete line of 73 types, models and capacities. And, contractors will appreciate Kelley's guaranteed "turn-key" installation.

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Our new, 32-page SPRINKLER SYSTEM GUIDE lays it all out. Building codes . . . insurance considerations . . . fire protection costs . . . and much more we can't tell here. Dozens of explicit illustrations. It's free. Send for it . . . before you get burned!

Everything you always wanted to know about sprinklers*

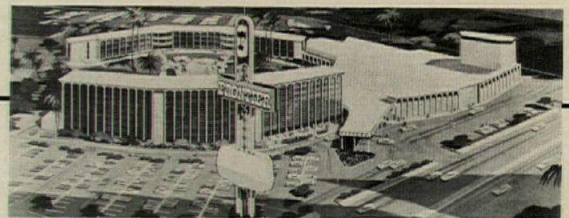
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 Company _____
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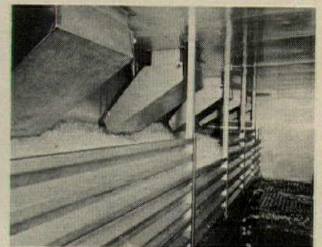
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COOLEST THING GOING IN LAS VEGAS' FRONTIER HOTEL



20 *Kold-Draft ice machines producing 8,000 lbs. of ice cubes daily.



Designers: Rissman and Rissman Associates.

See our catalog in Sweets 11.24/Ko

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A division of Uniflow Mfg. Co., Erie, Pa. 16512

A Tradition of Innovation Since 1920



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APPROVAL ON MOST MODELS

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BRINGING
NEW IDEAS

TO LIGHT

GE presents
lighting you design
with, instead of
around.

GE brings you the finest indoor/outdoor lighting, plus all the options that let you use lighting as an integral part of your design.

The options of colors like Sunset Orange, Lemon Yellow, Dresden Blue, and more . . . or shapes in cones, cylinders, rectangles, squares, and hourglasses . . . indoors or out.

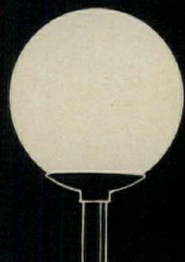
GE's decorative and efficient lighting systems help you brighten almost anything you're working on — interiors, facades, walkways, malls, parking lots, parks, playgrounds, plazas, arenas, driveways, or roadways.

And all of the attractive designs use economic High Intensity Discharge (HID) light sources . . . mercury, metal halide, or Lucalox® lamps. That's what GE designer lighting is all about.

If you want to turn on more than just lights, ask your GE representative for more bright ideas . . . or write GE Lighting Systems Department, Hendersonville, North Carolina 28739.

460-67

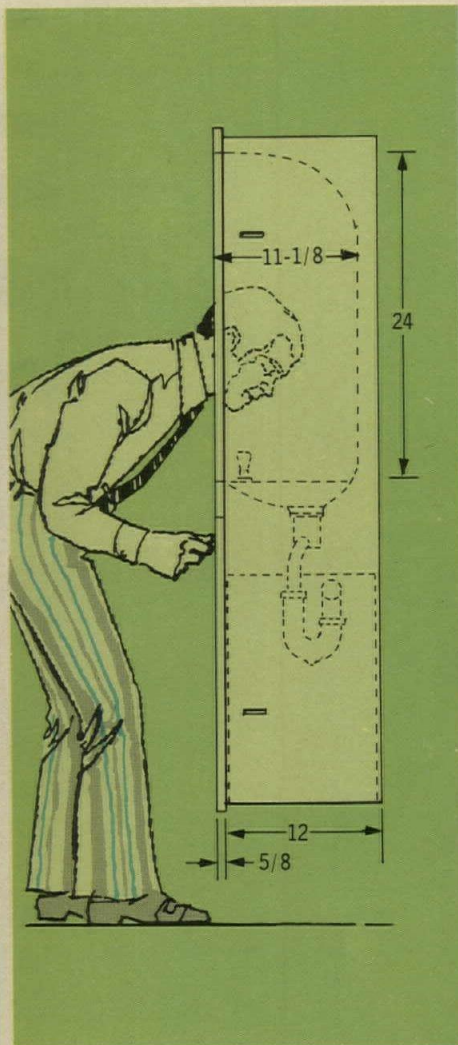
GENERAL  ELECTRIC



FULLY RECESSED WITH PLENTY OF HEAD ROOM

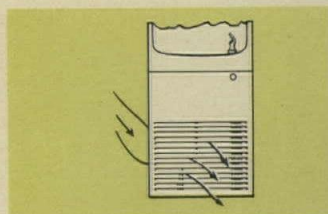


Model RC-8-A



No awkward head twisting or bumping against sides or back of fountain just to get a drink of water. The Halsey Taylor RC-8-A is a fully recessed fountain with plenty of head room and a conveniently placed projector. And this trim, stainless steel beauty not only looks good, it is a convenient, comfortable place to get a satisfying drink of cold water.

THE HALSEY W. TAYLOR COMPANY • 1560 Thomas Road, Warren, Ohio 44481
SUBSIDIARY • KING-SEELEY **KST** THERMOS CO.



VANE-TYPE LOUVERS provide 73% more free air flow and allow reduction in louvered area. Air flow is directed away from user.



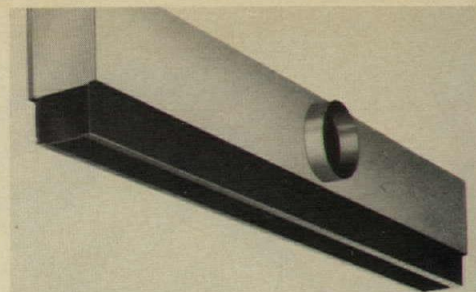
AUTOMATIC STREAM-HEIGHT CONTROL insures constant stream-height under varying water pressures. User can drink without sucking water out of projector.



CONTOUR DESIGN with rounded inside corners is aesthetically pleasing and easy to keep clean.

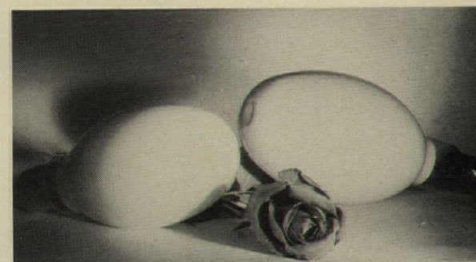


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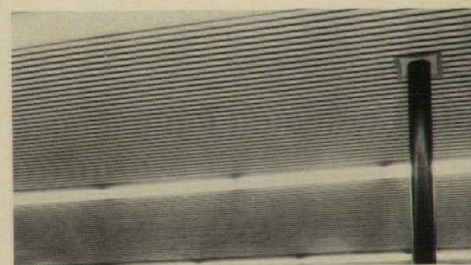
AIR CHANNEL DIFFUSERS / Designed for use with integrated air handling ceiling systems, the diffusers feature 180-degree pattern adjustment to meet future requirements with flexible space partitioning. The units are ideally suited for variable volume systems which utilize air change reduction to control space temperature. ■ Tuttle & Bailey, New Britain, Conn.

Circle 312 on inquiry card



MERCURY LAMPS / Featuring an improved phosphor coating which reportedly produces a warmer light and better color rendition, these lamps are available in 175- and 400-watt sizes. According to the manufacturer, this lighting is especially complimentary to complexions, clothing, woods, and other materials. ■ General Electric Co., Cleveland.

Circle 313 on inquiry card



ALUMINUM CEILING / Consisting of aluminum slats hung from supporting members with air space between slats, this ceiling, designed for commercial applications, allows easy access to wires, pipes, and other utilities. Three basic slat styles are available. ■ Levolor Lorentzen, Inc., Hoboken, N.J.

Circle 314 on inquiry card

SAUNA HEATERS / This wall-mounted unit comes equipped with 20 lbs of sauna rocks and a built-in thermostat. Wall-mounting brackets simplify installation. The unit features a double porcelain-enameled steel outer wall, steel-sheathed heating elements, stainless steel inner wall, and built-in overheat controls. ■ Air King Corp., Chicago.



Circle 315 on inquiry card

For more data, circle 93 on inquiry card

The Architect's Guide to Blinds.

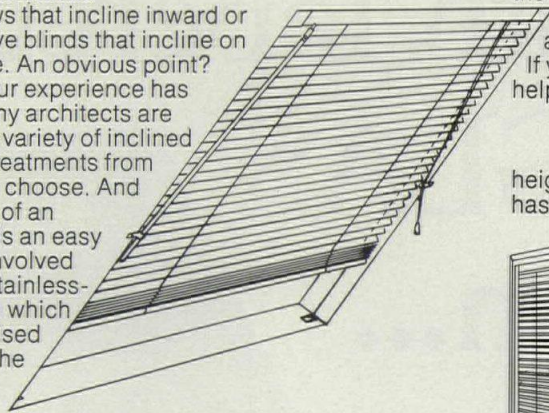
In this chapter: What we know about blinds; inclined blinds; how to reduce heat load; uniform heights; limited tilt, two-position slats; tween-glass blinds; how to find out more.

What We Know about Blinds.

At Levolor, blinds are our whole life. And we know a lot about them. In this series of ads we attempt to convey those points about blinds which are important to a practicing architect. Each point in the ad is presented because it has been the subject of scores of letters of inquiry from architects to Levolor. We welcome such correspondence, and hope that architects will continue to use us as consultants when difficult window covering problems arise. For more information, mail the coupon at the bottom of this ad.

Inclined Blinds.

Windows that incline inward or outward deserve blinds that incline on a parallel plane. An obvious point? Perhaps. But our experience has shown that many architects are unaware of the variety of inclined sloping blind treatments from which they can choose. And the installation of an inclining blind is an easy job. All that's involved is installing 2 stainless-steel guides on which the slats are raised and lowered. The slats tilt just as with any conventional blind. And the range of color is just as wide as is the range of conventional blind colors. (We have 50 different colors and finishes in stock.)



How to Reduce Heat Load.

The correct choice of color can make a substantial difference in the air-conditioning load of a building. The comparative shading coefficients in the table below are the result of research at the University of Florida.

Coating of Slat	Thru 1/4" Clear Plate		Thru 1/4" HA Plate		Reflect.	Absorpt.
	Open	Closed	Open	Closed		
White	.49	.27	.42	.29	.70	.30
Sand	.52	.38	.45	.28	.53	.47
Raw Umber	.67	.65	.49	.48	.08	.92
Polished Alum.	.45	.22	.34	.27	.76	.24
Brushed Alum.	.50	.25	.41	.28	.73	.27
Polished Brass	.52	.36	.42	.30	.55	.45
High Gloss Alum. Mirror Finish	.37	.15	.34	.23	.89	.11
Low Gloss on Mirror Finish	.40	.19	.36	.25	.81	.19

Uniform Heights.

We receive letters from architects which say in general: "I'd install blinds, but it bothers me to look at them from the outside and see them at all different heights."

Well, there's no need for an architect to permit the occupants of a building to control the height of its blinds. The architect can specify blinds that only can be raised or lowered to pre-set positions. The blinds can be all the way down, all the way up, half way down, or somewhere in between, at the discretion of the architect, not the user of the window. So the blinds always present a uniform appearance.

Limited Tilt, Two-Position Slats.

Levolor also makes a blind that lets the architect specify the tilting limits of the slats—so that early in the day, for example, the slats could all be in the "open" position, while when the afternoon sun pours in all the slats could be set for another position (60°). If you want integrated design control, we can help you achieve it.

Tween-Glass Blinds.

And if being able to specify uniform blind heights and limited tilts still isn't enough for you, Levolor has a blind that cannot be touched by the occupant of a building.



The Blind is called Tween Glass, and the slats are actually between two panes of glass in the window frame where they can't be tampered with. For the version shown a key is furnished to open the window for maintenance. (Though you *can* have the full complement of controls and a full range of color choice.)

How to Find Out More.

For technical specifications on Levolor Blinds, or for our free booklet (Window Magic) that shows unique applications of blinds, mail the coupon below.

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A-5

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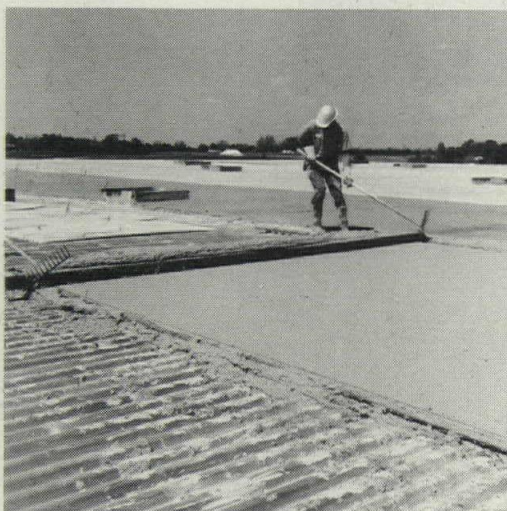
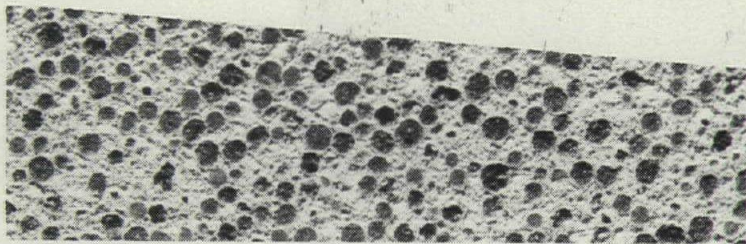
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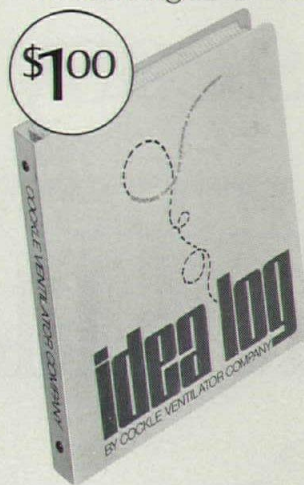
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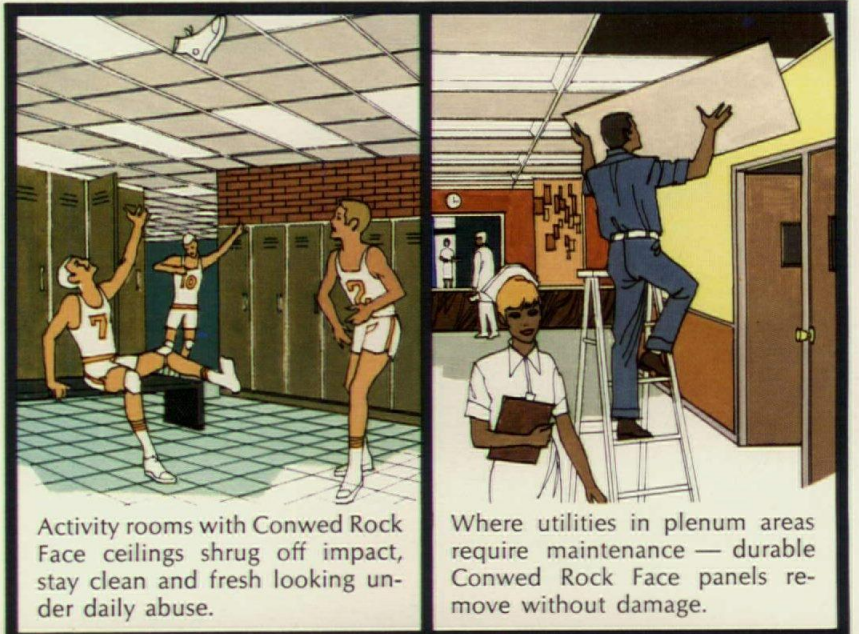
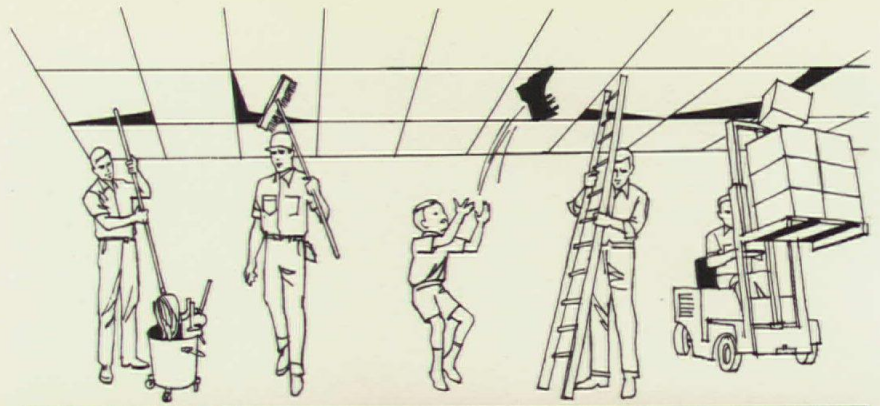
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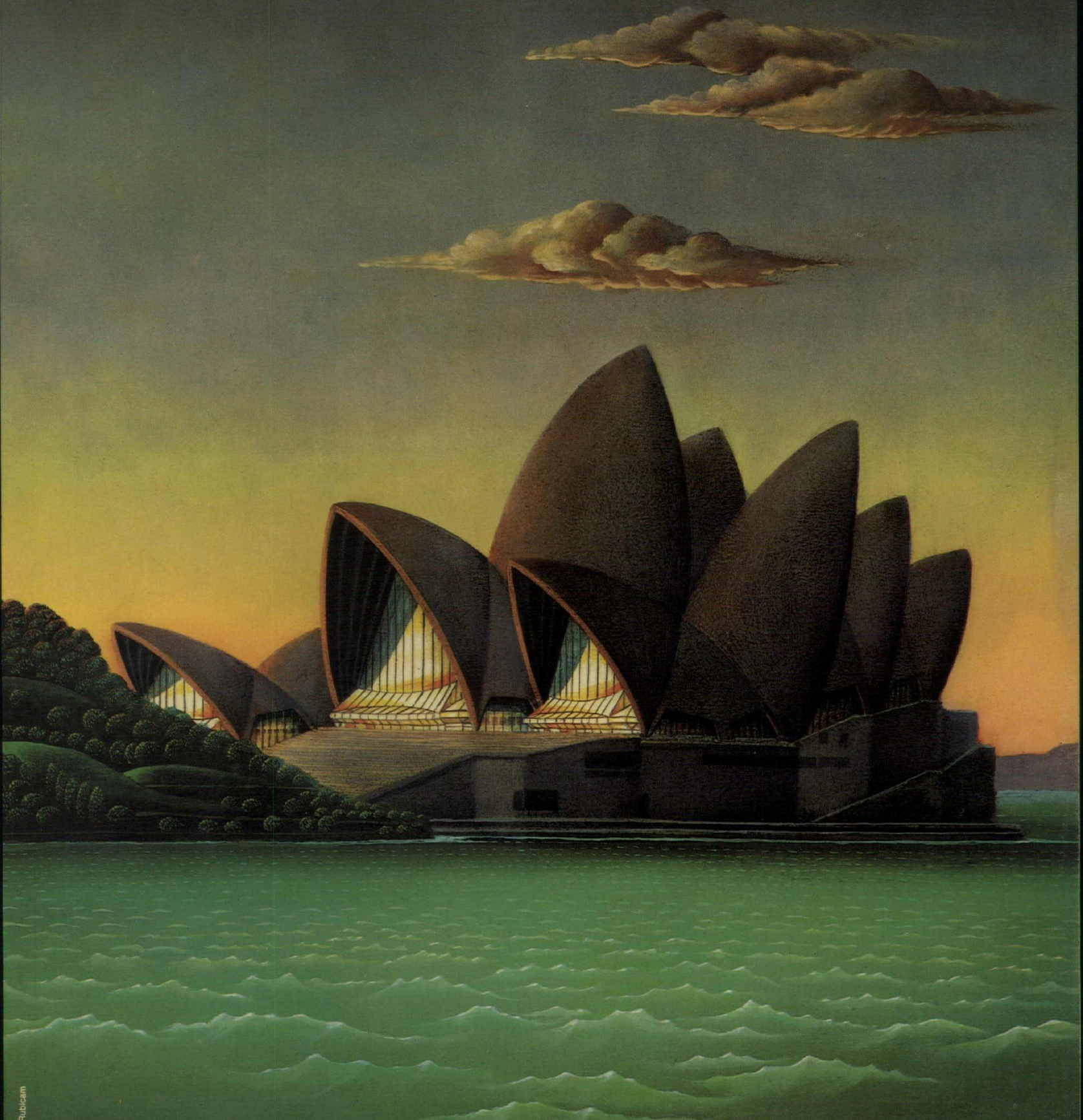


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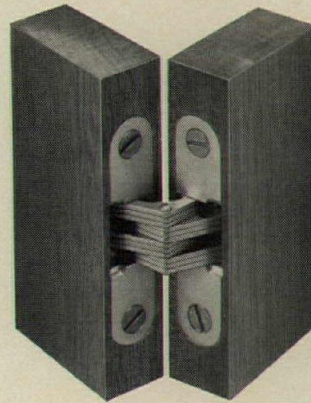
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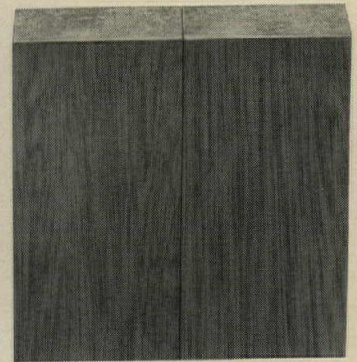
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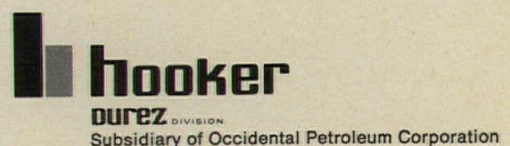
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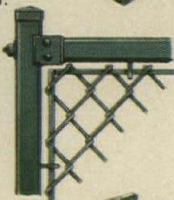
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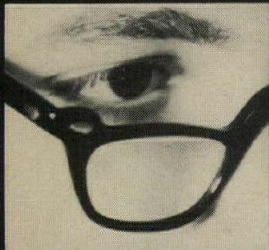
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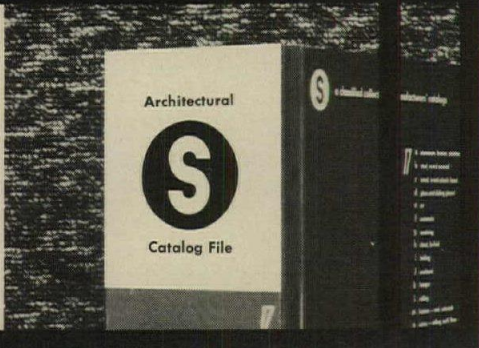
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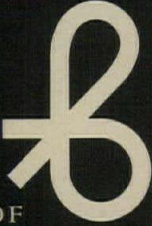


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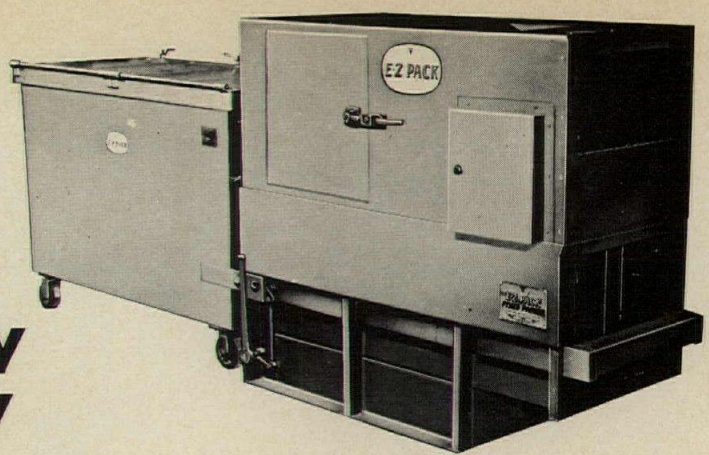
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consider the compaction concept by E-Z Pack Company



What is a Compactor? The Compactor is a stationary piece of equipment especially designed to compact refuse to a fraction of its original size and store it until it is transported to the dumping site. Its application in apartment buildings simplifies and cuts the costs of refuse disposal while eliminating incinerators and pollution.

Call it by any other name and it is still refuse, something everyone produces every day and more commonly referred to as garbage, trash, etc. Producers of refuse are many and varied, from restaurants to military installations, purveyors of fast foods, retailers, wholesalers, hotels, motels, hospitals, rest homes, apartment houses and homes, the list could go on, ad infinitum.

Just think of the average American family and how many garbage cans they fill each week and then compare that to the larger businesses where refuse accumulates at a much higher rate. Actually, the nation as a whole generates 340 billion tons of trash annually. Furthermore, it is estimated that within 5 short years, 1976, this figure will increase to 450 billion tons or roughly a 33% increase.

With these figures one can easily realize that the nation faces a monumental task of disposing of the ever increasing volume of trash. At the present time the annual outlay for rubbish collection and disposal is \$1.5 billion. This figure is exceeded only by the monies spent for schools and roads.

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This concept of stationary compaction is so new that approximately 70% of the potential users throughout the country are unaware of its availability and costs savings capabilities.

One of the many facets of the stationary compaction field is a complete system that can be designed into new apartment construction or adapted to work in apartment buildings already occupied. The same applies to business and food preparation establishments.

A stationary compaction system is a complete system consisting of a means to get the refuse to the compactor, the compactor which rams or compacts it into a container and the container itself. The container is either hauled away in its entirety and emptied at the landfill or transfer point, or discharged into a commercial pick up vehicle at the spot. There is a full range of sizes in this compaction equipment; from a 2 yd. front loader container to a 42 cu. yd. pull on container or a 72 cu. yd. transfer trailer, and from a 1/2 yd. compactor to an 11 yd. compactor to go with the 75 yd. transfer trailer.

E-Z Pack Stationary compaction systems can be adapted to any location. From having the entire unit inside or outside with the packer on the inside. When the entire unit is on the outside, it can be fed from the inside by the use of a chute through the wall which goes into the charge box hopper on the outside.

There are three distinct advantages to be derived from stationary compaction:

1. It permits you to comply with present or possible future anti-pollution regulations by eliminating the need for incineration at the site.
2. It completely eliminates the need for incineration and subsequent air-pollution

wherever compacted material can be used for landfill purposes.

3. Compacted material can more effectively be controlled at a centralized location if incineration is required.

If you take into consideration the tremendous number of establishments that are today using incineration as a means of getting rid of trash you can begin to appreciate the tremendous contribution compaction can make toward minimizing or eliminating air pollution.

Stationary compaction can play a large part in overcoming air pollution. E-Z Packs' wide range of available systems makes it possible for the smallest fast food business or apartment building as well as the largest commercial or industrial business to eliminate incineration. In addition to this great benefit, users of stationary compaction systems aid in bettering the environment by maintaining a clean, non-infested refuse area which will not tolerate insects and rodents.

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For additional information on the compaction equipment for your application contact: E-Z Pack Company, The Authority on Solid Wastes Handling Equipment and Systems.



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




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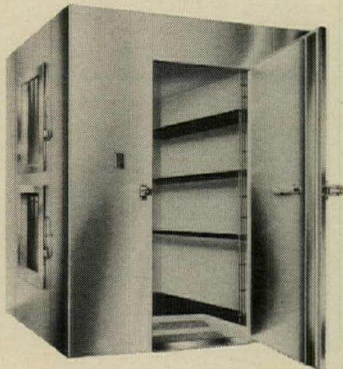


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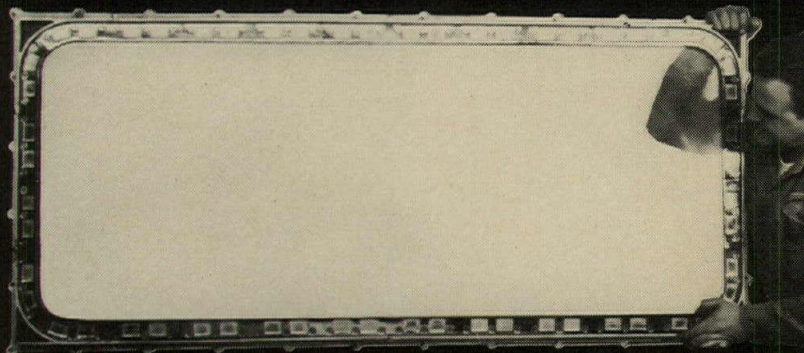
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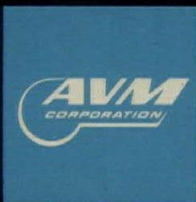
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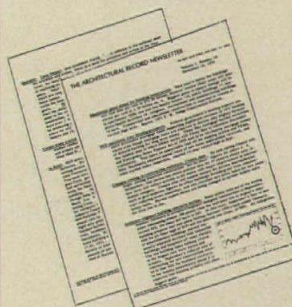
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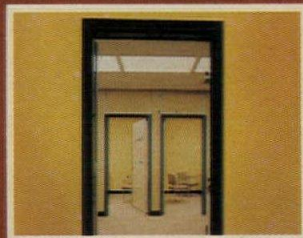
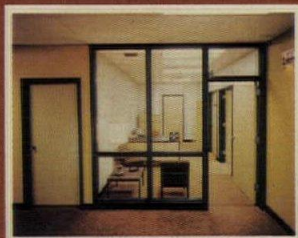
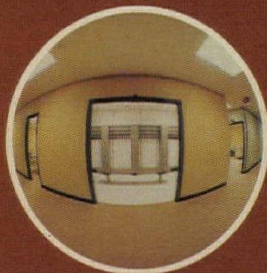
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