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BUILDING TYPES STUDY: MEDICAL FACILITIES

FULL CONTENTS ON PAGES 10 AND 11

ARCHITECTURAL RECORD

SEPTEMBER 1975 **9** A McGRAW-HILL PUBLICATION FOUR DOLLARS PER COPY

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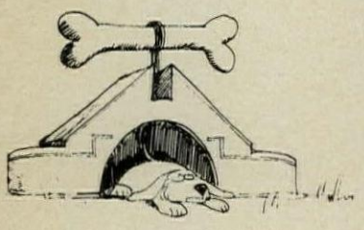
Research Tower, College of Veterinary Medicine, State Colleges, Cornell University, Ithaca, N.Y.
Architect: Ulrich Franzen & Associates

William Street Apartments, Wesleyan University Middletown, Conn.
Architect: Ulrich Franzen & Associates

Photographs: David Franzen

For more data, circle 2 on inquiry card

Letters to the editor



As a building type the small animal house has been considered (when considered at all) as a direct functional response to a single programmatic need—the housing of a small animal. The Exclusivism of such an attitude, prevalent as it is among orthodox Modern architects, contrasts sharply with the approach of Robert A. M. Stern, who in his essay explaining the design of a pool house in Greenwich, Connecticut (RECORD July 1975), demonstrates the possibilities for communicative richness and formal complexity inherent in even the smallest program.

My brief discussion of our recent project for a doghouse, then, is first of all a tribute to Stern's willingness to describe even a small building at considerable length. Beyond that, it represents a deep and overriding desire to get our building published.

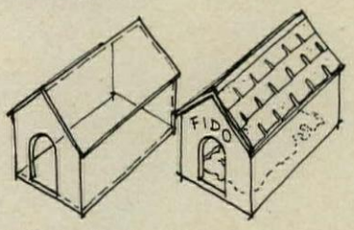
Context: warp and woof

Originally, our Inclusivist attitude led us to recommend that the owner keep his dog in his apartment. The owner, however, while understanding our predilection for chance happening, felt that until effective paper training could be accomplished a detached, preferably freestanding structure was mandated. The available site, a backyard in New Haven, Connecticut, fortuitiously contains many of those elements, such as garages, garbage cans, worn patches of grass, and wire fencing, semantically associated with the idea of *doghouse*.

In addition, the surrounding houses, the gable-fronted rectangular Federal and Queen Anne houses so typical of New Haven, suggested a repeated, ordinary form capable of a fresh, extraordinary interpretation through shifts of scale and symbolism. Anticipating this, the long axis of the wooden Federal house containing the owner's apartment is basically followed by the long axis of our rectangular doghouse, allowing only a slight inflection of the entrance facade toward the gate through which dog food is brought in.

Scale: shepherd vs. Chihuahua

The decision to juxtapose a small (even tiny) doghouse with surrounding medium- and large-size houses owes an obvious debt to Venturi and Rauch's project for Copley Square in Boston, in which a model of Trinity Church is juxtaposed with the actual, rather large Trinity Church. On another level, the use of full-size asphalt shingles reimposes the scale of the much larger houses on the small doghouse—a second scale shift charged with palpable tension. And, of course, the very use of shingles itself recalls the Shingle Style.



Entrance: bark vs. bite

We like the use of the gabled, arched opening, with its strong connotations of entrance, in the porches at Laon, Chartres, Rheims and Amiens. Here, however, the familiar tripartite porch has been unexpectedly reduced to one bay, and a Roman rather than a pointed arch reinforces the image of triumphal arch, as used by Alberti in the Tempio Malatestiano. Our classical inspiration is made more explicit by the Latin inscription over the arch, which, on another level, is also the name of the dog. The use of the applied inscription alludes to Venturi's "decorated box," especially as he distinguishes it from building as "duck." A doghouse in the shape of a dog, then, was consciously avoided—as was, of course, a doghouse in the shape of a duck.

Details: ruff/ruff

As part of our continuing search for expressive joinery, all plywood corners are simply butted together. This emphasizes the edges, which for us evoke the early molded wood furniture of Aalto. The plywood floor is covered with a found object used unconventionally, in this case a stadium blanket found in the trunk of a 1957 DeSoto belonging to the owner's father. We chose not to tack down the blanket, but rather to simply lay it in place in an effort to maintain the integrity of the floor and blanket alike. Unfortunately, at this writing the integrity of the blanket has already been severely compromised, it having been dragged into the yard and partially eaten.

In terms of design method, a recurring problem with very small buildings is the tendency to have a number of historical allusions "left over" (a problem analogous to the one of what to do with the unused pieces of paper in a *collage*). So here is a message for Sir Edwin Lutyens, George Howe, the early Le Corbusier, Wilson Eyre, Charles Moore, J. B. Fischer von Erlach, Hugh Ferriss, Rudolf Schinkler and Zantzinger and Medary—Thank you for your interest; while we regret having no openings at this time, we have you in our active file and will let you know as soon as we get another building to do.

The preceding discussion has attempted to demonstrate some of the literary and art historical strategies we use to go beyond (or around, as the case may be) mere functional problem-solving, and to enrich our design with allusion, comparison, reference and rationalization to the point where it takes six pages to show it in ARCHITECTURAL RECORD. This, in turn, is part of a process we call *collectage*, a strategy of assembly and acquisition by which we hope to enrich *ourselves* sufficiently to be able to buy a real house by Sir Edwin Lutyens instead of a plywood take-off with millwork moldings.

Robert L. Miller, architect
New Haven, Connecticut

Calendar

SEPTEMBER

24-26 Conference on Neighborhood Conservation, McGraw-Hill Conference Center, New York City. Sponsored by the National Endowment for the Arts, the Conservation Foundation, State of New York, and the New York City Landmarks Preservation Commission. Contact: Danae Voltos, 118 East 19th Street, New York, N.Y. 10003, or Benjamin Ruhe, National Endowment for the Arts, 2401 E Street N.W., Washington, D.C. 20506.

26-27 A two-day intensive course, "Solar Energy Use for Buildings, Houses and Pools," University of California, Berkeley. Sponsored jointly by Continuing Education in Engineering, and the College of Engineering. Contact: Bob Newton, Continuing Education in Engineering, University of California, 2223 Fulton Street, Berkeley, Calif. 94720.

26-29 The Second National "Back to the City," conference, St. Paul, Minnesota. Contact: Back to the City, c/o Old Town Restorations, Inc., 158 Farrington Street, St. Paul, Minn. 55102.

OCTOBER

27-30 "Resources 76," a seminar on strengthening the market for, and the marketing of, architectural services. Contact: William Marlin, ARCHITECTURAL RECORD, 1221 Avenue of the Americas, New York, New York 10020. Phone: (212) 997-4242, or Richard Muetze, conference coordinator, (312) 753-3185.

ARCHITECTURAL RECORD (Combined with AMERICAN ARCHITECT, ARCHITECTURE and WESTERN ARCHITECT AND ENGINEER)

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Quotations on reprints of articles available. Every possible effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or damage.

EXECUTIVE, EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: 1221 Avenue of the Americas, New York, N.Y. 10020. Other Editorial Offices: 425 Battery Street, San Francisco, Cal. 94111.

PUBLICATION OFFICE: 1221 Avenue of the Americas, New York, New York 10020. Second-class postage paid at New York, New York 10001 and at additional mailing offices.

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

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Sarah Scaife Gallery, Pittsburgh.
Architect: Edward Larrabee Barnes–New York.
Installers: Watson-Standard Co.
*Trade mark.

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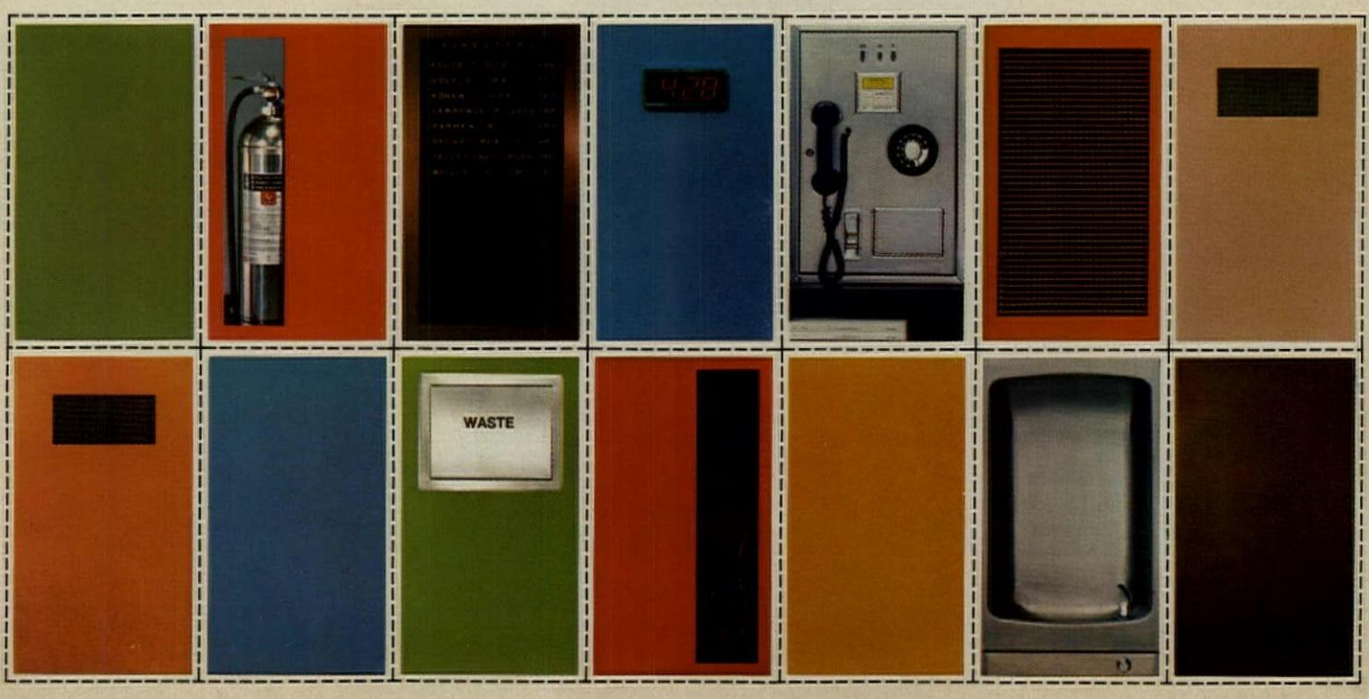

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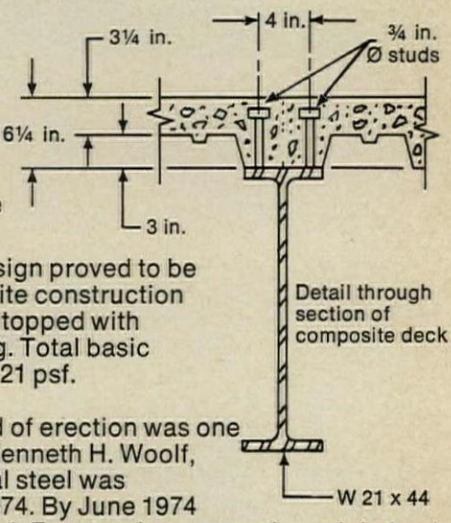
Preliminary frame analysis pinpoints most economical steel frame

A preliminary frame analysis, conducted by Bethlehem's Sales Engineering Buildings Group helped the owners of this Pensacola office building achieve optimum steel frame economy. The project's structural engineers, Phillip R. Jones & Associates, Inc., requested the computer analysis be based on a structure having 5 supported levels.

The analysis considered four basic framing schemes employing ASTM A36 steel in composite and non-composite construction; ASTM A572 Grade 50 high-strength steel in composite and non-composite construction.



The most economical and efficient design proved to be a high-strength steel frame in composite construction with a 3-in. composite steel floor deck topped with 3¼ -in. of lightweight concrete topping. Total basic steel frame weight was estimated at 7.21 psf.

Designed and built in 9 months. Speed of erection was one of the primary reasons the architect, Kenneth H. Woolf, A.I.A., favored steel framing. The initial steel was delivered to the site in mid-January 1974. By June 1974 the office was completed and occupied. Fast-track construction minimized the effects of escalating costs. Steel framing easily accommodated changes during the design/construction phase with the erection schedule closely following the finalization of floor plans.

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The project's architect (right) reports, "The steel framing was quickly erected, easily plumbed, and by pouring one floor each day, the building was ready for the mechanical work within a week. We were delighted with the economy and speed of erection."

Owners: Baptist Hospital, Inc.;
Architect: Kenneth H. Woolf, A.I.A.;
Structural Engineer: Phillip R. Jones & Associates, Inc.;
Fabricator: Bell Steel Company;
General Contractor/Erector: Dyson & Company.
All of the firms are located in Pensacola, Fla.

Cover: Episcopal Church of the Epiphany
Houston, Texas
Architects: Clovis Heimsath Associates Inc.
Photographer: Ed Stewart

THE RECORD REPORTS

Orlando R. Cabanban

ARCHITECTURAL BUSINESS

FEATURES

Norman McGrath

BUILDING TYPES STUDY 480

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ARCHITECTURAL ENGINEERING

NEXT MONTH IN RECORD

Building Types Study: Crisis in housing

The foundering and financially troubled New York State Urban Development Corporation has concluded, in a greatly modified version, its massive design competition for housing on Roosevelt Island—and it appears now that none of the winning entries will be built.

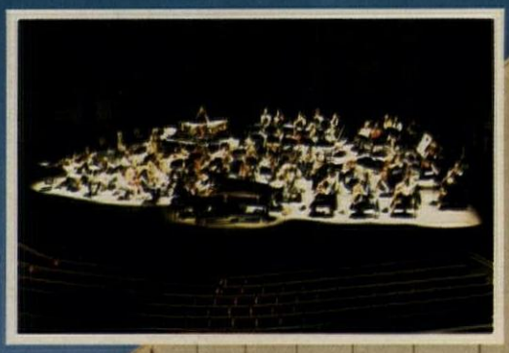
What happened to the competition, and what is happening to UDC, the embodiment of one of the most energetic and imaginative public attempts to improve the quality of multi-family housing? What, finally, can we learn from UDC's successes and failures?

These questions, together with some answers, are the subject of RECORD's October Building Types Study—which will also include a portfolio of extraordinary entries in the Roosevelt Island competition, published in conjunction with an exhibit to be held in the McGraw-Hill Building in New York from October 15 through November 4.

Two theaters in one civic center

STAGE LIFTS BY DOVER

The Birmingham-Jefferson Civic Center in Birmingham, Alabama, features two separate and completely equipped theaters. The smaller seats 1,000 for straight plays, the larger hall seats 2,960 for concerts, operas, and other musical productions. Each of these two theaters is served by two Dover Stage Lifts. Thus each has a forestage area that converts from stage to audience seating area to orchestra pit. For information on Dover Stage Lifts, write Dover Corporation, Elevator Division, P. O. Box 2177, Dept. A, Memphis, TN 38101.



DOVER Stage Lifts

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Birmingham-Jefferson Civic Center Theater and Concert Hall, Birmingham, Al.
Architects: Geddes Brecher Qualls Cunningham, Philadelphia, Pa.
Construction Management/Consultant: Turner Construction Company, Cincinnati, Oh.
General Contractor: Brice Building Company, Birmingham.
Theater Consultants: Jean Rosenthal Associates, Inc., Orange, N.J.
Dover Stage Lifts installed by Dover Elevator Company, Birmingham.

Guiding principles for Federal architecture; Part 3
Or, the Senate with great good sense supports adaptive use

Early in August, the Senate—by unanimous voice vote—passed S. 865 intended "to promote more efficient use of the Nation's construction resources, to foster the preservation of buildings of historic or architectural significance, and to enhance the social and economic environment within and surrounding Federal office buildings." The bill was introduced by Senator Buckley for himself and Senators Baker, Morgan, and Randolph. The bill has now been introduced in the House, as HR 9187, by Representative Abzug. Mrs. Abzug plans to hold hearings in the fall and hopes to get the bill to the House floor before the end of the year. Surely it can be considered a clear indication of the clear good sense of this bill, supporting adaptive use by the Federal government, that it has been sponsored both by James Buckley and Bella Abzug, who probably agree on nothing else with the possible exception of which direction the sun comes up.

This is, of course, a major move in the restoration of the Guiding Principles for Federal Architecture, a re-establishment of the idea that the Federal Government has "a special obligation . . . to seek quality in its buildings." The impetus has come—as noted in two earlier editorials (June 1974 and January 1975)—from a task force of the National Endowment for the Arts. To recap briefly: The first report of the Endowment task force, entitled "Federal Architecture: A Framework for Debate," was issued in May 1974. It described in broad—but timely and realistic—terms the many ways that the goal of better building by the country's biggest client, the GSA, can be pursued. That original report cut right to the critical questions: The cost of quality (and the cost of banality), the effects and benefits on the hundreds of communities across the country that would be impacted (all the Federal buildings are not in Washington!), attracting and recruiting the best (not the best connected) architects to design Federal buildings. The report also argued in the strongest terms for two ideas that were not in the original Guiding Principles: mixed-use; and adaptive-use.

The Endowment's staff report on mixed-use was described in the January 1975 editorial ("Why Shouldn't the Government Live Over the Store?"). The second staff report—Federal Architecture: Adaptive-Use Facilities—has now been published and argues at length the case that:

"Federal agencies should give priority consideration to adapting existing buildings for Federal use, particularly structures of architectural or historic significance. The government should consider both leasing and purchasing such structures as an alternative to a new structure, considering relative cost and adaptability of the existing building. This alternative should include consideration of satisfying space needs by adapting a cluster of smaller buildings as well as adapting single large buildings."

In her statement to the Senate subcommittee, Nancy Hanks, chairman of the National Endowment for the Arts, made a moving case for re-use of older buildings by government:

"Old buildings are like old friends. They connect us to the past. Yet at the same time, they are a vital part of our present because they assure us of a certain stability and continuity in times of rapid change. It is for just this reason that they should house the Federal Government's activities. They very often perfectly fit the 1962 Guiding Principles description of an appropriate Federal architecture style as one 'which is distinguished and which will reflect the dignity, enterprise, vigor, and stability of the American national government.'

"Re-use of old buildings also accords with lost American ethic which we are trying to recapture, one expressed in the New England proverb, 'Use it up, wear it out, make it do, or do without.'"

She argued correctly that "Because buildings represent investments and their sites economic opportunity, many older buildings have fallen victim to faulty economic reasoning that considers only some obvious costs of renovation without considering some not-so-obvious savings (no demolition or site clearance, less structural and other construction materials, faster completion and lower borrowing costs, possible energy savings). In addition, there are some indirect benefits attributable to re-use projects which we may never be able to measure quantitatively. These include revitalization of surrounding neighborhoods and thus increased revenues for local governments, as well as heightened civic pride."

As faithful readers will know, RECORD has devoted many pages to re-use and conservation since its landmark December 1971 issue. So we take special pleasure in giving three cheers to the Endowment for getting the ball rolling at the Federal level, and to the legislators in Senate and House who are making this great idea into a great new Federal policy.

—Walter F. Wagner Jr.

Going places together

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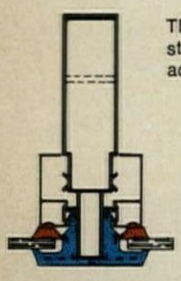

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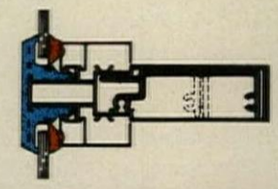

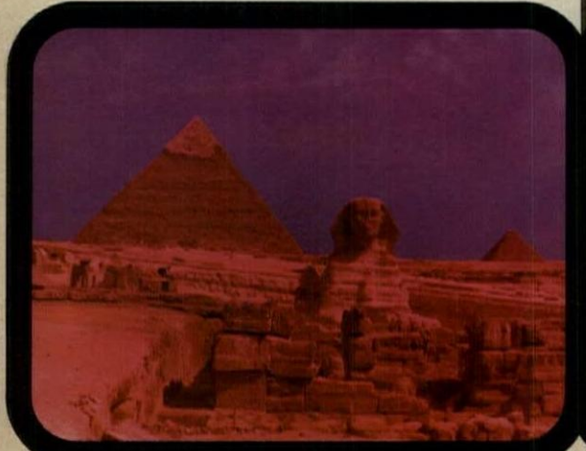

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2. Entries must be postmarked before December 31, 1975.
3. All entries eligible for Sweepstakes Drawing, January 21, 1976.
4. Winner will be notified by mail.
5. This contest is nationwide except where prohibited by law.
6. Winner will be announced February 1, 1976.

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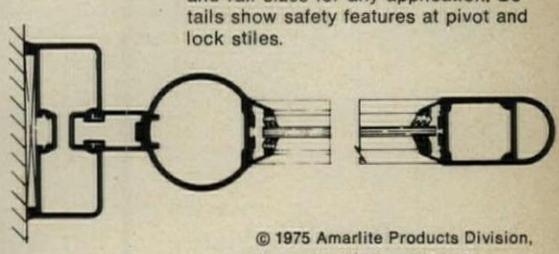

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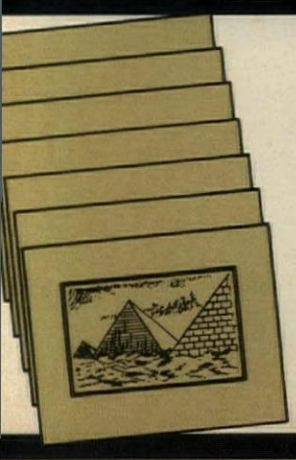


FREE! Drawings of 7 Wonders of Ancient World. Suitable for framing. Available to registered architects and consulting engineers.

A limited edition printed on parchment type paper, these drawings are a handsome addition to any wall. Each set is accompanied by a synopsis of the Wonder's history and architecture. Yours FREE with the coupon. Send for your limited edition set now.

For more data, circle 6 on inquiry card

MAIL TO:

AMARLITE/ANACONDA
MARKETING DEPT., P.O. Box 1719
ATLANTA, GEORGIA 30301

Yes, I wish to enter the Amarlite Going Places Together Sweepstakes and receive a set of 7 Wonders of the World Prints.

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

AR 975

ULTRAWALL®: Movable Partitions A tenant attraction worth promoting.

Here's a fresh, new way for you to attract tenants: Advertise *office flexibility.* That's what Wachovia Center did in effective ads like this.

The ULTRAWALL Movable Partition story appeals to tenants on the move, especially those who've suffered through the din, dirt and delays of changing permanent walls.

You'll find ULTRAWALL Partitions easy to work with. One trade can erect and dismantle.

You can also advertise tenant choice of 27 colors and five patterns in bank rail, cornice, and ceiling heights with ULTRAWALL.

At Wachovia Center you can change your office almost as fast as you can change your mind.

We're a little bit different. We don't agree with the old attitude that an office is an office is an office.

So at Wachovia Center we've come up with what we think is an ingenious way for you and your associates to "customize" your space: movable partitions.

They're actually floor-to-ceiling walls that are held securely in place by concealed locking devices. When and if you decide you'd like to make a few changes in the configuration of your space, give us a little advance notice and we'll come in and move your walls virtually over a weekend. Of course, they're prefinished in a wide variety of good looking vinyl converings, color coordinated to combine with other finish materials such as your carpeting and door and window trim.

Special texture and handsome wood-grain vinyls are also available at small additional cost.

Wachovia Center is a development of Cousins Properties Incorporated. For further information, contact your broker. Or call or write: Wachovia Center, Suite 500, 330 South Tryon Street, Charlotte, North Carolina 28202. Tel: 704/332-2126. We'll make your office the most interesting, versatile spot in town.

COUSINS

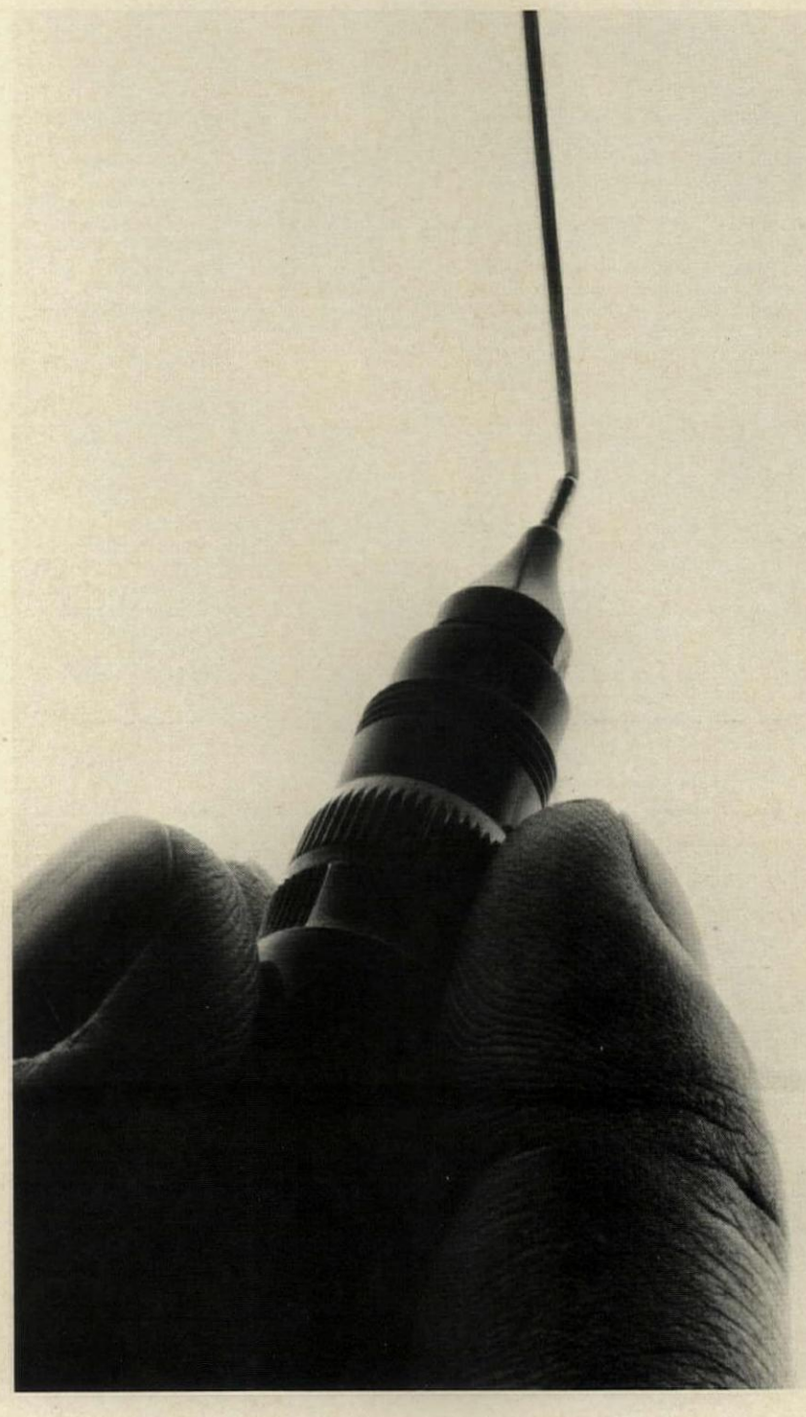
Wachovia Center. An office building out of the ordinary.

These days, a demonstrable difference can be very effective in attracting prospects. Customizing your space with ULTRAWALL Partitions can give you that difference. ULTRAWALL Partitions were selected for one of the most prestigious new buildings in the South by the Office Development Division of Cousins Properties, who recognized the appeal and promoted it. You might find advertising ULTRAWALL Partitions an effective strategy, too. Write us at 101 S. Wacker Dr., Chicago, Ill. 60606. Dept. AR–95

UNITED STATES GYPSUM
BUILDING AMERICA

Announcing a new line of Kodagraph wash-off films:

Whiter, brighter, with an improved ink drafting surface.



If you thought Kodagraph wash-off films were good before, you should see them now! Your drawings are reproduced with intense black lines on a white background that's highly translucent for fast printback.

Equally important, the matte drafting surface (available on one or both sides) has an improved tooth that makes it particularly suitable for ink drafting. Revisions are easy. Simply remove unwanted photographic details with a moistened eraser; then add new design. That's all there is to it.

For more information on these wash-off films, consult your reproduction specialist, or write: Eastman Kodak Company, Graphics Markets Division, Dept. R5778, Rochester, New York 14650.

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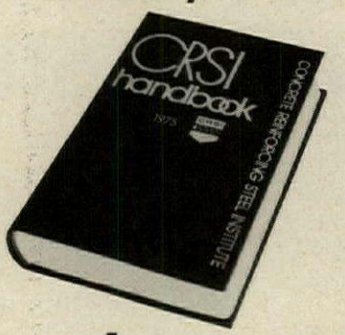
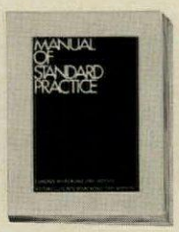
the Reinforced Concrete reference series.

the books you need when you want to go by the book.

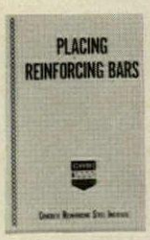


a ***New for 1975! The authoritative design handbook.*** This year's **CRSI Handbook** is bigger and better than ever. Packed with money-saving design solutions. Updated to meet 1973 and 1974 ACI Building Code revisions. Includes new, simplified section on splices; new pile cap and drilled pier tables; shortcut designs for slender columns; *Two-Way Slab Design* section (formerly sold as separate book for $4.00); and pages of tables that give you complete designs directly—without formulas or figuring. **CRSI Handbook,** 2nd edition, 1975, 816 pages, 6" x 9". Hardbound. **$20.00** postpaid.

b ***The complete book on a new, growing type of construction.*** Supplements the *CRSI Handbook.* Find complete designs tabulated for "sand lightweight" (w=115 pcf) and "all-lightweight" (w=95 pcf) concrete. Designs are based on f'_c=4000 psi, Grade 60 rebars and include: (1) flat plates; (2) flat plates with spandrel beams; (3) flat slabs with drop panels; (4) waffle flat plates (two-way joists); and (5) one-way concrete joist construction. There's more, including code requirements, fire test results for various ratings, and stiffness ratios for quick deflection estimates. **Structural Lightweight Concrete Design Supplement,** 1974. 220 pages, 6" x 9". Hardbound. **$8.00** postpaid.



c ***Codes and specs reference source.*** Contains illustrated explanations of industry standards and practices for reinforcing steel. **Manual of Standard Practice,** 1973. 80 pages, 8½" x 11". Soft cover. **$2.00** postpaid.



d ***Covers the most economical placing methods.*** Describes recommended field practice and the placing methods that save big money. Ideal for apprentices, journeymen, inspectors. **Placing Reinforcing Bars,** 2nd Edition, 3rd printing, 1975. 186 pages, 5⅜" x 8⅜". Soft cover. **$2.50** postpaid.

e ***All the details on detailing.*** This single, complete volume covers detailing of rebars, bar supports, welded wire fabric. Invaluable for on-the-job detailer training. Prepares beginner to use A.C.I. detailing manual. Describes manual detailing of footings, foundations, walls, columns, floors, bridges, and buildings. Plus computer estimating and detailing. **Reinforcing Bar Detailing,** 1970. 272 pages, 8½" x 11". Hardbound. **$18.50** postpaid.

f ***Comprehensive data on a vital subject.*** Gives complete coverage of economics, design, detailing, and construction of post-tensioned box girder bridges. Published jointly with PCI. **Post-Tensioned Box Girder Bridges,** 1971. 106 pages, 8½" x 11". Wire-spiral bound. **$6.00** postpaid.

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d ☐	Placing Reinforcing Bars	2.50		
e ☐	Reinforcing Bar Detailing	18.50		
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CRSI
FOUNDED 1924

CONCRETE REINFORCING STEEL INSTITUTE
180 North LaSalle Street, Dept. AR
Chicago, Illinois 60601

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COMPANY OR FIRM_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

It gets cold in Fairbanks. Down to −50 F in winter. But classes in day care at the new Hutchinson school are held in large, comfortably warm rooms, thanks to a super-efficient new urethane foam insulation system developed by the H. H. Robertson Co., and their Freeman Chemical Co. division. Based on Mobay urethane materials and production technology, the factory-made wall panels have a 2" core of rigid urethane sandwiched between steel facings with a baked enamel finish.

Light in weight. Only 3 psf, a fraction of the weight of conventional building materials, means savings in shipping as well as on-site handling costs.

Quick assembly. The 101,406 sq-ft facility went up in three months—25% faster than masonry wall schedules. And field labor costs were 35% lower than for conventional methods, since panels were pretrimmed to fit.

Superior thermal resistance. With a U-factor of .08, ⅓ lower than FHA minimum for masonry buildings in coldest climates, the urethane-insulated walls have seven times the thermal resistance (U-.58) of an 8" cinder aggregate block wall.

If urethane foam can keep a contented smile on a child's face in the bitter Arctic winter, chances are this versatile building material can keep your customers smiling, too. And the economics make easy reading for a builder.

Years ago, we wrote the book on polyurethane chemistry. Now we've written one on how urethanes can save energy, time and money for you: "How to Conserve Energy in Commercial, Institutional and Industrial Construction." Ask for it.

Mobay Chemical Corporation, Polyurethane Division, Code AR-95, Pittsburgh, Pennsylvania 15205

MOBAY

Why this Alaskan schoolgirl thinks you should read our new book on saving energy.

eet's Architectural File, 7.14/Mo

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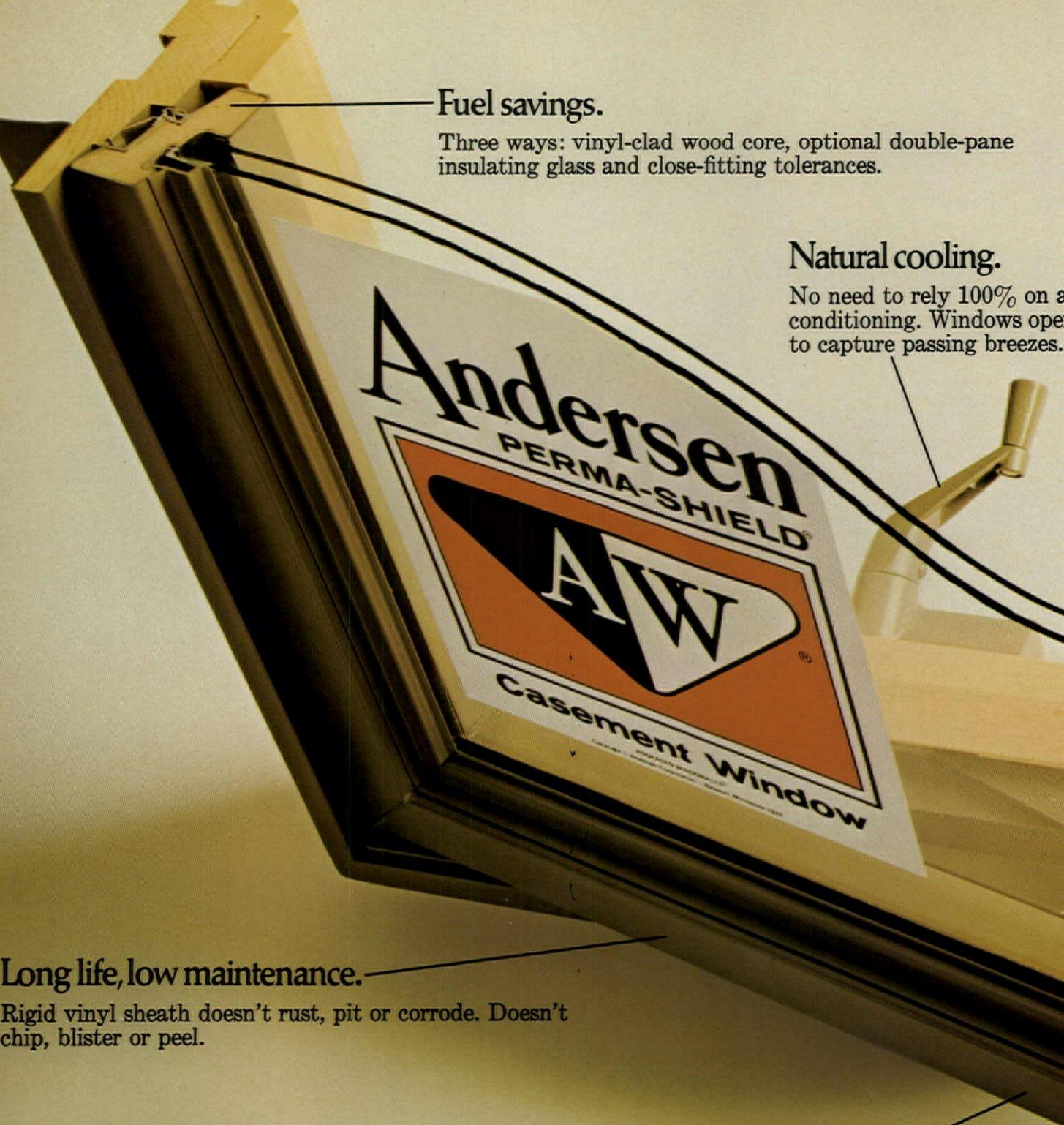

Fuel savings.

Three ways: vinyl-clad wood core, optional double-pane insulating glass and close-fitting tolerances.

Natural cooling.

No need to rely 100% on a conditioning. Windows ope to capture passing breezes.

Long life, low maintenance.

Rigid vinyl sheath doesn't rust, pit or corrode. Doesn't chip, blister or peel.

Look at all that Andersen® Perma-Shield® Casement and Awning Windows in Terratone can bring to your commercial and institutional designs. There's so much, it makes you wonder: Could this be the perfect window?

For more details, see Sweets, File 8P. Or call your Andersen Dealer or Distributor. He's in the Yellow Pages under "Windows." Or write us direct.

Color.

We call this rich, inviting earth-tone color Terratone. It's a deep, natural hue that blends beautiful with wood, brick, stone, masonry almost any building material. (Also available in white.)

The beautiful, carefree way to save fuel.

Andersen® Windowalls®

ANDERSEN CORPORATION BAYPORT, MINNESOTA 55003

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Printing limitations prohibit exact color duplication. Use actual sample for building

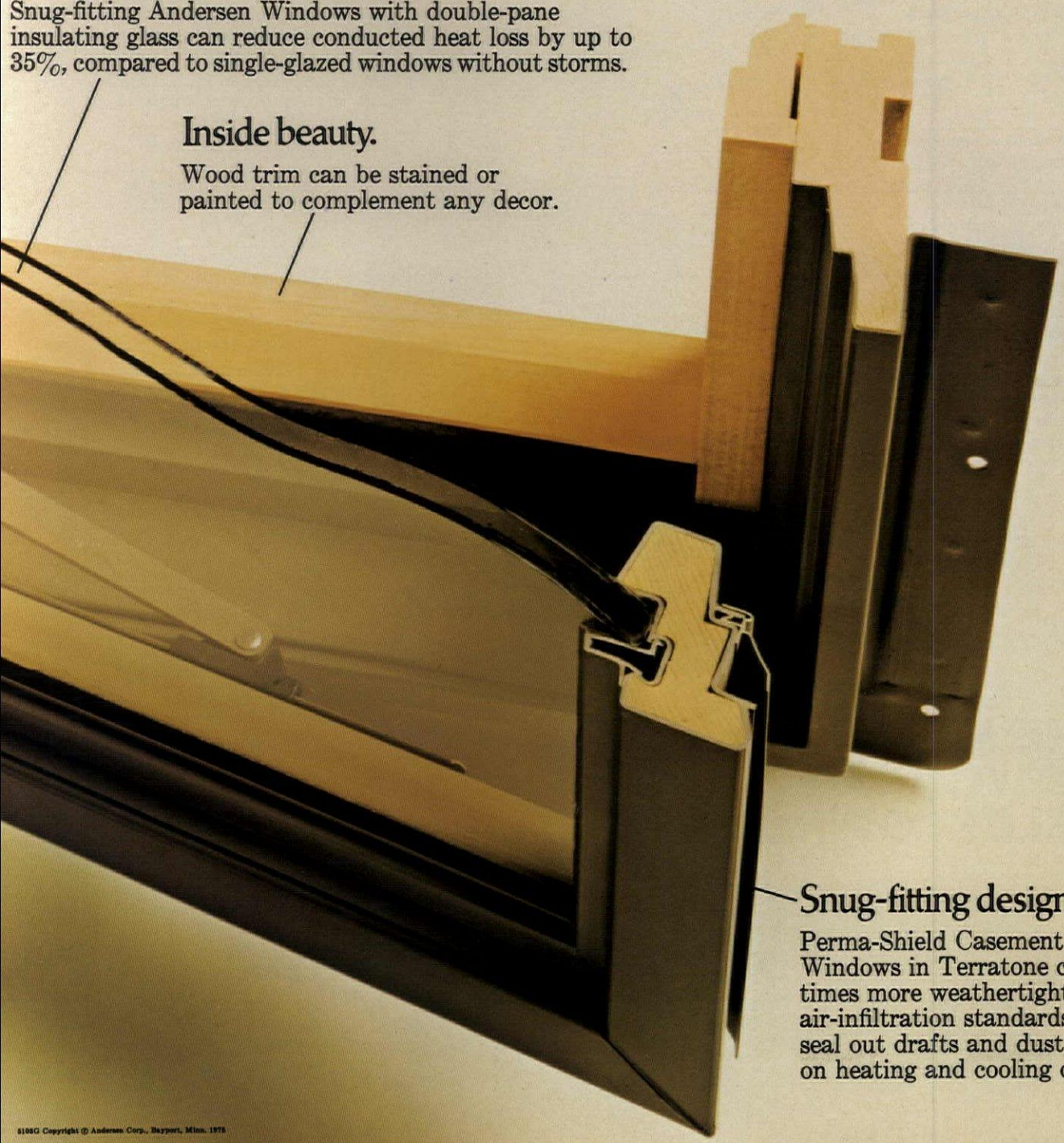
COULD THIS BE THE PERFECT COMMERCIAL WINDOW?

Double-pane insulating glass.

Snug-fitting Andersen Windows with double-pane insulating glass can reduce conducted heat loss by up to 35%, compared to single-glazed windows without storms.

Inside beauty.

Wood trim can be stained or painted to complement any decor.

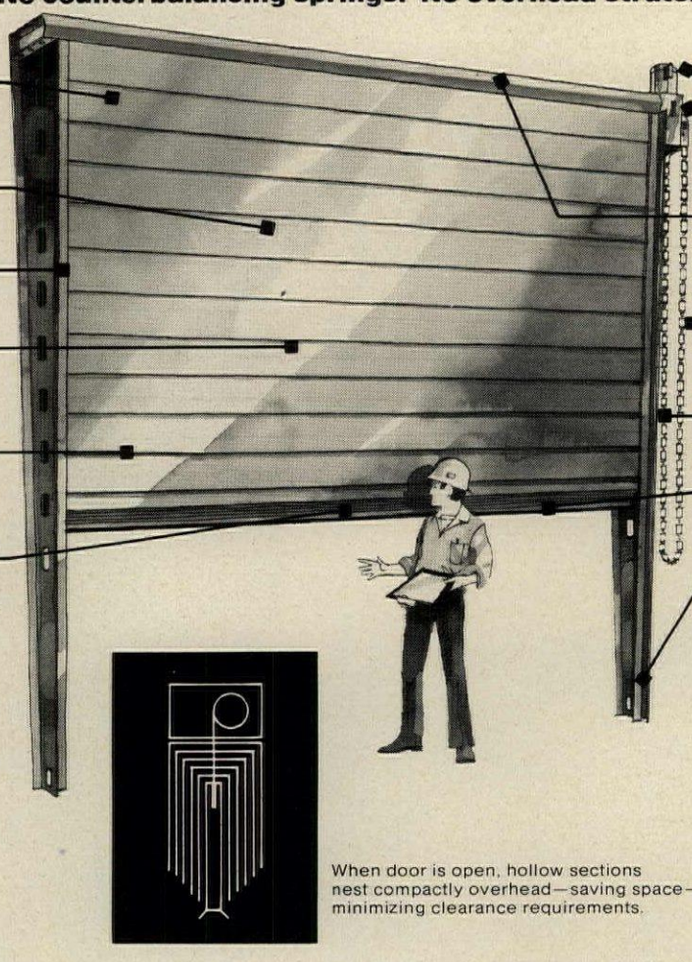


Snug-fitting design.

Perma-Shield Casement and Awning Windows in Terratone color are two times more weathertight than industry air-infiltration standards. To help seal out drafts and dust, and help save on heating and cooling costs.

IF YOU'RE LOOKING FOR AN INDUSTRIAL DOOR THAT'S SIMPLE, COMPACT, STRONG, RELIABLE, SAFE, FAST AND QUIET, HERE IT IS . . .

No counterbalancing springs. No overhead struts.



Dead air in hollow sections provides positive insulating values.

Baked enamel finish coat on curtain.

Close fit at stiles minimizes draft penetration.

Cables and control wires out of sight and protected within hollow door sections.

Sections not mechanically connected—easily removed for repair.

Safety controls in bottom section immediately reverse door travel on contact with obstacle.

Motor location optional.

Motor operator mounted either end.

Two sets of limit controls provide "fail safe" protection against overtravel.

Manual operator for power failures.

Weight of door carried on stiles and header box.

Heavy flexible weather strip along bottom.

Door locks and unlocks automatically in side stile slot.

When door is open, hollow sections nest compactly overhead—saving space—minimizing clearance requirements.

THE NEW INRYCO® TELESCOPING DOOR

The Inryco® Telescoping Door is new to America, but its dependability has been proven in many high traffic installations in Europe. Fast, quiet operation. Simple, all-steel construction with baked enamel finish on door panels. Standard sizes range from 10′ x 10′ to 24′ wide x 20′ high. Custom sizes available. For further information, write to: Special Products Division; INRYCO, Inc.; Dept. J, 4033 W. Burnham St.; Milwaukee, WI 53201.

INRYCO
an **INLAND STEEL** company

General Offices: Melrose Park, Illinois
Formerly INLAND-RYERSON CONSTRUCTION PRODUCTS CO.

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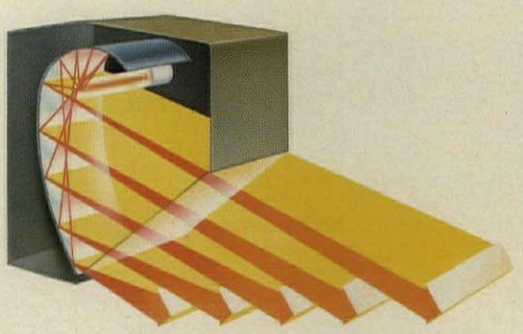
CROUSE-HINDS ANNOUNCES

The Precise Light.

A BETTER WAY TO GET LIGHT PRECISELY WHERE YOU WANT IT.



Knife-edge beam...

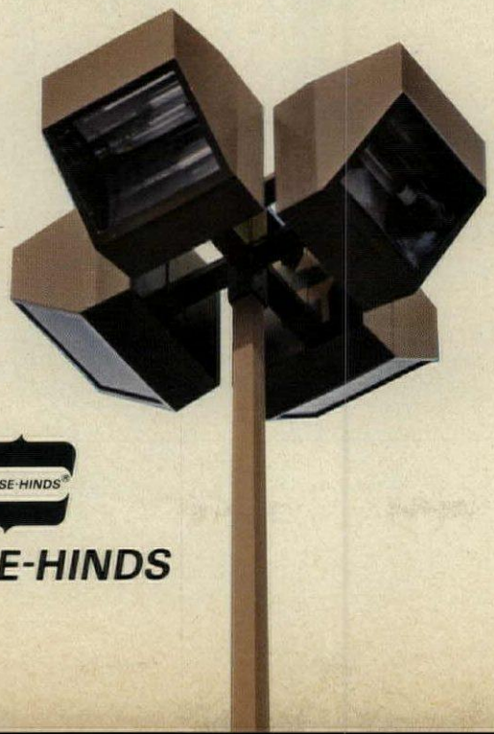
Unique reflector curvature builds single-reflected and double-reflected light rays into a powerful beam peak. Front of housing conceals lamp and provides knife-edge cutoff.

Provides cutoff on the ground...

The CLX respects property lines with light precisely where you want it, not trespassing on adjacent property. This sharp cutoff does not rely on energy-absorbing louvers or shields.

The Precise Light™ Model CLX is designed to optimize energy-efficient high-pressure sodium lamps up to 1000 watts . . . metal halide optional. Multiple mounting arrangements and design-integrated mounting hardware and poles are available for small or large areas. Fiberglass-reinforced polyester housing has integral bronze color. All components are readily accessible for low maintenance.

But don't take our pictures for it. Ask for a demonstration. And full facts. Contact your Crouse-Hinds lighting representative or call (315) 477-8241. Crouse-Hinds Company, Lighting Products Division, Syracuse, N.Y. 13201.



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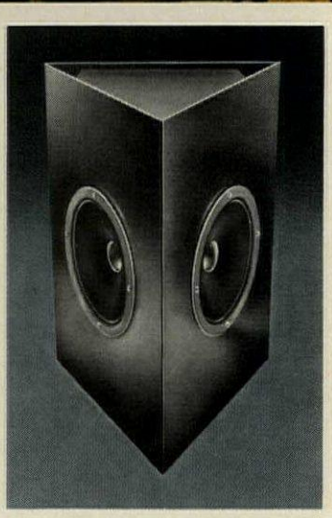
CROUSE-HINDS®

CROUSE-HINDS

This beach has the 3 essentials Owens-Corning has the system

1. An acoustically non-reflective ceiling is a *must*—to keep sound from bouncing to other areas. An independent acoustical testing laboratory examined eight ceilings, including expensive coffered and baffled systems. Their verdict: Owens-Corning's Nubby II Fiberglas* Ceiling Board (left) in any standard exposed grid suspension system is *best* for achieving speech privacy at economical installed cost.



*Reg. T.M. O.-C.F.

for speech privacy in open offices. that puts it all indoors.

2. An unobjectionable background sound helps mask distracting speech. Special electronic speakers, installed in the plenum, make it possible to hear normal conversation clearly within defined areas, without being overheard in other areas.

3. A barrier or proper acoustical *screen* is needed to block direct transmission (and reduce reflectance) of speech into adjoining areas.

Owens-Corning has it all

Complete speech-privacy systems —including Fiberglas Nubby II Ceiling Board, masking speakers, and Fiberglas sound screens —are available from Owens-Corning.

For details, write: X. A. Meeks, Architectural Products Div., Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659.

Owens-Corning is Fiberglas

OWENS/CORNING FIBERGLAS TRADEMARK ®

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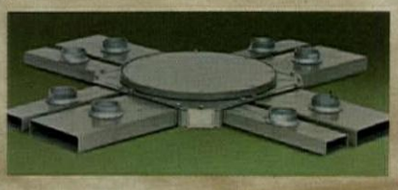
A communication problem isn't a ho-hum affair.

The communications boom isn't a bunch of boring statistics. Fact is, it's more phones and more new equipment than you ever dreamed of. With wires meeting all over the place. So don't get caught napping. Put a Walkerduct Underfloor System in your building specs. It will help keep the income from dropping off.

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 floor. Without spending a small fortune.

Contact your nearby Walkerman for more information. Or write: Walkerduct, Parkersburg, West Virginia 26101. In Canada: Walkerduct of Canada.



walkerduct® WALKER/PARKERSBURG

A textron Company

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If we tried to solve all your material-handling problems with a single system, it would be like trying to fit square pegs into round holes. So we developed a wide range of systems, to fill the needs of virtually any hospital.

And we back our product with expertise that helps us tailor our material-handling equipment to your building instead of requiring that you plan your building to fit our systems.

We work with you to determine the best system or combination of systems for the job you want done. We gather facts and figures on costs and cost-savings. We design the system down to the last nut and bolt — and can even employ computer simulation to prove that our plans will work as well in actuality as they promised to on the drawing board.

We provide full installation if required . . . train hospital personnel in proper and efficient use of the system . . . and remain on hand during start-up and operation to make sure all the bugs are out. To assure that they stay out, AMSCO offers you a nationwide network of service technicians for preventive maintenance or repair.

When it comes to material handling for hospitals, we may not have all the answers. But we're working on them.

AMSCO SYSTEMS

Division of American Sterilizer Company

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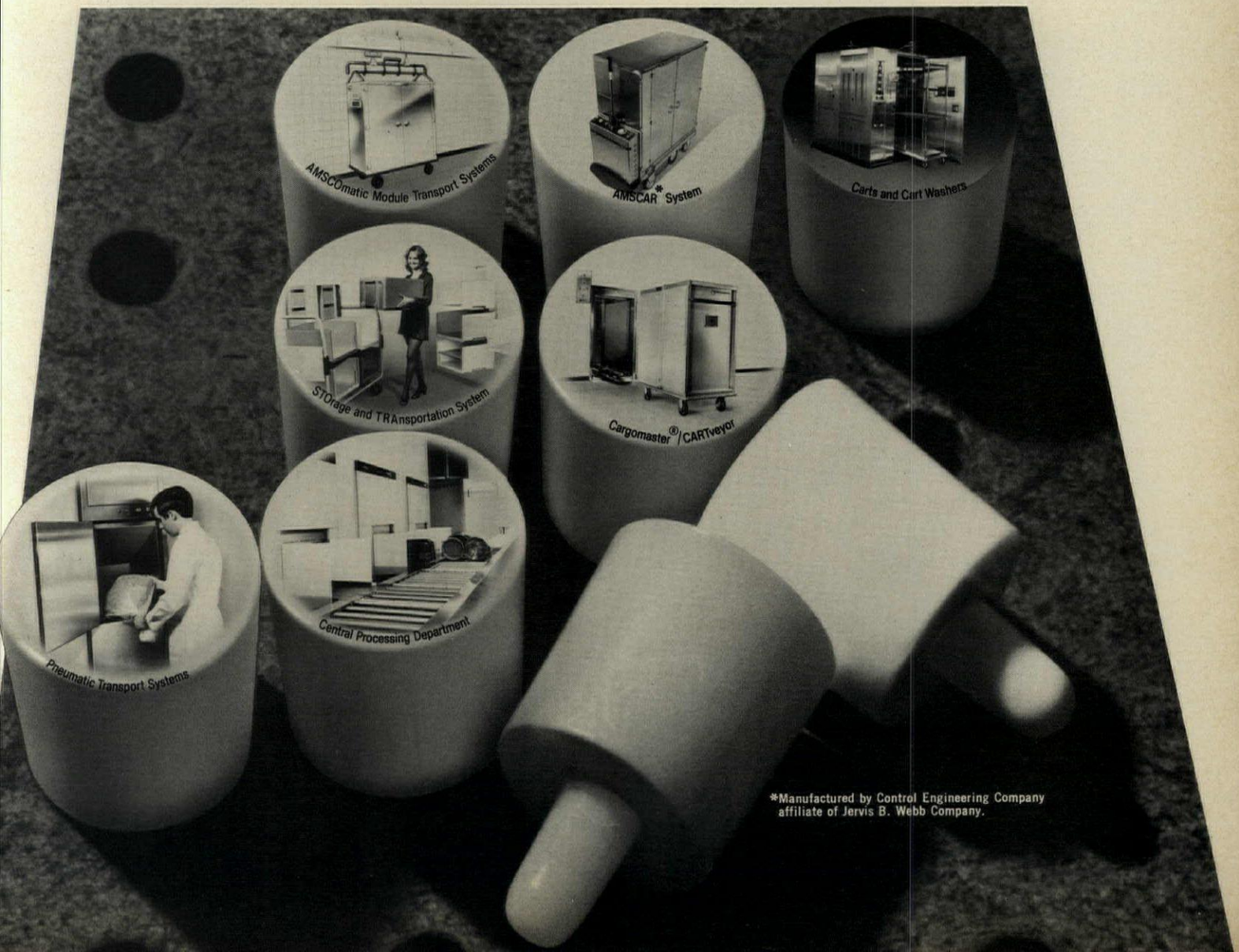
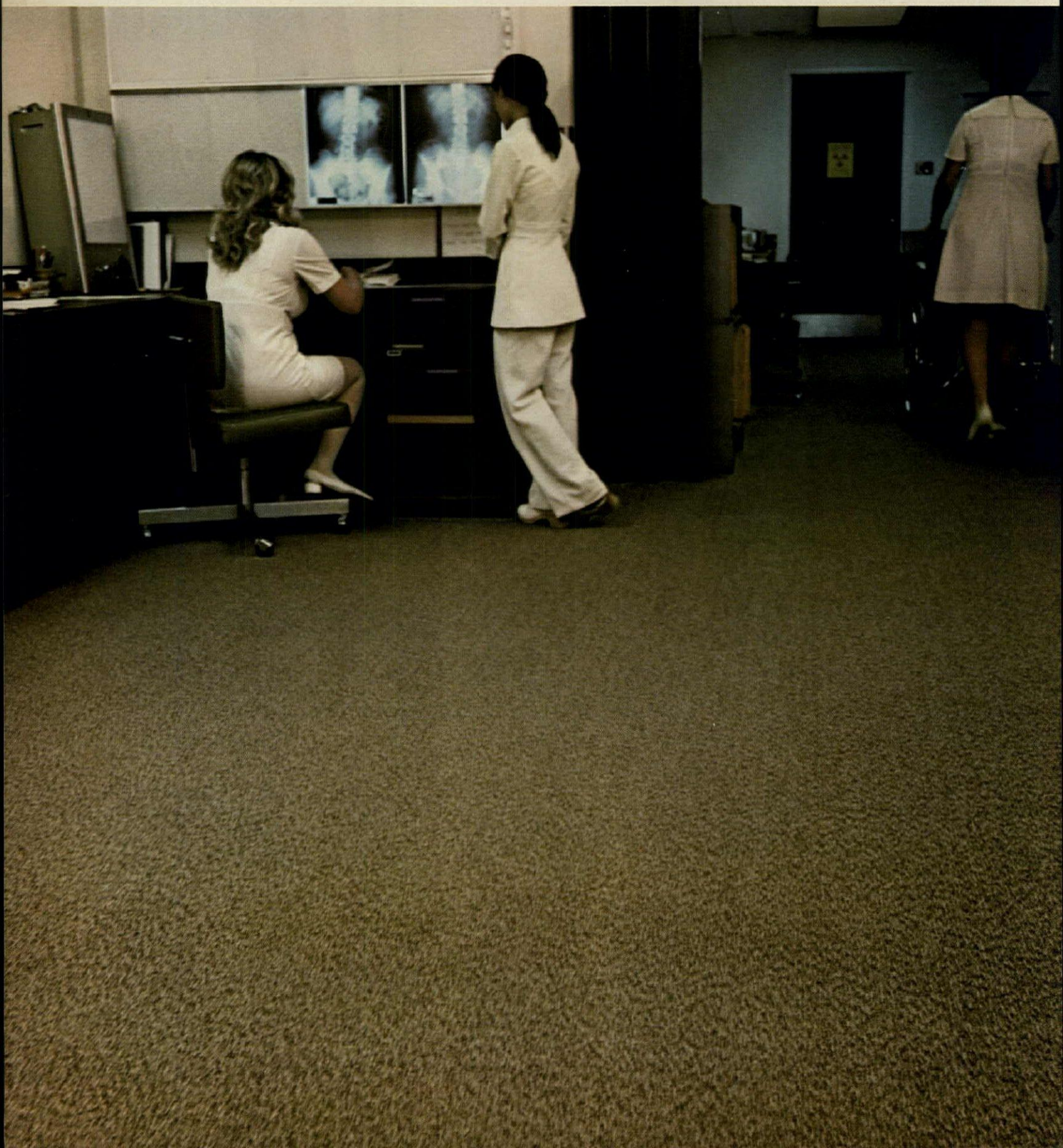
hospital planner, proceed from here



*Manufactured by Control Engineering Company affiliate of Jervis B. Webb Company.

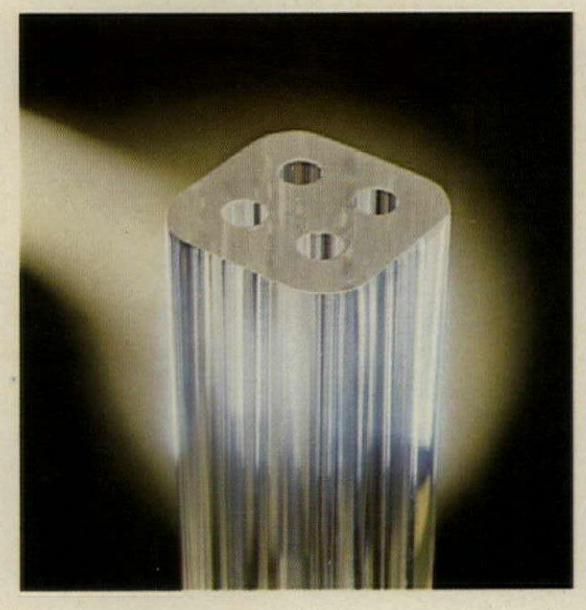
Expect quality carpets And expect their



to be in Antron® nylon. look to last.

What you see is what you'll get for a long time. "Antron" is a soil-hiding carpet fiber. It is the leading commercial carpet fiber brand with more than twice the available styles in "Antron" than those made of the next brand. Its ability to diffuse light helps blend soil concentrations into the overall look of the carpet. Also, being nylon, "Antron" gives carpet exceptional durability and crush resistance.

Lutheran General Hospital, Park Ridge, Illinois, is a large suburban hospital (675 beds, 1200 daily visitors). They were one of the first to adopt carpeting for patient care and public areas. The concept proved very satisfactory. When they decided to recarpet, their experience pointed up the features most desired in a hospital installation. Their new carpet has a pile of continuous filament Antron* nylon. "Antron" was selected to best satisfy the requirements of durability, ease of maintenance, and long-lasting good looks. Now most areas of the main building—patient rooms, examining rooms, snack bar, radiation therapy (shown)—are covered in this cut/uncut moresque in "Antron."



How "Antron" keeps carpet looking fresh. Its filament structure is remarkable, as simulated in this greatly enlarged model. The four microscopic holes scatter light to minimize rather than magnify the dulling effects of soil, while maintaining an attractive, subdued luster. This property of the fiber, together with its outstanding wearability, helps the look of the carpet to last.

For more information, talk to your mill representative or write to Contract Specialist, Du Pont, Room GB, Centre Road Building, Wilmington, DE 19898.

DU PONT
REG. U.S. PAT. OFF.

*Du Pont registered trademark. Du Pont makes fibers, not carpets.

For more data, circle 16 on inquiry card

In Norfolk's Skyline:

A decade of Ceco formwork

Contractors and owners coast to coast save on forming costs with Ceco services

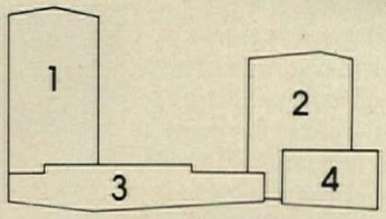
Impressive architecture in concrete is adding excitement to Norfolk's modern, growing skyline. These four projects are typical of Ceco's concrete formwork in Norfolk over the past decade.

With Ceco services you get simplicity, speed and reliability.

—And a firm contract price that represents cost savings to contractors and project owners.

—And performance by formwork specialists who take pride in getting the job done right.

Ceco offers economical and time-saving formwork for rib-slabs, waffle-slabs, flat-slabs, columns and beams. Services are nationwide on a local basis. For more facts, please see Sweet's or contact your nearest Ceco office.



1. Virginia National Bank Building (1965)
Skidmore, Owings & Merrill, *architects*
Williams and Tazewell & Associates, *architects*
Weiskopf & Pickworth, *structural engineers*
Basic Construction Co., *contractors*

2. United Virginia-Seaboard Bank Building (1968)
Vlastimil Koubek, *architect*
Baskam & Chester, *structural engineers*
Thorington Construction Co., *contractors*
L. J. Martone and Associates, *concrete contractors*

3. I.C.C. Office Building (1975)
Toombs, Amisano & Wells, *architects*
Harald Nielsen & Associates, Inc., *structural engineers*
Batson-Cook Co., *contractors*

4. First Virginia Bank Building (1975)
Dudley, Morrisette, Cederquist & Associates, *architects & engineers*
Basic Construction Co., *contractors*

CECO concrete forming services

The Ceco Corporation • General Offices
5601 West 26th Street • Chicago, Illinois 60650

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TALKING COMPUTER TELLS HOW YOU COULD GET UP TO TRIPLE YOUR MONEY BACK ON THE ADDED COST OF 2¼" ROOF INSULATION.

NEW OWENS-CORNING COMPUTER TELLS YOU ALL THIS IN 30 SECONDS

1. ANNUAL HEATING SAVINGS	$2,217	
2. ANNUAL COOLING SAVINGS	+361	
3. TOTAL ANNUAL FUEL SAVINGS		$2,578
4. INITIAL EQUIPMENT SAVING	$41,640	
5. LESS: COST OF ADDITIONAL INSULATION	−19,500	
6. NET EQUIPMENT SAVING		$22,140

To compute savings for the average life cycle of a building (20 years), multiply annual fuel savings ($2,578) by 20 and add new equipment saving ($22,140). Total, $73,700, is more than *triple* the cost of additional insulation. (That's not counting increases in fuel costs or the effect of continuing inflation.)

There's never been anything like it!

- Simply feed a few facts to our computer via touch-tone telephone.
- Wait 30 seconds.
- Then listen! The computer's voice will give you the approximate savings in a 6-point answer (see table). If you want a print-out in the mail, just say so.

This valuable service (called "The Energy Management System Line to Savings") doesn't cost you a cent, no matter how often you use it.

Saves time and money

We developed it to help architects, engineers, and owners solve a problem. The energy crisis has forced fuel prices up and made 2¼" roof insulation more desirable than ever before.

But the savings on any particular building depend on many variables—and doing the calculations can be tedious and costly.

No longer! Our new system does the job in seconds, makes it easier for you to be a hero to your clients or management.

Note: The savings shown above are approximate and are based on the following: Average 1975 fuel and equipment costs. Upgrading roof insulation from 15/16" to 2¼" on a 60,000-sq.-ft. metal deck. Suburban office building. Northern climate. Gas heating and electric cooling.

Your estimated savings on a particular building depend on size, type, location, method of heating and cooling, and other variables. (The figures you'll get from our computer are approximate savings, of course, and can't replace a full analysis.)

For more information

Call your Owens-Corning representative. Or write to Y. Y. Meeks, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.

Owens-Corning is Fiberglas

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THE RECORD REPORTS

The Ford Administration has endorsed legislation to require bidding by design professionals for Federal work. The legislation, if passed, would repeal the Brooks Law, which instructs civilian agencies to base designer selection on traditional technical competency grounds. Details on page 34.

Arthur F. Sampson, Administrator of the General Service Administration, has resigned, effective October 15. He expects his successor to be Nicholas A. Panuzio, mayor of Bridgeport, Conn. However, the White House had not confirmed this appointment as of press time. Details on page 34.

Contracts for future construction totaled $9.3 billion in June, a 13 per cent gain over June 1974. According to the F. W. Dodge Division of McGraw-Hill Information Systems Company, the seasonally-adjusted Dodge Index of total construction (1967=100) was 174 in June, 4 per cent below May's 182. For the second quarter, the Dodge Index averaged 182, showing a 29 per cent gain over the first quarter's depressed average of 141. Public works and utilities construction have been credited for the current improvement.

Registration closes September 19 for "Resources 76," an ARCHITECTURAL RECORD conference October 28-30 at the University of Chicago Center for Continuing Education. The conference will feature many of the country's leading government, financial and professional spokesmen, dealing with the subject of where future construction dollars will be. The registration fee is $400, and further information may be obtained from: William Marlin, ARCHITECTURAL RECORD, (212) 997-4242, or Richard Muetze, (312) 753-3185. See RECORD, July, page 65 for details.

The Senate has approved the Buckley bill to foster preservation of public buildings with historic or architectural significance, sending the measure to the House for consideration, perhaps this fall. The bill, S. 865, was introduced by Senator James Buckley (C-R, N.Y.), passed the Senate in a voice vote, and is expected to be well received in the House. A discussion of this measure appears in the Editorial on page 13.

September 15, 1975, is the deadline for entry slips in the 1976 AIA Honor Awards Program, and all entries in the preliminary submission must be postmarked no later than October 20. Eligible are works of architecture or urban design, which must be submitted by the architect. For further information, contact the headquarters of The American Institute of Architects in Washington, D.C.

An exhibition of the Roosevelt Island Housing Competition will be held October 15 through November 3 in the McGraw-Hill Building, 1221 Avenue of the Americas, New York City, from 11 a.m. to 6 p.m. weekdays. The competition, sponsored by The New York State Urban Development Corporation, called for the design of 1000 units of mixed income housing. The exhibition, sponsored by The Architectural League of New York, will include the four winners and 30 other projects from the 250 submissions. An article on the competition will appear in the October issue of RECORD.

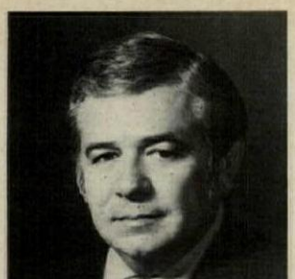
The AIA will sponsor its fourth annual Architects in Industry Seminar October 6-8, in Washington, D.C. Stressing on-the-job effectiveness, the Seminar is open to architects who are employed by commercial and industrial corporations. Participants need not be AIA members. For further information, contact: Evagene H. Bond, The American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006.

A $100,000 prize has been offered in a competition for developing a portion of Regina, Saskatchewan. The Canadian competition is open on a world-wide basis to all urban planners, architects and other professionals, with a deadline of October 1, 1975, for obtaining further information. Contact: Regina Rail Relocation Office, 1800 South Railway Street, Regina, Saskatchewan, Canada. Additional information on page 34.

In connection with the 41st International Eucharistic Congress, an altar competition has been announced. October 1, 1975, is the deadline for the design of altar stages for two sports stadiums in Philadelphia, the site of the Congress to be held August 1-8, 1976. Competitors must be registered architects in the United States. Cash awards will be given. For further information, contact: Mr. Mario Romanach, Philadelphia Chapter, AIA, 117 South 17th Street, Philadelphia, Pa. 19103.

Sir Robert Matthew, former president of the International Union of Architects, died June 21 at 69. The noted British architect, credited with London's Royal Festival Hall among other major projects, was also chief architect to the London County Council, and president of RIBA from 1962 to 1974. Details on page 37.

Architects, sculptors, designers and others are invited to compete for an Australian memorial to Walter Burley Griffin, the American architect responsible for the original design concept of Canberra, the Australian national capital. The memorial is to mark the centenary of Griffin's birth. Cash prizes are offered, and the first stage of the competition closes October 17, 1975. For further information, contact: Australian Embassy, 1601 Massachusetts Avenue, Washington, D.C. 20036, or the Australian Consulates in New York, Chicago, Los Angeles or San Francisco.



GSA's Administrator Sampson resigns

Arthur F. Sampson (top photo), the General Services Administration's dynamic and controversial chief, has resigned his post effective October 15. He expects his successor to be Nicholas A. Panuzio (bottom photo), the 39-year-old mayor of Bridgeport, Connecticut. The White House had not confirmed Panuzio's appointment by mid-August, however.

Presumably, Walter A. Meisen, Acting Commissioner of GSA's Public Buildings Service and the Government's highest ranked architect, will remain in his job at least until a new Administrator is confirmed by the Senate.

In a recent interview, Sampson said he had not found new employment, but was looking for "an action position" in private enterprise allowing him to exercise what he sees as innovative management. Before joining GSA six years ago, Sampson was in the Pennsylvania state government. He is an accountant and has had long service with the General Electric Company.

Sampson's tenure at GSA was marked by considerable controversy, highlighted by his statement that he would consider political recommendations for architect-engineer selections when the suggested firm was clearly qualified for the work.

He became involved in the Spiro T. Agnew scandals and once voided a contract with an architect who was publicly mentioned in connection with the Agnew investigation. Other wrangles developed over improvements to former President Richard Nixon's resort homes and the request for transition funds for Nixon.

At the same time, Sampson is credited with introducing or pushing new emphasis on life-cycle costing, fire safety features in high-rise structures and greater attention to energy and environmental factors.

The GSA's construction management program was implemented during Sampson's reign and several Federal structures acquired large sculptures in an elaborate art program.

A purchase contract building acquisition technique initiated by Sampson allowed the agency to begin $1 billion in new construction in a two-year period and allowed the reduction in a massive backlog of needed Federal buildings.

Ironically, it was not Sampson's controversial nature that was the immediate cause of his departure from the Government. Rather, it was a personality conflict between him and White House Chief of Staff Donald Rumsfeld. Rumsfeld does feel, however, that Sampson's effectiveness has been sapped by the controversies.

In his letter of resignation to President Ford, Sampson made it clear that he had intended to keep the job through most of 1976, but changed his schedule because of "circumstances." In his letter to the President, Sampson said that GSA was a "moribund, static agency" when he joined it.

Mr. Ford said Sampson had "worked tirelessly to build . . . an institutional reputation for productivity and effectiveness." However, Sampson would not be offered another Federal post.—*William Hickman, Washington.*

$100,000 prize in Canadian competition

Urban planners, architects, engineers, and developers have been invited to enter an international competition for an urban development concept for the reuse of 46 hectares of railway land in downtown Regina, Saskatchewan, Canada.

The Ministry of State for Urban Affairs will provide $100,000 Canadian prize money for the competition.

Those wishing to make submissions will have until October 1, 1975, to obtain information from the Regina Rail Relocation Office and to November 14, 1975, to submit a Phase One proposal.

Registrations accompanied by $50.00 Canadian are to be mailed to the Regina Rail Relocation Office, 1800 South Railway Street, Regina, Saskatchewan, Canada (S4P 0A8).

Ford Administration proposal would require competitive bidding by A-E's

Architects and engineers seeking Federal work will be forced to submit priced bids under new legislation developed by the White House Office of Management and Budget and endorsed by President Ford.

A draft of a proposed law has been sent to Capitol Hill. Under it, Federal agencies—both civilian and military—would engage in competitive procurement of professional A-E services based "on consideration of technical competence, technical proposals and fee."

Some professional society representatives flatly declare that the effect of price solicitation will be price competition—long anathema to the construction design professionals.

The proposed bill also calls for the elimination of the 6 per cent limitation on A-E fees. The Washington lobbyists for professional societies have a dislike for the fee ceiling, but explain that, since it is applied on the basic, initial fee, it does not greatly affect the actual price charged.

Other provisions in the lengthy proposed bill consolidate the armed services procurement regulations with the Federal procurement regulations, modernize sections of procurement laws relating to small business preferences, permit the greater use of multi-year contracts and extend the truth-in-negotiations requirements to all Federal agencies.

The suggestion that price become a factor in A-E selection—if it is approved—would expressly repeal the Brooks law, which instructs civilian agencies to base designer selections on traditional technical competency grounds.

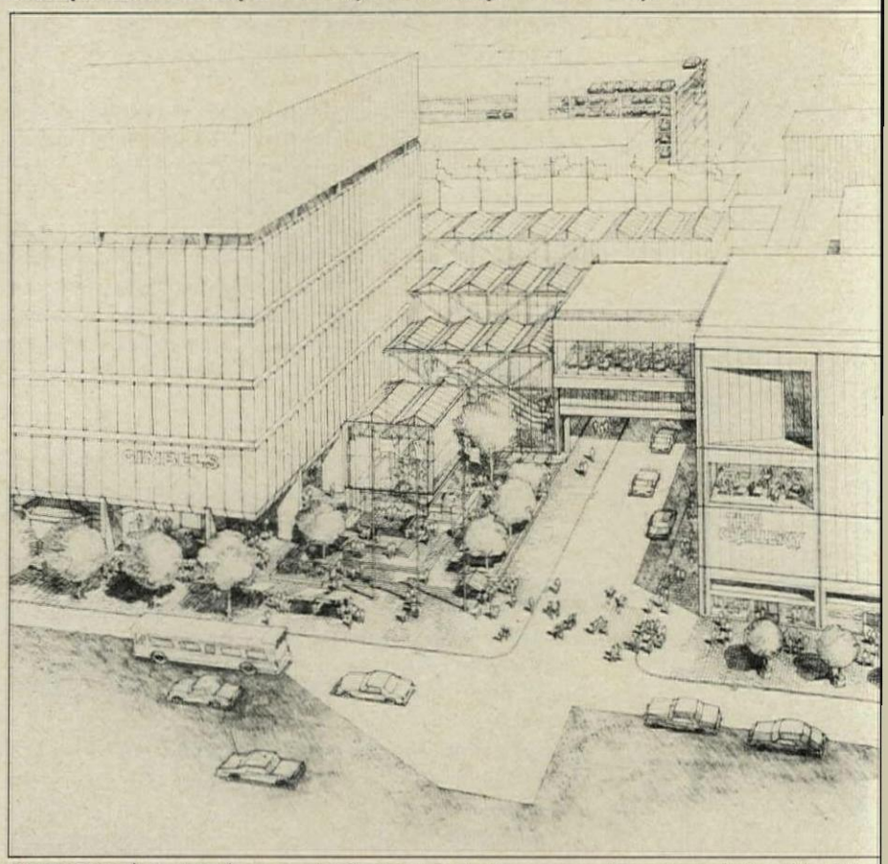
The Brooks law is named for its chief sponsor, Representative Jack Brooks (D-Tex.). Brooks is now chairman of the House Government Operations Committee.

There is no assurance that the bill, once it is formally introduced in Congress, will b referred to Brooks' committe It might go to the Judicia Committee where a friendly re ception could be expected. Bu in the Senate, Senator Lawto Chiles (D-Fla.), who heads Government Operations Pro curement Subcommittee, is a enthusiastic booster of procure ment reform, includin changes in A-E selection proce dures.

In any event, a proposal s technical and sweeping is sur to require many months o Congressional consideration Floor votes—if they come a all—are not expected befor spring of 1976.

The design societies' join lobbying group, the Committe on Federal Procurement of A- Services (COMPAES), ha called a meeting, which will b held September 17, to ma plans for sidetracking any a tempted change or repeal of th Brooks law.—*William Hick man, World News, Washing ton.*

Transportation mall part of major Philadelphia redevelopment

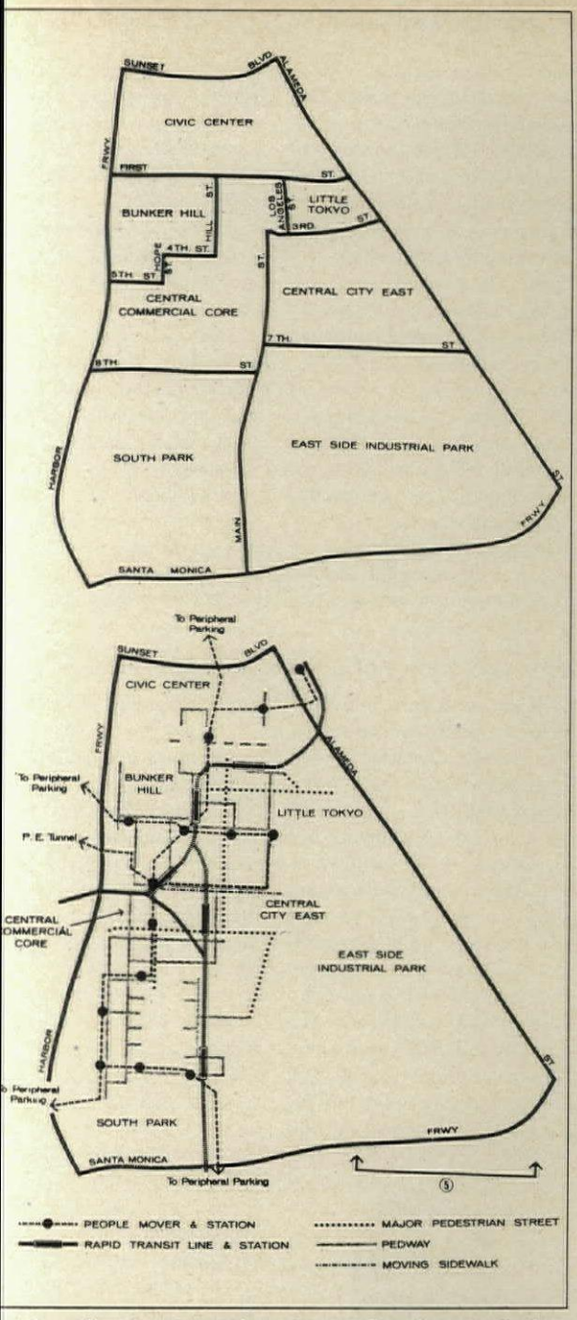


Construction has started on a downtown redevelopment project for Philadelphia that features a four-level enclosed mall by Bower and Fradley Architects, Philadelphia.

The mall will add 190,000 square feet of retail space to the area and link five city blocks as part of the Market Street East Transportation Mall Center, a project of the Philadelphia Redevelopment Authority.

At the main entrance to the mall, known as "The Gallery," a glass roof will cascade down in three steps to the entranceway (shown), where it will meet a matching cascade of broad brick stairs leading from an outdoor plaza at street level. An intricate system of escalators of various heights will connect the mall levels. The lighting system, designed by Sylva R. Shemitz & Associates, wi be programmed so that changes with use and time o day.

Other plans in the devel opment are improvement of major subway station, recon struction of the Reading Rail road terminal and provision fo a hotel to be built atop a sec tion of the mall.



Federal guidelines for transit assistance released to cities last month

The nation's cities got a stiff set of guidelines last month that they must meet in order to tap the Federal Transit Assistance Program, currently funded at $1.3-billion per year. The primary goal of the new rules issued by the Urban Mass Transportation Administration is to prevent cities from wasting money on what one Federal official calls "Hobby Horse" schemes, or on traditional transit systems that are too costly for a given city's needs.

The guidelines prescribe three basic conditions for receiving Federal transit aid:

- Cities must make an in-depth analysis of all transit options rather than "pre-selecting" a specific transit technology regardless of its practical application to urban use.
- Transit development must be phased by stages rather than as a systemwide "one-shot" program, to stretch the cost over a longer period of time.
- Cities must fully integrate various modes of transportation, such as combining rail and feeder bus lines, in the most efficient manner.

Cities that decide to build systems in excess of what UMTA considers justified after all options are analyzed will simply not receive funds for that part of the program deemed excessive.

The policy will become law later this year if there are no major objections, and UMTA has taken pains to prevent delay in adopting the rules.

With limited Federal funds, UMTA wants to make sure each city performs the kind of advanced planning and systems analysis needed to develop a transit system that makes sense.

B. R. "Bill" Stokes, president of the American Public Transit Association, agrees that "this will help standardize the criteria so the rules are the same for each city." He doubts, however, that the criteria will prevent cities from still choosing to build major systems.

George Prytula, Eastern marketing manager for Rohr Corporation, a major maker of buses, rapid rail and "people movers" feels the same way. "The vehicle accounts for maybe 10 per cent of the cost of a new system. Most of the cost is in cement and steel."

While the new UMTA rules may cause a technological retrenchment in developing advanced transit systems, they may not stem the tide of grant requests for building conventional facilities.

It will be up to UMTA's newly appointed Administrator Robert E. Patricelli, who was sworn in last month to judge how the cities respond to the new criteria, and to recommend additional funding if the needs are justified. While the Ford Administration last year proposed the $11.8 billion, six-year Federal transit program enacted by Congress, the actual annual funding level was lower. The cities supported the Ford plan because they obtained the long-term, six-year commitment, as well as a new program for Federal operating subsidies. Patricelli will have six months to make his assessment, and advise Congress on funding.—*John Higgins, World News, Washington.*

Amtrak will foresake Union Station in St. Louis for new terminal

Amtrak's board of directors has approved the expenditure of $1.7 million for the purchase of land and the planning and engineering of a St. Louis passenger station and support facilities.

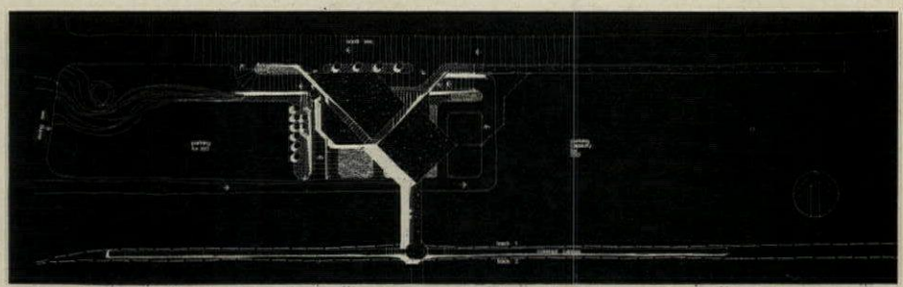
The Federally-subsidized rail passenger corporation plans to purchase 35 acres of land from the Terminal Railroad Association of St. Louis and the Norfolk and Western Railroad, and build a station on the property at the corner of Scott and Ewing streets. The new station will be about one mile west of the present Union Station (see RECORD, December 1974, page 135).

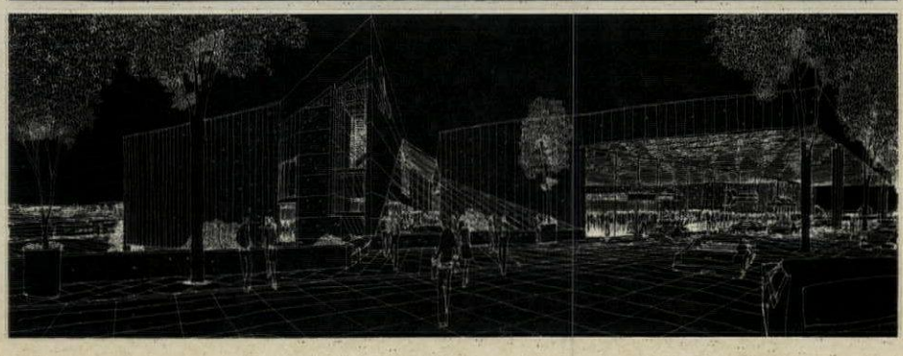
Designed by Curt Willard of Amtrak's Design Department, the 22,000-square-foot facility will be the largest station project Amtrak has undertaken.

The concrete and glass structure will be built on two levels, with passenger drop-off, ticket offices and lounges on the top level, and baggage claim area and passenger pick-up on the lower level. A mezzanine restaurant will overlook the lounges.

Controlled access to the track and trains will be through an enclosed bridge 25 feet over track level with escalators to the tracks.

After engineering plans for the station and servicing facilities are complete, Amtrak's board is expected to approve additional funds for completion of the project. Construction of the station will begin early in 1976. Amtrak plans to vacate Union Station by December 31, 1976. There are no plans for Union Station.





os Angeles approves downtown development plan

he Los Angeles City Council as approved a 255-block re-evelopment project taking in ost of the downtown Central usiness District (CBD).

Focus, according to the ty's Community Redevelopment Agency, will not be on emolition but on housing and n rehabilitation. The CBD an, which will guide growth rough 1990, designates the 100 acres blighted and in eed of social, physical and conomic rehabilitation. It ants to create a balanced rban environment, including a ll range of round-the-clock ses.

To people-orient the owntown, housing will be upraded for the 18,000 permaent residents (mostly senior itizens) and the housing suply increased for all income rackets. The CBD plan will:

Freeze the district's tax base the present $378-million evel for the project's 35-year life. Tax increment funds accruing from increases in assessed valuation will finance land clearance, commercial and industrial expansion, new and rehabilitated housing, and integrated transportation—not only rapid transit, people movers and expanded bus systems, but bikeways and grade-separated pedestrian ways.

- Roll back density to reduce floor area ratio (net building area to net site area).

CBD planning began in 1969 when a coalition of downtown businessmen (Committee for Central City Planning, Inc.) and the city raised funds to retain Wallace, McHarg, Roberts, & Todd of Philadelphia as lead design firm. Now businessmen have formed a successor to CCCP—the Non-Profit Los Angeles Central City Development Corporation—to help implement the project.—*Barbara Lamb, World News, Los Angeles.*

Expandable home for under $28,000

Jointly developed by *Family Circle* magazine and the American Plywood Association for publication in the magazine's July 1975 issue, the "House With The Built-In Future" is a modest-sized home designed to be economically expanded. The house is budgeted at $20,000 to $28,000.

Designed by Mithun Associates of Bellevue, Washington, the 1150-square-foot first phase home contains two bedrooms, one and a half baths, a 13 by 26-foot living/dining area, a kitchen and utility room.

"We went with a two-story design approach for three reasons," said Don Doman of Mithun Associates. "By placing the basic house bedrooms and bath on the second level with their own separate circulation, we greatly eased the circulation requirements of the second phase additions.

"Also, using a two-story design allowed us to develop a large, two-story volume in the living room with an open stairway to create a feeling of spaciousness in this small home."

Planned to meet building code requirements anywhere in the country, the home may be built slab on grade, with a crawl space, basement or wood foundation. It can be used on a standard 60- by 115-foot lot or duplexed on a 108- by 115-foot lot.

Outside, the basic home is a straightforward structure given the wood tones and textures of a rough sawn plywood exterior and a cedar shingle roof. The home's building scheme provides for the addition of a family room, extra bath, third and fourth bedrooms and a storage loft.

For example, a family with a desire for more primary living area may add on the family room addition first. Design features are continued, not destroyed. Materials are reused, not discarded. Plumbing, wiring and heating in the basic home are geared so that they may be economically extended to accommodate future additions.

Public policy and the built environment is Harvard conference theme

Public officials and practicing professionals will participate in a two-day conference, "Issues 76—Public Policy and the Built Environment," to be held on October 9 and 10 at the Harvard Graduate School of Design. The Conference is co-sponsored by the School, the Harvard Graduate School of Design Association, and *The Boston Globe*.

The opening address will be given on Thursday, October 9, at 10:00 a.m. by Florida Governor Reubin Askew, an active partisan of sound state land-use policies. Author and urbanist William H. Whyte will present a film on people's use of space, "Testing Urban Design," on Friday, October 10, at 9:30 a.m.

Preceding the conference on Wednesday evening, October 8, urban designer Richard Llewelyn-Davies, principal of the international urban design firm of Llewelyn-Davies, Weeks, Forestier-Walker & Bor of London, will give the annual Gropius Lecture on "The Tuscan Artist: Thought and Action in Design."

More than 40 public officials, practicing professionals, journalists, members of the Harvard Graduate School of Design faculty, and others will participate in panel discussions on various aspects of public policy as it relates to the built environment. Participants include former Massachusetts Governor Francis Sargent, Nebraska State Senator Douglas K. Bereuter, *Boston Globe* architecture critic Robert D. Campbell, and others.

Topics to be covered include "Washington and the Built Environment," "Housing Policy," "Housing Design," "State Government: Where the Action Is," "Designers and Planners as Public People," "National Land Use Legislation: Where It's Been, Where It's Going," "Urban Design and Local Government," "Environmental Protection: What is Protected? Who Pays?" and "Energy-Efficient Design."

"The purpose of the conference," explains Paul Fishman, director of Special Programs at the Harvard Graduate School of Design, "is to bring together public officials and practicing professionals for an exchange of views on the pressing social issues of housing, land use, and energy-efficient design. On one hand, planners and designers need to understand the goals of legislative policy and the problems of administering and evaluating existing programs. On the other, government officials need to hear from planners, architects, landscape architects, and urban designers on the issues and problems of carrying out public policy. In an atmosphere of informal interaction and productive collaboration, the conference will provide an opportunity for officials and practicing professionals to exchange points of view and learn about the problems and issues that each group must confront."

To register for the conference or for further information, write to Patricia McManus, conference coordinator, Harvard Graduate School of Design, Gund Hall 404, 48 Quincy Street, Cambridge, Massachusetts 02138.

Aluminum wire safety target of CPSC investigation

Aluminum wire in the home poses a potential fire hazard, the Consumer Product Safety Commission concluded, in the first step of a possible retroactive ban on installed aluminum wiring systems as a means of forcing manufacturer-paid replacement. The commission indicated, however, that it would not outlaw aluminum wiring in future systems.

Installed in an estimated 2-15 million homes between 1965 and 1971, non-coated aluminum electrical wire has been found to be incompatible with many terminals and connectors in use at the time.

Safety Commission officials differentiate between past and future aluminum wiri issues because they believe th sufficient technology now exi to ensure safe use. The fact th past wiring systems have led electrical failures and fires m mean that wire manufacture negligently brought their pro uct to market before it w ready.

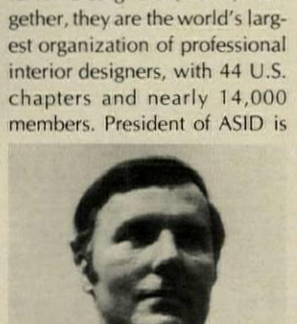
If the end result of upcor ing hearings is forced recall home aluminum wiring sy tems, the electrical manufa turing industry faces total rep or replacement costs in exce of $500 million.

"The hearings are designed generate facts," says a CP staff attorney.—*Roger Guil World News, Washington.*

First conference of ASID held in Los Angeles

In its first conference, in Los Angeles, the newly-formed American Society of Interior Designers (ASID) drew a better-than-anticipated 2000 attendees to its four days of seminars and workshops.

ASID was created last January in a merger of the 44-year-old American Institute of Interior Designers (AID) and the 18-year-old National Society of Interior Designers (NSID). Together, they are the world's largest organization of professional interior designers, with 44 U.S. chapters and nearly 14,000 members. President of ASID is



Norman De Haan (shown above), who heads his architectural firm in Chicago.

In Los Angeles, the 150 or so sessions centered on "perspectives, priorities and profits," with conference keynoter, Walter A. Meisen (below), Acting Commissioner of General

Services Administration's Public Buildings Service. His topic was "Interior Design in the Fed-eral Construction Program."

In the honors area, AS presented its international d sign awards to those who ha provided leadership and/ have made substantial contrib tions toward improving desi standards of the man-made e vironment. Three of the awar went to individuals: for pub office, to Tom McCall, form governor of Oregon and nc professor of political scien and journalism at Oregon Sta University; for private e deavor, to John Entenza, profe sor of architecture and art, U versity of Illinois; for educatio to Reyner Banham, professor architectural history, School Environmental Studies, Unive sity College, London.

In addtion, the delight a fantasy category award went Ontario Place in Toronto, a go ernment-funded, 96-acre c tural and leisure complex three man-made islands in La

Ontario. For urban design, t city of Munich was honored restoring its center as a pede trian mall.

Another ASID present tion—the Thomas Jefferso Award—went to Atlantic Ric field board chairman Robert Anderson (shown above) outstanding contribution to t preservation of America's c tural and national heritage. *Barbara Lamb, World New Los Angeles.*

George Furbeck House

Chauncey L. Williams House

enefit tour of FLLW homes nets $24,000

bout 1300 visitors toured ten omes designed by Frank Lloyd 'right in the Chicago area last ay 24, paying $25 apiece, and elding $24,000 for the spon-rs, the Frank Lloyd Wright ome and Studio Foundation. long with money from the en by Wright" tour, dona-ns of $70,000 will enable the undation to pay its share of e restoration of the Wright udio and home in Oak Park, Following is a brief report of e tour by one of the visitors, ck L. Gordon, an architect in ew York City. The tour in-uded eight houses, the Unity hurch and Parish House, and e Wright studio and house.

was pleasantly surprised to nd how these houses have dapted to new residents and odern times and especially ow well most of them have ithstood the years of use. The ibben Ingalls house designed 1909 is extremely well kept nd seems to have adapted uite well. The character of the ajor spaces such as the liv-g/dining areas—with light alls and oak trim (now becom-g more fashionable)—have een kept intact. Secondary paces have been painted bright olors in contrast.

The Cheney and Heurtley ouses, famous for their interi-rs are excellent examples of Wright's total design philosophy. Richly designed stained glass windows (50 in the case of the Cheney House) are designed with elaborately detailed walls as a unified whole. These designs are complete, allowing no room for embellishment by inhabitants. Most of the original furniture designed for these houses is no longer in existence; thus many of the interiors have been refurnished.

Wright never accepted the radiator as an element of design, and he constantly concealed them in walls behind elaborately designed screens. As a result they were ineffectual. It is not uncommon to see bare radiators added by owners tucked into corners of rooms, as in the Gale House, where one is squeezed alongside the fireplace.

Originally designed with sweeping horizontal lines extending into the landscape and relying on the foliage to continue the design, these houses now stand surrounded by other buildings, and on sites somewhat smaller than originally designed for.

But the people who live in them have assumed the demanding responsibility of maintaining the essential character of their houses, and the very powerful environments created by Wright.

Carnegie-Mellon architecture students win in habitat competition

A team of Carnegie-Mellon University students were the only Americans to win a prize at the International Competition for architecture students, held in conjunction with the World Congress of the International Union of Architects in Madrid, Spain.

The CMU students' project, which was selected as one of 20 finalists from 151 entries, representing 36 countries, was awarded a prize from the U.S.S.R. for their design of "Emergency Habitat." Each entrant designed habitation for up to 2000 people, to meet a need created by a large movement of population, a natural disaster or the establishment of a new agricultural or industrial complex.

The CMU project, consisting of A-frame units built with materials available in the affected area, has been tested in Guatemala and Bangladesh. The models were built with help from Intertect, a Dallas firm doing research and development for relief agencies.

As winners of the Russian Prize, the CMU students have been invited to spend a month as guests of the Soviet Union, touring architecture schools and major landmarks.

CMU architecture students attending the conference were: seniors Howard Graves, Steve Lee and John Whitner; and graduate student Richard Behr. Assistant professor of architecture Volker Hartkopf accompanied them. He and assistant professor of civil engineering Charles Goodspeed headed the project.

Sir Robert Matthew, past president of the IUA, is dead at age 69

In 1946, London had a history of uninspired town planning and could look forward to a future of post-war reconstruction on a low budget. That was the scene when 40-year-old Robert Matthew left his job as senior planner to Scotland's Department of Health to become chief architect to the London County Council. The June 21 death of Sir Robert Matthew has given Britain cause to look back at the works of a man who changed a bureaucratic little office into one of the most admired architectural operations in Europe.

Matthew oversaw the formative postwar years when the LCC's housing and town planning projects "established a high reputation throughout the world," as one official of R.I.B.A. phrased it. The Roehampton Estate was one of many housing and school schemes he undertook.

Matthew, the son of an architect, was born in Edinburgh in 1906. He was one of the first men in the world to sense the urgency of city planning, and his brilliant academic career catapulted him into the job at the Department of Health.

He quickly extended his expertise beyond Britain. In 1945 he represented his country's Ministry of Health on a fact-finding visit to Sweden, and in 1949 he visited the U.S. as a representative of Britain's building industry. By 1961, Matthew had become president of the International Union of Architects and the Commonwealth Association of Architects. "Without his leadership and continuous labors behind the scenes," *The Times of London* recently editorialized, "neither [organization] would have achieved the position of influence it now has."

Although dying, Matthew played a dominant role in the IUA conference this May in Madrid. Shortly before his death, he forwarded a draft declaration, destined for the United Nations, in favor of a Charter for Housing. This declaration begins with the following words: "We the Architects of the world ask all National Governments to make a firm commitment, internationally and nationally, to give the highest priority to policies designed to improve the human environment and to eliminate or control those forces that, in many countries, now work against the proper development of human settlements, from vast conurbations down to scattered and neglected rural communities."

After leaving the LCC in 1953, Matthew was appointed head of the architecture department at the University of Edinburgh, and three years later also went into private practice. He was president of R.I.B.A. from 1962 to 1974, and three years ago he was appointed to advise the national government on design standards. Among his many awards was being an Honorary Fellow of the AIA. Survivors include his widow, Lorna Pilcher Matthew, one son, and two daughters.—*Don Ediger, World News, London.*

Limits to Growth '75 conference set for Houston, October 19-23

Several hundred leading academicians, social scientists, and governmental and corporate leaders from around the world will participate in "Limits to Growth '75" October 19-23 at The Woodlands, a new town near Houston.

The global conference, first of five scheduled biennial assessments of the causes and consequences of limits to growth, is being sponsored by The Club of Rome, whose 1968 growth sessions precipitated substantial new studies on growth; the University of Houston; and Mitchell Energy & Development Corporation.

A highlight of the conference will be presentation at a banquet on Tuesday, October 21, of "The Mitchell Prize" to the top four papers submitted on the limits-to-growth theme. Some 300 papers have been submitted from 30 countries around the world. The $20,000 in biennial prizes are being sponsored by George and Cynthia Mitchell of Houston. Publication of the top 20 papers is planned.

Conference director is John Naisbitt, president of Urban Research Corporation, Chicago, and program director is Dr. Dennis L. Meadows of Dartmouth College. Dr. Meadows directed the team from the Massachusetts Institute of Technology, which devised the "Project on the Predicament of Mankind" resulting from original Club of Rome sessions in 1968.

According to Dr. Meadows, the program of "Limits to Growth '75" has been designed to stimulate an international debate on growth that: 1) Involves many cultures, ideologies, and disciplinary perspectives; 2) Has a long-term perspective; 3) Is geared to the formulation of concrete, practical, constructive initiatives that can be undertaken by current institutions and justified by current knowledge; 4) Undertakes to identify the areas where additional knowledge is required for more informed action later.

Meadows said, "Clearly limits of some sort exist and they are already having a negative effect on the global quality of life. Part of the debate will assume that we do face some limits and will attempt to formulate a response." Remaining meetings will occur by 1983.

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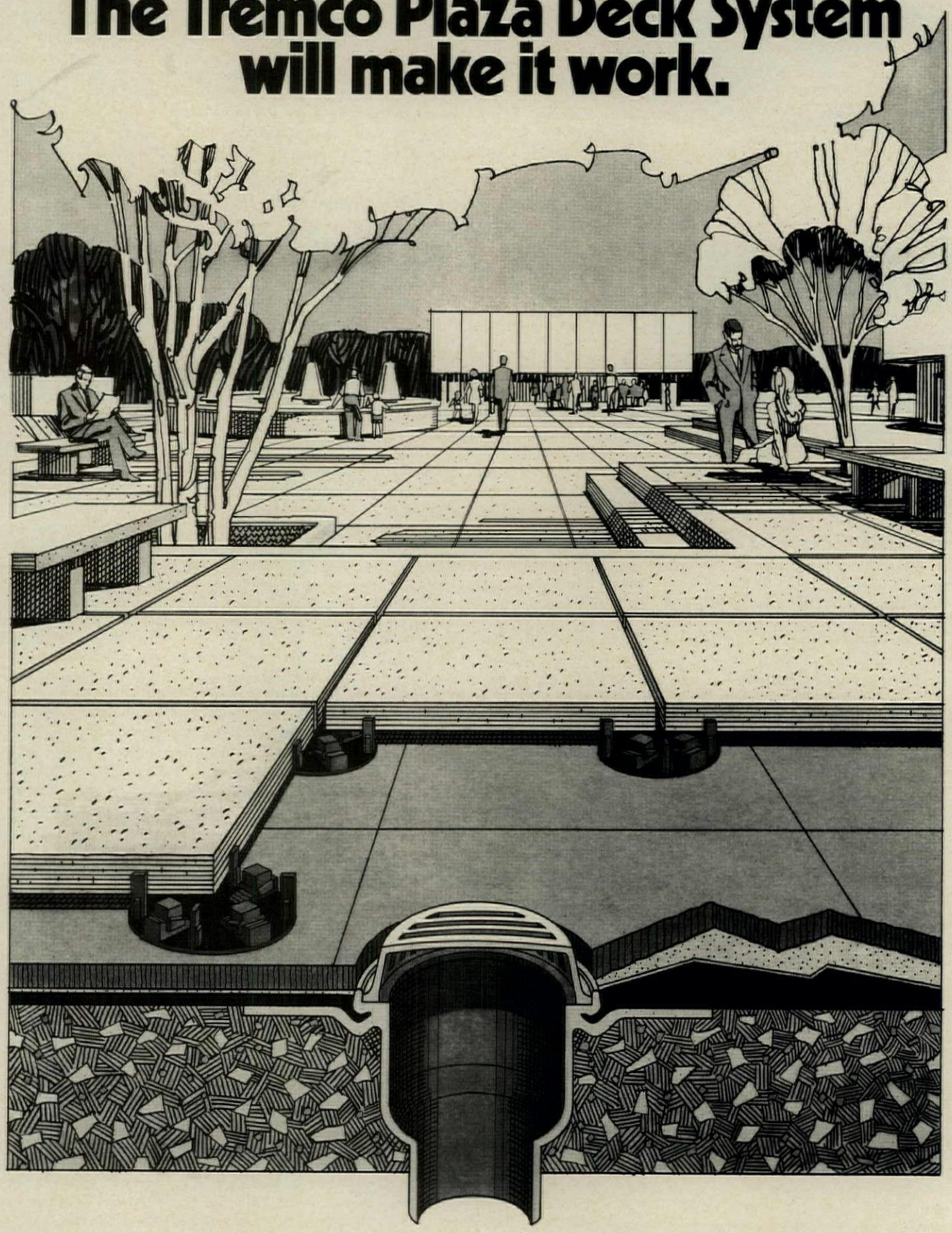

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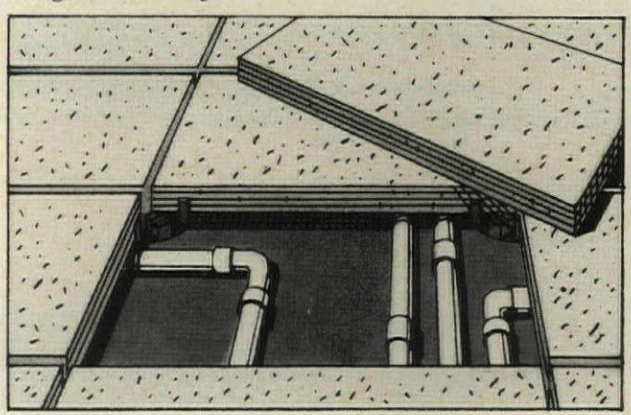

Accessibility is so easy that where codes permit, it's possible to run service cables in the space between the pavers and the slab.

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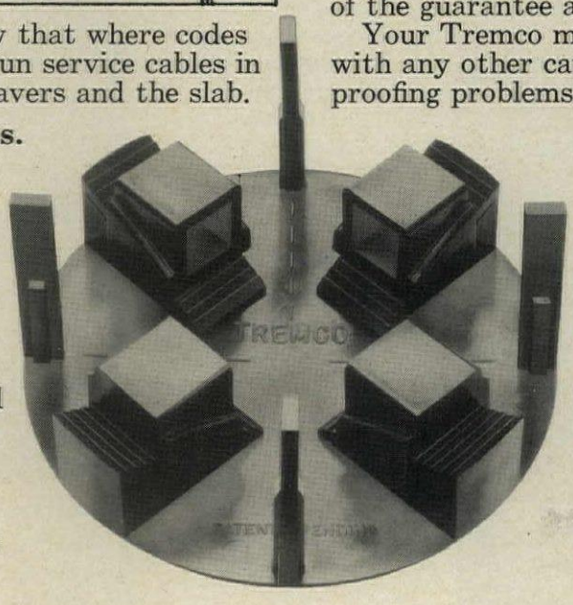

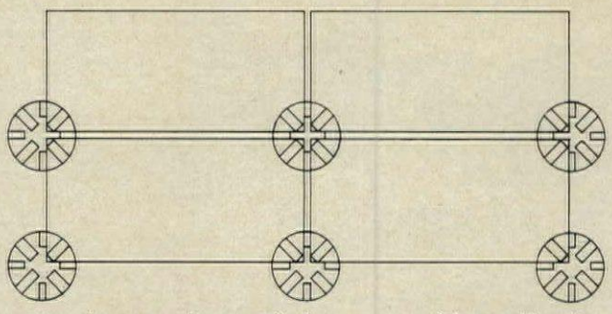

water immersion and, because of its adhesion, it prohibits water migration.

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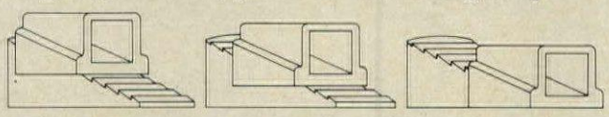

adjustments in 1/16 inch increments to allow for deck or paver irregularities. KingPins can take a tremendous weight load—10,000 pounds on concrete; up to 2,500 pounds on insulation board. They won't rot, crack, melt or absorb water in normal use.

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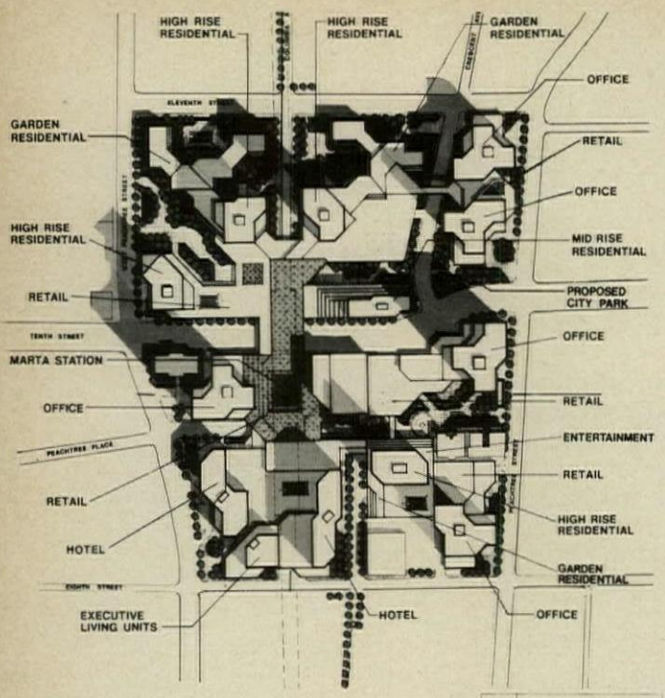
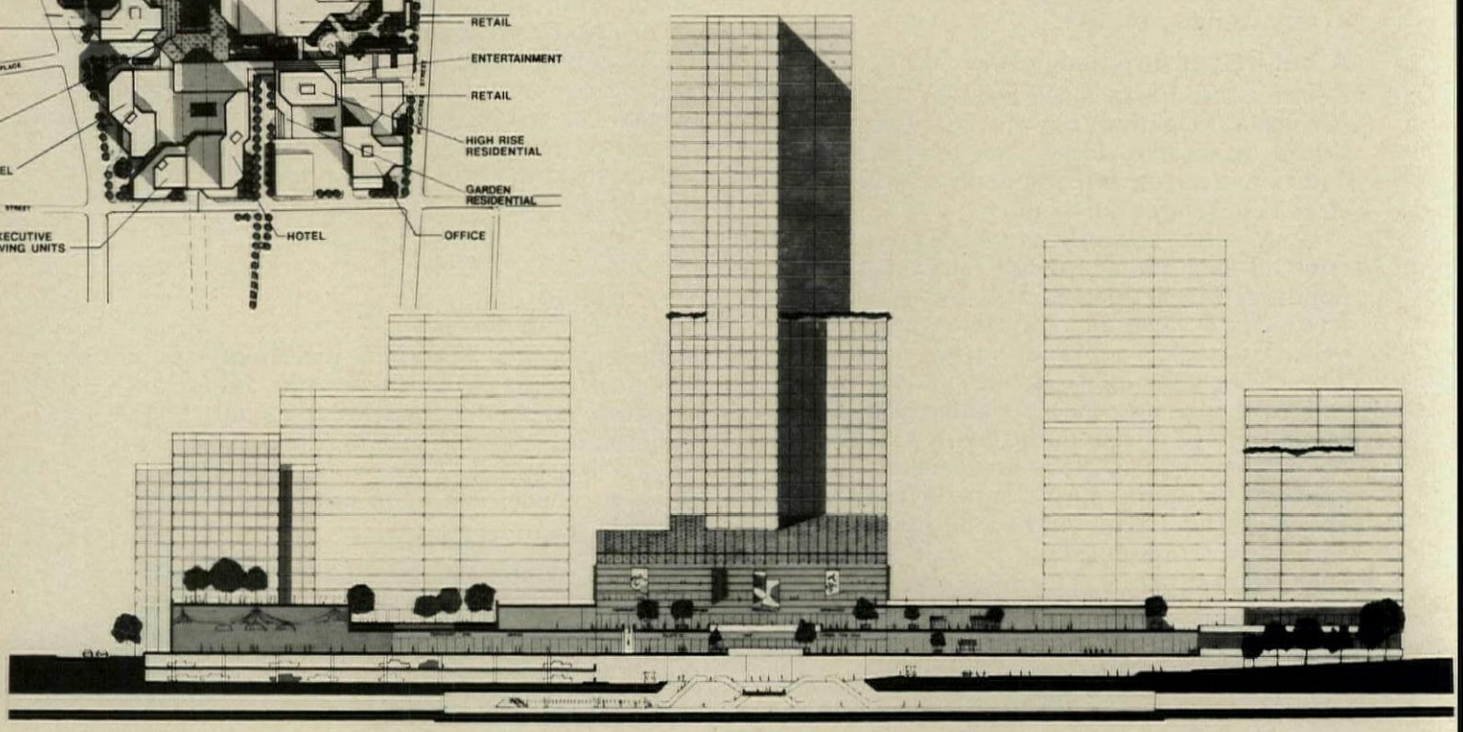
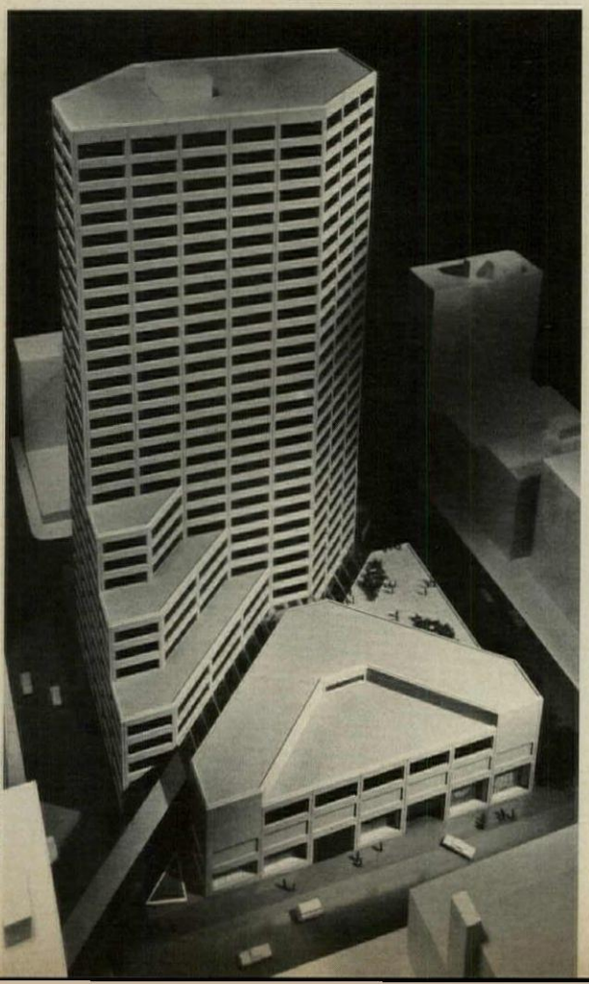
Tenth Street master plan will guide development in downtown Atlanta



NBCS Architects Inc. are the designers of this master plan for 35 acres of mixed-use development during the next 15 years. The plan reflects pedestrian and vehicular circulation networks to and from a MARTA (transit) station, recognizing that the rapid transit system offers design opportunities beyond basic functionalism. A limited air rights development above the station area can provide the economic justification for an elevated plaza to receive and distribute MARTA passengers. Patrons changing transport modes can do so directly on the vehicular and platform levels below the plaza without undue interference from embarking or debarking passengers, and vice versa, according to the archi tects. Commercial and retail ac tivities occurring on the plaz level and above offer opportu nities to shop, browse or sit in sidewalk cafe. Immediatel around the station, all vehicula activity occurs one level belov the plaza on the existing stree Parking will be underground o decked.





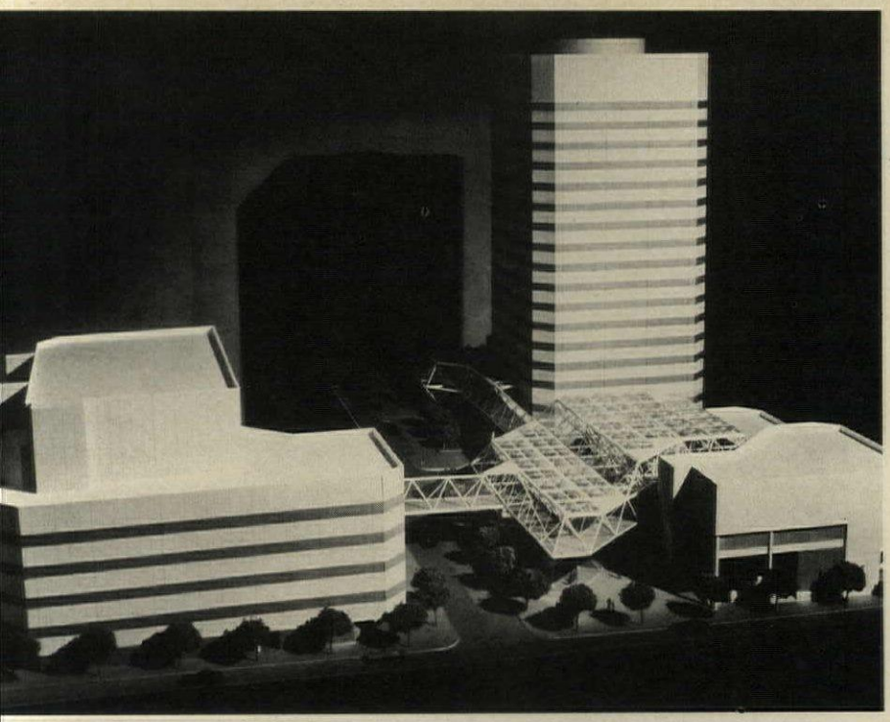
Orlando R. Cabanban

Kansas City complex designed by SOM

City Center Square, a retail and office development designed by Skidmore, Owings and Merrill, is scheduled for completion in late summer, 1976. The 30-story, six-sided building will contain retail and restaurant space on the first four levels, and basement parking. Over 900,000 square feet will be enclosed in the project, with net office space on the various floors ranging from 17,500 to 25,000 square feet. The $30 million project is being financed by the Massachusetts Mutual Life Insurance Company, and McCloskey Development Company is the developer for the project.

Hotel Inter-Continental Sharjah designed by TAC

A 14-story luxury hotel designed by The Architects Collaborative, Inc., will be built in Sharjah, United Arab Emirates, with a planned opening date in 1978. Guestrooms in the 330-room, fully air-conditioned hotel have been designed to view a central garden atrium, the adjacent beach and marina. Elaborate suites on the top two floors are distinguished by shaded terraces, which also share in the superb views.

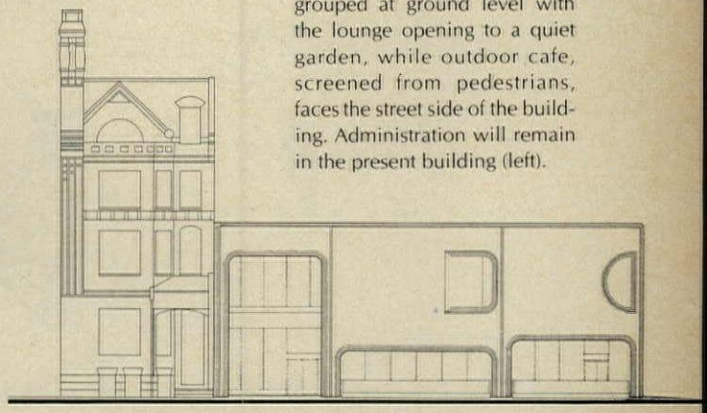


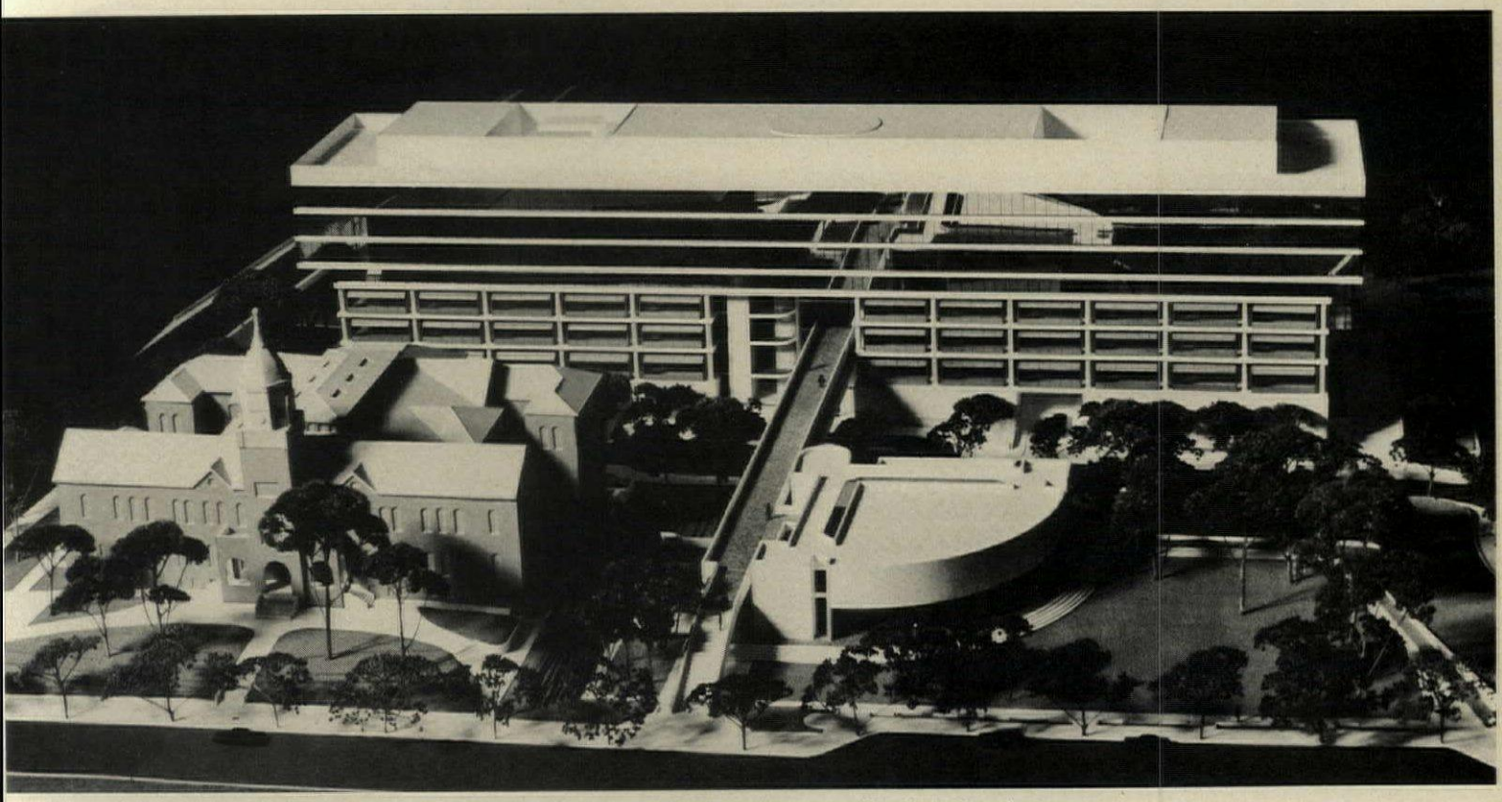
Portland General Electric Company headquarters will open in 1976

Wolff-Zimmer-Gunsul-Frasca Partnership has designed this complex under construction on three waterfront blocks in Portland, Oregon, and scheduled for completion in June 1976. Design consultant was Pietro Belluschi. The project includes an 18-story, 300,000-square-foot office building, a 170,000-square-foot engineering building, and a 45,000-square-foot multi-use facility containing cafeteria, auditorium, restaurants and underground parking. A covered ice skating rink is adjacent to the multi-use building and sky bridges will connect the three structures. Estimated construction cost is $27 million for the entire project.

Addition for senior citizens center

Announcement has been made of the start of this addition to the Philadelphia Center for Older People. Joe J. Jordan is the architect. Social activities are grouped at ground level with the lounge opening to a quiet garden, while outdoor cafe, screened from pedestrians, faces the street side of the building. Administration will remain in the present building (left).





A city-county building in Knoxville by McCarty Bullock Holsaple, Inc.

October has been set for the start of construction for this city-county building in Knoxville, Tennessee. Designed by McCarty Bullock Holsaple, Inc., with Lindsay & Maples, Architects, Inc., the 13-story main building will contain local governments, courts, the sheriff's office and jail, and a four-story garage. An assembly building connected to the main structure with a two-story bridge will seat 700. At a cost of approximately $25 million, the 815,559-square-foot building will be reinforced post-tensioned concrete framed.

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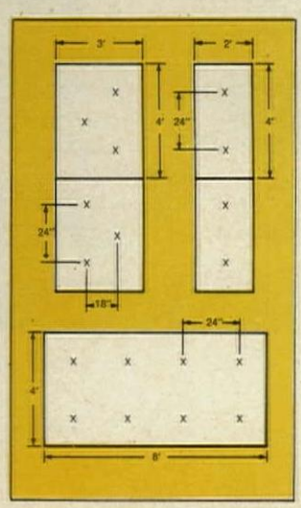

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Five for romance

FIVE CALIFORNIA ARCHITECTS, *by Esther McCoy, with a chapter by Randell L. Makinson; Praeger Publishers, New York, 1975, 200 pages, paperback, illustrations, $9.95.*

Reviewed by Richard Oliver

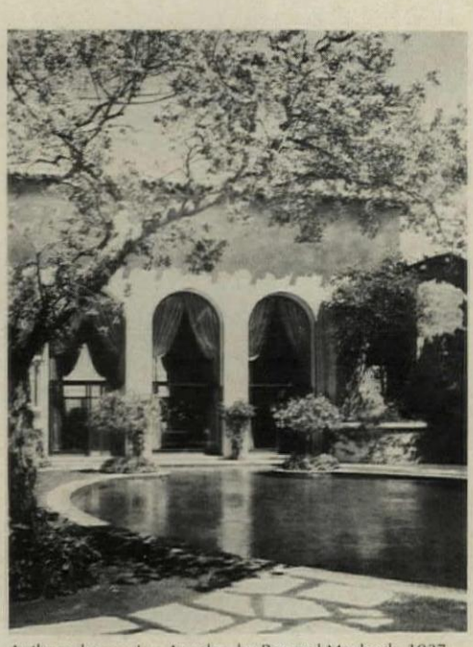
Esther McCoy's *Five California Architects* was first published in hard cover in 1960, with a second printing in 1968. The book has just been reissued in paperback, using the original plates. Few publishing efforts could be more gratefully received. The book is an acknowledged classic—a landmark study of an extraordinarily fertile period in American architecture. The hard-cover version has been virtually impossible to find for several years, but now a whole new generation of architecture and California buffs will have the pleasure of becoming acquainted with the work of five architects—Bernard Maybeck, Irving Gill, Charles and Henry Greene, and R. M. Schindler—each of whom developed works of lasting importance, inextricably related to a time and place nearly as remote to us now as Eden: California in the early years of this century.

The book is divided into four essays, three by Mrs. McCoy, with the essay on the Greene brothers by Randell Makinson. The essays discuss each man's origins, and work, and place each into a cultural context. Although the essays are solid and scholarly, the book as a whole is relaxed and easy to read. The collection of photographs is remarkable, both for the clarity of detail, and for the capturing of a sense of place. Since the original publication of Mrs. McCoy's book, there have been published complete books on Schindler and the Greene brothers. Although there are often rumors about a forthcoming book on Maybeck, none has appeared, and he and Gill are still most completely chronicled to date by Mrs. McCoy.

Books and their points of view, like buildings and their meanings, are locked in time. Mrs. McCoy wrote her book in 1956-58. As Bob Dylan reminded us, "the times they are achangin'," and indeed, they have changed. Since the point of view of this "new" paperback is nearly two decades old, I think it is fascinating to consider how well it has withstood the test of time. That is, what was the book saying to us in 1960, and what does it seem to be saying to us in 1975?

In 1960, in California, Modern architecture was an established fact. The San Francisco Bay region was the site of a lively vernacular based on simple wooden building forms, while the Southland was the site of an adventurous building program, sponsored by *Arts and Architecture* magazine, called the Case Study Program, which was producing a collection of formidably Modern houses. Mrs. McCoy's book served to suggest that Modern architecture had not been imported, fully developed and packaged, from Europe, but had instead developed earlier and indigenously on California soil (albeit by immigrant architects), and was a rational response to California's climate and modern way of life.

Richard Oliver is an architect who practices in New York and is currently at work on a book about Southern California architecture.



Anthony house, Los Angeles, by Bernard Maybeck, 1927

Blacker house, Pasadena by Greene and Greene, 1907

Wolfe house, Catalina Island, by R. M. Schindler, 1928

In 1975, by contrast, the buildings included in Mrs. McCoy's book come off, to a one, as remarkably romantic, redolent of "long ago and far away," simultaneously possessed of a sense of *déjà vu* and *dernier cri,* deeply mysterious, and evocative of an easy, almost idyllic way of life.

How is this possible? How could buildings which looked (at least to this writer) so provocatively Modern in 1960, seem so romantic in 1975? How could architectural pioneers suddenly seem so eclectic? Partly because of a shift in architectural interests: as Modern architecture moves from the realm of the avant garde to the realm of conservative orthodoxy, and as the various literary efforts of the Modern movement appear more and more like aggressively hard-sell advertising for new products of unproved worth, it becomes easier to examine architectural works for meanings and intentions other than how well they participate in some elaborate preface to mid-century Modern. Partly, also, because of the times: the 1970's are quite different from the late 1950's. This is a period of little new building, a period of reevaluation in almost every aspect of American life. It is a natural time to look at what one has, and has had. There is more involved than the current nostalgia craze.

Mostly, the answer to the above questions can be found in Mrs. McCoy's initial choice to write about these particular five architects. Why these five? As with the recently notorious *Five* (New York) *Architects,* one wonders what is the common thread that unites the group—the criteria for being included or excluded. Unlike *Five Architects,* it does not appear to be a question of style, inasmuch as the five Californians developed personal styles quite different from each other. Nor is it a question of a narrow time period, since Schindler did not even arrive in California until after the best work of the other four had already been completed.

There are, I believe, two criteria which link these five architects. First, the work of

continued on page 45

The design accent is on natural beauty..

Top: Environmental Education Center, Berkeley, Calif. Architect: Irwin Luckman
Middle: Interior accent walls and skylight surrounds of Shakertown 8' Barn Shake Panels.
Bottom: Shake panels wrap around walls and blend in with lush wooded setting.

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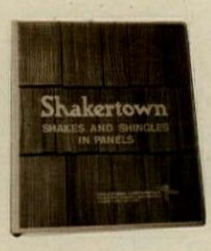

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REQUIRED READING *continued from page 43*

each seemed to anticipate or participate in the movement and experiments generally known as Modern architecture. Second, even though none were born or trained in California, each man made his way to the Coast, devoted most of his professional life to the place and was caught up in and flowered with the California Dream. In 1960, the first criterion was given pre-eminence as the basis of the five's reputation. Today, I think it is the second criterion that is the most vital and interesting link. Let us look at each in turn.

The work of the Five exhibits qualities that were held in high regard in the late 1950's: formal and structural invention, experimentation with space and natural light, use of new materials and techniques, integral relationships of indoor and outdoor space, and rational responses to new patterns of living. If one believed that Modern architecture, albeit a regional version, was one key to a better quality of life, one quite naturally would be interested in identifying that work which marked the most dramatic changes from old to new. So, here is Bernard Maybeck, granddaddy and guiding light of Bay Region architecture, exploring sophisticated spatial possibilities and off-the-shelf industrial projects; Charles and Henry Greene, whose houses and furniture were designated with "honesty" and great care, suggesting a view of life which was simple and chaste; Irving Gill, whose forms reminded everyone of Adolph Loos (although the connection was specious) and whose experiments with new structural techniques (tilt-up concrete) and social idealism seemed consistent with all the manifestoes; and Schindler, whose Lovell Beach House, and Cubist houses of the 1930's were as *au courant* as any contemporary work in Europe. What nobody seemed to face up to in 1960 was what Mrs. McCoy also pointed out—that each man was poetic and mystical by nature. So here, as well, is Maybeck, whose work was replete with melancholy Beaux Arts fantasies; the Greenes, whose houses revealed their fascination with oriental mysticism; Irving Gill, whose buildings submerged in vines were recollections of the mission ruins; and Schindler, whose own house on the Kings Road was a non-architectonic garden way-station on the road to Eden.

Although the evidence of architectural pioneering is clearly present in the Five's work, such an emphasis is, I think, totally inadequate. It misses altogether the specific richness of each man's work. What does link the Five in a way that captures the fullness of each is the second criterion, the realization that each man became "Californiated." That is, each man became immersed in and gave expression to the California Dream—the romantic image of California as Eden, a garden-like, non-architectonic Arcadia, a place where the climate is benign, anything will grow, and life is characterized by health, simplicity, and contentment. Now the California Dream is, to be sure, concocted—from Indian-Hispanic legends, romantic novels like *Ramona,* Manifest Destiny, a boom mentality, and plain old hard-sell ad-

continued on page 47

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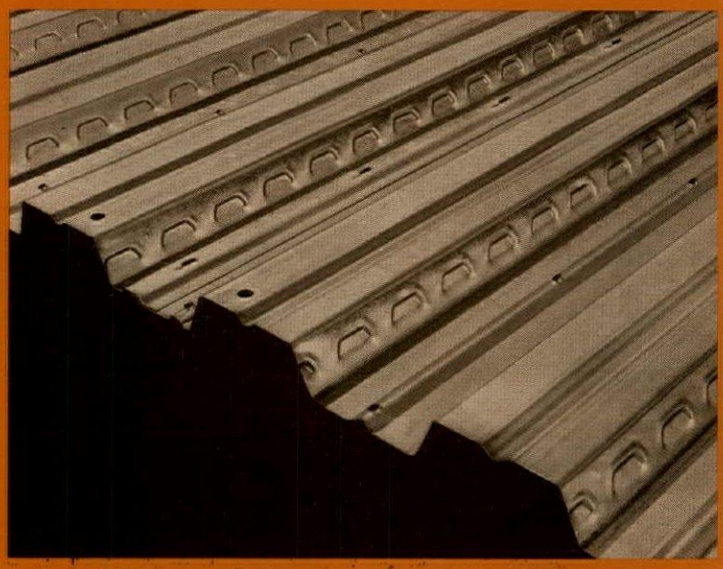

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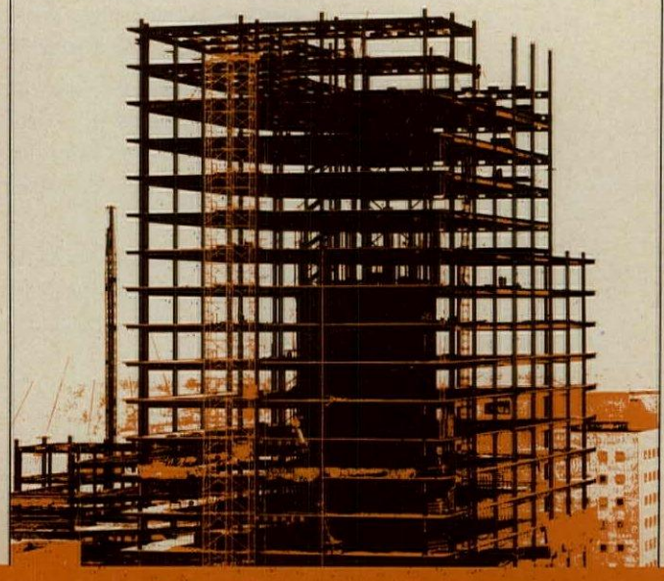

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REQUIRED READING continued from page 45

vertising—and like any romantic view of life, is somewhat "Pollyannic," attempting to gloss over the ambiguities of the natural landscape and the darker, rather evil side of California. But the dream, with its sense of freedom from traditions, spiritual renewal, and talismanic importance of the outdoors, was certainly part of the cultural "landscape" in which the Five worked.

The over-all impression of the Five's work that emerges most clearly from a current reading of Mrs. McCoy's book is how forthrightly functional problems were solved within a contest of evocative and subtle architectural situation. The work displays a sense of connection with the past (legendary as well as real) and with nature (idealized as well as actual), combined with a keen sense of invention. These connections between formmaking and mythmaking about the land and the past are, I believe, at the heart of California architecture, and at the heart of the work of the Five.

Smith house, Santa Barbara, by G. W. Smith, 1920

A corollary to asking what it is that links these five architects is to ask if anybody has been left out. Are there other early California architects of special quality in which these connections between forms and myths exist? I think there is at least one: George Washington Smith. An essay on Smith is sorely missed. Viewed from 1975, Smith's work seems indistinguishable in intention or quality from the Greenes, Maybeck, or Gill. Viewed from 1960, however, Smith must have seemed a totally committed eclectic, whose brilliant Mediterranean-style buildings must have seemed hopelessly traditional. I suspect that Smith was exluded because his work didn't seem to fit into the Modern biases of the 1950's, and because, unlike Maybeck, Smith did not have any obvious descendents within the Modern Movement. The omission of Smith seems to suggest that the Spanish Colonial Revival (or Mediterranean Style, as it was often called) had nothing to do with contemporary California architecture, which is not at all the case.

California, as a place and as an idea, still seems to claim a special hold on the national imagination. There have been endless books and movies about California, and more will come. But, as Joan Didion points out, "the truth about the place is elusive, must be tracked with caution." Mrs. McCoy's book does not pretend to be a definitive statement. Rather, it was in 1960, and still is today, just about the most wonderfully rich and provocative introduction possible to a subject of continuing interest.

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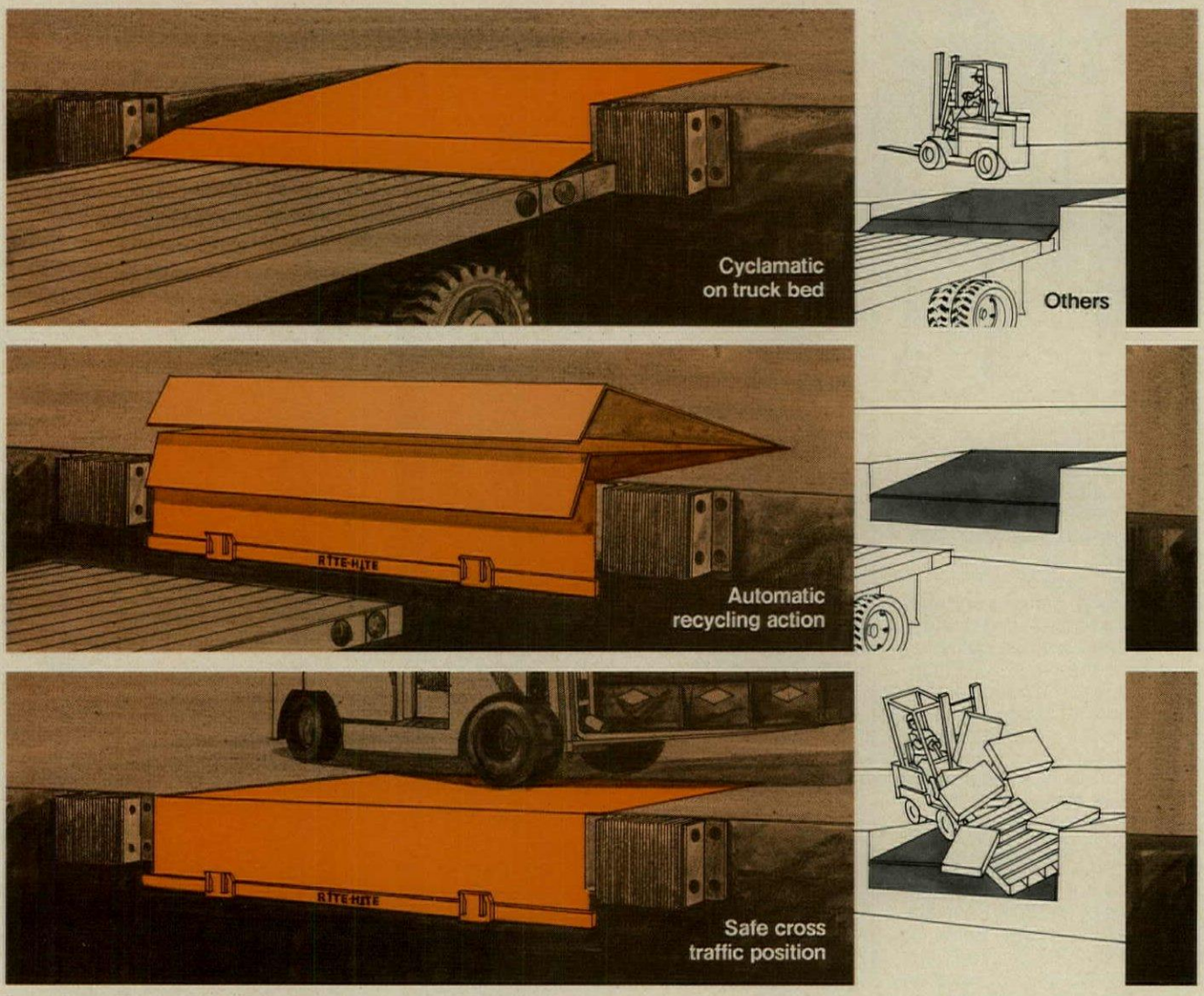

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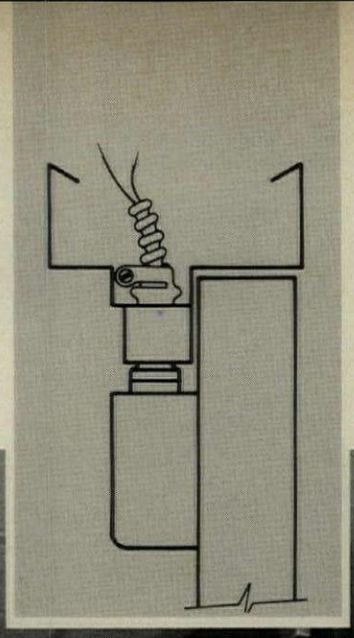

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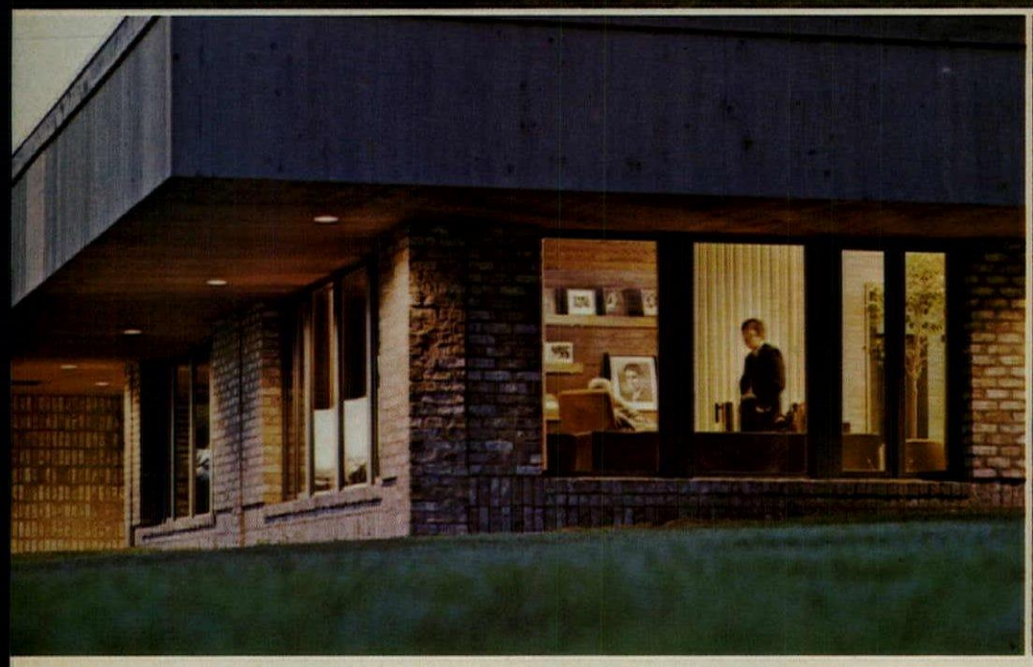

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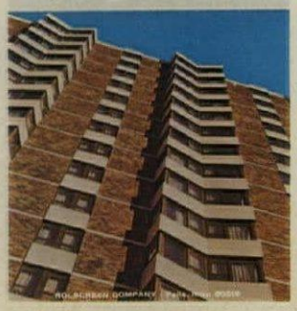

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Evaluating materials handling systems for hospitals

Hardware and management systems for handling an increasing volume and variety of materials in hospitals are becoming more and more complicated. And the opportunities for costly overkill—or under-design, for that matter—can have serious consequences in lost efficiency, impaired techniques and wasted money. It is extremely important for hospitals considering new construction, modernization or even reorganization programs to apply every pre-planning, evaluation and management technique—not only to a broad base of sophisticated (but not always compatible) hardware, but to operating and management decisions that affect both life-cycle costs and building configuration. The following is an analysis of some of these considerations by Edward A. Schachinger, manager, Transportation Systems, Amsco Systems Company.

Automated bulk or cart-size materials handling systems have gained in popularity since 1968. As of mid-1975, approximately 50 automated and 250 semi-automated cart handling systems have been sold throughout the United States. In addition to these are thousands of small-load or message-type systems and nearly 200 trash and soiled linen systems. Most of these systems are working well, but some have fallen victim to their original lack of planning and analysis, to poor management, or to misapplication of system components. Automated systems have been applied where semi-automated systems would have been successful and semi-automated and manual systems have been included in institutions that had a definite need for more mechanical assistance. Fragmentation, defined as the attempt to operate systems composed of noncomplementing hardware components, has caused failures in otherwise well conceived applications.

The word "system" has often been misused and applied to only the hardware and not the total scope. Hardware itself should be nothing more than the tool used to implement the over-all material management program. We can associate the selection of materials handling hardware simply with picking the right tool for the job.

Establishing a materials handling and management program by plan requires a disciplined methodology. These programs have been developing out of a changing state of the art. Reports have been written and published by almost every authority including the U.S. Government. Documents, articles and papers have covered materials handling in every way from the narrow view of a single installation to the summation of activities of entire regions. They have studied the movement of a single commodity and they have investigated the 70 or so general product categories and the thousands of items those categories represent. They have praised automation and condemned it. A few of the reports have taken a middle-of-the-road, semi-automation stand, and a few have acknowledged that the integration of hardware into a building program requires special and individual attention.

Materials handling and materials management literally link the hospital's services and communications to its primary concern of delivering quality healthcare. The thousands of different items required at various times throughout the institution must be acquired, stored, processed and delivered before use, recycling or final disposal.

A seemingly simple decision regarding reusable and/or disposable items dramatically emphasizes the requirement for good planning. If the planning team decides to handle a disposable line, it also must decide what provisions are to be made for acquisition, storage, retrieval and disposal. How is the product to be delivered to the user and by whom? How is it inventoried and charged? How will it be disposed of once used? And most importantly, what fall-back scheme is available to the hospital if these items become too expensive to buy or are no longer offered? Can space be made available for the storage, processing and transportation of the "reusable" alternate?

One thing is certain, with the radical change in the state of the art of available hardware subsystems, and with the upgrading changes in hospital techniques and requirements, most of the previously documented studies can do little more than provide guidelines and formulas for new reports. Their findings have been all but outdated. This phenomenon will probably persist, since a planning and construction cycle of 50 to 70 months for completion of a building does not allow a truly intensive historical analysis—especially when hardware and software conventions are changing rapidly. It is mandatory, nevertheless, that every hospital be thoroughly and accurately studied and planned in its own physical and management environment.

Evaluating the system's costs and benefits

Let's investigate what it is that we are actually trying to achieve through the establishment of a materials handling or materials management system. A proper blend of manual simplicity and automated sophistication should yield benefits that can be best categorized as quantitative and qualitative. The quantitative benefits are those that can be directly associated with dollar savings such as reduced inventories, lower labor costs, decreased space requirements, and controlled operating costs. Quality benefits are those that cannot show an immediate dollar relationship, but are obviously improvements, such as improved asepsis controls, better employee morale, increased management control and, most important, better patient care.

Benefits of early planning include a number of potential savings that may not be obvious. When automation is planned it almost always results in a decrease in labor force. Locker and interchange room space requirements are reduced. A smaller number of parking spaces may suffice. Life support systems such as lighting and air handling can be minimized when automation replaces people in tunnels or interstitial spaces. The relative economics of conventions (such as exchange carts, surgical case carts and centralized decontamination) change and *may* become more practical when automation is available. Conversely, added space, equipment and expertise will be required in the engineering and maintenance areas if automation is to work well.

The impact of most mechanically assisted transport systems on utility and energy costs is usually moderate. In most medium-sized buildings, an increase in electric bills of about $16,000 per year can be expected if automated movement is used instead of manual.

You can estimate the impact on your project by remembering that there are 746 watts to 1 horsepower. Average traction elevators use motors rated at approximately 25 horsepower and are used a weighted, equivalent average of about 5 hours per day, which works out to 93.3 kwhr. At six cents per kwhr, the cost would be about $5.60 per day, not counting any energy put back into the system by some modern elevators. Properly planned, automated, horizontal movement systems in standard chassis configurations will usually require .08 to .15 hp per cart moved. Most hospitals will have an average of .9 to 1.2 cart movements per bed per day vertically and 1.1 and 1.5 cart moves per day horizontally. Automated cart washers consume 20 to 30 hp for variable times of operation.

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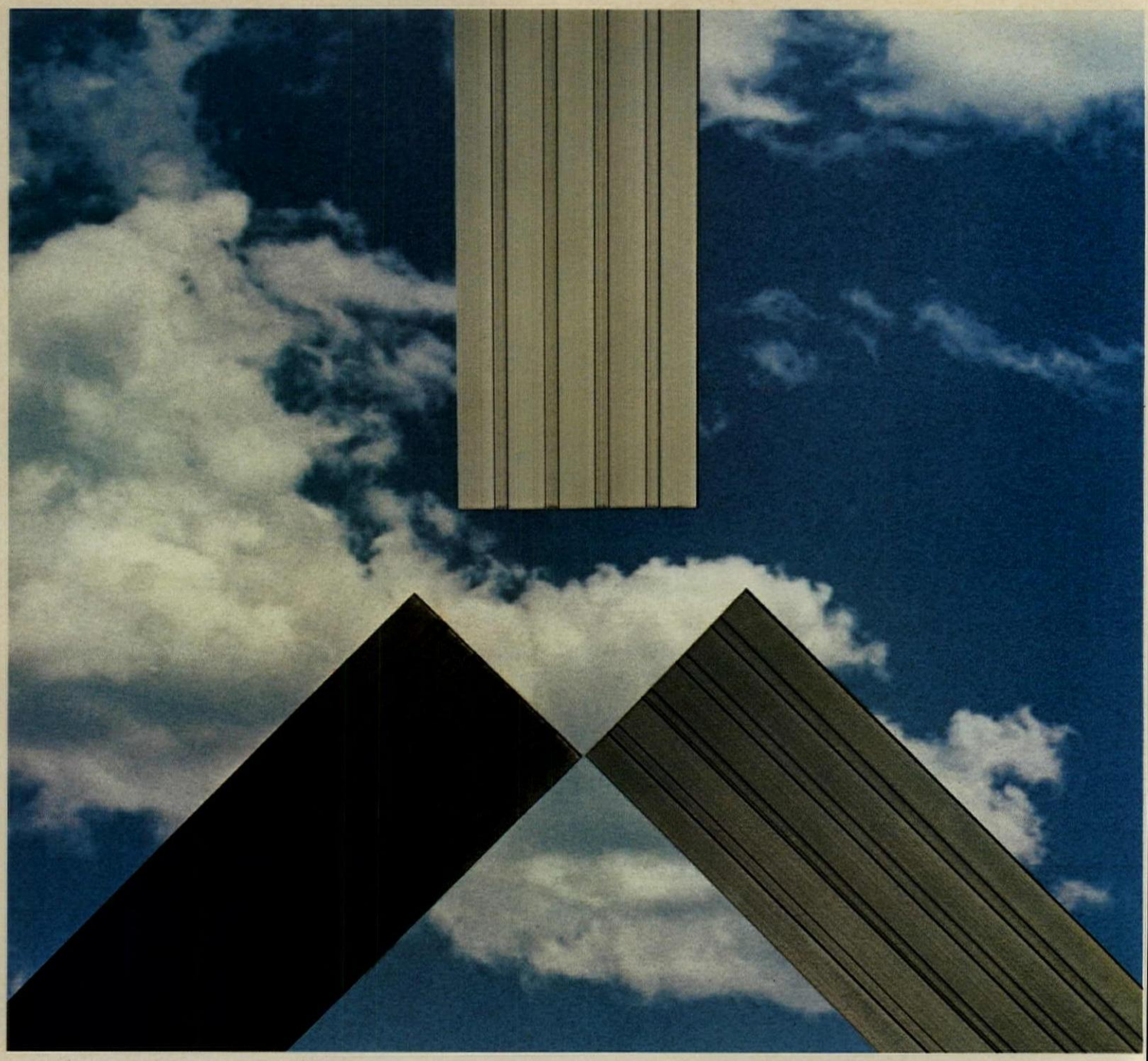

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(continued from page 55)

Approximately 55 per cent of the average hospital's expenses are for payroll, and current trends will increase this appreciably. Healthcare is and will continue to be a labor-intensive service, but the actual amount of labor expended from one hospital to another for equivalent services differs considerably. For example, the number of employees per bed in U.S. hospitals averages over 3.2 in the larger institutions but some of the more modern and systemized hospitals have claimed figures of 2.3 and less. Part of the impact of such an obvious saving in operating cost is minimized today because of current reimbursement procedures of Medicare and other programs. With the advent of national health insurance and other such programs, it will be even more critical for hospitals to control these expenses. Those institutions that are at the higher end of the cost scale in their geographic area may find it necessary to make drastic budget reductions in order to receive full reimbursement and avoid financial losses. A domino effect may occur at this point, since the necessary reduction in costs at these institutions would lower the over-all average upon which reimbursement rates are based. This will penalize hospitals in the next lower tier.

A noteworthy benefit of early cost effective planning has immediate advantages in pre-construction financing. Good materials management programs and handling systems can be used to show financial sources that new construction or modernization projects can be feasible. Two New York City hospitals demonstrate this principle. Both were faced with a possibility that they could not prove they were capable of repaying the mortgage or loan money needed for new construction.

The Lutheran Medical Center in Brooklyn, New York, was planning to renovate and move into an old abandoned industrial type building. Gutting and rebuilding this existing structure was going to save nearly $10,000,000 and a full year in construction time. The site and building, located near the Brooklyn waterfront, are not ideal for a 532-bed hospital, but can be adapted. The five floors cover a full city block and each measures approximately 200 by 700 ft. Some 386 clean cart movements were programmed, plus 261 soiled returns. The 647 cart moves and the related cartwashing and drying was going to require approximately 32 full time equivalent employees. A true average cost of nearly $15,000 per year per employee added to an estimated $400,000 cost for additional freight elevators and ancillary equipment added up to trouble. It was easy to see that the burden of materials handling was going to adversely affect the hospital's feasibility. Instead of accepting this, the administration and their architect, Rogers, Butler & Burgun, with the aid of consultants and vendors, designed a materials handling system to eliminate this high operational cost.

Life cycle cost studies indicated that the $2,000,000 spent for an automated overhead rail system would save the hospital over $4,000,000 in 20 years. They presented their plans and were given the go-ahead and money to proceed with the program.

At the other hospital (not named because negotiations are still in progress) early studies show that by adding nearly $3 million to their $60 million construction budget and reorganizing the ancillary and service departments into centralized materials management, a yearly savings of over $500,000 could be realized. This is neither typical nor an assured result. It simply shows that full life cycle analysis and management techniques can sometimes pilot a project safely through the shoals of first-cost shock.

Systems are solutions to problems of program and design

As stated before, studies have historically run the gamut from proving that total automation is the only way to go, to proving that totally manual systems are best. Obviously, the answer will probably lie somewhere between these two extremes for most institutions. One of the most crucial abilities in the analysis procedure is to be able to sort the actual problem from resultant symptoms. For instance, accumulation of material in passageways and corridors is not the problem; it's only a symptom of the fact that adequate storage and retrieval areas are not available. This same premise holds true for other symptoms such as nursing staffs performing non-nursing duties, idle equipment and labor time, crowded working conditions, general discontent and poor safety conditions.

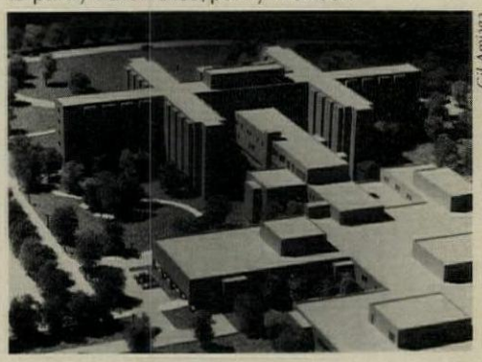
Many problem solving methods are used today. One of the most successful has been popularly called the team approach. Focusing the minds of many planners and designers on any problem increases the range of possible solutions in a synergistic fashion. Teams for hospital planning have historically included the hospital administrator and his staff, the hospital consultant, specialized consultants and, of course, the architects and engineers. Recently, also, there has been wide acceptance of including vendors with special disciplines and broadline capabilities. No one knows equipment potentials and limitations as well as the manufacturers.

Steps in an approach to systematic planning, analysis and implementation might be as follows:

1. Establish objectives and scope including financial and physical limitations.
2. Determine financial feasibility.
3. Commission in-depth operational studies and analysis.
4. Develop operational plans.
5. Establish systems concepts and overviews.
6. Develop hardware functional requirements.
7. Establish facilities requirements.
8. Refine and adjust systems.
9. Provide management interface.
10. Get total systems approval.
11. Select hardware subsystems and grouping.
12. Perform a systems precheck and traffic analysis.
13. Perform a final financial and feasibility analysis.
14. Accept firm proposals.
15. Negotiation and acceptance.
16. Installation.
17. Education.
18. Systems acceptance.
19. Start-up.
20. Systems audit.

You'll note that the key skills operative for the team vary from step to step, and the selection of hardware for the system is not made until a substantial amount of work and planning is done. It is absolutely necessary for the groundwork to be laid before systems hardware is even considered.

One of the basic approaches to providing balanced material distribution systems is to break down the over-all system into its fundamental components. Then analyze (separately) each of the vertical and horizontal transport segments of the system. You might find that where a totally automated system had been planned, it would be advantageous to change to partly automated/partly manual.



Gil Amiaga

Mixed automated-manual system uses tunnel under central spine at St. Joseph Mercy Hospital.

St. Joseph Mercy Hospital, Ann Arbor, Michigan—a 588 bed project designed by The Eggers Partnership, N.Y.C. (James Hamilton Associates, Hospital Consultants)—epitomizes the potentials of investigating different levels of automation for the various segments of material flow. Early surveys showed a distinct advantage for a fully automated, horizontal and vertical cart system over currently available alternates including manual. The cost for this system was approximately $750,000. During the development of the project, a new hardware capability of automatic horizontal shuttle movement was put on the market. This capability was brought to the attention of the materials management department of the hospital who instructed the architects and consultants to work with them in investigating this new possibility. The new alternate was analyzed using automatic horizontal through a 500 foot tunnel and standard service elevator for the vertical movement. The systems hardware cost was under $400,000 with an operational cost penalty of approximately $22,000 per year, mostly the cost for manning the service elevator. Potentials for automatic vertical transportation would be maintained to allow for changes in technique, conventions and/or labor rates, which could affect the justification analysis. This new alternate was analyzed and accepted.

How to tell when feasibility is assured

There are no hard rules that can be used to tell when automation should be employed. Final

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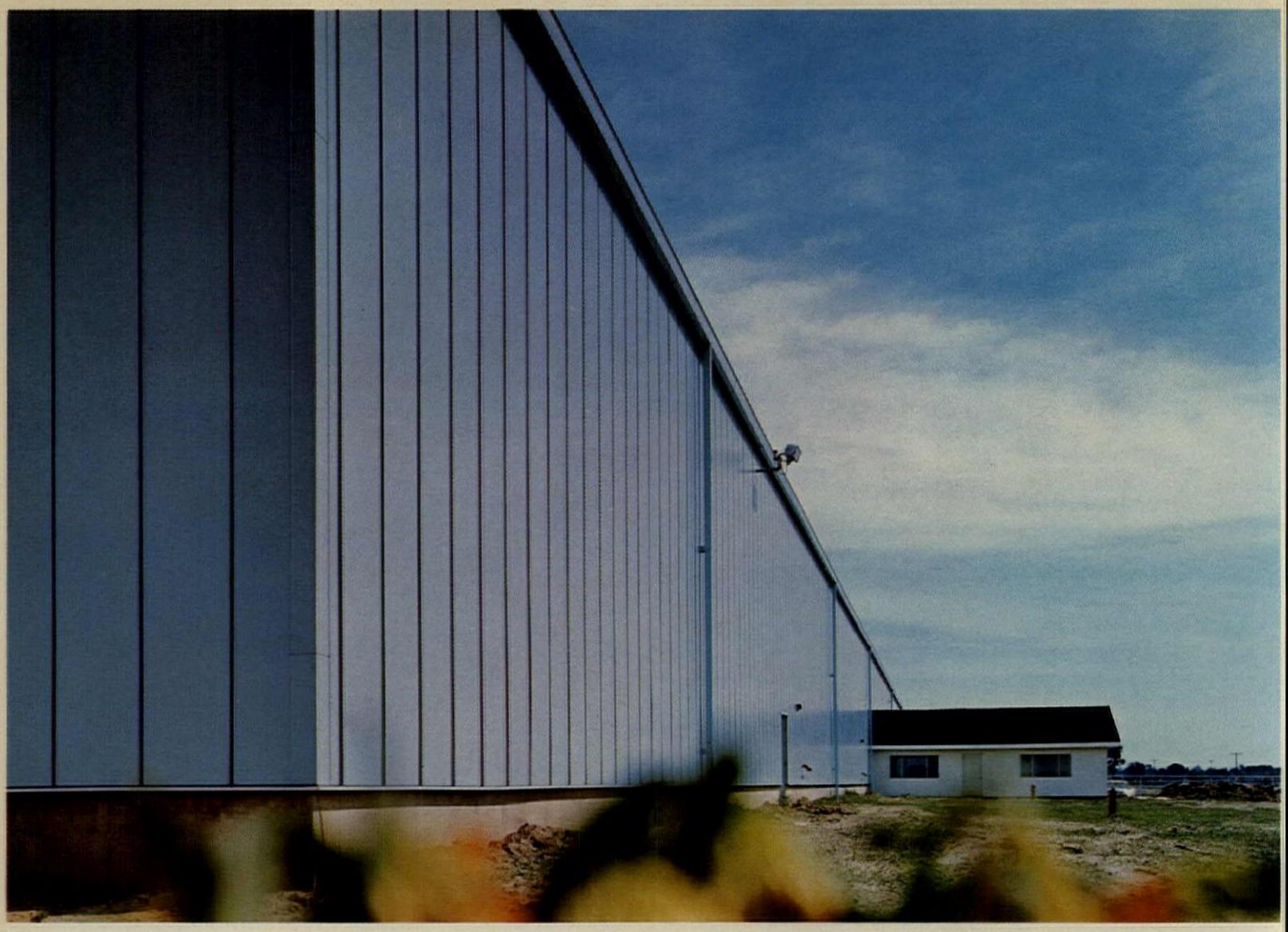

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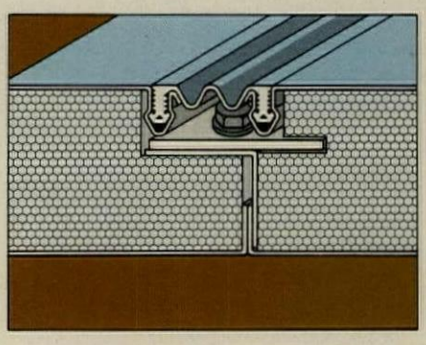

Furthermore, these panels come in lengths up to 30 feet, can be easily erected from the outside with self-tapping screws. The fasteners are concealed with extruded vinyl gaskets. These panels allow work on more than one wall at a time, which can reduce erection costs. Aluminum's well-established durability helps keep maintenance low. And in the event of some mishap, a damaged Economy Panel is easily replaced.

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answers can be determined only after traffic, physical limitation and financial impact studies have been completed. However, after analyzing hundreds of projects, a general pattern has evolved. The following chart may be considered a rule of thumb guide to the selection of handling systems. It is based on current hardware technology and costs.

Comparative feasibility of various systems

Bulk/cart size movement		with		Message*/unit size movement	
No. beds	Manual	Semi-auto.	Auto.	Manual	Auto.
75-125	A	C	D	A	C
125-175	B	B	C	B	B
175-250	B	A	C	B	A
250-300	B	B	B	B	A
300-400	C	B	A	C	A
400-500	C	B	A	C	A
500-600	D	C	A	D	A
600-750	D	C	A	D	A
750-	D	C	A	D	A

A. Almost always most feasible—must be considered.
B. Usually feasible—should be considered.
C. Occasionally feasible—minor consideration.
D. Rarely if ever most feasible.
*Hard copy.

The financial impact study should typically include a comparison of at least the three to five main distribution alternates. Life cycle costs and/or rates of return are computed for each to pinpoint the most attractive one. Care should be taken to avoid three common pitfalls. They are:

1. *Demanding a specific payback period for the investment.* This theory preaches that unless something pays back in a certain number of years don't buy it. Mistakes are easy to make with this formula since excellent rates of return or life cycle cost improvements are never considered. For instance, you might decide that a 3-year payback will be obtained or a system will not be purchased. Assume for a moment that a system is offered at a $1 million one time cost—with a life expectancy of 15 years. It saves $250,000 a year. If you apply the 3-year payback rule, you do not include the system in your plans. Of course, in this simple and obvious comparison, not buying would cause an increase in operating costs of $2,750,000 over the useful life of the system.

Life cycle cost comparisons must be made. Some of the factors that should be included are:

- Investment costs including the cost of money;
- Maintenance and overhaul costs;
- Operating labor;
- Utility costs;
- Housekeeping costs;
- Space and construction costs;
- Salvage value of purchases.

A point to remember in preliminary justification is that high interest rates will adversely affect large capital cost alternates. Conversely, high inflation factors will severely penalize labor-intensive operations. Therefore, all comparisons should be "sensitized" with various interest and inflation rates to obtain a broader range of possibilities upon which to make a final decision.

Popular variations of materials handling hardware and subsystems

	System characteristics					Rating scale for:			
	Horiz. speed, fpm	Vert. speed, fpm	Vol. cap., cu ft	Wt. cap., lbs	Stor. & Ret. Mode	Mgmt. contl.	Asep. contl.	Clean Del.	Soiled retn.
Carts—manually pushed	120	0	40	1000	MAN.	2	2	2	2
Tote boxes—manually carried	150	0	6	35	AUTO.	2	2	2	1
Freight elevators—man.	0	AR	800+	AR	MAN.	2	2	2	2
Selective vertical conveyor	80+	80	3	40	MAN.	3	3	3	2
Tray conveyor and lift	80	80	2	15	MAN.	3	3	3	2
Tow trucks—man.	440+	AR	2000	5000	MAN.	2	2	3	3
Tow trucks—driverless	440	AR	2000	5000	AUTO.	3	2	3	3
Box carrier—powered, trac.	100	100	1	20	MAN.	5	4	4	1
Pneumatic tube—4"	2500+	2500+	.05	2	MAN.	5	4	3	0
Pneumatic tube—6" spec. pur.	1200+	1200+	.143	4	MAN.	5	5	4	1
Pneumatic tube 8" & larger	1200+	1200+	.3-1.0	25	MAN.	5	5	5	1
Pneumatic tube trash and/ or linen	2000+	2000+	3.5	35	MAN.	5	5	0	5
Tote box conveyor	150+	80	4	35	AUTO.	4	3	3	2
Cart size dumbwaiter Man.	0	AR	28	500	MAN.	2	2	2	2
Dumbwaiter—auto. Load cart	25	AR	28	500	MAN.	3	3	4	4
Elevator—auto load Cart	25	AR	40	1000	MAN.	3	3	4	4
Overhead monorail powered—auto	200	100	18	220	MAN.	5	4	4	4
In-floor tow conveyor, auto	60	AR	40	1000+	MAN.	4	2	3	3
Overhead power & free rail—auto	40	AR	32	800	AUTO.	5	5	5	5
Driverless electric car—auto	88+	AR	34	800+	MAN.	5	5	5	5

Note: All figures are representative of physical and practical limitations. AR = As Required. Rating scale: 5 = excellent; 4 = good; 3 = above average; 2 = average; 1 = not practical or too limited; 0 = no present capability. Ratings are based on: application, suitability, speeds, cleanliness, reliability, capacities and management control advantages.

2. *Not annualizing true costs will provide a distorted picture of obtainable benefits.* Generally, non-Government hospitals do not purchase major equipment items out of available funds. They almost always raise capital through loans, mortgages, or bond issues. Therefore, the costs for the first year of a $1,000,000 system does not start at the purchase price but is only the amount of principal and interest paid. First-year savings in expenditures or operating costs may be available even on the largest of purchases.

3. *When dealing with phased projects that provide justification for only the simplest of systems during the early stages, you must give consideration to ultimate requirements.* Architectural restrictions should not prevent the inclusion of mechanical assist systems when the building program expands to a point where automation is necessary to cost effective materials management.

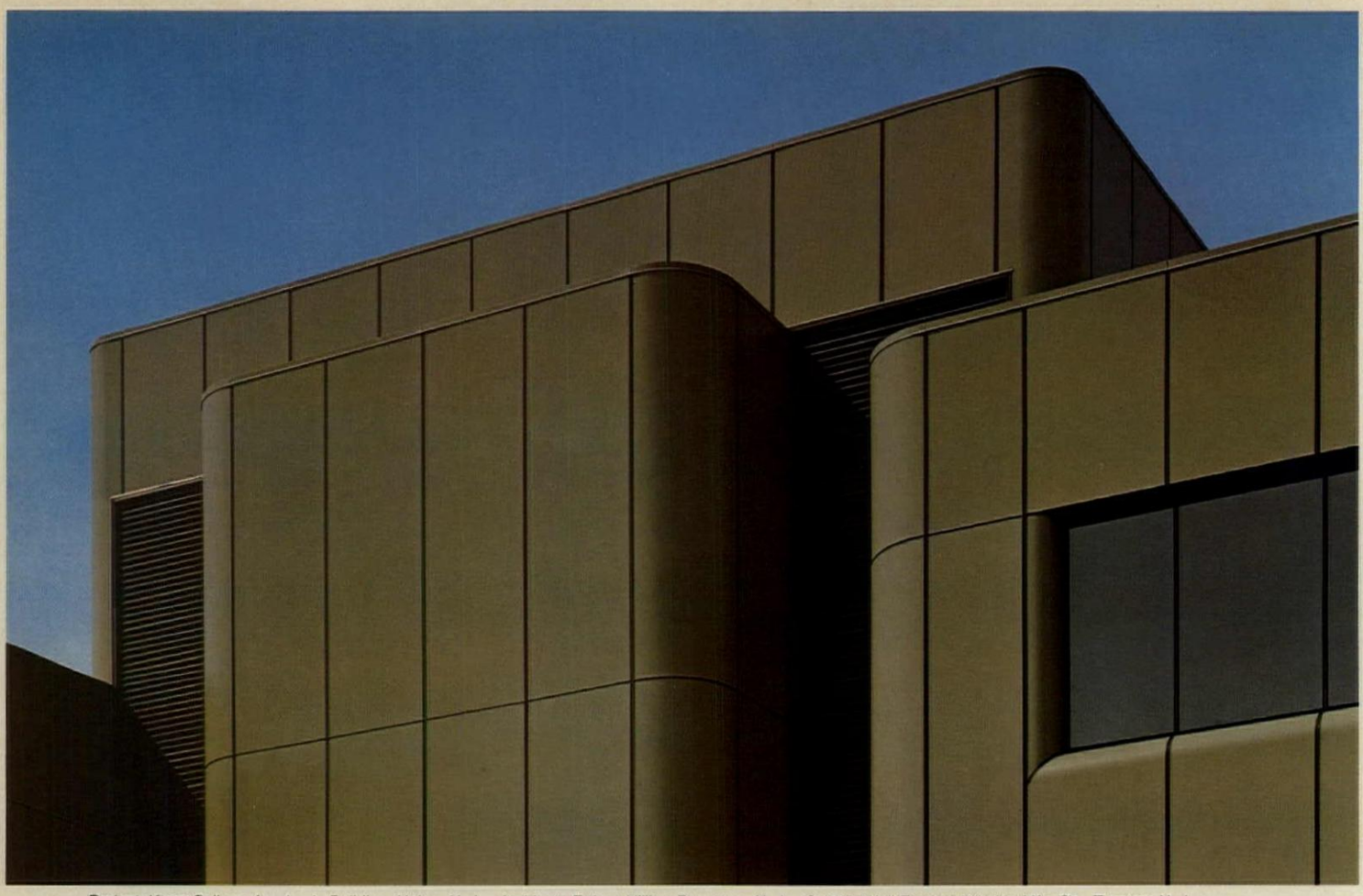
What to consider in hardware specifications

General characteristics and applicability of various systems are shown in the accompanying chart. A serious problem that must be overcome in including hardware systems in building projects is vendor selection. Most systems available on today's market are virtually proprietary—if not generically proprietary at least in application. For instance, there are three vendors in the hospital field of what is called overhead power and free conveyor systems. A recent competitive situation revealed a space requirement differential of some 13,000 square feet between two of the bidders. Fortunately, the architect, Robert M. Bradbury, Jr., AIA, had foreseen this potential problem. Proposals were accepted and a vendor was selected on a design competition basis a full year before construction started. Almost all of the space savings were put to practical use. An identical approach was used by S. I. Morris Associates with similar good results for the Memorial Hospital System, Houston, Texas.

One method of systems design competition uses a performance or functional specification to define the parameters and requirements of a system. It allows different vendors to employ different hardware solutions to solve the problems. "Not to exceed" prices are submitted and the vendor with the most cost-effective program is retained to act as equipment vendor and (it is to be hoped) consultant to the building design "team." This pre-bid technique ensures close coordination in the final architectural design, engineering and implementation of the over-all system. Few, if any, functional problems should appear during the life of the system selected this way, since adequate time was allowed for traffic studies and systems adjustments prior to the installation phase. Drawing changes are also held to a minimum, since no surprises occur after the working drawings have been completed.

Systems design competitions have been accepted, in lieu of standard bidding procedures, for projects in New York, Texas, Michigan, Tennessee, Washington, D.C. and other localities. A quick check of the funding sources and authorities in your area should be made before this procedure is used since it may not be accepted. If it is permitted, it may be the best method of guaranteeing a smooth project.

—Edward A. Schachinger



Project: Keen College Academic Building, Union, N. J. Architect: Robert Hillier, Princeton, N. J. Curtain Wall Erector: Whelan Mfg. Co., Trenton, N. J.

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Average costs of theaters

The following is a cost analysis and space planning guide for Theaters.

Building system	Average $/SF	Average % Tot	High $/SF	High % Tot
Site improvement	$ 3.61	6.6	$ 4.52	7.7
Foundations	1.50	2.7	1.50	2.5
Floors on grade	1.10	2.0	1.10	1.9
Superstructure	5.43	9.9	5.43	9.2
Roofing	1.12	2.0	1.12	1.9
Exterior	4.88	8.9	6.10	10.4
Partitions	2.75	5.0	3.44	5.9
Wall finishes	1.56	2.8	1.95	3.3
Floor finishes	1.51	2.7	1.68	2.9
Ceiling finishes	.92	1.6	1.16	1.9
Conveying systems	1.35	2.4	1.51	2.6
Specialities	2.02	3.7	2.25	3.8
Fixed equipment	5.45	10.0	6.06	10.3
HVAC	6.76	18.7	8.46	14.4
Plumbing	1.98	3.6	2.20	3.8
Electrical	6.56	12.0	7.29	12.4
General conditions	2.97	5.4	2.97	5.1
Total	$51.47	100.0	$58.74	100.0

Following is a general space planning guide.

Theater area	SF range
Lobby	1000-1500
Coat room	200- 400
Box office	150- 400
Seating	8 SF per seat
Orchestra pit	800-1000
Projection room	200- 300
Stage	2400-5400
Green room	400- 700
Dressing rooms: star	120
Single	80
multiple	50 SF per occupant
Flat storage	800-1000
Shop	1500-3000

To allow for circulation, services and structure, add 30 per cent to the total area obtained from the values given above. *John H. Farley*

INDEXES: September 1975 1941=100.00 (except as noted)

Metropolitan area	Cost differential	Current Indexes non-res.	residential	masonry	steel	% change last 12 months
U.S. Average	8.5	494.6	464.4	486.0	473.9	+ 7.75
Atlanta	7.5	593.9	560.0	582.4	570.8	+ 5.11
Baltimore	8.5	550.9	518.0	540.1	524.9	+ 4.31
Birmingham	7.3	446.7	416.1	434.1	432.0	+ 8.11
Boston	9.0	493.4	466.3	490.8	475.4	+ 6.33
Buffalo	9.1	543.4	510.4	534.5	519.7	+ 6.97
Chicago	8.3	549.8	522.8	529.6	522.5	+ 4.83
Cincinnati	8.8	527.6	496.7	514.1	501.1	+ 6.87
Cleveland	9.0	526.8	495.9	517.1	503.4	+ 5.33
Columbus, Ohio	8.2	509.4	478.4	502.2	488.2	+ 6.62
Dallas	7.9	495.7	480.1	486.6	478.2	+ 7.58
Denver	8.4	539.3	507.4	531.9	518.6	+11.34
Detroit	9.8	563.6	536.9	573.3	549.7	+ 6.68
Houston	7.4	455.4	427.7	443.7	435.5	+ 8.72
Indianapolis	7.8	446.1	419.0	436.6	426.2	+ 8.01
Kansas City	8.7	490.3	463.4	481.4	473.0	+10.36
Los Angeles	8.5	561.8	513.7	544.8	532.9	+ 6.26
Louisville	7.6	481.6	452.3	469.1	460.8	+ 4.83
Memphis	8.4	509.7	478.7	490.0	481.5	+ 9.55
Miami	7.9	508.5	484.5	494.0	483.1	+ 6.78
Milwaukee	8.7	565.9	531.5	557.7	542.9	+10.45
Minneapolis	8.9	522.6	491.7	515.2	503.3	+ 9.36
Newark	9.0	489.4	459.7	485.5	472.7	+11.95
New Orleans	7.5	472.5	446.2	467.0	455.3	+ 5.90
New York	10.0	539.2	501.4	528.1	516.0	+ 5.32
Philadelphia	9.1	540.4	514.9	537.4	522.9	+ 7.18
Phoenix (1947 = 100)	8.2	292.8	275.1	284.6	278.3	+ 9.98
Pittsburgh	8.9	483.4	454.9	479.6	464.1	+ 7.05
St. Louis	8.7	506.9	478.6	502.5	491.1	+ 8.41
San Antonio (1960 = 100)	7.6	189.6	178.1	186.6	181.7	+ 7.54
San Diego (1960 = 100)	8.7	210.7	198.0	206.8	201.4	+ 8.18
San Francisco	9.6	735.0	672.0	726.2	705.1	+10.60
Seattle	8.6	487.8	436.7	482.3	463.5	+ 7.88
Washington, D.C.	8.4	489.3	459.6	480.5	467.6	+11.51

Cost differentials compare current local costs, not indexes, on a scale of 10 based on New York

Tables compiled by Dodge Building Cost Services, McGraw-Hill Information Systems Company

HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL NON-RESIDENTIAL BUILDING TYPES, 21 CITIES 1941 average for each city = 100.00

Metropolitan area	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974 (Quarterly) 1st	2nd	3rd	4th	1975 (Quarterly) 1st	2nd	3rd	4th
Atlanta	321.5	329.8	335.7	353.1	384.0	422.4	459.2	497.7	544.8	555.2	556.7	573.5	575.0	583.8	585.3		
Baltimore	285.7	280.9	295.8	308.7	322.8	348.8	381.7	420.4	475.5	516.3	517.8	532.8	534.3	538.7	540.2		
Birmingham	265.9	270.7	274.7	284.3	303.4	309.3	331.6	358.3	402.1	405.5	407.0	419.7	421.2	438.6	440.1		
Boston	257.8	262.0	265.7	277.1	295.0	328.6	362.0	394.4	437.8	455.1	456.6	461.0	462.5	484.1	485.6		
Chicago	311.7	320.4	328.4	339.5	356.1	386.1	418.8	444.3	508.6	514.2	515.7	528.1	529.6	539.2	540.7		
Cincinnati	274.0	278.3	288.2	302.6	325.8	348.5	386.1	410.7	462.4	484.5	486.0	498.6	500.1	518.0	519.5		
Cleveland	292.3	300.7	303.7	331.5	358.3	380.1	415.6	429.3	462.2	490.3	491.8	508,0	509.5	516.6	518.1		
Dallas	260.8	266.9	270.4	281.7	308.6	327.1	357.9	386.6	436.4	453.7	455.2	476.4	477.9	488.3	489.8		
Denver	294.0	297.5	305.1	312.5	339.0	368.1	392.9	415.4	461.0	476.1	477.6	508.5	510.0	530.4	531.9		
Detroit	284.7	296.9	301.2	316.4	352.9	377.4	409.7	433.1	501.0	519.5	521.0	537.2	538.7	554.4	555.9		
Kansas City	256.4	261.0	264.3	278.0	295.5	315.3	344.7	367.0	405.8	435.6	437.1	443.4	444.9	481.1	482.5		
Los Angeles	297.1	302.7	310.1	320.1	344.1	361.9	400.9	424.5	504.2	514.3	515.8	531.3	531.8	546.7	548.2		
Miami	277.5	284.0	286.1	305.3	392.3	353.2	384.7	406.4	447.2	467.6	469.1	484.6	485.5	499.5	501.0		
Minneapolis	285.0	289.4	300.2	309.4	331.2	361.1	417.1	412.9	456.1	469.7	471.2	487.1	488.6	513.9	515.4		
New Orleans	256.3	259.8	267.6	274.2	297.5	318.9	341.8	369.7	420.5	437.5	439.0	440.6	442.1	463.5	465.0		
New York	297.1	304.0	313.6	321.4	344.5	366.0	395.6	423.1	485.3	497.4	498.9	513.8	515.3	524.1	525.5		
Philadelphia	280.8	286.6	293.7	301.7	321.0	346.5	374.9	419.5	485.1	495.7	497.2	517.0	518.5	531.5	533.0		
Pittsburgh	267.0	271.1	275.0	293.8	311.0	327.2	362.1	380.3	424.4	443.7	445.2	464.1	465.6	475.2	476.7		
St. Louis	280.9	288.3	293.2	304.4	324.7	344.4	375.5	402.5	444.2	458.7	460.2	475.2	476.7	497.5	499.0		
San Francisco	368.6	386.0	390.8	402.9	441.1	465.1	512.3	561.0	632.3	647.1	648.6	671.0	672.5	716.0	717.5		
Seattle	268.9	275.0	283.5	292.2	317.8	341.8	358.4	371.5	424.4	437.8	439.3	448.7	450.2	472.5	474.0		

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

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Fabricator: J-C Products Corporation Applicator: Midway Glass Company

Project: Professional Building for Stebbins & Scott, Fort Pierce, Florida
Architect: Stebbins & Scott, A.I.A. Fabricator/Installer: Construction Specialties, Inc.

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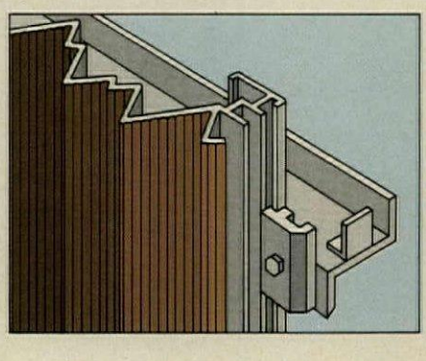

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The Federal Government and hospital construction

This review of the Health Services Act by economist Henry Arnold adds perspective (and some unavoidably redundant detail) to the article by architect George Mann in this month's Building Types Study.

Reports that the Hill-Burton Program, which has long been an important source of Federal assistance for hospital and other health facilities construction, is dying or already is dead (". . . the medical facilities construction program is being terminated." *The Budget of the United States, 1974)* are, at the least, premature. The following year's *Budget* indicated that the gun had been jumped:" . . . termination of the medical facilities construction program *is again being proposed."* (Emphasis added.) And this year's *Budget,* along with the "National Health Planning and Resources Development Act of 1974" (signed by President Ford in January), confirmed that Hill-Burton lives although its focus is clearly changing: "A revised construction assistance activity will focus Federal support on the modernization of existing facilities and the construction of outpatient facilities."

In August 1946, President Truman signed the "Hospital Survey and Construction Act," popularly known as the Hill-Burton Program after its sponsors. It authorized Federal grants to states for two purposes: to survey health needs and develop plans for the building of hospitals and public health centers and to assist in the financing of hospitals and other health care facilities. The Hill-Burton Program was designed to alleviate a shortage in health care facilities by encouraging the states to determine their more pressing health care needs and then helping them financially in constructing hospitals and other facilities to meet those needs. The sponsors also hoped that a better distribution of facilities would result—that is, poorer, rural areas would be favored.

To reflect changing health needs, the Hill-Burton Program has changed since 1946. For instance, the proportion of persons over 65 years old has risen throughout the post World War II era. Older people's needs include nursing homes as well as hospitals, so the Program was broadened in 1954 to provide grants for the construction of nursing homes and rehabilitation centers. Ten years and many new Hill-Burton-aided hospitals later, the Program's focus shifted and a 1964 amendment authorized a new grant program for modernization and replacement of hospitals and other health care facilities. Finally, in 1970 the Act was amended to provide assistance to neighborhood health centers and alcoholism treatment facilities and it assigned priority to areas that had "relatively small financial resources"—permitting the Federal share of a project's cost to go as high as 90 per cent in poverty areas.

What sort of record has the Hill-Burton Program posted? Most observers would probably agree that it has been a good one. Certainly the statistics are impressive: Roughly $4 billion of Hill-Burton funds have gone to build, modernize and rehabilitate nearly 11,000 health care facilities costing over $13 billion. Overall, two out of three Hill-Burton projects have been for the modernization of existing hospitals and other health care facilities. And, more interesting, the trend has clearly moved from new hospitals to modernization. For example, in 1948 over 80 per cent of general hospital projects were new construction. By 1950 modernization accounted for more than one-half and in 1971 for 96.5 per cent of Hill-Burton projects.

Finally, since those states that had shortages of health care facilities probably were those with lower average incomes, then Hill-Burton would seem to have been successful in providing a better distribution of these facilities. With a few exceptions, such as Alaska (a special case), all states that had per-capita incomes below the nationwide average received larger than average per-capita allotments of Hill-Burton funds. For example, Mississippi, the lowest income state, received the highest per-capita allotment of funds over the years. High income states like Connecticut, California, New York, Illinois and New Jersey all received low amounts of Hill-Burton funds.

The Act President Ford signed last January amends the "Public Health Services Act" by adding two titles: "Title XV—National Health Planning and Development" and "Title XVI—Health Resources Development." (The Hill-Burton Program is Title VI of this Act.) Why did Congress amend the law again? Essentially Congress was dissatisfied with the health care delivery system in the U. S. It recognized that "The achievement of equal access to quality health care at a reasonable cost is a priority of the Federal Government." Congress felt that "massive" infusions of Federal dollars had failed to achieve "an adequate supply or distribution of health resources" and, therefore, "it is the purpose of this Act to facilitate the development of recommendations for a national health planning policy, to augment areawide and state planning for health services, manpower, and facilities, and to authorize financial assistance for the development of resources to further that policy."

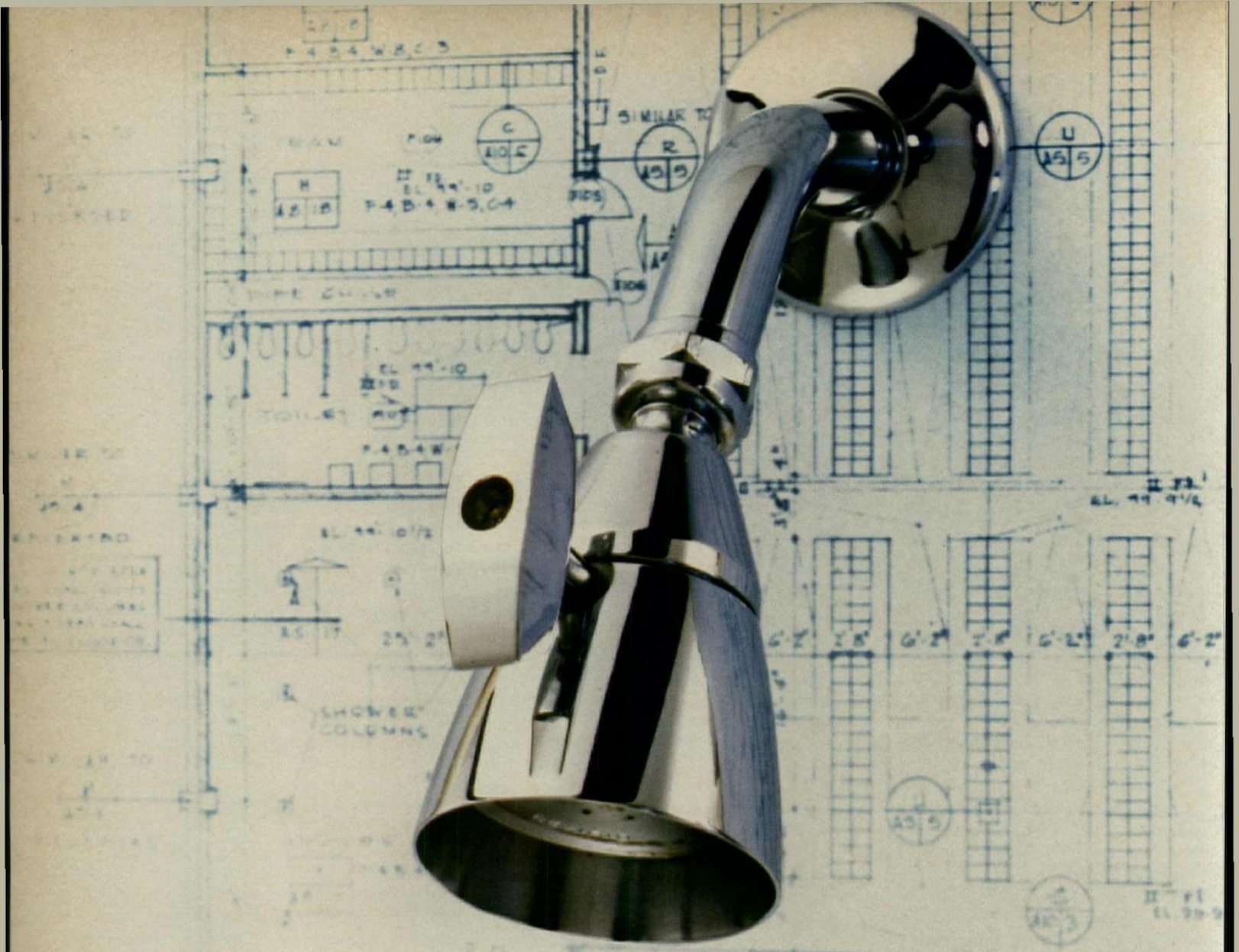
Title XV could be described as the planning and coordination part of the law. It creates a network of Health Systems Agencies that are charged with "improving the health of residents of a health service area," (geographic areas that are defined in detail by the Act). These Agencies should increase the accessibility and improve the quality of health care in their areas, while "restraining increases in cost" and "preventing unnecessary duplication of health resources." Other sections of this title require HEW to issue guidelines on national health planning, authorize grants for state health planning, provide technical assistance for Health Systems Agencies and provide impetus for other planning efforts.

Title XVI takes over the functions of the Hill-Burton Program and changes its emphasis somewhat. Its purpose is to provide assistance, loan guarantees and interest subsidies for: "1) modernization of medical facilities; 2) construction of new outpatient medical facilities; 3) construction of new inpatient medical facilities in areas which have experienced . . . recent rapid population growth; and 4) conversion of existing medical facilities for the provision of new health services." To provide Federal assistance to carry out the above, the Act authorizes $390 million for the three fiscal years through 1977 (Hill-Burton funds) of which 22 per cent must go to projects that will eliminate safety hazards or avoid noncompliance with state or other accreditation standards.

What does all this mean for health facilities construction? Direct Federal Government assistance will probably decline somewhat. However, this loss may be offset by indirect aid resulting from an open-ended feature in the new law: construction and modernization loans are authorized in "such amounts as may be necessary."

Other factors weigh more heavily in the outlook for hospital construction. The quarter century impetus that the Federal Government gave to construction has just about eliminated major shortages of health facilities. In fact, there is evidence that in some parts of the nation hospitals are not being fully utilized. Although the proportion of people over 65 years old is still increasing, total population growth has slowed. Taking all these factors into account, it's unlikely that hospital construction will set many records in the next few years.

Henry C. F. Arnold



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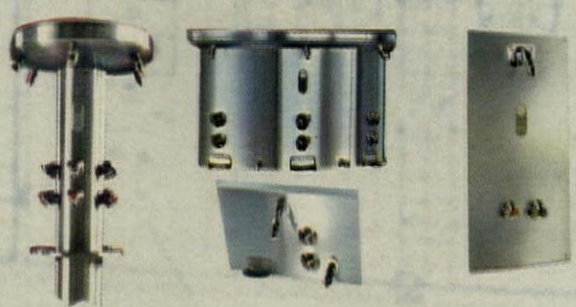

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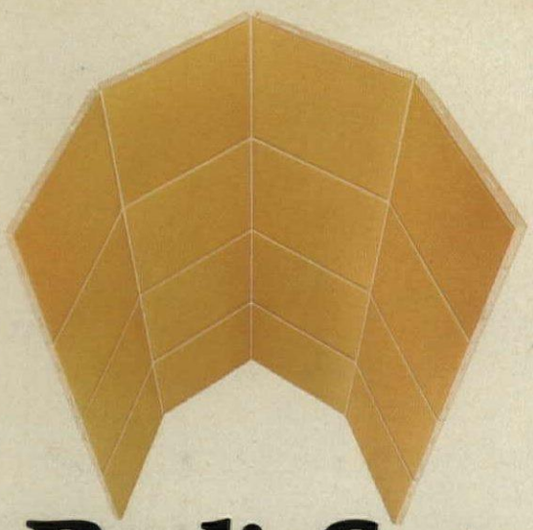

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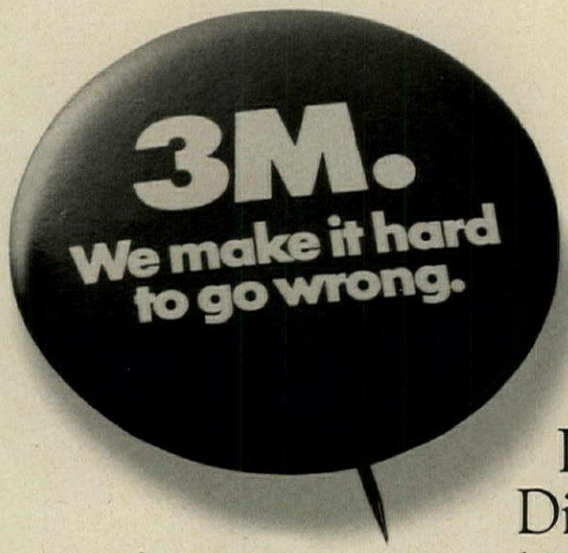

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Bobrick coordinated stainless steel washroom equipment carries out a "total design concept." Shown here are towel dispensers recessed into mirrored walls; waste receptacles recessed in the tiled wall; and soap dispensers mounted on the lavatories.

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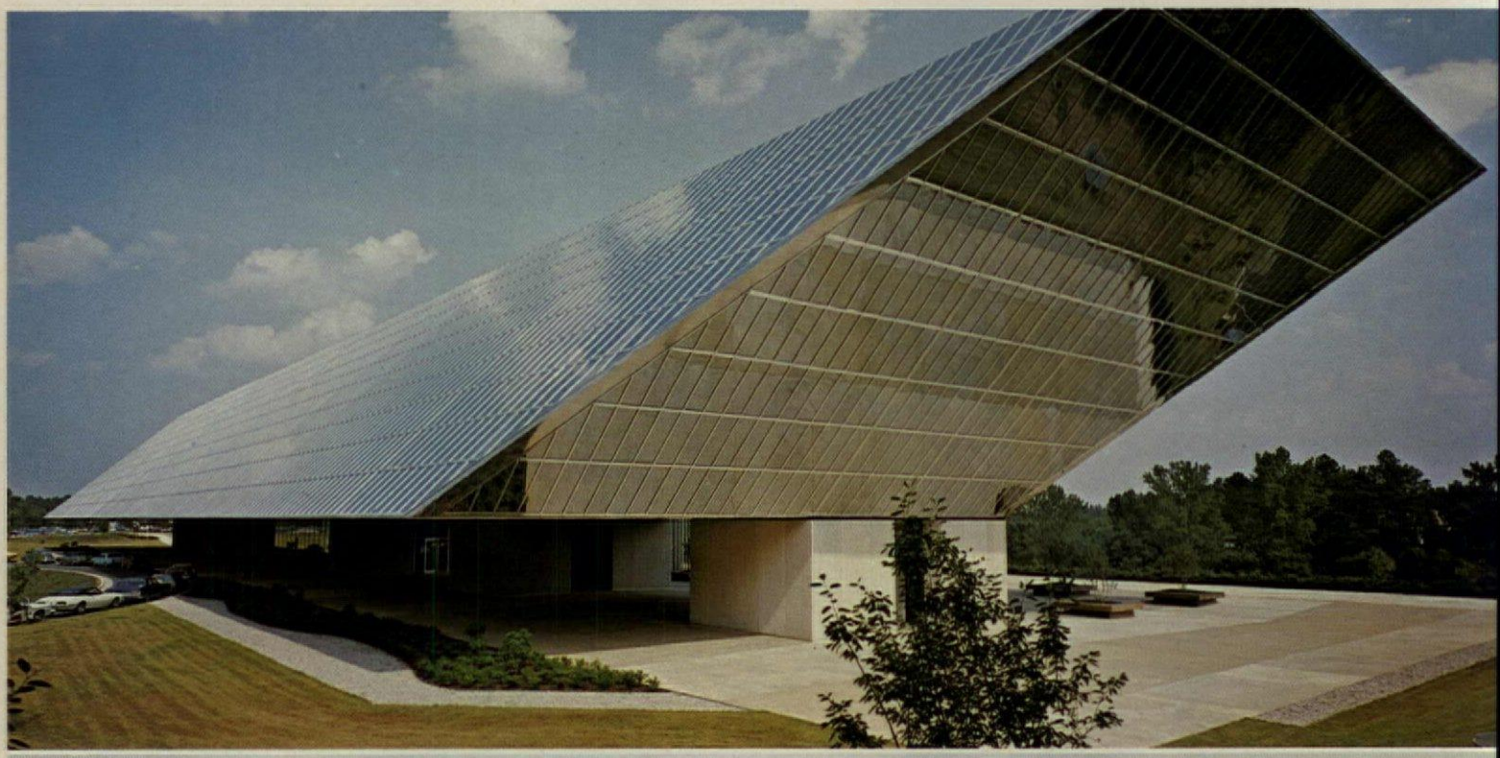
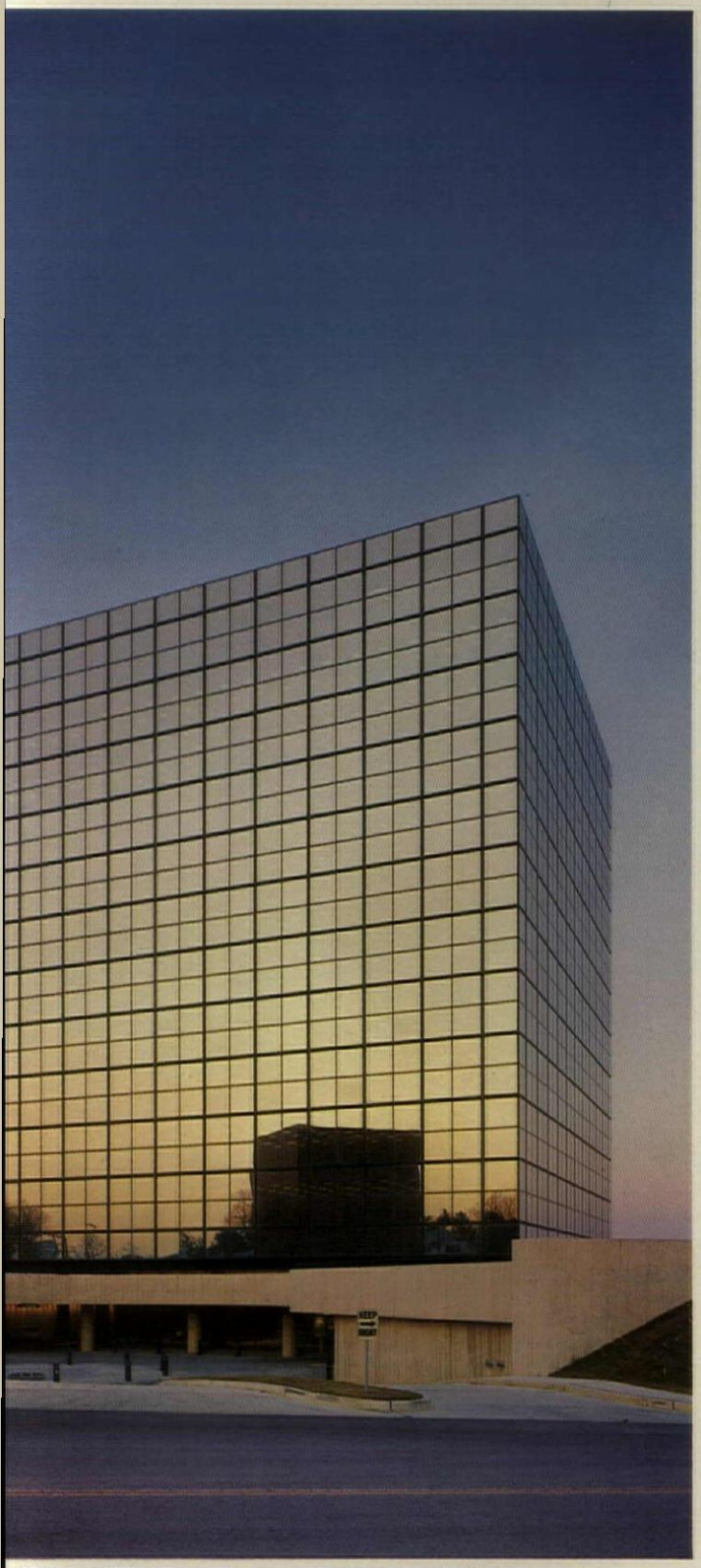


Upper left: Blue Cross and Blue Shield Service Center, Durham, North Carolina. Architect: Odell Associates, Inc. Glass: Vari-Tran 1-108.

Lower left: Blue Cross Building, Seattle, Washington. Architects: Maloney, Herrington, Freese & Lund. Glass: Vari-Tran 1-208.

IE COUNTRY, UNDER LOF GLASS.



: Maryland Blue Cross, Baltimore, Maryland. Architects:
on & Brickbauer. Glass: Vari-Tran 1-108.

BLUE CROSS AND BLUE SHIELD CHOSE LOF VARI-TRAN® TO HELP SAVE ENERGY.

In a business where operating costs can affect the price of medical care, efficient use of energy is a primary concern for Blue Cross and Blue Shield building design.

That's why reflective glass with LOF Vari-Tran® coating was used to glaze these buildings. Located in different parts of the country, and subject to a wide range of climate conditions, all three buildings enjoy the energy saving properties of Vari-Tran coated glass.

The North Carolina Service Center of Blue Cross and Blue Shield (upper left) and the Maryland Blue Cross Building (right) were glazed with Vari-Tran in Thermopane® insulating units. It was chosen for its ability to reduce heat loss during the winter and control solar heat gain during the summer. The energy requirements of the Seattle building were met by monolithic Vari-Tran.

But the beauty of Vari-Tran goes beyond energy savings. It's a dynamic glass. Adding an ever-changing look to a building as it takes on the mood of the sky it reflects.

What's good for Blue Cross and Blue Shield may be good for a building you have in the works. Contact one of our highly qualified architectural representatives. He'll be glad to help you save energy dollars with our high performance glass. Or write Dan Hall, Libbey-Owens-Ford Company, 811 Madison Avenue, Toledo, Ohio 43695.

LOF

For more data, circle 46 on inquiry card

How to Take the Hidden Waste Out of Your Building Operation.

A report to executives from Johnson Controls.

Today's buildings are jam-packed with building equipment that is achieving miracles of comfort and safety. Yet an insidious waste has crept in. This waste lies not in the equipment itself, but in its control. In many modern buildings control is primitive.

The Hidden Waste You're Up Against

A modern building is a conglomerate of individual building systems. Up 'til now, control of each of these systems has been, essentially, separate from all the others. As a result, the bundle of wiring it takes to feed a typical control room would fill a water main. The control room itself can be a nightmare of duplication. But even more costly, in the long run, is what this cluttered control room leaves undone. With all systems pursuing separate goals in total disregard of each other, there's a team but no teamwork.

There *Has* to be a Better Way

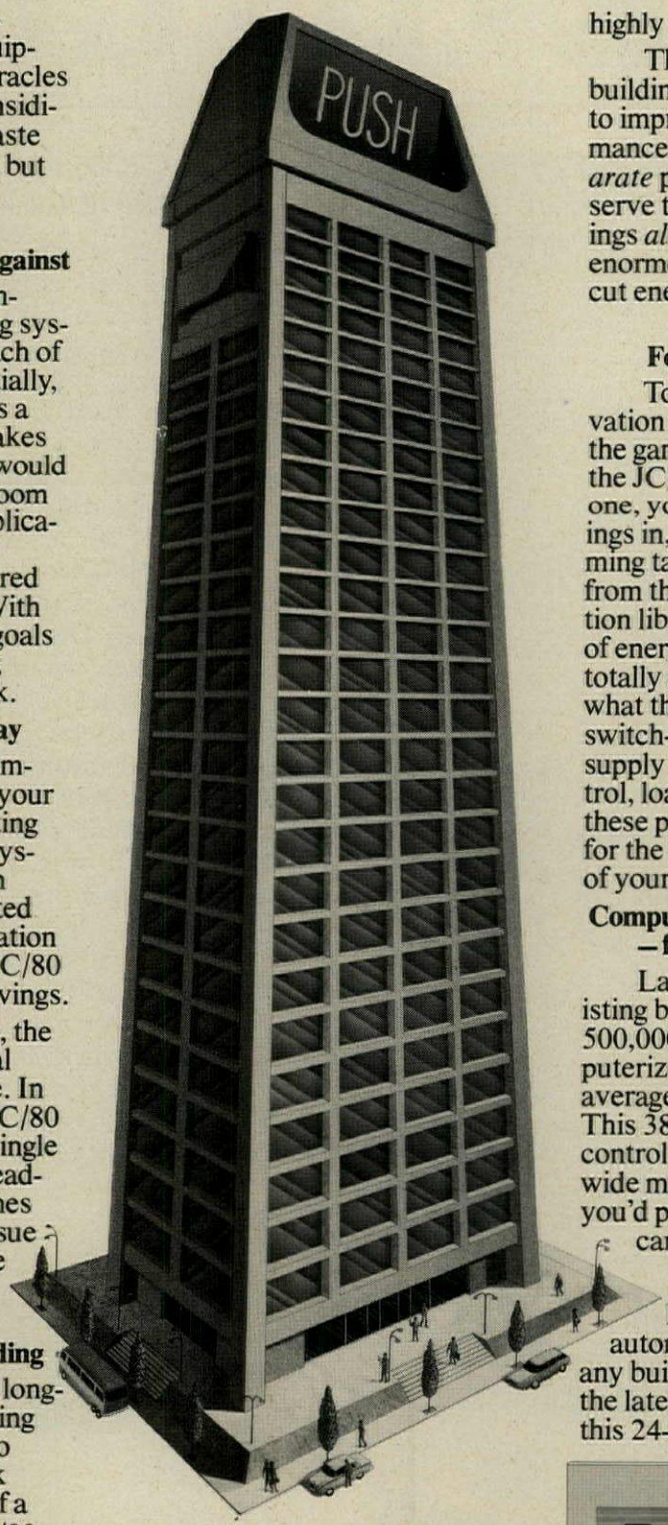
Now, what if you could combine all systems and automate your building as a *whole?* Coordinating sophisticated interdependent systems is no simple matter. But in 1973 Johnson Controls perfected the JC/80 total building automation system. In one fell swoop the JC/80 delivered a host of first-cost savings.

In place of massive wiring, the JC/80 uses only a single coaxial cable that ranges building-wide. In place of dozens of meters, the JC/80 displays hundreds of facts on a single cathode ray (television tube) readout. In place of banks of switches and dials, the JC/80 lets you issue orders from a single touch-type keyboard on which you enter commands in plain English.

A New Way to Run Your Building

The JC/80 also eliminates long-term hidden waste, by performing all the necessary calculations to make all building systems work together as one. Over the life of a 400,000 sq. ft. building, the JC/80 system could save you $1 million in operating costs alone!

The JC/80 system works at this tirelessly. It reads thousands of incoming reports per minute, remembers these reports, files them away, make calculations, forecasts, arrives at decisions, and acts. It can do all this because of its unique, highly specialized computer.



The JC/80 computer is built for buildings only. It's sole purpose is to improve your building's performance. Servicing up to 15,000 *separate* points, the JC/80 can fully serve three, four, five or more buildings *all* from a single location. This enormous capacity can be used to cut energy expenditure to the bone.

Energy Conservation: For Long Haul Profitability

To be effective, energy conservation procedures must run across the gamut of building systems. Since the JC/80 controls all systems as one, you just program energy savings in, using low-cost programming tape available "off the shelf" from the Johnson Controls automation library. You get the full panoply of energy-saving procedures – totally automated programs for what the engineers call enthalpy switch-over, nite set-back, start/stop, supply air reset, chiller plant control, load shedding, and more. And these programs are in full operation for the long haul, for the entire life of your building.

Computerized Building Automation – for Just 38¢ a Square Foot

Last year, in both new and existing buildings from 15,000 to 500,000 square feet, JC/80 computerized building automation averaged *only 38¢ a square foot.* This 38¢ includes the computer, the control center, and the building-wide multiplex wiring. It's less than you'd pay for exterior lighting or carpeting the corridors.

Send for This Free Booklet

Find out how total building automation can be put to work in any building you plan or own. For the latest on today's buildings get this 24-page color booklet, *"The Big Idea in Building Automation."* Write direct to Fred L. Brengel, President, Johnson Controls, Inc., Reference G-3, P.O. Box 423, Milwaukee, Wisconsin 53201.

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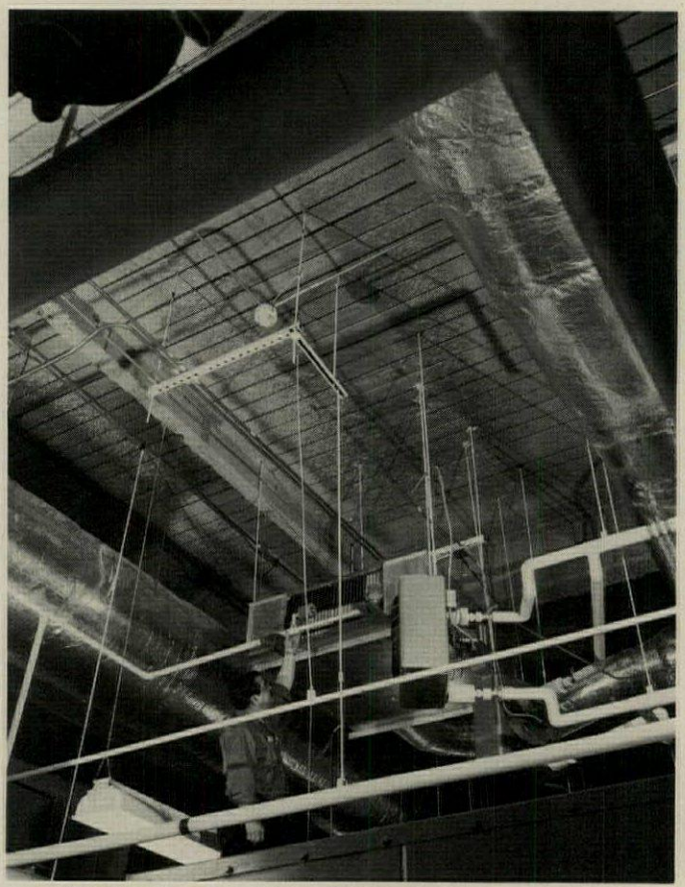

Central Medical Pavillion, Pittsburgh, Pennsylvania
Architects: Rea, Hayes, Large & Suckling
General Contractor: Dick Corporation

- EPICORE, EC266, and EC366 are ready and waiting with integral dovetail ribs anytime you need to install hangers for ceilings, piping, ducts, or any utility components.
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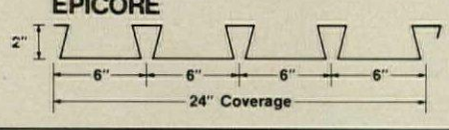
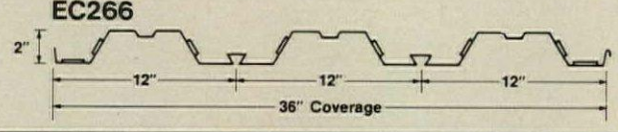
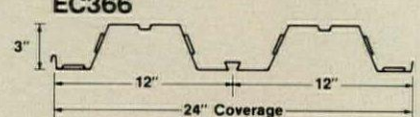
Type	Spacing of Hangers: Parallel to Ribs	Spacing of Hangers: Perpendicular to Ribs	Safe Loading Capacity per Hanger*
EPICORE 	Continuous	6"	Standard/200 lbs. Wedge bolt/1000 lbs.
EC266 	Continuous	12" & 24" at alternating intervals	Standard/100 lbs.
EC366 	Continuous	24"	Standard/100 lbs.

*Providing the floor system is designed to carry this load.

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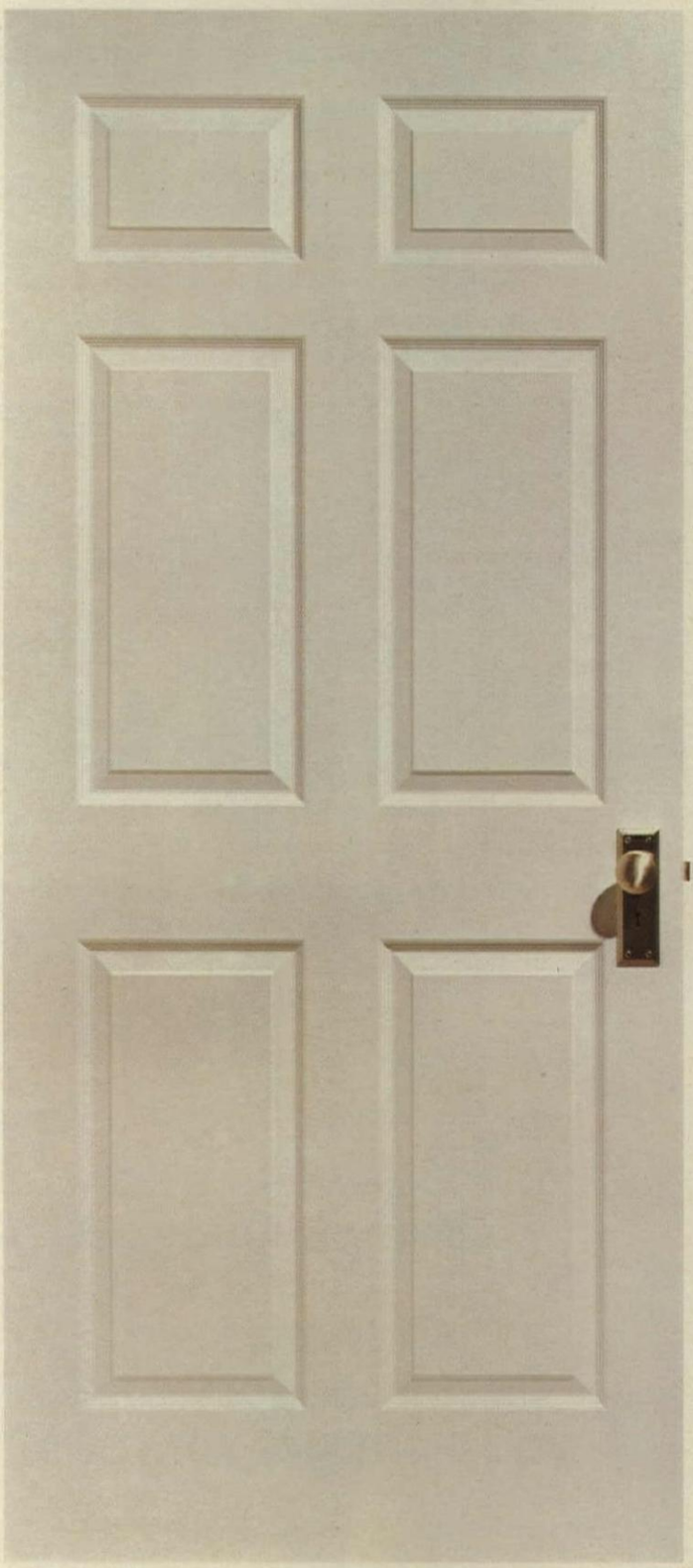

COLONIST
doth delight the eye and pocketbook

Yankee ingenuity approacheth witchcraft in the Colonist door facing. Its wealth of detail doth becloud the mind and convince one he is in the presence of a stile and rail door crafted of wood. But if truth be told, tis hardboard. The fine edges of the panel areas, both concave and convex, the texture of the wood grain, the detail where the panels, stiles, and rails doth meet are the work of masters of the embossing trade.

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And no publick outcry accompanyeth the presentation of costs. Zounds, tis but a bit more than an embossed flush door! Builders, take heart. Now ye be at liberty to install Colonial paneled doors throughout your interiors.

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30 years.

Our new 30-year warranty — the industry's longest — is as simple as this: If an Overly batten roof ever leaks on your building during that time, we will fix it. Free.

Naturally, there are a few limitations, but they're clearly spelled out. They include Acts of God, tornadoes, earthquakes, fires, lightning or direct hits by heavy objects.

We roofed this house in 1942. Owners report no leaks at all.

But only Overly gives you 10 years more on your roof warranty. We've been a leading manufacturer and installer of roofs since 1888. Although we're supremely confident that the roof we make for you won't leak, we have a money reserve set aside that's large enough to cover all of our warranted work. We'd call that speaking frankly. Our 30-year warranty speaks frankly, too. We manufacture a first-class product and back it with a first-class warranty. See us in Sweet's, write for our roof brochure or a sample warranty. Overly Manufacturing Company, 574 West Otterman Street, Greensburg, Pa. 15601.

New roof on Filene Center at Wolf Trap Farm Park, Va., 1974. Overly batten roof stopped leaks.

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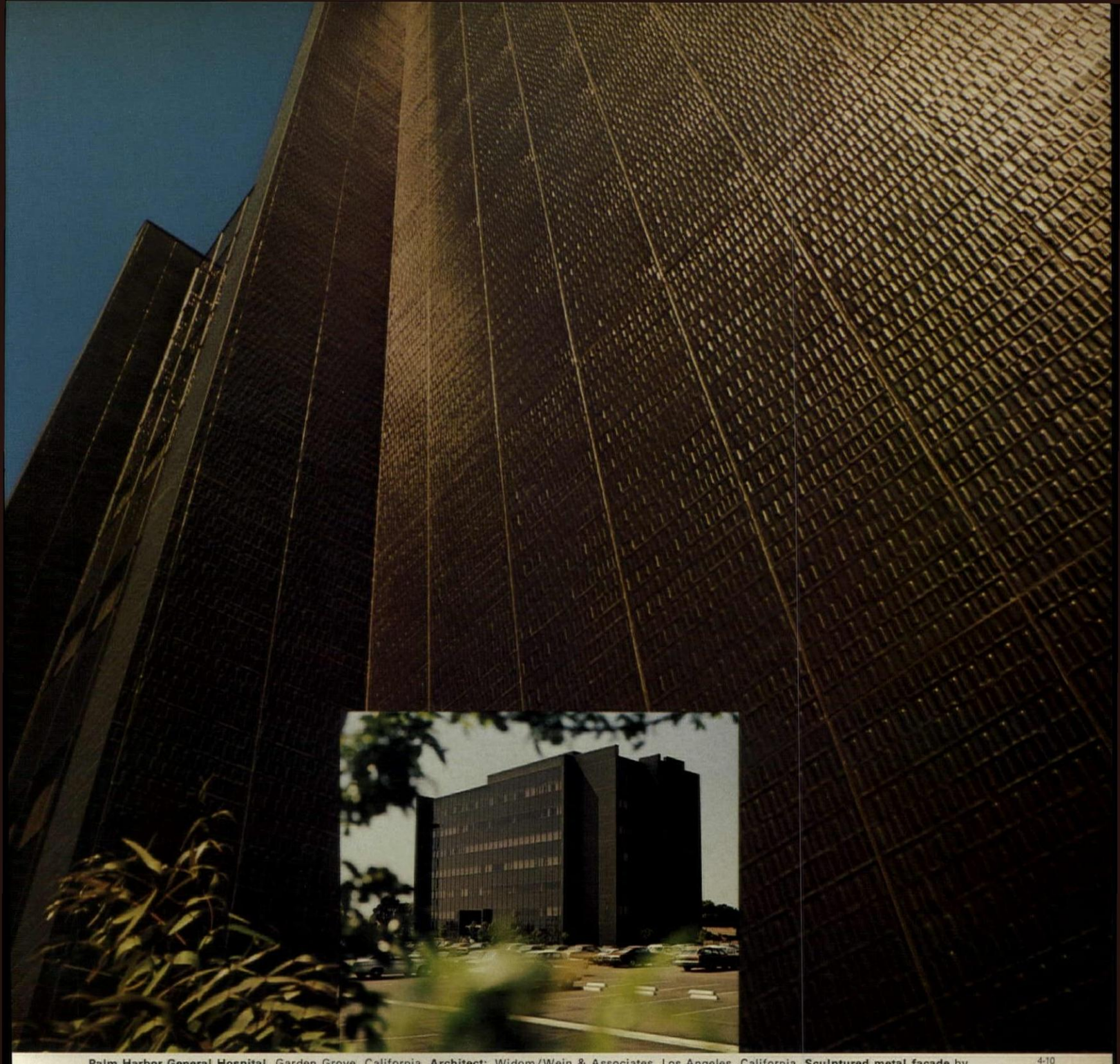

Palm Harbor General Hospital, Garden Grove, California. **Architect:** Widom/Wein & Associates, Los Angeles, California. **Sculptured metal facade** by Warnel Corporation, South El Monte, California. **Coil Coater:** California Finished Metals, Inc., Cucamonga, California.

4-10

Just what the doctors' architect ordered: DURANAR 200® coatings from PPG.

The Palm Harbor General Hospital in Garden Grove, California, got a beautiful, durable exterior and still stayed within the budget. How? By incorporating a sculptured metal facade by Warnel Corporation, prefinished with a DURANAR 200 fluoropolymer coating from PPG.

Sculptured metal facades provide a fantastic array of truly beautiful textures and effects, while reducing the weight of exterior walls with commensurate savings in framing. And DURANAR 200 coatings give the metal the minimal-maintenance beauty and extended durability characteristic of other, more expensive fluoropolymer finishes.

The secret of DURANAR 200 coatings lies in PPG's patented combination of remarkably durable resins, together with pigmentation techniques that assure maximum color durability. It can give your medical center—or any building—a very healthy skin.

For information on DURANAR 200 coatings, see Sweet's Architectural or Industrial Construction Files 9.10/PPG or contact: Market Manager, Coil Coatings, PPG Industries, Inc., Dept. 16W, One Gateway Center, Pittsburgh, PA 15222.

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Add to this our silent drawer operation, and you have the ultimate in function and form.

All-Steel's 1500 Series offers a wide range of desks, L-Units, credenzas, and tables.

Available in a variety of colors, finishes, and wood grain tops.

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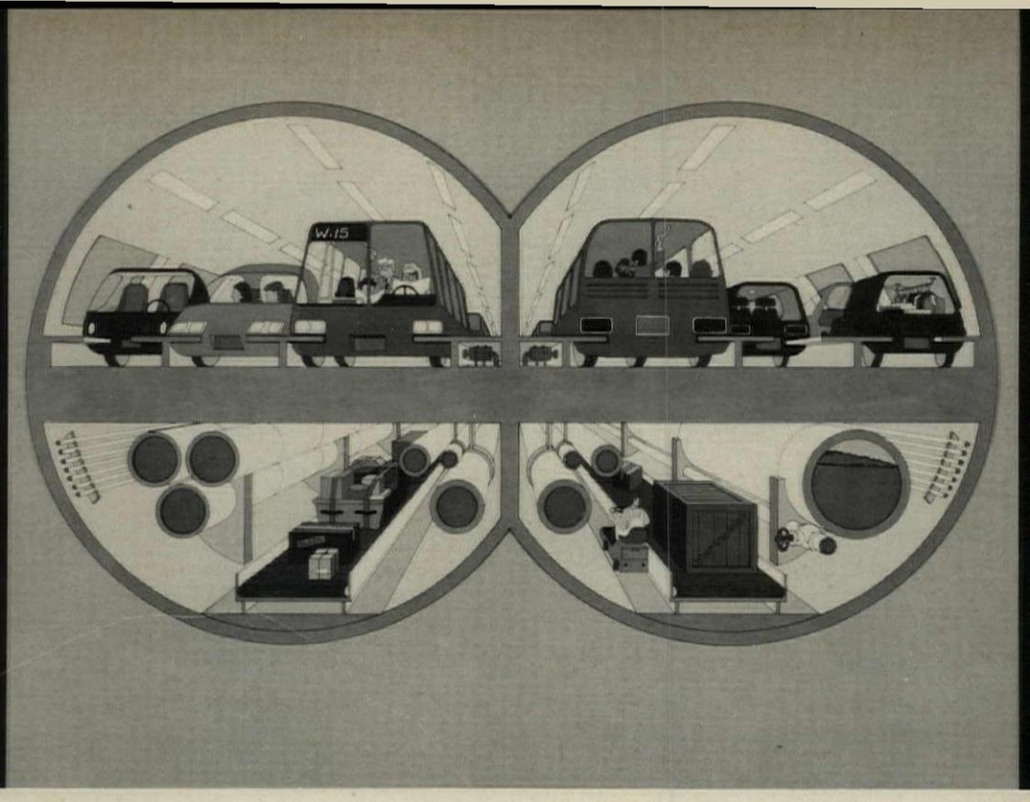
ULRICH FRANZEN: CHANGING DESIGN SOLUTIONS FOR A CHANGING ERA



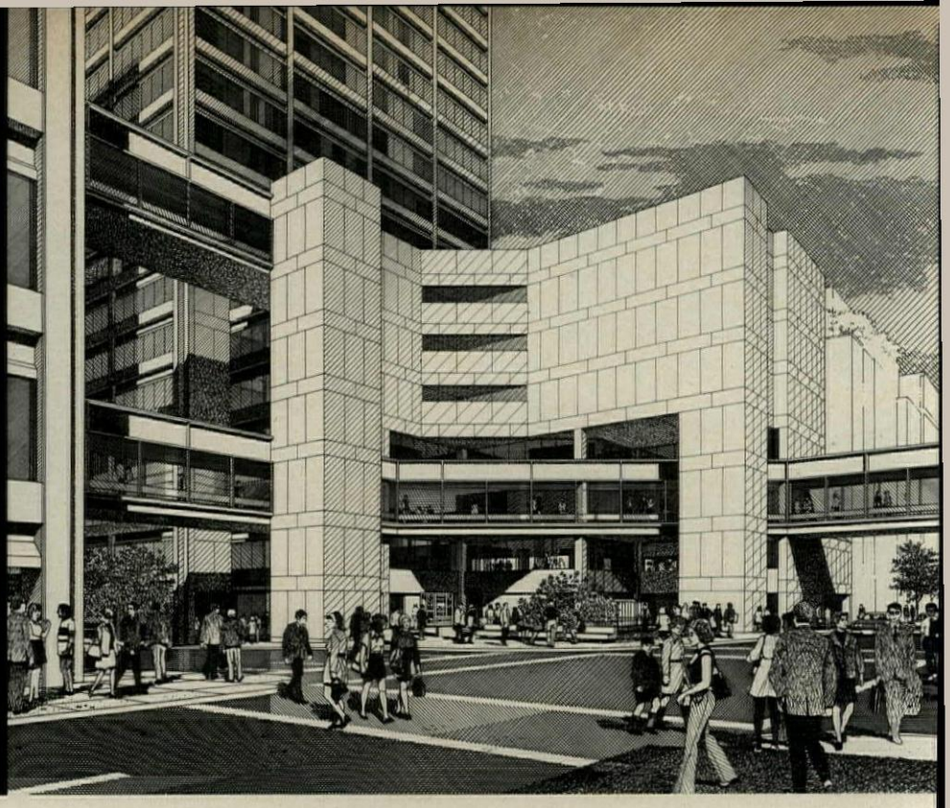
Always believing that ongoing change is a necessary ingredient of a designer's growth, Ulrich Franzen has not been content to produce visually constant or functionally unprogressive buildings. And he likes to see the changes in the same building, which is regarded as an assemblage of previously developed concepts and parts, joined together with new concepts and parts. Because of this mix of elements, the results often express contradictions in terms of established styles—as in the opposed smooth glass and heavily sculptural facades of the Veterinary College at Cornell University (see page 87)—and Franzen likes things that way. The results gain tension out of visual conflict and hence—as in a whole city—life.

Preoccupation with a fixed personal stamp is a dead end for Franzen. Even when his buildings may have appeared most consistent, he never regarded them as design solutions that would be perfected without alteration in the future. With today's typically tightened budgets, increased costs, and a host of new demands—ranging from more stringent fire-safety laws to energy conservation—Franzen can welcome challenges that strongly motivate intentional change. Today, the changes can be a necessary response to immediate problems; they can creatively answer the new demands with fresh design solutions. This is an idea whose time has clearly come.

On matters of style, Franzen will not deny anyone's right to categorize or search for historical precedent, but he feels such effort is not relevant. He believes that the design results are innately successful (with their own style) or they just are not—all rationalization aside. Accordingly, he has introduced a wide range of expressions and historical precedents into his work—mixing them firmly (as in a sculptural assemblage) to give his buildings their particular character. The projects on the following pages appear very different from Franzen's previous work, but—like the work of any true professional—they show a steady hand responding to evolution.

—Charles Hoyt

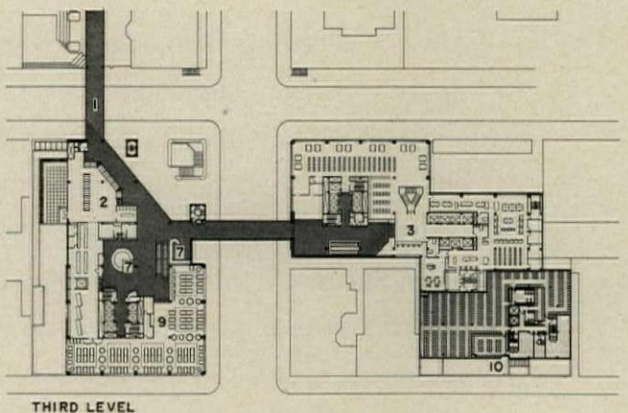
Hunter College gets a campus and an identity on crowded streets

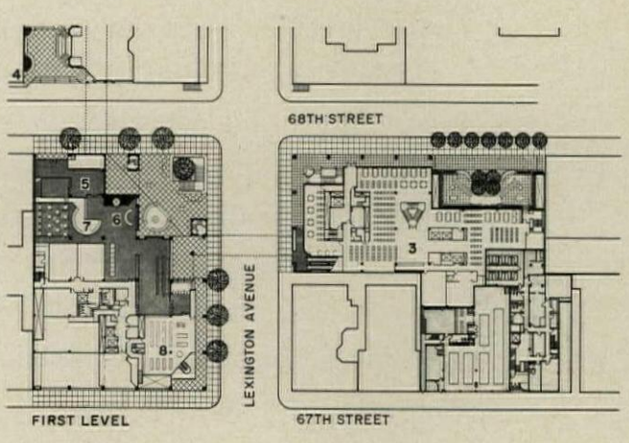


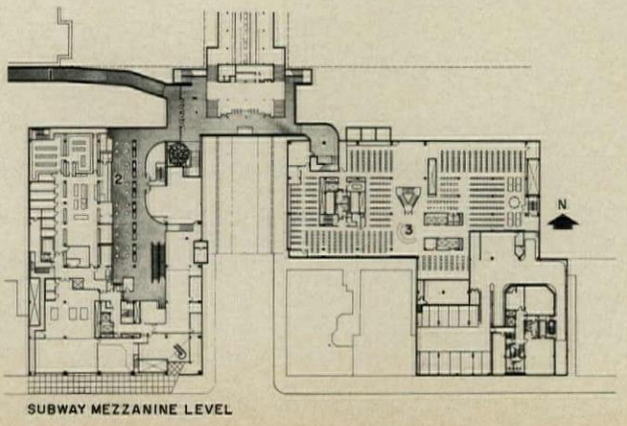
■ Besides providing 800,000 square feet of badly needed new space (due to a fourfold increase in enrollment to 10,000 students), these buildings currently under construction are planned to provide Hunter, for the first time, with a sense of campus. Since 1945 the College has been housed in a monolithic, almost block-square building to the northwest (the corner is visible in the lower right of the photo, opposite). Although the parts of the new site were somewhat disjointed from that building and from each other, Franzen has provided pedestrian links above and below the busy streets. These bridges and tunnels unify the functions of the original building with the new, and provide a subgrade major entrance from the subway at the sunken part of the plaza on the corner. Accordingly, the corner plaza is to form the active "heart" of the complex.

Above the avenue, the 19-story towers come as close as possible to touching each other at their corners and define a campus gateway reinforced by the bridges overhead. The towers' placement allows the main open-space at the corner and a mid-block "passive" garden adjacent to the large new library, which occupies the lower floors of the eastern building. At first glance, the concrete clad towers do not appear typical of Franzen's previous heavily sculptured esthetic, although the spandrels are to be structurally supportive of the floors to allow a massive and deeply recessed profile. And—in fact, the architect promotes a "juxtaposition of opposites" in simply housing basic space requirements on the upper floors and in the creation of a fairly complex environment near the street where sculptured spaces provide a sense of place. As a concept, "spectacular" design can still exist when needed—not necessarily in every detail.

HUNTER COLLEGE, New York, New York. Owner: *Dormitory Authority of the State of New York.* Architect: *Ulrich Franzen—associate-in-charge: Edward Rosen; project architect: Roger Diao.* Engineers: *Weiskopf & Pickworth* (structural); *Jaros, Baum & Bolles* (mechanical/electrical).

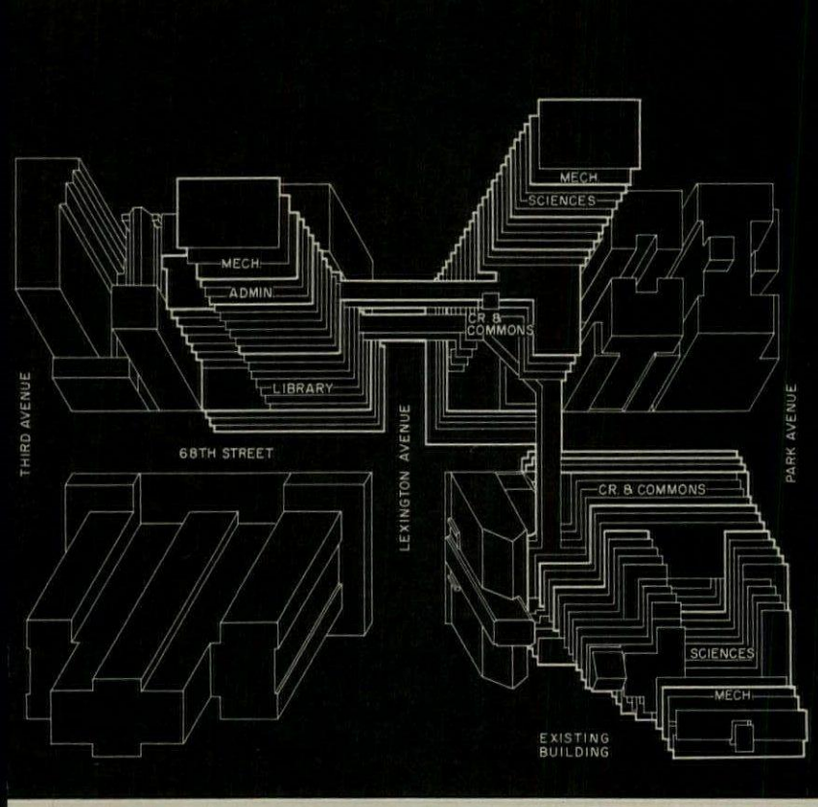






To encourage a sense of campus life, Franzen has provided views from the central plaza on the corner that will simultaneously reveal activity within the adjacent student center, on the bridges overhead and below on the sidewalk. The bridges will keep an estimated maximum crowd of 15,000 students from pouring onto the well-trafficked streets at breaks. The retail character of the avenue has been continued by placement of the bookstore.

1. College to existing Hunter
2. Snack bar
3. Library
4. Existing Hunter College
5. Gallery
6. Lobby
7. Student lounge
8. Bookstore
9. Student commons
10. Police station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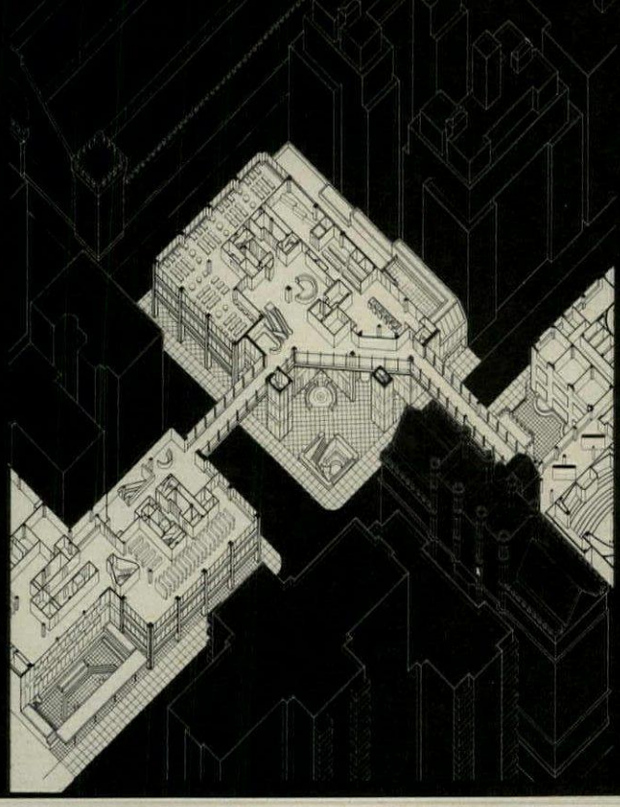
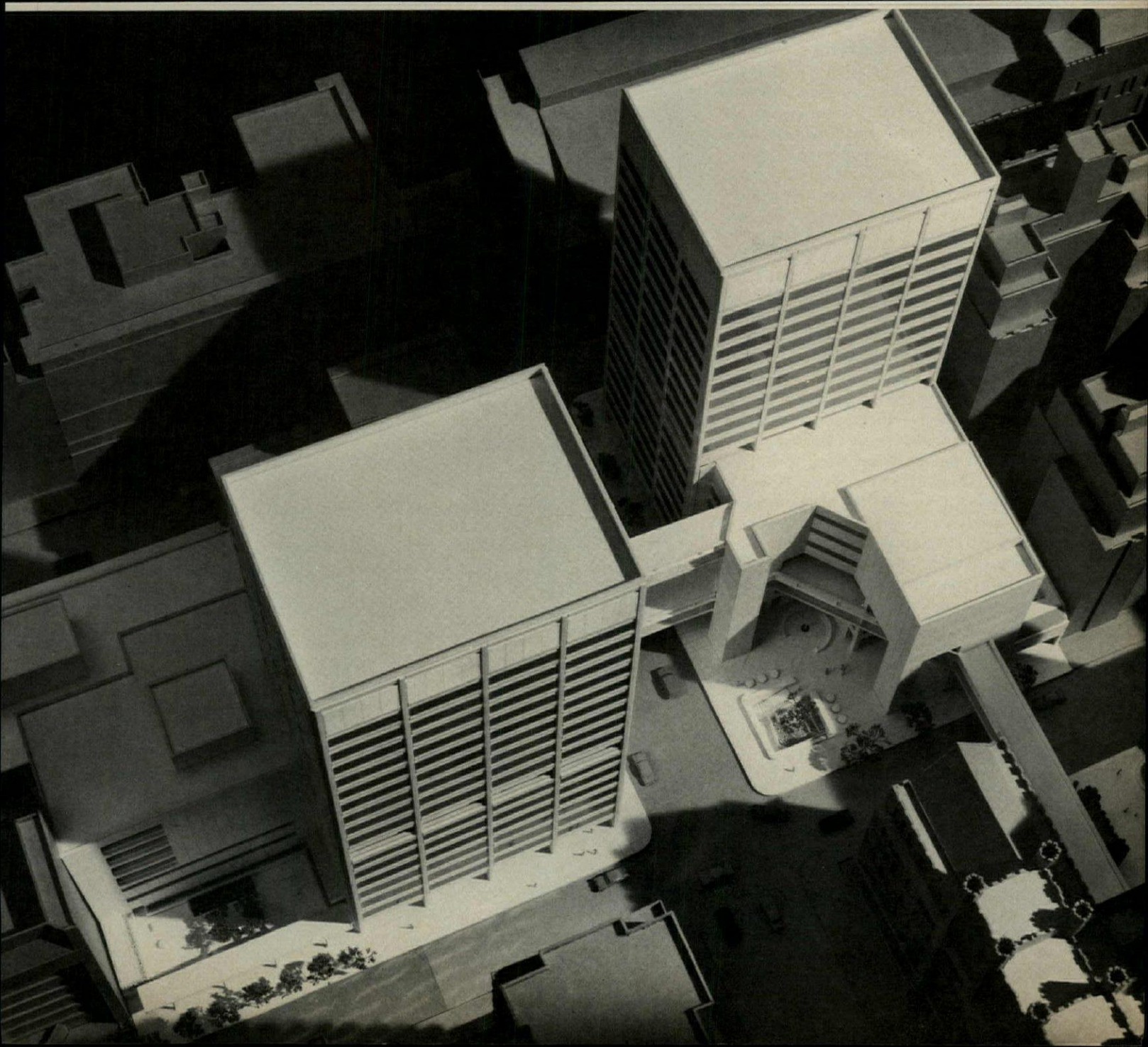
EXISTING BUILDING





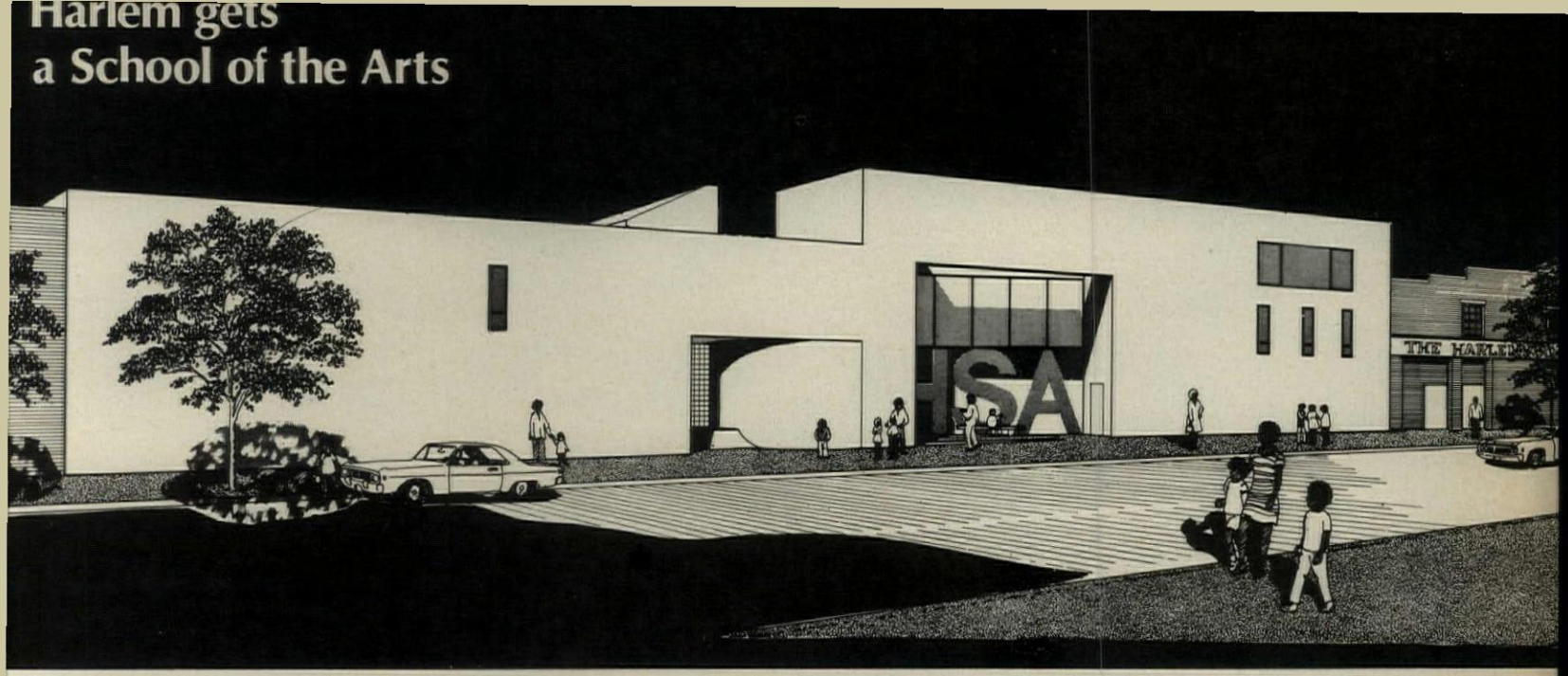
New streets for New York

■ In this study commissioned by The Ford Foundation and administered by the American Federation of Arts, Franzen has proposed an alternate use for the streets, which take up 30 per cent of the City's land—clogged with polluting traffic but offering, because of their area, a great potential for open space and relief of the pressures of urban crowding. The East Side of Manhattan (aerial views, right) is used as the study area, as it is the most densely populated (200 dwellings per acre) residential area in the world—and therefore one of the more congested. Franzen states that other studies have proposed isolated closings of streets and "street furniture," but none has dealt with the problem in a comprehensive way.

Essentially, the study proposes the gathering of incoming goods and people in a linear structure (superimposed on photos) along the less densely populated opposite shore of the East River. From this "service structure" concrete-tube tunnels (section, page 81) would carry freight on conveyor belts and people in small scaled electric vehicles (such cars could be rented). The effect for the City would be a massive reduction in traffic (and the near-elimination of trucks) with a proportional decrease in

the width of required right-of-way. Much of the current streets could be turned over to park-like pedestrian use—especially the more intimately scaled cross streets which would become *cul-de-sacs* off the through avenues. Franzen has gathered the results in a lively movie, and sees the plan as universal for rectilinear cities.

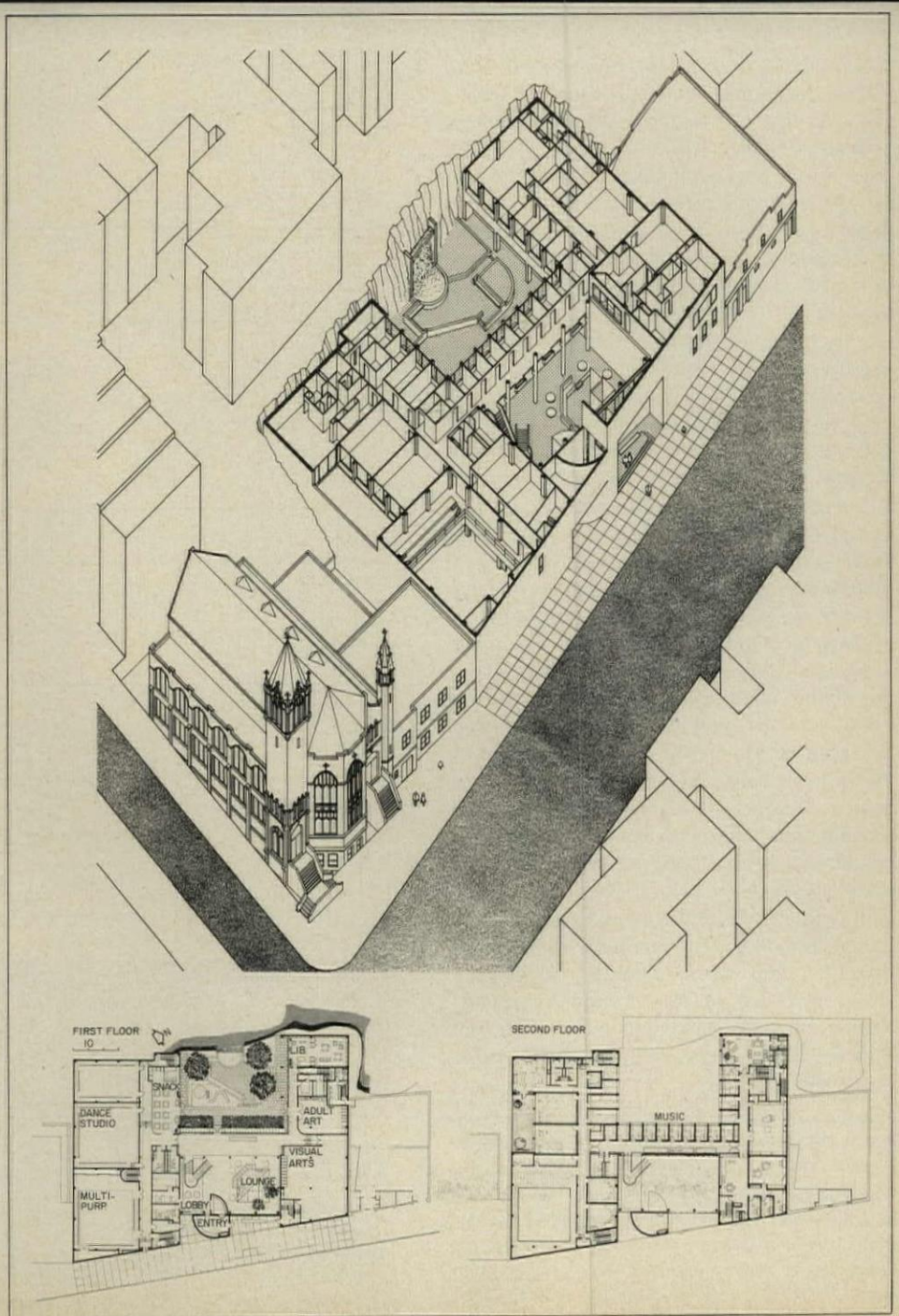
Harlem gets a School of the Arts



■ Growing from 20 to 800 students in the last ten years, the School—with a current faculty of 66—provides instruction in music, dance, art and photography to local children (from ages three and up) and adults. Many would otherwise never have such opportunity. Started by concert soprano Dorothy Maynor in the community center of the St. James Presbyterian Church (where Maynor's husband is pastor), the programs are a result of her determination and the input of many other well-known persons in the arts. Most recently, this determination in fund raising (by donations, concert proceeds and the help of The Ford Foundation) has produced the money for this new school currently under construction.

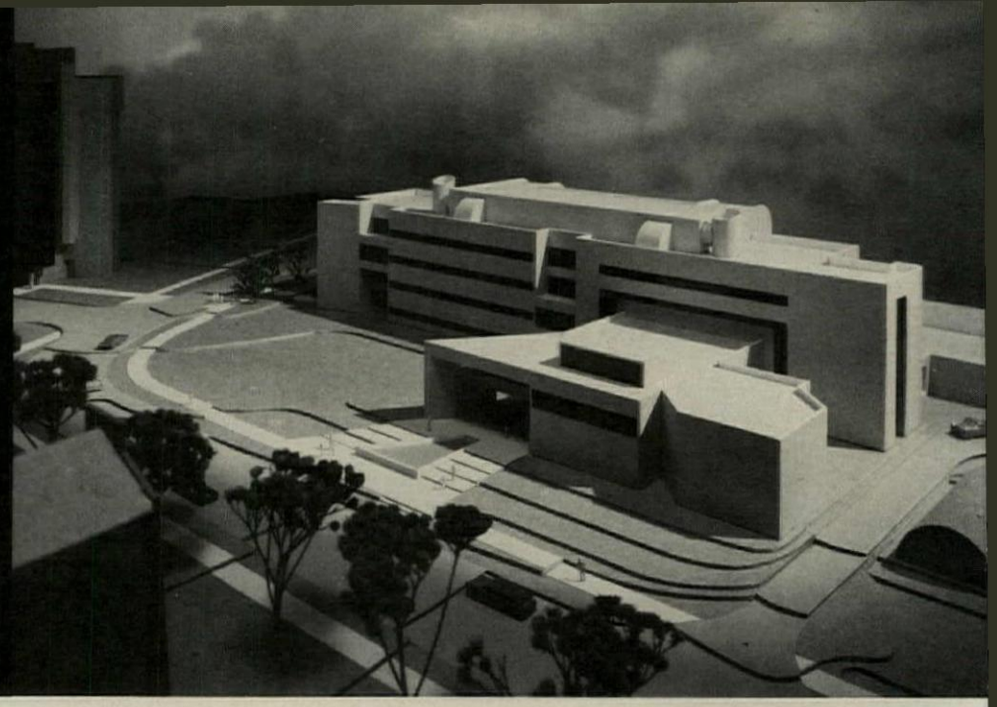
Franzen's concept was to provide an oasis that isolated the building's interior from its sometimes harsh surroundings, while respecting the low-height scale of the block. The architectural importance of the neo-Gothic St. James Church (see isometric, opposite) continues in the block-front.

Accordingly, the low, new building covers a large percentage of its site to produce the required floor area. The unbuilt site is devoted to a court that is the focus of the interior outlook. The rear wall of the courtyard takes advantage of a rarity in the city—a cliff against which the building butts (see drawing). On the street-facade, "openings" are concentrated in blind recesses indicating the presence of the large double-height lobby within. Entrance is gained through a "lock" that allows visitors to proceed into a semi-circular vestibule until admitted electronically through a second door. The main practice and recital rooms are located directly off the main lobby. Off a balcony above are more individual practice rooms and offices.



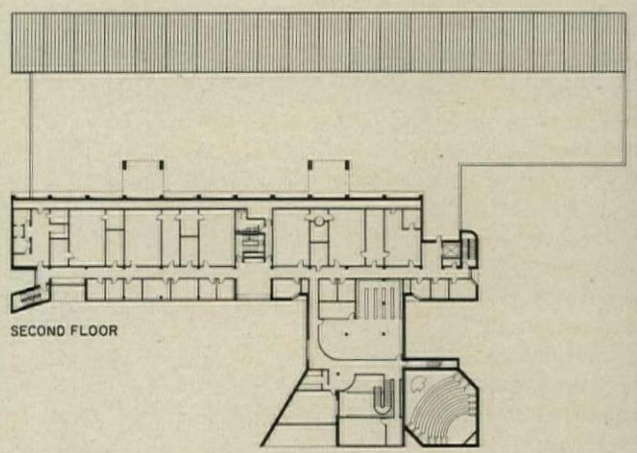
THE HARLEM SCHOOL OF THE ARTS, New York, New York. Architect: *Ulrich Franzen—project architect: William Jacquette.* Engineers: E. W. Finley (structural); *Hannaham & Johnston (mechanical* /electrical). Consultants: *Klepper Marshall King Associates, Ltd.* (acoustical).

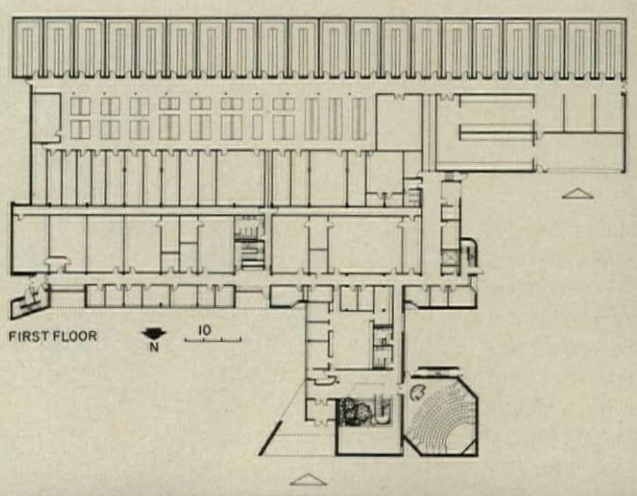
At Cornell, a strong expression of technology

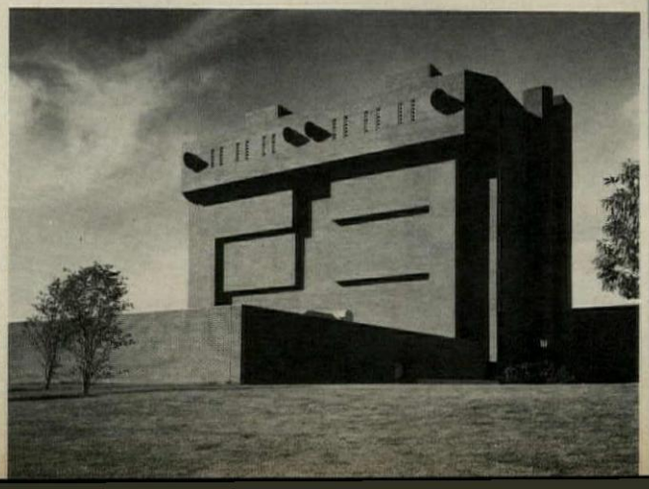


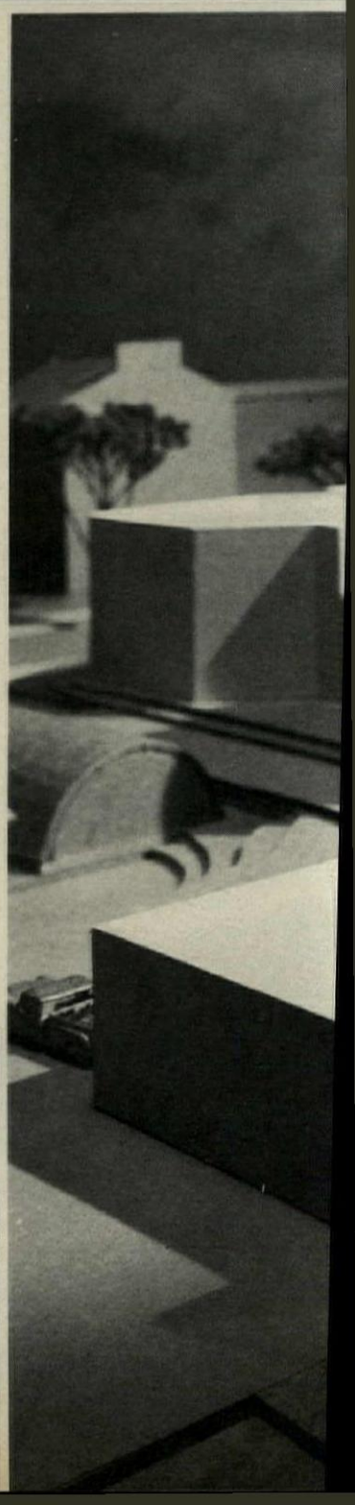
■ Cornell University's new building for biological studies adopts a concept of spatial organization similar to Franzen's earlier Veterinary College (RECORD, July 1971, pages 114-116) shown in the background of the Boyce Thompson Institute model (photo, opposite) and in the photo below. But—despite the use of the same brick cladding and the same strong expression of the mechanical functions—the results will not be alike.

As examples of the tension that Franzen likes to create by a combination of seemingly contradictory design language, Boyce will have very different scales on the opposite facades that face south to a parking field and highway, and north to the campus; the south facade (photo, opposite) is massive and the north (photo, top) is intimate. The laboratory areas will be on the south side, which is a sculptural, solid wall behind the even-larger scale of the greenhouse, where the Institute's primary functions of growing and testing are conducted. Between the main building and the greenhouse is a one-story service area for the "dirty work" of growing the specimens. Atop the south facade are the rounded housings of the heat exchange wheels (section, opposite page, top), which transfer outgoing heat to the incoming air. The north wall of the building contains the research offices, and is reduced in scale by windows in a segmented masonry wall with a projecting administrative and entrance wing. A basement provides facilities for insect rearing, storage and a maintenance shop. Because of programmatic considerations, the new building is more spread out than the older Veterinary College while relating closely to it.

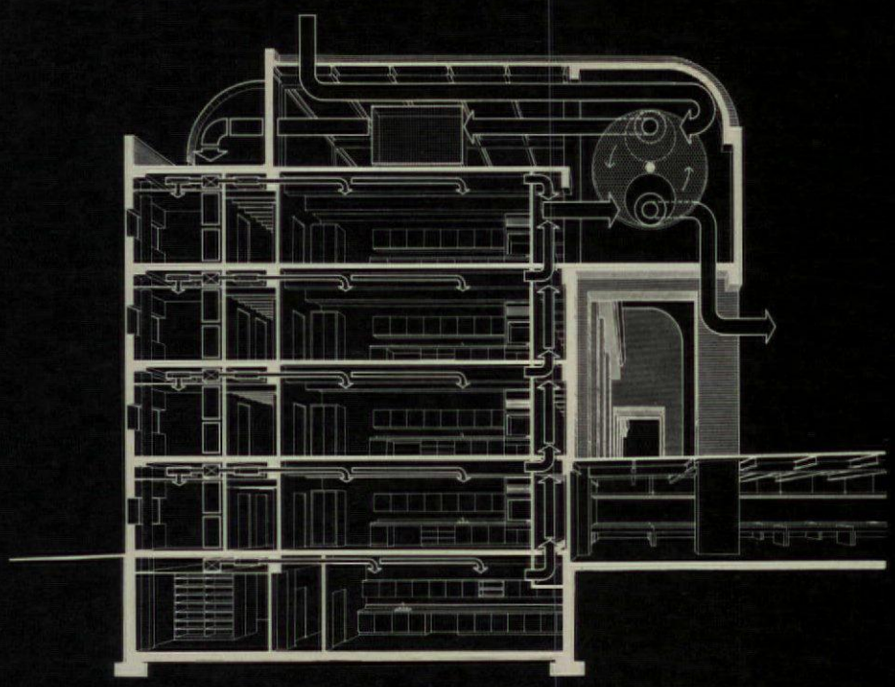


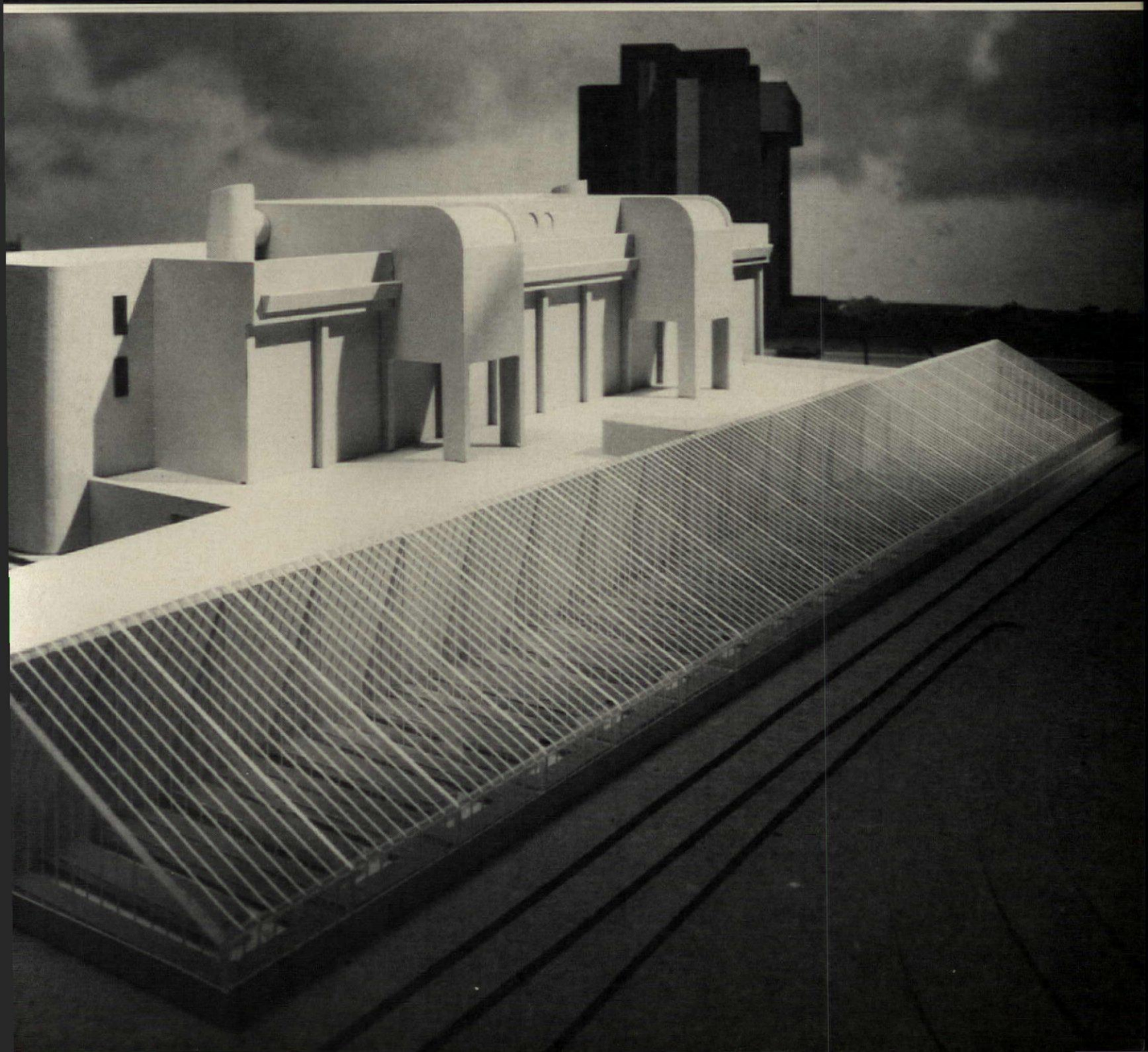




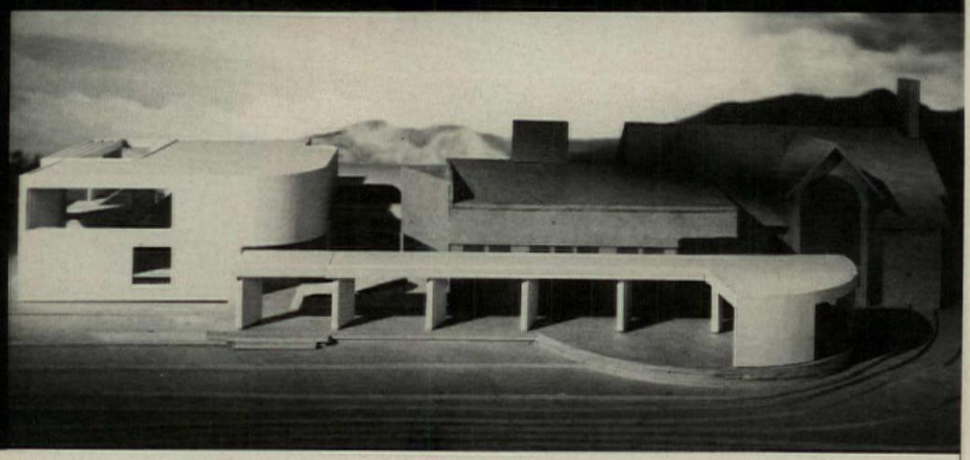


NEW YORK STATE COLLEGE OF AGRICULTURE AND LIFE SCIENCES and THE BOYCE THOMPSON INSTITUTE FOR PLANT RESEARCH, Cornell University, Ithaca, New York. Owner: *State University Construction Fund and State College of Agriculture.* Architect: *Ulrich Franzen—associate-in-charge: Edward Rosen; project architect: Roger Diao.* Engineers: *Pfisterer, Tor & Associates* (structural); *Kallen & Lemelson* (electrical and mechanical).





Two houses: a unique conservation

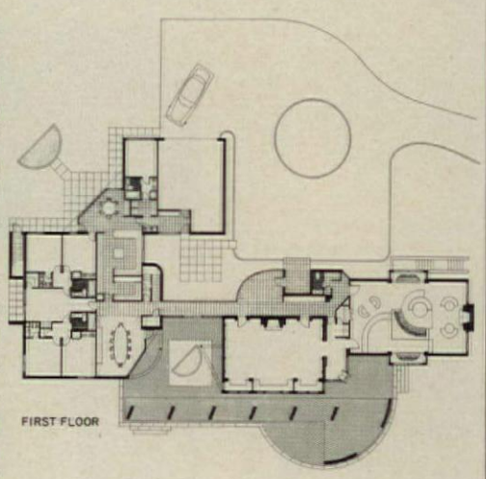


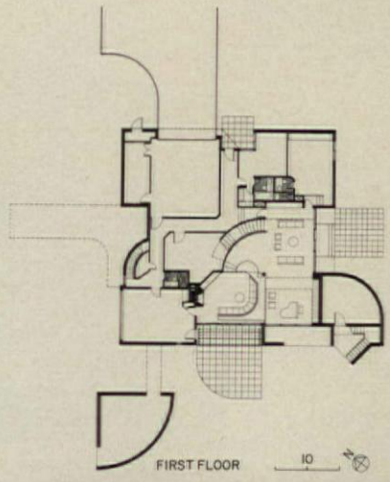
■ The two houses shown here are to occupy a former estate, where the clients halted demolition of a characterful mansion at a point when only two major rooms remained. Franzen's challenge was to incorporate the two rooms of disparate architectural style into one of the houses as a cohesive whole (photo above and plan, right), while providing a totally new design for the other house (photo and plan).

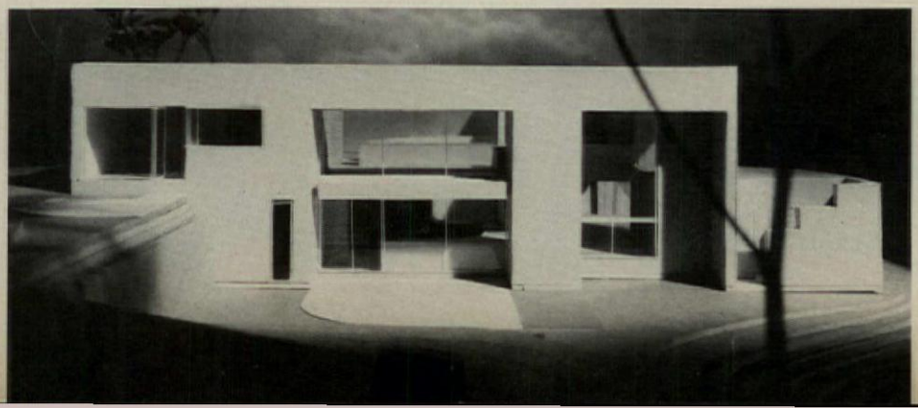
Rather than encasing the disjointed fragments of the mansion in the new structure, the architect used them as part of a composition of old and new forms that interlock to mutually complement each other. As opposed to his earlier projects (photo, top) which articulated walls and roof, the new structure is designed in the vocabulary of a sculptural volume. And such treatment is the necessarily strong compositional ingredient that pulls the diverse mix of structures together.

Carrying the same vocabulary to the second house, Franzen placed the volume below part of the surrounding level of the terrain to reduce its impact on the site, and to provide a main entrance at the second level. This plan is more compact than the other house while achieving the grand qualities of the other's older rooms through double-height spaces entered from above on a curving stair. The retaining wall shown in the model will be replaced by a slope, in the final building.

RESIDENCES FOR MR. AND MRS. EUGENE KRAUSS AND MR. AND MRS. ALVIN KRAUSS, Old Westbury, New York. Architect: *Ulrich Franzen—associate: Samuel Nylen.*

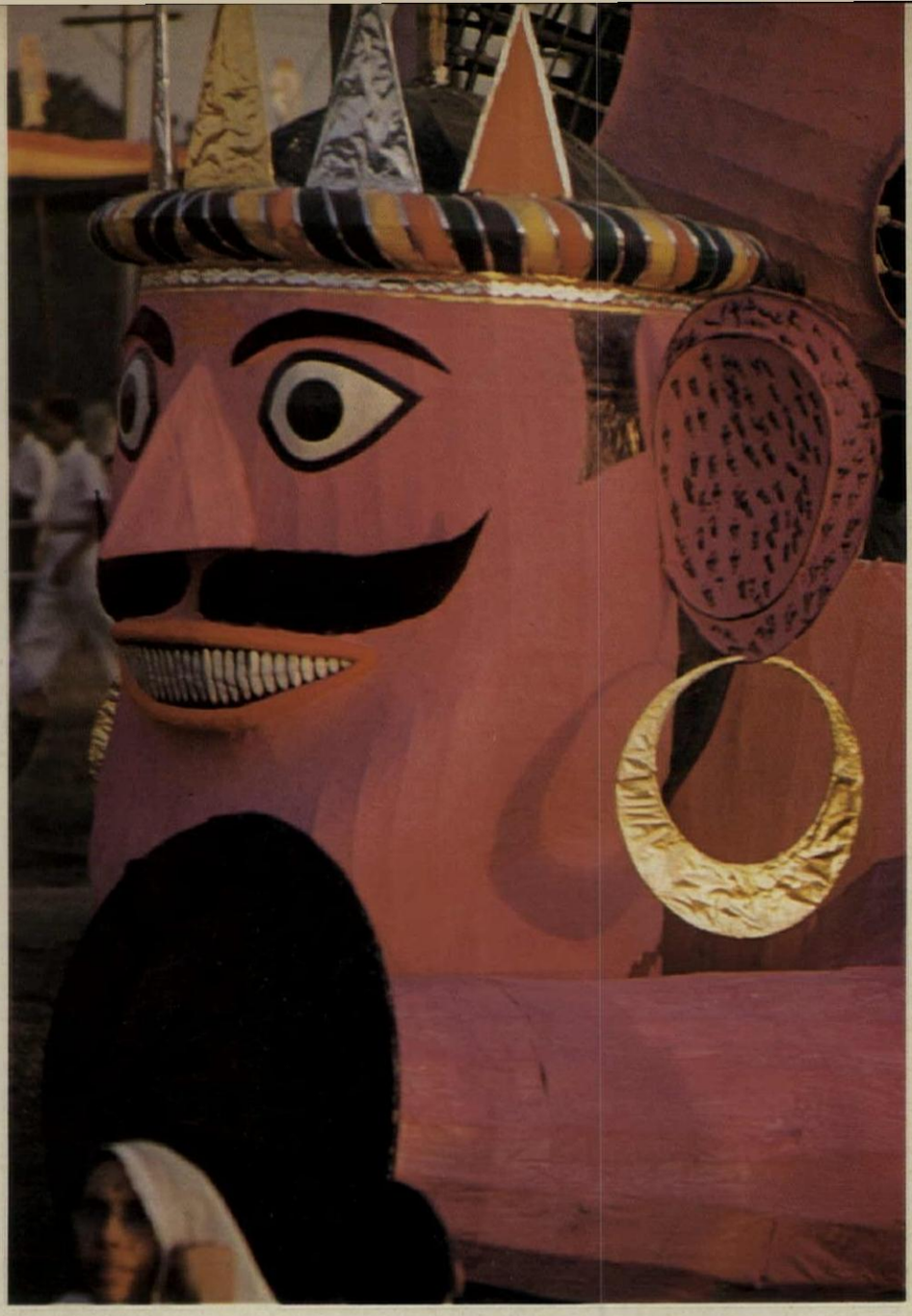






5 WAYS TO PEOPLE PLACES

by Donlyn Lyndon



Architecture calls our attention to things. It displays some of the physical elements of building (bolts and beams often) while it suppresses others (nails and electrical wires usually). It helps us imagine that quite simple buildings are other things as well (abstract patterns or ornate places), or that quite complicated buildings are really very simple.

Lately architects of small custom buildings have chosen to bring attention either to the physical processes of building or to the intellectual ingenuity of their design. Architects of very large buildings, on the other hand, have recently been inclined to make their dispositions of corporate power seem effortless—with a princely disdain for revealing either the humdrum processes of building or the labors of imagination. Size and lavish austerity prevail. As we know from television, Upstairs does not concern itself much with a more or less well-run Downstairs; so in our monumental architecture the interests of some seem beneath display as the dull power of others is manifested on the skyline (while in suburbs and discount marts the electorate carry on without it).

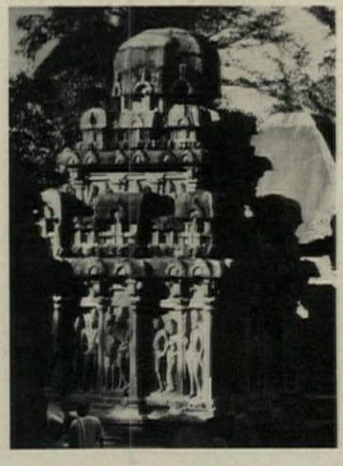
But in any world that transcends the boundaries of the domestic parlor or the corporate boardroom, architects should call our attention to *people*—the people who designed and made buildings, and the people who use them and walk about on them and change them. Architecture would thus appear to be *inhabited,* to bear the many marks of personal enterprises and attention.

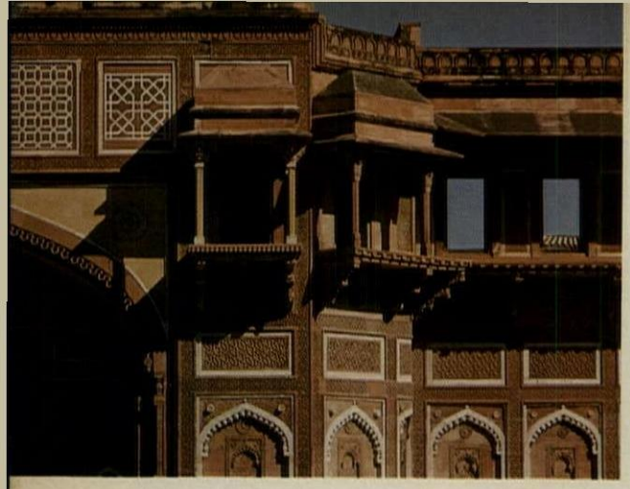
Here follow some simple suggestions for making places that bear witness to people and to their activities . . .

1 IMAGINE INHABITANTS

Incorporate images of people

Once everyone did—in stone and stucco and wood and bronze and a host of other materials. Then several generations of Modern architects decided that that was silly, and so now the only human images in our buildings are those made with electrons or with newsprint and ink, and they are confined to sacred boxes or waiting room tables and newsstands. The only other way images of people are usually found in the environment is on billboards—a genre only recently recognized by architects, and still lacking in respectability in many quarters in spite of its obvious possibilities for grandeur. However (small consolation), life-size figurative sculpture, as in the work of George Segal, is enjoying a comeback in some art collectors' living rooms.

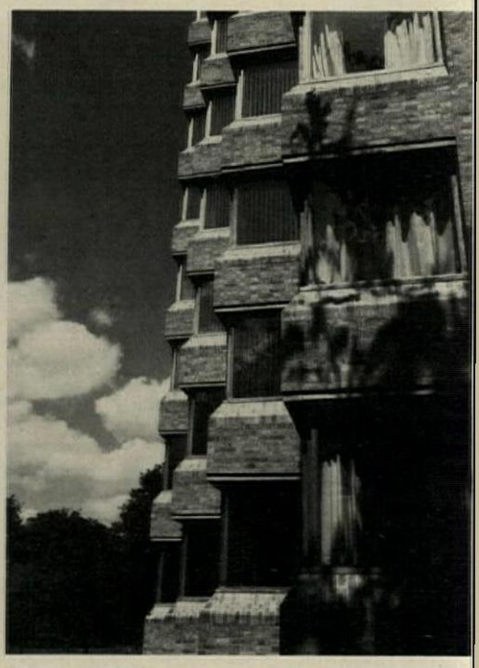




Use elements that suggest the presence of people

Windows and doors in their traditional forms make direct reference to the people who appear in them to open or close them, to sit behind them, stand before them, or walk through them. Stoops and balconies and bays make sense only as places for people to be; similarly, pedimented overhangs and canopies are there to shelter someone. As long as such elements are of a size that relates to individuals or to small groups they can suggest the presence of people. But the game is lost when they become repetitive strips in a continuous geometric pattern, or when they cover windows that evidently do not open. Then they become emblems of the system that made them rather than of the people inside.

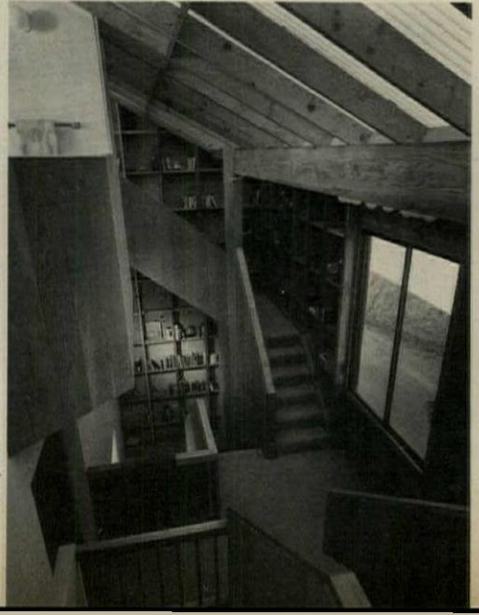
Antonio da San Gallo's windows at the Farnese Palace (below left) practically beg for someone to appear in them. The pediments, paired columns and implied bases are of the same derivation as the shrines that house gods on Hindu temples (previous page), saints on Medieval churches and imaginary musicians in Islamic palaces. Simpler forms will do too, as in the William Stone Building at Peterhouse in Cambridge, England (below right), where the shape and angled disposition of the windows make a continuous elevation seem to be made up of many individual parts.



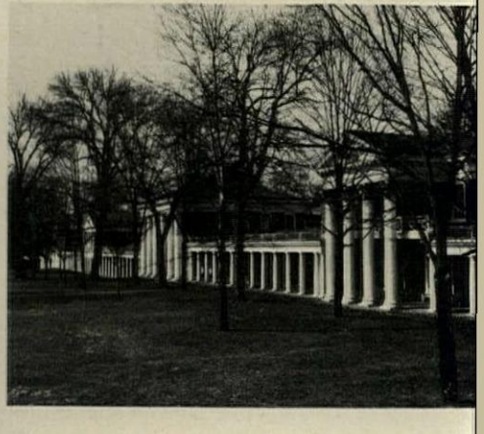
Emphasize forms that relate directly to the human body and reveal its actions

Some parts of buildings are shaped directly by the human body and by its dimensions and movements. These parts are especially suggestive of people. Thick masonry walls are often hollowed into seats beneath a window (left), making a special place that encourages us to imagine inhabitants even when none are actually present. Stairs, too, are a direct trace of human movement. Their steps represent actions, and we can easily imagine the kinds of motions they require, when they are not packed into fireproof boxes. The images of Duchamp's "Nude Descending a Staircase" and of Scarlett O'Hara gliding down to the ball both owe allegiance to the stairway made visible. A house designed by William Turnbull in Aptos, California (below left; see also RECORD HOUSES OF 1974, pages 60-64), expands this principle until the stairway almost fills the house.

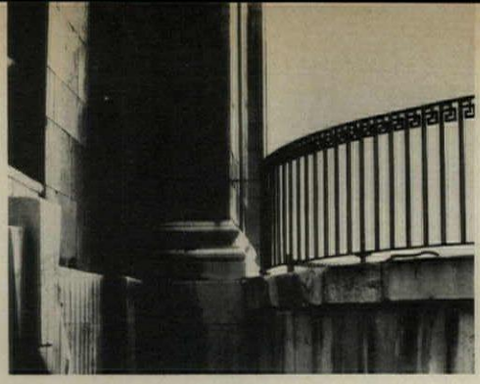
Colonnades, too, can suggest people—especially when the columns that line a path of movement are husky enough, the size of a real-life companion. Thomas Jefferson's very friendly columns at the University of Virginia (below right) combine with a succession of large porticos to make the Lawn one of the best-peopled places in America—even before punch and Frisbees lure real people out onto the grass in the afternoon.

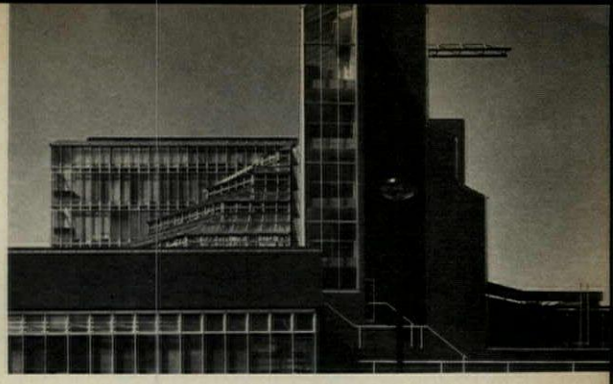


Morley Baer



2 REVEAL CARE



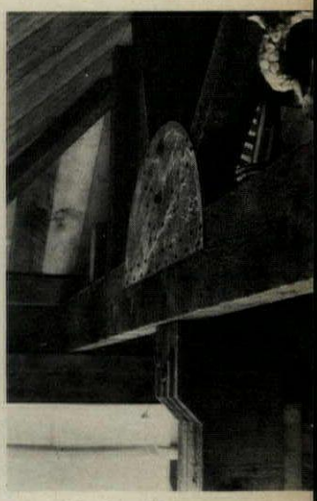


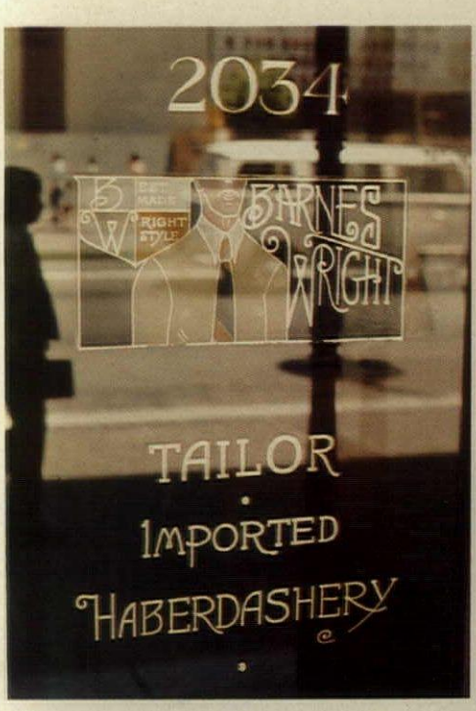
Prefigure the problem

One of the most obvious ways a building can bring people to mind is by revealing the thought and care with which it was made. When we can vividly sense the working minds of the designers and builders, we can also feel their presence in the completed building. This happens when they have prefigured the problem, divided it into separable parts and therefore set limits on their own decisions. In a barn in Pennsylvania (left), for instance, a quite simple building consideration separates the masonry (which goes into the damp ground) from the wood (which can more easily enclose a large space). The more complicated separation of brick from glass and steel in James Stirling's History Faculty Library at Cambridge (above right) comes from prefiguring the types of rooms that would be required inside, and the building techniques suitable to them. Prefiguring owes much to the classic architectural tradition of forming buildings into a limited number of recognizable parts, so that their disposition by the designer can be more easily admired, as in Nicholas Hawksmoor's St. George-in-the-East in London (above left).

Let craftsmanship loose

The opportunities for inventive attention to detail have been severely limited by an economy based on repetitive mass production, and by the new-fangled custom of paying reasonable wages. But even though the more intricate skills have been priced out of the commercial market, they are returning here and there in craft shops and self-help projects as part of an alternative economy that measures the dignity and satisfaction of work as well as its rate of pay. Buildings should allow such personalizing energy to find its place and help reveal the imaginings of many people. The parts of a building can also be assembled in ways that encourage us imaginatively to re-enact its construction (photo far right); this may, however, require the builder to perform with unaccustomed (and costly) grace.



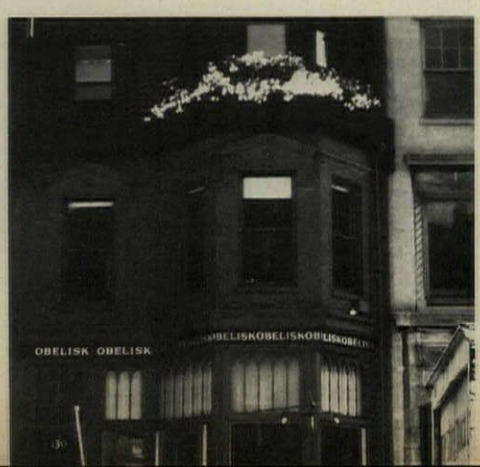


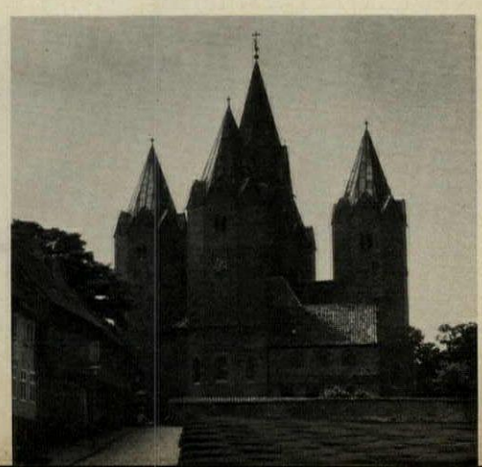
Create pride of place by continuing care

Daily maintenance extends evidence of personal care into the immediate present. Renewing a specially prized feature of a building (left), or remodeling a building to accommodate new uses, or filling an unused space with trimmed hedges—all of these are examples of continuing care. They call our attention to stewardship and intelligent use by the people who use places.

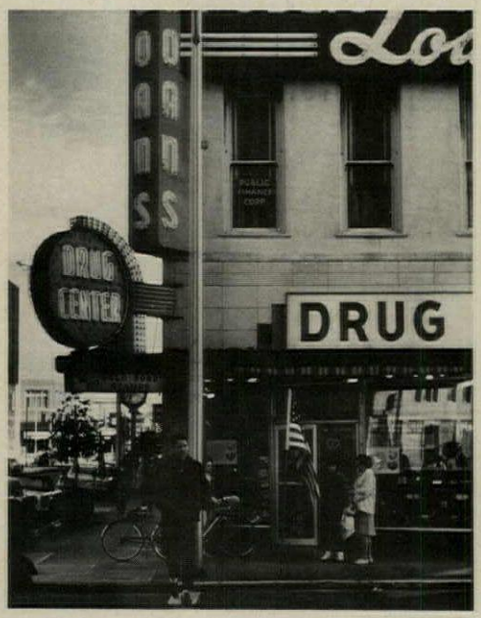
Plants and flowers are common recipients of loving attention, and they amply reward it. Provisions for accommodating them can be made rather easily, yet in this country they seldom are. Flower boxes (below left) may indeed be frivolous as emblems of the natural world, but as displays of personal care and attention they are not.

Giving pride of place to things that require frequent renewal is tricky. If priorities change, or if hard times come, these same elements can trumpet messages of neglect and inattention (not inhuman messages, but discouraging nonetheless). Yet to construct a world that does not allow renewal is to subtract from the environment evidence of people and their values. What is needed is a realistic assessment of the amount of commitment and involvement that can be expected from a building's inhabitants—and then to make it count.



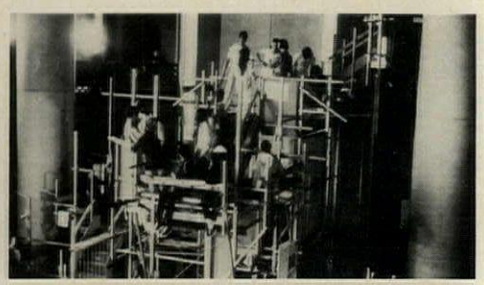


3 ACKNOWLEDGE OTHERS



Be open to the conflicting claims of use

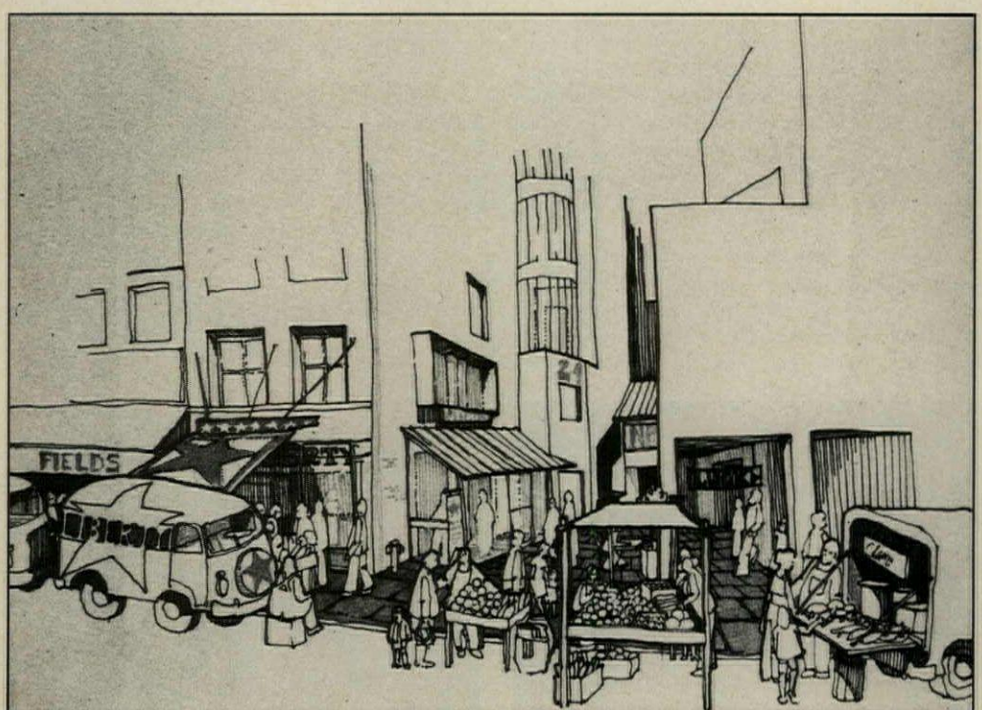
For a long time architects and camera buffs have been returning from abroad bearing gifts of the picturesque confusion made when the things people use supersede the forms of buildings themselves. In an alien culture dissonance seems charming. But in our own, the conflicting claims of actual use seem more threatening (photo, far left). Still we must be open to invention by others, and to contradiction, if the environment is to have the liveliness of life. What we need in the first place are buildings that make enough of a statement to *be* contradicted, that can be read through the claims of conflicting use without having to suppress or deny them. Conversely, new uses should not be unnecessarily limited by the existing order, since the assertion of new patterns and structures can revitalize empty formality.



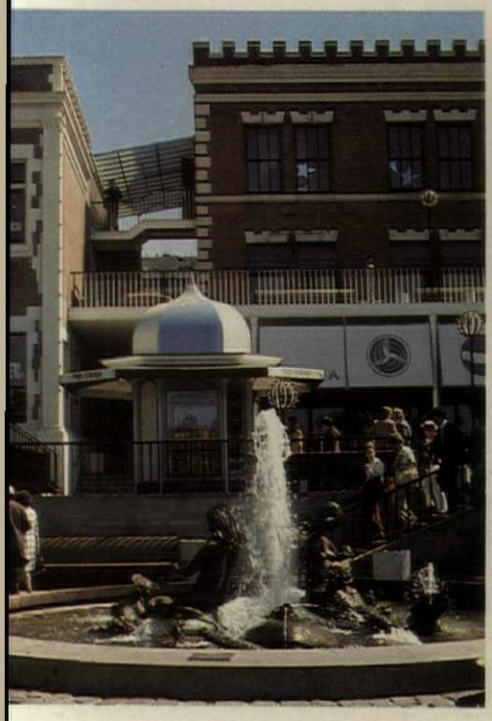
Incorporate what others have built and reinvest their care

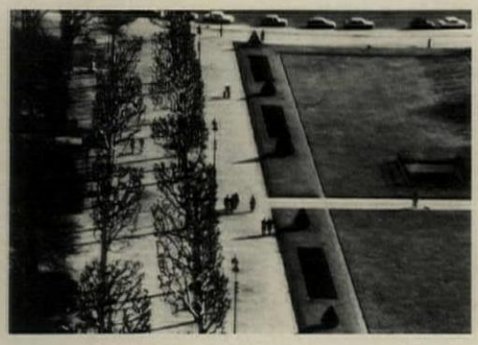
Tin cans and paper, when they are recycled, shed their previous forms and start afresh. Buildings are not like that, because the materials themselves are not usually as valuable as the labor and care that went into forming them. Often new materials and new mechanical systems are needed, or a reconfiguration of the rooms. But it makes sense whenever possible to take advantage of the care and craftsmanship that are already there. Buildings that incorporate the work of several generations offer complex evidence of the people who have lived and worked on the site, and of their whims and commitments.

The patterns of activity that surround a building site also need attending to, since their threads have often been woven over the years and are at least as fragile, as invested with human meaning, as crafted materials are. A proposal by Lyndon Associates (below left) for the re-use of a nineteenth-century building near Faneuil Hall in Boston was designed to take advantage both of the building and of the street market that presently extends to it. Any intervention by new construction, or with new patterns of activity, should take into account the already existing forms and patterns of a place.



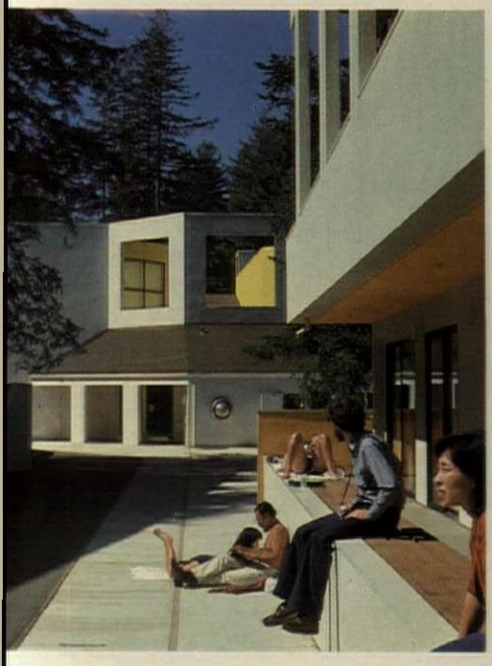
4 STRUCTURE PLACES FOR PEOPLE TO CLAIM

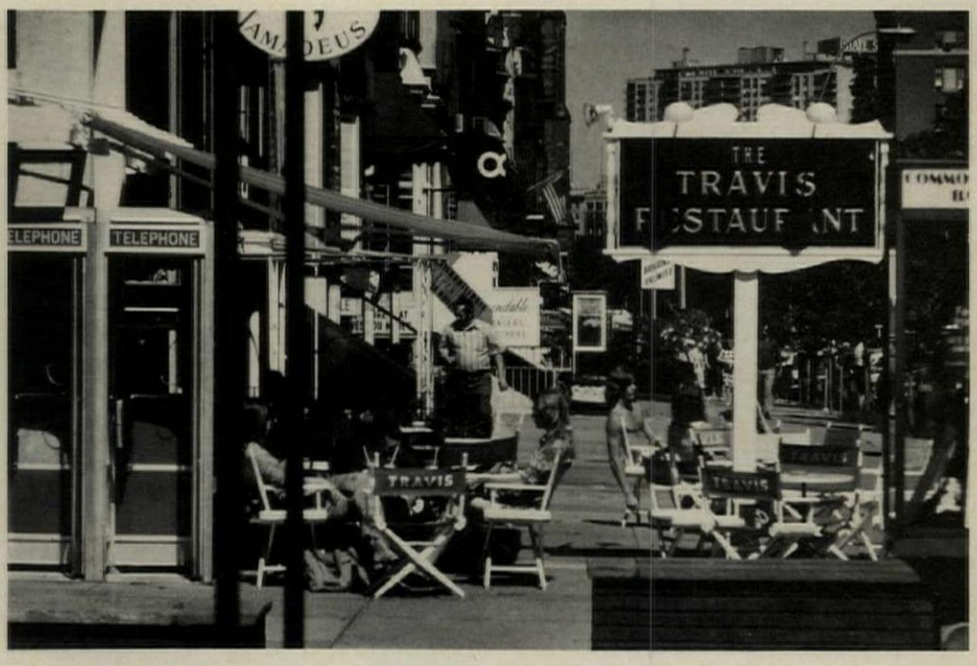




Give a measured and varied structure to space

Individuals and groups need to be able to place themselves in a space and be evident to each other. Large and undifferentiated spaces do not offer much help in recognizing individuals and small groups, but places that are modulated and that have variations in their structures make it easier to attend to people and to imagine their individual claims on parts of the environment. The structure may be complex, and it may channel people's movements in many different ways to make an animated scene (photo left). Or it may be so differentiated that the spaces and buildings themselves encourage you to imagine very different lives for a number of different people living close to each other. In some sections of San Francisco (above right) bowed fronts, turrets, balconies and greenhouses so vividly establish the scene that no actors are needed. Where spaces are very large and sparsely populated (above left), quite simple modulation can sort people into separately identifiable groups.



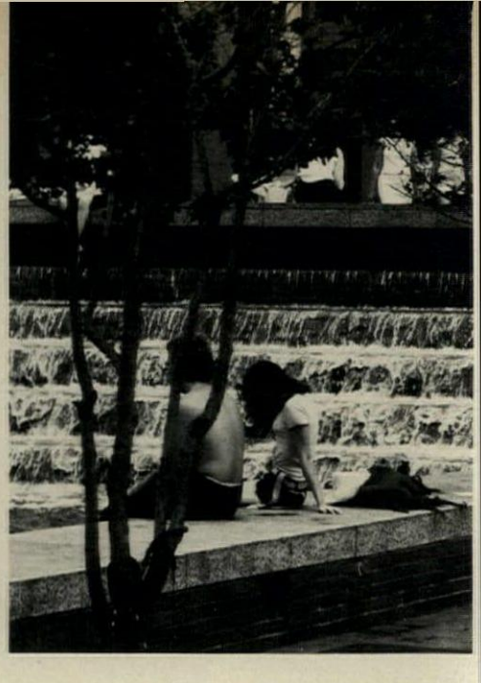


Make spaces that are contestable and encourage improvised use

In order to give people opportunities for spontaneous action, we need parts of the environment that can be used in many different ways, and which seem to belong at the same time to public realm and to the private realm.

Contestable spaces are usually found along the boundaries between public and private property, adjoining but separate from a main path. Contestable spaces usually have no specific boundaries; they are wedged between things, and they have walls, columns or other props that help people use them for a variety of purposes. A high bench that lies between private rooms and the main public walkway at Kresge College in Santa Cruz, California (above left), are many things at once—sunbathing platform, backrest, and a place to pause along the way. Residential streets turned commercial often have contestable spaces (above), with large setbacks that are paved like sidewalks, but that are still private property, often separated off by signs, low walls or plants. Eating outdoors often takes place in contestable spaces. Early views of the Place de la Concorde in Paris (left) suggest that, before cars spoiled the scene, the balustrades and piers were not simply formal boundaries, but things that sheltered and encouraged a great range of activities, mercantile and otherwise. Here small forms that may seem incidental to the over-all scheme offer useful opportunities for improvisation, and compelling evidence that there are people about.

5 BIND PEOPLE IN TIME

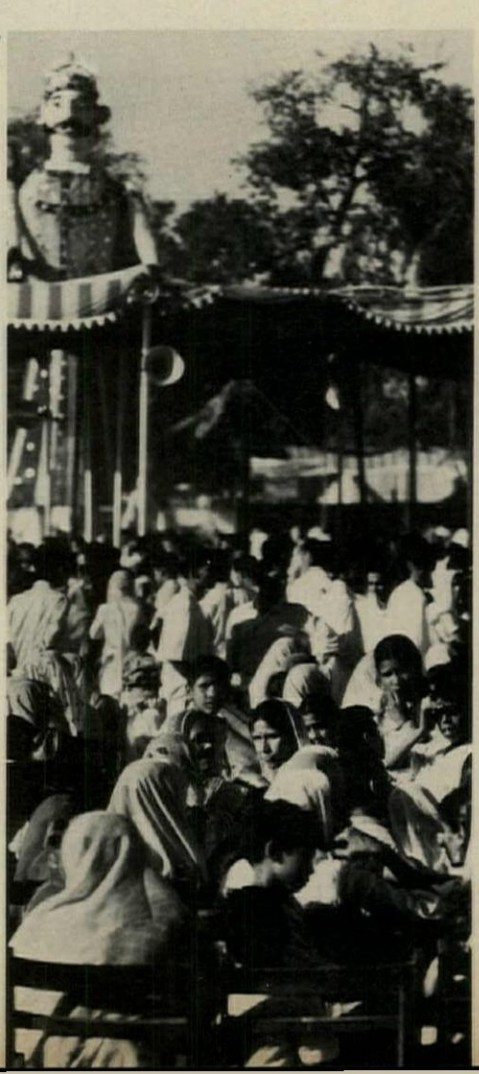


Make places that nurture celebration and encourage people to pay attention to each other

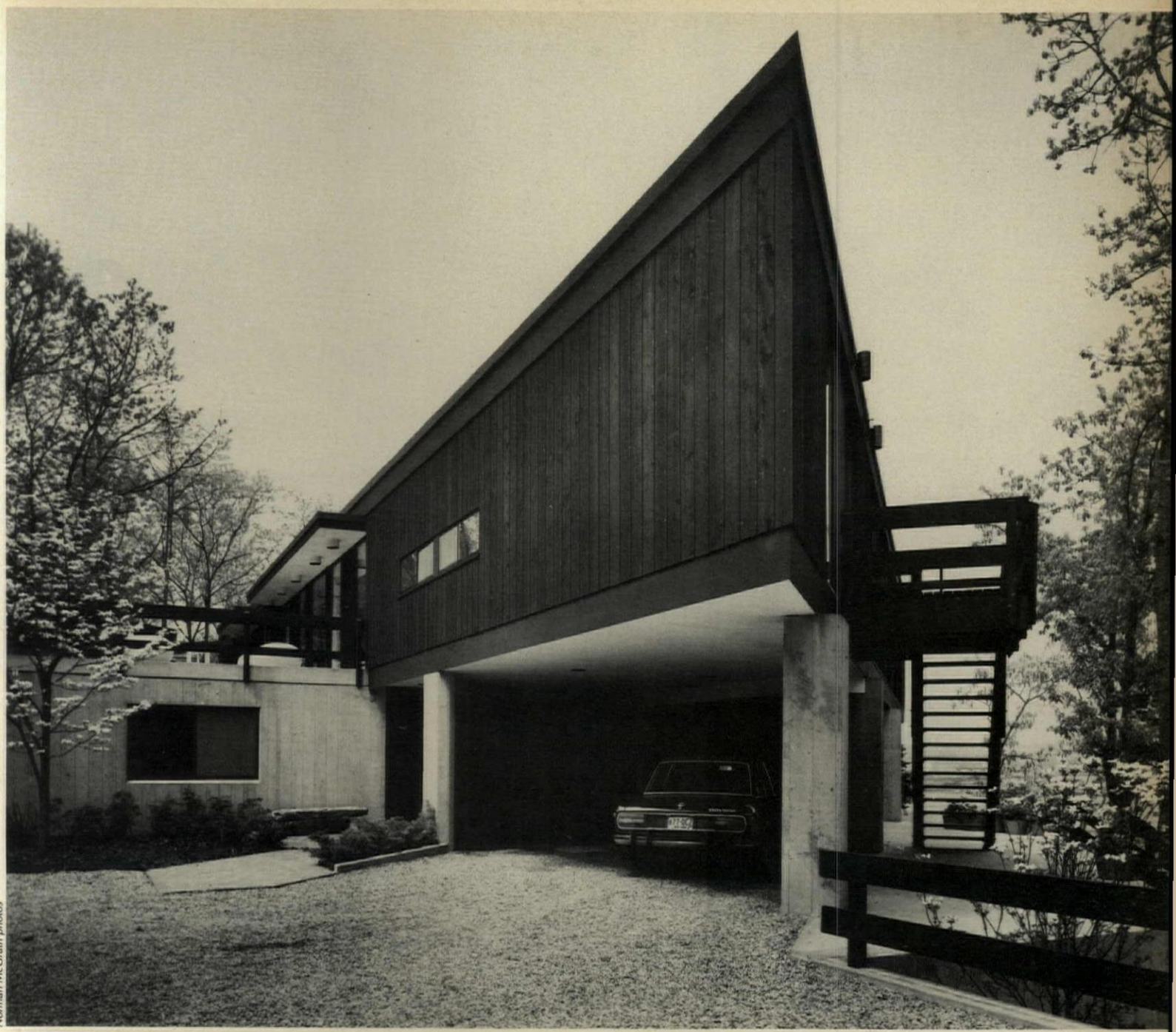
Events that bring people together and call their attention to some common theme release them from ordinary constraints and allow even strangers to notice and to know each other. Great festivals set up a grand mythic context for such encounters, but more daily things like street musicians, running water and awesome sights also interrupt people's private schedules and bring them together, binding them for a moment to a different life beat, common to a particular place and a particular time. In our world of architecture beyond the parlor and the board room, there should be many places where this can happen.

PARTICIPATION AND US

Contemporary architecture has been heavily burdened with the assumption that its main purpose is to reveal the sensitivity of the designer, and the fine ability of the client to discriminate. Accordingly most efforts during the last ten years to develop more democratic participation in designing the environment have focused almost exclusively on the participation of a large number of people, specialists and otherwise, in the design process itself. But architects have on the whole neglected the equally important opportunities for making an architecture which as a final product engages our imaginations and brings to mind the people who built it, who maintain it and who use it—an architecture, that is, that helps us to pay attention to the people we live among.



Donlyn Lyndon, founder of Lyndon Associates in Cambridge, is Professor of Architecture at MIT and formerly head of the architecture departments there and at the University of Oregon. Co-author, with Gerald Allen and Charles Moore, of the book The Place of Houses, *Lyndon is this year Keay Visiting Professor at the University of Maryland.*



Norman McGrath photos

BOLD TRIANGLE DESIGN FOR AN ISLAND HOME

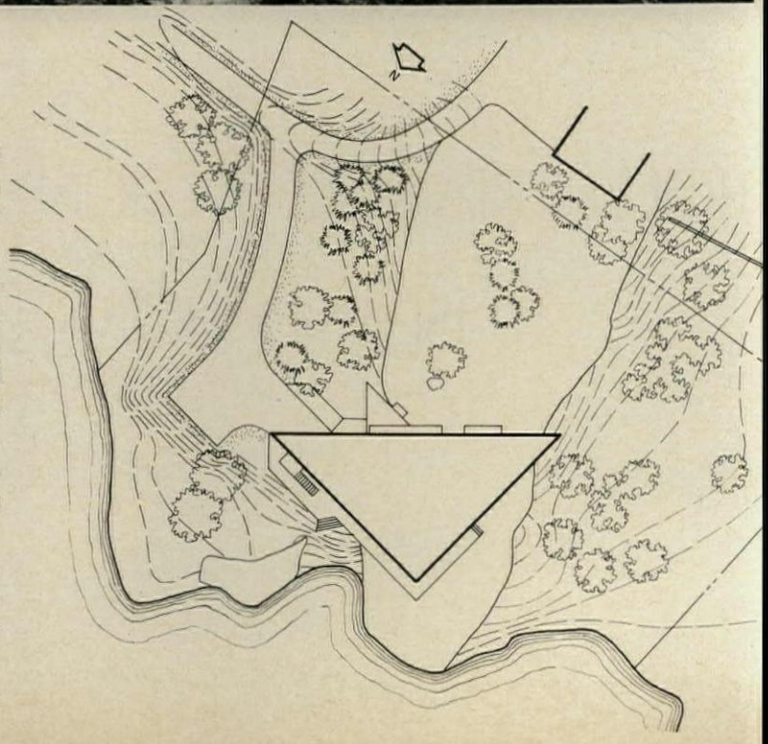
Architect Eliot Noyes studied this site near Mystic, Connecticut, followed his penchant for strong simple-shaped houses, and chose his design: a triangle. This two-level, dark-cedar-clad home that resulted, setting on a rocky peak of a shoreline island, is distinctive, even ingenious, from whatever angle it's viewed. (From the air, it looks like a giant arrow directing pilots to an airport five miles away.)

The 180-degree view of scenic Ram Point Cove that the owners, The Reverend and Mrs. Francis Johnson, are able to enjoy is owed partly to a triangular screened porch adjoining the glazed living area and turned northwest toward the water.

In zoning the house, Noyes used the long, entry side for bedrooms, baths and kitchen, adding floor-to-ceiling windows to the bedrooms to draw in the southern sunlight.

Beyond this row of rooms is the large living/recreation area, including living room, dining and music areas. Broken up only by a freestanding stone fireplace, the room has direct access to the porch and the view through sliding glass doors.

In using the triangular shape, Noyes also took to task a problem



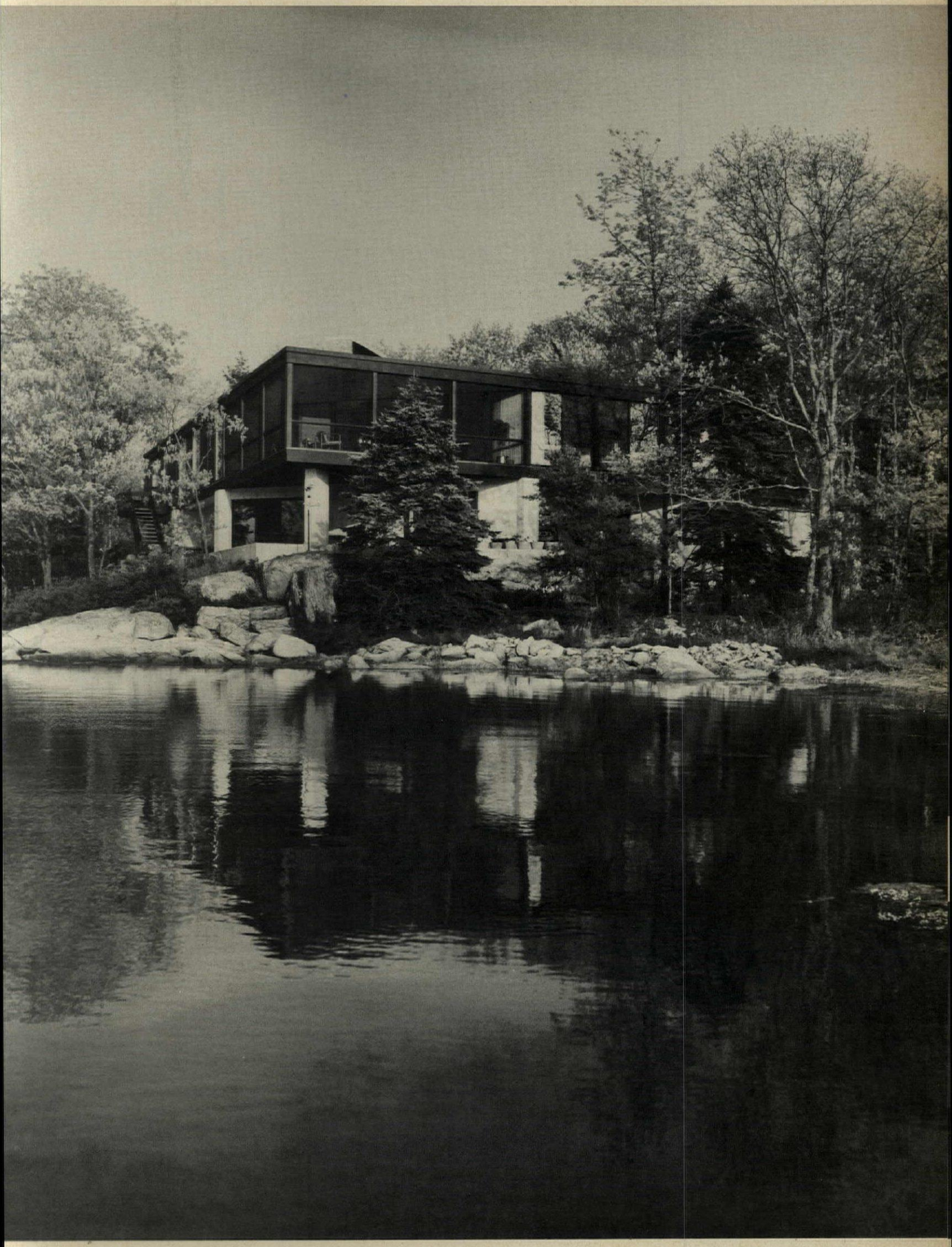
site. Not only was it small (less than half an acre), it was interrupted down the center by a large, rocky ridge. Noyes decided to build a lower level with an irregular, zigzag outline, and to "rest" a triangular second story on top to minimize removal of the rock.

The Johnsons, near retirement, didn't need much room for children, as most of theirs are grown, but their hobbies and favorite activities required ample work and storage space. In their previous Colonial-style house they were used to giving large dinner parties and wanted to do the same here. Their activities—boating, gardening, dogs—had an even better chance for development in this new location.

The entire lower level was designed with these outside interests in mind. Centered on a large entry room, it houses a workshop, bicycle room, boat storage room, carport and dog bath.

A utility-sewing room for Mrs. Johnson juts off the front of this level. From its windows she can get a clear view of approaching visitors as she works; its roof is a sun deck for the second story that opens off one of the bedrooms above.

In addition to a stairway, a small elevator up to the kitchen eases

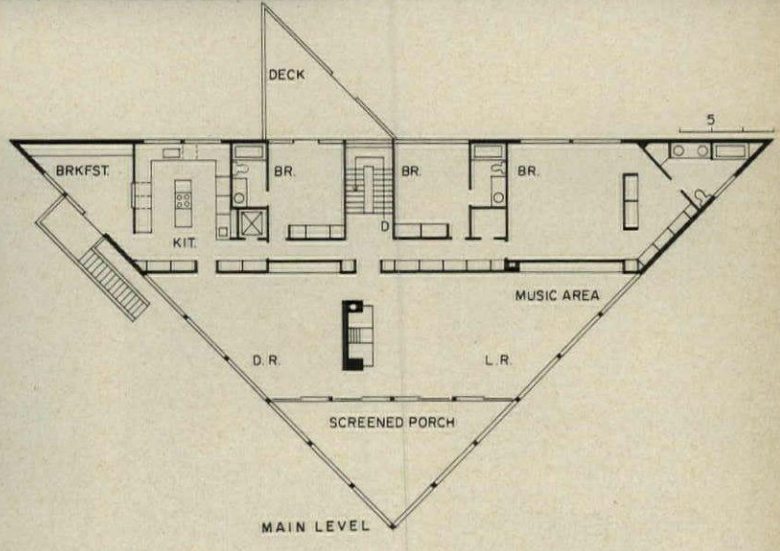


garbage and grocery hauling for the Johnsons. A skylight at the top o the stairs is one of many throughout the house—in the bedrooms baths and kitchen. If these could be considered energy-savers, the lighting system over the large living area is a small-scale luxury. It i a vast grid of downlight fixtures, set four feet on center, with dimmer and group circuits. Almost any combination of lighting is thus possible to suit a variety of moods or times of day, and furniture can be shifted around more flexibly.

To fill one of the acute angles created by the house's shape Noyes designed a breakfast nook off the kitchen. A small greenhouse outside the master bedroom, bluestone floor covering on the first level and slate counters in the kitchen are other special features.

The house has a steel-frame structure with standard wood joists on a concrete foundation, and is centrally air-conditioned.

RESIDENCE FOR THE REVEREND AND MRS. FRANCIS JOHNSON, near Mys tic, Connecticut. Architects: *Eliot Noyes & Associates*. Engineers: *Arne Thun* (structural), *Peter Szilagyi & Associates* (mechanical/electrical). Lighting con sultants: *Sylvan R. Shemitz and Associates*. Contractor: *Ole P. Jensen*.


DECK
BRKFST.
KIT.
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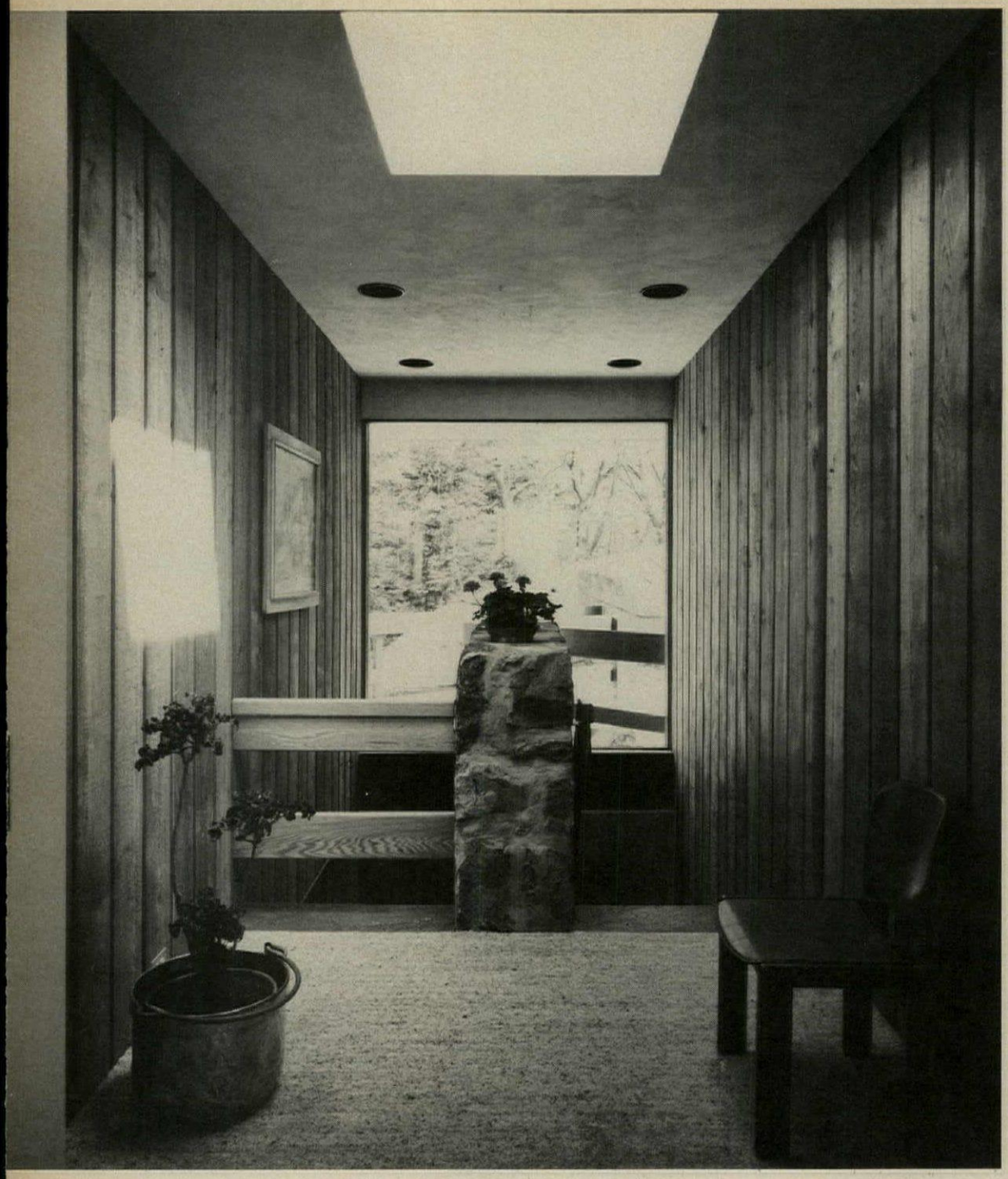
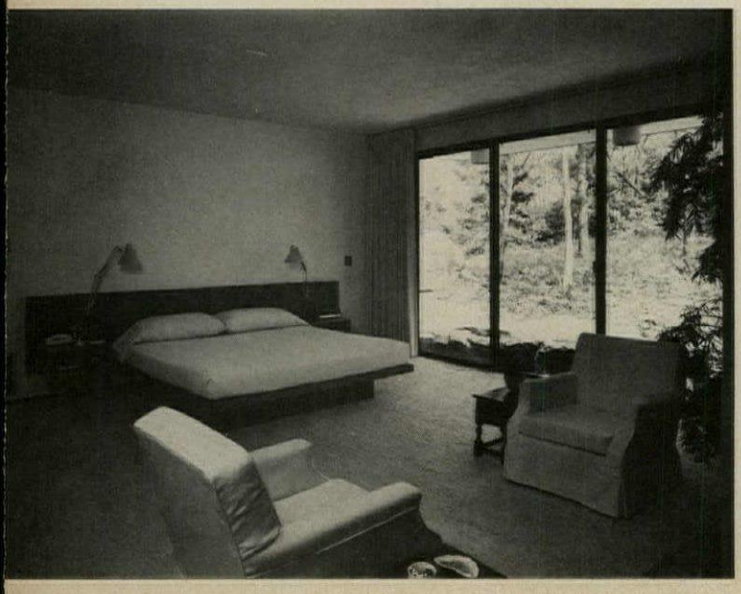
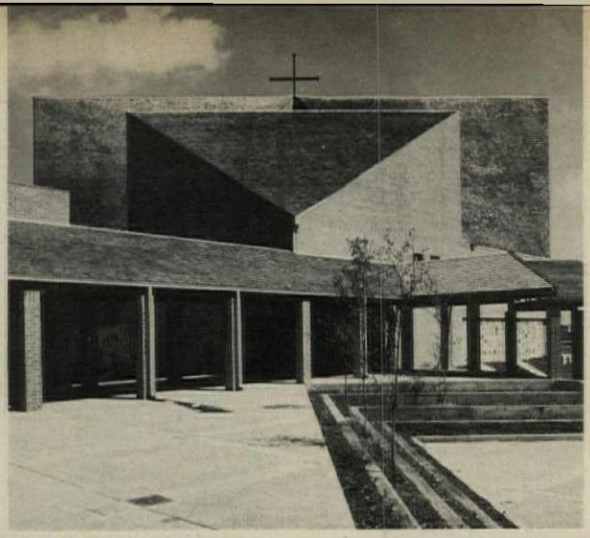
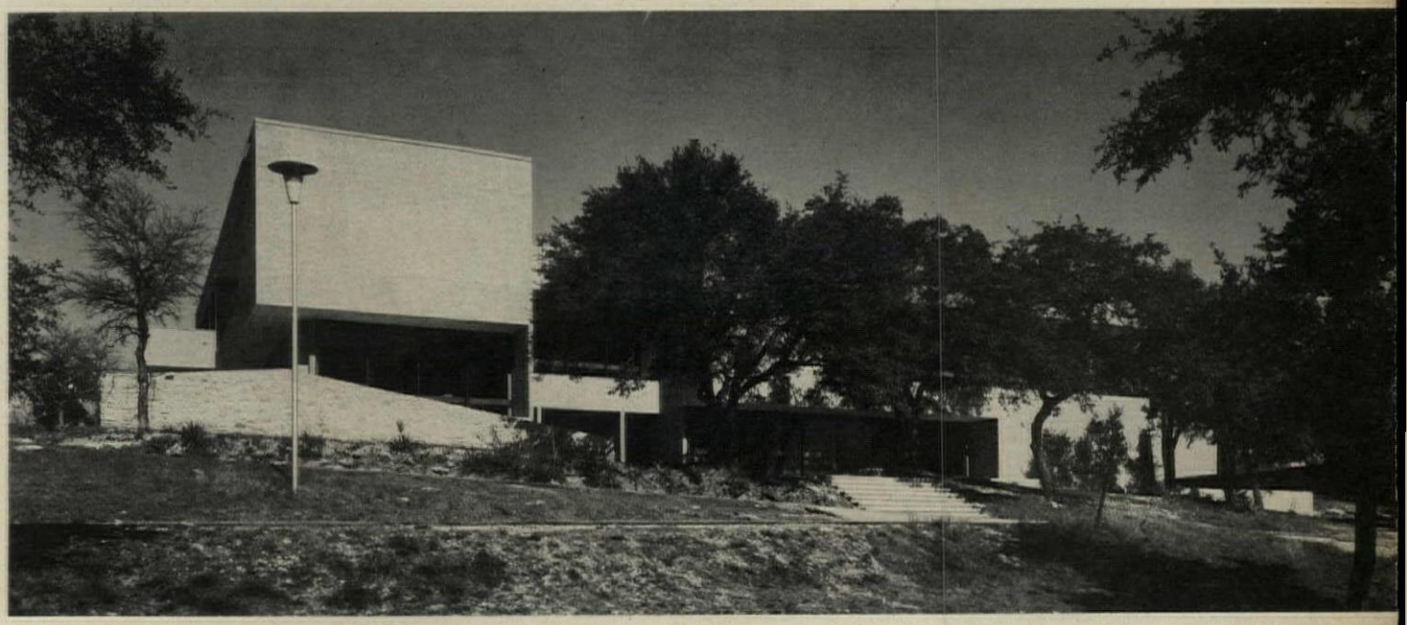
MUSIC AREA
D.R.
L.R.
SCREENED PORCH
MAIN LEVEL



Stairway (left), facing south, leads to elegantly furnished second floor, the main living area of the house. Glazed skylights like the one above, and full-length windows such as those in the master bedroom (below left) draw in energy-saving sunlight throughout the house. In the dining room, the Johnsons and their guests can overlook a scenic view of the cove, as they can in varying degrees from windows in the entire living area (see preceding spread).







THREE BUILDINGS BY CLOVIS HEIMSATH

There is little apparent similarity in the three projects presented on these pages—all are very different in purpose, in scale, in materials usage and in form. But architect Heimsath feels that "there is a connection among these buildings—though I have thought very little about relating the formal solutions and esthetics. Continuity for me is continuity of design process . . ."

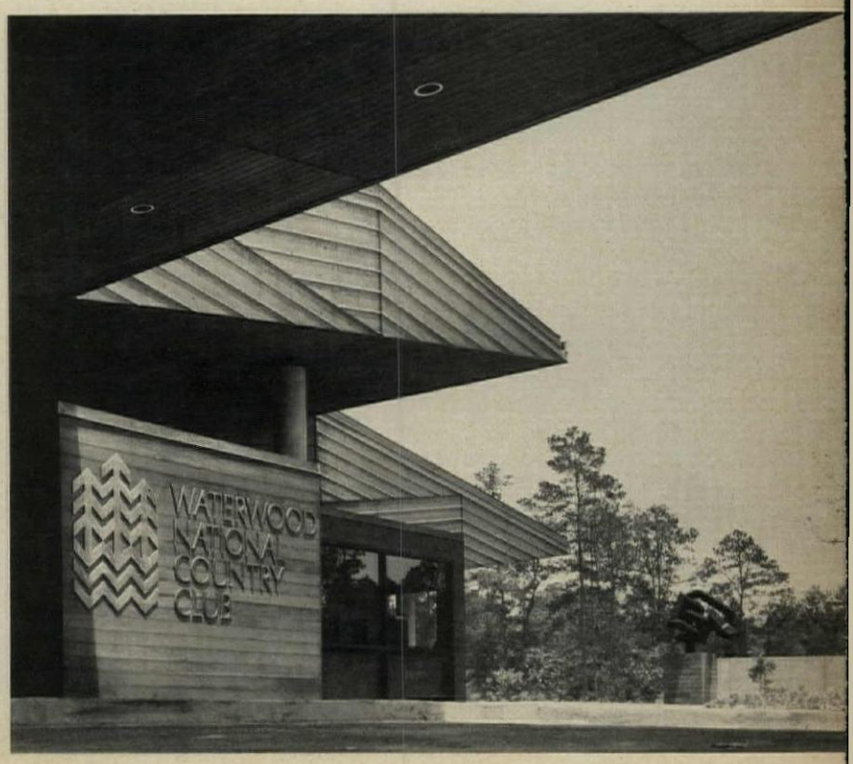
That continuity relates, one can argue, two strong interests of Heimsath: One is behavioral architecture, a subject on which he is now writing a book to be published soon by McGraw-Hill. He clearly works very hard to establish not just how spaces will be used, but how they will be used by groups of varying size. "Except possibly for a church sanctuary, there is no meaning in planning for groups of 50 or 100; people interact only in groups of eight at the largest." His efforts to create spaces for groups of this size—while letting them relate to groups all around them—is apparent in all three designs.

Another strong interest is systems and research—Heimsath was the founder of the national AIA Systems Committee, and now has in his office four major research projects for FEA, the Corps of Engineers, NASA, and the Postal Service. "Systems, to me, implies a knowledge of the maximum number of subcomponents which we can use in designing through alternatives. My interest is to broaden the number of meaningful parameters that must be considered in a building design."

And so, Heimsath argues: "A building form cannot be preconceived in any way—but must grow out of the best thinking we can manage about how people will use and understand and be moved by a building; and out of the best thinking we can manage about how to build it most efficiently. I am increasingly concerned about esthetic systems which tend to become symbols—and finally interchangeable symbols that are starting points for design. The starting point needs to be the process. . ."

The Heimsath firm makes every attempt to avoid any kind of specialization—and "has had a few of almost any building type you can think of." There are now 12 professionals in Clovis Heimsath Associates Inc.'s small Houston office.

—Walter F. Wagner, Jr.



SAINT STEPHENS EPISCOPAL SCHOOL LIBRARY STUDY CENTER: SYSTEMS STRUCTURE WITH SPECIAL SPACES

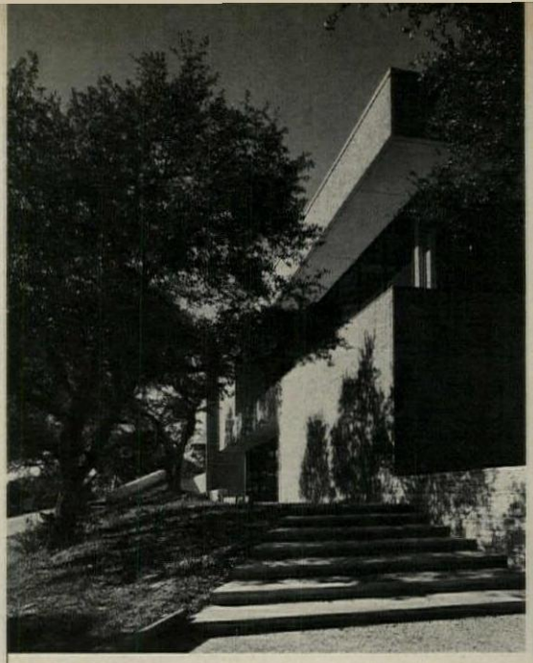
The design of this small building is tightly tied to integrated-SCSD systems components, and a five-foot grid is imposed everywhere inside and out—yet in scale and finishes and detailing the St. Stephens library suits its strong Texas hill-country site and a collection of small-scale academic and dormitory buildings built mostly from native stone in a Texas vernacular style.

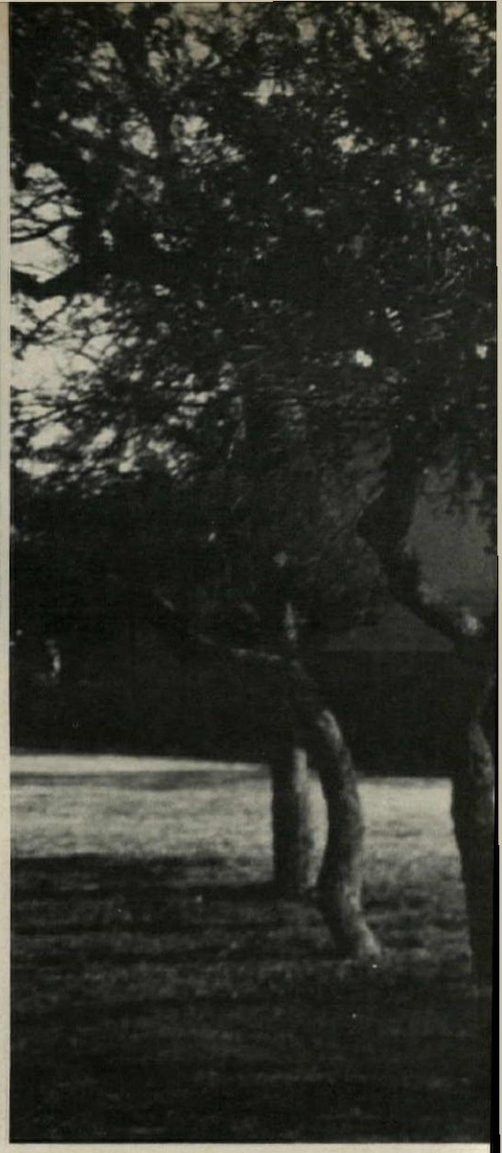
The 15,000-square foot building is at the crest of a steeply graded site, where the split-level plan is not only appropriate but helps to hold down the building scale. The four levels (three shown right) offer the students a wide variety of choices of secluded study places, reading/study spaces of various scales and offering varying degrees of companionship, and open and relaxing lounge areas for quiet conversation—with book stacks serving as space dividers. All of the spaces are lighted and given a quiet sense of drama by the lightwell extending from the lowest level to a skylight at the top and bridged by the stairs connecting the half levels. Since its completion, the building has—because of the variety and flexibility of its attractively designed interior spaces—proven to be not just a library, but a focus for campus activity and a flexible setting for the school's close student-teacher relationship.

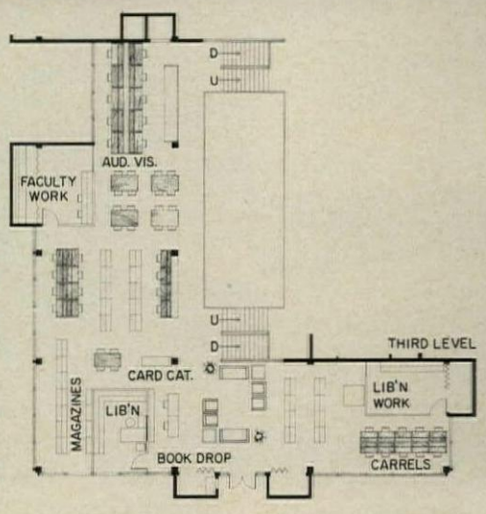
In response to the spectacular views on all sides, the building is ringed with glass.

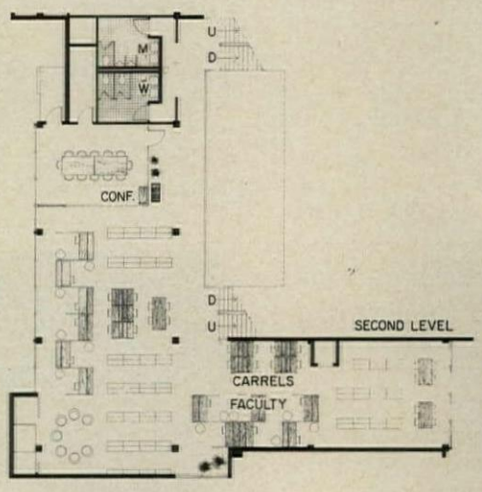
Construction cost of the 15,000 square foot building was $380,000.

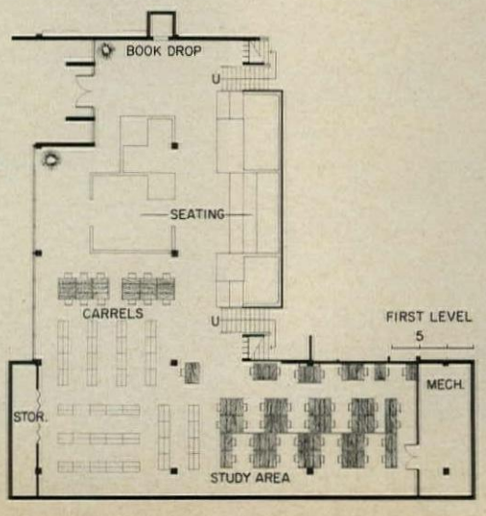
ST. STEPHENS SCHOOL LIBRARY/STUDY CENTER, Austin, Texas. Architects: *Clovis Heimsath Associates Inc.*—project team: *Clovis Heimsath, Joe Santamaria, Rob Warrick, Gene Koonce,* and (for interiors) *James Gaffney.* Associate architect: *Pfluger-Polkinghorn Architects.* Engineers: *Krahl & Gaddy Engineers* (structural), *Jochen & Henderson, Inc.* (mechanical). Interiors and landscape: *Clovis Heimsath Associates Inc.* Contractor: *A. W. Bryant Construction Company, Inc.*

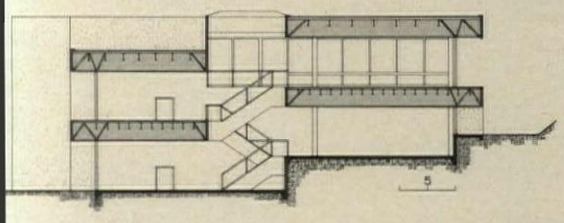










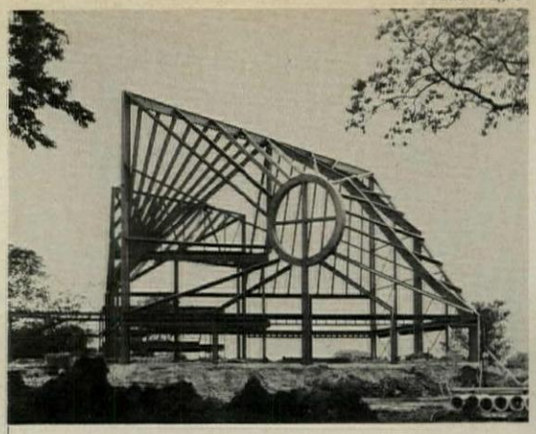


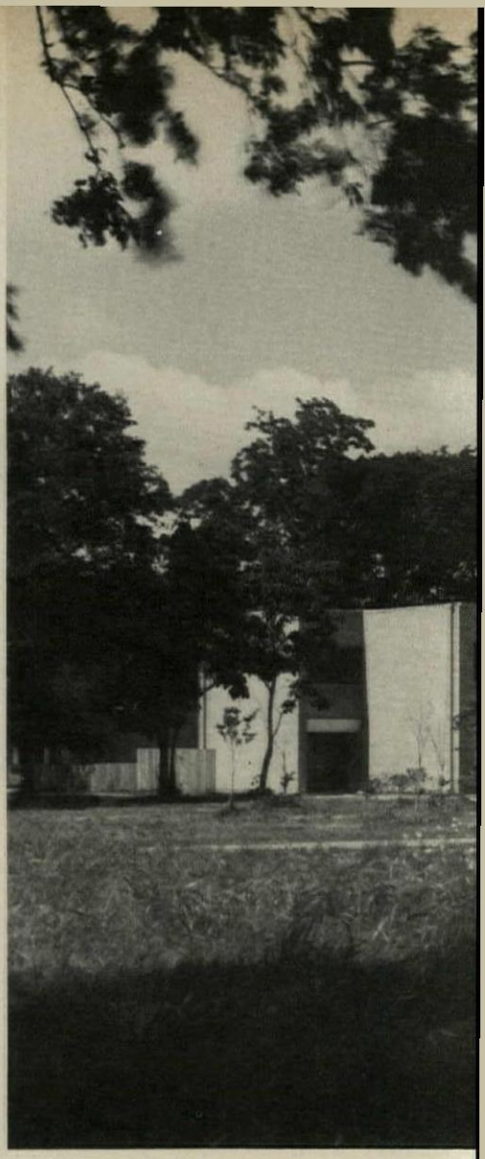
Lawrence Williams photos

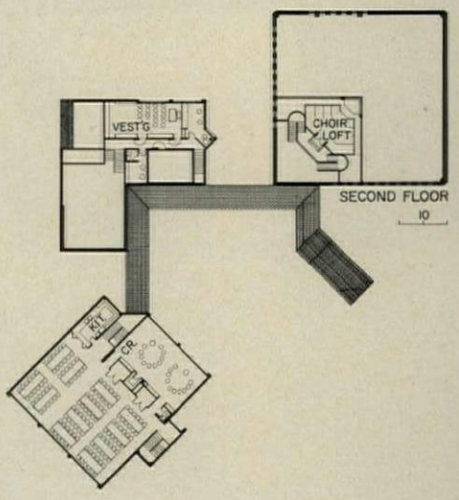
The 5-foot grid extends from the steel-frame, bar joist structure to the layout of partitions and built-in furniture designed by the architects under an EFL study grant. The ceiling system combines troffered lighting with acoustic control, and plenum air supply to the fixtures. Finishes are simple: exposed-aggregate cement plaster above the natural stone retaining walls which tie the building to the rocky site and the surrounding buildings; bronze glass, and oak trim throughout.

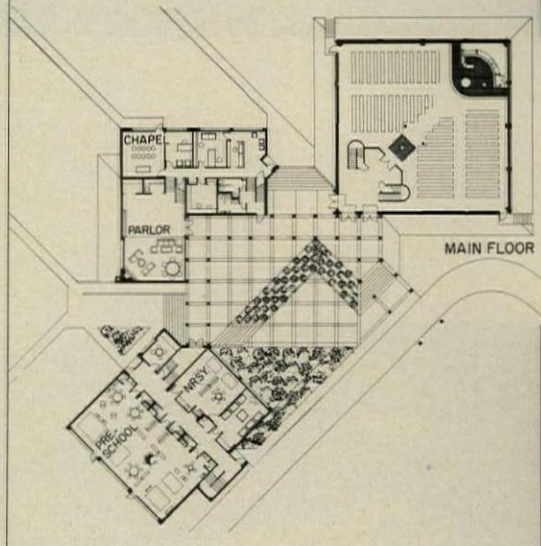
EPISCOPAL CHURCH OF THE EPIPHANY: SYMBOLIC BOLDNESS IN CONTRAST TO SYSTEMS SIMPLICITY

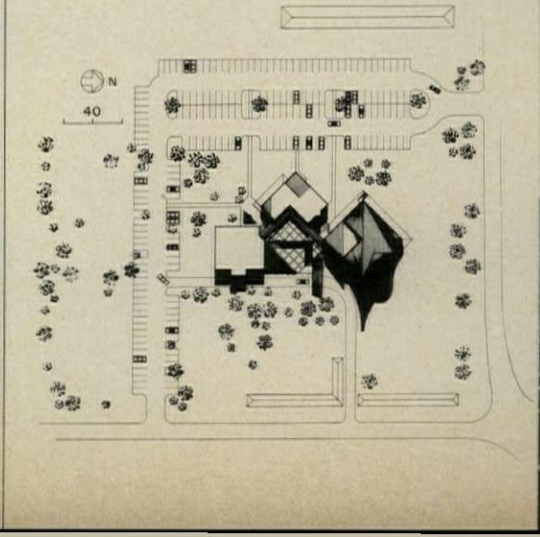
Walter Wagner









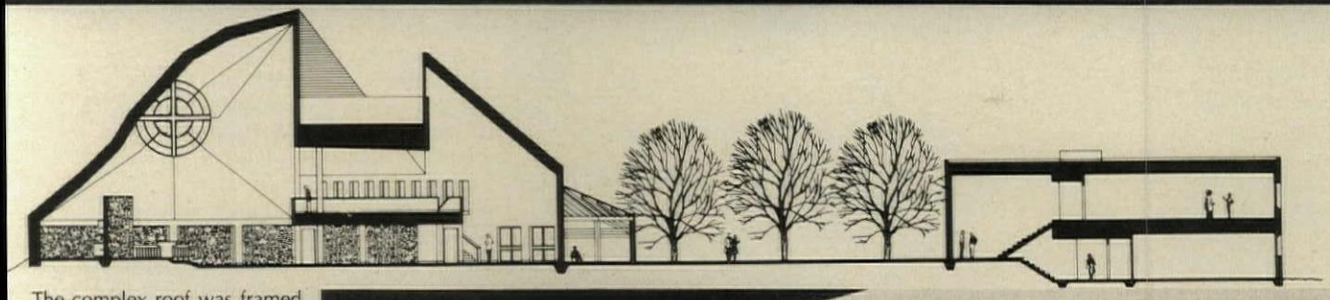


The approach to this church in suburban Houston is of course dominated by the roof form with its round stained glass window. But upon arrival, churchgoers experience a simply-managed but effective circulation amidst low and simple buildings with somewhat ceremonial changes of elevation and scale—until they emerge from beneath the choir loft into the sanctuary, where roof shape, seating arrangement, and the light from the window combine to focus attention on the chancel.

Designed to be a strong community focus, the complex is set in a triangular plan—with an administration and social building set between the sanctuary and the education building. The simplicity and scale of the secondary buildings—like the library on the previous pages designed to the SCSD format—establishes a scale of importance that is strengthened, physically and psychologically, by raising the plaza and the sanctuary five-and-a-half feet on fill—an astonishingly successful technique on the bald prairie surrounding the church.

The raised plaza also works well to relate all of the subsidiary spaces by permitting a split-level plan in the administration and education buildings. The social "parlor" is at "piazza" level, with offices and a high-ceilinged chapel a half flight down and vesting rooms above. In the education building, nursery and Sunday-school spaces are a half-flight down; the fellowship hall a half flight up. The result is a compact, multi-level space arrangement with none of the too-familiar "church basement" feeling. In a colder climate, of course, the outdoor circulation would have to be modified.

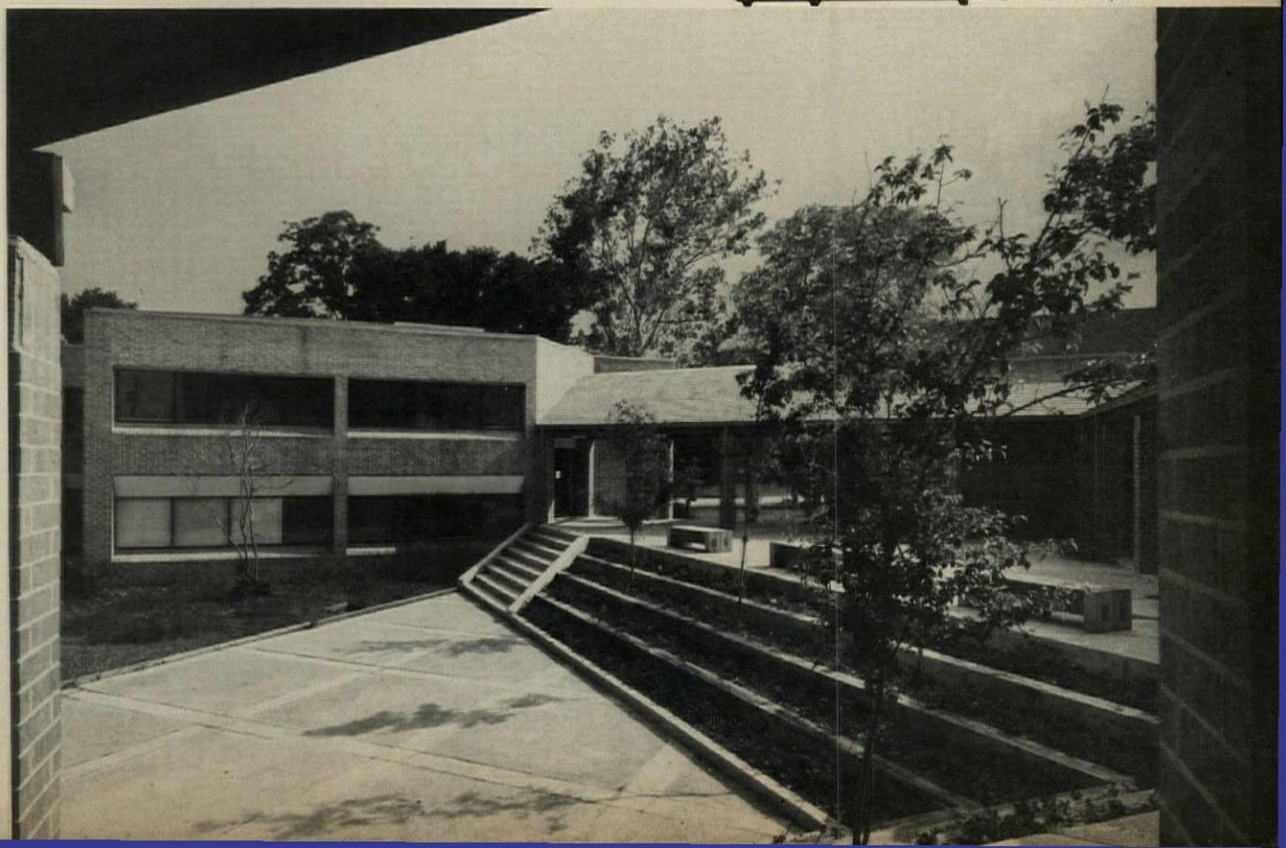
EPISCOPAL CHURCH OF THE EPIPHANY, Houston. Architects: *Clovis Heimsath Associates Inc.*—project team: *Clovis Heimsath, John Day, and Fred Stephens.* Engineers: *Krahl & Gaddy Engineers* (structural), *Jochen & Henderson, Inc.* (mechanical and electrical). Liturgical consultant: *Rambusch Associates.* Landscape: *Fred Buxton.* Contractor: *BD & B, Inc.*



Ed Stewart photos

The complex roof was framed, as the construction photo above left shows, entirely in straight members—the double curvature formed by placing the diagonal of the roof above the square of the base and running straight members between. The shape is sheathed in wood. Elsewhere materials were chosen to lend a sense of tradition—light brown brick for most exterior walls, with rough native rubble stone forming the lower walls of the sanctuary structure inside and out. Heavy timbers atop brick columns support the arcade roof. All sloping roofs are cedar shake.

Construction cost for the 19,000-square foot project was $588,000.



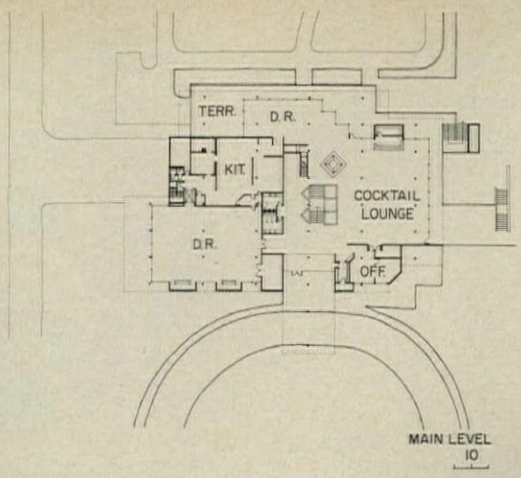
WATERWOOD NATIONAL GOLF CLUB: COMPLEX PROGRAM LEADS TO SPECIAL SITE WORK, PLANNING, AND ROOF

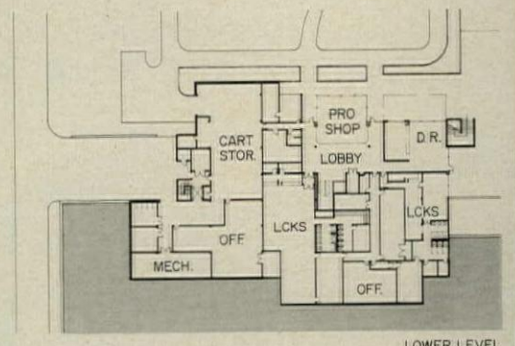
The design of this 35,000-square-foot building began with obvious practical constraints: the men's and women's locker rooms, the pro shop, the coffee shop, and the golf-cart storage all want to open directly to the tees at grade. Yet the prime spaces requiring view are the lounges, dining rooms and dining terraces. One solution would be a very low and very sprawling building. Another, a two-story configuration that would require each visitor to enter the main spaces via a flight of stairs. The architects solved the problem "by moving a mountain" to the front of the building—creating a grade change that puts the dining and lounge areas on the level of the auto entrance (photo above). They open on the golf-course side to a broad deck with a splendid view of the course; while the locker areas, pro shop, etc. open to grade beneath.

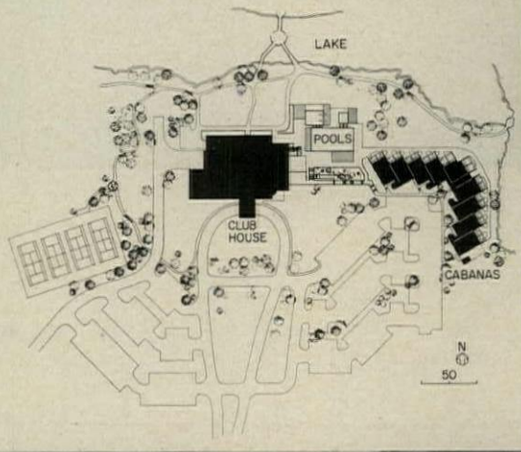
The upper-level plan is divided into a number of small seating groups (center photo, bottom), and the dining areas on the view side are separated into outdoor and indoor spaces, with the stepped glass wall creating a number of quiet corners. Heimsath argues that "How well a building is used simultaneously by a lot of small groups might be called the dynamics of the building—a better definition of its use than the plan considered statically."

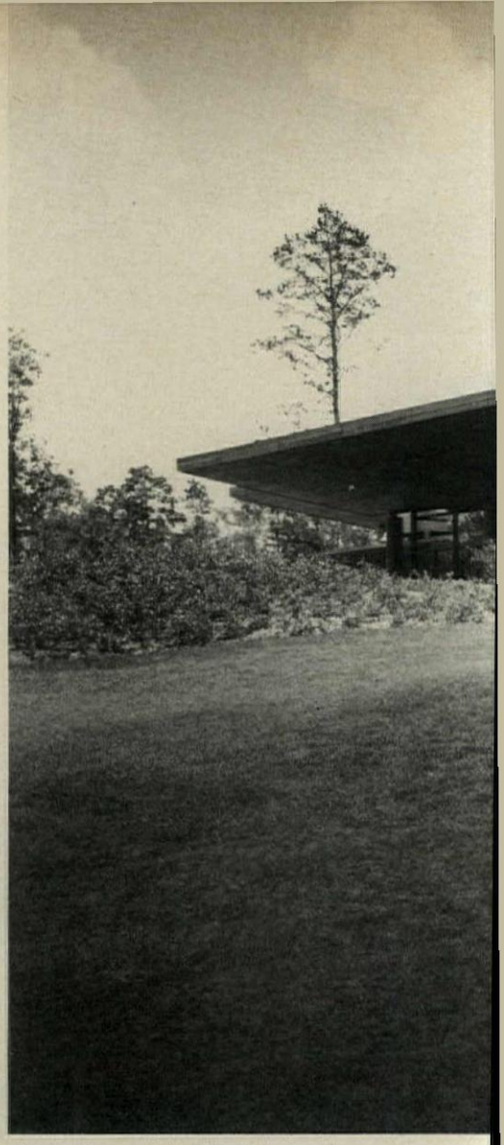
Given this free and flowing placement of the spaces the problem of the roof was solved innovatively. The truss form developed permitted great flexibility in creating varied scale.

WATERWOOD NATIONAL GOLF CLUB AND CABANAS, Lake Livingston, Texas. Owner: Horizon Properties Corporation. Architect: *Clovis Heimsath Associates Inc.*—project team: *Clovis Heimsath, Rob Warrick, Fred Stephens, Kris Kossak, and* (for interiors) *James Gaffney and Henry Derwin;* Engineers: *Krahl & Gaddy Engineers* (structural), *Jochen & Henderson, Inc.* (mechanical). Landscape architect: *Fred Buxton.* Graphics: *Bill Sawyer Associates, Inc.* Sculptor: *Bob Fowler.* General contractor: *Horizon Corporation.*

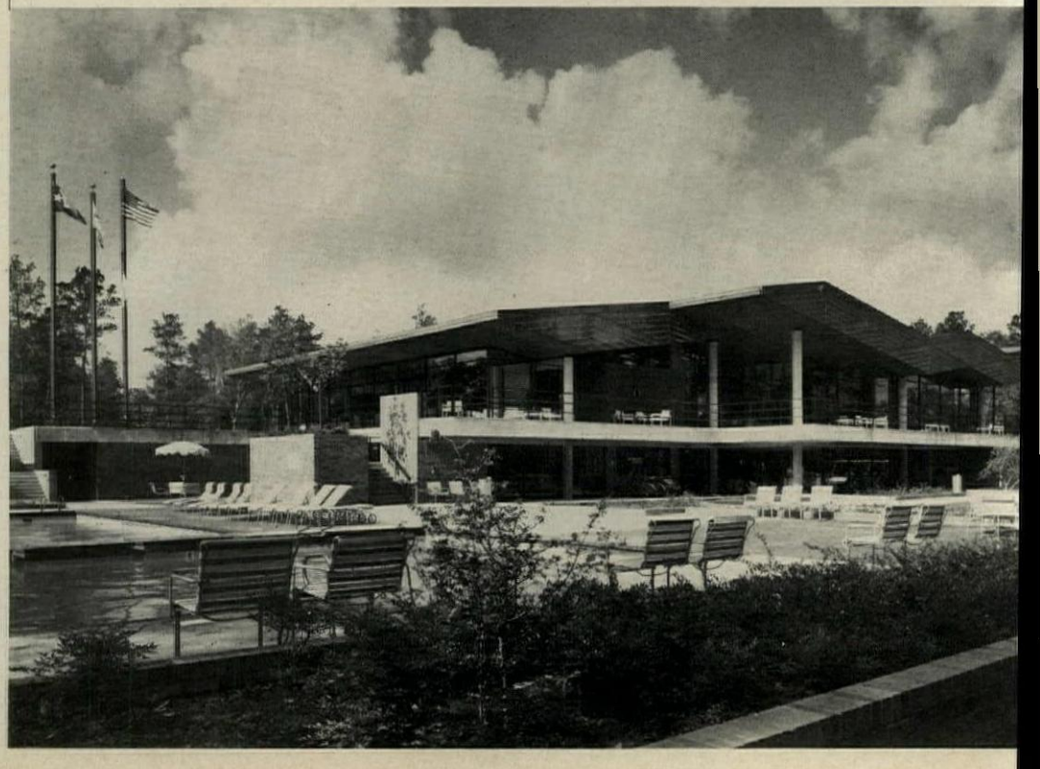




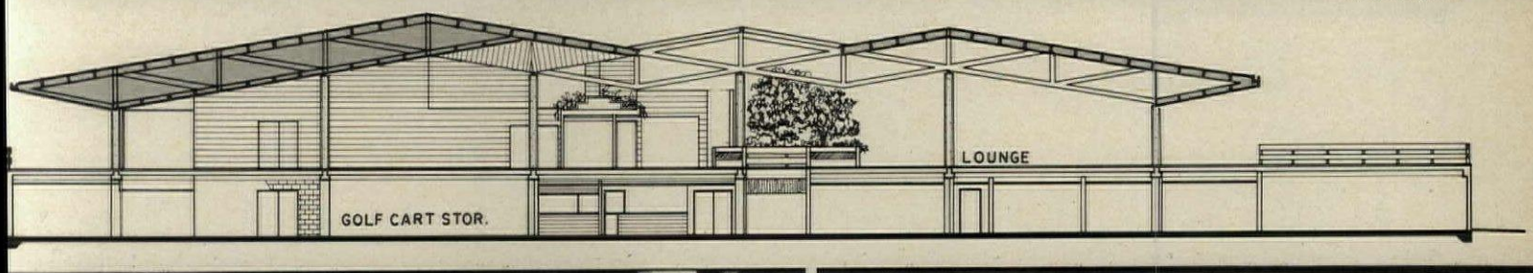


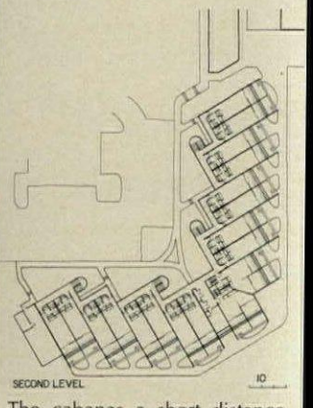


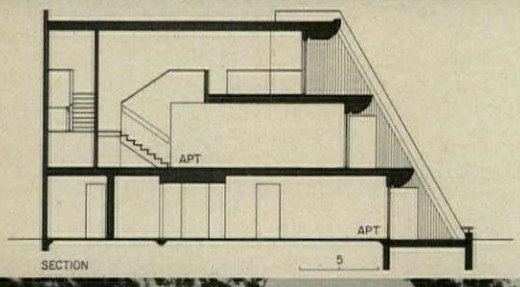
Despite the complexities of the clubhouse, the structural system is simple; an ordered pattern of concrete columns supporting the prefabricated five-foot-deep trusses on 16-foot centers. Finishes are wood siding on the upper level, brick below; wood plank ceilings, copper fascia.



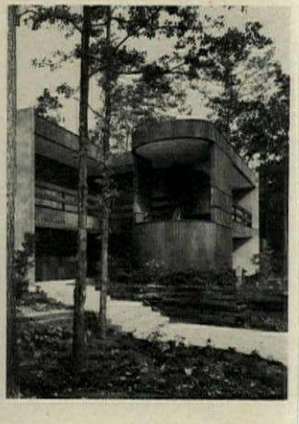
Ed Stewart photos

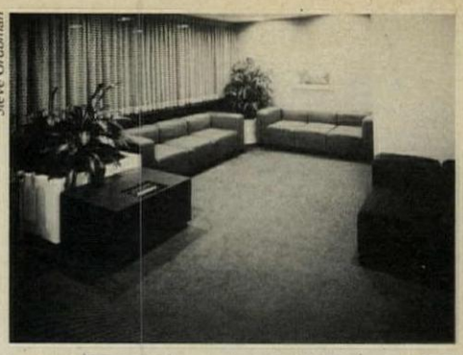






The cabanas a short distance from the club house complement the main building in scale and in finishes, but are entirely different in structure. The cabana walls are tilt-up concrete on slab, with lightweight steel joists spanning between the bearing walls. A mix of single rooms, two-bedroom family units, and duplex suites (see section) fits within the basic plan. The larger ground-level units develop the stepped back massing. All units have decks with views overlooking the course.

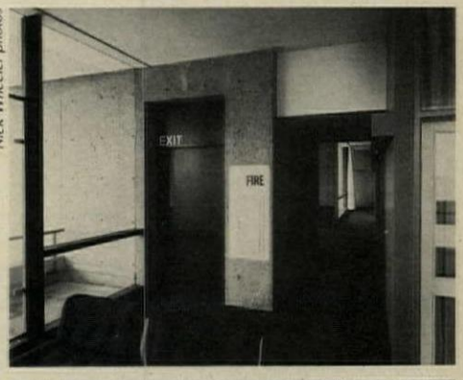



Steve Grubman

MEDICAL FACILITIES

In spite of a profoundly changing climate of design for medical facilities brought about by new legislation and shifting ratios of outpatient space allocation, there is a sustained and increasing quality of design attention to buildings and their interiors. The National Health and Resources Act of 1974 has changed the ground rules of health facility financing and regional planning. George J. Mann analyzes the law and its implication for architects beginning next page. Other aspects of the effects of health care systems on design are analyzed by Michael L. Bobrow and Julia Thomas (page 122). The photos of hospital interiors at right attest to the design quality of the portfolio of hospitals exhibited on the following pages. While the quality of building architecture and interior design is a basic theme in the exhibits that follow, it is notable also that each of the hospitals shown is a planned addition to an existing hospital and responds to the conditions of change described above. Master planning for expansibility and flexibility is basic to all of the facilities described. The portfolio of four hospitals by Payette Associates is shown here to demonstrate the variety of solutions and consistency of quality that can be called upon in a single firm. The Illinois hospital by Perkins & Will demonstrates that this kind of quality is neither regional nor exclusive to a single firm. The implication hoped for is that the constraints of change and budget can be overcome by architects of quality everywhere.

—William B. Foxhall



Nick Wheeler photos


Jim Gabriel

Top photo at right is of a patient dayroom at Ingalls Memorial Hospital designed by Perkins & Will with interiors by ISD Incorporated. The other four photos comprise a portfolio of designs by Payette Associates beginning on page 114.

THE HEALTH PLANNING LAW: CRISIS OR OPPORTUNITY FOR ARCHITECTS?

by George J. Mann

The National Health Planning and Resources Development Act of 1974 (P.L. 93-641) opens up sweeping opportunities for architectural firms. Yet an atmosphere of crisis can be created within the traditionally oriented practice emphasizing the design of hospitals and health care facilities if the reasons for this legislation are not fully comprehended by the principals. This article analyzes the new law and its impact on architectural practice.

In evolving the new health legislation, the Congress of the United States recognized that: 1) the achievement of equal access to quality health care is a priority of the Federal government; and 2) massive infusions of Federal funds into the existing health care system contributed to inflationary increases in the cost of health care and failed to produce an adequate supply or rational regional distribution of health resources (health services, health manpower and health facilities). (In fiscal year 1974, we spent about $104 billion for health care. That works out to $485 for every man, woman and child in the country. The cost of health care constitutes 7.7 per cent of our Gross National Product. The national health bill has risen so rapidly that in six years it has nearly doubled, in 14 years it has quadrupled, since 1950 costs have increased ninefold. Approximately $25 billion out of the $104 billion represents expenditures by the U.S. government.) Therefore, the primary reason for P.L. 93-641 is to conserve dollars. The cost of health care has soared and the government has had to pick up a significant portion of the bill.

The objectives and purposes of this Act are to facilitate the development of recommendations for a national health planning policy to strengthen area-wide and state planning and coordination of health services, manpower, and facilities, and to authorize financial assistance for the development of resources to further that policy.

The new legislation creates a single new program of state and area-wide health planning and development replacing several previously existing programs for health planning and resource development. Through this Act, planning and development are, for the first time, legislatively tied together at the national, local, and state levels.

Provisions of the National Health Planning and Resource Development Act

The legislation has two principal parts: Title XV revises existing health planning programs (which expired June 30, 1974) and Title XVI revises existing construction and modernization programs (which also expired June 30, 1974). It also provides funds for "Health Systems Agencies" for use in implementing their plans. The Act of 1974 is being administered by the Bureau of Health Planning and Resources Development in the Health Resources Administration, one of the six components of the Public Health Service.

Title XV, Part A: National Guidelines for Health Planning provides for guidelines that will be forthcoming shortly. These guidelines will include a statement of national health planning goals based on national health priorities specified and enumerated in the legislation.

A National Council on Health Planning and Development will be established. This council will advise the Secretary of HEW on the implementation of P.L. 93-641 and on the development of the national guidelines. The council will have 15 members.

Part B: Health Systems Agencies directs that a network of Health Systems Agencies responsible for health planning and development throughout the country will be developed. The governors of each state have been asked to designate "Health Service Areas" for planning and development purposes that meet the requirements specified in the legislation.

The "Health Service Areas" are important to the new planning program because they represent the first step toward the eventual designation of "Health Systems Agencies," responsible for health planning and development in the areas designated. In each "Health Service Area" a private nonprofit corporation or a public entity will be designated as the Health Systems Agency responsible for health planning and development in that area.

The "Health Service Areas" are to have the following characteristics:

1. be geographical regions appropriate for effective planning and development of health services;
2. have at least one center for providing highly specialized health services to the extent practical;
3. have a population of between 500,000 and 3 million and preferably not split a SMSA (Standard Metropolitan Statistical Area), and conform wherever possible with the areas of PSROs (Professional Standards Review Organizations). The legislation also permits the area to be less than 500,000 to a minimum of 200,000 under "unusual circumstances" and below 200,000 in "highly unusual circumstances," both as determined by the Secretary of HEW.

The "Health Systems Agencies" in order to accomplish the above will:

1. gather and analyze data;
2. develop short range and long range Health Service Area plans;
3. provide technical assistance;
4. coordinate plans with PSROs and other agencies;
5. review, approve, or disapprove applications for Federal funds;
6. assist states with capital expenditure reviews;
7. assist states in determining need for new institutional health services;
8. assist states in reviewing existing institutional health services offered with respect to the appropriateness of these services;
9. annually recommend to the states projects for modernization, construction, and conversion of medical facilities in the area.

"Health Systems Agencies" will be responsible for:

1. developing and implementing plans for improving area health;
2. improving the quality of health care services and their accessibility;
3. controlling costs;
4. preventing unnecessary duplication of area health resources (services, manpower and facilities).

Part C: Designation of State Health Planning and Development Agencies provides that each state will have a coordinating council appointed by the governor and a statewide agency selected by the governor and designated by the Secretary of HEW. Together they will review Health System Agency plans and recommend a statewide health policy.

The "State Health Coordinating Council" will:

1. have 60 per cent of its members appointed by the governor from the state's Health Systems Agencies and have a consumer majority;
2. review annually and coordinate the health system plans and annual implementation plans of the state's Health Systems Agencies;
3. prepare a state health plan;
4. review funding requests;
5. advise the State Agency on the performance of its functions;
6. review and approve or disapprove state plans and applications for grants to the state.

The required functions of the "State Agency" include:

1. state health planning and implementation of those parts of the state's health plan and the plans of Health Systems Agencies which relate to the government of the state;
2. preparing a preliminary state plan for approval or disapproval by the State Health Coordinating Council;
3. assisting the Council in the review of the state medical facilities plan;

George J. Mann is director of the Health Service Planning and Design Program at the Graduate School of Architecture and Planning, Columbia University. He is also president of Resource Planning & Development, a firm in private practice in New York City and Bryan, Texas.

Highlights of the new legislation:

- Requires HEW to issue guidelines on national health planning policy.
- Establishes a National Council on Health Planning and Development.
- Creates a network of Health Systems Agencies (HSAs) responsible for health planning and development.
- Specifies procedures for designating Health Service Area.
- Authorizes planning grants for Health Systems Agencies.
- Provides assistance for entities conditionally designated as HSAs.
- Has HEW designate State Health Planning and Development Agency in each state (upon recommendation of the governor).
- Creates Statewide Health Councils.
- Authorizes grants for state health planning and development.
- Authorizes grants for six states for demonstrating effectiveness of rate regulation.
- Provides technical assistance for Health Systems and State Agencies.
- Authorizes at least five centers for study and development of health planning.
- Revises the existing medical facilities construction program.
- Provides assistance through allotments, loans, loan guarantees and public interest subsidies for projects for:
  modernizing medical facilities;
  building new outpatient medical facilities;
  building new inpatient medical facilities in areas which experienced recent rapid population growth;
  converting existing medical facilities for providing new health services.
- Includes grant assistance for construction and modernization projects for eliminating or preventing safety hazards and complying with licensure or accreditation standards.
- Authorizes grants to Area Health Service Development Funds.
- Authorizes appropriations for transition of existing planning and related programs to the new system established under the Act.

4. serving as the designated planning agency under Section 1122 of the Social Security Act if the state has made an agreement and is administering a state certificate of need program;
5. reviewing new institutional health services proposed and making findings as to the need for such services;
6. reviewing existing institutional health services with respect to the continuing appropriateness of such services and publishing its findings;
7. administering or supervising the administration of the state medical facilities plan.

Part D: General Provisions include:

1. procedures and criteria for use by the Health Systems Agencies and the State Agencies in their reviews;
2. requirements that the Secretary of HEW provide technical assistance to Health Systems Agencies and State Agencies and establish a national health planning information center;
3. a requirement that the Secretary of HEW fund at least five centers for the study and development of health planning;
4. requirements that the Secretary review and approve or disapprove the annual budget of each Health Systems Agency and State Agency, develop performance standards for Health Systems Agencies, and State Agencies, and monitor their performance, and review in detail at least every three years the structure, operation and performance of each Health Systems and State Agency.

Title XVI—Health Resources Development revises the existing medical facilities construction program, and relates construction much more closely to the planning programs created by Title XV.

Part A: Purpose, State Planning and Project Approval provides assistance through allotments under part B (Title XVI) and loans and loan guarantees and interest subsidies under part C, for projects for:

1. modernization of medical facilities;
2. construction of new outpatient medical facilities;
3. construction of new inpatient medical facilities in areas which have experienced (as determined under regulations of the Secretary) recent rapid population growth; and
4. conversion of existing medical facilities for the provision of new health services and to provide assistance through grants under part D, for construction and modernization projects designed to prevent or eliminate safety hazards in medical facilities or to avoid noncompliance by such facilities with licensure or accreditation standards.

In order to receive funds under parts B and C, the State Agency must have a medical facilities plan which has been approved by the Statewide Health Coordinating Council and the Secretary of HEW.

Part B: Allotments provides for allotments to the states on the basis of population, financial need, and the need for medical facilities projects. It limits to a maximum of 20 per cent of the states' allotment for use in new outpatient facilities in areas of recent rapid growth in population, and limits to a minimum of 25 per cent of the states' allotment for use in outpatient facilities which will serve medically underserved areas.

Part C: Loans and Loan Guarantees authorizes the Secretary to make loans and guarantees loans for medical facilities projects. A loan or loan guarantee may not exceed 90 per cent of the cost of a project unless the project is in an urban or rural poverty area, in which case the loan or loan guarantee may cover 100 per cent of the costs.

Part D: Project Grants provides for direct Federal project grants to publicly owned health facilities for projects which will eliminate or prevent safety hazards or avoid noncompliance with state or voluntary licensure or accreditation standards. The amount of the grant is not to exceed 75 per cent of the project costs unless the project is located in an urban or rural poverty area, in which case the grant may cover 100 per cent of the costs.

Part E: General Provisions contains general provisions pertaining to judicial review, recovery, State control of operations, definitions, financial statements and technical aid.

Part F: Area Health Services Development Funds provides that development grants will be made to each Health Systems Agency (up to an amount not to exceed $1 per person in the Health Service Area) which is organized and operated under the provisions of the law.

The legislation also includes transitional provisions for CHP 314 (a) and (b) agencies, regional medical programs, and experimental health service delivery systems as they are phased into HSA's.

Implications of the Act for hospital design architects

The architect must be aware that for just reasons there will be serious questioning related to any planned health facility development. Its size, scope, cost of construction and operation will have to be clearly and concisely presented and justified to the Health Systems Agency.

The new client will likely be the Health Systems Agency (rather than an individual institution) which will stress a regional approach to the coordination and consolidation of health resources—i.e., health services, health manpower and health facilities. These Health Systems Agencies will have the mission of stopping the unnecessary proliferation of health and hospital facilities.

Often the broader consequences of what we have done by designing beautiful but expensive hospitals and health facilities that often do not respond to health needs have escaped us as a profession. That is, a poorly located facility which duplicates existing health services, and is costly to operate and staff, can become counter-productive in a very serious manner. Now an opportunity exists to solve in a new manner, and on a regional basis, the serious problems related to health care delivery, and the design of health facilities. The architect therefore will have to think in broader terms, i.e., in total health resource planning and development on a regional basis. He will have to think in terms of health needs, priorities, cost, and available health resources. The opportunities for innovation are quite different from what they have been, but they are tremendous!

Bibliography

The author has extracted much of the above information from

1. Public Law 93-641, 93rd Congress, S. 2994—January 4, 1975;
2. Summary of National Health Planning and Resources Development Act of 1974 prepared and distributed by the U.S. Department of Health, Education, & Welfare;
3. Health Resources News, Vol. 2, No. 6, February 1975, U.S. Department of Health, Education, & Welfare, P. 1.

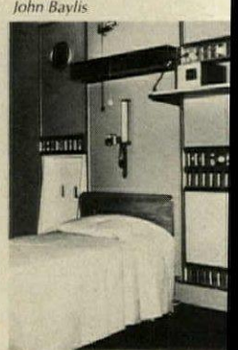
P & W DESIGNS A NEW CORE FOR AN ILLINOIS COMPLEX

Ingalls Memorial Hospital in Harvey, Illinois, had acquired a new central core building designed to provide a new main lobby, receiving and executive sections, plus 200 additional patient-beds. The objective was to create a warm, rich, non-institutional atmosphere and at the same time to update treatment capacities of the institution at optimum cost. Optimum, in this case, did not mean sparse minimum. Much of the upgrading was accomplished through thoughtful emphasis on custom designed furnishings in both public areas and patient rooms, and the use of warm colors and adroit interior design. The work of ISD Incorporated, interior designers, is apparent in the generous treatment of lobby and patient spaces (opposite) and the light-hearted conversion of an area designated "the boiler room" as staff cafeteria. The purposeful exposure of mechanical systems was underscored by a mural of insulated pipes (right) and a red-on-black graphics entrance to this area (not shown) repeated the words "boiler room" in vertical stripes. A warm light tan treatment of metal and wood furnishings was used throughout the hospital, with accent colors of blue, orange, red and gold.

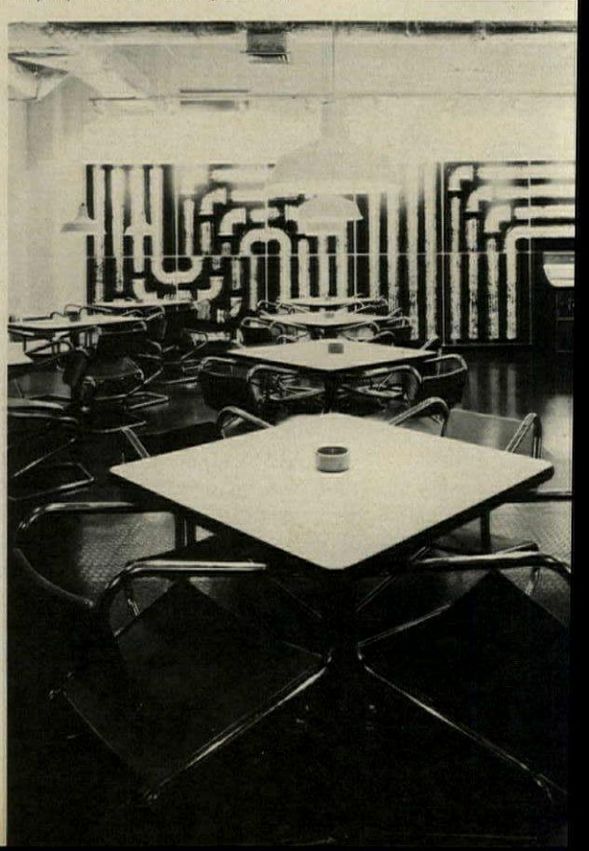
The Perkins & Will / E. Todd Wheeler building design and plan provide a study in logic and logistics in modern hospital requirements. Areas on the first floor are blocked in with careful regard for special purpose and traffic requirements: emergency, radiology, administration, public, etc. Similarly, the second floor assembles surgery-related spaces, with patient rooms above.

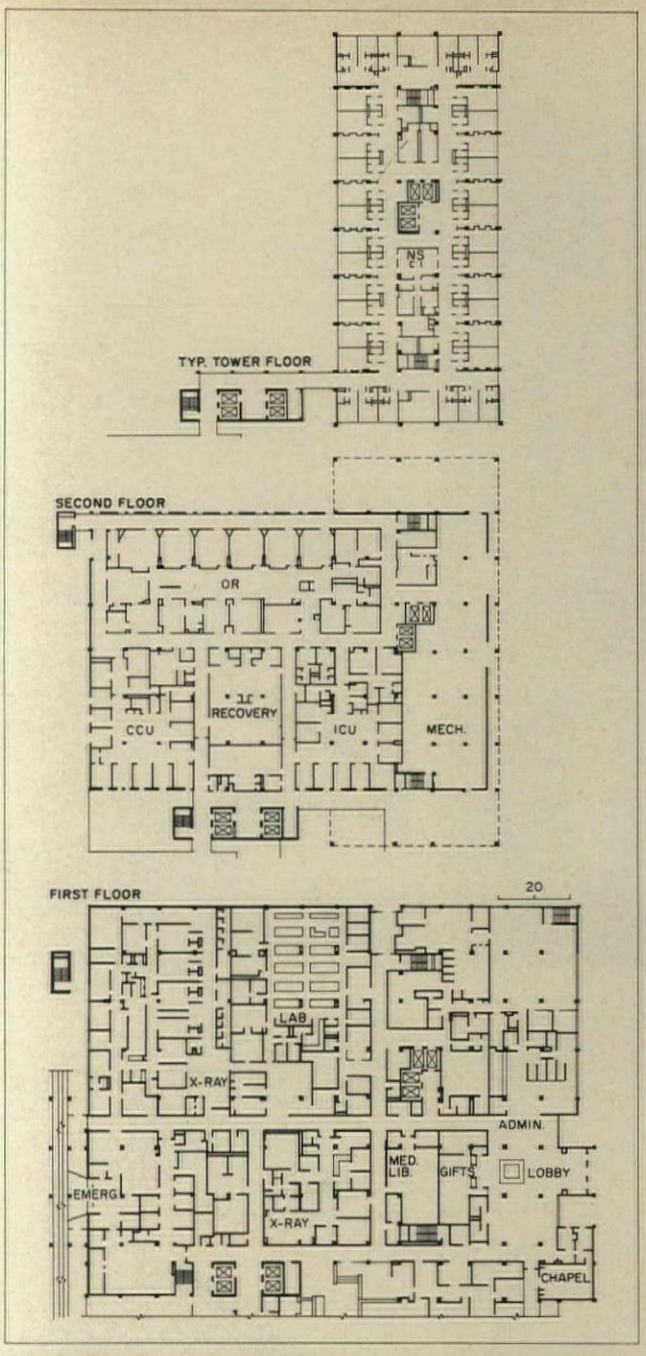
INGALLS MEMORIAL HOSPITAL, Harvey, Illinois. Architects: *Perkins & Will—Harry F. Anderson, partner-in-charge; Al K. Baktys, project director; Donald Johnson, job captain; Peter Hitt, designer.* Associated architect: *E. Todd Wheeler Hospital Consultant.* Engineers: *Environmental Systems Design, Inc.* (mechanical/electrical.) Consultants: *ISD Incorporated* (interior and graphics design). General contractor: *A.M. Lombard Co.*

John Baylis

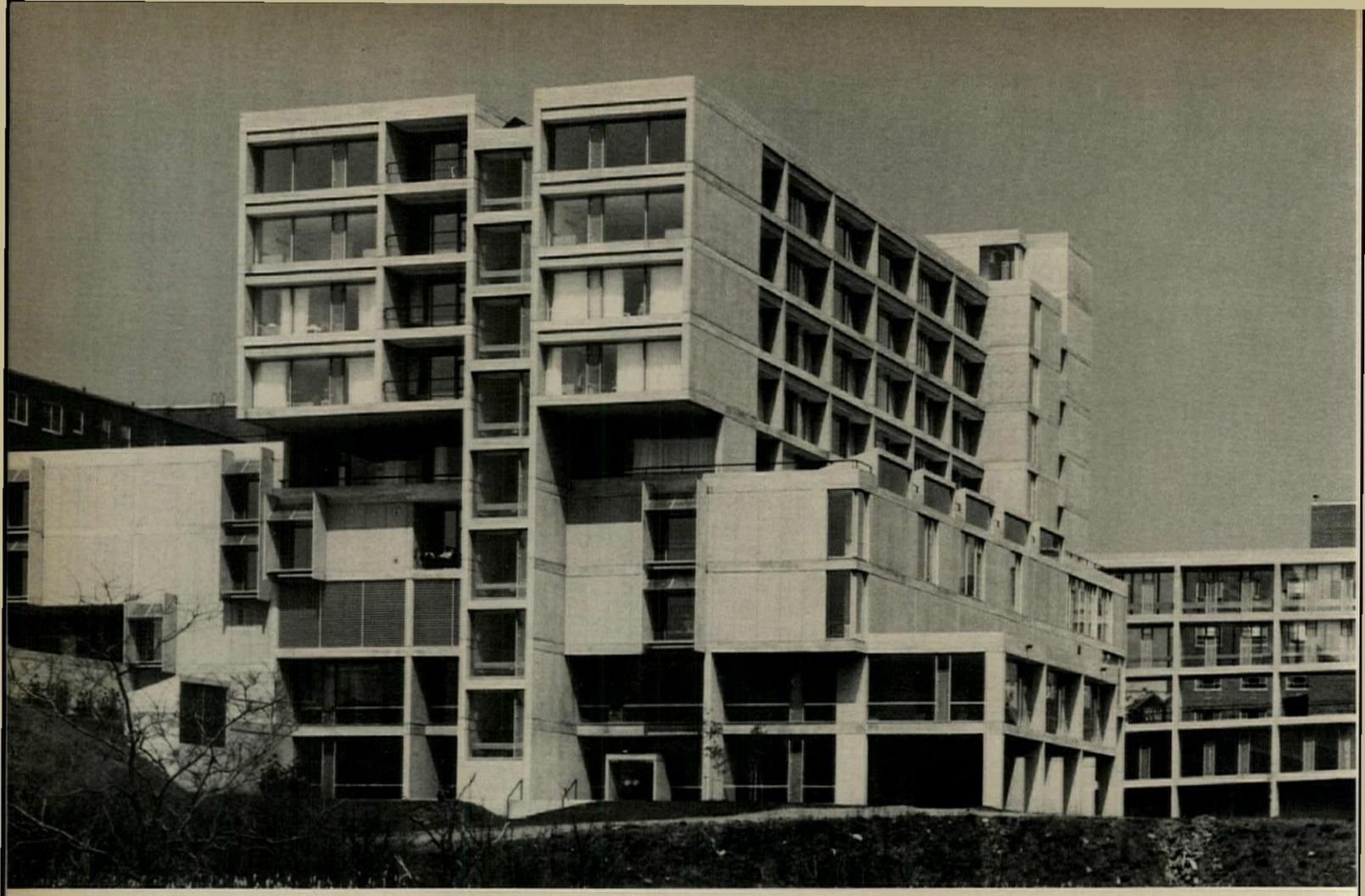


Exterior handling of exposed aggregate precast concrete and recessed glazing ties in well with the limestone of existing buildings in the complex. Perimeter placement of elevators aids internal space planning. Special care equipment modules (right) and supplementary communications and materials transport systems (pneumatic trash and linen disposal, dumbwaiters, lifts, PA, AV, and others) relate to over-all efficiency of hospital operation and simplify internal traffic patterns.





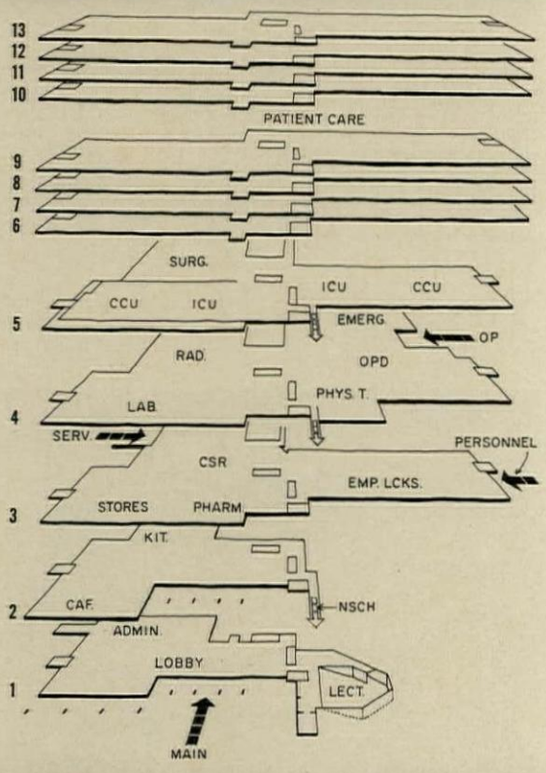
Steve Grubman photos

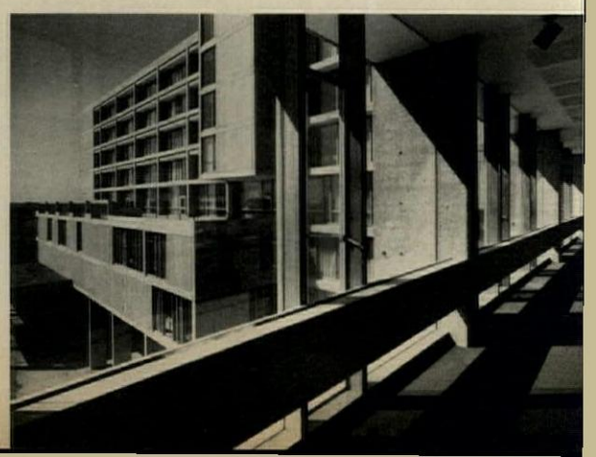


PAYETTE'S YANKEE PORTFOLIO HAS A GROWTH PLAN FOR SALEM

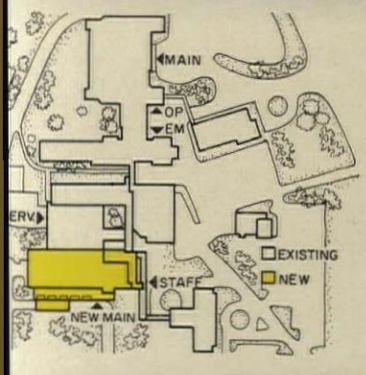
Design for planned growth to match the burgeoning population growth of a Boston suburb is the Payette solution at Salem hospital in Massachusetts. Expansibility was built into the Payette master plan in 1964 so that the present capacity of 350 beds (largest in Massachusetts, north of Boston) is a planned increment toward an ultimate capacity of 800 beds. Inherent in such a growth pattern is a planned flexibility in patterns of circulation and a concentration on principles of privacy and technical excellence in patient care. Phase I development, completed in March 1973, consisted of 126 acute care and 23 coronary care beds, a major laboratory and expanded radiology and other service departments. Vacated space within older buildings dating back to 1917 was renovated into a new medical health center and several doctors' suites. Strong clusters of patient rooms and social spaces and the extensive use of glass and terraces helped to maintain consistency of vocabulary while preserving natural qualities of a sloping site. The site itself has aided separate staff and visitor circulation, and upon completion of Phase 2 will provide a new entrance at the base of the core which will be used in common with North Shore Children's Hospital and a new Salem Long-Term Care Facility (RECORD, August 1974). The hilly site made it possible to define and separate patient, staff and visitor circulation systems both horizontally and vertically. All major connections between these three systems in lobbies, reception-waiting areas, elevators and nursing stations were emphasized by the integrated use of color and light.

ADDITION TO SALEM HOSPITAL, Salem, Massachusetts. Architects: *Payette Associates Inc.—Thomas M. Payette, architect-in-charge; Robert H. De Vries, project architect; Jonathan F. Warburg, project manager.* Engineers: *Arthur Choo Associates* (structural); *James P. Collins & Associates Inc.* (foundation); *Dellea Engineering Inc.* (mechanical/electrical). Acoustical consultants: *Bolt Beranek & Newman Inc.* Landscape architect: *Carol R. Johnson.* General contractor: *Franchi Construction Co., Inc.*



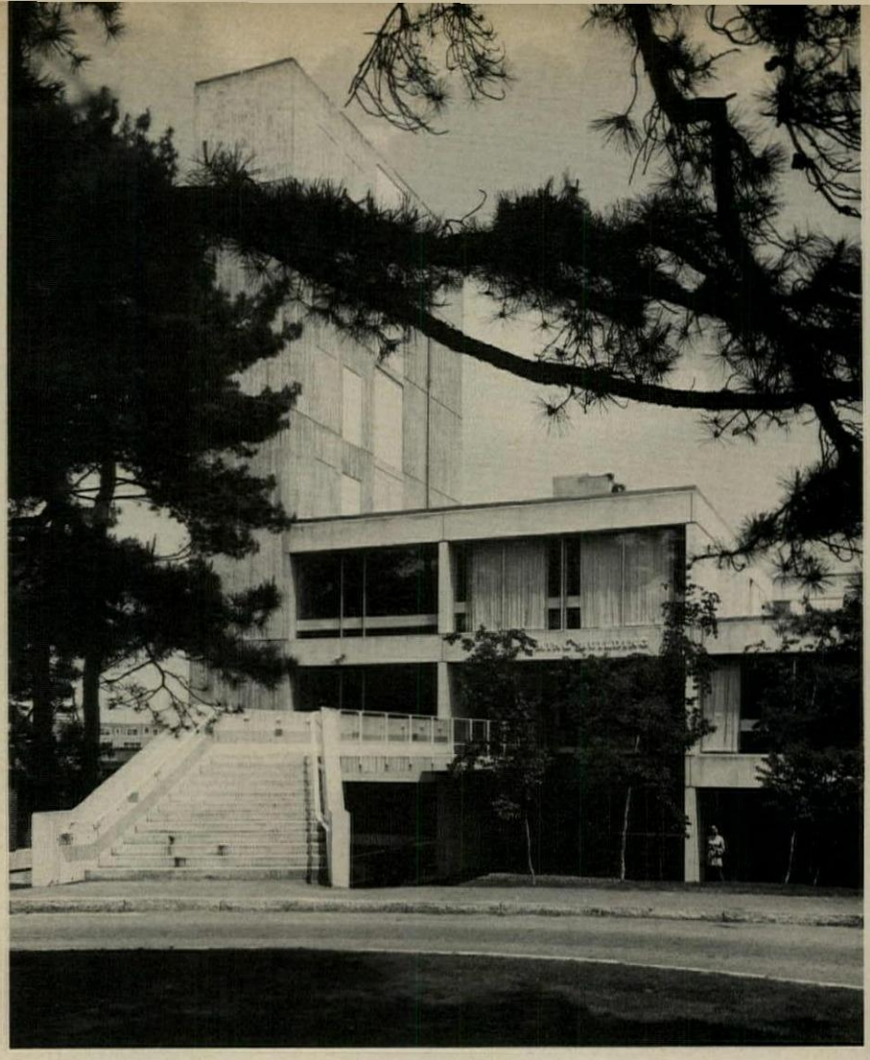


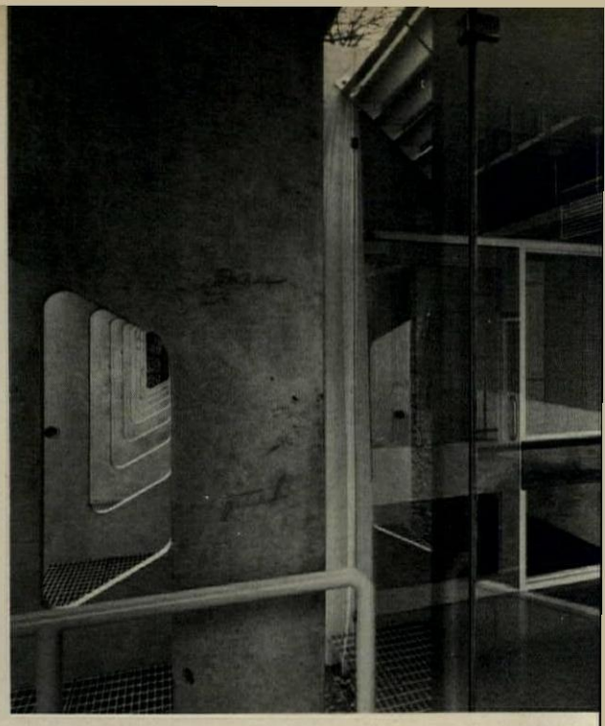
Nick Wheeler photos



Great importance was placed on minimizing the patient's sense of isolation. This was accomplished by developing strong clusters of patient rooms and social spaces and by the extensive use of glass walls, skylights, balconies and terraces. Every effort was made to preserve the natural qualities of site, largely a swamp within a protective surrounding of exposed rock ledge hills. The natural vegetation helps to integrate site and buildings.

The structural system is reinforced concrete with local red stone aggregate, exposed by sandblasting. The exterior walls are glass and precast sandblasted concrete panels. Interior finishes are carpeted and vinyl tile floors, plaster walls, acoustical tile and exposed concrete fan ceilings.



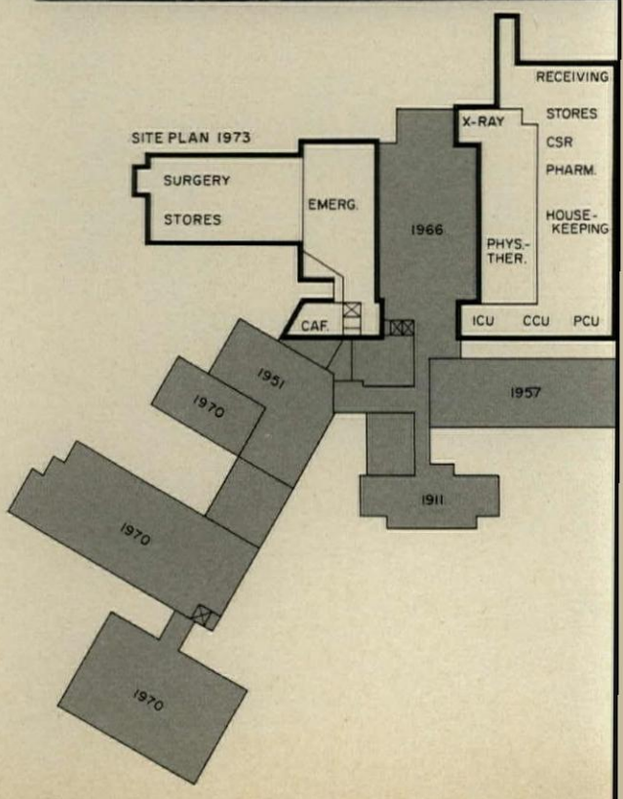


MASTER PLAN FOR CONCORD MOVES WITH CHANGING TIMES

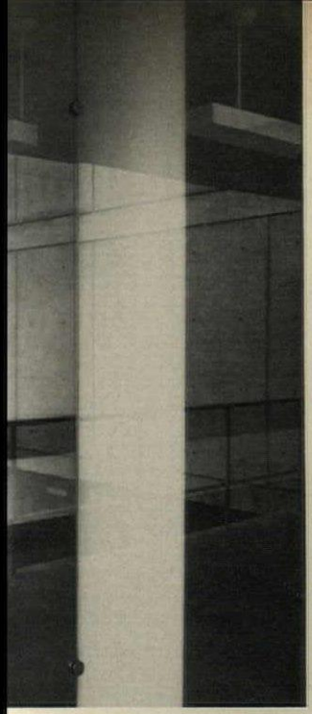
Emerson Hospital in Concord, Massachusetts, is another example of effective growth based on a Payette master plan prepared in 1961 when the firm name was Markus Nocka Payette and Associates, Inc. Here, a series of random additions between 1911 and 1957 had created an obsolete complex in which both growth and efficiency were inhibited. Master planning developed a forward-looking basic hospital chassis designed for growth and replacement in response to changing conditions. Expansion has been both vertical and horizontal and includes a new doctors' office building as well as expansion of outpatient and service areas in conformance with today's changing patterns of care.

The decision to build a doctors' office building caused a revision of the master plan in 1967. As part of this master plan, a parallel plan was also developed for the location and growth of utilities and mechanical services. The 1967 master plan also encompassed expansion of projected inpatient/outpatient requirements and in 1973, construction was completed for expanded outpatient deparments; emergency, radiology, physical therapy; a new medical service floor including a new surgery, ICU and supporting services (see plan).

Emphasis here, as in other Payette designs, has been on strict attention to interior amenities. Wood casework and trim are used extensively and color and graphics accents convert the conventional materials of the interiors to a pleasurable visual experience, reinforced by extensive use of floor to ceiling glass in a reinforced concrete structure.

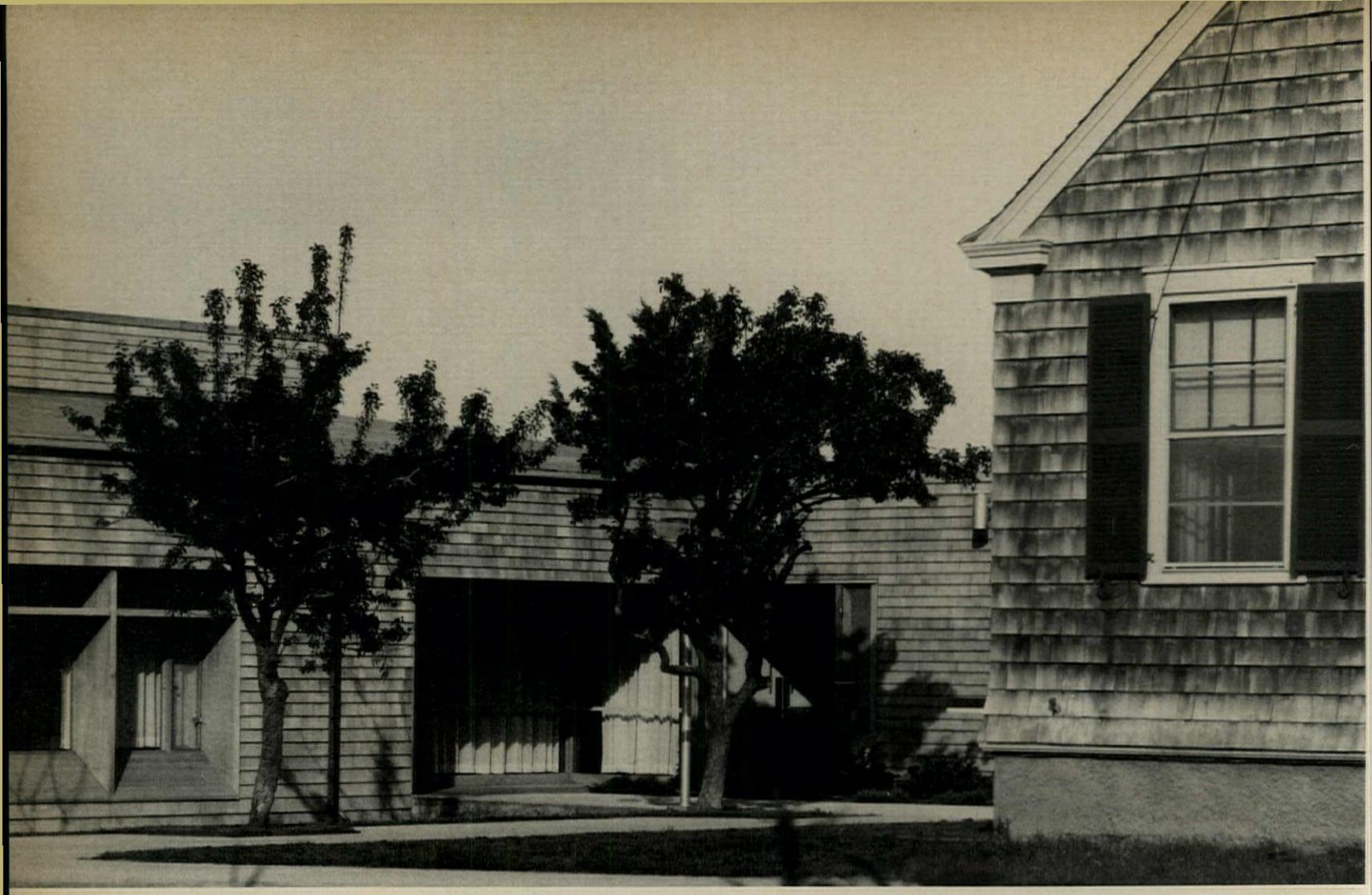


EMERSON HOSPITAL, Concord, Massachusetts. Architects: *Payette Associates Inc.—Thomas M. Payette, architect-in-charge; Gary Lahey, project architect.* Engineers: *David Weidman and Arthur Choo Associates* (structural); *Dellea Engineering Inc.* (mechanical/electrical). Consultants: *William Cavanaugh* (acoustical); *H. E. Wile Corp.* (cost). Landscape architect: *Carol Johnson.* General contractor: *H.E. Wile Corp.*

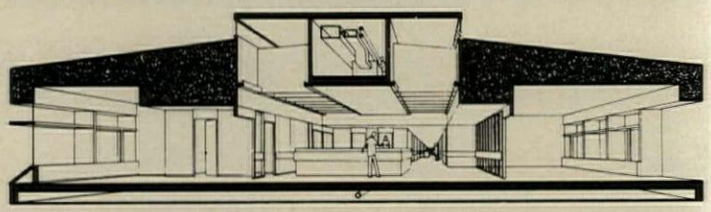


Emerson hospital has grown in an orderly pattern since 1964, unifying the rather random growth of former years (see plan). Most of the newer areas are completely air conditioned. Interior construction consists of metal stud plaster partitions and hung acoustical and plaster ceilings. Floors are vinyl asbestos tile or sheet vinyl, with carpeting in lobbies and common spaces in patient areas. Wood is used extensively in trim and casework. Extensive use of floor-to-ceiling glass in a reinforced concrete structure provides maximum exposure of interior spaces to natural light and a wooded site.

Nick Wheeler photos



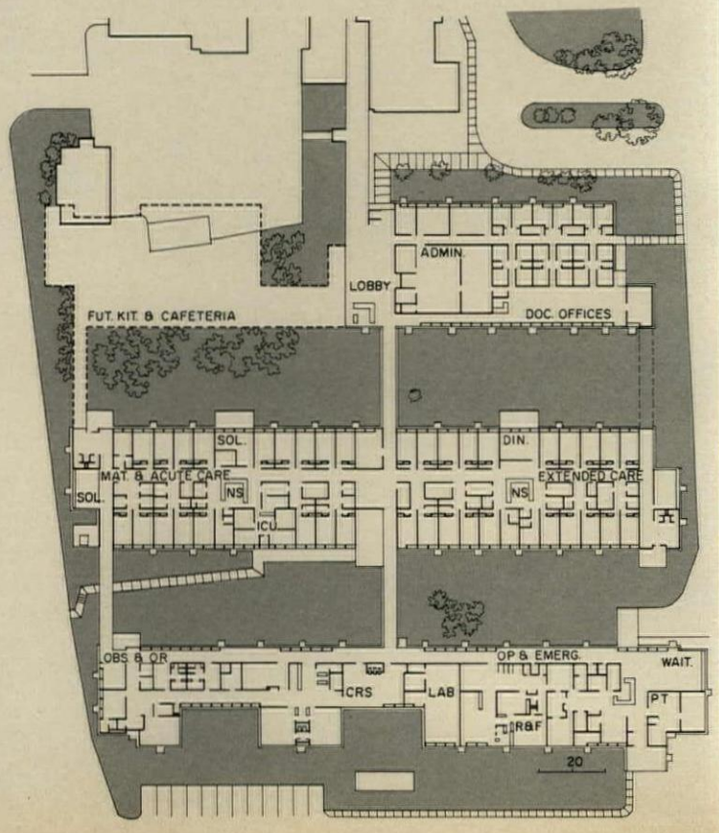
MARTHA'S VINEYARD PLANS FOR SEASONAL LOAD AND FUTURE GROWTH



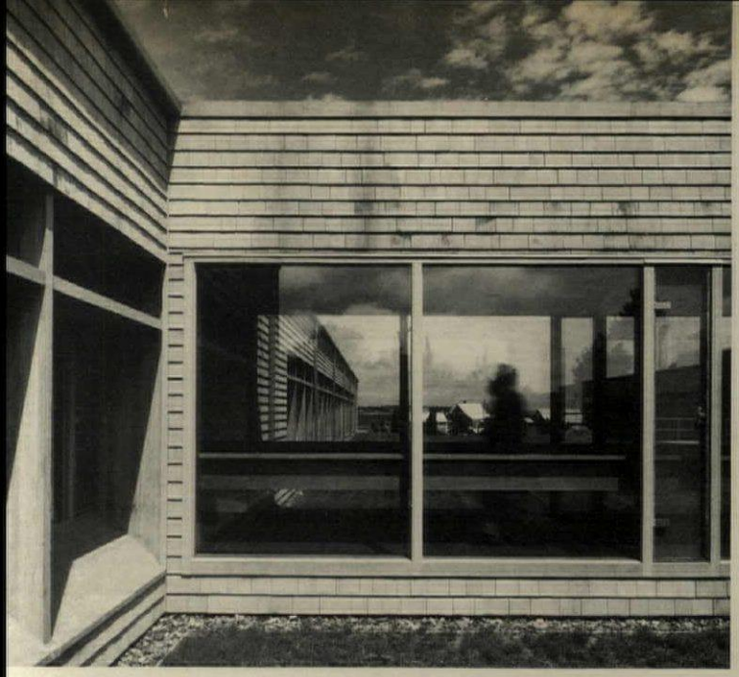
Martha's Vineyard is an island about 10 miles off the coast of southern Massachusetts. Its permanent residents number 6,000, with a summer population of 40,000. To meet the modern medical needs of the people of the island, Martha's Vineyard Hospital elected to replace their 1929 building with a completely new 40-bed acute and 40-bed extended care facility, located on property adjacent to the existing hospital. In addition to the medical planning program, several unusual objectives were established. First, to create a one-story building consistent with the established scale and materials of the island's architecture. Second, to fit all buildings, parking, site access and sewage treatment plant onto a very small site without destroying its natural amenities. Third, to provide an easily assembled structure using as little "on site" work as possible to avoid the excessive cost of ferrying from the mainland skilled labor and heavy equipment for long time periods.

The plan itself is a series of three wings connected by glazed links and separated by landscaped courts. Each of the wings allows for future expansion with minimal construction disturbance.

The on-grade first-floor slab supports a superstructure of wood utilizing prefabricated wood trusses and pre-fit window elements used as bearing wall. The structure is sheathed in plywood and weatherproofed with a foamed-in-place roofing system. Cedar shingles treated with bleaching oil cover all exterior walls. Fascia, gutters and trim are redwood. All wood components are treated with fire retardant.



MARTHA'S VINEYARD HOSPITAL, Oak Bluffs, Massachusetts. Architects: *Payette Associates Inc.—Thomas M. Payette, architect-in-charge; Daniel L. Meus, design architect; Robert W. Grow, project manager.* Engineers: *Mitchell Systems* (structural); *James P. Collins & Associates* (foundation); *Dellea Engineering Inc.* (mechanical/electrical). Consultants: *Carlton Nickerson Goff* (cost); *Daniel Rubenstein, M.D.* (medical). General contractor: *Henry E. Wile Corp.*



A change of pace in Payette's exterior vocabulary is consistent with the New England coast architecture of Martha's Vineyard. Interiors achieve warmth and variety by the use of oak and birch wood tones in furnishings and cabinetry, with strong color accents in public areas, milder shades in patient rooms. Variable space volumes and lighting are produced by exposed truss spaces with clerestory and cove lighting at key activity areas. Acrylic carpeting is used in corridors and lobbies, sheet vinyl in patient rooms.

Nick Wheeler photos

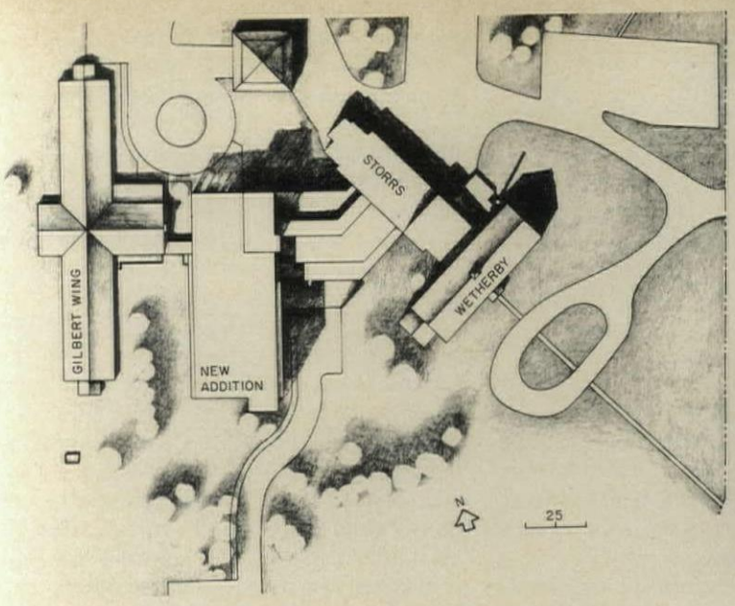
The mechanical system consists of a low-velocity air-conditioning system with steam reheat coils, integrated with a forced hot-water perimeter radiation system. Air-handling equipment is located in a continuous spine through the truss space (see section, opposite). A complete new sewage treatment plant on the site is sized to handle future growth. Total construction cost was $5 million for 67,000 sq ft of new hospital building and office suite annex.

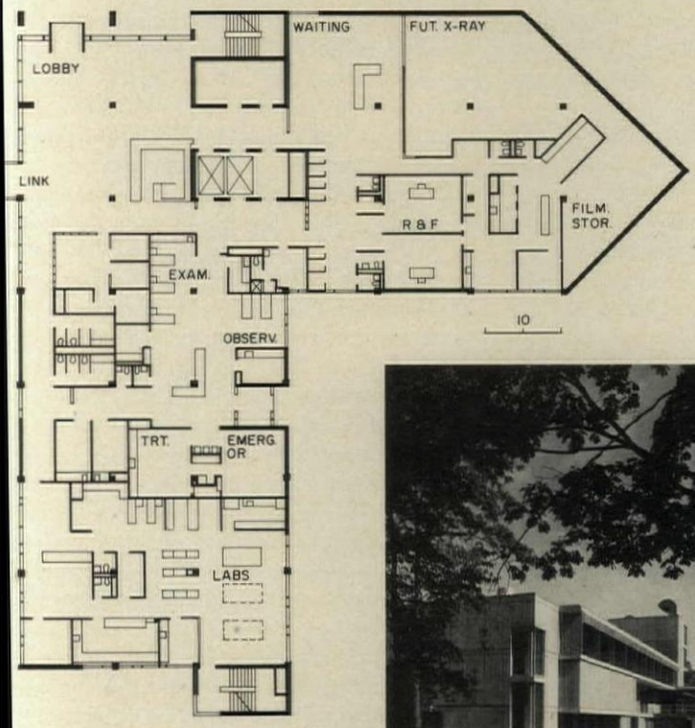
NEW ACCESS AND A NEW WING ON A SLOPING SITE IN WARE

In the primarily rural, midland town of Ware, Massachusetts, the Mary Lane Hospital provides general services to the people of nine surrounding communities with a total population of about 20,000. Here again, the Payette problem was to provide for expansion from 79 beds to 100 beds without disruption of existing facilities. The older buildings, dating back to 1923, with an added wing in 1948, needed major remodeling to conform with changing requirements of patient care as well as for population growth. A 1968 master plan by Markus Nocka Payette and Associates called for a new building located between two existing buildings planned for ultimate growth to about 500 beds with new supporting services. Site conditions again dictated the location of the new wing and a reassignment of access for both patients and services. The building consists of an exposed architectural concrete structure with exterior walls of either glass or wood designed so that they can easily be removed to accommodate expansion. Corridors are fully carpeted. Walls are painted drywall. Oak rails are used throughout, serving as both bumper protection for the walls and as handrails for patients.

The Gilbert wing (site plan, opposite) was outmoded for its medical-surgical nursing occupancy, but it readily converted to light-care use with doctors' offices in one wing. The Storrs building, one full floor above the Gilbert building, contained the service entrance, a determinant in planning two expansible lower floors for services in the new wing, topped by vertically expansible nursing floors.

MARY LANE HOSPITAL, Ware, Massachusetts. Architects: *Payette Associates Inc.—Thomas M. Payette, architect-in-charge; David J. Rowan, project director.* Engineers: *Rubin M. Zallen Associates* (structural); *Haley & Aldrich, Inc.* (foundation); *Dellea Engineering Inc.* (mechanical/electrical). General contractor: *H.P. Cummings Construction Co.*





Glass and naturally weathering African mahogany exterior walls tie in without discord to older brick wings. Connection to the Storrs wing retains the 24-ft square bay module to house new service areas on lower floors and to merge nursing unit floors at the third level and above. The Payette technique of interior design, with wood and color accents, with carpeting and acoustic surfaces on fairly austere concrete slab construction, and with purposeful handling of space volumes, succeeds here at about $42 per sq ft.

Nick Wheeler photos

THE EVOLVING HEALTH CARE SYSTEM: A FRAMEWORK FOR DESIGN

by Michael L. Bobrow and Julia Thomas

Architecture for hospitals calls for a new strategy of participation in the architecture of the whole community. A building is only as complete and as competent as is the health care system it serves. The final challenge is to establish communication of the use of the building to its staff and to the community at large.

In the quarter century following World War II, the major factors affecting the evolution of a hospital's facility were primarily internal in nature. Major design influences related to changes occurring within a particular hospital's medical staff, or those produced by new treatment modalities and equipment. External forces played a relatively minor role in influencing design, and the evolution of one hospital facility was little influenced by any other institution, except during periods of competitive action.

During the 1960's, architectural firms specializing in hospital design directed their efforts to developing new programming techniques, applying systems theory to planning and updating departmental planning through functional analysis. With the 1970's came several changes in the health care system which shifted emphasis in hospital design. The most important factors influencing the physical organization of the hospital were no longer internal changes but external constraints.

While changes occurring within an individual hospital continue to play a significant role in determining design parameters, they are of relatively minor importance compared to changes occurring within the health care system as a whole.

This article surveys the current context of hospital planning and suggests how the physical organization of the individual hospital may be affected by current and emerging trends in health care delivery. These changes include new legislation, advances in medical research and treatment, revised reimbursement formulas, changes in the economy, and changing expectations on the part of the consumers and providers of health care.

Perhaps the most important force for change is the Federal government's participation in the health care field. The framework already laid down at the Federal level gives tremendous power to the government to intervene in all phases of the system, including setting minimum standards for the design of all of our health care facilities.

Regardless of the type and scope of the national health insurance bill ultimately passed, there is already a Federal "ring around the healthcare delivery system" (Dr. Earl W. Brian, as quoted in *Modern Healthcare*, June 1975).

An equally important factor at work on the hospital involves the changing patterns of illness and new modalities of treatment. Further advances in the treatment of heart disease, stroke and cancer may be anticipated. These diseases currently account for about 70 per cent of all deaths in the United States. As more effective treatments are developed, hospitals will experience episodic surges of increased demand for new services as they become available.

Another important trend in health care delivery is a new emphasis on the treatment of chronic diseases. As the ratio of the elderly increases within the population, the demand for chronic care will also increase, since the incidence of chronic disease increases with age. Thus we can anticipate demand for a new type of services, including rehabilitative medicine, long-term care and treatment of the terminally ill patient.

Medical treatment in the future will likewise focus on conditions associated with sedentary life patterns, poor diet, environmental pollution of air and water and the stress commonly attributed to urban life. These changing patterns of illness will undoubtedly affect design requirements for health care facilities, producing a level of care which will go well beyond crisis intervention. Other important changes which will affect the design of hospitals include extension of health care benefits to employees through the Occupational Health and Safety Act, revision of reimbursement formulas with emphasis on ambulatory care and continuing inflation.

The principal areas in which these changes will make their impact on the physical plan of the hospital are summarized below. They include:

- size, type and distribution of inpatient care units
- growth of outpatient services and increased emphasis on ambulatory care
- role and design of emergency departments
- interrelationship of the various departments within a hospital
- over-all relationship of the hospital to the community it serves
- regionalization of the health care system

Inpatient care bed distribution

While architects continue their attempts to design the most efficient nursing unit, their primary concern at present is in justifying the addition of new beds to existing facilities. A recent study for a Senate Sub-Committee reported 60,000 excess beds across the country, each costing the nation $50/day to maintain. Current overbedding has been brought about by overbuilding as well as through the introduction of utilization review and comprehensive health planning. The National Health Planning and Resource Development Act (PL 93-641), passed earlier this year, is designed to put increasing pressure on providers to control costs of patient care by inevitably leading to lower bed utilization. (See article by George Mann, page 110.)

Bed ratios: The current national ratio of acute hospital beds is 3.8 to 4 per 1000 population. One health maintenance organization, Kaiser Permanente, plans approximately 1.5 beds per 1000 population. However, their population varies significantly from the norm in their areas in terms of age and sex mix. Somers' work indicates that Kaiser would need 2.02 beds per 1000 population if it served the same mix as that existing in the general California population. (See A.R. Somers, The Kaiser Permanente Medical Care Program, The Commonwealth Fund, New York, 1971.) If these ratios were applied to the nation as a whole, the number of excess beds would be astronomical.

Preliminary indications of the impact of controlled admissions and utilization review in various areas across the country show a significant reduction in length of stay. The introduction of utilization review has been an important force in producing declining occupancy rates. Following the introduction of utilization review in Sacramento, California, hospitals in that area experienced an over-all utilization reduction of 18 per cent. Other areas in the United States show corresponding reductions ranging from 10–20 per cent with the application of utilization review. The recent recession has also contributed to the decline in inpatient admissions, particularly for elective procedures (Chart 1).

The resultant decline in patient days experienced by many of the nation's hospitals has proven catastrophic in many instances, particularly for those hospitals with under 100 beds which are especially vulnerable to reduced

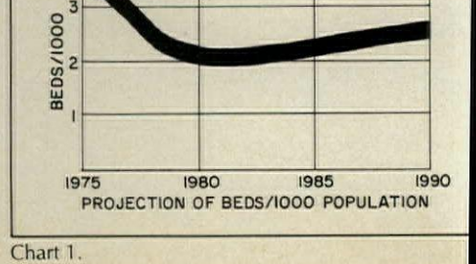


Chart 1.

Michael L. Bobrow is principal of the architectural firm of the same name in Los Angeles and is coordinator of the program in Health Facility Design at the UCLA Graduate School of Architecture and Urban Planning.

Julia Thomas received her M.A. in Architecture and Urban Planning from UCLA and is currently Director of Research and Planning for Michael L. Bobrow and Associates.

occupancy rates. Many of the hospitals in this category are now considering merger or closure. The precariousness of their present situation is being exacerbated by recent trends in reimbursement formulas that are based on higher occupancy rates. There are those, however, who feel that these formulas provide an appropriate mechanism through which to reduce surplus beds within an area.

Rural hospitals represent a special problem for the planner. These institutions are often forced to provide a full range of services to a dispersed population which is incapable of supporting high occupancy rates. Survival of the rural hospital will require special consideration and planning over the next few years.

At the other end of the scale lies the larger urban hospital which is experiencing a dramatic increase in utilization, yet is blocked from growth by state plans that limit the total number of beds within a given area. State plans do not clearly reconcile the high occupancy facility's need for growth with bed needs for the area as derived through statistical analysis. This dilemma may be resolved by forcing the closure of smaller hospitals which are unable to operate with current reimbursement rates. Hospitals accustomed to operating within a fixed budget, such as public institutions and proprietary chains, may demonstrate a competitive edge over community hospitals in the next decade.

Taking a look at trends in in-patient care

To analyze the effect of these changes on the design of inpatient care units, one must first assess which patients will no longer be receiving hospital treatment on an inpatient basis. The trend is to provide patients not requiring acute nursing care with alternative forms of treatment in long term, rehabilitation, minimal care, or outpatient facilities.

On the average, 4 to 5 hours of nursing time per patient day are currently provided in an acute unit. The patients to be removed from acute units will be those requiring fewer hours of care per day (Chart 2). The result, then, will be an over-all increase in the average number of hours of care required per patient per day. In effect, the remaining patients will require care similar in nature to that which is currently provided within an intensive care unit. Whether existing nursing units can be modified to provide the setting required for these remaining patients is questionable. Demand for increased nurse-patient contact in the remaining inpatient areas may render archaic the design of existing inpatient care units in the very near future.

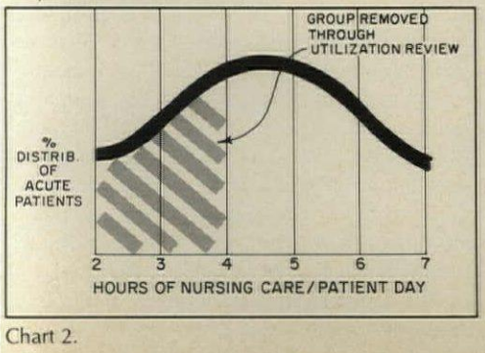
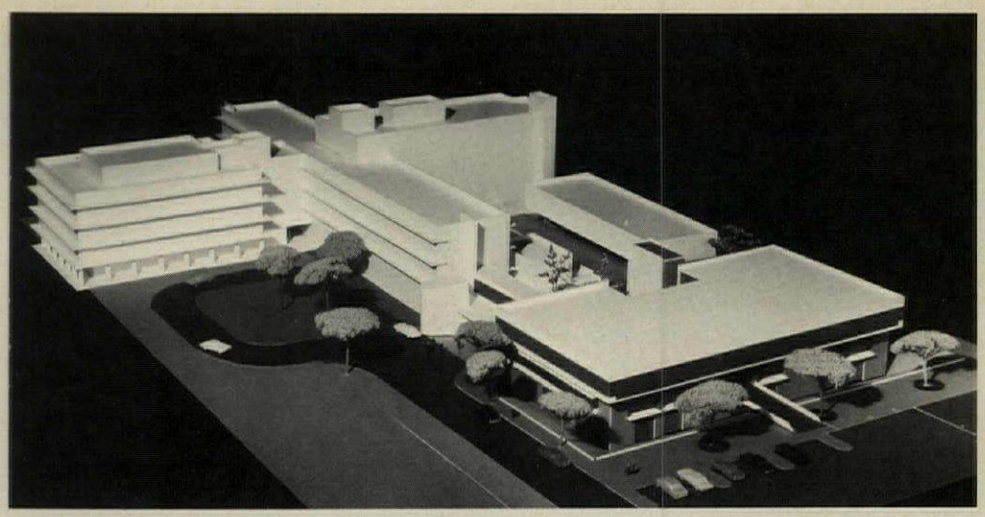


Chart 2.



The Daniel Freeman Memorial Hospital, Inglewood, California, Michael L. Bobrow and Associates, architects. The design of a new $8.5 million, 70-bed comprehensive rehabilitation center emphasizes new trends in health care delivery. This addition to a 333-bed community hospital will include an expanded diagnostic and treatment center.

The special needs of rehabilitation facilities

Rehabilitation and long-term care facilities are also facing new demands. There is growing recognition that many patients recovering from strokes or heart ailments are not being provided with appropriate post-crisis care. Many patients often skip this step on the route to full recovery because of 1) lack of available facilities or 2) lack of orientation to rehabilitation on the part of the physician. Most rehabilitation is currently provided in long-term care facilities.

Rehabilitation facilities require the concentration in one well-designed area of an interdisciplinary team of physicians and therapists to provide a wide range of treatment modalities (speech, occupational and physical therapies, dietary counseling, etc.). The resources necessary for such comprehensive rehabilitation care are usually found only in larger facilities. However, even when all the elements necessary for rehabilitation are present, they are often not geared to the multidisciplinary team effort which many experts feel is critical to producing successful results. Thus, construction of new rehabilitation facilities, based on design parameters generated by multidisciplinary treatment efforts and the wheelchair patient, may be required.

Whatever direction an individual hospital decides to pursue in defining a role congruent with external constraints, it is imperative to question seriously past solutions to design problems. The architect's task will be to create a strategy for design of inpatient care units that can evolve as needs change.

Outpatient care: The scope and form of outpatient care delivery is also undergoing dramatic change. The pressure to reduce inpatient utilization is based on the premise that many procedures that are currently provided on an inpatient basis could be more economically provided as outpatient services. Recognition of this fact has significantly increased the number of outpatient visits to the hospital. From 1953 to 1973, the total number of outpatient visits to hospitals increased by 312 per cent while inpatient visits increased by only 72 per cent. This increase in hospital outpatient visits is partly attributable to increased utilization of the emergency department. Emergency departments play an important role in increasing the utilization of hospital diagnostic services as well as in referring patients to inpatient zones, so the relationship between inpatient and outpatient zones is an interactive one.

Within the hospital facility, the area experiencing the greatest increase in utilization is the emergency department. From 1953 to 1973, the emergency department's share of total hospital outpatient visits rose from 20 to 30 per cent. In some urban ghetto areas, the emergency room is responsible for 75 to 80 per cent of all health care. Increased use of the emergency room for treatment of patients who are not critically ill may be attributed to several factors, including the following:

- the emergency department is presently the only access point to the health care system controlled by the patient,
- it provides access to a wide range of services on a 24-hour basis without unnecessary delays,
- increased mobility has resulted in a growing number of patients who do not have family physicians,
- many physicians in private practice will not accept patients whose coverage is provided by Medicare or Medicaid.

Over-utilization and inappropriate use of the emergency department is causing severe problems for hospitals, since most emergency departments are not designed or staffed to deliver primary care. Many hospitals are now actively searching for solutions to this problem. A case in point is the Emergency Department at the University of California, Los Angeles. Faced with handling 60,000 visits per year in a facility designed for approximately half that workload, the hospital undertook a study to analyze the types of care being delivered to emergency room patients. Only 1 per cent of these patients were truly "emergent," i.e., requiring life-saving measures immediately. An additional 18 per cent were classified as "urgent," or requiring care within two hours. The remaining 81 per cent were patients using the Emergency Department for a wide variety of ailments, who perceived the department as a "primary care clinic."

To counteract this situation, a separate unit was established during periods of high use in the Emergency Department (after 3 p.m.). This primary care clinic was designed to take referrals of patients from the Emergency Department who did not require traditional emergency care but who did not otherwise have access to a physician within a reasonable period of time. This system worked well initially. However, in less than a year, the primary care clinic had established a self-sustaining clientele of its own through Emergency Department referrals and by word of mouth so that it could no longer relieve the Emergency Department.

Diagnostic and treatment services: Diagnostic and treatment services are being increasingly supported by outpatient volume. In the past three years, outpatient utilization of radiology departments has increased substantially, with the outpatient-generated workload now accounting for 35-40 per cent of the departmental total. The number of outpatient laboratory tests has also increased, currently comprising 12-16 per cent of the total laboratory workload.

Other departments are also finding themselves supporting greater numbers of outpatients. Thus, the balance of hospital space allocation is shifting drastically to accommodate expanded diagnostic and treatment services (Chart 3). A conceptual diagram of the hospital in the 1950's would show a relatively large inpatient zone supported by a smaller diagnostic and treatment area, and an even smaller outpatient zone (Chart 4). A contemporary diagram would reveal the hospital as primarily a diagnostic and treatment center, with reduced inpatient zones and expanded outpatient zones (Chart 5).

Changing methods of delivery of ambulatory care

Specific methods of ambulatory care delivery vary from hospital to hospital and are dependent upon several factors including:

- location of medical office building,
- acceptance of hospital-based physician groups,
- available health-care alternatives within the community,
- demographic characteristics of the population served.

Most recently, hospitals have been designed to provide space for physicians' offices on the hospital grounds. This allows the physician to maintain his private practice, while the hospital benefits from increased utilization of services through physician referrals. In other cases, hospitals have established family practice programs which operate within the hospital. Both types of practice can co-exist.

Since many physicians prefer not to see indigent patients or those on Medicaid, the hospital-based group does assure that the low-income patient can receive comprehensive health care. A hospital-based group practice likewise is advantageous to the facility located in a declining urban area. Referrals from both primary care clinics and hospital-based group practices provide referrals for hospital services and raise occupancy rates.

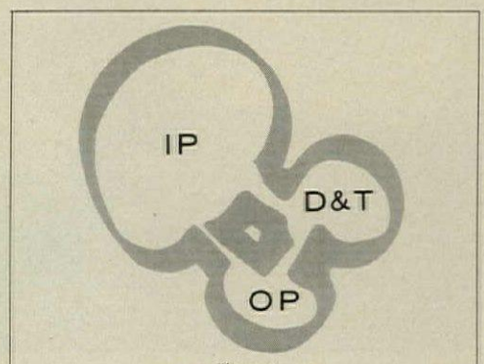


Chart 4.

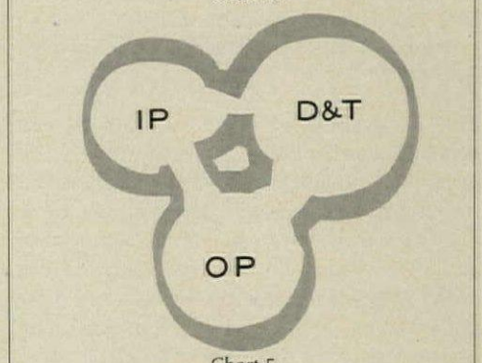


Chart 5.

Finally, the limited availability of resources necessitates an increased utilization of hospital outpatient services. Kaiser Permanente utilizes fewer physicians and more paramedic personnel per 1000 population than other providers of healthcare, with no evidence of loss in quality of care. Limited third-party reimbursement means that those facilities with higher utilization, better management and ultimately lower unit costs, will survive and thrive. An additional trend will be the centralization of facilities. Likewise, smaller hospitals will work together within proprietary or non-profit chains.

Summary:

Recent changes in health care delivery cast serious doubts on the ability of contemporary hospitals to satisfy evolving needs. Few of today's hospitals can adequately adapt to future changes in the health care delivery system. To prepare for potential future demands, the hospital must prepare to respond to the current and emerging trends summarized below:

- increased participation of Federal government in all aspects of health care,
- regionalization of facilities,
- restrictions on additions of new beds,
- changes in requirements for inpatient units,
- increased use of outpatient services, and
- increased difficulty in financing.

The design of specific health care facilities must therefore flow from a recognition of both the broad context of health care delivery and the specific role of the individual hospital.

The architect must therefore satisfy two relatively new design problems. On the one hand, he must be author to a strategy for the existing hospital's growth and evolution. Our premise is that a building is perpetually incomplete and that it must always be adaptable to change and growth. This cannot be done by designating a master plan of set physical shapes but, to our mind, can best be accomplished by developing an open-ended, expandable zoning plan for the facility's growth and eventual rejuvenation. In a recent project, this was accomplished by setting down broad zones within which various sequences of physical solutions could be applied. These solutions would be controlled, however, by a predetermined circulation system (Chart 6). On the other hand, while directing a hospital's growth, the architect must be responsive to the need for establishing a visual language to guide the patient, the visitor and the staff, in the use of the evolving building.

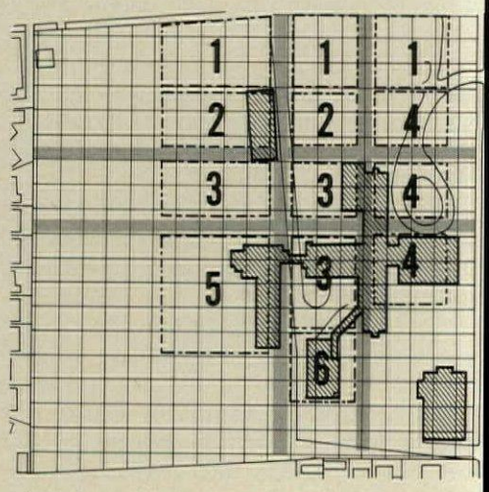


Chart 6.

1 Parking
2 Doctor's office
3 Diagnostic & treatment
4 Nursing
5 Convent
6 Service

Finally, architects must be aware of the fact that a building communicates to its users an idea of the resident institution's self-perceptions and relationship with the user. In recent years, too many hospitals have communicated only the idea of their preoccupation with technology and the importance of their highly trained staffs. Too few have communicated the true nature of the hospital as a public servant and provider of a psychologically nurturing environment. It will be in attempting to project this latter image that architects will ultimately be able to make their greatest contribution to the health delivery system.

Chart 3. Comparative area requirements for a hypothetical community of 100,000

	Beds	Out Patient	Diag. & Treat.	In Patient	Admin. & Support	Net Total	Gross Total
Kaiser Type Facilities	202	56,000	33,200	52,800	28,000	170,000	303,000
Community Type Facilities	370	136,700	37,200	82,000	62,100	318,000	477,200

Architectural implications of structural vibration

by Clive L. Dym and Don Klabin, Bolt Beranek and Newman Inc.

There are many sources of vibration to be considered in the design of lightweight structures, whether in an urban or rural environment. External sources involve underground rapid transit systems, nearby road traffic, nearby industrial complexes that may involve heavy machinery operations, and, of course, wind loading and seismic forces. Internal sources include elevators, and escalators, process machinery, air-conditioning equipment and plumbing, and pedestrian traffic. In many instances noise problems are associated with vibration problems. Though problems of architectural acoustics are well recognized, the architectural implications of structural vibration are only now being widely perceived.

While this article concentrates on problems faced by the architect in designing a structure, often the solution to vibration must be sought at the source. As an extreme example, an industrial plant in New England installed a new vibratory conveyor, and found that the conveyor caused vibration in adjacent buildings. In nearby offices the level of vibration was so severe as to shake objects off desks. The solution turned out to be simple (a change in frequency of the driving motor and its connection to the conveyor), but the problem serves as an interesting object lesson.

Problems resulting from wind-induced vibration are widely recognized as being potentially severe; it is rare that a tall building is designed nowadays without serious consideration of these effects, including wind tunnel studies to develop criteria for structural design. However, many problems caused by wind loading, as with curtain walls, are localized phenomena and thus cannot be anticipated unless the wind tunnel studies are carried out in a boundary-layer wind tunnel and with the appropriate instrumentation.

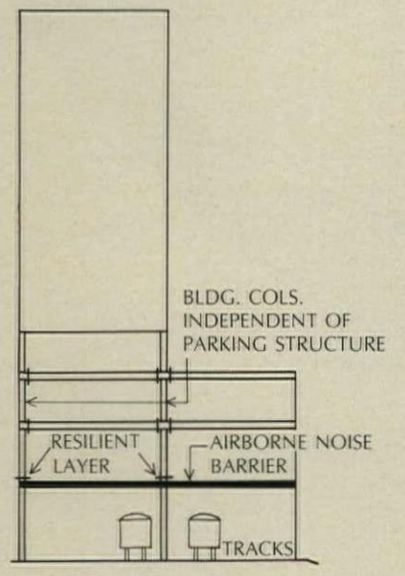
More vibration problems occur now because structures today are more flexible

The advent of lightweight, flexible construction—particularly with long clear-spans—has also led to problems of floor vibration which arise because, for one example, the floor system responds to pedestrian traffic like a soft spring, which is easily set in motion. The solution must be sought in terms of either increasing the *damping* of the floor system, so as to damp out the induced vibration quickly, or increasing the *stiffness* of the floor system in order to raise its fundamental resonance frequency significantly above the frequency of the exciting force.

In either approach, the designer must note how the floor systems are connected to the rest of the structure. A rigid connection increases floor stiffness, as in an integrally poured or post-tensioned floor/wall system, though simultaneously it helps to transmit vibration to adjacent structure. Often floors are floated on resilient pads at the supports in order to introduce some dissipative attenuation. This will not keep an otherwise flexible or live floor from disturbing walkers; it is meant only to reduce vibration transmission from the floor into the nearby structure.

Psychological reaction to floor vibration is highly variable. Also the seriousness of vibration will vary from building type to building type. In a parking garage, for example, the floor slabs may be excited by the starting and stopping of automobiles, and by wheel movement over expansion joints. The requirements for a garage, however, are not as rigorous as for a dwelling unit, or as stringent for a computer or electronics research facility, or an industrial operation where vibration-sensitive equipment is used.

Another source of vibration problems is traffic, which might involve the transmission of underground or road vibration to nearby buildings as well as the more severe vibration encountered in air-rights construction over turnpikes and railroads.



This Vancouver building (shown in RECORD, mid-August 1974) had to be isolated from the rumble of railroad trains and also from the vibration of parking garage floors. Because acoustic and structural considerations are interrelated, early collaboration is needed for best design.

Vibration Checklist

External vibration sources:
- nearby roads and elevated highways
- nearby trains and rapid transit systems
- nearby rail and road tunnels
- ground winds and wind loading
- seismic sensitivity of region.

Internal vibration sources:
- hvac equipment
- elevator motor location
- other oscillatory equipment, e.g., conveyors, automatic bag-handling equipment
- industrial equipment, e.g., stamping devices
- heavy pedestrian traffic

Structural design aspects:
- long clear-spans
- lightweight floor and wall systems

Interior space:
- location of vibration-sensitivie equipment, e.g., electron microscopes
- location of vibration-sensitive spaces, e.g., dwelling units, recording studios, operating rooms, miniature electronic parts assembly
- loading and location of operational equipment, e.g., elevator motors in basement or penthouse, or rotating machinery on center of span.

If the vibration source cannot be eliminated, it may have to be isolated

In designing vibration isolation systems for buildings, one must pay particular attention to the frequencies of interest. For example, rail and subway traffic generate considerable energy at frequencies below the audible range. Since this energy is transmitted relatively efficiently along earth and structural paths, the building response includes both audible noise and perceptible vibration. (See Figure 1.) At low frequencies, these audible and tactile (and often visual) cues reinforce each other, giving rise to complaints from occupants about low frequency "rumble."

Ideally, the solutions to some vibration problems require elimination or, at minimum, isolation of the source. In actual practice this is often impossible, and thus sometimes an entire building must be resiliently supported in order to uncouple it from a vibration source. For example, a significant noise and vibration reduction—on the order of 8 to 15 decibels—

Dr. Dym is a professional engineer, and his co-author, Don Klabin, is a graduate architect.

Depending upon its intensity and its frequency, vibration can be felt, or heard, or both

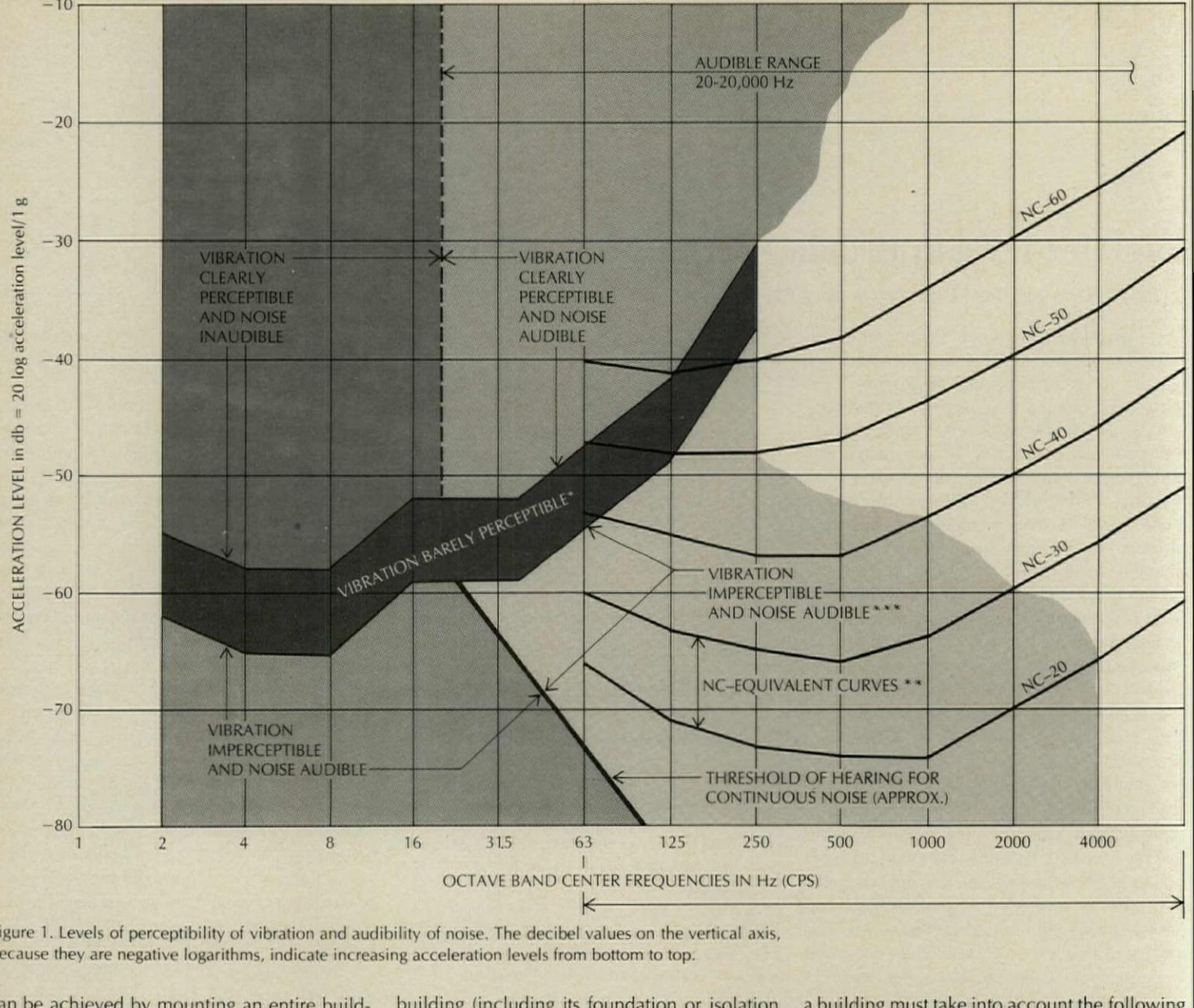


Figure 1. Levels of perceptibility of vibration and audibility of noise. The decibel values on the vertical axis, because they are negative logarithms, indicate increasing acceleration levels from bottom to top.

can be achieved by mounting an entire building on "springs"; examples include Lincoln Center's Philharmonic Hall in New York City, and Place Ville Marie and Queen Elizabeth Hotel in Montreal. This amount of reduction is the subjective equivalent of at least halving the noise level. Such a reduction could make an "annoying" situation "tolerable" or a "tolerable" situation "acceptable"; what might be audible on the fourth floor of a solid-mounted building would be inaudible below the first floor of a "floated" building. A solid-mounted building of conventional construction will provide, between any two adjacent floor levels, only a barely noticeable 3 decibels reduction in low-frequency vibration (or A-scale-weighted noise level).

Expressed in qualitative terms, the goal in achieving adequate vibration isolation is to interrupt the continuous circuit of rigid building materials and structure by introducing a resilient intermediate layer. This causes a mismatch of material density and stiffness, and thus, of vibration transmissibility. Some energy is reflected at this discontinuity, some is absorbed, and some is transmitted—but at a significantly lower level.

The theoretical expression of this idea is the reduction of the natural frequency of the building (including its foundation or isolation pad) to a very low value.* When the excitation frequency is three or four times as large as the natural frequency, the vibration transmitted into the building is very low. Since the natural frequency of a structure increases with the stiffness of the system, the need is to "soften" the building by using a resilient support. Depending upon the loading and the natural frequency limit desired, a resilient material such as bridge-bearing-quality neoprene might be chosen. Lead-jacketed layers of felt-type asbestos have also been used with some controversial success: effectiveness has been demonstrated in practice, although the theoretically predicted performance is questionable. The effective use of rubberized cork and other such materials is limited to the absorption of high-frequency vibration, and therefore they do not provide adequate isolation of rumble or seismic forces.

The detail design of a vibration isolator for a building must take into account the following parameters: structural damping, elasticity, incompressibility, low creep, and constancy of stiffness with changes in temperature. In addition, to ensure its serviceability throughout the anticipated life of the building, the isolator should have a high resistance to corrosion, fire, ultraviolet deterioration, and moisture penetration. The dynamic properties of the isolator material(s) while under load should also be investigated.

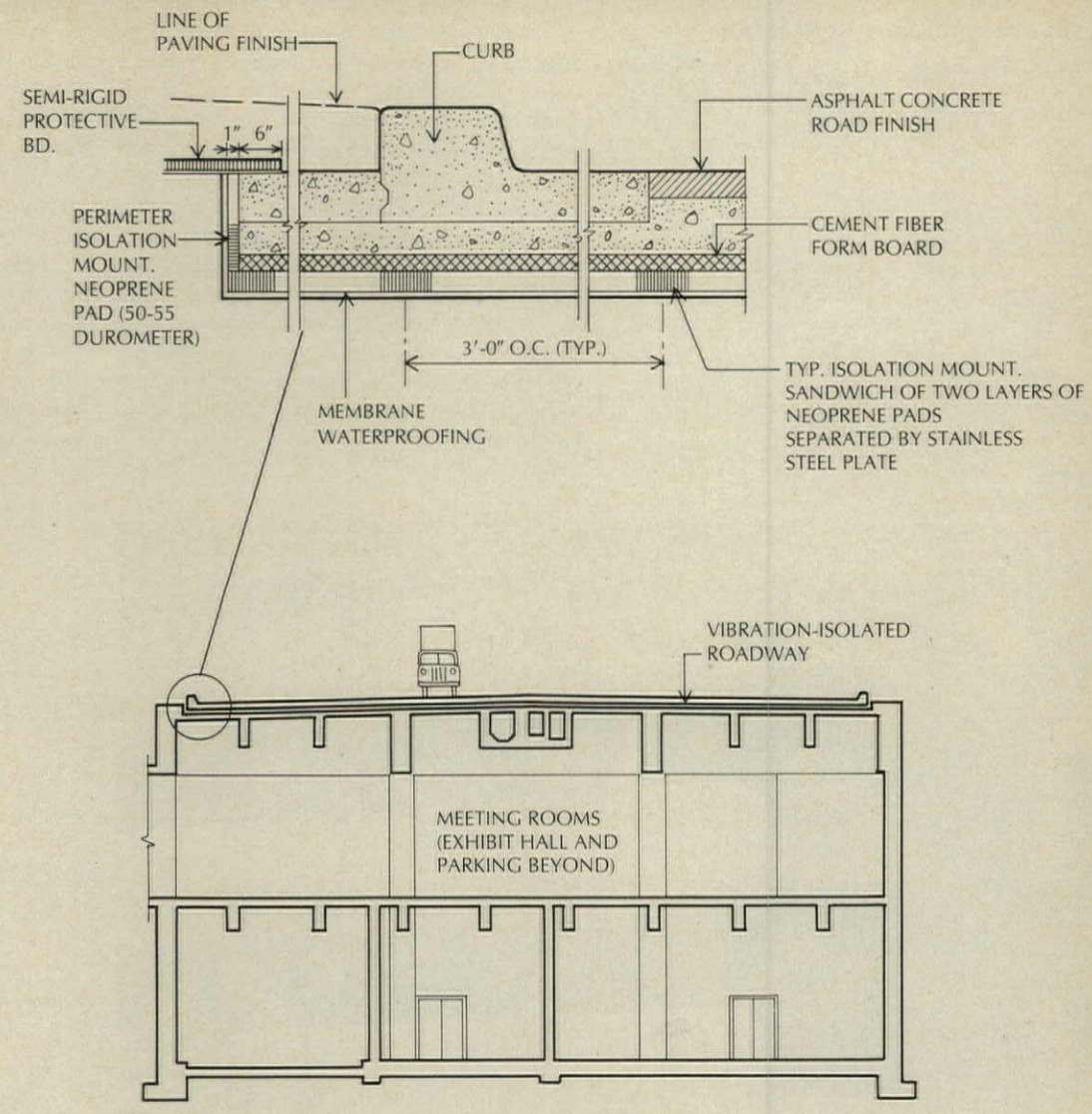
Rubber can be chosen so as to satisfy the selected criteria within acceptable limits. Further, a sandwich of rubber and steel plates improves the stiffness of the rubber mount in shear. Building mounts of this type, using rubber of bridge-bearing quality, have been successful in various locations throughout the world, principally for the isolation of road- and rail-traffic vibration, but also for protection against seismic forces. Wind-induced vibration has also been reduced by incorporating lateral mounts that provide horizontal resilience. Thus a complete vibration-isolation design for a building may entail mounts under all columns, isolation joints in exterior walls and in interior partitions at levels near the foundation, and a resilient "jacket" and backfill around all underground exterior walls.

*In the case of seismic design, where the most significant energy is in the frequency range from 1 to 10 Hz, which is close to the natural frequency of most high-rise buildings, it is generally adequate to reduce the natural frequency of the building to about 0.5 Hz. Such a reduction requires extremely close attention to detailing and execution by the architect, consulting engineers, and contractors.

Isolation and damping techniques are used to prevent vibration from being a nuisance

The graph across page shows five zones of varying degrees of perceptibility of vibration and audibility of noise resulting from vibration. The NC curves at the right of the graph are not exactly the same as the standard curves commonly used for specifying the noise levels for rooms, but rather are the equivalent based upon noise produced by vibrating surfaces.

The road isolation detail (right) has been proposed for the new Yerba Buena Center, an underground convention facility, in downtown San Francisco. Though the "floating" of the street was required only for an effective airborne noise barrier, the detailing would not have been significantly different if vibration transmission were of concern. The isolation will be controlled by the resonance frequency of the air space between the street and the structure which is greater than the resonance frequency of the neoprene pads at the design dead loading. Architects: McCue Boone Tomsick; structural engineers: John Blume Associates.



*Threshold of perception to vertical whole-body vibration as measured experimentally by T. Miwa (one-third octave bands of random vibration)

**Acceleration levels of a large vibrating surface, e.g., wall or floor, that will produce radiated noise levels approximating the indoor noise criterion (NC) curves.

***The energy generated by a source of vibration is heard at lower levels than those at which it is felt.

Figure 2. Techniques for preventing traffic from causing noise problems in meeting rooms of a building directly under the highway.

Considerable care must be exercised by the contractor during the installation of vibration isolators to ensure that there is no contact between different parts of the building structure other than through the isolator. It is, unfortunately, all too common during a job inspection to see that a discarded pipe elbow, rebar or bottle has lodged in the space left for clearance around the isolator. (This is particularly true for the operating clearance under a spring-mounted fan or pump base.) Such refuse short-circuits the isolator and thus negates its beneficial effects.

Since periodic supervision of the isolator installations by the architect may be difficult to arrange, it is crucial that all other responsible parties—e.g., job superintendent, sub-contractor, workers—thoroughly understand the purpose of the isolator. A poor installation discovered *after* the completion of a building is often prohibitively expensive or, because of scheduling difficulties, impossible to correct.

Isolation, by itself, is not the whole answer to minimizing vibration

Vibration isolation of the entire building will not by itself solve all of the problems listed at the beginning of the article. For example, where isolation of building vibration due to internal pedestrian traffic is required, the structural design must be tailored to this need. Experience shows that lightweight, low-stiffness wall and floor systems (often the product of a search for more efficient structural design), as well as long-span structures, cause the most significant problems of excessive floor vibration. The elasticity of these structures can aggravate as well as generate vibration problems due to mechanical equipment, if the equipment operating frequency is close to the resonant response of the supporting structure. The lower dynamic stiffness of such modern wall and floor structures contrasts greatly with older, more massive buildings , whose sound isolation problems were also less stringent.

As we said earlier, the solution to vibration problems is to increase either the floor's damping or its stiffness, keeping firmly in mind the manner in which the floor system is connected to the rest of the structure.

The most important point of this discussion is to indicate the limitation of a structural design that is formulated wholly in static terms—e.g., designing a long clear-span for strength or deflection by considering stiffness alone; a long clear-span could thereby prove to be excessively "live." It is important that structural designs also be considered in dynamic terms, i.e., terms which consider the ratio of stiffness to mass. Unsupported length has crucial significance here, since the floor bending frequency is inversely proportional to the square of the span, and the lower the frequency, the more "live" the structural response. The increase in length contributes to an over-all reduction of the floor stiffness and increased susceptibility to vibration excitation.

With regard to interior space planning, the load and placement of sensitive equipment, as well as that of equipment producing high vibration levels, should be carefully considered relative to the nearby building structure (secondary beams or joists) and its distance from primary structure (primary beams and columns). Resilient mounting of either or both kinds of equipment may be necessary.

In this brief article we cannot hope to do more than touch upon the complex analyses and solutions required for wind loading or the control of vibration. No universally accepted criteria exist for vibration perception by humans, or for minor or major structural damage. Active research on human perception of whole-body vibration is proceeding rapidly, however, and thus it is likely that the criteria resulting from this research will find their way into building codes.

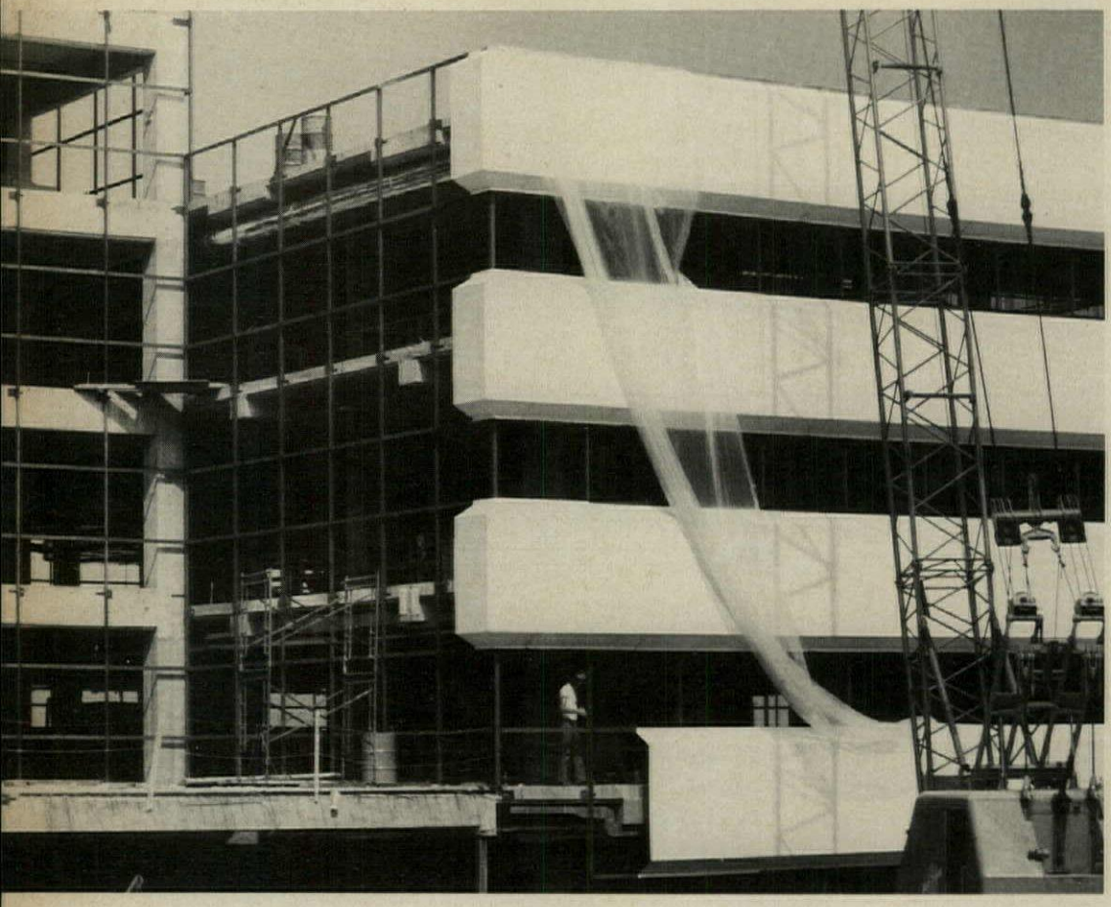
Fiberglass-plastic wall panels save weight and field labor on a 12-story hospital tower

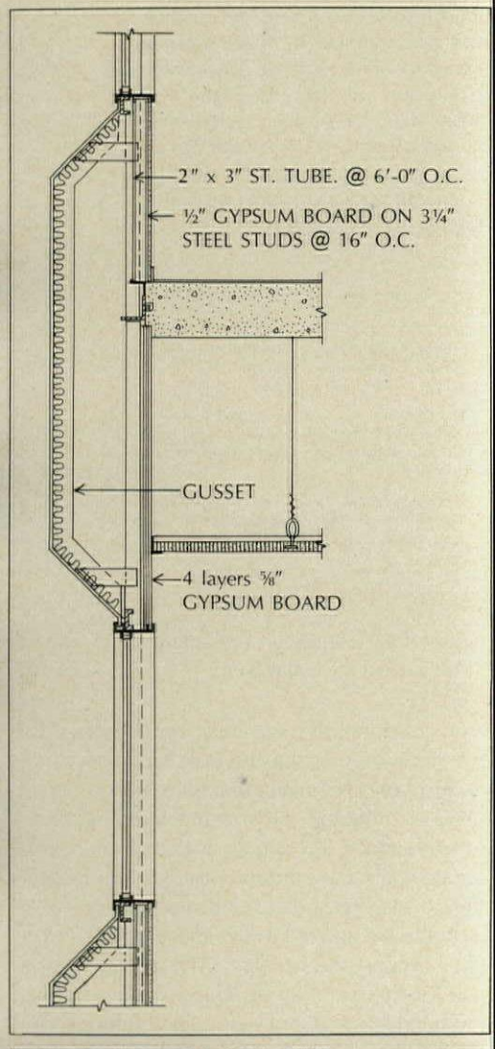
Fiberglass-reinforced-plastic spandrel panels, in lengths up to 100 ft, will clad the George Hubbard Tower in Nashville, Tennessee. The building has a 12-story cruciform tower, and a 4-story extension. The panels, which weigh about 75 lb per running foot, are laid up in molds that are relatively inexpensive, when compared to metal-stamping dies. In all, some 760 panels will be used. The erector, John McDougall Company, reports that a 100-ft panel could be installed by only two men. The panels—laid up in the molds at the Advanced Materials Technology Division of Willard Boat Works in Fountain Valley California—were designed with molded-in steel straps for mounting to the supporting steel tubes attached to the building frame.

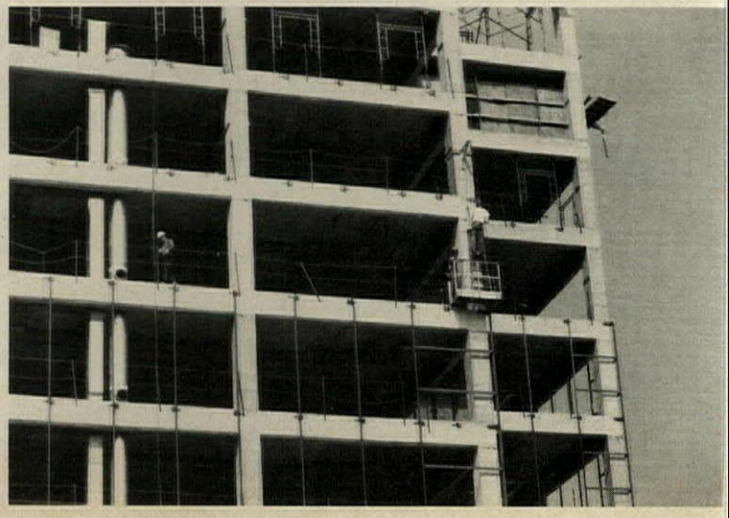
From a code standpoint, the panels had to comply with the definition "incombustible," as given in model code documents: i.e., they had to have a structural base of incombustible material (gypsum board), with a surfacing material (in this case, FRP), not over ⅛ in. thick, having a flame-spread rating of less than 50. The FRP was covered on the back side with a sprayed-on thermal insulation to give a U-value for the panels of 0.09.

The polyester resin has a halogen-type reactive ingredient that combines with the resin to serve as a flame retarder.

The architectural design consultant was Edward Durell Stone, and executive architect was McKissack and McKissack. Structural engineer was Jack Figilis & Associates, Inc.



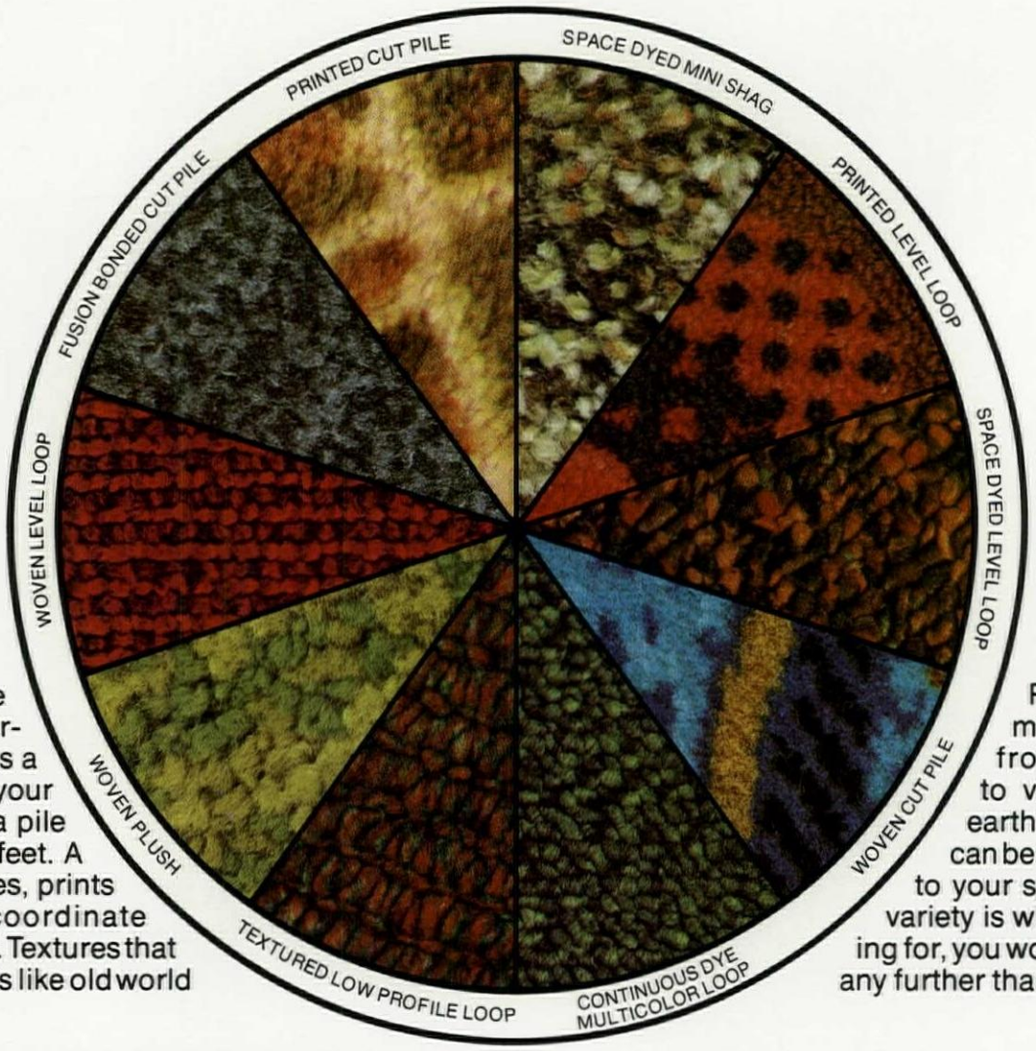




When it comes to carpeting, Anso® has everything the other nylon has,

and...everything it hasn't.

The other nylon has great variety.
Anso has great variety.

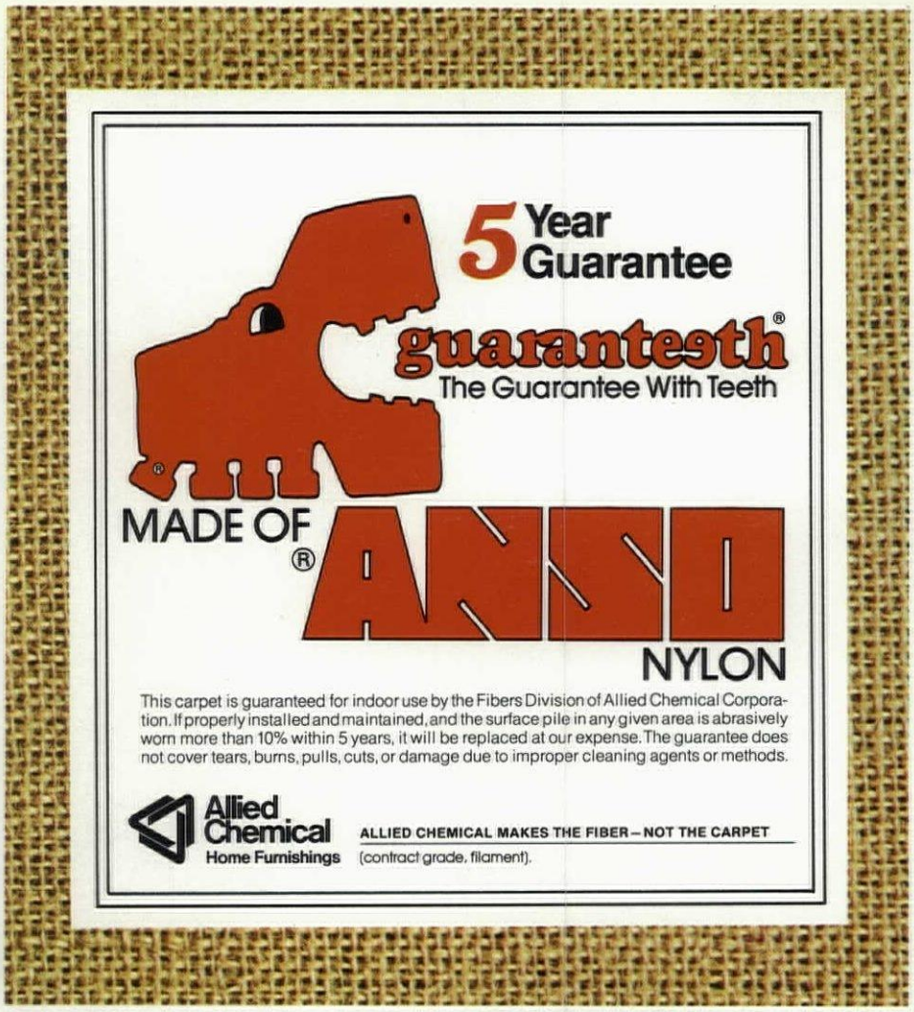


Whatever you're looking for, carpet of ANSO has a style to satisfy your eye as well as a pile to please your feet. A range of textures, prints and colors to coordinate with any interior. Textures that can take it. Prints like old world

Persians and mosaics. Colors from soft pastels to vivid clears and earth tones. Or colors can be blended exactly to your specifications. If variety is what you're looking for, you won't have to look any further than ANSO.

THE OTHER NYLON IS ANTI-SOIL. ANSO IS ANTI-SOIL

When you specify carpet made of ANSO, you get a second generation, anti-soil nylon fiber. A nylon fiber with a modified shape that makes it smoother. The result is that soil is more easily removed by ordinary cleaning methods. So it stays looking "like new" year after year.



And... Anso has the 5-year guarantee.

Allied Chemical's Guaranteeth®, the guarantee with teeth, is the strongest fiber guarantee in the carpet industry. It was also the first. Simply, it states:

- If any carpet of ANSO fiber wears more than 10% within the first 5 years, we'll replace it... Free.
- Allied Chemical will pay the entire cost of removal and re-installation. Including labor.
- Wear is not averaged over the carpet surface so any wear, anywhere, is covered.
- Allied Chemical will pay 100% of the replacement cost up to the very last guaranteed day. The offer is not pro-rated.
- All claims are investigated by an independent nationwide testing organization.
- ANSO-X anti-shock nylon is guaranteed against static-shock for the life of the carpet.

And...Anso has a solid-core construction to resist liquid borne soil

When it comes to staining, ANSO gives you extra protection. Because ANSO is a solid-core nylon, common stain-producing materials like ink, beverages, oily materials etc., can't penetrate or be entrapped in the fiber. Most can be removed easily with a damp cloth. If something out of the ordinary spills, our free carpet care booklet provides instructions for easy removal.

AND... ANSO HAS A MANDATORY CERTIFICATION PROGRAM.

Before they receive the ANSO label, carpets of ANSO are put through rigorous tests in a carefully supervised certification program. These tests include: pile yarn content, density factor, pile height, adhesion of backing, tuft bind, flammability, taber abrasion and color fastness. We make the exact minimum specifications available to you, so when you specify carpet of ANSO, you know what you are getting. Just ask for form A-22.

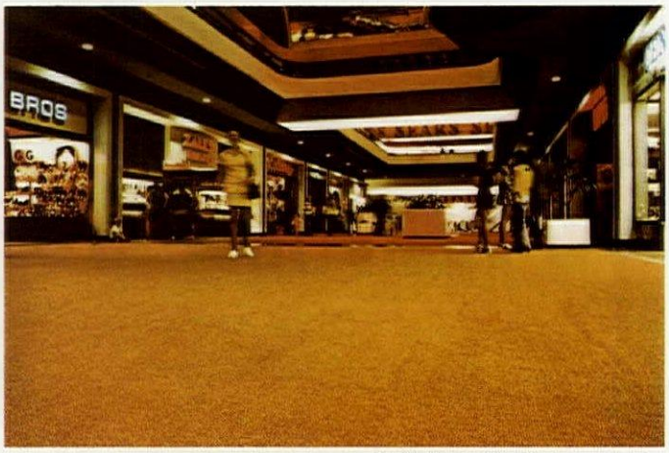
AND...ANSO HAS 2 CUSTOMER SERVICE PROGRAMS

1. Our Custom Specification Program helps us determine your exact installation needs so we can help you fill your requirements precisely. And most economically. Allied Chemical specialists are available nation-wide to assist you.

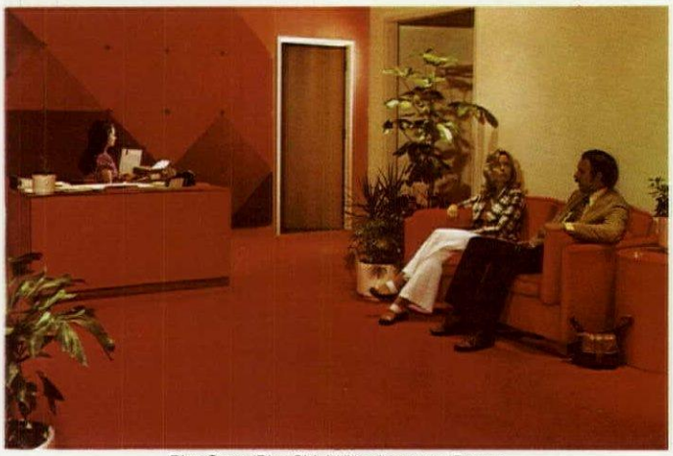
2. Our Masterwork Styling Program enables us to custom design carpets for special installations where aesthetics are of particular importance. Minimum yardage depends on carpet and manufacturer you select.

Put our 100 million plus square yards of experience on your floor.

The Hertige School, Miami, Florida



Northridge Fashion Center, Los Angeles



Blue Cross/Blue Shield Headquarters, Denver

ANSO is the most widely used guaranteed carpet fiber today. When you specify carpet of ANSO, you put 100 million plus square yards of experience to work on your floor. Above are some typical ANSO installations.

Anso®: The carpet nylon with the 5 year guarantee.

Allied Chemical
Home Furnishings

New-ANSO-X®

The third generation nylon guaranteed against annoying carpet shock from static electricity for the life of the carpet. For a free brochure on ANSO-X anti-shock nylon, and a list of carpets currently available with this fiber, please check here. ☐

For further information phone the Contract Carpet Dept.: 212-736-7000 or return the following coupon
Allied Chemical, Home Furnishings Merchandising, 1411 Broadway, N.Y., N.Y. 10018.
Please send additional information on the following:

☐ Mills carrying carpets of ANSO nylon. ☐ Appointment with ANSO Contract Specialists

☐ Custom Specification Program ☐ Masterwork Styling Program

☐ Information requested for ☐ current project ☐ future project (Please give brief description)

_____

_____

Name_____ Position_____

Company_____ Address_____

City_____ State_____ Zip_____ Telephone_____

r more information, circle item numbers on
ader Service Inquiry Card, pages 191-192.

nter pivoting window imported from West Germany

s window is suggested for in hospitals, schools, office ldings and other types of ctures because it offers virly no limitations in height l width dimensions. For ease leaning, the *Unitas 10* winv can be pivoted 180 degrees, and a built-in lock limits the opening to up to 22 degrees. The window is available in either wood (pine, mahogany or teak), aluminum, or PVC. Its weather-tightness is said to result from one handle, which operates five locks (two at the top and three at the bottom), securing the sash completely in the frame. The window is available with round tops, and Venetian blinds between double panes of glass. ▪ Roto International, Essex, Conn.

Circle 301 on inquiry card

rthopedic chair suggested for health care

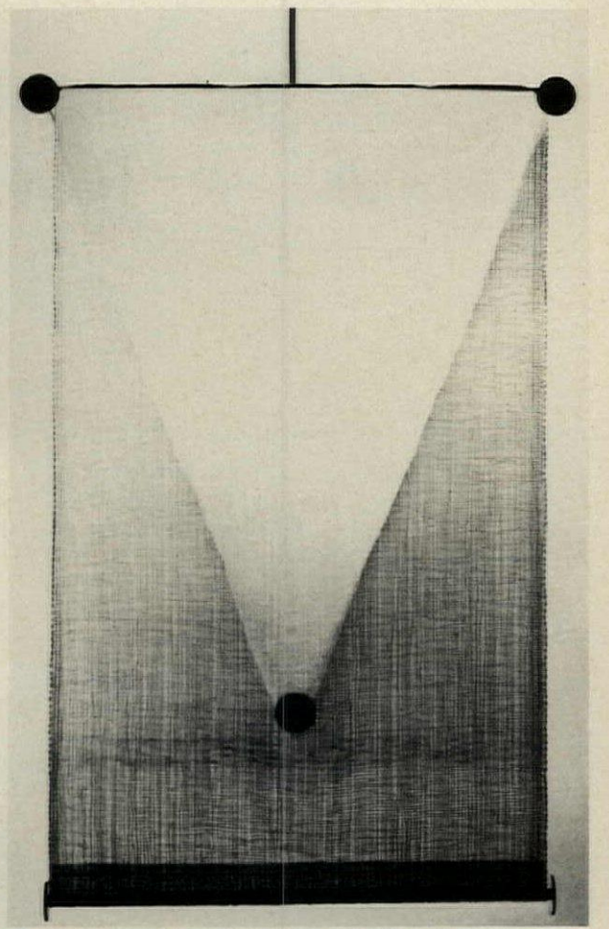
s channel back highback th continuous bentply n/leg has a molded plywood me that rocks, and its vinyl holstery sleeve may be unped and replaced when necary. Designed for the company by Joe Russo and Rick Sonder, the *IDG* chair may be used with over-bed tables, and meets all fire-proofing standards. ▪ Thonet Industries, Inc., York, Pa.

Circle 302 on inquiry card

Fiberglass sculpted ceiling panels

"Andes" offers a washable white vinyl facing on panels measuring 2 by 4 ft by 1 in. thick. They are said to absorb approximately 75 per cent of noise while reflecting 75 per cent of the available light. ▪ Certainteed Products Corp., Valley Forge, Pa.

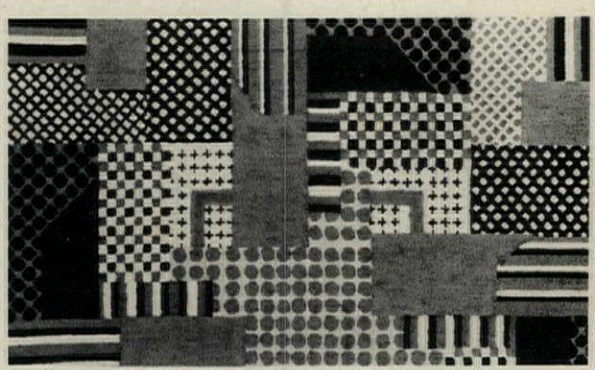
Circle 303 on inquiry card



Lighting developed within gauze-like fabric

Tele was designed by Archille and Pier Giacomo Castiglioni for the XI Milan Triennale. It consists of a metal top with socket, and metal rods attached to two of its sides. Two pieces of translucent fabric are draped over the rods. It is suggested for large spaces or over conference tables. ▪ Atelier International, Ltd., New York City.

Circle 304 on inquiry card



Hand-made rug with low-level loop construction

"Monopoly" is a hand-made rug with all wool construction featuring a variety of small-scale patterns. Executed in neutrals (black, beige) the rug may be extended in a wall-to-wall installation, and as with all company rugs, is available in custom colors. ▪ V'Soske, New York City.

Circle 305 on inquiry card

more products on page 137

"A money-saving, space-saving DWV system." That's what Tyler RufWall™ delivered to the One U.N. Plaza Hotel.

United Nations Development Corporation, Owner

David Norkin, President of Norkin Plumbing Company, tells why RufWall was chose for the 10-story, 350-unit hotel portion of Manhattan's newest combination 4(story office/hotel building.

"Rigid space requirements, narrow channels in the slab floors, and lack o storage space called for a compact DWV system. Tyle RufWall was the ideal solution.

"In addition to furnishing basic fittings for floo mounted back-outlet water closets, the RufWall uni will pick up tubs which rough-in above the floor an still fit 2-inch pipe into 3-inch channel slots in the slab And because the RufWall system uses less materia than traditional XH class cast iron installation, cost were reduced. All in all, RufWall gave us just wha we were looking for, a money-saving, space-savin DWV system."

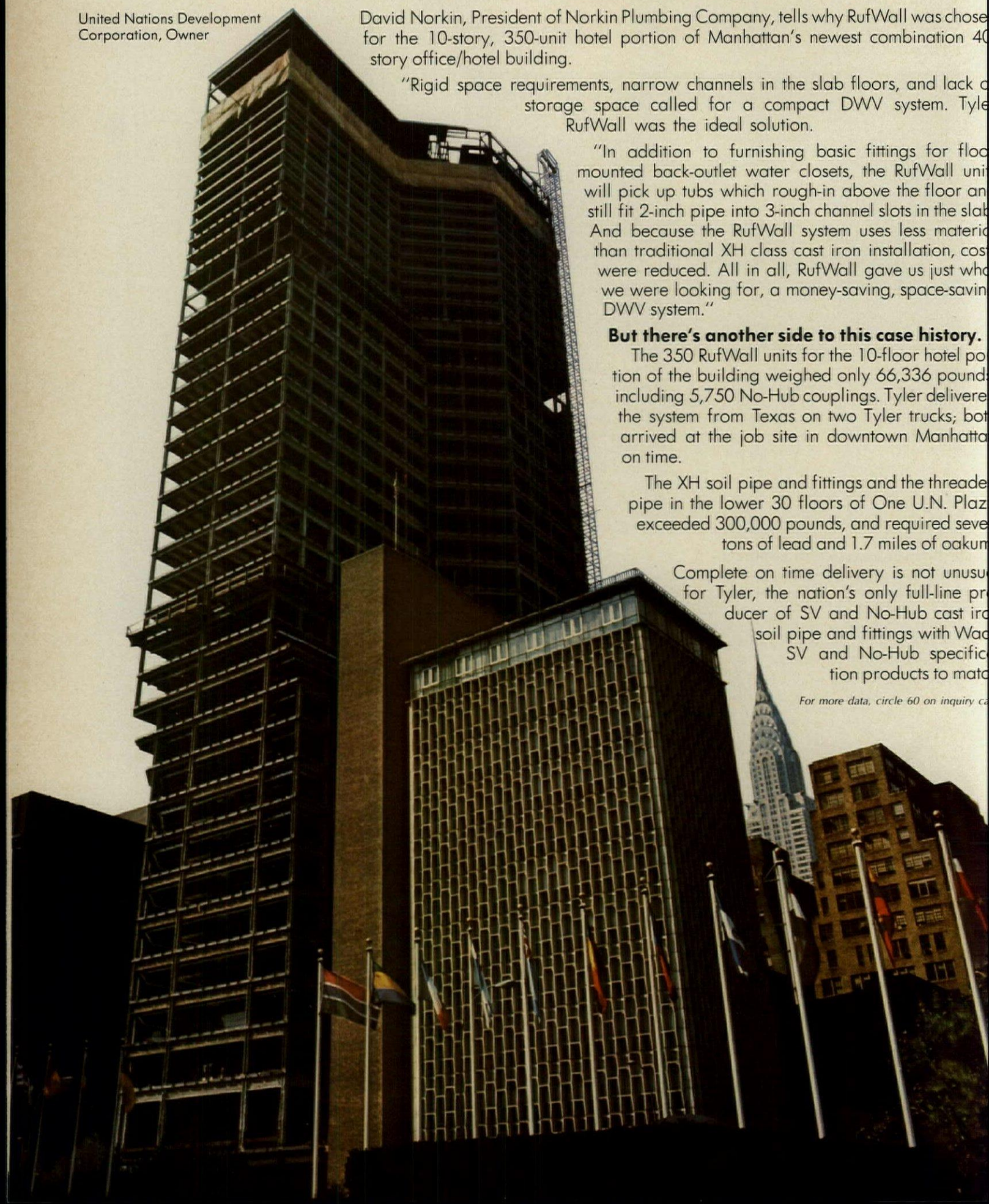
But there's another side to this case history.

The 350 RufWall units for the 10-floor hotel po tion of the building weighed only 66,336 pounds including 5,750 No-Hub couplings. Tyler delivere the system from Texas on two Tyler trucks; bot arrived at the job site in downtown Manhatta on time.

The XH soil pipe and fittings and the threade pipe in the lower 30 floors of One U.N. Plaz exceeded 300,000 pounds, and required seve tons of lead and 1.7 miles of oakum

Complete on time delivery is not unusu for Tyler, the nation's only full-line pr ducer of SV and No-Hub cast iro soil pipe and fittings with Wad SV and No-Hub specific tion products to mata

For more data, circle 60 on inquiry ca



OFFICE LITERATURE

For more information, circle numbers on Reader Service Inquiry Card, pages 191-192.

TEXTURING WALLS / A new brochure describes texturing techniques and materials for walls and ceilings in residential and commercial structures. Recommendations for surface preparation and application conditions for the new non-asbestos finishes are presented for specifiers and contractors. Data on coverage is included for estimating purposes. Detail photographs in the publication illustrate the wide range of effects available through the use of different products and/or application techniques. Texture finishes are commonly applied to gypsum wallboard and concrete, although they may be used over properly prepared surfaces such as plaster, wood and metal. ▪ Gold Bond Building Products, Buffalo, N.Y.

Circle 400 on inquiry card

SOLAR HEAT-GAIN / Data obtained from continuing studies on the effectiveness of solar screens in reducing heat-gain through glass, and how they conserve costly energy, are now being released by the company. Typical performance data and comparisons with various types of glasses and shading devices are detailed. ▪ Koolshade Corp., Solana Beach, Cal.

Circle 401 on inquiry card

SOIL SEALANTS / Facts on how to seal lagoon bottoms with *Volclay*, a high swelling bentonite clay, are discussed in a 12-page brochure entitled, "Effective Water Stoppage." Explained is *Volclay's* ability to expand up to 15 times its dry bulk when wetted. Under confined conditions, *Volclay*, when saturated with water, swells to fill the voids between various sized soil particles, preventing further passage of water. This brochure explains how the product can be used to seal both newly constructed lagoons and those already in use. ▪ American Colloid Co., Skokie, Ill.

Circle 402 on inquiry card

HOT WATER BOILERS / This eight-page discussion outlines the design, construction and advantages of an immersion fired boiler—that is, the gas is burned inside a series of long, small diameter firing tubes which are totally submerged in the boiler water. A complete study includes the features of immersion firing, supplemented with drawings and diagrams. ▪ Sellers Engineering Co., Chicago, Ill.

Circle 403 on inquiry card

BATH REMODELING / The 12-page, four-color brochure shows a complete array of bathroom products in room settings, and includes a new marbleized china line. The brochure features bath settings of modular fiberglass tubs and showers, bathroom and kitchen faucets, lavatories, water closets, decorator vanities, and other bath products. Typical floor plans of powder rooms, and small and large bathrooms can be used as scaled models and easily adapted to accommodate personal taste or preference. ▪ Universal-Rundle Corp., New Castle, Pa.

Circle 404 on inquiry card

HEAT RECOVERY UNIT / A catalog on a water-to-air heat recovery unit, called the *Hi-Line SEASONAIRE*, provides a description of how the system works and details the specifications, performance, application and dimensional data and considerations of the new unit. The equipment reduces energy use by recovering heat from areas of a building requiring cooling; the recovered heat is then transferred to areas that require heating. Heating capacities of the heat recovery unit are 9600, 14,100, 17,600, and 26,600 Btuh. ▪ McQuay-Perfex Inc., Minneapolis, Minn.

Circle 405 on inquiry card

DOOR SEAL / New literature featuring door seals, drive-in door seals, and rail shelters has been released by the company. Door seals are available in standard or deluxe models. Standard models have a two-ply nylon cover on all pads, and deluxe models have an additional two-ply protector layer. The drive-in door seal is designed for oversized doors and is built so that trucks can back into the seal, rather than against it. Rail shelters are available for extensions up to 72 in. from wall to rail car. ▪ Serco Engineering Corp., London, Canada.

Circle 406 on inquiry card

KITCHEN FAUCETS / *CHATEAU 78* single handle kitchen faucets are detailed in a four-page illustrated color folder from the company. New space-saving installation options with hose and spray for 3- and 4-hole sinks are pictured. Also included in the folder is a selector chart for determining model choices, installation specifications, and supply fittings. Mirror-polished chrome and stainless steel finishes are offered. ▪ Moen, Div. of Stanadyne, Elyria, Ohio.

Circle 407 on inquiry card

LECTERNS / From traditional to contemporary the series of lectern designs presented in this color bulletin offer auxiliary audio-visual equipment options. Elevating and non-elevating models are included and many design and engineering options make it possible to customize any model to meet individual requirements. ▪ Jerome Mendell Co., Inc., New York City.

Circle 408 on inquiry card

ENVIRONMENTAL SERVICES / As a guide to meeting Federal, state and local environmental requirements, the firm offers a brochure outlining the services of its Bionomics Studies Group. The brochure lists key tasks involved in such environmental projects as acoustical evaluations, air pollution and meteorological studies, aquatic analyses, terrestrial ecology studies, earth sciences investigations, water resource development and socio-economic studies. ▪ Michael Baker, Jr., Inc., Beaver, Pa.

Circle 409 on inquiry card

SHIELDED ROOMS / Technical literature on shielded rooms which eliminate magnetic and vibration-induced distortions affecting electron microscopes describes how such enclosures guarantee the instrument's high resolution performance when the site magnetic fields or vibration exceed the tolerable limits recommended by the microscope manufacturer. These rooms exclude interference emanating from high current power line feeders, elevators, fluorescent lighting and others caused by fluctuating magnetic fields as well as exterior vibration from the surrounding building. ▪ Keene Corp., Norwalk, Conn.

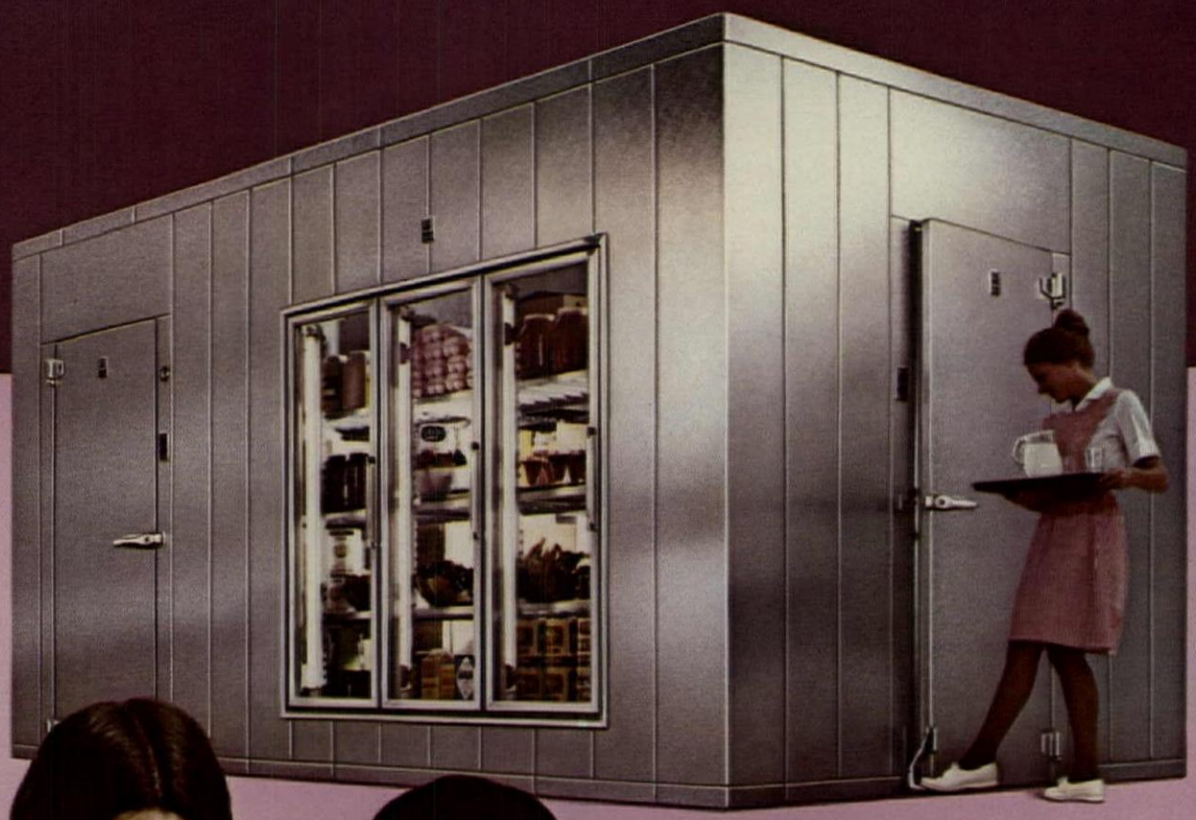
Circle 410 on inquiry card

HID LIGHTING / A full color catalog on over 250 individual HID lighting luminaires discusses recessed, surface-mounted and post-top styles in mercury vapor, metal halide and high pressure sodium. A comprehensive technical section includes photometric data as well as an informative two-page spread on lighting design procedures. An illustrated general information section discusses the concept of HID lighting in terms of its energy-saving and lighting efficiencies and compares it to incandescent and fluorescent light sources. Detailed information related to lamp operation, ballasts and general luminaire design features is also presented. ▪ Markstone Mfg. Co., Chicago, Ill.

Circle 411 on inquiry card

Bally belongs

where walk-in refrigeration is a critical requirement



Bally Prefabs are there for the very best in patient care

Bally Walk-In Coolers and Freezers can be assembled in any size for indoor or outdoor use from standard panels insulated with four inches of foamed-in-place urethane. Choice of stainless steel, galvanized or patterned aluminum. Easy to enlarge... easy to relocate. Refrigeration systems from 35°F. cooling to minus 30°F. freezing. Subject to fast depreciation and investment tax credit. (Ask your accountant.) Write for 28-page book and urethane wall sample. Our 182-page *Working Data Catalog* is available to Architects and Specifiers at no charge. Also, see our catalog in Sweets, 11.24/Ba.

Bally Case & Cooler, Inc., Bally, Pennsylvania 19503. Phone: (215) 845-2311.

ADDRESS ALL CORRESPONDENCE TO DEPT. AR-9

Bally®

For more data, circle 61 on inquiry card

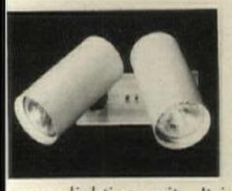
FUME HOODS / These new units allow operation at lower face velocities than other conventional units, according to the company. Regardless of sash position, air is continually flowing across the work surface to sweep out the entire chamber and there are no "dead" spaces where fumes can accumulate. Both hood models are available in three widths: 4, 5 and 6 ft. All are 34½ in. deep and 59 in. high. Mounted on a base unit and work top, the entire assembly is 96 in. high. ▪ Fisher Scientific Co., Pittsburgh, Pa.

Circle 306 on inquiry card

CENTRIFUGAL PUMP / This horizontally split case pump is designed for all liquid handling problems requiring a large capacity, with either high, medium or low head pumping. The shaft is mounted in heavy duty ball bearings to reduce friction and assure vibration-free operation. The horizontally split case with both inlet and discharge in the lower half cuts down on inspection and maintenance time since piping does not have to be disconnected. ▪ LFR Corp., Hamden, Conn.

Circle 307 on inquiry card

EMERGENCY LIGHTING SYSTEM / A decorative cylinder design power source for up to eight remotely-connected cylinder fixtures, exits or lighting heads is the latest addition to the firm's DE-LITE series of emergency lighting units. It is completely self-contained and includes pure lead, maintenance-free batteries, charger, transfer, complete supervision and provisions for remote connections. Matte white cylinders with recessed lamp on a contrasting black swivel are furnished. The system meets OSHA, NEC, NFPA Life Safety and other state and local codes. ▪ Dual-Lite Co., Newtown, Conn.

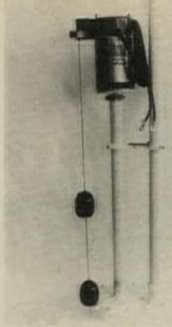


Circle 308 on inquiry card

HEAVY-DUTY SLIDE / This all-steel, full extension slide will carry 250 lbs. and its "non-handedness" allows for either slide to be mounted to either side of the unit being moved. The *3320* is simply installed, requires ¾ in. side space, has all ball bearing action and a clear chromate protective finish. This slide is recommended for application to heavier-than-usual store fixture drawers, file cabinets, and shelves which support units such as TV sets, stereo components and related equipment. ▪ Grant Hardware Co., West Nyack, N.Y.

Circle 309 on inquiry card

EMERGENCY SUMP PUMP / A sump pump in one-third and one-half horsepower motor units is fully automatic, self-cleaning and operates off a 12-volt, automotive-type battery. Designed to operate alongside a present sump pump, the unit prevents flooding resulting from power or pump failure. The unit reacts to the high-water level and automatically begins pumping in excess of 3300 gallons per hour. ▪ Emergency Sump Pump, Ltd., Arlington Heights, Ill.



Circle 310 on inquiry card

HOSE GATE VALVE / A gate valve with a national standard hose-thread connection is now available. Suited for general applications where a hose connection is needed, and furnished with cap and chain as standard features, *T-113-HC* is rated at 125 psi saturated steam and 200 psi non-shock cold water. It is available with FSPS inlet and national standard hose-thread outlet in ½ through 1½ in. sizes. ▪ NIBCO Inc., Elkhart, Ind.

Circle 311 on inquiry card

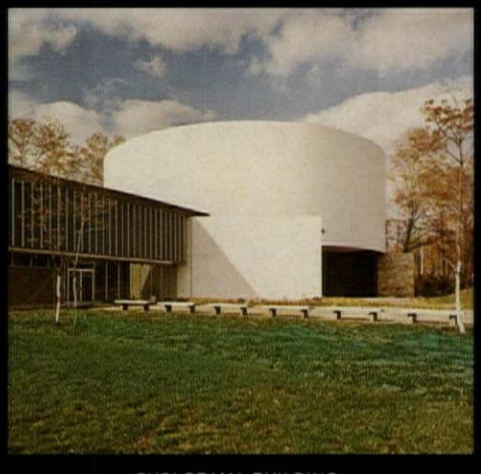
more products on page 139

AMERICAN PLAZA TOWERS
PORTLAND, OREGON

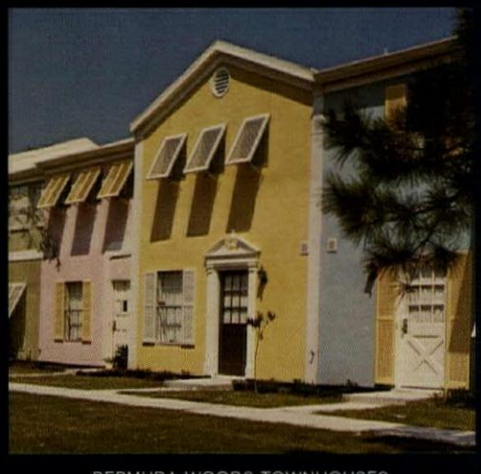
NEWINGTON MALL
NEWINGTON, NEW HAMPSHIRE

ORAL ROBERTS UNIVERSITY
TULSA, OKLAHOMA

SHERATON INN-AIRPORT
PORTLAND, OREGON



CYCLORAMA BUILDING
GETTYSBURG, PENNSYLVANIA



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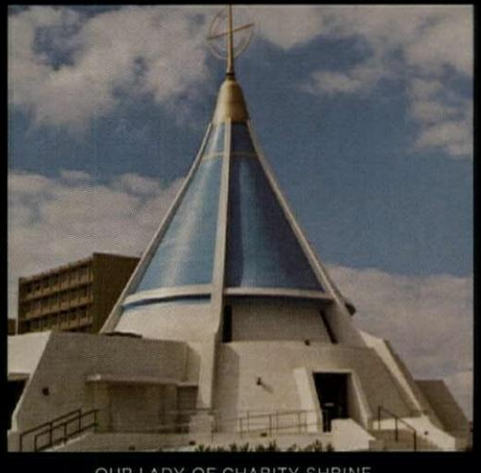
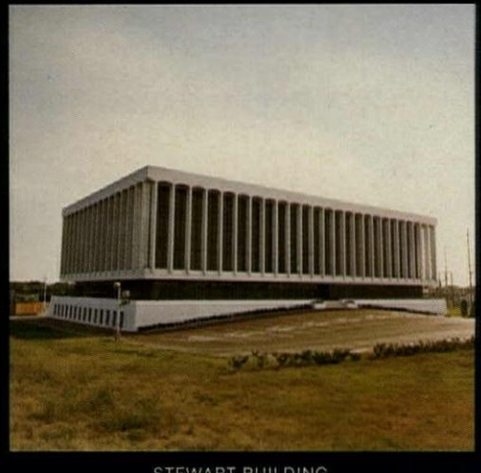
MADRID SQUARE
BROCKTON, MASSACHUSETTS



OUR LADY OF CHARITY SHRINE
MIAMI, FLORIDA



STEWART BUILDING
NEW ORLEANS, LOUISIANA

FIREPLACE HOOD / This unit, available in black, hammered simulated brass, copper and pewter finishes, measures 42 in. high by 42, 48 or 54 in. wide. All finishes are baked acrylic enamel. It is possible to attach a screen to the bottom of the hood. ▪ Swanson Mfg. Co., Owosso, Mich.

Circle 312 on inquiry card

STAINLESS STEEL TANKS / A line of stainless steel tanks is available in sizes from 6 by 12 by 3 in. deep to 72 by 120 by 72 in. deep. Consisting of more than 1500 standard sizes in Type 304 stainless steel, these basic, floor-mounted rectangular tanks afford optional features such as bases, legs, outlets in IPS, sanitary and flanged, large corner radius coves, ground welds and other sanitary features. Identical tank structures can also be fabricated from Type 316 stainless steel. ▪ United Utensils Co., Inc., Port Washington, N.Y.

Circle 313 on inquiry card

OVAL SHAPED BACKSTOP / Backstops are available in two sizes: a 60 ft wide by 20 ft high model, and a smaller unit, 50 ft wide by 14 ft 8 in. high. Main oval frames are 2⅞ in. O.D. galvanized pipe, and vertical frame members are 2⅜ in. O.D. galvanized pipe on approximately 6 ft centers. Heavy-duty mesh is 9-gauge galvanized steel. ▪ Quality Industries, Inc., Hillsdale, Mich.

Circle 314 on inquiry card

TWO-HEAD GEL BATTERY / Featuring teak front panels, beige baked enamel finish, two emergency light heads and rechargeable gelatin electrolyte batteries, these lights meet National Fire Protection Association's National Electrical Code, Life Safety Code, and OSHA standards. Units measure 12 in. long by 5 in. wide by 15 in. high, including heads. Battery charging is by a multi-rate fully automatic silicon solid state integrated circuit charger which maintains or restores the battery to full capacity within 24 hours from 87½ per cent of nominal system voltage. ▪ Teledyne Big Beam, Crystal Lake, Ill.

Circle 315 on inquiry card

KITCHEN HOOD / The *Mark I* island and wall mount hood line is handcrafted from cold rolled steel finished in baked-on matte black, trimmed in brass, copper or stainless steel. The built-in blower/vent system is completely pre-wired. Engineered for simple installation, the *Mark I* is particularly adaptable for remodeling projects. ▪ Goodwin of California, Berkeley, Cal.

Circle 316 on inquiry card

LOW-COST SECURITY SYSTEM / A residential security system with an installed cost to builders of less than $400 is installed in a standard wall box. The system meets all building code requirements and the master control panel is listed by Underwriters' Laboratories. When a number of systems are installed in a high-rise building, they can be readily linked to an over-all communications system. With the addition of fire and smoke detectors, it provides a complete security system for less than $600. A standby power supply to assure system operation in case of electrical power failure is optional. ▪ Westinghouse Security Systems, Inc., Pittsburgh, Pa.

Circle 317 on inquiry card

METAL ENTRANCE DOORS / Weather tight solid designs that are impervious to moisture and insulated as storm doors, are factory primed, with frame and sill, prehung and ready to install. Doors feature hot galvanized steel surfaces permanently bonded to a rigid polyurethane core. A total thermal break between metal surfaces, including at hinges and lockset, is provided. Magnetic weatherstripping rides on vinyl, so it closes like a refrigerator door and is mechanically fastened to the jamb. ▪ Northern Sash Door Co., Hawkins, Wis.

Circle 318 on inquiry card

more products on page 141

One of today's smart new creations can save this store $12,000 in lighting.

Automatic Energy Control from Wide-Lite is one beautiful example.

With a typical HID lighting system* AEC can save over 400,000 kilowatt hours and $12,000 for each and every relamp interval. This means savings from 15% to 25% for most commercial installations.

Why? Because AEC maintains constant level illumination — so you won't have to pay for higher initial footcandles to meet the specified minimum as lamps age.

And how does Automatic Energy Control work?

It all starts with a photocell sensor which simply reads illumination levels.

Then the AEC system converts this reading into a signal which alters power input. Thanks to our special dimming ballasts which continuously and automatically adjust lamp lumen output to maintain a predetermined value.

So, as lamp lumen depreciation lowers illumination, AEC automatically compensates by increasing lamp power.

Or if ambient daylight increases total room illumination, AEC automatically compensates by reducing lamp power.

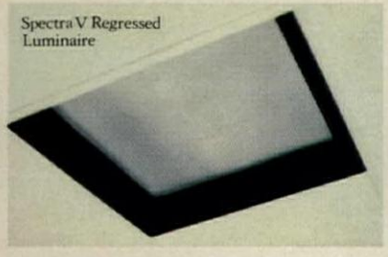
The result is that you get only the amount of light you need. And pay for only the amount of light you need.

Of course, we recommend you use our dustproof luminaires as part of your AEC system to keep maintenance costs at a minimum.

We also recommend you write for our brochure that details how AEC can save on any indoor lighting project you may have.

It shows how fantastic you can look with our smart new creation.

Spectra V Regressed Luminaire



WideLite

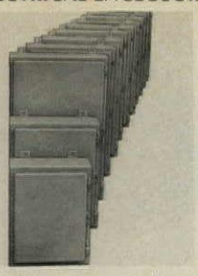
POST OFFICE BOX 191, HOUSTON, TEXAS 77001
WIDE-LITE® PRODUCTS ALSO MANUFACTURED IN AUSTRALIA, BELGIUM (FOR EUROPE), CANADA, MEXICO AND GREAT BRITAIN.
A COMPANY OF THE ESQUIRE LIGHTING GROUP

*150 1000-WATT FIXTURES WITH MERCURY VAPOR DX LAMPS, BURNING 12-HOURS PER DAY, FOR A TOTAL OF 16,000 HOURS BEFORE RELAMPING, AT 3¢ PER KWH.

For more data, circle 65 on inquiry card

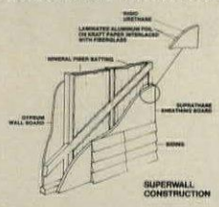
PRODUCT REPORTS *continued from page 139*

ELECTRICAL ENCLOSURES / Enclosures may be ordered with grey primer or electrostatically applied epoxy resin finish for improved resistance to oils, acids, chemicals and physical abuse. Custom electrical enclosures with mounting holes or other special requirements are also available. ▪ Brasch Mfg. Co., Inc., Maryland Heights, Miss.



Circle 319 on inquiry card

URETHANE SHEATHING / *Suprathane* urethane laminate sheating board is generally 1¼ in. thick in panels 4 by 8 ft. Installed outside 2 by 4's instead of plywood sheathing, the product is approved by the Federal Housing Authority as sheathing board in one- and two-family housing of wood frame or masonry exterior wall construction. This materials release was based in part on a fire endurance classification of 47 minutes on the ASTM E-119-73 test. ▪ Rubicon Chemicals Inc., Naugatuck, Conn.



Circle 320 on inquiry card

STONE-EPOXY FLOOR / Formulated from permanently colored quartz granules and 100 per cent solids epoxy, the surfacing fuses into a seamfree, monolithic flooring which does not become brittle. This prevents, according to the company, the surfacing from cracking when subjected to expansion, contraction and impact. The material bonds to any surface, is thin and lightweight, acid and chemical resistant, and meets USDA-OSHA specifications. ▪ Dura-A-Flex, Inc., Hartford, Conn.

Circle 321 on inquiry card

BATH STORAGE CABINET / Called "Wall-Ette," the unit measures 36 in. high, 18 in. wide and 5¼ in. deep. It contains four shelves, and doors of the cabinets are available in three styles to match the doors of the company's vanities. The styles include Colonial, Mediterranean and French Provincial. ▪ Universal-Rundle Corp., New Castle, Pa.

Circle 322 on inquiry card

BAR / The *Cervibar* includes a stainless steel bar sink with two bottle wells, a 3.2-cu ft refrigerator, and undercounter storage space. This model is available in a choice of three hardwood veneers: Ash, Spanish Oak or Birch. Over-all dimensions are 42 in. high by 45 in. wide by 18½ in. deep. The unit is ready to plumb-in, hook-up and use. ▪ Cervitor Kitchens, Inc., South El Monte, Cal.

Circle 323 on inquiry card

more products on page 143

Practicality.

What's beauty without it?

When it comes to carpeting, there really is no beauty without practicality. Certainly no long term beauty. Because without practical performance features, the original beauty of carpet can't be retained. And without practical performance features, carpet maintenance cost can rise. That's why Monsanto has engineered many practical performance features into their carpet fibers. They want to be sure that carpets made of their Acrilan® acrylic fiber not only look beautiful at the start, but continue to look beautiful as long as they last, with a minimum amount of maintenance cost.

For this kind of long-lasting beauty, it takes a host of practical features... soil and stain resistance, soil and stain hiding, fade-resistance, static-resistance and easy cleanability. And Acrilan® Plus and Acrilan® 2000+ carpets have them all.

In public areas, you can count on making favorable and lasting impressions with carpets made of our fiber. They resist soiling in the first place, thanks to their inherent static resistance. They hide the soil that *does* cling, thanks to the fibers non-transparent nature. And they clean-up easily and at minimum cost with regular routine vacuuming.

In areas subject to excessive soiling or unusual staining such as reception areas or restaurants, Acrilan® 2000+ carpets perform better than any we know of. They have all the practical features of Acrilan® Plus carpets and more. Acrilan® 2000+ carpets are made of solution-dyed fiber and so, are exceptionally colorfast. And because they're colorfast, they can take the chemicals necessary to clean really stubborn stains and soil. When backed with a man-made backing, Acrilan® 2000+ carpets aren't even fazed by 100% bleach.

Just as Acrilan® 2000+ carpets are colorfast, so are they lightfast. They can take many hours of sun exposure and still show no perceptible color change. In fact, Acrilan® 2000+ carpets are 35 to 50 times more lightfast than the industry standard.

It takes all these practical features to keep carpeting looking beautiful, and you can count on Acrilan® acrylic fiber for all of them. After all, what's beauty without practicality? And what's carpeting without beauty?

Acrilan®
the ability fiber

Acrilan® Plus Monsanto

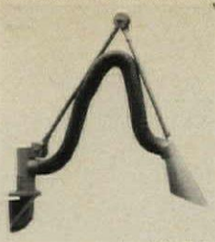
Acrilan Monsanto 2000+

Monsanto

Monsanto Textiles Company
320 Interstate North Parkway
Atlanta, Georgia 30339 (404) 434-4949

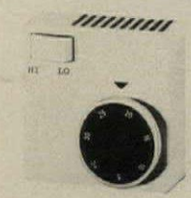
For more data, circle 68 on inquiry card

SNORKEL INTAKES / Two sizes—5 or 6 in. in diameter—can reach a full 10 ft yet fully retract. They can be wall mounted and swing through 180° or, they can be mounted overhead and swing through 360°. A coverage area of 20 ft in diameter is claimed. The support arms are made of full 2 in. diameter aluminum tubing. ▪ Dustvent, Inc., Addison, Ill.

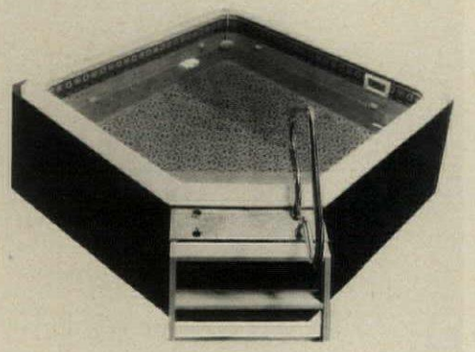


Circle 324 on inquiry card

ROOM THERMOSTAT / The temperature range of "The Patriot" is 32°F to 86°F. Its application is for 24 volts with a switch differential of ± 0.5°F. Dimensions of "The Patriot" are 2.8 in. square by 1.4 in. deep. ▪ Ammark Corp., Fair Lawn, N.J.

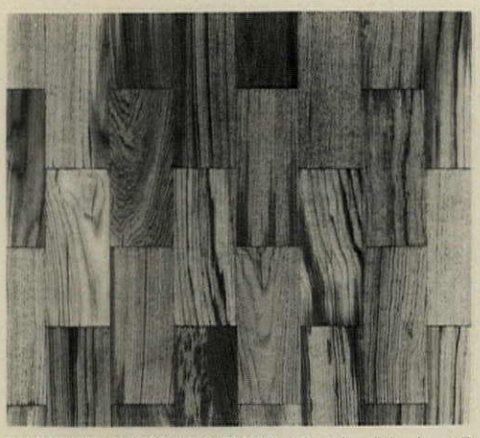


Circle 325 on inquiry card



THERAPEUTIC POOL / The new spas are designed to be freestanding and their modular construction permits access to rooms and areas without disturbing existing structures. Two sizes are available: 8 by 8 ft, and 4 by 6 ft. Both are constructed of 14 gauge, copper bearing, stiffened galvanized wall panels, with 8-in. wide coping and heavy gauge vinyl liner. Each comes complete with filter, heater, skimmer, and high volume air turbulent agitator. ▪ Venture Assocs., Paterson, N.J.

Circle 326 on inquiry card



BUTCHER BLOCK PANELING / Butcher block wall paneling in Teak and Brazilian Rosewood comes in a standard brick pattern. The Brazilian Rosewood is available in miniature brick or standard brick pattern. Both can be installed vertically or horizontally. The paneling is prefinished with a protective vinyl coating. Available in 4 by 8 ft sheets, each sheet is 5.5mm in thickness or approximately ¼ in. ▪ Bangkok Industries, Inc., Philadelphia, Pa.

Circle 327 on inquiry card

more products on page 145

This full-recessed drinking fountain

Goes on Giving!

Model 2510

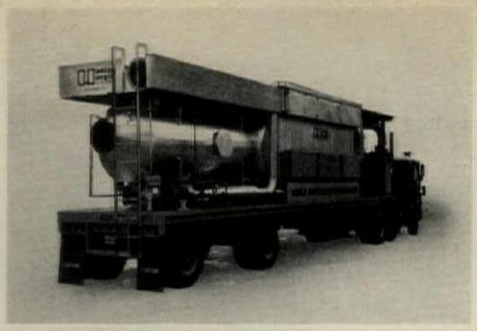
A drink of water now, when the building is new, and for years to come. Haws incorporates this unparalleled product reliability within a smoothly molded receptor of Polymarble. Suit your decorating fancy with Tan, or give some thought to Satin Gray, Yellow Mist, Cerulean Blue, Pistachio Green or White. With any Polymarble fountain you choose, there's luster that lasts, to resist bumps, abrasion, chalking; plus the cleanly swept appearance of recessed bubbler and flush-mounted push-button valve.

Polymarble drinking fountains, part of the Haws experience in reliability since 1909. For full product information and Polymarble Color Selector, contact your nearest Haws Representative or Haws Drinking Faucet Co., 1441 Fourth Street, Berkeley, CA 94710.

Haws®

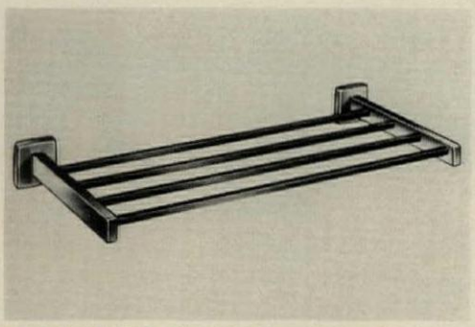
DRINKING FOUNTAINS

PRODUCT REPORTS *continued from page 143*



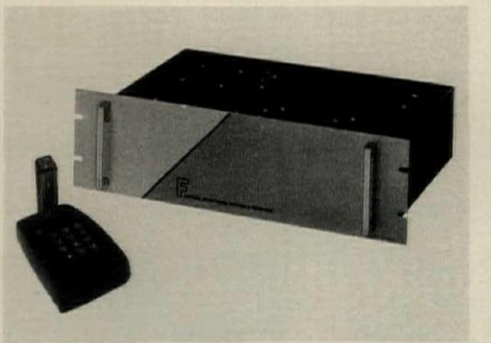
POLLUTION CONTROL / To make it possible to arrive more quickly at the right decision in selecting pollution control equipment, the company has introduced two services designed to facilitate all phases of the pre-testing required. One service is a mobile laboratory for making air quality tests right at the plant site. The other service is a mobile electrostatic precipitator for actual equipment performance verification. The mobile unit contains a complete system that is large enough to sample a meaningful amount of the total volume flow from any emission source. It's also designed with adequate system flexibility to permit on-site modifications to suit characteristics of the specific pollution emissions. ▪ United McGill Corp., Columbus, Ohio.

Circle 328 on inquiry card



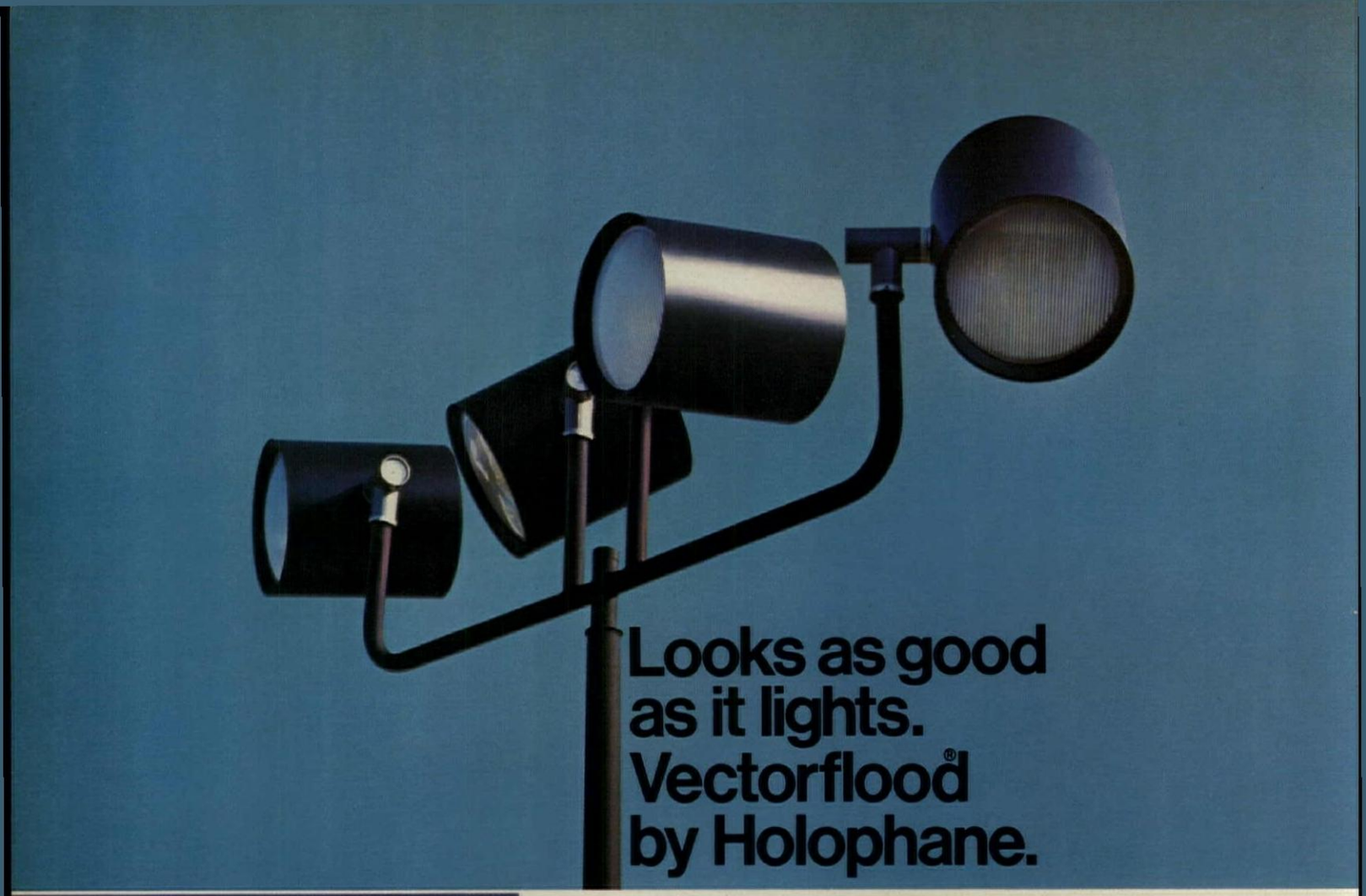
STAINLESS STEEL BATH ACCESSORIES / All of these stainless steel guest bathroom accessories for hotels include two storage shelves for flat-folded towels, and one that also provides a bar for hanging towels below the shelf. The new towel storage shelves consist of four $^{5}/_{16}$ in. square stainless steel tubes and come in a choice of two finishes. ▪ Bobrick Architectural Service Dept., New York City.

Circle 329 on inquiry card

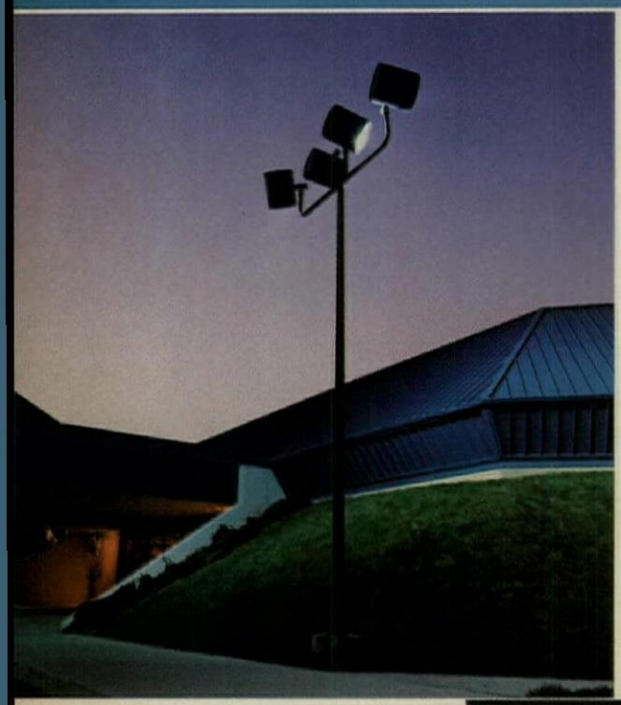


AV-CONTROL / The company has recently developed a "Wireless Control" for total operation of existing and new audio-visual systems. The standard pushbutton telephone panel has the capability of performing 1030 functions. It can select any one of 1000 random access slides in addition to operating 10 pieces of equipment in three different modes. In that standard telephone tones are utilized, this system has the capability of being computer activated for large scale board room or auditorium applications. ▪ Fortune Audio-Visual Systems and Equipment, Little Ferry, N.J.

Circle 330 on inquiry card



Looks as good as it lights. Vectorflood® by Holophane.

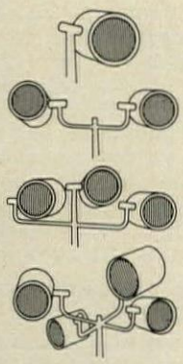


Now there's a floodlight system you can use as an integral design element, with both clean architectural styling and outstanding performance. Vectorflood by Holophane.

First to introduce a crisp cylindrical profile, Vectorflood complements modern architectural concepts. You can even color coordinate with a spectrum of designer hues.

Plus, its advanced optical system gets the most out of the new, short-arc HID lamps—high pressure sodium to 1000W, or metal halide to 1500W—for maximum energy savings.

Let Vectorflood challenge your imagination. Find out how from your local Holophane sales engineer. Or write Holophane, Dept. AR-9, Greenwood Plaza, Denver, Colorado 80217.



Design with cylinders: singles, doubles, triples, or quads.

Johns-Manville JM

For more data, circle 72 on inquiry card

CREDITS

The Front Row Theatre,
Highland Heights, Ohio

Architect:
Richard R. Jencen & Associates

Structural Engineer:
D. T. Levigne Associates, Inc.

Electrical Engineer:
Denk-Kish Associates, Inc.

General Contractor:
Faro Construction, Inc.

Electrical Contractor:
The Max Oster Electric Co., Inc.

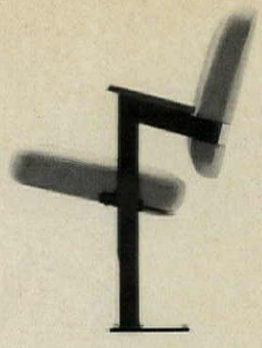
All firms located in
Cleveland, Ohio

J G Furniture Company
Quakertown, Pa. 18951

For more data, circle 29 on inquiry card

auditorium seating

2-63
sign: Peter Dickinson



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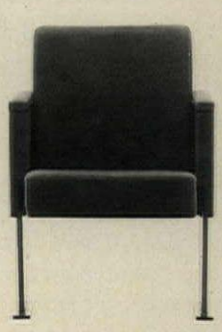
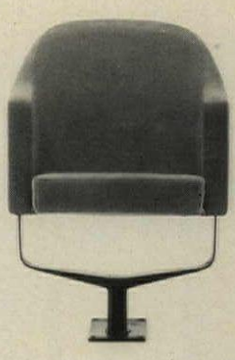
ign: Dave Woods



estminster
ign: Dickinson/Smith



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ign: Dave Woods

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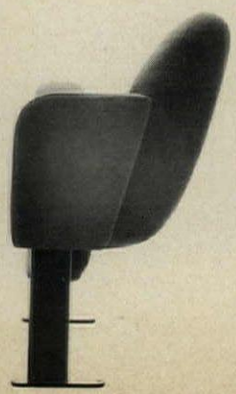

Colorstyle doors add beauty to the Washington scene

Style and beauty plus ruggedness make Ceco steel doors attractive to architects in Washington and throughout the country. Ceco doors meet every functional need. Use them as a "package" to accent your design. Ceco doors and frames are prepared for simple erection in minutes. And both are prepared for quick and solid attachment of hardware. Ceco doors and frames are tough and stable—won't warp, swell, shrink or rot. You gain the advantages of durability and trouble-free performance. Our Colorstyle doors have factory-baked quality finishes, kept fresh in poly bags. See Sweet's, or consult your local Ceco office.

CECO steel doors

The Ceco Corporation • 5601 West 26th Street • Chicago, Ill. 60650

"The door people"

For more data, circle 79 on inquiry card

AE/UPDATE

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

FREE FENCE SPEC KIT SAVES TIME, TROUBLE! Invaluable for planning chain link fencing. Kit includes drawings on styles, wire gauges, gates, fittings, framework. Also includes lab reports, work sheets and specifications. *Page* ® aluminized fabric lasts 3-5 times longer than the best of galvanized. Send for your kit today. American Chain & Cable Company, Inc., Page Fence Division, P.O. Box 430, Bridgeport, Connecticut 06602

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RECORD IMPRESSIONS CATALOG

SEND FOR A COMPLETE, DETAILED CATALOG of "Record Impressions." A convenient service offering reprints of Building Type Studies, Interiors and Special Reports. Offered are more than 30 items including back issues of Record Houses 1968 and 1970; Product Reports '73 and the practical reference guide, "Air Conditioning: A New Interpretation." Address your request to: Record Impressions, Architectural Record, 1221 Avenue of the Americas, New York, New York 10020, Att: Joseph R. Wunk

WE PROVED TO THE WORLD THAT NO NYLON HIDES SOIL BETTER THAN ENKALURE II.

Now Fiat is proving it every day.

When the carpet looks clean, the offices look clean. That makes perfect sense. And that's why Fiat went for carpeting made of Enkalure® II nylon in a big way. 5,775 square yards of it for their new North American Headquarters in Montvale, N.J. Enough for 68 offices, plus the lobby, plus the conference room, all the corridors, and all the open work area.

Fiat knows carpeting of Enkalure II nylon stays clean-looking longer.

Enkalure II nylon, known as "the soil-hider," hides the dirt. Its special multilobal construction causes light to bounce off the fiber, keeping the color looking clean, even when the carpet is dirty. Unlike conventional fibers, there are no deep grooves to trap dirt. So daily vacuuming, occasional spot cleaning and a sensible maintenance program is all that's needed to keep all 5,775 square yards looking "just installed."

A grueling test by Nationwide Consumer Test Institute proves that no nylon hides soil better than Enkalure II. That's why American Enka confidently gives you this warranty: Enkalure II nylon will wear no more than an average of 10% for 5 years when certified and properly installed and maintained, or we'll replace it. **For further information about how your installations can stay clean-looking longer, as well as for the complete full color Enkalure II portfolio of carpet styles, write:**

American Enka Co. Department AR, 530 Fifth Ave., N.Y., N.Y. 10036.

For more data, circle 83 on inquiry card

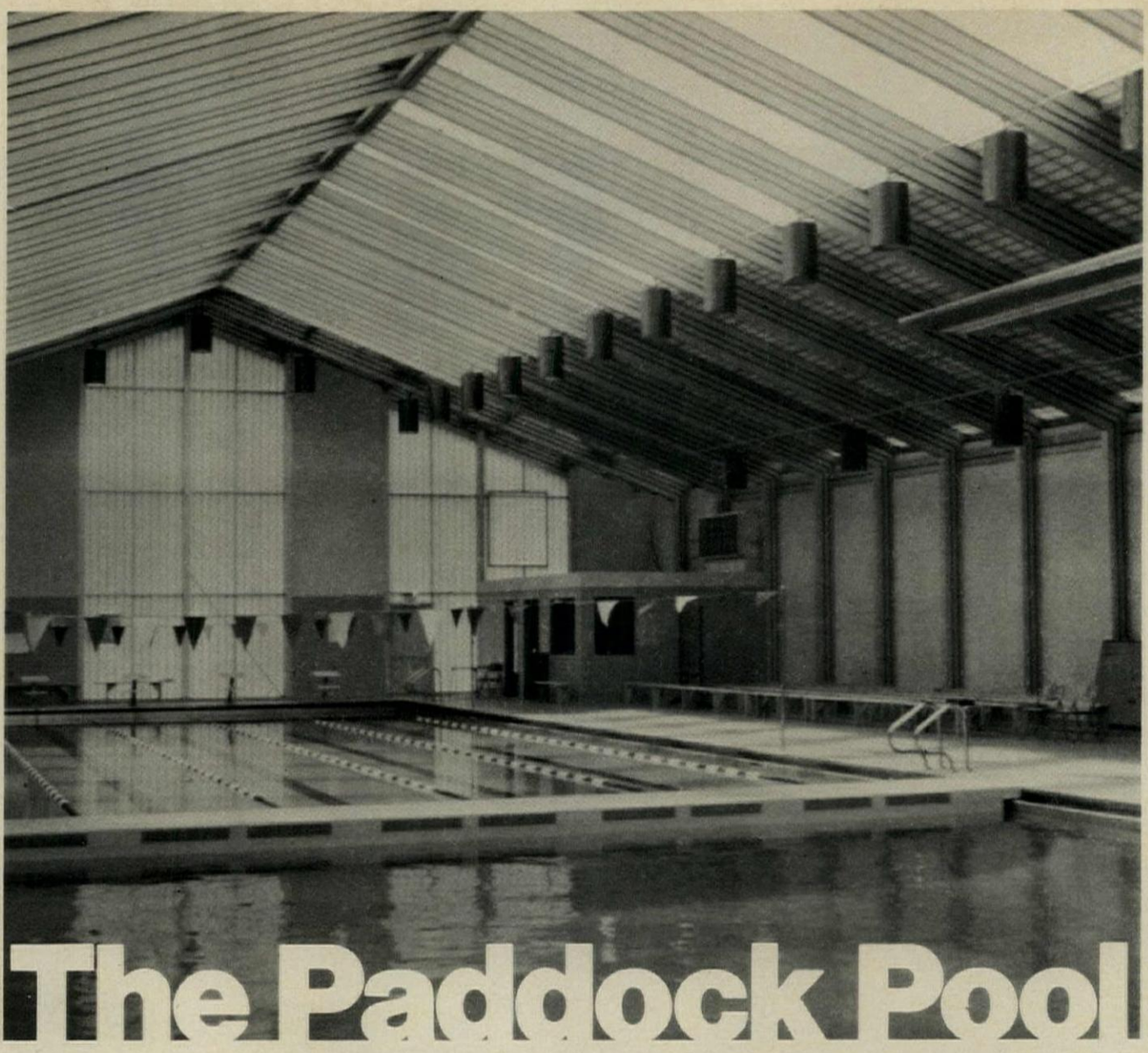
Cut and uncut velvet carpet woven by Gulistan, Div. of J. P. Stevens. Space planning and design by ISD Incorporated.

Smart. New. Versatile. The GF 710 Table Group.

The 710 Table Group, designed by Andrew Belschner, finds so many uses: conference and dining rooms, student meeting rooms, libraries. In open plan or private offices. Stackable squares and rectangles or a versatile round.

A continuous chrome-plated steel rod rings the table, protects the top, forms the legs. Wood or colored Hila-Tex tops. And GF 40/4 Chairs compliment the Group so well. Write: GF Business Equipment, Inc., Youngstown, Ohio 44501. In Canada, Toronto, Ont.

Office Furniture Systems
GF Business Equipment



The Paddock Pool

Someday all swimming pools will offer these advantages.

This is the pool system that gives you all the comforts of an outdoor Summer pool and an indoor Winter pool. In warm weather over two thirds of the side walls and approximately 50% of the roof can open to the sun. Come cold or inclement weather they close snug, and our exclusive Pad-Air system controls interior heat and humidity.

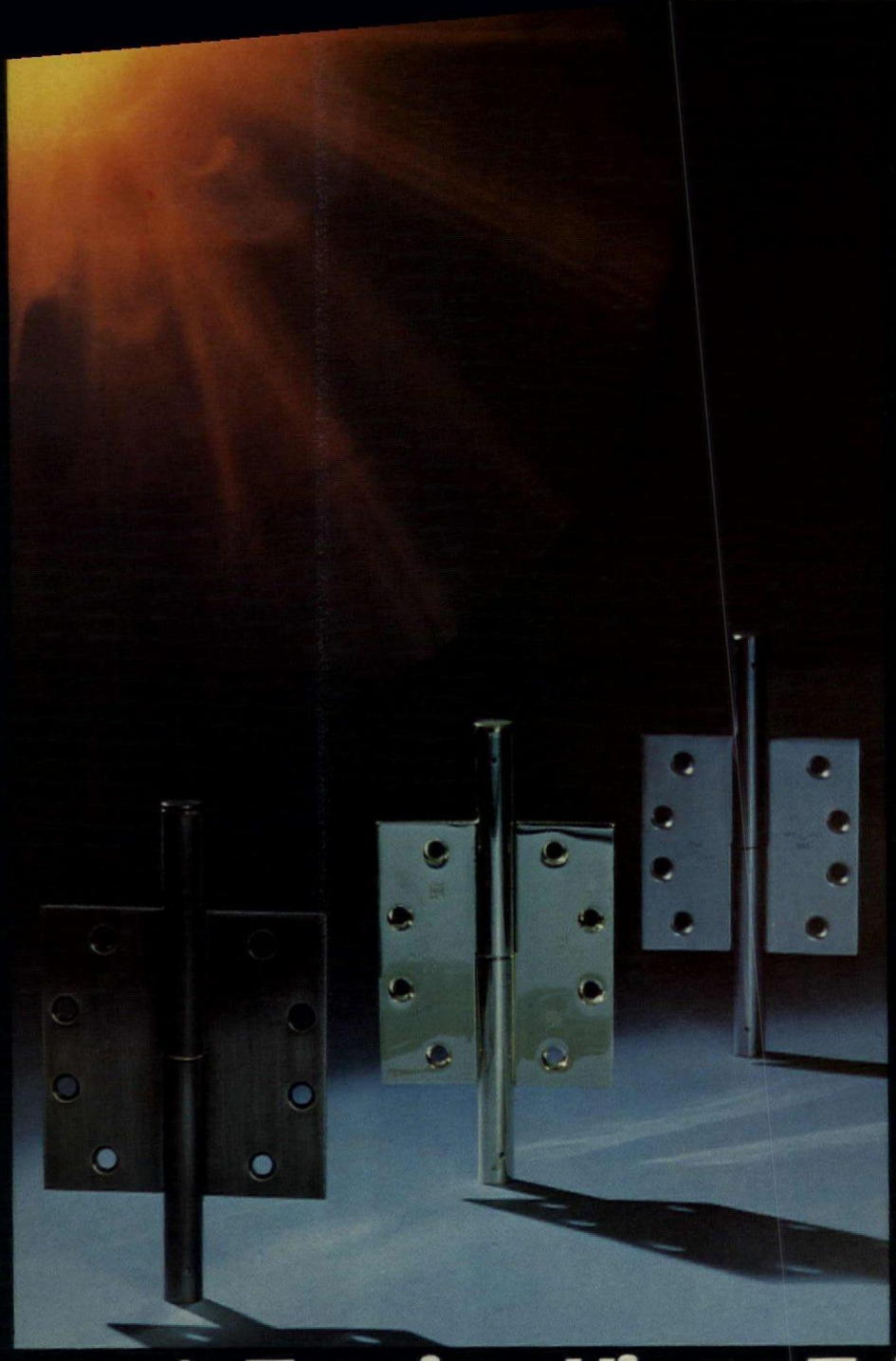
This same integral action is designed into all components of the Paddock System. It begins with our IFRS system of pipeless water recirculation and our surge wall pool. It continues through a complete line of filters and deck accessories to our energy absorbing enclosure. This allows you to place single responsibility for your project with one company . . . a company that has set the standard of leadership in the swimming pool industry since 1920.

For pool renovation or new pool projects (including the new educational/ municipal facilities), the Paddock System gives you year 'round swimming within a reasonable budget.

For further information and current installations write Paddock Industries, Inc., P.O.Box 511, Rock Hill, South Carolina 29730.

Paddock®
INDUSTRIES INC.

For more data, circle 85 on inquiry card



Hager's Torsion Hinge Trio does what other hinges can't.

Hager's torsion hinges, not only close doors beautifully, but they can be adjusted for correct closing strength on the job site, unlike some other self-closing hinges.

Hager's new torsion hinges have been used successfully in a wide variety of building types. Now our new 4" x 4" size is available for use in commercial construction.

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The plans called for both steel joists and wide flange beams.

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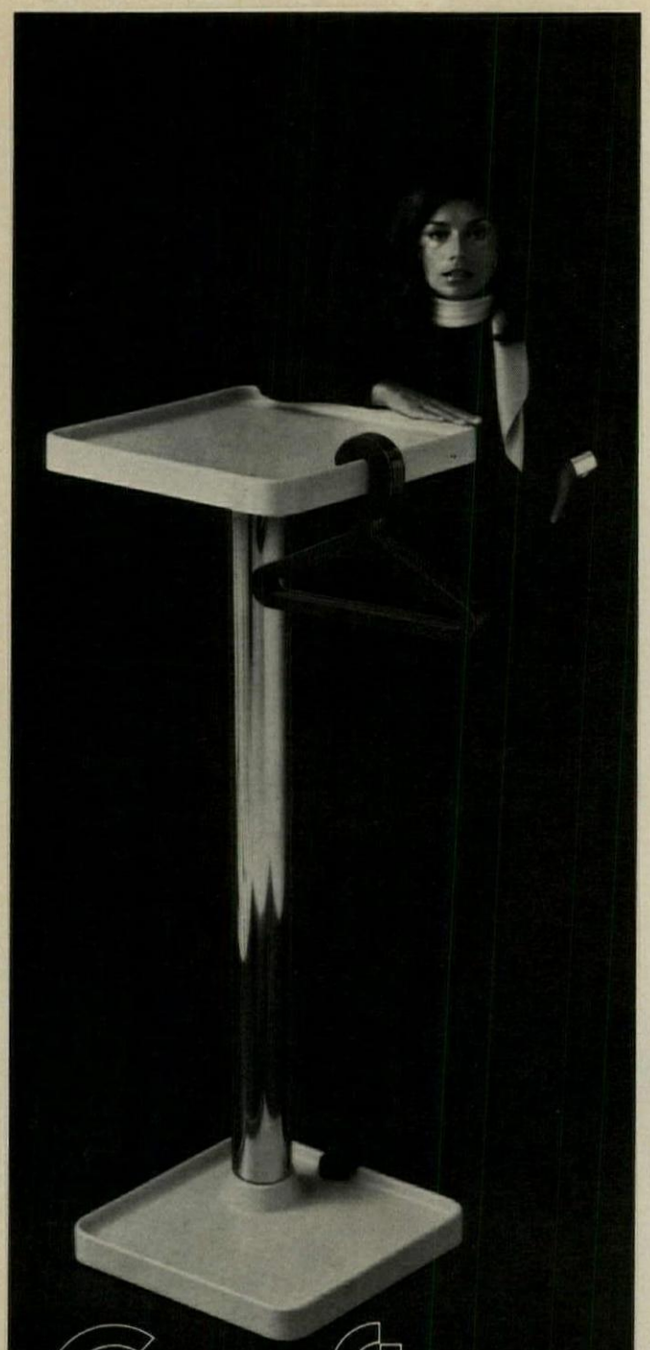

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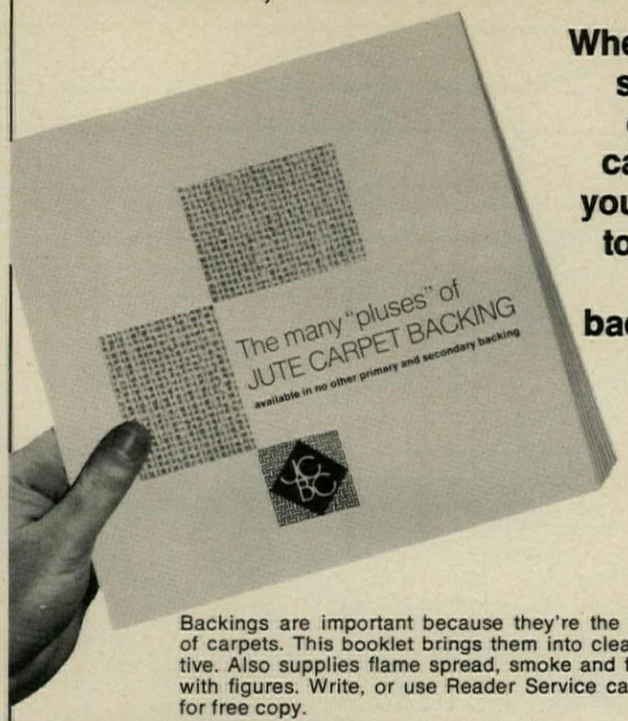

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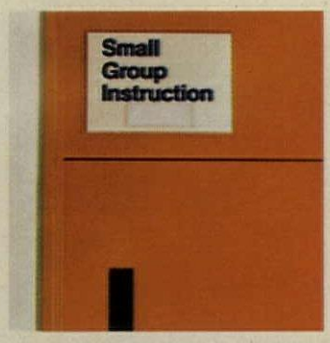

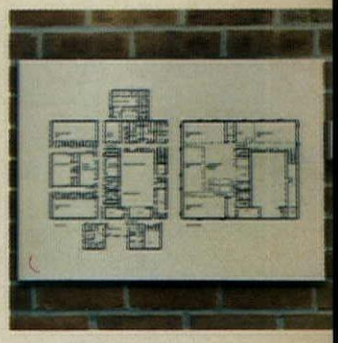

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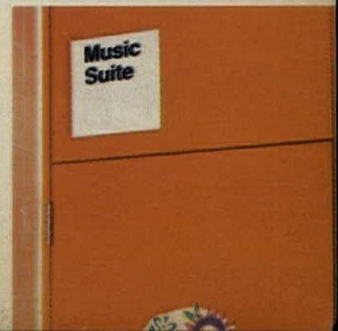

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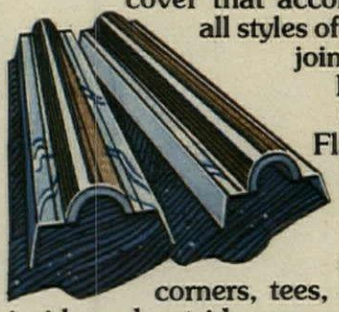

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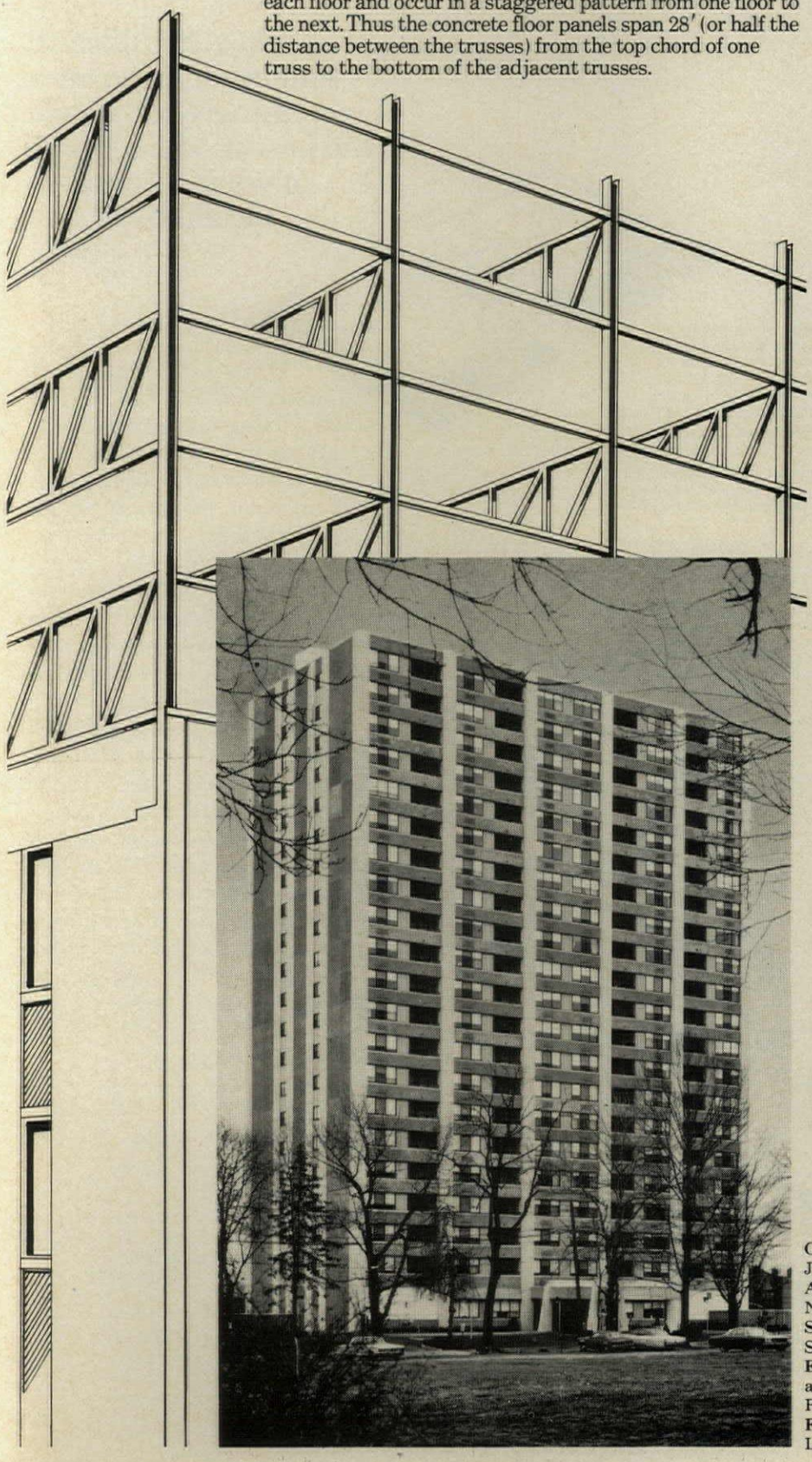

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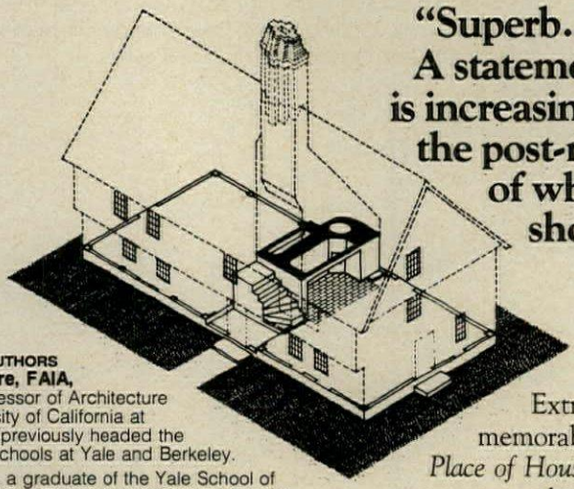

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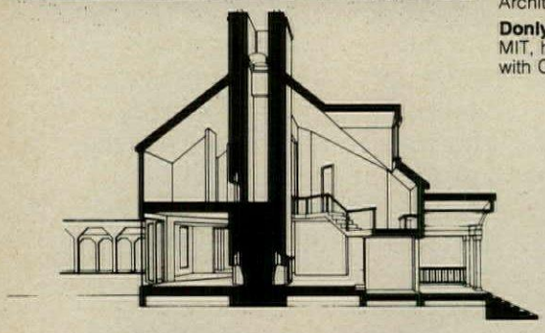
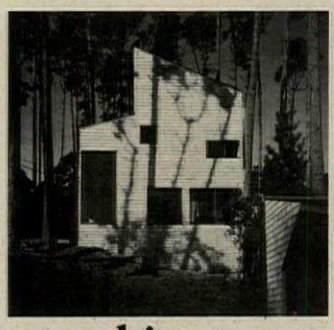
ABOUT THE AUTHORS

Charles Moore, FAIA, currently Professor of Architecture at the University of California at Los Angeles, previously headed the architecture schools at Yale and Berkeley.

Gerald Allen, a graduate of the Yale School of Architecture, is an editor of *Architectural Record*.

Donlyn Lyndon, AIA, Professor of Architecture at MIT, has designed many award-winning buildings with Charles Moore and William Turnbull.





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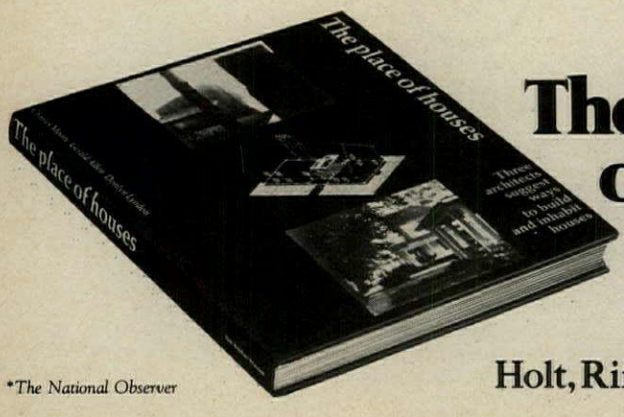

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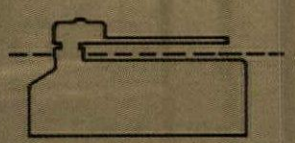

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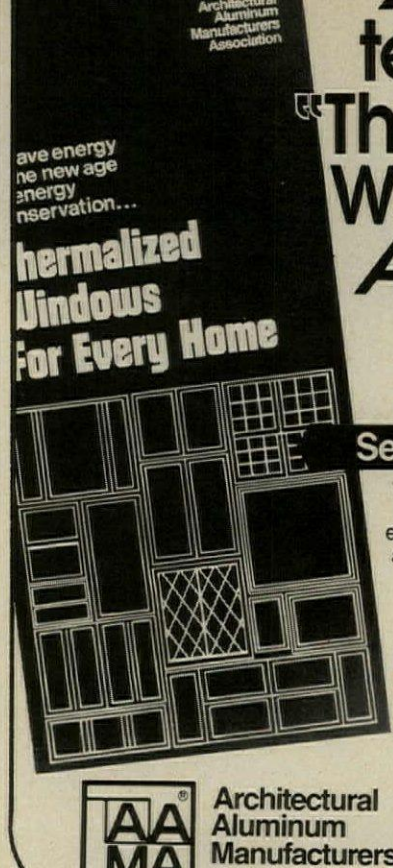

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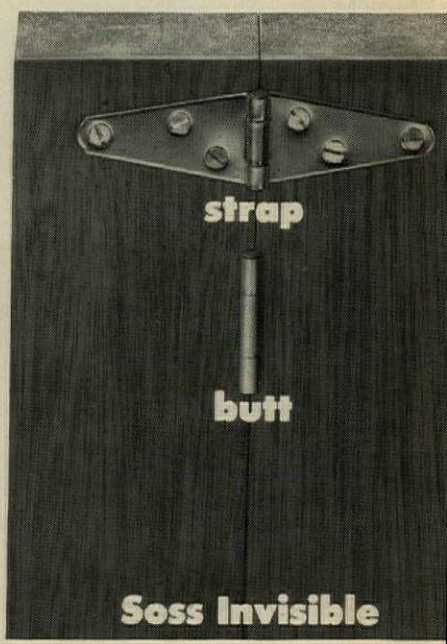

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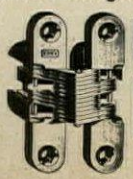

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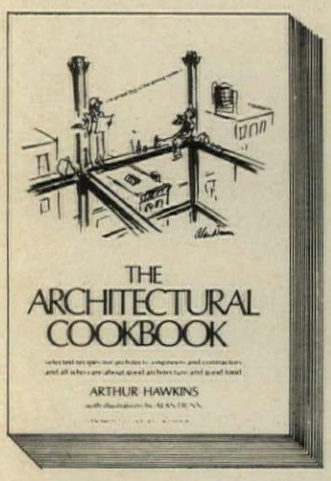

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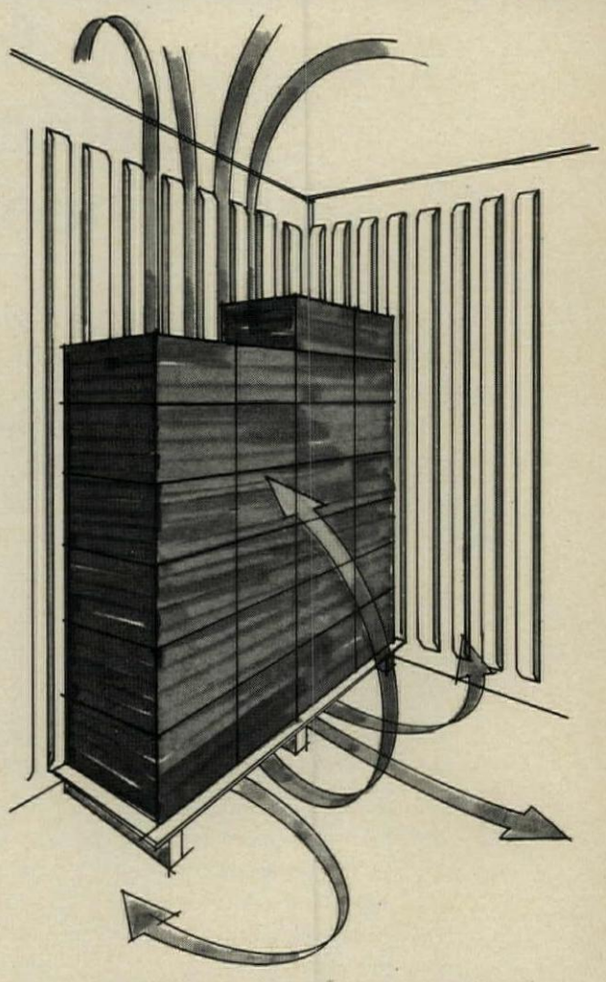

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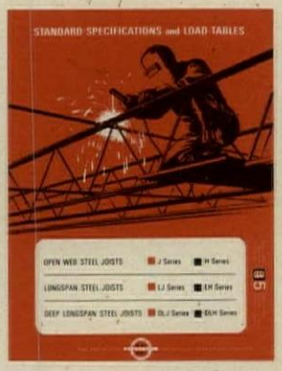

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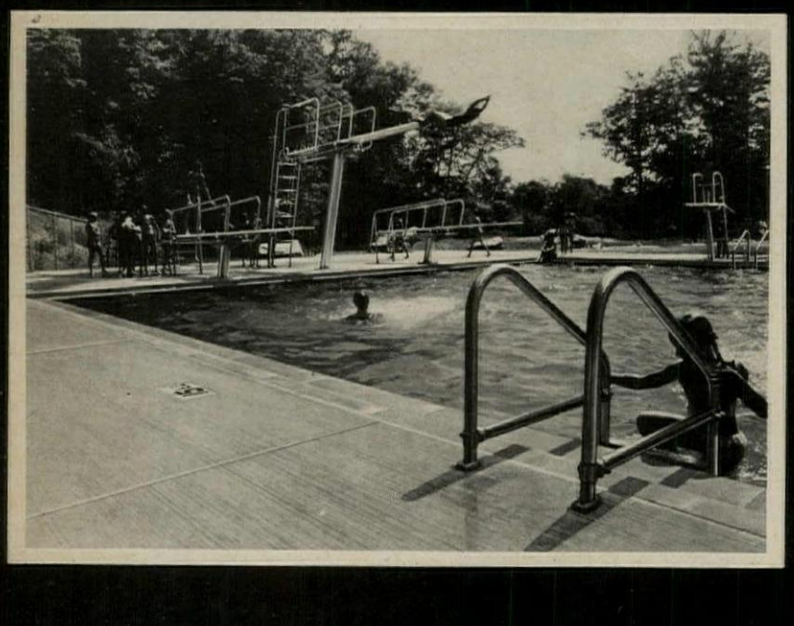

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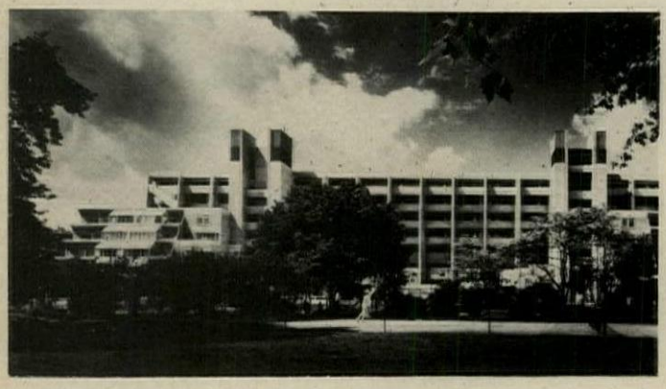

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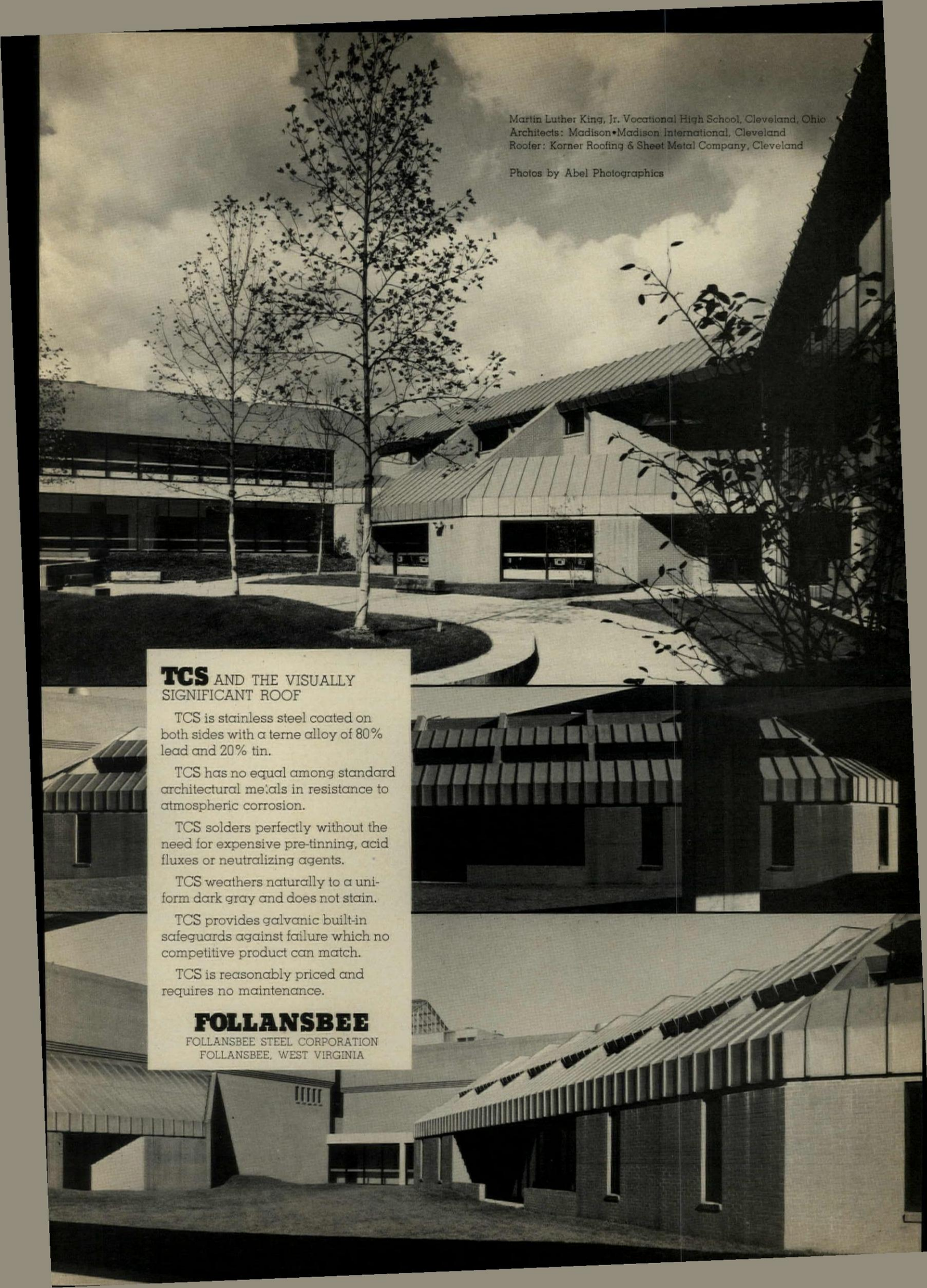

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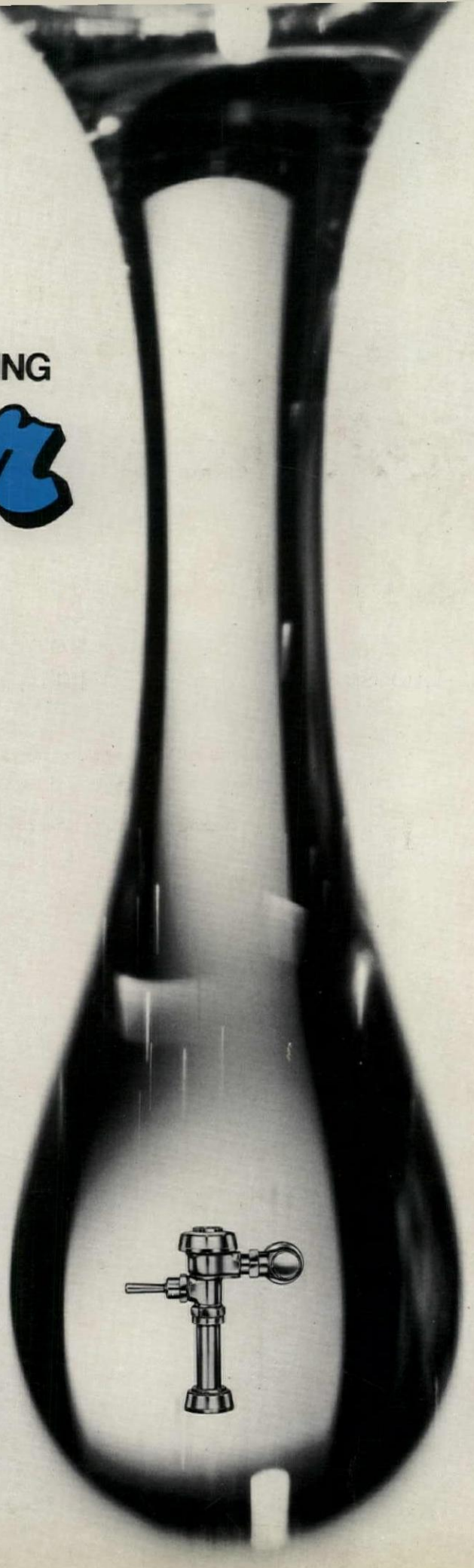

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