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BUILDING TYPES STUDY: HOUSING FOR HEALTH CARE

FULL CONTENTS ON PAGES 10 AND 11

ARCHITECTURAL RECORD

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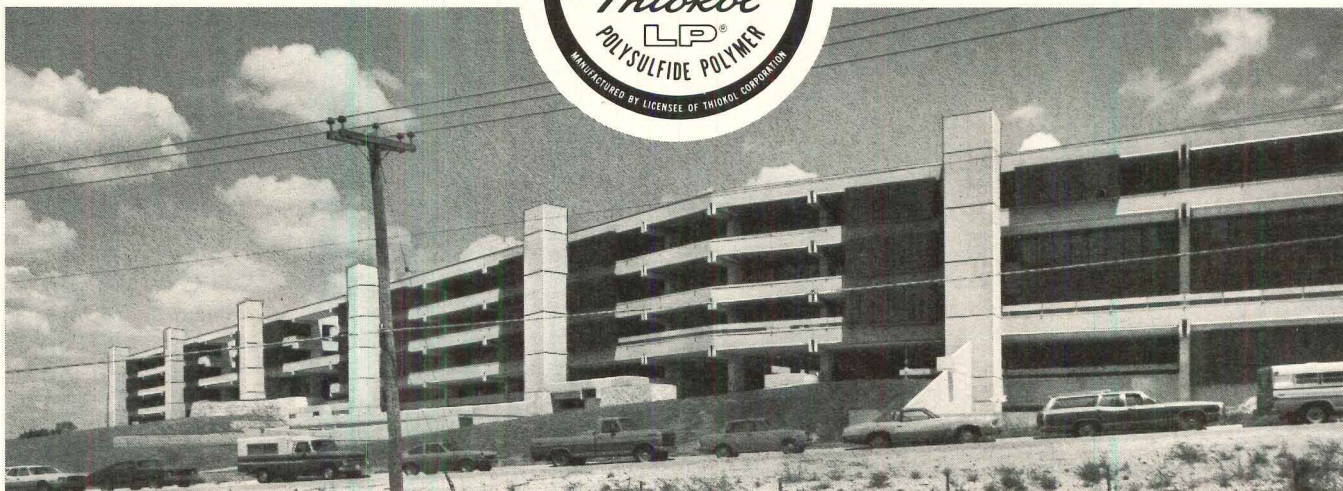
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Washington Monument, Washington, D.C.



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Letters to the editor

Three cheers to ARCHITECTURAL RECORD. First, for conceiving and co-sponsoring the international competition for the urban environment of developing countries. Second, for an inspiring issue on the results. And third, for naming a first-rate jury, which selected a superb first prize. Ian Athfield's design is innovative in its concept, creative in its solution, timely in its message and sensitive in its response to human needs and human aspirations.

*Robert A. Spillman, AIA
Spillman Farmer Architects
Bethlehem, Pennsylvania*

Congratulations on your issue on human settlements. You are to be congratulated on making a genuine contribution to this field.

*Martin A. Brower
Director of public relations
The Irvine Company
Newport Beach, California*

My congratulations!!!! It takes a courageous jury to recognize and award first prize to a courageous proposal. Athfield's time and insight will not go unnoticed. In fact, I trust that his ideas will serve as a catalyst to enlighten designers and planners the world over and give hope to other communities that there are ways to improve the quality and awareness of their lives as well.

Yours for a more spirited architecture.

*Larry Abell, AIA
Marker Associates
Casper, Wyoming*

Robert Stern amazes me. He missed the point of Andrew Alpern's book, "Apartments for the Affluent," [February 1976, page 43] which—as I see it—was to create a popular, readable, and entertaining survey of apartment house development for those who are not professional architects or historians. He succeeded in making this reader much more aware of his architectural environment, which is what I believe was his evident intent. There is certainly a place for a scholarly architectural analysis of apartment houses, broad in its scope and heavy with words; but there had been a lack of popular history—indeed, any history at all—of a way of living which is most familiar to us urbanites.

We should be grateful that Mr. Alpern has removed that lack.

*The Reverend Alan C. Freed
Brooklyn, New York*

As a two-year resident of the I. M. Pei

dormitories, and as a recent graduate of the School of Architecture and Urban Planning at Princeton University, I feel obliged to make a few personal observations on "Pei at Princeton" (RECORD, January 1976). I was disappointed that you did not address the contradiction between the design intentions of the entire complex and the individual design of the eight separate buildings.

In terms of campus planning, Spelman Hall concretely represents the crossing of two minor circulation axes, which is visible at the monumental concrete "arrow" and the unresolved intersection of the step ramp and the Parthenon-scale steps adjacent to it. According to the design architect at Pei's office, the construction should serve as a focus for the building grouping. Yet, with the exception of the eastern face of building 5, none of the buildings addresses this plaza. Rather, their "backs" are turned, negating the area's potential for providing a common space to alleviate the social problems within the complex.

The units are alienating. There is no sense of "Spelman Community" as there is, elsewhere on campus, of a "Holder Hall Community." Contrary to your impression that life in Spelman Hall is a continuous houseparty, life is very isolated—both from the campus at large and from other students living with the complex. Cooperative inter-suite eating groups have not proliferated. In fact, rarely do all four residents of each suite establish cooperative eating/cleaning schemes.

Perhaps my strongest criticism of "Pei at Princeton" is not specific to your approach. While I enjoyed the lyrical presentation of your impressions of Princeton University and the Spelman Halls, I firmly believe that architectural criticism should be responsible to the concerns of not only the architect, but to those of its users and the community at large.

*Cynthia J. Phifer, Class of 1975
Princeton University*

Calendar

JULY

4-9 International Association of Shell and Spatial Structure, World Congress on Space Enclosures, Montreal. Host is the Building Research Center, Concordia University, Montreal, in cooperation with the Department of Mechanical Engineering, Ecole Polytechnique, Montreal, and Form Studies Unit, Architectural Research Group, Carleton University, Ottawa. The Congress is also sponsored by departments of the

federal government, Ottawa, and the Quebec Ministry of Education. Contact: Dr. Paul Fazio, Chairman, Congress Committee, WCOSE-76, Building Research Centre, Concordia University, Sir George Williams Campus, 1455 de Maisonneuve Boulevard West, Montreal, Quebec, Canada.

6-8 Annual conference conducted by The Guild for Religious Architecture, Copley-Plaza Hotel, Boston, Massachusetts. Contact: The Guild for Religious Architecture, 1777 Church Street, N.W., Washington, D.C. 20036.

18-21 Annual meeting and fourth International Cost Engineers Symposium of the American Association of Cost Engineers, Boston. Contact: A. D. Furia, United Engineers & Constructors, Inc., 100 Summer Street, Boston, Massachusetts 02110.

AUGUST

2-13 Washington Women Architects, an art exhibition at the Inter-American Development Bank Gallery. Contact: Nancy Renfrow, Washington Women in Architecture, P.O. Box 32072, Washington, D.C. 20007.

10-12 Pacific Technical Conference and Technical Displays—PACTEC '76, Washington Plaza Hotel, Seattle. Sponsored by the Western sections of the Society of Plastics Engineers. Contact: Mr. Minor Brown, 4703 Lake Washington Boulevard South, Seattle, Washington 96118.

23-25 The National Structural Engineering Conference, Wisconsin Center, University of Wisconsin Campus. Contact: Professor C. G. Salmon, Engineering Building, University of Wisconsin, Madison, Wisconsin 53706

SEPTEMBER

1-19 Art by Architects Art Show, Valley Bank Center, Phoenix, Arizona. Contact: Renae Lindley, AIA Collaborating Arts Committee, 384 East Coronado Road, Phoenix, Arizona 85004.

3, 10, 17 and 24 Conference on Solar Energy Applications for Buildings, Oakland Museum, Oakland, California. Registration fee. Contact: Dale Sartor, Program Coordinator, Interactive Resources, Inc., 39 Washington Avenue, Point Richmond, California 94801

OCTOBER

21-22 ASTM Committee C-18 on Natural Building Stones, U.S. Geological Survey, Knoxville, Tennessee. Contact: Hank Hamilton, Public Relations Director, ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103.

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

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These architect-designed, pre-engineered steel buildings were cited by the Metal Building Dealers Association for 1975. **1.** Airborne Freight Terminal, Seattle, Wash. Architects: Douglas Mulvanny, Seattle, Wash. **2.** Bethlehem Church, Dover, N.J. Architects: Layer-Godsall Associates, Ridgewood, N.J. **3.** Boys' Club of Brownsville, Tex. Architects: Swanson, Hiester, Wilson & Claycomb, Brownsville, Tex. **4.** McGraw-Edison Co., Portable Appliance & Tool Group, Columbia, Mo. Architect: Ralph Broughton, Design + Inc., St. Louis, Mo. **5.** Ingersoll-Rand Co., Western Distribution Center, Tucson, Ariz. Architects: ADECO, Tucson, Ariz. **6.** Laurel St. Elementary School, Ft. Collins, Col. Architects: Robb and Brenner, Inc., Ft. Collins, Col.



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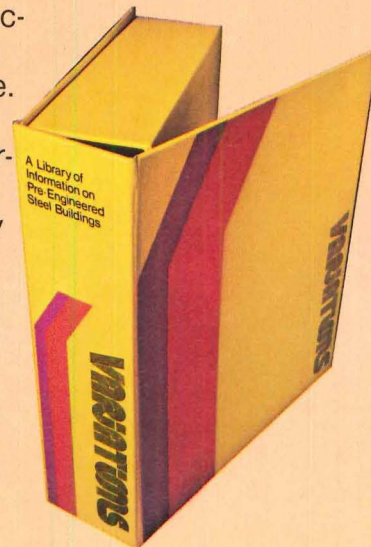
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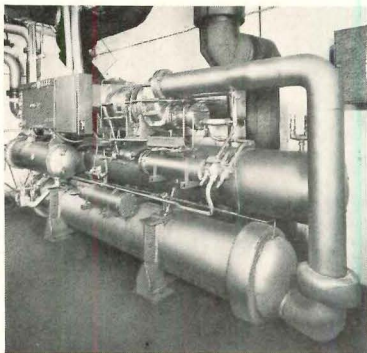


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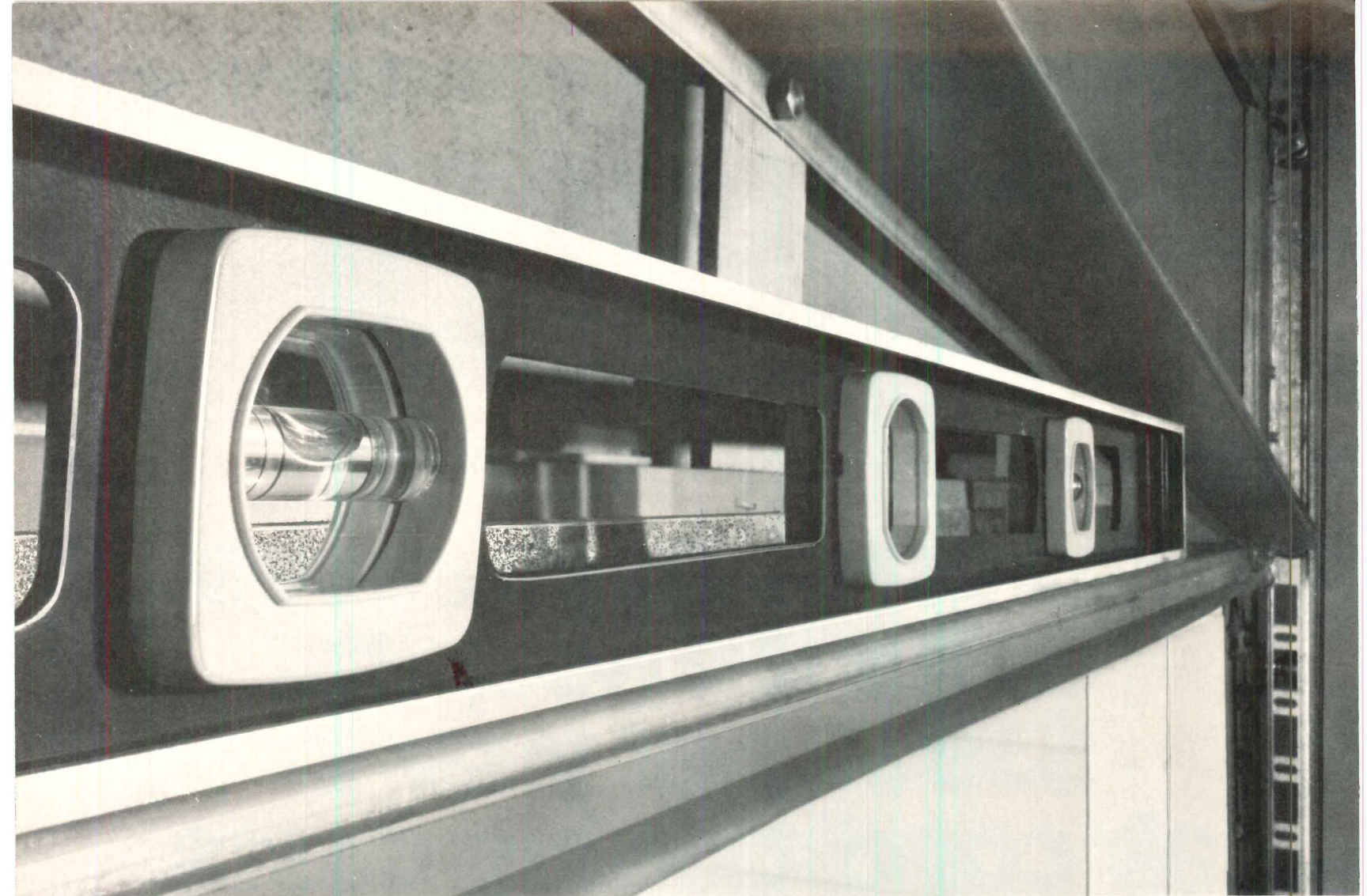
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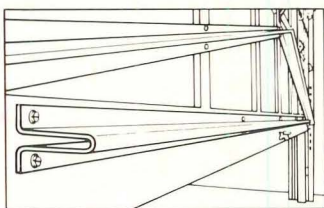
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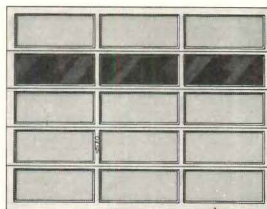
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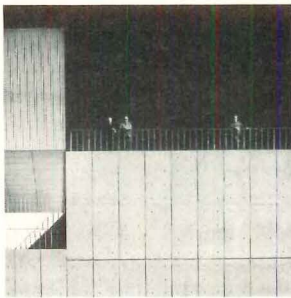
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The West. Boom, bust . . . boom!
The third article in a series
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There is a new spirit of public partying across the United States, as towns discover that public celebrations are fun, and that they reinforce a community identity. What this means for architects is a growing demand to identify and create coherent spaces for community celebrations.

87 Milwaukee Art Center
Milwaukee, Wisconsin

The new Milwaukee Art Center by Kahler, Slater & Fitzhugh Scott, Inc., is a 150,000 square foot addition to Eero Saarinen's War Memorial Center in Milwaukee. Modest, efficient, and ample, it provides a neutral backdrop for the display of art, and to the older Saarinen building.

93 L.I.U. library: architecture as a way of pulling together its surrounds

Beyond providing a badly needed facility as a repository for learning, this new building at Long Island University's downtown Brooklyn campus creates a sense of place out of formerly unrelated structures by defining a mutual campus yard.

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Sport + Fischer Sporting Goods Store, Newton, Massachusetts (pages 99-101). New facilities for art and music for Groton School, Groton, Massachusetts (pages 102-103). Retail store for Design Research, Inc., Philadelphia, Pennsylvania (pages 104-105). Private residence, Nantucket Island, Massachusetts (pages 106-107). Tanner National Bank, Woburn, Massachusetts (page 108).

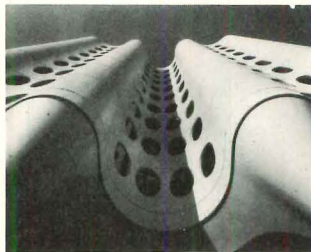


BUILDING TYPES STUDY 490

109 Housing for health care

While construction in the health-care field has been given a shot in the arm, up 14 per cent during the last year, architects are far from being of a single mind about how to adjust the premises of design to changing modes of medical practice.

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Prentice Women's Hospital and Maternity Center of Northwestern Memorial Hospital in Chicago, St. Joseph Hospital in Tacoma, and St. Mary's Hospital in Milwaukee, by Bertrand Goldberg.



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127 The energy standard—simplified

Consulting engineer William Tao has reduced ASHRAE Standard 90-75 to its essentials in tabular form for the architect and engineer. In this issue, the first eight divisions are presented.

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NEXT MONTH IN RECORD

Building Types Study: Urban high-density housing at the lowest possible cost

All the projects to be featured have three characteristics in common: they are located in New York City, have been built on minimum budgets and have received some form of government subsidy. Most are large-scale complexes combining high density, high-rise with high-density, low-rise and including schools, apartment units and recreational space for the aged, parking facilities, indoor and outdoor community space and commercial space.

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Maybe what this country needs is more good "family architects"

Despite all the specialization in medicine, this country still has plenty of family doctors. When anyone in my family comes down with the flu, or turns an ankle, or has a cut that looks like maybe it ought to have a stitch, or is just worried about "feeling funny," we don't "call a doctor"—we call Tom Bucky. We're not close friends—but everyone in the family knows him and likes him and trusts him and counts on him. He lives on the main road in town, which is a state highway, and is the kind of guy who leaves his Thomas L. Bucky, M.D. sign lit all night—which probably results in him being shaken out of bed more often than he otherwise would be. We have a dentist we count on and his name is Ron Silverman. Haven't needed a lawyer lately, but if I did I'd call Pete LaChance or Fred Friedman and ask them for help.

The point of all this is that most people have a doctor and a dentist and a lawyer that they know and lean on for advice and for help when they need it.

But how many families (not to mention neighborhoods or towns) have an architect that they know and lean on for advice and for help when they need it? Not many. And wouldn't most families (or communities) be the better for having "a family architect"?

Why is it that families who are thinking of an addition to their house seem to be so reluctant to call an architect to discuss it? Why will people call on, and count on, a "remodeling contractor—no job too small" from the Yellow Pages?

Why is it when a neighborhood, or a town, has a planning problem, or is considering a building project, they so seldom call on local architects for advice and help? One not-too-earthshaking example from the Connecticut town in which I live: The town recently purchased 55 acres of perfectly beautiful land near the center of town for use as an open space/town recreation center/swimming/walking area. To propose a plan for the various land uses and the design of the many buildings called for, the town officials called in—you guessed it—an engineering firm. In my view, at least, the resulting design appears to feature primarily parking spaces and an entry road designed to divide one of the handsomest meadows into two equal pieces while requiring a maximum of grading and culverts. Tossed in at no extra charge was a preliminary design for town recreation building "in natural wood to blend in," but done with (to my certain knowl-

edge) no analysis of the possible uses of the building.

One problem is simply that too many people have an exceedingly imprecise image of what architects do. They know that architects design big buildings—and that when the town needs a new school they should "interview some architects." But they're not quite sure (indeed, perhaps even embarrassed) to ask an architect if he could plan a town park, or remodel an old barn into a community center, or help the town find new uses for an abandoned and somewhat decrepit elementary school, or work out a house addition that the owner wants to cost about \$10,000. On page 108 of this issue—in an article on the work of Architectural Resources Cambridge, a young 6-man firm—is a case example of just the kind of "community work" I'm talking about; the "restyling" (and it is mostly that, not redesign) of a plain vanilla, fake Kolonial two-story office building—of the sort that abounds in small cities and towns across this country—into a smart, contemporary, but comfortable-in-its-setting bank.

Not all architects, of course, would touch any such job. But plenty (especially young people) would—and (like being willing to design houses for families who want them) more should.

Another problem is that—except for experienced clients—most people have an exceedingly apprehensive view of what calling in an architect will cost. When I urge friends to call an architect instead of their local remodeling contractor (since I know they'll be worried about what it will cost), I suggest that they simply ask for some idea of fee; and for some assurance that the resulting construction job will not somehow be twice as expensive simply because it is better and more thoughtfully designed—an assurance which any architect ought to be able to give. I also suggest to my friends that an architect might reasonably expect to want to earn about as much per day as his client does (unless of course the client is a doctor, dentist, lawyer or banker).

So maybe—at least for some architects, especially smaller firms and younger firms—there is an important and worthwhile and rewarding role as the "family architect"—the architect who works in his town to earn the same kind of everyday personal and community acceptance (and commissions) that the family doctor enjoys.

—Walter F. Wagner Jr.

Distinguished character, frugal personality.

Behind the distinguished Vari-Tran[®] coated glass walls of Tower Place lies a building with a frugal personality. A personality which has proved to the owners that spending a little more for glass can save a lot of money and energy in the long run.

Check the figures in the chart. Choosing Vari-Tran coated glass in Thermopane[®] insulating units, the owners spent 55% more than the base comparison glass, 1" Grey Thermopane. But look at the numbers right down the line from the money saved on heating, cooling, and distribution equipment to the impressive savings on annual operating costs.

We want you to know the energy and dollar savings LOF high performance glass can mean for your clients. Contact one of our architectural representatives. He'll be glad to put our computers to work on a spec sheet for a building you have in the works.

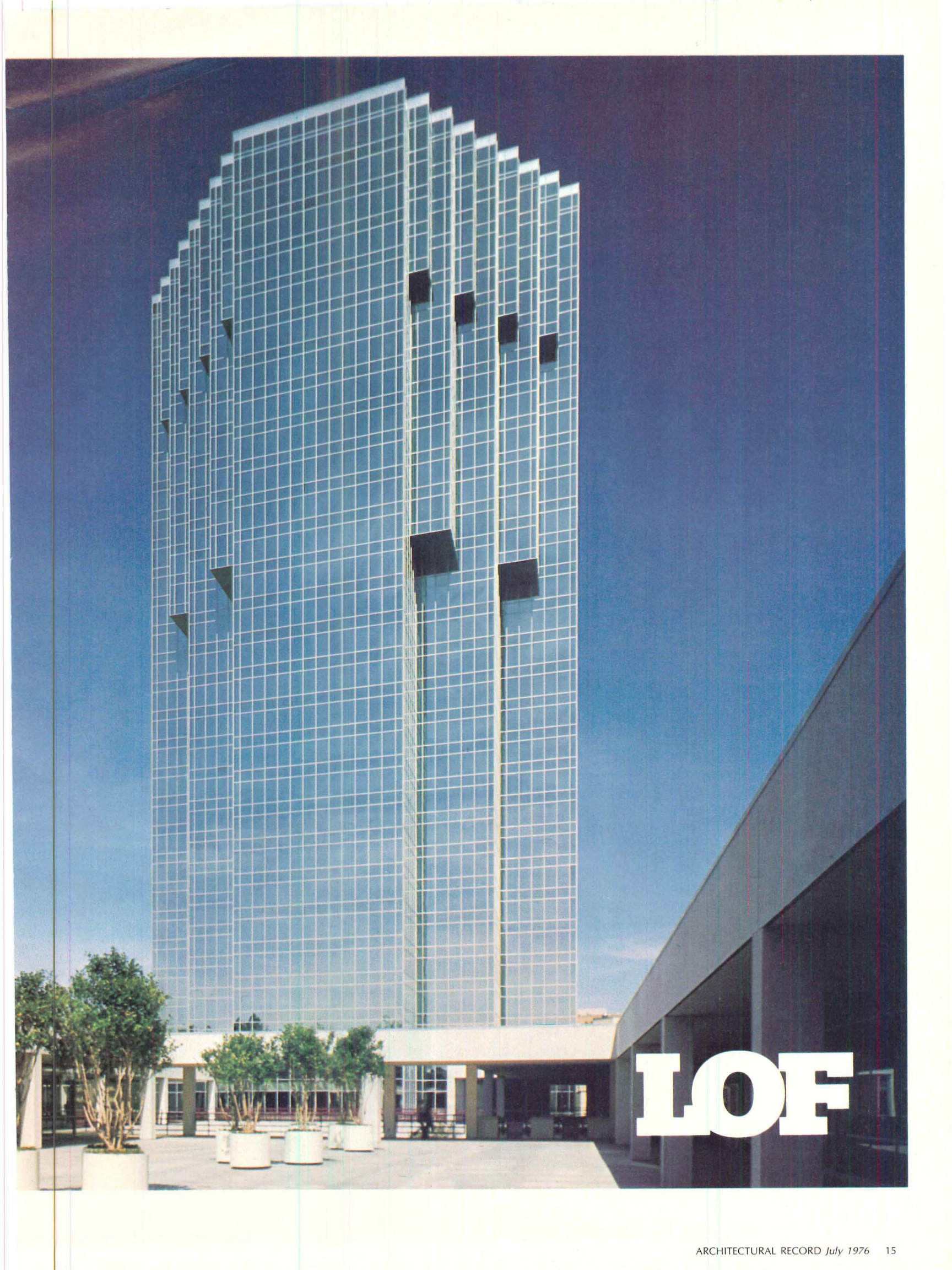
For more detailed information on LOF glass products, please refer to LOF's Sweet's Catalog—"Glass for Construction." Or you can write Marty Wenzler at Libbey-Owens-Ford Company, 811 Madison Avenue, Toledo, Ohio 43695.

	1" Grey Thermopane	Vari-Tran 1-108 Glass in Thermopane Insulating Units	Savings \$	Savings %
Glass Cost	\$1,064,412	\$1,655,752	—591,340	—55
Heating, Cooling and Distribution Equipment	1,433,054	574,308	858,746	60
Comparative Initial Construction Costs	2,497,068	2,230,060	267,008	11
Annual Heating Cost	25,715	23,377	2,338	9
Annual Air Conditioning Costs	28,473	12,018	16,455	58
Annual Insurance Premium	2,497	2,230	267	11
Annual Property Taxes	49,949	44,601	5,348	11

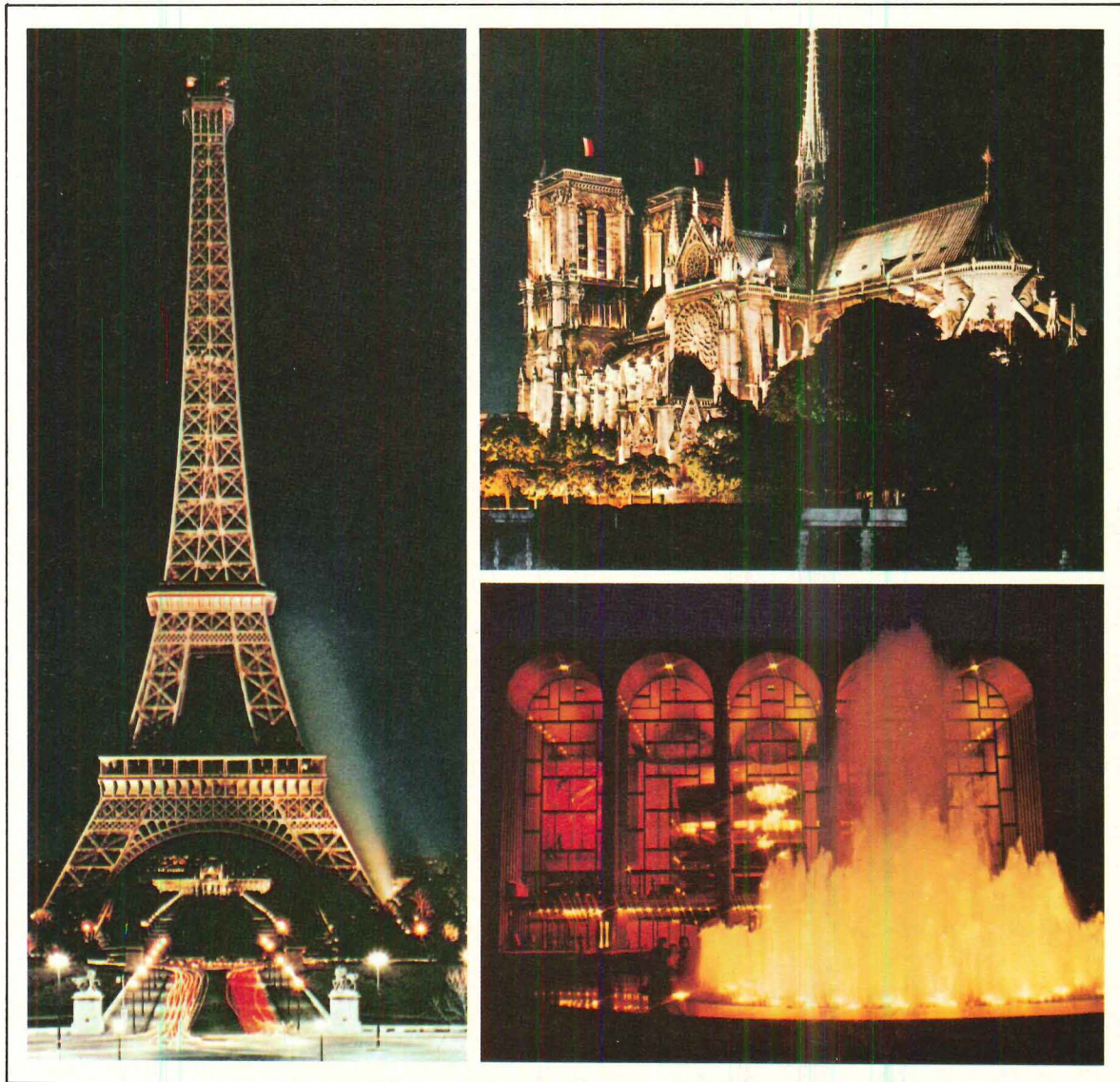
Building: Tower Place, Atlanta, Georgia
 Developer: Ackerman & Company
 Architect: Stevens & Wilkinson, Architects & Engineers, Atlanta, Georgia
 General Contractor: Henry C. Beck Company
 Glazing Contractor: Starline Inc.



For more data, circle 9 on inquiry card

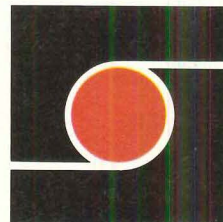


LOF



Architecture by geniuses. Lighting by Sterner. At Sterner, all lighting projects are created equal. Whether we're lighting the Cathedral de Notre Dame in Paris, or a parking area in your hometown, every project we tackle receives the full benefits of our world-wide lighting experience. To help solve specialty lighting and floodlighting problems we call in our Simes and Infranor Divisions.

Along with our technical expertise go the facilities to design and construct highly specialized, one-of-a-kind lighting units for those rare occasions when our existing line of fixtures can't solve the problem to perfection. So remember, no matter how large or small the project may be, if lighting is your problem, Sterner is your answer.



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612-485-2141

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Rimrock Mall, Billings, Montana

Architect: Charles Kober Associates

Beautiful is expensive, right?

GLULAM—Structural Glued Laminated Timber—offers architects as much in cost efficiency appeal as it does in aesthetic qualities. And that's an established fact! Yet, some specifiers still aren't convinced that glulam can be both appealing and economical.

If you routinely think of certain structural materials as being for certain type projects, here's a different line of reasoning to consider:

- Glulam is a stress-rated structural framing material that's competitive for most types of construction projects
- Engineered glulam installation is fast and efficient
- Exposed glulam is creatively attractive and eliminates expensive drop ceilings
- And, the fact that glulam can be manufactured to

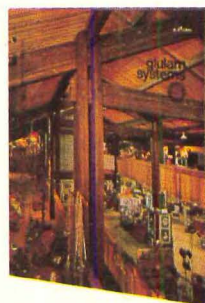
Wrong!

virtually any size or shape presents you with design opportunities limited only by your creative imagination. Cost efficient glulam?

Right!

AITC's comprehensive "Glulam Systems" catalog details glulam use in a variety of applications. Extensive technical design information will convince you that your recommended specifications should call for structural glued laminated timber—glulam.

Write for your copy.



American Institute of Timber Construction
 333 West Hampden Avenue
 Englewood, Colo. 80110
 303/761-3212
 Call **800/525-1625**—Toll Free!

Owens-Corning tells why you this unusual picture next time



The concept of open offices is gaining acceptance *quickly*. No wonder.

Both owners and architects are drawn to their airy, sweeping good looks. To the improved communications and increased efficiency they promote for workers. And to their astonishing economy of 50 cents vs. roughly 15 *dollars* per square foot for inevitable alterations to meet shifting work patterns.

But here's a word of caution. Plant our outlandish basketball "office" firmly in your mind. Because unless you base your design on *acoustics*, as well as aesthetics, you may never hear the end of it.

More than one open office has had to be modified—embarrassingly and *expensively* torn apart,

baffled, receilined, or refurnished—in order to achieve *workable* sound levels.

Owens-Corning has helped pioneer the development, testing, and matching of open-office components. Look over these highlights of what our experts have learned. Then call on us for *all* the details and *all* the components of a *successful* open-office system.

The ceiling.

Handsome is as handsome does.

The ceiling is the single most important acoustical component in an open office. It should absorb, not reflect, sound. A perfect ceiling would have the same

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

should remember you design an open office

sound attenuation as the open sky—a Noise Isolation Class (NIC) rating of 23.

An independent acoustical testing laboratory examined eight ceilings, including costly coffered and baffled systems. Their verdict: Owens-Corning's Nubby II Fiberglas* Ceiling Board, in any standard exposed grid suspension system, is *best* for achieving speech privacy at economical installed cost. In these tests, Nubby II was the *only* ceiling board with an NIC' as high as 20 in a flat configuration.

Some architects prefer the look of ceilings with *concealed* grids. Caution: As yet, *no* such ceiling provides the minimum NIC performance necessary to achieve satisfactory acoustical privacy in an open office.

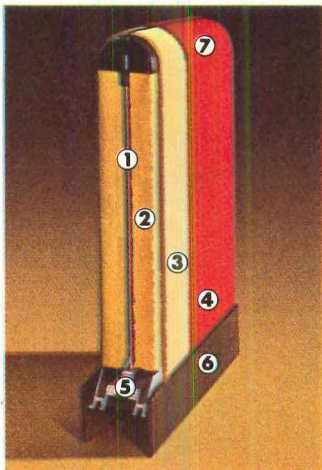
In this league, handsome is as handsome *does*.

Acoustical screens.

"Don't just stand there. Do something."

The sound screen, visual symbol of the open office, offers flexibility, economy, personal privacy, and acoustical control. It has *two* acoustical *functions*. First, to block direct sound transmission from one work zone to another. Second, to absorb sound, reducing flanking reflections into adjacent zones. Owens-Corning's sound screen is the *most* effective screen available. Its engineering features include:

1. A metal septum—to block sound transmission.
2. One-inch Fiberglas core on each side of septum—to absorb sound.
3. Sturdy special Fiberglas sound diffuser (Glastrate)—for abuse resistance.
4. Stain-resistant Dacron® Polyester fabrics. These fabrics are washable, colorfast, and fire-retardant (Class 25).



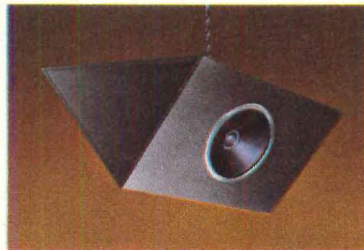
5. Extruded aluminum frame, fastened to septum—for strength and stability.

6. Painted anodized aluminum kickplates—for additional abuse resistance.

7. Top and side radii designed to minimize sound defraction over edges.

Masking sounds. The sounds of silence.

Even the finest acoustical ceilings and screens cannot do the whole job of providing speech privacy. An electronic sound masking system of speakers, installed in the plenum, is necessary.



This sound must be unobtrusive—and *uniform*. Even at a few decibels above the desired $NC_{40} = 40$ rating, the masking sound causes

people who are working in the office to begin raising their voices, defeating the whole purpose of the masking.

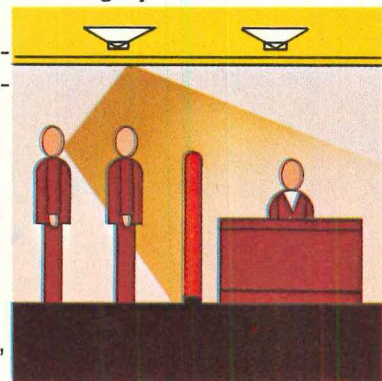
Owens-Corning's experts can recommend a background masking system that meets these requirements.

Owens-Corning system gets it all together.

For the open-office concept to be successful, the ceilings and screens must be tuned carefully to work *together*, and *with* the masking system.

Owens-Corning will be happy to provide you with all necessary information on achieving acoustical control in your open office. Or to guide the development of the whole acoustical system for you.

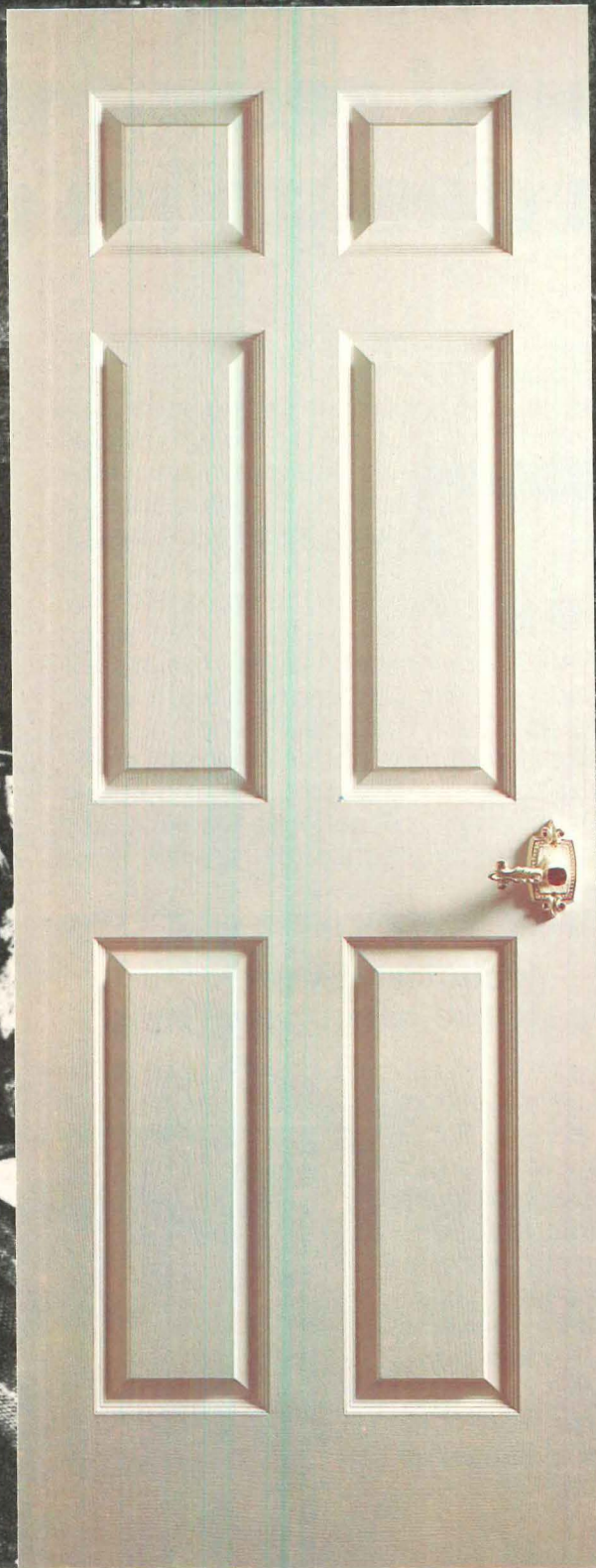
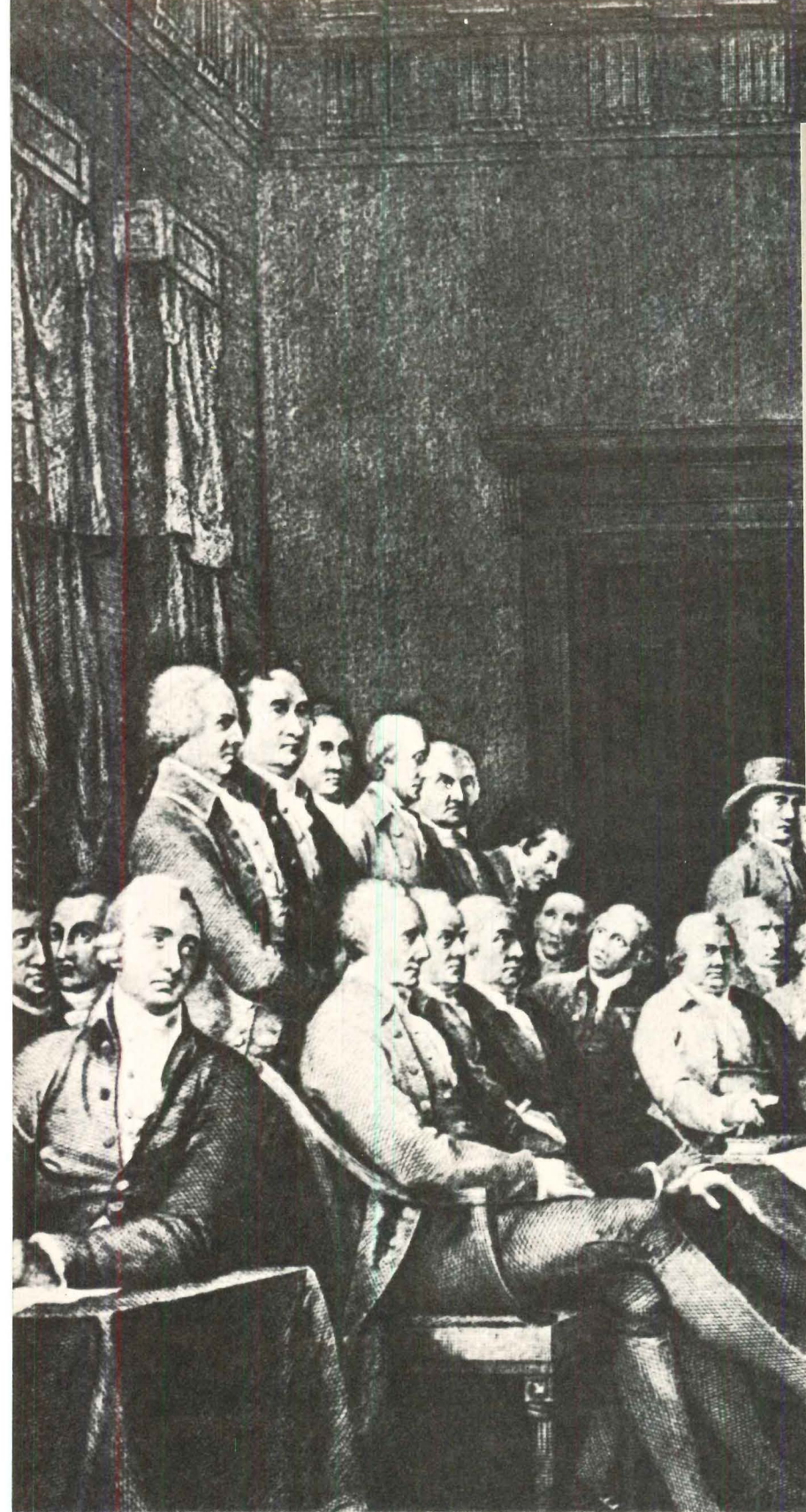
Write D. J. Meeks, Building Products Operating Division, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.



Owens-Corning is Fiberglas

OWENS/CORNING
FIBERGLAS
TRADEMARK

For more data, circle 12 on inquiry card



Never before were the best of tradition and technology combined in so pleasing a manner.

Wm. Harrison
Francis Lightfoot Lee

A penny saved is a penny earned. Surely Colonist's great virtue is this.

W. Lloyd Garrison

Embossed so sharply, even the King could spyeth its quality without his spectacles.

John Hancock

Builders findeth no better way to offereth authentic detail free from the tyranny of high prices than with Colonist faced doors.

George Wythe

Th. Jefferson

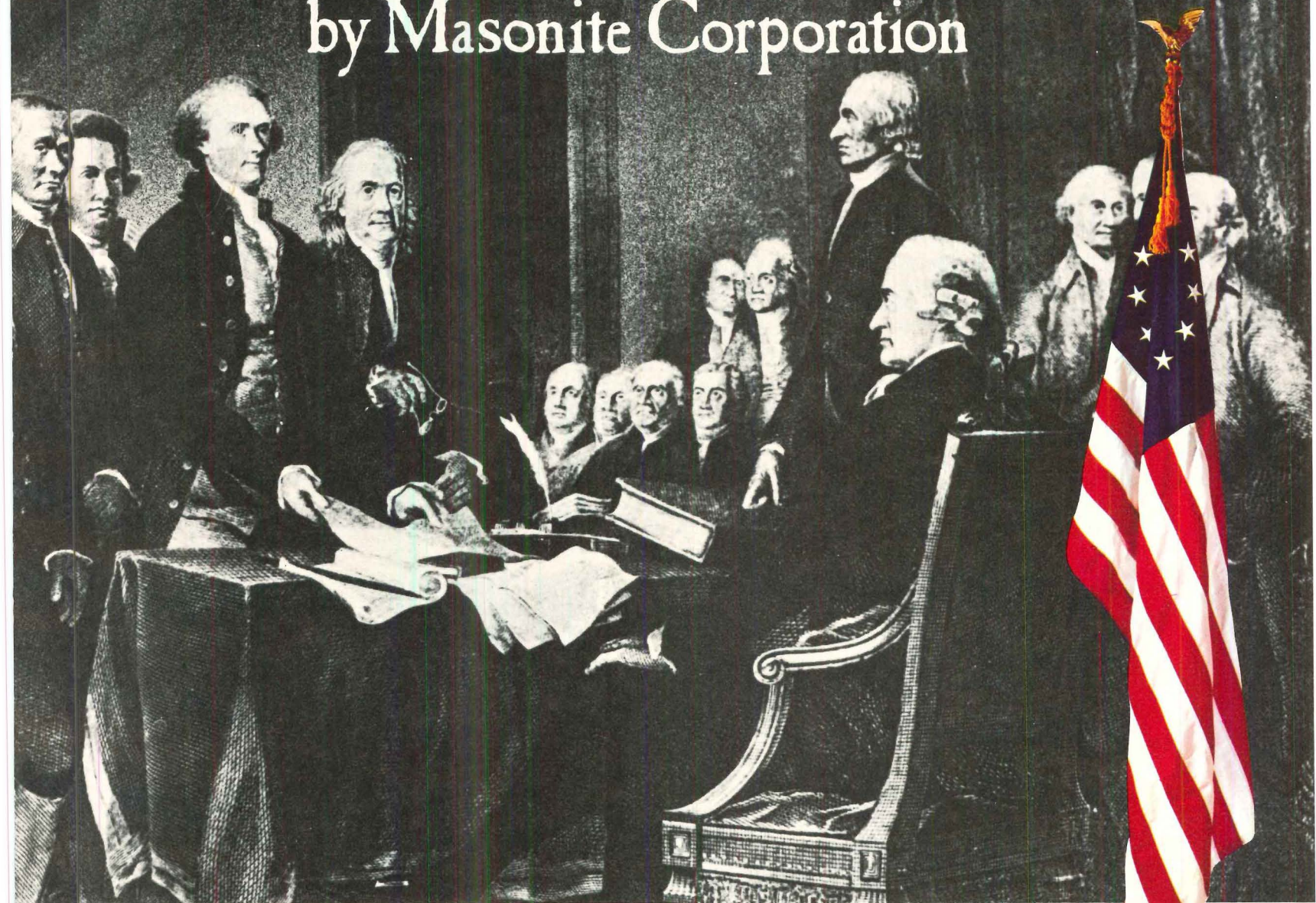
We must count ourselves fortunate that Colonist is the work of honest men. Seeing how they've captured the look of wood stile and rail doors, I give thanks they turned not their skills to counterfeiting money.

Sam. Adams *Benj. Franklin*

Colonist surpriseth me not. For who else might best be expected to raiseth the art of embossing hardboard to this perfection but the very people who hath invented the material...Masonite Corporation.

Thos. Stone
Geo. Taylor

"Tis a Unanimous Yea! ...for COLONIST[®] by Masonite Corporation



The American home must not only shelter our citizens but also lend pleasure to daily life. Colonist is a great stride toward this end.

Arthur Middleton

Builders selling Colonial homes with flush doors hath as much chance of success as innkeepers who serveth beer in coffee cups. Since Colonist, they hath no excuse.

Want ye the names of COLONIST suppliers? Take pen in hand and write Masonite Corporation, 29 North Wacker Drive, Chicago, Illinois 60606

John Adams *Wm. Whipple*

Great changes are irksome to the human mind, but Colonist is a revolution to be welcomed.

Benjamin Rush *Thob. Morris*

A single piece of hardboard that's free from the dangers of separation and distortion and yet looks truly like a wood door...tis proof of American ingenuity.



Robt. Frazer Paine

For more data, circle 13 on inquiry card

Park Ridge Hospital prevents epidemic of slapped-up signs with integrated signage system.

The interior of Park Ridge Hospital—a warm, harmonious blend of wall colors, textures and carpeting—is therapy in itself.

Located in Greece, New York, and serving the Greater Rochester area, the hospital was dedicated in September 1975. A two-building complex, it covers approximately 300,000 sq. ft. The medical building contains 194 patients' rooms—all private—in addition to offices, conference rooms, labs, therapy departments, etc. It is connected to the adjoining Supply, Processing and Distribution building via a glass-enclosed walkway.

Signage as a subsystem

A hodge-podge of signs, slapped up as an afterthought to construction,

would have seriously marred the hospital's handsome interior. But the architects and hospital administrators, aware of the need for an efficient traffic moving system, wrote a complete signage program into their initial plans.

Matthews was called in a year before the building completion date to design and fabricate a total, integrated signage system for both interior and exterior traffic control.

Over 300 individual signs—interior and exterior—were installed. Most were fabricated of damage-resistant NOMAR fiber reinforced polyester. All of the signage is tastefully understated but highly functional, with complete continuity of color and letter style.

Matthews. Total responsibility for total signage systems. Write for further details to Jas. H. Matthews & Co., 1315 West Liberty Ave., Pittsburgh, PA 15226.

Architect: Stevens, Bertin & O'Connell, Rochester, NY

Construction Mgmt. Firm: John W. Cowper Buffalo, NY

Signage Contractor: Empire Sign Co., Inc. Rochester, NY

JHM MATTHEWS

Architectural Division

For more data, circle 14 on inquiry card

1., 2., 3., 4., 5. and 9. NOMAR with screened graphics embedded. 6. Cutout aluminum logo. 7. NOMAR post and panel assemblies with surface applied reflective pressure-sensitive legends. 8. Reverse screen process on acrylic identifies patients' rooms. Slide-in cards and strips for adaptability.



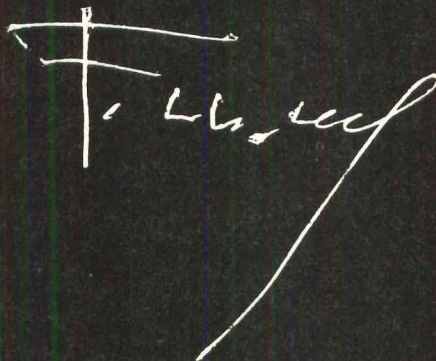
Nearly two decades have passed since the late Frank Lloyd Wright's comment on Follansbee Terne was first published. No comparable product has ever received such an endorsement from such a source, and we reprint his statement here in the belief that time has not lessened its fundamental impact or its relevance to contemporary design.

FOLLANSBEE

FOLLANSBEE STEEL CORPORATION
FOLLANSBEE, WEST VIRGINIA

For more data, circle 15 on inquiry card

Imaginative new conceptions in architecture can frequently trace their origin to a basically simple idea. One of the oldest types of roofing, terne metal, thus lends itself to many dramatic new applications in the contemporary idiom. Because of its inherent adaptability in both form and color, Follansbee Terne permits the visible roof area to become a significant part of structural design. Thus by re-discovering and re-interpreting a time-tested material, we make out of the very old the very new. I have furthermore found terne superior to other roofing metals in economy, color-adherence, heat-reflection, permanence, workability, and low coefficient of expansion.

A handwritten signature in white ink, appearing to read "F. L. Wright", is written across the bottom of the page. The signature is stylized and fluid, with a long, sweeping underline that extends to the right.

Without a little soft soap,

Halsey Taylor never would have made it.

Just about 62 years ago, a man named Halsey Taylor called on the U.S. Surgeon General with sketches for an altogether new type of water fountain projector. When the Surgeon General insisted on an actual model, Halsey Taylor bought a bar of soap, sat down on a Washington park bench and carved out the first—and now famous—twin-stream projector.

Thus, the Halsey Taylor Company was launched—on a bar of soap.

Today, we manufacture the widest selection of water coolers in the industry. And every one of them is built with high quality, heavy-duty components to deliver years of service with minimum maintenance. For example, we use corrosion-resistant regulator valves, positive start capacitors, long-life fan motors, dual temperature controls that counteract freeze-up, and overload protectors that prevent overheating.

Each of our welded unitized cabinets is topped by a polished stainless steel receptor. And any cabinet can be finished in any of eight different Polychrome colors or your choice of our vinyl clad steels. Stainless steel and PATINA bronze-tone stainless are available on selected models.

Halsey Taylor water coolers. Products you can honestly rely on. And that's no soft soap. Write for a copy of our catalog to Halsey Taylor Division, Dept. 176, 1554 Thomas Road, Warren, OH 44481.



Halsey Taylor®

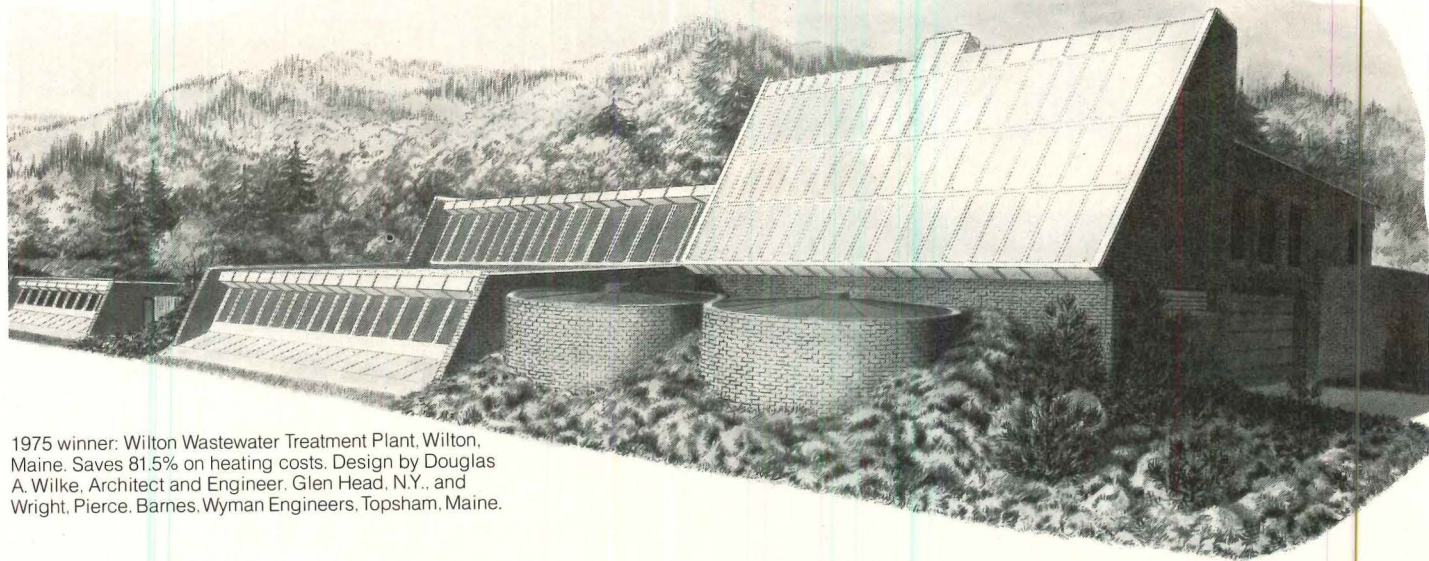
KING-SEELEY **KST** THERMOS CO.

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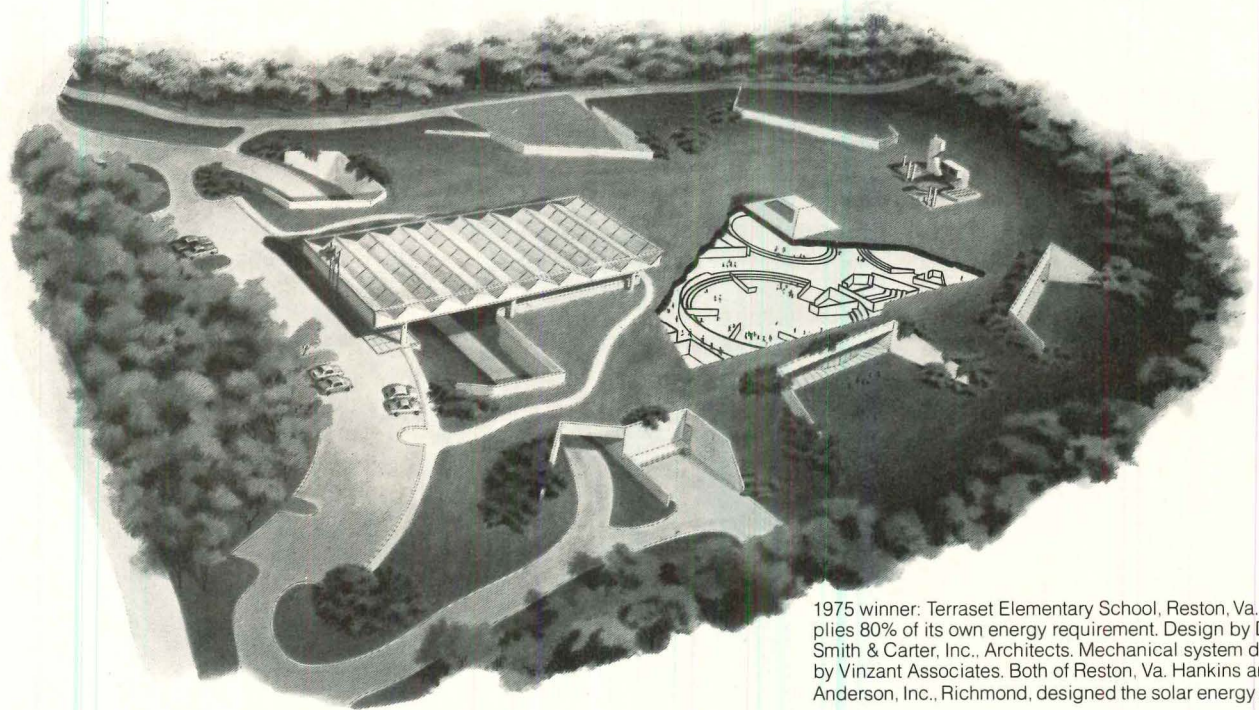
**Could your
building design earn this
distinguished award?**



See details on next page.



1975 winner: Wilton Wastewater Treatment Plant, Wilton, Maine. Saves 81.5% on heating costs. Design by Douglas A. Wilke, Architect and Engineer, Glen Head, N.Y., and Wright, Pierce, Barnes, Wyman Engineers, Topsham, Maine.



1975 winner: Terraset Elementary School, Reston, Va. Supplies 80% of its own energy requirement. Design by Davis, Smith & Carter, Inc., Architects. Mechanical system design by Vinzant Associates. Both of Reston, Va. Hankins and Anderson, Inc., Richmond, designed the solar energy system.

**These designs earned our 1975 award.
Read how you can enter our 1976 program.**

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

Announcing the 5th annual Owens-Corning Energy Conservation Awards Program

Show our Awards Jury a building design that doesn't waste energy—and you could receive one of the Energy Conservation Awards Owens-Corning will present in 1976.

The Awards Jury will be looking for design excellence and significant energy conservation features and/or systems. Too many of our buildings waste fuel.

By continuing the Energy Conservation Awards Program we began in 1972, Owens-Corning hopes to stimulate even more ways to conserve energy. It also lets us recognize—and honor—those who do the best job of designing buildings and mechanical systems that help conserve our nation's energy.

Who can enter

Any registered architect or professional engineer practicing in the U.S. is eligible. As an individual. Or in a team. But to qualify, your entry must be a commissioned building project—



The Owens-Corning Energy Conservation Award, "Triangles," a Steuben Crystal sculpture that captures and reflects light from multiple triangular planes.

in the design process, under construction, or a completed structure.

Although Fiberglas* products are an excellent way to conserve energy, their use is not an entry requirement.

Four entry categories

Winners will be selected from four design categories:

Institutional—schools and hospitals, for example.

Commercial—office buildings, shopping centers, retail stores, and similar structures.

Industrial—including manufacturing plants, research centers, and warehouses.

Governmental—post offices, administrative buildings, and military structures, to name a few.

The Awards

Winning architects and/or engineers will receive the handsome Steuben Crystal sculpture. Owners or clients will receive other Steuben Crystal awards.

The Awards Jury for 1976

Outstanding professionals in architecture and engineering will serve as the Awards Jury to select the winners.

Send for entry details now

Completed entries must be submitted by August 31, 1976. Winners will be selected and notified in early October.

For a brochure with details on how to enter, write: G.R. Meeks, Owens-Corning Fiberglas Corp., Building Products Operating Division, Fiberglas Tower, Toledo, Ohio 43659.

This program has been approved by the American Institute of Architects and is patterned after its Honor Awards program.

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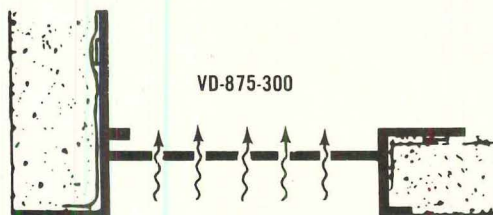
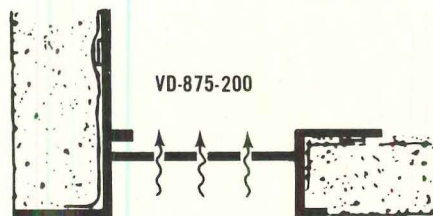
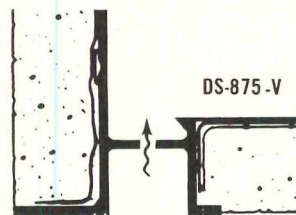
STOP SOFFIT STAINS!

with Fry's Drip Screed for Plaster or Drywall

Ugly soffit stains often spoil an otherwise beautiful job. They also rob you of time and dollars spent on callbacks. Fry Drip-Screed used as a drip mold protects you from soffit stains, also gives you cleaner, razor sharp edges. Now available vented, too, to permit greater air circulation and compliance with codes. Made of rugged extruded .050 aluminum with clear plastic coating (per Federal Specification TT-E-529 Class B). For detail sheets and/or samples, write today.

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Phone: (213) 245-9471

FRY REGLET Corporation



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"Olympic or equal."

When you specify "Olympic or equal," we sure hope you get what you want.

Because for quality, beauty and the tough guarantee your customers deserve, nobody in the business "equals" Olympic!



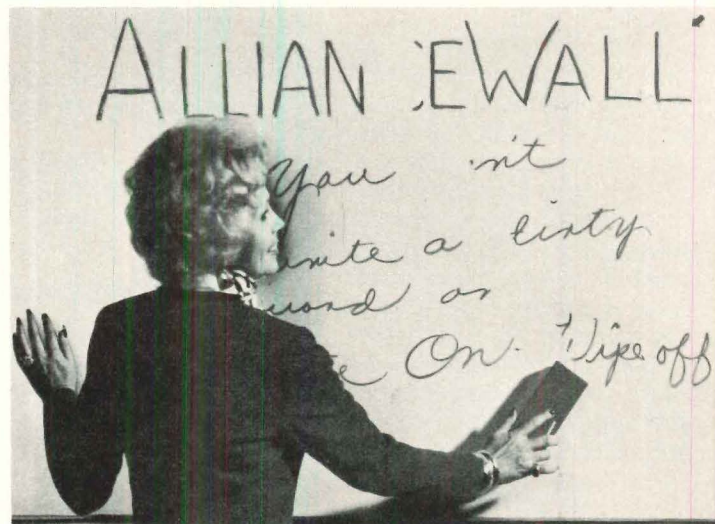
OLYMPIC

Olympic Stain. A division of COMERCO, INC.
1148 N.W. Leary Way, Seattle, WA 98107 (206) 789-1000

There is no equal.



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You Can't Write A Dirty Word With AllianceWall's Rite-On, Wipe-Off System

Specially treated porcelain-on-steel panels and dry marker pens are combined to create a completely DUSTLESS WRITING SYSTEM. Writing dries instantly. Can be erased with a dry cloth or felt eraser. Laminated to low-cost gypsum board, AllianceWall Rite-On, Wipe-Off panels are fireproof, inexpensive to install and maintenance free. Panels double as bulletin board when used with miniature magnets. Also make excellent projection screens. Can be used with any partition system. No special lighting required. Writing surface is guaranteed for 50 years.

AllianceWall
CORPORATION

Manufacturing plants in Alliance, Ohio; Okmulgee, Oklahoma; Genk, Belgium and Odense, Denmark.
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ALLIANCE, OHIO 44601

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**PPG
GLASS
HELPS
MAKE
ATLANTA
MORE
INVITING.**

Peachtree Center Plaza Hotel, Atlanta, Georgia.
Owner: Portman Properties, Atlanta, Georgia.
Operator: Western International Hotels.
Architect: John Portman & Associates, Atlanta, Georgia.



The reflective glass tower rises like a beam of light out of Atlanta's famous Peachtree Center.

And though Peachtree Center Plaza is the world's tallest hotel, feet and inches can't begin to measure it.

This is a spectacular building.

And what first draws the spectators is PPG LHR[®] Solarbronze[®] reflective glass. Sixty-three cylindrical stories of it.

It's quite a sight. The reflectivity of the glass and the shape of the tower combine to give a magnificent surrealism to the reflected surroundings.



PPG Solarbronze glass makes the spectacular Sun Dial Restaurant the perfect place to take in the view in comfort.

But all that LHR Solarbronze reflective glass is not just to please the people walking by. The idea of a hotel is to please the people walking in.

And the generous expanses of glass do exactly that. The guests, mostly out-of-towners, see Atlanta at their feet. The city becomes as beautiful a spectacle from the hotel as the hotel is from the city.

The glass has more mundane aspects, too, of course. For one thing, it's very practical. In a Southern city like Atlanta, its reflectivity shades the sun's glare, reduces solar heat gain, and helps ease the load on the air conditioning.

LHR Solarbronze reflective glass is both beautiful and sensible. And Peachtree Center Plaza proves that it can also be monumentally spectacular.

Find out more about it. Write to us, and we'll tell you more about this glass and our whole family of high-performance glasses. PPG Industries, Inc., One Gateway Center, Pittsburgh, Pa. 15222.

PPG: a Concern for the Future

AND SOUTHERN HOSPITALITY WILL NEVER BE THE SAME.

PPG
INDUSTRIES

Wellco carpets the Superdome. Super.

Carpeting the Louisiana Superdome was no small challenge.

The world's largest enclosed stadium, in the heart of downtown New Orleans, is ringed with 55,000 square yards of carpeted hallways and ramps that twist, taper, and turn from ground level to dome.

What could have been a designer and installer nightmare went off without a hitch. The colors were right. The precise quantities of each grade, design, and color came through the tricky installation on target.

All 55,000 square yards look absolutely super!

Wellco carpets in special stripe designs, color-keyed to seating levels, cross the ramp surfaces and climb partway up the walls. Stop off at any level and you step on a bright solid-tone Wellco carpet color-

keyed to the ramps.

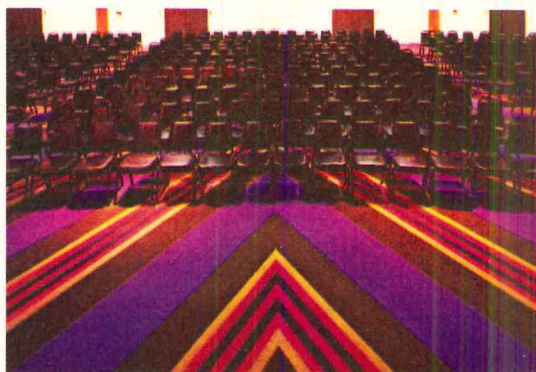
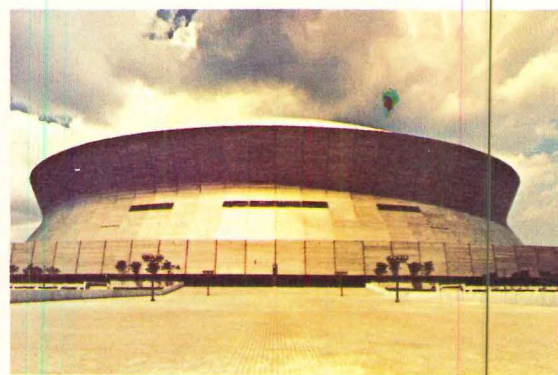
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NEWS REPORTS
 BUILDINGS IN THE NEWS
 HUMAN SETTLEMENTS
 REQUIRED READING

Producers' Council schedules new, national Building & Construction Exposition & Conference for Chicago's McCormick Place next November 17-19. Details on page 35.

The French Academy of Architecture has awarded its 1976 "Grande Medaille d'Or" to Marcel Breuer. In a parallel action, the architectural documentation service of the French Cultural Ministry has designated Marcel Breuer and Associates' Research Center for IBM France, at La Gaude, as an outstanding example of contemporary architecture in France.

Challenge to proposed policy allowing OSHA to cite several contractors, including architects and engineers, is made by AIA, ASCE, ACEC, and NSPE. Details on page 34.

The Architect of the Capitol, George M. White, FAIA, has announced the selection of the Philadelphia-based architecture and planning firm of Wallace, McHarg, Roberts and Todd to assist him in preparing a Master Plan for future development of the U.S. Capitol Grounds and related areas.

AIA survey finds delays and added costs are results of Maryland's new A/E selection law, which calls for consideration of price as well as technical proposals. Details on page 35.

Canada has designated January 1, 1978 as "M-Day", the first day of the Metric Conversion Year, in which the construction industry will start implementation of work on-site in the metric system.

The Illuminating Engineering Society (IES) of North America has selected the following new officers to its Board of Directors: Carl J. Long, P.E.; David H. Patterson; John L. Hood, Jr.; Thomas S. Madonia, P.E.; John E. Flynn, AIA; and Lawrence G. Spielvogel, P.E.

John Portman has been presented with this year's Elsie de Wolfe award by the American Society of Interior Designers. The annual award was instituted by the New York Chapter in 1956, and has included several architects among its recipients: Philip Johnson, Edward Durell Stone, and George Nelson.

April construction lifts Dodge Index to new 1976 high; contract value, at 9.4 billion, unchanged from year ago. April contracts for future construction work lifted the seasonally-adjusted Dodge Index of total construction contract value to 189, its highest level so far in 1976. (The Dodge Index uses 1967 as its 100 base.) "The similarity of the 1975 and 1976 totals conceals some important improvements in construction markets over the past twelve months," noted George A. Christie, vice president and chief economist for Dodge. "At this time last year, a lot of the thrust in construction demand was being created by Federal anti-recessionary public works spending. By now, that temporary stimulus has worn off, and has been replaced by self-sustaining demand for housing and the beginning of a recovery in commercial and industrial building." Nonresidential building contracts totaled \$2,740,924,000 in April, two per cent less than in the year-ago month. "At this time last year, nonresidential building was on the way down—now, it's on the way up," Christie emphasized, "The low point of contracting for commercial, industrial, and institutional buildings was reached last December. Since then the rate of nonresidential building (seasonally adjusted) has made four successive monthly gains." April contracts for residential structures, at \$4,003,270,000, led last year's total by 34 per cent. Although by far the biggest part of the housing improvement has been confined to one-family homes, Christie pointed out that "The apartment market isn't quite as dormant as national totals seem to indicate. In the first four months of 1976, multi-family building has been making solid gains in the Midwest and in the Far West. These advances, however, have been offset by continued weakness all up and down the East Coast, where most of the condominium surplus is concentrated."

An intensified cooperative effort to develop unified specification systems has been announced by representatives of The American Institute of Architects (AIA), the Construction Sciences Research Foundation Inc. (CSRF), founded by the Construction Specifications Institute Inc. (CSI) in 1967, and Production Systems for Architects and Engineers Inc. (PSAE), founded by AIA in 1969, who agreed on the principles of a cooperative effort at a recent joint meeting. The focus of the current effort is Division 1, which basically sets forth General Requirements of construction specifications. The development of a compatible approach to Division 1 documentation has been identified since 1966 as a vital part of the uniform industry wide documentation system.

Vincent G. Kling, FAIA, has been presented the 1976 Tau Sigma Delta Gold Medal award at a recent meeting of the Association of Collegiate Schools of Architecture in Philadelphia. Tau Sigma Delta is a national honor society in architecture and allied arts. The Gold Medal is awarded to a professional who has distinguished himself in design in the field of architecture, landscape or allied arts. The selection is made by the Grand Chapter of the Society and the award is presented annually at the national meeting.



New tramway links NYC's Manhattan and Roosevelt Island

New York City's new aerial tramway is said to be the first such system employed in the United States to be integrated within an urban environment and with a city's mass transportation network. Designed by engineers Lev Zetlin Associates, Inc., project managers for the owner, the New York Urban Development Corporation (UDC), the tramway runs virtually parallel to the Queensboro Bridge for a distance of 3,100 feet, connecting Manhattan and Roosevelt Island. The 125-passenger cars, weighing 40,000 lbs when loaded, soar to a height of 250 feet at the system's highest of three support towers, commanding a new and exciting perspective of city activities along and around the East River.

Residents of Roosevelt Island's new town, containing approximately 2,000 apartment units, now have direct access to Manhattan via the five minute tram ride across the River. Before the opening of the tramway, the morning rush hour drive by car or bus from Roosevelt Island through western

Queens and across the 59th Street Bridge could average 45 minutes.

According to Richard L. Tomasetti, principal-in-charge of the project for Lev Zetlin Associates, the tramway incorporates several unique features. The steel towers supporting the cables that haul two trams back and forth across the river, were specially designed to accommodate the tight restrictions of the densely developed urban site along 60th Street. For example, the tower closest to the west bank of the East River at York Avenue has a split leg in order to span the access road ramp to the 60th Street heliport. The Manhattan Station, which is elevated to permit the trams to run above Second Avenue traffic, contains structural foundations and columns for a future high-rise building. Prior to the system's official public opening, the trams crossed the river several hundred times in order to check all components and safety devices to assure all concerned with efficiency and function.

NCIC votes down management/labor communications proposal

A year and a half after its founding, the National Construction Industry Council—the "Single Voice" organization of 30 construction industry associations—is still talking in unison only with the government. At the last (May 18) meeting near Washington, D.C., the council agreed to take a united position on several legislative matters, but voted down a proposal to establish communications with the building and construction trades department of the AFL-CIO.

Several council members believe a liaison with labor would provide a much-needed mechanism for management and labor to work together on common industry problems. But the issue rangles members who are direct employers of union workers. Led by the Council of Construction Employers, Inc. (CCE), they argue that the council should not be dealing with their employees, even if the liaison were created only to discuss issues unrelated to collective bargaining.

In the end, a compromise motion to establish communications with labor exclusively through CCE failed

to muster the necessary three-fourths majority. (The vote was 15-9, with one abstention and five not present. Both the American Institute of Architects and the American Society of Landscape Architects approved the motion. The Society of American Registered Architects was not present.)

In legislative matters, the council voted to end congress statements opposing legislations creating national minimum benefit standards for worker compensation and favoring relaxation of air pollution standards in "pristine air" areas of the country. The council's legislative committee is preparing several statements for consideration at the next council meeting, scheduled for August. These include positions in favor of the provisions of a bill toughening provisions of the Federal criminal code relating to construction site violence, endorsing a measure that eases reporting requirements and minimum funding standards for pension plans, and opposing legislation making the existing lobbying law more stringent.—*Judith H. Dobrzynski, World News, Washington.*

New OSHA policy challenged by construction industry groups

Engineers and other construction industry associations are attacking a recently proposed policy allowing the Occupational Safety and Health Administration to cite several contractors, including architects and engineers, for job safety violations at multi-employer worksites. They say the new policy may raise construction costs and disrupt contractual agreements without necessarily improving safety conditions.

Under the proposed guidelines, OSHA would cite for safety violations: first, the employer who created the hazard; second, the employer who can best correct the violation; third, the employer whose employees are actually or potentially exposed to the hazard, whether or not that employer created the hazard or has the capacity to abate it. In some cases, all three may be cited.

At present, OSHA cites only those employers whose workers are exposed to the hazard.

Since design professionals and their employees may sometimes be on a job site, perhaps in a supervising capacity, they could now be cited.

In opposing the proposed guidelines, the American Institute of Architects, the American Society of Civil Engineers, The American Consulting En-

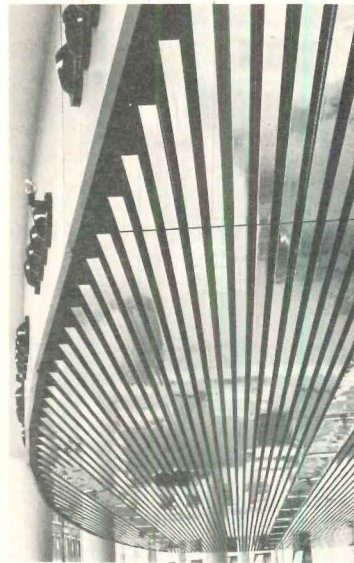
gineers Council and the National Society of Professional Engineers contend that "architects and engineers are inappropriate agents through whom to attempt to bring about OSHA compliance on multi-employer worksites."

In a joint statement, the four groups note that "by training and experience many of them have insufficient background concerning the details of the construction process (and particularly with equipment and temporary facilities) to permit informed reactions to safety problems."

Critics of the proposed policy agree with a statement submitted by the 30-member Association National Construction Industry Council. It says, in part, "the capacity of an employer to debate a condition caused by another can involve craft jurisdictions, expertise in another specialist's field, as well as contractual agreement, . . . the requirement would mandate that all employers be familiar with OSHA standards for all other employers on the job and might cause duplicate expenditures to be made in abatement of hazards."

The council and several individual associations have asked OSHA to hold public hearings on the proposed regulations.—*Judith H. Dobrzynski, World News, Washington.*

Insurance office wins Reynolds award for Foster Associates



Foster Associates, architects, London and Oslo, won the 1976 international R.S. Reynolds Memorial Award, for distinguished architecture using aluminum, with their design of the new country head office of Willis, Faber & Dumas Ltd., insurance brokers and underwriters, Ipswich, Suffolk.

The award—a \$25,000 honorarium and an aluminum sculpture by David Lee Brown—is sponsored by Reynolds Metals Company as a memorial to its founder, and administered by the AIA. It was presented to Norman Foster, on behalf of his firm, at the AIA convention in Philadelphia.

This year's jury consisted of William Marshall, Jr., FAIA chairman; Ehrman B. Mitchell, Jr., FAIA; and James

J. Foley, FAIA. In their jury report, they commented that "the entire site has been skillfully occupied utilizing an edge-band structural system and a three-story suspended glass exterior wall—both of which follow the curving, amorphous shape of the enscribing streets. In daylight, the one acre of mirror glass exterior wall uniformly reflects and augments the historic neighboring structures.

"At night, with its customized, mirror-finished aluminum ceiling reflecting an evenly illuminated interior, the building becomes an enclosed urban plaza. The darkened and quiet neighborhood which enscribes it after nightfall is then provided with an exciting vista into the active world within."

AIA study calls Maryland A/E selection law more costly

Maryland's new architect-engineer selection law, which calls for consideration of price as well as technical proposals, is delaying the state's construction program and making it more costly, according to a study by the American Institute of Architects. In most cases, technical proposals were nearly meaningless, with contracts awarded on the basis of price.

The law, enacted two years ago to prevent repetition of the engineering kickback scandal that forced former Vice President Spiro T. Agnew to resign, requires that design contracts for state projects over \$25,000 be awarded on "a competitive basis," including evaluation of technical and priced proposals from at least two firms.

AIA studied the 17 contracts awarded during 1975 and found that 10 awards went to the low bidder and 4 to the second low bidder. "The implications of this may be seen, if the

trend continues, as it inevitably will, in poorer quality architecture and more costly construction. . . . The fight for low bid will necessitate that some A/Es may promise more and deliver less in the way of creativity, innovation and efficiency in design," the study concludes. "The impetus toward low bid and low bid alone could mean that design work left out of blueprints must be done at the construction site, resulting in cost overruns."

The new process is also more time-consuming. AIA says that 15 project programs scheduled for 1975 were not written.

AIA is pushing for legislation that would amend the law to include competitive negotiation similar to the Federal Government's system. It also recommends that registered and practicing professional architects and engineers be added to the selection boards.—*Judith H. Dobrzynski, World News, Washington.*

National building industry meeting set by Producers' Council

The first "Building & Construction Exposition & Conference" (BCEC) on a nationwide basis is scheduled for Chicago's McCormick Place next November 17-19.

Sponsored by The Producers' Council, Inc., the event is intended to bring all the building industry's elements together nationally—owners, financiers, architects, engineers, designers, contractors and others—to see and compare materials produced by the total construction products industry as well as to discuss and evaluate ideas.

To date, more than 150 major manufacturers have contracted for exhibit space, and up to 15,000 visitors are expected to attend the exposition, with some 1000 registering for one or more of the conference sessions.

"This is a long-overdue and much needed step," states Richard I. Morris, president of Producers' Council. "Up to now, exhibitors and visitors from the various disciplines that make up our industry have always had to participate in several trade shows every year in order to remain alert to changing influences in the construction marketplace. BCEC can change all that . . . the opportunity to display every prod-

uct line to all the decision makers in one place at one time makes sense."

Based on the theme, "Promotion & Performance . . . Your Blueprint for Profit," BCEC will feature 14 conference sessions "geared to the idea of making things happen in construction . . . now!"

Three of the sessions will be devoted to the commercial market: the owner's expectations from a new building; ways to predict and design for a building's financial performance; and money-saving building systems.

The residential market will also be covered in three sessions, and "retrofitting" older buildings in two.

Other conference sessions will be concerned with energy conservation, overseas construction, how to get work in public building construction, case histories on the industry's role as catalyst in "making things happen in construction," and new "professional" ways to sell services.

Exhibit and attendance information may be obtained from the Charles Snitow Organization, 331 Madison Avenue, New York City; Conference information from A.G. Robinson, Producers' Council, 1717 Massachusetts Avenue N.W., Washington, D.C.

SH&G survey effects of metrication on US building

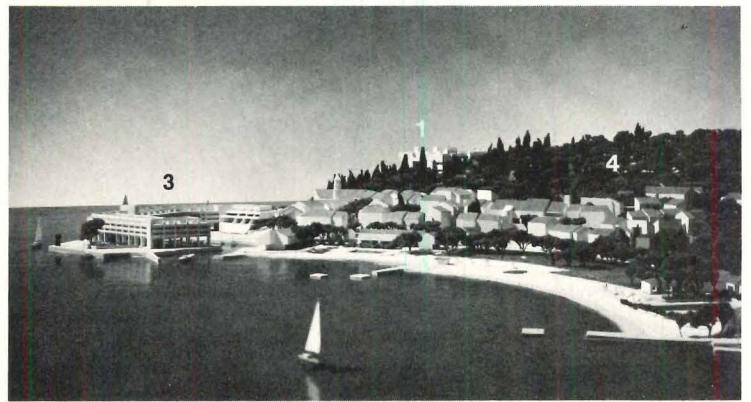
Prompted by the Federal government's passage of the Metric Conversion Act of 1975 and by their own curiosity, Smith, Hinchman & Grylls are conducting a survey of the construction industry in an endeavor to get the jump on metrication. Although the Act stipulates no schedule for U.S. conversion to the metric system, SH&G considers it inevitable.

"When metrication comes," explains Bradley G. Field, the firm's corporate director of architecture, "we architects will have to make all the pieces fit together. We want to learn

all we can about new sizes, strengths, weights and durabilities as early as possible."

The firm has mailed some 150 questionnaires to architectural and engineering societies, manufacturers and trade associations, and general contractors.

In addition to queries about the state of the art with respect to metrication and about projected timetables for conversion, SH&G also asked about dimensional changes and the effects these might have on rated capacities of materials and on renovations.



Adriatic resort aims to increase Yugoslavia's tourist income

Nearing completion on the Adriatic coast near Trieste, Hotel Bernardin has been designed by The Architects Collaborative to take advantage of one of Yugoslavia's primary assets: a near-ideal natural environment for outdoor recreation. Bernardin capitalizes on its environment by being low-rise and sympathetic to local tradition. Settled comfortably into a wooded hillside site, the buildings may well accomplish their economic purpose because they are reminiscent of country towns with casual growth and winding streets; they produce a sense of their unique location—not the "Westernized" polish so often emulated by Eastern resorts designed to attract Western tourists.

Bernardin is actually three hotels offering a wide range of accommodations and prices for a possible total of 2,500 guests. The buildings are interspersed over their site with recreational facilities including beaches, marinas, bicycle paths, and courts for various games; these latter facilities are to be paid for and used by an expected 1,000 visitors a day, besides those actually staying there. The most expensive hotel (1 in the photo,

above) is the exception to the low-rise rule. It is built down the side of a cliff, so that only the top few stories are exposed to the rest of the resort above. To be open all year round, it has already entertained President Tito.

Further along the beach, the two linear elements of an intermediate-priced hotel (3) interlock to form two "town squares," one around a marina and the other around a bell tower from a monastery formerly on the site.

The third hotel (4) offers moderate-priced accommodations in "cottages" scattered over the hillside above the broadest beach. The entire site is to be largely free of cars, which will be parked near the entrances and under the tennis courts on the hillside.

Bernardin is the only one of several such proposals by TAC for Yugoslavia, and the first to be built. If Bernardin is as successful as hoped, it could stimulate interest in Jaz, another planned resort near Budva to the south. Here, up to 5,000 guests would be accommodated in a rural, beachfront setting that would include camping facilities. The resort is planned to appeal to package tours from the West.—*Charles K. Hoyt.*



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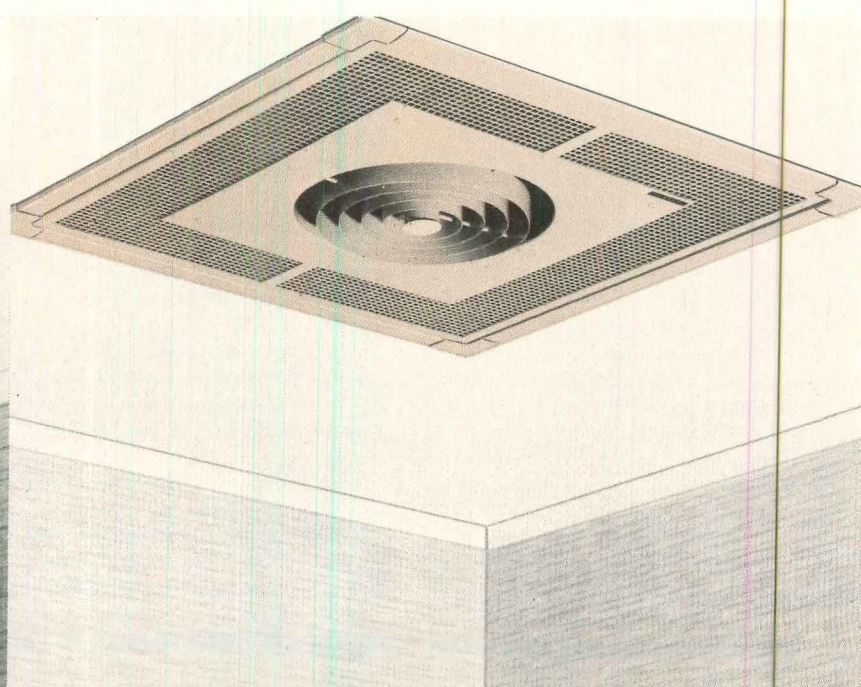
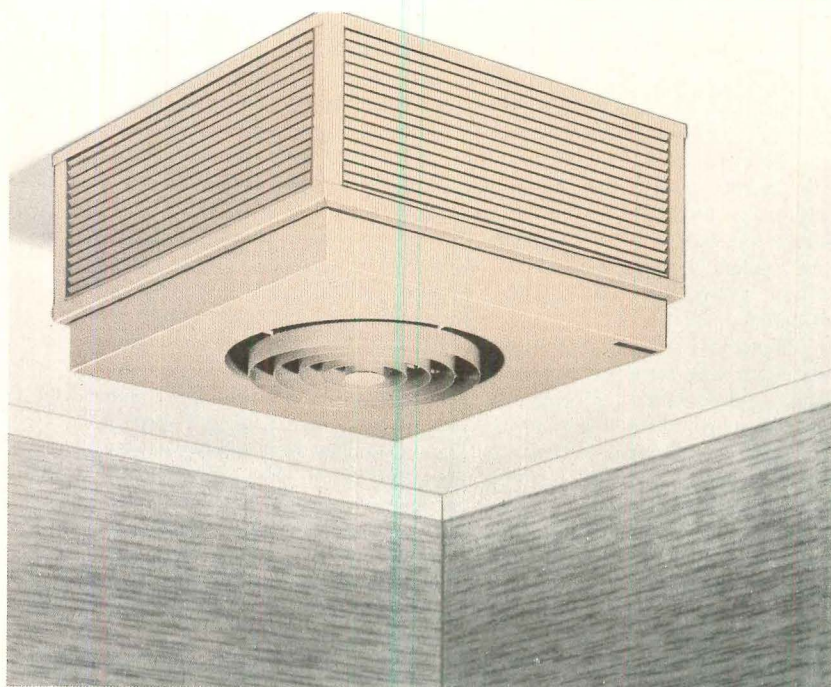
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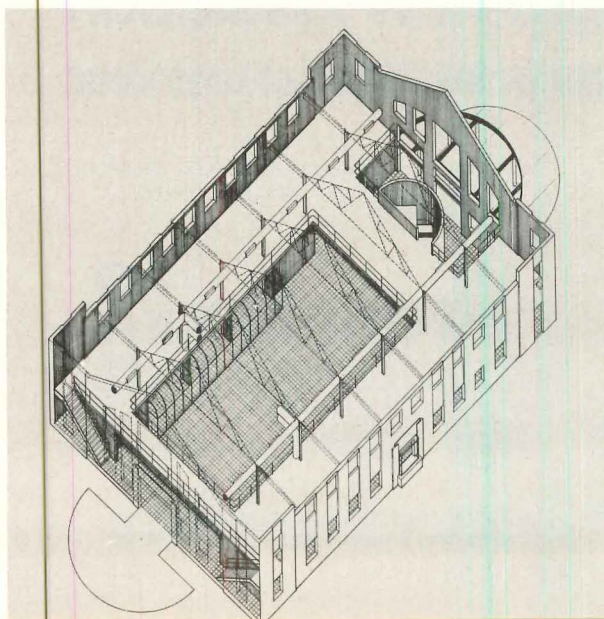
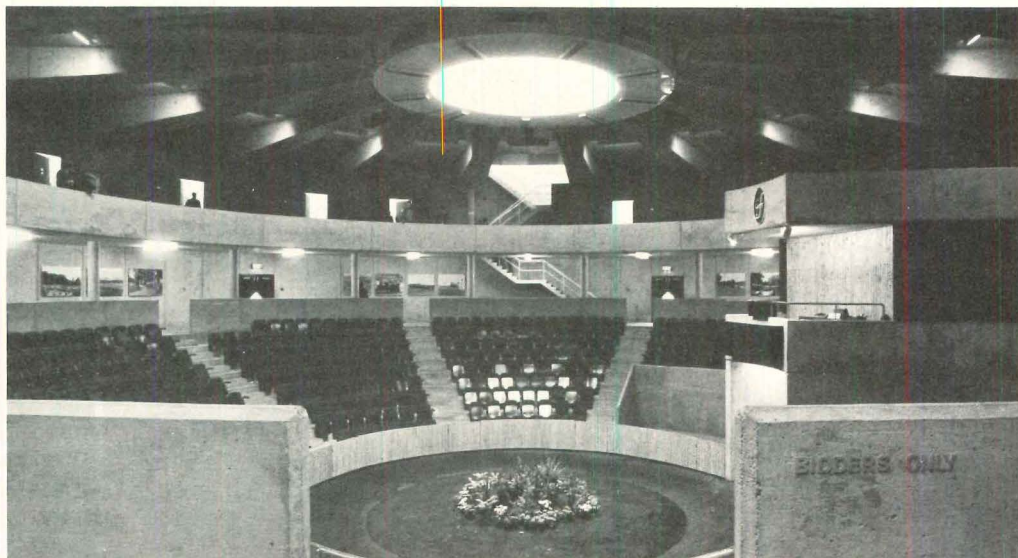
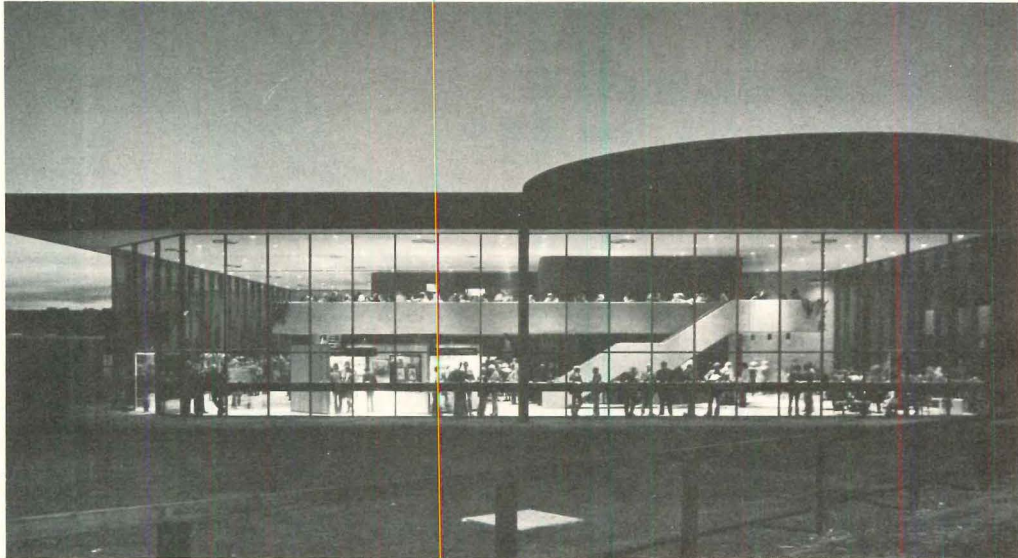


An elegant contemporary pavilion for horse sales

This bloodstock sales complex at Kill, County Kildare, was designed by Scott Tallon Walker Architects of Dublin for R. J. Goff & Co. Ltd. The building consists of a 120-foot circular salesring building attached to a 120-foot-square, glass-walled "facilities building," which includes information booth, a bar, a bank, telephones, and shops on the first level; a restaurant on an upper-level mezzanine. The circular sales ring building (lower photo at right) includes, around the depressed sales ring area itself, a sloped 744-seat auditorium, beyond that a standing/circulation area for 300, and around the outer perimeter offices for various agencies and their clients. This office area opens directly to the restaurant mezzanine in the connected building. Above this level, a

second floor includes the mechanical room, and general and management offices for the owner. The planning of the area is designed to completely separate the service and the public areas. Built off a dual highway, the complex covers 77 acres. The parking area for 468 cars and 224 horse trailers, along with service areas, barns and exercise areas, are all to the rear. The public enters the complex through a controlled ticket office in the security fence. A landscaped approach to the sales ring includes two landscaped pools, which double as water reservoirs for fire fighting.

Horses are led into the sales ring beneath the auctioneers via a graded ramp, which leads from the outdoor parade ring, under the auctioneer's rostrum, into the main space.

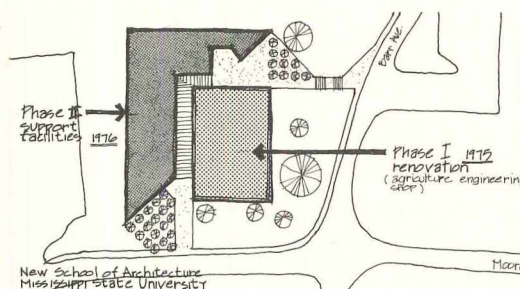


... and a former "cow palace" designed as an architecture school

Mississippi State University near Columbus, Mississippi has a brand-new architecture school—established only last year. Its new home on the campus will be this dairy judg-

ing pavilion, built for the agriculture school circa 1925, and being remodeled by Evans/Eley, Architects of Jackson. Design studio space for upperclassmen will be in the two mezzanines

and bridges—one the space for the judges. The first floor will have offices for the 12 faculty members under one mezzanine, a glass-walled library under the other—and the freshman design studio will be in the grand central space. A skylight at the ridge will bring light into all of the spaces. The building is brick—the interior walls will be painted white under a wood ceiling. A second building will be added to the school as soon as funds are available, reports Dean William McMinn, and will include an auditorium, library, gallery, labs and shops.



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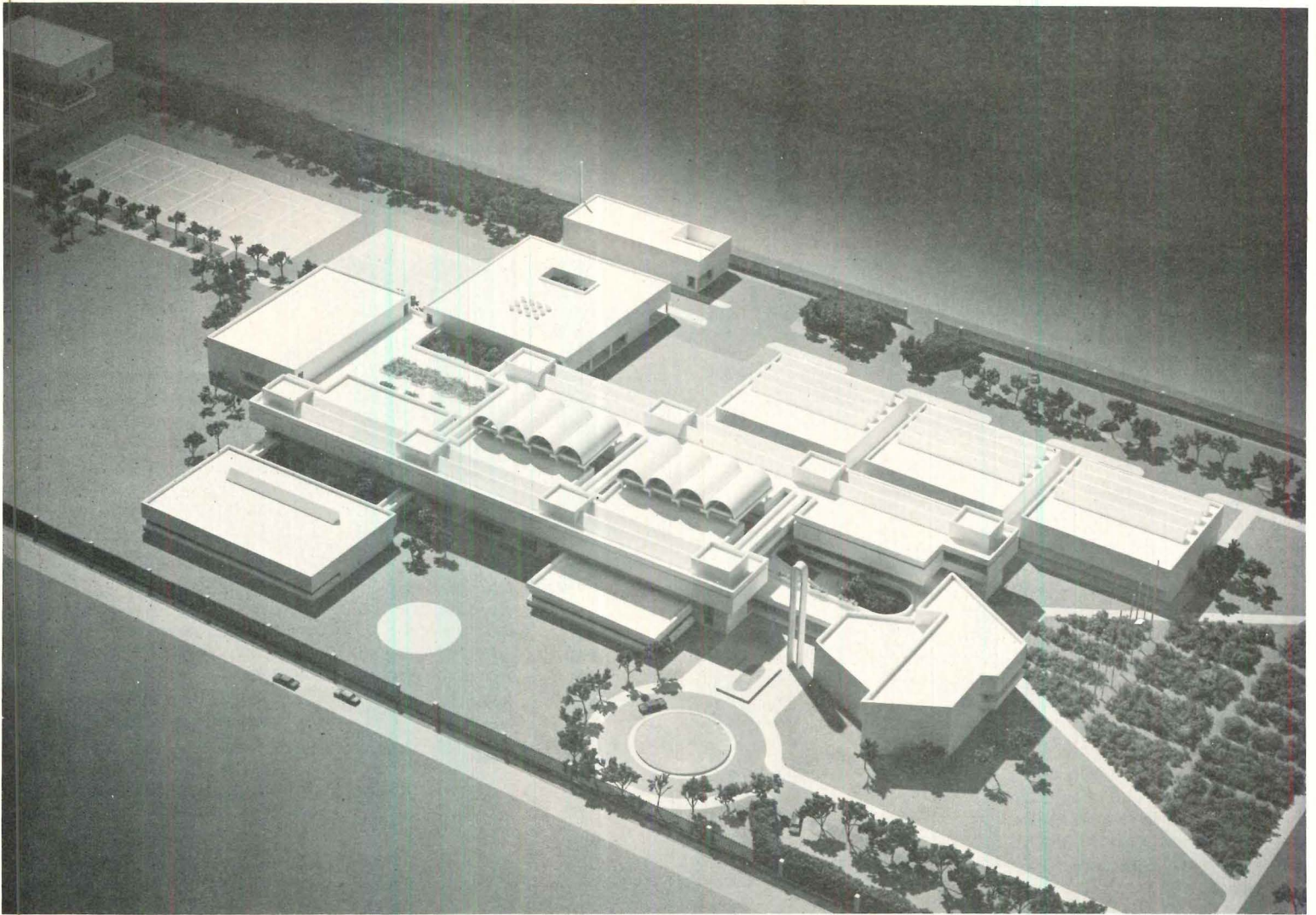
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Two buildings for Iran: a 1000-student technical institute in Shiraz . . .

The Shiraz Technical Institute, designed by Hugh Stubbins and Associates, will be the first facility in Iran to provide training in industrial science and technology for post-secondary school

graduates. The school will offer technical education and teacher training for a thousand students in mechanical, electrical, civil, and manufacturing and materials engineering, plus

a fifth option not yet determined.

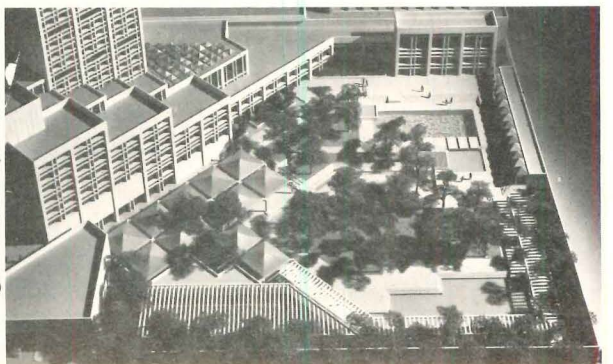
The building is designed as a linear form, generated by the academic spine of classrooms, faculty offices, and labs; with a

series of cross axii to outlying support functions. The building is designed to stimulate natural ventilation, and air conditioning is limited despite the climate. East and west facades are

closed to eliminate solar loads and prevent sandstorm damage. The reinforced concrete structure is designed to resist earthquakes, since this is one of the most active seismic areas.

New "tallest" for Teheran—a \$40 million Sheraton

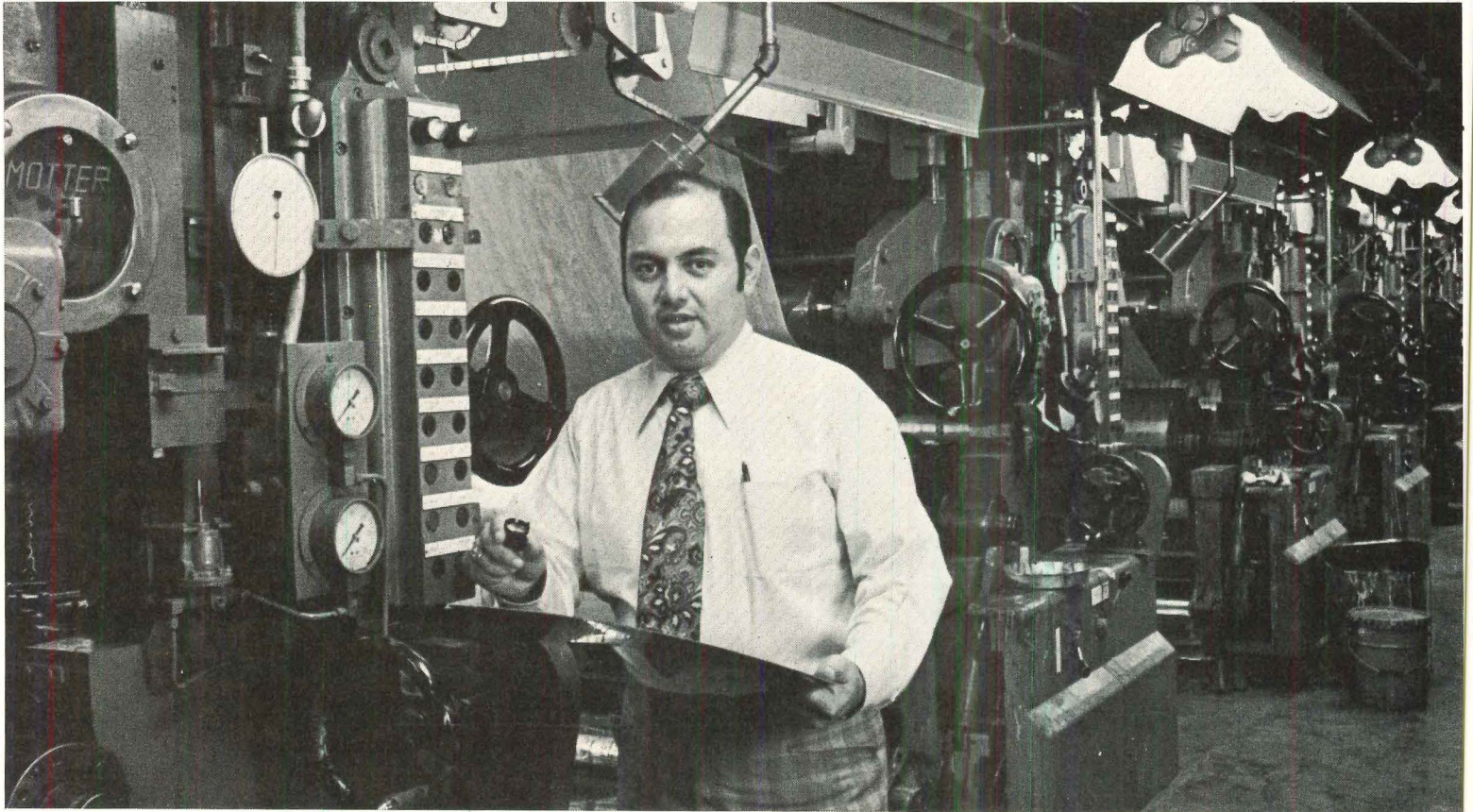
Designed by Welton Becket Associates for Iran Air, this 41-story hotel will have 587 rooms, the largest ballroom in the Mideast, and a revolving rooftop restaurant. At the entry level (not shown) a circular drive leads to the main, ballroom and Royal entrances to the hotel; they open to the eight-story-high lobby (top photo, right). The lobby level—one story down—contains the desk, a restaurant, a lobby bar, retail shops, the grand ballroom, and a link to an existing Sheraton hotel next door. Between the two hotels is an extensively landscaped, four-story-high, glass-enclosed "tea garden" (lower photo), which offers informal dining around a central fountain, and opens to a swimming pool area with fountains and lush gardens.



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Hospital design

HOSPITAL PLANNING HANDBOOK, by Rex Whitaker Allen and Ilona von Károlyi; John Wiley & Sons, New York, 1976, 242 pages, illustrations, \$16.00.

THE HOSPITAL: A SOCIAL AND ARCHITECTURAL HISTORY, by John D. Thompson and Grace Goldin; Yale University Press, New Haven, Connecticut, 1975, 349 pages, illustrations, \$25.00.

Reviewed by Michael Adams

The number of new "hospital books" coming into print seems to be steadily increasing. Ten, fifteen, or twenty years ago, an architect faced with hospital planning tasks to organize and design problems to solve would probably have gained very little by a trip to the local library or bookstore. As in any new field, this growing health and hospital publication output is something of a mixed blessing, and nowadays—for the architect involved in this highly differentiated specialty—a trip to the bookstore often suggests the wisdom of using the library. Few of these new volumes deserve to be read in full; fewer still deserve purchase.

The two books reviewed here are part, though perhaps not a representative part, of this recent output. The first, *Hospital Planning Handbook*, fills a particularly important need; the second, *Hospitals: A Social and Architectural History*, points up an unfilled need.

Architect, hospital administrator, and health planner alike are bewildered by the formidable and changing array of Federal, state, and local codes, guidelines, standards, regulations, and rules of thumb that influence hospital planning and programming. For the architect especially, seeking to manage a hospital project and the project's specialized team, this necessitates acquiring a familiarity not only with the entire planning process but also with some unfamiliar tools which may not have been a part of his or her architectural education. A single book treating each of the various elements of the planning process in exhaustive detail would, alas, go unread and would be seriously out of date and misleading by the time the presses began to roll. Allen and Károlyi's *Handbook*, however, is a very sound step in the right direction. This is not a hospital design book or a philosophical planning text. It is, above all, a practical road map through the complicated terrain of project planning and management. The authors begin, appropriately, with a brief (perhaps too brief) explanation of network techniques for relating indi-

vidual planning activities. This CPM task-interdependency approach is tremendously helpful for sorting out schedules and responsibilities and is also solid support in compensation negotiations with the client.

The book's ten major chapters deal with health and hospital planning considerations, analysis of existing conditions, outpatient services (this chapter accounts for about 20 per cent of the text), nursing services, diagnostic and treatment services, supply services, administrative and general services, housekeeping, maintenance, engineering services, and systems, the effect of education on the hospital, and planning guidelines. Each topic is dealt with according to the same basic format: after an opening discussion, the authors lay out the purpose for the topic being considered, the essential planning information needed, the policy decisions, planning decisions, or planning assumptions to be documented, and the procedure for data collection and organization. Since most if not all of the issues addressed are matters of considerable debate and difference of opinion among specialists, the authors present concise alternative arguments to better prepare the user for the inevitable negotiations which are a key part of planning in the real world. And in this same connection, the authors are careful to identify significant political determinants, both internal and external to the institutional planning setting.

Balance and level of detail in any publication is always a difficult matter of editorial judgment—especially difficult when the book covers a vast and complex assortment of inter-related issues. For the most part, the *Handbook* walks the tightrope between too much and too little information and guidance.

Unfortunately, there are minor problems which seem, to this reviewer at least, important enough to deserve comment. First, medical equipment and furnishings receive only minor coverage and, in some special topic areas, are not dealt with at all. The capital and operating cost impact of technology cannot be ignored even in the earliest stages of planning. Second, project financing has a significant influence on the over-all timetable of project planning and development. Aside from brief initial mention of this as an important consideration, no further guidance is given. Third, since the book's function is basically one of process organization, fuller advantage could be taken of footnotes and bibliographical references in the text to direct the reader to specific sources of further detailed information. Fourth, a detailed index is an essential ingredient for successfully using this kind of book, and regrettably this index fails to reveal the book's range.

This slim and tightly woven volume will be of useful assistance to architects, planners, and administrators regardless of level of professional expertise. It is one of those rare books that not only deserves to be read from cover to cover but also should become a part of the user's own reference library.

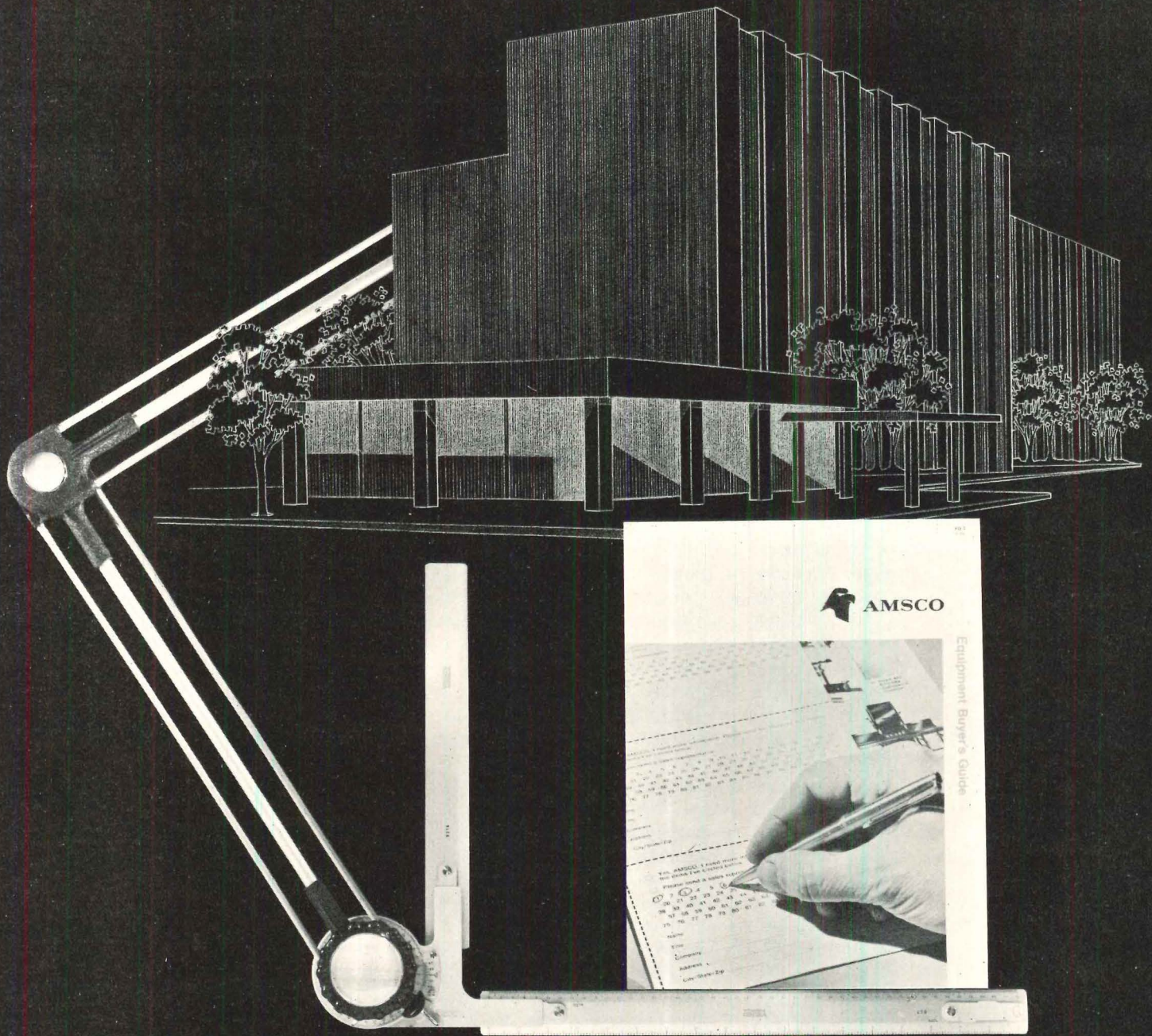
The Hospital announces itself in the subtitle to be more than it is in fact. This book is concerned almost exclusively with the ward or nursing unit and its development from the Greek Asklepieion to the 20th century. The authors focus in this historical analysis on four "ingredients of any unit"—namely, "the healthful environment it provides for the patients, the amount of privacy it allows patients, the extent to which it exercises supervision and control over patients, and the efficiency with which it can be operated." In addition, the authors draw what they consider a basic distinction (as difficult to understand as their comparison of hospitals and train stations) between "designed and derived historic hospital plans" which the reader finds translates to mean that only in the last 100 years have we been designing functional buildings. Part I of the book (pre-20th century) is the most interesting for its photographs, plans, diagrams, and excerpts from contemporary writings.

But, as the text moves into the 20th century, the chosen focus turns into an unfortunate aberration. This century is dealt with in forty-four pages, and is characterized as a period simultaneously preoccupied with patient privacy and observability. The remainder of the text, which totals just under 20 per cent of the pages, restates some of the well-known results of the Yale Studies in Hospital Function and Design, not solely concerned with the nursing unit. The book excludes, perhaps intentionally, a great number of significant buildings, people, and related architectural and sociological documents of this period in both the United States and in England. It seems somehow that the entire 20th century has been characterized largely in terms of work done in the 1930s in the United States and by only a modest sampling of European hospitals of this century. The social component of the analysis, at least partially visible in Part I, is now much less apparent. For a book which represents to be concerned with the social as well as architectural history of the hospital, these are significant shortcomings. The final part of the book, deals with progressive patient care which the authors feel is the direction of the future. They make the point that this health care future demands examination of a wide variety of care alternatives, not all of which currently exist,

continued on page 43

Michael Adams is director of the health services division of MDC Systems Corporation, and a doctoral candidate in architecture at Columbia University.

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but fail to recognize the key importance of growth and change as significant hospital planning issues and neglect to give any consideration whatever to health care and hospital planning in developing nations.

The Hospital is interesting enough as a partial historical overview of hospital development up to the 20th century. Its shortcomings beyond this point, however, are fatal to its stated purpose. The social and architectural history of the development of the hospital is an important field in which the contributions to date are fragmentary and much in need of a theoretical framework. *The Hospital* sheds little light into the dark corners of this field of inquiry. Check this one out of the local library.

Interior design

TEN BY WARREN PLATNER, with a foreword by Ezra Stoller; McGraw-Hill Book Company, New York, 1975, 196 pages, illustrations, \$25.00.

Reviewed by Jeanne M. Davern

This is an unfashionable book on an unfashionable subject.

Superb architectural photographs (most in color) and elegant drawings describe ten projects by Warren Platner, an architect who is one of the gifted designers of an era in which *non-design* has been elevated to the status of a formalistic ideal (one is tempted to say *non-ideal*).

Mr. Platner's concern as a designer is to create beautiful and evocative spaces for human use, and he goes about this task he has set himself with sensibility and taste (yes, *taste*). The brief segments of text describing the designer's intent reflect an unself-conscious conviction that the beauty of fine proportions, fine materials and fine workmanship can expand the horizons and uplift the spirits of ordinary people in their everyday lives.

An editorial note on the contents page tells us that "this book reflects intangibles—atmosphere, light and space, the effects of form and materials, the interaction of nature and man, and the concepts which bind these in physical and psychological reality." But the meaning of the book is more effectively suggested in the foreword by Ezra Stoller when he says: "None of the projects in this book are 'great monuments' in the accepted sense: no great civic buildings, no churches, no museums. Even the library for a small New England town is a modest one. Yet they are all important in that they show how the creative designer can bring us pleasure through his handling of the commonplace."

The ten projects include, besides the library, restaurants, offices, renovations (a club and a factory) and Mr. Platner's own house. The design moods range from serene to spectacular, and the photographs (by Ezra Stoller, Alexandre Georges and a photographer new to this reviewer, Susan McCartney) are superb.

Mr. Platner's focus is in *architectural* problems rather than *social* problems. So his spaces are for *people* rather than for the *poor*, the *rich* or the in-between. The new élitists will complain; but the rest of us (most of us??) may just hope his tribe will prosper—and increase.

Jeanne M. Davern is a free-lance architectural journalist and a former managing editor of ARCHITECTURAL RECORD.

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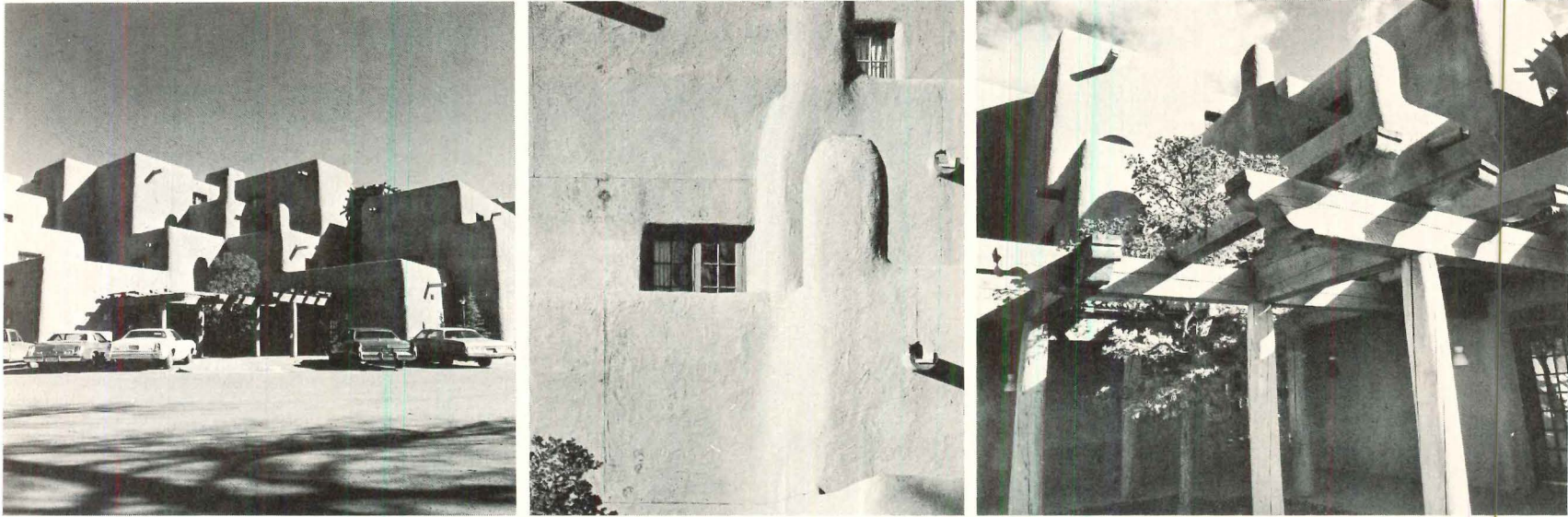
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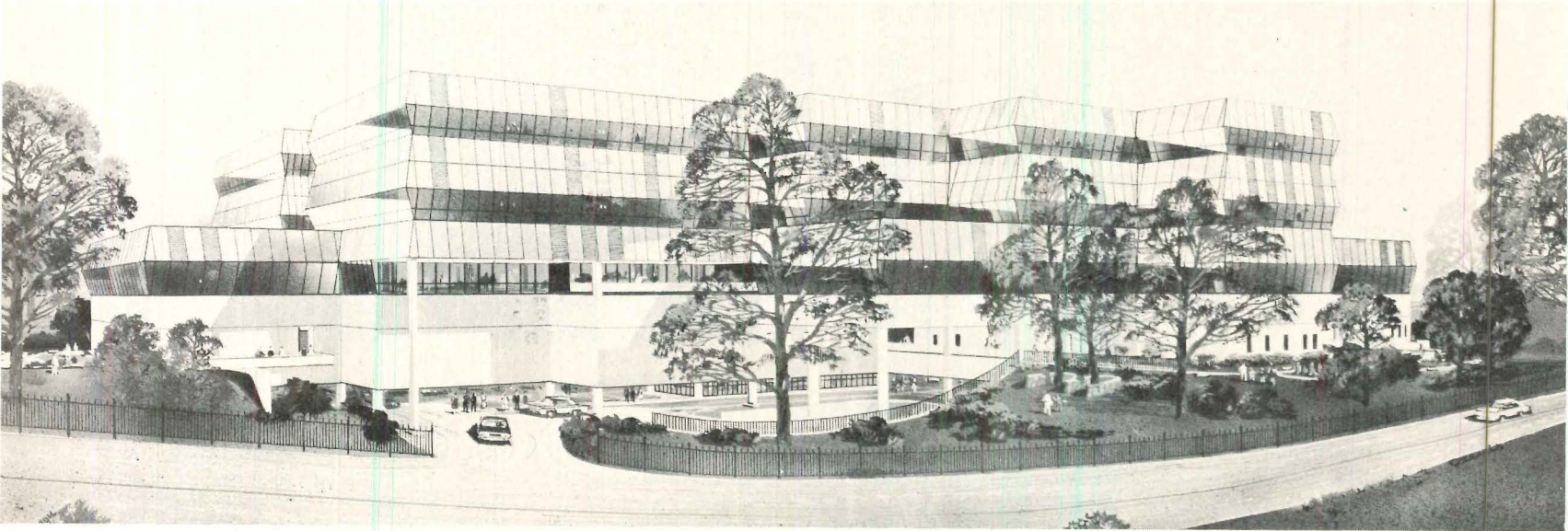
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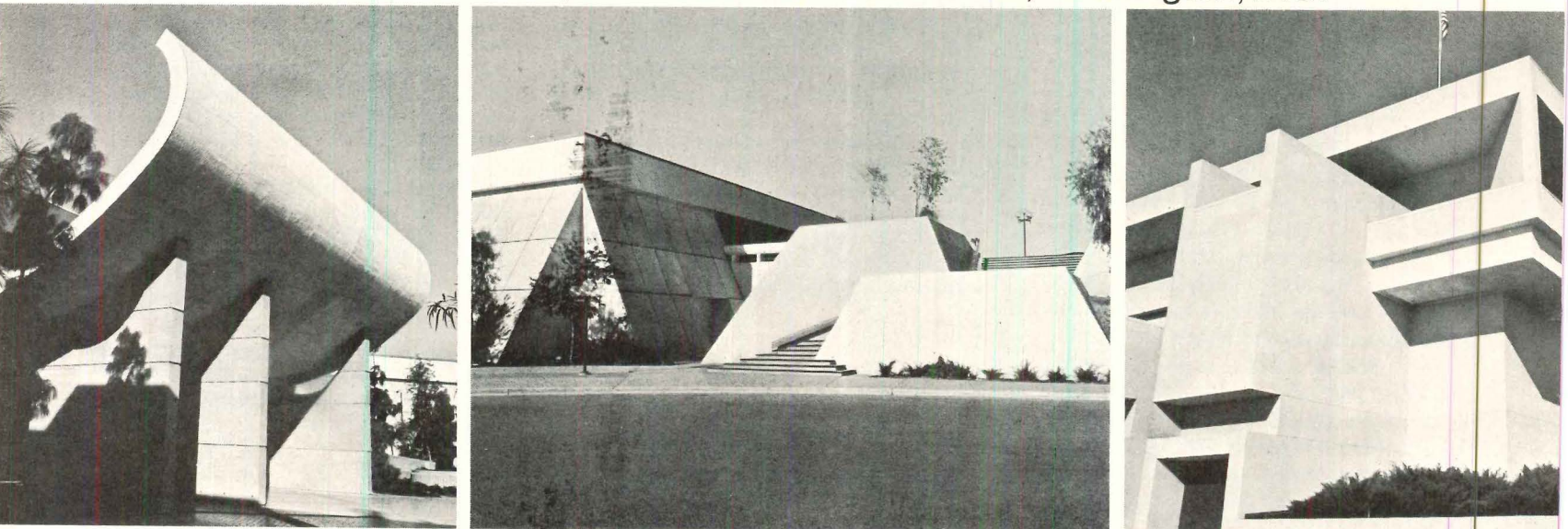
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Noel E. Kroncke, administrator, Children's Hospital National Medical Center, and Leo A. Daly III, vice president of the architectural firm of Leo A. Daly, agreed: "The Building Industry Consultant provided Children's Hospital with a preplanned telecommunications capability that is as adaptable as the building itself. The system will accommodate whatever future needs hospital management can envision."

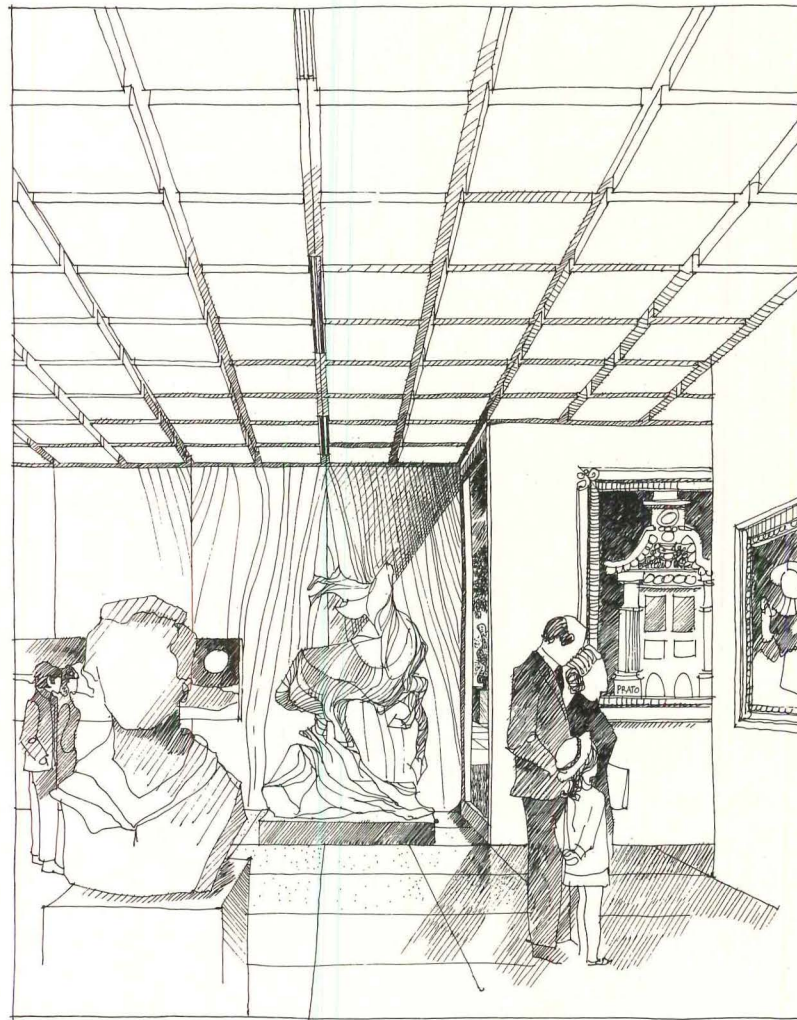
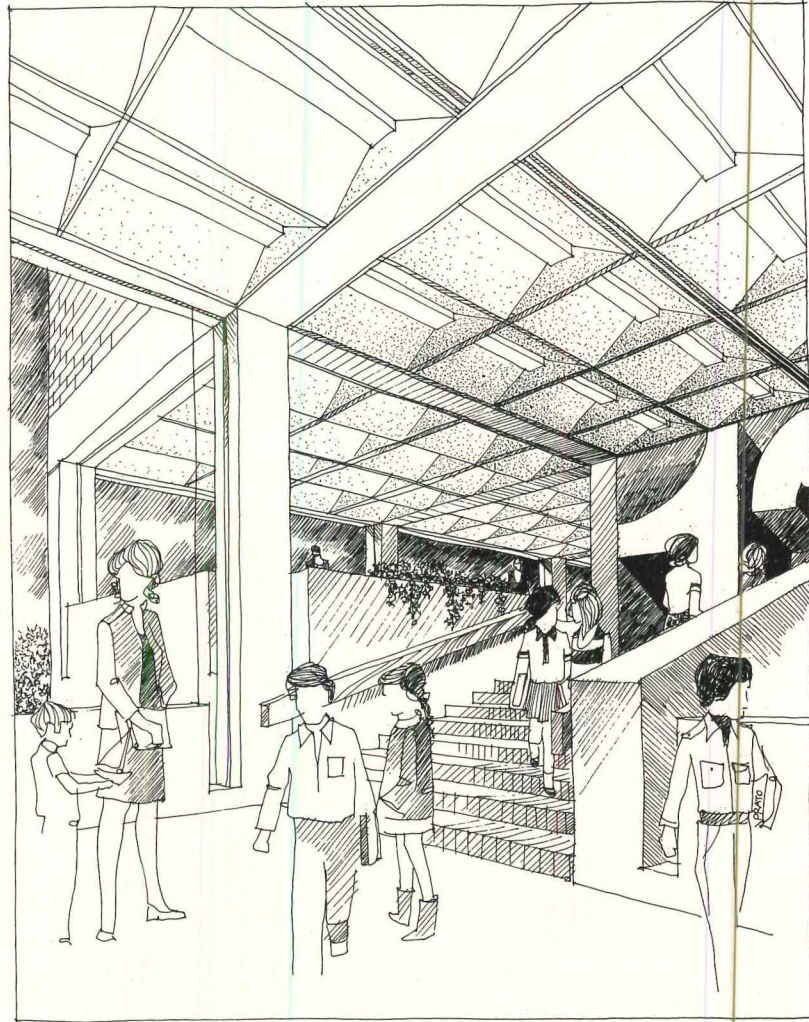
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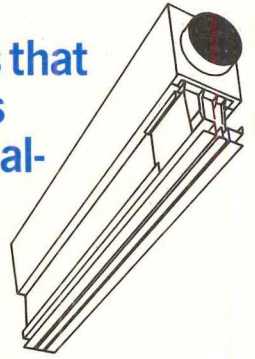
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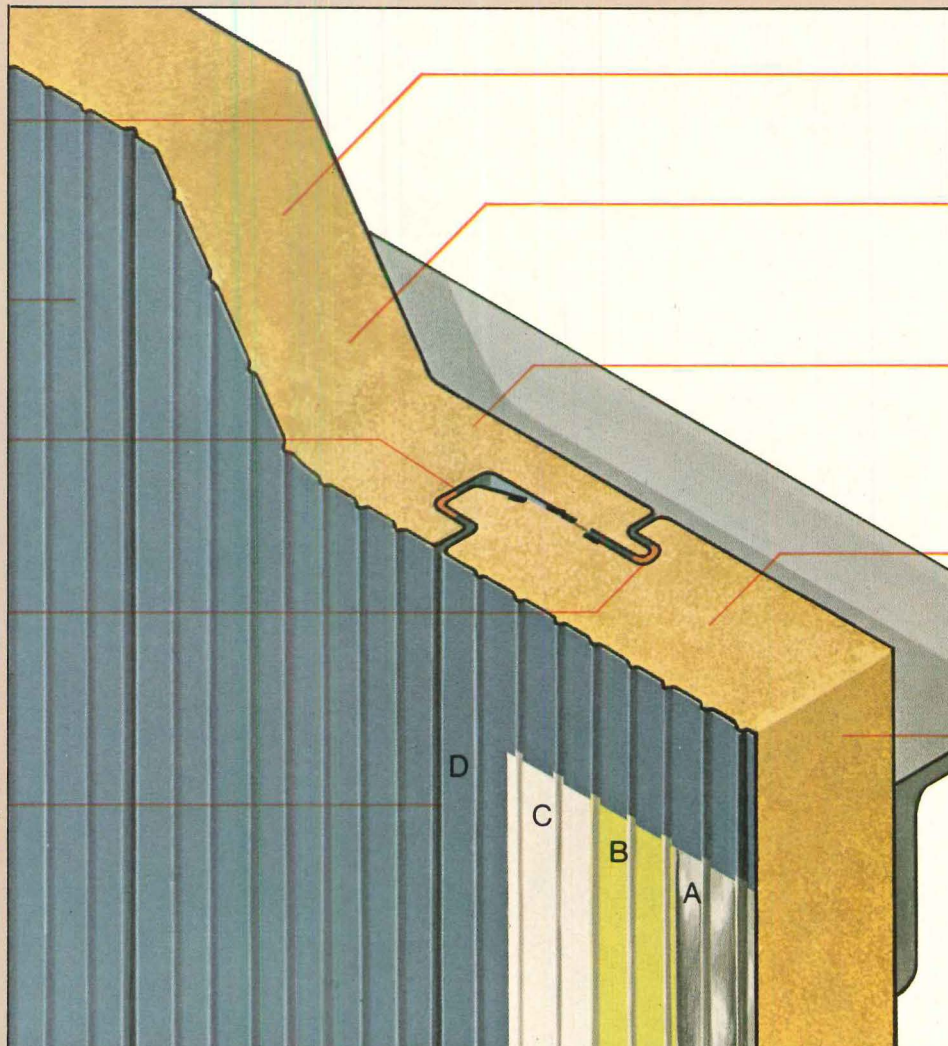
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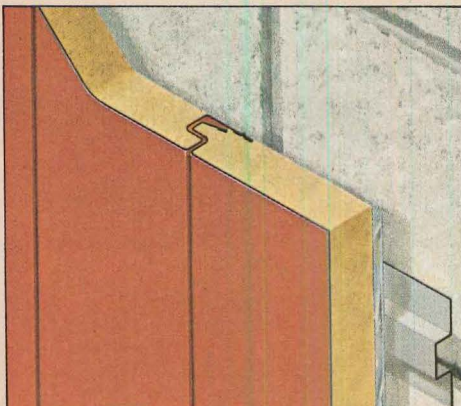
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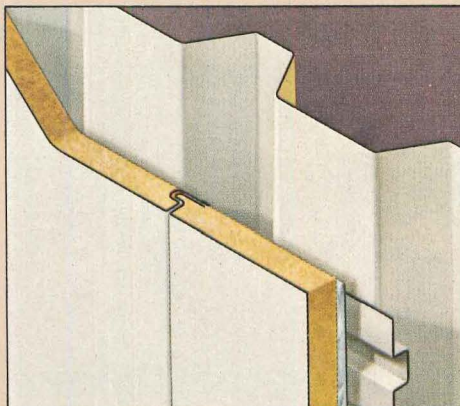
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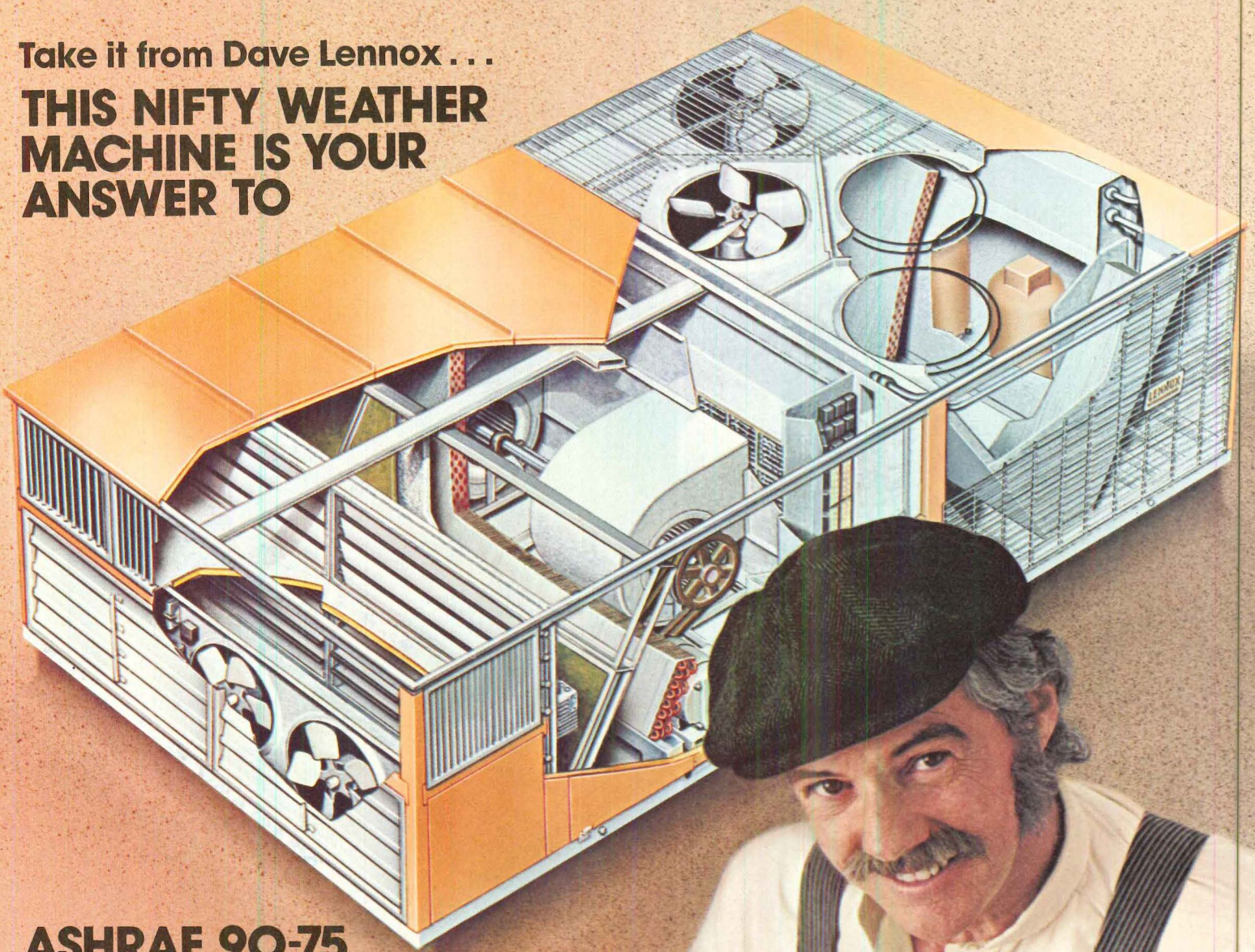


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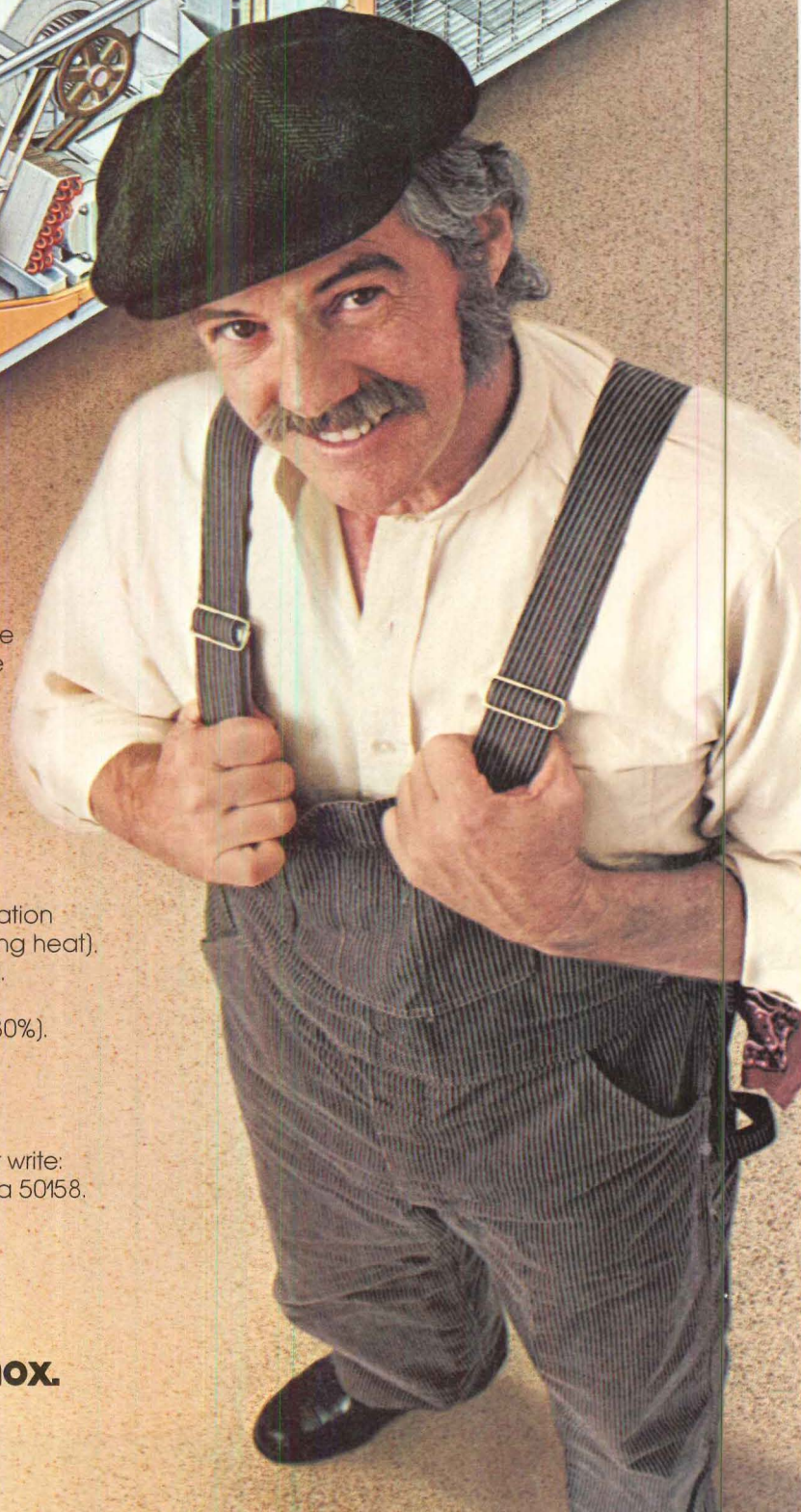
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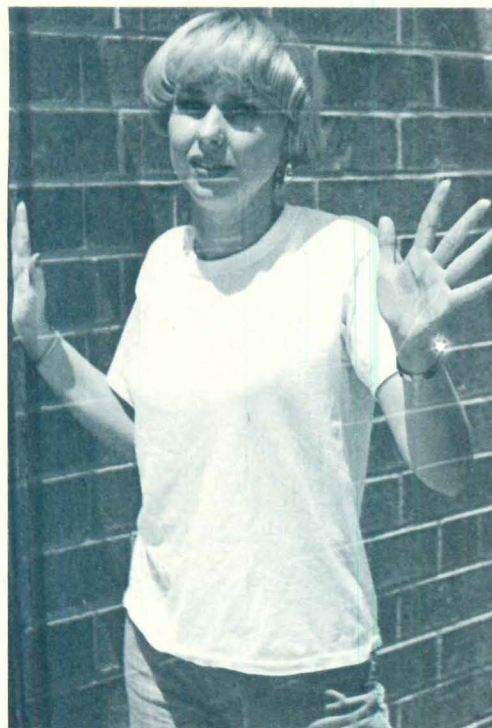
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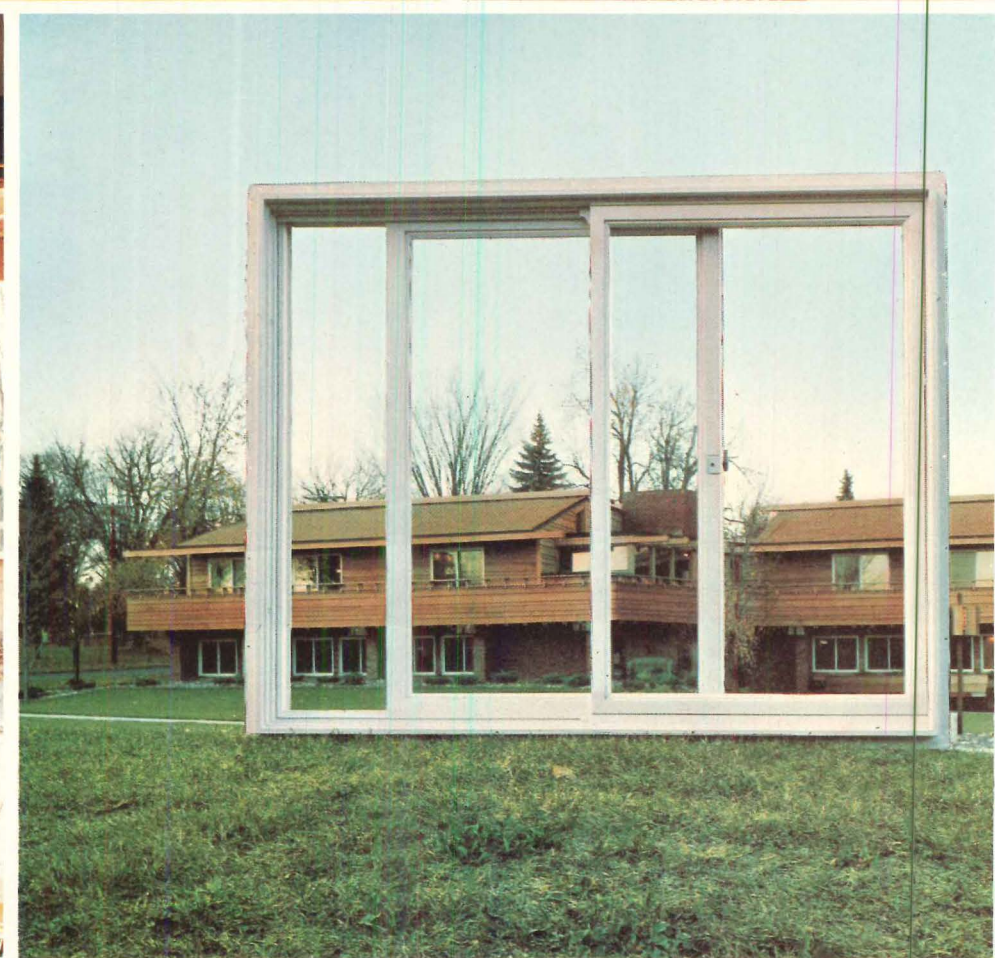
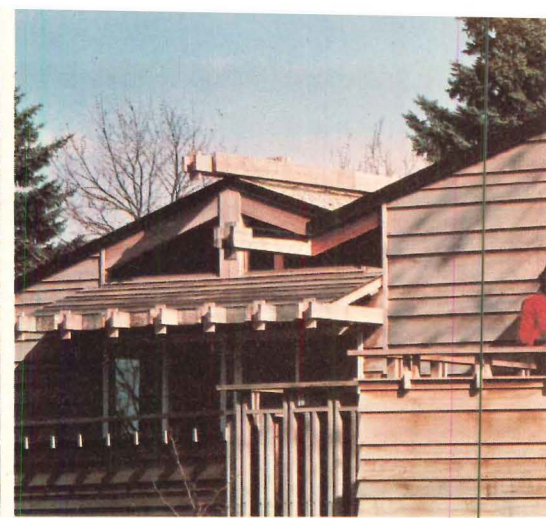


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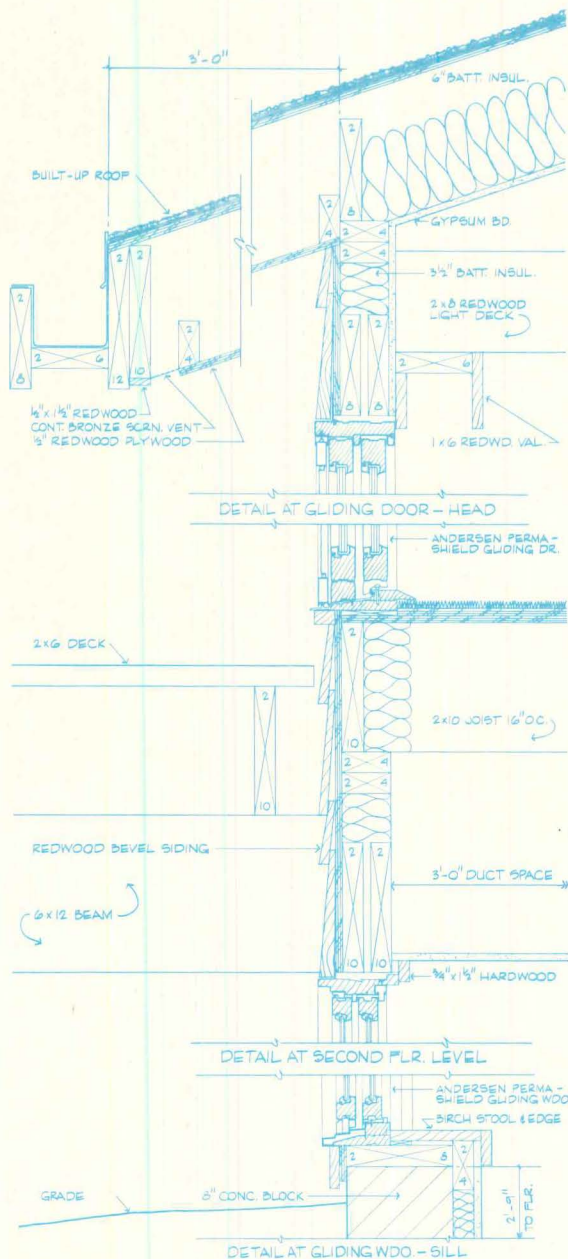
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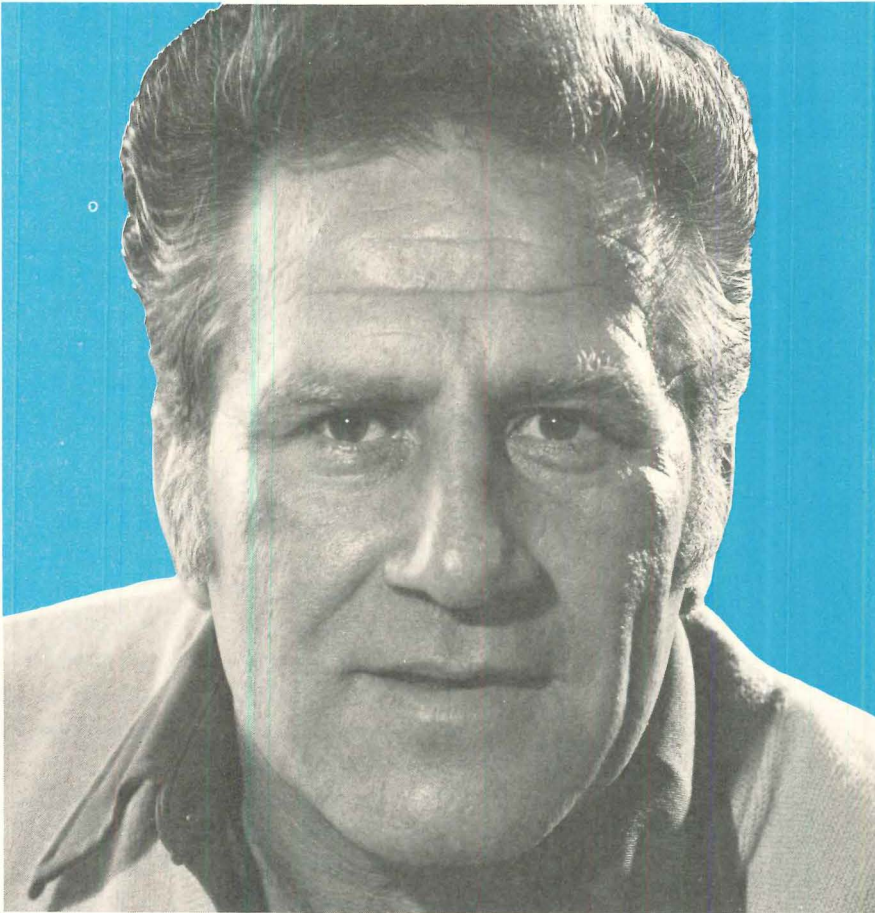
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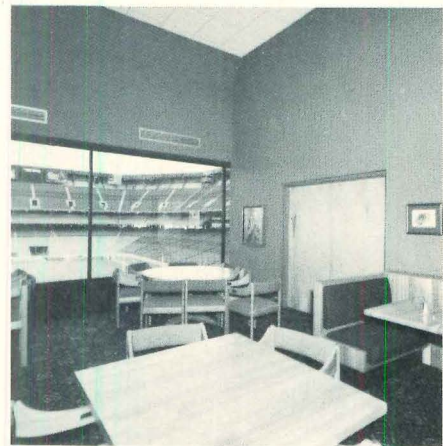
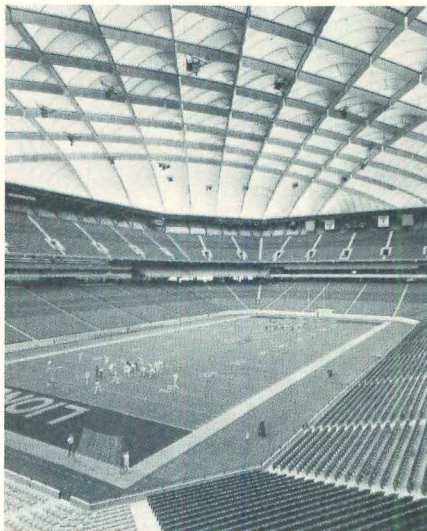
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Overlay drawing technique helps reduce errors and omissions

by Philip M. Jones, R.A.

In 1975 the New York office of Caudill Rowlett Scott initiated the use of overlay drawing for a \$10 million hospital project, with the primary goal being a potential reduction of coordination errors and omissions on construction documents. The project consists of additions and alterations to the Cape Cod Hospital (right) in Hyannis, Massachusetts.

Overlay drawing simply involves drawing on a separate sheet, or series of sheets, laid over a basic drawing—rather than working directly on a single, original sheet. The base drawing and its overlays are then combined into a composite reproduction drawing using photographic techniques. A base drawing is produced whenever another trade, or discipline, requires design and construction information as a reference for its work.

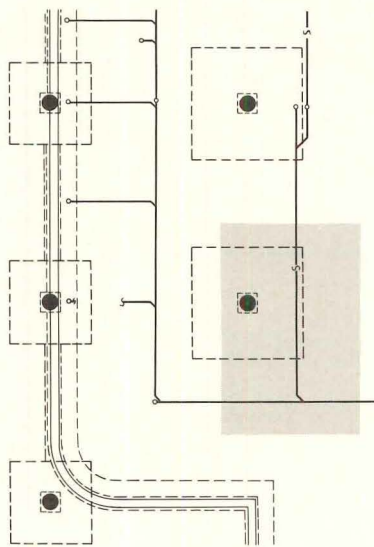
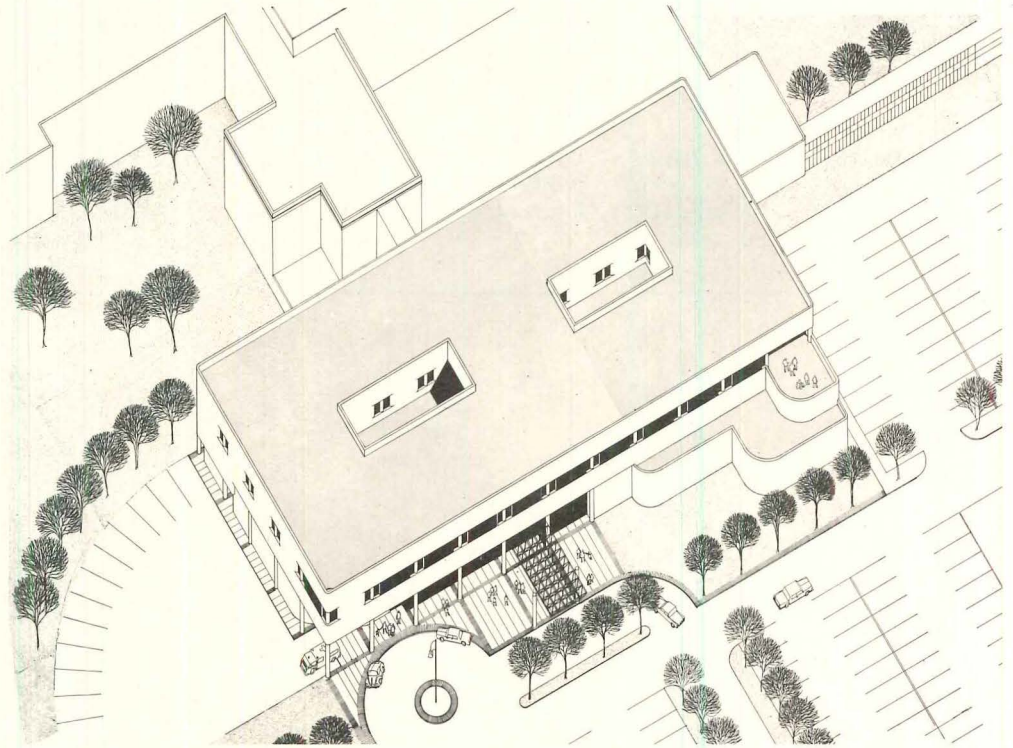
Overlay drawings are treated as line prints and information applicable only to a particular trade is dominant on the final composite print. This fact, plus the fact that photo-reproduction affords excellent print quality renders a final composite, which clearly and effectively communicates the data intended.

The overlay reproduction process has been used within the graphic arts and mapping industries for years, but because of its dependency on photographic processing, it has not been widely used by architects and engineers—who have long been comfortable with established production methods, techniques and materials based on the economies of the direct diazo reproduction processes.

However, in the mid-1960s, the wide availability of a photo-sensitized translucent polyester drawing film allowed the duplication by camera of any original drawing onto a sheet which is dimensionally stable, which has a matte surface suitable for drawing, which can be easily erased, and which is transparent, permitting reproduction on standard diazo equipment in the office.

Two important advantages over conventional reproduction processes

The flexibility of the overlay drawing system allows drawings of any one discipline to be laid over any other for direct visual coordination and checking. Costly errors and omissions become obvious during production rather than during construction. (See the example above right. Overlays reveal a plumbing line indicated at a footing location.) Disciplines are



forced to solve problems such as pipe opening locations, ceiling fixture locations, etc., because the final composite print can be a combination of the final drawing of one discipline with that of another.

Further, the system loosens restrictions on architectural-plan changes once the base drawings have gone to consulting engineers. Consultants never draw directly on a sheet that also contains the architectural plan; therefore, the architectural base plan need not be completely developed before consultants begin

drawing on their overlay sheets. This relieves the normal pressure on architects to finalize all plan areas of a building early in design development or construction documents phase—and allowed CRS to successfully combine the design development and pricing phases for the Cape Cod Hospital project (as described below).

Consultants are also forced to revise their drawings when architectural-plan changes are made because their final drawing is printed as an overlay over the revised base plan; revisions not incorporated are obvious on the final composite.

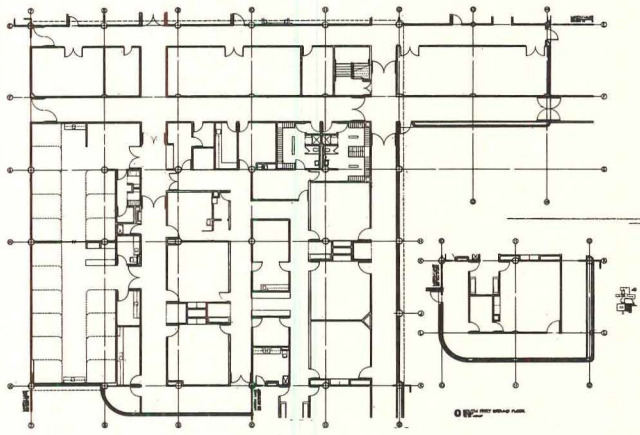
Consulting engineers are the major beneficiaries in terms of drawing-time savings, because they need never draw an architectural line, including the incorporation of architectural plan revisions on their drawings. All plans and revisions are drawn only once on the base drawing. This fact also allows changes to be accommodated easily, by all disciplines, and later on in any particular production phase.

The drawing organization for the Cape Cod project involved the use of three basic photographic combinations of overlays (see examples overleaf):

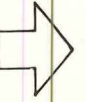
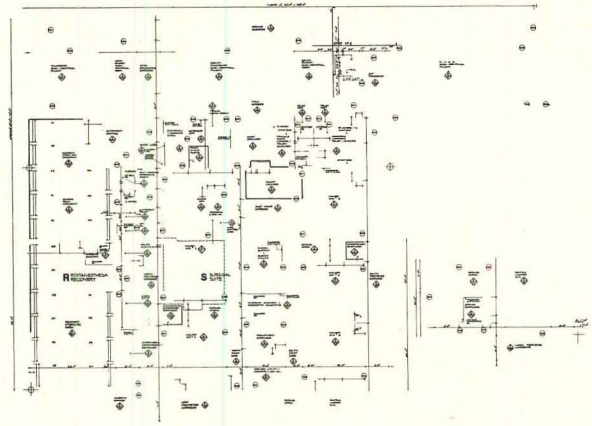
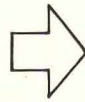
1. *Line base drawing.* For use by architectural disciplines, a base drawing, printed as

continued on page 58

1

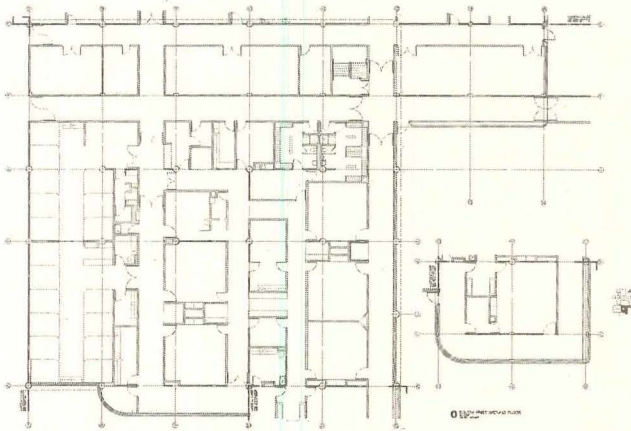


This typical base drawing contains the column grid lines, fixed building lines like partitions and walls, circulation elements and fixed equipment—information useful to other disciplines. It will be used in the two examples below.

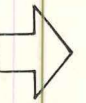
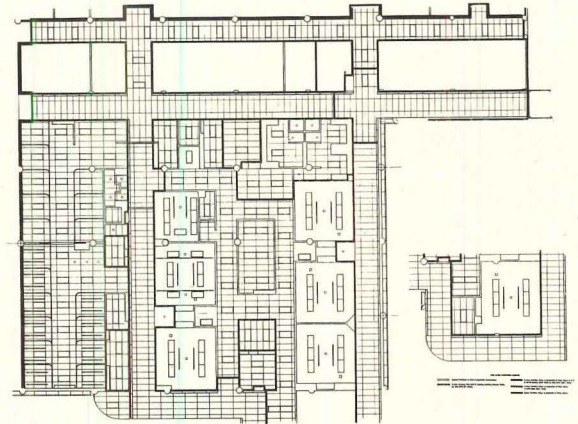
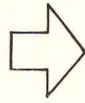


As a separate overlay, general architectural notes which are usually produced late in production phases did not conflict with notes or drawing of other design disciplines. For instance, the mechanical engineer's duct drawings did not overprint the architect's notes.

2

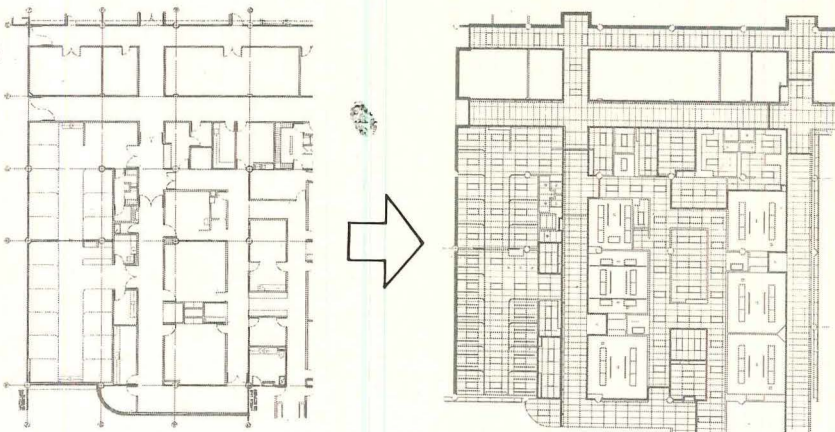


This base drawing is the same drawing shown above in example 1. It has been screened to 50 per cent because the architect merely wished the information to be used by the contractor as a reference. In the composite (right), the reflected ceiling plan is emphasized.

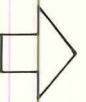
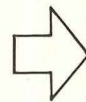


This ceiling grid plan overlaid on the screened base drawing also shows fire-rated partitions and walls, which the architects in this case chose to emphasize here rather than on floor plans. Performing double-duty, this drawing will be used again in example 3.

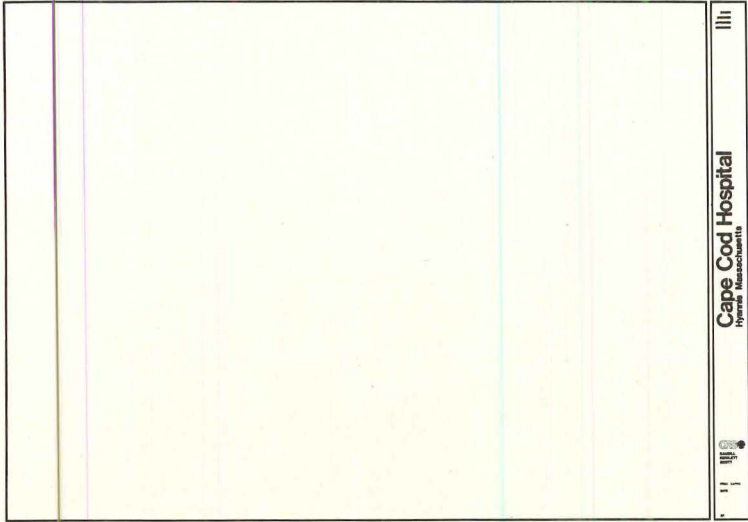
3



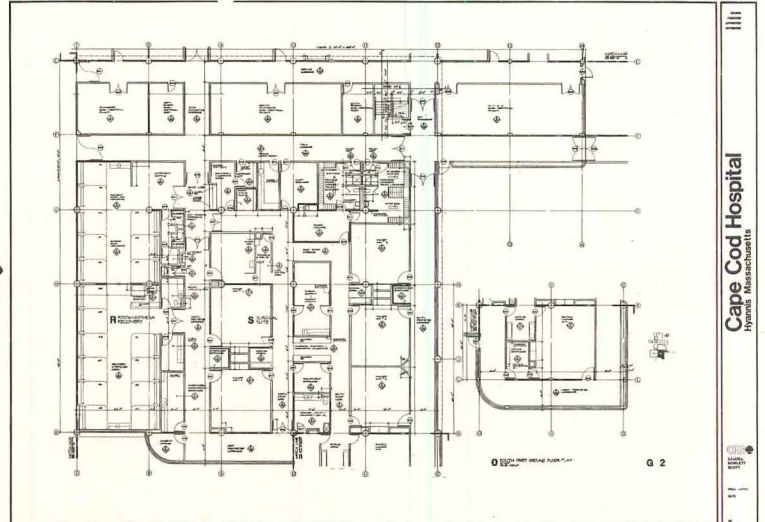
The screened base drawing used in example 2 is combined with a screened ceiling grid plan to form a new base drawing for the electrical engineer's lighting plan. A 50 per cent screen is generally specified.



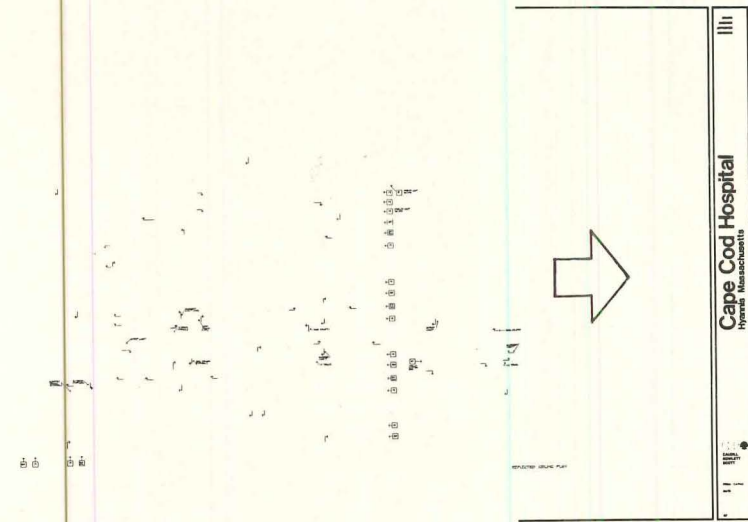
Illustrating another advantage of overlay drawing, this drawing by the electrical engineer indicates which lighting fixtures will operate as emergency lighting. This will be helpful in locating the emergency lighting circuitry in the next overlay.



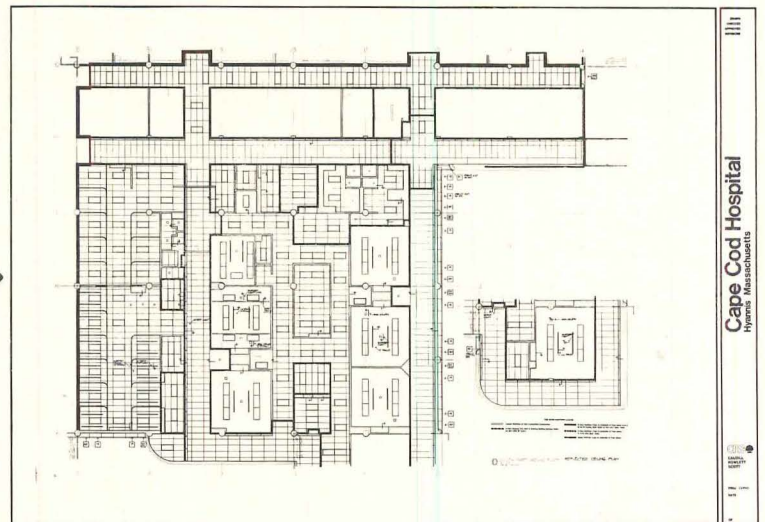
A drafting-time saving can be achieved when a separate "format" overlay sheet is used to apply the border/title block to drawings. Project dates, identification or other notations normally hand-lettered need be applied only once to the format sheet.



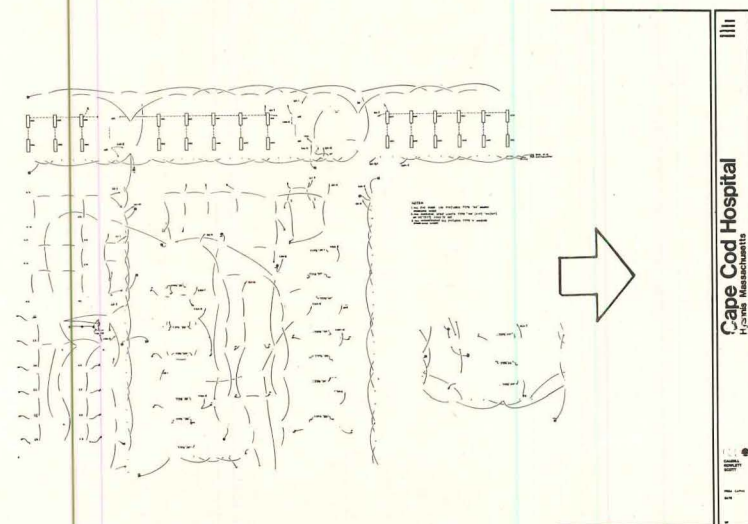
A composite drawing such as this one for the general contractor shows all lines of equal value because all portions are important contractor information. It is a conventional floor plan, but one well coordinated and capable of excellent reproduction.



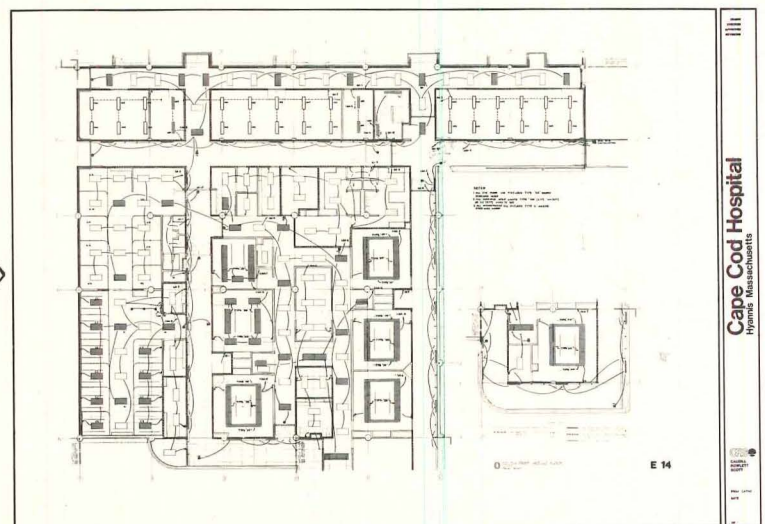
Because the ceiling grid plan at left itself served as a base drawing for the electrical lighting plan, mechanical duct distribution and fire sprinkler plans, it could remain free of architectural notes. They were added when required with this overlay.



The composite again is a conventional-appearing reflected ceiling plan, but the dominant information for the general contractor is the ceiling grid, including light fixtures and architectural notes showing materials, construction details, etc.



An important benefit of this drawing technique is the elimination of repetitive drawing. In preparing the wiring diagram, the electrical engineer did not redraw lighting fixtures, which have already been supplied on the architect's ceiling grid base drawing.



The final electrical lighting plan is conventional except for the added emphasis on information needed by the electrician. The ceiling and floor plans are subdued, on the final plan only as a reference. Note the clear indication of emergency lighting.

continued from page 55

solid line work (not screened), was simply combined with a single overlay drawing to make a final composite print containing no screens. Drawing types processed in this fashion included the basic site plan and the basic building plans, combined with their corresponding site plan and architectural floor plan overlays. The basic site plan included only property line, building and pavement data. The basic building plan included only exterior and interior wall lines, column grid identification lines, fixed equipment requiring mechanical services, a key plan appropriately marked for each drawing, and common circulation elements such as duct shafts, stairs and elevators. Overlays included general construction notes and material indications, dimensions and detail reference marks.

2. *Halftone single base drawing.* The base drawing image was printed as a halftone (screened 50 per cent) print and combined with overlays. The basic building plans were combined with the following overlay plans: structural framing; reflected ceiling; medical equipment casework; pneumatic tube routing; food services equipment; mechanical piping; electrical power and plumbing. The site demolition plan overlay was combined with a screened print of the site survey; the building demolition plans for all disciplines were printed over screened prints of existing building plans, and the site paving, grading, electrical and landscaping plans were overlaid on the basic site plan.

3. *Halftone double base drawings.* An overlay for one discipline was used as an additional base drawing for another discipline primarily to facilitate coordination between the two. Notes, dimensions and detail reference marks for the original discipline were placed on an additional "notes" overlay for that print. For example, the architectural reflected ceiling grid layouts were included when printing the mechanical duct distribution plans, the fire protection sprinkler plans, and the electrical lighting plans. The structural footing and foundation plans were included with the plumbing underground piping plans; and the site grading plan was included with the site utility plan.

Before actual drawing for the Cape Cod Hospital began, several basic decisions were made. Because plans of all disciplines (civil, structural, mechanical, electrical and plumbing) are drawn as overlays on a base architectural plan, a common drawing scale of 1/4 inch per foot was established. Sheet layouts for the base architectural plans were organized to meet the requirements of each individual discipline. Where the large drawing scale dictated that a floor plan be broken to occur on two or more sheets, placement of the parts on the sheet were organized to allow visual overlay of identical parts for succeeding floor levels, permitting easy coordination of vertical building elements such as piping, ductwork and structural openings. The plans were also arranged to facilitate photographic or scissor matching of the broken parts. It was these preliminary plan layouts that established the sheet size—rather than the restrictions of standard drawing sheets preprinted with title block.

Avoiding the cost of preprinting blank drawing sheets, or stick-on title strips, for project and drawing identification, a single clear film positive print was made photographically from a paste-up original, which included the sheet border lines (see example 1, page 56). This one film positive was used repeatedly as an additional overlay for all drawings; therefore, only one sheet required dating, rather than each individual sheet, when printing. It was also decided before drawing that all final prints would be reduced and issued at a plan scale of 1/8 inch per foot, or one-half the original size. This decision was made in agreement with the construction manager, and resulted in savings of photographic and diazo print costs. Therefore, all drawing was executed with reduction in mind.

Establish a good printer relationship early

A procedure for instructing the printer on assembling the overlay drawings, which printing process to use and which sheets should be halftones must be established in agreement with the printer. Photo-reproduction printing turnaround time is greater than that for diazo printing. Based on the scheduled project deadlines, and the quantity and type of drawings to be photographed, an early agreement should be made with the printer regarding printing turnaround time, including a commitment to print during non-working hours whenever necessary.

Also, a reliable and efficient system for registering the overlay drawings is necessary for both the draftsman and the printer. Registration can be achieved visually through the use of marks, or targets, placed on the drawings. Sheets can be secured with tape; however, this technique is time-consuming and is only as accurate as the eye, and patience, of the draftsman and/or printer will permit. The pin registration system, also a product of the graphic arts industry, eliminates these problems. A metal strip with mounting pins along it is inserted in prepunched holes in the film. All drawing and print film is punched before drawing or printing occurs; therefore the placement of the overlays onto the pinbar and over the base drawing(s) always assures quick, automatic and positive registration.

Costs prohibit photographic reproduction for the large number of progress, check, or review prints required throughout the production process, but up to four overlay sheets can be printed with reasonably good quality on a standard diazo machine. Precise registration of the overlays is not possible due to the roll process; however, for internal use, the degree to which the overlays are out of register is not objectionable. For external review prints, polyester film suitable for exposure on diazo equipment can be exposed economically in a vacuum frame with perfect registration.

Because all disciplines must simultaneously work on sheets laid over the same basic drawings, it is necessary to print duplicate base drawings without distortion. This is achieved by making polyester clear film prints (matte drawing surface is not required) exposed in a vacuum frame. Where exact regis-

tration is not critical, ammonia processed polyester sepia prints can be used economically.

The disadvantages and advantages of overlay drawing

The negative aspects of overlay drawing are mostly related to one-time personnel problems, and costs. Re-education is necessary—for all individuals involved must be made to understand the intent of the system. Any drawing-time savings—especially for the architect—that can be realized with the use of overlay techniques are probably sacrificed with initial use of the system. First-time mistakes are inevitable.

One first-time difficulty experienced on the Cape Cod Hospital project occurred with the handling of large-size sheets. Having based the plan layouts on a drawing scale of 1/4 inch, it was necessary to use a 36- by 54-inch sheet size to effectively accommodate the building plan parts at this large scale. Overlay drawing increases the quantity of sheets required, and the day-to-day handling and storage of oversized sheets was an inconvenience.

Another first-time difficulty experienced at CRS was the placement of lettering notations on the overlay drawings. Careful coordination of notes on the overlay is necessary to prevent an overlap of information being placed on the base drawing.

The use of photography as a reproduction medium for construction drawings offers several advantages. Print quality alone is improved by photographic techniques of tone and contrast. The quality of reduced drawings is enhanced, enabling them to be used by contractors for bidding and construction purposes. Because original drawings are not run through a diazo processor, the use of applique graphic aids such as tape and press-on symbols, normally not used because of their inability to withstand the heat of the diazo machines, can be used effectively as time-savers where photo reproduction is involved.

It is also possible to reproduce the drawings in color with offset printing by exposing offset plates directly from individual overlay sheets. The proper use of color can greatly enhance the clarity of drawings where linework is complex by differentiating the work of one trade.

Not only is control of drawing quality improved, but a tighter control of production schedules is possible as a result of much preplanning. The development of each discipline's drawing must parallel that of another where composites of the two are to be made.

These advantages—reduction of errors and omissions, ability of consultants to begin drawing early, improved print reproduction quality and production scheduling—all are ones that directly benefit a client. In fact, certain government projects are increasingly requiring the overlay system primarily because of the ability to reproduce color offset prints.

Philip Jones, formerly an associate in the New York office of Caudill Rowlett Scott, was senior project architect and manager of architectural production during the design development and production phases of the Cape Cod Hospital. The drawings for this project, shown on pages 56-57, were reproduced and provided by Reprostat, New York City.

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Chairman
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Building type: warehouses

Building system	Average		High average	
	\$/SF	%TOT	\$/SF	%TOT
Foundations	\$ 1.59	6.9	\$ 1.83	6.3
Substructure	1.67	7.2	1.47	5.1
Superstructure	4.92	21.2	5.25	18.2
Exterior closure	4.63	20.0	7.51	26.0
Roofing	1.42	6.1	1.12	3.9
Partitions	0.93	4.0	1.43	5.0
Wall finishes	0.34	1.5	0.70	2.4
Floor finishes	0.41	1.8	0.59	2.0
Ceiling finishes	0.21	0.9	0.39	1.4
Specialties	0.21	0.9	0.18	0.6
Conveying systems	0.24	1.0	0.80	2.8
Plumbing	0.71	3.1	1.25	4.3
Fire protection	0.29	1.3	0.26	0.9
Hvac	1.77	7.6	1.68	5.8
Electrical	2.49	10.7	2.65	9.2
General conditions	1.13	4.9	1.49	5.2
Equipment	0.22	0.9	0.25	0.9
Gross building cost	\$23.18	100%	\$28.85	100%
Foundations	\$ 1.24	4.1	\$ 1.51	4.1
Substructure	1.55	5.2	1.14	3.1
Superstructure	4.18	14.0	4.65	12.7
Exterior closure	4.03	13.5	4.81	13.1
Roofing	1.18	3.9	1.06	2.9
Partitions	1.92	6.4	1.62	4.4
Wall finishes	0.82	2.7	1.25	3.4
Floor finishes	0.48	1.6	0.72	2.0
Ceiling finishes	0.56	1.9	0.80	2.2
Specialties	0.21	0.7	0.15	0.4
Conveying systems	0.0	0.0	0.0	0.0
Plumbing	0.44	1.5	0.52	1.4
Fire protection	0.14	0.5	0.33	0.9
Hvac	2.01	6.7	3.62	9.9
Electrical	3.18	10.6	3.86	10.5
General conditions	1.33	4.4	1.90	5.2
Equipment	6.67	22.3	8.72	23.8
Gross building cost	\$29.94	100%	\$36.66	100%

Metropolitan area	Cost differential	Current Indexes				% change last 12 months
		non-res.	residential	masonry	steel	
U.S. Average	8.5	539.1	506.4	532.6	518.9	+ 9.1
Atlanta	7.5	611.9	577.0	604.8	593.2	+ 3.2
Baltimore	8.5	622.2	585.0	610.5	596.2	+13.1
Birmingham	7.3	476.1	442.8	463.4	456.9	+ 6.7
Boston	9.0	544.7	514.7	551.7	530.3	+10.6
Buffalo	9.1	577.6	542.4	569.6	552.8	+ 6.5
Chicago	8.3	570.2	542.2	551.9	544.0	+ 3.9
Cincinnati	8.8	612.8	576.7	602.5	587.2	+16.3
Cleveland	9.0	588.9	554.1	579.1	562.2	+12.0
Columbus, Ohio	8.2	524.9	493.0	521.4	505.4	+ 3.2
Dallas	7.9	512.7	500.5	506.1	494.9	+ 3.6
Denver	8.4	588.8	553.9	584.0	571.0	+ 9.4
Detroit	9.8	624.0	595.4	633.4	609.1	+10.9
Houston	7.4	507.2	476.3	496.1	487.3	+11.6
Indianapolis	7.8	481.7	453.4	474.2	463.8	+ 8.2
Kansas City	8.7	532.6	503.3	524.5	510.3	+ 8.9
Los Angeles	8.5	614.4	561.7	598.7	584.9	+ 9.6
Louisville	7.6	513.7	482.4	501.7	491.9	+ 6.9
Memphis	8.4	546.9	513.5	528.6	517.4	+ 7.5
Miami	7.9	597.2	569.0	595.2	586.4	+17.7
Milwaukee	8.7	618.6	580.9	614.1	593.4	+ 9.5
Minneapolis	8.9	556.4	523.5	549.5	536.7	+ 6.7
Newark	9.0	500.7	470.2	497.6	484.5	+ 2.5
New Orleans	7.5	531.6	501.8	523.4	511.6	+12.8
New York	10.0	553.8	515.0	544.1	532.6	+ 2.9
Philadelphia	9.1	590.3	562.4	591.6	572.9	+ 9.4
Phoenix (1947 = 100)	8.2	317.0	297.7	313.1	304.9	+ 8.6
Pittsburgh	8.9	516.1	485.6	515.9	498.7	+ 7.0
St. Louis	8.7	551.8	520.9	546.8	534.4	+ 9.1
San Antonio (1960 = 100)	7.6	215.7	203.3	210.9	206.5	+14.4
San Diego (1960 = 100)	8.7	251.5	236.2	249.1	247.5	+19.9
San Francisco	9.6	809.8	740.2	803.2	776.8	+10.3
Seattle	8.6	541.6	484.8	532.0	514.0	+11.3
Washington, D.C.	8.4	525.9	493.8	518.3	503.4	+ 7.7

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

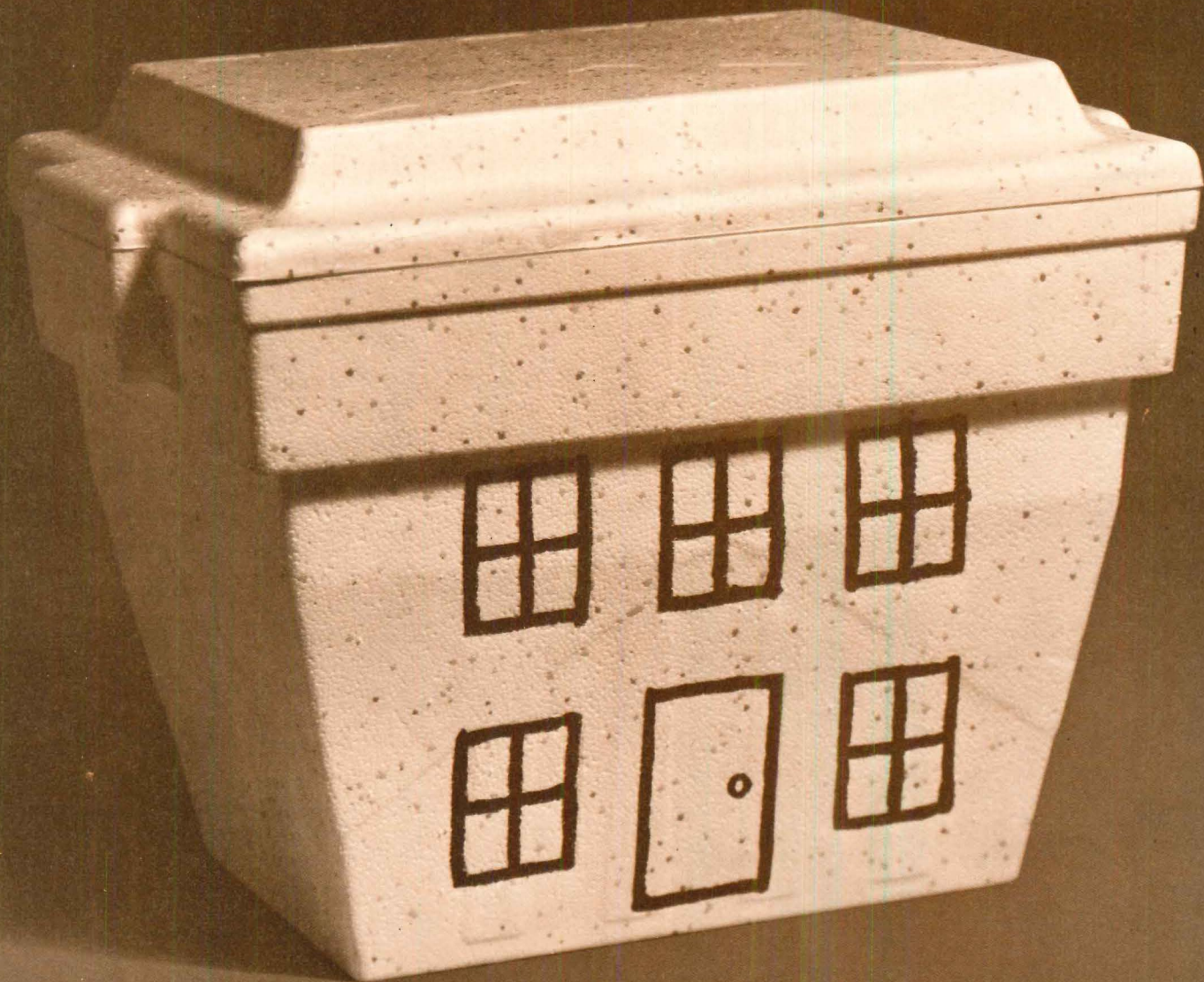
Tables compiled by Dodge Building Cost Services, McGraw-Hill Information Systems Company

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

1941 average for each city = 100.00

Metropolitan area	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975 (Quarterly)				1976 (Quarterly)			
										1st	2nd	3rd	4th	1st	2nd	3rd	4th
Atlanta	329.8	335.7	353.1	384.0	422.4	459.2	497.7	544.8	575.0	583.8	585.3	597.2	598.7	602.6	604.1		
Baltimore	280.9	295.8	308.7	322.8	348.8	381.7	420.4	475.5	534.3	538.7	540.2	579.6	581.1	609.7	611.2		
Birmingham	270.7	274.7	284.3	303.4	309.3	331.6	358.3	402.1	421.2	438.6	440.1	447.4	448.9	469.0	469.5		
Boston	262.0	265.7	277.1	295.0	328.6	362.0	394.4	437.8	462.5	484.1	485.6	511.7	513.2	535.7	537.2		
Chicago	320.4	328.4	339.5	356.1	386.1	418.8	444.3	508.6	529.6	539.2	540.7	558.6	560.1	560.3	561.8		
Cincinnati	278.3	288.2	302.6	325.8	348.5	386.1	410.7	462.4	500.1	518.0	519.5	549.1	550.6	602.9	604.4		
Cleveland	300.7	303.7	331.5	358.3	380.1	415.6	429.3	462.2	509.5	516.6	518.1	529.5	531.0	578.7	580.2		
Dallas	266.9	270.4	281.7	308.6	327.1	357.9	386.6	436.4	477.9	488.3	489.8	498.1	499.6	506.1	507.6		
Denver	297.5	305.1	312.5	339.0	368.1	392.9	415.4	461.0	510.0	530.4	531.9	552.1	553.6	580.3	581.8		
Detroit	296.9	301.2	316.4	352.9	377.4	409.7	433.1	501.0	538.7	554.4	555.9	596.0	597.5	615.1	616.6		
Kansas City	261.0	264.3	278.0	295.5	315.3	344.7	367.0	405.8	444.9	481.1	482.5	507.6	509.1	523.8	525.3		
Los Angeles	302.7	310.1	320.1	344.1	361.9	400.9	424.5	504.2	531.8	546.7	548.2	592.6	594.1	599.1	600.6		
Miami	284.0	286.1	305.3	392.3	353.2	384.7	406.4	447.2	485.5	499.5	501.0	557.4	558.9	588.1	589.6		
Minneapolis	289.4	300.2	309.4	331.2	361.1	417.1	412.9	456.1	488.6	513.9	515.4	536.5	538.0	548.3	549.8		
New Orleans	259.8	267.6	274.2	297.5	318.9	341.8	369.7	420.5	442.1	463.5	465.0	493.2	494.7	522.8	524.3		
New York	304.0	313.6	321.4	344.5	366.0	395.6	423.1	485.3	515.3	524.1	525.5	532.0	533.5	539.4	540.9		
Philadelphia	286.6	293.7	301.7	321.0	346.5	374.9	419.5	485.1	518.5	531.5	533.0	566.0	567.5	581.8	583.3		
Pittsburgh	271.1	275.0	293.8	311.0	327.2	362.1	380.3	424.4	465.6	475.2	476.7	508.0	509.5	508.5	510.0		
St. Louis	288.3	293.2	304.4	324.7	344.4	375.5	402.5	444.2	476.7	497.5	499.0	527.4	529.5	542.7	544.2		
San Francisco	386.0	390.8	402.9	441.1	465.1	512.3	561.0	632.3	672.5	716.0	717.5	751.8	753.3	790.1	791.6		
Seattle	275.0	283.5	292.2	317.8	341.8	358.4	371.5	424.4	450.2	472.5	474.0	513.6	515.1	525.9	527.4		

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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expandable polystyrene, in accordance with ARCO Polymers recommended procedures, meets or exceeds the requirements of U.S.A. Federal Specification HH-1-524B. Its use as non-structural exterior sheathing has been approved by F.H.A. in their Materials Release No. 808, also by the S.S.B.C. in their report No. 7431-74. For more information, contact ARCO Polymers, Inc., Dept. 1006, 1500 Market Street, Philadelphia, PA 19101.

CAUTION: The foamed polystyrene described in this advertisement is combustible and should not be exposed to open flame or other ignition sources.

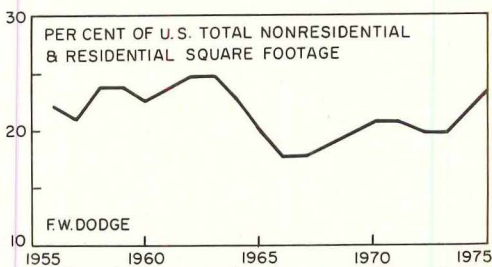


ARCO/Polymers, inc. 
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The West: Boom, bust...boom!

Heavy reliance on the defense industry has subjected the Western economy to a boom and bust cycle dragging the region's share of construction along with it. Over the last ten years, the Western region's share of total building construction has been slowly emerging from the bust phase (see chart) and this is likely to continue in the future.



Two important developments loom large on the Western horizon. These are a big Federal defense budget, and the flow of Alaskan pipeline oil to the West Coast market. Both factors are expected to sustain the region's share of total building construction around the 25 per cent level over the next five years, at least, representing an increase of about 5 percentage points over the depressed level of the late sixties and early seventies.

Residential construction boosted the region's share of total building to a peak of 25 per cent in 1962 and 1963. Then the region's share of total building plummeted to 18 per cent in the 1966 to 1967 period during the aerospace industry depression but, in sharp contrast to the experience of recent years, defense expenditures are expected to increase by more than 60 per cent between 1975 and 1981.

Defense and aerospace will contribute to the growth of the West's economy over the next five years and a fillip will come with the scheduled flow of Alaskan pipeline oil in 1977. Even without the boost from the higher defense budget and Alaskan oil, the region's share of construction has been slowly turning upward under a concentrated effort to diversify industry, and by applying the technological expertise in defense production to serving peaceful needs such as urban mass transit, environmental control, and information systems.

Growth of income, population, and employment is expected to continue in the second half of the seventies under the influence of national economic recovery and the impact of defense production and oil refining. This

should have a positive effect on housing and commercial construction towards the end of the decade.

Nonresidential building

Manufacturing construction. The region's share of total manufacturing was 24 per cent in 1956, but following the Korean War it declined to a low of 13 per cent in 1965. The Vietnam war and the emergence of new industries resulted in an upward trend between 1965 and 1975, and the trend is expected to continue through 1980 under the impetus of the higher defense budget. For instance, approval of production of the B-1 bomber by the Congress would have a tremendous impact on California's manufacturing industry. The region's share of total square footage of new construction is expected to reach 26 per cent in 1980. Additional oil refineries would show up only in the dollar value statistics bringing the region's share of contract value to 30 per cent.

Commercial building. Office building construction ranged between 21 and 26 per cent in the boom period from 1955 to 1965 and then the bust brought it to 16 per cent in 1968. Stimulated partly by the San Francisco rapid transit system opened in 1971, the region's share began to climb in the late sixties and early seventies. Under the influence of economic recovery the trend in office building construction is expected to continue upward to about 26 per cent by 1980.

Stores. The region's share of construction of stores and shopping centers fluctuates less than the other building categories. Market share has ranged between 17 and 24 per cent in the last 20 years. Since 1968, the trend has been slowly upward and resembles the patterns in residential construction. Therefore, the outlook is for continued growth.

Institutional. As the region's economy slowed down in the fifties and sixties, institutional building declined also. In 1971 regional share began a belated and upward trend in response to a pickup in the region's economy. The outlook for institutional building remains good because prospective higher levels of employment and income will generate revenues for public spending. An important factor here will be schools and hospitals construction in the state of Alaska, and substantial taxes on oil production and property will enable the state to finance badly needed facilities. The state will begin to collect the royalties when oil production begins in 1977.

Residential building

Single-family housing. Through 1964, single-family housing in the West was 20 to 25 per cent of total U.S. single-family housing and then the bottom fell out of the market. The region's share fell below the 20 per cent level between 1965 and 1974 as the region experienced some of the highest unemployment rates in the country. Between 1962 and 1966, market share dropped 8 points. Aggressive promotion of high interest rates to draw deposits from around the country into California savings and loan associations resulted in overbuilding contributing to the collapse of the market during this period. A gradual recovery has been underway in recent years, and in 1975 market share rose to 22 per cent. Housing construction should improve in the second half of the decade with higher incomes and less unemployment and market share should be at the 21 per cent level in 1980.

Multi-family housing. The region's share of multi-family housing has also been a boom and bust affair. In the 1956-1964 period, the region's share ranged from 30 to 37 per cent and then dropped to the 15 to 26 per cent range between 1965 and 1974. Market share jumped to 32 per cent in 1975 because construction everywhere else was at a standstill. The trend in recent years has been upward, although the pattern has been very erratic. Market share should show further improvement as employment and income increase, resulting in a corresponding increased demand for multi-family housing.

Hotels and motels. Tourism is an important feature of the West's economy. The region not only includes sunny California, but also the two other popular tourist destinations—Hawaii and Alaska. Construction in Hawaii dropped sharply in the 1971-73 period but has since recovered much of the drop. Alaska is slated to become more of a tourist attraction because of recent pipeline publicity, and hotels and motels construction should increase in the state.

Economic and demographic growth are the key factors coloring the rosy outlook for the region's share of construction between now and 1980 when market position will be at its best since the fifties. All types of building are expected to improve, with the increase in residential construction probably spilling over into the next decade.

Jeanne A. Grifo, senior economist
McGraw-Hill Information Systems Company

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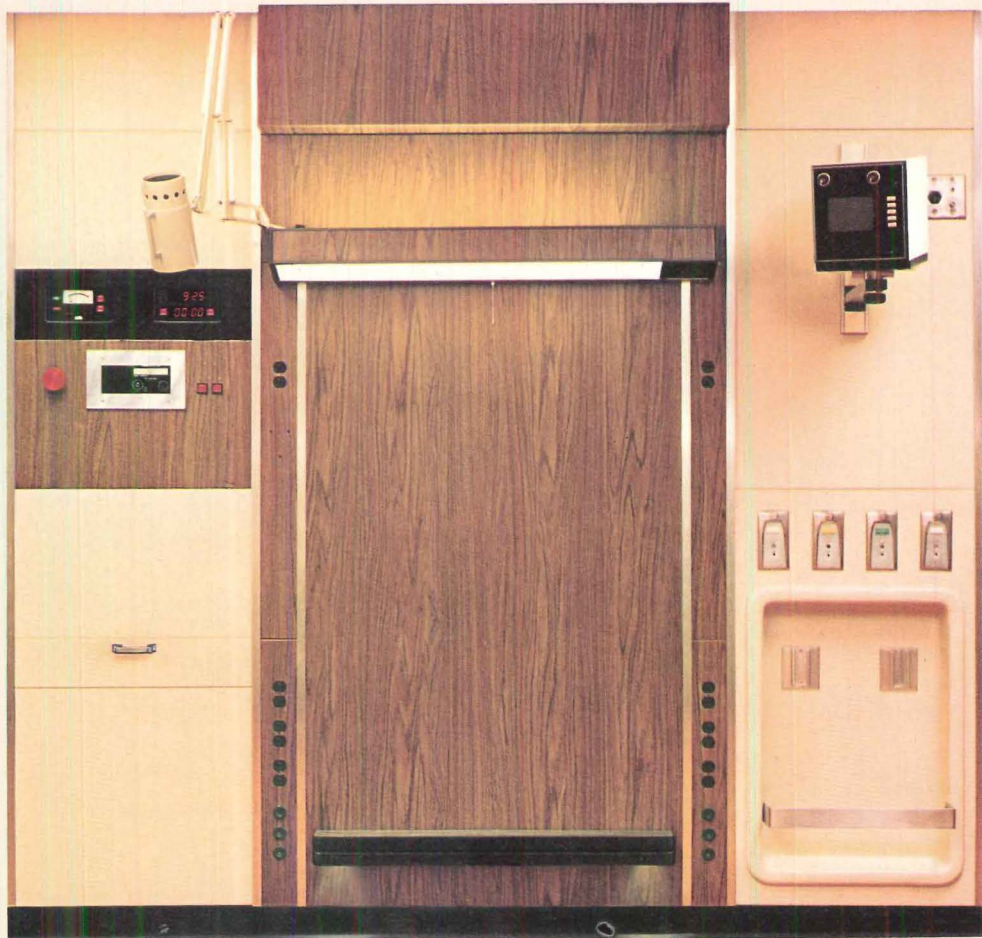


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movable for service and essential electrical components are accessible from the hinged door service module.

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This is an industry breakthrough.

We have finally developed a non-composite foam insulation which qualifies for Factory Mutual Class 1 fire rating when installed directly over unsprinklered steel decks.

It's a roof insulation board never before available. One with all the advantages of urethane: thin profile, lightweight, ease of handling, meeting all of today's more exacting requirements for insulating values. And with a Class 1 fire rating.

Celotex Thermax® Roof Insulation. It is a strong, lightweight roof insulation board with a foam core (reinforced with glass fibers) sandwiched between two asphalt-saturated asbestos facer felts.

It gives you the high insulation values of urethane, plus fire rating, without requiring a second product like perlite, foam glass or fibrous glass between it and a steel deck.

Superior insulating efficiency. One inch thick Thermax Roof Insulation boards give approximately the same insulation value as 3 inches of cellular glass, 2½ inches of perlite or 15/8 inches of

fibrous glass. Because of this insulating efficiency, Celotex recommends Thermax Roof Insulation be applied in single thickness.

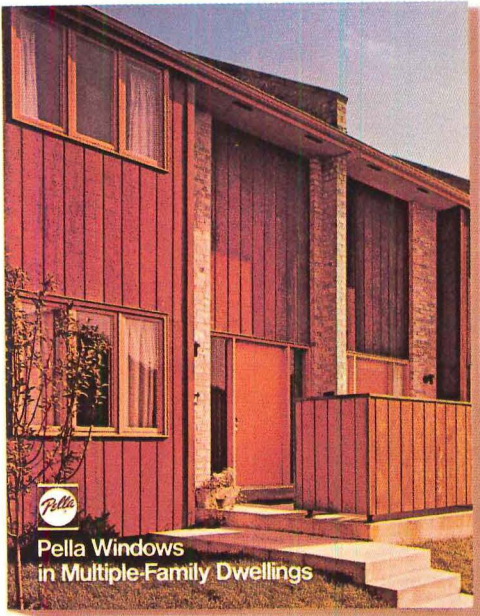
Lightweight. Compared with other FM-rated roof insulating materials providing the same insulation value, Thermax boards are 3 to 6 times lighter. That's up to 75% less deadload factor. The advantages are obvious: you can reduce the size and gauge of roof supports, have greater flexibility in choosing heating and air-conditioning equipment, reduce the size of metal or wood fascia around roof perimeters. And still have that Class I fire rating.

Are there any disadvantages? No. It does not cost any more, it is easy to cut and handle, gives more footage per truckload, uses less warehouse space and requires less handling.

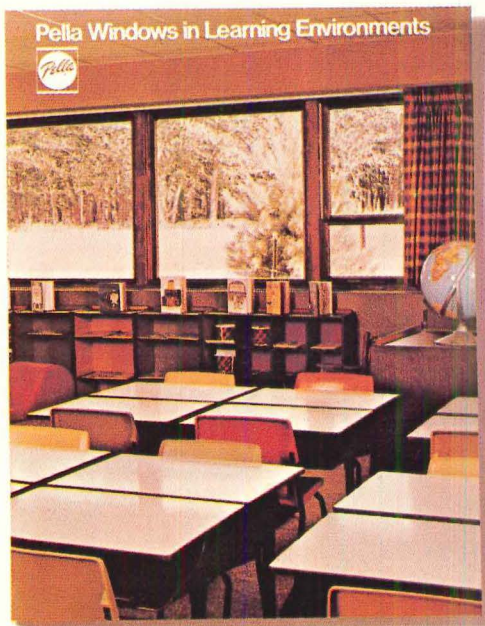
We started out by saying we had an industry breakthrough. We'd like to prove it to you. Contact your local Celotex sales representative, or call John Hasselbach direct: Commercial Roofing Department, The Celotex Corporation, Tampa, Florida 33622.

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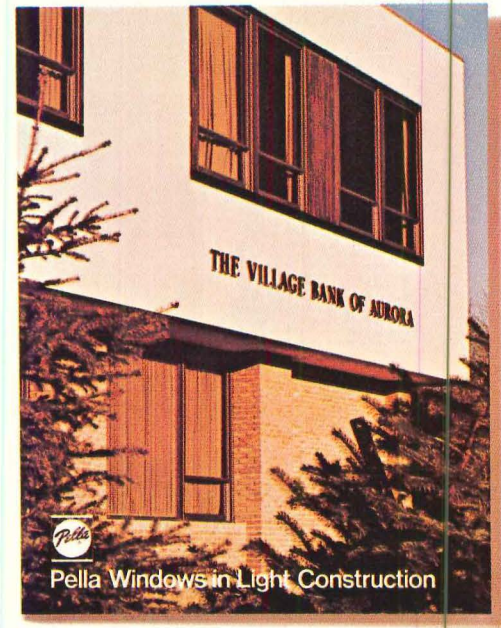
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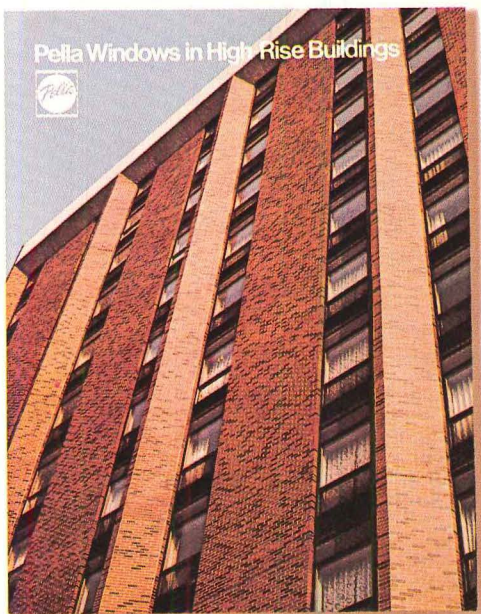
Multiple-Family Dwellings — Pella Wood Windows can help give apartments and condominiums a non-commercial feeling.



Learning Environments — shows how Pella Windows are being used to create the kind of warm, home-like environments students prefer.



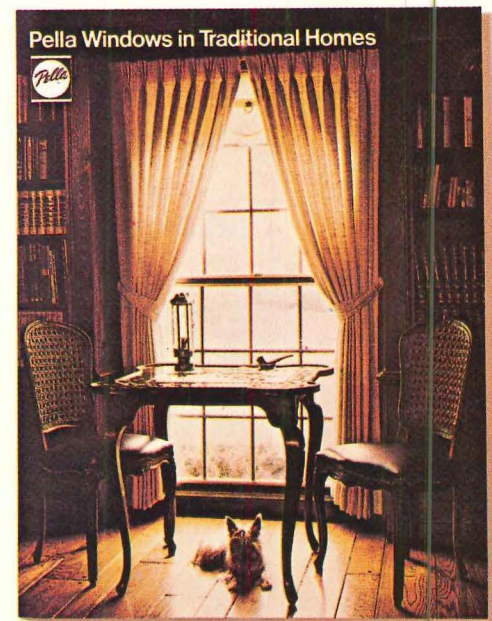
Light Construction — illustrates how Pella Windows and Sliding Glass Doors contribute to the architectural theme of a variety of building styles.



High-Rise Buildings — Pella Clad Windows combine the beauty of wood inside, with the low maintenance of aluminum outside.



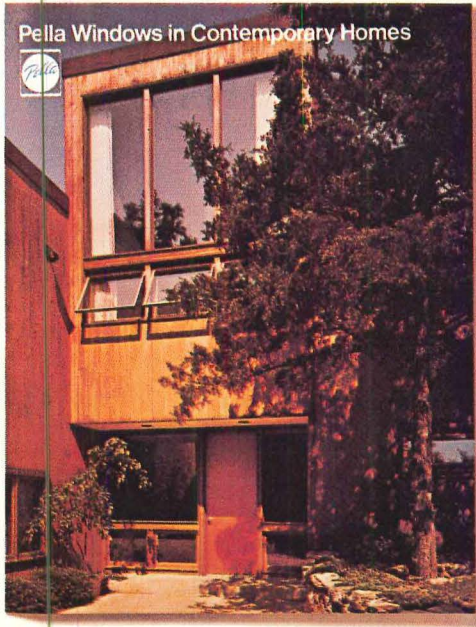
Health Centers — Pella Windows help health centers, hospitals, and homes for senior citizens project a feeling of comfort and security.



Traditional Homes — Pella takes a close look at the types of windows best suited to the traditional home.

**If it involves windows and doors
Pella has written the book.**

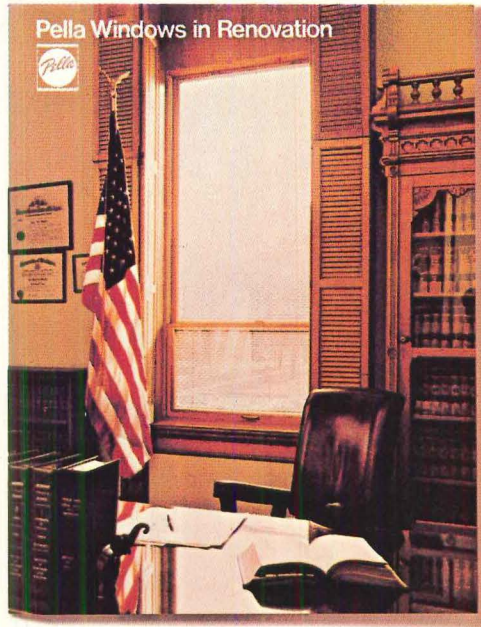
Free for the asking.



Pella Windows in Contemporary Homes



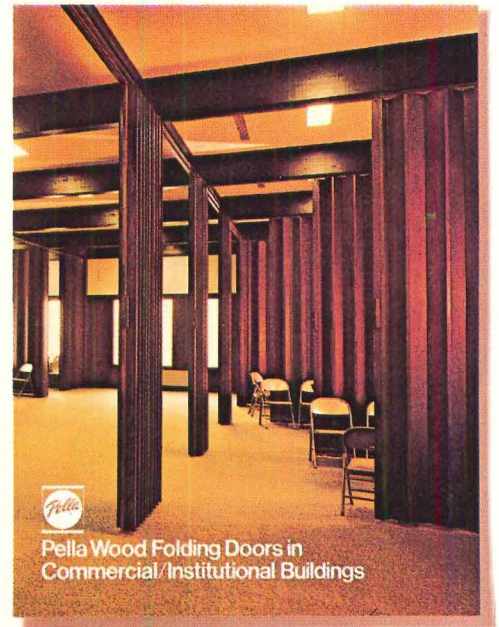
Contemporary Homes — shows how our window styles work equally well with a wide array of contemporary architectural designs.



Pella Windows in Renovation



Commercial Renovation — Pella Windows can help preserve the original character and dignity of elderly court houses, hospitals, office buildings.



Pella Wood Folding Doors in Commercial/Institutional Buildings

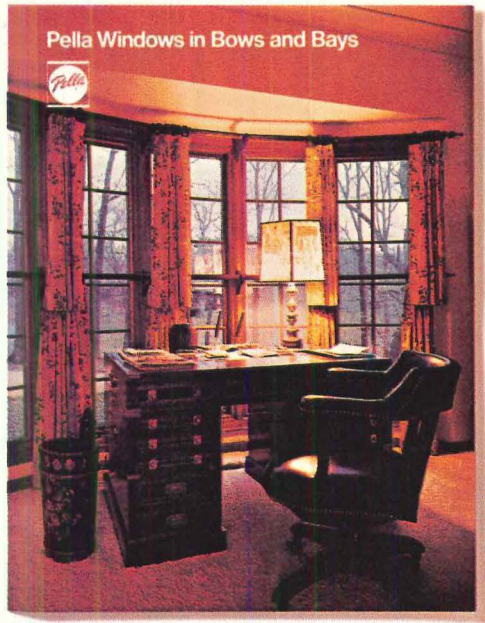
Folding Doors in Commercial/Institutional Buildings — attractive, functional, durable... Pella Folding Doors close off or divide space beautifully.



Pella Wood Folding Doors in Homes



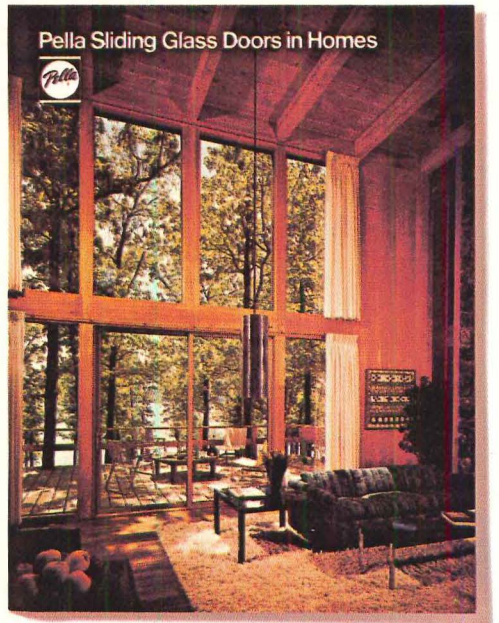
Folding Doors in Homes — use Pella Wood Folding Doors and save the cost of dropped headers and stub walls on your next project.



Pella Windows in Bows and Bays



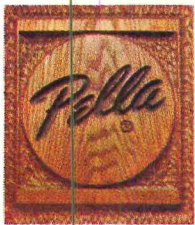
Bows and Bays — these arrangements are an important architectural element. This brochure contains a good selection of classic examples.



Pella Sliding Glass Doors in Homes



Pella Sliding Glass Doors in Homes — provide the drama of floor-to-ceiling glass along with weathertightness and smooth operation.



Free Library of Pella Idea Booklets — This up-to-the-minute collection of our very latest 6-page brochures contains over 70 pages in full color. We think it's the kind of reference material you'll find helpful time and time again. It's yours free and without obligation. Simply fill in and mail the coupon today.

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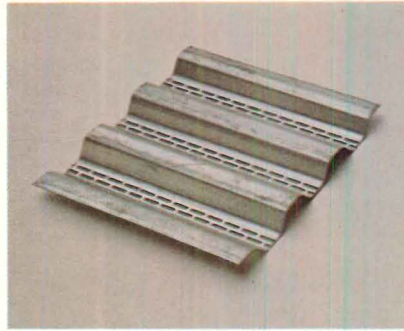
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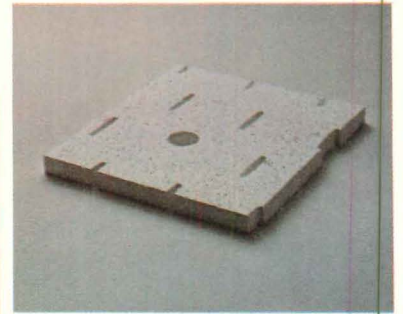
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 100 Main St., Pella, Iowa 50219
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1. Slotted Metal Base

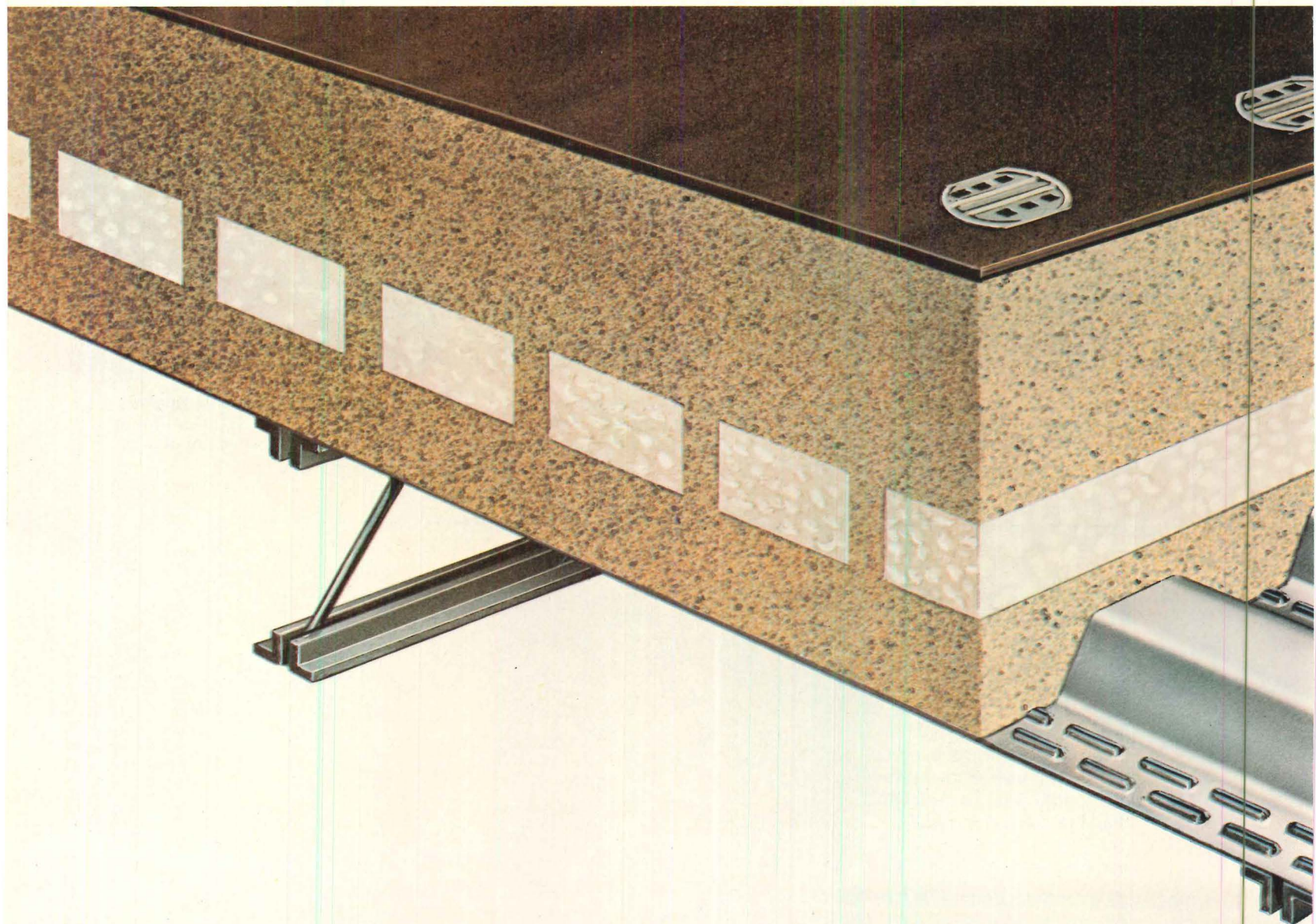


2. Insulperm™ Insulation Board



3. Zonolite Base Ply Fasteners

Three design improvements tops in performance,



This isn't the Zonolite Roof Deck you knew ten, five, or even two years ago. Design improvements make installation fast and simple, cut drying time to a minimum and permit early application of built-up roofing. Winter or summer. North or South.

A new Slotted Metal Base, the first improvement.

The new base helps speed drying and venting, provides a unique structural marriage with lightweight Zonolite Insulating Concrete for maximum strength and stability.

New Insulperm™ Insulation Board, the second improvement.

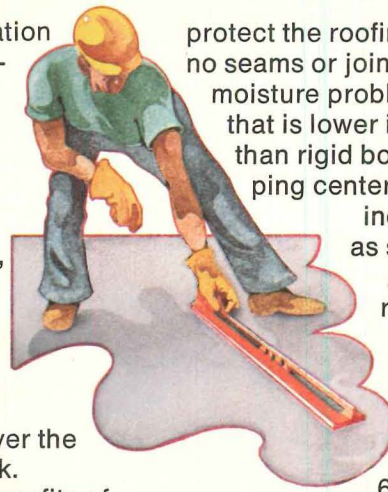
Insulperm board is slotted to promote fast, complete drying and venting and also ensures maximum shear strength in the insulation sandwich. One of the finest insulating materials known,

Insulperm board, in combination with Zonolite Insulating Concrete, makes Zonolite Roof Decks the most efficient and economical way to achieve today's insulation criteria of .10 U or less.

Zonolite Base Ply Fasteners, the third improvement.

These new fasteners provide a strong, mechanical bond of the base ply of built-up roofing while allowing the venting of air over the top of the Zonolite Roof Deck.

Take a new look at the benefits of Zonolite Roof Decks. Insulation that meets strict new U value requirements, reduces energy consumption, cuts heating and cooling costs. A roof deck that has earned Factory Mutual's Class I rating for fire and wind resistance. A roof deck with a firm base to



protect the roofing membrane, with no seams or joints to fail and cause moisture problems. And a roof deck that is lower in cost for most jobs than rigid board decks. On shopping centers, warehouses and

industrial plants as well as schools and churches.

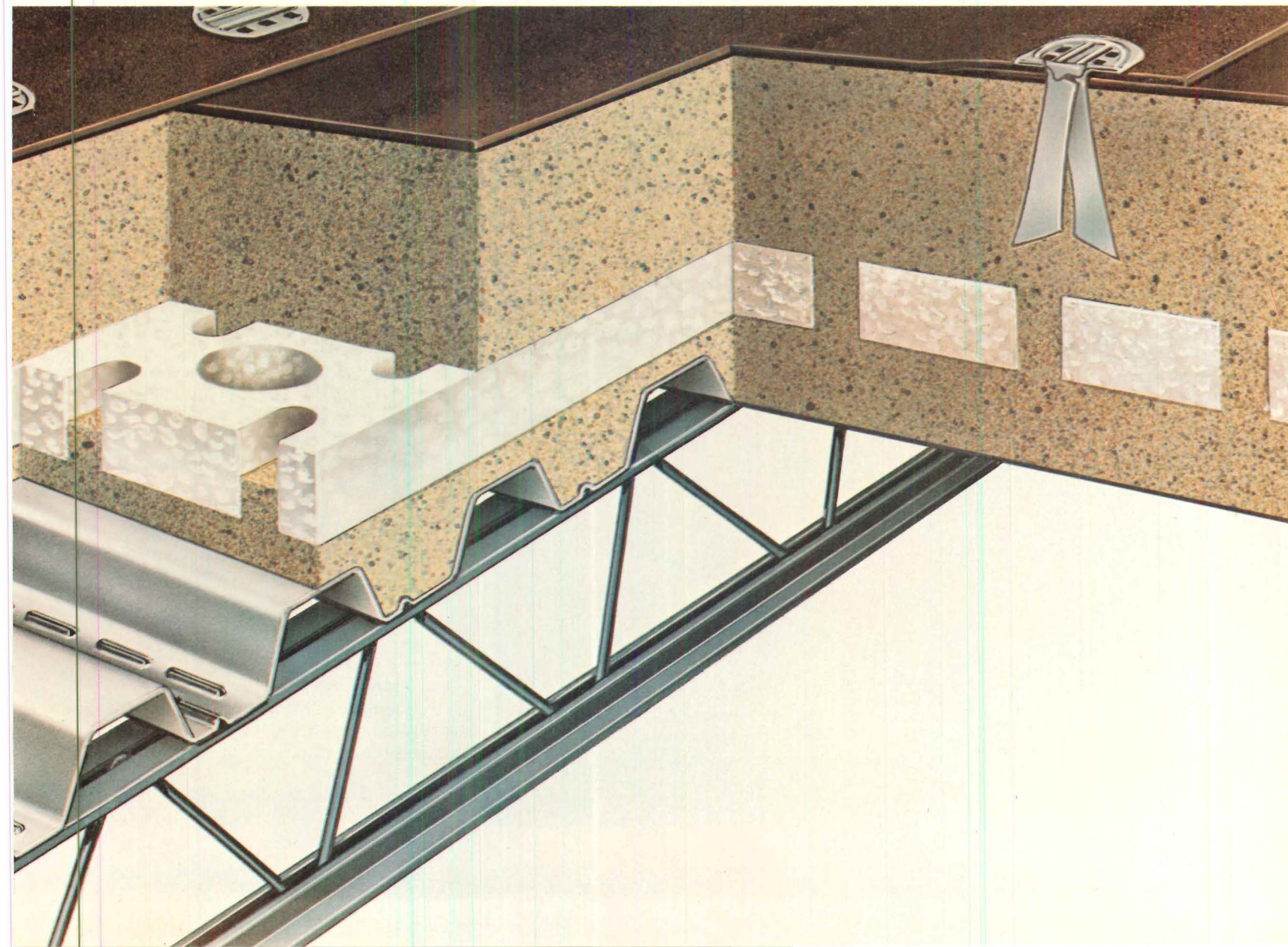
Ask your Zonolite representative to give you all the facts on new, improved Zonolite Roof

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OFFICE NOTES

Name changes, new firms

Hutton + Rostron, Architects have moved to new offices at 213 Washington Street, Gloucester, Massachusetts.

Pfeifer and Shultz, Inc. have become part of the firm of Henningson, Durham & Richardson. This new division of HDR will be named **Pfeifer and Shultz/HDR, Inc.**

Carl Walker & Associates, Inc. announces the opening of an office in Billings, Montana.

Theodore Barry & Associates, management consultants with offices (at 1151 West 6th Avenue) in Los Angeles and New York, have announced that the architectural organization of Richard Dorman, FAIA, has become part of the Barry firm.

Richardson Nagy Martin have moved to 4000 Westerly Place, Suite 200, Newport Beach, California.

R. Jack Mosher, AIA and Thomas J. Eckelman, AIA have become partners in the firm of **Sauer/Obrock Design Associates, Inc.**, 7777 Bonhomme, Suite 2020, Clayton, Missouri.

Perry B. Goldstein AIA has opened his new office with **Michael A. Mosher AIA** as associate for the practice of architecture/planning/interiors at 600 Old Country Road, Garden City, New York.

William M. Gaul, AIA, and Richard A. Tater have announced the formation of a new firm, **Gaul-Tater Associates, architects and interior designers**, headquartered at 11 East Hubbard Street, Chicago, Illinois.

Ezra D. Ehrenkrantz and Associates, P.C. have relocated their offices to 19 West 44th Street, New York, New York.

Raymond P. Howell, AIA has opened his new office at Route One, Box 250-A, Blowing Rock, North Carolina.

Murray B. Kasman Associates, architects announce the opening of new offices at 310 South Michigan Avenue, Suite 1408, Chicago, Illinois.

Architects and planner, **Joe Greenberg** has announced the opening of new offices at 2821 Florida Avenue, Coconut Grove, Florida.

James Follensbee & Associates, Ltd. architects, planners, engineers have relocated their offices to 311 West Hubbard Street, Chicago, Illinois.

Leonard P. Perfido, architect, has moved his office to 307 Fourth Avenue, Pittsburgh, Pennsylvania.

New associates, promotions

Charles M. Toner, Jr., AIA has been elected vice president of Schwab & Twitty Architects, Inc.

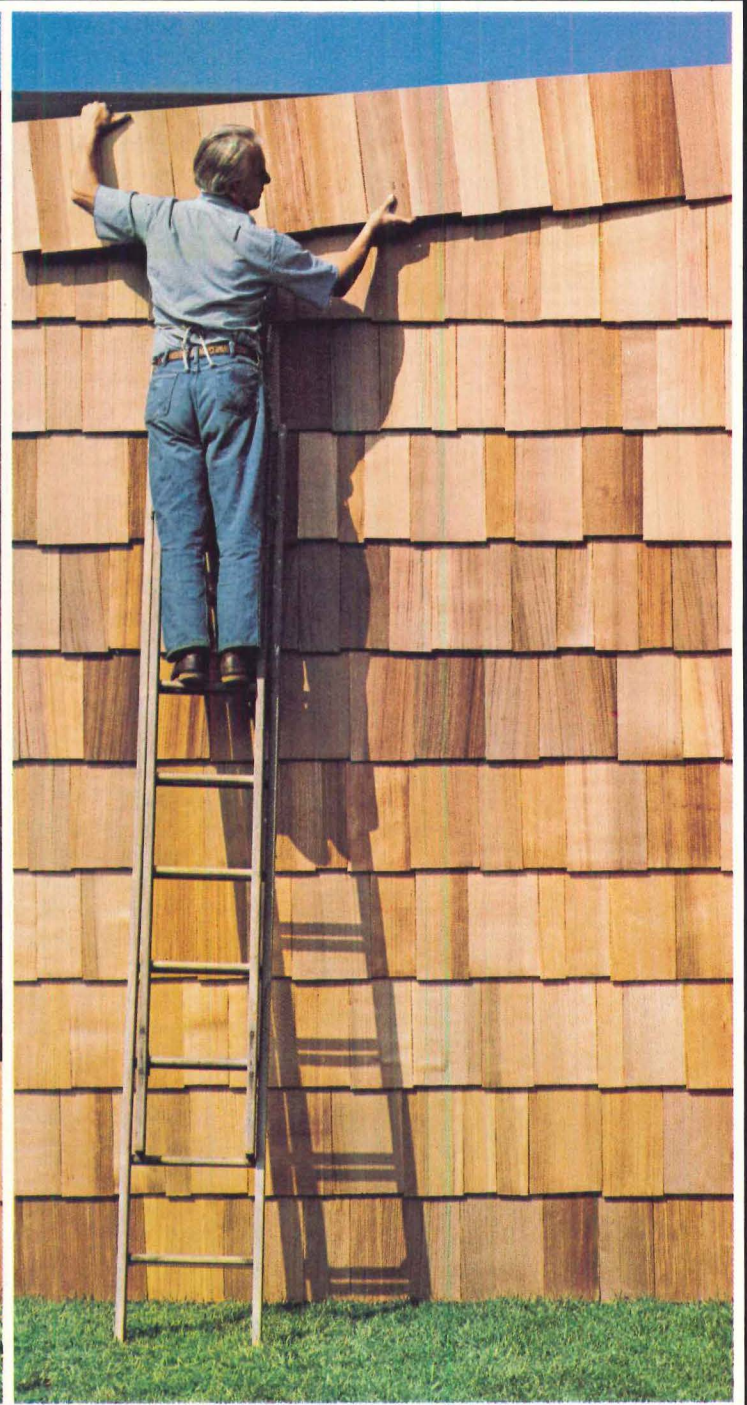
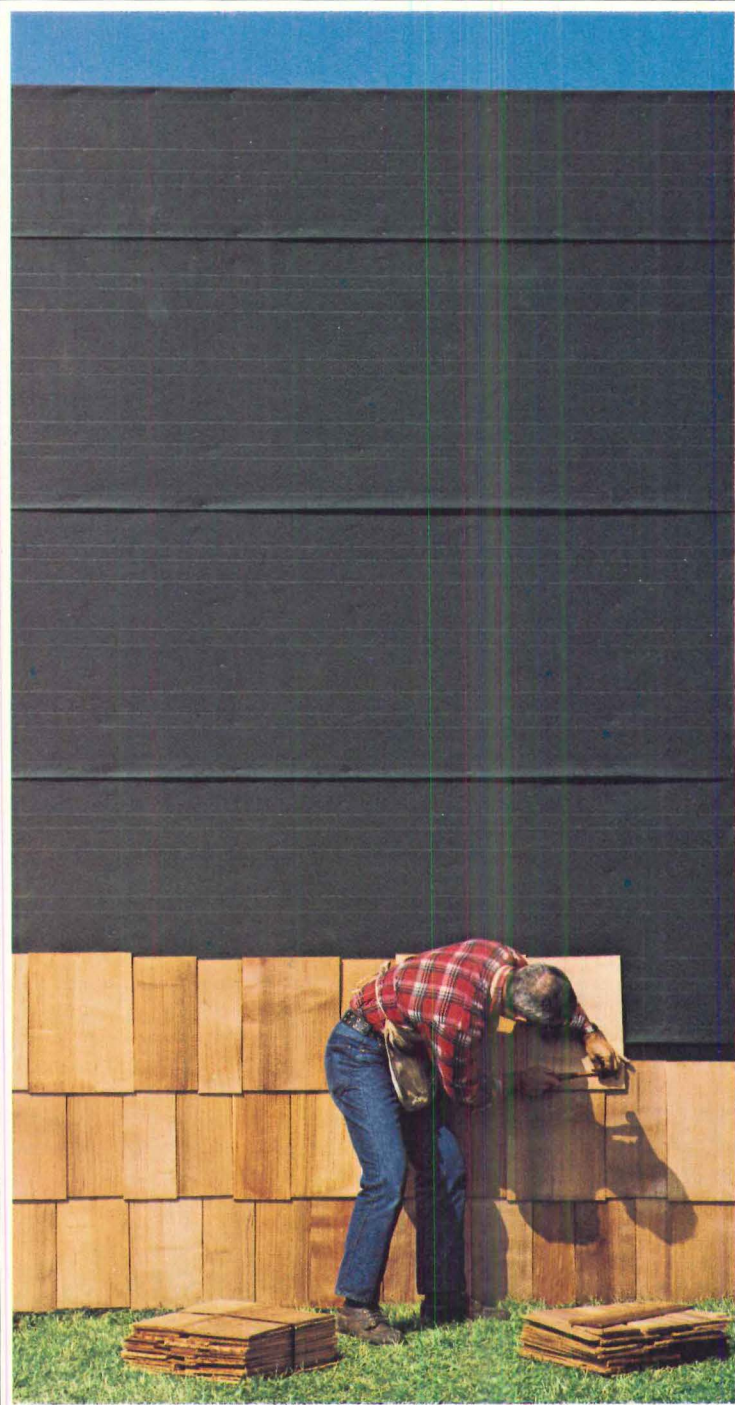
James F. Smith, PE, has been named director of the health facilities division of Heery & Heery, an Atlanta-based architectural and engineering firm.

Thomas L. Hand has been named a principal in the architectural firm of Everett/Zeigel Associates, in Boulder, Colorado.

John R. Haaf, architect, has been named a full partner in the Philadelphia firm of David Wisdom and Associates.

more office notes on page 74

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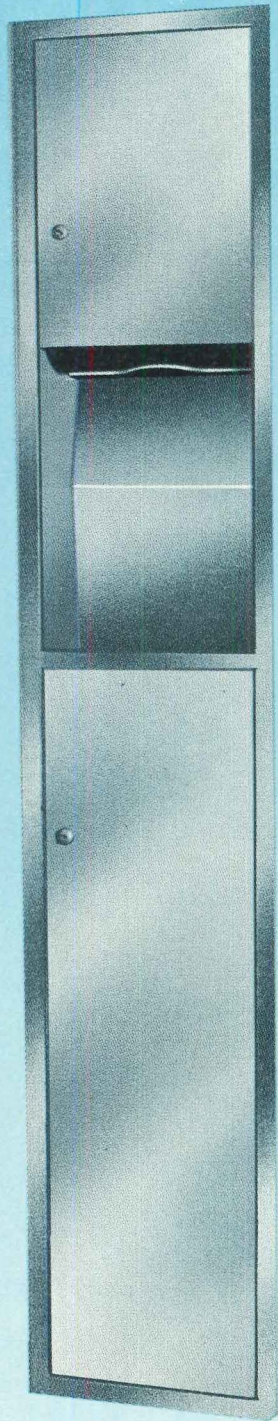


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OFFICE NOTES *continued from p. 72*

Seymour Remen, AIA has joined the staff of Albert Kahn Associates, Inc., architects and engineers, as manager of Health Facilities Planning.

Neuhaus + Taylor announce the following promotions: **Bob G. Moore, vice-president**, who is relocating to the Houston office and **Richard W. Jennings, AIA, vice-president** has been named director, Neuhaus + Taylor/Dallas.

Melvin C. Williams has been promoted to assistant vice president of Sverdrup & Parcel and Associates, Inc.

Durrant, Deininger, Dommer, Kramer, Gordon, architects and engineers, have named **Dale Nederhoff, Gordon Mills, James Straka** and **Vern Worrell** as principals of the firm.

Wiley & Wilson, Inc., have announced the appointment of **William H. Clingenpeel, Charles H. Barnes, Jr., Donald P. Manning, and Maynard K. Jones, Jr.** as new associate members of the Lynchburg-based architectural-engineering-planning firm.

Smith, Hinchman & Grylls Associates Inc., has named **Bradley G. Field, AIA** corporate director of architecture. **Arnold Mikon, AIA** succeeds Mr. Field as project audit control.

Haines Lundberg Waehler announces 10 additional partners. They are: **Gregory E. Brooks; Arnold D. Hackel; Lee R. Kirk; Bronislaus F. Winckowski; William E. Baltz; Robert A. Djerejian; John S. Fountain; Charles Hyun; Jack C. Smith, and Anthony J. Flaherty.**

Daniel, Mann, Johnson & Mendenhall announce that **Walter A. Meisen, AIA** has joined the company's Washington D.C. office as vice president and operations manager, eastern region.

Samuel M. Burnett, Jr., AIA, Richard A. McKnew and **Ronald R. Meza, AIA** have been named vice presidents of Charles Luckman Associates.

James L. Rocco has joined Commonwealth Associates as manager of business development in the facilities division.

EPR announces that **Virgil R. Carter** has joined EPR as project director.

Hoad Engineers, Incorporated is pleased to announce that **John Goodwin** has joined their firm as vice president of projects and production.

Walter Madden Cooper, Inc. of Riverdale, Maryland, consultants in architecture, planning, landscape and interiors, are pleased to announce the appointment of **William D. Fought, AIP** to head planning and urban design.

Michael Baker, Jr., Inc. engineers and surveyors, have announced the appointment of **Wayne A. Cornelius** and **Harold Scott** as vice presidents.

Edward R. Jones, Jr., AIA, and Richard C. Niblack, AIA, have been named senior presidents and members of the executive committee of Charles Luckman Associates.


Glenwood L. Garvey, has been elected president of William L. Pereira Associates, planners, architects and engineers.

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Delta's DASH guarantees delivery on the flight or routing you specify between most Delta cities. Packages accepted up to 50 lbs. with length plus width plus height not to exceed 90"

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Philadelphia-Houston.....	\$26.25
New York-Tampa.....	\$26.25
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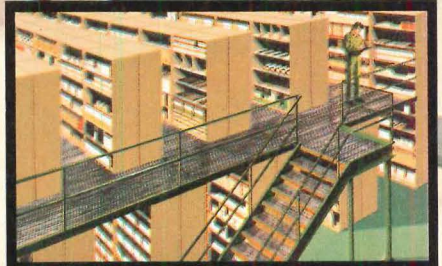
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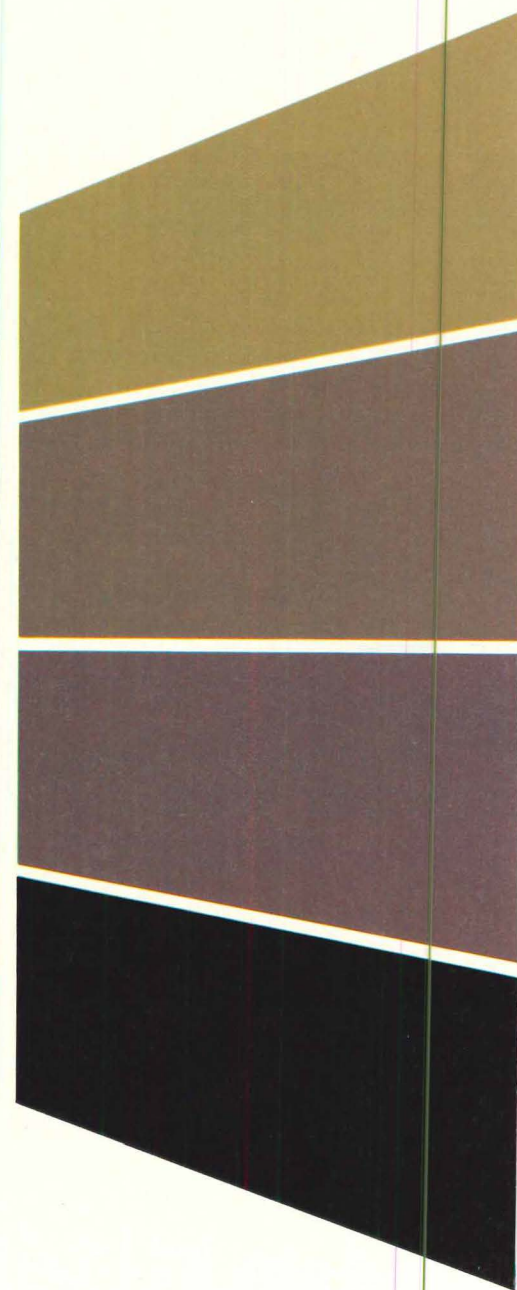
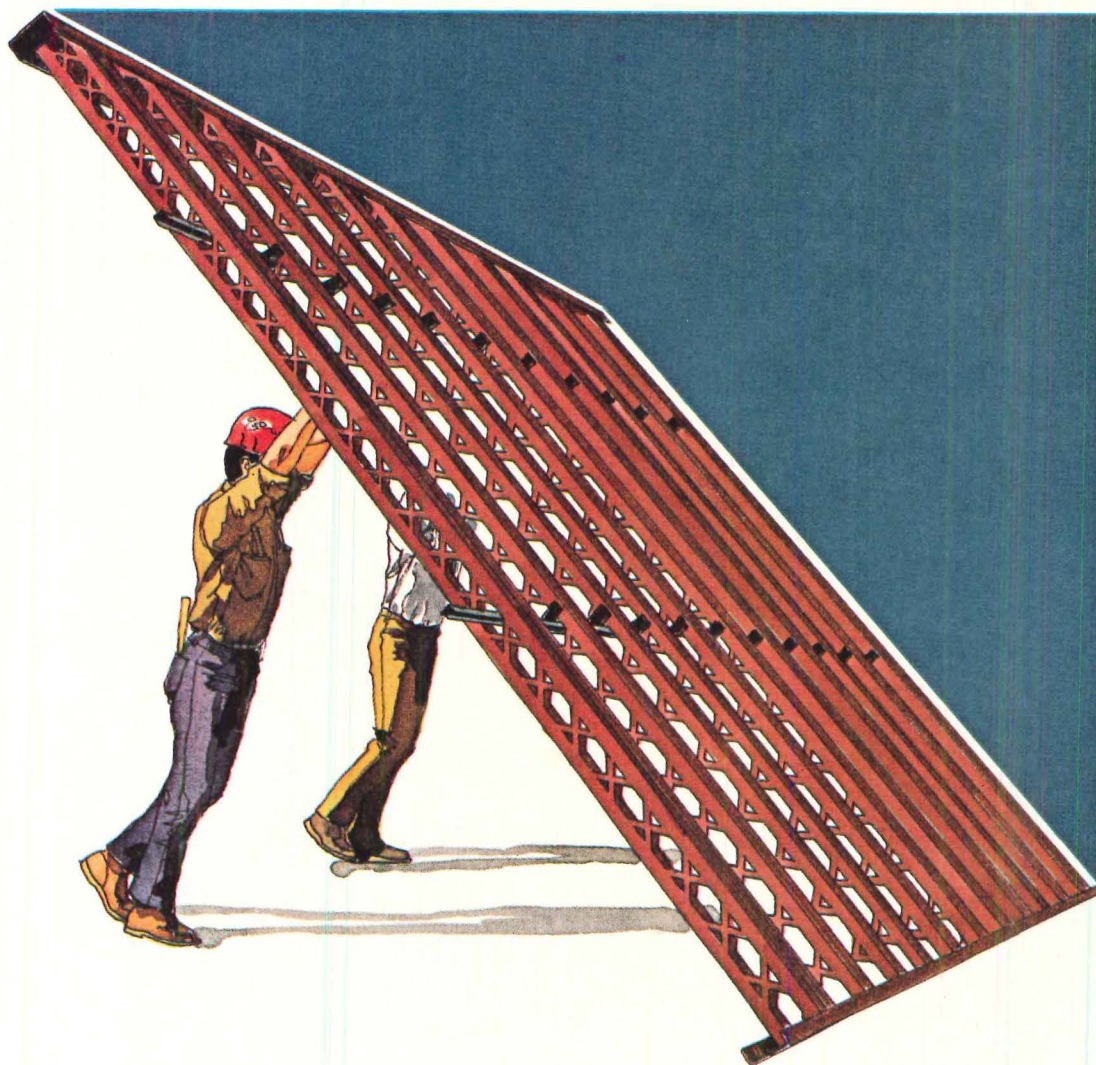
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THE SHAPE OF CELEBRATION

by Melinda Blauvelt and J. P. Chadwick Floyd

There is a new spirit of public partying in the United States, as communities of every size report a groundswell of enthusiasm for public celebrations. It started in earnest as long ago as 1968. Since that date, the number of community festivals has nearly doubled, as residents and visitors in towns across the country discover that public celebrations are fun and that they reinforce a community identity. What this means for architects is a growing demand to identify and create coherent spaces for community celebrations. Underlying the trend is a down-to-earth economic fact: domestic tourism is today the nation's second largest retail industry, and it is doubling every decade. This effectively elevates the tourist's whim—his growing inclination to plan holidays around special events at destination points—to the level of a major economic force. And for any community thinking about mounting a celebration, there is not only a burgeoning supply of out-of-town tourists to attract, but there is also a record number of local residents, especially suburban expatriots, who are suddenly willing to be lured back downtown under the aegis of a special event.

The nation's businessmen, recognizing real "urban renewal" when they see it, are fanning these celebration fires with great diligence. Charles Herd, executive director of the Louisville, Kentucky, Chamber of Commerce, sees in these increased public celebration activities the brightest hope yet for bringing people back downtown.

His conviction is based on experience. In 1974 he helped bring about an ambitious program of weekend festivals in a downtown Louisville plaza. The program turned out to be such an overwhelming success that it now runs



An enclave for celebration sets a scene just extraordinary enough so that the most outrageous dreams and pretensions will seem within limits. Here in the protective, provocative streets of the New Orleans French Quarter, Ethyl and William Kugler have been drawn out of their everyday lives; today, on the morning of Mardi Gras, they're on center stage, and they love it.

continuously every weekend from the spring into the fall, attracting as many as 70,000 people to a single event. Herd claims that the image change caused by these festivals has been enough to turn around what had been called by some a "hopeless situation."

What Herd and other businessmen like him in the nation are discovering is that the old formula of trundling off "messy" celebration activities to rural fairgrounds—while it may have simplified concerns such as parking and trash removal—actually produces boring celebrations and few, if any, spin-offs to the local business community. What is now needed, say city leaders, are in-town celebration locations that take advantage of and reinforce a community's sense of identity, that dovetail nicely with community amenities and businesses, and that assure a more complex and interesting layering of activities. Realizing this, communities are increasingly willing to consider multi-dimensional celebration possibilities for existing and new public buildings, urban spaces, and streets.

If architects respond to this opportunity, we may see a dramatic departure in the conventional wisdom of architectural programming, in everything from courthouses to parking lots. In addition to their customary high-mindedness, for example, courthouses may soon be seen displaying an altogether refreshing new dimension as giant stagesets for outdoor pageants, variety shows, and festivals.

The famous Santa Barbara County Courthouse is a clear case in point. Though it had never been programmed to operate as an outdoor theater, it nevertheless functions that way three evenings every August during the Santa Barbara Fiesta. One day it's a courthouse, the

... if we go about it carefully, we can design the mysterious dimensions of celebration right into our public realm. ..."

The first essential is parade streets— and almost every American town already has one

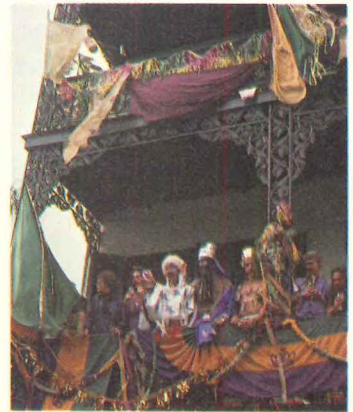


Main Street is the Great American Parade Street. In fact, for communities under 30,000 people, it is usually the only parade street. Here, in downtown Monte Vista, Colorado, Route 160 is commandeered by a "Sky-Hi Stampede Float." This is a great arena for spectacle; its openness, its broad skyline and its sunbaked brightness—so typical of Western Main Streets—make it a highway Circus Maximus.



Parades are the most popular American celebration. The granddaddy of them all is Mardi Gras, and in 1976 over a million people visited New Orleans for it. Another statistic: they ate seven million hot dogs.

Route 14 makes a different theater for spectacle on Main Street in Bristol, Rhode Island. The performing surface is half the width of Monte Vista's (above) so spectators have a closer look. The atmosphere is like a stage-set for archetypal America, with front porches as box seats . . . a comfortable place for the nation's longest Fourth of July Parade.



Mardi Gras' St. Charles Street is only 24 feet wide, with as many as three levels of wrought iron balconies on either side. It is an intimate theater, where interaction between performers and spectators is destined from the start.



Main Street's hidden dimension as theater is revealed: a planting strip slopes up at 25 degrees from the curb for spectator seating. Horse chestnut trees overhead offer soothing shade, and the street's north-south orientation washes performers' costumes with flattering sunlight while keeping the glare from spectators' eye.





This Rex float at Mardi Gras is really a roving stage-set. Performers riding on it are "krew" members whose task it is to throw talismans—cheap necklaces and doubloons—to the eager crowd standing in the street or leaning from the balconies. Can you imagine this happening on Colorado Route 160 in Monte Vista? Scale makes a difference in kind of behavior.

Disney World's parade street is only 36 feet wide, festooned with the trappings of Victorian American Main Streets—but all at 7/8th scale. At its end: a talisman, the Fantasy Castle, like a giant magic charm bringing back memories of Snow White, Cinderella and other Disney myths.

next day—presto chango—it's an instant Shakespearean theater gaudily plastered with banners, bunting, strings of lights, and food booths, to say nothing of the crowd of four thousand people. And this with men occupying jail cells three floors up. A violation of dignity? Perhaps. But if it is, it is an altogether ami-



able one; the venerable old monument fairly basks in public attention—a purpose for which, presumably, it was intended—while the Fiesta celebration enjoys the added emphasis of a unique and functional setting.

Architects curious about the dynamics of multi-dimensionality may wonder what accidents came together in this building to make it such a great stage set for flamenco dancers and mariachi bands. The answer is simple: no accidents at all. In 1929, architect William Mooser forged his building in a theatrical mold to ele-



vate and dramatize the comings and goings of lawyers, clerks, and plaintiffs. In so doing he unwittingly created the real thing: a functional theater space which, with a few festival trappings, works astonishingly well for a full-scale production number.

If there is any single key to designing celebration into the physical environment, it is in finding ways to marry disparate personalities into the same place—in the case of Santa Barbara, courthouseness and theaterness. The reason: celebration is a temporal activity that must commandeer settings normally used for different purposes. Mooser achieved this multidimensionality by means of his own innate theatrical instincts (which have been aptly displayed elsewhere: he was the original architect of the Ghirardelli Chocolate Factory). For others of us, it might be achieved by the careful programming of each personality quite separately and methodically. Make it work first as a courthouse, and then make it work as a theater. In this way, programming for multidimensionality might offer a navigable route to meaningful complexity and contradiction in architecture.

We came to this conclusion over the

Another essential is talismans— visual points of reference and backdrops for pageantry



Seen from half a mile away, the Fantasy Castle at Disney World is a talisman and a symbol. But close up, Disney made use of its evocative facade as the backdrop for an outdoor proscenium theater; the same thing was done in the Middle Ages, when Mystery Plays were performed in front of churches.



The Capitol at Cheyenne, Wyoming, here presiding over the Frontier Days parade, illustrates the body imagery characteristic of all talismans. The theory of body imagery posits that an empathetic response in the unconscious is triggered by the geometry of the human body—for example, bilateral symmetry and verticality—mirrored in the environment. This talisman, like all the others shown on these pages, is symmetrical, vertical and frontal. It even has a dome at the top—making it look like a person's head and shoulders.

You often find talismans along parade routes. Here the Alamo lends its dignity to San Antonio's Battle of Flowers parade. It is a symbol of Texas' heritage and the inhabitant of every child's fantasy. Opposite the Alamo is the main reviewing stand—the logical spot for it.





Talismans don't have to be made of brick and mortar. Meet Zozobra, a 40-foot-high paper and muslin effigy of "Old Man Gloom," sewn together every year to ignite the start of the Santa Fe fiesta. It is a tradition that was invented in 1924 by Mr. Will Schuster of Santa Fe, and it occurs in a public park at the top of an impressive set of "Mayan" ritual steps built just for this purpose. For 364 days a year, the place looks pretty much like any other park.

This talisman is made over each year in new designs with corn and wheat. It is the Mitchell, South Dakota, Corn Palace. In honor of the building, Main Street is closed off for seven blocks every September and turned into a carnival midway and bazaar. If the Corn Palace were not there, would they still have the carnival on Main Street?



course of a year's study. What impressed us most about the places we observed was their seesawing between functions in the routine mode and functions in the celebration mode. We discovered, for example, that every community, regardless of size, has its own celebration zone waiting to be put to use. But on routine days, this network of spaces is eclipsed by the dominant patterns of daily commerce. Only when activated by a full-scale community celebration does it step forward to reveal itself as a resourceful stage set for parades, variety shows, and all manner of participatory activities.

Our research indicated that these celebration zones are typically made up of three elements: *parade streets* for the favorite American ceremony; *talismans* (symbolic landmarks, usually monuments or public buildings like the Santa Barbara County Courthouse) as points of visual reference and close-in backdrops for proscenium pageantry; and *enclaves* (centered enclosures) for activities that encourage human encounter. These are the basic building blocks. But each one—every single town green, or courthouse, or Main Street—has special hidden qualities that uniquely suit it for its own particular celebration activities. We refer to these special qualities as "performing qualities," because they always seem to forge a vaguely theatrical arena for human expression—perhaps a great Main Street Circus Maximus for a parade spectacle, a frontal proscenium theater for formal pageantry, or a less formal theater in the round, where distinctions between spectator and participant are blurred. Typical of these performing qualities are concerns like theaterness, atmosphere, separateness, scale, and body image—all elaborated in these pages, which give a brief survey of celebration settings around the country. Every setting in this survey—from the ritual space where the effigy Zozobra is burned in Santa Fe (left), to the 5.8 acres of "La Villita" in San Antonio (see following page) which are crammed with 90,000 people in a single night—is located right in the middle of an urban environment. Also, each is a place which, when it was originally built, was intended for quite another use. Let us hope that these are just the beginning. We need a great many more splendid places like these to inspire and nurture the outpouring of joy in our cities. All that is needed to make more of them happen *on purpose* (at least from the point of view of design) is a methodical, pragmatic process. If we go about it carefully, we can literally design the mysterious dimension of celebration right into our public realm.

Melinda Blauvelt and J. P. Chadwick Floyd worked under a grant from the National Endowment for the Arts, City Options Program, to study American celebrations and the environments in which they occur. This essay has been drawn from their forthcoming book, "The Shape of Joy." Miss Blauvelt is a Lecturer on visual and environmental studies at Harvard University; Mr. Floyd works for the office of Moore, Grover, Harper, architects and planners.

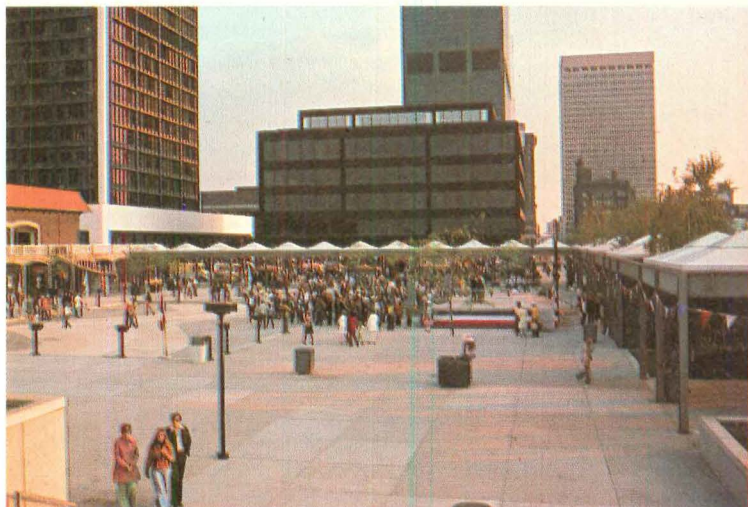
A third element is enclaves— centered enclosures that encourage human encounter



Of the three basic elements of celebration—parade streets, talismans, and enclaves—enclaves are the most transformed by the event itself. Above, the Municipal Pier Parking Lot in Boothbay Harbor, Maine, is taken over by a local high school drill team.



If you close off a street at both ends so that it is a closed system, it then becomes an enclave. Here the Feast of St. Anthony of Padua on Sullivan Street in New York City shows that, in the Italian tradition of making street enclaves, not only are the ends closed off, but so is the sky. The enclosure above creates an aura of security that induces people freely to act out their fantasies.



Riverfront Plaza, in Louisville, Kentucky, is one of the few examples of a purposefully designed celebration enclave; it is by Doxiadis Associates of Washington, D. C., Lawrence Mellilo of Louisville, and Jaspar Ward of Louisville.

The New Orleans Superdome is an enclosed enclave for spectacle; here it hosts the 1976 Bacchus Mardi Gras parade.



La Villita is a tiny (5.8-acre) enclave of restored adobe houses on the banks of the San Antonio River right in the middle of downtown. It is owned by the city and remains available for rent to any group who would like to use it, or any part of it, as a setting for a special occasion. Planning director Daryl Engle calls it San Antonio's "party house." On the right it is shown crammed with 90,000 people for "A Night in Old San Antonio."

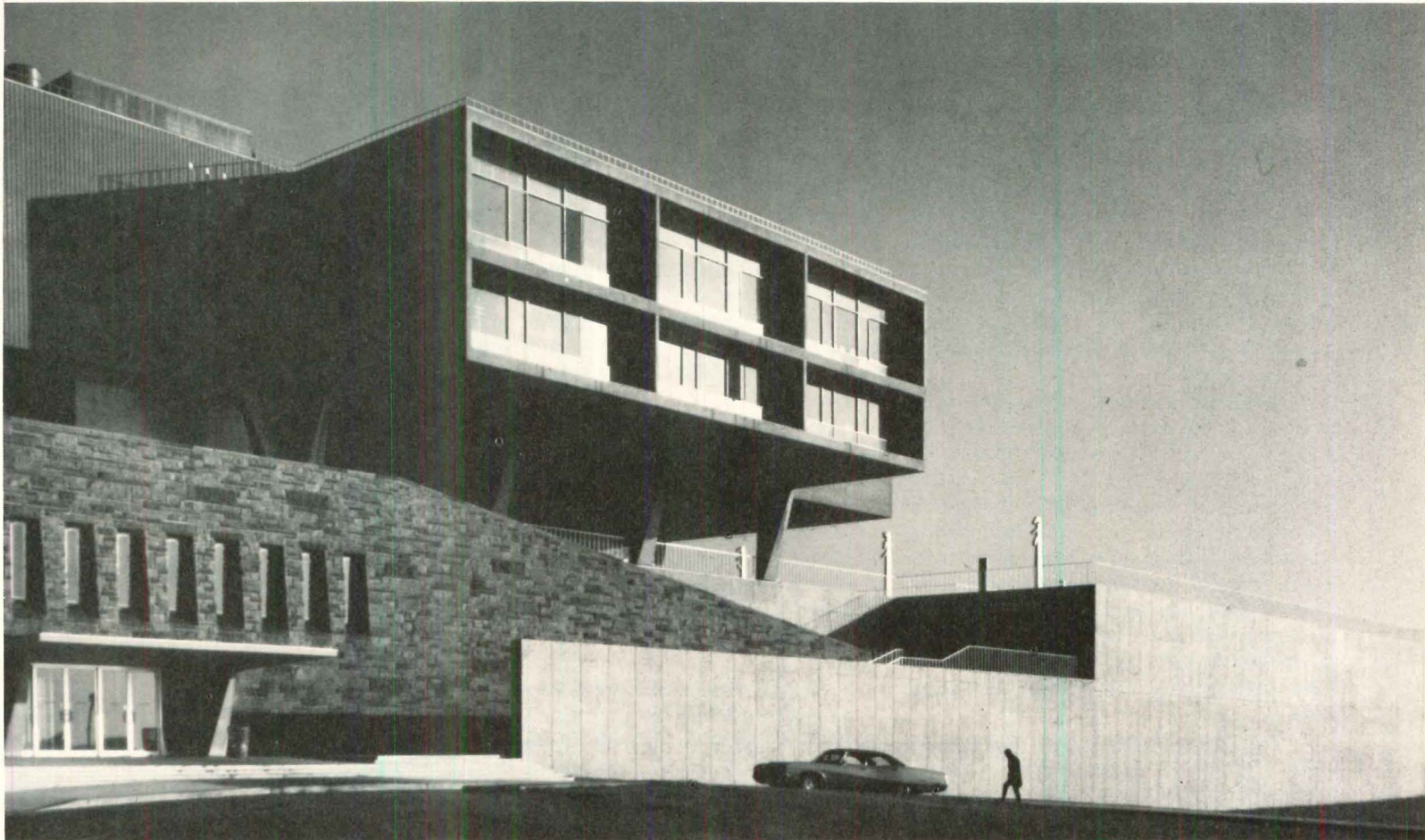
Enclaves often do not have enough atmosphere of their own to set the proper mood, so you have to add applied atmosphere in the form of decorations (right). Best are hand-made items that signal the care of people; it is strictly "senior prom" technology, but it netted the Conservation Society \$230,000 in only four nights.

Enclaves are theaters in the round where people can leave behind the passive role of spectator and become personally involved in the event. These are the places where corn on the cob gets eaten, where souvenirs get bought, and where people dress up in costumes and assume the responsibility of entertaining themselves (and each other).



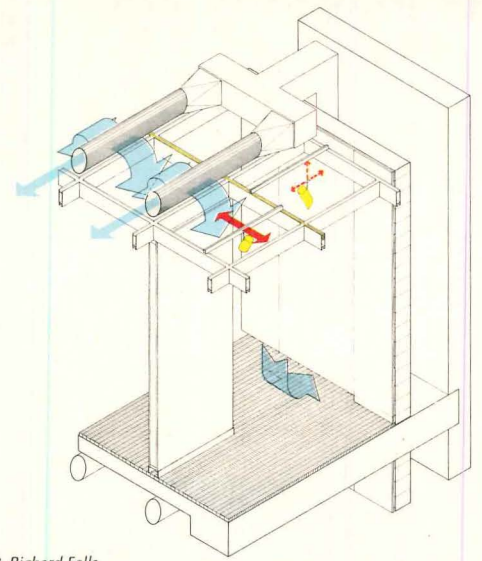
MILWAUKEE ART CENTER

A big and bold—but modest—addition to a modern monument



Heinz Kluetmeier

The new Milwaukee Art Center, seen in profile in the bottom right portion of the photograph above, is a massive, modest, and efficient addition to Eero Saarinen's Milwaukee County War Memorial Building. David Kahler, president of the Milwaukee firm of Kahler, Slater & Fitzhugh Scott, Inc., and project designer for the new building, describes it in this way: "In designing the Milwaukee Art Center's expanded quarters, our goal was to complement the original structure conceived by Eero Saarinen, not to compete with it. We did not seek to produce a monument but instead to create a quiet, unassuming, and low-keyed background for the soaring sculpture of the original Memorial Center and a neutral context that would not detract from the works of art to be displayed." What the architects also delivered, according to one prominent expert on museum design, was a great deal of eminently flexible space for the very reasonable sum of about \$45 a square foot. The new addition is essentially a 200- by 200-foot building, which provides 90,000 square feet of undifferentiated exhibition space on three main levels, each interconnected with a vertical circulation spine. The roof of the addition, covered with a precast concrete walking surface, acts as an extension of the original Memorial Court and provides a monumental setting for outdoor sculpture.



P. Richard Eells

Flat-plate concrete floor slabs, ribbon beams, and poured-in-place walls were selected—not only to relate to the older Saarinen building, but to maintain a shallow floor-ceiling system, thus providing maximum gallery heights. The basement of the new building is 15 feet below the level of Lake Michigan. It does not rest on pilings, but on a two-foot-thick reinforced concrete slab, which is heavy enough to withstand the pressure of the water pushing upward.

The diagram above and the axonometric drawings on the opposite and following pages show the arrangement of some of the mechanical and electrical systems in the new building. For purposes of providing uninterrupted exhibition space, the primary air distribution ducts are grouped together on the lowest level of the building and connected to risers sandwiched into the north and south exterior walls. Low-velocity conditioned air is ultimately introduced into the galleries through perforated cylindrical ducts above the lighting grid (diagram above).

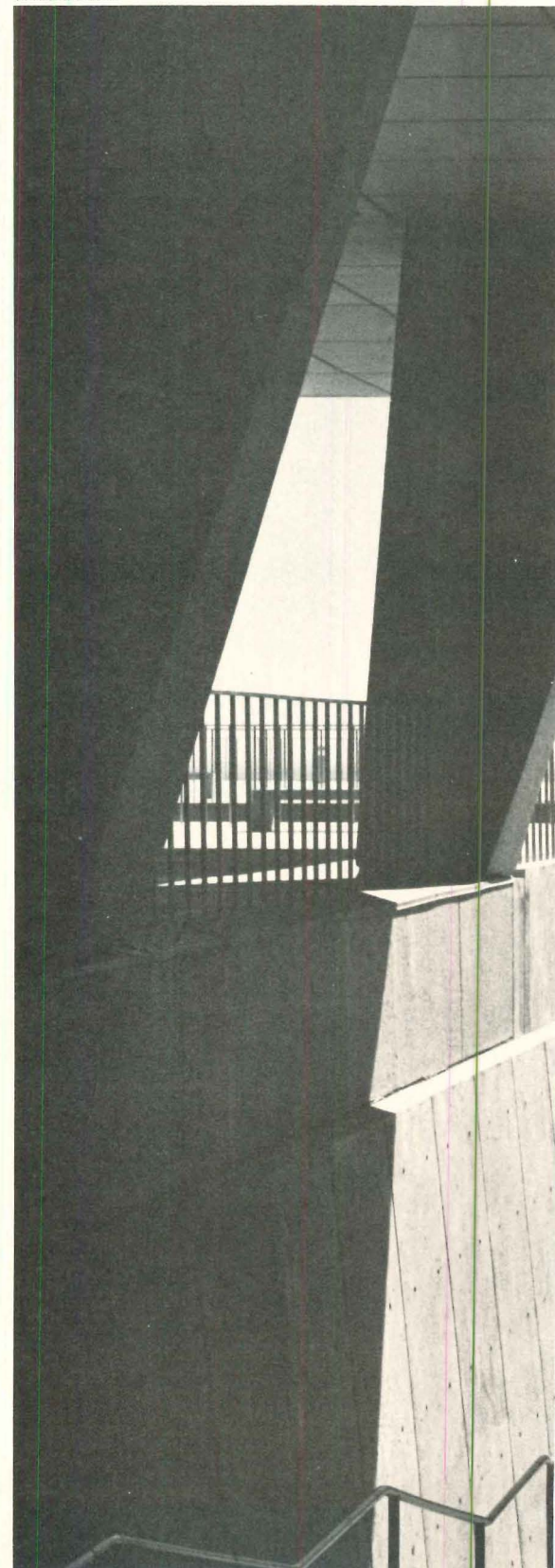
Also shown in the diagram above is the flexible exhibition lighting system—a combination of a four- by four-foot by eight- and one-half-inch deep aluminum grid, movable light supports, and light fixtures. This system easily accommodates changing demands for lighting, and it also provides lateral bracing for the movable partitions on which the art is hung.

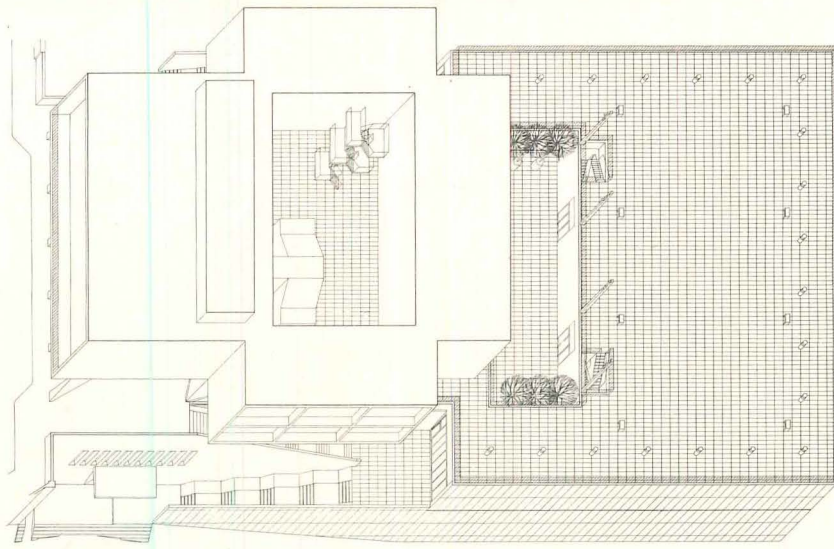
This kind of flexibility, according to architect Kahler, means that “every piece of art, no matter what its nature, can be displayed at its best. This contrasts with the design of many European museums. In those buildings, space was created for a particular piece of art, which was expected to remain in one place indefinitely. Ours is a different concept. Our displays are constantly changing. Besides, we recognize that art itself is changing, and that there is no way to predict for certain what it will be like in the future.

“Every effort has been taken to make sure that the art can be displayed not only to maximum advantage, but that it will be protected. Temperature and humidity are carefully regulated, and even in the storage areas banks of lights are provided, so that a painting can be studied or photographed without having to be removed from its rack. The goal is to reduce the handling of valuable works of art to a minimum.

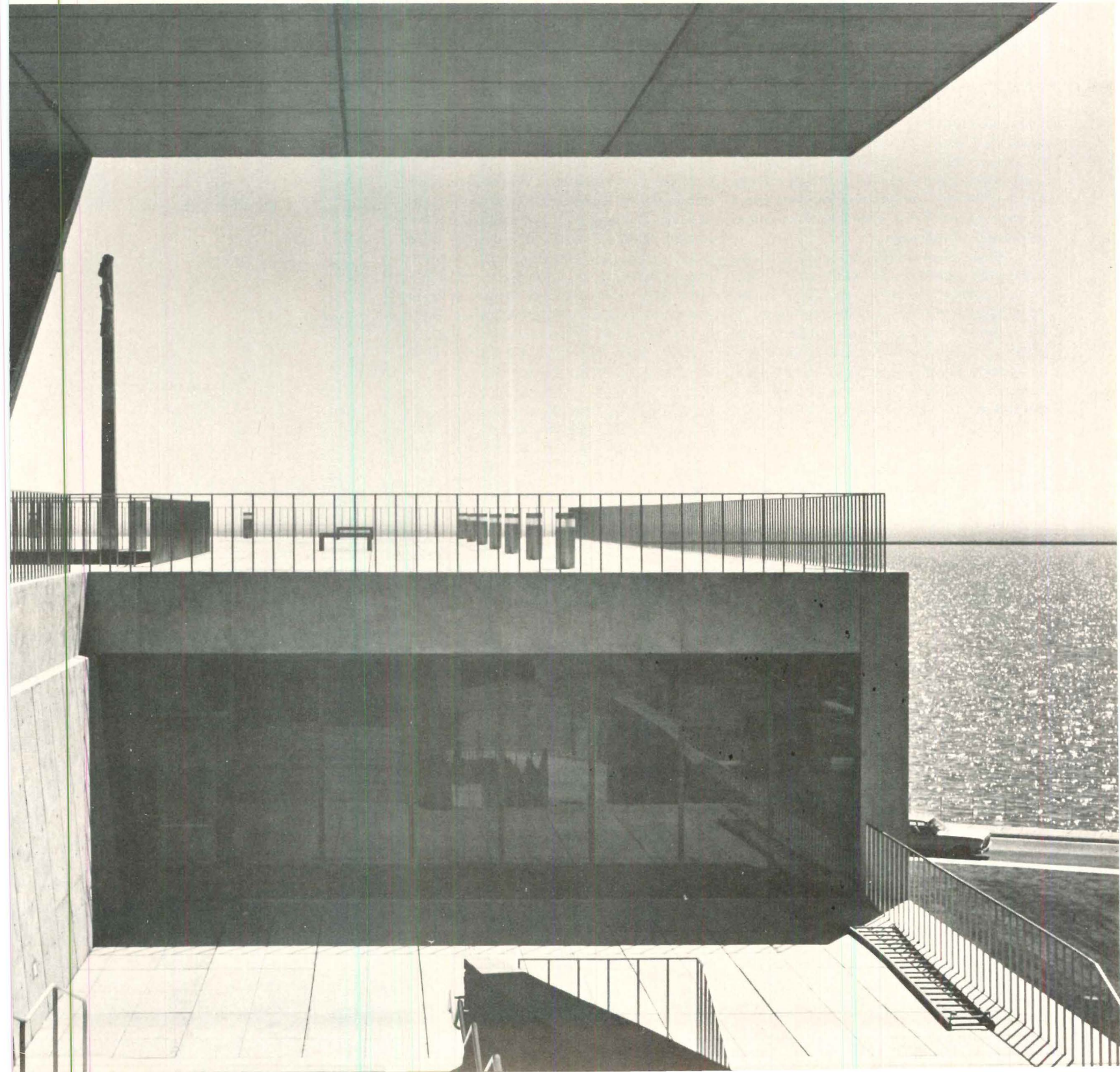
“On the north side of the building, there is an entrance that leads to an underground ramp. The purpose of this is that it lets a truck that delivers a shipment of art—a traveling exhibition, for instance—be kept in an enclosed space while the temperature is raised or lowered gradually, avoiding any danger of damage from sudden changes.”

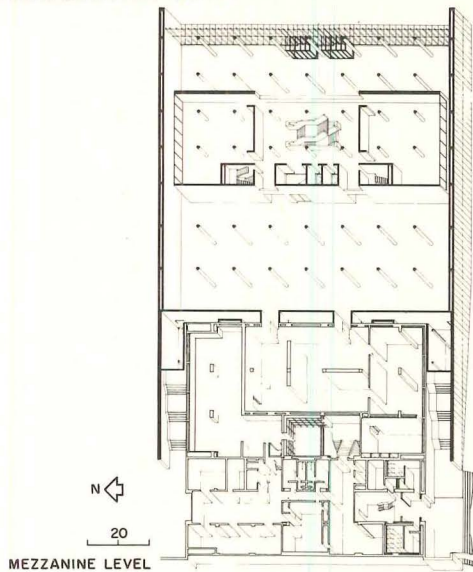
The Milwaukee Art Center contains almost 150,000 square feet of space, of which



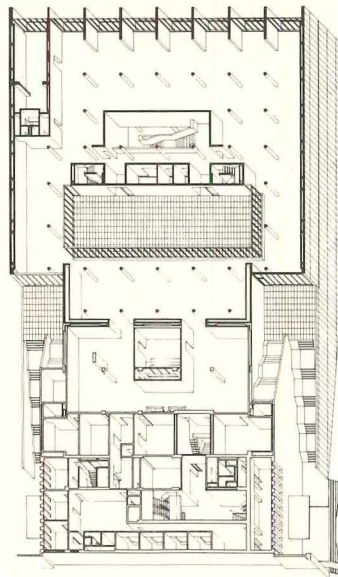


The photo on the opposite page shows a typical part of the mechanical and electrical system in the gallery ceilings. The axonometric drawing on the left shows the original building designed by Eero Saarinen and, to its right, the new extension by Kahler, Slater & Fitzhugh Scott. The large photograph below shows one entrance to the new extension, and, above it, the new rooftop promenade and sculpture court. In the background are the waters of Lake Michigan.





MEZZANINE LEVEL



UPPER LEVEL

about 55 per cent is devoted to exhibition areas. The joint between the old and new buildings is seen in the photograph on the right, and the profiles of both are seen below right from the waters of Lake Michigan.

"Saarinen's building," Kahler points out, "has had a dramatic effect on the Milwaukee lakefront. His design seems to float above it, his way of coping with the vast, intimidating scale of the setting, the flat panorama of the lake and the sky. The new building becomes a massive base for his cantilevered structure completed 18 years ago.

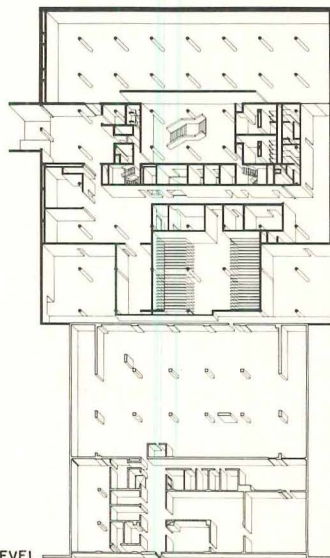
"The main entrance faces Lake Michigan, making full use of the views of the water. Deep pockets protect the windows on this side of the building from the sun, echoing the design of the original building. These windows and others, including those overlooking the sculpture garden, permit the introduction of natural light into the galleries, with special solar glass that reduces the penetration of ultraviolet rays and diminishes the heat build-up from the sun.

"The materials that are used, inside and out, are an honest expression of the building's structure. The best example is the concrete. Whether one views the monumental staircase, the wall of the lake level gallery, or the columns, a suggestion of the underlying skeletal frame is always apparent, and it contributes to an over-all sense of the integration of many diverse parts. The holes left by the forms

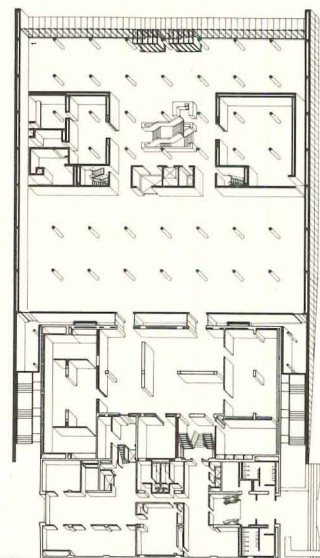
used to make the concrete wall slabs have been retained and closed with lead plugs on the outside for visual scale. They remain open on interior walls, where they are threaded and can be used for hanging massive pieces of sculpture or other heavy displays.

"The Memorial Court has become a focal point for Milwaukee. By making the roof of the new addition an extension of this area, we have provided a setting for new outdoor sculpture. Even the lighting for this rooftop promenade has been designed not to detract from the original building. Inside, it is difficult to tell when you walk from the new structure into the original building, or back again. Outside, it takes more than a casual glance to detect where one ends and the other begins. This is how it should be. When you visit the new Art Center, I hope that what you notice and remember is the art, not the building."

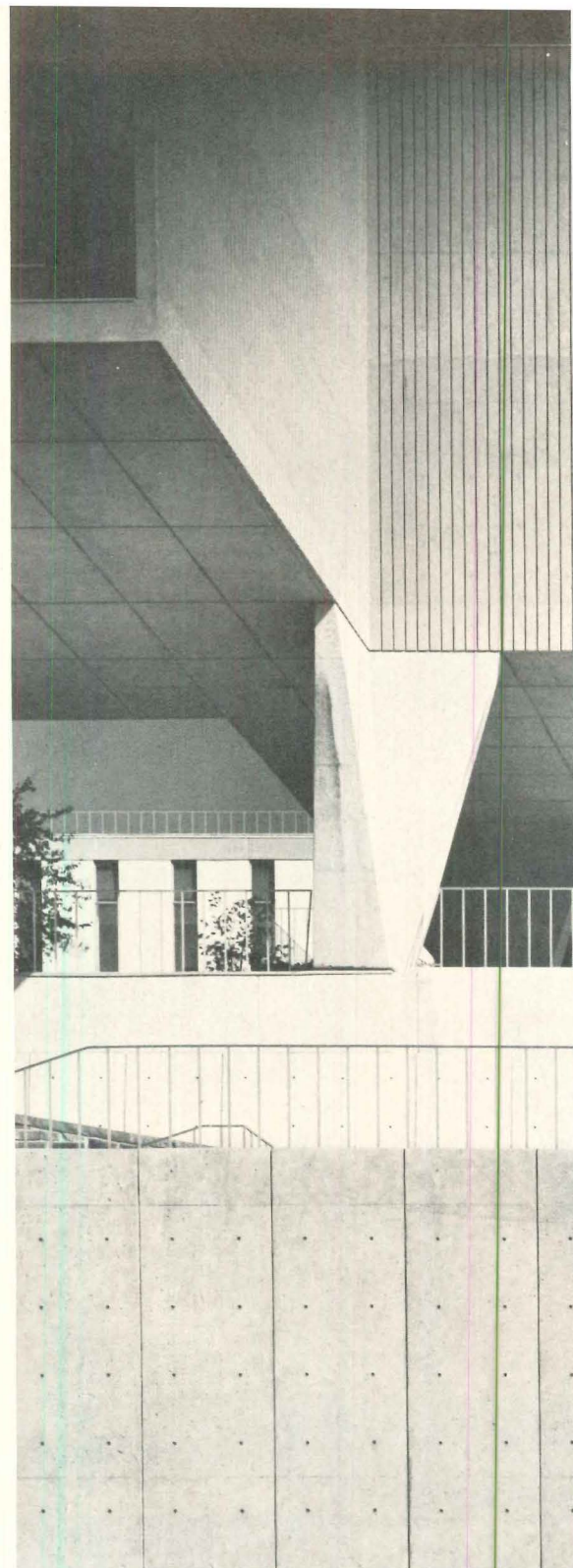
MILWAUKEE ART CENTER, Milwaukee, Wisconsin. Architects: Kahler, Slater & Fitzhugh Scott, Inc.—partner-in-charge and project designer: David Kahler; project architect: George Saar; construction supervisor: George Toller. Engineers: Ammann & Whitney (structural), Pittsburgh Testing Laboratory, Wisconsin Testing Laboratories (soils); Bert Fredericksen, Inc. (mechanical); Leedy & Petzold, Inc. (electrical). Consultants: Claude Engle (lighting); Lyle Yerges (acoustical). Lighting fixtures by Edison Price; movable furniture by Robert Forrest. General contractor: Klug & Smith Company.



LOWER LEVEL

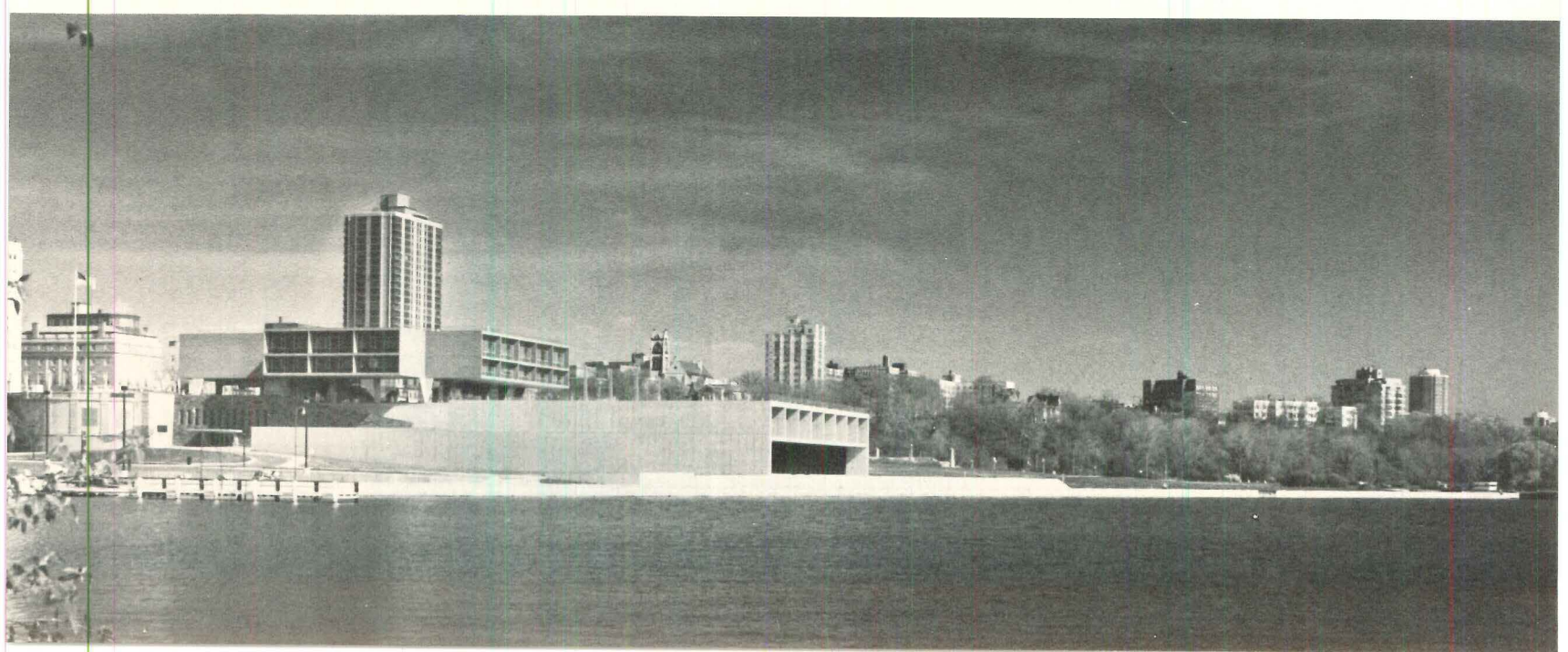
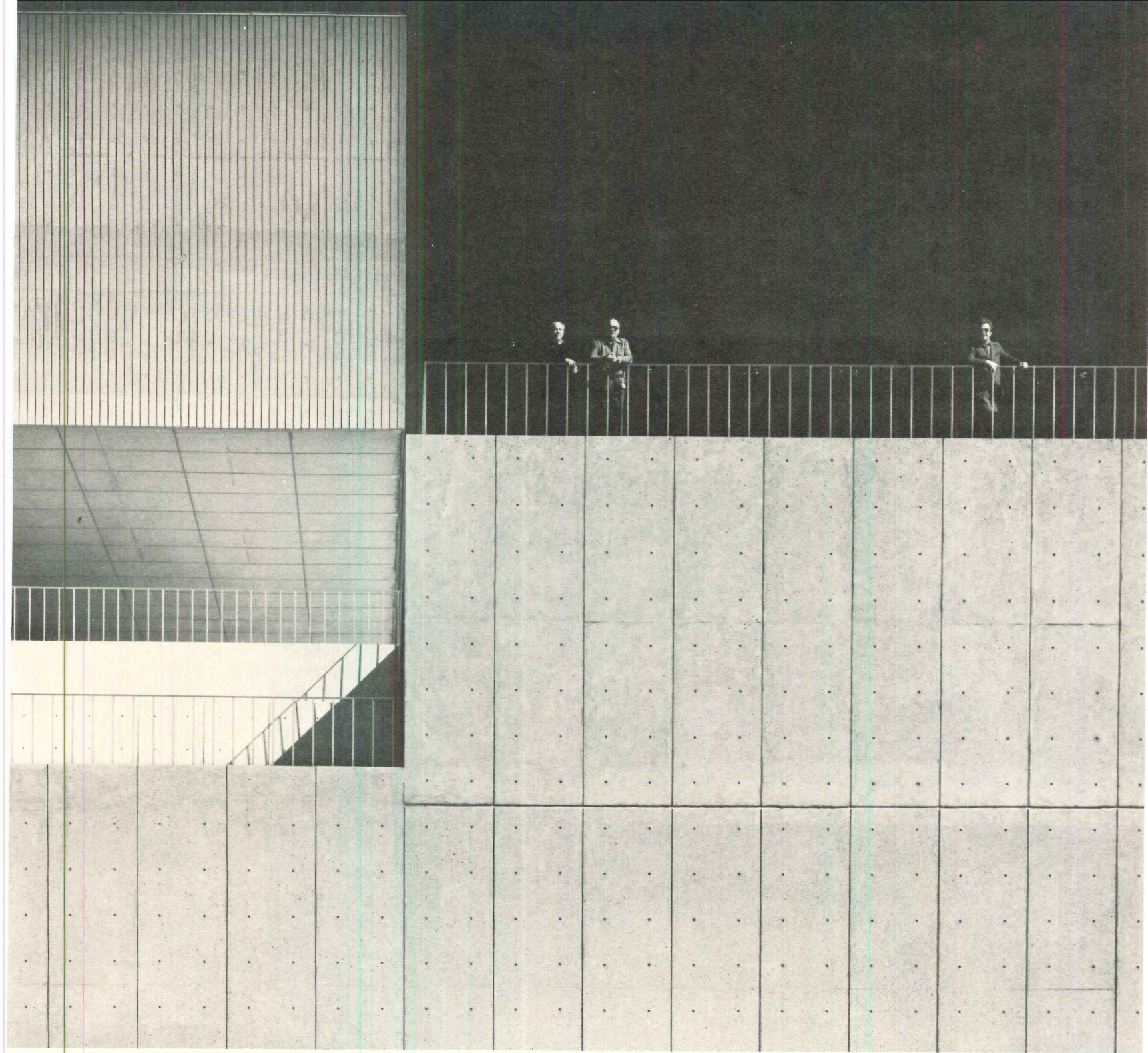


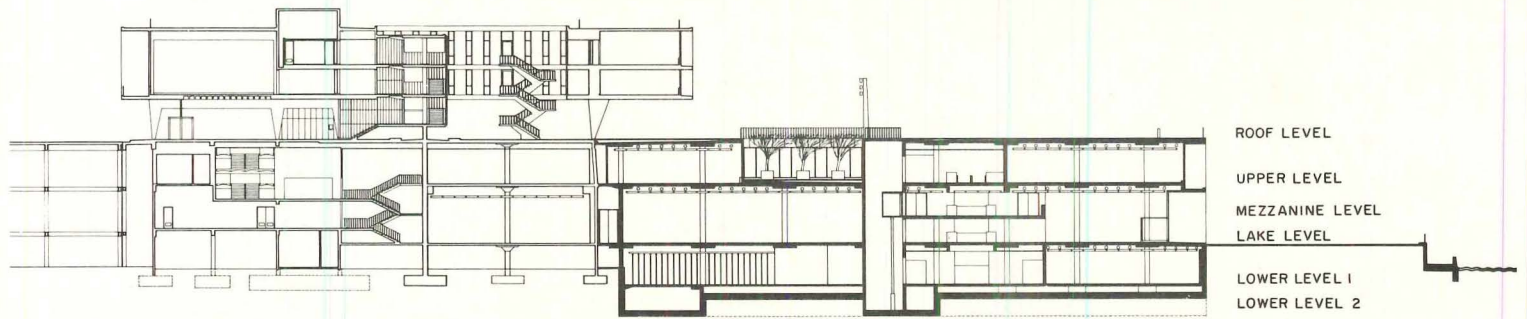
LAKE LEVEL



P. Richard Eells photos

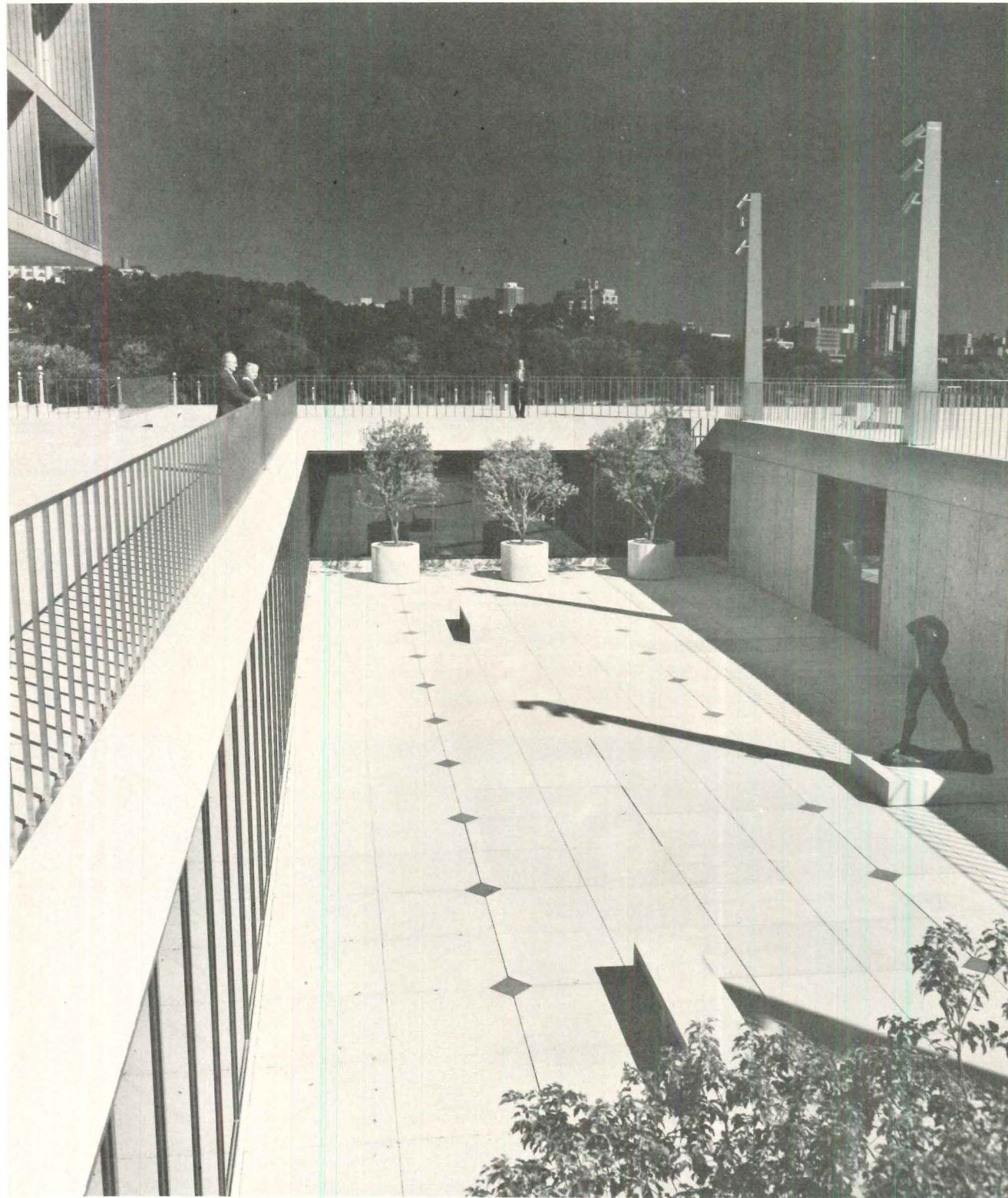






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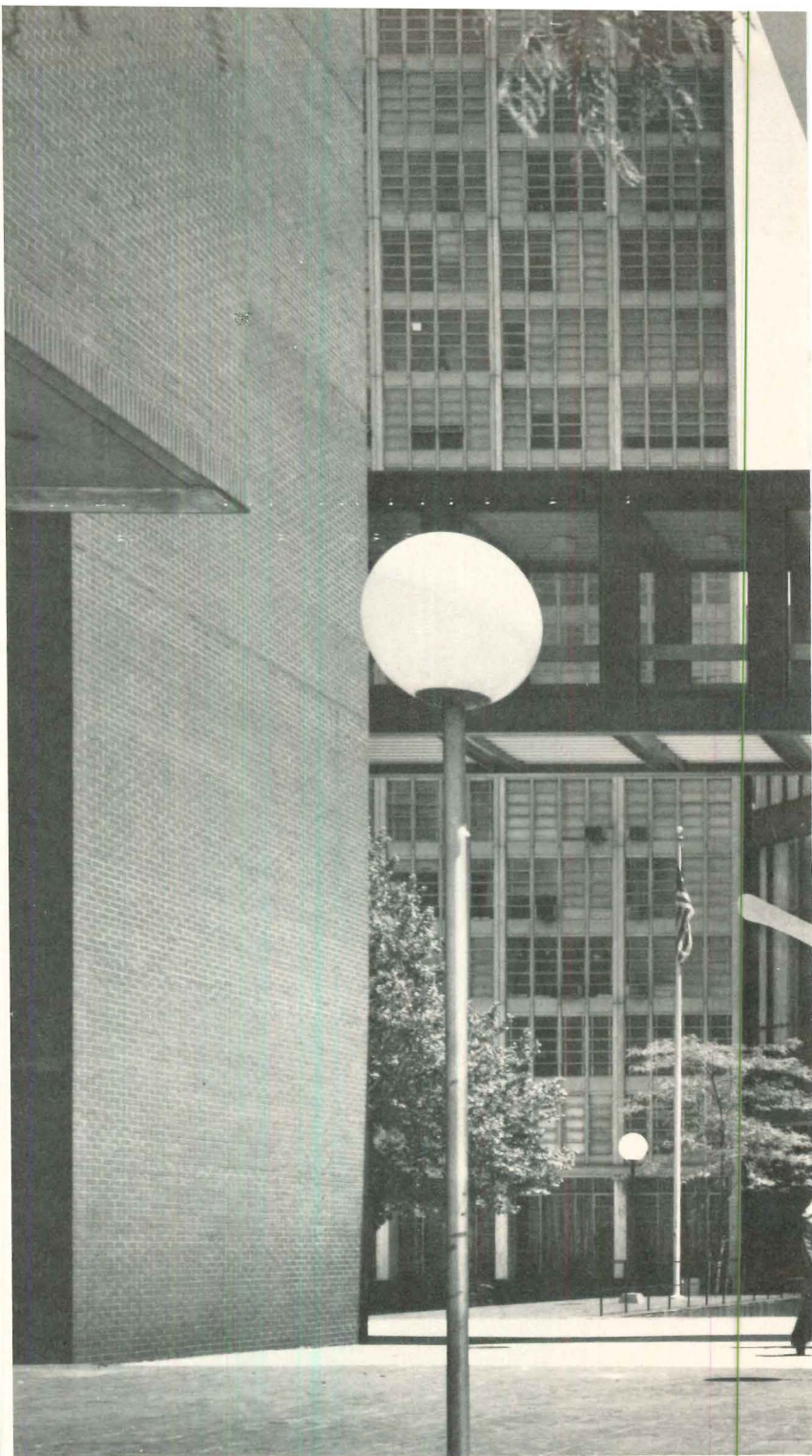
The section above shows the original Saarenen building on the left, with the new extension projecting outwards towards the waters of Lake Michigan on the right. The photograph on the left shows the recessed courtyard for sculpture in the roof level of the new building. This in turn opens into the gallery on the top level, introducing natural light into its center.





L.I.U. LIBRARY: A FINAL CAMPUS LINK

Tying together the formerly unrelated buildings of the Brooklyn Center branch of New York's Long Island University, this just-completed library and "learning center" by architects Davis, Brody & Associates/Horowitz & Chun now fills an almost-final missing link in a master plan prepared by the architects for a campus of structures that originally were almost all built for other uses. In creating a cohesive whole from these disjointed parts, this new \$8-million building has an impact on the entire downtown of Brooklyn, for which the campus forms an "anchor." Of special interest to architects everywhere is the way in which the program for this building—like the program for the entire university center—has adapted to quickly changing needs and budget crises; a valuable demonstration of how to get buildings built in these troubled days.—C.K.H.



Over ten years ago—when architects Davis, Brody & Associates/Horowitz & Chun completed their master plan for the Brooklyn Center of Long Island University—the plan seemed an innovative but modest proposal of combined new construction and re-use of an odd collection of neighborhood buildings. The goal was a quality—but very low budget—university, intended to anchor an urban center designated for commercial, residential and civic “renewal” projects, all to be financed by a combination of public and private monies. Today, L.I.U.’s part of the intended construction—most of it designed by the master planners—is nearing fulfillment, while many of the more ambitious projects nearby have been diluted, temporarily shelved or outright abandoned. The success on the campus could well be attributed to the sensible over-all planning approach that was well ahead of its time—utilizing available physical assets (although a viewer then might have thought the existing structures hopelessly unattractive).

In order to make a unified grouping of the randomly placed buildings to be re-used, the plan called for the definition of a central campus yard by the placement of a new library (dark shadowed on site plan). That building can be seen today in the top photos above, on the right hand side. The yard had been a street, and the continuing requirement

of a utility easement and access to a transit authority facility (Figure 4 on the site plan) is accommodated by an outdoor passage through the new structure (photo above, left). The diagonal wall of the library is planned both to lead the visitor into the yard, and to reflect the greenery there to the outside street. There was a conscious decision not to make the wall of mirrored glass, so that the activities within the library would also be evident.

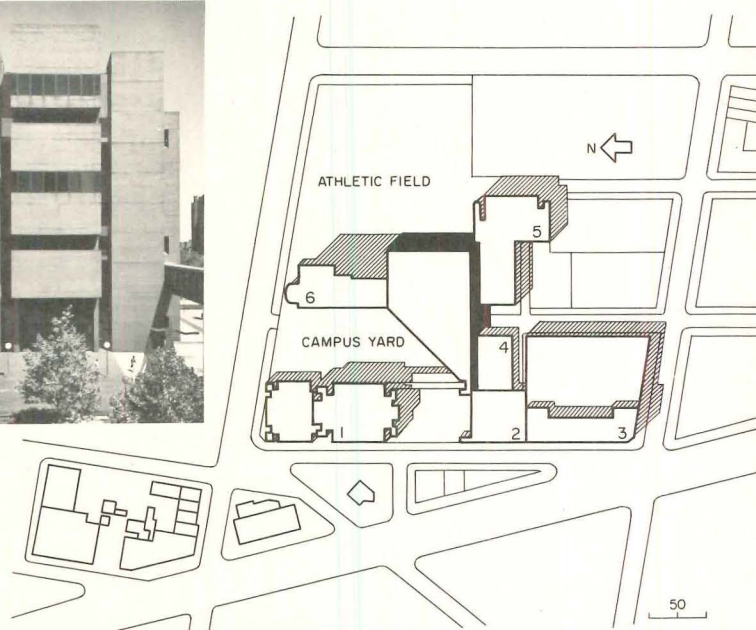
Construction under the master plan began in the late 1960s with the conversion of a nine-story industrial plant into the Humanities-Social Sciences Building by a distinctive replanning and resheathing of the original sturdy structure (small photo, opposite and Figure 1 on site plan). At this time, a decision was made to link all of the buildings by connections at the third-floor levels, to reduce vertical transportation on the multi-story campus. Accordingly, each building was to have two “main” floors. Subsequent conversions of a used-car agency (Figure 2 on the site plan) and early-twentieth-century movie “palace” (Figure 3) provided classrooms, offices and a gymnasium.

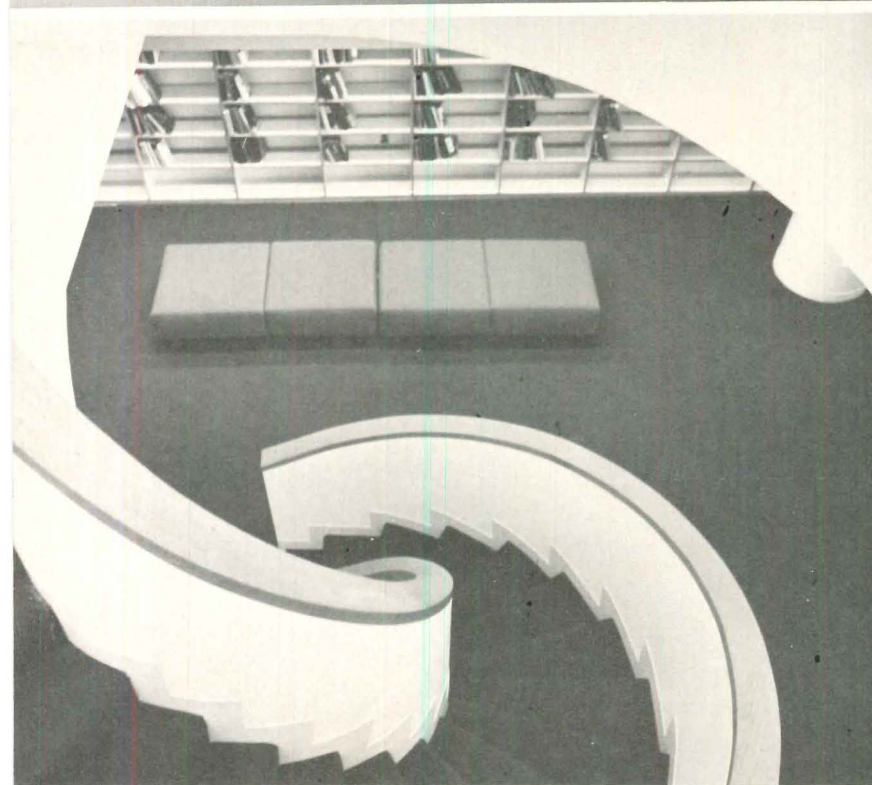
But of paramount importance to the physical scheme was the construction of the large new library building that would tie the disjointed structures together into a homogenous whole. While the earlier conver-



sions of the original structures were well within the bounds of available monies, the financing of the all-important "missing link" foundered—a not-unfamiliar problem in the early part of the 1970s, when both shrinking sources for monies and a shrinking student body reduced the potential size of a new library well below that which would make an over-all impact on the campus.

Not insensitive to the loss of a cohesive over-all plan by such a reduction, L.I.U. chancellor and architectural critic Albert Bush-Brown saw the chance to wed facilities for newly emerging needs with those for the library, and the originally planned size of the new building was retained. These added uses serve the needs of the poor adjacent communities, of businesses in the downtown area and of five nearby colleges. Today, beyond providing remedial programs for the educationally disadvantaged, the learning center also provides a full range of technologically advanced teaching aids and hence ways of dealing with local and universal urban problems. Businesses are using the multimedia-study facilities and the reception area; the adjacent colleges use all of these facilities, and participate in a program for the interchange of source materials that are "strong" in different areas at each institution (Brooklyn Center is oriented toward the Humanities, Social Sciences





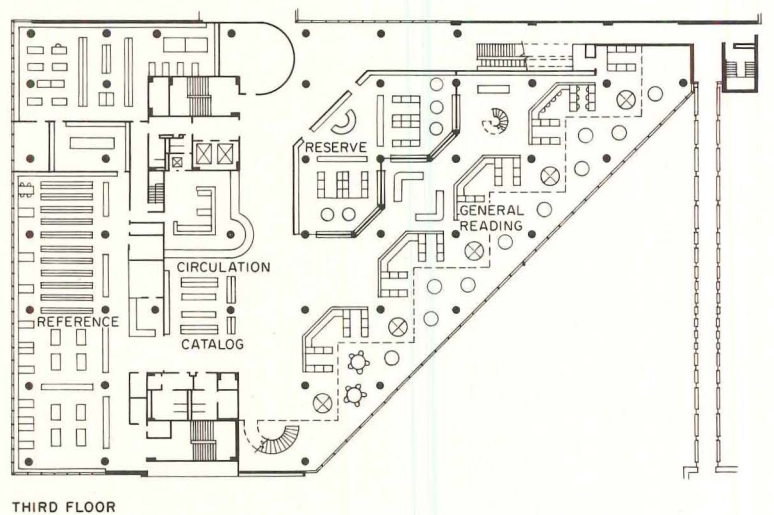
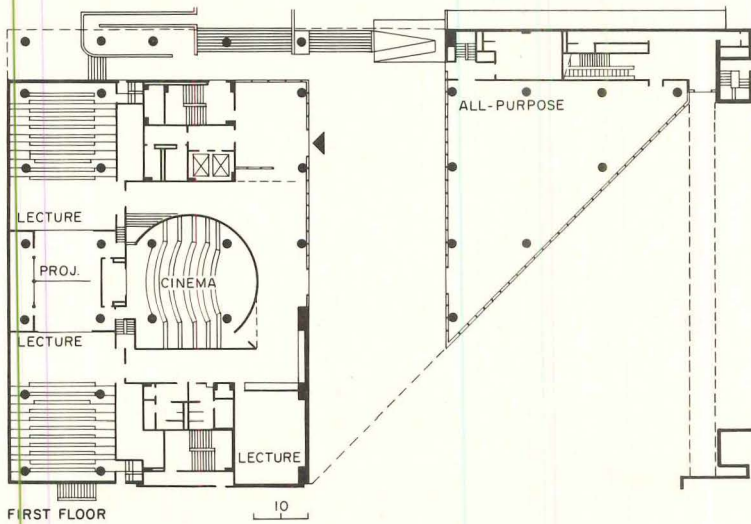
and Biology). All of these newly found functions are providing income in the form of grants, rents, and donations because of the involvement of the general public. And the result for L.I.U.'s students has been the resource for a more complete and dynamic academic experience.

The five floors of the new 140,000-square-foot building are divided into a library at the top and a learning center on the bottom. The first level of the library (photos above and opposite page, far right) is on the third floor, which becomes a main floor of the building because of its location on the bridged pedestrian passage through the campus. Here and on the mezzanine level above are located open stacks, lounge-like areas and desks for 1,800 students (the large number is to accommodate a very high percentage of commuting students who have nowhere else to study between classes). The various types of desks range between semi-isolated (photo, above right) and completely exposed, like those at the mezzanine-level railing (adjacent photo, opposite page). Closed stacks are located on the top floor. The structural support for a capacity of 400,000 books dictated an industrial-type, flat-slab-concrete construction, and the splayed columns are reminiscent of those in the nearby remodeled Humanities Building.

But it is really on the floors below the library that the building takes

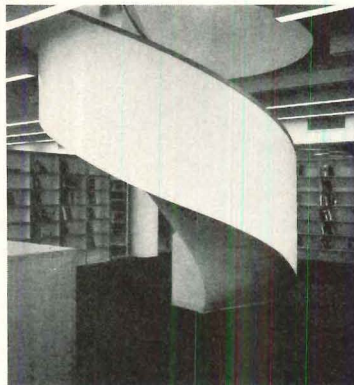
on its unique character. Because of the open pedestrian passage and a utility easement underneath, the first two floors of the building and the basement below are split in two parts. The part to the left (plan, opposite) contains the learning center. On the ground floor, there are three large rooms for multimedia presentations from a central rear-screen projection facility. On the floor above are study spaces, ranging from laboratories to small private offices (top photo, opposite), surrounding a central computer station with feeders for remote reception. The basement contains preparation spaces for the various types of presentation above.

It is in this learning center that the full concept of the building is realized, for it is here that all of the various types of media—from books to the computer-connected screens—can be united to produce "in-depth" coverage of the many programmed categories of available subjects for study. Perhaps the most controversial element of the building—during planning—was the triangular multi-use room (right side of ground floor plan). This was intended as a theater for "live" performances, although there was some conjecture on how the space would function as such. Actual use of the room has borne out the architects' intentions; the room has been successful for both L.I.U.'s theatrical



L.I.U. LIBRARY-LEARNING CENTER

Robert Gray



Because of the necessary verticality of buildings on a restricted site, a number of devices are here used to make the transition from floor to floor as natural and pleasant as possible. Besides reinforcing the character of the third floor of the building as the main floor of the library, the pedestrian links at this level—including the bridge between the Humanities building and the library (photo, left)—aid a very high percentage of handicapped students in moving from building to building. This bridge, supported by two steel Vierendeel trusses, is cantilevered from a central support to the Humanities Building, and is anchored in the structure of the library.



groups and for community groups, which are eager to use it. (Below this space is the mechanical equipment room for the entire building.)

According to Bush-Brown, "if a university can be known for marshalling its resources to offer broad educational opportunities, that university will win the generous support needed for its prosperity." And the chancellor's thoughts seem to be taking effect. A new pharmacy college is nearing completion adjacent to the library, and funds are accumulating for the resheathing and remodeling of an older dormitory building and for the conversion of two triangular lots opposite the entrance (now occupied by gas stations) into parks. The dormitory (visible in the background of the exterior photographs) is a remnant of earlier campus construction before the current master plan. Built before a later shift to largely commuter enrollment, its new uses will include a student center.

LIBRARY-LEARNING CENTER, Brooklyn, New York. Owner: *Long Island University*. Architects: *Davis, Brody & Associates/Horowitz & Chun*—project architect: *Robert Scheu*; team: *Phyllis Birkby, Cynthia Peterson, Tom Durant*. Engineers: *Wiesenfeld & Leon* (structural); *Wald & Zigas* (mechanical/electrical). Consultants: *Cerami Associates* (acoustical); *David Mintz, Inc.*, (lighting); *Rosanne Gordon* (interiors). Landscape architects: *Balsley, Balsley, Kuhl*. General contractor: *J. Baranello & Sons*. Sculpture: *William King*, courtesy of the Public Arts Council.



**FIVE PROJECTS
BY ARCHITECTURAL RESOURCES
CAMBRIDGE, INC.
TWO STORES,
ONE HOUSE,
A BANK
AND AN
ARTS CENTER.**

Architectural Resources Cambridge, Inc. is a young firm of architects and planners founded six years ago in Cambridge, Massachusetts. Working together are James F. Davies, Joseph Maybank, Robert N. Nizel, Henry S. Reeder, Jr., Colin L.M. Smith and Arthur Cohen. The firm has been responsible for a wide variety of projects beginning with the renovation of their own offices in an old clapboard building on Harvard Square and including the projects shown on the following pages. With the exception of the Nantucket house, which shows a very high degree of sensitivity to that island's vernacular architecture, all the other projects consist of very skillful additions and renovations. Included is the new Design Research store in the historic Van Rensselaer mansion in Philadelphia's Rittenhouse Square, a sports shop (above), a remodeling and addition for music and art at the Groton School and a simple and effective "re-styling" of a suburban bank.

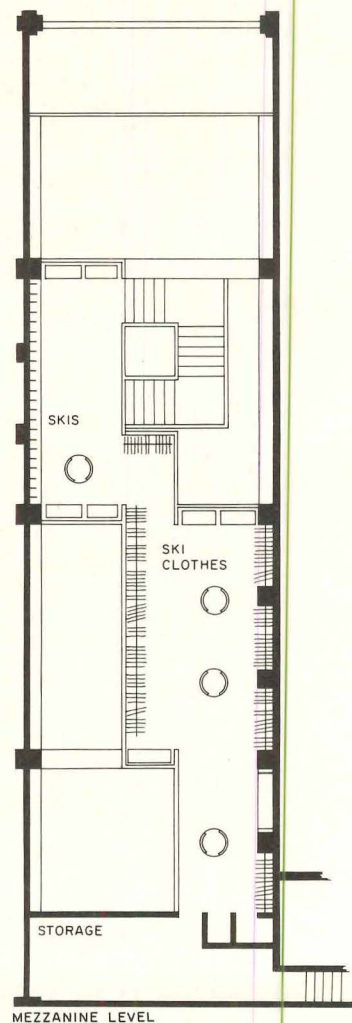
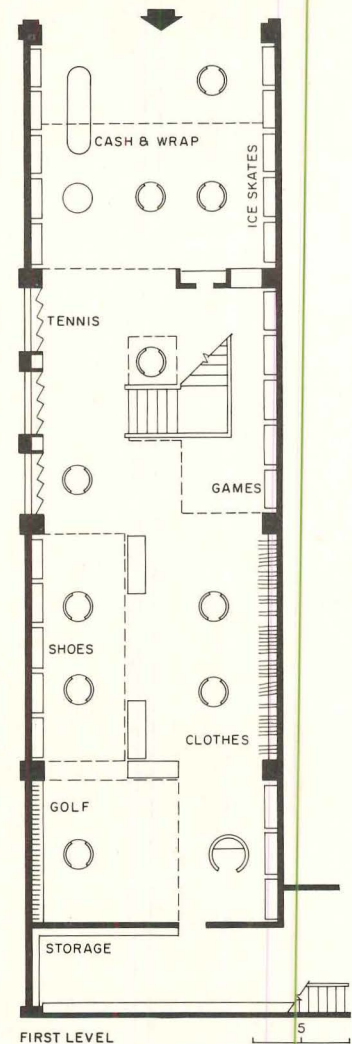
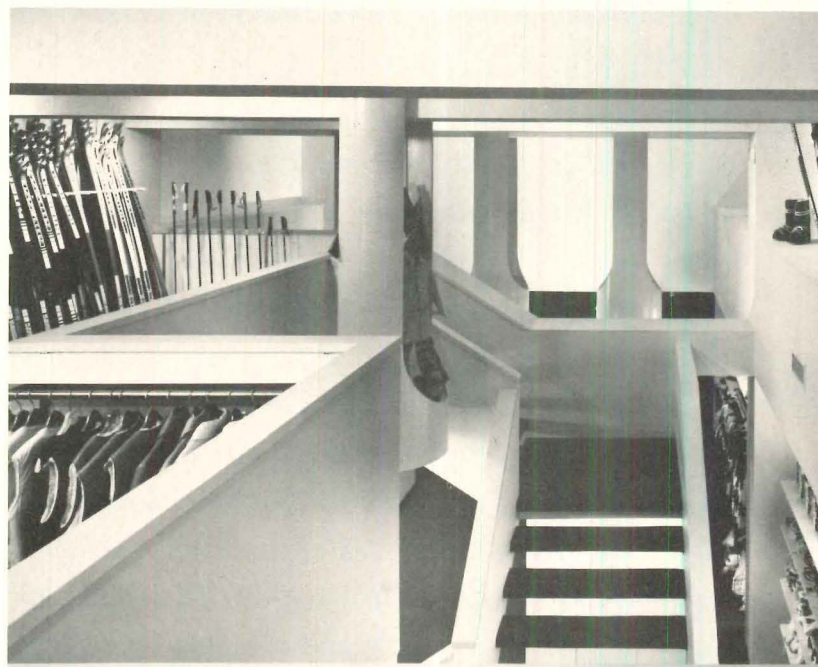
Plastic glamour:
Skis and ski clothes are
among the best looking
and competitively styled
products in the world.
This shop makes them
look even better

Ski equipment and clothes are most often in primary colors and in geometric patterns. Some of the most skilled graphic artists and product designers in the world lavish attention on the design of the trademark of a ski or boot, which is a big part of the "look" of what is usually a very well designed product. A rackful of skis or boots or vests is a handsome sight—if well placed in space, against complementary colors and carefully lit.

The fixtures designed by Architectural Resources Cambridge Inc. for Sport + Fischer evoke and harmonize with the shapes and graphics of ski equipment. The lighting emphasizes and enhances this particular kind of merchandise as do the strong background colors. This attention to the detailing of lighting, fixtures and color gives the shop the feeling of a totally integrated environment. The simplicity of the over-all design allows the products to dominate.

As the plans indicate, the major sports are sorted out into clearly defined areas, while at the same time the customer can move easily from one area of the store to the next. Careful attention was paid to the creation of uninterrupted sight lines to provide quick reference for customers seeking specific items and as an aid to store personnel in the servicing and control of the sales area. The strong round shapes of display units and lighting fixtures are fiberboard tubes—one of the techniques used to keep fixture and construction costs to a minimum of approximately \$15 per square foot.

SPORTING GOODS STORE, Newton, Massachusetts. Owner: Sport + Fischer, Associated Retailers, Inc. Architects: Architectural Resources Cambridge, Inc. Engineers: Weidemann Brown, Inc. (structural); W.N. Peterson Associates, Inc. (mechanical); Bay Design Group, Inc. (electrical).



Nick Wheeler photos



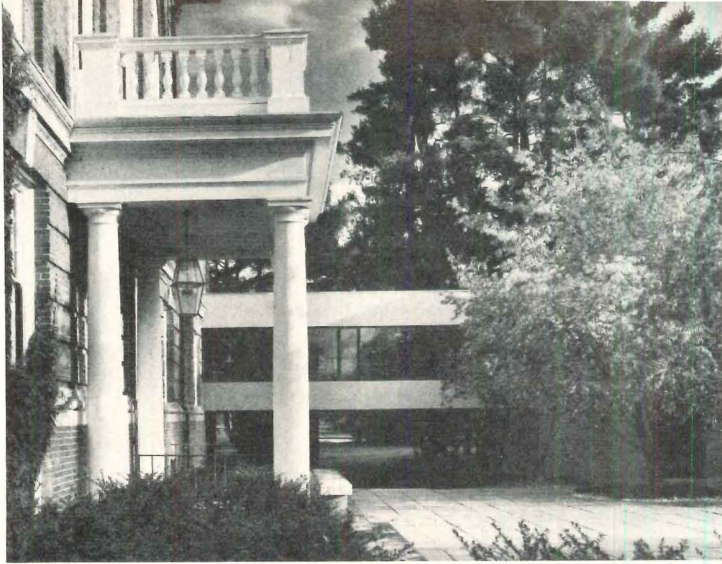
Upgrading a baseball cage to an arts center: Groton, a boys' prep school now co-ed, is adjusting to girls by renovation as well as new construction

When Groton became co-educational in the fall of 1975, increased emphasis was placed upon programs in art and music. Educators believe that such programs have, in addition to their intrinsic value, the merit of bringing shy boys and girls together; and art and music facilities, therefore, tend to be related spatially to a school's social center—usually a dining hall or a student union.

As part of this program, Groton's administrators decided to link up a little used baseball cage with the adjacent dining hall by means of new construction. The baseball cage has been remodeled into a visual arts center (photos opposite page). The new addition shown adjoining the dining hall (top photo) comprises the new school center (this page). A second addition—the music building shown in the plan—will be constructed at a later phase. The new wing, constructed of brick and precast concrete, has been shaped to screen the service area of the dining hall and at the same time to form a garden, which will become a new focal point for campus activities.

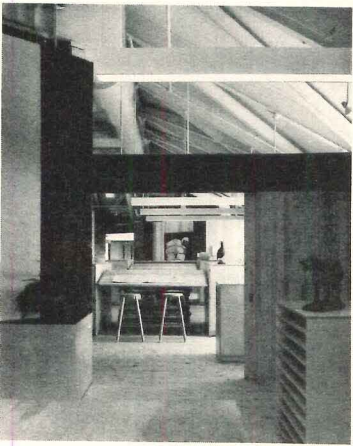
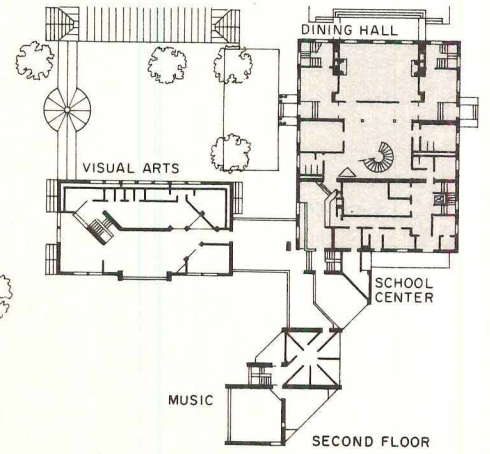
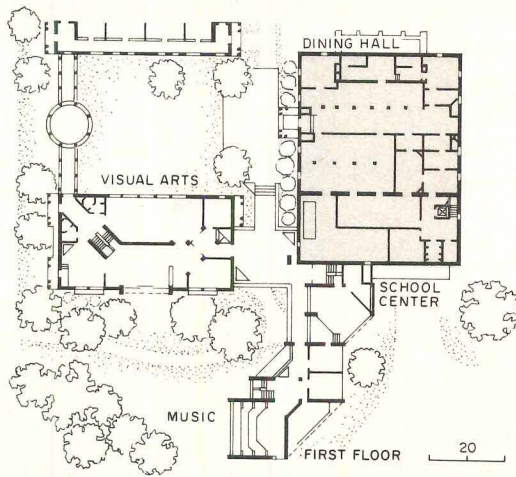
A corner of the dining hall has been renovated into a snack bar. The baseball cage has been transformed into a multi-level structure with studios, workshops and darkrooms giving a total of 8,000 square feet of usable space.

SCHOOL CENTER AND ART AND MUSIC FACILITY FOR GROTON SCHOOL, Groton, Massachusetts. Architects: *Architectural Resources Cambridge, Inc.* Engineers: *Le Messurier Associates, Inc.* (structural); *Francis Associates, Inc.* (mechanical/electrical). Consultants: *Bolt, Beranek & Newman, Inc.* (acoustical); *Carol Johnson and Associates, Inc.* (landscape). Contractor: *Granger Brothers, Inc.*



Nick Wheeler photos





Within the baseball cage are three levels of interpenetrating vertical space (top). Just under the roof (above) is the architecture and graphics studio. An all-purpose work space is shown at right. The structural and mechanical system is exposed and painted white.





**Marimekko's mansion:
The 1890's Van Rensselaer
house, a designated
landmark in Philadelphia's
Rittenhouse Square,
becomes a retail store
for Design Research, Inc.**

Tom Crane photos



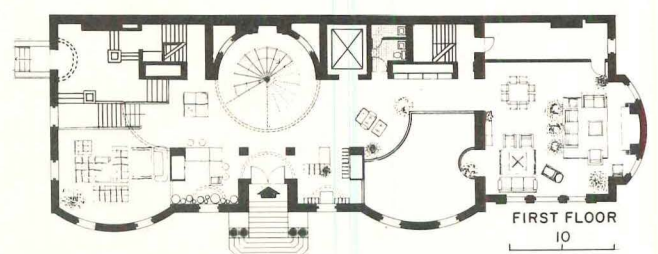
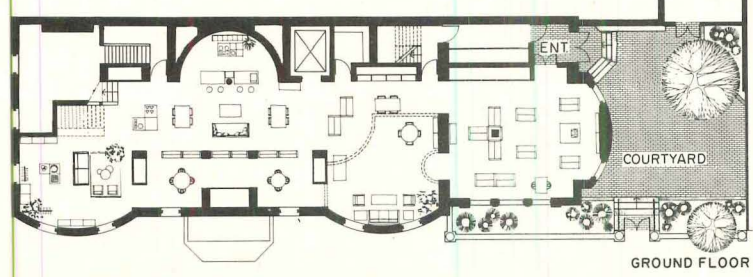
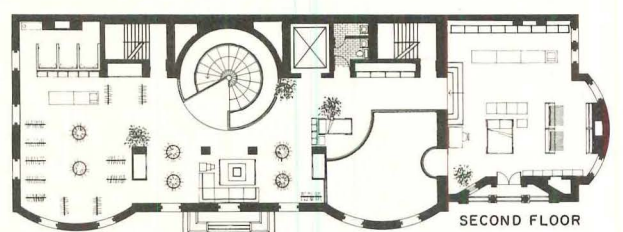
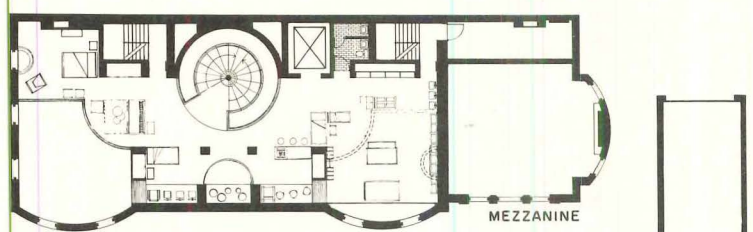
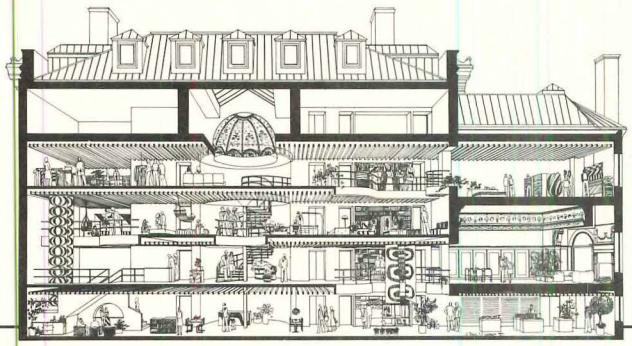
As the architects for Design Research, Inc., Architectural Resources Cambridge, Inc. were given the challenge of transforming the historic Van Rensselaer mansion into a retail store for the display of contemporary furnishings, fabrics and accessories. This was to be accomplished without changing the exterior appearance.

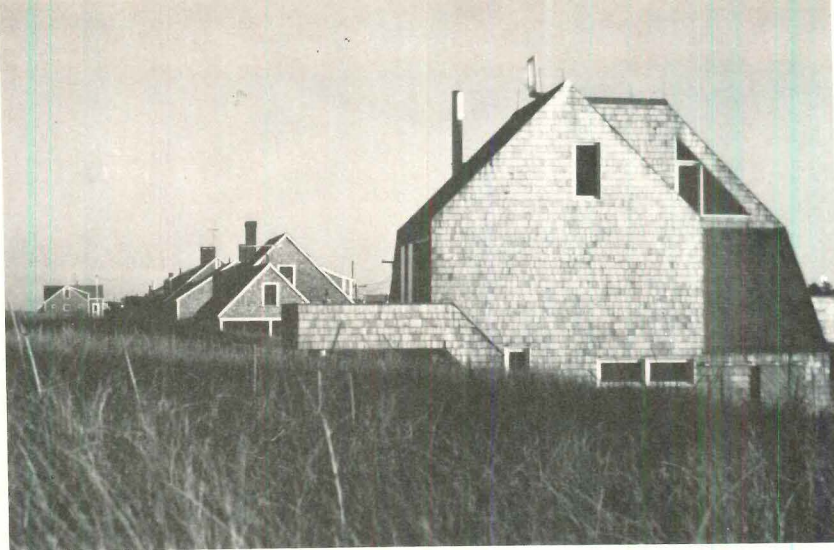
The existing three high-ceilinged floors were removed and four new levels were built, using several two-story spaces to draw the customer up and through the store. The magnificent stained glass dome (opposite page left) was retained to become the focal point for the new circular stair. The multi-level spaces are designed to provide glimpses of displays throughout the store and to retain a flow of light and movement integrating the entire space. The visitor's eye is constantly led upward, through and beyond from one level to the next.

The architects strove to preserve the integrity of the building by changing the exterior as little as possible while maintaining the important interior features of the house. In addition to the stained glass dome, these include the former dining room (opposite page top right) with its elegant painted ceiling.

The interior walls have for the most part been painted white to reflect as much of the available light as possible, bouncing it back and forth from one level to another. These bright interiors form a striking contrast to the somber richness of the granite exterior, which for almost 90 years has belonged to Rittenhouse Square.

RETAIL STORE FOR DESIGN RESEARCH, INC., Philadelphia, Pennsylvania. Architects: *Architectural Resources Cambridge, Inc.* Engineers: *Mitchell Systems, Inc.* (structural); *W.N. Peterson and Associates, Inc.* (mechanical); *Bay Design Group, Inc.* (electrical). Contractor: *John S. McQuade Company, Inc.*





Nick Wheeler photos

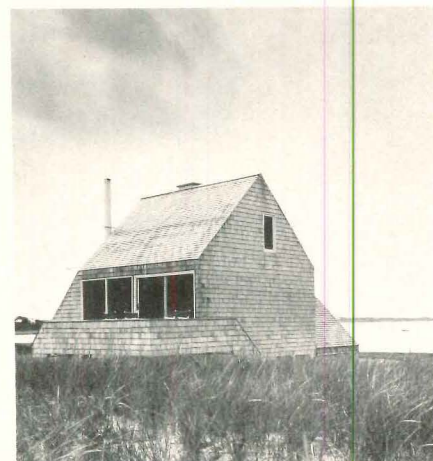
**Community and privacy:
A Nantucket house for a
large family has
generous spaces to be
shared by all combined
with private retreats
for each generation**

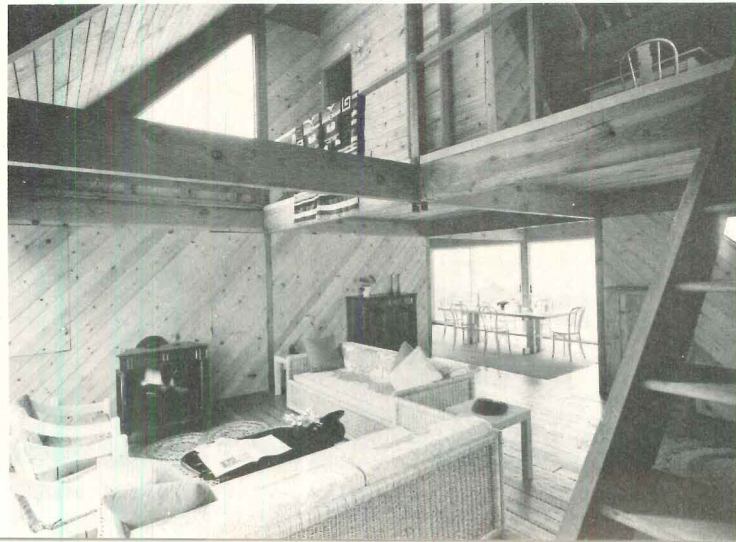
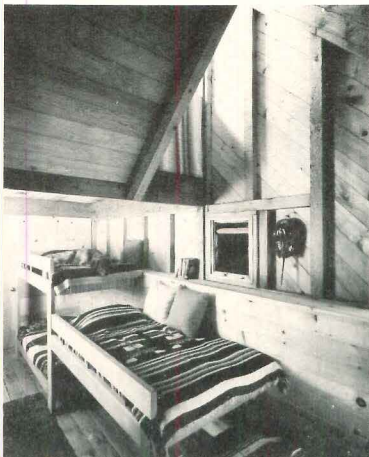
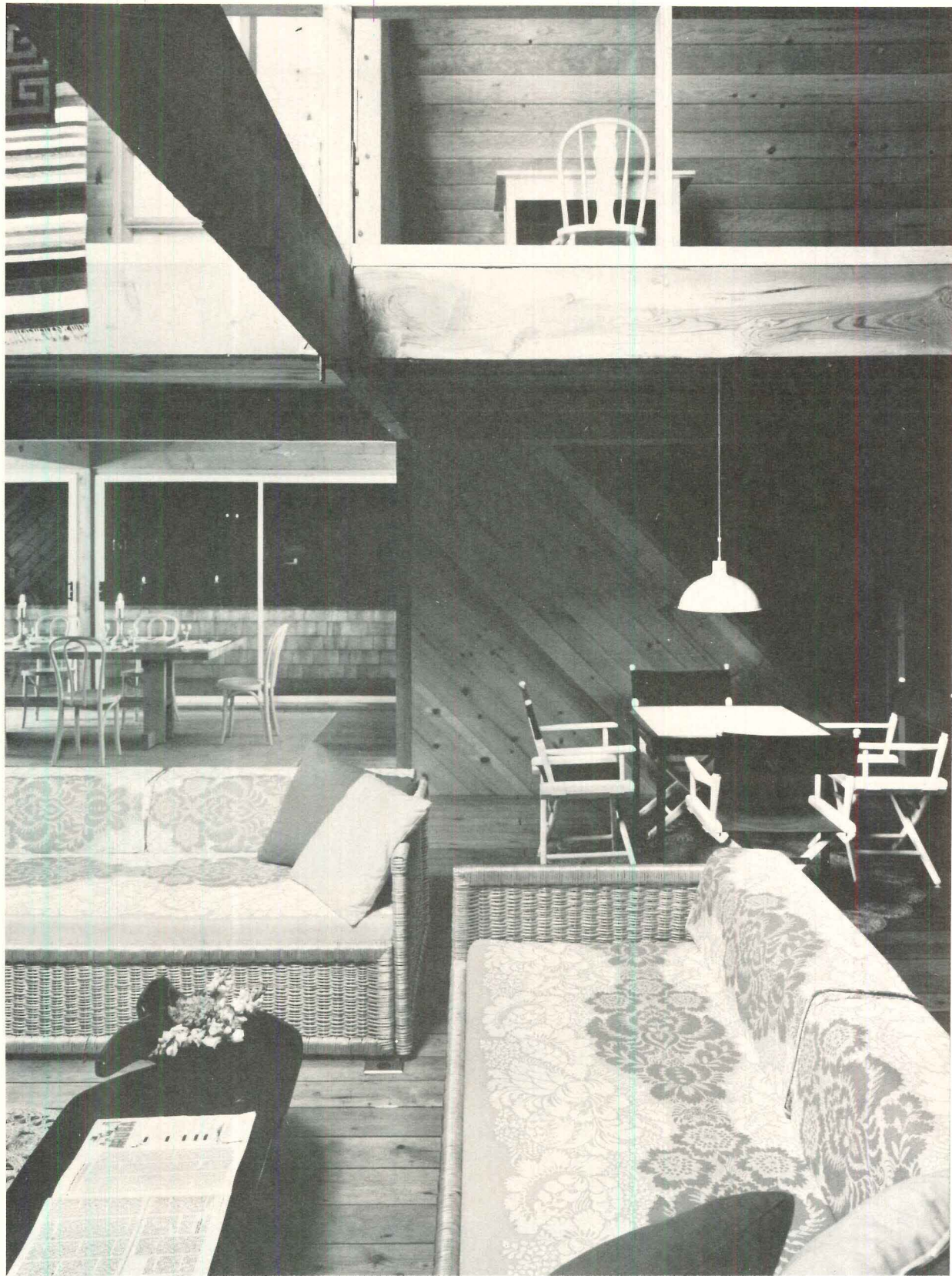
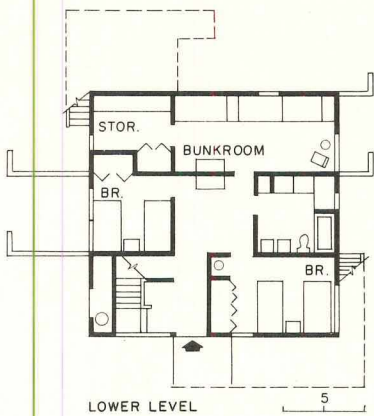
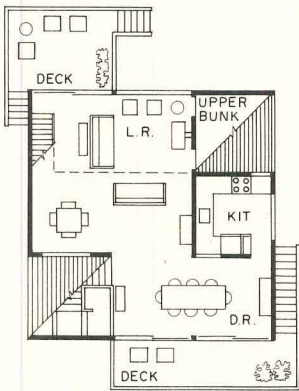
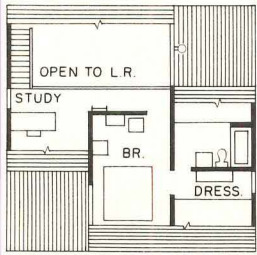
This vacation house was designed for a three-generation family to spend holidays together in. Grandparents, parents and children use the house simultaneously and require as much privacy as possible. The plan permits the parents and children to share the lower level with its own private entry, two master bedrooms and a bunkroom for the children. The grandparents share a bedroom, bath and study on the upper level. The middle level is devoted to shared living, dining, and kitchen.

The design had to take into account views of the Atlantic Ocean to the east and Nantucket Harbor to the west. In keeping with the traditional architecture of Nantucket, examples of which border the house on both sides (top photo this page), roof planes were pitched at 45-degrees and the entire house was clad in cedar shingles. To take advantage of both spectacular views, the living level and terraces were placed on the second floor.

To circumvent the difficulties of island construction, the house was designed in modular panels and pre-fabricated elsewhere.

PRIVATE RESIDENCE, Nantucket Island, Massachusetts. Owners: *Mr. and Mrs. Preston C. Carnes*. Architects: *Architectural Resources Cambridge, Inc.* Engineers: *Weidemann Brown, Inc.* (structural). Contractor: *Spacemaker, Inc.*





**Almost all right:
This brick bank
with its stock shutters
and colonial door,
has been completely
transformed by a few
additions and deletions**

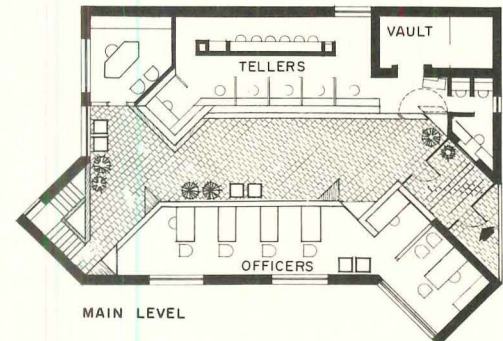
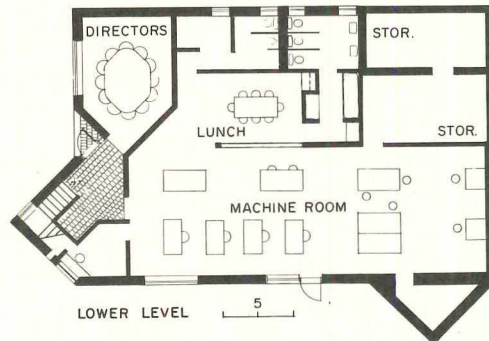
The occupant of the pseudo-colonial box was a growing and progressive bank, which had decided that it needed to occupy a building more in keeping with the contemporary business image that the bankers wished to project.

To add interest to the facades and provide additional interior space, the architects added a triangular element to each of two corners. One encloses a stair and the other an office. Shutters and the colonial door were removed and the fenestration was changed to effectively light the re-arranged interiors.

All that remained to be done on the exterior was to unify the old and new brick walls by painting them in a single dark brown color. The interiors, designed by the architects, are of quarry tile, oak and fir.

TANNERS NATIONAL BANK, Woburn, Massachusetts. Architects: *Architectural Resources Cambridge, Inc.* Engineers: *Wiedemann-Brown, Inc.* (structural); *W.E. Peterson Associates, Inc.* (mechanical). Landscape architect: *Carol Johnson & Associates, Inc.* Contractor: *E.A. Comeau, Inc.*

Nick Wheeler photos





Illuminations from The Medieval Health Handbook, courtesy George Braziller, Inc.

HOUSING FOR HEALTH CARE

Being privy to bedlam

There are many dimensions in which to perceive and plan places for people to get well. Some are measured on the following pages. Bertrand Goldberg introduces a new and controversial morphology to the field (overleaf). Westermann & Miller and Russo & Sonder solve the familiar problem of expanding existing facilities with a great deal of finesse (page 119). Ridenour, Cochran & Lewis invigorate a neighborhood with a mix of patient-care and retail activities (page 122). American Health Facilities offers a clinically cool programming technique as a basis for apt, adaptable design (page 116). And Herbert McLaughlin inveighs against those who would sooner design monuments than serviceable space, susceptible to change (page 118). There is indeed a certain contentiousness in addition to contrasting design responses implied in these varied projects, but threading through them is a belief that a principal duty of the architect is to foresee change, and nowhere is this truer than in the bedlam of complicated functions and conflicting demands that make up a health-care facility. Whether adapting those we already have or creating new configurations from scratch, the primary dimension to be measured in coming years is the changing nature of the architect's true clients—those people getting well. Because they are getting out of bed sooner than they used to, out-patient services are burgeoning as beds stand empty, as empty as old assumptions about what a hospital is.

—William Marlin

THE GOLDBERG EFFECT

The architect of Marina City casts a spell on concrete to enclose health-care concepts

There have been times when Bertrand Goldberg seemed more like an alchemist than an architect. In the 12 years since completion of Marina City in Chicago, he has quietly taken a mortar and pestle to his concepts of space and structure, pushing this way, pulling that way, and producing—abraconstructa!—some incredible formal mutations.

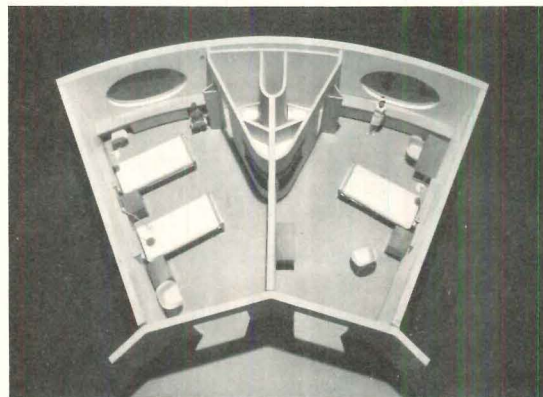
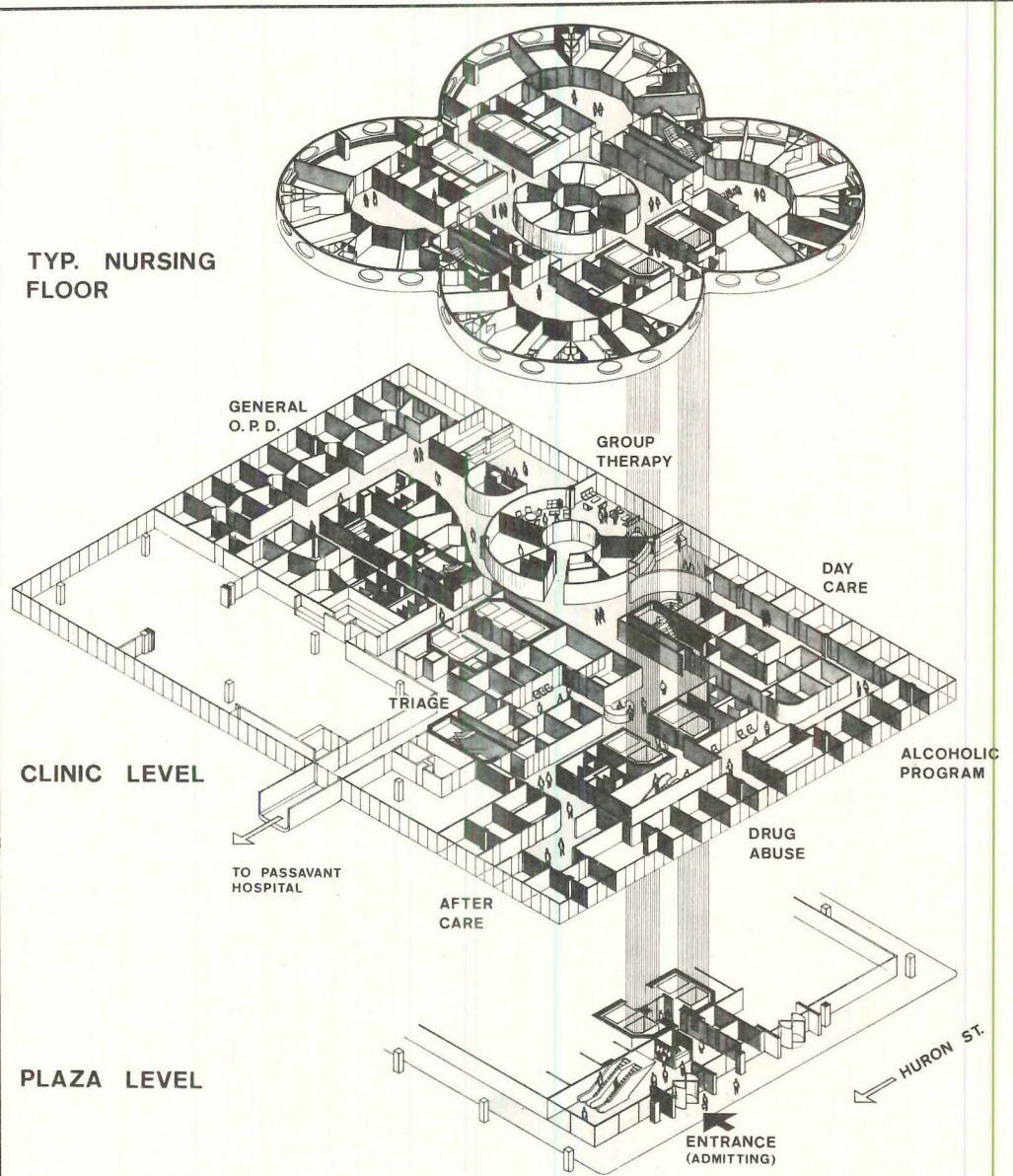
The Prentice Women's Hospital and Maternity Center at Northwestern Memorial Hospital in Chicago (shown opposite), St. Joseph Hospital and Health-Care Center in Tacoma, Washington (pages 112-113) and St. Mary's Hospital in Milwaukee (pages 116-117), are examples. They hold out a hope that the lock-step linearity of traditional hospital layouts is at last being challenged, but they also display a morphology that is making some hospital architects, including many who are engaged in challenges of their own, slightly uncomfortable. It is hard not to take the impulse of such provocation, or the reasons for the presence of this new architectural tack.

These designs stem from a kind of scholarship that has always fascinated Bud Goldberg—analyzing the relationship, not between function and form so much—the old Chicago ethic—but, more, between functional patterns and those of human interaction. Nowhere is such interaction more intense, varied, and unpredictable than in health-care facilities. He has thus considered the nature of group relationships as the pivotal premise and, pivoting literally, he has created spatial clusters to identify them in both functional and visual terms.

The apparent advantages of this "quiet village" approach over a linear scheme, usually requiring a staff equipped with roller skates, are that travel-time is less, visual control of patient situations is convenient, and an empathetic environment is engendered in which those taking cures feel closer to those giving them.

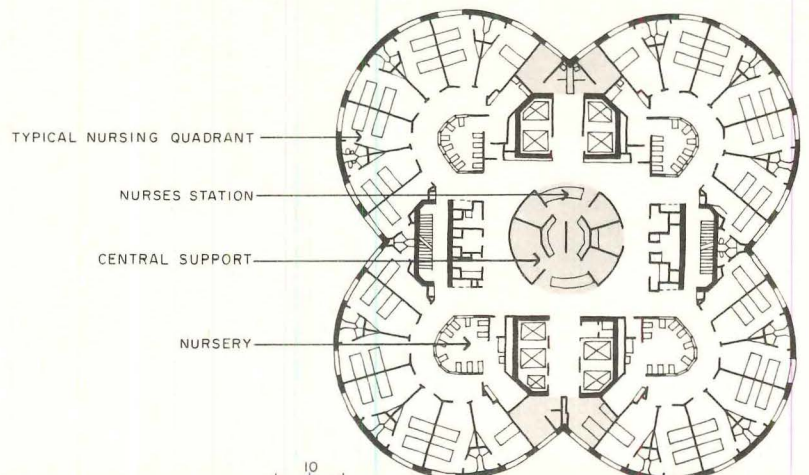
Vertical transportation for patients, staff, visitors, and supplies is controlled at the core of each bed-tower floor with the result that through-traffic does not conflict with activity in the cluster-like quadrants that emanate from the core area. In all three buildings, common support services, out-patient departments, and administrative spaces are contained in plinth-like base structures atop which the bed-towers are poised like ammonia ampules waiting to be snapped open in an emergency.

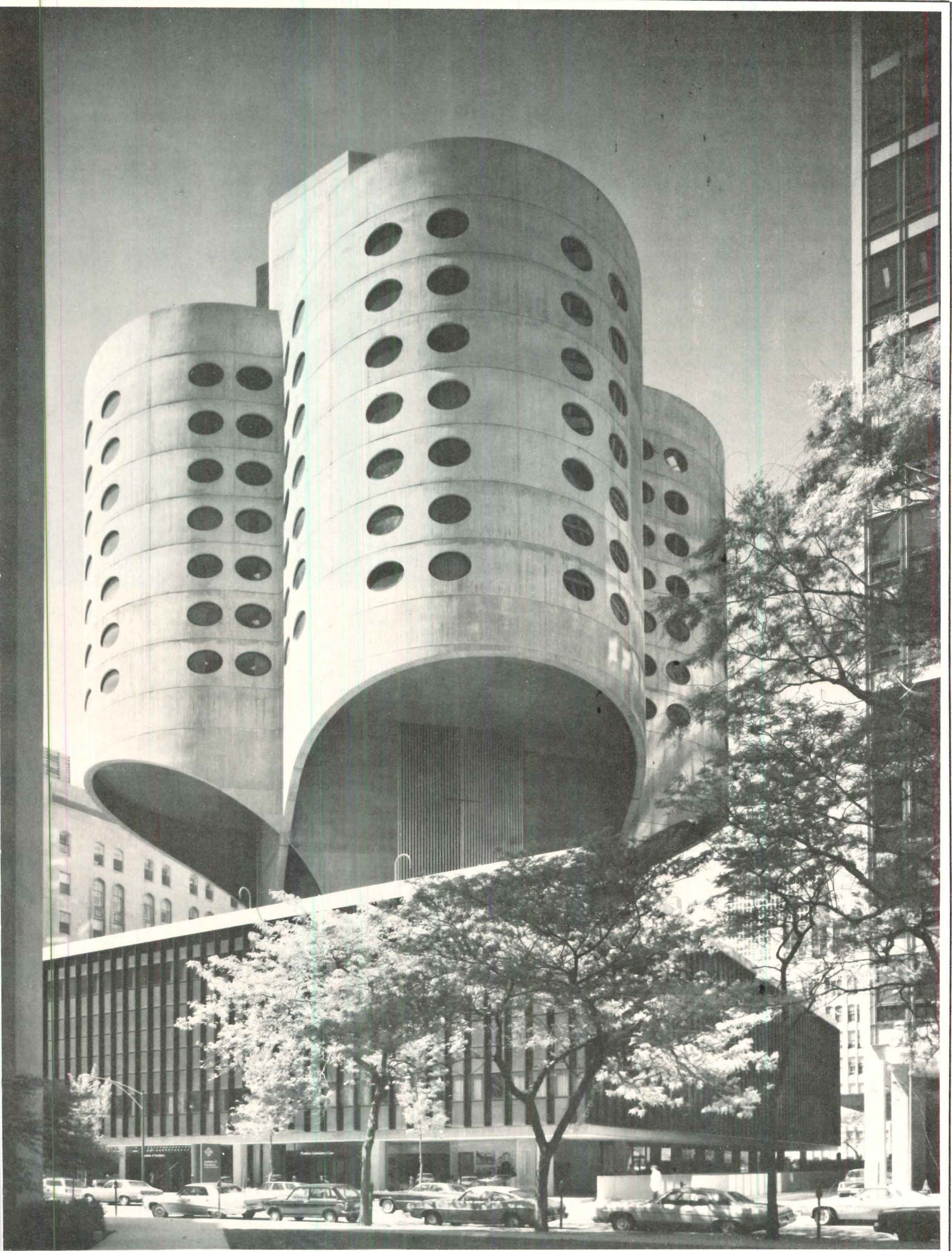
The overworked word "dichotomy" comes to mind in noting the formal contradiction (even clash) between the base buildings and the bed-towers. For down below, Goldberg reverts to a rectilinear grid which can all too easily revert to a rabbit-warren of specialized cubicles, or sets of them, interconnected with corridors. This is a vexatious problem, Goldberg acknowledges, making it all the more necessary to clearly and separately articulate the enclosure of the patient-care "villages" as was finally achieved at Prentice.



Hedrich-Blessing

Prentice Women's Hospital and Maternity Center consists of a seven-story bed-tower, containing 264 beds arranged in four patient-care villages per floor, perched atop a four-story plinth of supporting services. The quatrefoil shell is cantilevered 48 feet from the core on immense arches, creating both a structural system and enclosing wall.





Here an ingenious computer-calculated cantilever of monolithic lightweight concrete shells billows outward for 48 feet beyond the shear walls of the bed-tower cores containing stairs and elevators. The patient rooms in the tower's seven stories, their plan formed by four intersecting circles like a four-leaf clover, are not only insulated from traffic noise but aloof from the frenzied variety of the goings-on in the four-story base. These house administrative and physicians' offices, files, a psychiatric outpatient department, therapy, surgery, labor, delivery, and intensive care units for infants.

In a number of important respects, Goldberg hit the snail on the head with this shell configuration for the tower. For one thing, in the context of his "village" concept, the shell allows much more flexibility than would the typical post-and-beam structure. Another clincher is the economy of the system. For \$13.50 per square foot, Goldberg gets structure, walls, and his unusual elliptical windows called "visional panels" all at once; which is a lot cheaper than a good glass curtainwall, which would normally come in at around \$15 per square foot without the cost of the columns and beams backing it up. This alternative reduced Prentice's over-all cost to about \$57 per square foot, which is a bargain compared to the \$75 per square foot (and up) normally associated with this building type. Front-end savings come by re-using a minimal number of forms; long-term savings are projected because the close-packed character of the structure and space cuts down on fuel consumption and mechanical runs while the thickness of the shell/wall—15 inches for the first three stories, 10 inches for the upper four—reduces thermal load.

Goldberg is enthusiastic about the construction method he has developed in these buildings. "The cost of form erection is approximately the same with flat forms in conventional building as our curved forms," he points out. "The curved ones have an inevitable way of being put together, whereas the straight ones frequently require some amount of layout. But if you have enough re-use of the forms, then the costs drop down very low. In Marina City, for example, we had as many as 80 re-uses of the same form. Form cost is the one-time cost of the material plus the cost of your original layout."

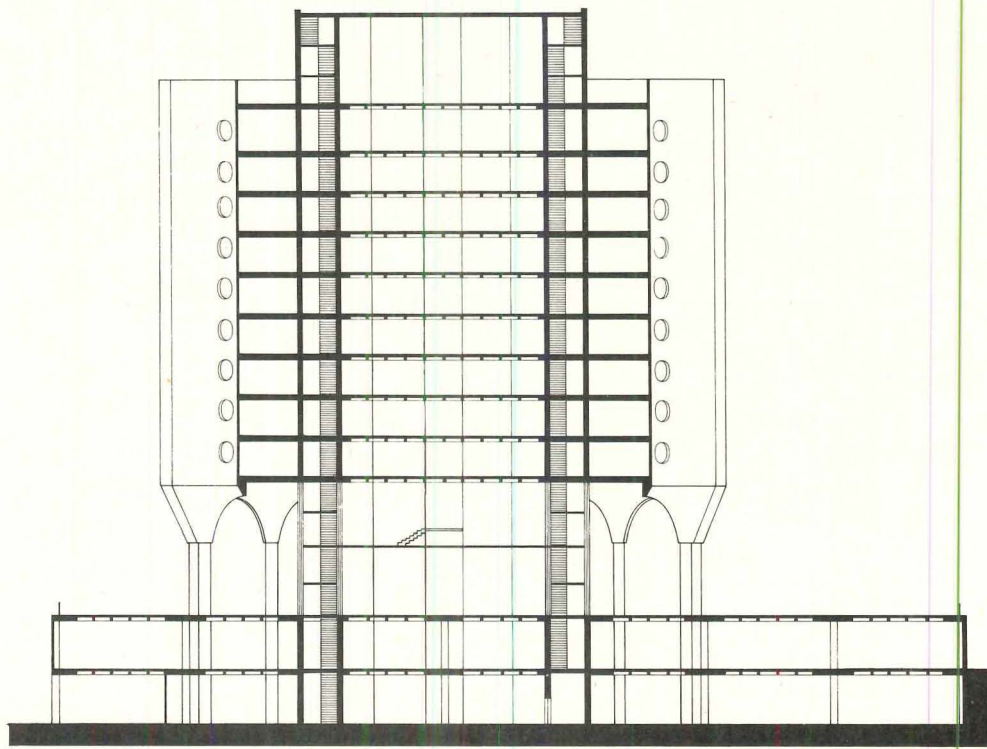
At St. Joseph, which preceded Prentice and is unlike it mainly because the shell/wall is supported on columns rather than being cantilevered from the core, the cost of the curvilinear shell was so minor a portion of the total that it came in well below the cost of a hospital of conventional design—about \$47 per square foot.

The difference in shape between Prentice and St. Joseph lies in the fact that at St. Joseph the walls are "corrugated" as opposed to the radial shape of the Prentice quatrefoil. The columns supporting the corrugation, which is slightly cantilevered from them, coincide with the exterior plumbing runs of the inpatient rooms of the bed-tower, and they are designed to take lateral vibration—rather like shock absorbers in this earthquake-prone region. Loads are transferred to the foundation from the cor-



Tom Upper

St. Joseph Hospital, slightly pre-dating Prentice in its design, consists of a nine-story bed-tower, containing 260 beds arranged in four similar clusters around nursing substations, all of which relate, as at Prentice, to a central support area in the core. The tower shell is supported on tapering conically capped columns that rise through and above a two-story plinth of supporting services.





rugated shell by way of conical column caps. This continuity and plasticity of material and force reads out dramatically in the over-all configuration of the building as the columns gently taper earthward.

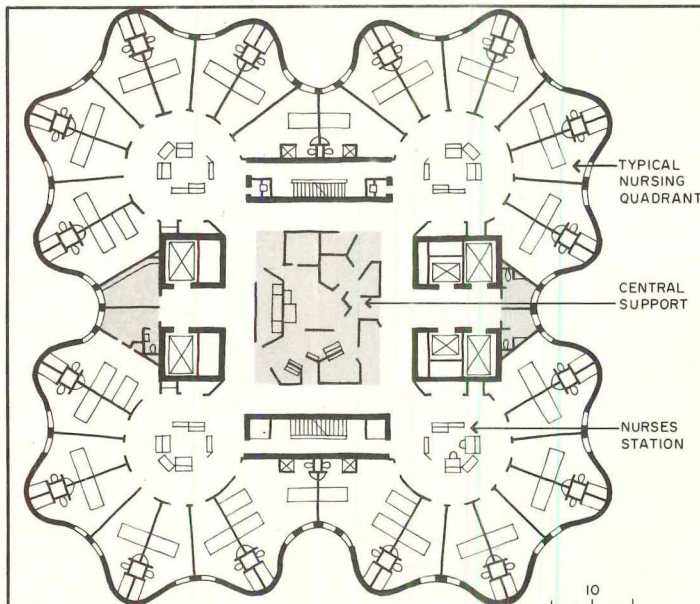
In contrast, the curved quadrants at Prentice are completely core-supported, thus abridging the functional and formal contradiction, mentioned earlier, between the bed-tower and base structure. At St. Joseph, for example, it was discovered that where the tower columns entered the base there was chaos because the column structure of the base itself interfered and the columns of the two different systems often came very close together. Naturally, as far as activities in the base structure were concerned, layouts and spatial clarity tended to become confused. This is why Prentice called for a core-supported cantilevered shell. "We found that we were able to spring these shells from the core by paying a price only for the temporary support required to construct the two lower floors which, when completed, were self-supporting and enabled us to proceed quickly with pouring the shell above," says Goldberg.

He had tried before to find such a cantilevered solution, realizing the complications brought on by the conflicting column systems of the tower and plinth at St. Joseph and St. Mary's. The engineering proof was highly intricate, however, and it took many months of coddling his in-house computer bank—"very anthropomorphic machine," he says—before an adequately strong shell could be worked out.

Here is how the solution came about. The first floor of the bed-tower, which is 55 feet from the roof of the plinth, gives way to the shell walls, rising 92 feet. The four cantilevered sections, emanating from the core area, intersect in a system of cylindrical arches that carry the forces into the walls of the core shaftways, which were engineered to receive the loads and to act as wind bracing, this latter function needing no supplementary reinforcement. Because of the superior stress characteristics of the shell, the cantilever was accomplished from core walls of typical 12-inch thickness.

At St. Mary's Hospital in Milwaukee, the design of which was concluded slightly before the engineering breakthrough making possible the Prentice *parti*, there is a somewhat different modification in that, unlike either St. Joseph or Prentice, such large floor areas were specified by the client that the column- or core-supported technique of the other two jobs was not economically feasible. Yet St. Mary's was taken with and wanted a simulation of Goldberg's village clustering of bed space around the nursing stations. What they have as a result is, again, a plinth of support services, this one 150- by 300-feet and three-stories -high, atop which is a five-story bed-tower. Here the floor loads are supported by a system of columns radially arrayed around a central column located smack-dab in the middle of each nursing substation.

The elliptical windows that appear in the other two buildings were dispensed with in this one because of the inherent disparity between the structural system and the non-structural en-

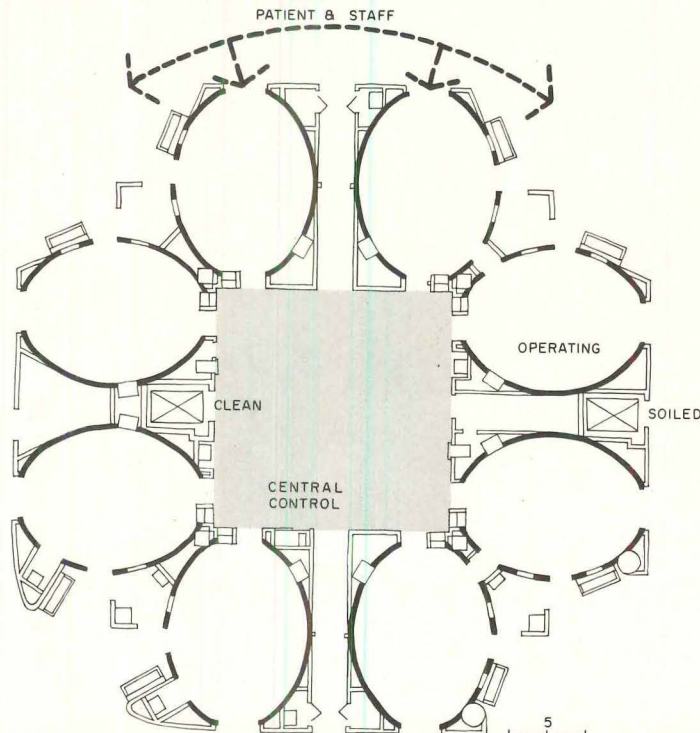


At St. Joseph Hospital, each of the nine bed-tower floors, enclosed by the corrugation of the concrete shell, contains four patient-care villages clustered about the nursing substations and centralized support area (left). Elliptical windows (above), which also appear at Prentice in a horizontal direction, accommodate the flow of stress in the shell.



Russ Carmack photos

Ovaloid operating rooms, arrayed about a central control room, is a unique feature of St. Joseph. Only what is immediately needed for procedure is at hand while unneeded or standby material is kept in the central area.



folding walls—walls which, in the other two, remember, were simultaneously structural. At St. Mary's, the walls are simply undulating curtains, reflecting the internal disposition of bed space. Hence the windows are square, as if to underscore the conventional structural system of columns. Why? Because there are not the stresses involved here that apply in the shells of St. Joseph and Prentice, and their elliptical windows were used to underscore that flow of stress. These "vision panels," which give a certain porthole and stateroom quality to the patient-care units, lessen the possibility of cracking, which often occurs at the corners of square windows in a structural concrete wall. Also, less reinforcing was required around the openings, thus incurring some savings. But at St. Mary's, "where a new shape is using an old structural form," as Goldberg puts it, the square window was a way of telling the truth about the compromise he had to make.

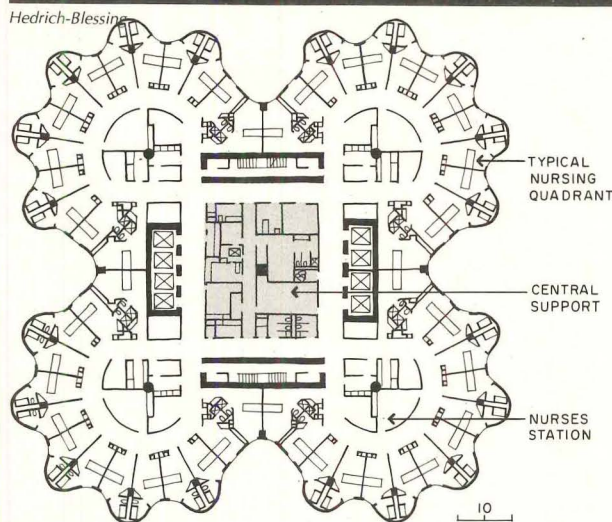
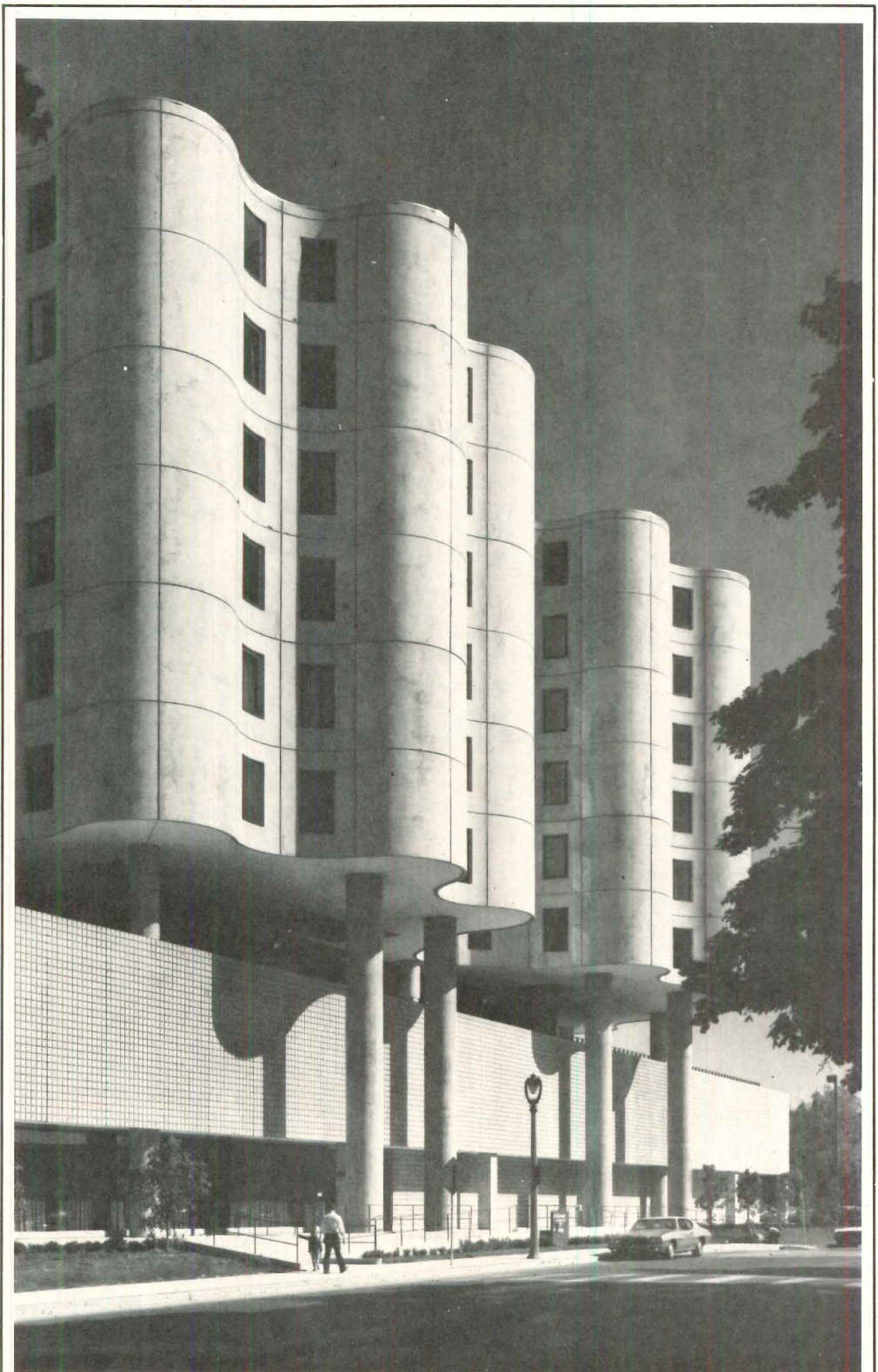
"My approach in this work goes back to an absolutely ancient relationship, such as existed in the open wards of past centuries. What we are trying to restore is the give-and-take, the come-and-go, between the very ill person and the very concerned care group, and we do this on the premise that people, who can not afford to be casually ill, have a right to a mode and a mood of treatment that goes beyond the old story, routine in the familiar linear layout, of people running long distances to deliver a glass of water or make the pill run," says Bertrand Goldberg sardonically. "Cutting hospitals out of linear yard goods may be acceptable when you are interested in structural relativity for functions not directly related to patients but, for them, human relativity is a prod to recovery and, from it, we derive not only a new pattern of care and concern but a more telling pattern of space."

As controversial as these designs are among those still preoccupied with cutting out "linear yard goods," they at least bring architecture closer to medicine's focal contribution to society. As Dr. Edmund Pellegrino, chairman of the Yale/New Haven Medical Center, puts it, "The sick person wants to know what is wrong, how he got that way, what will happen to him, whether he can be helped and how, and what it will cost in discomfort, money, and personal dignity." It is a blend of competence and compassion, answering such questions. If the Goldberg Effect is only to dramatize the need for these qualities, he will have ventured an answer to be dealt with.

PRENTICE WOMEN'S HOSPITAL AND MATERNITY CENTER, Chicago. Owner: *Northwestern University and Chicago Maternity Center*. Architects: *Bertrand Goldberg Associates*. Engineers: *Bertrand Goldberg Associates*. Contractor: *Paschen-Newburg*.

ST. JOSEPH HOSPITAL, Tacoma, Washington. Owner: *Daughters of Charity*. Architect: *Bertrand Goldberg Associates*. Engineers: *Bertrand Goldberg Associates* (mechanical/electrical); *ABAM Engineers, Inc.* (structural). Contractor: *Baugh Construction Company*.

ST. MARY'S HOSPITAL, Milwaukee, Wisconsin. Owner: *Daughters of Charity*. Architects: *Bertrand Goldberg Associates*. Engineers: *Bertrand Goldberg Associates*. Contractor: *J. A. Jones Construction Company*.



St. Mary's Hospital, with a similar bed-tower and plinth relationship, shrouds a conventional column structure, arrayed around a central column in the support area, with an unconventional curtain wall which, unlike the two other examples, is strictly non-structural and thus incorporates square windows to underscore the disparity. Here the tower is five stories high; the plinth, three stories. Large floor areas include four patient-care villages, with 14 bedrooms each for a total of 56 beds per floor, about centralized support areas.

THE MALIBU TREATMENT

A unique architectural consulting firm shores up hospital design by bidding a tide of date to come in

A number of conditions, unfolding as the 1980s approach, are conspiring to make adroit hospital planning essential, not only to secure accurate estimates of space and equipment but also to anticipate how and when such needs might change.

American Health Facilities/Medical Planning Associates of Malibu (AHF/MPA) has been performing virtuoso variations on the old theme of "architectural services" by factoring such conditions of change into its programming function as a consultant to a world-wide range of design firms and health-care organizations.

Among those conditions: The government's involvement is changing from rote review of projects, and of how they work or don't work, to stringent regulation at their inception and planning phases. Even with a 14-percent increase in hospital construction during the last year, a kind of "birth control" on such facilities is being imposed, every state is going to have an agency, and strict certification of need for a facility, based upon areawide review of existing resources, is becoming the rule. Advancing technology is supplying more sophisticated and costly instrumentation. Thus greater scrutiny is being given to the range of technology to go inside proposed facilities to cut down on over-duplication in the context of area-wide demand. Capital shortages and the high cost of borrowing means that what is developed from now on must be as sparing as it is ample, its architectural layout susceptible to changes in demand. Construction costs, having risen 70 per-

cent in the last five years, present another obvious crimp and, finally, the old reliable third-party payers, who used to shell out for just about every form of treatment under the sun, are not covering as many costs as they were. All of these facts taken together in this most complex of building types, and you have a real analytical nightmare—unless, that is, you have the clinical "cool" to carefully cross-reference all these elements with the minutiae of materials, equipment, and space that goes into health-care delivery.

This clinical cool is where AHF/MPA comes in—gathering and analyzing data and information by way of computer, setting down exacting standards of space and equipment with an eye to efficiency and flexibility, and helping the architectural team come quickly to terms with the array of needs that must be accommodated so it can come even *more* quickly to terms with what that array might "look" like.

A good many architects wince at the thought of consultants, especially those who are brother or sister architects, telling them what to do, but, so insists architect Donald Rasmussen of AHF/MPA, "The first thing people in our field have to realize is that we can't possibly think of everything ourselves and, even if we could, that may not be the primary place for architects to exert their energy and perception." The job of this firm, sizing itself up, is not to diminish the role of the designer but to enhance it, clarifying for both designer and client the facts of a facility's life.

The "client" which, in this field, can be a complicated, contentious collection of overlapping disciplines, finds out a lot more about itself during the programming phase, and the design and planning team, brought into the client's processes and problems, usually on an early basis, becomes a more integral part of programming. "It is the creative structuring of that stage which architects must take more seriously, and as 'cold' as computerized calculations and specific standards may appear,

they are a fundamental way of *really* knowing what the actuality of a design situation is and what the eventuality may be," adds Rasmussen. "If a design team can get at this to begin with, if the client can, then time can be spent more productively, indeed more creatively, on translating fact into form."

AHF/MPA's functional and space programming process has several key elements. A *Functional Program* tabulates all activities, right down to the phone booths, that are anticipated by an institution, including workloads, staffing, service systems, and the operational as well as administrative goals of both individual departments and the overall health-care organization. This program, which actually becomes a statement of the institution's role locally and area-wide, derives from exhaustive, exacting questionnaires and interviews, pinning down everyone involved—hospital administrators, doctors, department heads, nurses, orderlies—as to the things they think they want or truly need. Not only do personnel get to know each other, they get to know themselves and, with the specificity and range of the questions (as many as ten thousand), there is a constant revalidation of the assumptions guiding client attitudes and decisions. Were such only possible in all building types!

A second element of the process is *Space Standards*, which is a comprehensive, constantly updated bank of information and data that quantifies, for each projected space, an optimal configuration of square footage, equipment, utilities, engineering, and environmental characteristics. The firm has a number of people whose sole job is to watch out for changes in the state of the art so that these standards, interfaced with the Functional Program of a facility, are fresh and flexible. They also happen to be as expressive of personnel requirements as the Functional Program is a test and re-test of what personnel really thinks its requirements are. The firm maintains an impressive staff of nurses who have as much (probably more) say as the architects in how the program and the standards go together on a given job. Not incidentally, there is also a useful empathy established between the firm and those who really do the work in a hospital. After all, the nurses, in a field that has been called the "last of the great push-cart industries," know what the changing cost of a push-cart is.

What emerges from the Functional Program after it has been bounced off of the Space Standards is the clincher of the consultancy, an *Area Program* (example lower left). Traditional planning, which often produces facilities in which functional problems become apparent only *after* they go into operation, thus gives way to a tabulation which, while not meant to tell the architect how to do his job, does set strictures and requirements clearly in place, generating a design response that will more likely preclude obsolescent, ineffective, or redundant space.

As illustrated here, the Area Program includes numerical identification of each space, and these numbers are cross-referenced to the earlier questionnaires (1). Also like the questionnaires, all spaces are organized by category and

SAMPLE HOSPITAL DEPARTMENT ANY CITY, YOUR STATE		NON-ANCILLARY SERVICES XXX SURGERY AND ANESTHESIOLOGY 53									
MPA ROOM ID	Room / Area Function	Existing Space Feet	TARGET YEAR 1975/ 274 BEDS				TARGET YEAR 1980/ 374 BEDS				
			MPA Standard	Units or Occupants	Square Feet	Square Meters	Units or Occupants	Square Feet	Square Meters		
①	OPERATING AREAS	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	
40	OPERATING ROOM - MAJOR		400	4	1800	148.70	4	1600	148.70		
148	CYSTOSCOPY ROOM		280	1	280	26.02	2	560	52.04		
263	X-RAY CONTROL AND FILM FINISHING ROOM		68	1	68	6.32	1	68	6.32		
239	X-RAY FILM PROCESSING		43	1	43	4.00	1	43	4.00		
241	TRANSFORMER ROOM		18	1	18	1.67	2	36	3.35		
274	PATIENT SANITARY FACILITIES		20	1	20	1.86	1	20	1.86		
43	OPERATING ROOM - LAMINAR AIR		480	1	480	42.75	1	480	42.75		
41	OPERATING ROOM - SPECIAL		520	0	0	.00	0	0	.00		
SUPPORT AREAS											
49	PATIENT HOLDING SPACE		80	6	480	44.61	7	560	52.04		
262	SCRUB SINKS		17	9	153	14.22	11	187	17.38		
480	CLEAN WORK AREA		100	1	600	55.76	1	700	65.06		
482	SURGERY CONTROL CENTER		79	1	79	7.34	1	79	7.34		
264	SOILED UTILITY AND HOLDING - SURGERY		40	6	240	22.30	7	280	26.02		
308	SOILED COLLECTION - LIVEN/TRASH		18	2	36	3.35	2	36	3.35		
310	CRASH CART		20	1	20	1.86	1	20	1.86		
293	EQUIPMENT HOLDING		100	1	100	9.29	1	110	10.22		
232	ANESTHESIA WORKROOM		25	1	150	13.94	1	175	16.26		
937	JANITORIAL/HOUSEKEEPING ROOM		30	1	30	2.79	1	30	2.79		
386	MEDICAL GAS HOLDING AREA		20	1	20	1.86	1	20	1.86		
561	FLAMMABLE SUPPLY STORAGE		20	1	20	1.86	1	20	1.86		
294	STRETCHER		18	6	108	10.04	7	126	11.71		
51	PATIENT RECOVERY SPACE		80	8	640	59.48	9	720	66.91		

uniformly titled to cut down on confusion about what it is, exactly, that a given space is for (2). In the case of expanding or adapting existing facilities, which represents most work in the field today, a column is included where the client can list existing square footage, enabling him to realistically relate what he wants with what he has (3). The computer-calculated AHF/MPA standard, showing optimal square footage, is then inserted (4), followed by a stipulation of the number of spaces needed for a given function or the number of people using it (5). A total square footage is thus established, taking the AHF/MPA standard and multiplying it by the number of units or occupancy (6). Square meters are always included, anticipating conversion (7). All this takes place in the framework of two target years, selected at the start and maintained throughout the process, thus executing a statistical *pas de deux* so that estimates of gross square footage can keep in step with anticipated change in demand (8). As a result of such specificity, more dependable cost estimates are achieved.

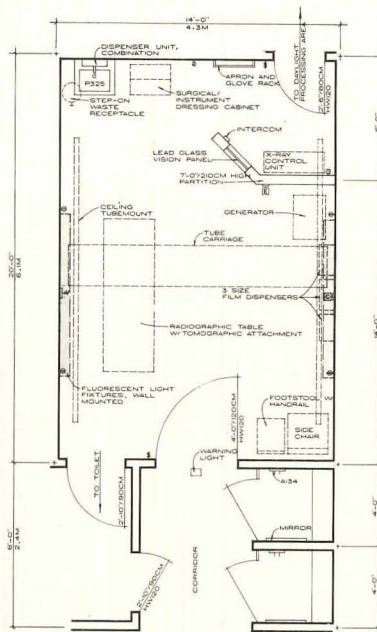
The standards used (examples right) reflect five categories: planning information, in which a space's purpose and proximity to other functions are evaluated; mechanical service and the ganglia of criteria occasioned by the touchy matter of treating and moving air, water, fire, earth, and heaven knows *what* else; electrical service, which gets right down to recommended foot-candles, outlets, squawk-boxes, and so forth; building elements, replete with performance standards and reference to mandatory codes; and finally equipment, scads of it, fixed and moveable. It is this equipment, sterile a subject as it is, that ends up being the primary factor in determining whatever "firmness, commodity, and delight" a design conveys in its operational phase.

"It is important to remember," says Rasmussen, "that we are developing, with all this information, an optimum set of conditions. Certainly the ultimate configuration of space can fluctuate from the standard we establish, but at least the fluctuation will be informed by very accurate estimates of the things which must be taken care of. Mere whim is not only out of place in hospital design, it borders on the brutal, no matter how stupendous or resplendant the architectural envelope may be."

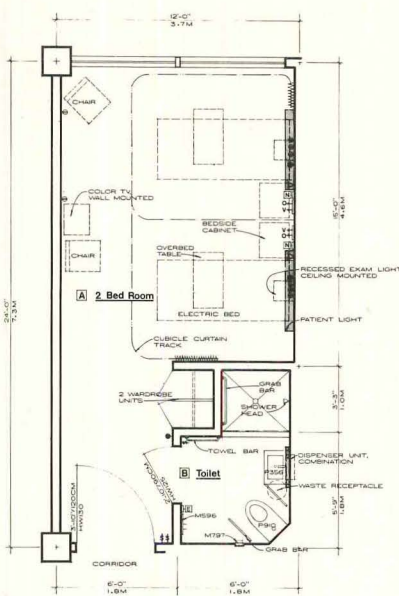
An increasingly pertinent issue brought into focus by the work of American Health Facilities/Medical Planning Associates is that of clearly establishing, more than the role of a health-care room and reliable unit costs, the role of the institution in the overall health-care delivery network of the area and region.

The firm has been called an "institutional inventor" by clients just because it has taken the initiative in guiding others toward an understanding of their "fit" in the area-wide pattern of resources.

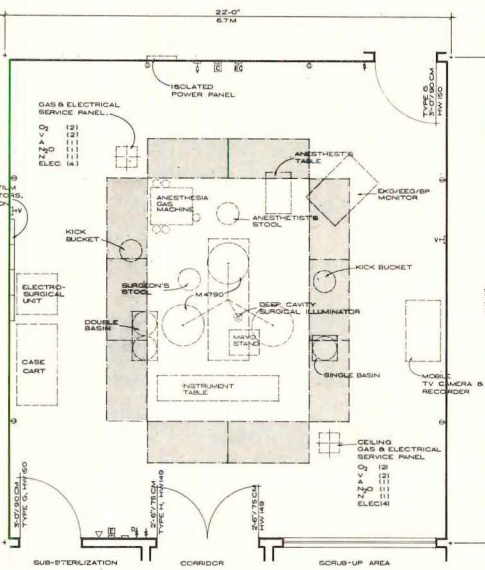
"It doesn't take thick narratives, just a lot of thought and talk, to convince a hospital that what is being built must be reconciled with realities of revenue and shifts in society's expectations," insists Rasmussen. With more premeditation like this, architecture may yet help medicine out of its emergency ward of sprained assumptions.



DIAGNOSTIC X-RAY ROOM



GENERAL OPERATING ROOM



TWO-BED PATIENT ROOM

Architectural	
a Net area	260sqft / 24.2 sqm
b Wall finish	SC-GPDW-PNT b
c Floor finish	VAT c
d Base finish	RB d
e Ceiling finish	ACT e
f Ceiling height	10'-17" / 3.0m f
g Door type	A (Lead Lined) g
h Special features	Walls shall be Lead-Lined and Shielded h Universal Suspension Grid System i

Mechanical	
a Number of air changes min/hr	6 a
b CFM requirements	275 b
c Air pressure requirements	E c
d Controllable temperature range	78° F / 26° C d
e Humidity range	50% e
f Air change rate outdoor air/hr	1.5 f
g Outside exhaust requirements	Opt. g
h Air filtration requirements	25% h
i Number of gas outlets	- i
j Number of compressed air outlets	- j
k Number of oxygen outlets	- k
l Number of nitrous oxide outlets	- l
m Number of vacuum outlets	1 m
n Cold water required	Yes n
o Hot water required	Yes o
p Steam required	- p
q Distilled water required	- q
r Floor drains required	- r
s Special features	Anesthesia may be Required by BUMED s t
t	- t

Electrical	
a Number of convenience outlets (115v-120v)	6 a
b Required footcandles	50 b
c Type of lighting fixtures	Wall Mt'd. FL c
d Dimmer	- d
e Special equip. outlets v. ph. wlt.	- e
f Switches	Dual f
g Emergency item	Lighting, Power g
h Emergency branch connection	Critical h
i Special power features	X-Ray Apparatus i
j Intercom Yes telephone- dictation-	- j
k	ECS, GWG k

Architectural	
a Net area	A 220sqft / 20.4qm B 45sqft / 4.2sqm a
b Wall finish	A GPDW-PNT B CT-WRGPDW b
c Floor finish	A VAT B CT c
d Base finish	A RB B CCT d
e Ceiling finish	A GPDW-PNT B WR-GPDW-PNT e
f Ceiling height	8'-0" / 2.4m f
g Door type	A g
h Special features	- h
i	- i

Mechanical	
a Number of air changes min/hr	A 4 B 10 a
b CFM requirements	with Orientation b
c Air pressure requirements	A E B N C
d Controllable temperature range	78° F / 24° C d
e Humidity range	50% e
f Air change rate outdoor air/hr	A 2 B Opt. f
g Outside exhaust requirements	A Opt. B Yes g
h Air filtration requirements	A 25%+80% h
i Number of gas outlets	- i
j Number of compressed air outlets	- j
k Number of oxygen outlets	A 2 k
l Number of nitrous oxide outlets	- l
m Number of vacuum outlets	A 2 m
n Cold water required	Yes n
o Hot water required	Yes o
p Steam required	- p
q Distilled water required	- q
r Floor drains required	- r
s Special features	Toilet Exhaust Duct: Aluminum or Copper s with Water-Tight Joints t
t	- t
u	- u

Electrical	
a Number of convenience outlets (115v-120v)	A 8 B 1 a
b Required footcandles	A 20 B 30 b
c Type of lighting fixtures	A Exam & Patient Light B Surt Mt'd. FL c
d Dimmer	- d
e Special equip. outlets v. ph. wlt.	- e
f Switches	Normal f
g Emergency item	Two Duplex Outlets & Night Light g
h Emergency branch connection	Critical h
i Special power features	One Duplex at the Head of each Bed i
j Intercom - telephone A Yes dictation -	- j
k	*Should be on a Separate Circuit: GWG, ECS, NCS k

Architectural	
a Net area	500 sqft / 46.5 sqm a
b Wall finish	LGC-GPDW b
c Floor finish	SHT-VIN c
d Base finish	INTG-VIN d
e Ceiling finish	WR-GPDW-PNT e
f Ceiling height	9'-6" / 2.9m f
g Door type	G & H g
h Special features	- h
i	- i

Mechanical	
a Number of air changes min/hr	25 a
b CFM requirements	1900 b
c Air pressure requirements	P c
d Controllable temperature range	68°-80° F / 20°-27° C d
e Humidity range	50-60% e
f Air change rate outdoor air/hr	5 f
g Outside exhaust requirements	- g
h Air filtration requirements	25% - 80% - 99.99% h
i Number of gas outlets	- i
j Number of compressed air outlets	2 j
k Number of oxygen outlets	4 k
l Number of nitrous oxide outlets	2 l
m Number of vacuum outlets	2 m
n Cold water required	- n
o Hot water required	- o
p Steam required	- p
q Distilled water required	- q
r Floor drains required	- r
s Special features	Min. Two Exhaust 1'-0"/30cm Above Floor s t Remote From Each Other; Gas Scavenger System; Room Not De- t U signed For Flammable Anesthetics
t	- t
u	- u

Electrical	
a Number of convenience outlets (115v-120v)	14 a
b Required footcandles	200 b
c Type of lighting fixtures	Surgical Lights, Rec. FL c
d Dimmer	On Surgical Lights d
e Special equip. outlets v. ph. wlt.	- e
f Switches Multiple Switches to Provide 50-100-150-200 Footcandles	- f
g Emergency item	Lighting, Power g
h Emergency branch connection	Life Support h
i Special power features	Power for OR Table with Remote Control i
j Intercom Yes telephone Yes dictation-	- j
k	Isolated Power Panel, ECS, Equipotent, Gndg., GWG k

THE MONUMENTAL HEADACHE

Overtly monumental and systematic hospitals are usually functional disasters

By Herbert McLaughlin

Architects, until quite recently, were trained to be essentially the sculptors of monuments. Secondarily, they have been taught, or they have learned, to think in terms of a simplistic notion of systems with the result that their monuments have come to be based on repetitive, modular units of measurement.

The thing is, overtly monumental and systematic hospitals are usually functional disasters, yet this is the thinking that has dominated the field, particularly since the more sophisticated design firms entered what was considered, until about ten years ago anyway, a kind of conceptual backwater. The result has been buildings which are generally much more admirable as pieces of large-scale sculpture than the common, older hospital—but which are also much less useful.

The problem lies in the inability of monuments to deal with the two kinds of change which dominate the existence of a hospital, any hospital—addition and demolition. A hospital is the most changing of building types, and its physical life is uniquely characterized by modification. Designs should permit this change to occur in diverse patterns, but most hospital designs don't, can't—at least not in ways that are appropriate.

Sure, you can move furniture around inside of a hospital of this monumental variety, but you can't tack on a shanty, and hospitals need shanties added, regularly.

The importance of this kind of change can not be too strongly stressed. The demand for regular and small-scale expansion of virtually every department is necessary and incessant. It frequently doesn't occur, however, because the design of most buildings makes such an incremental, uneven process almost impossible. It should be apparent that the central problem of designing for change in hospitals is providing for easy additions of this very small scale nature. For the raw and regrettable fact is that hospitals, which average about 550 square feet per bed in 1950 and which now average about 1,000 square feet, are just getting bigger and bigger per bed and for no convincing reason.

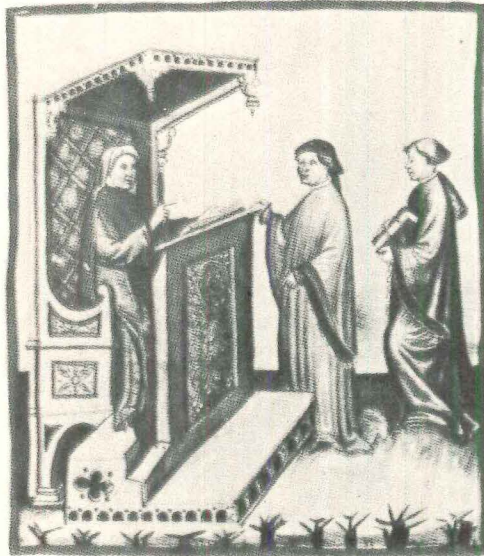
Monumentally minded architects naturally want to avoid the shanty. Scrambling to deal with a demand for change through addition, they invent another problem by pretending that what should really occur is large-scale remodeling. This kind of scrambling takes on the form of hospital layouts that are internally flexible, perennially ripe for spatial wrenching. Now the theoretically happy result of this is that the exterior visage of these sculptures remains unsullied by ungainly bumps. This can work out in actual practice, for the standard overkill device for achieving this kind of flexi-

Mr. McLaughlin is a principal of the San Francisco architectural firm of Kaplan and McLaughlin.

bility, the interstitial floor, is so expensive that the client may not be able to afford additions.

The interstitial floors weaves in some corollary thinking about systems. This pertains to long-span structures. It is difficult in theory to conceive how reducing the number of two-foot-square columns makes much difference to the flexibility of a 20,000-square-foot squared-off mass of space in which no room is larger than 20 by 24 feet, and in which no major remodeling, or very little, occurs. Admittedly, long-span construction is conceptually interesting, and those few columns may look splendidly solitary in the master scheme before they are sent out to be confused by the draftsmen and engineers who invariably insist on cluttering them up with walls and doors.

The fact that large-scale remodeling doesn't occur very often in a truly well-planned hospital is, I think, the common architectural experience, and this was certainly borne out a couple of years ago when my firm studied the record of actual change in six hospitals over a 21-year period. Such a well-planned hospital will seldom have to undergo the agony of large-scale remodeling because, as new spaces are added, old ones can be converted without



major remodeling, within both the total fabric and individual departments.

Ultimately, one is hard-pressed to figure out which came first—the interstitial floor solution, or the supposed problem. Since the problem doesn't really exist, one has to assume that the solution came first. Design ingenuity?

Another thing. While monuments are seldom designed for addition, they are never, never, never designed to be demolished. Yet this is an appropriate way to deal with change in the single most significant part of a larger hospital, the nursing tower. This fact, plus growth in the number of beds, invalidates the monumentalists' favorite planning scheme—what Isadore Rosenfeld called the "matchbox on a muffin" which, despite all logic, has dominated hospital design for the last ten years. Worse, as many as four "matchboxes" on a giant "muffin" are built—clearly monumental, clearly systematic, clearly differentiated elements (shades of all those smart fellows at Harvard and their Cropsiusian binuclear houses). The shaft of the nursing tower thrusts starkly above a sweeping horizontal base.

Recent changes in commonly accepted standards in the layout of nursing units have been phenomenal. While changes in labs, central supply, radiology and so forth has generally consisted of adding more of the same kinds of space, and in some instances of revising circulation somewhat, nursing units have changed in every way—size, shape, spatial arrangement. But in the matchbox-and-muffin scheme, the problems are extraordinary. Circulation and critical support elements are nestled tightly around a central elevator core serving the nursing tower, which is so placed that it is extremely difficult to expand. When standards change, the nursing units must either be maintained in place in an inefficient form or abandoned with the disastrous consequences of a new tower and new core, totally unrelated to the tight cluster of support service in the "muffin" around the original core.

What, then, should a hospital be? The most apt analogy as far as I am concerned is that of a village, starting with a multi-layered, industrial-services building with labs, radiology, surgery, administration, and designed to make the addition of shanties very easy. The "service road" or horizontal transportation system is open-minded, leading to an easily expanded vertical *circulation* tower, which in turn connects to an expandable number of *nursing* towers in which elements that are out-of-date can be dispensed with or replaced quickly. This is a much more "systematic" approach, let me suggest, than applying the same structural and architectural solution to all parts of as complex an organism as a hospital. Visually and functionally, these increments should be conceived to anticipate additions, and the architect might as well accept the fact that they may well be designed by others.

I realize that this is contrary to most current architectural instincts, even the most "advanced" ones. We have been taught to deal with the building as an isolated and glorified event, and architects today go to considerable lengths to amplify this tradition. For example, even in our crowded cities, they try to make a Monticello of office buildings by creating vapid plazas with little functional rationale or human appeal—expensive visual foregrounds shoring up half-baked esthetic stunts.

As far as hospitals are concerned, at least, an urban-design consciousness is useful because it must deal with tightly woven assemblages of varied but intermingling parts. The function of a hospital as a compact, changing village of such variety should be affirmed, not denied, in much the same metaphorical as well as operational sense that Mitchell/Giurgola skillfully affirmed the differences between sun and view at their United Fund Building in Philadelphia. There is a tangible opportunity in such affirmation, a very real chance to engender a new kind of hospital in which one architect has the chance to indulge himself in designing three or four different but sympathetically related buildings rather than going through the ordeal of forcing varied functions into one package. When commissions are scarce, the chance to turn one building into three or four might be enough to overwhelm the predilection for monumentality.

A GRASS ROOTS RECOVERY

Clarity and grace of design characterize the growth of this Grand Rapids institution

While the "rapids" of the Grand River were long ago reduced to a gurgle due to dredging, the hometown of Gerald Ford is fast becoming one of the Midwest's most liveable and culturally vibrant cities.

Good health, and the facilities to maintain or restore it, is a routine index of liveability anywhere and, here again, Grand Rapids scores well: being a mecca for those seeking plastic surgery, known as the colostomy capital of the U.S., commanding extensive resources for ambulatory as well as acute care. So it is not only in the field of rare disability but, more vitally, in regular forms of illness, that the city has put together an admirably balanced system for the delivery of services.

Summing this up is the development program, or "growth system" as the architects put it, of St. Mary's Hospital, located in the 14-acre Washington Square urban renewal area and positioned on a central axis with Washington Square Park, just west. The concept by architects Westermann & Miller, Russo & Sonder has evolved over a 12-year period, and the new structure, rising five stories to date, has become a catalytic connector between St. Mary's older hospital buildings to the north and a new professional office building to the south. Economically feasible phasing of the would-be medical center was, as in so many projects of this building type, an inviolate requirement. Which meant exacting programming and planning strategies to assure a coordinated, cohesive result.

Architect Richard Miller, speaking for many of his colleagues faced with the ubiquitous challenge of adding onto existing facilities, notes, "The trouble with this situation is that the temptation always arises to add here, and add there, ending up with a kind of structural mist and functional fog." Suppressing that temptation, the design team worked out an open-ended "growth system" into which both imminent and longer-term modification could be efficiently plugged without severe wrenching of the over-all architectural configuration.

This open-endedness of the building—eventually to be ten stories—applies especially to the structural and utility systems, and an X, Y, and Z network was conceived for the growth to latch onto. The X axis pertains to main circulation of a public orientation. The Y axis is analogous to a "main street" with room for lateral growth. And the Z axis applies to the vertical stacking of patient-bed floors (five through ten). "This game of three dimensions is the essential stuff of hospital design," comments associate architect Richard Sonder, "and these dimensions should be thought of, right from inception, as kind of discreet pathways making possible the efficient inter-penetration of services at those points where such convergence is necessary. The drive in design



The inviting entranceway of St. Mary's Hospital in Grand Rapids fronts on the pleasant Washington Square Park, which is flanked, in turn, by older hospital buildings to the north and a new professional office building to the south. Supportive and special medical services are located on the first three levels; mechanicals on the fourth level

right above surgery, intensive-care units and recovery; and surgical beds, pediatrics, obstetrics and maternity on the upper levels, of which a total of ten are projected. An open-ended structural and mechanical system allow flexible expansion or adaptation of existing phases horizontally and vertically, anticipating growth.

Eliot Fine photos



is too often toward the creation of some 'perfect' event, but in this field 'perfection' can only be said to have been attained if the result of what one designs at a given period can gracefully give way to new needs, new additions, in another period."

Construction is of reinforced concrete—flat slabs, poured-in-place, with bays that are 26 by 30 feet. The external finish is of limestone. Along the perimeter, reinforcing rods, left exposed for about two inches along a continuous L-shaped seat in the nine-inch slab, will facilitate future connections by easy removal of the building facing, plus the styrofoam filling of the L-shaped seats, then quickly welding new rods to the existing ones. This approach will enable additions by single or multiple bays according to need.

Open-endedness amongst the mechanicals has been achieved by capping the major ducts, piping, and conduit at the building perimeter and, for easy vertical expansion as well, these lines were capped at the underside of the slabs with knock-out panels in the roof. The result has been expeditious stacking of new patient-care floors as the phases of construction unfolded.

Three levels house support facilities, and all can expand horizontally. Must expand, in fact. At best, such growth is unpredictable in terms of size, shape and timing. The design makes possible departmental growth of up to 60 feet outward from the present perimeter. In contrast to the unpredictability of the support areas, those in the tower are more dependably repetitious, housing 376 beds in all. But as mentioned, stacking to achieve this total has been easily accomplished. Another important aspect of this flexibility is that the size of bays and the loading of floors at the support levels are designed to accommodate drastically different medical functions. The re-making of structure for such changes as turning administration areas into radiological or clinical laboratories, with their heavy equipment, is avoided by this constant loading capacity.

Flanking either side of St. Mary's are the old building, which is being adapted for specialized out-patient departments, and the new professional office building which brings the doctors and their allied disciplines close by the complex.

The formal properties of the complex can not be said to be any great shakes as sculptural phenomena, yet an essential simplicity, deriving from the give-and-take between varied hierarchies of health care, makes this a much more congenial presence in the city than probably would have been the case had "formal properties" been uppermost in the minds of the architects. The entrance area is a place of invitation, rather than suppressed terror—so frequently the image conveyed by hospital entrances (if one can find them). The circulation from the main lobby into the supporting departments and on up into the bed-tower floors is legible and even pleasant. "The key thing," says Miller, "was clearly classifying what existed, what we had to have and in what order, what we would want to do with the original buildings and in what order, and always classifying the range of probable future needs

to be taken care of." Allowing this classification to assert itself by way of a three-dimensional "growth system," St. Mary's now displays an over-all order, even as it is, in reality, an array of highly differentiated functional components.

The project also forces attention on a kind of reckoning that is occurring throughout the health-care field today—that of adjusting to the changing role of health-care institutions.

"Hospitals not only can, but must, contribute to a city scene," insists Sonder, "and help coalesce a city's resources. Sometimes the intricacy of the functions involved result in simplistic, stand-pat solutions which just sort of stand there, aloof from the health of a city, in the very process of enhancing that health. Yet it is that very intricacy that demands a recognition of the incremental character of hospital planning and, with careful classification of needs and timing, that kind of growth can result in a building that looks better, feels better, and *is* better. This is very important in a period when the health field is setting its sails for ambulatory care, away from the old dependency on in-patient care."

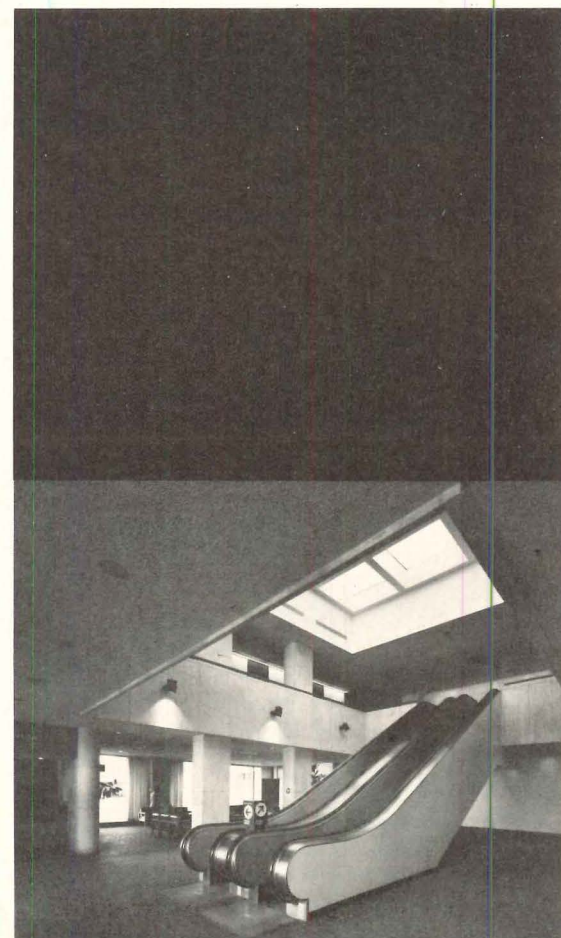
It is this "setting of sails" which will be the test. St. Mary's architects made only two assumptions—that there would be a need for growth, and that such growth can be categorized. This led to the axial accommodation. Whereas the Z axis, as mentioned, is meant to take care of vertical expansion of a repetitive nature, the X and Y axes are definitely the most important with respect to long-term needs because, like spatial sponges, they must absorb a kind of growth that is not so easily predictable.

The north-south X axis, for example, connecting existing, new, and future institutions, had to be, by nature, open to all "comers" as the complex evolves. The east-west Y axis, the most absorptive of all, had to be ready for the unending, uneven nature of departmental growth. All the while, the number of nursing units in the floors above will have reached a relatively static structural state, compared to the dynamicism of these institutional and departmental levels. What has evolved here, then, is a flexible mesh of matrices off which change will be easily bounced.

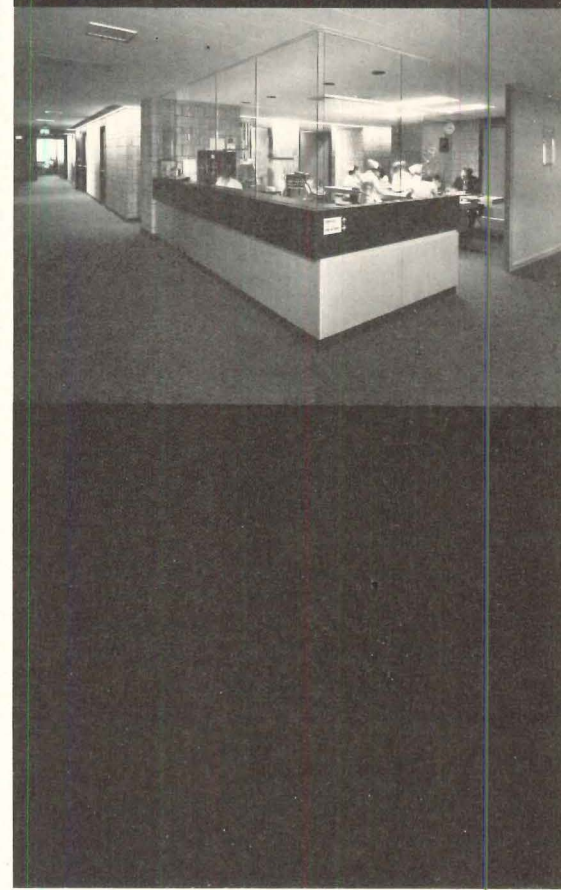
Says project architect Guy Oliver, of Westermann & Miller, "More than ever before, when you talk about the planning of hospitals, you're talking not only about the structuring of space but also the structuring of investment—and in both cases, what you build has to be ready to stretch. The time is over when you could save up enough space or money to afford to throw either away." That's the kind of thinking that conservative Grand Rapids likes to hear.

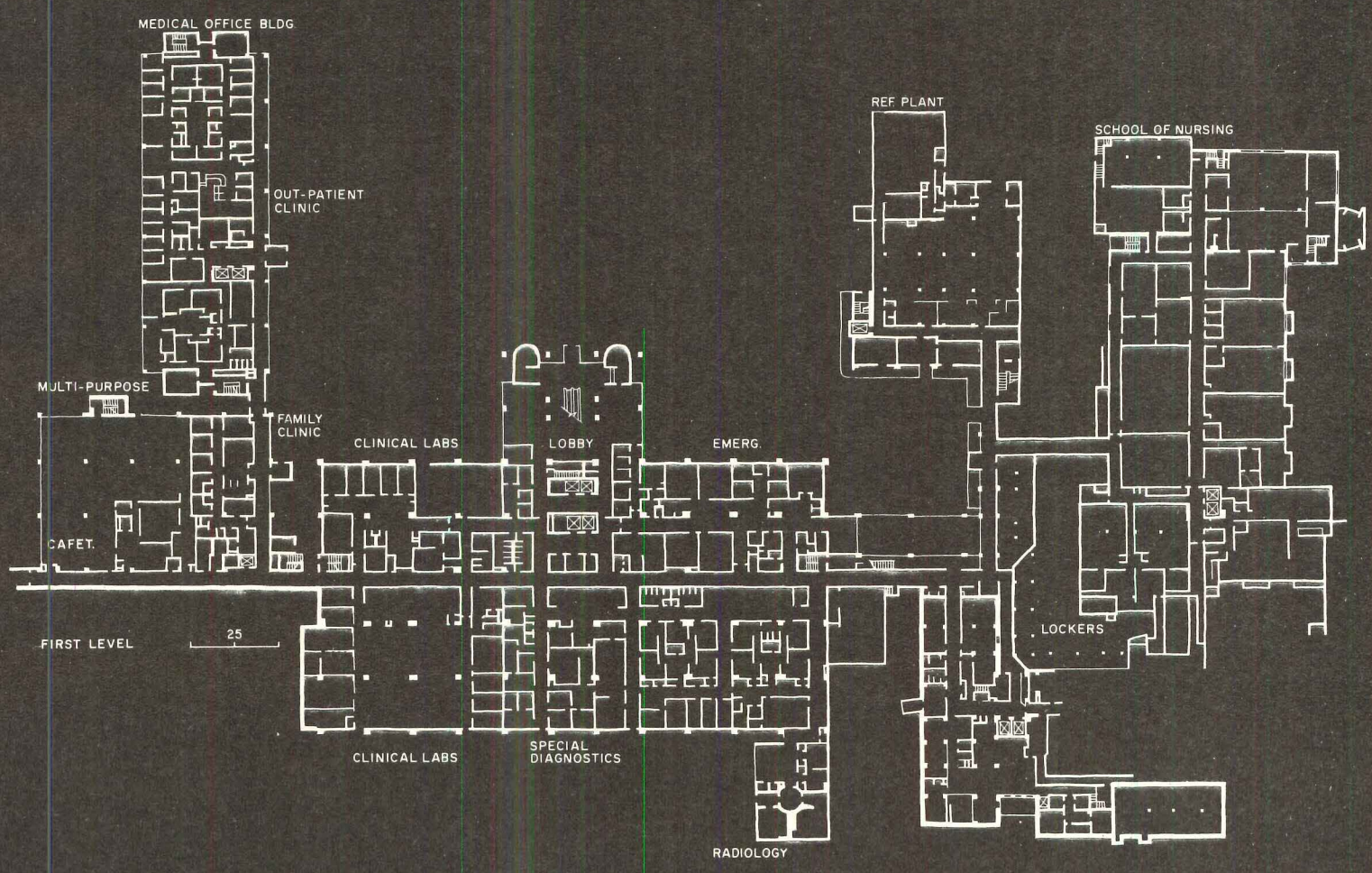
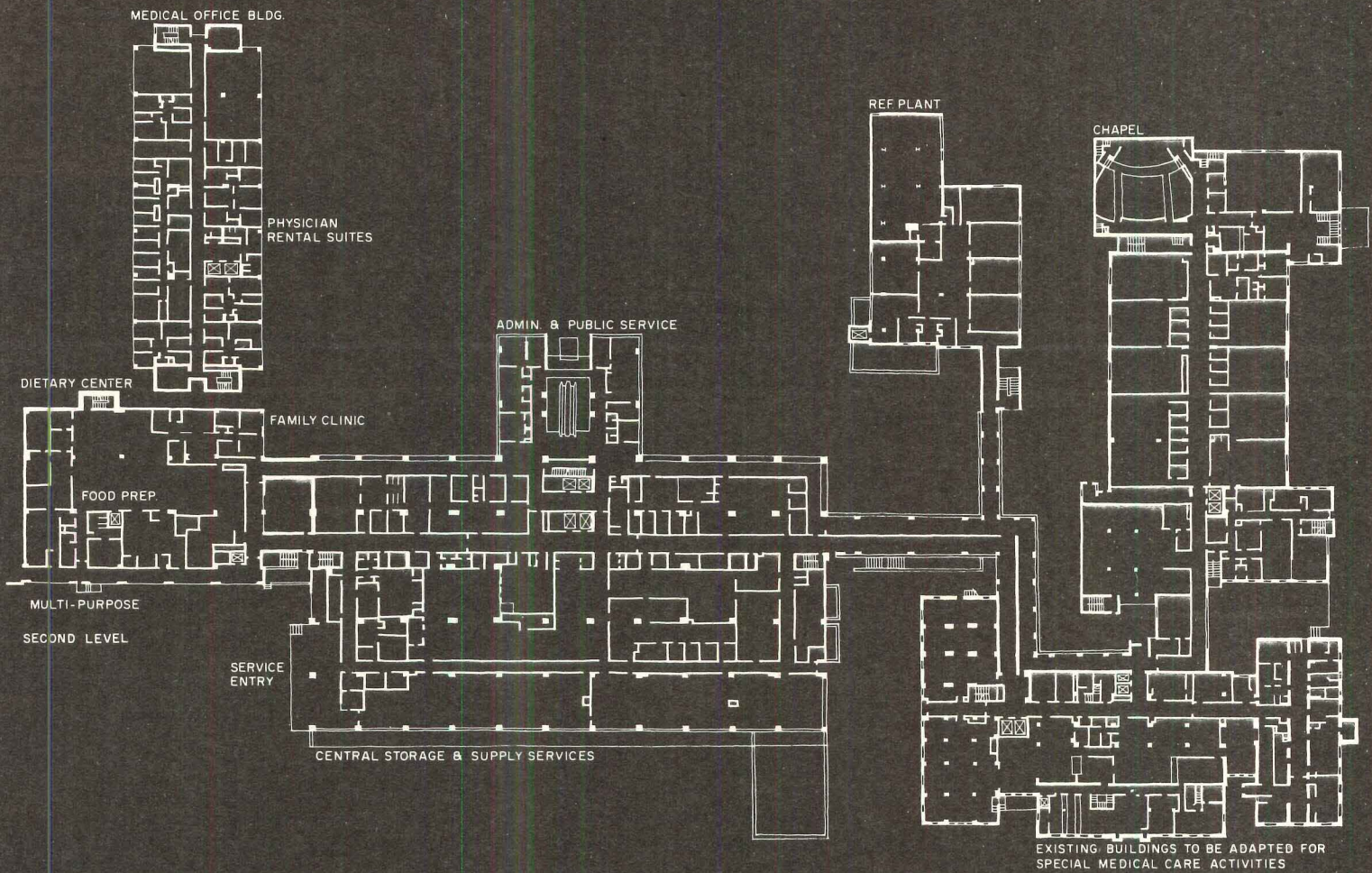
Seeing, of course, is believing. And St. Mary's, having looked farther ahead than most, can now proceed apace with faith.

ST. MARY'S HOSPITAL, Grand Rapids, Michigan, Owner: Sisters of Mercy. Architects: Westermann & Miller, Associates P.C., and Russo & Sonder (Richard Sonder, partner-in-charge; Guy W. Oliver, project architect). Associate architects: Koprowski Associates. Engineers: Lev Zetlin Associates, Inc. (structural); Caretsky (mechanical); Eberlin & Eberlin (site-work). Contractor: Owens-Ames-Kimball Co.



Interior of St. Mary's Hospital are consciously becoming and warm, denoting the institution's fast changing role as a focus of ambulatory care and community oriented medicine. The main lobby provides immediate, legible relationships to other areas of the support-services section and to the bed-tower floors above.





A GOOD STREETSIDE MANNER This health-care facility invigorates a whole neighborhood as part of its function

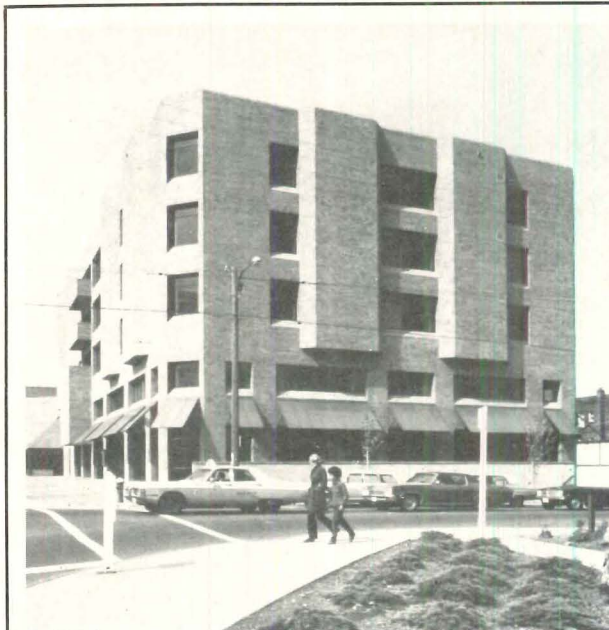
"As a work of art, it's probably not the greatest," cautioned architect Donald Cochran. "The fact that it comes off at all esthetically is a minor miracle to us."

But the multi-purpose Progressive Care Facility, located in Seattle's Capitol Hill district and designed for the consumer-owned, pre-paid Group Health Cooperative of Puget Sound, comes off very well indeed. Ridenour, Cochran & Lewis have built a real beauty, and for just under \$50 per square foot.

They didn't necessarily start out to. Other things were on their minds. Not least of all, community attitude which, around Seattle's Capitol Hill, is very outspoken. Over the years, Group Health had created a virtual campus of facilities and, to take care of parking, had bought up a patchwork of old house lots. The community finally blew the whistle on this practice and, to start off the new project on the best footing, the architects took on James Van Drimmelen as facility programmer, who, acting as Group Health's representative, set about taking community leadership into confidence in order to draw up a mutually sympathetic list of neighborhood goals. It was into this context that the function and physical configuration of the Progressive Care Facility was to fit.

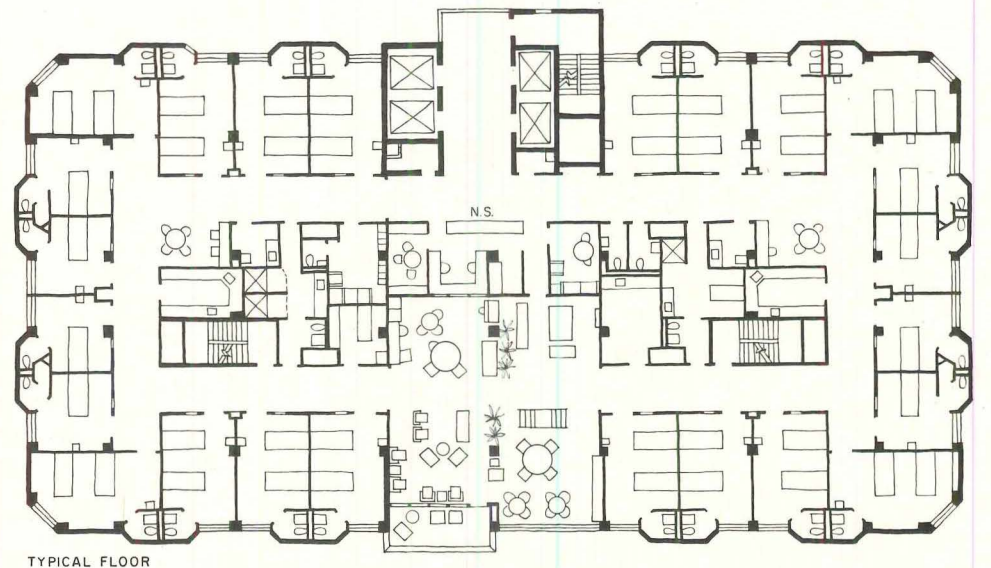
And fit it does, in a very restrictive zoning envelope. Group Health agreed to develop a car-pool program to alleviate traffic, and promised not to expand its "campus" any further up and beyond improving existing buildings in connection with constructing the Progressive Care Facility. Because a number of small businesses were to be dislocated by the project, Group Health also promised to make available space on the ground floor to any legitimate neighborhood retailer, the idea being to stitch a sociable seam between the function of health care and the ongoing life of the community.

"Probably the most strenuous part was in resolving the challenge of taking care of everything that had to be taken care of within the limitations, and this was especially true of resolving the nursing floor plan," says Cochran. "The lot coverage limitation allowed only 14,100 square feet to be built. This meant that the desirable minimum area for the 40 beds per floor and necessary support, such as toilets, would be 10 to 15 per cent over, which is why we did the fairly obvious thing of projecting the toilets out from the exterior at 45 degree angles, conserving some space—not to relieve the building of a monotonous, box-like appearance, although it does that too." This projection also gets the patients nearer the corridors, saving steps for the nurses, and it provides a nice alcove for the beds, encouraging people to get up and look out at the city. After all, a progressive-care approach is designed to get patients back into it as soon as possible.

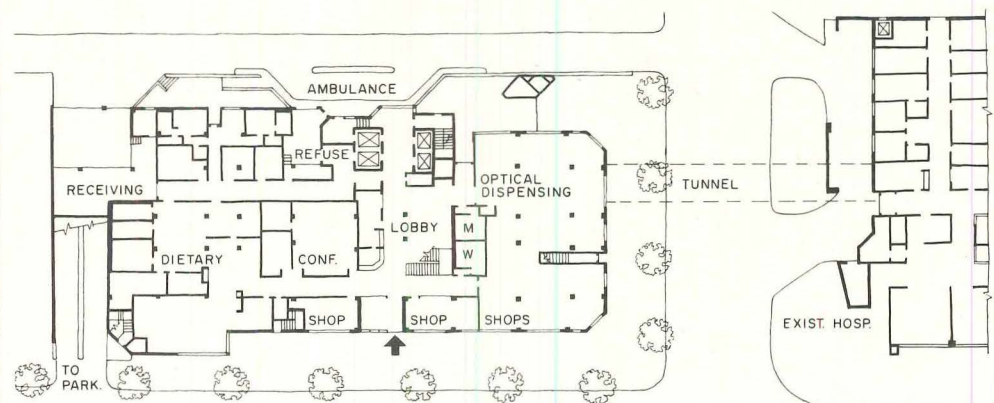
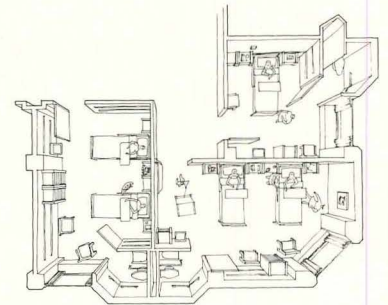


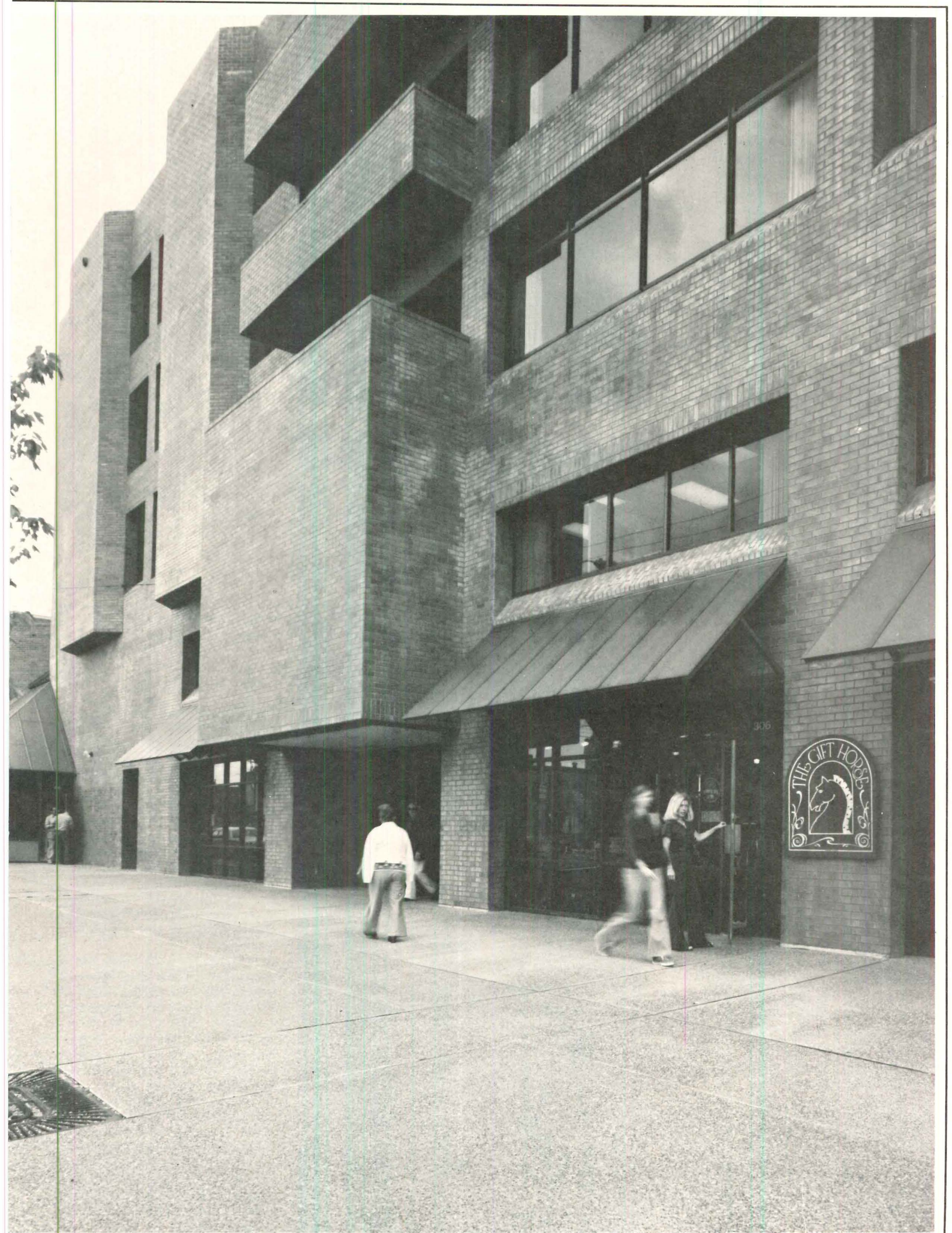
Jim Ball photos

The five-story, brick-clad Progressive Care Facility of the Group Health Cooperative in Seattle was built on a tight corner site and to a strict 60-foot height limit. Nursing floors, with 40 beds each, nudge the patient-care rooms to the periphery where the back-to-back toilets project outward at 45 degrees, providing a visual texture to what would have otherwise been a flat, uneventful exterior. By agreement with community spokesmen, the client agreed to lease retail space on the ground floor to neighborhood businesses in an effort to create a more congenial relationship, functionally and socially, between the facility and its surroundings.



TYPICAL FLOOR





Another space-saver is a flexible, moveable array of storage and service modules, thus cutting down on clutter and redundant closets. Another quite forward-thinking provision is a convenience food service, rather like that the airlines use, using prepared meals served piping hot from microwave ovens.

The tight corner site mandated a rectangular plan and, with a 60-foot height limitation in effect, the architects were obliged to squeeze the five stories into a sandwich of flat-slab construction that, "unfortunately" Cochran adds, resulted in having a lot of columns to work around. But even with such constraints, the disposition of the building inside and out is distinctly congenial and, it might be said, recuperative. In contrast to nearby Group Health buildings, stark white, this one is of warm reddish brick to complement the old residential neighborhood. Ten-foot setbacks were maintained along the two sidestreets, even though setbacks were not required, to give a generous sidewalk to the community and a more inviting presence to the building itself.

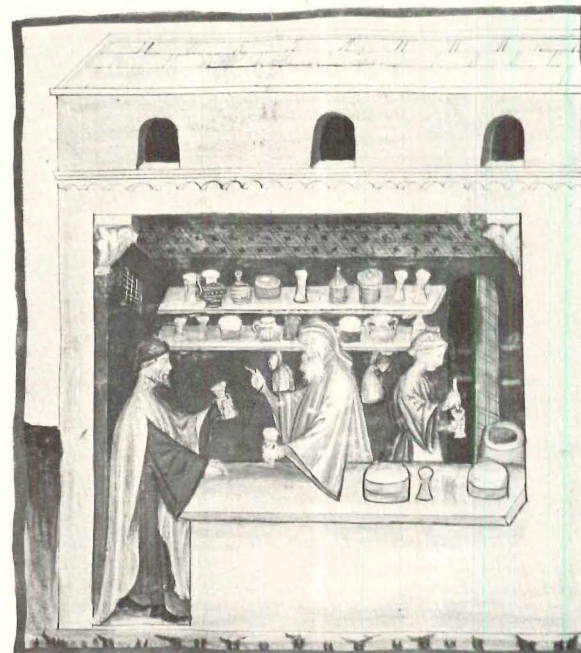
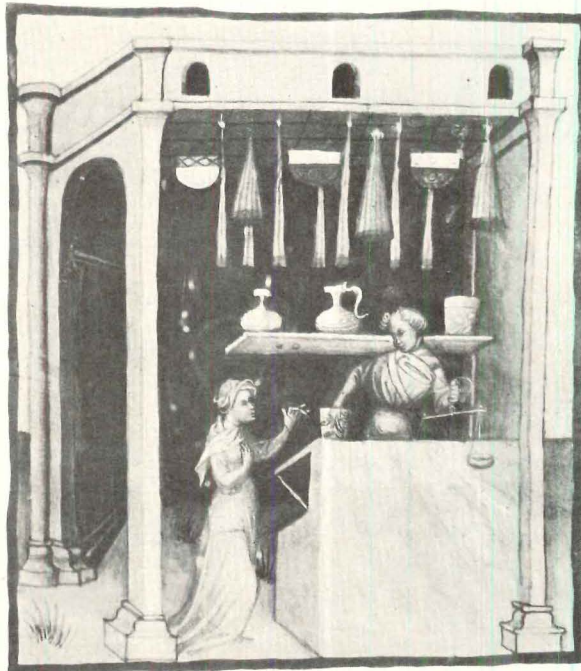
Also, to satisfy a Health Department requirement that some sort of outdoor recreation area be included, a kind of roof garden has been included on the third level, providing sheltered, landscaped views to the city, although, when cost-cutting time came around, too much of the landscaping was eliminated.

Other things were eliminated too. Carpet in the corridors of the nursing floors (oh, their aching feet) was one thing but, even more important, the innovative insights of a behavioral study by Dr. Thomas Lasswell who, interviewing patients, nurses, visitors, and even community citizens, really got into the "user" aspect of the project and its impact. "I think there will (and should come a day when this type of input will be a major design determinant rather than the odd-ball, irrelevant thing it's considered to be by many clients now," Cochran emphasizes. Perhaps the proof of this will come in a user-evaluation study, which the architects intend to have done once the building has been fully occupied for six to 12 months.

With increased emphasis being placed, nationwide, on progressive care, augmenting the belief that patients who are not acutely ill should be up and out of an intensive health-care environment like the typical hospital as soon as possible, this is a yeoman example of how such facilities, instead of looking like laboratory specimens, can instill a sense of normalcy and good nature within and around the intricate processes of getting people well.

A high value has been put on health in our society and, as buildings of this quality suggest, we are moving into an era when the public will determine more directly how to apportion health care. Here in Seattle the physiognomy of reform looks pretty cheerful.

PROGRESSIVE CARE FACILITY, Owner: Group Health Cooperative of Puget Sound, Seattle, Washington. Architects: Ridenour, Cochran, & Lewis. Engineers: Engineers-Northwest, Inc. (structural); Ervin Engineers (mechanical); Sparling & Associates, Inc. (electrical). Consultants: James Van Drimmelen (facilities program); Dr. Thomas Lasswell (behavioral program). Contractor: John H. Sellen Construction Co.



WHEN ARCHITECTS CONSULT PEOPLE

by C. M. Deasy,
writing in *Psychology Today*.

The first step in planning anything—a new town or a pizza parlor—is to find out the particular yearnings, kinks and aberrations of the groups that make up the little world you are dealing with.

The crucial difference between planning a structure for some exotic animal and planning one for the non-exotic human being is that an expert on animal behavior has an essential voice in the animal project but no expert on human behavior has anything to say about the human's habitat. As a result the animal gets a distinctly better deal.

The creation of a working relationship between the social and behavioral sciences and the planning and design professions is by no means a visionary proposal. It has been done; it works; and, while I like to think that it won't always be as strenuous an experience as it is now, it is a remarkably productive liaison.

The building program can be very specific on such details as how to handle a hospital bedpan problem and completely ignore the question of what gives the staff a sense that their work means something, a point likely to have much more to do with the quality of patient care, and with employee turnover.

Light-gage steel is the framing for lightweight wall panels

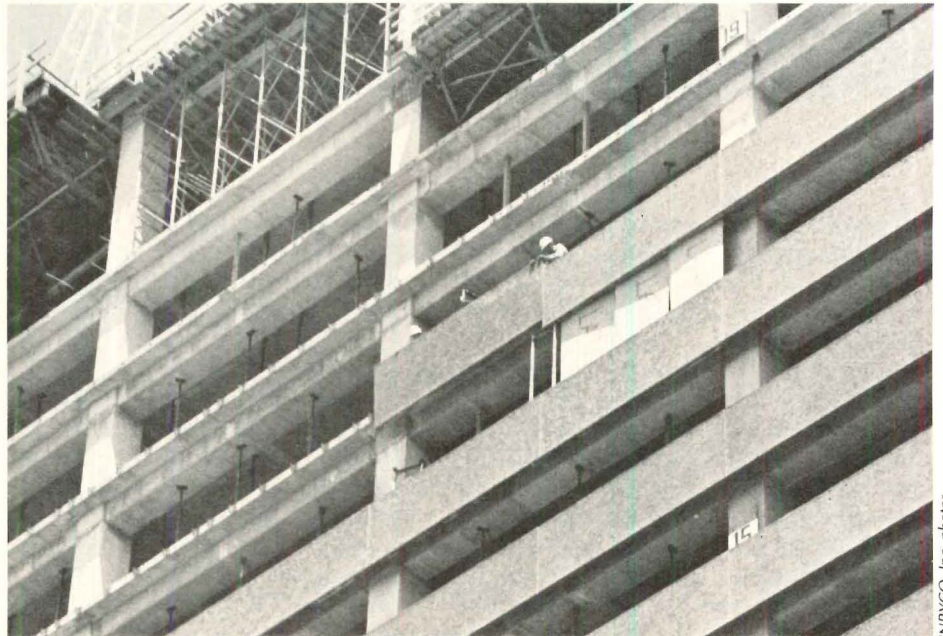
Light weight combined with high strength, rapidity of construction, low installed cost, and incombustibility have all contributed to the fast-growing use of light-gage studs as the framing material for a variety of exterior wall systems with finishes of cement plaster, asbestos-cement sheet topped with aggregate, and various forms of sheathing and sheet surfacing materials.

One of the most recently completed buildings employing the system is the 26-story Hyatt Regency in Phoenix for which the exterior panels (top photo, right) were made on site from frames of light-gage, cold-formed steel covered with $\frac{3}{4}$ in. of portland cement plaster. The panels were fabricated and installed on a floor-by-floor basis which eliminated the need for costly scaffolding systems and heavy lift equipment.

The exterior wall sections employed an 18-gage C-channel frame and steel studs spaced 16 in. on center. The steel studs were shipped to the site in pre-cut lengths. First step by the subcontractor, Bob Campbell, Inc., was assembly of the studs into frames in jigs, followed by welding at joints. Next, paperback-type metal lath was attached to the framing with self-tapping metal screws to receive the cement plaster. Finally, a frame of no. 66 galvanized steel trim, $\frac{3}{4}$ -in. deep, was attached to the front face of the panel to serve, in effect, as a plaster ground. The panelized frames were then hand carried to the floor below that on which panels were being attached to the structure. The frames were laid flat on the floor slab, and plasterers applied the scratch, brown and finish coats to the panels in this position. The panels were fabricated in three sizes and weighed approximately 15 lb per sq ft.

Conventionally, the cement-plaster application has been done with framing attached to the building and the plastering performed from scaffolds. This takes much more time for the plastering operation and for the curing process. Furthermore, it is estimated that 25 per cent of the plastering material is lost when it has to be applied on a vertical rather than a horizontal surface.

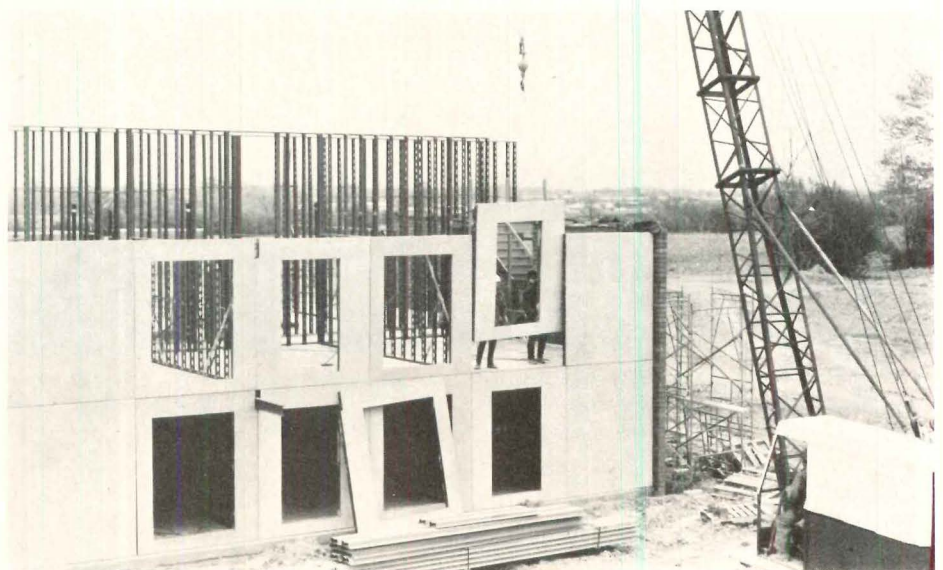
The architects for the Regency Hyatt were the Phoenix office of Charles Luckman Associates, who had previous experience in the innovative use of lightweight steel framing for the support of cement-plaster finishes. One such installation was a series of flared columns for a large Sears department store in Phoenix. "Petal" columns that originally were to be of



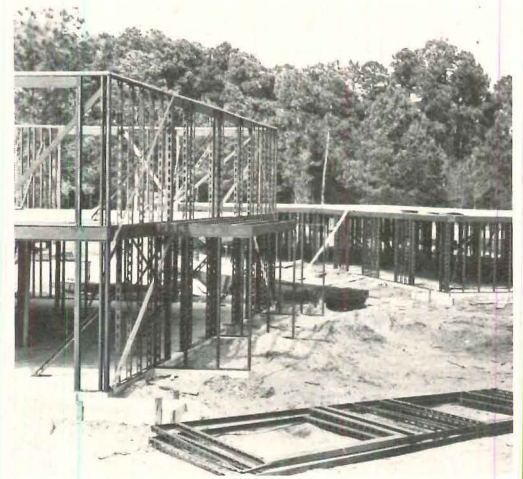
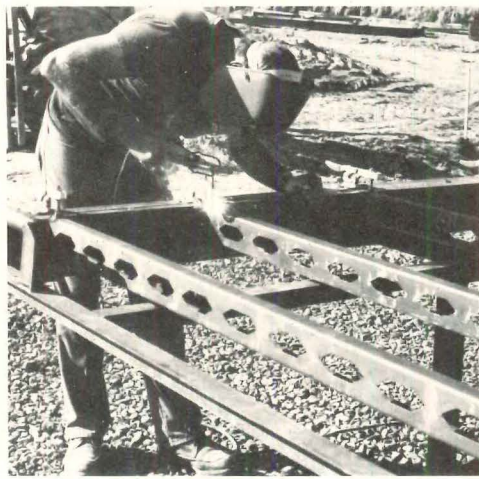
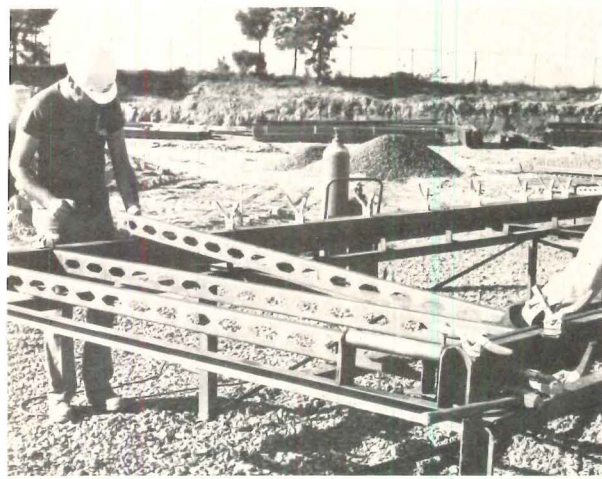
INRYCO, Inc. photos



Three variations of steel-stud-frame support for exterior walls are shown here. The new Hyatt Regency in Phoenix (above) has wall panels of cement plaster on a steel-stud frame that were site fabricated. The cement plaster was applied to the metal-lath-covered frames on floor slabs of the building. At the Phoenix Convention Center (left) the tetrahedron-patterned, 20-ft deep fascia is field-applied cement plaster on metal lath attached to a three-dimensional steel-stud frame. Prefabricated panels are often used for housing (below).



The assembly starts with pre-cut lengths of light-gage studs and C-channels set in a fixture and then welded into a rigid unit. When used for vertical loads, the smallest flange width is 1 in., but if sheet materials are to be butt joined, the flange area is increased to 1 3/8 in. or 1 7/8 in.

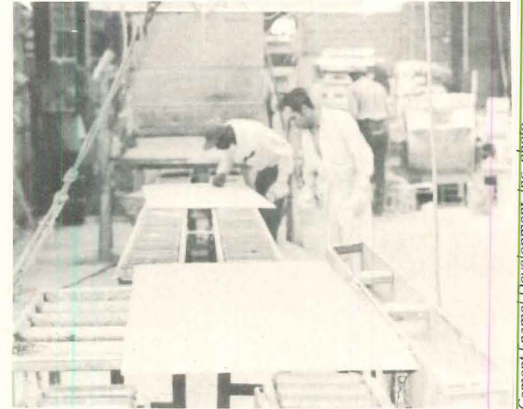


precast concrete were constructed using 16-gage steel-stud members, with the flared portions of the tops framed of 3/4-in. channel iron. An aggregate-faced cement plaster was then applied to metal lath.

A quite unusual application of the system by the Luckman office was developed for the Phoenix Convention Center (center photo, previous page). The tetrahedron-patterned, 20-ft-deep fascia of the building was constructed using a light-gage framing system attached to the structural steel trusses that span between columns. Altogether there are 208 tetrahedrons in the 20-ft-high fascia. The framing was covered by galvanized metal lath to which was applied cement plaster followed by a proprie-

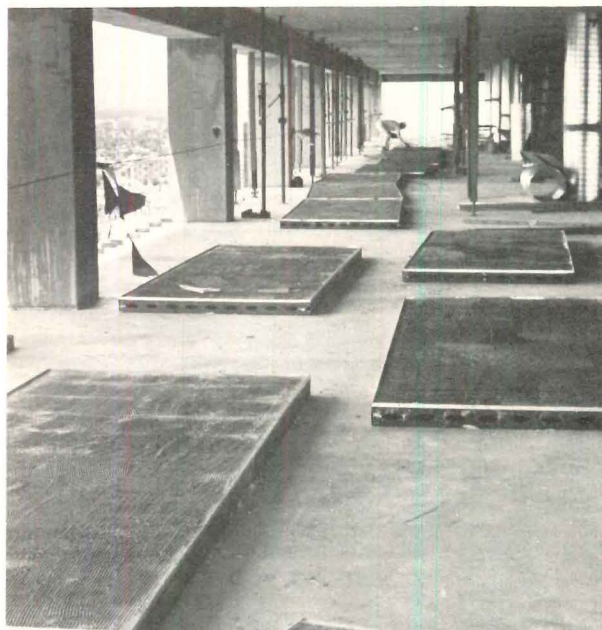
tary, trowelled-on coating of marble chips and binder. The subcontractor for the fascia construction, Gray Plastering, brought in structural engineers A.V. Schwan & Associates for working drawings and specifications on the light-gage steel framing system.

In addition to site fabrication of the light-gage-steel-framed panels, a number of companies shop fabricate these panels in factories, and can ship them considerable distances because of their light weight. One franchiser lists member companies from coast to coast in the states of California, Colorado, Texas, Ohio, Virginia and Florida. Frequently the facing consists of asbestos-cement sheets topped by aggregate in cement, sand and binder.



In factory-made panels, asbestos-cement sheet is topped with a stone aggregate in a matrix.

Cement Enamel Development, Inc. photo



INRYCO, Inc. photos



On-slab fabrication of the cement-plaster panels for the Hyatt Regency in Phoenix is shown above. With the mobility afforded by open floor space, it was possible for fabrication to proceed rapidly. Scratch coat has been applied in the photo above, left, and the finish coat is shown above, right.

The ASHRAE Energy Standard for New Buildings: A Digest

This digest (the standard's requirements in convenient tabular and condensed form) was prepared originally by consulting engineer William Tao to aid his clients in understanding the various mechanical and electrical requirements of ASHRAE Standard 90-75. RECORD thought its own readers might welcome such a condensed version. Of course, the full copy of the standard should be available for reference when it is being used for design. The first eight sections of the standard are covered in this issue. In the October AE section, a table of the thermal factors for heating and cooling for buildings in the major cities (calculated by Tao) will be presented along with the section on lighting; also a list of definitions and formulas. The author is president of William Tao & Associates, Inc. of St. Louis.

1-3. PURPOSE, SCOPE AND DEFINITIONS

This standard is to provide design requirements which will improve utilization of energy in new buildings, with general scope in Section 2 and technical definitions in Section 3.

4. EXTERIOR ENVELOPE

Design elements—Energy-efficient design shall be based on evaluation of building orientation, shape, aspect ratio, number of stories, thermal mass, color, shading and reflections based on adjacent structures, natural ventilation and wind. Design criteria are summarized below.

Heating/cooling criteria—Maximum thermal transmittance (U_o) and minimum insulation resistance (R) for component assemblies (walls, floors, roof/ceilings) are summarized in Table A. The U_o values of some assemblies may be increased and others decreased, provided the over-all heat gain or loss for the entire "building envelope" does not exceed the total which would result from conformance to the stated U_o values.

Annual Heating Degree Days	Maximum Transmittance $U_o = \text{Btu/h-ft}^2\text{-F}$				Min. Insulation† R (h-ft ² -F/Btu) For Slab-on-Grade				
	Gross Wall			FLOOR over Unheated Space	ROOF & CEILING	Heated	Unheated		
	Over 3 Stories	3 Stories & Under	1-2 Family Dwelling						
12,000	.28	.20	.16	.08	.060	11.5*	8.8*		
11,000						10.7*	8.2*		
10,000	10.0	7.5							
9,000	.22	.18	9.3			6.8			
8,000	.24	.19	8.5			6.2			
7,000	.31	.26	.21			.068	7.8	5.5	
6,000	.33	.28	.22			.076	7.0	4.8	
5,000	.36	.30	.23			.084	6.3	4.2	
4,000	.38	.32	.25			.11	.092	5.5	3.5
3,000	.41	.33	.27			.19	.100	4.8	2.8
2,000	.43	.35	.28	.26	4.0	2.2			
1,000	.46	.37	.29	.33	3.3	1.5*			
500	.47	.38	.30	.36	2.9	0.8*			

*Extrapolation from Figure 2 of Standard.
† Total insulation length to be 24 inches minimum.

OTTV—Overall Thermal Transfer Value (for walls in Type "B" buildings) shall not exceed Table B. This table, which applies to the cooling-load situation, also includes Solar Factor (SF) for fenestration and Equivalent Temperature Difference (TD_{eq}) for walls, which relates to the "mass" of the exterior enclosure.

North Latitude	25°	30°	35°	40°	45°	50°	55°
Max. OTTV (Btu/h-ft ²)	29.3	30.7	32.1	33.5	34.9	36.3	37.7
SF (Btu/h-ft ²)	118	121	124	127	133	138	144
WALL	mass/area (lb/ft ²)	0-25	26-40	41-70	> 70		
	TD_{eq} (F)	44	37	30	23		

Air leakage—shall not exceed values in Table C.

Type of Window/Door	Residential	Non-Residential
Windows	0.5 cfm/L.ft	0.5 cfm/L.ft
Sliding Doors	0.5 cfm/ft ²	11.0 cfm/L.ft
Swinging Doors	1.25 cfm/ft ²	11.0 cfm/L.ft
Revolving Doors	—	11.0 cfm/L.ft

5. HVAC SYSTEMS

Exceptions—Special applications, such as hospitals, laboratories, special equipment, etc., are exempt from requirements of this section.

Indoor design conditions—(winter) 72 F db at 30% max. RH; (summer) 78 F db with RH selected to minimize energy usage, within limits of ASHRAE Standard 55-74.

Outdoor design conditions—Selected from climatic conditions listed in 1972 ASHRAE Handbook of Fundamentals under 97.5% column for winter, and 2.5% column for summer.

Ventilation—shall conform to ASHRAE Standard 62-73. For recirculation systems, outdoor air may be reduced to 33% of the specified minimum, but not less than 5 cfm per person.

Temperature & humidity—Thermostats and humidistats shall be provided for each system (or zone). Humidistat shall prevent use of new energy to produce a space RH above 30% or below 60%. Controls shall be readily accessible for shutoff, setback or volume reduction during non-use or alternate-use periods.

Simultaneous heating & cooling—within a zoned space, and the reheating or recooling of supply air are discouraged except as delineated.

Cooling with outdoor air (economizer cycle)—shall be used when-

ever it will result in lower usage of new energy. Exceptions will be permitted for small systems (less than 5,000 cfm or 134,000 Btu/h), poor outdoor air quality, requirement of more new energy for humidity control or other systems, and systems designed for interzone energy recovery.

Air transport factor (ATF)—the ratio of sensible heat removal rate to fan power input. Shall not be less than 4.0 based on design conditions.

Energy recovery systems—recommended to conserve new energy.

Piping insulation—shall be in accordance with table D for thermal resistances (R) of 4.0 to 4.6 h•F•ft²/Btu/inch For other insulation material, thickness shall vary in inverse proportion to R.

Piping System Types	Fluid Temp. Range (F)	Pipe Sizes (inches)					
		Runouts ≤ 2	≤ 1	1½-2	2½-4	5-6	≥ 8
Steam & Hot Water	306-450	1.5	1.5	2.0	2.5	3.5	3.5
	251-305	1.5	1.5	2.0	2.5	3.0	3.0
	201-250	1.0	1.0	1.5	1.5	2.0	2.0
	120-200	0.5	0.75	1.0	1.0	1.0	1.5
	Any	1.0	1.0	1.0	1.5	1.5	2.0
Chilled Water	40-55	0.5	0.5	0.75	1.0	1.0	1.0
Refrigerant/brine	<40	1.0	1.0	1.5	1.5	1.5	1.5

Ductwork—All ductwork (except ducts installed in unventilated basements, within HVAC equipment, exhausts, or having Δt less than 25F) shall be insulated if it would require additional energy otherwise. Insulation shall have thermal resistance (R) greater than 0.067 × Δt (F). (See para. 5.11)

6. HVAC EQUIPMENT

Performance responsibility—Supplier shall provide equipment performance data and maintenance manual upon request. System designer shall determine compliance of unitary equipment provided by more than one component supplier.

Standard rating conditions and COP—are summarized in Table E for various equipment and components.

Type	Standard Rating Condition	Min. COP					
		1977	1980				
Heating Equipment	Heat *	Air Entering Outdoor Section 47 db/43 wb, F	2.2	2.5			
	Pump	Air Entering Outdoor Section 17 db/15 wb, F	1.2	1.5			
		Water Entering Outdoor Section 60 F	2.2	2.5			
Cooling Equipment	Electrically Operated	Air Entering Temp.: 80 db/67 wb, F	< 65,000 Btu/h	1.8	2.0		
			≥ 65,000 Btu/h	2.0	2.2		
Cooling Components	Heat Operated	Direct Fired (Gas or Oil)		0.40	0.48		
		Indirect Fired (Steam or Hot Water)		0.65	0.68		
	Electric Water Chiller	Leaving Chilled Water 44 F	Self-Contained	Air	2.2	2.3	
		Entering Chilled Water 54 F	Centrifugal	Water	3.8	4.0	
		Leaving Condenser 95 F	Self-Contained	Air	2.1	2.2	
		Entering Condenser 85 F		Water	3.2	3.4	
		Fouling Factor:		Condenserless	Air	2.6	2.8
		Non-Ferrous Tubes 0.0005	Water		3.2	3.4	
	Steel Tubes 0.0010	Reciprocating	Water	3.2	3.4		
	Compressor & Condensing Units (≥ 65,000 Btu/h)	Condenser Ambient (Air or Evap. Cooled), 95 db/75 wb, F	Recip. (air Cooled)		2.3	2.5	
Compr. Sat. Discharge: Water or Evap. Cooled, 105 F		Recip. (Evap. Cooled)		3.3	3.5		
Air Cooled 120 F		Recip. (Water Cooled)		3.3	3.5		

*Based on 70 F db air entering indoor section on heating mode.

Operation of heating equipment—minimum 75% combustion efficiency at maximum rated output; supplementary heater shall be cut off when the load can be met by heat pump alone.

7. SERVICE WATER HEATING

Scope—This section is to provide criteria for design and equipment selection that will produce energy savings when applied to service water heating for domestic, sanitary and swimming pool purposes.

Equipment and system performance—The maximum standby loss and continuous loss for water heaters, storage tanks and piping shall not exceed the values given in Table F.

EQUIPMENT	MAXIMUM STANDBY LOSS		
	Unit	1976	1977
Elec. Storage Heaters	Watt/ft ² of Tank Surface	6	4
Gas/Oil Storage Heaters	Percent (%)	43 + 67/V	23 + 67/V
Combination Service/Space Heating Boilers	Btu/h	25pmd + 250 n	13.3pmd + 400 n

Notes: V = Rated volume of tank, Gallon
 n = Fraction of year when outdoor daily mean temp. > 64.9 F
 pmd = Probable maximum demand, Gallon/h

EQUIPMENT or PIPING	MAX. CONTINUOUS LOSS (Btu/h-ft ²)	
Unfired Storage Tanks	15	
Piping of Recirculating Systems	Above-ground	25
	Underground	35

Recovery efficiency (E_r)—All gas and oil-fired automatic storage heaters shall have a recovery efficiency not less than 70% for 1976, and not less than 75% for 1977 and thereafter.

Operations and controls—Adjustable automatic temperature controls shall be provided for all service water heating systems. Switches and valves shall be provided to turn off the heaters, burners and/or circulating pumps when the system is not in operation.

Showers, lavatories and swimming pools—shall comply with the criteria given in Table G. Pools used for therapeutic purposes are exempt from this requirement.

EQUIPMENT	DESCRIPTION	CRITERIA
Shower Heads	Max. Flow Rate	3.0 GPM
Faucets (in public restrooms)	Type of Faucet	Self-closing
	Max. Flow Rate	0.5 GPM
	Max. Hot Water Temp.	110 F
Heated Swimming Pools	Max. Water Temp.	80 F
	Min. Outdoor Temp. for Heating Uncovered Pools	60 F

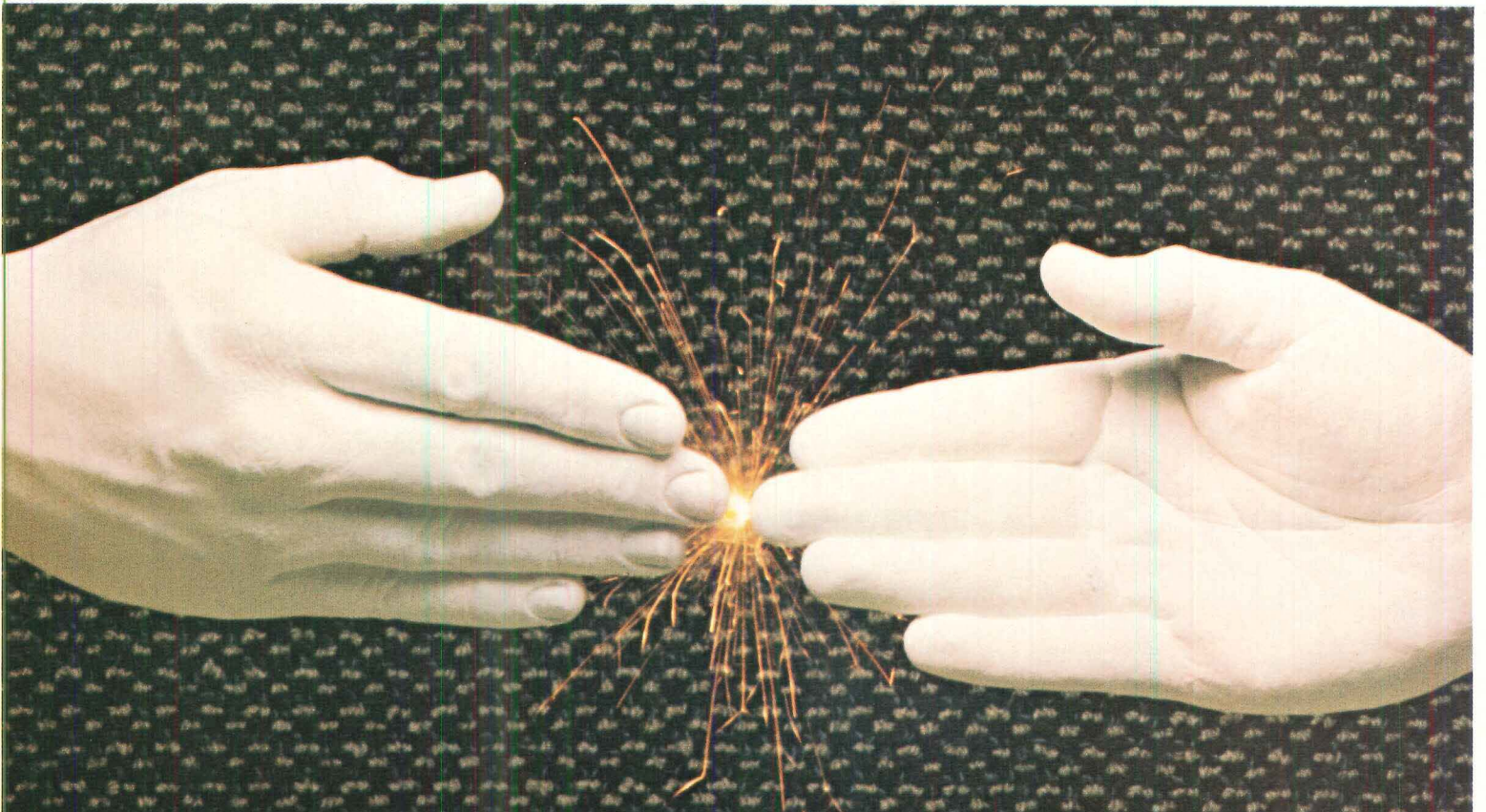
Minimum Power Factor	Utilization Equipments > 1000 W	85%
	Lighting Equipments > 15 W	85%
	To Correct Util. Equipment w/PF < 85%	90%
Maximum Voltage Drop	Branch Circuits and Feeders	3%
	Total System	5%
Service Voltage	To be selected for least energy loss	
Lighting Circuits	To be switched by area, & by use	

8. ELECTRICAL DISTRIBUTION SYSTEMS

Scope—Electrical distribution systems shall be designed for efficient distribution of electrical energy from the service entrance to the points of use.

Criteria—Shall comply with Table H.

Energy determination—In any multi-tenant residential buildings, except hotels, college dormitories and other transient facilities, provisions shall be made to separately determine the energy consumed by each tenant.



ACRILAN[®] 2000+ VS. STATIC ELECTRICITY.

If you ever shook hands with someone while standing on a carpet and got the shock of your life, you know all about static electricity. You can imagine what it would do to a magnetically programmed computer or similar equipment. So can Monsanto. That's why our Acrilan 2000+ carpets meet the low static build-up requirements of computer rooms and other sensitive installations.

Acrilan 2000+ carpets are created from a specially manufactured solution-dyed Acrilan acrylic fiber. They have an extremely low propensity to voltage build-up without using conductive fibers in their face fabric. Their voltage build-up is so low that in most situations there's no need for added static control. And where delicate computer sys-

tems are used, only a conductive system in the back of Acrilan 2000+ carpets is required.

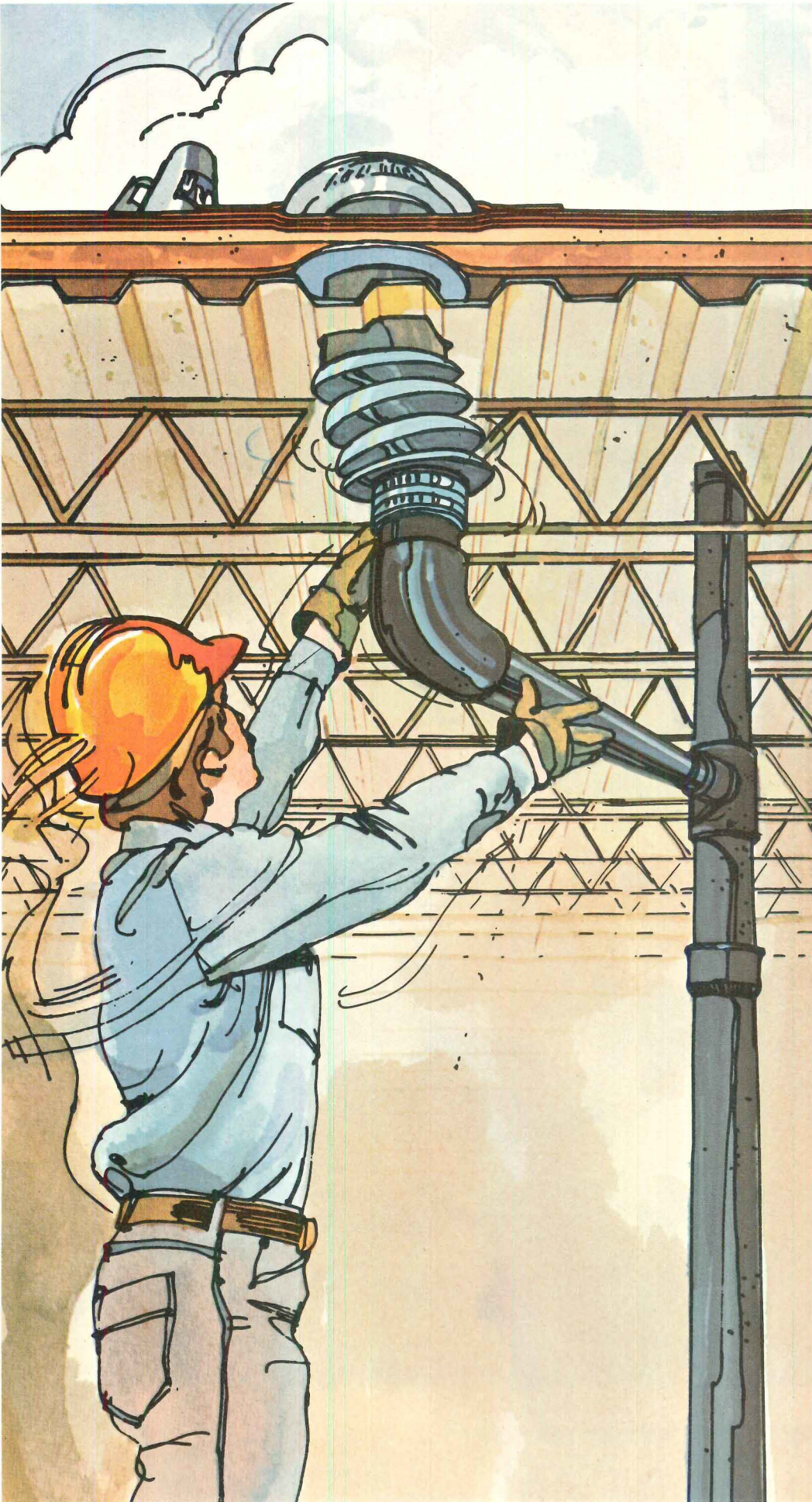
The inherent characteristics of Acrilan 2000+ carpets also make them ideal for hospitals where delicate monitoring equipment is used and where a static-free environment is essential. In fact, Acrilan 2000+ carpets are the answer wherever static electricity is a problem. So next time you're around sensitive equipment—or wherever static build-up may be a problem—think of Acrilan 2000+ carpets. They beat static electricity hands down every time.

Monsanto

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J-M Flex-I-Drain.™

The easy solution to the problem of relocating drains on reroofing jobs.

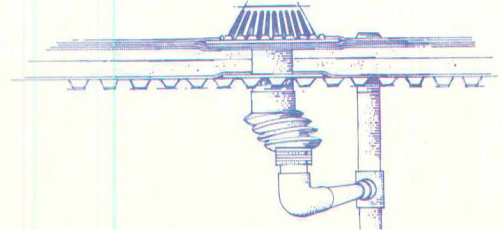


Replacing roof drains on a reroofing job can be a real problem.

Relocating them is often even more of a problem.

But both problems have an easy solution...

Flex-I-Drain, the new, patented flexible drain system from Johns-Manville.



The answer lies in Flex-I-Drain's unique construction — a bellows-type neoprene body that flexes to accommodate "normal" changes in alignment of the new roof drain to existing, rigid drain stacks. That also provides for easy attachment to lateral runs.

This flexibility provides another important function. To compensate for normal pipe and deck movement, both lateral and vertical. So both drain and roofing remain functional.

Flex-I-Drain consists of two basic parts that are easily and quickly installed, adapting to any thickness of insulation and roof membrane up to 3¼". And providing a waterproof insulation that's covered if the Johns-Manville Guaranteed Roof Program is used.

Best of all, Flex-I-Drain is competitively priced. Which means you can offer your client better, longer drain performance while realizing important savings in installation time and labor.

For information about Flex-I-Drain or the J-M single source built-up roofing system, write for BU-319A, Johns-Manville, P.O. Box 5108, Denver, Colorado 80217. Or call Don Korte, 303/770-1000.



**We've got
better building systems.**

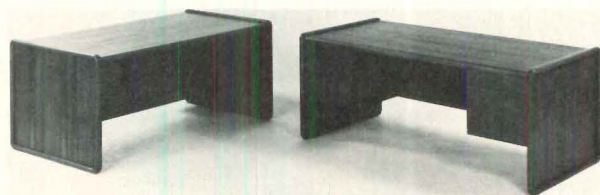
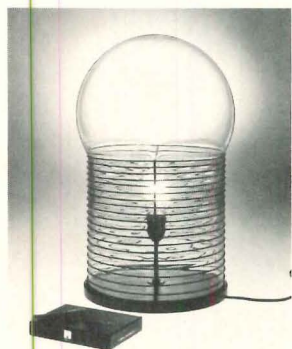


Johns-Manville

For more data, circle 53 on inquiry card

For more information, circle item numbers on Reader Service Inquiry Card, pages 193-194.

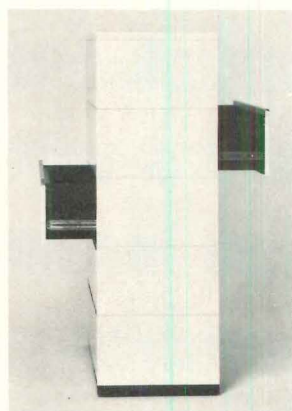
Manufacturers show contract furnishings last month at Chicago's Merchandise Mart . . .



Gunlocke



Harter



Modulo 3



Jansko



Stendig



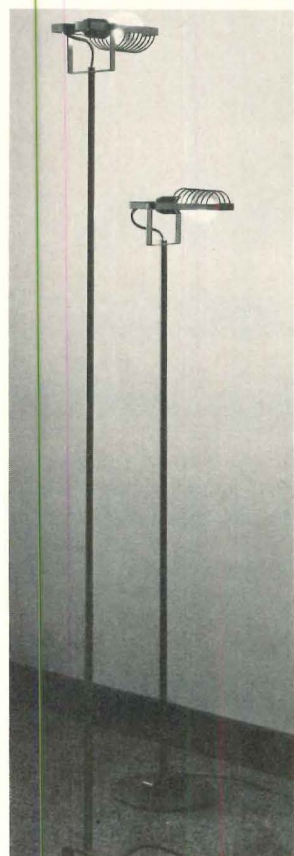
Thonet



Steelcase



Eppinger



Castelli

CASTELLI / Adjustable, extendable table, wall, ceiling and floor lamps designed by Ernesto Gismondi are available in white, blue, red and green lacquered metals. The blown glass table lamp with metal mesh base was designed by Gae Aulenti. ■ Castelli, New York, New York.

Circle 300 on inquiry card
GUNLOCKE / The "Lyrics" desk and credenza line features a full (shown) or three-quarter elliptical end panel with solid wood drawer fronts and interiors. Executive and secretarial

models are offered in oak or walnut. ■ The Gunlocke Co., Wayland, N.Y.

Circle 301 on inquiry card
HARTER / The "7600" series seating designed by Earl Koepke includes executive models, managerial, clerical, fixed-back and posture-back secretarial, and pedestal and high base chairs. A rigid foam shell structure is the basic construction of most models. The arms and five-legged base are cast aluminum. ■ Harter Corp., Sturgis, Mich.

Circle 302 on inquiry card

MODULO 3 / The "Dimension 4" lateral file can be stacked in any combination from two-drawer credenza to free-standing ceiling high dividers. The metal files are available in four colors, with fronts of laminate, oak or walnut veneer. ■ Modulo 3 Inc., Maryland Heights, Mo.

Circle 303 on inquiry card
JANSKO / This secretarial desk measures 30 by 60 in. and is one of five units in this tubular mirror chrome steel series. ■ Jansko, Ft. Lauderdale, Fla.

Circle 304 on inquiry card

STENDIG / "Thalia" is an elegant, but strong dining chair of steam bent solid ash in natural finish or colors. The seat is either woven cord, or upholstered foam. ■ Stendig Inc., New York City.

Circle 305 on inquiry card
THONET / The "940 Ekselius" table has oak veneer molded plywood legs in a double-pronged configuration. ■ Thonet Industries, York, Pa.

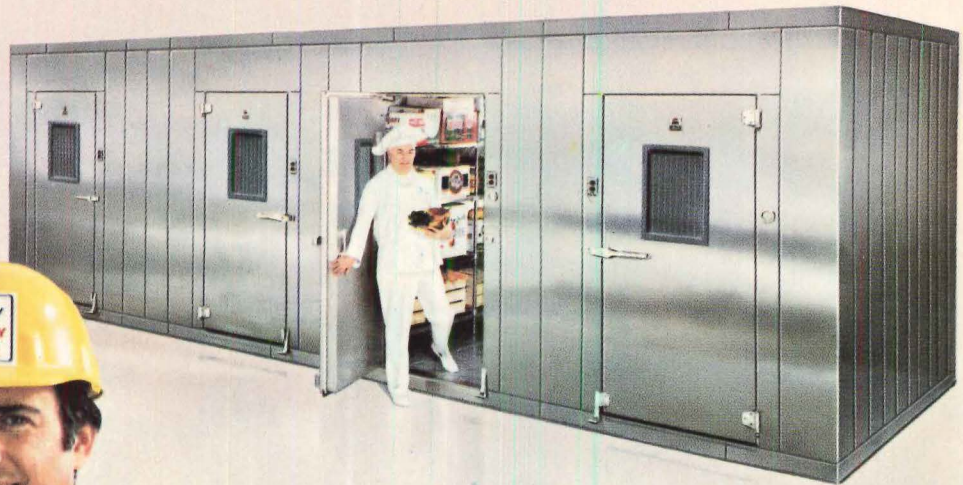
Circle 306 on inquiry card
STEELCASE / The "Series 9000" word processing stations offer a solid typing surface with

adjustable height. Electrical cords are concealed in end panels which snap open for lay-in wiring. Wood, laminate or fabric finishes are offered. ■ Steelcase, Inc., Grand Rapids, Mich.

Circle 307 on inquiry card
EPPINGER / "High Emetric" units are shown in an executive setting. The 75½-in.-high storage units contain lighting and are available in open pore oak or walnut. ■ Eppinger Furniture, Inc., Elmsford, N.Y.

Circle 308 on inquiry card
more products on page 134

Bally where all our energies
are aimed at reducing
your energy costs.



**We guarantee that Bally
Coolers/Freezers with special
4-inch urethane insulation will
use less electricity, at lower
cost, than 80%* of the
Walk-Ins manufactured today.**

It's one more reason why you should buy Bally.

Bally is the world's leading producer of Walk-In Coolers/Freezers/Refrigerated Buildings. Can be assembled in any size for indoor or outdoor use . . . easy to enlarge or relocate. Refrigeration systems from 50°F. cooling to minus 30°F. freezing. Subject to fast depreciation and investment tax credit. (Ask your accountant.) **Bally Case & Cooler, Inc., Bally, Pa. 19503.** Phone: (215) 845-2311.

ADDRESS ALL CORRESPONDENCE Dept. AR-7

*Our estimate of the number of competitive Walk-Ins being manufactured with 2½" thick urethane . . . or 3" thick urethane . . . or wood frame panels with urethane butted in place . . . or fiberglass . . . or styrofoam . . . or other conventional materials.



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For more data, circle 54 on inquiry card

For more information, circle item numbers on Reader Service Inquiry Card, pages 193-194.

BACTERIAL RESEARCH / The ability of a variety of building materials to inhibit bacterial growth was the subject of a detailed experiment performed at the Research Clinic of the Hospital Institute in Modena, Italy, sponsored by an industry group. Stainless steel, three finishes of aluminum, porcelain-on-steel, and three types of plastic material were compared for the degree of spontaneous and induced contamination, and speed of decontamination by various means. A full explanation of the testing process, as well as the results for the various surfaces, is available in a brochure. ■ AllianceWall Corp., Alliance, Ohio.

Circle 400 on inquiry card

SOUND CONTROL SYSTEMS / Various noise reduction apparatus designed for industrial, gas turbine and commercial applications are described in an illustrated color brochure. Included are acoustical panel enclosures and silencers to dampen sound from high-pressure vents, fans and equipment; as well as sound-absorbing louvers and duct silencers for air handling systems. ■ Environmental Elements Corp., Baltimore, Md.

Circle 401 on inquiry card

THERMAL WINDOW / Intended for replacement installation in commercial and high-rise buildings, "Model 535" features full weather-stripping and double marine-type vinyl glazing. It meets requirements for use 550 ft above grade, and withstands winds of 100 mph, according to a fact sheet on the unit. ■ Season-all Industries, Inc., Indiana, Pa.

Circle 402 on inquiry card

ICEMAKERS / A series of illustrated catalogs describes a complete line of automatic flake, cube and chip icemakers, ice and drink dispensers, and ice storage bins. Ice-producing capacities at different water-flow temperatures, storage capacities, compressor horsepower, and plumbing and power requirements are given, as well as a full description of each unit. ■ McQuay-Perfex Inc., Crystal Products Div., Minneapolis, Minn.

Circle 403 on inquiry card

APPLIANCE CATALOG / A new 28-page catalog provides product specifications and dimensional drawings on a full line of freestanding and built-in ranges, washers and dryers, refrigerator-freezers, packaged terminal air conditioners, etc. Power-saving features and electrical ratings are included. ■ General Electric, Appliance Park, Louisville, Ky.

Circle 404 on inquiry card

URBAN TRAFFIC SIGNAGE / An eight-page, full-color brochure presents the *Metro Modules* series of street furniture components for vehicular and pedestrian functions. Included are clearly-defined streetlights, traffic and pedestrian signals, signage and graphic panels, phone booths, and litter containers. Architectural details and on-site photos are shown. ■ Crouse-Hinds Co., Lighting Products Div., Syracuse, N.Y.

Circle 405 on inquiry card

MINERAL WOOL INSULATION / Illustrated data sheets provide information on three mineral wool insulation products: *Super 1900* and *Mono-Block* for service up to 1900 F; and *Super Powerhouse* for temperatures up to 1200 F. Complete physical properties of the products are listed, as well as details on specification compliance, thermal conductivity, and typical uses. ■ Keene Corp., Vienna, W. Va.

Circle 406 on inquiry card

ENERGY-SAVING FIREPLACES / "Energy Saving Circulating Fireplaces" is a new four-page brochure giving details on this line of masonry-installed fireplaces. A technical/installation bulletin is also available. ■ Whittier Steel & Mfg., Inc., Santa Fe Springs, Calif.

Circle 407 on inquiry card

COMPUTER-CONTROLLED STORAGE / The advantages of the "Micro" system—microcomputer-controlled courier storage and retrieval—are explained in a full-color folder. This computer unit has been designed specifically for the control and management of storage and retrieval installations, according to the manufacturer. ■ Interlake, Inc., Chicago, Ill.

Circle 408 on inquiry card

FIBER GLASS CEILING / Three sculptured fiber glass panels designed for use on big ceiling areas—shopping centers, sports arenas, swimming pools, etc.—are described in a full-color brochure. Physical properties, sound absorption coefficients, sizes and styles are given. ■ Johns-Manville Sales Corp., Denver, Colo.

Circle 409 on inquiry card

CENTRAL VACUUM SYSTEMS / A clearly-detailed and illustrated 24-page bulletin provides information on the design of central vacuum systems and tips on establishing volume requirements. Dry, wet, and combination central vacuum installations for industrial, commercial and hospital use are covered. ■ The Spencer Turbine Co., Windsor, Conn.

Circle 410 on inquiry card

WEATHERPROOFING SYSTEMS / A sealant selector chart giving performance characteristics for 14 sealant products is featured in a new four-page illustrated brochure. Two types of glazing systems and *TREMproof* liquid polymers are also explained. ■ Tremco, Cleveland, Ohio.

Circle 411 on inquiry card

GALVANIZED STRUCTURAL STEEL / Four years of research by the BNF Metals Technology Center in England went into the preparation of a 200-page looseleaf book intended as a working guide for the structural steel specifier. "Galvanizing Characteristics of Structural Steels and Their Weldments" should help in predicting a steel's galvanizing behavior, expected mechanical properties and weldment after coating. International steel specifications and mechanical strength levels are cross-referenced. Copies are \$3.50 each from the Zinc Institute Inc., 292 Madison Ave., New York, N.Y. 10017.

SUBFLOOR JOISTS / A data sheet covers specifications for Southern Pine floor joists used under concrete sub-floors of both 30 and 40 psf live load. ■ Southern Forest Products Assn., New Orleans, La.

Circle 412 on inquiry card

CORROSION-RESISTANT CEMENTS / Two technical brochures give product characteristics, surface preparation, and application and curing information on seven corrosion-resistant cement products. Three monolithic cements, for gunite, pour-and-cast applications, and four mortar-grade compounds, for trowel, pour-and-cast methods are covered in the illustrated brochures. ■ Sauereisen Cements Co., Pittsburgh, Pa.

Circle 413 on inquiry card
more literature on page 145

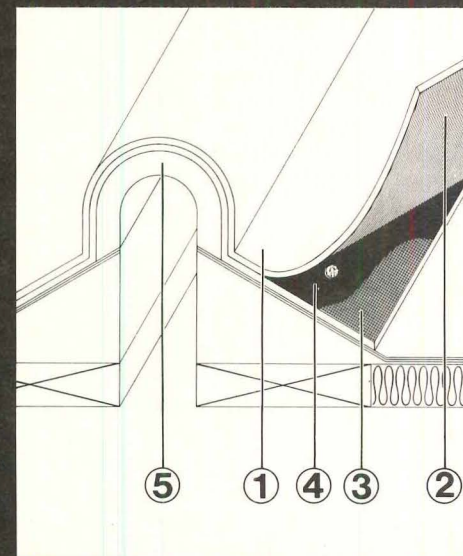
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Introducing Sando-Flash™

Patents Pending

The Universal Roof Expansion Joint Cover

A unique concept offering the architect/designer a simple solution to any roof expansion problem.



The specially formulated Neoprene Cover (1) with a unique substratum fabric (2) can be mopped to the roof — *without stripping* — with either hot asphalt or pitch. The expansion bellows consists of woven wire cloth (3) coated with a special rubberized asphalt coating on both sides (4). This is a dual-purpose component—easily shaped to any contour. The wire mesh provides an extremely high-strength elastic bellows which doubles as a self-sealing nailing strip, which is always tight to the weather regardless of temperature or expansion stresses. It is permanently bonded to the neoprene cover. Finally, the package is backed with a layer of insulating foam (5) which reduces heat loss and condensation.

For more information on Sando-Flash, call or write:

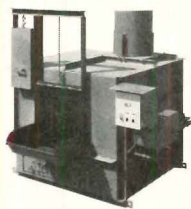
S

SANDELL

MANUFACTURING COMPANY, INC.

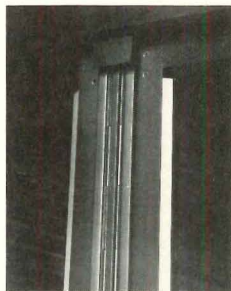
84 Sherman Street, Cambridge,
Massachusetts 02140 (617) 491-0540

HOSPITAL INCINERATORS / "GR" model incinerators are designed for general refuse or mixtures containing pathological material and items such as drugs requiring security treatment; intended applications include hospitals, institutions, and clinics requiring the positive destruction and sterilization of such materials. Incinerators include an internal chamber which recycles afterburner heat back into the furnace; pyrometer controls are standard. Stack vents, with Venturi scrubbing equipment as an option, are said to meet the most demanding environmental standards. ■ Bayco Industries of California, San Leandro, Calif.



Circle 309 on inquiry card

SECURITY ASTRAGAL / Separate spring-actuated hinged leaves for each door form a new panic-device security astragal. The leaves interlock when the levers meet the strike installed in the header, completely closing the clearance between the doors. This is said to prevent the insertion of a wire hook to trip the panic hardware. The security astragal can be installed on existing or new panic doors made of almost any material. Both doors remain active, allowing a free exit through either one. There are no exposed fasteners; the unit is available in clear or bronze finishes. ■ Amarlite/Anaconda, Atlanta, Ga.



Circle 310 on inquiry card

TELEPHONES / "Voicecasters" are a new line of dial- and crystal-controlled touchtone telephones. The device is a hand-sized, complete loudspeaking phone, including an electronic ringer which comes ready to plug into any standard telephone jack. It is said to eliminate any echo, and can be adjusted for low-volume privacy or turned up for use from 20 ft away. The "Voicecaster" works on all calls, and can easily be unplugged and moved from one room to another. ■ Data Transmission Sciences, Inc., Ridgefield, Conn.



Circle 311 on inquiry card

WATER COOLER / This wall-mounted cooler—model "WC-7-A"—is particularly convenient for users in wheelchairs. Lever handles on both sides permit easy right- or left-hand operation; an 18½-in. projection offers ready access from a sitting position. The two-stream projector provides water at an ample flow rate. ■ Halsey Taylor Div., King-Seeley Thermos Co., Warren, Ohio.



Circle 312 on inquiry card

WINDOW GREENHOUSE / The "Plant Pantry" is an in-home window greenhouse formed of one-piece Uvex plastic sheet, chosen for its high impact resistance and ability to transmit growth-producing light rays, according to the manufacturer. The 15¾-in.-deep greenhouse comes in six standard window sizes up to 48- by 60-in.; its low heat loss permits it to substitute for storm glazing. The "Pantry" is available in either clear or smoke-tinted Uvex sheet; each of the three plant shelves can hold up to 25 lbs. ■ Hunter & Assoc., Detroit, Mich.



Circle 313 on inquiry card



PAPERWORK SORTER / Designed to reduce both time and cost of paper handling in offices, the "Paperflo" system consists of six different trays sized to accept material from punched cards to computer print-outs. These can be mounted on partition walls, installed in locking files, or used, with supports, on desk tops or credenzas. ■ Steelcase, Inc., Grand Rapids, Mich.

Circle 314 on inquiry card

more products on page 137

At no extra cost... steel door frames with faces as narrow as

1 inch

Your slim-line decor doesn't have to stop with the first floor. Curries makes steel door frames with face widths of 1, 1¼, 1½, 1¾ and 2 inches.

These are pre-engineered frames, sold by Curries Distributors all over the country. They come either knocked down or welded—with jamb depths from 4¼ in. through 12 in., in ⅛ in. increments.

Pre-engineered Curries doors and the finish hardware to go with these narrow face frames—can be obtained from the same, single source. Call your Curries Distributor for details. He's in the Yellow Pages under "Doors" or "Doors-Metal".

Or see Sweets/8.2, or write: Curries Manufacturing, Inc., 251 9th St. S.E., Mason City, IA 50401. (515) 423-1334.



For more data, circle 56 on inquiry card

For more data, circle 57 on inquiry card

Potlatch

Lock-Deck[®]



Space Beautiful

...for homes, churches, commercial and institutional structures.

Lock-Deck is a superior laminated decking designed by Potlatch to free the outer limits of your imagination and work with you to make space beautiful in a variety of ways.

The warmth, charm, and natural elegance of wood: Inland Red Cedar, Idaho White Pine, Southern Pine, Douglas Fir/Larch, and White Fir.

The textural qualities and subtle color tones allow the designer to uniquely personalize his plan. A broad range of

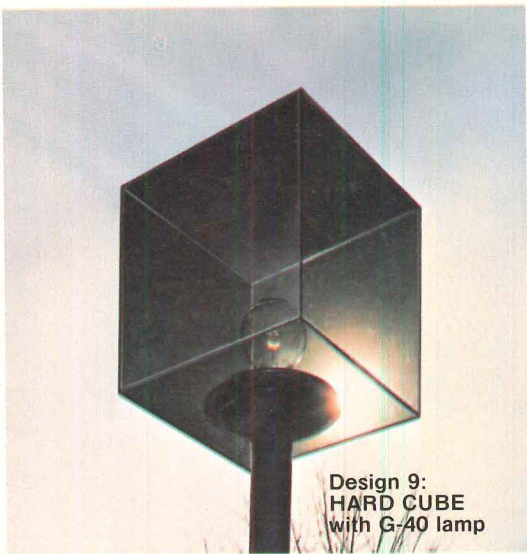


acrylic stains on wire brush, smooth, or saw textured surfaces are available for your selection.

And, Lock-Deck's strength to weight ratio offers the kind of structural freedom that allows the designer to create imaginative structures as diverse as church and home.

So if you're interested in making space beautiful through free play of the design imagination, contact the Western Wood Products division now.

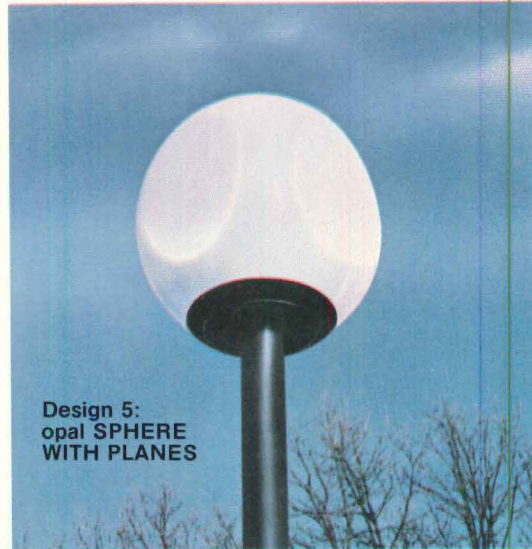
Potlatch Corporation
Wood Products, Western Division
P.O. Box 5414, Spokane, WA 99205
(509) 455-4260



Design 9:
HARD CUBE
with G-40 lamp



Design 6:
DRUM
with refractor



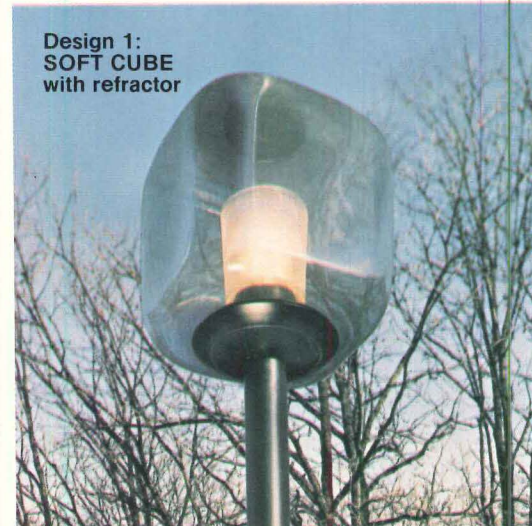
Design 5:
opal SPHERE
WITH PLANES



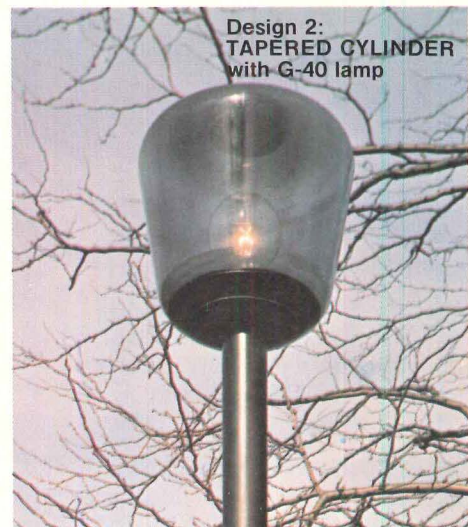
Design G:
4-SPHERE cluster
with refractor

APPLETON GLO-METRICS™

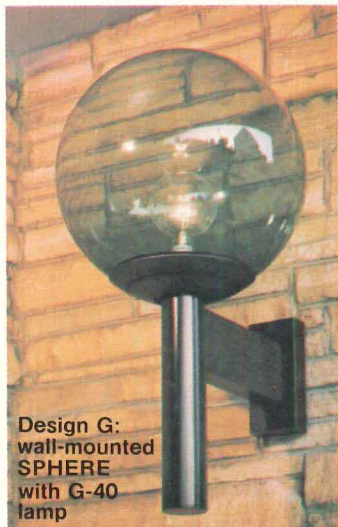
Contemporary Outdoor Luminaires



Design 1:
SOFT CUBE
with refractor



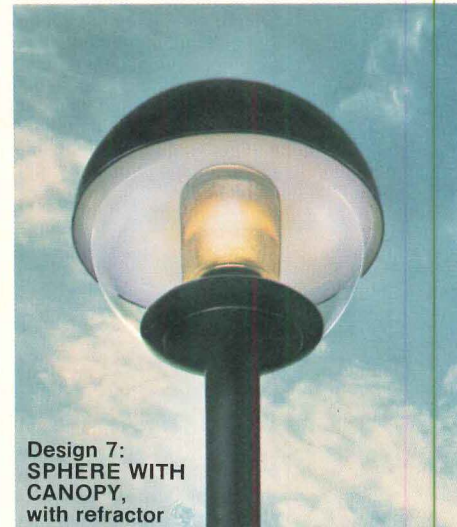
Design 2:
TAPERED CYLINDER
with G-40 lamp



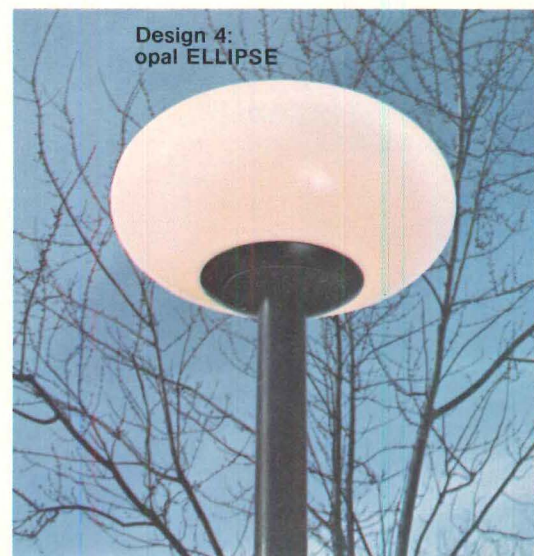
Design G:
wall-mounted
SPHERE
with G-40
lamp



Design 3:
CYLINDER
with G-40
lamp



Design 7:
SPHERE WITH
CANOPY,
with refractor

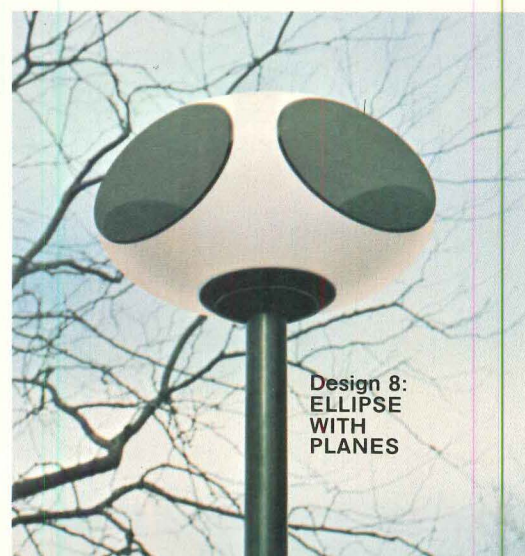


Design 4:
opal ELLIPSE

Appleton Glo-Metrics offer ten contemporary diffuser shapes, for wall, poletop or cluster mounting, with matching poles. Opal-white or transparent diffusers, with or without refractors. Choice of light sources and lamp wattages, with "in-pole" ballasts. Write for Glo-Metrics catalog. Appleton Electric Co., 1701 Wellington Ave., Chicago, Ill. 60657.

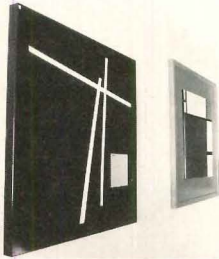


APPLETON®



Design 8:
ELLIPSE
WITH
PLANES

DECORATIVE PANELS / "Lansdales" are porcelain-enamel-on-steel decorative panels for both interior and exterior use. Two-coat porcelain is applied to 16-gauge steel, with added firings for color. The customer's own design, as well as limited-edition murals similar to those shown, can be reproduced in this very permanent medium. Suggested applications include facades, foyers, pools, and gardens. ■ Skylight Gallery, Port Washington, N.Y.



Circle 315 on inquiry card

SHEATHING BOARD / A rigid expanded-polystyrene tongue-and-groove insulation, "ENFO-TG" is manufactured in 2- by 8-ft and 4- by 8-ft boards as well as in custom sizes. Standard nominal density is 1 1/2 lb per cu ft; available thicknesses range from 3/4- to 2-in. The insulation meets code requirements; contains a self-extinguishing fire-retardant additive; and resists insects, fungi, and bacteria. ■ EFP Corp., Elkhart, Ind.



Circle 316 on inquiry card

MOVABLE WALLS / The "Air Wall Ultra 9000" series of operable walls eliminates hanging weight, reducing the need for beams or special supports. Each panel slides on two Teflon discs inside an aluminum track raceway, without drag seals at either top or bottom. After the wall is positioned, compressed air is used to raise the telescoping top cap, which pushes the panel tight to the floor. The "Air Wall" is now self-supporting, sealed at both top and bottom against sound and light transmission. Panels are available surfaced in carpet, hardwood facings, vinyls, and chalkboard and display panels. ■ Air Wall Div., Richards-Wilcox Mfg. Co., Aurora, Ill.



Circle 317 on inquiry card

WATERPROOFING TAPE / Pictured is an application of "Flashband" waterproofing tape, a flexible aluminum surface over a contact-sealing asphalt adhesive. The tape is available in widths of from 2- to 24-in., can be applied over any clean surface, and has a certified minimum life of ten years. ■ Evode, Inc., Somerdale, N.J.



Circle 318 on inquiry card

CONTRACT FABRICS / "Counterpoint" is part of the Vista collection of polyester/cotton, washable fabrics for contract window casement use. The horizontal stripe and angle pattern is available in a number of colors. ■ Riverdale/Specifier Contract



Fabrics, New York City.

Circle 319 on inquiry card

GRAPHICS PROCESSOR / The recently-introduced model "244T Startech" processor offers through-the-wall processing of graphic arts reproduction films and paper from either darkroom or room-light side. Operating at up to 12 ft a minute, many Kodak films can be processed dry-to-dry in less than 90 seconds. All necessary chemicals come in ready-to-use form; operation and routine maintenance are said to be quick and easy. ■ Eastman Kodak Co., Rochester, N.Y.



Circle 320 on inquiry card

HARDWOOD FLOORING / Two new flooring designs are "Herringblock" (shown) and "Cabin Strip," both intended primarily for residential installation. Consisting of three flooring strips assembled side-by-side to form a 3/4-in. thick, 4 1/2-in. by 9-in. prefinished piece, "Herringblock" is laid in a parquet pattern directly over wood or concrete subfloors. "Cabin Strip" uses lower-grade flooring with knots and burls to produce a 2 1/4-in.-wide, random length strip with a rustic appearance. ■ Memphis Hardwood Flooring Co., Memphis, Tenn.



Circle 321 on inquiry card
more products on page 139

CUTTING COSTS ON JOINT SEALS COULD COST YOU YOUR REPUTATION

You may not even think twice about joint seals for your building. They have to be there; but why bother to specify one by name? Maybe this is one place to cut costs.

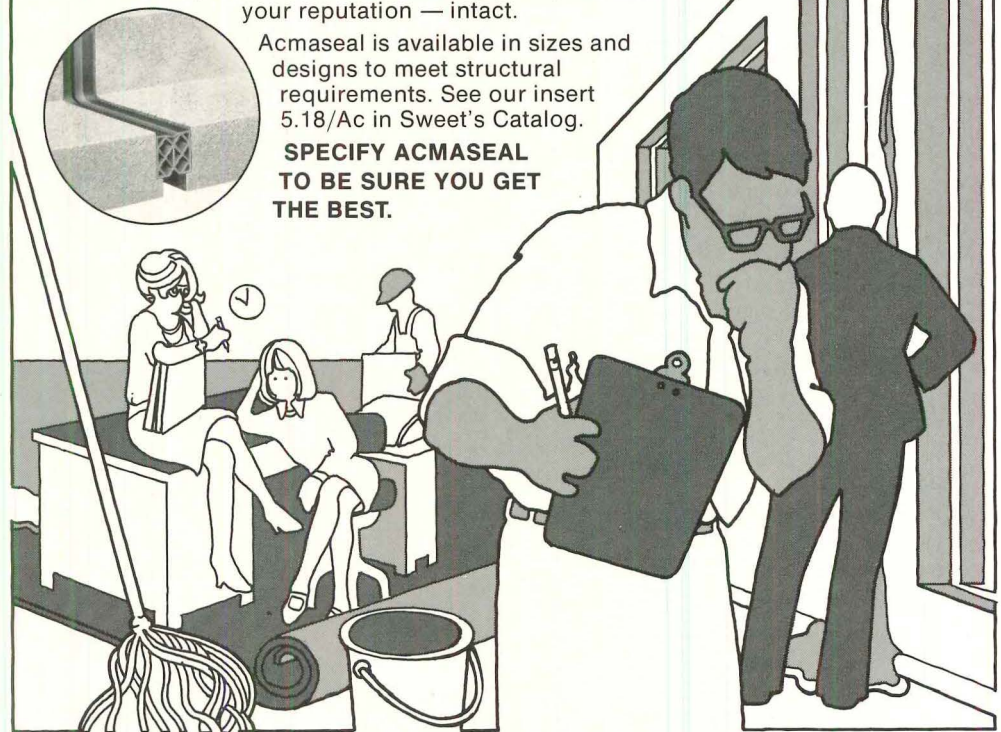
The fact is, though, that while joint seals may be only 1% of the building's total cost, they're 90% of its performance. To be sure your reputation doesn't go down the drain when your building starts to leak, specify Acmasel®.

Acmasel has distinct advantages over other types of structural sealants. The preformed Neoprene provides a positive seal at construction and expansion joints. It remains elastic at all temperatures, yet is sturdy enough to handle building movement. It's been proven effective around the world.

You can depend on Acmasel to keep your joints — and your reputation — intact.

Acmasel is available in sizes and designs to meet structural requirements. See our insert 5.18/Ac in Sweet's Catalog.

SPECIFY ACMASEAL TO BE SURE YOU GET THE BEST.



acme

Acme Highway Products Corp.
33 Chandler St., Buffalo, N.Y. 14207
(716) 876-0123

For more data, circle 59 on inquiry card

New, beautiful, textured finish for protecting concrete and masonry.



A smart, clean, contemporary look was achieved with two brush-coats of THOROCOAT on this slip-formed concrete building with broom-finished texture. THOROCOAT is specifically designed to protect and decorate a wide variety of concrete and masonry surfaces. It comes in many colors; has excellent adhesion; creates a rich, sand-textured, flexible, non-gloss, water repellent finish. Applied easily by brush, roller or spray.

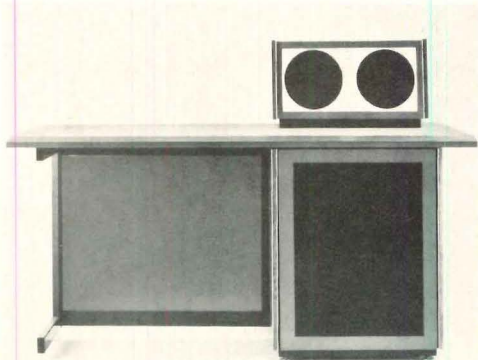
*American Plaza Cond.—(Lincoln Tower, pictured) Arch.: Travers/Johnston AIA, PC
Gen'l. Contra.; W. C. Sivers Co. Appli.; Ferguson's Northwest, Inc.*

STANDARD DRY WALL PRODUCTS

DEPT. 76-AR-2 ● 7800 N.W. 38TH STREET, MIAMI, FLORIDA 33166



For more data, circle 60 on inquiry card



ELECTRONIC EQUIPMENT ENCLOSURES / Shown is the "Speciality III Data Desk and Data Mount," modular electronic equipment enclosures. These units are said to provide functional, flexible work stations for word processing and terminal installations. Standard "Data Desk" widths are 24-, 48-, 60-, and 72-in. Options permit customized configuration requirements. ■ Systems Furniture Co., Los Angeles, Calif.

Circle 322 on inquiry card

THEFT-PROOF LOCKER / Intended for pilfer-proof storage of personal possessions, the "Secur-n-Vent" locker combines ventilation with effective security. A positive-type locking mechanism engages the locker top, bottom, and jamb; partitions

between the box lockers are 3/4-in., 13-gauge expanded metal to maximize air flow. Alternate planes of metal in the solid door also increase ventilation of stored clothing and equipment. ■ All-American Lockers, DeBourgh Mfg. Co., Bloomington, Minn.

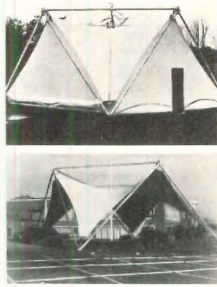
Circle 323 on inquiry card



COMFORT STATION / The *Enviro-Pak* is a self-contained multi-toilet unit, which does not require the emptying of holding tanks or connection to a sewer. The addition each week of a bacteria/enzyme powder to the water in the system accelerates liquification of wastes, which are then filtered, aerated, and evaporated. Gases are vented through the "flag-poles." A common flush header continuously feeds the toilets with the double-filtered water effluent, some of which is pumped to the packaged hvac unit mounted on the station's roof. The *Enviro-Pak* is self-supporting and can be towed to the site on its own wheel system or carried by truck. The prototype module pictured contains seven toilet compartments; four urinals; two complete, tiled washrooms, three outside water coolers with separate sanitary water storage tank serving the washbasins as well; and a handicap toilet with its own washbasin. ■ Modular Conceptual Systems, Inc., Warminster, Pa.

Circle 324 on inquiry card

TENSION STRUCTURES / Designed by Geiger Berger Associates, this modular tension structure (shown in closed and open positions) is easily erected for a wide variety of uses where portability is necessary—emergency housing, camps, pool enclosures, etc. Constructed of high-strength plastic-coated fabric, with or



without side wall for complete enclosure, the structure is offered in three sizes: 32-, 40-, and 60-ft square. Multiple units can create larger covered areas. The shelter can be heated; an optional liner reduces Btu loss substantially. ■ Air-Tech Industries, Clifton, N.J.

Circle 325 on inquiry card

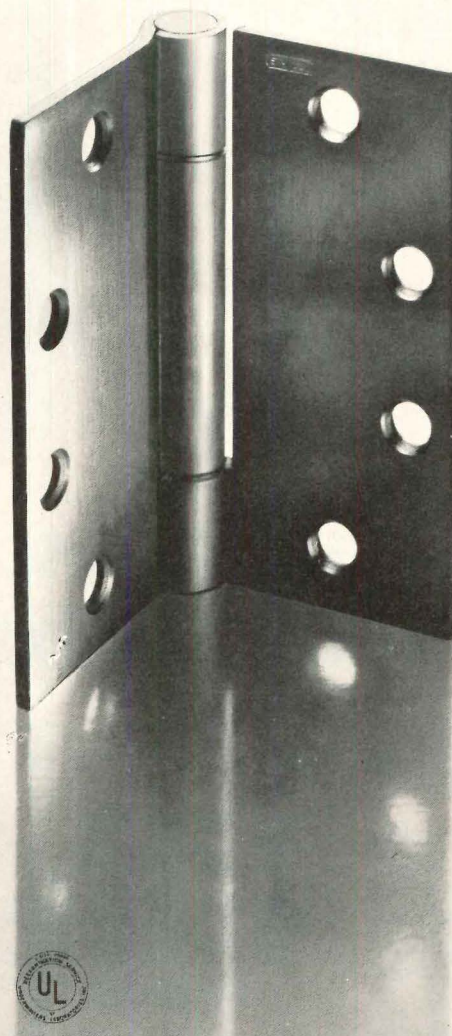
WASHROOM ACCESSORIES / The newly-introduced "Trimline" series of stainless steel accessories feature doors that completely cover recessed cabinets, concealing rough wall openings from top to bottom and side to side. Doors have hidden full-length piano hinges and are fitted with tumbler locks. Cabinets



are heavy-gage stainless steel with all-welded construction. Thirteen different models include waste receptacles and paper towel dispensers; and liquid, powder, and leaf soap dispensers. ■ Bobrick Washroom Equipment, Inc., New York City.

*Circle 326 on inquiry card
more products on page 141*

You've got codes to cope with. Stanley's new spring hinges cope.



Building codes can be a problem. But with our new spring hinges: No problem. They answer codes requiring self-closing doors on hotels, motels, apartments, institutions and office buildings.

Now available in sets.

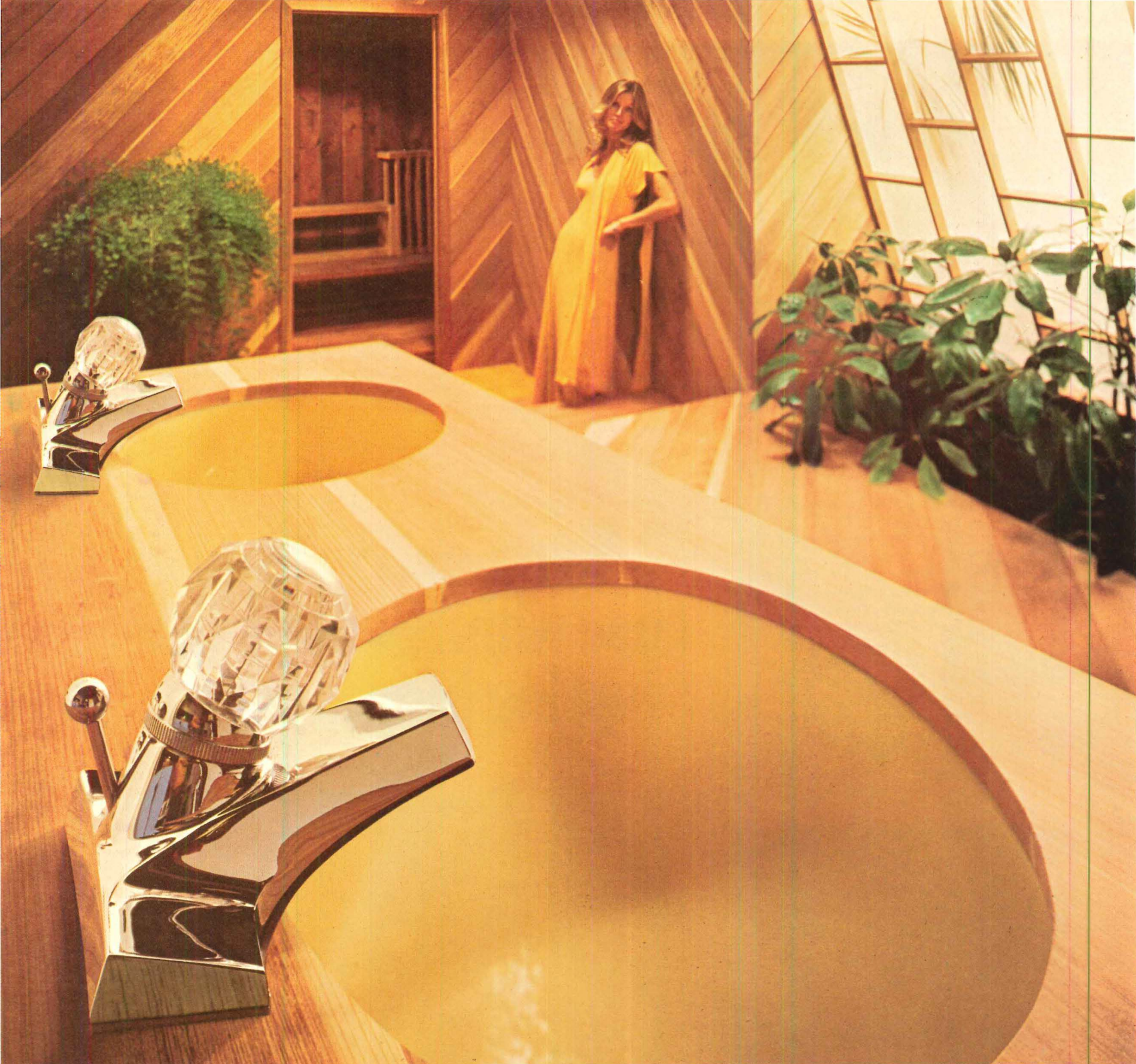
New sets #2051 and #2052 combine spring hinges #2050 with springless hinges that look alike for just the right closing power.

A new adjustable model too! Where it is impossible to predict the closing power required, the new adjustable #2060 does the trick.

To cope with codes, write: Stanley Hardware, Division of The Stanley Works, New Britain, Conn. 06050. In Canada: The Stanley Works of Canada, Ltd.

STANLEY helps you do things right.

For more data, circle 61 on inquiry card



Delta washerless faucets. Two good reasons to specify them.

The his and her lav. A sign of today's lifestyle. In fact, a recent survey by National Family Opinion revealed that one out of three prospective home buyers prefers the two-sink lav.

And the more faucets you specify, the more reasons for Delta. Because Delta faucets have a patented rotating ball valve instead of an old-fashioned compression washer like ordinary faucets. Which means they'll last a lot longer. So adding an extra faucet won't add to your troubles.

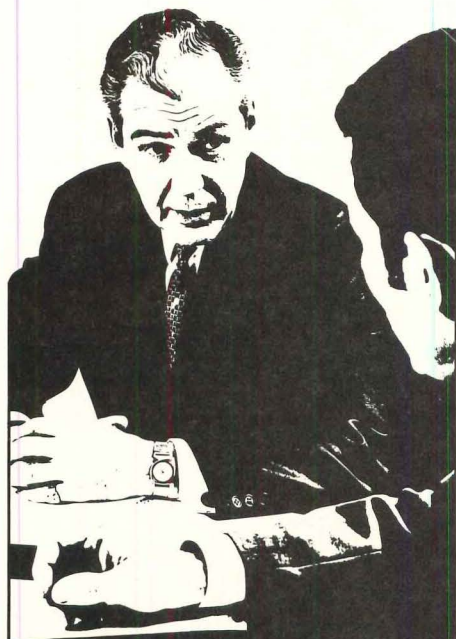
**You Can
Believe In
Delta & Delex
Washerless
Faucets**

The stylish Delta faucets also add just the right touch of elegance to any house, apartment or condominium you design or build. There are Delta single-handle and Delex two-handle faucets for every lavatory, bath, kitchen. In fact, there's a Delta product for literally every room in the home.

If you need more reasons to specify Delta and Delex faucets, just write for our new catalog. And watch for them day or night on national network television.

Delta Faucet Company, Dept. 83, Greensburg, Indiana 47240. A Division of Masco Corporation of Indiana. © 1976 Copyright. Masco Corporation of Indiana.

For more data, circle 62 on inquiry card



When you say 'flashing', you haven't said enough. Say 'Wasco Flashing' and protect your client.

For years Wasco has produced the most complete line of first quality flashings in the country. Whether you are calling for copper and fabric, copper and paper, a PVC or a Butyl, saying "Wasco" assures that your client's property is being protected by a flashing that sets the standard for the industry. Saying "Wasco" also assures 24 hour delivery from any of our 82 fine distributors across the country. Using the best is always economical when you are protecting your client's property.

**Wasco Flashing
'the protector'**

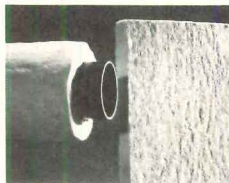


WASCO PRODUCTS, INC.
LEADERS IN SKYLIGHTING, FLASHING,
AND SMOKE AND HEAT VENTING

P.O. Box 351, Sanford, Maine 04073

For more data, circle 63 on inquiry card

ACOUSTIC/THERMAL INSULATION / A new insu-



lation material is easily moldable to conform to any complex shape and can withstand continuous temperatures up to 2300 F. "Cousti-Therm" is also said to achieve a NRC of 0.60 with a 1-in. thickness. Supplied as 24- by 36-in. moistened sheets, it retains the desired shape after air-drying. "Cousti-Therm" can be used for pipe wrapping, furnace insulation, engine and power plant insulation, etc. The material resists most acids, oils, and solvents, and has a fuel contribution factor of zero. ■ Ferro Corp., Composites Div., Norwalk, Conn.

Circle 327 on inquiry card

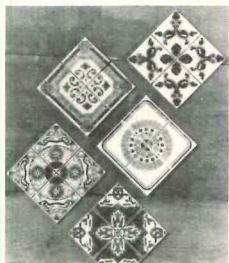
PNEUMATIC DISTRIBUTION SYSTEMS / A com-



puter-control has been made available to govern carrier and cargo movement through one- or two-tube pneumatic distribution systems. The control includes a "sophisticated priority dispatch" mode; it can recommend preventive maintenance; and it can increase traffic capacity, with visual tracking of carriers in movement. ■ American Sterilizer Co., Erie, Pa.

Circle 328 on inquiry card

CERAMIC TILES / Five different ceramic tiles with



a printed Spanish design are available for either interior or exterior installation. The 3-in.-square tiles are frost-proof; they are laid in blocks of four to form one 6-in. over-all pattern. A surface bullnose can be ordered for this series. ■ Quality Marble & Tile Co., North Hollywood, Calif.

Circle 329 on inquiry card

FLOORING / "Trinatta" brand MP flooring is made



of an elastomeric substance said to be quiet and resilient, while providing the patterns and coloring of wood. The flooring is supplied as a system of interlocking pieces (about 19-in. square), which form a parquet design; seven shades are now available. A finish coat on the flooring resists stains and burns; "Trinatta" is suitable for both residential and commercial installations. ■ 3M Co., Industrial Abrasives Div., St. Paul, Minn.

Circle 330 on inquiry card

VINYL DOORS / These new doors, intended for use



in cooler and freezer rooms, are constructed of lightweight, 1/8-in.-thick "Flexalon" vinyl, reinforced with polyester cord. The vinyl is transparent for better visibility and safety. A door-top gravity hinge permits free clearance across the full width of the opening; doors are cut to fit flush with jambs with a 3-in. overlap at center. Sizes up to 9- by 12-ft are available, as are magnetic or spring closures for outside door applications. ■ Chase Industries, Inc., Cincinnati, Ohio.

Circle 331 on inquiry card

more products on page 143

THE Stemwinder

NEWS AND VIEWS ON HARDWOODS AND VENEERS

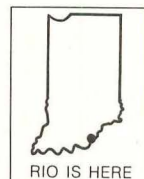


Richard K. Stem
President

Chester B. Stem
Incorporated

RIO IS IN INDIANA?

In a wall paneling way, yes. Rio African veneer is alive and well at our Stem plant in Southern Indiana.



And now we can offer a wall paneling veneer that's a good replacement for the elusive Brazilian rosewood.

Rio African possesses the color and grain characteristics that many architects continually seek: deep hues of reddish brown over a lighter background. Ask us for a sample.



Pay us a visit. We can probably help you in the achievement of your wall paneling design. We're just fifteen minutes from the Louisville, Kentucky airport, can meet your plane in the morning and see you off in the afternoon. In between, you can see how our veneer is made and examine our inventory. The visit might provide just the ingredients for your own expression in wall paneling design. Just let us know your flight schedule.

The wood that's catching the imagination of many a designer today is Acacia. It has a honey background with dark veining. Ask us for a sample.

FLITCH SPECIFICATION. There may be times when simply specifying stock wall paneling is inadequate—times when you wish to more precisely express your own individual taste. The flitch specification process—plus Stem's bold inventory of woods—allows you to do just that. You handpick the veneer that best meets your aesthetic criteria for color and grain patterns. We welcome your inquiry.

Chester B. Stem, Inc.,
2704 Grant Line Road,
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Fifteen minutes from
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STEM
EMINENCE IN WOOD

Let's face it: only wood is wood.

Why **ULTRAWALL**[®] deserves to be your partition standard.

Only ULTRAWALL Partitions fulfill the expectations of progressive building managers and architects. They are movable without looking movable.



Economy
Choice of surface materials determines the complete cost, from budget to luxury. As your standard, ULTRAWALL is an economy leader.

Appearance. ULTRAWALL Partitions are permanent looking; finished with tasteful aluminum framing and trim.

Speed. An ULTRAWALL Partition Crew can install as many lineal feet, completed, ready for move-in, in one day, as a fixed-partition crew installs in four days.

Flexibility. The system provides for glass, for varying heights, and choice of finishes. Always looks consistent. Movability and accessibility from either side, with full security.

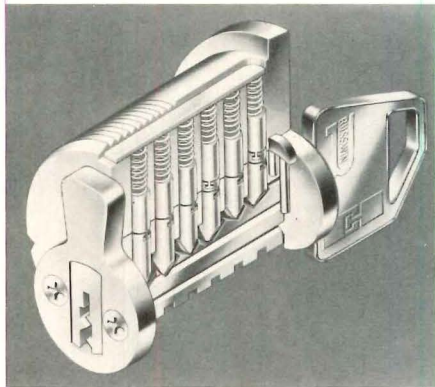
Write for literature and name of nearest installation contractor:

UNITED STATES GYPSUM 
BUILDING AMERICA

101 South Wacker Drive, Chicago, Ill. 60606.

About the only way to pick the New Emhart High Security Locking System is to select it.

When you specify a lockset incorporating the new Emhart High Security Locking System, you have the key to positive building protection in your pocket. The odds against a would-be intruder beating the system are astronomical!



It's designed so that angular cross-cuts in the key bit* rotate the multi-section tumbler pins a precise number of degrees. This lines up T-slots in their upper ends with mating projections in their upper sections to activate the cylinder. Considering the possible combinations of angles of rotation in the 6-pin cylinder, it's virtually impossible to operate without the key!

Russwin will custom build a high security package to your needs with a fine quality lock and the Emhart High Security Locking System. Emhart System keys can also operate other selected Russwin locks, permitting the use of conventional locksets for normal security plus Emhart System locks in critical areas, all operated with one key. The System's cylinders may also be imposed on new or qualified locking systems.

Write to Russwin for complete details on the high security system with more angles than any burglar. UL listed *Patent applied for



HARDWARE DIVISION, EMHART CORPORATION
BERLIN, CONNECTICUT 06037



EYE-WASH FOUNTAIN /



New to this manufacturer's line of OSHA safety plumbing fixtures is a deck-top-mounted emergency eye- and face-wash fountain. The basin (13 3/8-in. diameter) is stainless steel; the twin perforated disc heads are chrome-plated brass. An integral control assures a steady flow under varying water supply conditions. ■ Bradley Corp., Menomonee Falls, Wisc.

Circle 332 on inquiry card



TEXTURED WATERPROOF COATING / Both high-build Nu-Sensation (*Fibred*) and Nu-*Tex* coatings are said to protect, waterproof, and add texture in one application to concrete block, brick, and other masonry surfaces. Nu-Sensation covers minor cracks with a single coat 13 mils thick, and can also be applied over primed old or new wood or metal. The coatings come in a range of standard and custom tints for both interior and exterior use. ■ Republic Powdered Metals, Inc., Medina, Ohio.

Circle 333 on inquiry card

INDOOR LIGHTING /



The "Vanguard V6" luminaires are intended for indoor lighting applications where ceiling heights are limited. The 14 1/2-in.-high units are available with a variety of lamps: 150-watt Unalux; 250-watt mercury; 175-watt Metalarc; or a 100-watt high-pressure-sodium lamp. The

aluminum reflector can be ordered as illustrated or as an upright. Ballast and all wiring are accessible through hinged doors at the ends of the housing. ■ GTE Sylvania, Fall River, Mass.

Circle 334 on inquiry card



WATER HEATERS / Hot water heaters from 30- to 120-gallon capacity are now being offered with a corrosion-resistant second coat of glass on the lining. "Marathon Two-Coat Glass" heaters carry a 10-year warranty and are available in either gas or electric models. ■ W. L. Jackson Mfg. Co., Inc., Chattanooga, Tenn.

Circle 335 on inquiry card

3M Brand Modular Distribution System.

Above all, it's flexible.

A 3M Brand Modular Distribution System is a complete distribution system for electrical power, lighting, communications, and electronics.

The system offers design and landscaping flexibility for the life of the building and saves installation time for the electrical contractor.

The basic electrical power and lighting component of the 3M Modular Distribution System is the Power-T-Duct, a factory pre-wired raceway that is permanently mounted to your specified T-Bar ceiling system. The system is UL-listed, IBEW manufactured, and is wired for plug-in receptacle circuiting with both 120 and 277 volts.

Your communication wiring needs are easily handled with the 3M Brand Communication T-Duct. Attached to the T-Bar like PT, CTD offers total flexibility from closet to point of use.

Power, communication, and electronics are distributed from ceiling to point of use through 3M Brand Communi-Poles. These poles are designed for flexibility and economy in open office landscaping.

Want to know more about the Modular Distribution Systems? Write Dept. EAY-3, 3M Electro-Products Division, Bldg. 223-4N, 3M Center, St. Paul, MN 55101.

For immediate assistance, call toll free (800) 328-1684.

We make it hard to go wrong.



Frozen Music



The Triangle Building, Atlanta, Ga.
Thompson, Ventulett & Stainback, Inc., Architects

"I call architecture frozen music," Johann von Goethe wrote in 1829.

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T-100

Auditorium seat designed by Dave Woods. Installed at the Guggenheim Auditorium, The Institute of Man and Science, Rensselaerville, New York. Architects: Prentice & Chan, Ohlhausen.

OFFICE LITERATURE *continued from page 133*

INDOOR POOLS / A wide range of indoor relaxing pools for residences, health clubs, rest homes, etc., are illustrated in a color brochure. The "Aqua Plunge" whirlpool bath consists of a lightweight, unit-molded fiber glass and polyester-resin tank, with "Jetaction" pumping system for aerated water; heater; filter; drains; and plumbing fixtures. ■ Aqua Plunge Div., Wiedemann Industries, Inc., Muscatine, Iowa.

Circle 414 on inquiry card

FIRE-SAFETY SYSTEMS / Computer-governed fire-safety systems designed for early detection, containment, evacuation and total high-rise-building control are fully introduced in an eight-page full-color booklet. Also discussed are sensing devices, escape systems, and various adaptations to changing fire codes. ■ Johnson Controls, Inc., Milwaukee, Wisc.

Circle 415 on inquiry card

INSULATING SHEATHING / An illustrated data sheet gives details on "Super Sheath" polystyrene insulating board. The lightweight sheathing has a laminated foil vapor barrier and is easy to cut. Application suggestions are included. ■ Holland Plastics Co., Gilman, Iowa.

Circle 416 on inquiry card

TURF IRRIGATION / A 175-page manual has been made available for architects, landscape architects, and other professionals involved in the design and installation of automatic underground sprinkling systems. Sections discuss such topics as basic hydraulics as they affect irrigation systems; planning considerations; residential and commercial systems; installation details and problem solving. A technical reference chapter includes charts for checking friction losses, pipe velocities and capacities, etc. Book owners will receive free updating material. Available for \$6.75 from The Toro Co., P.O. Box 489, Riverside, Calif. 92502.

GYP-SUM-FILLED WALLCOVERING / An illustrated folder presents "Coverall," a gypsum-filled wallcovering which hides cracks, patches, mortar joints and other surface irregularities. Economy, ease of application, fire resistance, and acoustical qualities are claimed for the product, a permanent finish for use over concrete and cinder block, gypsum board, glass, plaster and metal. ■ Marlite Div., Masonite Corp., Dover, Ohio.

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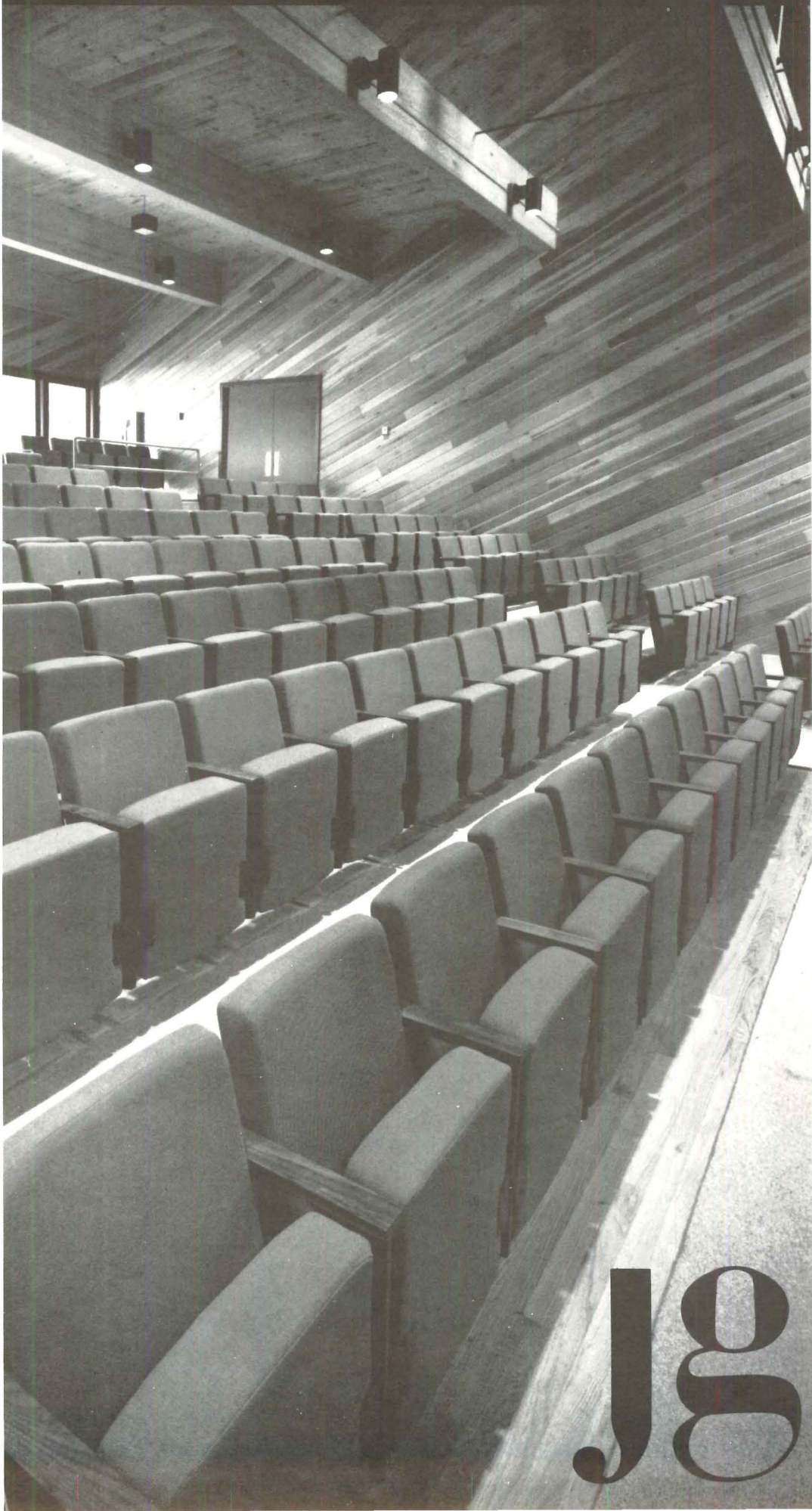
FLOOR DECKS / Revised engineering tables and features of the "Epicore" composite floor system and 11 other decks are contained in a new 20-page catalog. A deck selection chart, and tables for loading, shoring, section properties and temperature mesh are included. The advantages of the "Epicore" floor system for installations requiring extensive hanging and flexibility are explained. ■ Epic Metals Corp., Rankin, Pa.

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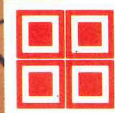
PAINT / A new 60-page catalog includes selection charts for easy determination of proper coating products for all types of interior and exterior surfaces. Information on recommended uses, surface preparation and priming, application, drying times, and film characteristics is given. There is also a section on flame spread, fuel contribution and smoke development, as well as a listing of OSHA colors for industrial applications. ■ The Sherwin-Williams Co., Cleveland, Ohio.

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JG



Summitville



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Church: 4" x 8" Strata Tile



Restaurant: 6" x 6" and 3" x 9" hex strata tile



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Restaurant: 6" x 6" Quarry Tile



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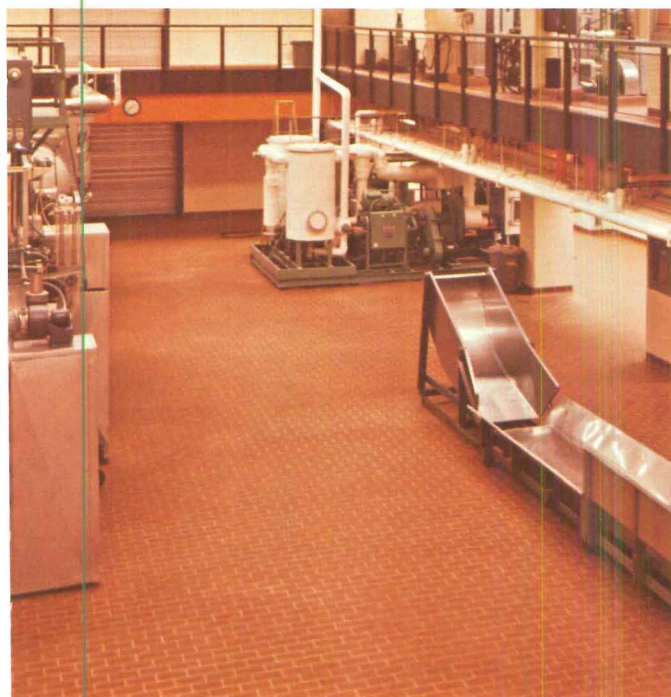
The full story is available from your ceramic tile contractor, distributor or from Summitville Tiles, Summitville, Ohio 43962.



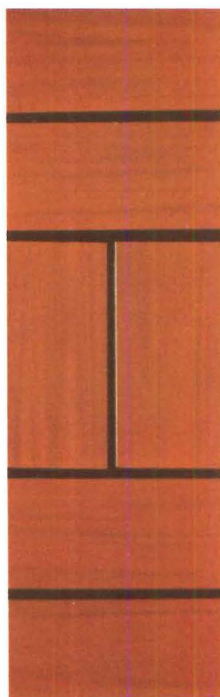
Member: Tile Council of America



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Food processing: Floor Brick



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Terrace: 8" x 8" Olde Towne Pavers

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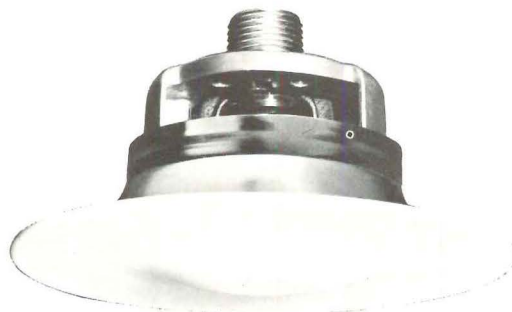
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... and away!*

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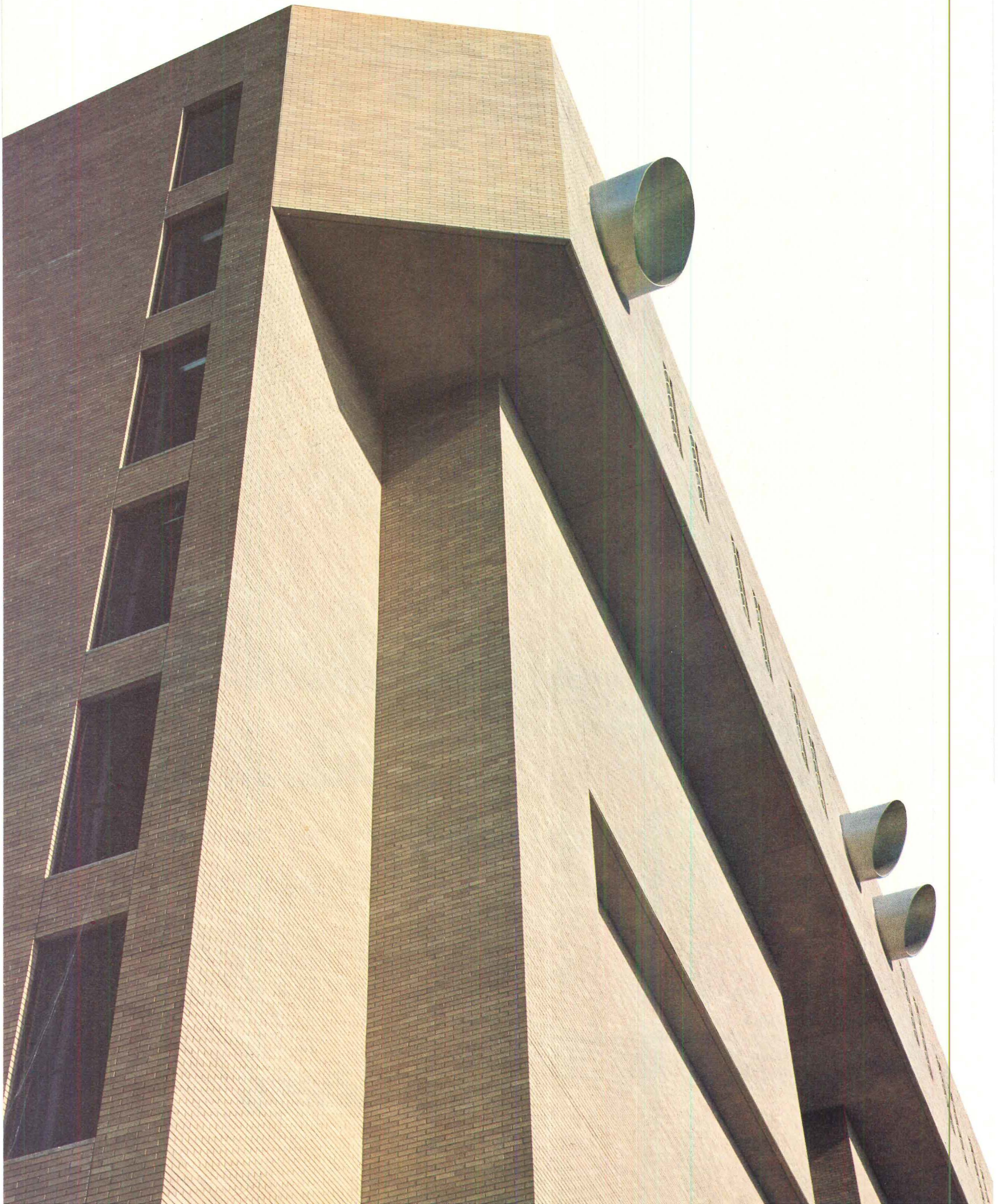
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*Research Tower, College of Veterinary Medicine,
State Colleges, Cornell University, Ithaca, N.Y.*

Architect: Ulrich Franzen & Associates

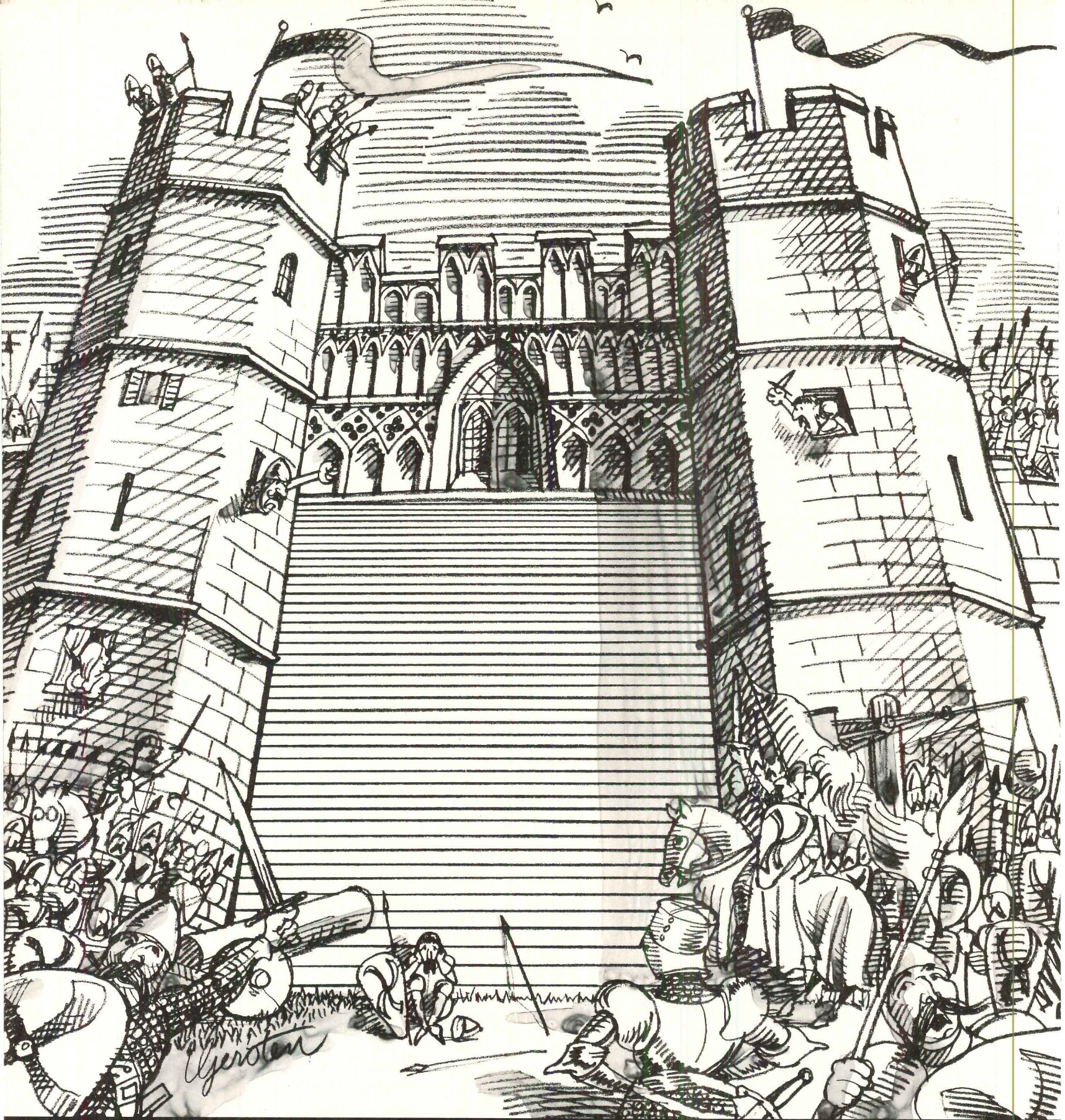
*William Street Apartments, Wesleyan University
Middletown, Conn.*

Architect: Ulrich Franzen & Associates

Photographs: David Franzen

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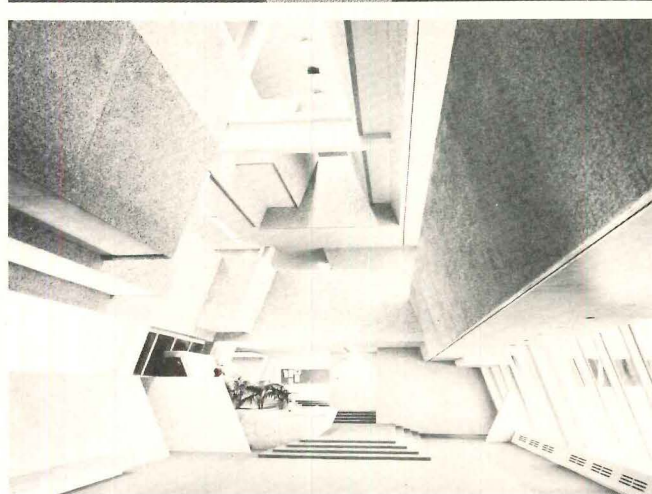
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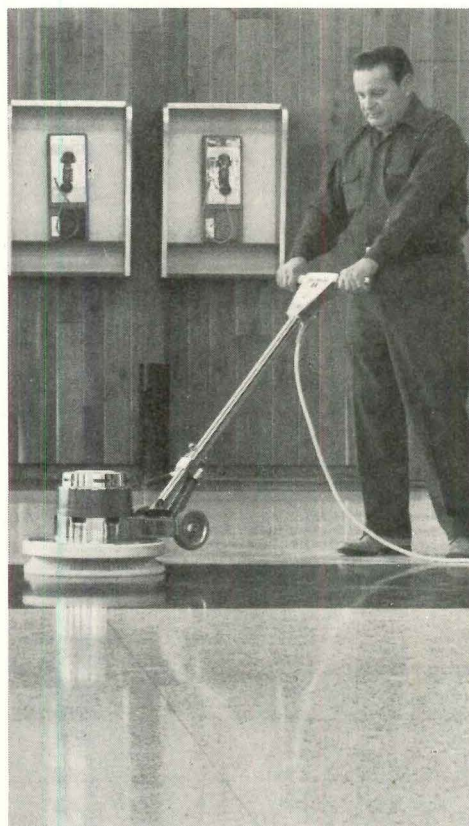


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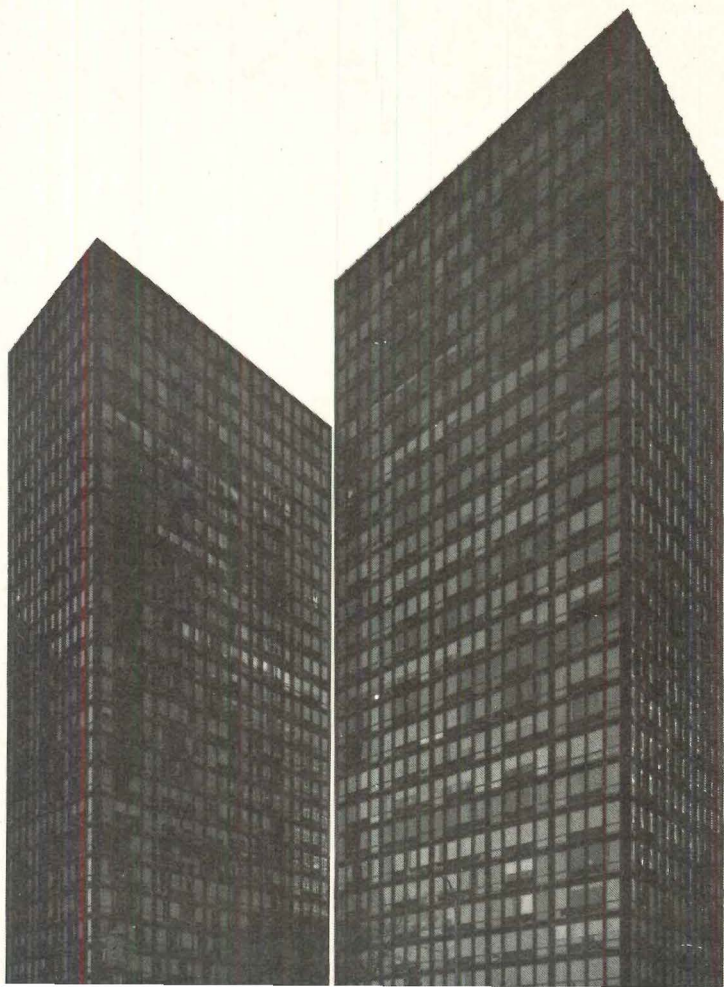


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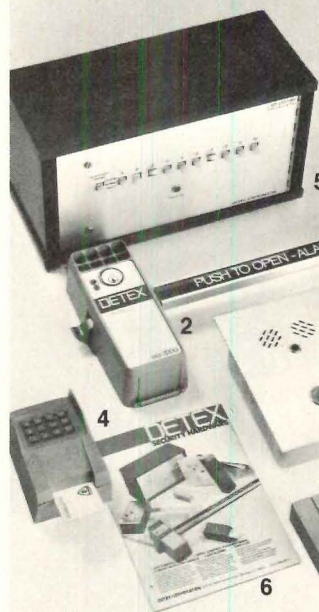
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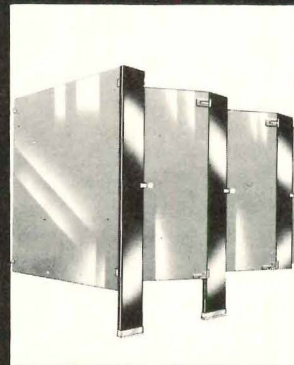
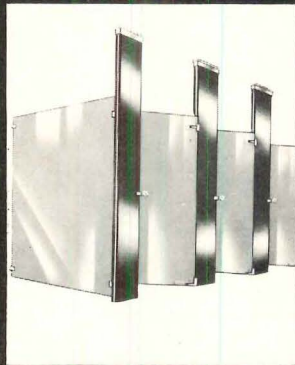
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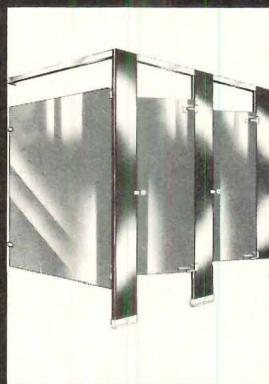
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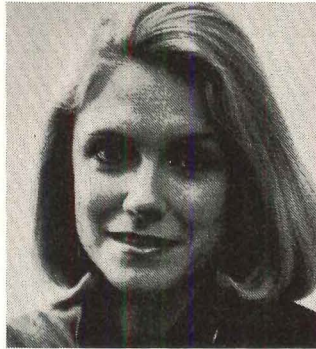
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By CELIA WALLACE
DMMA Consumer Affairs Director

Whether you realize it or not, you are exposed to over 300 advertising messages per day while you watch TV, read newspapers and magazines and ride the highways. And there is no easy way to "turn off" these messages.

But if you don't want to receive advertising mail, there's a simple, effective way to stop most of it. Just contact the Direct Mail/Marketing Association (DMMA), a group of businesses that use mail to advertise their products and services, and they'll send you a *name-removal* form.

Think you want to be taken off mailing lists?

According to Robert F. DeLay, President of the DMMA, once you've returned the name-removal form you should notice a substantial decrease in the amount of mail advertising you receive. "But," he added, "very often people take steps to get their names removed from mailing lists, objecting to what they consider 'junk mail.' But then later decide maybe it isn't so bad after all when they consider some of the good offers that come through unsolicited third class mail. Such as catalogs, new product samples, chances at sweepstakes, introductory offers from magazines, and coupons that knock a dime or so off prices at the supermarket or drugstore."

However, for those who decide they *still* don't want to be bothered by advertising mail, Mr. DeLay assures that their names will be removed from the lists of many DMMA member companies who conduct most large-scale mail adver-

tising campaigns. "It's just too expensive to waste on people who don't want it," he says.

MPS also enables you to be added to lists.

If, on the other hand, you feel you don't get your fair share of mail offers, the DMMA offers another service to get your name *on lists*

that will make you a candidate to receive more offers in special interest areas such as arts and crafts, books, investments, clothing, sports, travel and gardening.

Both services are offered to the public by the DMMA in an effort to make shopping by mail more enjoyable.

If you want to take advantage of either of these services offered by the DMMA, simply send the coupon below for a free application or write the association

c/o McGraw-Hill
P.O. Box 500
Hightstown, New Jersey 08520



MAIL TO:
DIRECT MAIL/MARKETING ASSOCIATION
c/o McGraw-Hill, P.O. Box 500,
Hightstown, New Jersey 08520

- STOP IT!** I don't want to be on anyone's "list." Please send me a *Name-Removal Form*.
- SEND ME MORE!** I'd like more mail on my favorite interests and hobbies. Send me an *"Add On" Form*.

PRINT NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

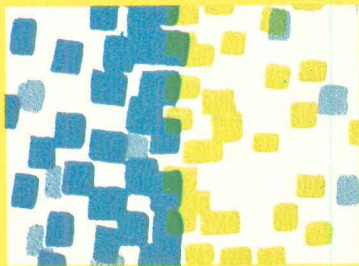
**With all
their other
problems,
hospitals
don't need
stained walls!**



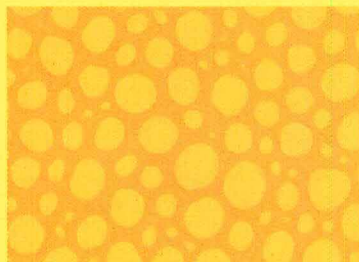
Now you see it . . . now you don't!



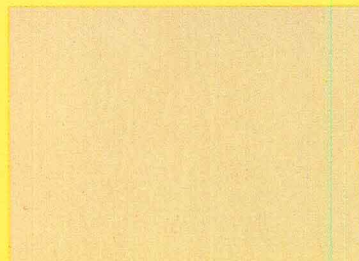
New Vicrtex T Patterns:



Avalon



Honeycomb



Marathon

Stainproof
VICRTEX[®] T
VINYL WALLCOVERINGS
surfaced with DuPont Tedlar*

Make hospital, nursing home, all health care facility walls *absolutely stain-proof* by specifying VICRTEX T Vinyl Wallcovering, specially surfaced with Tedlar* film coating.

Vicrtex T not only wipes clean easily: it destroys surface staph bacteria; eliminates 100% of staph in 24 hours, maximum. Harsh cleaning agents (toluene, acetone or MEK) won't affect Vicrtex T.

Specify Vicrtex T for all high traffic areas, elevator lobbies, telephone banks, restrooms; anyplace visitors or staff congregate.

3 stock patterns available in exclusive Vicrtex T collection. Other Vicrtex patterns surfaced with Tedlar to special order.*

Write or phone for swatches today!

L. E. CARPENTER

AND COMPANY



A DAYCO
COMPANY

170 North Main Street, Wharton, New Jersey 07885
(201) 366-2020

NYC: (212) 355-3080

*DuPont registered trademark

DISTRIBUTED BY: VICRTEX SALES DIVISION, New York, Atlanta, Chicago, Dallas, Los Angeles, San Francisco, Boston, Minneapolis, Toronto, Montreal / HOWELLS, INC., Salt Lake City / PAUL RASMUSSEN, INC., Honolulu.

For more data, circle 102 on inquiry card

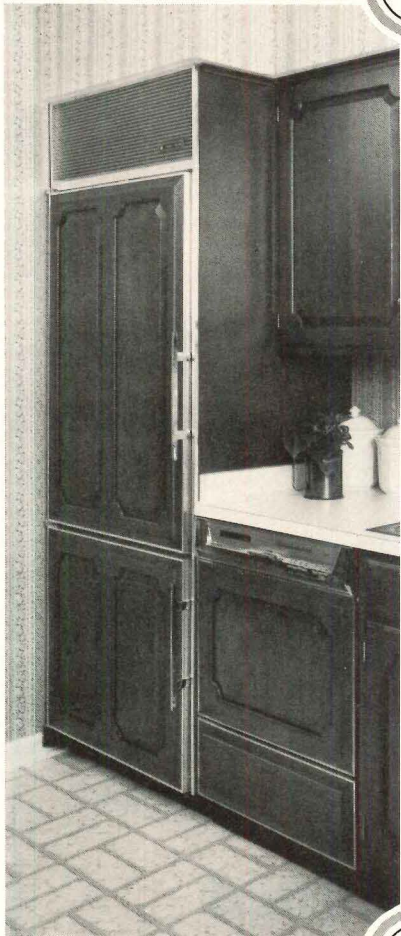
Elegance in home refrigeration

BUILT-IN TO BLEND-IN
All units built to 24" kitchen counter depth to fit flush with cabinets * Front & side panels to match your decor * Units will accept wood, glass, metal, leather, plastics . . . or use your imagination * 24", 30", 36", & 48" wide models * Largest capacity home units manufactured * All refrigerator, all freezer or combination models * "Over-n-under" or "side-by-side" units * Built-in ice makers * Superb workmanship and individually factory tested for total performance.

SUB-ZERO

Now Available in Canada

Send for free colorful brochure
on unique kitchens:
SUB-ZERO FREEZER CO.,
Box 4130, Madison, Wisconsin 53711



For more data, circle 81 on inquiry card

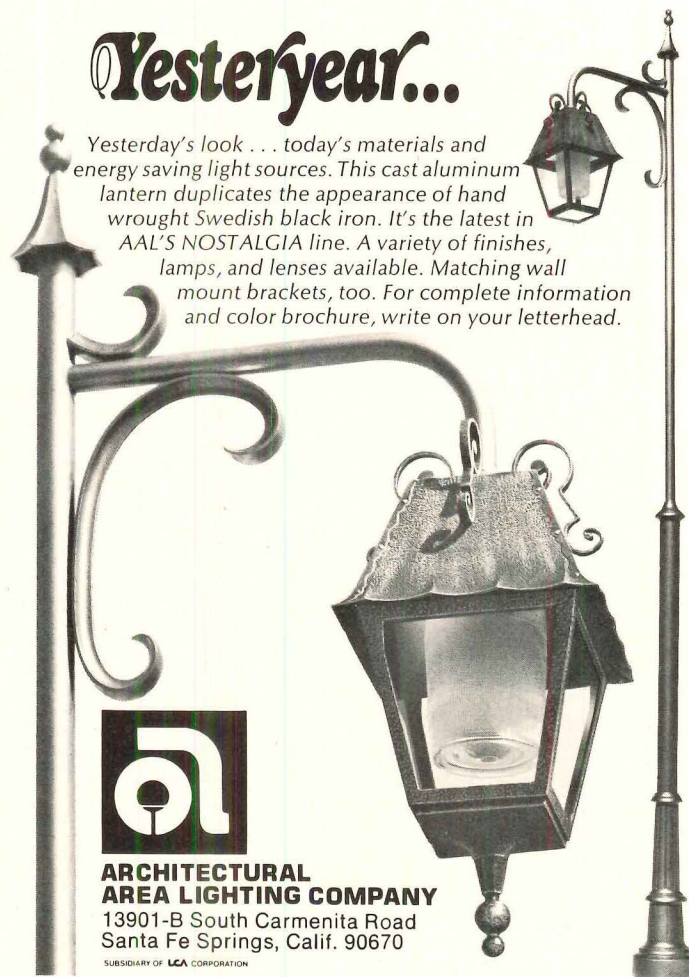
Yesterday..

Yesterday's look . . . today's materials and energy saving light sources. This cast aluminum lantern duplicates the appearance of hand wrought Swedish black iron. It's the latest in AAL'S NOSTALGIA line. A variety of finishes, lamps, and lenses available. Matching wall mount brackets, too. For complete information and color brochure, write on your letterhead.



**ARCHITECTURAL
AREA LIGHTING COMPANY**
13901-B South Carmenita Road
Santa Fe Springs, Calif. 90670

SUBSIDIARY OF LCA CORPORATION

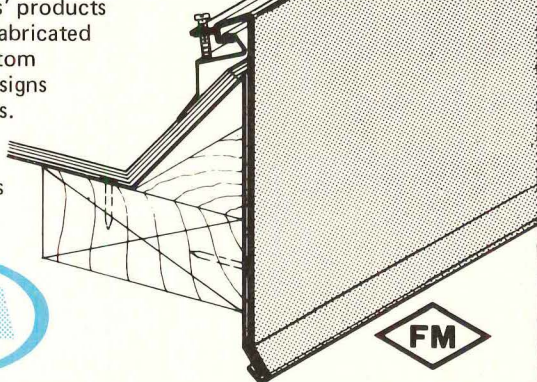
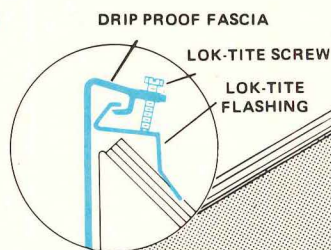


For more data, circle 104 on inquiry card

THE MATERIALS MAKE IT... THE SYSTEM SHOWS IT.

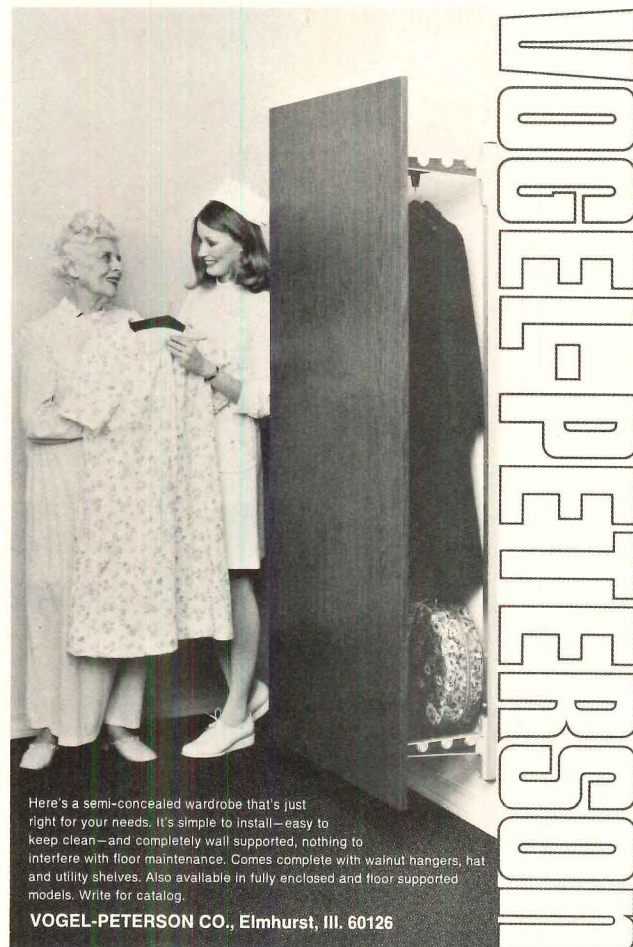
Send for MM Systems' FREE brochure and let us show you how our proven engineering designs can help you with your roofing construction needs. For example, the brochure includes MM Systems' FM approved DRIP PROOF fascia system with the exclusive non-penetrating LOK-TITE design.

All MM Systems' products are factory prefabricated and include custom and standard designs to fit your needs. Contact MM Systems for complete details today.



MM SYSTEMS CORPORATION
4520 ELMDALE DRIVE, TUCKER, GEORGIA 30084 / PHONE (404) 938-7570

For more data, circle 103 on inquiry card



Here's a semi-concealed wardrobe that's just right for your needs. It's simple to install—easy to keep clean—and completely wall supported, nothing to interfere with floor maintenance. Comes complete with walnut hangers, hat and utility shelves. Also available in fully enclosed and floor supported models. Write for catalog.

VOGEL-PETERSON CO., Elmhurst, Ill. 60126

VOGEL-PETERSON

For more data, circle 105 on inquiry card

Is your hospital out of control?


It is if these common problems are present! You know the problems all too well. How do you control access to drug rooms, chemotherapy areas, stair towers and emergency entrances? How do you meet safety requirements on emergency exits without sacrificing security? How do you stop unwanted visitors from entering patients' rooms during non-visiting hours, or keep disoriented patients from wandering away? How do you prevent patients from leaving without paying?

There is an easy and economical solution to all these problems. It's MediControl from Hager Control Systems.

MediControl is a flexible system designed specifically for hospitals, nursing homes and extended care facilities. MediControl can monitor, lock, unlock, latch and unlatch doors. And it can all be done with a flip of a switch from one location.

MediControl can put you in complete control of your hospital. Write today for information and specification brochure. Hager Control Systems, 10765 Indian Head Industrial Blvd., St. Louis, Mo. 63132.

HAGER CONTROL SYSTEMS



Confined patient escape

Emergency room traffic uncontrolled

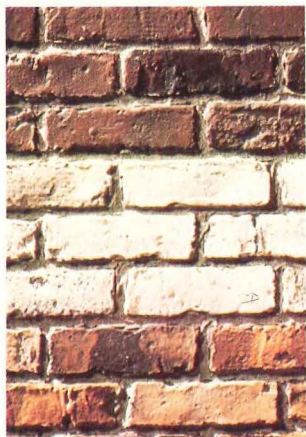
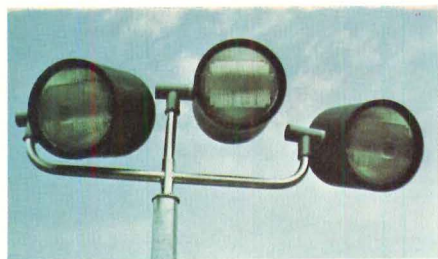
After-hours visitor

Unauthorized stair tower traffic

Radiology intrusion

Unauthorized drug room entry

Disoriented patient wanderings



Coming in
mid-October



PRODUCT REPORTS

Architectural Record's *Product Reports* issue is devoted in its entirety to a comprehensive view of the year's most significant developments in building products. It represents an outstanding advertising value for manufacturers of building products because it offers . . .

- The largest paid architect and engineer subscriber audience ever made available to advertisers—some 45,000 architects and engineers.
- A unique editorial atmosphere. *Product Reports* is the only publication where architects and engineers can obtain, all in one place, a comprehensive view of the year's most significant developments in building products. With this issue in their hands they are totally receptive to learning more about products.
- Hard, repeated use. *Product Reports* is the most useful collection of new and improved products ever assembled in one convenient issue for the men who design, specify and buy.
- Close adherence to the 16-Division Uniform Construction Index—making feasible quick and easy review of the latest available products during the design and specification process.
- Full page advertisers may select division in which their advertisements will appear. Special positions are available too.
- *Product Reports* is the principal product update for Architectural Record's subscribers in the U.S. and Canada—those architects and engineers verified by Dodge Reports to be designing over 90 per cent of all architect-planned building in the U.S.
- Reduced charge for four-color advertising because four-color is used throughout the editorial as well as advertising pages.

Product Reports is where architects and engineers go for product ideas. What better time to reach them than when they are thinking product!

Closing date for advertising: September 15.





The more you have to put up, the less you should have to put up with.

Monumental ceilings can cause monumental headaches.

So many things have to work together just right: the ceiling panels, the lighting fixtures, the air diffusers, the acoustical insulation, the subcontractors. Especially the subcontractors.

When everything comes from different sources, the chance for monumental foul-ups goes up.

Enter the Alcan Planar® Ceiling System. A total system. Complete and uncomplicated. Because you can specify the panels, the fixtures, everything, from one source.

From Alcan. You can even specify polywrapped acoustical blankets for pools or food processing plants.

Everything is worked into our ceiling system, so you'll have fewer

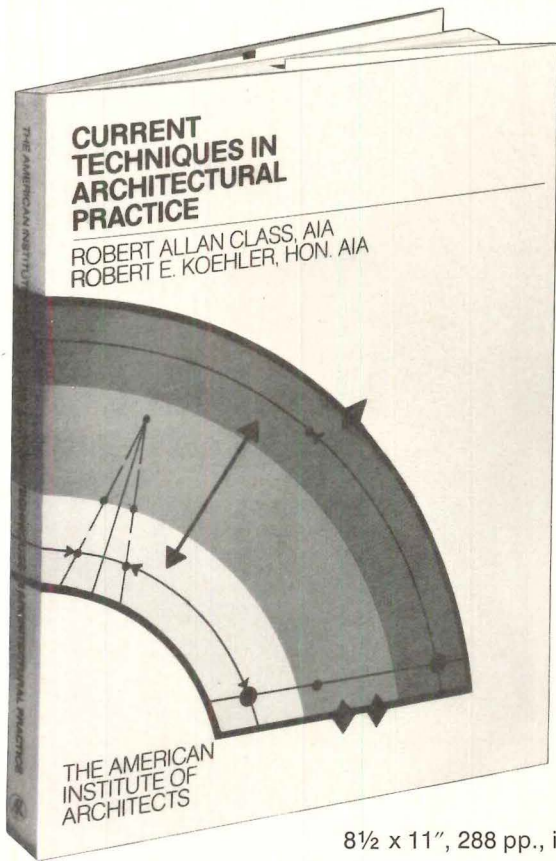
limitations to work around. Just light-weight, durable, maintenance-free Alcan aluminum that gives you the freedom to execute a monumental idea. Beautifully. And the silicon polyester finish of the Alcan Planar Ceiling lets you carry a total design concept through to exterior soffit treatments.

The Plenum Mask is a unique concept in ceiling design that provides effective screening of the mechanical, wiring and piping in the plenum area. It does not achieve full closure and therefore requires no extra costs for special air distribution diffuser, lighting, or sprinkler fixtures. The Plenum Mask achieves a crisp, lineal appearance that produces a pleasing, monumental effect.



If you want less to put up with, you ought to look at our Planar Ceiling System. Write for details to Alcan Aluminum, Dept. IA, Box 511, Warren, Ohio 44482. Or check specification information in *Sweet's Catalogue*, Section 13.5.

Alcan Building Products
Division of Alcan Aluminum Corporation 



8½ x 11", 288 pp., illus.

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. . . Construction Cost Control . . . Regulations Control . . . Information Resources . . . Computing . . . Office Machines . . . Network Scheduling . . . Drawings . . . Specifications . . . Trends in Architectural Practice . . . and a selective professional bibliography.

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Payment must accompany order



Natural Red

The Spanish accent you can see. Si, Ludowici Spanish roofing tile!

There is always a heavy demand for this most popular, authentic style Spanish Roofing Tile, for many different types of buildings.

Beauty and versatility are part of the reason. The lasting benefits, built-in by Ludowici, make it eminently practical, too. Low maintenance costs are a major attribute. It is also fire-proof and storm-resistant. It affords no foothold for fungus. Weathering simply seasons it into softer beauty.

No other manufacturer, domestic or foreign, matches Ludowici tile in richness of color and hardness of material.

On a lasting value basis, Ludowici Tile compares favorably with the cost of any roofing material. It is truly economical, saving money in replacement and maintenance. Specify Ludowici, and forget roof problems. Permanently.

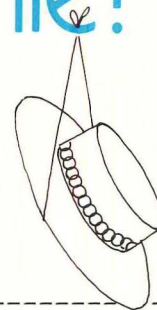
It's easy to get complete information on all Ludowici Tiles. You can check your Yellow Pages for the local distributor. Sweet's Catalog carries all data. Write to the address below, or have your secretary send the handy coupon.

For more data, circle 109 on inquiry card



NORMAN ROOFING TILE

A blend of tiles, in seven subtle earth-tones, to duplicate the centuries-old roofing tile of Normandy. Want your own tile color, shape, texture? Ludowici will custom-make roofing tile to your requirements.



LUDOWICI-CELADON COMPANY

111 E. WACKER DRIVE, CHICAGO, ILL. 60601 • (312) 329-0630

New Products/New Ideas in Tile

Send me a color brochure. I'm interested in custom-made tile.

NAME _____

FIRM _____

ADDRESS _____ COUNTY _____

CITY _____ STATE _____ ZIP _____

CLASSIFIED SECTION

POSITIONS VACANT

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Architects/planners needed for Peace Corps projects in Latin America, Africa, Asia; VISTA projects in 25 U.S. cities. Housing projects, design of schools, hospitals, community centers, rehab, university teaching, regional planning, etc. Expenses paid, travel, medical, vacation and living. U.S. citizen. Singles or couples only. Information: Lynn Rotenberg,

ACTION,
ORC Box A-1
Washington, D.C. 20525

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Produce construction documents to maximize the efficiency of design and utilization of Pizza Hut restaurants and other facilities, and administer a broad program of design, remodeling, energy conservation, maintenance, standards compliance, and our building R & D effort. Requires degree in engineering or architecture and experience in multi-unit retail establishments.

We offer attractive salaries, outstanding benefits, excellent career opportunities and very desirable working atmosphere. Please send resume in confidence, including salary history, to:

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An Equal Opportunity Employer M/F

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Architect-Engineer firm, nationally ranked in top 400, seeking experienced person or persons, with established contacts and proven track record at marketing Architect-Engineer services for its southeastern regional office. Clientele desired includes full scale industrial and broad range of architectural. Reply with resume, P-1519.

Architects-Design & Project Management . . . Designer and builder of medical buildings and schools seeks architect with experience in medical field. Must have good design ability with leadership and administrative skills to supervise projects from client-contract through completion. Compensation package consists of excellent salary, bonus's, profit sharing, and other fringes plus advancement on merit. For prompt interview write or telephone Harry. Case daily 1/414/437-4353 or at home evenings and weekends 1/414/435-0685. Management Recruiters, 115 S. Jefferson, Suite 302, Green Bay, Wis. 54301. Licensed employment agent.

Architects-Design & Production: Nationally known A-E firm has permanent positions with excellent opportunities for graduate architects with a minimum of 3 or 4 years experience. Full benefits, insurance and retirement plan. Please submit confidential resume and/or contact Herman Schmidt, Henningson, Durham & Richardson, Inc., 8404 Indian Hills Drive, Omaha, Nebraska 68114. An Equal Opportunity Employer M/F.

POSITIONS VACANT

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Key career position at prestigious university-affiliated medical center for experienced project engineer. Responsibilities encompass architectural planning, hospital construction and renovation. We seek a graduate engineer or architect with at least 3 years construction project experience. Hospital construction and cost containment background desirable. An exceptional professional opportunity offering broad exposure and wide latitude for innovation. Starting salary to mid-teens plus comprehensive benefits package. Send resume including salary history in confidence to: Mr. Ken Marland, Personnel Department.

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330 Cedar Street
New Haven, Conn. 06504
equal opppty employer m/f

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P-1491, Architectural Record
Class. Adv. Dept., P. O. Box 900,
N. Y., N. Y. 10020
An Equal Opportunity Employer M/F

POSITIONS WANTED

Financial Executive—Heavyweight—Listed co. V.P., Controller—CPA (Big 8 exp.)—Attorney—Acquisitions, financial controls, taxes. Exp'd. real estate, construction industries. Combines technical skills with imagination. \$28-32,000 required. For resume: PW-1376, Architectural Record.

Architect & Civil Eng.—Young draftsman, 5 years exp.—Desires full or part-time job. Manhattan or Queens. Call Cecilia Serrano 688-8080, Weekdays 9:30-4:30.

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Architect, British, RIBA and Dip Arch qualifi- cations, with 15 years international experience in the design and project management of major commercial, university and industrial projects in Scandinavia, Caribbean and Europe, seeks top responsibility appointment as Project Architect or Site Co-ordinator for U.S. firm engaged on major project in U.S. or abroad. PW-1391

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For Sale Urgent—Architect Practice in South Pacific Island group—Tax free territory—(No personal or corporate taxes). Only architect's office of the country. Possible bank credit. Contact: P.O. 200, Vila- New- Hebrides.

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Kinsey Architectural Arts

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Tel. (419) 475-7011



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ARCHITECTURAL ARTS

Architectural Arts—Ink drawings—presenta- tion renderings/perspectives. Color schemes—finishes. Models. David 1-819-684-8320. Ottawa

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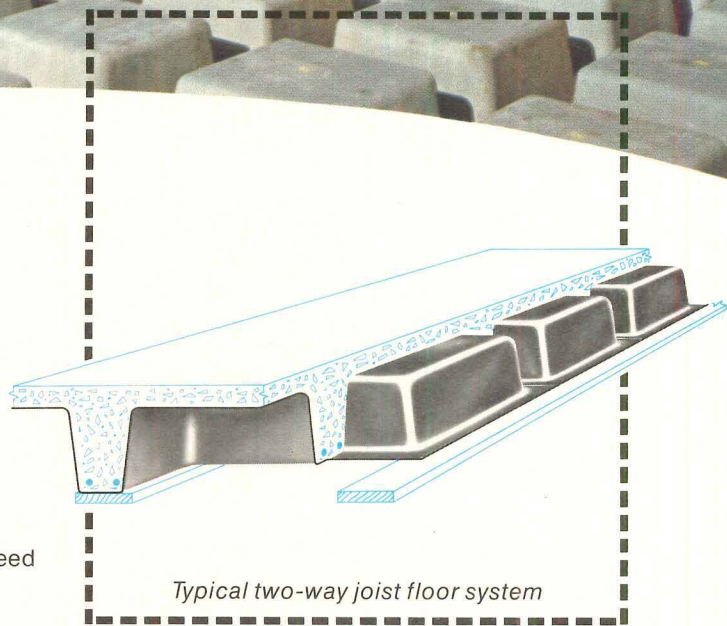
MEMORABILIA WANTED

World's Fair Memorabilia wanted. Orth, 1439 Killarney, Los Angeles, CA 90065. Stamp for Exposition Collectors-Historians Club information.



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The James Madison Memorial Library of Congress, is still another Washington building using Ceco concrete forming services. With Ceco services, you get simplicity, economy, speed and reliability. Our crews of formwork specialists erect and remove forms of steel or fiberglass. We do this floor by floor and on a firm lump-sum contract basis. Ceco's equipment, materials, crews, skilled foremen and superintendents are available nationwide. For more facts, please see Sweet's files, consult our local Ceco office, or write.



James Madison Memorial Building
Library of Congress, Washington, D. C.
George Hyman Construction Co., *Contractor*
Roscoe DeWitt, A. J. Tatum,
Alfred Easton Poor, Albert Homer Swanke,
Jesse M. Shelton, A. P. Almond, *Associate Architects*
Severud, Perrone, Sturm, Conlin, Bandel,
Consulting Engineers Superstructure



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

For more data, circle 110 on inquiry card

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- L Light Construction File (yellow)
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If your client wants more storage space... **SPECIFY ROLL-SHELF.**

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ROLL-SHELF is storage shelving on wheels. Unlike conventional shelving, Roll-Shelf requires less cubic area. Excess aisle space is eliminated, so one aisle does the job of four, five or more. Your client gets up to 80% more storage capacity in the existing space.

Since the shelves are adjustable and sturdy — weight and bulk are no problem. For extra heavy duty storage capability . . . ask about MEG ROLL-SHELF with "Turn-Glide" — a unique control mechanism that lets anyone move tons of storage with finger-tip ease. And with ROLL-SHELF, maintenance costs are reduced for lighting, heating, cleaning, etc.

End panels are available in colors or wood grain plastic laminates and help to beautify interiors. And, ROLL-SHELF is easy to install.

Whether you're planning a new installation . . . or the refurbishing of an existing building — if more storage space is what your client wants . . . specify ROLL-SHELF — the high density mobile storage shelving system by MEG.

Today, send for your FREE copy of the ROLL-SHELF specifications catalog. It'll give you all the facts you need. Write:

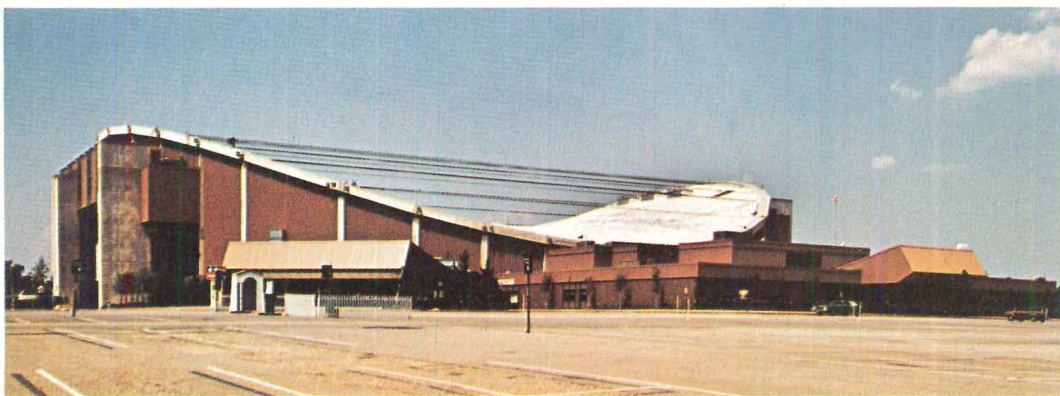
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100 Bidwell Road, South Windsor, Ct. 06074.

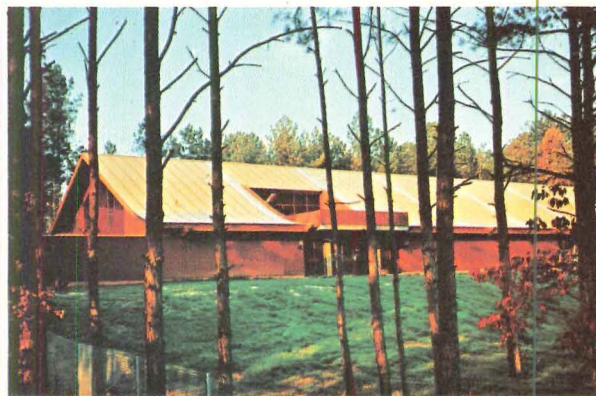
See MEG's catalog in Sweet's Interior Design File. Reference No: 11.10/KI

For more data, circle 111 on inquiry card

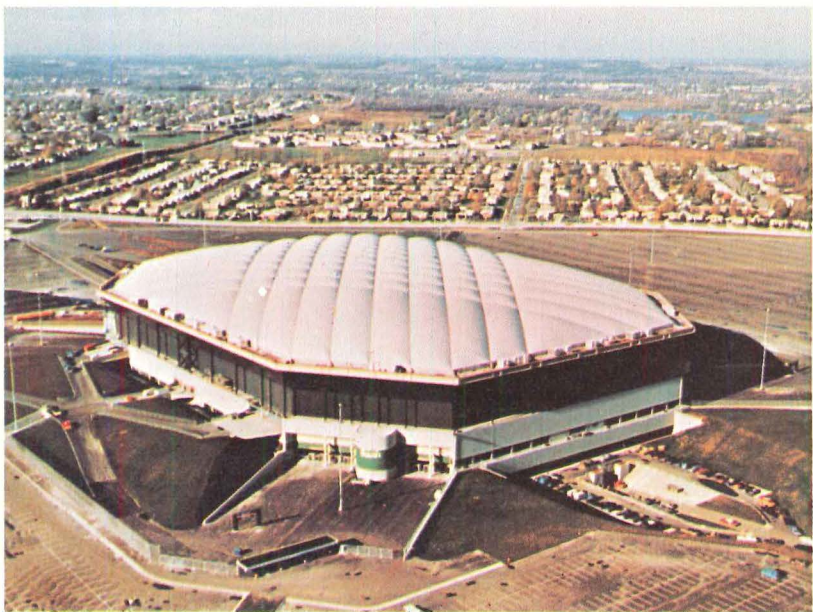
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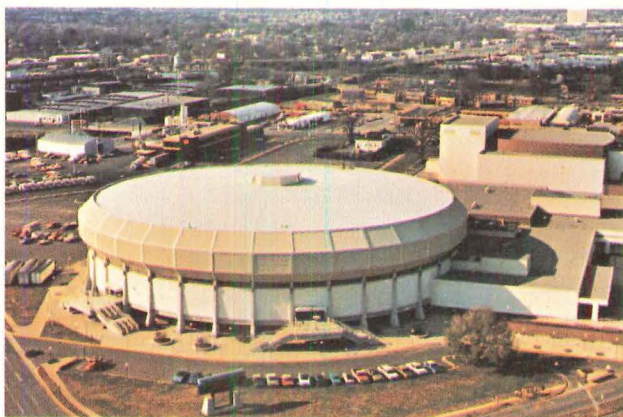
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If you have a recreational building metal wall or roof project, let us help early in the design stage. For full details, write for Catalog WP.



ELWIN G. SMITH DIVISION

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EGS 121

Now, Computerized Building Automation at an Affordable Price.

In the past, when you suggested computerized automation for a client's building, you may have gotten responses like these: "Sounds great, but I can't afford all that. What do you think I am, a finance company? Tell it to the Pentagon." Today your answer can be forthright and simple:

Tell him Johnson Controls computerization, in new and existing buildings from 15,000 to 500,000 square feet, averaged *only 51¢ a square foot* last year.

Fifty-one cents! It comes to a lower total cost than he usually pays for exterior lighting, or landscaping, or carpeting the corridors.

Fifty-one cents — for the computer, the control center, and the building-wide multiplex wiring — out of an average building cost of \$20 to \$60 a square foot!

How the JC/80 Computer System Cuts First Costs

The JC/80 is the computer built for buildings only. It's not designed to reserve flights, or mail bills, or figure compound interest. Its sole purpose is to monitor and control building automation systems. The JC/80 system cuts first costs because the *same* computer, the *same* control center, the *same* multiplex wiring are used to monitor and control HVAC, humidification,



firesafety, security, communications, lighting and clock systems.

What's more, with or without input/output devices, it can monitor and control three, four, five or more buildings *all* from a single location.

Even more impressive are the *ongoing* savings the JC/80 delivers year-in and year-out. In the average installation, the JC/80 pays for itself in less than three years!

How JC/80 Cuts Operating Costs

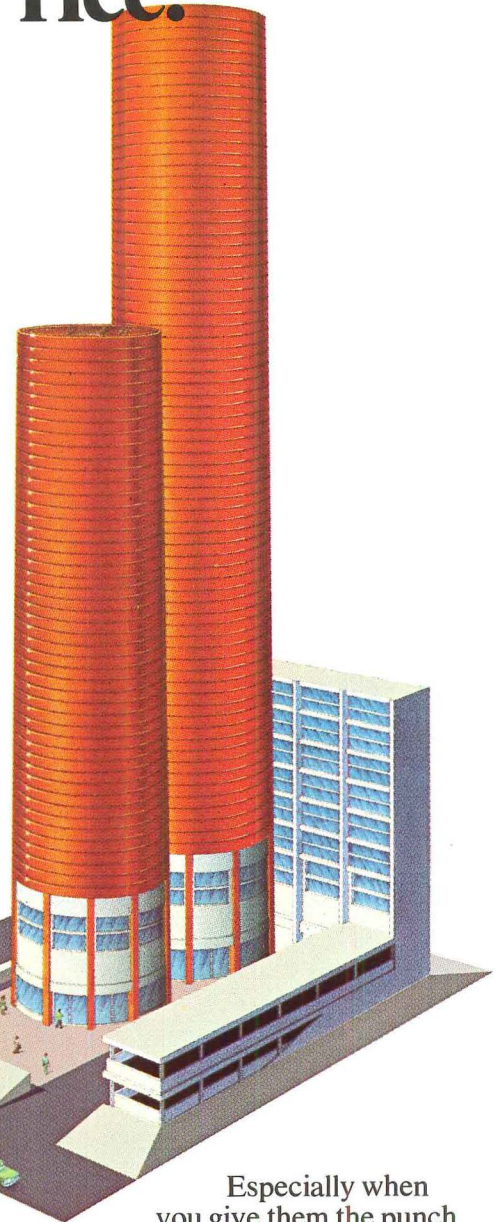
In heating and cooling costs alone, the JC/80 system can save 8¢ to 12¢ a square foot out of the estimated yearly heating/cooling cost of 36¢ a square foot.

By activating totally automated programs for enthalpy switchover, nite set-back, start/stop, supply air reset, chiller plant control and load shedding, in a 200,000 square foot building the JC/80 can save \$16,000 to \$24,000 a year!

What does JC/80 hold for you?

The Johnson Controls JC/80 lets you provide the ultimate in esoteric building control at the lowest available cost. Alternatively, it lets you start with the basic necessities and then "add on" automation systems in the next few years. Either way the JC/80 gives you a cost-saleable design. And Johnson Controls backs you up with one-source supply, one-source responsibility, and the expertise that has commissioned more than half the computerized automation systems in U.S. buildings.

Owners want what computerized building automation can do, and they're prepared to pay for it.



Especially when you give them the punch line: *51¢ a square foot*. For more information call your local Johnson Controls office. And send for Johnson Controls 12-page booklet, "JC/80 Computerized Building Automation." Write R.J. Caffrey, Vice President-Marketing, Systems & Services Division, Johnson Controls, Inc., Reference M-2, P.O. Box 423, Milwaukee, Wisconsin 53201.

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CONTROLS

Prime source of problem-solving systems.

You can't afford to waste water. Not at these prices:

MONTHLY METERED COMMERCIAL RATES (Per 100,000 cubic feet or 748,000 gallons)*

Boston	\$482
Chicago	283
Dallas	315
Denver	241
Hartford	446
Kansas City	250
Los Angeles	247
Minneapolis	350
New York	525
Pittsburgh	546
Portland, Ore.	270
San Francisco	285
Seattle	213
Tampa	360
Tucson	300
Washington, D.C.	300

*From January 1976 survey conducted by *Business Statistics*.

So you can't afford to install anything less than Sloan Flush Valves.

That's because a Sloan Flush Valve uses 12½% less water than a flush tank. And this difference increases with use because leaks in tanks go undetected to waste even more water. With today's water rates, it all adds up to a healthy saving on your water bill.

You also save on the energy needed to pump water within a building to upper floors and distant branches. The more water you save, the less energy you have to pay for.

Sloan Flush Valves save water another way, too. Because you can't hold a Sloan Flush Valve open, it meters out the same minimal amount of water needed to flush one fixture, then shuts off automatically.

Put an end to water waste that's costing you money. Find out how Sloan Flush Valves use 12½% less water. The facts are in a recent test report prepared by an independent laboratory. For your free copy, write us. We will send you the facts.

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Anything else
is a waste
of money.



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