



THE BANK OF TOKYO, NEW YORK CITY—A LANDMARK “NEW USE”  
FRANK GEHRY’S SEARCH FOR A “NO RULES” ARCHITECTURE  
DIXWELL FIRE STATION, NEW HAVEN, CONNECTICUT, BY VENTURI AND RAUCH  
BUILDING TYPES STUDY: SCHOOLS  
FULL CONTENTS ON PAGES 10 AND 11  
SEMI-ANNUAL INDEX ON PAGES 209-212

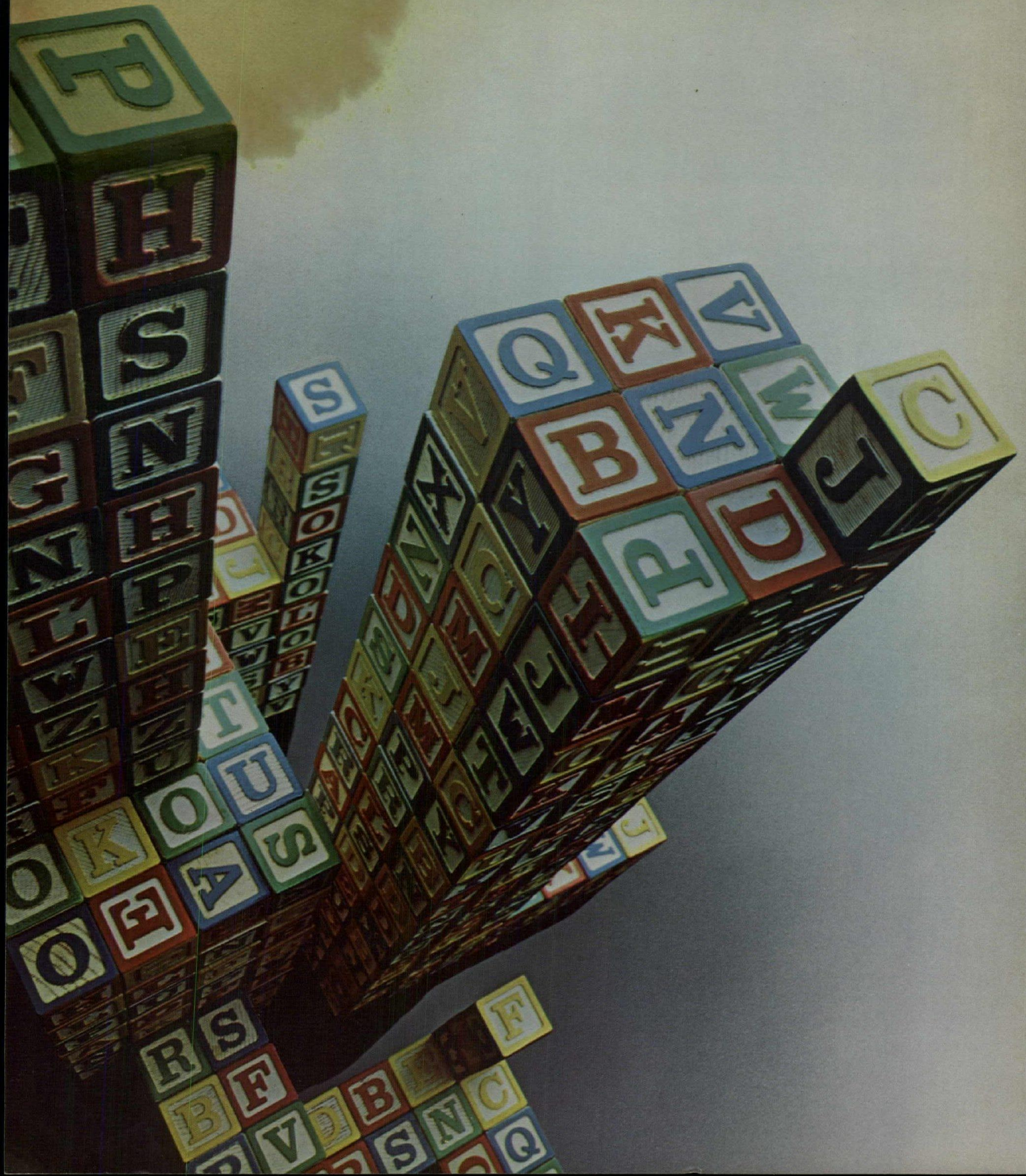
# ARCHITECTURAL RECORD

JUNE 1976

6

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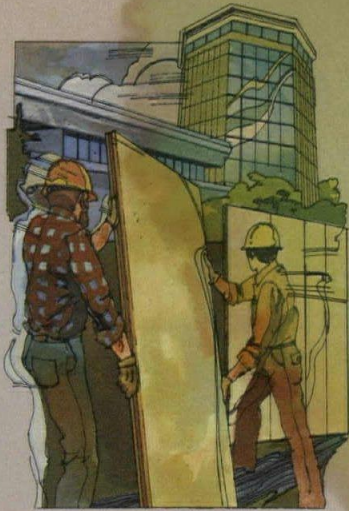
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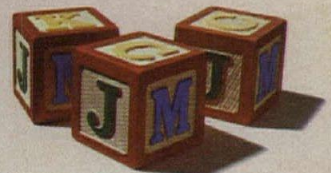
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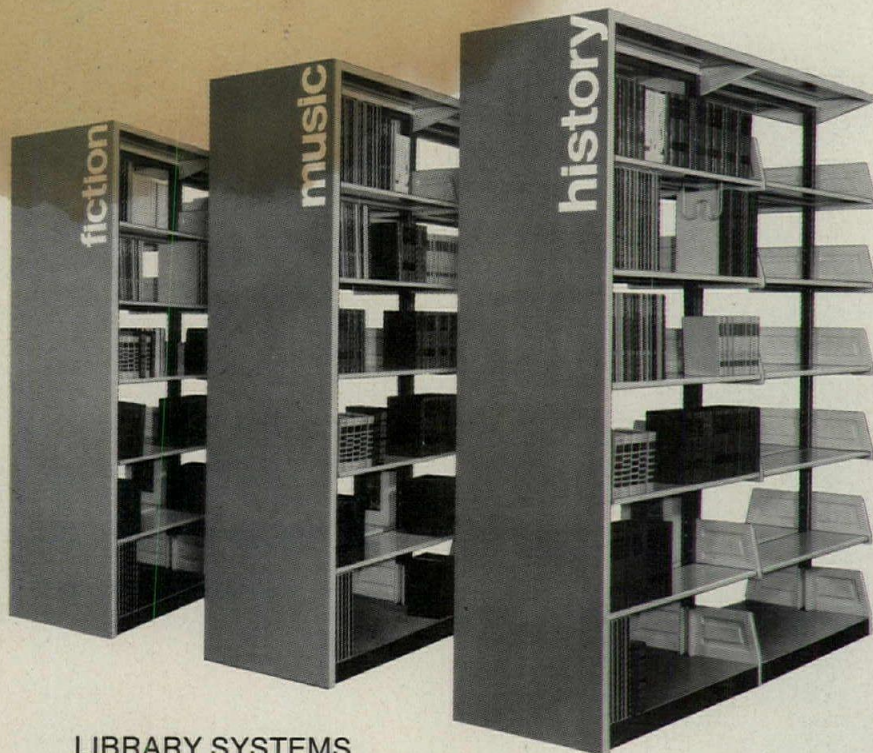
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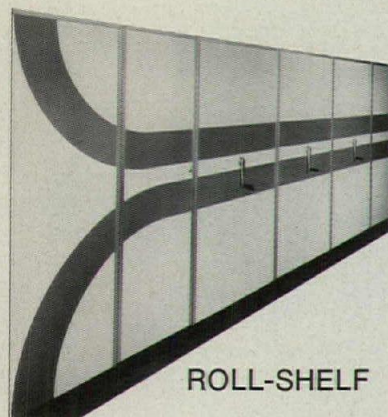
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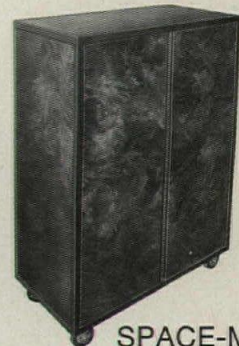
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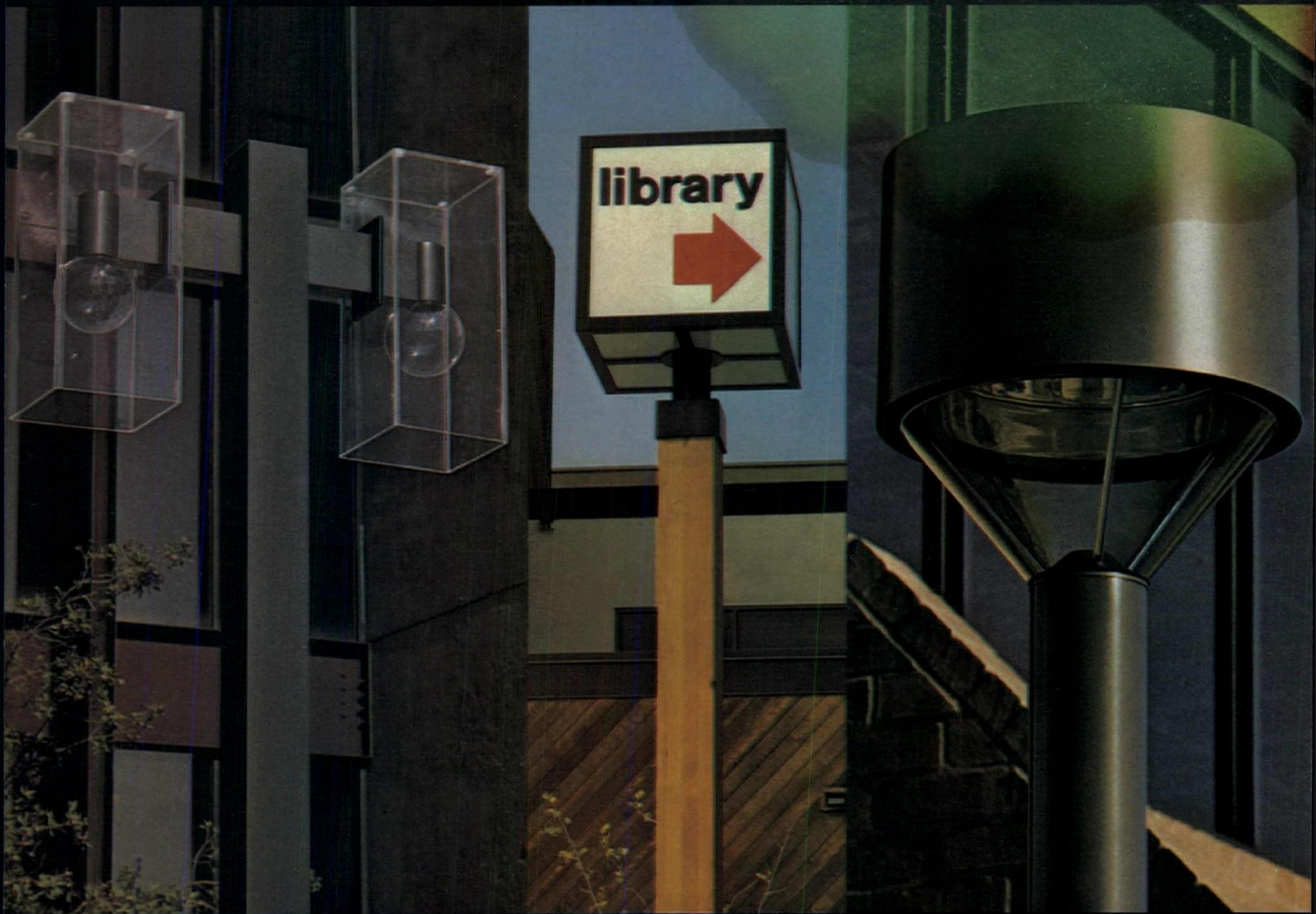


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### Letters to the editor

You are to be congratulated for the publication of Herbert McLaughlin's excellent piece "Density: The Architects' Urban Choices and Attitudes" (RECORD, February 1976), which, in my opinion, is one of the most important and concisely presented articles on density distribution to be featured in a very long time.

I am delighted to report that much of our own work confirms that high density need not be high rise, nor cost any more than high-rise construction. Besides the numbers, feasibility studies conducted from 1968-75 by the firm of A. J. Diamond and Barton Myers (in association with A. J. Vermeulen, Q.S.), my own designs for the completed Student Union Housing Building at Edmonton (a high-rise turned on its side and extruded for nearly 1,000 feet for 6½ floors (at ± 250 DU/NA) and the Dundas-Sherbourne infill project for the City of Toronto, now under construction (5-7 floors and existing housing of 3 floors at 150 DU/NA), should have laid away for good the myth that the only economical alternative for high density is high rise.

Unfortunately high density has become synonymous with high rise, and a massive educational undertaking is needed to undo this concept, not only for architects but all the "official plans" across North America that prohibit, through zoning, alternatives to high-rise/high-density.

Barton Myers and Associates  
Toronto, Ontario

Robert Stern's review of Andrew Alpern's book, *Apartments for the Affluent* (February 1976), sounds as if it were written by a man who resented the fact that someone produced a book in a previously untrod area and then wrote it for the general public rather than architects. Mr. Stern apparently wished to write a similar book and is at once disappointed and gratified that Mr. Alpern's book is not the one he would have produced.

Mr. Stern chides Mr. Alpern for not including a great deal of technical information and for omitting some structures clearly intentionally omitted (see the Introduction) as outside the book's scope. Mr. Stern clearly hasn't evaluated the book on its own terms or accepted the premise that it is based on. This doesn't strike me as proper reviewing.

Mr. Alpern's book is extremely informative and great fun for the apartment dweller. It offers a fascinating perspective on the types of homes I have lived in, almost lived in, and

wanted to rent. One does not have to be an architect to appreciate the plans and other data. One is both entertained and educated by both the sociological information and the light technical talk. If this mix of education and entertainment disquiets Mr. Stern, or if Mr. Stern would rather not reach Mr. Alpern's audience, that is too bad, but it is not cause for disparaging the book. If Mr. Stern believes that only scholarly professionals are entitled to read about architecture—and that is what he seems to be saying when he berates the book's lack of scholarly technicality—then that is too bad, and perhaps revelatory of Mr. Stern's relations with his clients and the public he builds for.

When an architect creates a building, it is an answer to a problem—a presentation to the people who will use the building, an answer to the space, and a symbol to the surrounding environment. He hasn't solved that problem if only his colleagues see the solution. A building is an education.

As a non-architect I laud Mr. Alpern's work on this subject and urge him to make this book the first of a series.

Ronald Cohen  
New York, New York

I commend you on the publication of Herb McLaughlin's "Density" article (February 1976 issue) dealing with the choices before an architect as he faces the urban housing situation.

Whether one agrees or not with his conclusions, I think we can all agree that the study's revelations are surprising in several areas.

More importantly, as a professional, I am pleased to see published in the trade magazines, papers of a scholarly nature such as this, which is a solid piece of creditable material amid so much other beautiful pictorial mush.

We architects show each other our pretty pictures, and the public largely has the notion we do "nice" things.

It is a hopeful sign to see some emphasis in your pages on serious business-like, problem-oriented topics, solutions, and discussions. Give us more and do the profession a favor. It is needed.

Harold F. Van Dine Jr., AIA,  
Vice-president  
Straub, Van Dine, Dziurman/  
Architects  
Troy, Michigan

Thank you for the prominent coverage of the Kemper Arena in your March

1976 issue. The way in which you emphasized the issues that are important about the building was especially rewarding and reassuring and should be interesting to the profession.

Helmut Jahn  
C.F. Murphy Associates  
Chicago, Illinois

### Calendar

#### JUNE

**17-18** Recycling Inner City Real Estate, New York City. Sponsored by the Practising Law Institute. Contact: Practising Law Institute, 810 Seventh Avenue, New York, New York 10019.

**21-23** The Construction Specifications Institute, 20th annual convention and exhibit, Philadelphia. Contact: Eugene M. Dutchak, CSI, Suite 300, 1150 17th Street N.W., Washington, D.C. 20036.

**23-25** Design: For America's Future. A national conference sponsored by the University of Delaware and the Delaware American Revolution Bicentennial Committee to be held at the University of Delaware. Contact: Design: For America's Future, c/o Art Department, University of Delaware, Newark, Delaware 19711.

**23-25** NEOCON, National Exposition of Contract Interior Furnishings, Merchandise Mart, Chicago.

#### JULY

**4-9** International Association of Shell and Spatial Structure, World Congress on Space Enclosures, Montreal. Host is the Building Research Centre, 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.

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

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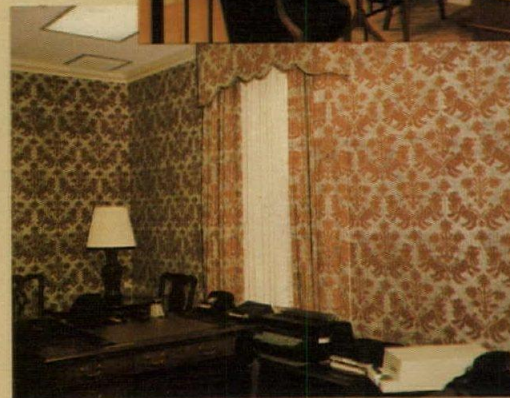
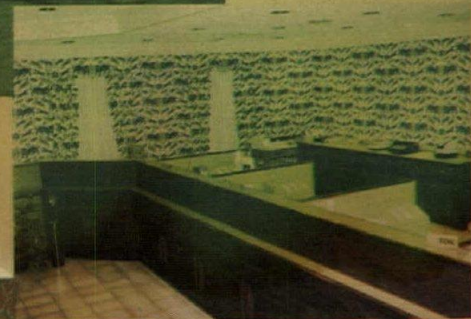
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Vice President, Design & Planning,  
Chandler Cudlipp Associates, Inc.*

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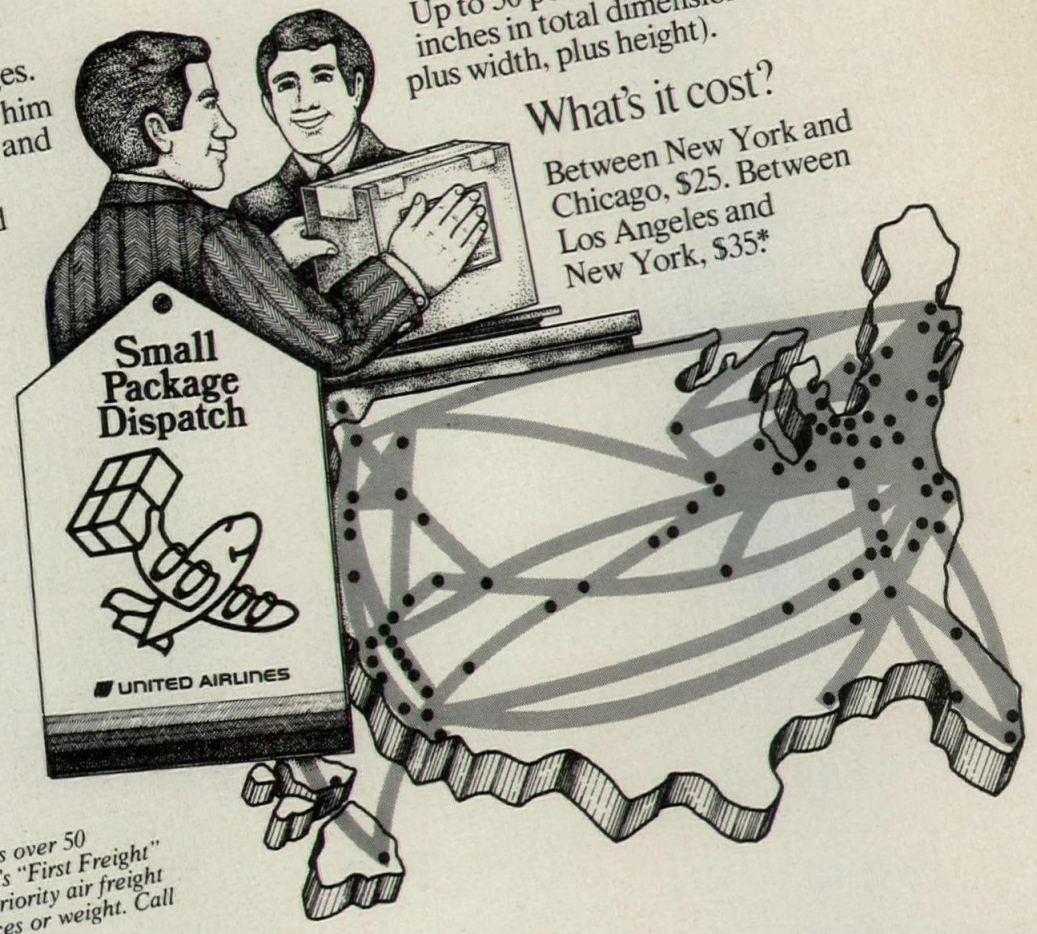
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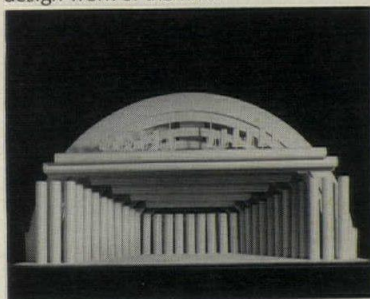
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## NEXT MONTH IN RECORD

**Building Types Study:  
Health maintenance facilities**

At the level of the regional health sciences center, the community hospital, or the neighborhood convalescent home, the places that society provides for people to stay well, or to get well, are among the most telling indicators of that society's values. This article will be an anatomy of several projects at different points in the hierarchy of health care, stressing the programmatic and social context of their architectural character.



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# MODUSPAN

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## The question of ethics: The AIA Convention takes sound action after sound debate

It was, as AIA president Lou de Moll said in his opening statement: "... the most important issue to come before the Convention in many years." The nub of the proposed ethical changes—in case there is an architect anywhere who doesn't know about it—was the removal of a prohibition on advertising; on competitions not approved by the AIA or (related, of course) providing free sketches as part of a presentation for getting new work, on paying commission agents in connection with getting work ("the way business must be done in the Middle East"), and—perhaps, most importantly—removal of the prohibition against an architect contracting for building construction—in effect, permitting an architect to become a design-build firm as long as he discloses to the clients "any financial interest, activity, or compensation arrangement which could be construed to affect adversely the interest of such client or employer."

Prior to the convention, the AIA leadership had explained the proposed changes to Grassroots across the country and felt that they had enough response to justify bringing the proposed changes to the Convention. The Board itself voted 20 to 15 to bring the matter to the Convention. "At the very least," said president-elect Jack McGinty, "this debate will focus attention on the question." Indeed it did.

What needs to be said at once is that the debate was a model of its kind. The comments of almost everyone—the proponents and the opponents—were delivered thoughtfully and (how rare these days!) in moderate tones. De Moll, as moderator, gave everyone who wanted to have his or her say that opportunity.

The case for the loyal opposition—the members of the Board who voted against bringing the ethical-standards changes to the convention—was made by Jerome M. Cooper of Atlanta, who was a member of the original Task Force on the ethical question appointed by then-president Chick Marshall. Mr. Cooper said that he was "not opposed to change—nor unmindful of the failures of the profession to meet the changing expectation of society either in the quality or the scope of the services it offers." But his criticisms of the proposed changes were clear and pointed, and the applause that greeted his comments suggested that most of the delegates agreed with him:

On permitting architects to take construction contracts, in short to become design-build

firms: Mr. Cooper argued primarily on the grounds of "professional relationship between architect and client." He pointed out that architects can now become involved in construction through professional practice as a construction manager, and as owner of a project "may bring it to fruition in any manner that is legally consistent with ownership—including building it himself." He noted that "nothing prohibits the architect from participating as part of a design-build team [as long as] he does so for a fee and his compensation is not derived from profit on labor or material provided," and argued that the new standard "would allow the architect to engage in building construction where his financial interests could be in conflict with those of his clients. Even though he discloses his conflict of interest to his client," Cooper argued, "the professional relationship will have been destroyed. To whom can the client now turn for objective advice? Let us not delude ourselves that it continue to be us."

Cooper was equally compelling on some of the other proposed changes:

On use of commission agents: "The effect of this is to establish a conduit for bribery or other inducements."

On permitting free sketches: "To accept this proposed change will give license to every state, county, and municipal government, to every school board, and even to private clients to seek sketch proposals from as many architects as they choose on their forthcoming projects.

"I am the first to admit," Cooper continued, "that the present Competition Code is inadequate; and should be liberalized to permit clients who choose to do so receive a variety of ideas before selecting an architect. But let us have guidelines for this and not rely on the law of the marketplace..."

On removing the ban against advertising by architects: "I do not think that the public perception of the architect as a professional depends on whether we do or do not prohibit advertising. I think that the architect's perception of himself as a professional is deeply involved in this issue. . . . It is a fragile thread that holds us together [as professionals]." To the argument that prohibitions currently in the standards are under fire by the Justice Department and officials of a number of states: "We need not be anything that we do not wish to

be. If we agree that change is not in the best interests of the public or our membership, we have remedies open to us. And on this issue . . . I say we should attempt to negotiate. Failing that, I say we should fight!"

Jack McGinty argued that there was only one conceptual issue involved in the changes: "Shall the profession be governed by a prescriptive set of 'don'ts,' or by a performance standard that does not address what you do, but rather how you do it?" He argued: "This is not a weakening. It is responsive to law and to rising consumer expectations."

Also speaking in favor of the changes, Jack Hartray of Chicago reasoned this way: "Is it any worse to do free sketches than to take the client golfing? . . . Free sketches, advertising, and contracting are not the issue. The issue is conflict of interest. There are many clients who see benefits to themselves when the designer is 'in on the deal.' There are clients who don't trust our motives as professionals, but who would trust our motives as businessmen. . . . Clients and contractors trust people who are willing to take a risk."

After a long day of debate, the Convention voted to return the question of Ethical Standards back to the Board for "comprehensive investigation of the issues" by a "Task Force representing the diverse views of the profession." The motion required that a proposed new Ethical Standard, and "an in-depth report containing majority and minority opinions be distributed to the membership . . . that the Chapters be requested to study the proposed Standard and report to the Task Force in a predetermined format . . . that the Task Force review the Chapter response and finalize the proposed Ethical Standards with updated majority and minority reports" . . . and resolved that "the results of that study be submitted to the 1977 Convention for its consideration."

It all is, as Lou de Moll said at the beginning, "the most important issue . . . in many years." The Convention action calling for more detailed study and full disclosure and public airing of all points of view, is clearly the right one. It seems to me, on this subject, that informed and concerned professionals can be for or against—but that there is no room for not caring. Too much—and most especially that "fragile thread" called professionalism—is at stake.

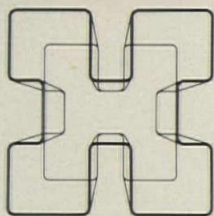
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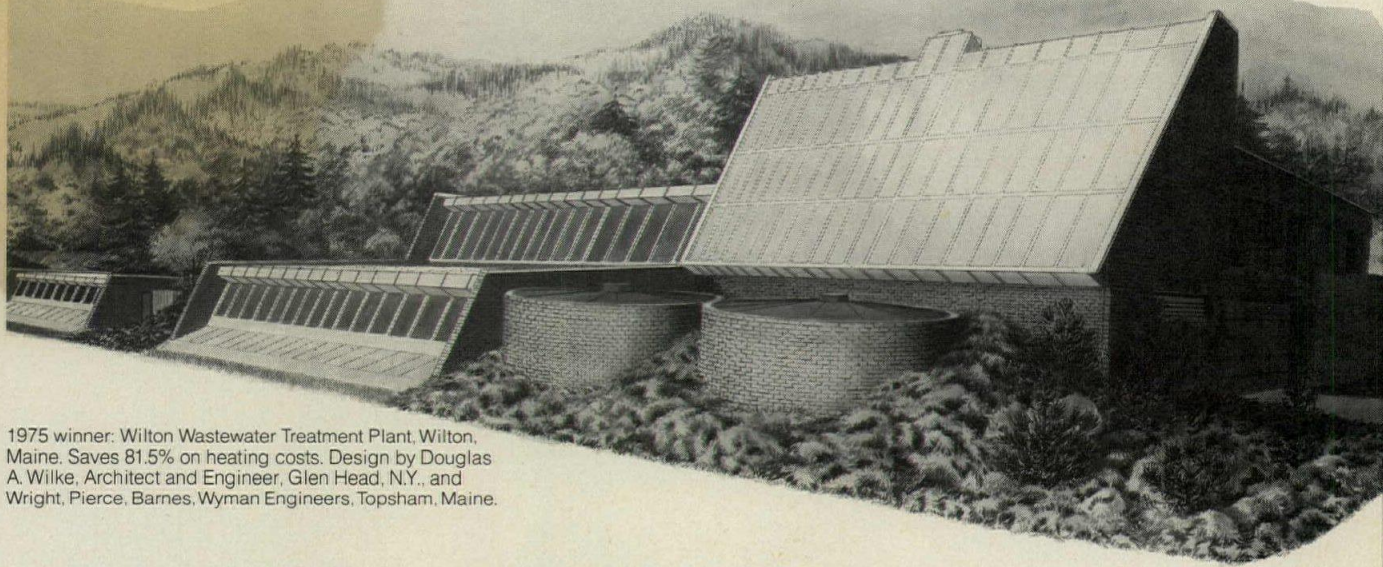
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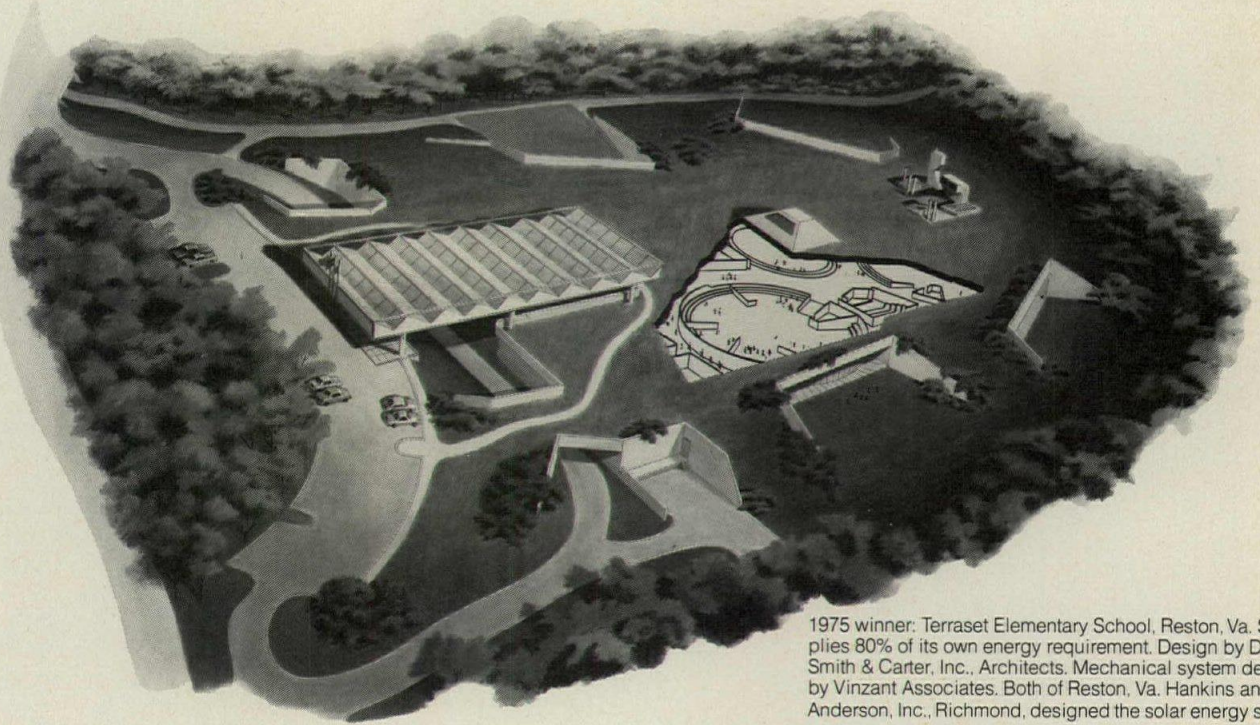
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#### Who can enter

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—

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#### 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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# Owens-Corning tells why you this unusual picture next time



**T**he 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, receilinged, 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.**

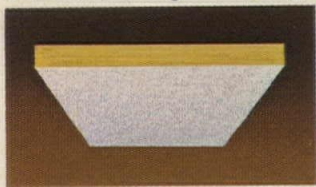
The ceiling is the single most important acoustical component in an open office. It should absorb, not reflect, sound. A perfect ceiling would have the same

\*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.



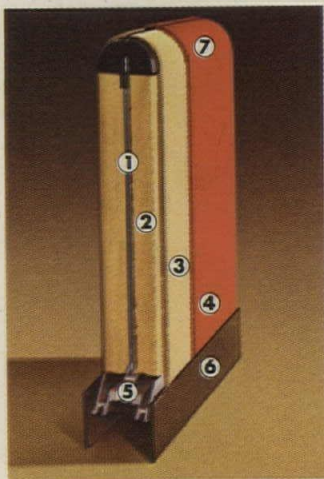
Some architects prefer the look of ceilings with *concealed* grids. Caution: As yet, *no* such ceiling provides the minimum NIC performance necessary to achieve satisfactory acoustical privacy in an open office.

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).

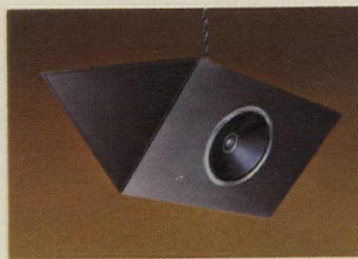
5. Extruded aluminum frame, fastened to septum—for strength and stability.

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.

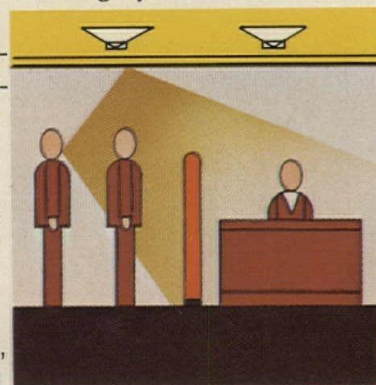
Owens-Corning's experts can recommend a background masking system that meets these requirements.

## 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.

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



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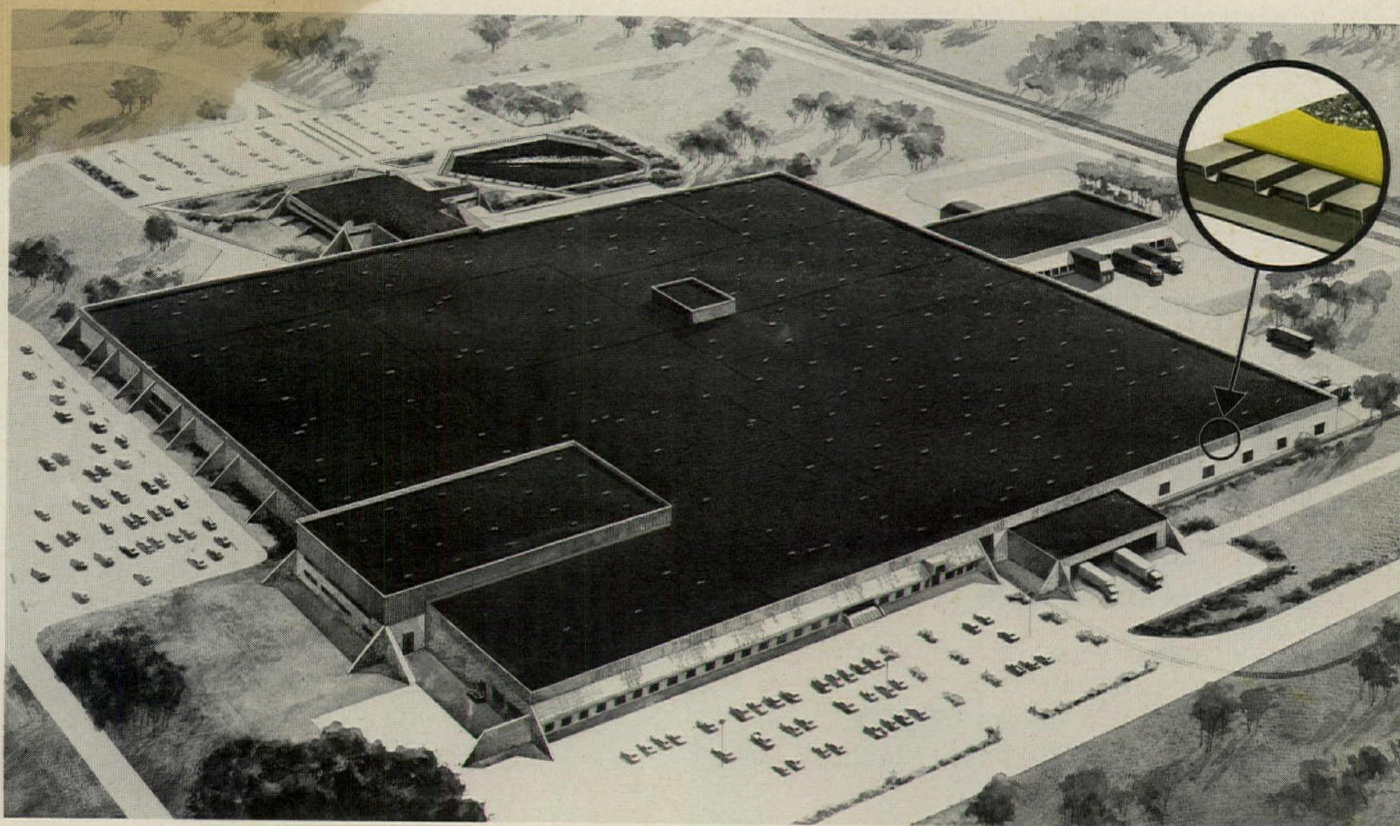
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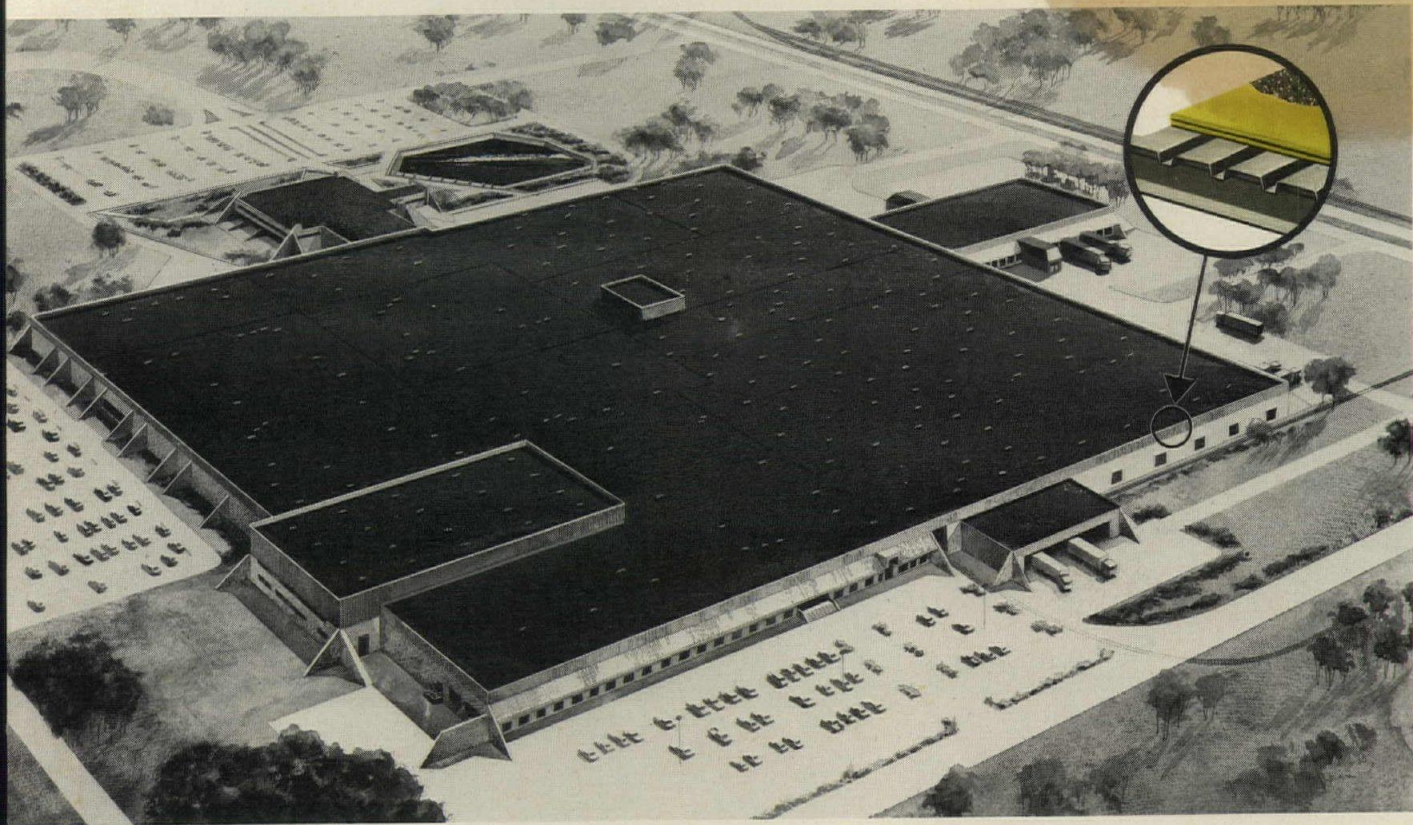
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2. It saves on construction costs. The first cost of this energy-tight warehouse is actually lower than if a less efficient version had been built! Reason: the improved thermal performance of the roof permits use of less costly heating and cooling equipment. The savings are large

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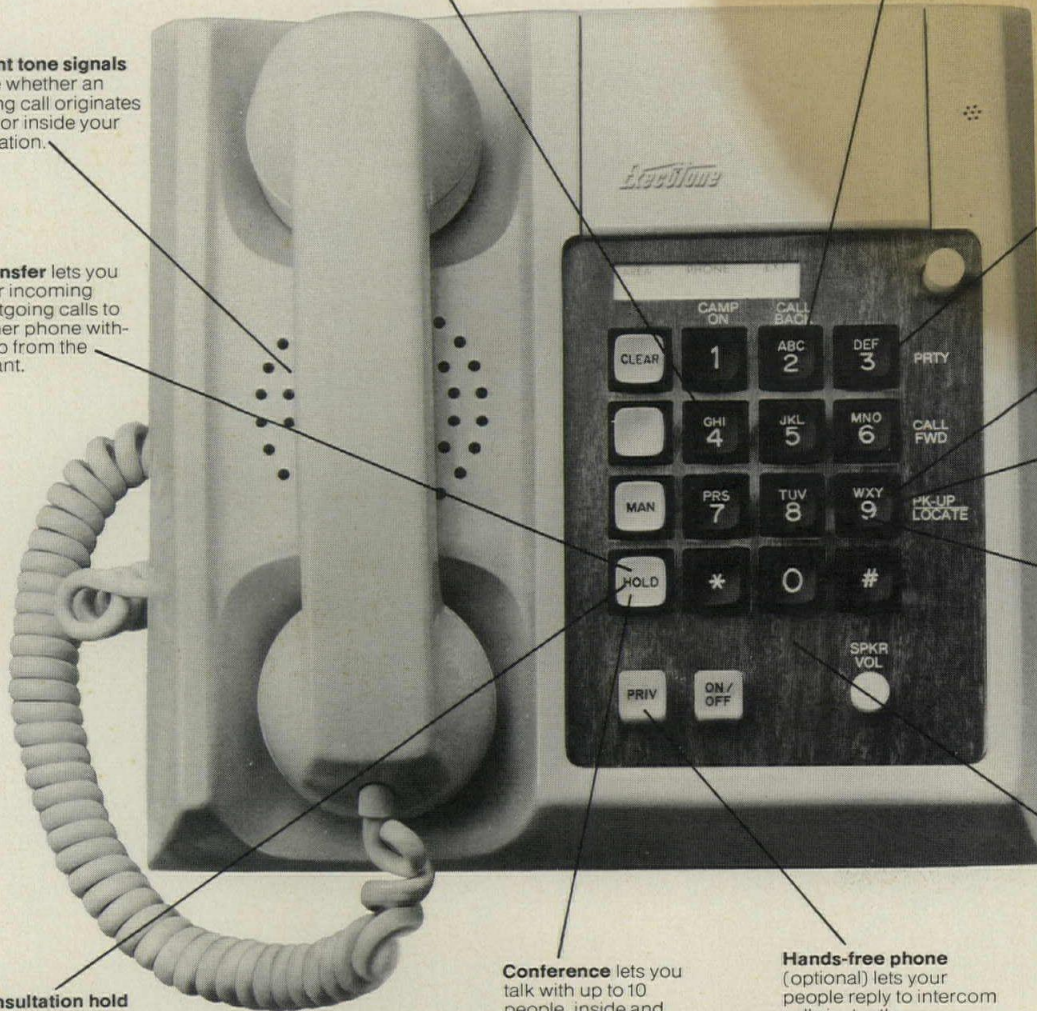
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**Introducing the Registron™ Series from Armstrong.  
Three beautifully sculptured ceilings designed to make  
the grid become part of the pattern.**



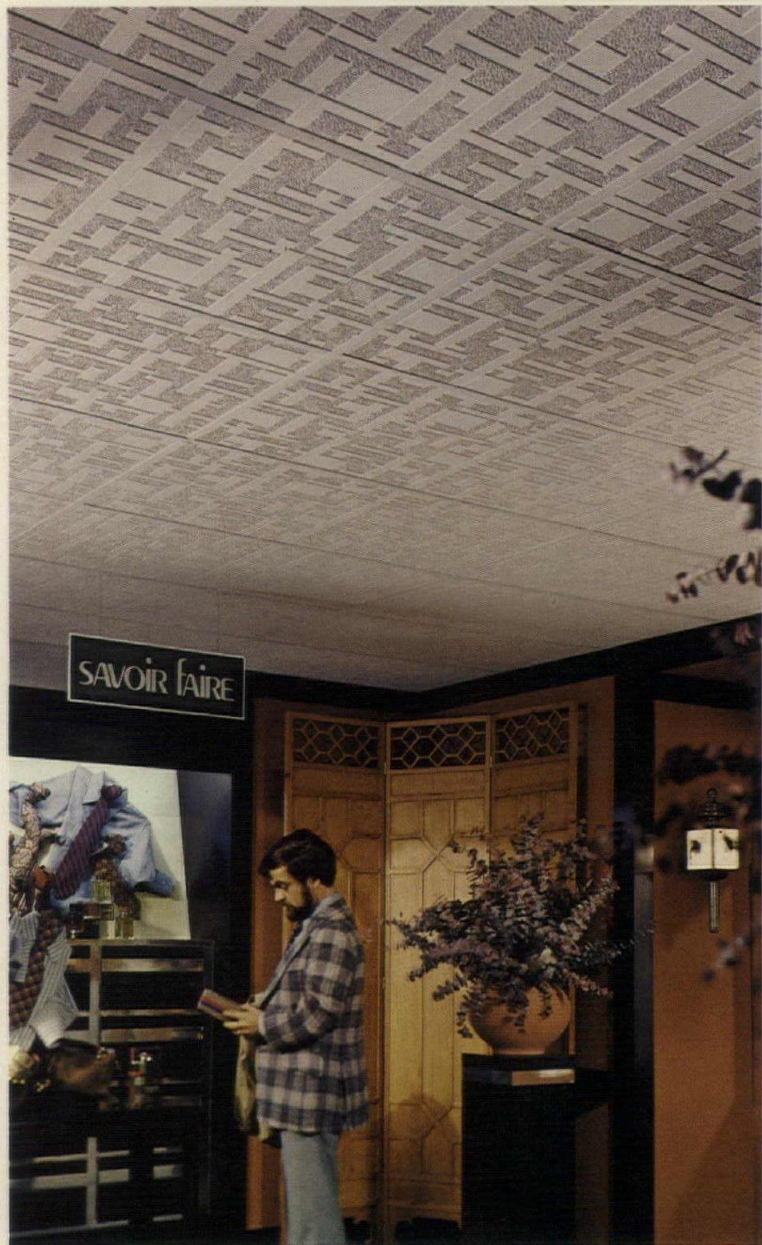
The standard lay-in ceiling has two things going for it...economy and accessibility in a suspended grid system. However, because the grid is exposed, the ceiling's design is interrupted and its aesthetic appeal diminished. Now, with the new Registron Series, Armstrong has come up with an ingenious solution.

Since there's no way to eliminate the grid, we've found a way to eliminate its visual impact. And the way we've done it is to purposely design the grid as part of the ceiling's surface pattern. So

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There are three designs available in the Registron Series, all manufactured to carefully register the embossed designs and to beautifully conceal the acoustical perforations.

**Textured Squares** employs a 12" x 12" tilelike module and features embossed radiused



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In the geometric design of **Grid Shapes**, the 2' x 4' scale of the panel has been reduced to a point where there is no recognizable module left. With its inch-wide grid shapes combined in an overall weave pattern, the result is a sweeping flow of pure design.

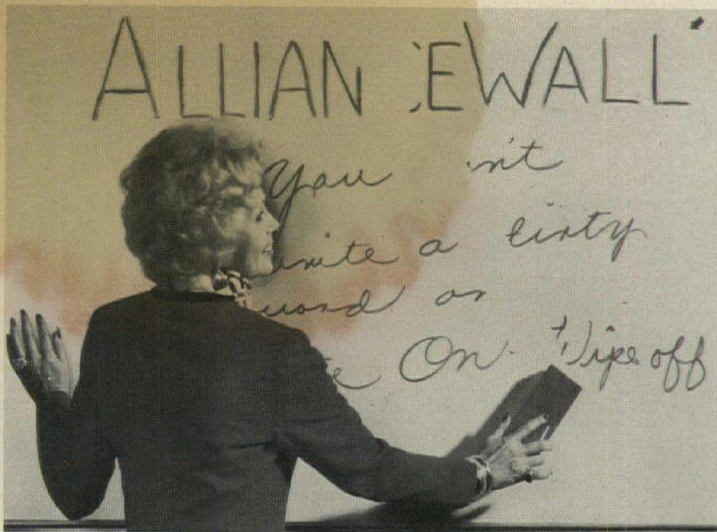


**Circles 'n Squares** features eighteen circles within smooth-surfaced squares in each 2' x 4' ceiling panel. The one-inch-wide embossed border effectively blends in the grid and disguises sprinkler heads, lighting fixtures, and speakers.

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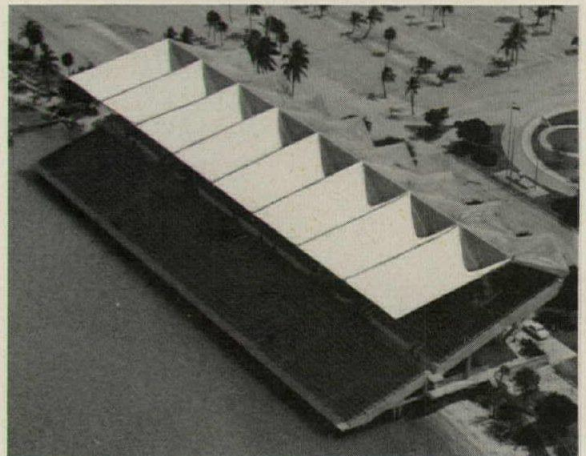
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**Alvar Aalto died in Helsinki May 11 at the age of 78.** Venerated not only as a master of modern architecture but as one of its founders, Aalto is remembered in the United States for his teaching at the Massachusetts Institute of Technology from 1946 through 1948, and for his design of MIT's Baker House dormitory. He received the Gold Medal of the American Institute of Architects in 1963.

**Members of the AIA, meeting in Philadelphia, rejected changes in ethical standards** regarding advertising and design-build. These issues were referred to a task force for special study. Details on page 34.

**Elmer Botsai, of San Francisco, has been elected first vice president and president-elect of the AIA.** Details on page 35.

**Resolutions considered by the membership at the AIA convention** included a proposal to establish an Institute Office of Legal Assistance (failed), permission for the Institute to join its components in selected liability actions (passed), and the establishment of a Preservation Re-use Assistance Team (PRAT) on a regional basis (passed). Details on page 34.

**March contracts for future construction showed a 42 per cent gain over last year's figure**, totaling \$8,907,887,000, according to the F.W. Dodge Division of McGraw-Hill Information Systems Company. More encouraging for architects is a 17 per cent March increase in nonresidential contracts, which totaled \$2,560,990,000. Says Dodge economist George A. Christie, "If, as it now appears, 1977 is to be the big year for business capital spending, then contracts for commercial and industrial facilities should be rising through the balance of 1976." March residential contracts totaled \$3,618,002,000, more than 50 per cent above the market's exceptionally low rate at this time last year.

**The Boston Building Department has withdrawn its ban on further occupancy of the John Hancock Tower** (see RECORD, May 1976, page 35). Building Commissioner Francis W. Gens says that he and a five-member study group have found no danger to occupants of the 61-story building, which has suffered some new glass breakage. At the same time, the Commissioner has recommended that Hancock commission an "independent analysis" as to the cause of glass breakage, and he has suggested that the company "devise and install a monitoring system . . . to ensure maximum safety of the glass."

**President Ford has named O. M. Mader chairman of the National Institute of Building Sciences (NIBS)** and has designated 17 other directors of the institute. Details on page 37 and page 136.

**The Department of Defense will conduct an initial demonstration of solar heating systems** in 50 military family housing units at various locations within the United States, in cooperation with the Energy Research and Development Agency and the Department of Housing and Urban Development. The team selected to plan and implement the program includes Ezra D. Ehrenkrantz and Associates, New York City, as architects; the Minges Associates, Farmington, Connecticut, as engineers; and Wormser Scientific Corporation, Stamford, Connecticut, and Donald Watson, AIA, Guilford, Connecticut, as solar consultants.

**Jean Labatut, FAIA, received the first Joint Award for Lasting Achievement in Architectural Education** from the Association of Collegiate Schools of Architecture and the American Institute of Architects. Mr. Labatut, professor emeritus at Princeton University's Graduate School of Architecture, accepted a certificate signed by former students and a citrine topaz, symbol of the search for wisdom. Professor Labatut's former students include John M. McGinty, president-elect of the AIA, and Donlyn Lyndon, president-elect of the ACSA, as well as Charles Moore, Louis Skidmore, William Turnbull, Jr., Robert Venturi, Robert S. Harris and Hugh Hardy.

**The AIA has initiated a program to develop prototype energy budgets for buildings.** The four-month project, under the direction of David Bullen, AIA, has two principal goals: to evolve a clear concept and basic framework from which energy budgets can be developed for future application, and to propose budget figures for specific building types in various locations.

**Paul D. Spreiregen, AIA, who is writing a book on design competitions, seeks competition drawings**, whether pre-empted or not, as illustration. He will also welcome photographs of completed projects. He may be reached at 2215 Observatory Place N.W., Washington, D.C. 20007, or by telephone at 202/337-2887.

**The Association of Collegiate Schools of Architecture, recruiting teachers among women and minorities**, asks interested persons to send one-page résumés of their professional and educational backgrounds to the Executive Director, ACSA, 1735 New York Avenue N.W., Washington, D.C. 20006. The association reports that a similar effort made in 1972 resulted in the placement of virtually everyone on the roster.

# The AIA, meeting in Philadelphia, talks ethics, business, Scully and pretzels

The 108th national AIA convention, held in Philadelphia May 2-5, was a most unconventional convention. Its theme was "An American City: The Architecture of Information"—and its purpose was to focus on ways the architect can get access to information that will make the built environment more habitable, more understandable and more responsive to human needs. Approximately 2,700 persons attended (1,500 persons less than attended the 1975 convention in Atlanta).

Despite name badges designed as large pretzels worn around the neck and programs of almost incomprehensible complexity, the best of the unconventional plans was to locate all events—theme and workshop sessions and social gatherings—in various places around Philadelphia, giving the visitor a first-hand experience of Philadelphia.

Most places chosen had special historical or architectural significance, and many had views of Philadelphia from unusual vantage points.

Opening ceremonies were held at Centre Square near City Hall, where an "historical fable" (written by Richard Saul Wurman, national convention chairman) entitled "What-If, Could-Be" was read. The City Lights Ball was held at the Academy House, and the Cine City film festival at the School of Fine Arts, University of Pennsylvania. R. Buckminster Fuller spoke at Holy Trinity Church, after which everyone flooded into a sunlit Rittenhouse Square for open-air festivities. A tour was held of the three most recent projects of Mitchell/Giurgola (recipients of this year's AIA Firm Award), and a plethora of meetings, events and exhibits were held in almost every noteworthy building in the city.

## The hottest issues this year: advertising and design-build

The most hotly contested issue at the 1976 AIA convention—the proposed revisions to the Institute's Standards of Ethical Practice—was, by an overwhelming majority vote, deferred to a special task force for further study and possible modifications. In a new form, it will be presented to the members at the 1977 convention in San Diego.

One of the proposed revisions would have eliminated the AIA's present ban on paid advertising by its members; another revision would have allowed architects to become involved in the construction process as design-build firms (and as holders of the prime contract), requiring only that architects disclose to their clients "any financial interest, activity, or compensation arrangement which could be construed to affect adversely the interest of the client or employer." These revisions went to the convention floor with the endorsement of the Institute's Board of Directors by a narrow 20-15 vote.

While the majority of delegates favored deferring the issues, many said they were eager to debate them, for in some states local chapters have been under great pressure by state officials to eliminate the ban on advertising.

Delegates from one of these states, Arizona, sponsored a resolution asking that the Institute support any local component chapter financially and with legal counsel if any component was attacked by its state for following the standards established by the national AIA. This resolution failed, but a hastily formed resolution did pass that simply stated the Institute should help any component chapter in any way it could if problems arose from Institute policies.

Louis de Moll, president of the AIA, said that "the 'ethics' question is possibly the most important issue we have ever faced" during the 119-year history of the Institute. While most in attendance were in favor of continuing the advertising ban, many were particularly outspoken. Nathaniel Owings, of Skidmore, Owings & Merrill, said, in his address to the College of Fellows, "When most of the normal professional guideline approaches to the client are shifting, disorientation is the name of the game. One startling evidence of disorientation . . . comes in the idea of a new set of 'ethical standards.' Are ethics adjustable? I thought ethics were immutable!" Others felt the need to advertise would work a financial hardship on small firms. (Institute statistics show that the majority of members practice in firms of fewer than 10 persons.)

Members in favor of lifting prohibitions generally said that removal of the ban would not constitute a requirement that all firms buy advertising space and they doubted the practice would become widespread even if it were not forbidden by the present code.

The "design-build" issue, allowing the architect to engage in building contracting or any other activity where his financial interests could be in conflict with those of his client, was also discussed, with Jerome M. Cooper eloquently summing up one faction of the profession. He spoke against the measure, arguing that the professional relationship between architect and client will be destroyed. "To whom can the client turn for objective advice? Let us not delude ourselves into thinking that it will continue to be the architect. For through adoption of the change, we will have cast ourselves as adversaries with our clients. To me one of the most

cherished essences of this profession is the relationship between the architect and his client . . . This trade-off of professionalism for additional business opportunities is a bad trade . . ."

Arguments in favor of adopting this change center around contentions that the Institute is "protectionist" in its attitudes, and that architects are already involved in potential conflicts of interest with their clients. Others argue that "only a small part of the built environment is designed by architects," and this will offer the architect "a greater piece of the action."

Another issue close to the hearts of architects is the free sketch. This revision of the Standards of Ethical Practice would allow the architect to give free sketches to the client. Certain members said this would give license to clients and that small firms cannot compete. Therefore, it would create unfair competition. Others felt that this is a necessary part of conducting business. One individual said that "It's either doing free sketches or playing golf with the client. It's all time consuming." (For more on the ethics question, see editorial, page 13.)

## The members also discussed lawsuits, preservation, dues

In addition to the "ethics" issue, there were a large number of other resolutions voted on during the business session, May 3. Some of the results:

- A resolution failed that would have established an Institute Office of Legal Assistance, which would have been available for consultation by individual firms.
- A resolution passed that allows for the Institute to join with component chapters to deal with selected liability complaints, including third-party liability actions.



Richard Saul Wurman, convention chairman, spoke at the opening ceremonies held in Centre Square.



One of the grand events was held in Rittenhouse Square during an interlude between R. Buckminster Fuller's

talk and presentation of the AIA awards. Called "Celebration Squared," the celebration gave people who came

to the convention a chance to talk and enjoy the fine weather and outdoor festivities.

- A resolution passed that directs the Institute to study its planning, funding and approval mechanisms to increase its productivity and timeliness.
- A resolution passed that asked the AIA to call upon architectural products manufacturers and their agencies which disseminate product information to raise their level of excellence and preclude the "unnecessary and exploitive practice of using nude and scantily clad models" in advertisements, product literature and information.
- A resolution failed that would have eliminated the provision for private limited design competitions from the Code for Architectural Design Competitions.
- A resolution passed that requires the Institute to establish a Preservation Re-use Assistance Team (PRAT) program on a regional basis, an extension of the existing R/UDAT program.
- A resolution passed which directs the AIA to implement a study to determine how the Institute can communicate more effectively with the public, especially regarding the profession's skills and principles.
- A resolution passed by which the Institute's "Memo" newsletter would include a special column for component chapter news.
- A resolution passed that places a 10 per cent ceiling on increase of supplementary dues in any calendar year; with that limit these dues remain correlated to the consumer price index.
- An omnibus resolution on minority affairs passed, continuing the minority/disadvantaged scholarship program, and reaffirming minority involvement in the profession.

### Elmer Botsai chosen president-elect of AIA

Elmer Botsai of San Francisco was elected to the office of first vice president and president-elect of the Institute, taking office as president in December 1977. John M. McGinty,

Houston, will succeed Louis de Moll as president in December 1976.

Three vice presidents were also elected: Herbert Epstein, Brooklyn Heights, New York; Ehrman B. Mitchell, Jr., Philadelphia; and Robert L. Wilson, Stamford, Connecticut.

Robert M. Lawrence, Oklahoma City, was elected to a two-year term as secretary; Charles E. Schwing, Baton Rouge, Louisiana, continues as treasurer.

Mr. Botsai is a partner in the West Coast firm of Botsai, Overstreet and Rosenberg. Currently serving his second term as AIA vice president, he formerly held the office of treasurer, and has been extensively involved in local and national AIA activities.

### Scully declines medal, protesting fellowship election

Vincent J. Scully, Jr. rejected two AIA awards that were to be presented at the Philadelphia convention.

Mr. Scully was to receive an AIA Medal for his accomplishments as an architectural historian, and an honorary membership in recognition of his distinguished contributions to the architectural profession.

Upon hearing, however, that Robert Venturi did not receive a Fellowship (proposed by the Philadelphia chapter), he wrote a letter to AIA president Louis de Moll, explaining, "You will understand, I know, that as an historian of American architecture I cannot in good conscience accept an award, however welcome, in the same year that the most important architect of my generation is denied a fellowship."

Mr. Scully was described by the 1976 Jury on Institute Honors as a "stimulating lecturer to several generations of architectural students" who has "identified many of the previously unrecognized general achievements of American architecture." By bringing them to the attention of the profession and the public, "he has saved particu-

lar examples from destruction and enabled their ideals to enter the mainstream of contemporary architecture, thereby guaranteeing the survival of much that is good in our native tradition." He has been a member of the Yale faculty since 1947 and has written a dozen books—two of which received national awards—on a wide range of topics.

### Bucky Fuller delivers an inspirational address

In a special session entitled "Lucky to Have Bucky," R. Buckminster Fuller opened the final day of activities with a message of hope for mankind, appropriately given in Holy Trinity Church. He spoke of his vision of the earth's future by describing a democratic world free of national allegiances, where war and politics, hunger and poverty are obsolete. "We have an option on whether we make it," he said. "It's really how we act in our own world . . . how you and I act personally." Other notable quotes from one of America's notable quote-makers: "There is enough to go around—therefore politics is obsolete and war is obsolete" . . . and "Are you willing to commit yourself to everybody? I'm quite sure it will be everybody or nobody."

### Architects' involvement urged in shaping American cities

In a Monday session titled "We Get What We Deserve—Why Can't We Get What We Want?" architect-urban planner Richard Weinstein traced the differing development of modern architectural practices in Europe and America. He pointed to the relative "isolation" of American architects from the business decisions that determine the quality of urban development and "the consequential lack of impact that the profession has had on the formation of urban America."

About remedies Mr. Weinstein was less sure than about his diagnosis, but he advocated both the Portman approach—that is, the architect as entrepreneur, though perhaps on a smaller than Portmanesque scale—and the greater involvement of architects with builders and/or with urban government. These prescriptions do, of course, raise many of the ethical and conflict-of-interest questions that were discussed at the next day's business session.

### Architectural employment dropped 20 per cent last year

"Employment in U.S. architectural firms is down some 20 per cent compared to 1974 figures," said Louis de Moll, president of the AIA, at the opening of the convention's business meeting. The June 1974 figures showed that employment of AIA members was down 10 per cent from the previous year. An updated survey will be distributed in June. A quarterly employment survey of AIA members has been taken since December 1973.

"We're not over the hump yet," Mr. de Moll continued, and, while there are signs of a general business recovery, the construction industry—and, by the same token, the architectural profession—is not likely to benefit economically from its benefits for some time to come.

Mr. de Moll believes that the recession has tended to accelerate trends that had already become apparent in the profession, including more acquisitions and mergers involving architectural firms, and more design work being done by large multi-disciplinary firms.

These figures parallel a potential loss in dues from decreasing Institute membership during hard times, but Mr. de Moll feels "the AIA is stronger than ever." Nonetheless, he feels, the AIA should increase non-dues income, perhaps by marketing and developing selected programs.



A mime show was part of the festivities held in Rittenhouse Square in downtown Philadelphia, along with

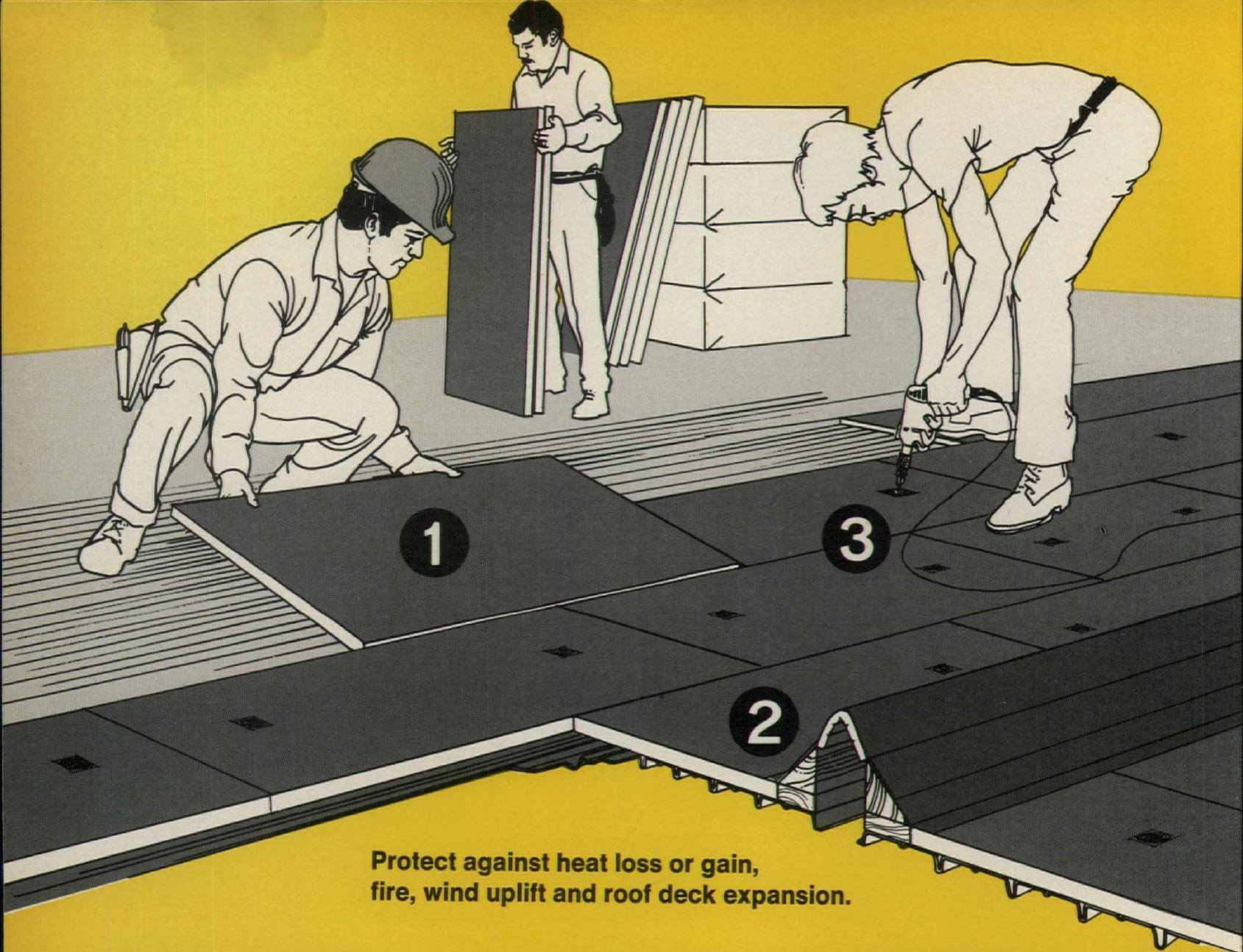
chamber music, bagpipe-and-drum band, a flight of balloons and a surprise breakfast treat.



Two notable speakers at the convention were R. Buckminster Fuller (left) and Nathaniel Owings (right).



R. Buckminster Fuller danced a jig to the Mummies band during festivities in Rittenhouse Square.



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## President Ford nominates 18 to NIBS board

After a delay of 20 months—a delay never officially explained—President Ford has finally nominated 18 members to the board of directors of the National Institute of Building Sciences (NIBS). Congress created NIBS to test new building technology, particularly in performance terms, and to speed its adoption through a certification process. The institute is expected to take a leading role in formulating performance standards for energy conservation codes.

The board proposed by Mr. Ford, which is subject to Senate confirmation, is equally divided between nominees representing public and private interests. Under the terms of the legislation creating NIBS, architects and engineers are public interest representatives.

Quick Senate approval appears likely. If so, NIBS is expected to be in full operation by the end of the year.

The President designated O. M. Mader, vice president for marketing of the Aluminum Co. of America, as Chairman of the Board. Members who will serve one-year terms include: Robert J. Brungraber, Professor of Civil Engineering, Bucknell University, and Research Engineer, National Bureau of Standards; Lew J. Cantor, Commissioner of Buildings, Richmond, Virginia; Jodie R. Johnson, President, Johnson Homes, Inc., Gulfport, Mississippi; Joseph H. Newman, Senior Vice President, Tishman Research Corporation, and First Vice President, Tishman Realty and Construction Company,

Inc., New York City; Charles H. Pillard, President, International Brotherhood of Electrical Workers; and Robert F. Schmitt, President, Bob Schmitt Homes, Strongsville, Ohio.

Members who will serve for two years include: William F. Floyd III, Construction Manager, Atlanta Region, Builders Investment Group; Jasper S. Hawkins, principal, Hawkins and Lindsay, Los Angeles; Warner Howe, owner, Gardner and Howe Structural Engineers, Memphis; Charlene Sizemore, President, Women's Club of Huntington, West Virginia, and member, Consumer Advisory Council of Underwriters Laboratories, Inc., Chicago; S. Peter Volpe, President and Treasurer, Volpe Construction Co., Inc., Malden, Massachusetts; and Jeremiah T. Walsh, Commissioner, Department of Buildings, Housing and Development Administration, New York City.

Those who will serve for three years include: Robert A. Georgine, President, Building and Construction Trades Department, AFL-CIO; David S. Miller, President, David S. Miller and Associates, Inc., Cleveland; Glen R. Swenson, Director, Utah State Building Board, and President, National Council of States on Building Codes and Standards, Salt Lake City; and Herbert H. Swinburne, consultant, Architecture, Planning and Building Research, Philadelphia. (For a background story on NIBS, see page 136.)—*William Hickman, World News, Washington.*

## OSHA policy would extend scope of employer responsibility

The Occupational Safety and Health Administration (OSHA) is proposing a policy change that could, under certain circumstances, make architects and engineers targets for citation for job safety violations at multi-employer work sites.

Heretofore, OSHA has held each construction employer, at a site where several are working, responsible for protecting his own workers from exposure to hazardous conditions, regardless of whether he created the hazard or had authority to order it corrected. In essence, OSHA put the burden of ensuring job safety on the immediate employer. Where the hazard was not one of his own making, the employer was to insist that those responsible remove the hazard, or, if the hazard were not removed, to order his workers to avoid it.

Now, however, OSHA proposes

to broaden the spectrum of those it might cite for safety violations at multi-employer projects. Under the new policy, it intends to continue holding the immediate employer responsible under certain circumstances, but in some instances would cite those responsible for creating the hazard, and in other cases would cite those having authority to order the hazard corrected.

OSHA defines those having "the ability to abate a hazardous condition" who might be subject to citation under the new policy as "the general contractor, construction manager, architect, engineering firm, or owner who has safety responsibility for the work site, as well as subcontractors who have safety responsibility over specific operational aspects of a work site."—*Herbert Cheshire, World News, Washington.*

to be distributed to all accepted candidates by their registration boards, and which will be included in the *NCARB Architectural Registration Handbook*, available in midsummer from Architectural Record Books, 1221 Avenue of the Americas, 41st floor, New York, New York 10020, at \$20 a copy.



## Mexico workers' housing fund attacks a giant problem

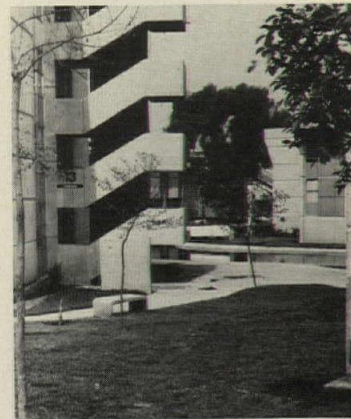
In an effort to cope with an acute housing shortage—currently estimated at 4.5 million units, and still growing—the Mexican government in 1972 established INFONAVIT, an acronym for the government's workers' housing fund. Funded by a 5 per cent tax on the payrolls of some 250,000 companies, INFONAVIT has a constituency of about 4 million workers, who are automatically enrolled as members of the program.

The agency has budgeted more than half a billion dollars for 1976 to construct 64,000 housing units for low-income families. By the end of this year, the program will have spent \$1.6 billion to build 120,000 houses and apartments in 114 Mexican cities and towns.

In the provinces, where land and materials are relatively cheap, INFONAVIT has made great strides and has been rapidly accepted. Workers eligible for INFONAVIT houses must be chosen by lottery.

Provincial projects use the services of local architects and thus avoid national standardization. For example, INFONAVIT houses in Monterrey in northern Mexico, where people are likely to spend time indoors to escape climatic extremes of hot and cold, have relatively large living rooms. On the other hand, in tropical Merida on the Yucatan Peninsula, INFONAVIT projects adapt to local custom, sacrificing living room for outdoor porches. These policies have made it difficult for INFONAVIT to cut costs through volume buying of materials, but at least the projects have been well received.

INFONAVIT's real problems come with housing in Mexico City, a metropolitan area whose 12-14 million population grows by more than a million a year. There are constraints on design and construction—units are budgeted at \$12,000 each, and government policy, dictated by high unemployment, calls for labor-intensive building methods rather than prefabricated components. Land is too expensive to use for single-family housing, but at the same time city dwellers tend to resist massive housing developments, suspecting that crime rates will go up and community spirit will go down.



Timothy Berry photos

The program's first project—at Iztacalco, near Mexico City (above)—was meant to be a showpiece. To avoid uniformity, building heights are varied; the project includes five-story apartments, duplexes, and single-family houses. All windows command a view of green grass. The buildings surround an artificial lake, and canals wander through the project.

Units at Iztacalco were offered for sale to salaried workers for nothing down and less than \$100 monthly. Nonetheless, months after it opened it was still only two-thirds full. Furthermore, construction went well over budget.

The reaction to Iztacalco was projects like El Rosario on the other side of Mexico City, where 17,000 apartments are contained in more or less identical rectangular buildings, their windows facing each other and their views dominated by other buildings and expanses of concrete pavement. The project does offer some amenities—an artificial lake and a few duplex units—but by and large it is the kind of project that draws critical predictions that it will turn into a social jungle.

INFONAVIT uses the services of many firms in the design of separate projects—at El Rosario, for example, 15 or 20 private companies took part, including several construction firms and several architectural firms. Designs must be based on a detailed set of norms and specifications developed by INFONAVIT.

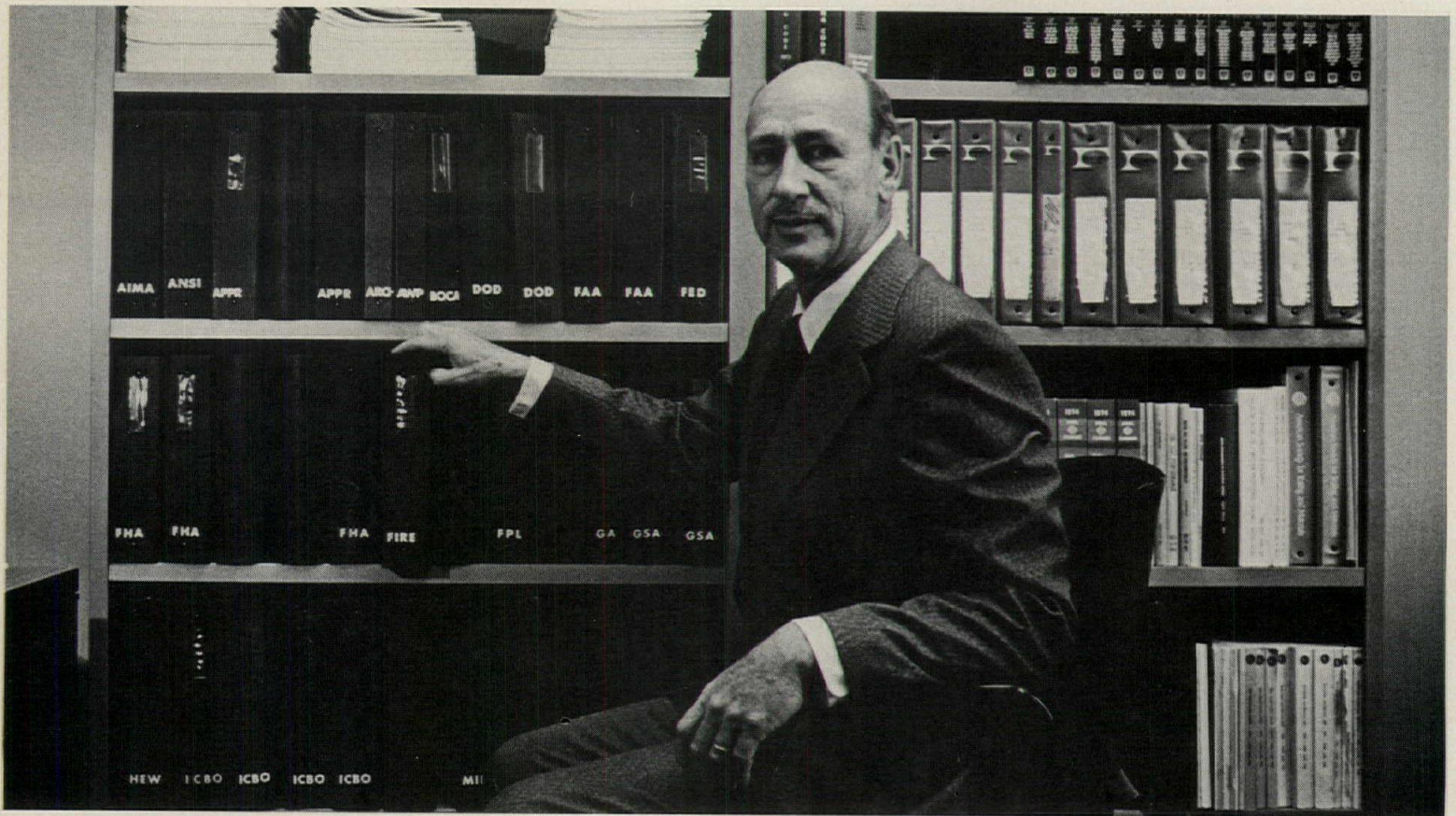
From Iztacalco to El Rosario, INFONAVIT is learning, but the process is slow and the problems difficult.—*Timothy Berry, World News, Mexico City.*

## Correction

The subject of the 1976 NCARB registration examination will not be a correctional institution, as reported in RECORD's April 1976 News in Brief section. Rather it will be a special facility within a correctional institution, the exact description of which will be contained in the "mission statement"

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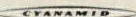
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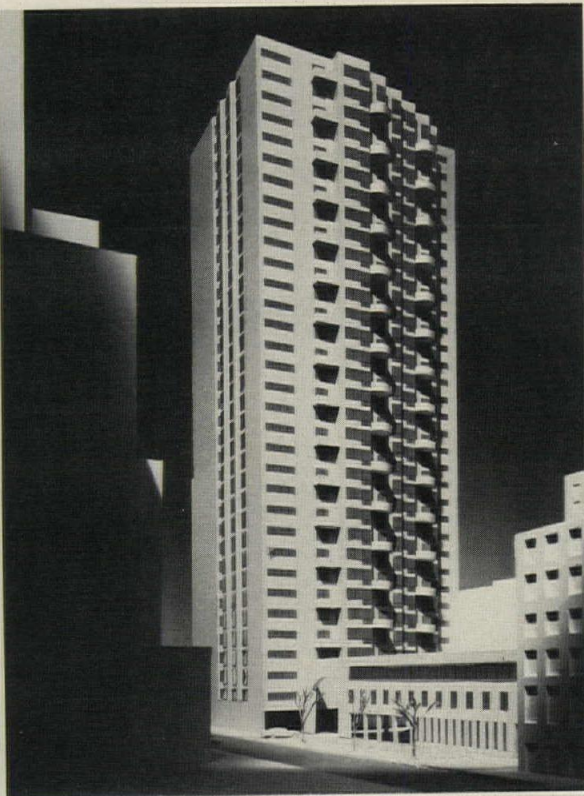
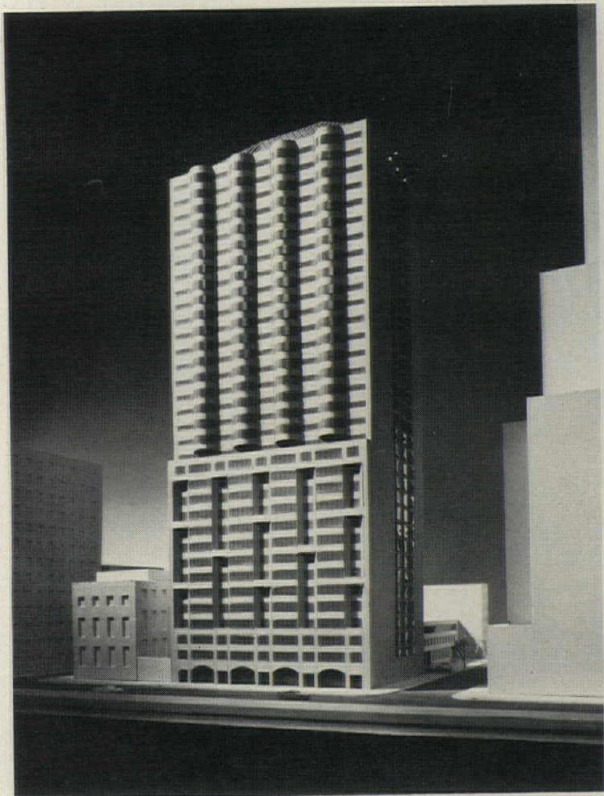
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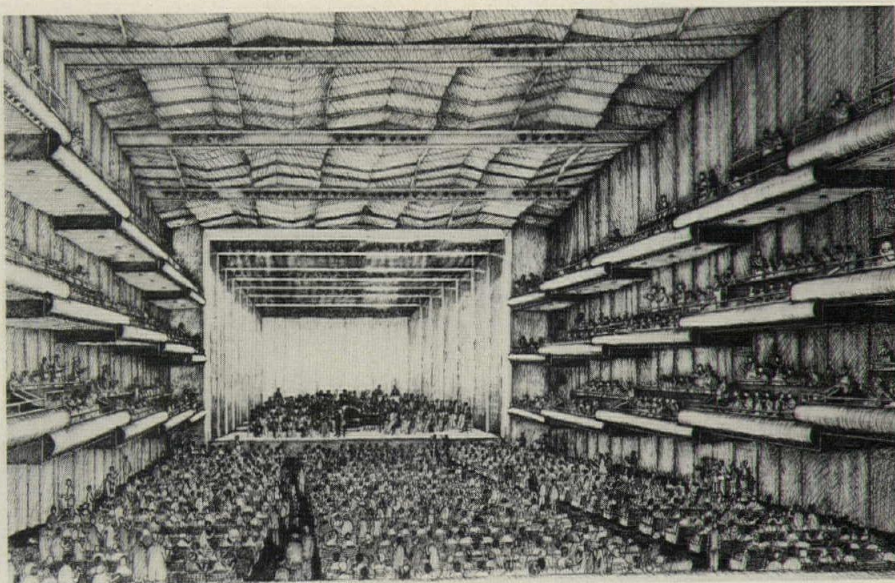
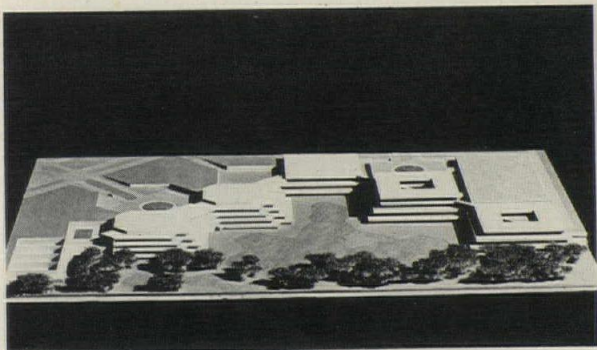


**Franzen high-rise slated for Fifth Avenue**

A 33-story luxury apartment and community center are proposed for a highly conspicuous and exceptionally valuable site on Manhattan's Fifth Avenue facing lower Central Park. The plot is presently occupied by the boarded-up Dodge mansion and grounds. Ulrich Franzen & Partners, as consulting architects, designed the new building to fill the site out to the lot line in order to extend the existing "wall" of apartment facades on Fifth Avenue. The formal west facade, facing the park, will have terraces and bay windows; on the east facade, facing a neighborhood of townhouses and smaller apartments, staggered ranks of balconies will suggest a more residential scale. Along 61st Street, a three-story community center will be set back on a small plaza. Michael Schimenti, AIA, is the architect for interior planning.

**Braniff plans headquarters at Dallas-Fort Worth**

Braniff International Corp. backs to the airfield and their plans a new headquarters complex at Dallas-Fort Worth airport, near which its administrative and training facilities presently scatter over a 21-mile area. Designed by Welton Becket Associates, the buildings are sited on a slope with their chief orientation to a wooded lake. Buildings will accommodate offices and computers as well as training facilities and guest rooms and recreation facilities for layover crews. Scheduled completion of the project is early 1978.



**Acoustical renovations underway for New York Philharmonic's auditorium**

Acoustic problems have plagued Avery Fisher Hall, home of the New York Philharmonic, since its opening at Lincoln Center 14 years ago. In the intervening years, numerous efforts—and a lot of money—have been expended to solve such problems as inadequate bass response, uneven sound distribution, and the inability of

musicians to hear each other. This summer the hall will be gutted and its interior shape and surfaces radically altered. Renovations, under the direction of acoustical consultant Cyril M. Harris and architects Johnson/Burgee, require that the hall, presently an elongated semi-ellipse focused on the stage, take a more conventional rec-

tangular form. The off-white wood walls and off-white plaster ceiling will have irregular profiles. A gold proscenium will surround the orchestra platform, and shallow gold-colored boxes will replace curving balconies on the side walls. The renovations, funded largely by a gift from Avery Fisher, will cost an estimated \$5 million.

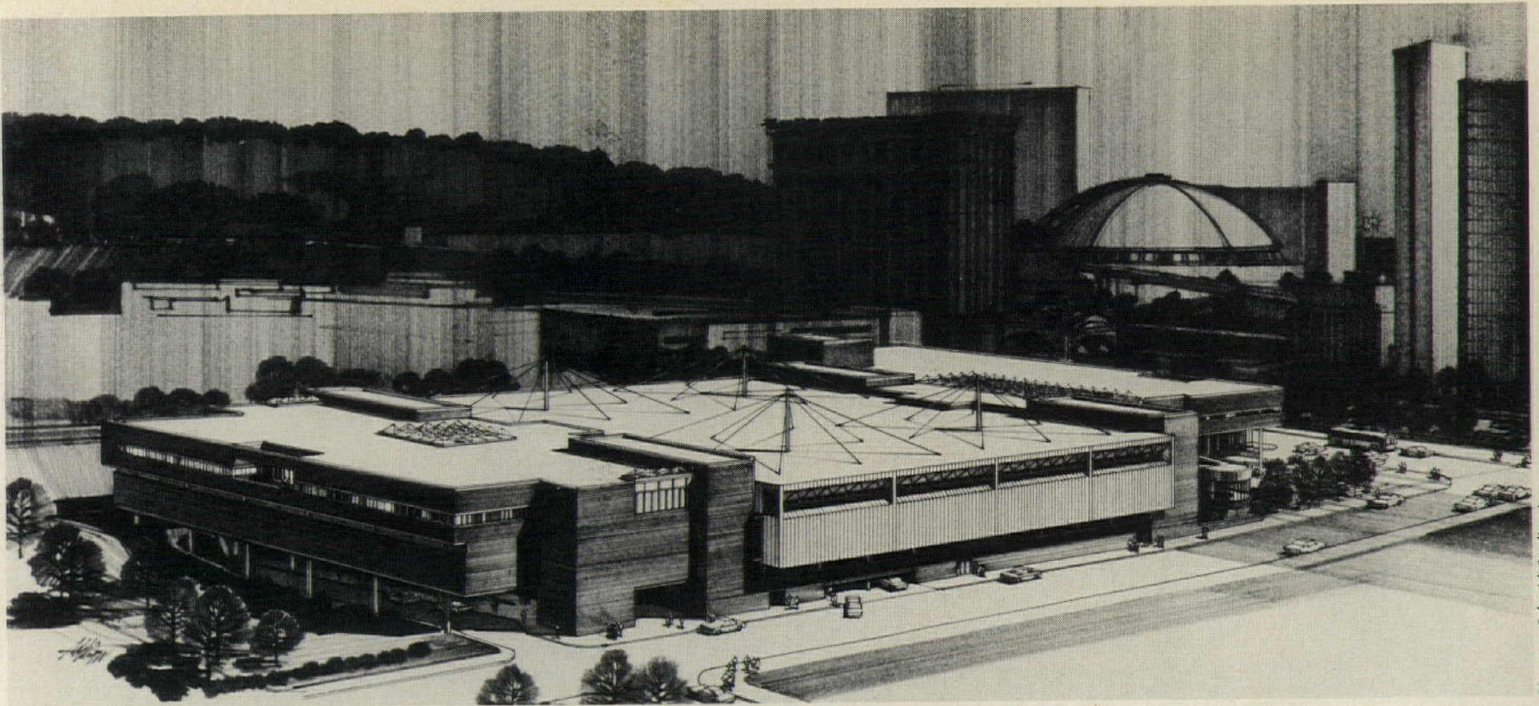
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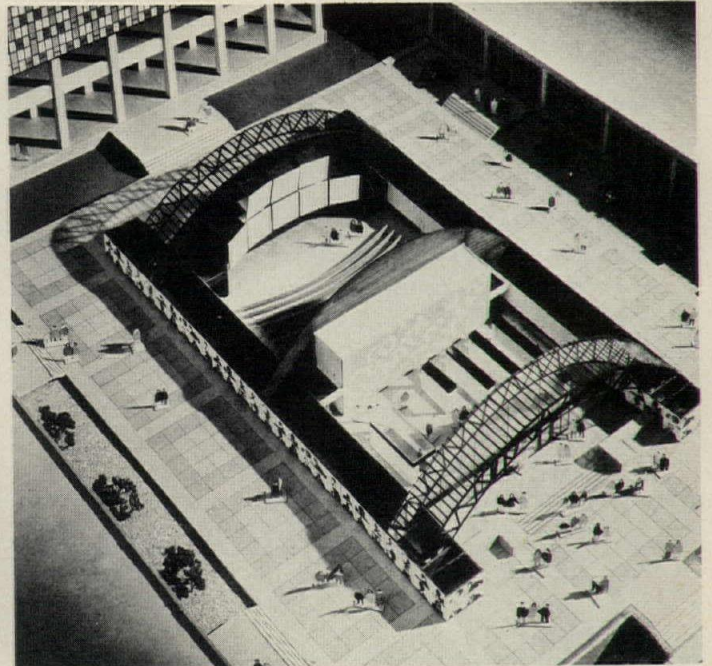
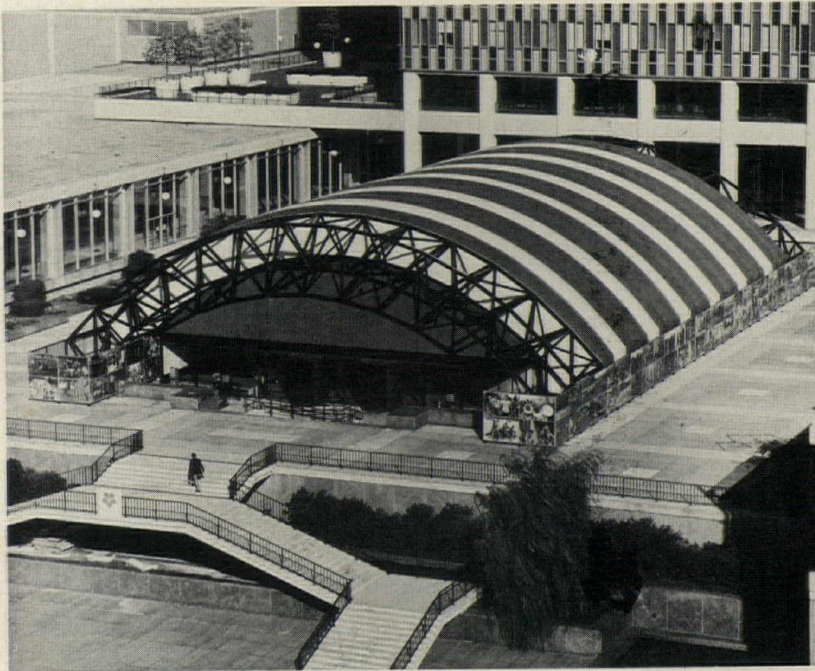
Newman-Schmidt Studios, Inc.

### Convention-exposition center planned for Pittsburgh's Golden Triangle

For Pittsburgh's new convention center, Celli-Flynn and Associates have designed a 100,000-sq-ft steel space truss suspended by steel cables from four steel masts—"a glamorous steel structure for a steel town."

The space truss will roof the center's major convention-exposition space, which will be flanked by concrete wings housing meeting rooms and ancillary facilities. The building, sited in the northeast

corner of the Golden Triangle near the Allegheny River and within walking distance of downtown offices and hotels, is scheduled for completion in early 1979. Estimated cost of the project is \$25.6 million.



### Air-pressurized roof overarches Prudential's Bicentennial pavilion

A red-white-and-blue striped air-pressurized pavilion will occupy the South Plaza at Boston's Prudential Center throughout the Bicentennial year. Designed by Cambridge Seven Associates, Inc., the pavilion houses exhibits, a visitors' information center, a graphic mural of local colloquialisms—e.g., *Brahmin*, *frappe* (milk shake), *peat from the same bog* (best friends)—

and a 300-seat multimedia theater. The structure, engineered by Weidlinger Associates, has a 162-ft-long vinyl-coated fiber glass air-pressurized roof supported at either end by 8-ft-deep double steel arch trusses. Because the city's building code prohibits air-supported buildings, the structure was designed to bear the weight of the deflated roof—3,000 lb for the fab-

ric, plus 20 psf snow load. A segmented arch across the middle of the pavilion provides support only in case of deflation. Longitudinal steel cables support the deflated roof, and lateral cables restrain the fabric against internal air pressure. The exterior wall protects the roof anchorages. The building was commissioned by the Prudential Insurance Company.



# THE ROOF. PART ONE

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fiberboard	2-1/2 in.
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In addition, urethane is three to six times lighter in weight than the other materials.

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**Q. I design buildings in various parts of the country in many different climates. My standard design calls for a steel deck with rigid insulation. What roofing system can I specify as a standard that will perform in all weather conditions?**

A. There is a system that has been the mainstay of the industry for many years and has successfully waterproofed millions of squares of roofing in every area of the country. It is our Series 300 roofing system. It utilizes a Vaporbar® coated base sheet and three plies of perforated asphalt felt, applied with hot asphalt. Result: a total of four

waterproofing layers of hot asphalt gives the building maximum protection from the elements, while the four plies of felt material give the system maximum strength for resisting external stresses and forces that so often damage roofs. It must be recognized, however, that numerous two-ply coated felt systems have also performed well. To give you additional reassurance, Celotex offers a Roofing Bond or Inspection and Service Contract on the completed roof when applied according to Celotex published specifications.

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3. There is a difference in elevation of adjoining decks.
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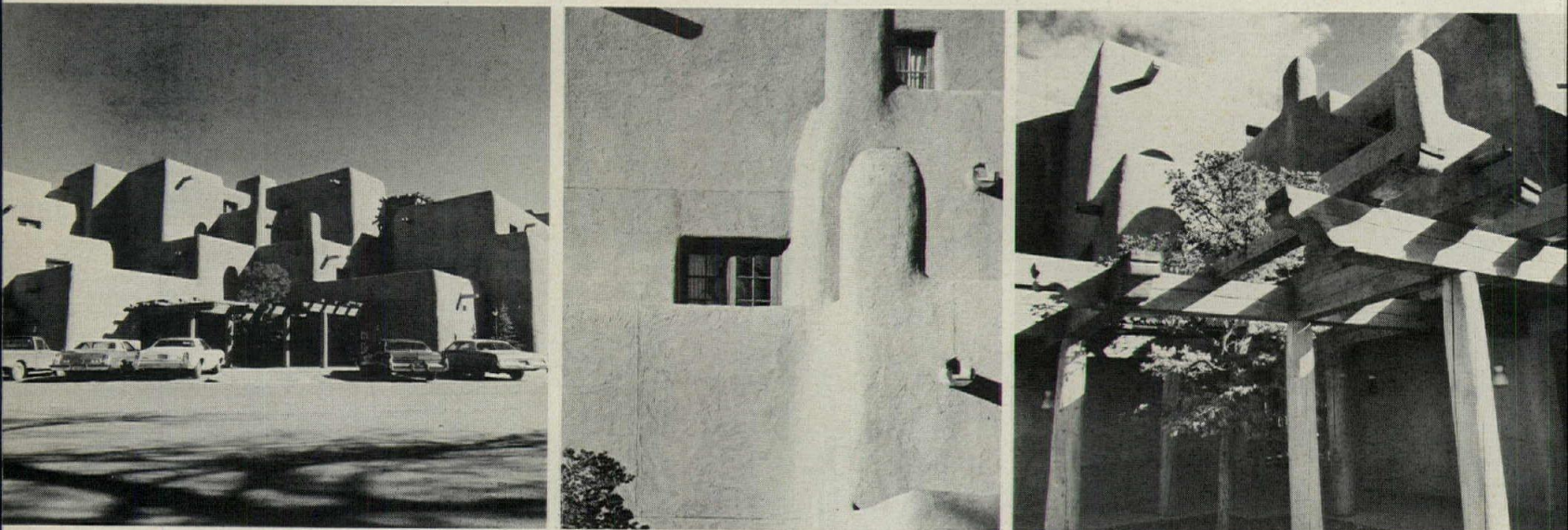
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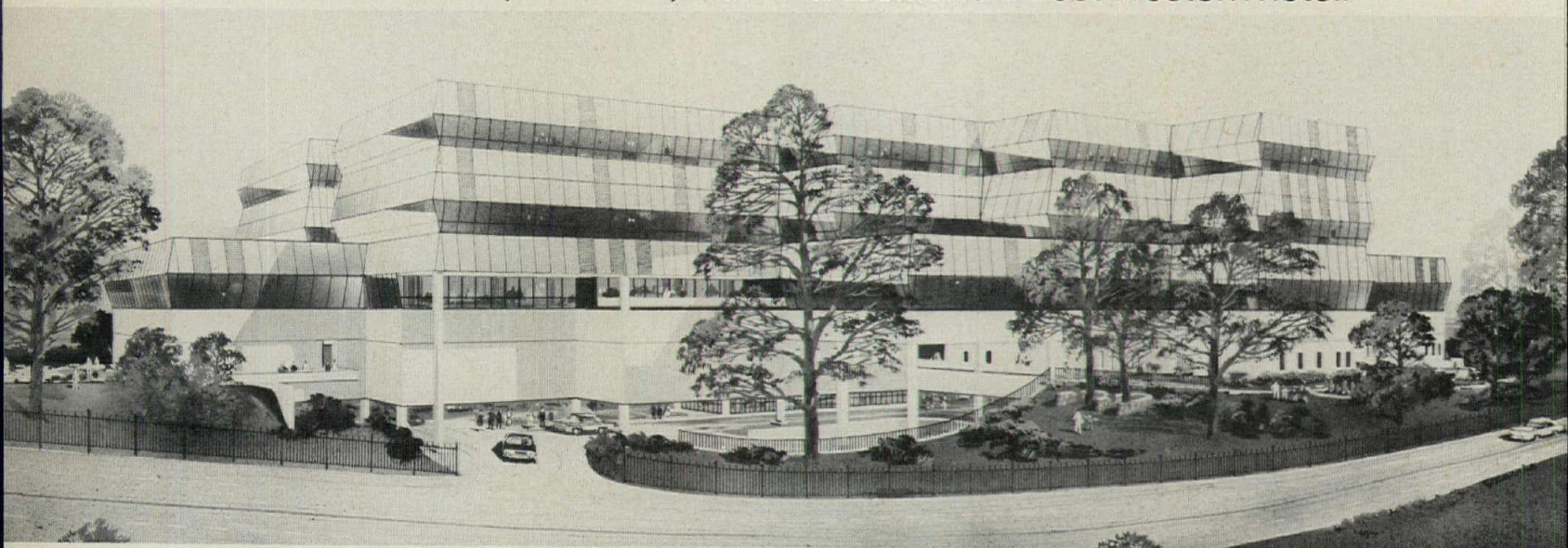
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# **FORMS + SURFACES**

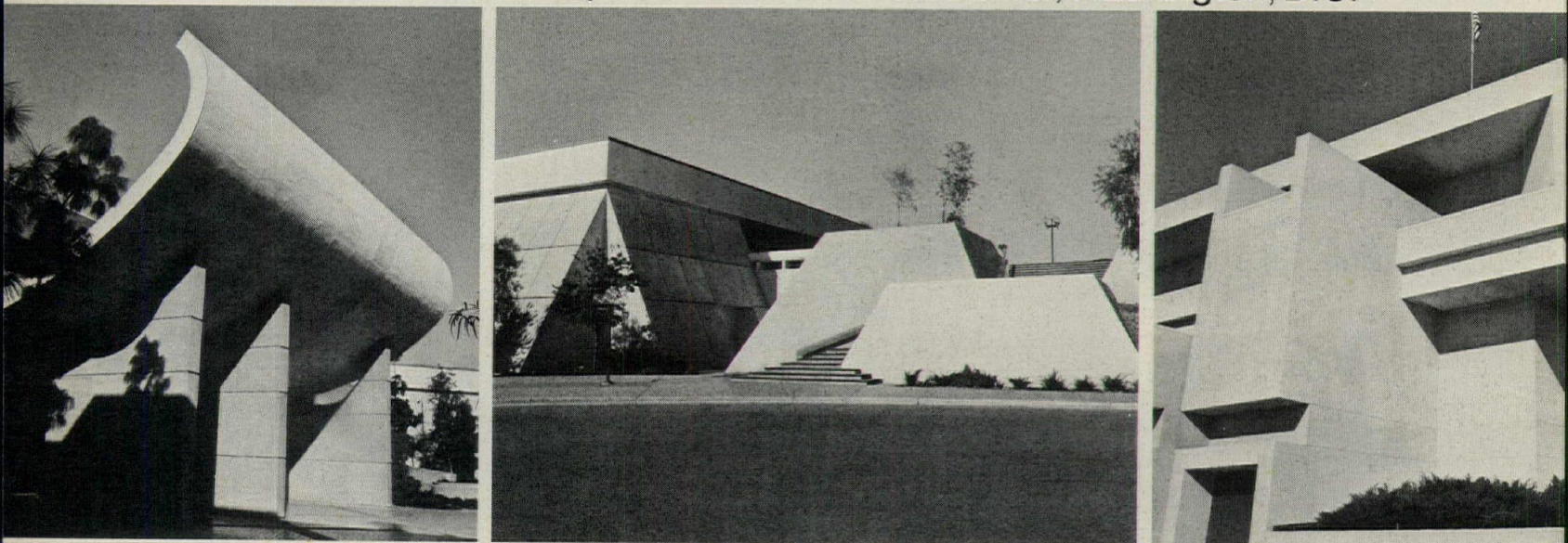
# How Bell's Building Industry architectural integrity



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The new Children's Hospital National Medical Center, Washington, D.C.



The MetroCenter, Phoenix, Arizona. A new 312 acre Westcor shopping mall.

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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."

Alfred H. Fast, project architect for Westcor, assessing Bell's contribution to the MetroCenter shopping mall: "Because of the Building Industry Consultant, we're not going to face redundant situations—tearing up concrete or knocking down walls because adequate provisions weren't made in the initial stages."

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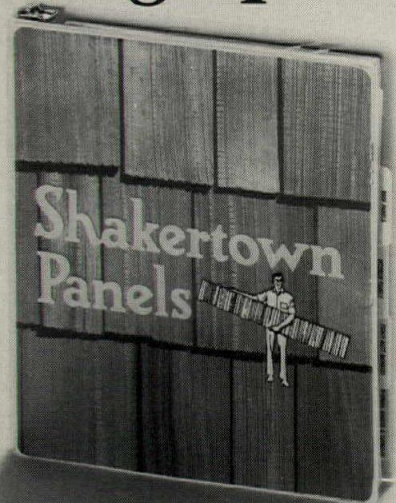


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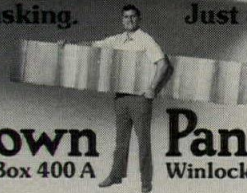
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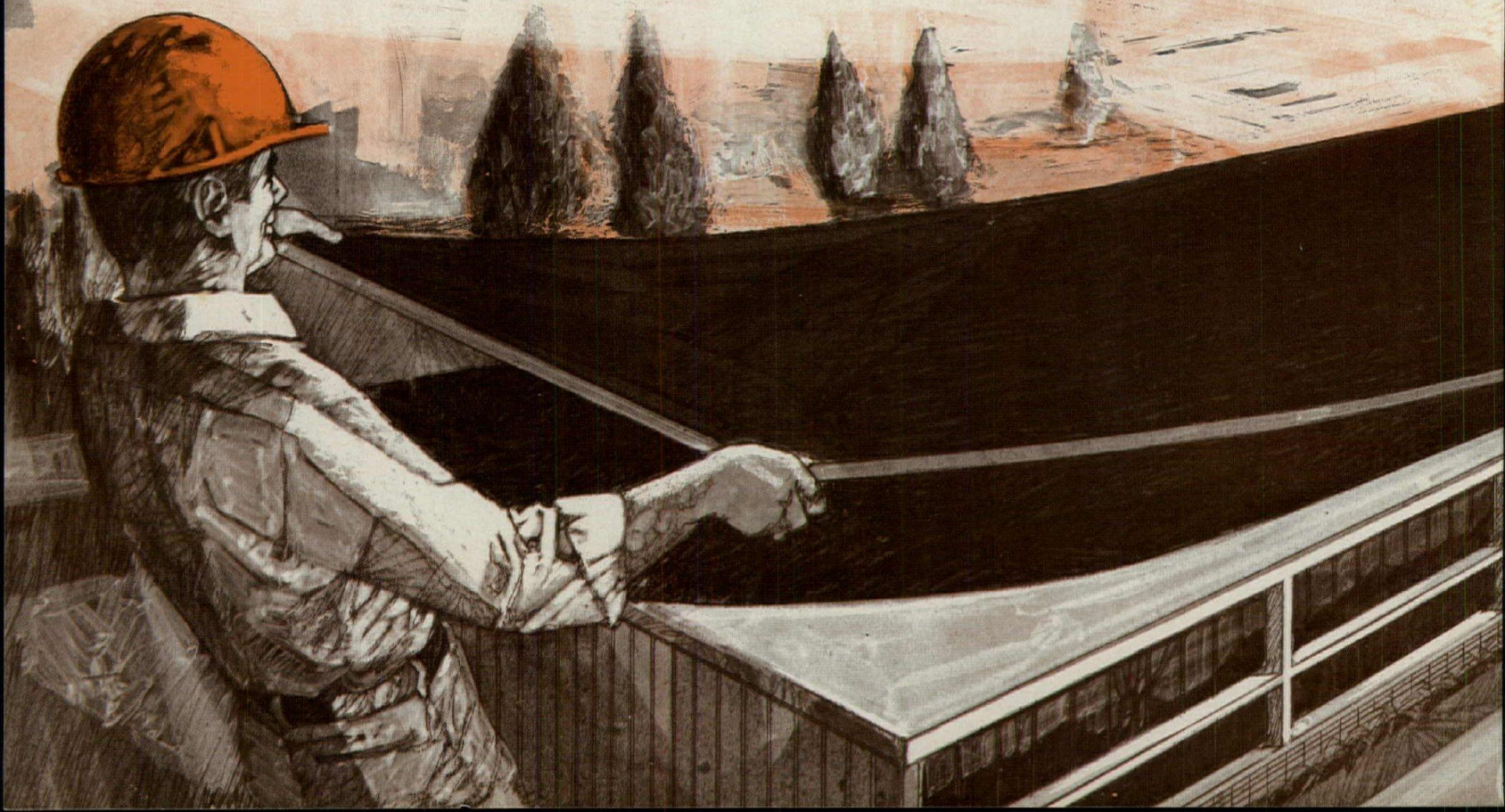


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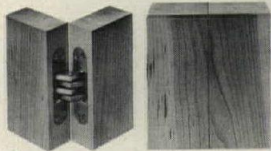
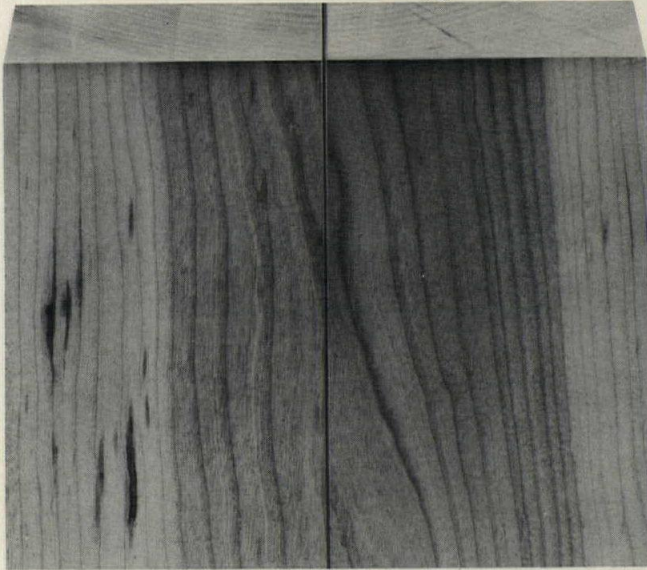
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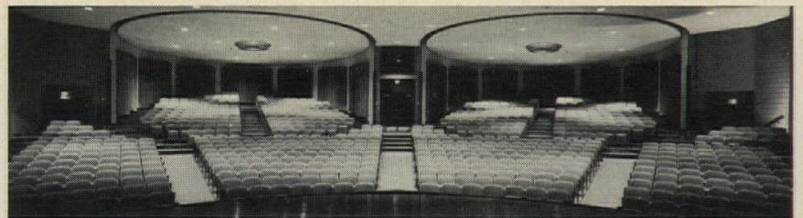
Some hinges are decorative. Some are functional. But only one hinge is invisible.

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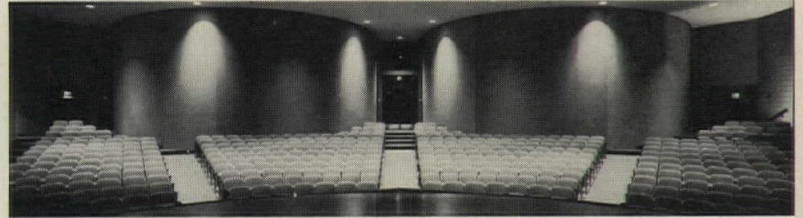
Choose from 18 models and four finishes. All models open 180° and disappear when closed.

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Macton turntables turn idle auditorium space . . .



into useful classrooms.



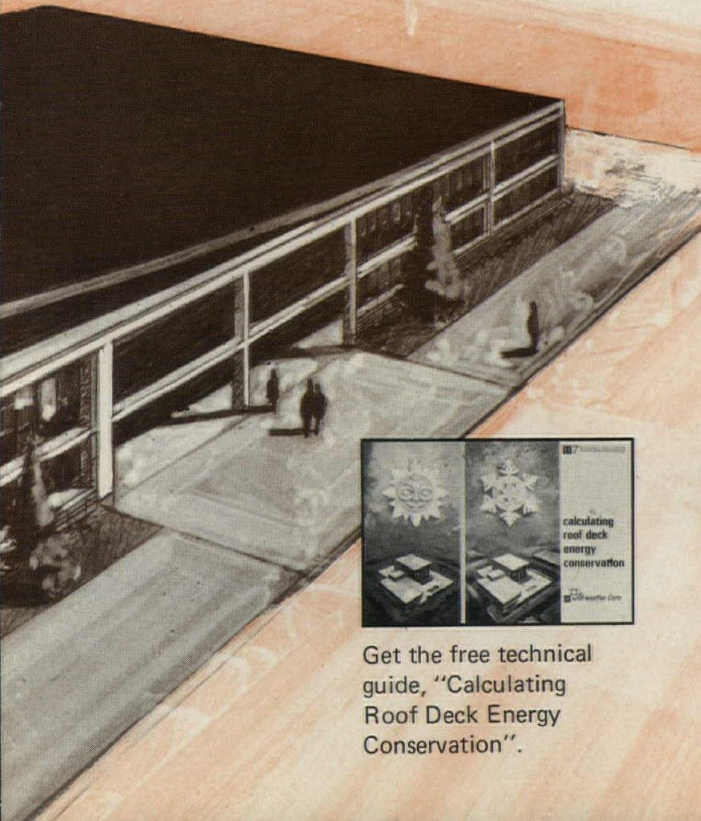
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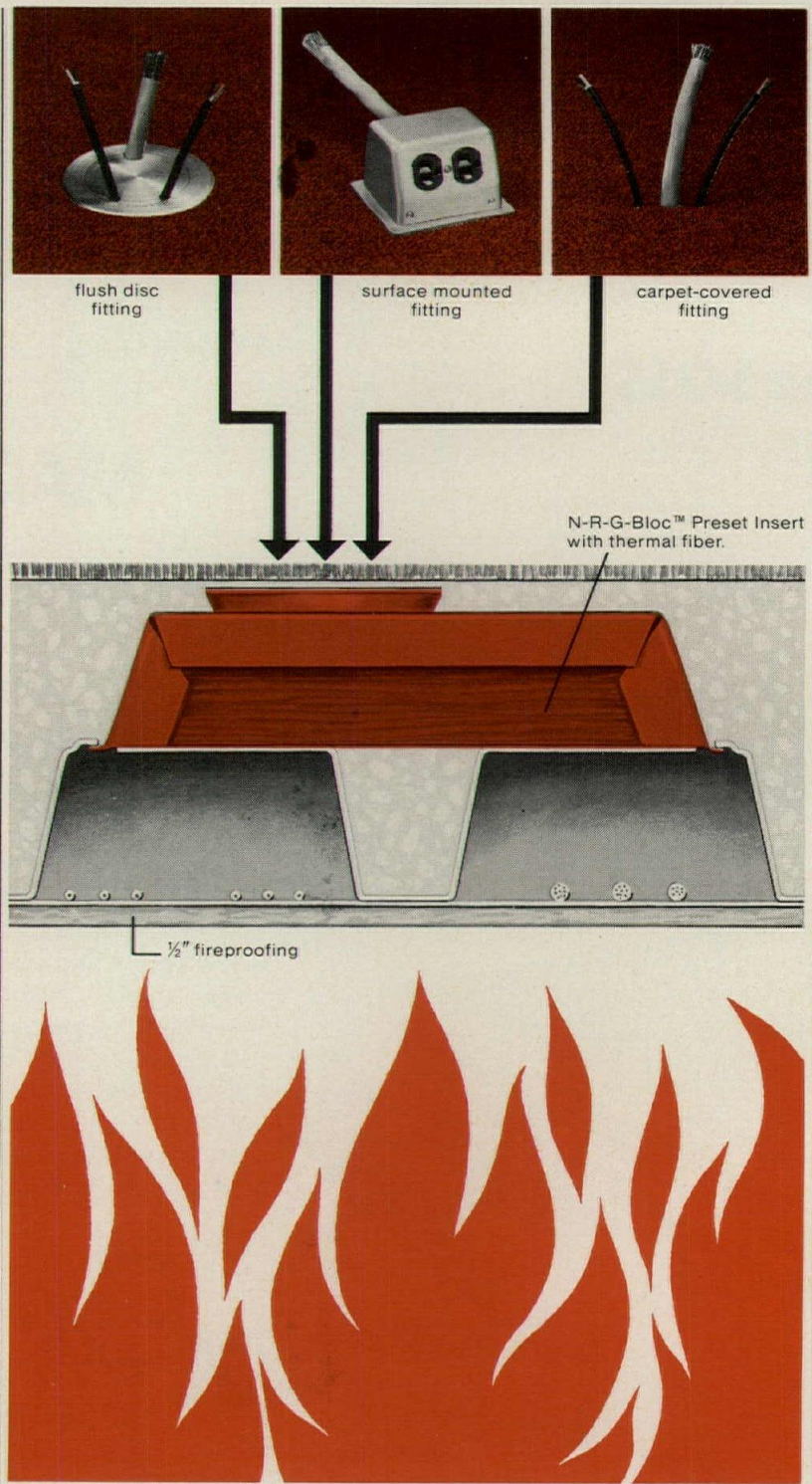
\*Using flush service fitting. Other ratings are available.



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Architect—Rooney, Musser & Assoc., Inc.  
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These days, more and more businesses are opting for a face lift, rather than spending money for a new building. We're sure that right in your community there are businesses already leaning in this direction.

Suggest reglazing with Vari-Tran coated glass to your clients. It could mean more business and good public relations for your firm. Because when creative architecture can help stabilize old neighborhoods, everyone takes notice.

Reglazing with Vari-Tran coated glass was the answer for the Hancock Savings and Loan building (shown here) in Findlay, Ohio. It has turned the value of their property around. It has also turned many heads around.

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For more information about reglazing with Vari-Tran glass, write Ralph Hayward at Libbey-Owens-Ford Company, 811 Madison Avenue, Toledo, Ohio 43695.

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# LOF



# Tectum Roof Deck. If you've had an earful of OSHA.

The passage of the Occupational Safety and Health Act (OSHA) makes noise control in manufacturing plants a primary consideration. Gold Bond® Tectum® Roof Deck gives you structural strength and depending upon thickness, a sound absorbing ceiling with up to .80 noise reduction coefficient.

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# Order and simplification are the first steps toward the mastery of a subject...

Thomas Mann, 1924



The Triangle Building, Atlanta, Ga.  
Thompson, Ventulett & Stainback, Inc., Architects

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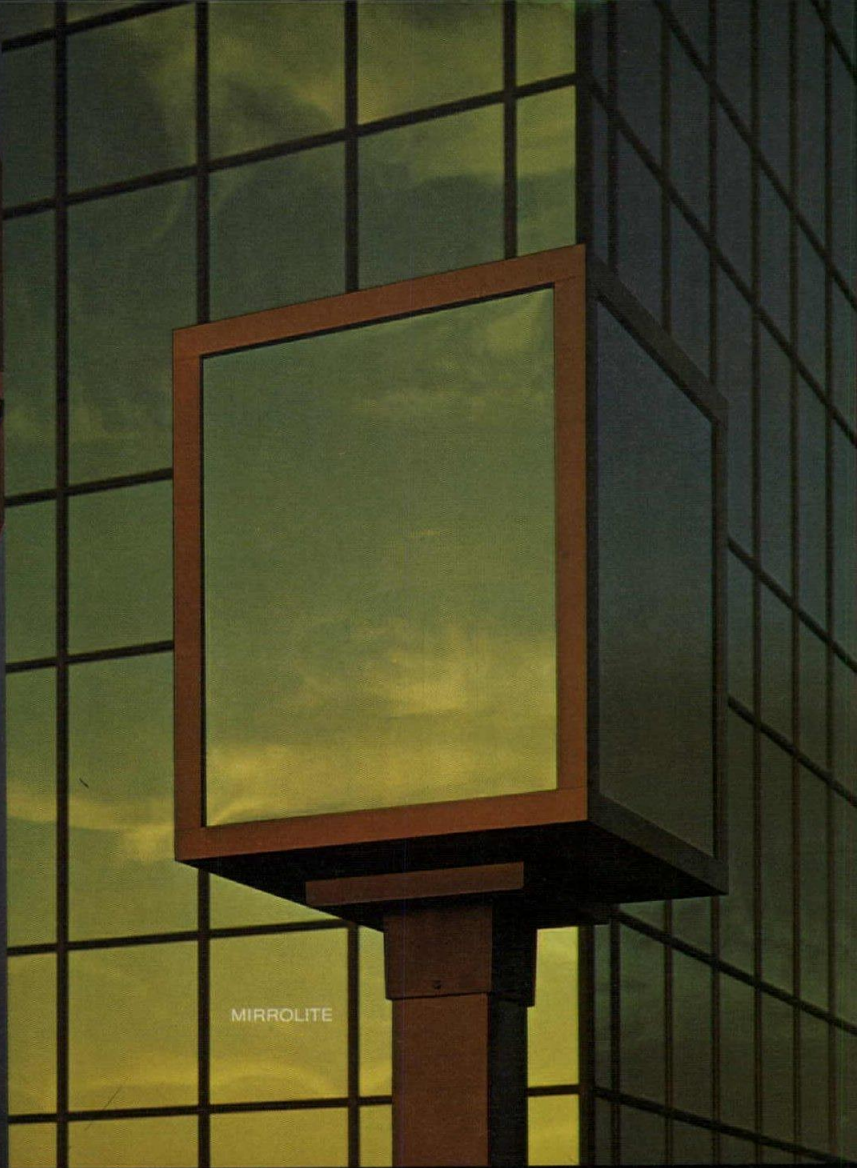


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BUILDING COSTS  
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## Take-part workshop: a new tool for programming

by Robert B. Marquis

In August, 1974, Robert Marquis' firm was hired by the City and County of San Francisco to prepare a feasibility study for the Commodore Sloat School. The process outlined for this undertaking consisted of two main tasks. The first of these was the staging of a Take-Part Workshop, which brought together for two evenings representatives from all the different groups interested in Commodore Sloat School—teachers, administrators, parents, neighbors and architects. The workshop was so structured as to allow this divergent group to work together to define goals. Using the ideas and directions generated in the Workshop as "User Requirements," the architects then proceeded to the second task, the development of several alternative schemes, using more or less of the existing buildings. New construction was located in relation to various portions of the existing buildings to be either substantially remodeled or demolished, as were general building configurations and the nature of the spaces within. Information about costs, phasing, and the relative merits of each scheme was also provided. Following is the description of the programming workshop.



For better or worse, and I think it's for better, we are in a new consumer- or user-oriented era. The day when an architect could come up with a design, put on a three-piece suit, and stand with his beautiful rendering in front of a community group and say, "This is what you need," is over. "I am the doctor and you need your leg amputated." The hell you say!

We have now designed two schools, one public (Commodore Sloat, a San Francisco elementary school) and one private (St. Mary's College High School, a Catholic school in Berkeley) using the technique of the "Take-Part Workshop," a form of community participation involving students, teachers, administrators, parents and members of the surrounding community. We put on these workshops jointly with James Burns of Lawrence Halprin & Associates, and based them on work pioneered by Halprin and Burns and described in their book, *Taking Part*, published by M.I.T. Press.

The Commodore Sloat School is a 50-year-old elementary school that did not meet the Field Act, a California State Law, requiring

structural upgrading of old buildings for resistance to earthquakes. The Board of Education could meet the state requirements at a cost of approximately \$1,000,000, but that would have left the school essentially unchanged, with two stories, long corridors and inflexible classrooms. Since the school was to house kindergarten through third-grade children, the plan to retain the antiquated, two-story plant met with resistance and acrimony from the community.

Called in to make a feasibility study, we and Jim Burns of Lawrence Halprin's office studied the problem, defined the issues, and designed the workshop technique program to be followed.\*

A series of issues were identified such as, "Should classrooms be open, self-contained, or a combination? Do we want to keep existing building? Part of it?" etc.

Invitations to the workshop were sent. One must make sure that a representative

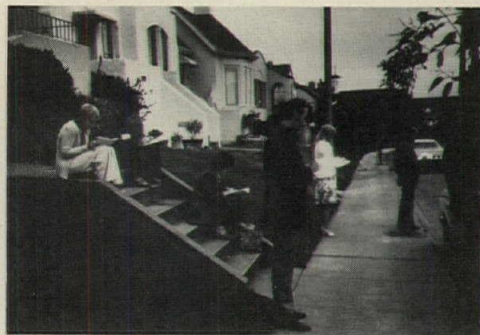
\*It is important to involve a person, like Burns, who has experience in running a workshop. I would advise the inexperienced not to try it on their own.

group is involved, including parents, faculty, administrators, neighbors, downtown staff, Board of Education, etc. In this case, students were not included as the school was to be kindergarten through third grade. However, several young alumni were pressed into service to represent the students. (Make the invitation stimulating and provocative to provide incentives to participate, i.e., offer baby-sitting, refreshments, transportation, etc. Follow-up phone calls to remind and assure attendance are essential.)

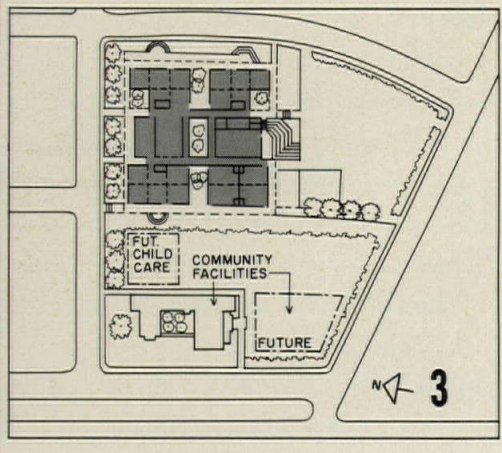
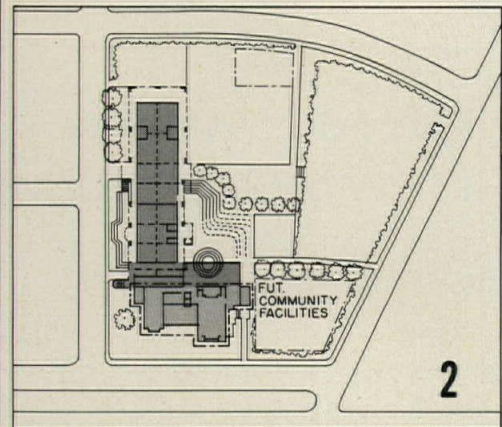
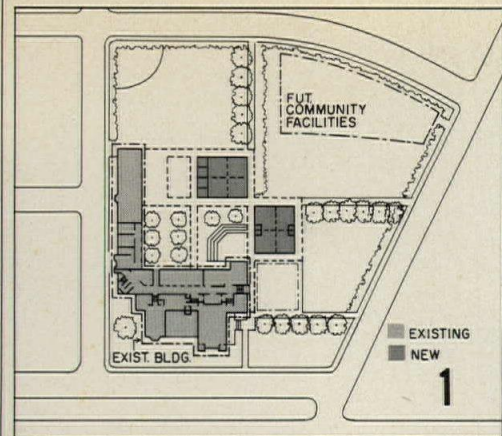
### The first evening

1. *Introduction and warm-up:* In explaining the workshop objectives and issues to be addressed, it is important *not to raise false expectations*, and also to make clear that this is a process to try to obtain some consensus for objectives and program, and not to arrive at a solution or building design. That is the architect's job.

As a brief warm-up exercise, we asked the participants to imagine themselves as second graders coming to the existing school the first



Most people attending the workshop felt that the Spanish-style facade (above) along a major thoroughfare exhibited a scale and character in keeping with the surrounding residential neighborhood. The large elements of the cafeteria and auditorium related well to the church next door, and were appropriate with the "automobile scale" of the boulevard. The rear parts of the school were felt to be "grim, prison-like, inflexible, cold and unappealing" by workshop participants who reported back to the group after an awareness walk (above right).



day of the school year. The purpose was to encourage participants to experience the school as a child would as well as to introduce the attitude of shared experiences.

2. *Awareness walk:* Each person was given a map with specific locations in and around the school and asked to go to these locations in a certain order. The maps were designed so that only a few participants are at any one location at a time. They were given a notebook in which to note their impressions at each location. This exercise is designed to make participants "aware" of the environment that is being dealt with and to gather their feelings about various spaces and elements in the school. Comments from the awareness walk (top right photo) are incorporated into the report.

One teacher told me that she had been teaching there for 15 years and had never realized the school looked like a prison to the neighbors to the rear of it.

3. *Group planning:* When participants returned from the awareness walk, they were divided at random into six groups. Paper, magic markers, glue, etc., were available, and each

group was asked to plan the school under the conditions of different scenarios, ranging from "the school has been destroyed by an earthquake and must be rebuilt in its entirety . . ." to "the school has been declared a national landmark and must be restored." Members of the architect's staff sat at each table as "facilitators." That is, they took notes about what was being said, assisted progress, kept time, *but did not participate in a substantive way.*

4. *Summary, first evening:* Each group selected its own spokesman, who presented the group's scheme to the entire workshop. The architects then made a summary pointing out similarities as well as conflicts that emerged.

**The second evening**

5. *Introduction:* A slide show was given as an instant replay of the previous evening helping participants and a few newcomers recapitulate the previous activities.

6. *Attitude survey:* This was made by the simple device of reading 30 prepared questions and asking participants to vote by raising their hands. Further questions were solicited

from the audience and added to the list.

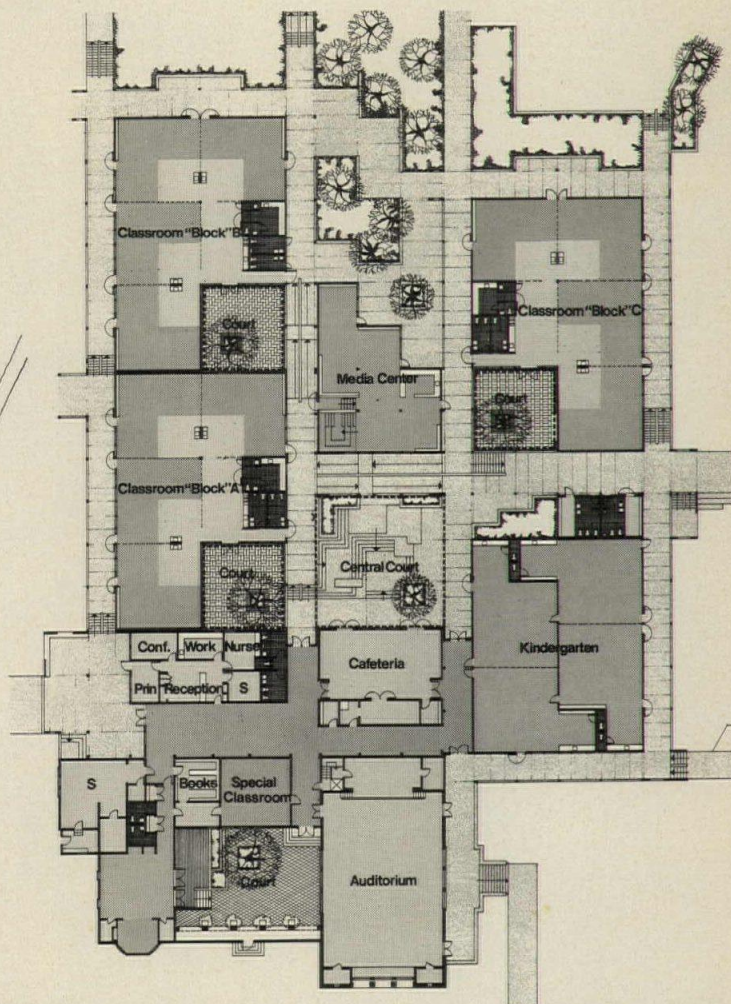
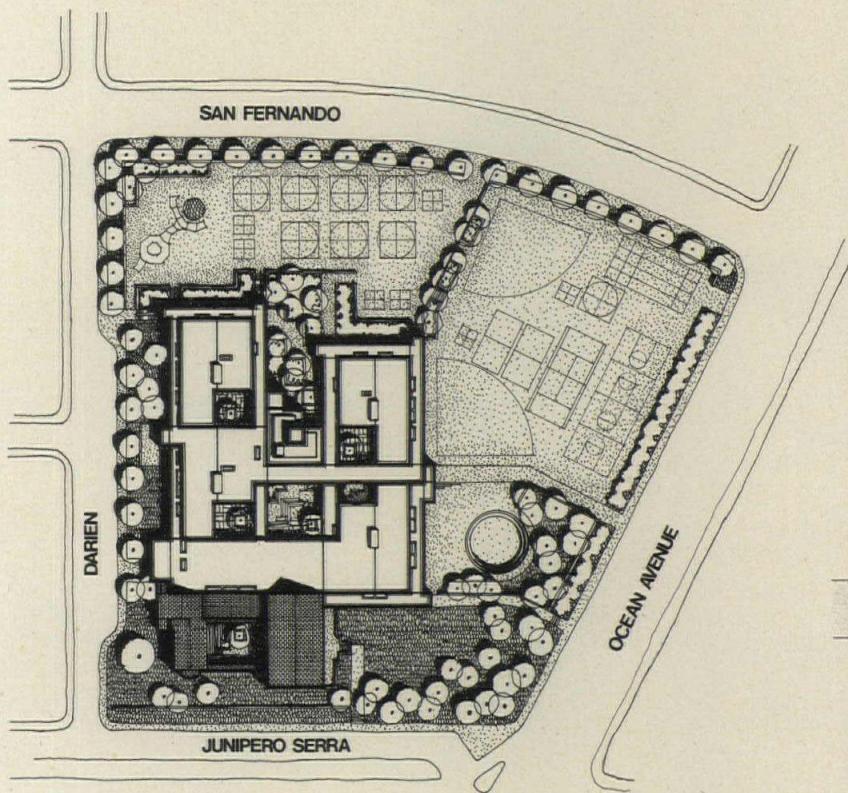
7. *Group Planning:* Participants were divided at random into five groups. Each group was given the same task to generate a clear picture of what they envisioned for the school: "Design for the site a place for learning, playing, eating, administering, etc. Decide—and locate on the site—what you want, what you wish to keep or discard from what is already here." Materials for their use and staff from the architect's office were again available.

8. *Priorities* (to keep expectations in check): Each group was asked to establish priorities for the implementation of its plan.

9. *Summary and conclusions:* Each group presented its scheme and priorities. The material from the two evening workshops was gathered, analyzed, and edited, and a written report was distributed to the 42 participants, as well as to the school planning office and the Board of Education.

Based on the report and additional conventional studies, a feasibility study was made by our office, resulting in three schemes:

*Scheme 1* saved the existing cafete-



ria/auditorium and patio. The workshop had shown that the community very much desired to keep these elements. In addition, Scheme 1 remodeled one two-story wing of the school and added two separate and flexible classroom units. (See plan 1, above left.)

Scheme 2 saved only the cafeteria/auditorium and added a new classroom wing with flexible classrooms.

Scheme 3 saved the cafeteria/auditorium for some other undefined use and built a new school at the rear of the property.

The three schemes were presented to the "Field Act Committee" composed of workshop participants. Because of its workshop participation, the group was extremely sophisticated and quickly understood the alternatives. Since they had been through the planning process themselves, they concentrated on the concepts. No time was lost discussing details of storage, toilets or security, although these concerns rightly surfaced later.

From these discussions a fourth and final scheme ensued, combining the best qualities of Schemes 2 and 3. The committee liked a

new school best (as in Scheme 3). However, they were afraid that they could buy so little new school for \$1,000,000 that Scheme 3 was impractical, and that no community use for the auditorium/cafeateria element would be found and it would be lost. They also realized that by not replicating these functions they could get "more school for the money."

Our final scheme saves and remodels the much regarded auditorium/cafeateria elements and adds one-story clusters. Each cluster can be used as an open classroom or as individual (conventional) classrooms, a flexibility desire that emerged from the workshop as did the centrally located media center. Each cluster has a courtyard "patio classroom." It and the stucco "arcade" covered walks will help blend with the Spanish style of the auditorium and the neighborhood. This school is now under construction. (See plans above.)

We do not believe that the "Take-Part Workshop" is a panacea, nor is it applicable to all situations. However, we have found it a remarkably effective tool for arriving at a consensus as well as an accurate means of identi-

fying disagreements.

In the case of Commodore Sloat, for example, it became clear that all had great affection for and wished to save the old Spanish auditorium yet felt that the balance of the school was outdated and "prison-like." There were many teachers who did not agree with the concept of the open classroom, and provision to accommodate them was made. We would have, I'm sure, arrived at the same conclusions and design, but not in an atmosphere of a shared experience. The workshop results in all parties having had a voice and a share in the decision-making process and feeling, as they should, that they, the users, neighbors and parents are as much the "client" as the school board. An unexpected result was the degree of understanding and sophistication they developed in such a short time, as well as a high degree of identification with "their" architect and his staff.

COMMODORE SLOAT SCHOOL, San Francisco, California. Architects: Marquis Associates, Architects and Planners—J. Peter Winkelstein and Cathy Simon, project architects.



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Contractor: Western Roofing Company, Kansas City, Mo.

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**Hourly wages tied to higher costs**

Average building construction costs have gone up 2.5 per cent since last fall and now stand at 7.9 per cent above a year ago. In the current Dodge Building Cost Calculator survey 183 metropolitan areas throughout the United States tie the increase to higher hourly wages for building trades craftsmen—up 7.3 per cent for the year—while building material prices increased 8.2 per cent.

Basic hourly wage rates are five times what they were in 1941, whereas, material prices are nearly three times those of that year. Overall, building construction costs now average about 470 per cent higher than in 1941.

	No. metro area	9/75 to 3/76	3/75 to 3/76	1941 to 3/76
<b>Eastern U.S.</b>				
Metro N.Y.-N.J.	16	+1.3	+ 6.3	+495.9
New England states	21	+0.9	+ 5.3	+438.9
Northeastern & North Central states	46	+2.4	+ 8.1	+455.7
Southeastern & South Central states	39	+2.1	+ 6.6	+417.1
<b>Average Eastern U.S.</b>	122	+1.9	+ 6.9	+429.4
<b>Western U.S.</b>				
Mississippi River & West Central States	35	+3.1	+ 8.9	+441.9
Pacific Coast & Rocky Mountain States	26	+4.7	+11.1	+481.9
<b>Average western U.S.</b>	61	+3.9	+10.0	+461.9
<b>U.S. average</b>	183	+2.9	+ 8.5	+445.6

John H. Farley, chief editor  
Dodge Building Cost Services

Metropolitan area	Cost differential	Current Indexes				% change last 12 months
		non-res.	residential	masonry	steel	
U.S. Average	8.5	538.6	505.9	532.1	518.4	+ 9.2
Atlanta	7.5	611.4	576.5	604.3	592.7	+ 3.2
Baltimore	8.5	621.7	584.5	610.0	595.7	+13.2
Birmingham	7.3	475.6	442.3	462.9	456.4	+ 6.7
Boston	9.0	544.2	514.2	551.2	529.8	+10.6
Buffalo	9.1	577.1	541.9	569.1	552.3	+ 6.5
Chicago	8.3	569.7	541.7	551.4	543.5	+ 3.9
Cincinnati	8.8	612.3	576.2	602.0	586.7	+16.4
Cleveland	9.0	588.4	553.6	578.6	561.7	+11.9
Columbus, Ohio	8.2	524.4	492.5	520.9	504.9	+ 3.3
Dallas	7.9	512.2	500.0	505.6	494.4	+ 3.6
Denver	8.4	588.3	553.4	583.5	570.5	+ 9.4
Detroit	9.8	623.5	594.9	632.9	608.6	+10.9
Houston	7.4	506.7	475.8	495.6	486.8	+11.6
Indianapolis	7.8	481.2	452.9	473.7	463.3	+ 8.2
Kansas City	8.7	532.1	502.8	524.0	509.8	+ 8.9
Los Angeles	8.5	613.9	561.2	598.2	584.4	+ 9.6
Louisville	7.6	513.2	481.9	501.2	491.4	+ 6.9
Memphis	8.4	546.4	513.0	528.1	516.9	+ 7.5
Miami	7.9	596.7	568.5	594.7	585.9	+17.7
Milwaukee	8.7	618.1	580.4	613.6	592.9	+ 9.5
Minneapolis	8.9	555.9	523.0	549.0	536.2	+ 6.7
Newark	9.0	500.2	469.7	497.1	484.0	+ 2.5
New Orleans	7.5	531.1	501.3	522.9	511.1	+12.8
New York	10.0	553.3	514.5	543.6	532.1	+ 2.9
Philadelphia	9.1	589.8	561.9	591.1	572.4	+ 9.4
Phoenix (1947 = 100)	8.2	316.5	297.2	312.6	304.4	+ 8.6
Pittsburgh	8.9	515.6	485.1	515.4	498.2	+ 7.0
St. Louis	8.7	551.3	520.4	546.3	533.9	+ 9.1
San Antonio (1960 = 100)	7.6	215.2	202.8	210.4	206.0	+14.4
San Diego (1960 = 100)	8.7	251.0	235.7	248.6	247.0	+20.0
San Francisco	9.6	809.3	739.7	802.7	776.3	+10.3
Seattle	8.6	541.1	484.3	531.5	513.5	+11.3
Washington, D.C.	8.4	525.4	493.3	517.8	502.9	+ 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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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	528.9	542.7				
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				
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				

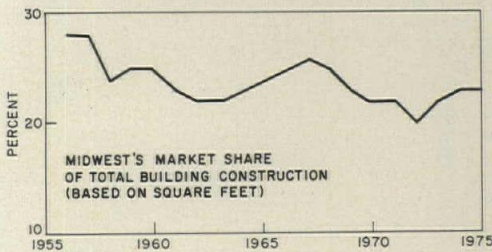
Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) divided by the index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than the costs in the other. 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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## The Midwest: Aging, but still swinging

Because the Midwest is the center of the nation's heavy manufacturing industry, this region is naturally more vulnerable than the others to the recurring joys and woes of the business cycle. This inherent industrial instability spills over in the region's construction business, causing its share of the national total of building to swing as much as five percentage points between prosperity and recession.



These strong cyclical fluctuations in Midwest building activity often conceal another characteristic of the region's construction market. There is a myth that says the Midwest is a kind of microcosm of the United States, and that what happens there is typical of all America—including its rate of economic growth. Not so for construction, and construction is a pretty good measure of a region's general economic development. (When we grow, we build. . .) Lurking just under the surface of the Midwest's cyclical swings is a 20-year trend of diminishing share of the national building total amounting to an average loss of roughly one percentage point every ten years. Like the Northeast, but not to the same degree, the Midwest is showing its age as more and more of the nation's expansion has shifted to the South and the West.

The reasons for the long-term decline in market share in the Northeast and the Midwest are common to both regions and among them are: the loss of manufacturing firms to the South and West; the migration of the Southern poor to the Northern cities; the deterioration of the inner cities; and slower population growth. However, there are some good reasons why the Midwest adapted to the social upheaval of the 1960s better than the Northeast did.

Minority groups coming to the North to look for blue-collar jobs in the post-World War II period found employment on the Midwest's assembly lines. Auto manufacturers made special efforts to recruit from the ghettos, and one

in particular became the largest single minority employer in the United States. These weren't low paying jobs either. Weekly pay for auto workers is much higher than the national average and many Southerners achieved middle-class status as homeowners in the state of Michigan.

When Ohio was faced with a loss of manufacturing firms in the 1960s the state recruited 2,500 new firms—and is continuing to attract industry. Through measures like these, the Midwest has retained its dominant position in industry compared with the Northeast.

In the next several years, cyclical forces will be having more influence in the Midwest's construction future than these long-term trend forces. And since the nation—and especially the region—is now emerging from a severe recession, the recovery phase of the business cycle should have a beneficial effect on the Midwest's construction potential over the next four years. Here is the outlook for construction in the Midwest:

### Nonresidential building

**Manufacturing facilities:** With the transportation industry, much of the primary metals, machinery, and durable goods industries situated in the Midwest, the region quite naturally accounts for a disproportionately large share—more than a third, at times—of the nation's industrial construction. Because consumer demand for autos is extremely sensitive to economic conditions, manufacturing construction in the Midwest has been depressed by two recessions before and since the oil embargo in 1973. Automotive production began to recover in 1975 and the region is expected to recapture much of its market share of manufacturing construction in the second half of the seventies.

**Commercial building:** The region's market share ranged narrowly between 21 and 25 per cent over the last two decades and is expected to wind up in the lower end of the range by 1980. Office and bank building expanded in the mid-1960s but has since fallen back to earlier levels where it is expected to remain until late in the decade.

Construction of stores and shopping centers in the region has been rising sharply in the sixties and seventies—although it receded during the recession. The steep upward trend has enabled the region to maintain its position in this sector of the market. The region's share is expected to remain stable around 25 per cent

through the end of the decade because of the need for shopping centers, especially in the suburbs.

### Residential building

**Single-family housing:** The rush from the heavily populated cities to the suburbs in the fifties swelled the demand for single-family housing and increased the region's market share to almost one-third in 1956. In the Northeast, the experience was similar but not to the same extent as in the Midwest. From that peak the Midwest's market share fell continuously to a low of 21 per cent in 1963. During the following years, the exodus tapered off and the slope of the downward trend flattened. The decline in market share has been offset by regional participation in the national housing cycles. Market share has ranged between 24 and 19 per cent since 1963. A slight decline is projected for the region based on slower population growth during the rest of the seventies.

**Multifamily housing:** The region's share of multifamily housing reached new highs in the sixties and seventies. Between 1965 and 1975, market share ranged between 18 and 28 per cent compared with 15 to 20 per cent between 1956 and 1964. Subsidized housing construction, some of it sponsored by the local housing authorities of Chicago and Cook County, were responsible for much of the building during this period.

But market share is expected to recede in the future without the HUD 236 program and with the growing criticism of public housing for contributing to urban ghettos. In the private sector, the collapse of many real estate development trusts has put a damper on private construction.

To sum it all up then, the Midwest is apparently on the threshold of a surge in construction as the national economy pulls out of a severe recession and regional market share remains in the upward cyclical phase of recovery. Recovery will put market share around 25 per cent in the 1976-1978 period before the cycle recedes again by the end of the decade. Non-residential construction—manufacturing, in particular—will be the strongest sector over the 1977-78 period, and stores and shopping centers will be the next important category through 1980.

George A. Christie, vice president  
and chief economist

Jeanne A. Grifo, senior economist  
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Note: This is the second article in a series on regional construction trends.



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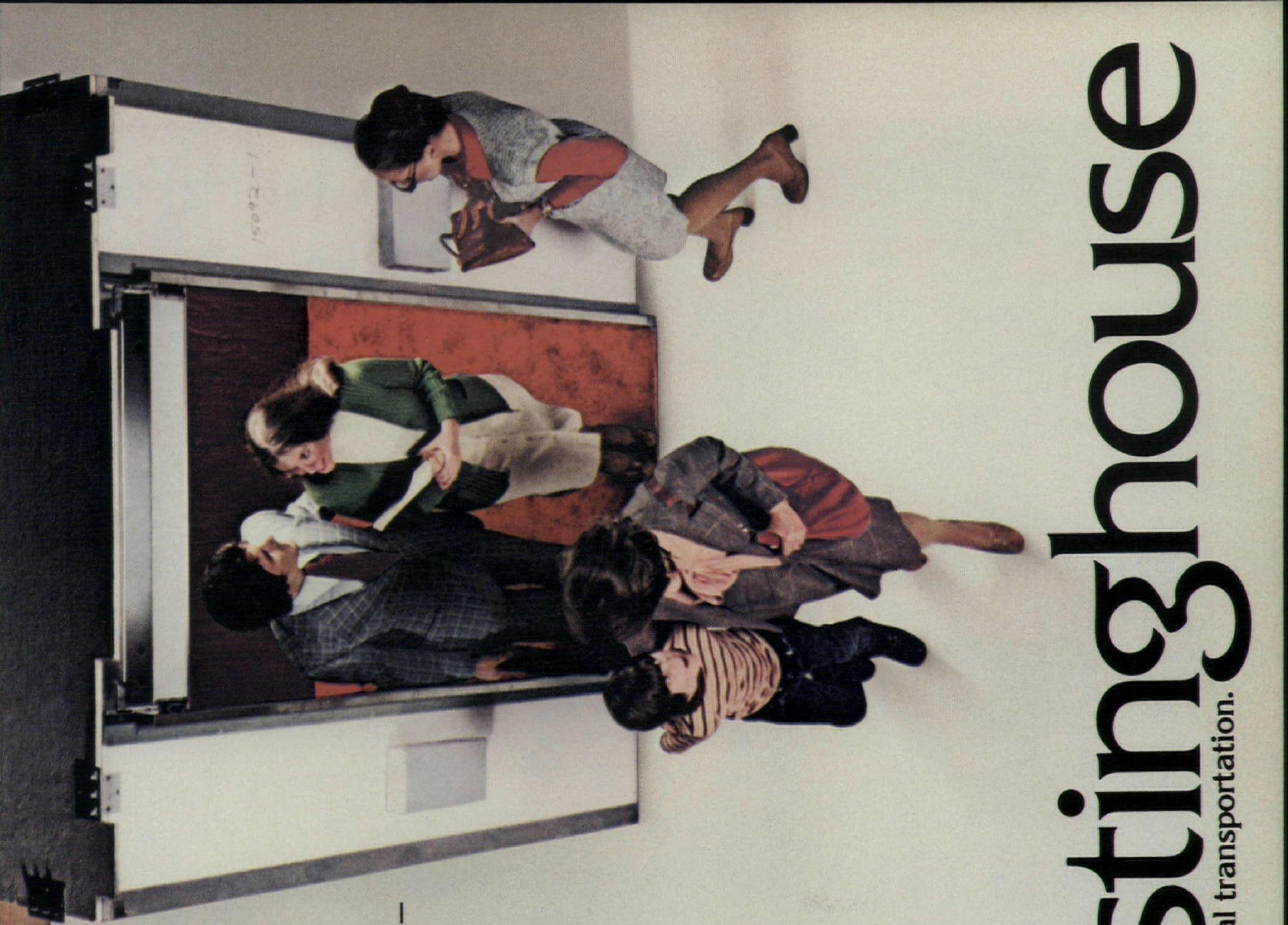
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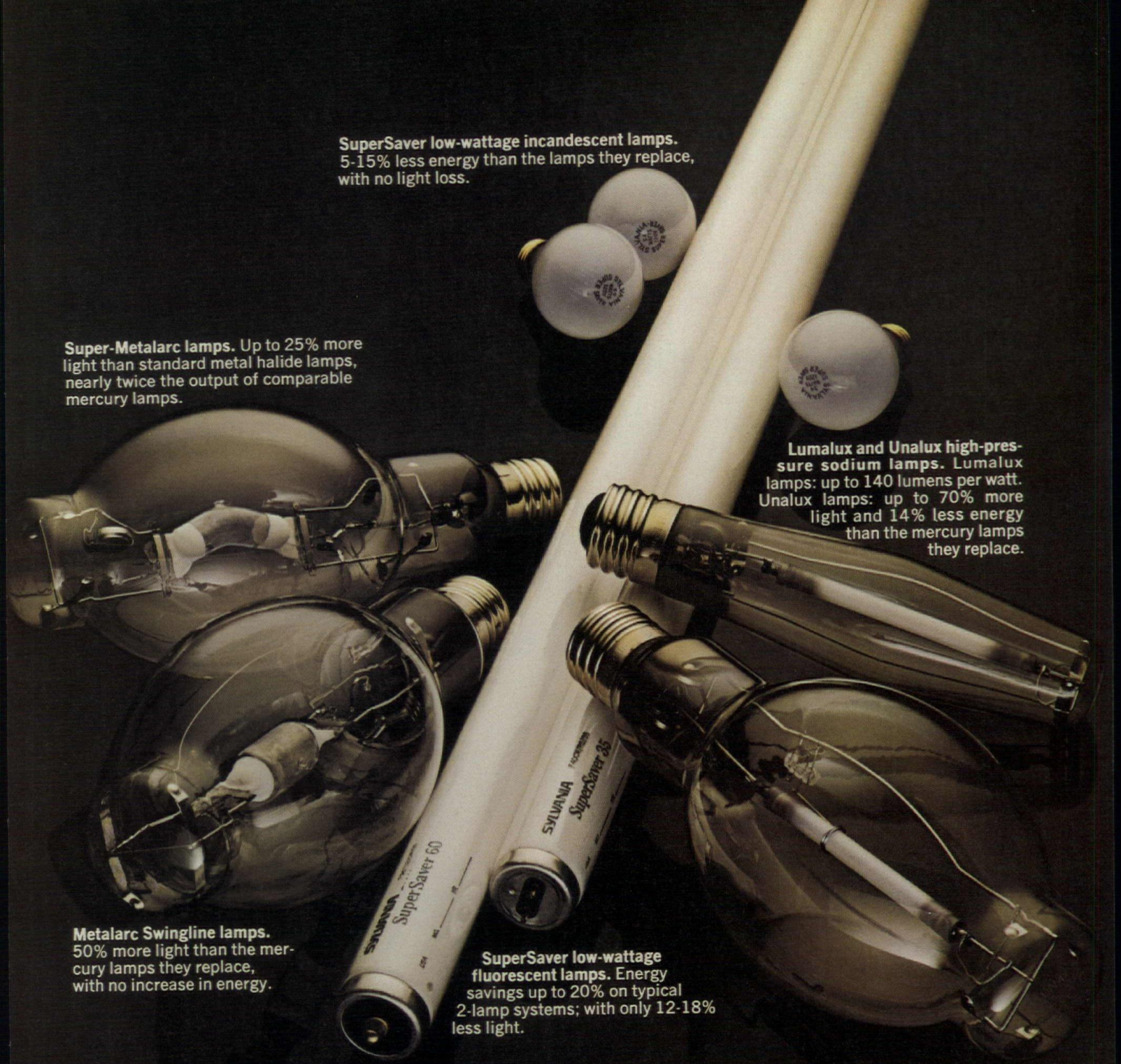
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Architect: Vincent G. Kling & Partners, Philadelphia, Pennsylvania.  
Flooring Contractor: B. Shehadi & Sons, Livingston, New Jersey

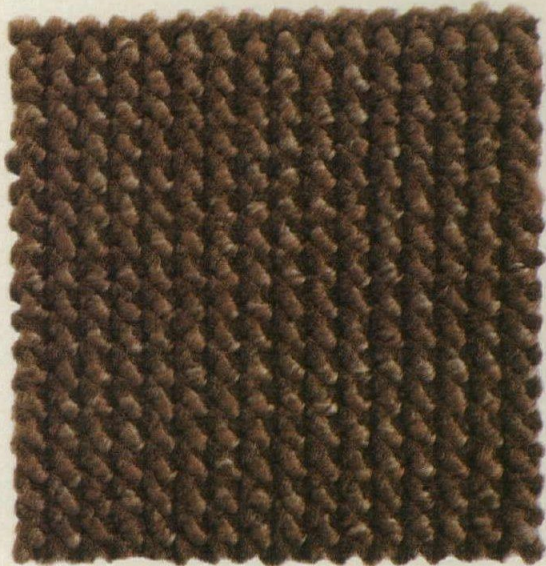


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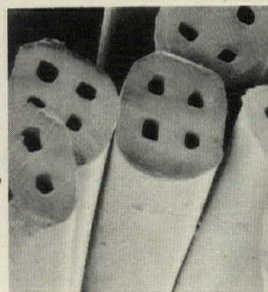


**Why "Antron" II?** "Antron" II nylon is designed to mask the presence of soil. And, because it is

a nylon, it's the most abrasion-resistant of all carpet fibers. In addition, "Antron" II has a pleasant, subdued luster, unlike bright or sparkle-luster fibers that can dull rapidly in contained high-traffic areas. Cleanability and texture retention are excellent.

These are the properties most specifiers expect from "Antron" II, the fiber known for its lasting good looks. And they are among the reasons why it is the leading contract carpet fiber brand.

**How "Antron" II masks soil.** Here in this 250X electron micrograph, you can see the remarkable four-hole fibers of "Antron" II. The four microscopic voids scatter light to mask soil and help blend soil concentrations into the overall carpet look. The smooth exterior shape minimizes soil entrapments, making cleaning more effective than irregularly shaped fibers.



"Antron" III nylon for durable, effective static control is available in most styles in "Antron" II.

**Specifier's Information Kit.** For more information—a carpet manufacturers' resource list, a specification guide for commercial office buildings, and a maintenance manual—write: Du Pont Contract Carpet Fibers, Centre Road Building, Room AR, Wilmington, DE 19898.

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

## Antron® II.

### The leading contract carpet fiber brand.



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# Introducing the **CLEANLINE**® Sprinkler.

A beautiful way to help save lives.

Now there's a new way to design in fire protection for life safety in modern high rise and other buildings without intruding upon design aesthetics. Grinnell's new CLEANLINE® Recessed sprinkler is so unobtrusive, so trim and compact, once it's installed you'll hardly know it's there.

But don't let CLEANLINE's quiet good looks fool you. Beneath that attractive closure you'll find one of the most reliable sprinkler heads in the industry. When room temperature reaches a predetermined level, the attractive closure falls away,

exposing the *fast*-response Duraspeed sprinkler. As a second predetermined temperature is reached, the sprinkler activates, distributing a uniform water spray to put down a fire.

The standard finishes



available are satin chrome and white. CLEANLINE Sprinklers are also offered in a variety of finishes to match any decor. All metallic finishes are UL-listed.

There's a lot more to tell about CLEANLINE. For more information and complete specifications, call your nearest Grinnell district office listed in the Yellow Pages, or write Grinnell Fire Protection Systems Company, Inc., 10 Dorrance Street, Providence, Rhode Island 02903.

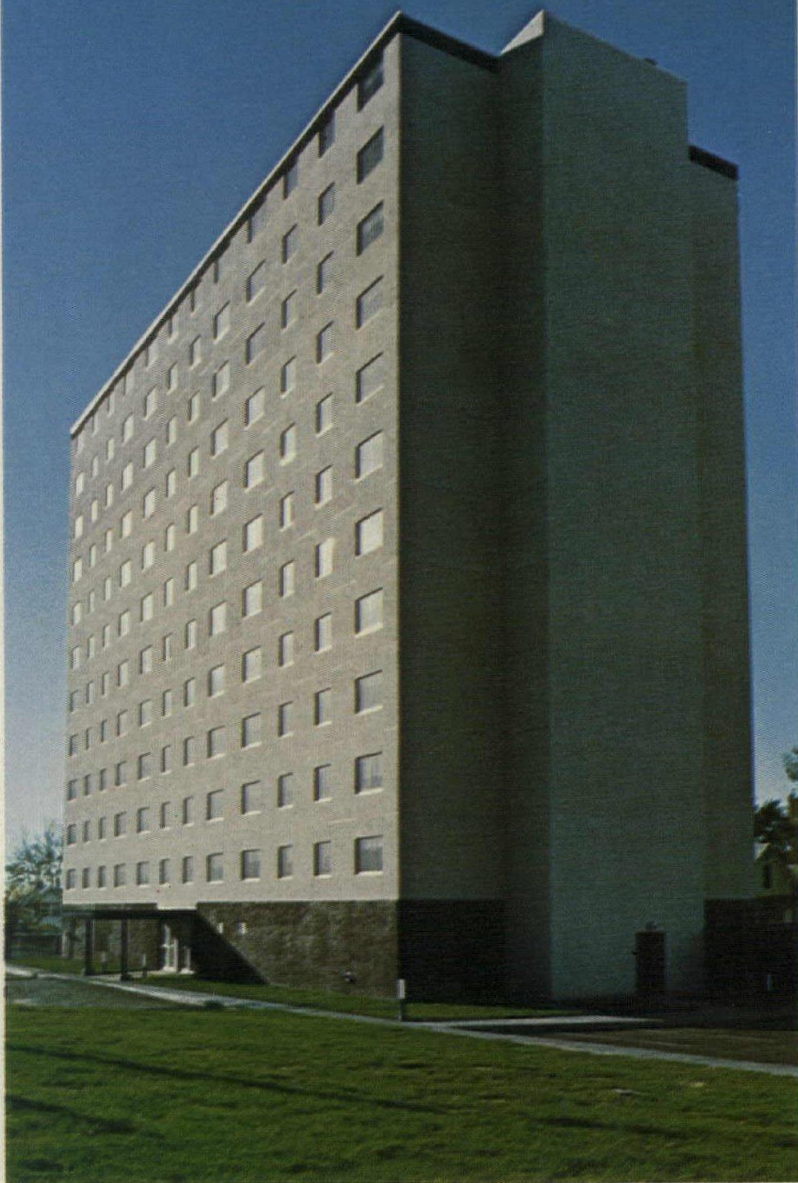
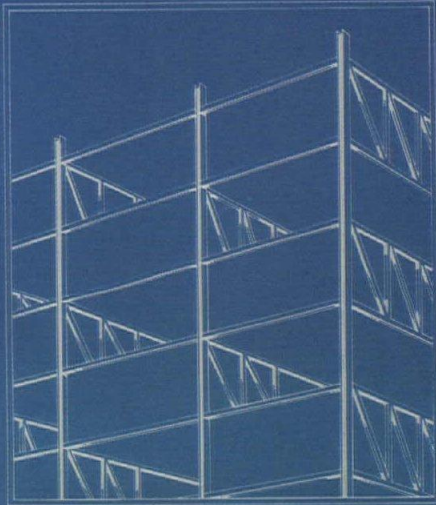


**GRINNELL**  
GRINNELL FIRE PROTECTION SYSTEMS COMPANY, INC.

PROTECTING LIFE AND PROPERTY SINCE 1850.

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Owner: Kansas City Kansas Public Housing Authority.  
Architect: Everett Peace, Jr., Overland Park, Kansas.  
Contractor: D & N Construction Co., Kansas City, Kansas.  
Fabricator & Erector: Havens Steel, Kansas City, Missouri.  
Consulting Engineer: Robert L. Riley, Prairie Village, Kansas.



## Steel costs cut 40% in Kansas apartment building— with Staggered Truss Framing System.

It is the first Staggered Truss building in the Kansas City area—a Department of Housing and Urban Development (HUD) sponsored project planned as low-rent housing for the elderly. Called Adams 39, the handsome 12-story building contains 122 apartment units.

The use of the Staggered Truss design eliminated about 40% of the steel required for a similar structure of conventional design. A great cost saver in terms of materials and labor.

Speed of construction was also important in terms of recovering capital investment and, in fact, *the steel frame including floor units was erected in just 36 working days.* The building was completed in 9 months, which is about half the time needed for the construction of a similar building made of concrete.

The staggered trusses span the full 51-foot, 6-inch width of Adams 39, from the second through the twelfth floor, and 400 tons of U.S. Steel's EX-TEN 50 high-strength low-alloy steel went into the building.

For this important project—and for many others—the Staggered Truss design proved to be the most practical and economical system. And it's fast!

For additional information regarding Staggered Truss structures, contact a USS Construction Representative through your nearest U.S. Steel Sales Office or write for our booklet, "Staggered Truss Framing Systems for High Rise Buildings" (ADUSS 27-5227-02) to U.S. Steel, P. O. Box 86 (C603), Pittsburgh, Pa. 15230.

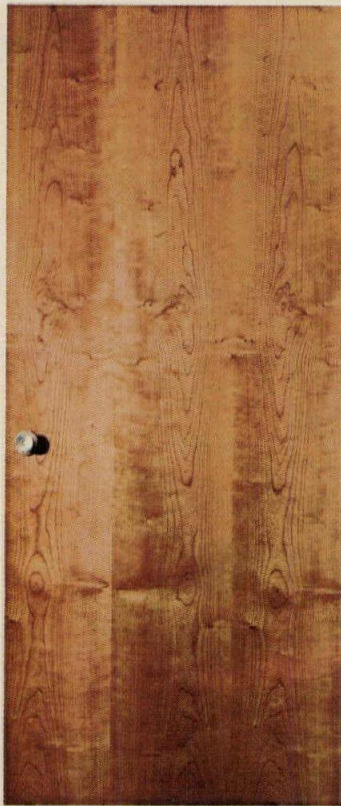
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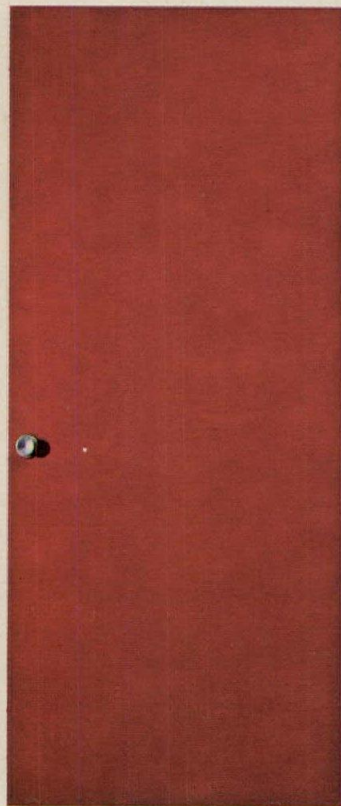
**United States Steel**



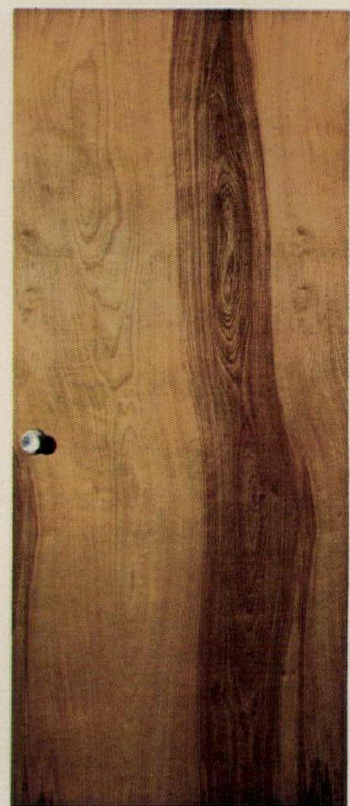
# IN CASE OF FIRE, PICK THE FIRE DOORS THAT WON'T TRANSMIT HEAT LIKE HOLLOW METAL DOORS.



1.



2.



3.



4.

Weldwood® Fire Doors have an extra degree of protection. They won't transmit heat like hollow metal doors. So, the unexposed side doesn't get hot enough to be dangerous.

U.S. Plywood's insulation is the reason why. It's Weldrok®, an amazing incombustible mineral core that retards heat transmission.

Covering this built-in safety feature are some of the world's most beautiful wood veneers.

Look at doors numbered 1, 3 and 4. They come in cherry, birch and walnut. Perfect for executive offices, hotel lobbies, restaurants and apartment buildings.

While door numbered 2 is ideal for schools, hospitals or

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a Weldwood Fire Door. It's your proof that you're getting an extra degree of protection.

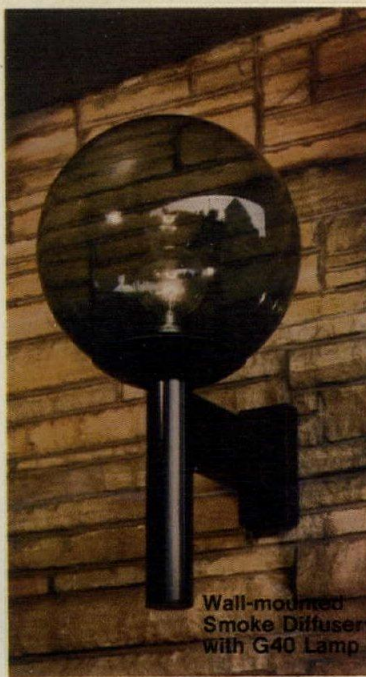
For everything else you need to know about Weldwood Fire Doors, call your local U.S. Plywood Branch Office.

## WELLDWOOD FIRE DOORS

 **U.S. Plywood**  
Champion International Corporation



3-Sphere  
Opal-White  
Cluster



Wall-mounted  
Smoke Diffuser  
With G40 Lamp



1-Sphere  
Clear Diffuser  
with G40 Lamp



4-Sphere  
Smoke Cluster  
with Refractor



Additional diffuser shapes... available in bronze and smoke tints, plus opal-white and clear.

# APPLETON GLO-METRICS™

Contemporary, modular-design outdoor luminaires for visually exciting lighting systems—day and night.

You can achieve a variety of architectural lighting effects in a visually unified system with Appleton Glo-Metrics luminaires.

The Glo-Metrics luminaire system is modular, offering unusual flexibility in lighting design. There are nine striking acrylic diffuser shapes in a choice of sizes... in transparent bronze and smoke color tints, plus clear and opal-white. Each design is offered for individual pole-top or wall mounting, or with bracket for pole-top cluster mounting in groups of 2, 3, or 4 luminaires. And they are all available for a choice of lamp types and wattages (with prismatic refrac-

tors where appropriate), providing various lighting levels and aesthetic effects.

The Glo-Metrics system also includes Appleton's unique Mardi-Gras™ luminaire. It has an internal, motor-driven projection system that makes the spherical diffuser appear to revolve in a dramatic blaze of colors and patterns. For wall or pole-top mounting.

Outstanding Glo-Metrics luminaire features: a double-locking system for securely attaching diffusers to their smooth, cast aluminum fitters; pre-wired, crisply styled extruded aluminum mounting arms; luminaire stems

with clean, symmetrical lines; ultra-violet-resistant acrylic diffusers, and integral "in-pole" constant wattage ballasts for mercury and high-pressure-sodium lamps. The finish is attractive, durable acrylic enamel.

Ask your Appleton distributor, or write for the Glo-Metrics Catalog. Appleton Electric Company, 1701 Wellington Ave, Chicago, Ill. 60657.

(In Canada, Appleton Electric Ltd., 750 Lawrence St., Cambridge, Ont. N3H 2N1)

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**APPLETON®**

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# Higher strength, higher rise.

Concrete construction soars as higher strength concrete becomes practical.

Until recently, 4,000 or 5,000 psi concrete was considered strong. Today, "high strength" means 6,000 psi and up. In New York's 57-story Galleria, 6,000 psi was the order of the day. On the Water Tower Place project in Chicago, strengths of 9,000 psi were common. *POZZOLITH* was used to achieve high strengths on both jobs.

This kind of strength permits architects to extend the benefits of reinforced concrete construction to heights never before considered. At 859 feet, Water Tower Place is the highest so far.

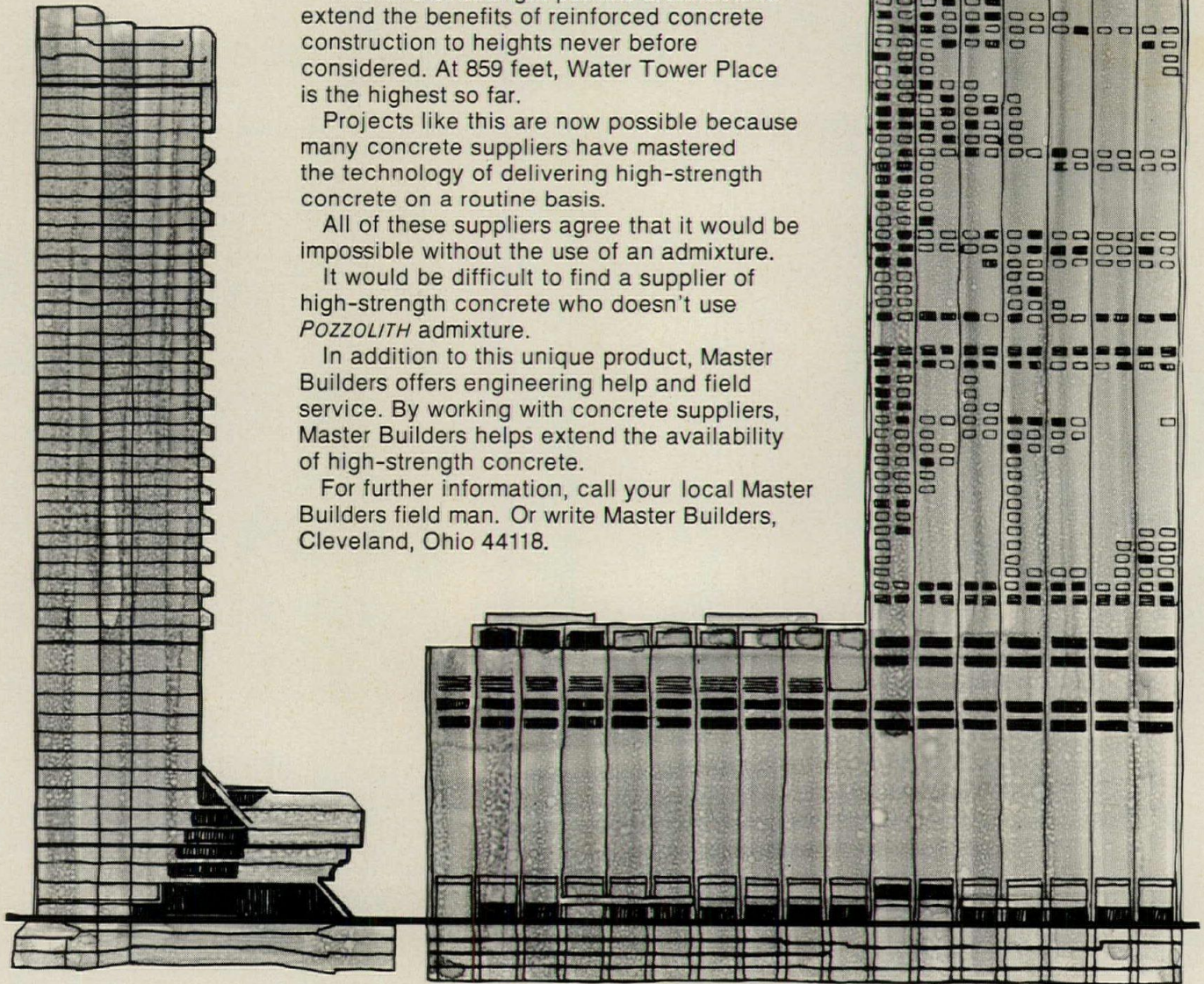
Projects like this are now possible because many concrete suppliers have mastered the technology of delivering high-strength concrete on a routine basis.

All of these suppliers agree that it would be impossible without the use of an admixture.

It would be difficult to find a supplier of high-strength concrete who doesn't use *POZZOLITH* admixture.

In addition to this unique product, Master Builders offers engineering help and field service. By working with concrete suppliers, Master Builders helps extend the availability of high-strength concrete.

For further information, call your local Master Builders field man. Or write Master Builders, Cleveland, Ohio 44118.



57-story Galleria, New York's tallest concrete building. Architect: David Kenneth Spector. Structural Engineer: The Office of Irwin G. Cantor. General Contractor: HRH Construction Corp. Ready-mixed Concrete with *POZZOLITH* admixture: Colonial Sand & Stone Co.

World's tallest reinforced concrete building is 74-story, 859 ft. Water Tower Place in Chicago. Owner: Mafco, Inc., sub. of Marshall Field & Co., and Urban Investment and Development Co., sub. of Aetna Life & Casualty. Architect: Loeb, Schlossman, Bennet & Hackl, and C. F. Murphy Associates. General Contractor: Inland-Robbins Construction, Inc. Concrete Contractor: James McHugh Construction Co. Ready-mixed Concrete with *POZZOLITH* admixture: Material Service Corporation.

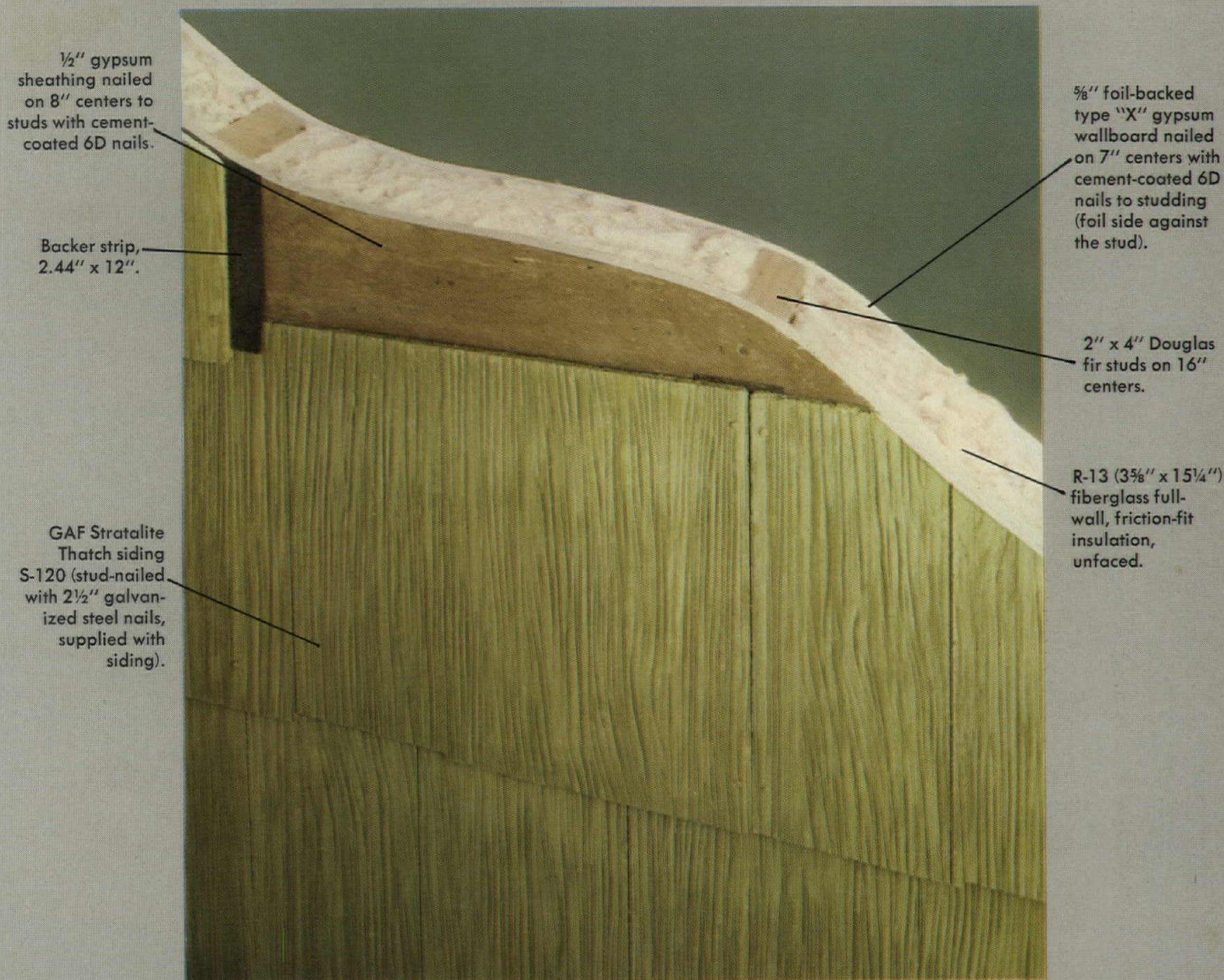
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water-reducing, set-controlling admixture for concrete.

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# FINALLY A LOW COST, ONE-HOUR FIRE-RATED WALL SYSTEM.



1/2" gypsum sheathing nailed on 8" centers to studs with cement-coated 6D nails.

Backer strip, 2.44" x 12".

GAF Stratalite Thatch siding S-120 (stud-nailed with 2 1/2" galvanized steel nails, supplied with siding).

5/8" foil-backed type "X" gypsum wallboard nailed on 7" centers with cement-coated 6D nails to studding (foil side against the stud).

2" x 4" Douglas fir studs on 16" centers.

R-13 (3 5/8" x 15 1/4") fiberglass full-wall, friction-fit insulation, unfaced.

If you're on a budget, squeezed between demands for fire protection and costs, a wall system incorporating GAF® Stratalite® thatch siding may be the answer.

It's a wall system that sets a new record in its price range for fire protection. In fact, it has been tested and certified by Underwriters Laboratories, Inc. to meet all community and fire protection standards for one full hour.

And Stratalite is handsome, with a wood-like durable texture in nine colors. GAF Stratalite cannot burn, warp, crack, shrink, or rot. The colored surface remains fresh and beautiful for years.

Before you start your next project, perhaps it would be wise to write us for full details.

**GAF® STRATALITE®**  
THATCH SIDING

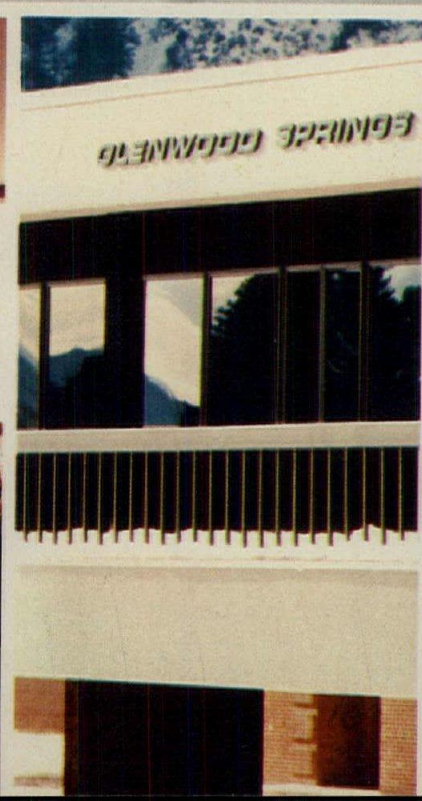
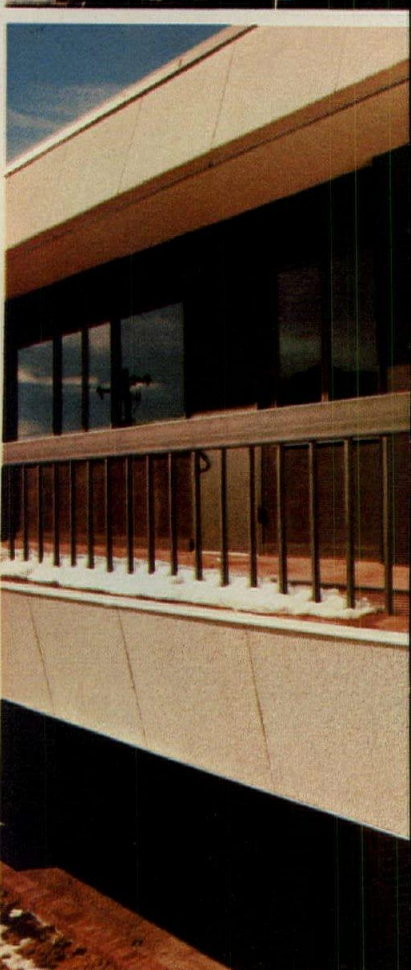
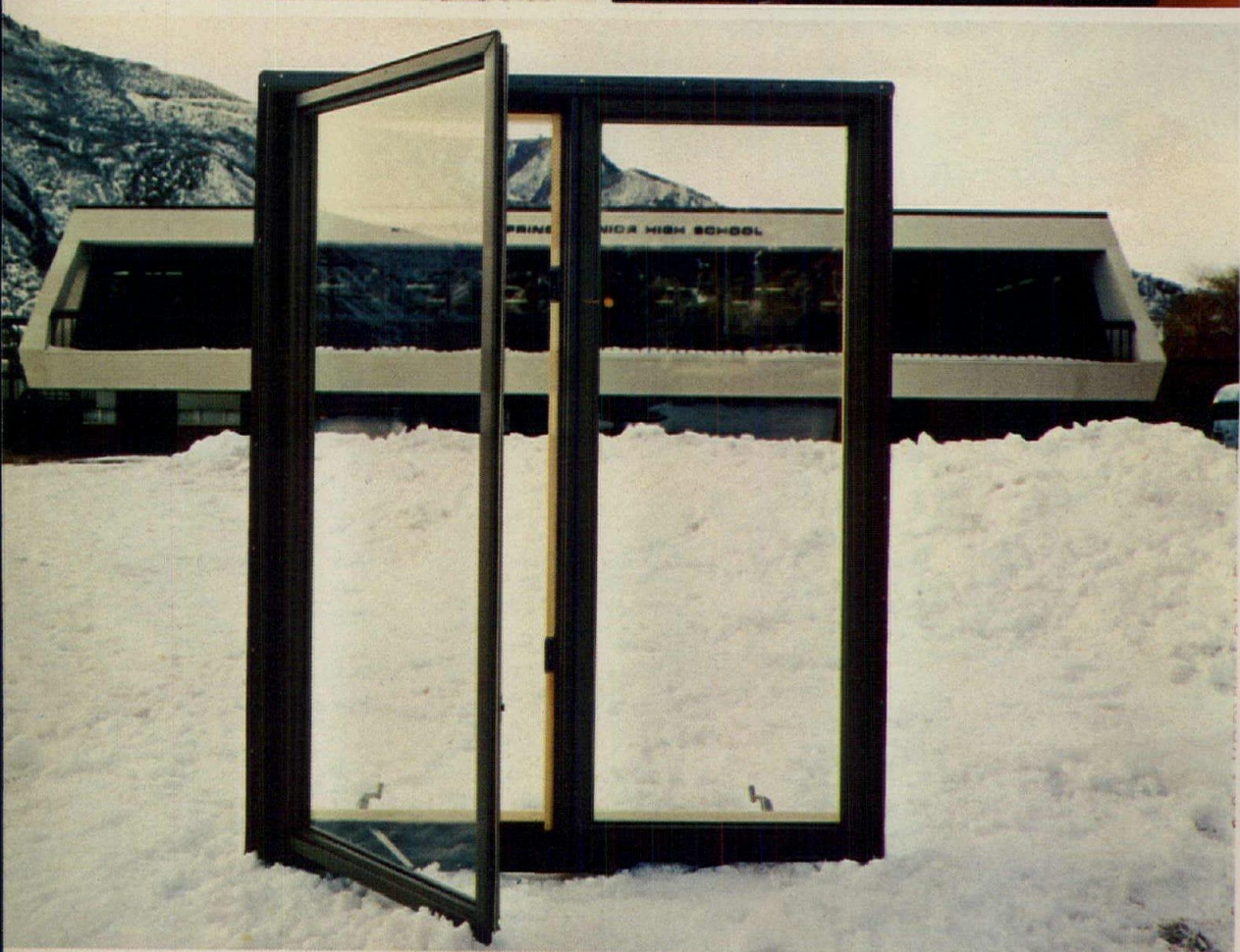
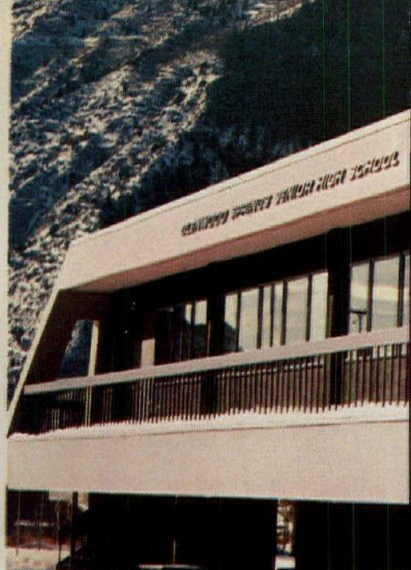
GAF Corporation, Dept. AR-66 Building Materials,  
140 West 51 Street New York, New York 10020

Please rush me full information on your low cost, one-hour fire-rating wall system.  Have a representative call. TA

NAME \_\_\_\_\_

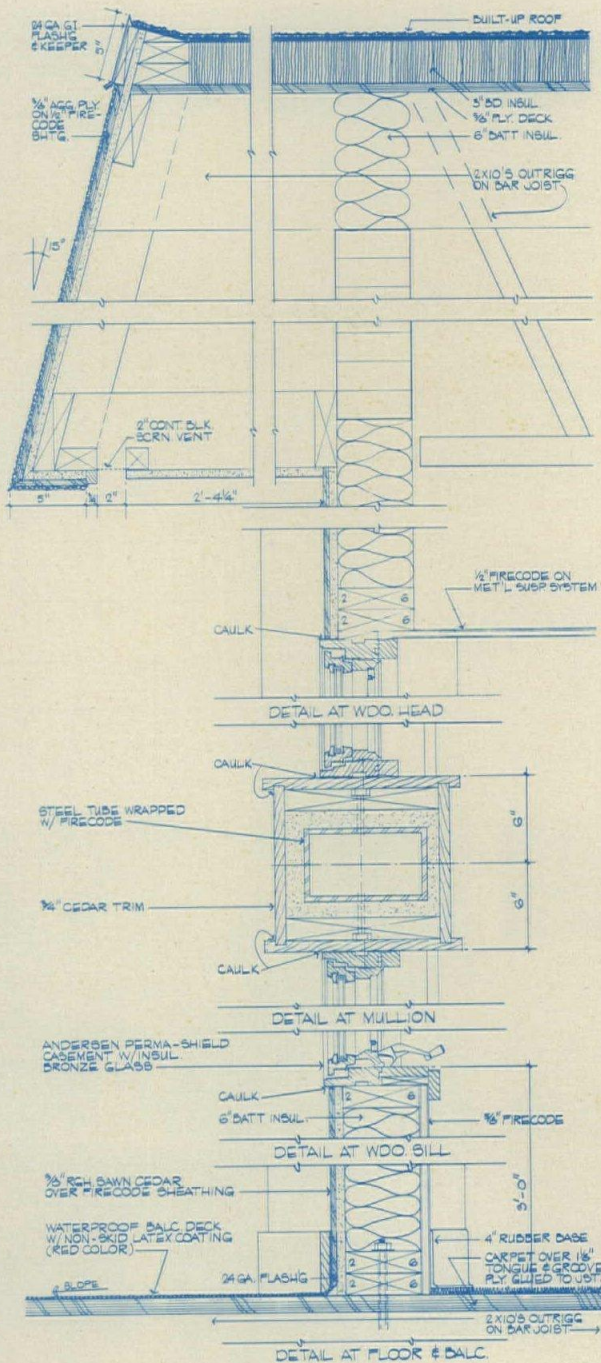
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# At Glenwood Springs High...

## Andersen helps the students maintain their link with the land.



Glenwood Springs High School Addition  
Glenwood Springs, Colorado

Architect: Lincoln Jones/AIA  
Glenwood Springs, Colorado

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

6120 Copyright © Andersen Corp., Bayport, Minn. 1976

Young or old, Colorado people are spirited, friendly, outdoor folks with a strong attachment to the land.

An earth-bond so strong that—building out here—you use only those colors and materials that reflect the surrounding countryside.

That's why, when designing the Glenwood Springs High School addition, the architect chose Andersen® Perma-Shield® Casement Windows — in Terratone color and bronze double-pane insulating glass—along with Andersen Wood Gliding Doors.

He knew the students would like how Terratone's earthy color brought the look of the land to the face of their school. And the natural match Andersen's earth-tone hue and the bronze insulating glass made with both the cedar paneling around the windows and the mountain landscape around the school.

Inside the school, he knew Andersen Wood Gliding Doors would continue the students' link with the land. Using these solid, snug-fitting doors as glide-open interior "walls," he brought the beautiful look, feel and warmth of wood into their study areas.

Finally, the architect knew Andersen Perma-Shield would bring school maintenance costs down to earth, too. Because Perma-Shield is a long-lasting, low-maintenance rigid vinyl sheath designed not to rust, pit or corrode. Not to chip, flake, peel or blister.

So, bring the look of this good earth to your next design. Specify Andersen Perma-Shield Casement and Awning Windows in deep, dramatic Terratone color.

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

The beautiful way to save fuel.

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# depend on Bethlehem

Early involvement of Bethlehem's Sales Engineering Buildings Group enabled the owner to obtain optimum steel frame economy for the building.



#### Call on us early in the design stage

You will gain maximum benefit from our preliminary frame analysis if you call on us before committing your design to a particular construction material. This allows our Sales Engineering Buildings Group and your structural engineer maximum freedom to develop the most favorable steel framing system for the building under study. Our early involvement will also help minimize design changes later on. Two or three weeks are normally required to complete the study, although preparation time varies with the complexity of the building's design.

#### Other services available

Our Sales Engineering Division offers a variety of technical and advisory services, plus a host of technical and product literature . . . all designed to

help you develop the optimum structural frame for your building.

For more detailed information we suggest you get in touch with the Bethlehem Sales Office nearest you.

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The look is warm. The design is soft. Clean. Uncluttered. Gently rounded and trimmed in polished chrome. Finished with meticulous detailing in natural wood veneers, soft leathers or acrylic enamels.

Series 9000 Desks and Credenzas provide you with your choice of pedestal drawer options; your choice of credenza storage units to suit your precise needs, your own unique work habits. And as your needs change, so can Series 9000.

Series 9000 is a unique group of office furniture that will bring a new look to your office and a new standard of performance. We call it the next generation of office furniture.

You'll find Series 9000 on display at your Steelcase Dealer and Regional Office. They're listed in the Yellow Pages.

For full color literature, please write Department G/6.

Steelcase Inc., Grand Rapids, MI 49501.  
Los Angeles, CA 90067; Ontario;  
Steelcase (Far East) Ltd., Tokyo.

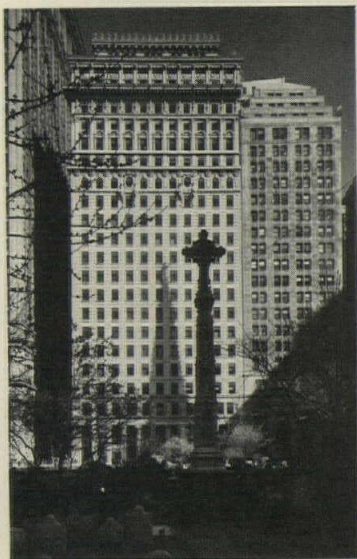
# Steelcase

80033

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Ezra Stoller © ESTO photos



## THE BANK OF TOKYO NEW IMAGE WITH OLD ROOTS

In searching for a solution to outmoded facilities with a dated appearance, this Manhattan bank found what was, for a commercial institution, a revolutionary new answer: stay in the existing building, preserve its visual assets of a grand facade and great public space, and replace its inadequate functional areas with sparkling new facilities—which give freshness to the whole project. Here is an example of good vision by the designers, good sense by the client, and good luck for the city.—CKH



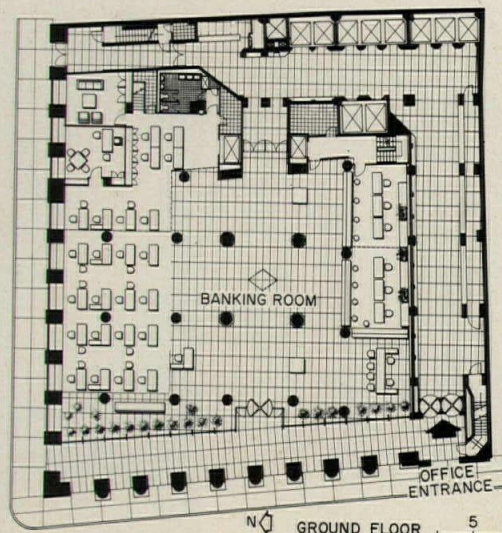
Behind the "traditional" facade there is an almost-completely-new building, which is viewed first through a new recessed, ground-floor arcade (photo top). Within, the original central bay of the banking room has been surrounded by new construction. The central theme of the redesign is a sculpture by Isamu Noguchi.



In many past issues, RECORD has discussed the desirability of preservation and re-use of older buildings—not just of maintaining examples of architects' past efforts, but to leave the valuable, varied context of the neighborhood intact. Too often, however, directors of corporations have thought that headquarters in older buildings were incompatible with the appearance of commercial efficiency, and they have moved from or torn down distinguished buildings primarily to obtain that desired "image." Thus. . .

The newly remodeled Manhattan branch of the Bank of Tokyo is exceptional for two reasons. First, it clearly demonstrates that a sensitive remodeling—designed by Kajima International—can produce relatively inexpensive (\$11 million) "new" space with not only a progressive image, but a highly urbane and memorable image as well. Secondly, this project is distinguished in its respect for its environment: in its highly visible location across the street from the venerable Trinity Church Yard (foreground of bottom photo, previous page), the renovation has maintained the flavor of a uniquely "settled" neighborhood, and it has avoided the usual prolonged disruption of a new-construction site by producing the new space in a short time (during which—by planned staging—the tenants never left the building).

Essentially, Kajima's approach was to almost completely rebuild the interiors of 13 floors of the 22-floor building (designed by architect Bruce Price and built between 1894 and 1896) and to provide new glazing, elevators and mechanical systems for the remaining floors. Left intact, of course, was the structural frame,







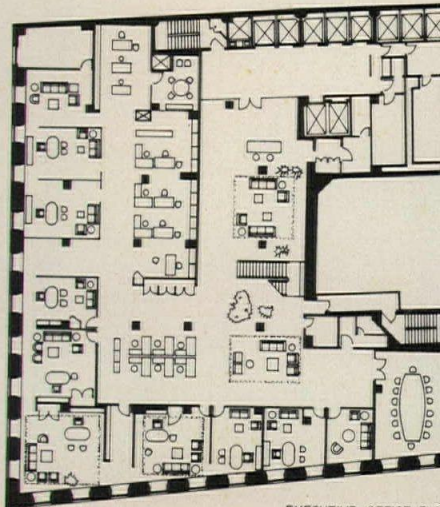
The designers have produced "a journey forward in time." The elevator lobby for the main floor (photo, above) is a white marble "funnel" leading through the original space to the starkly contemporary interiors on the floors above (photo, below).



the irreplaceable ornamental central bay of the banking room, the ceiling of the elevator lobby, and the elaborately carved stone facade. The crisp design of the new construction surrounding the central bay and on the floors above was designed in deliberate contrast to the richness and elaborations of the remaining original detail. And to accommodate and welcome the public at large, the frameless ground-floor glazing facing Trinity Church was pulled back to produce an inviting open arcade and a completely "modern" facade behind the original.

The design of the upper floors of the original building had largely been ignored in the original construction, and resembled the characterless spaces in many commercial buildings of the same vintage. Here, everything is new and appropriately appears that way. Each floor is entered via large elevator lobbies and reception areas, which provide an up-to-date spaciousness. New bronze-glass and metal window units are set in splayed recesses to reflect the natural light, while accommodating the two-foot wall thickness of the old facades.

THE BANK OF TOKYO, New York City. Client: The Bank of Tokyo. Designers: *Kajima International, Inc.*—Nobutaka Ashihara, director; Ryoza Iwashiro, project designer; Martin Frauwirth, manager. Associated architects: *Welton Becket Associates*—Charles Ginste, project director. Owner: *Sylvan Lawrence Company, Inc.*—Fred Safran, architect to the owner. Engineers: *Welton Becket Associates* (structural); *Lehr Associates* (mechanical/electrical). Consultants: *Donald Bliss* (lighting); *Carlos Ramirez & Albert Woods, Inc.* (graphics); *Frank N. Giampietro Associates Inc.* (kitchen); *Jerome Menell Company, Inc.* (audio-visual). General contractor: *Safran Builders, Inc.*



EXECUTIVE OFFICE FLOOR

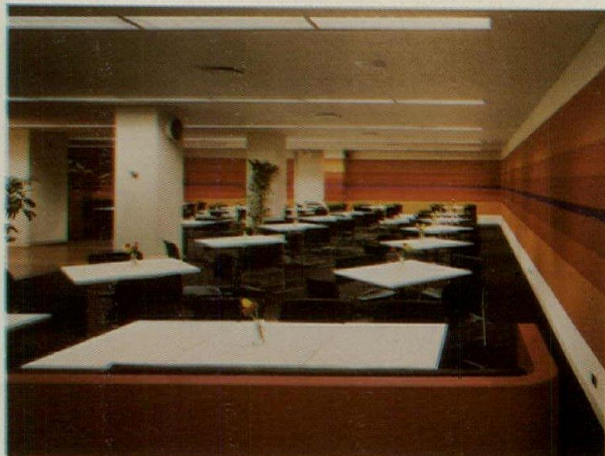


*The plan of an executive floor (opposite page) varies on a typical floor only by open work areas replacing the offices. An executive reception area is shown above, and an office at right. Paintings are by Asoma and Erica Kipp.*





*A restrained placement of furnishings and objects includes bright graphics in the cafeteria (photo, below). Exposed lighting in the office ceilings has slatted covers, and fixtures are designed to be at a greater-than-normal distance apart with consequent energy savings. Floors in many parts of the offices and*



*reception areas are Tasmanian oak. The top photo shows the typical open office areas, and the photos at left show a mezzanine-level conference room (overlooking the banking floor) and a meeting room with audio-visual facilities.*

# FRANK GEHRY: THE SEARCH FOR A "NO RULES" ARCHITECTURE

"My approach to architecture," says Frank Gehry—principal of the Santa Monica-based architectural firm of Frank O. Gehry & Associates—"is different. I search out the work of artists, and use art as a means of inspiration. I try to rid myself, and the other members of the firm, of the the burden of culture and look for new ways to approach the work. I want to be open-ended. There are no rules, no right or wrong. I'm confused as to what's ugly and what's pretty. Buildings become obsolete, so individual criteria is not the issue. I think an architect should respond to the site and budget, but be allowed to create space that is flexible and for multi-use.

"I design for minimal construction, by defining only the line or outer physical wall, and let the user define his own space and make it an intimate part of himself, so he will develop a relationship with the architecture. That relationship may be totally different from the person's down the hallway or down the street—or the next owner. In that sense, too, it is important to design a flexible space.

"Because times and the economy are changing, we are looking for ways to create buildings that are inexpensive, yet provide a quality of richness. I call it 'cheapscape architecture'. We are constantly trying to think of new uses for existing materials that have become stereotyped for use in a certain kind of building or in a particular manner. The material, however, must justify itself.

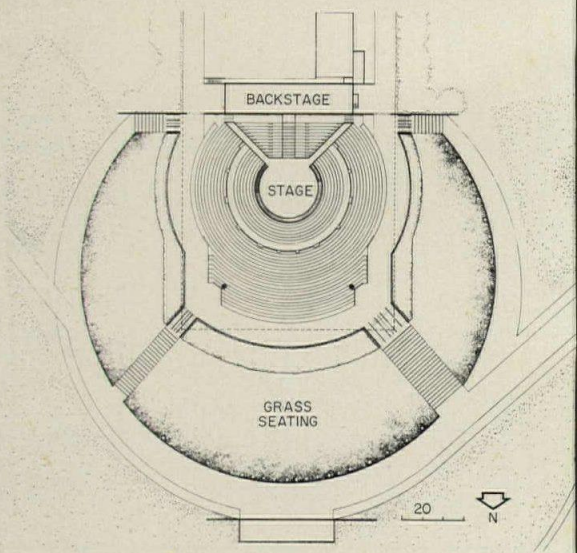
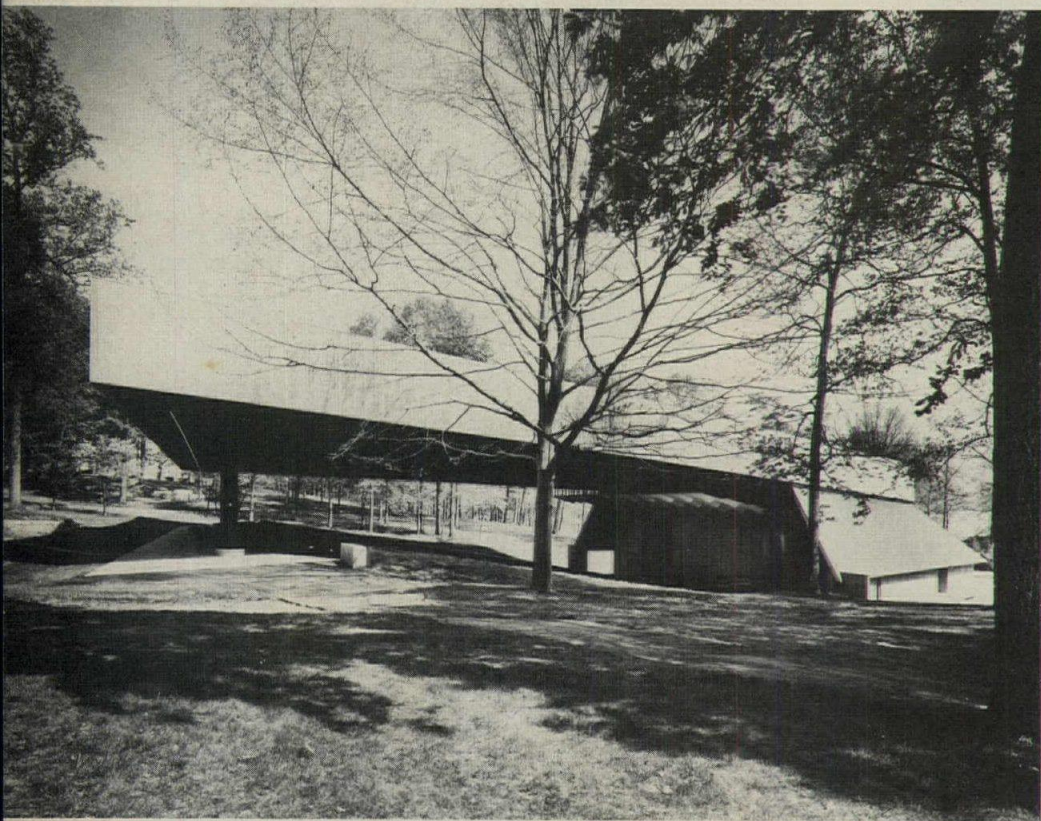
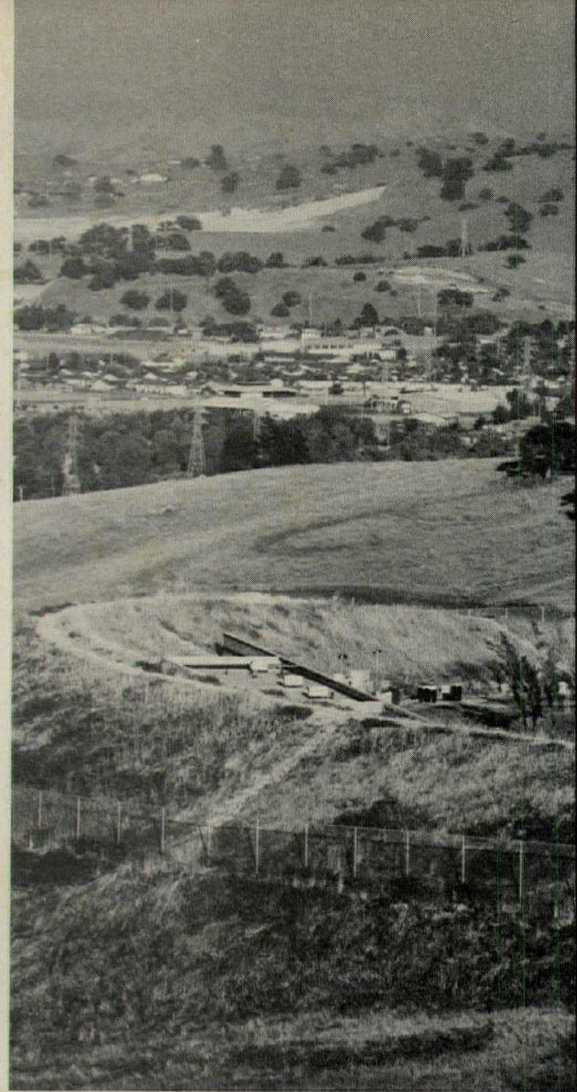
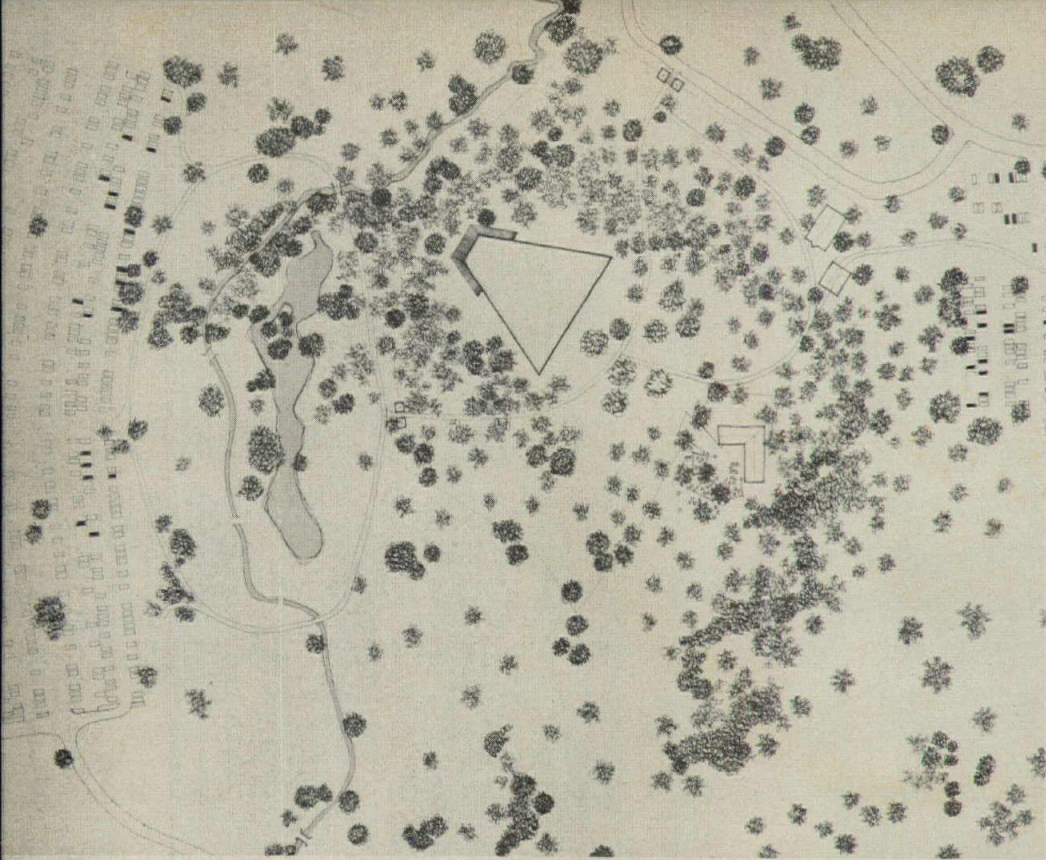
"I am also trying to explore 'invisible architecture'. By invisible I mean architecture that doesn't shout 'Look at me, I'm Architecture!'—but instead is very subtle."

On the following pages are a variety of projects which represent the evolutionary process of design in the firm's work and which express Frank Gehry's architectural philosophy.

—Janet Nairn







Robert Lautman photos

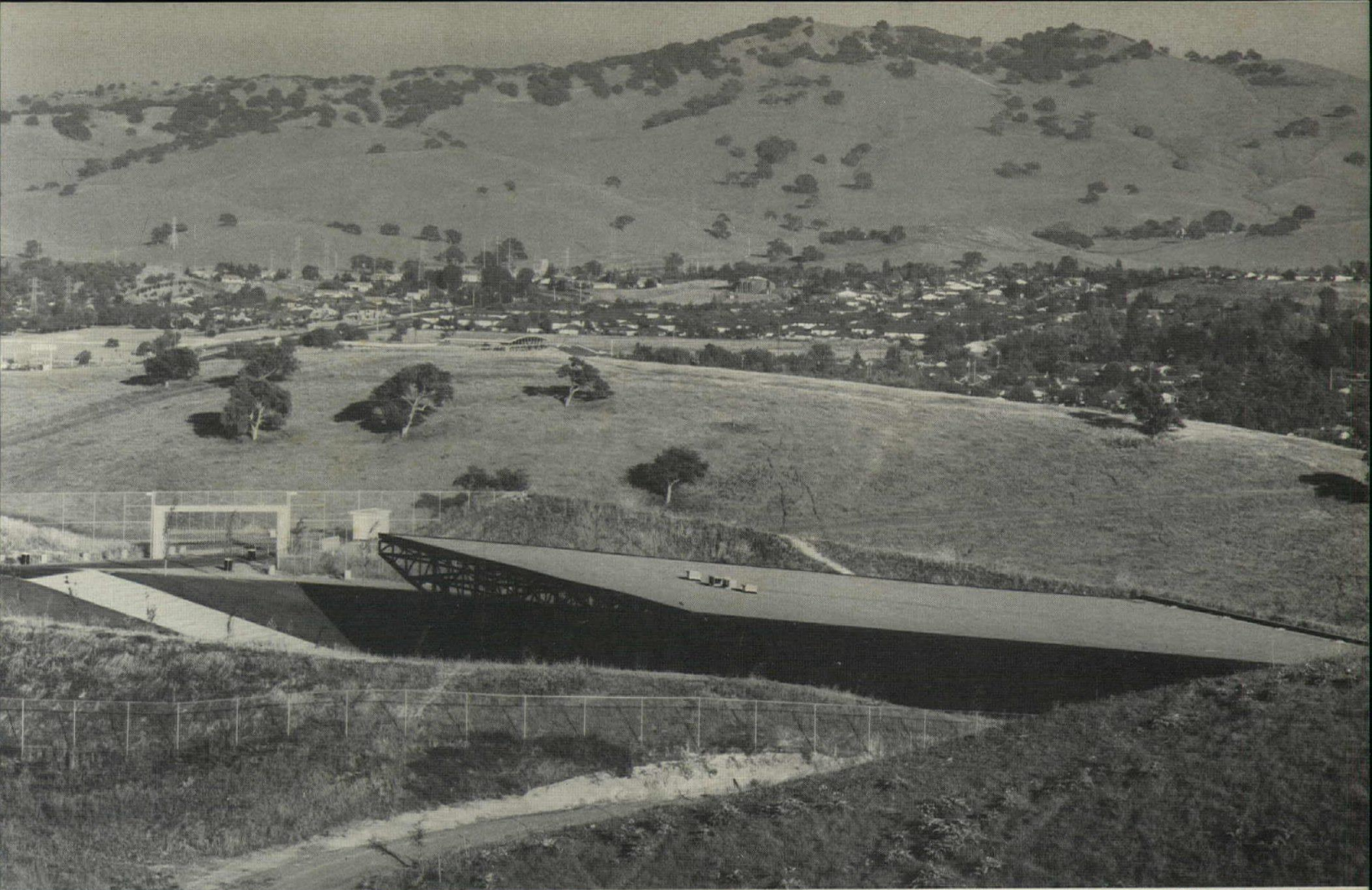
## Merriweather Post Pavilion Columbia, Maryland

A set of three pavilion projects—Merriweather Post Pavilion of Music, Concord Pavilion and Hollywood Bowl—is one important group of projects in which the firm has been involved. The Concord Pavilion is a direct, but expanded, result of the earlier Merriweather Pavilion design, and the Hollywood Bowl redesign—the newest work—cannot be separated in its approach to shell structure design and acoustic problems encountered in the other two pavilions.

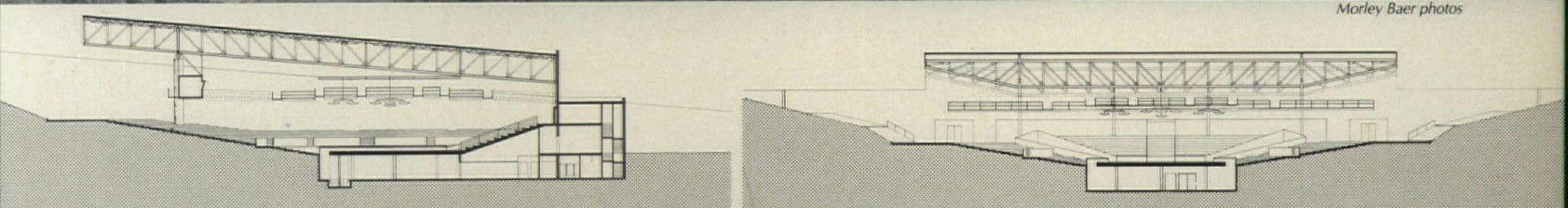
The Merriweather Pavilion (above left) met severe time restrictions, for it was designed and constructed in eight months to meet a previously committed orchestra schedule. On a gentle slope in a downtown park, the structure consists of a 35,000-square-foot, fan-shaped, trapezoid roof, supported by six columns. An exposed system of steel joists span 150 feet with 15-foot cantilevers. The Pavilion seats 3000 persons under the roof, and can accommodate 4000 persons on the surrounding lawn. Facilities for acoustics include two canopies: the acoustical canopy, which hangs

over the orchestra, and the fore-stage canopy, which extends 30 feet from the stage over the audience. No amplification is used within the Pavilion; those outside the Pavilion hear the natural sound reinforced by a tape delay system heard from five speakers mounted in the rear of the roof.

MERRIWEATHER POST PAVILION OF MUSIC, Columbia, Maryland. Architects: Frank O. Gehry & Associates, Inc.—Frank O. Gehry, C. Gregory Walsh, Jr., N. David O'Malley, design team. Structural engineer: Aaron Garfinkel & Associates. Acoustical consultant: Christopher Jaffe. Contractor: Gilbane Building Company.



Morley Baer photos



## Concord Pavilion Concord, California

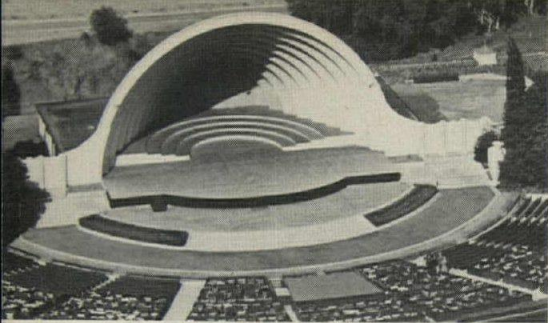
The West's newest open-air performing arts center is the Concord Pavilion, located in the rolling foothills of Mt. Diablo, east of San Francisco. The structure is an exciting fan-shape (reminiscent of Merriweather Pavilion), 200-foot-square steel truss roof, supported by two columns at the open end, and a long, low concrete block sound wall at the other end, separating back-stage facilities. Underneath the roof, which cantilevers 40 feet over the columns, is seating for 3500 persons, while a raked, grassy bowl seats an additional 4500 persons. The structure and bowl are sunken in

a crater-shaped amphitheater (constructed by utilizing existing topography, additional excavation, and the addition of an earth berm).

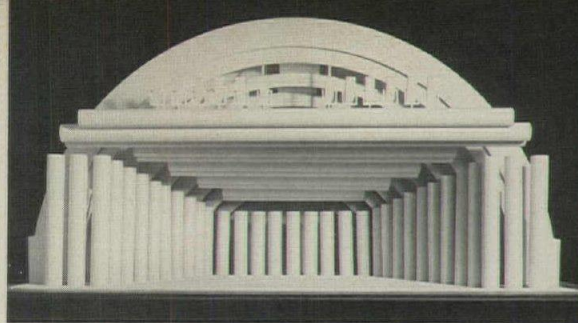
The flexibility of the Pavilion was paramount, for it accommodates a variety of community activities, ranging from musical and theater performances, to school graduations and public rallies. The stage, therefore, was designed as a theater-in-the-round, which can be converted to a conventional stage with a proscenium (and with scenery hung from the trusswork), or any number of other stage configurations. While the acoustic system is complex, it is reinforced with an electronic sound system called "Assisted Resonance,"

which enables the amount of reflected sound to provide optimum reverberation for various types of performances. This system is a key element in the Pavilion's multi-use concept. Since the Pavilion's recent completion, it has also been used as an acoustical research lab.

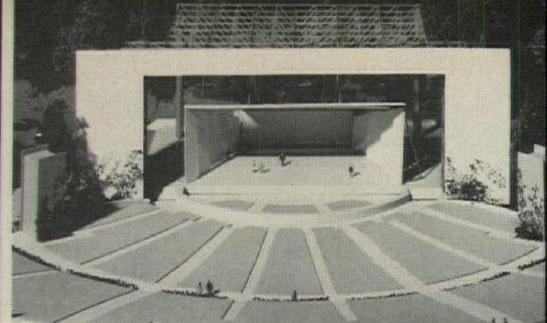
CONCORD PAVILION, Concord, California. Architects: Frank O. Gehry & Associates, Inc.—Frank O. Gehry, C. Gregory Walsh, Jr., James F. Porter, design team. Engineers: Garfinkel & Kurily & Associates (structural); Irving Schwartz Associates (electrical); John Kerr Associates (mechanical). Landscape architects and civil engineers: Sasaki-Walker & Associates. Consultant: Christopher Jaffe (acoustics, stage and lighting design). Contractor: F. P. Lathrop Construction Company.



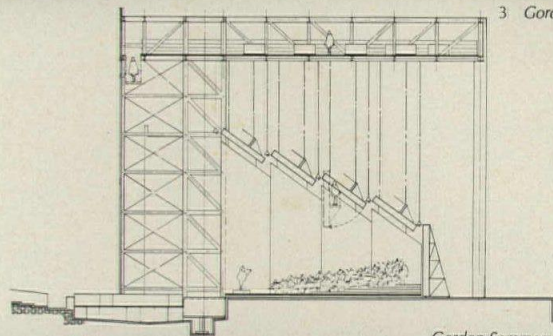
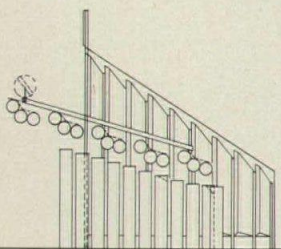
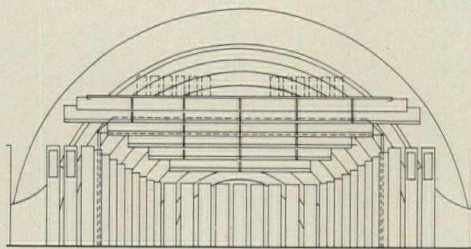
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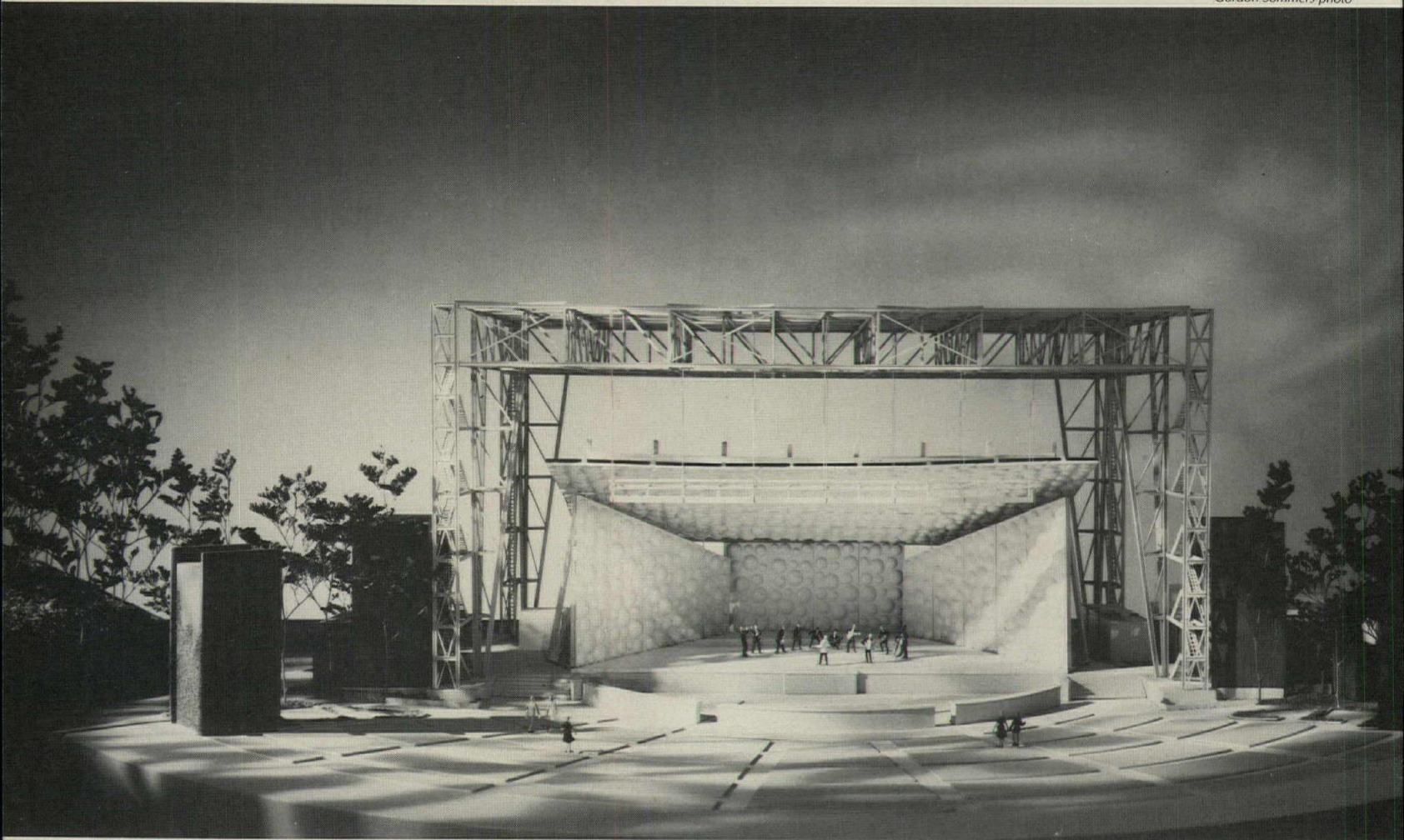


3 Gordon Sommers



Gordon Sommers photo

4



## Hollywood Bowl Hollywood, California

The story of the Hollywood Bowl is, in itself, an evolutionary tale. Two shells (one a Frank Lloyd Wright design completed in 1927) had each been demolished, and subsequently, in 1929, the present shell was built (top left). Because of inferior acoustic and lighting conditions, the Gehry firm was hired in 1969 to design a temporary solution to the problems, while working on a final solution, part of a master plan for redesigning all facilities. The temporary solution (top center) consists of a set of cardboard tubes placed inside the shell.

While an unusual concept, it developed from research and manufacture of cardboard furniture, another project of the Gehry firm. These tubes diffuse the sound and create resonating chambers.

The plan for the new, permanent shell calls for demolition of the existing shell, and replacing it by an open steel truss, from which can be hung a solid proscenium wall (top right). A bare open structure, however, is the architect's preference. Experiments with a variety of acoustical panels, including panels of "bubbles" (above) are now being conducted.

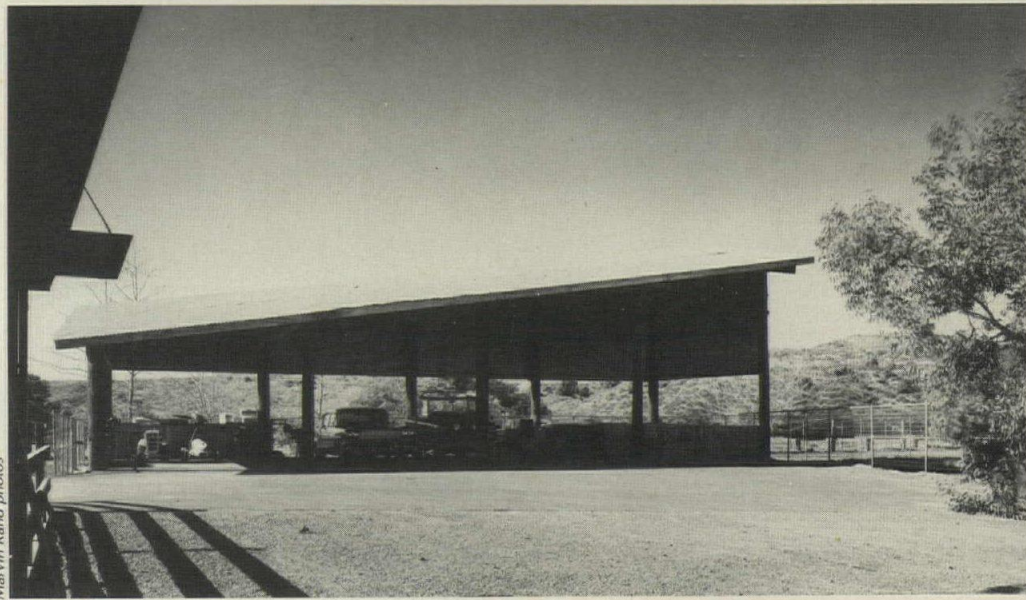
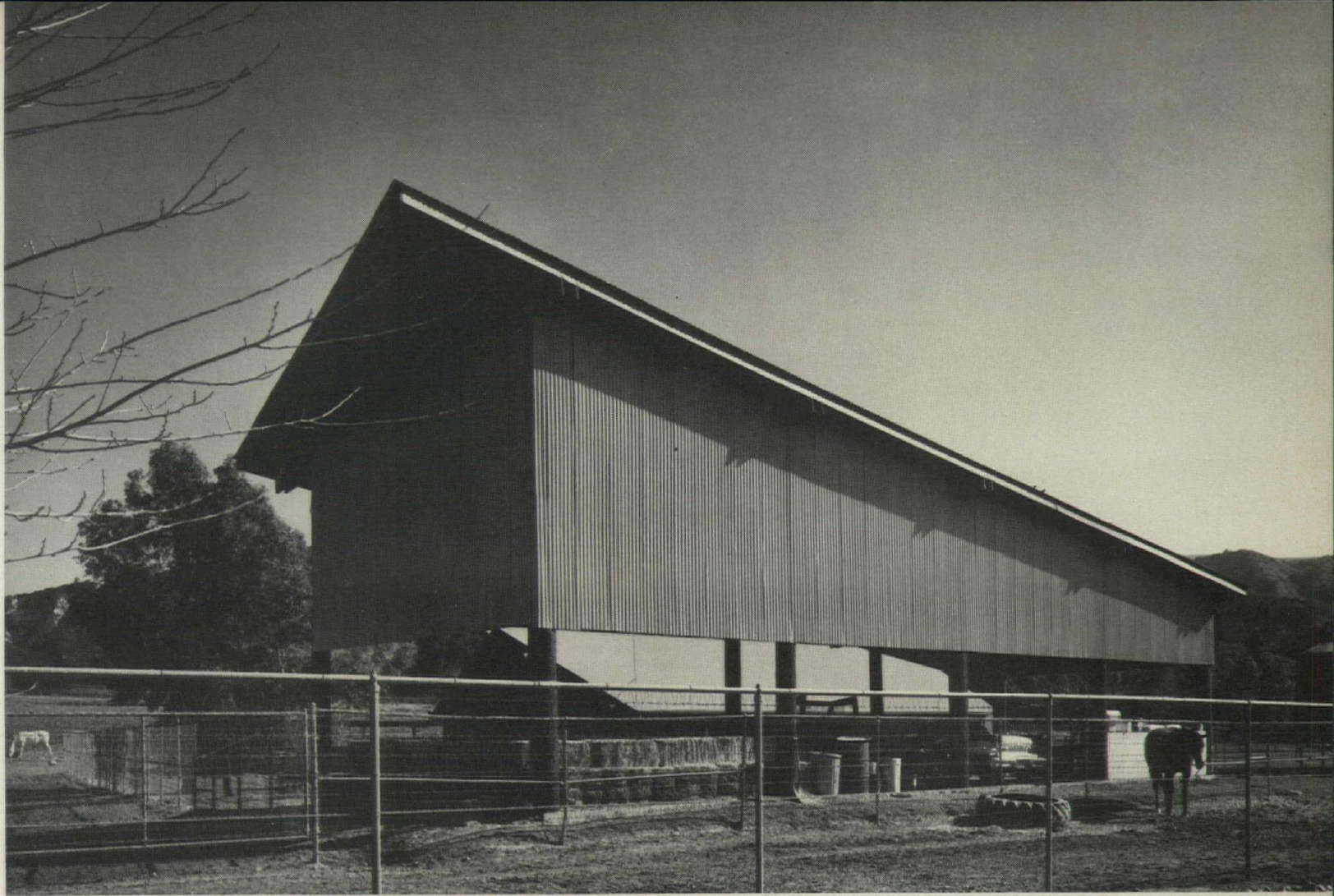
HOLLYWOOD BOWL, Hollywood, California.

(1) Existing shell: *Elliott, Bown, Walz* (engineers) and *Vern O. Knudsen* (acoustics)

(2) Design for temporary use. Architects: *Frank O. Gehry & Associates, Inc.*—*Frank O. Gehry, C. Gregory Walsh, Jr.*, design team. Structural engineer: *Joseph Kurily*. Acoustical consultant: *Christopher Jaffe*. Contractor: *George Kobel* (with *Symphony stage hands*).

(3) Early schematic model. Architects: *Frank O. Gehry & Associates, Inc.*

(4) Final schematic model. Architects: *Frank O. Gehry & Associates, Inc.*—*Frank O. Gehry, C. Gregory Walsh, Jr., Barton Phelps, Peter Wexler* (theater design). Engineers: *Garfinkel & Kurily & Associates* (structural); *George Thomas Howard & Associates* (electrical/theater equipment). Acoustical consultants: *Boner Associates*.



Marvin Rand photos

## Hay Barn For O'Neill Ranch San Juan Capistrano, California

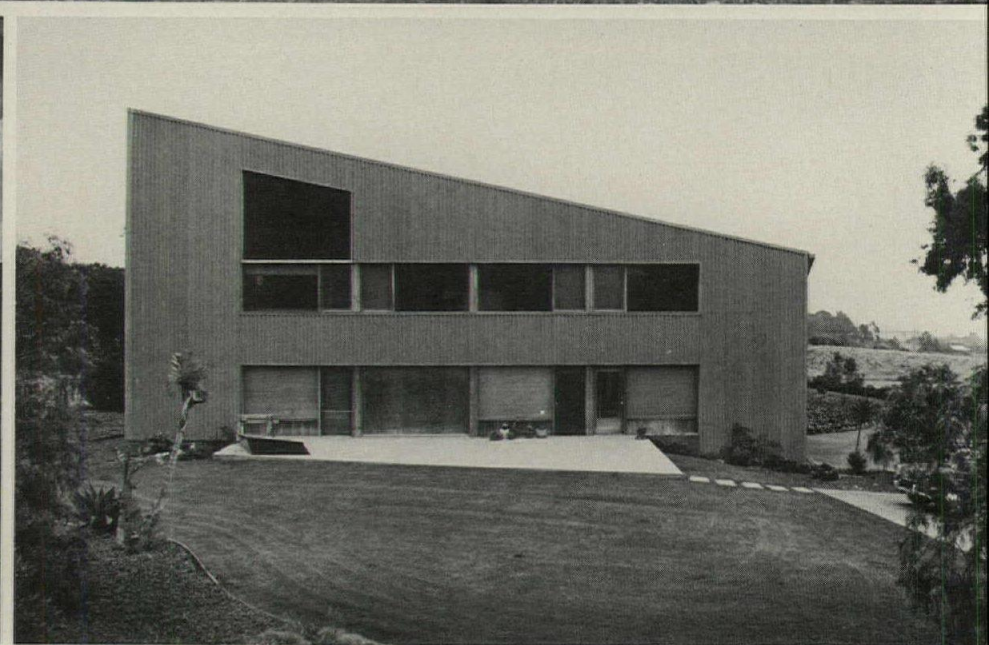
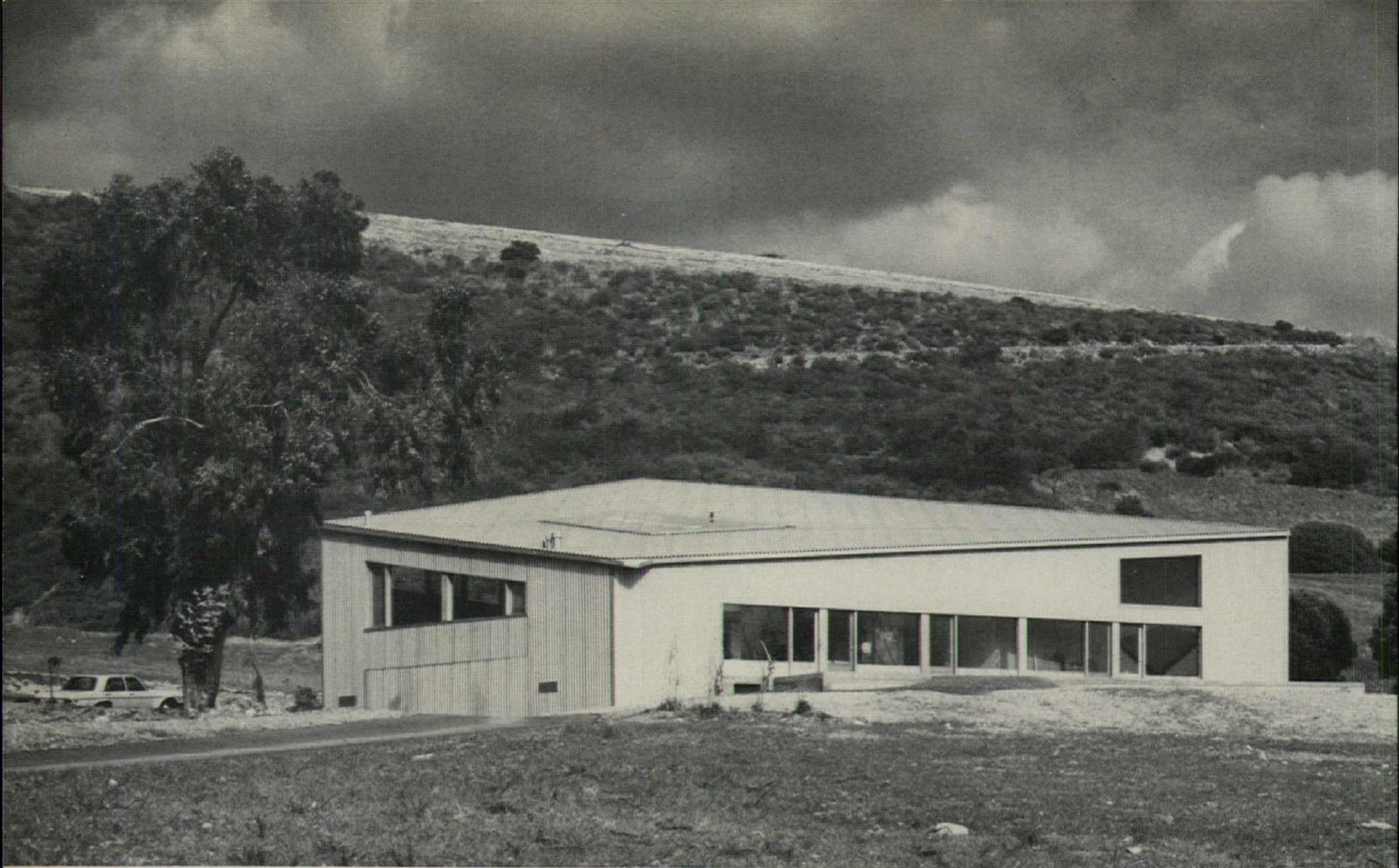
Intrigued by materials traditionally used in industrial building and the desire to "give more for the client's money," Gehry has designed several structures with corrugated, galvanized metal.

Gehry accepted a commission for a small project—a hay barn—in order to experiment with both the corrugated metal and form, and he designed it as a "minimal sculptural statement." Ideas generated by this project were elaborated on in the larger, more complex designs of the Davis residence and the Long Beach project (shown on the following pages).

As a simple, clear statement, it is unpretentious and functional—and beautiful. The slope of the roof follows its function, coordinating roof height with required storage space. The sharp roof line (bottom left) works well visually with the other buildings in the area. "When seen from afar," states Gehry, "the roof seems to disappear as it slopes downward." Total cost was \$2500, and the building was built by the ranch hands.

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HAY BARN FOR DONNA O'NEILL RANCH, San Juan Capistrano, California. Architect: Frank O. Gehry.



## Ron Davis Residence Malibu, California

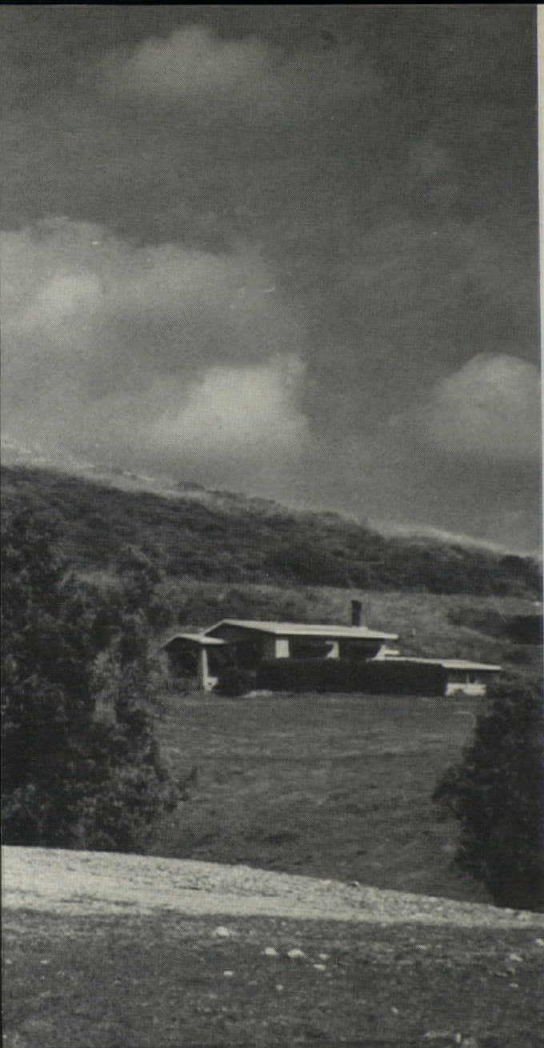
An unusual concept for a residence is Gehry's design for an artist, Ron Davis. A temporary combination of residence and studio (a separate studio is planned for later) is located on a three-and-one-half-acre site in Malibu with views to the south and west of the ocean and to the north and east of mountains. The objective of the architect was to create a minimal structure in which Davis could arrange space for his own special and changing needs. A trapezoidal form (reminiscent of the hay barn design) was developed from a close collaboration between artist and architect, and relates

strongly to Davis' paintings (mostly abstracts based on strong use of perspective).

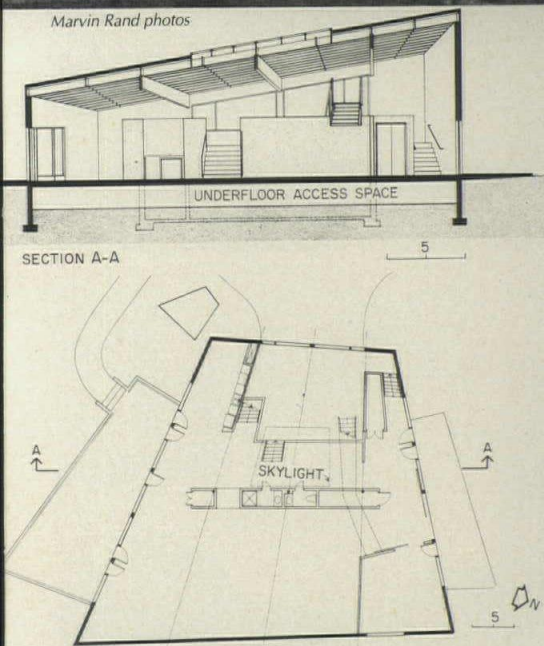
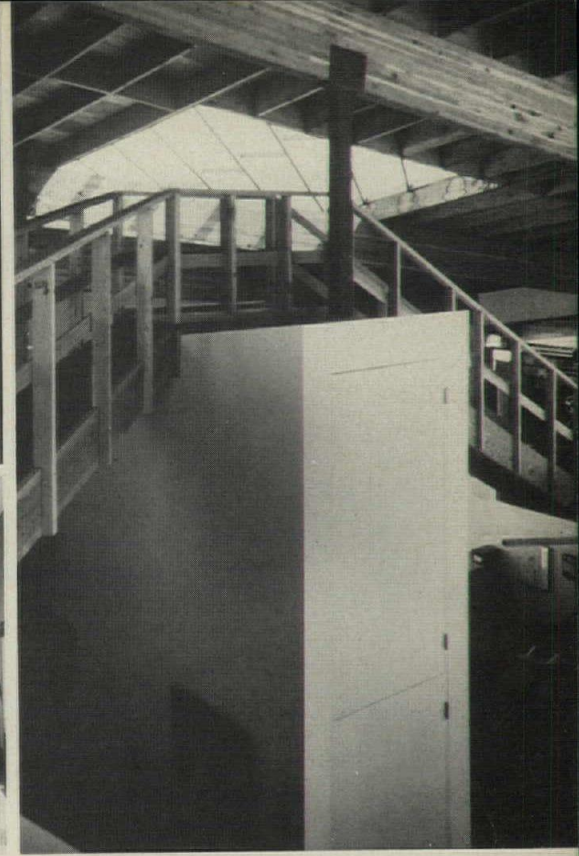
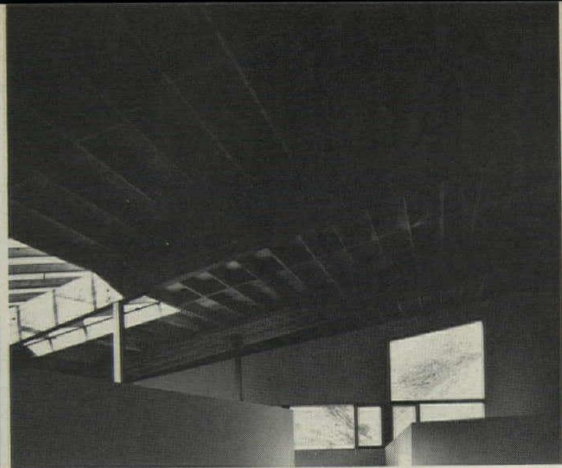
From a 30-foot-high corner, the roof slants steeply to a 10-foot height at the opposite corner. Windows—in varying sizes and shapes (and reflective glass on the south wall)—and a large 20- by 20-foot centered skylight allow more than adequate natural light for the artist's work. These unconventional shapes add a new dimension and different perspective to each side of the house. The use of corrugated, galvanized metal on the exterior—at a cost of only \$16 per square foot—permitted an en-

largement of the house's size to 5000 square feet within the owner's budget.

The angular and high ceiling allows a flexibility in use of the space, including loft space, which could be expanded to a complete second floor within the structure, thus doubling the floor area. Openness for work area and display of art was achieved through the use of only three center columns and few partitions. To increase the flexibility for the artist, Gehry originally proposed that everything, including wall partitions, be on wheels, allowing spaces to be changed according to need and function. This was not done, but there are very few permanent partitions, none full ceiling height. A



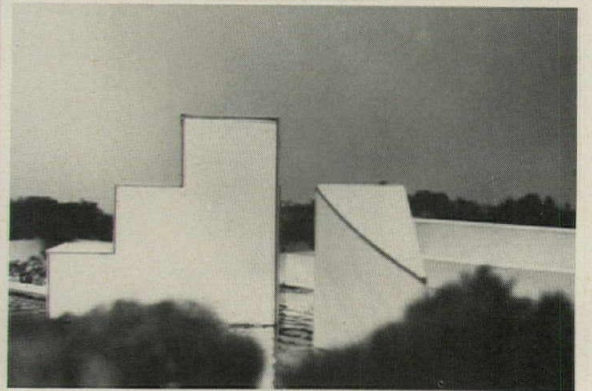
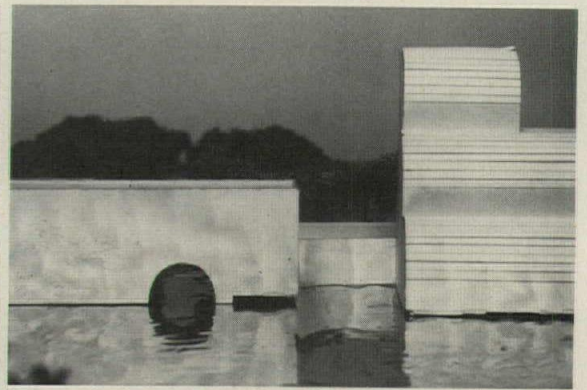
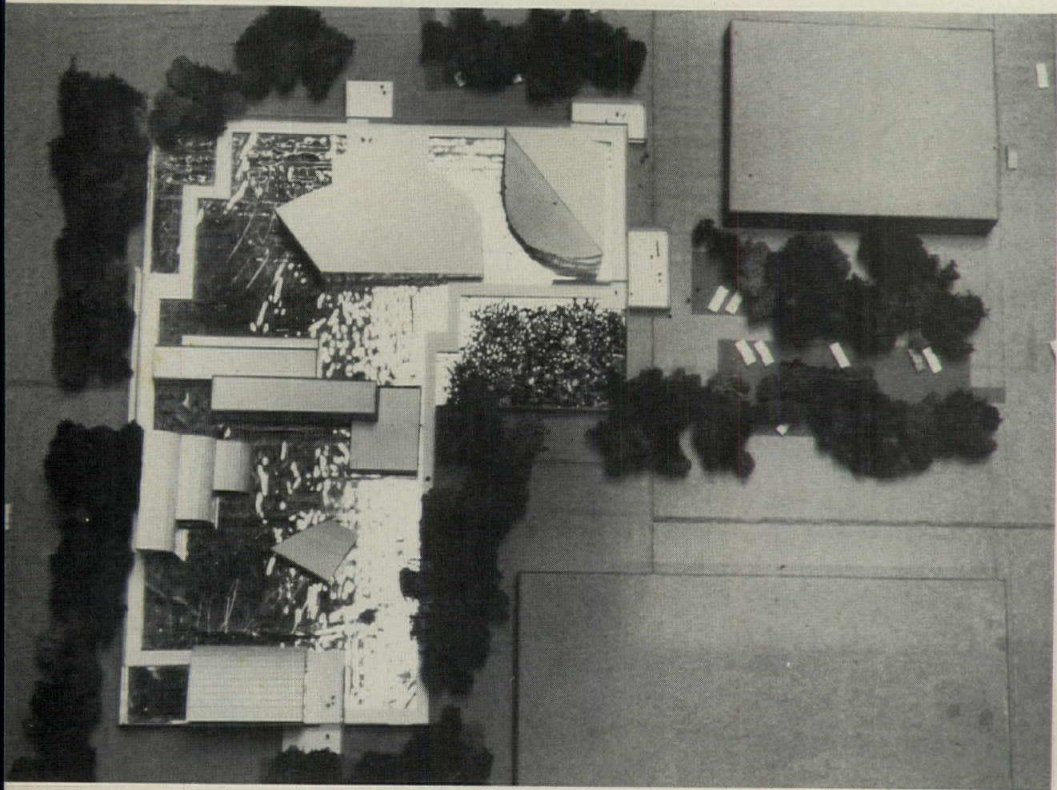
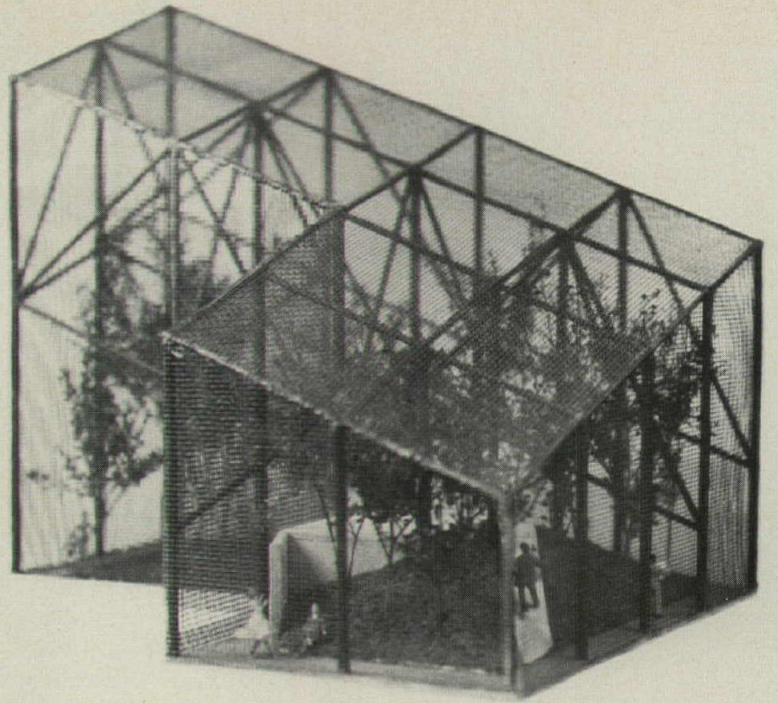
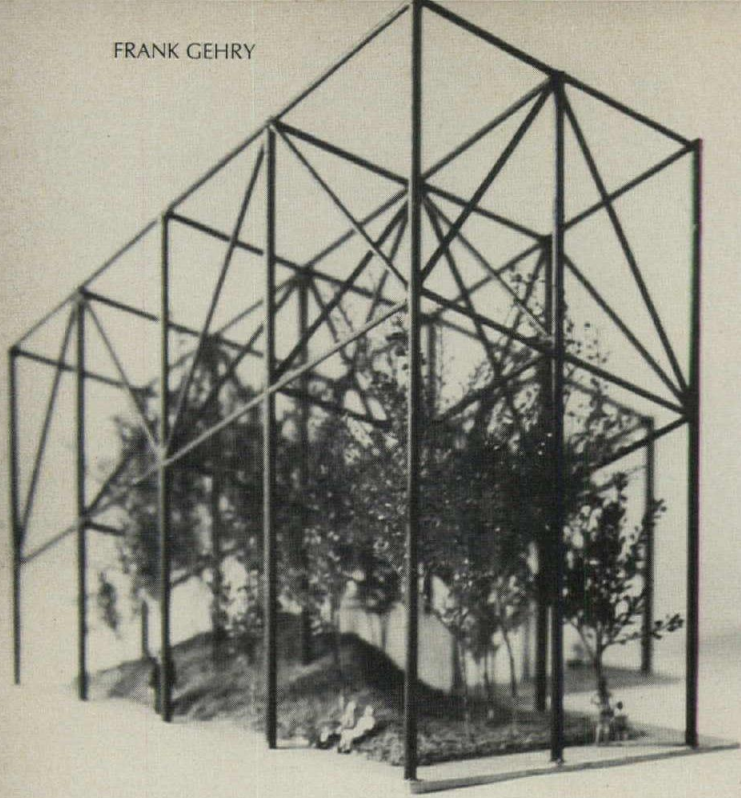
Marvin Rand photos



partial second level (top, far right) was built to allow an unusual place to sit, talk, sketch or view art work.

One of Gehry's aims is to create spatial illusions. In designing for these he uses unusual shapes—and this design surely avoids the obvious and predictable. "If you move a chair or a wall," says Gehry, "you don't know what's going to happen to its relationships. Night brings another change. Like the sea, the moods are endless."

DAVIS RESIDENCE/STUDIO, Malibu, California. Architects: Frank O. Gehry & Associates, Inc.—Frank O. Gehry; C. Gregory Walsh, Jr., design team. Structural engineer: Joseph Kurily. Contractor: John Fernandez, of Jondol Company.



## Long Beach Park Sculpture Institute for Jung Analysts

Frank O. Gehry & Associates has been recently retained to design two extremely unusual projects, both of which are presently in design stage. The first is a group of four buildings for a Long Beach park; the second is the Institute for Jung Analysts. Both strongly represent the most advanced examples of Gehry's architectural philosophy.

One structure in the Long Beach project (top) is an open-air, walk-through sculpture, sheathed in chain-link fence, with steel trusses

supporting the frame. The angular roof and sides are similar to the hay barn and the Davis residence designs. It has no specific function, but is intended to be an "experience." Once again, Gehry has defined only the perimeter wall—using inexpensive materials.

The Institute for Jung Analysts (above) will be located in an industrial section of Los Angeles. The design is an expansion of Gehry's "invisible architecture" philosophy, and is a radical departure from the kind of buildings the client has previously occupied. Gehry's proposal is quite simple in that he intends to build a wall that will surround a series of buildings set in a pool of water (the symbol of the unconscious in Jungian philosophy). The buildings will include education facilities, analysts'

offices, a library, administration and visitors' living quarters. The design of the individual buildings is still undecided but Gehry has been toying with different forms (represented in photos). As Gehry further explains, "The wall is a division line between inside and outside environments, and when a person enters, he will find a totally different world. The wall defines the relationship of a person to the sky, for that's all he will see above the wall. The sky will be reflected in the water, as will other images of buildings, people and art work."

# NEW HAVEN'S DIXWELL FIRE STATION BY VENTURI AND RAUCH

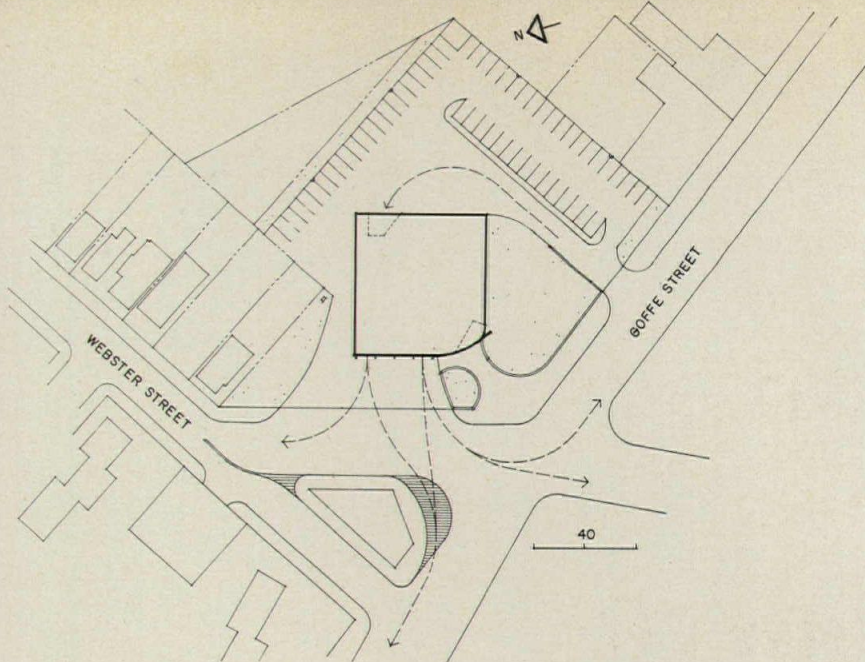
"We must remember to talk about context,  
which is supposedly the key to  
understanding these pesky 'inclusivists.'  
In New Haven there is a heap o' context."  
... a critique by Robert L. Miller





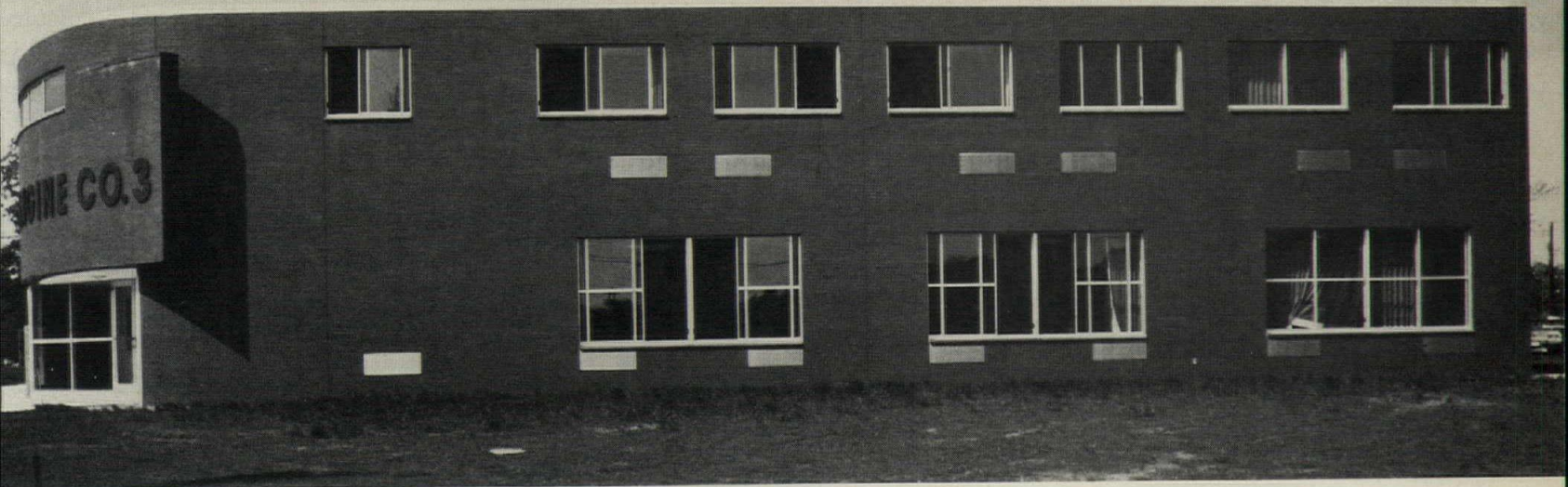
For a sprawling urban renewal site in New Haven's Dixwell neighborhood, Venturi and Rauch were asked to plan a home for three formerly separate fire companies and a rescue unit. The result is a box within a box—the smaller one being a two-story “apparatus room” for fire engines and other equipment, and the larger one the almost-square building itself, which contains the apparatus room and everything else.

The big doors face neither of the two intersecting streets, but open instead onto the angled lane that connects them. This arrangement, and a wide apron, assures optimum maneuverability for trucks headed in either direction. It also assures, however, that the building does not face the major street (Goffe Street in the adjacent site plan). Thus the building is truncated on the Goffe Street corner to provide a pedestrian entrance.



Above the entrance a brick wall that carries a long list of company names sails out into space. Most of the building is finished in a dense, but unglazed, brick with matching mortar; it produces a heightened version of common brick red, saturated enough to recall “fire engine red” in a city whose fire engines are white. Standard, natural finish aluminum windows and storefront glazing are used. But there are also special elements, in addition to the brick sign, to identify this as a public building: a flagpole set in a tiny but lush green lawn, and a small white marble veneer wall that marks the pedestrian entrance.



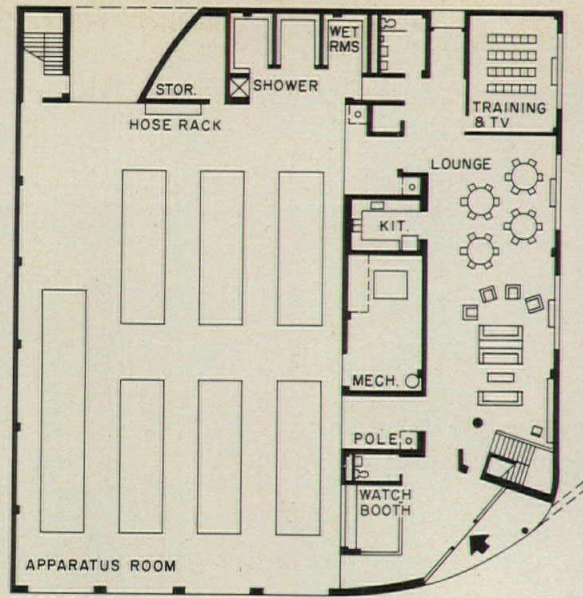


*Venturi and Rauch photos*

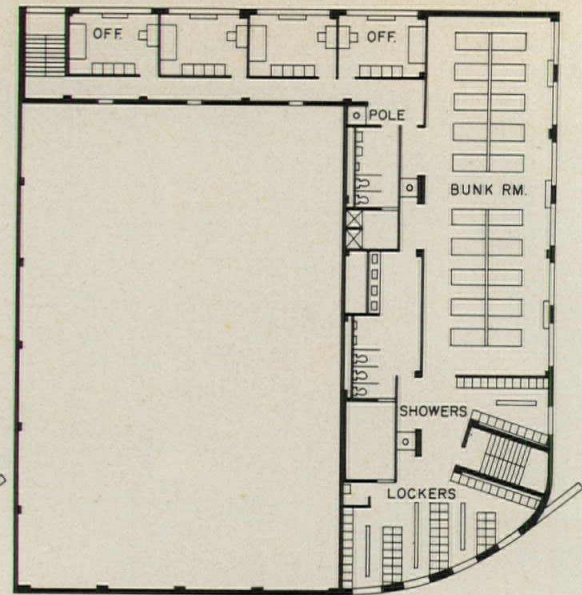


The carefully maintained, like-new look of the interiors is striking in combination with the like-old look of the finishes, which recall a standard institutional interior of the 1950s: light green glazed wall tile, marbled floor tile in a checkerboard pattern, rubber cove bases and natural, colored aluminum hardware. Within this vocabulary there are small but noticeable shifts from the ordinary, combined with unusual precision in detail.

DIXWELL FIRE STATION, New Haven, Connecticut. Architects: *Venturi and Rauch*—Robert Venturi, John Rauch, Arthur Jones, Leslie DeLong, Robert Renfro. Engineers: *The Keast and Hood Company* (structural); *Vinokur-Pace Engineering Services, Inc.* (mechanical/electrical). Consultants: *Dian Boone* (interiors); *William Genetti* (cost). Contractor: *J. H. Hogan*.



FIRST FLOOR



SECOND FLOOR

Cervin Robinson photos





Venturi and Rauch's Dixwell Fire Station is a splendid building entirely on its own—surreal in the positive, literal sense of being super-real, as real as your corner gas station, and as super as you would feel as a ten-year-old at the wheel of a speeding American LaFrance hook-and-ladder, siren howling, dalmatians close behind. Before getting carried away by the building, however, we must remember to talk about *context*, which is supposedly the key to understanding these pesky "inclusivists," with their tiresome insistence on recognizing the existence of buildings other than their own.

In the case of New Haven, which shares with Columbus, Indiana, the distinction of being either the showcase or the elephants' burying ground of modern American architecture, there is a heap o' context.

One of the earliest critics of New Haven's architecture was a visitor from the Massachusetts Bay Colony, who observed that, given the settlement's modest size and wealth, its houses were perhaps overly "elaborate." Indeed, New Haven was one of North America's first planned cities, designed to be the capital of a large, independent colony. Through a series of economic and political misadventures, however, this role was never fulfilled. The city found its true identity as a solid, lower-middle class, ethnically diverse factory town like many others in New England, passing in and out of the fiscal doldrums unto the present day. Its original pretensions, however, kept alive by the presence of Yale University, were never forgotten. In this way the city developed a kind of architectural split personality. Generations of snobbish Yalies observed that if it were not for Yale, New Haven would be Bridgeport—a saying so old that it might have been attributed to that visitor from Massachusetts, had Bridgeport and Yale existed at the time.

In their search for built grandeur, Yale and New Haven have almost always opted for the exotic and the richly eclectic. It is a taste shared by other, deceptively conservative New England towns, in whose squalid, damp climate the latest gewgaw just off the India clipper often made better architecture than the masterly, correct, and magnificent play of forms in the murk. New Haven's native architect laureate, Henry Austin, in the mid-19th century honed his taste to a fine edge of insanity with his Moorish-Gothic-Italianate villas, sprouting enough cupolas, overhangs, and brackets to make Frank Furness look like Walter Gropius. Later, having torn down its original door, the Harvardesque Brick Row, Yale imported a long series of architectural carpetbaggers to create, among other things, a building that is Gothic in front and Georgian in back, and an intersection whose four corners contain Gothic, Georgian, Venetian, and Moorish buildings respectively. (The Moorish one, a secret society by Richard Morris Hunt, is hard by an enormous Beaux-Arts facade by Carrère and Hastings, which is in turn across the street from Austin's Egyptian cemetery gate and the world's largest Gothic power plant.)

Coexisting, more or less, with all this was the other New Haven: three-decker houses on elm-lined streets, open-air markets, scattered

factory loft buildings, lots of Queen Anne porches and Jane Jacobean amenities as well as a few genuine, unpicturesque slums. Never exactly prosperous, this New Haven was hit hard after World War II by the now-familiar inner-city problems, including rampant suburbanization.

It was the rise of the cities, the car culture and the highway programs, and the invention in the early 1950s of urban renewal that finally, after three hundred years, allowed dons and burghers led by Mayor Richard C. Lee to drive a wedge both literal and figurative between the fantastic, pinnacled, and towered dream capital and its grubby industrial underpinnings. The wedge was the Oak Street Connector, a six-lane highway which even now connects nothing, but which was then seen as a way to bring suburbanites into the city to shop at Chapel Square, a brand new, poisonously dull downtown version of a suburban shopping center, and as the first link in a projected ring road, a carbon monoxide moat between the official fantasyland and the racial and ethnic minorities on its fringes. The connector and related projects displaced thousands of low-income residents, many of whom had no alternative but to leave the city: New Haven, it was now said, looked like Bridgeport because much of New Haven was *in* Bridgeport.

This and other abuses of urban renewal in New Haven, as elsewhere, led in a short time to one of the sincerest forms of environmental criticism—rioting—and a reluctant general admission that something was wrong, followed in a few years by the Nixonian dismantling of the whole renewal machine.

In the meantime, a remarkable collection of buildings had been produced on the Yale campus and elsewhere throughout the city center. Like the story of New Haven's urban renewal process, the story of these buildings is well enough known to anyone interested enough in architectural journalism to get past the sauna ads. While impressed by the extreme originality of, say, Saarinen's hockey rink or Bunshaft's rare book library, some critics demurred that these buildings bore almost no relationship to their surroundings. We have just seen, however, that by encouraging stubborn discontinuity of style and a taste for the grandly exotic, these architects were following in well-trodden paths. Mayor Lee's innovations were confined to speed, scale of execution and completion, and space. Great spaces—sometimes "plazas" but usually parking lots—often denied the city one compensating benefit of its cacophony of styles: the nutty, accidental charm of their close juxtaposition.

It is not surprising that many in New Haven, including many architects, were politically radicalized by the worst excesses of the renewal years. It is a bit surprising, or at least ironic, that in these same years a thoughtful critique of urban renewal's way of building emerged at Yale (which became in these years the northern outpost of something called the "New Haven-Philadelphia Axis," apparently a sort of DEW line for intercepting Miesian propaganda being lobbed over from Chicago).

The architects who developed this critique, either written or built or both, were all

in some way students of Louis I. Kahn, influenced by Vincent Scully, and destined later to be called "inclusivists." Their main arguments against the renewal mentality and the accompanying antiseptic knee-jerk Modernism, and in favor of the messy, difficult vitality of the existing environment dealt with on its own terms, are by now so current that even Ulrich Franzen can claim to be complex and contradictory and get away with it.

It is worth remembering, however, that in 1966, when *Complexity and Contradiction in Architecture* was published, urban renewal was an article of faith, and that when Robert Venturi said that "Main Street is almost all right," his statement was seen not so much as radical, but as purely incomprehensible. In his introduction, however, Vincent Scully made his own view of the matter (in Philip Johnson's phrase) bludgeon-like clear: "[Venturi's] proposals, in their recognition of complexity and their respect for what exists, create the most necessary antidote to that cataclysmic purism of contemporary urban renewal which has presently brought so many cities to the brink of catastrophe."

I happen to agree with that statement. Scully, however, never one to linger long in the grey middle areas of opinion, tempts me to continue in the mode of the good guys against the bad guys. What, my readers now ask breathlessly, happened then? We know that urban renewal bit the dust, so Venturi and the other inclusivists must have won, right? Socked the old antidote right in there. Stuffed Gordon Bunshaft into the Fine Arts Commission's gingerbread oven and lived happily ever after.

Unfortunately, this was not the case. Renewal programs were rescinded in general, as part of a new political and economic retreat from the cities, a conservative reaction to the fact that Federal largesse had, incredibly as it seemed, been met with riots and resentment. The new "respect for what exists," then, was often highly pragmatic. For not a few architects, preservationism, "ad hocism," adaptive re-use, recycling, and "context" represented a bandwagon loaded with sour grapes.

In New Haven, the mood is less one of resentful pragmatism than of exhaustion, a return to economic standstill in the aftermath of the renewal bonanza. Few opportunities exist for any kind of building, but, if they did, there is little evidence that the Yale Corporation and the City Fathers, supposedly having learned their lesson, would now ask their architects to study the restoring of the Chapel Street five and ten cent stores and black storefront churches in the Hill in preparation for doing things better next time. There is every reason to suspect, on the contrary, that the habits of three hundred years are not easily broken, and that New Haven is simply waiting for a break to go architecturally bananas once again.

Out of this, Robert Venturi and the firm of Venturi and Rauch have gotten one small opportunity, the Dixwell Fire Station, to demonstrate their alternative (the firm's well-known, competition-winning project for the Yale Mathematics Building is apparently stalled for lack of funds). And, in some respects, the building does not seem to represent an alternative at all. It is clearly a special, unusual build-

ing; to anyone attuned to such things, as many New Haveners are, it has visible pretensions to high art—the extending fin wall, for example. One might suspect the involvement of yet another in the long tradition of out-of-town, Yale-connected architects. This is in fact true.

But it is not the purpose of this, or any other Venturi and Rauch building, to look *precisely* ordinary, to imitate, in this case, one of the nearby auto body shops, as if on a movie set. What the firehouse tried to do instead, with considerable success, is to be both a special, even monumental public building, and *at the same time* to be part of the factory town of New Haven, as the garages of automobile row so clearly are. To the extent to which it succeeds in doing this, Venturi and Rauch's small building, symbolically located on the border between Yale's turf and the black Dixwell neighborhood (and very near the proposed site of the dividing ring road), rejoins the halves of the city's dual identity, grandiose fantasy and grubby reality. It is very nearly the first Modern building of any architectural ambition to deal in the vocabulary of the "real" New Haven.

The Dixwell Fire Station is a *celebration* of the traditional dullness of municipal architecture, which by being celebrated is somehow no longer dull in any pejorative sense.

The interiors of Venturi and Rauch's building, especially, borrow some 1950s, late Art Deco qualities. The flatness of the exterior, on the other hand, and its wonderfully intense saturated red color, looking as it does almost painted on the brick, are reminiscent of a neighboring church, the United House of Prayer for All People. The use of a buff brick wainscot at the garage doors appears to be another specific quotation from nearby auto repair shops; its context is changed, however, by putting the lighter of the two colors illogically on the bottom.

It is the *over-all* image of the building, however, in relation to its time and place, that seems particularly well chosen. The earlier Venturi and Rauch firehouse in Columbus, Indiana, reflects in its form a different program, but also represents the desire for a strongly graphic, Pop image. The Dixwell Fire Station—although it uses a kind of brick billboard as its main "architectural feature"—rejects specifically Pop devices because of the nature of New Haven. That is, there is a perception that in a place where every architect has an angle, the most impact is made by playing it straight. The impact of straight but intense and highly selective *reportage*, seen in the work of the photorealist painters and of recent photographers who employ similar methods, represents a natural outgrowth of Pop to which this building clearly owes a great deal. This is, then, a photorealist building, very much of its time and thus not entirely escaping New Haven's insistence on fashion. It is also, however, a real building (a super-real building), among the first architect-designed buildings in New Haven that can make that claim. It is hoped that there will be, by Venturi and Rauch and others, many more. —Robert L. Miller

*Robert L. Miller, the author of this essay, works in the office of Arthur Cotton Moore/Associates in Washington, and he studied with Robert Venturi at the Yale School of Architecture.*

# SCHOOLS

Alexandre Georges



Last April the New York Chapter of The American Institute of Architects sponsored a conference for educators, architects and taxpayers entitled "Suburban School Planning Today and Tomorrow: Responses to Diminished Resources." As that title implied, the school market is in an era of retrenchment caused by inflation and declining enrollments. How architects have responded to these pressures, which have been mounting since the late 1960s, can be seen in the schools selected for this Study. The emphasis is, of course, on getting more from the building, and reducing construction and operating costs—goals that now pertain to all buildings, not just to schools. But the point made by these schools is that "getting more for less" includes getting excellent design. The schools offered here are for the most part public schools, built to tight budgets. But they gain considerably more than economy from the use of simple repetitive structural elements and carefully thought-out systems and product application. These communities and their architects are saying that in a time of concern over financing and use of resources, architecture need not be one of our diminished resources.

—Charles E. Hamlin



Alexandre Georges photos



“UNIVERSAL SPACE” PROVIDES ONE SOLUTION TO THE COST/TIME PROBLEM

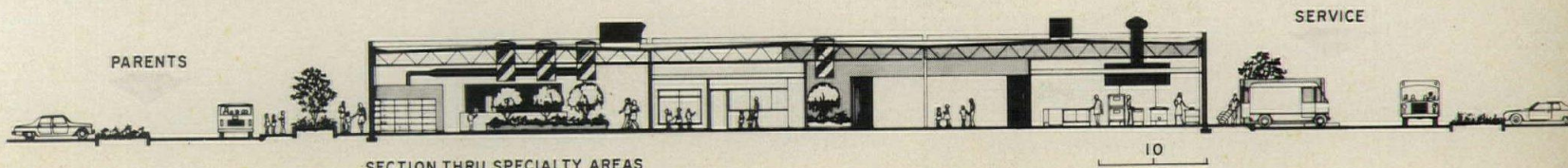
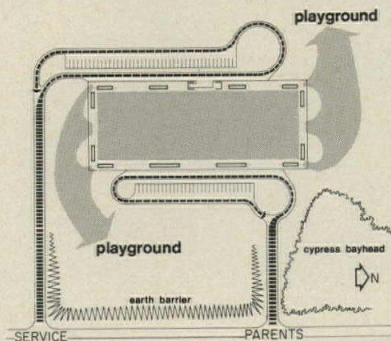
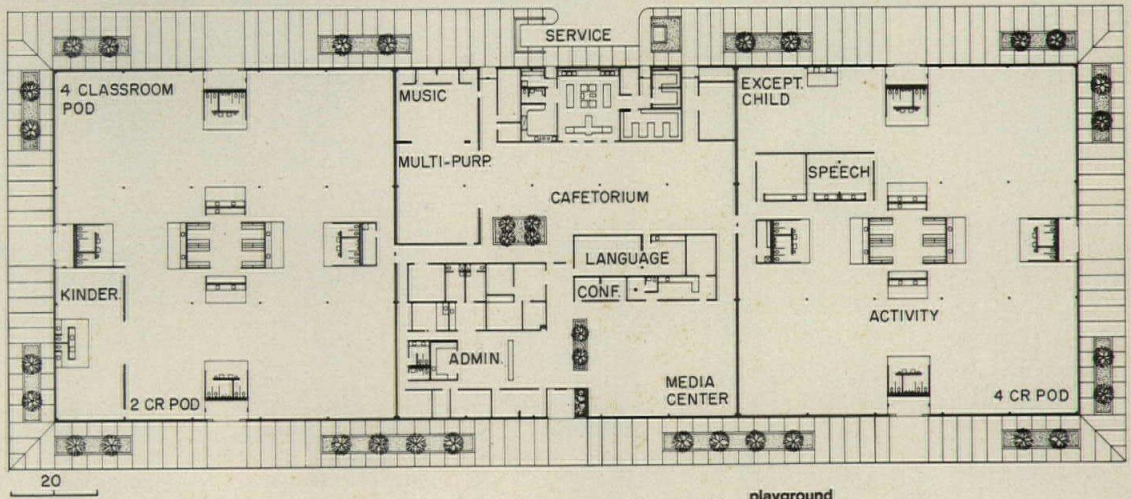
The Francis J. Bellamy\* Elementary School in Tampa, Florida, is straightforward design and fast-tracked construction teamed against the exigencies of an inflationary economy. (See page 123 for design information.)

Rowe Holmes Associates designed a simple, linear, open-plan school—grouping kindergarten and elementary classes into one block, primary and special education into another, and all support functions into the third. Toilets adjacent to the entrances conveniently serve class and play areas.

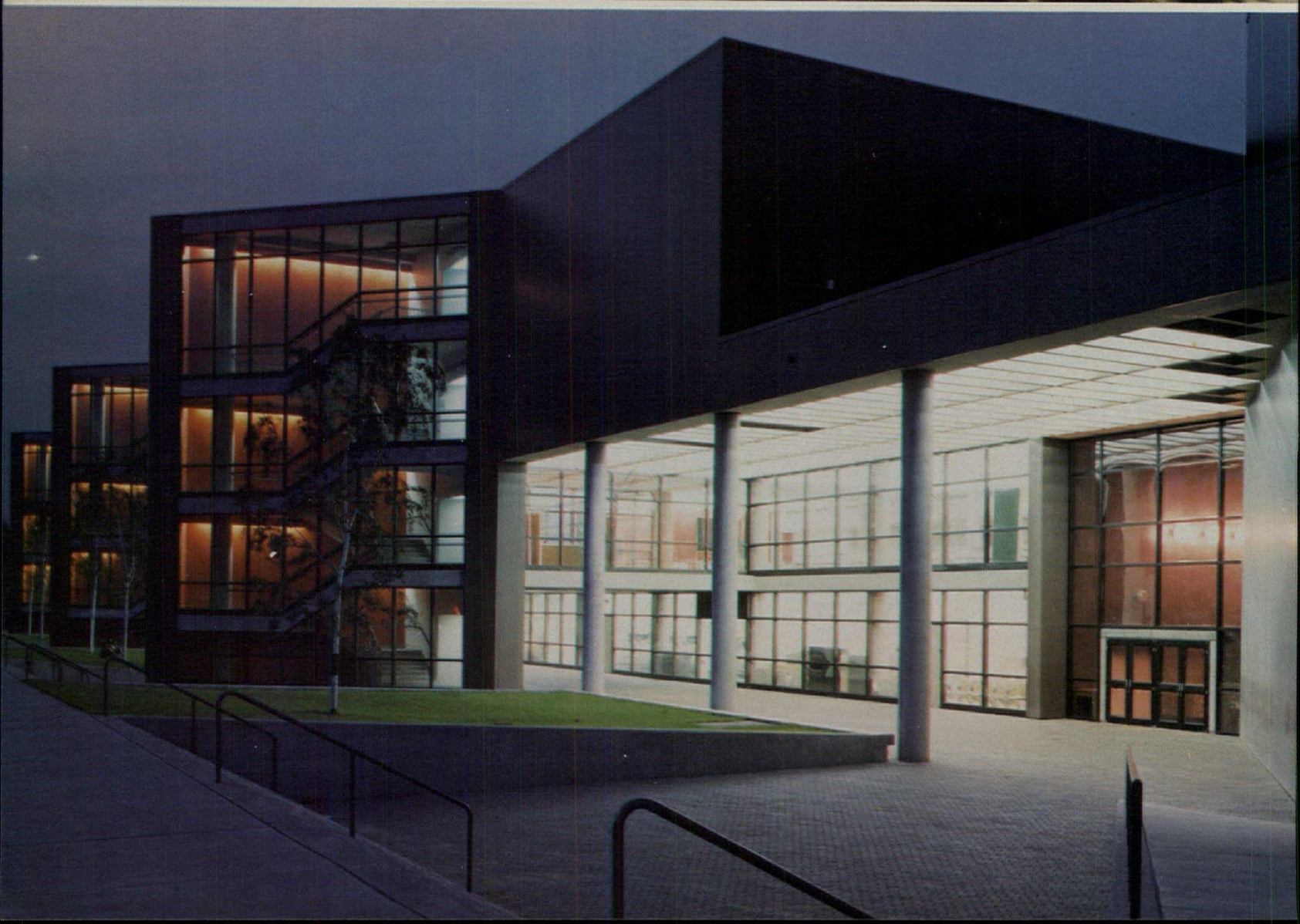
Mobile storage units (above) combine with movable chalkboards to increase interior flexibility.

\*Author of the Pledge of Allegiance, hence the exterior graphic.

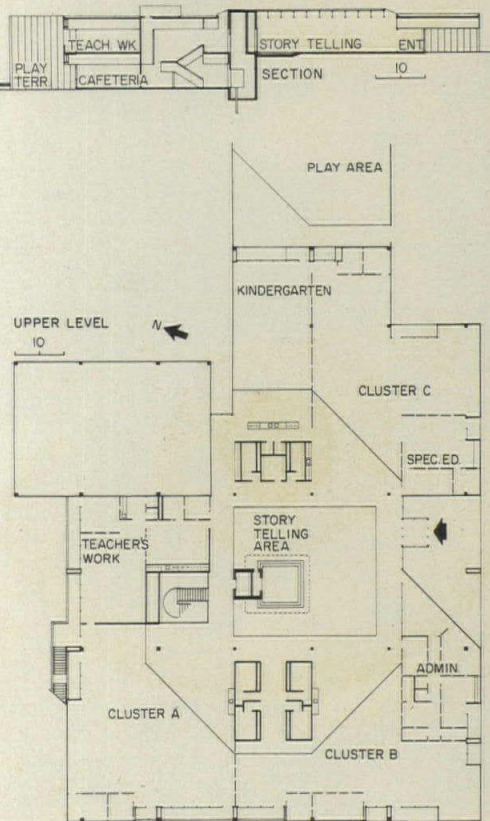
FRANCIS J. BELLAMY ELEMENTARY SCHOOL, Tampa, Florida. Architects: Rowe Holmes Associates Architects, Inc. Engineers: Rast Associates, Inc. (structural); Robert P. Jaffer, P.E. (mechanical/electrical).







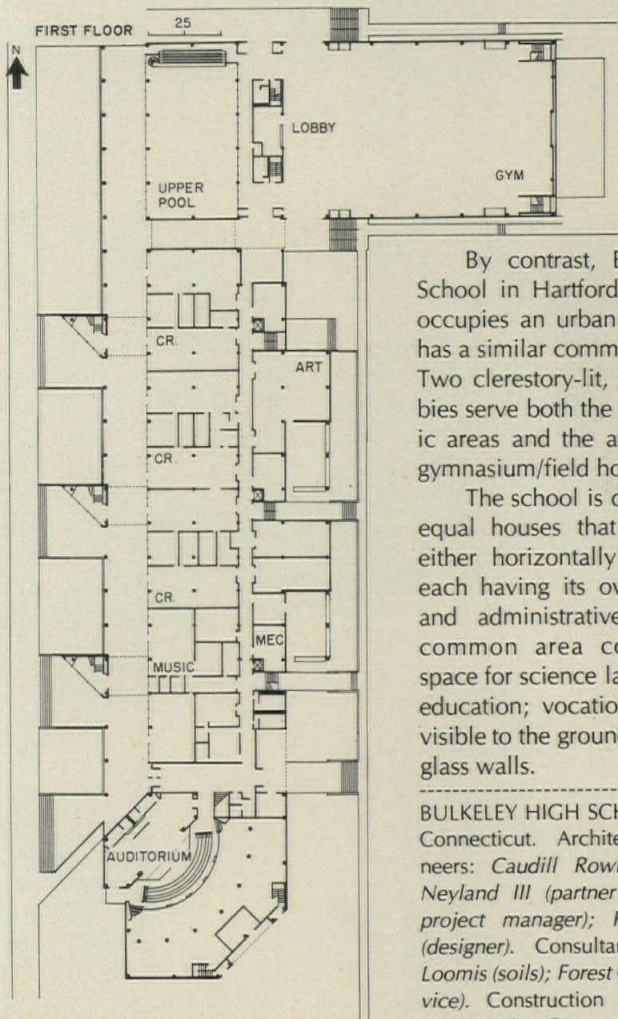
## TWO SCHOOLS BY CRS MAXIMIZE USAGE BY INVITING COMMUNITY INVOLVEMENT



A sloping site afforded two levels with separate entrances for the Ivan G. Smith Elementary School, designed to serve both educational and recreational needs of the residential community of Danvers, Massachusetts.

The main academic area on the upper level is separated from the potentially disruptive physical education/community activity area, cafeteria and service entry on the lower level. Smith Elementary's focus is the media center (overleaf, top). Construction information is on page 123.

**IVAN G. SMITH ELEMENTARY SCHOOL**, Danvers, Massachusetts. Architects and engineers: *Caudill Rowlett Scott—John M. Rowlett (partner in charge); Alexander Brailas (project manager); Frank Lawyer (designer)*. Consultants: *Murphy and Lindsay Associates (food service); Construction Consultants, Inc. (roofing)*. Contractors: *Frasca Construction Corporation and Wexler Construction Company, Inc.*

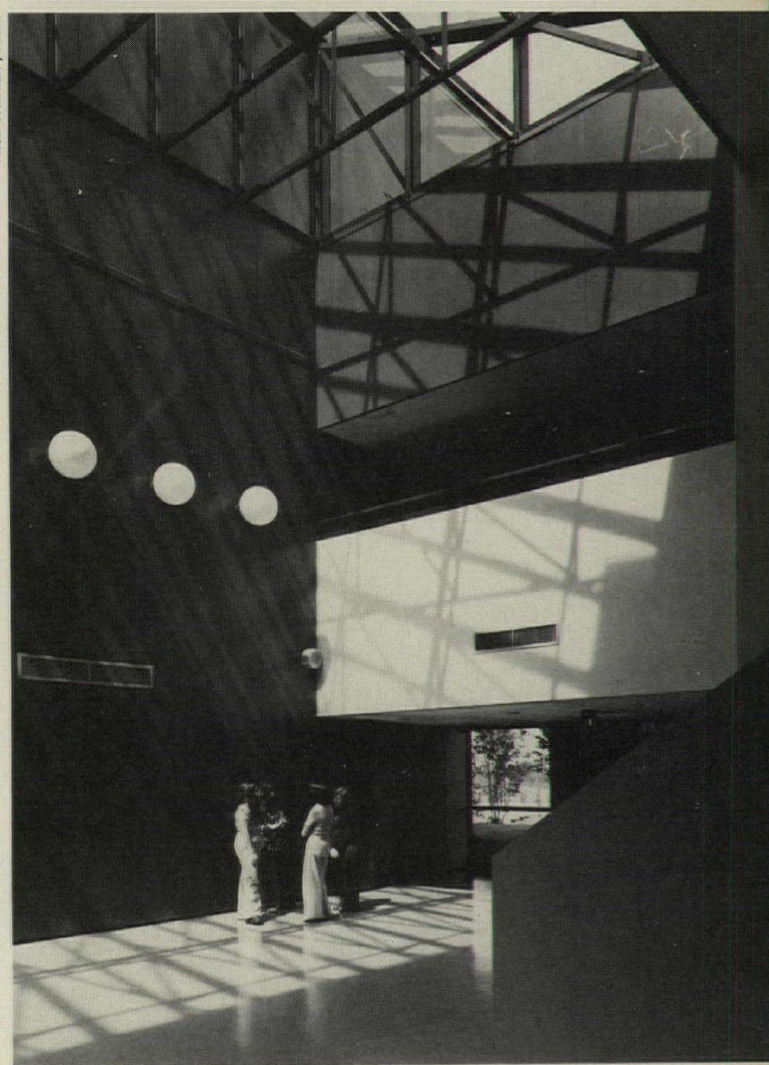


By contrast, Bulkeley High School in Hartford, Connecticut, occupies an urban setting, but it has a similar community function. Two clerestory-lit, two-story lobbies serve both the main academic areas and the auditorium and gymnasium/field house.

The school is divided in two, equal houses that can function either horizontally or vertically, each having its own classrooms and administrative sections. A common area contains open space for science labs and special education; vocational training is visible to the ground floor through glass walls.

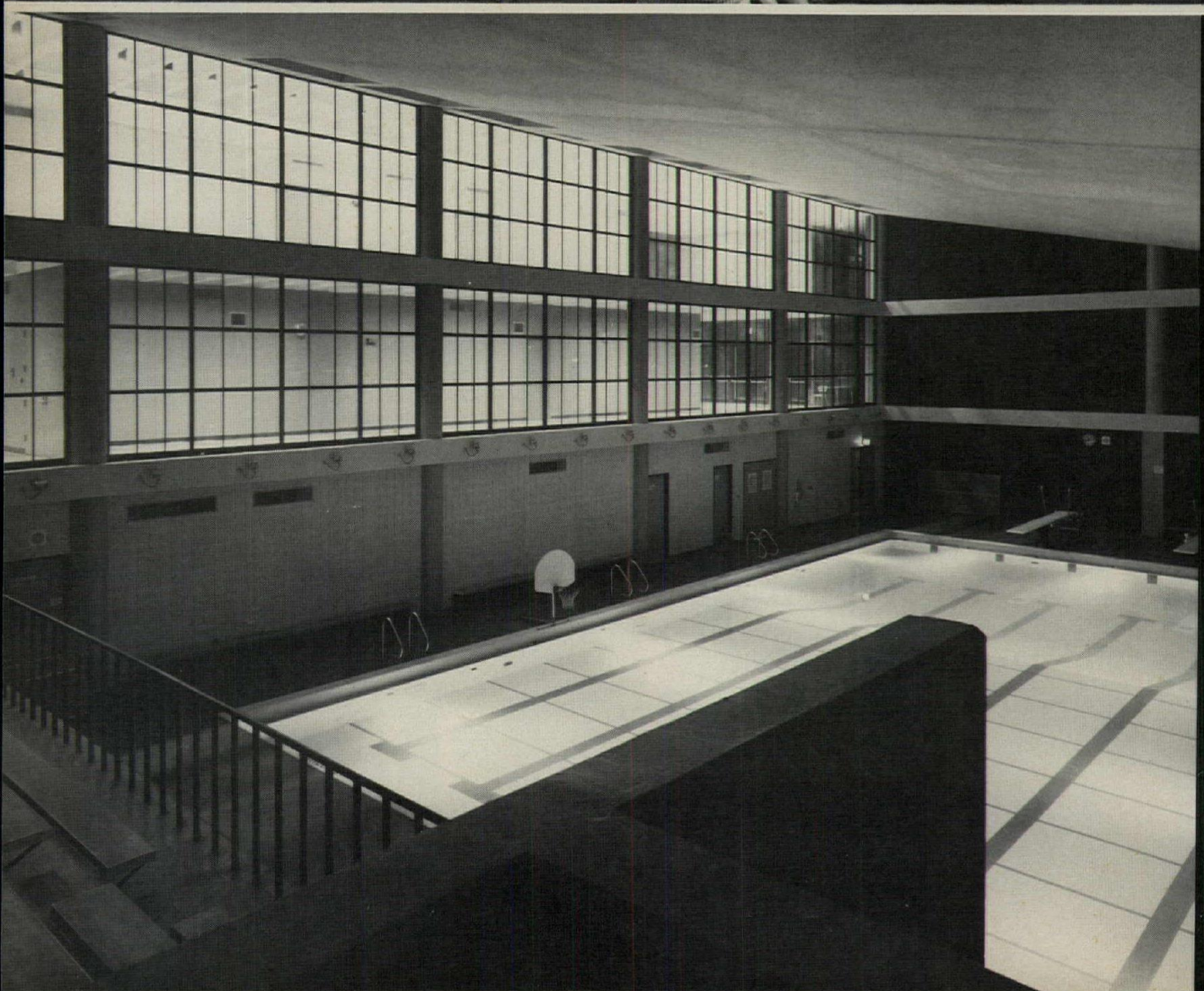
**BULKELEY HIGH SCHOOL**, Hartford, Connecticut. Architects and engineers: *Caudill Rowlett Scott—S. J. Neyland III (partner in charge and project manager); Robert Ambrose (designer)*. Consultants: *Loomis & Loomis (soils); Forest Cauley (food service)*. Construction manager: *Horn Construction Company*.

Nick Wheeler photos





The sunken media center of Ivan G. Smith Elementary School is lighted by a clerestory and surrounded by three classroom clusters, each containing four classrooms.



The swimming pool of Bulkeley High School is overlooked by two levels of glass-enclosed corridors framed by cast-in-place columns and beams.

Alexandre Georges



*Francis J. Bellamy Elementary School*, page 118, was a fast-tracked project, and as such is a showcase for materials and construction techniques evaluated for both performance and critical path scheduling. The architects, Rowe Holmes Associates, segregated construction into seven bid packages, including three major contracts: sitework and foundation; general construction, framing, and enclosure; and interiors. In addition, four areas were selected for pre-bidding based on anticipated supply problems: hardware; quarry tile; plumbing fixtures; and hollow metal (doors, frames). "Add and deduct" provisions were required for these items which could be furnished by the owner (School Board) to the general contractor. The architects developed the school's structural frame drawings for conventional steel framing on a 5-foot module, but included performance criteria to permit bidding by "systems" suppliers. In fact, conventional steel framing proved less expensive. Initially, tilt-slab concrete walls poured on the site were specified, but conventional concrete block construction was found to be considerably cheaper and faster. (A similar school now nearing completion in the same market is being constructed with the tilt-slab walls, bid cheaper than block this time.) Both roof deck and rigid insulation were in extremely short supply at the time of design. Because of the roof's severe insulation requirements, a number of alternatives were considered and a 2½-inch fiber glass formboard—readily available—not only proved to be economical, but provided excellent U-value and acoustic properties (.85 NRC). The fiber glass was exposed on bulb tees. Eliminating the suspended ceiling, the architects were able to increase the apparent ceiling height permitting the use of efficient industrial lighting fixtures (which must be located higher than conventional ceiling heights allow). The exposed ceiling also reduced the amount of ductwork required from the rooftop air-conditioning units. On the interiors, the architects used plain veneer plastered partition walls painted white or with bright graphics. The finishes are protected with a clear, low gloss acrylic coating that provides a scrubbable surface. Exaggerated wall clocks (numbers are painted on the walls) reduced the number of clocks to four for an entire 16-classroom suite. Similarly, the number of intercom speakers was greatly reduced, as were other internal systems such as CCTV distribution networks.

Gross square feet 96,702  
 Cost per square foot \$19.50  
 Student number 860 (K-5)  
 Completion November 1974

Nick Wheeler



*Ivan G. Smith Elementary School*, page 120, was constructed with industrialized building systems components which, combined with a modified fast track schedule, cut approximately six months from the project delivery time, according to the architects, Caudill Rowlett Scott. In this school, the steel systems structure is combined with an integral ceiling/lighting system and packaged rooftop units for heating, ventilating and air-conditioning. The

factory-finished exterior of foam-filled metal wall panels was selected after a comprehensive energy analysis was completed for the school. The lightweight panels also helped speed construction, and permitted the basic color scheme. Although the program called for an open-plan school, the client requested that the final design be capable of converting to a closed classroom arrangement. The combination of exposed steel grid and acoustical ceiling panels is intended to respond to this eventuality. Interior construction consists of metal stud with gypsum board and wood paneling, concrete masonry, and carpet and vinyl asbestos tile floors.

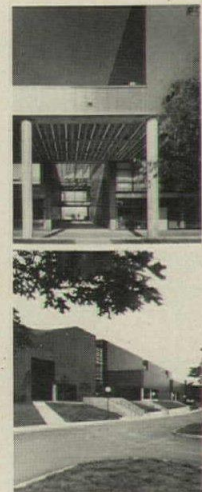
Gross square feet 38,160  
 Cost per square foot \$32.40  
 Student number 350-385 (K-6)  
 Completion January 1974

*Bulkeley High School*, page 120, was a fast-tracked project, administered by a construction manager, with some 30 prime contracts bid separately. The primary architectural feature of the building is its use of metal wall panel enclosure, which the architects, CRS, selected for its speed of erection, appearance and insulation qualities. Bronze porcelain enamel finished panels are used as a cladding over a poured concrete structure (necessitated by fire codes and market conditions). Structure appears at points of circulation and at entrances. Although the classrooms are finished in gypsum board over the metal panels, the architects claim they are suitably finished for interiors and were indeed used this way in mechanical rooms and non-public service areas. Standard-size panels were used, with only a few special pieces fabricated. Although they were not available at the time, one-piece corner panels and pre-shaped soffits are now available in these metal wall systems. The building is completely air conditioned, with multi-zoned blow-through, and single zone draw-through air handling units supplying conditioned air through low velocity ductwork, ceiling diffusers and sidewall registers.

Gross square feet 288,000  
 Cost per square foot \$38.89  
 Student number 1800  
 Completion September 1974

*The Park School*, on page 125, relies on simple structure for its visual appeal. According to the architect, Earl Flansburgh, the negative moment effect of simple cantilevers actually reduces the amount of structure required in the main building. This does not necessarily contribute to cost savings, but at no added cost, provides the striking architectural profiles of the building as it gains height. The basic structural system is concrete, poured-in-place, with uniform depth one-way beams on poured-in-place columns or walls. Pressed wood forms were used for columns and slabs, with prestressed single tees, 6 feet wide and 32 or 40 inches deep used in the gym and auditorium.

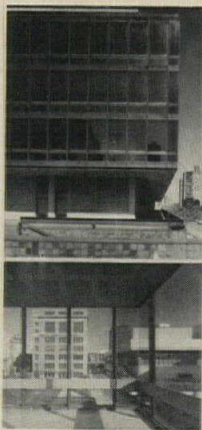
Square feet 97,000  
 Cost per square foot \$38.00  
 Student number 450 (K-9)  
 Completion September 1971



Nick Wheeler



Wayne Soverns, Jr.



*Martin Luther King, Jr., High School*, on page 128, achieves a non-institutional look from scale and materials: brick pavers and matching face-brick express the ground-hugging character of the base; exposed concrete structure and concrete masonry define the interiors; and the weathering steel and glass curtainwall emphasize the light character of the perimeter corridors. Concrete use was determined by several factors: (1) due to zoning restrictions, as well as to the ground water conditions, the lower floor-to-floor height which can be achieved with concrete was critical; (2) as a plastic material, concrete permitted an economical solution to the cantilevered corridors and the double cantilever corners; (3) the waffle flat plate construction for the rather large typical bays (25 by 30 feet) provided strength and economy for long spans, while being esthetically pleasing; (4) concrete construction provided a Class 1A fireproof building without requiring further treatment. Two finishes are expressed on the architectural exposed concrete; plastic-coated plywood forms were used for exterior and interior columns, stair soffits, and the stage proscenium and apron; and roughsawn random pattern boards in various widths were used for exterior and interior walls to contrast with other materials. Structural steel is expressed in the cantilevered perimeter corridors where it contributes to the light, open look; the selection of weathering steel was motivated by its maintenance-free and esthetic characteristics. The frame was fabricated and erected in 5-foot-wide by three-story-high segments, reducing the number of pieces required and permitting multiple re-use of jigs and fabricating aids (a cost reduction measure). The vertical segments serve as both ties and struts between the cantilevered levels, causing all levels to move together, and thus preventing the bronze-colored glass from breaking. Mullions designed as a pair of angles with a joint between each pair permit lateral expansion or contraction due to temperature changes. The same block was used on both exterior (plaza level) and interior corridor walls throughout, so that the superstructure appears as a masonry box visible through the weathering steel and glass skin. The fluted concrete block discourages casual vandalism, and is used as an alternative to the ubiquitous structural facing tile. Although manufactured by different companies, the 4-by-4-by-4-inch face brick and 4-by-4-by-1½ inch brick pavers are identical in appearance.

Gross square feet 437,250 (250,000 net)  
 Contract cost \$29,220,300 (1971)  
 Student number 3650  
 Completion 1975



*Lincoln Park Community School*, on page 130, includes handsomely detailed fenestration, notable for its slender mullions. Wind-load members are not part of the window, but a separate interior steel framework, exposed and painted as a decorative element. This allowed the mullions to be small and the same size regardless of the glass wall size or location. It also permitted interior glazing and clearly demonstrates the structural component needed for wind support. The system was easily manipulated, according to The Architects Collab-

orative, to achieve both sloped and skewed window surfaces. The PVC coating on the system is warm to the touch, and provides a long-lasting low-maintenance surface. The architects also point out the use of inexpensive split-face concrete block and precast trim on the exterior cavity wall. The masonry was set in full running bond to achieve a "stacked" effect expressing its role as a veneer. The precast was sized and detailed to be in increments of the 8-inch block so that it too would be a part of the veneer expression.

Gross square feet 102,000  
 Cost per square foot \$44.00  
 Student number 850 (K-6)  
 Completion September 1975

*Plymouth Elementary School—West*, page 132, includes a steel frame based on a 5-foot module with ceiling heights of 9 feet in the academic and administrative areas; 11 feet in the library (accomplished with a 2-foot drop in the floor); 12 feet in the dining area (3-foot drop in the floor); and 20 feet in the gymnasium. The ceiling/lighting subsystem is an integrated assembly suspended below the structure. An over-all pattern of 20-by-60-inch fluorescent fixtures is used in the classroom areas, while a 60-by-60-inch pyramidal unit was selected by the architect, David M. Crawley, for the common areas. The system provides some degree of lighting and appearance flexibility, with surface mounted, recessed and coffered lights used for differing effect throughout the building. Aluminum faced lay-in ceiling tile has been used in rooms subject to moisture and humidity problems. The environmental subsystem consists of electric rooftop multi-zone units that heat, ventilate and air-condition the spaces through separate zone controls. Supplemental electric radiation is added under the glass areas. A significant feature of this school is the exterior wall system of 5-foot wide insulated panels with a heavy-gauge aluminum face on both sides. The panels permit relatively simple future expansion or relocation, and their high insulation quality reduced the initial size and cost of hvac equipment according to the architect. Considerations which resulted in the specification of this wall system were: (1) lightweight and ease of installation; (2) insulation characteristics; (3) contemporary design; (4) self-adjusting features; (5) adaptability for future expansion; (6) conformity with the 5-foot module; (7) resistance to salt air exposure; and (8) single contractor responsibility for walls and windows. The interior partition subsystem consists of demountable, metal-faced partitions that integrate with the module. Chalkboards are floor-to-ceiling with magnetic chalk trays adjustable to user height. All interior partitions can be modified to become fire- and sound-rated as program requirements dictate. At the classroom entrance, electrical and communication facilities are combined in one control panel containing lighting switches, a clock, speaker and call-in switch, a television reception outlet, and a duplex receptacle.

Gross square feet 57,605  
 Cost per square foot \$33.23  
 Student number 700 (K-4)  
 Completion March 1975





Wayne Soverns, Jr. photos

## SITE, STRUCTURE AND SPACE EFFICIENCIES CREATE A DESIGN BONUS



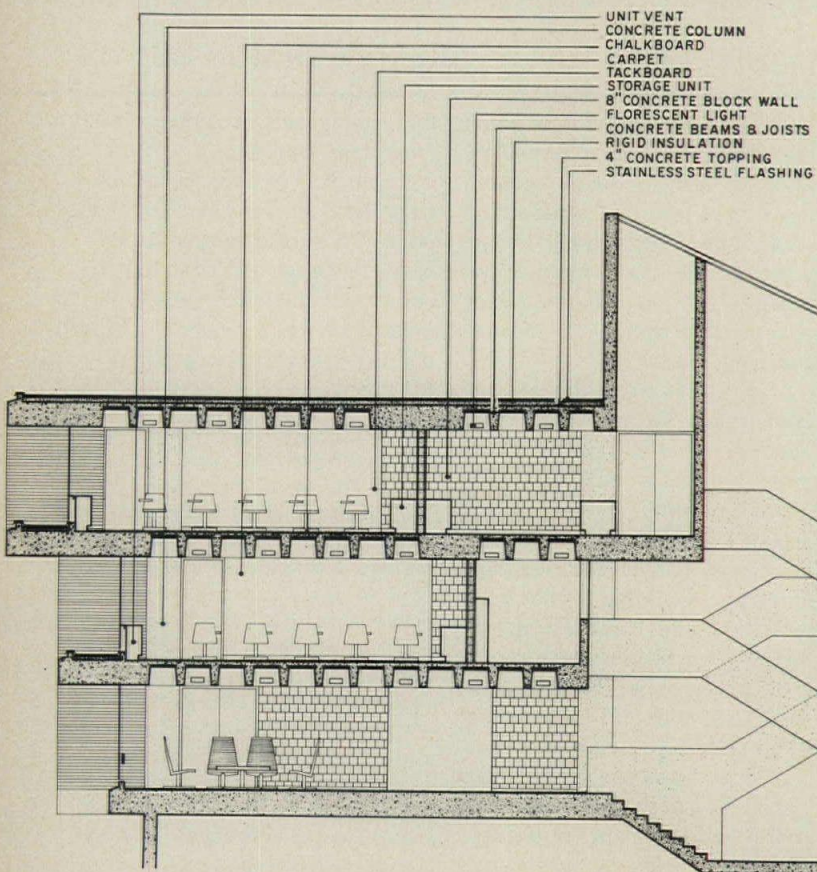
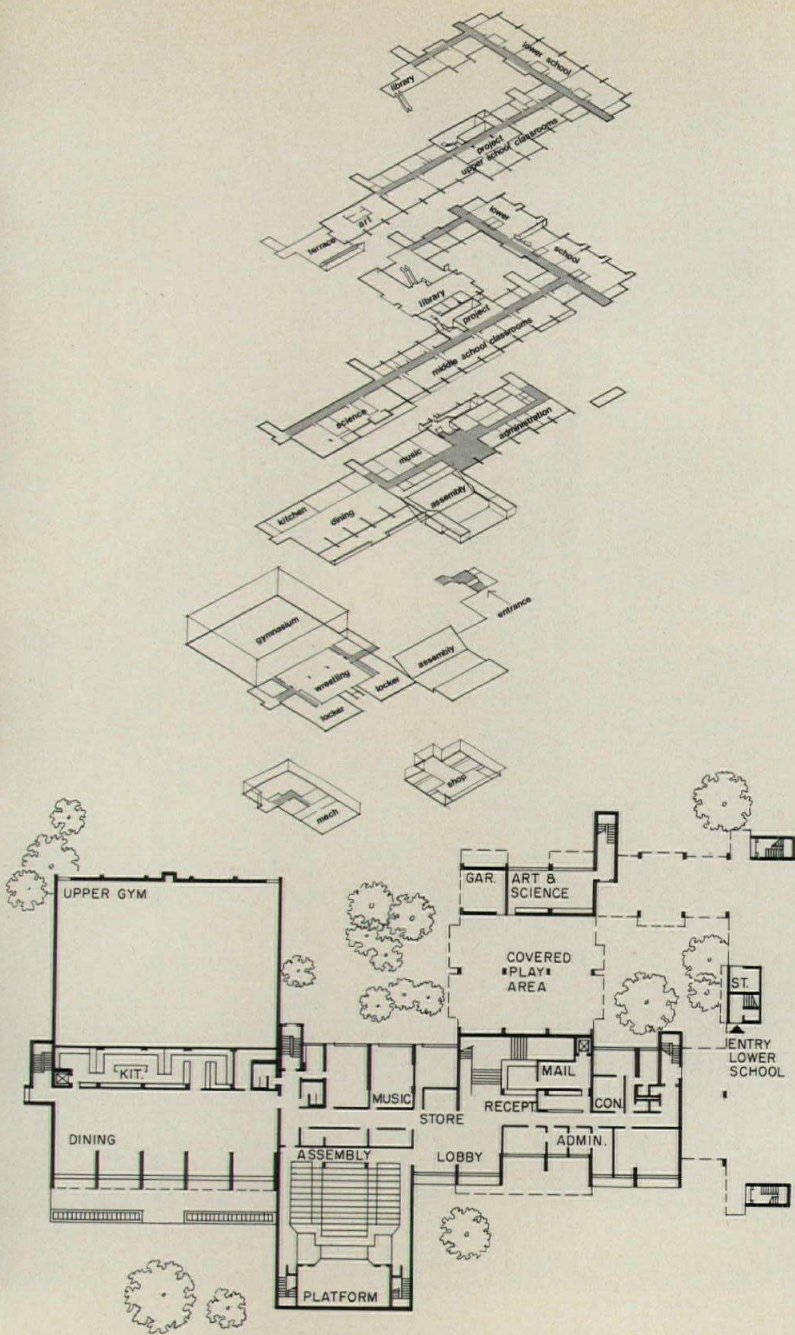
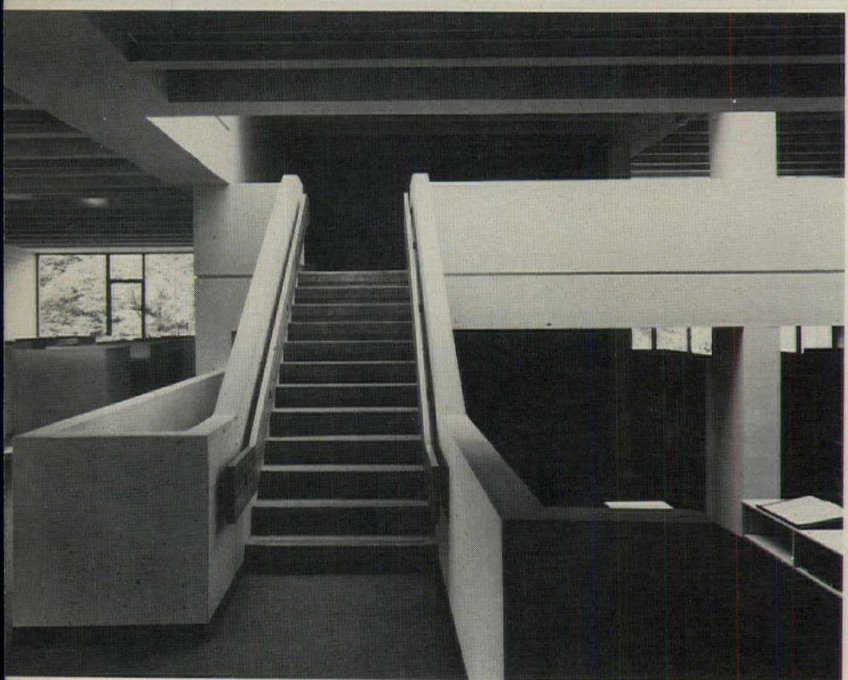
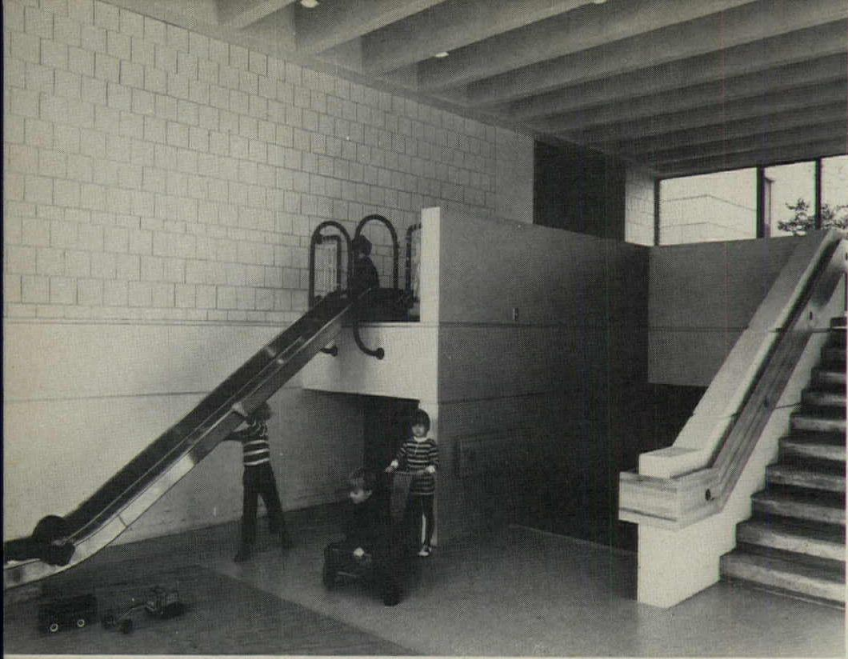
Earl Flansburgh is the first to admit that The Park School in Brookline, Massachusetts, is more conventional in its technical aspects than some of his projects, but its simple repetitive structure, multiple-use spaces, and imaginative siting have created some very effective planning efficiencies.

The semi-urban, limited site contained a flat area and a rock outcropping of Roxbury Pudding Stone. If the school had been built on the simple, flat area the school's athletic program would have been confined to mountain climbing, according to the architect. Therefore, the building was designed to fit into the rocks in some places or rise above them on pilotis (see page 123 for structural information). The massing necessitated by these site irregularities provides varied exterior spaces, while reducing the building's scale, and freeing the open spaces

for playing fields. (The design also minimized blasting.)

The Park School exemplifies what has become the "contemporary New England vernacular" of school design and construction: concrete frame with exposed slab underside; cavity walls of block and waterstruck brick; and quarry tile floors.

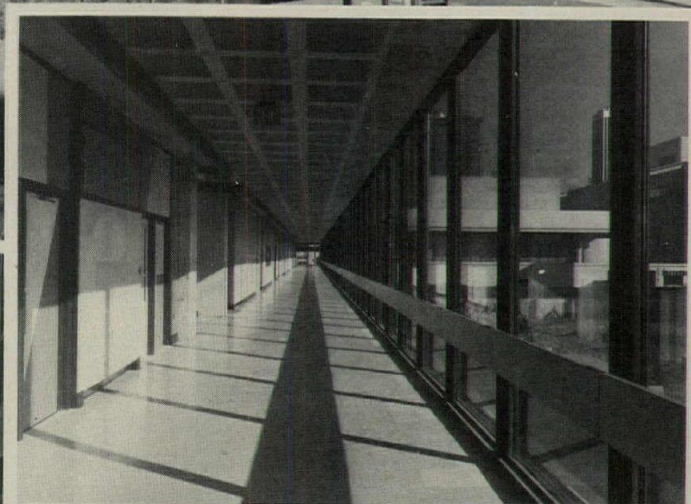
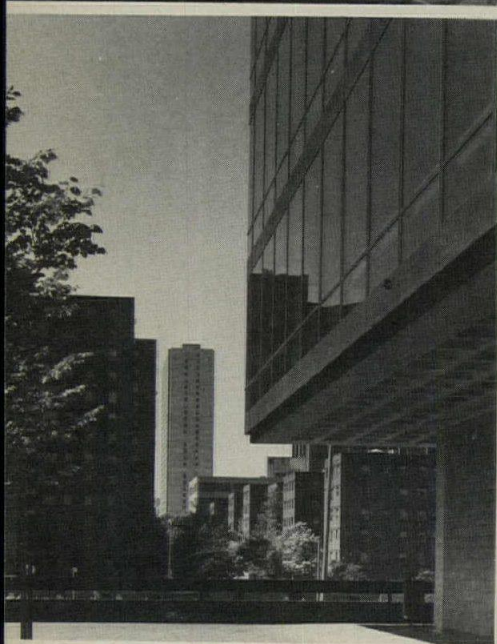
THE PARK SCHOOL, Brookline, Massachusetts. Architect: *Earl R. Flansburgh and Associates, Inc.*—Earl Flansburgh (principal); Douglas Flockhart (associate—design); Russell Tremaine (associate—construction); Linda J. Stuart (associate—interiors); Stanley Hutchinson. Engineers: Souza and True (structural and soils); Shoshanian Engineering, Incorporated (mechanical and electrical). Landscape architects: Mason & Frey, and Earl R. Flansburgh and Associates, Inc. Consultants: Bolt Beranek & Newman (acoustical); Leslie Buckingham (costs). General Contractor: The Volpe Construction Company, Inc.



Flansburgh's Park School is library-centered, with all three grade levels accessible to—and sharing—this resource. However, each cluster of grades has its own teachers' offices, project spaces and outside play areas. Program elements are arranged along circulation spines, which are modulated in width and expand into skylighted stairwells and multi-use project areas. The auditorium can function conventionally or as a theater-in-the-round, and—with the library and the gymnasium—is used during the evening by the community.

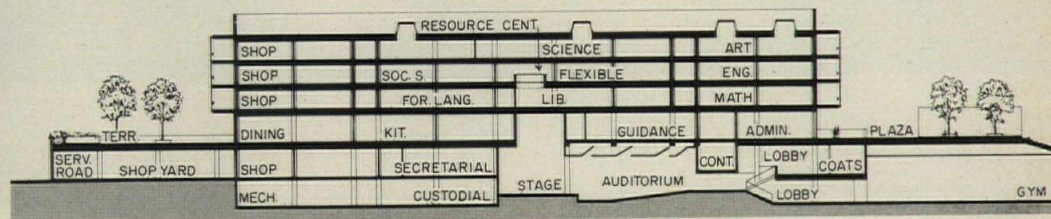
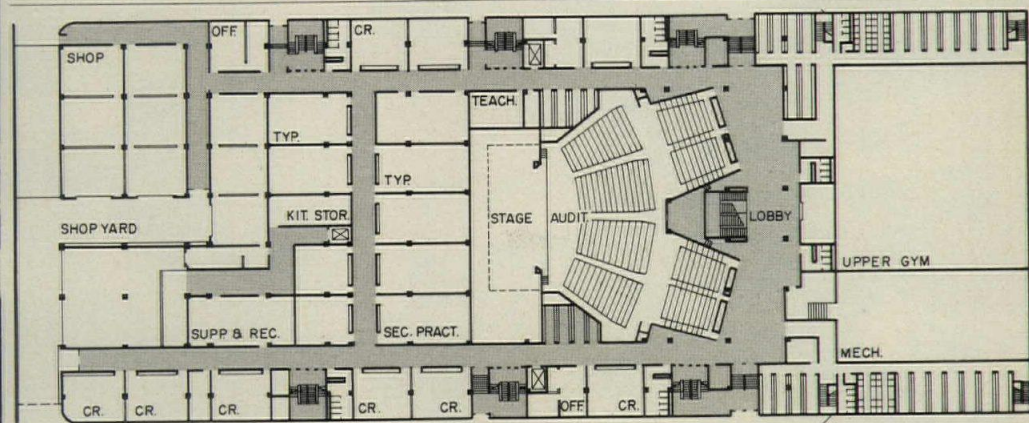
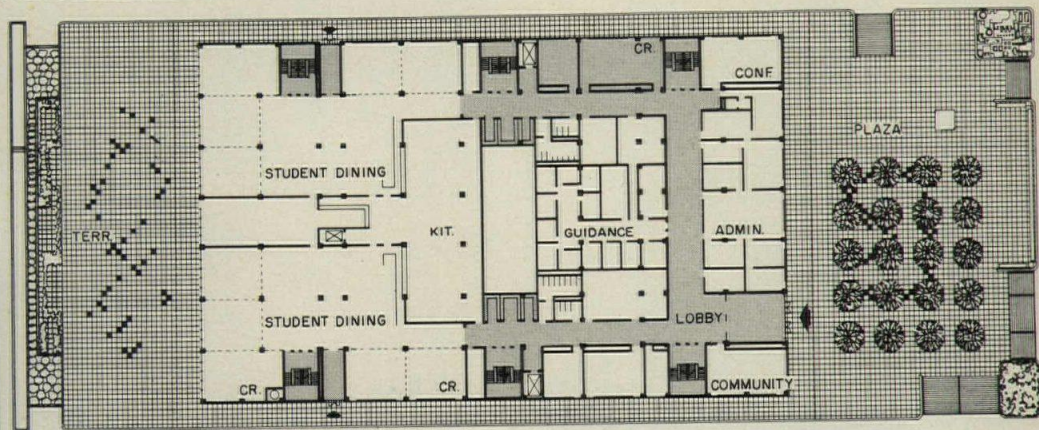
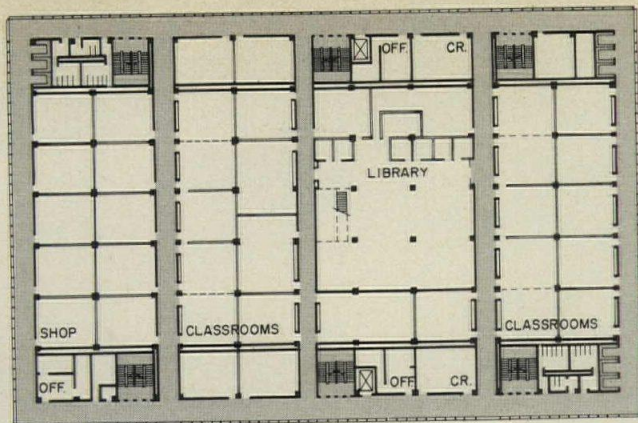








Nathaniel Lieberman photos



AMSTERDAM AVENUE

## LOFT SPACE HELPS PRESERVE AN URBAN HIGH SCHOOL'S FUTURE USEFULNESS

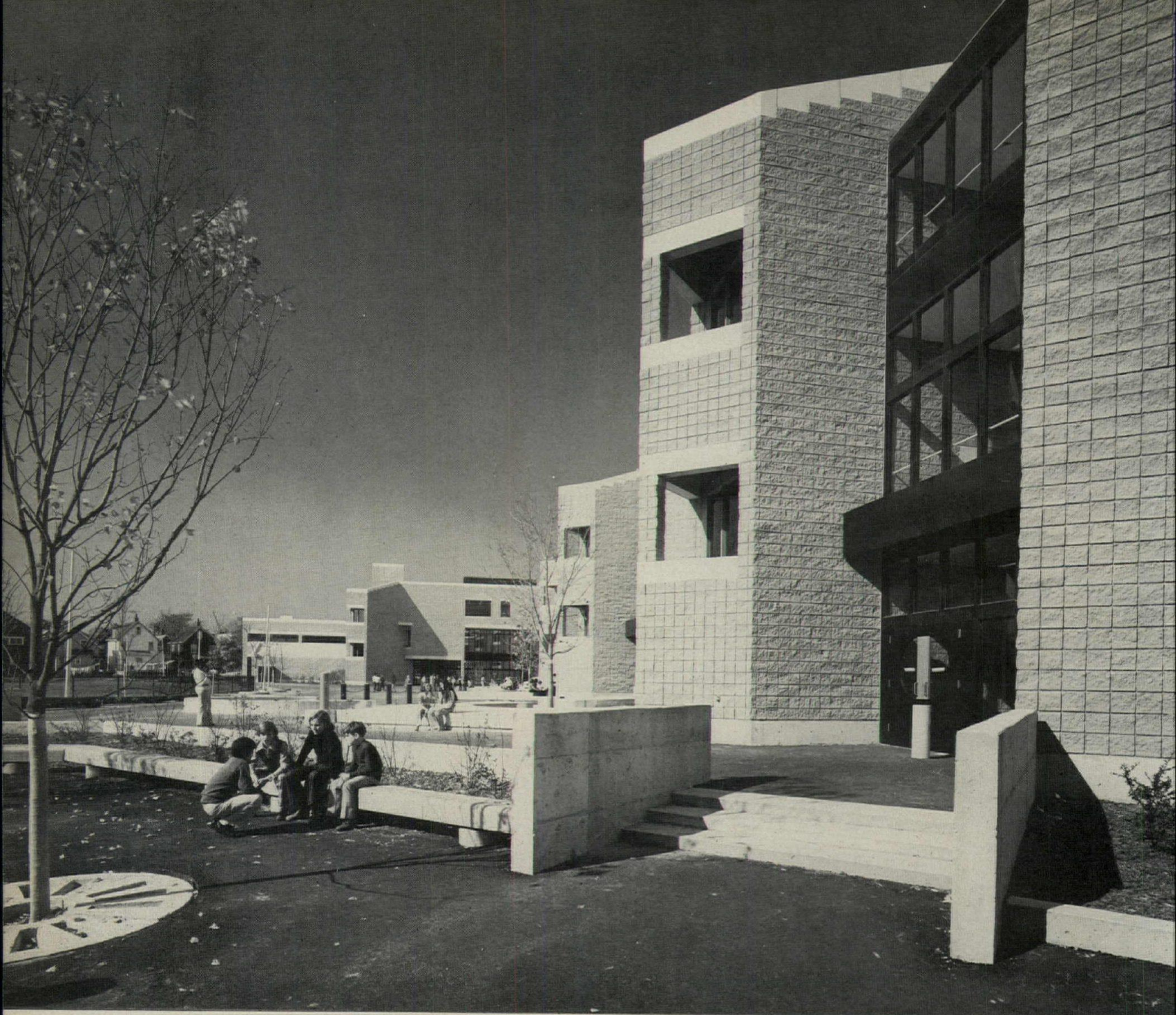


The architects of Martin Luther King, Jr., High School on Manhattan's West Side have designed in options for future utilization of the building. Frost Associates placed the bulk of the instructional space in a three-story loft-plan superstructure, surrounded by cantilevered, glass-enclosed corridors that act as a buffer zone for environmental control. (See page 124 for construction information.) Classroom flexibility is provided by demountable partitions, and continuously finished floors.

Besides accommodating a complex mix of academic, commercial, industrial and maritime

studies, the school fits broader goals of neighborhood scale and renewal. Its plaza, for example, will eventually be linked to those of nearby Lincoln Center for the Performing Arts.

MARTIN LUTHER KING, JR., HIGH SCHOOL, New York City. Architects: Frost Associates—A. Corwin Frost (partner in charge); Rachele Bennett (project architect). Engineers: Ames and Selnick (structural); Abrams-Moses-Solomon (mechanical and electrical). Consultants: Michael J. Kodaras Inc. (acoustics); David A. Mintz Inc. (lighting); Zion and Breen Associates (landscape architects); William Tarr (plaza sculpture). Contractor: Caristo Construction Corporation.



Steven Rosenthal photos

## STRETCHING PUBLIC FUNDS FOR A SCHOOL PRODUCES A NEW PARK AS WELL

Site selection for urban schools is often motivated by the desire to minimize disturbance to established interests. This was particularly true for this school whose site is an existing playground—Lincoln Park—an intensively used 7.2 acres bounded by a residential neighborhood.

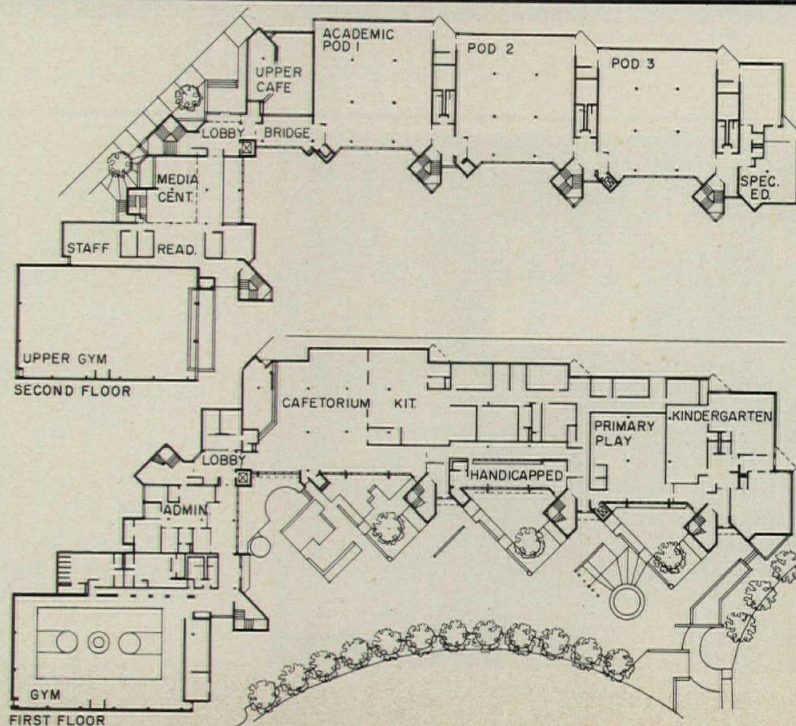
The City of Somerville, Massachusetts, wanted to renovate the park as well as place an elementary school within its boundaries. Under the definition of a school, the entire project was eligible for two-thirds state support. And so the park land was transferred to the school committee.

The Architects Collaborative located the school as close as possible to existing north and east park boundaries, including the

Boston and Maine Railroad right-of-way. Thus, the building becomes a new wall of the park.

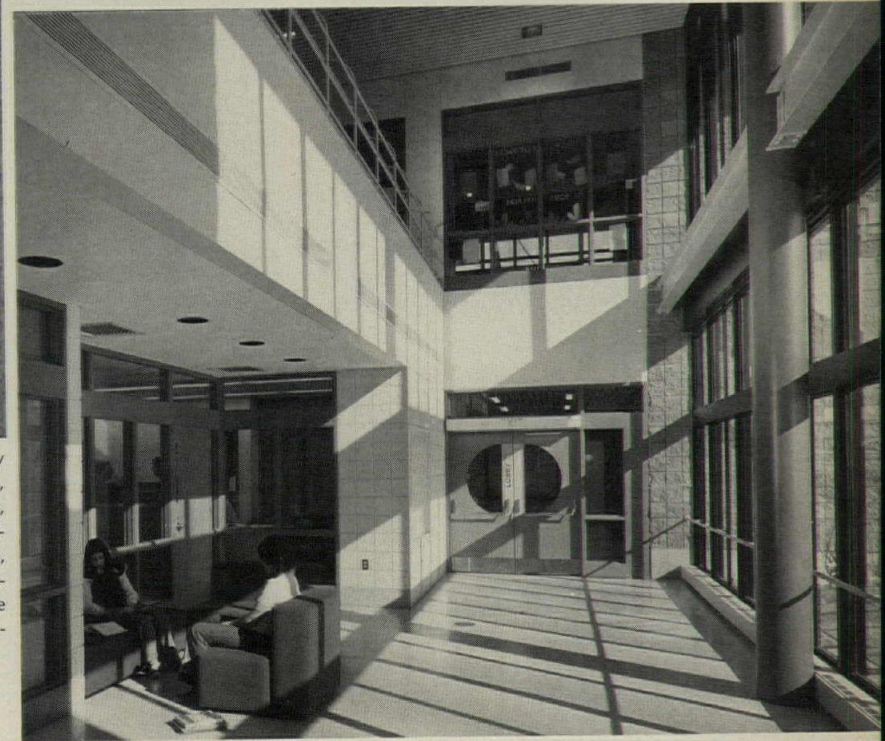
The school's structure is steel with concrete-filled steel tube columns. Prestressed, pre-cast concrete plank flooring has an average span of 20-25 feet. (See page 124 for design and construction information.)

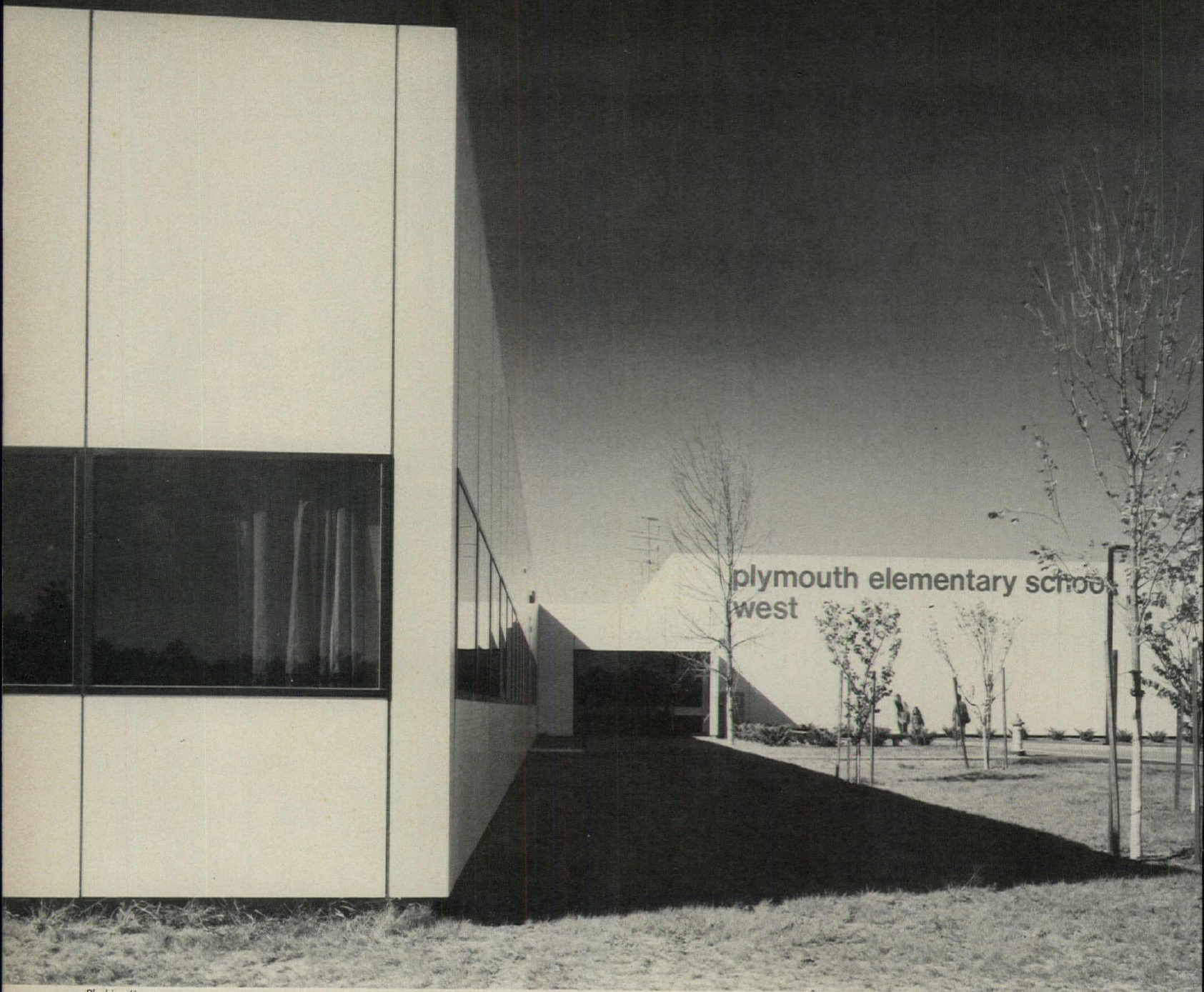
LINCOLN PARK COMMUNITY SCHOOL, Somerville, Massachusetts. Architects: *The Architects Collaborative*—William Geddis (partner in charge); David Sheffield (senior associate); Martin Sokoloff (project architect). Engineers: *Souza and True* (structural); *Fitzmeyer and Tocci* (mechanical); *Bay Design Group* (electrical). Interior design and landscape architecture: *The Architects Collaborative*. General contractor: *E. C. Blanchard Company*.





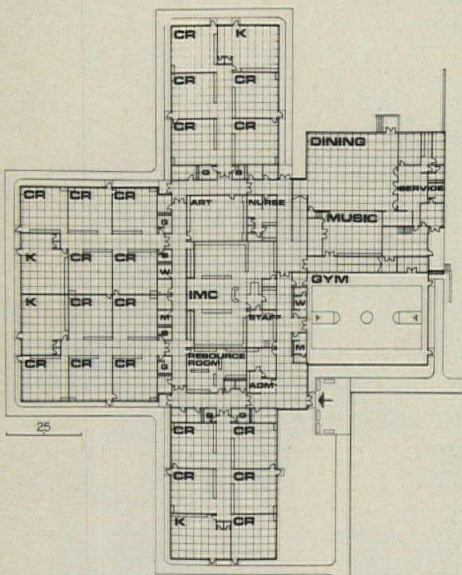
The building's interior is brightly painted, with structural members, exposed ducts, doors and frames, and railings converging in a profusion of color against neutral walls, ceilings and floors. Sunny halls provide study and social nooks, some overlooking the potential excitement of the railroad (below).





Phokion Karas

## A PROTOTYPE DESIGN REFLECTS INCREASED USE OF COST-EFFECTIVE SYSTEMS

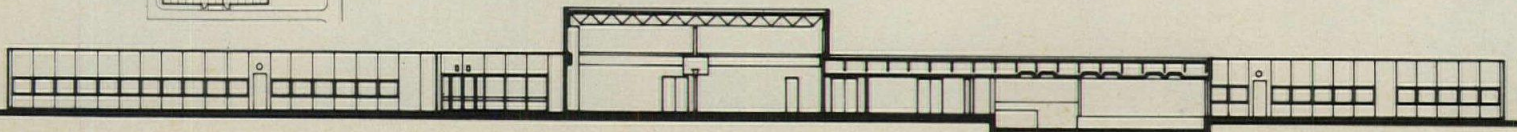


Shown here is one of two identical schools in Plymouth, Massachusetts, among the few in the state that employ the four major subsystems approach established by the SCSD program (RECORD, February 1964, page 166 and Mid-August 1974, page 130): structure, ceiling/lighting, environmental and partitions. Both schools were bid and built simultaneously. (See page 124 for systems information.)

The problem faced by David M. Crawley Associates was to design a school with 12-, 18-, or 24-classroom potential. The solution uses a six-classroom pod which can be attached at pre-determined

points to the perimeter circulation of an administrative core containing library, dining room, gym, nurse and office. Areas used by the community are located near the main entrance.

PLYMOUTH ELEMENTARY SCHOOLS—WEST AND SOUTH, Plymouth, Massachusetts. Architects: David M. Crawley Associates Inc.—David B. Peck, Jr. (project manager). Engineers: Steco Engineering Corporation (structural and soils); C. A. Crowley Engineering, Incorporated (mechanical and electrical). Landscape architect: Shepard Williams. General contractor: Pioneer Site and Utility Company.



## High-strength concrete allows bigger loads on smaller columns

Robert E. Fischer photo

If ordinary concrete (about 4,000 psi compressive strength) were used for the lower-story columns of very tall buildings, these columns would be so large that they would use up too much rentable space. This is the main reason that structural engineers have been specifying concrete strengths of 6,000, 7,500 and 9,000 psi for buildings of 35-40 stories and above. High-strength concrete was an economic and space-utilization necessity, for example, for the 76-story tower of Chicago's Water Tower Place, in which 9,000 psi concrete was used up to the 25th floor and 7,500 psi concrete from the 25th to the 40th floor.

There are also other economic advantages in using high-strength concrete (which is defined as concrete having compressive strengths of 6,000 psi or higher). For one thing, column sizes can be kept constant for all or many stories of a building, which means that the same forms can be used over and over. Another advantage of high-strength concrete is that it allows structural engineers to optimize use of reinforcing steel. For example, a 30- by 30-in. column of 6,000 psi concrete might require an amount of reinforcing steel equal to 4 per cent of the column area for a given load, whereas the same column in 9,000 psi would require only 1 per cent steel—the minimum allowed by code.

Use of high-strength concrete is particularly beneficial in mixed-use, high-rise buildings because of the need to suit column sizes and locations to spatial requirements, and because of the different structural transitions that are necessary between floors of one type of occupancy and another, such as residential to office, or office to school, etc.

High-strength concrete also has potentialities for long-span roof structures. As an illustration, Werner Sturm of Severud-Perrone-Sturm-Bandel, New York, has suggested the possibility of a 120-ft span gymnasium roof that could be done with 16- by 36-in. post-tensioned concrete beams on 16-ft centers, with a 4½-in. slab forming a T-flange. Live load was assumed to be 30 psf and concrete compressive strength was taken as 8,000 psi.

High-strength concrete does not make sense, however, for conventionally reinforced floor slabs because a minimum depth is needed in any event to limit deflection. It has to be used, nonetheless, for small areas around columns, perhaps supplemented by dowels when the column strength exceeds slab strength by more than 40 per cent. This is done

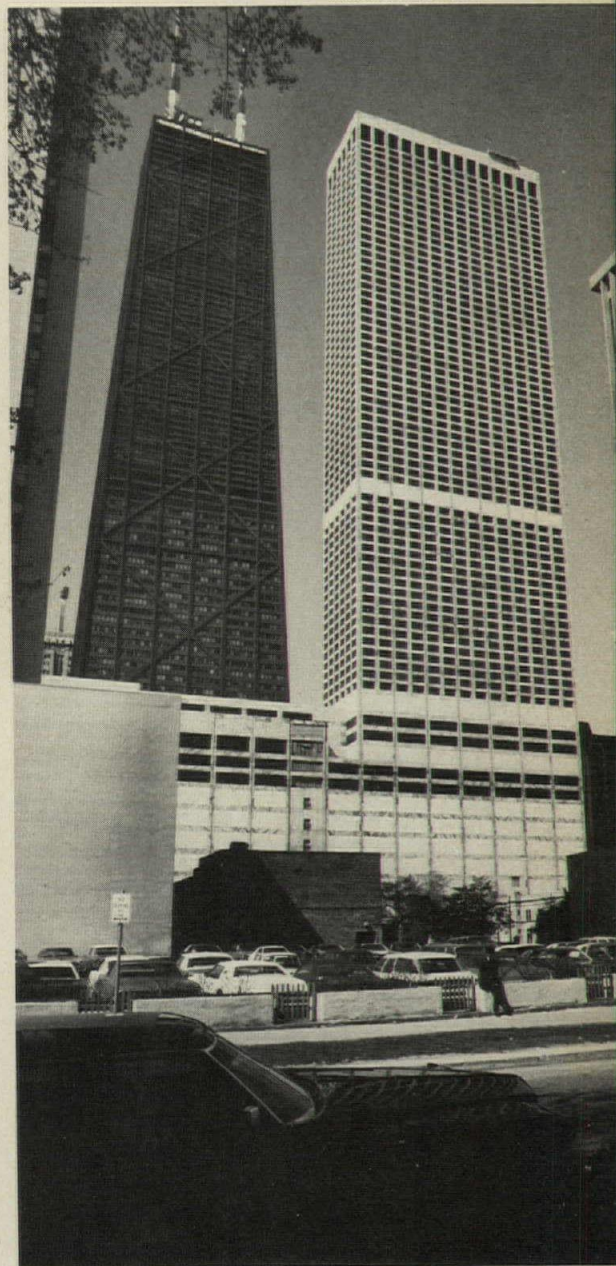
so that column loads can be transferred through the floor system (column-floor interaction); furthermore this increases the shear strength of the floor slab at the columns.

### High-strength concrete is not altogether new, but cast-in-place application is recent

Prestressed concrete requires high-strength concrete, so factories producing precast, prestressed members have been using it for many years. But placing concrete in forms in a factory is a lot easier than placing it in the field. Relatively "dry" (low-slump), rich mixes can be consolidated in strong forms by vibration or shock methods. Cast-in-place concretes, on the other hand, must have slumps on the order of 3-in. or so to enable the concrete to be handled in the field. And only field-type vibration techniques can be employed. This means that the concrete, itself, has to be different than ordinary concrete, and it also means that a high-degree of quality control must be exercised, and close cooperation must exist among the engineer, the ready-mix producer, the concrete sub-contractor and the testing laboratory.

High-strength concrete is not new to some foreign countries. For example, a 35-story building using 8,000 psi concrete was built in 1954 in Cuba. And Ysrael Seinuk, now of the Office of Irwin G. Cantor in New York, structural engineers for the 57-story Galleria, designed a 50-story building in 1958 for Havana, but it was not built.

In the U.S., Chicago has led in the use of high-strength concrete. In 1961 and 1962, 5,000-psi concrete was used in two high-rise apartments on the lake front. And in 1965, 7,500-psi concrete was developed for the 70-story Lake Point Tower. Seven years later concrete producers were supplying 9,000 psi (56-day strength), and, today, research is being conducted on 11,000-psi concrete in two columns of a 44-story apartment building—River Plaza—in Chicago. Only 9,000 psi was needed for design requirements, but the owner and engineers Cohen, Barreto, Marchertas cooperated with a number of organizations—Chicago Committee on High-Rise Buildings, Concrete Reinforcing Steel Institute, Portland Cement Association, and Material Service Corporation—who are monitoring such characteristics as setting temperature and creep of 11,000-psi concrete in the two columns. The first 9,000-psi concrete was used in the 50-story Mid-Continental office building in Chicago completed in 1972. Architect was



**THE TALLEST CONCRETE BUILDING**, Chicago's 76-story Water Tower Place, has 9,000-psi concrete in tower columns up to the 25th floor. From the 25th to the 40th floor, 7,500-psi concrete was used. In floors above this, strengths were decreased progressively from 6,000 psi through 5,000 psi to 4,000 psi in the highest portions. Design, programming, and administration were by Loebel, Schlossman, Bennett & Dart; working drawings and engineering were by C. F. Murphy Associates

The editors appreciate the assistance of Jeffrey I. Charloff, P.E. in assembling background information for this article.

Alfred Shaw & Associates; structural engineer was William Schmidt & Associates. A half-dozen major buildings in Chicago have now used such high-strength concrete.

Some of the reasons for Chicago's leadership are: the availability of the right kinds of materials (fly ash as an admixture, for one); a particularly good spirit of cooperation among architects, engineers, contractors, and suppliers; and the existence of concrete suppliers who are progressive enough to conduct their own research and testing and who are aggressive in their marketing.

### What is the secret to getting high-strength concrete suitable for cast-in-place use?

The main difference between high-strength concrete and ordinary concrete is that it requires more cement—the mix is called "rich." But this is not the only difference. For concretes of about 6,000 psi, the next major difference is in the size of the aggregates. The coarse aggregate (stone) is smaller than that used for conventional concrete and the fine aggregate is coarser. This aids workability while helping to reduce the water/cement ratio. Excess water—beyond that required for hydration—is the enemy of high strength. The lowest water/cement ratio consistent with workability is the goal. Another essential ingredient of high-strength concrete is a water-reducing, retarding admixture.

Chicago, which is the only area so far to have employed 9,000 psi cast-in-place con-

crete, uses still another ingredient which concrete producers there deem essential—fly ash. According to the major concrete supplier there, Material Service Corporation, the fly ash performs two main functions. First, it combines with free cement in the mix, increasing compressive strength. It performs this function even though it is not cementitious, being basically silica. Second, its small angular particles improve workability, helping to reduce the water/cement ratio. (After a certain concentration of cement is reached with a given aggregate, adding more cement does not add to strength.)

Chicago has a local supply of high-quality fly-ash (low-carbon). New York City does not. New York City producers, nonetheless, are sure they can achieve strengths in the neighborhood of 7,500 psi with use of local materials along with admixtures. Anthony Rizzi of Rizzi Concrete reports, for example, field test cylinders with breaking strengths averaging 7,500, with some as high as 8,000. In New York City, the design mix prepared by the testing laboratory must have a laboratory testing strength 25 per cent higher than the strength specified by the structural engineer. So, if 6,000 psi is specified, the lab's cylinders must test out at 7,500. Field cylinders need to have the design strength. One member of New York's Concrete Industry Board at a recent seminar on high-strength concrete cited a Norwegian investigation into a special high-strength cement which would be more coarsely ground. Question was whether this special cement could eliminate the need for fly ash, but as yet this has not been answered.

In Philadelphia 6 floors of a 36-story downtown office building designed in 1968 has columns of 6,000 psi concrete. The architect, Charles Luckman, felt that the columns for the three lowest floors were still too large using the 6,000 psi concrete, so the columns there were done in structural steel. According to Ysrael Seinuk, Office of Irwin G. Cantor, structural engineer, if 8,000 psi concrete had been available, the reinforcing steel in the upper columns could have been reduced by 60 per cent; and if the same amount of reinforcing steel had been used as was used in the 6,000 psi columns, the use of 8,000 psi concrete could have reduced the columns originally designed for the lower three floors from 36 by 46 in. to 30 by 30 in. This size would have been acceptable to the architect, and the structure could have been built by concrete trades, instead of both concrete and steel.

### Care has to be taken with the ingredients and also with quality-control aspects

Choice of brand and type of cement is, according to Ronald L. Blick of Material Service Corporation, probably the most important factor in the selection of materials because variations in the cement will cause concrete compressive strengths to fluctuate more than any other material. The portland cement used must have an optimum quality from the standpoints of both strength and workability. Blick says that a program for studying variations in chemical and physical properties of locally available cements is a necessity. The selection of cement,

he says, should be based upon strengths at 28, 56 and 90 days because some cements may produce very high strengths at an early age, but exhibit little gain at extended ages.

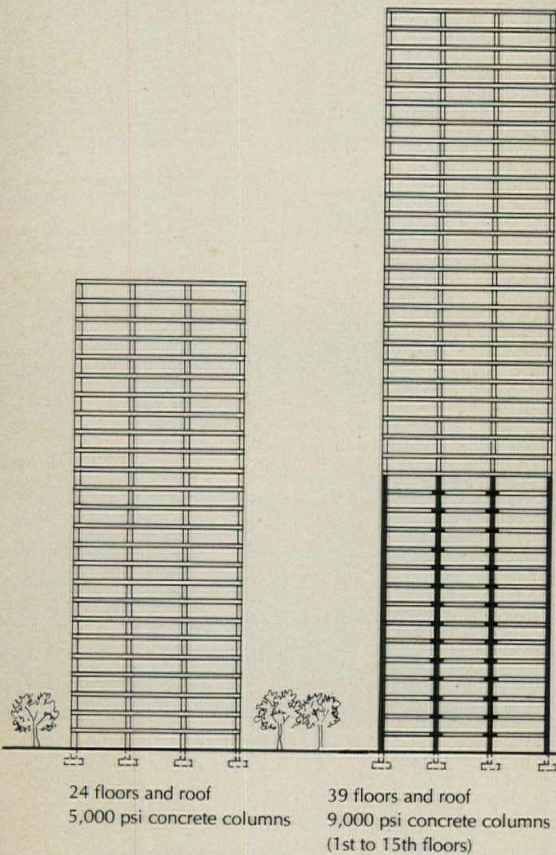
Air-entraining agents are not normally required or recommended for high-strength concrete because in its applications the concrete is not usually exposed, and air-entrainment lowers the strength.

Choice of shape and texture of aggregates affects total mixing water requirements, and hence strength, and has been discussed in technical papers by Blick and by Paul Klieger, director of concrete materials research at Portland Cement Association: The water/cement ratio should be under 0.40 (as low as 0.34) for 9,000 psi concrete. Slump will generally be in the range of 2½ to 3½ in. The strength loss normally associated with increasing mixing water when using small-size and angular-shaped coarse aggregate is overcome by the greater bond developed between the cement paste and the aggregate. And, as mentioned earlier, a coarser sand than normal is used for the fine aggregate. Rounded and smooth fine aggregate particles result in less water demand. The amount of fly ash used in the Chicago high-strength concretes has been from 10 to 15 per cent of the cement content by weight.

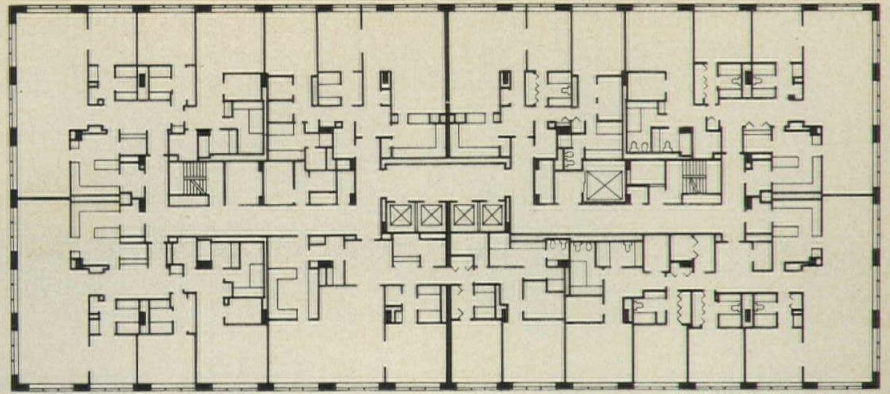
Because high-strength concrete gains considerable strength after 28 days, specifications should be modified from the typical 28-day criterion to either 56 or 90 days. This makes sense because in very tall buildings, the lower portions are not fully loaded for some time.

It is necessary to have a good quality control program at the concrete ready-mixed plant and at the site to limit the variability of strengths. The less effective the controls, the higher the average concrete strengths to meet the specifications, which increases the cost. The quality control program of continuous inspection and testing at the plant and at the site is necessary to ensure proper batching, mixing placing, consolidating and curing. A competent commercial testing laboratory must be employed, which can prepare trial design mixes, provide the design engineer with documentary information, test preliminary test cylinders in the laboratory, and, finally test cylinders taken in the field. It has been suggested that a minimum of one set of cylinders should be taken per 100 cu yd of placed concrete and a minimum of two cylinders each for the testing ages of 7, 28, 56 and 90 days.

The party who guarantees the strength of the concrete is different in Chicago than in New York City. In Chicago, the concrete supplier, who has control over the concrete from batching to placement in forms, takes responsibility for the strength. In New York, however, the concrete subcontractor, rather than the supplier, is legally required to be responsible for the specified strength. Though the control over the concrete is divided between the supplier up to the time of delivery, and the contractor for placement, this situation has not deterred a number of contractors in the New York area from providing 6,000-psi concrete. On the other hand, they may have not been as aggressive in promoting high-strength concrete as have been concrete suppliers in Chicago.

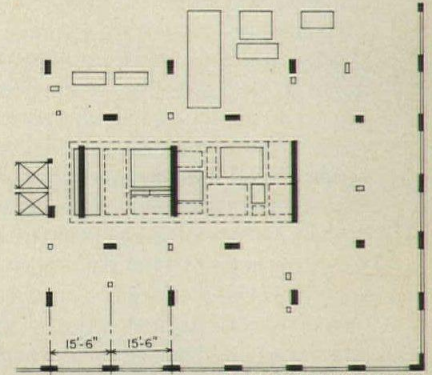


**MORE STORIES ARE POSSIBLE** in a high-rise apartment building by using high-strength concrete in the lower portion, avoiding the need for increasing column sizes. In this hypothetical example by Werner Sturm of Severud-Perrone-Sturm-Bandel, New York, presented at a Concrete Industry Board seminar, the column sizes are the same in both buildings. The typical interior column is 27 by 16 in., and the slab is 6½-in.-thick flat slab of stone concrete.

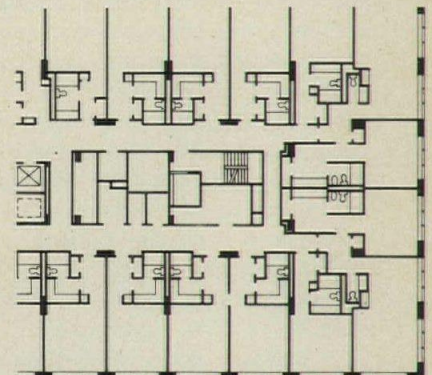


TYPICAL APARTMENT FLOOR

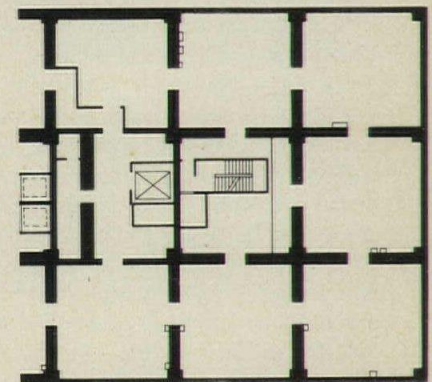
**DIFFERENT SPACE OCCUPANCIES AND USES** require different column shapes and locations in Water Tower Place. The top 40 stories have condominiums. Below the 32nd floor, which is mechanical space, are 17 floors of hotel guest rooms. Below the guest rooms are the hotel lobby floor and hotel offices and ancillary spaces. Floors 8 and 9 of the tower are for offices. The top photo shows construction of the short face of the tower. The series of plans indicates the structural transitions.



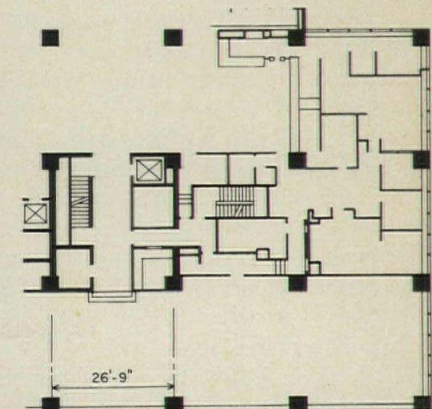
32nd FLOOR (MECHANICAL)



TYPICAL GUEST ROOM FLOOR



14th FLOOR (MECHANICAL)



12th FLOOR





## Why a National Institute of Building Sciences?

by Ernest Mickel

Nearly a decade after it was first proposed, and some 20 months after Congress had authorized it, the National Institute of Building Sciences, a vehicle for unifying the building regulatory process and thus hopefully lowering costs, is about to be born. The White House finally moved to nominate 18 directors, who now must be confirmed by the U.S. Senate after scrutiny by its Banking committee. (See Record Reports, this issue.) Only then can the Institute be duly incorporated and begin to function.

Long before the formal request for a Congressional mandate supporting such a private endeavor, construction industry leaders had envisioned an organization to smooth the way for introduction of new building technology into the design and construction process without the current impediments of strict code restraints. A part of this idea was a new, strong emphasis on performance specifications to supplant prescriptive mandates where they could do so feasibly. This approach, it was felt, could lower building costs substantially by removing the need for certain outlays inevitably encountered with the present complicated building regulatory system.

The Housing and Community Development Act of 1974, signed into law on August 22 of that year, contained Section 809 covering the NIBS authorization. Findings by Congress, set out initially in this section, describe a lack of a national source to make findings and advise on the use of building science and technology. Nationally acceptable standards for use in building regulations could not be achieved, it states, without some such organization to take full advantage of new developments in products and processes and to pass these into the design and construction stream.

The lawmakers said they were convinced that a model building code could not handle the problem. Why? Because (and they wrote this into the law) of "the difficulty at all levels of government in updating their housing and building regulations to reflect new developments in technology, as well as the irregularities and inconsistencies which arise in applying such requirements to particular localities or special local conditions."

NIBS also is expected to influence building costs through coordination of the development and promulgation of performance criteria, encouraging the acceptance of new methods and materials, and through disseminating technical information on a wide basis. One of the chief goals is more uniformity in building regulations.

Thus the Institute was initiated by the Federal government, after much industry prod-  
ding, with the specified advice and assistance

of the National Academy of Sciences-National Academy of Engineering-National Research Council, and of various sectors of the building community including labor, management, technical experts and government itself. In April, President Ford told Congress he intended to nominate 18 of the 21 NIBS board members authorized in the legislation and sent the names to Capitol Hill. Otis Mader, vice president of corporate marketing, Aluminum Company of America, Pittsburgh, was designated chairman.

It was understood additional names would be submitted later on to fill out the allowed complement of 21; two of these additions are likely to be government officials.

The question of financial support for the process of establishing the board, initiating its early functions and carrying through with activity until future self-support is attained should pose no major problem. The law authorizes \$10 million (\$5 million for each of two fiscal periods) and it permits NIBS to accept contracts and grants from government agencies at all levels as well as grants and donations from private sources. The Institute can charge fees for its services.

Congress carefully outlined the intended functions as follows, telling NIBS to encourage, but not force, adoption of its technical findings, performance criteria and standards in all codes:

1. Development, promulgation and maintenance of nationally recognized performance criteria, standards, and other technical provisions for maintenance of life, safety, health, and public welfare suitable for adoption by building regulating jurisdictions and agencies, including test methods and other evaluative techniques relating to building systems, subsystems, components, products, and materials with due regard for consumer problems.

2. Evaluation and prequalification of existing and new building technology in accordance with the above.

3. Conduct of needed investigations in direct support of the above.

4. Assembly, storage, and dissemination of technical data and other information directly related to above points.

The composition of the Board of Directors was carefully worked out in what seemed to be endless conferences between Congressional committees, staff members, and industry spokesmen. The law, as written, specifies a balance between industry, public interest, and consumer representatives, but states that a majority of the members must represent the public sector. There was some question that the

names submitted by the White House to the Senate would meet this mandate but there was room for some flexibility in the submission of subsequent nominees, expected soon.

There also was careful Congressional designation of representative types within the categories. For example, construction industry representatives must include those from labor, producers, builders, housing managers and experts in standards, codes and fire safety. Placed in the public interest slot, where the majority of board members must prevail, are architects, professional engineers, and Federal, state and local officials as well as those upholding consumer interests.

Why did it take so long for the White House to designate its preferences for board of directors membership? There was this somewhat complex specified balance of personnel which lengthened the search and the Executive Department said repeatedly that it experienced difficulty with security clearance and conflict of interest checks as it scrutinized prospective designates.

As early as September of 1971, the newly designated Board chairman, Otis Mader, put the issues in perspective when he testified before a Senate Banking subcommittee hearing the then-proposed Building Sciences Act, S. 1850. That bill, he said, would strike at the heart of what is commonly called the building code problem.

"For quite a number of years," Mader testified, "public attention has been directed to the tremendous proliferation of building codes, to the lack of uniformity among them, to failures to revise them regularly to keep them up to date, and to restrictions on the use of new products and practices. More recently, through the work of the National Commission on Urban Problems and other groups, attention has been directed to underlying facts and forces that must be taken into account if we are to achieve a truly workable, continuing solution to building code problems." He also argued that progress in codes and standards must proceed on a firm basis of demonstrated excellence of technical work, and not by fiat.

Much of the credit for pursuing the concept of a National Institute of Building Sciences, often in the face of discouraging odds, and of bringing it to the point of possible passage in the national Congress must go to the late Douglas Whitlock, Washington, D.C. attorney and construction industry leader.

It now will be the task of the new Board of Directors, and the organization it puts together, to prove the validity of the controversial concept and bring its benefits to society in full measure.

For more information, circle item numbers on Reader Service Inquiry Card, pages 217-218



## Helikon's NEOCON entry: conference table with burl elm top

The "T1342" conference table shown is one of the manufacturer's two NEOCON introductions this year. The table shown has an oval elm burl top on two polished stainless steel drum bases. The top measures 120 by 60 in., although sizes are

offered up to 8 by 20 ft., with bullnose edge. ■ Helikon Furniture Co., New York City.

Circle 300 on inquiry card



## Stendig shows executive seating at NEOCON

"Attache" is a series of executive seating designed by Ernst Luthy of Switzerland. Shown are arm models with high and low backs; there are two

armless types. All are upholstered in Swiss military leather. The high back is standard with a five-prong steel tube chromed mirror polished base. The two

low back armchairs have either a four- or five-prong base. Swivel-tilt mechanisms are offered. ■ Stendig, Inc., New York City.

Circle 302 on inquiry card

## Herman Miller announces the ergonomic chair

This line of chairs, to be introduced June 23-25 at NEOCON in Chicago, has been designed by Bill Stumpf according to the principles of ergonomics, the science of man's relationship to the physical environment. The Ergon chair is said to permit freedom of movement in all types of work stations, and is available in four specific types: executive, management, secre-

tarial and operational. Construction features include rigid ABS plastic seat and back shells that can be upholstered; back height and tilt adjustment; polished aluminum or epoxy-coated bases; and rubber wheel casters. Seat cushions are polyurethane foam. ■ Herman Miller, Zeeland, Mich.

Circle 304 on inquiry card  
more products on page 145



## Architect-critiqued chair by All-Steel

After receiving input from the architectural/design community, the company will introduce its "500 Series" chairs, 14 models, each on a highly polished tubular chrome base. An extruded chrome plastic bead-

ing at cushion margins, dual wheel casters and cantilever arm construction are other refinements. The chairs will be shown at NEOCON. ■ All-Steel Inc., Aurora, Ill.

Circle 301 on inquiry card



## Westinghouse ASD will exhibit work stations

A new series of word processing work stations will be shown at NEOCON by the company. The components were designed to respond to the unusual work flow of word processing tasks

with a minimum use of space and minimum sound transmission. ■ Westinghouse Electric Corp., ASD, Grand Rapids, Mich.

Circle 303 on inquiry card



About the only way  
to pick this lock is to select it.



Emhart High Security Locking System. A major advance in positive protection for buildings that breaks dramatically with traditional lockset design. Unique cross-cut key bit\* and interlocking tumbler pins create astronomical odds against picking.

DirMo II Design. Other designs and functions available tailored to your security and styling needs.



HARDWARE DIVISION, EMHART CORPORATION  
BERLIN, CONNECTICUT 06037



\* Patent applied for

For more information, circle item numbers on Reader Service Inquiry card, pages 217-218

**SPIRAL STAIRS** / A four-page booklet describes this complete line of all-wood spiral stairs, including architectural details and specifications, and ordering information. ■ Stair-Pak Products Co., Union, N.J.

Circle 400 on inquiry card

**CONCRETE FORMS** / "FormGuard" is a high-density overlaid plywood concrete form panel system capable of over 75 re-uses, according to the manufacturer. A newly-revised eight-page brochure illustrates a wide range of end-use projects, and gives technical information on recommended care, handling and forming fabrication. ■ Simpson Timber Co., Seattle, Wash.

Circle 401 on inquiry card

**INSULATION** / "800 Series Spin-Glas" is a new thermal and acoustical insulation product developed for commercial, industrial and institutional buildings. A data sheet gives the material's thermal R-values, sound absorption coefficients, fire safety ratings and general properties. ■ Johns-Manville, Denver, Colo.

Circle 402 on inquiry card

**FIRE-RESISTIVE COATING** / An illustrated brochure gives information on "Pyrocrete," a magnesium oxychloride fire-resistive coating for use on structural steel and plastic foam insulation. The material is said to meet code and insurance requirements; UL listings, and physical and chemical characteristics are included. ■ Fireproofing Products Div., Carboline, St. Louis, Mo.

Circle 403 on inquiry card

**INDUSTRIAL HARDBOARD** / A series of technical fact sheets covers product applications, machining and finishing data, sizes and special properties of six lines of industrial hardboard products. ■ U.S. Plywood, Stamford, Conn.

Circle 404 on inquiry card

**SOIL SEALANTS** / "Volclay" is a high-swelling sodium bentonite compound for long-lasting control of lagoon seepage to prevent groundwater pollution. A brochure gives details on the product's application in fresh-water or highly-contaminated industrial wastes lagoons, and for control of landfill leachate seepage. ■ American Colloid Co., Skokie, Ill.

Circle 405 on inquiry card

**PANELING** / A four-color brochure describes "Trend Planks," prefinished hardboard panels (16 in. by 8 ft) with a simulated woodgrain finish. Eight designs are shown, along with harmonizing moldings. Planks have tongue-and-groove edges, and install with concealed metal clips and adhesive. ■ Marlite Brand Paneling, Dover, Ohio.

Circle 406 on inquiry card

**LAUNDRY EQUIPMENT** / A condensed catalog gives basic information on 23 laundry washer-extractors, ranging from 35- to 600-lbs. capacity. Capacities, dimensions and standard and optional features are given for each unit; additional information is available. ■ Pellerin Milnor Corp., Kenner, La.

Circle 407 on inquiry card

**INSULATED WALL SYSTEM** / An insulated wall system said to be low-cost and easy to construct is described in an illustrated brochure. The "Multuloc" wall can be used for re-facing existing structures; for mechanical penthouse enclosures; and for both permanent and movable interior partitions. ■ Multuloc Corp., Chicago, Ill.

Circle 408 on inquiry card

**SUB-SURFACE INVESTIGATIONS** / An illustrated brochure details the boring and sampling services available to foundation contractors and engineers. Also covered are services for the development of power plant refuse facilities and other solid waste disposal projects. ■ Tinney Drilling Co., Beaver, Pa.

Circle 409 on inquiry card

**LANDSCAPE CONTRACTS** / A free booklet from the GSA describes how landscape architecture firms receive government contracts. Research, analysis, site and master planning, and the evaluation of exterior environments are some of the services GSA requires. Copies of "Landscape Design Services" are available from the Director, Special Programs Div., Room 5338, U.S. General Services Administration, 18th and F Sts., N.W., Washington, D.C. 20405.

**PLAYGROUND EQUIPMENT** / Twenty different product categories are covered in a 91-page, full-color catalog. An "American History" theme playground is featured, with play units ranging from "Columbus' Ship" to the five-swing "Atom Splitter." In the wood product line is the new "Ramble Climber," a total play system combining tires, slides, bridges, climbers, poles and steps. Therapeutic and preschool play equipment are also included, as well as picnic tables, benches, stoves and shelters. ■ Game Time, Inc., Eden Prairie, Minn.

Circle 410 on inquiry card

**PANEL WALL SYSTEM** / An embossed panel system that can develop a "U" factor as low as 0.05, and a fire rating of 4 hours, is explained in a new brochure. These flush-glazed panels are also available in stainless steel, anodized aluminum, copper and Cor-Ten weathering steel. ■ Ferro Enameling Co., Oakland, Calif.

Circle 411 on inquiry card

**ESTIMATING CALCULATOR** / Three new electronic calculators designed especially for the architect and engineer, are presented in an illustrated brochure. The calculators can measure, calculate and display length, area, and volume directly from drawings for immediate extension by cost or labor factors. There are both counting and measuring probes; models work in architect's scale, engineer's scale, or both—with two memories and a print-out. ■ Keuffel & Esser Co., Morristown, N.J.

Circle 412 on inquiry card

**STANDARDS FOR LAMINATED PLASTIC** / The Standards Committee of the Decorative Laminate Section of NEMA has recently revised performance criteria for all high-pressure laminated plastics throughout the industry. Products are divided into seven categories: general purpose; post-forming; cabinet liner; backer; specific purpose; high-wear; and fire-rated. These sections cover a total of 18 different grades or thicknesses. The results of 15 individual tests on each laminate sample form the basis of performance standards for each type of plastic. The new Manual (NEMA #LD 3-1975) is available for \$8.50 from the Decorative Laminate Section, NEMA, 155 E. 44th St., New York, N.Y. 10017.

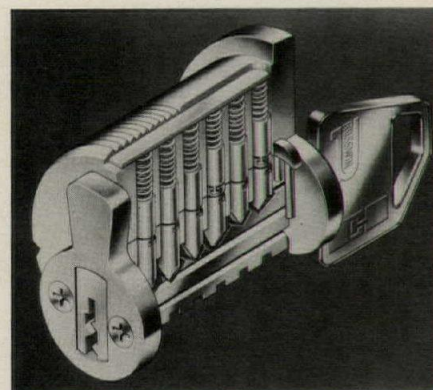
**POLYCARBONATE SHEET** / The advantages of TUF-FAK polycarbonate sheet in glazing applications are explained in a 15-page technical brochure. Said to be highly break- and abrasion-resistant, with good weathering characteristics and optical clarity, TUF-FAK sheet is recommended for glazing in schools, plants, bus shelters and telephone booths. ■ Rohm and Haas Co., Philadelphia, Pa.

Circle 413 on inquiry card

more literature on page 196

## 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



For more data, circle 61 on inquiry card

When it comes to lighting,  
Parabolume has a lot more  
than meets the eye...



MONTGOMERY WARD CORPORATE HEADQUARTERS Architect: Minoru Yamasaki & Associates; Interiors: Sydney Rodgers Associates; Electrical Consultant: Joseph R. Loring & Associates.

## ...like speech privacy!

In Open Plan interiors, lighting fixtures are an important part of the visual and acoustical environment. They must be low brightness, of course, in order to avoid intolerable glare and provide high visual comfort in the large open areas. But the fixtures must also inhibit the reflection of sound in order to assure speech privacy. Parabolume does both! Flat lenses reflect sound, much as a mirror reflects light. Voices or conversation may be directed away from

the area intended. However, the complex baffle curves and contours which give Parabolume low brightness light control also serve as an effective sound baffle. Most of the sound entering the fixture is re-reflected internally and absorbed. Parabolume gives you the precise means of confining both light and conversation where they belong. Parabolume lighting: low brightness, high visual comfort and speech privacy!

**columbia  
lighting  
inc**

**GTE SYLVANIA**

north 3808 sullivan rd □ ta box 2787 □ spokane washington 99220 □ (509) 924-7000

For more data, circle 62 on inquiry card

**MORTARLESS BRICK** / "Zip Brick" is a new concrete masonry system



using bricks with interlocking horizontal joints to provide a strong, self-aligning wall. Available in either 4-in. or 8-in. widths, the bricks have a 3/8-in. simulated mortar joint, requiring mortar only at wall corners for a uniform appearance. The

first course is set in a bed of mortar for a level base; subsequent courses are stacked dry. A groove provides for the addition of reinforcing steel where necessary. The brick is produced in a number of states, and has won union endorsement. ■ Zip Brick, Inc., St. Louis, Mo.

*Circle 305 on inquiry card*

**MICROFICHE DUPLICATORS** / Model "105 D1"

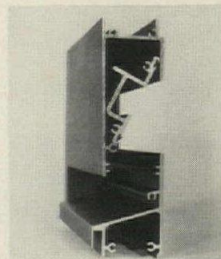


automatically produces flat, high-quality cut-card fiche duplicates on standard diazo microfilms from 105mm roll film. The unit features a self-contained, recirculating aqueous ammonia system that eliminates the need for external venting or plumbing.

Model "105 D2" is designed for vesicular film. Both have a "Film Out" indicator, and accommodate master microfiche imaging at reductions of up to 48X. Speeds of up to 900 copies per hour are possible. ■ GAF Corp., New York City.

*Circle 306 on inquiry card*

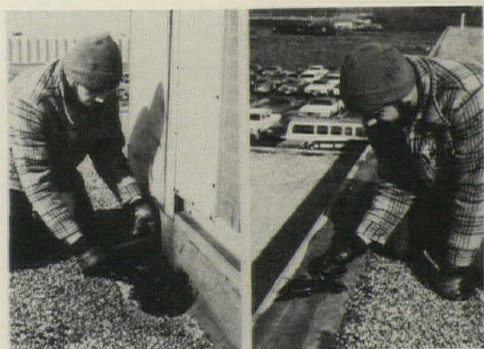
**VENTING PANEL** / Intended for use with the manufacturer's "Series 2000"



projected, pivoted, top-hung or fixed windows, the "Insta-Vent" provides emergency or casual ventilation with security. The entirely weatherstripped venting panel slides into the window frame; nothing projects into the room

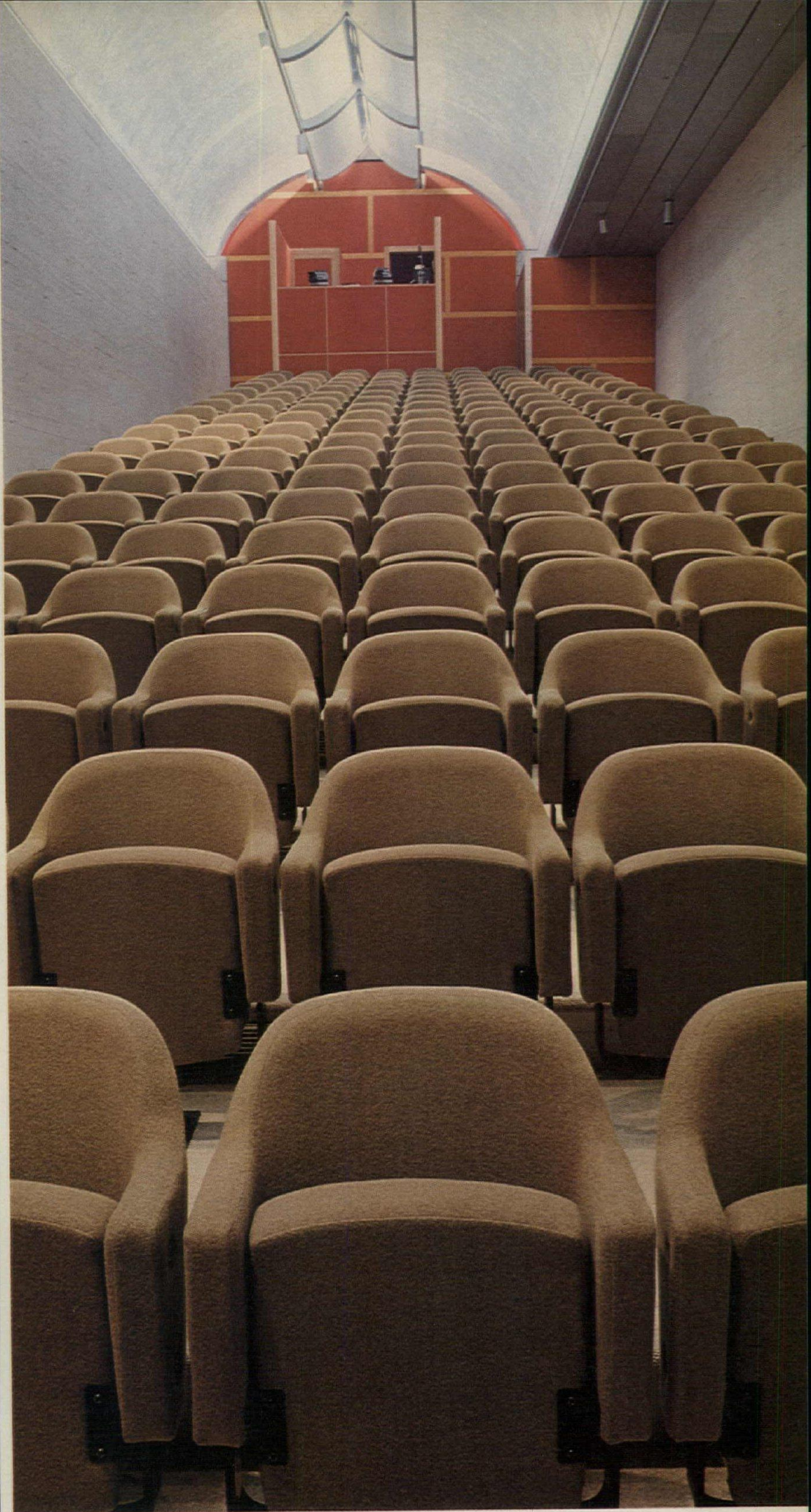
itself. The vent may remain open even during extremely wet weather without water penetration. ■ Wausau Metals Corp., Wausau, Wisc.

*Circle 307 on inquiry card*



**ROOFING CEMENT** / New "Polar Patch" roofing cement can be used to stop roof leaks in wet or freezing weather. The compound is quick-sealing asphalt, with plasticizers and asbestos fibers, and is said to have good adhesion even to wet surfaces. It comes ready-to-use, needing no thinning or stirring. ■ The Monroe Co., Inc., Cleveland, Ohio.

*Circle 308 on inquiry card  
more products on page 149*



**JG**

**Westminster**

Auditorium seat designed by Dickinson/Smith  
Installed at the Kimbell Art Museum, Fort Worth, Texas  
Architect: Louis I. Kahn

JG Furniture Co., Inc. Quakertown, Pa. 18951 (215) 536 7343  
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This Haws electric water cooler beckons to those in wheelchairs and the general public alike. It promises the satisfaction of cool water for all, fulfilling the requirements of Public Law 90-480 and most state codes.

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Model HWCD-8 wall-mounted electric water cooler is the ideal unit to specify for schools, hospitals, office complexes, or any other projects where building construction, leasing or financing involves federal funds. Get full facts on Model HWCD-8 from your nearest Haws Representative or Haws Drinking Faucet Co., 1441 Fourth Street, Berkeley, CA 94710.

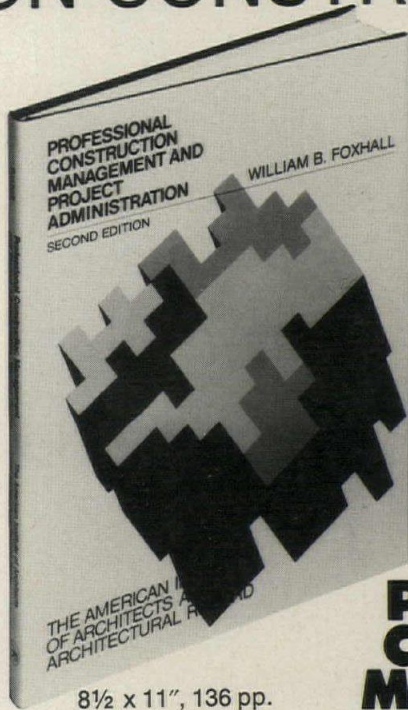


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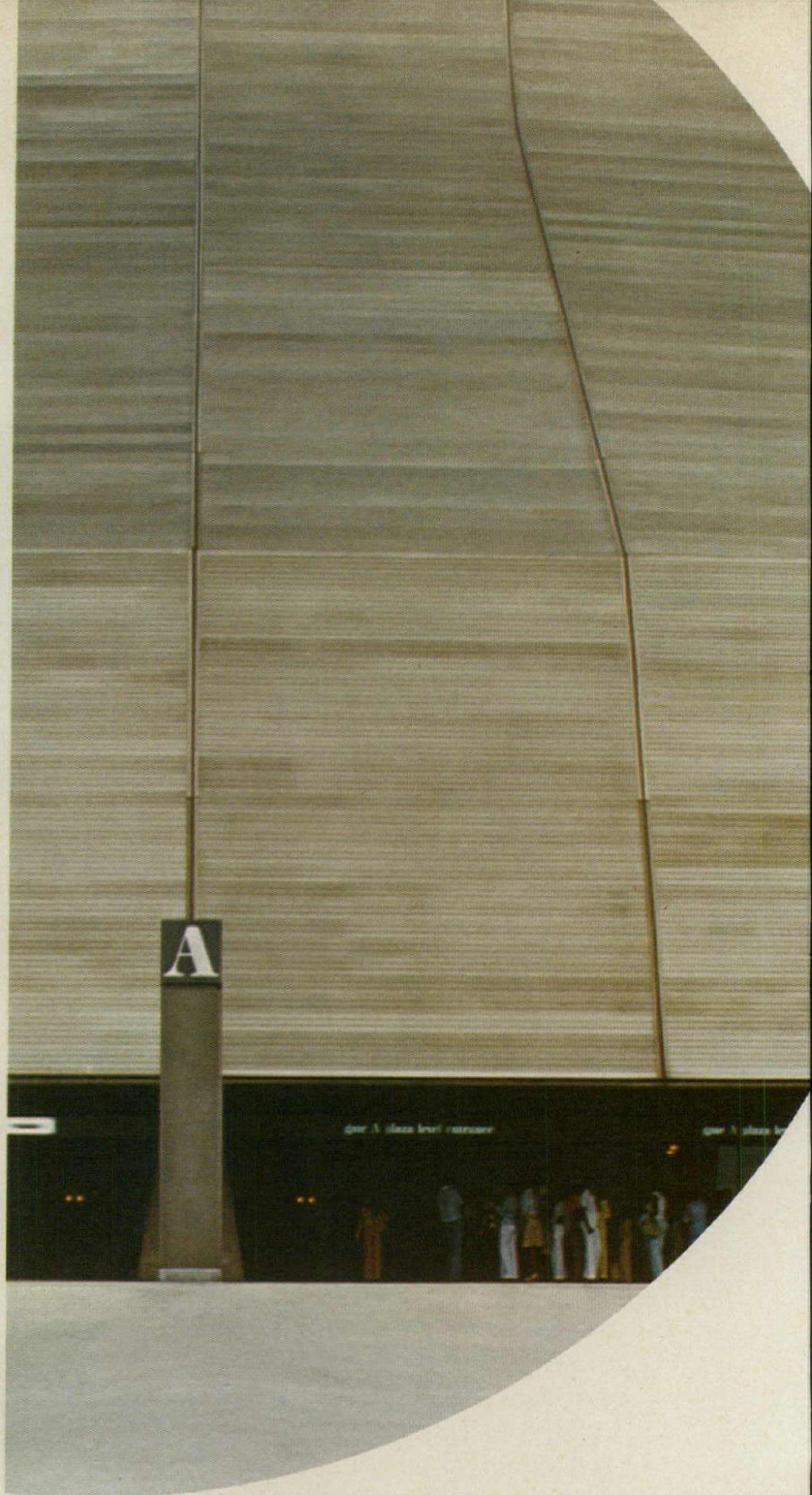
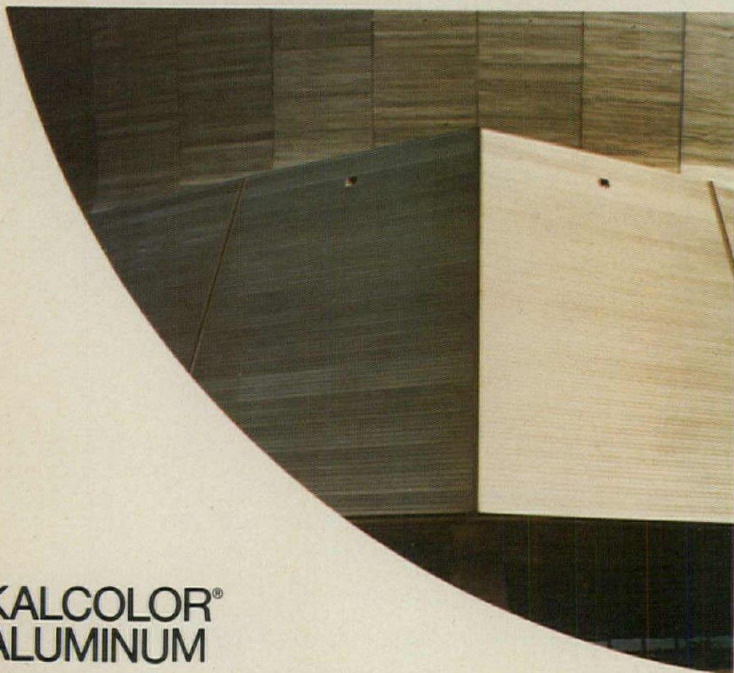
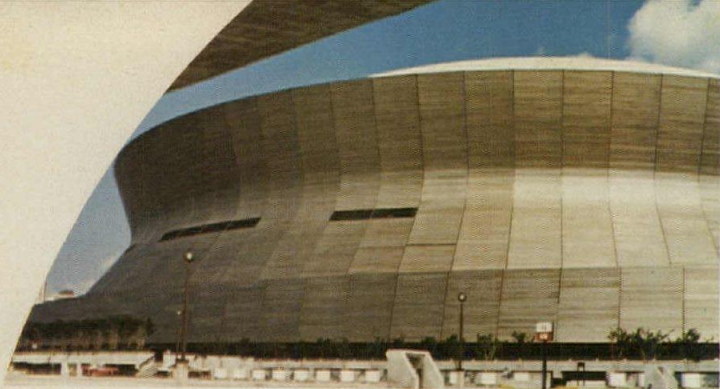
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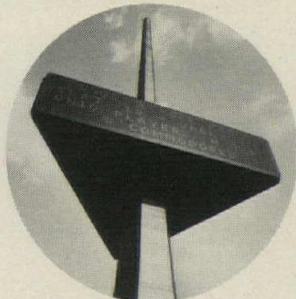
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Wall System: H. H. Robertson Co., Connersville, IN

### GRAPHICS

Anodizing: Aluminum Finishing Corp. of Indiana,  
Indianapolis, IN  
Fabrication: J-C Products Corp., Indianapolis, IN  
Installation: PPG Industries, Kokomo, IN

### ELECTRONIC CARREL /

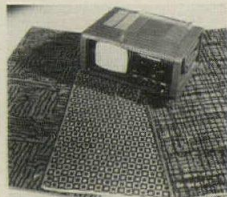


This "Video Training Carrel" has special security features to discourage pilferage and tampering with expensive electronic equipment. The cassette player is recess-mounted in a desk surface cut-out, and installed with a security mounting bracket. The TV monitor is bolted to an angled shelf nine inches

above the desk top. Both player and monitor units require special tools for removal. The carrel itself comes with an 18-in.-long, 15-watt fluorescent fixture and a 110-volt outlet; there is also a power column with a pilot light, 10-amp circuit breaker, four 110-volt grounded outlets and a 4-ft power supply cable. Surfaces are finished in leather- and teak-textured plastic laminate. ■ Howe Furniture Corp., New York City.

Circle 314 on inquiry card

### CARPETING /

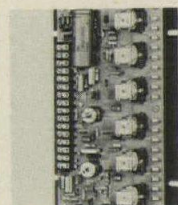


Three geometric designs are printed over seven tri-tone color mixtures to create 21 different carpeting effects in this new line of contract coverings. The carpets are textured level-loop nylon suitable for offices, restaurants, schools, etc. ■

Philadelphia Carpet Co., Philadelphia, Pa.

Circle 315 on inquiry card

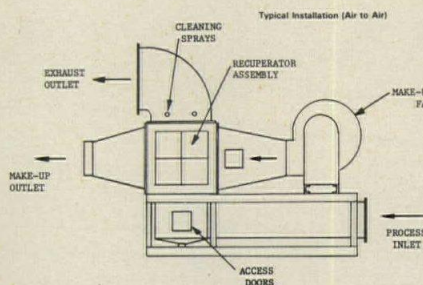
### HVAC CONTROLS /



The "Series R48" load sequencer monitors single zone environmental systems and provides no more heating or cooling than is absolutely necessary to maintain optimum space temperatures. For multi-zone systems, the

"R41" Mizer control (pictured) provides maximum usage possible of outdoor air before mechanical cooling must be introduced. Both heating and cooling modes are activated in proportionally sequenced stages, as load conditions require, for efficient use of energy-consuming equipment. Clock-programmed night set-back provisions are available. ■ Penn. Div., Johnson Controls, Oak Brook, Ill.

Circle 316 on inquiry card



**HEAT RECOVERY UNITS /** At least 60 per cent of heat normally wasted can be reclaimed and re-used by these compact modular units, according to the manufacturer. Two basic types are available: air-water exchangers, changing heat into hot water; and air-air, where heat is transferred into a second air stream. Suggested applications include curing and drying ovens, process dryers, furnaces and boiler exhausts. ■ Beltran Associates, Inc., Brooklyn, N.Y.

Circle 317 on inquiry card

more products on page 151

# What about smoke venting?



When fire strikes any major building, fire fighters must be able to vent the smoke and heat readily. People's lives depend on it.

The Building Codes recognize this need and call for venting capability in most large structures. Wasco has worked closely with the fire fighting community to develop the techniques and hardware to meet their requirements.

As the leader in the design and manufacture of roof smoke vents for large single-story buildings, it was natural that Wasco would develop the first exterior wall vents. Wasco has placed these vents in hospitals, hotels, bank buildings, atriums and malls. A list of the buildings and architects is available for the asking. These vents are particularly effective for large open areas. For more compartmented areas, Wasco is now supplying interior wall vents which open into a smoke shaft. In a newly completed apartment for the elderly, the architect provided two such shafts and two Wasco vents on each floor to allow smoke to be vented from the corridors.

All Wasco vents can be operated manually, remotely by fire fighters, and/or tied into heat and smoke sensing devices.

When you need to provide smoke venting, and would like the latest data or design assistance, write or call Architectural Services Department, Wasco Products, Inc., Box 351, Sanford, Maine 04073.



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# Modified open plan with high flexibility works in old, new or future schools

Operable walls installed in the Jeffersontown Elementary School, Jefferson County, Ky., will accommodate virtually any teaching method likely to be developed in the foreseeable future.

Immediate flexibility is the key.

Changes are made by the teachers themselves. The walls can be moved away for a complete open plan or closed for traditional classrooms. Teachers can arrange separate study carrels, reading labs or resource centers for their students in minutes.

The walls combine the advantages of demountable walls and free-standing dividers without the disadvantages, and can be used to convert existing conventional buildings to the modified open plan.

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tem. On your letterhead write "Divisiflex Brochures", your name, title and phone. Mail to Modernfold, Box 310, New Castle, Ind. 47362.



Teacher seals entire wall for individual classroom at Jeffersontown School.



Open Plan arrangement at Jeffersontown School. Right angle tracks in ceiling permit open plan arrangement, above, or traditional classroom, as shown in top photo. Hartstern, Schnell, Campbell, Schadt - Louisville, architects.

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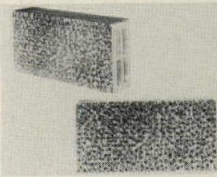
**OFFICE SEATING** / A new introduction to the contract furniture field is the "Luxeur Series" of office chairs, designed by Robert Schier. The multi-density cushioned seat conforms to the curvature of the bentwood frame back to provide posture support.



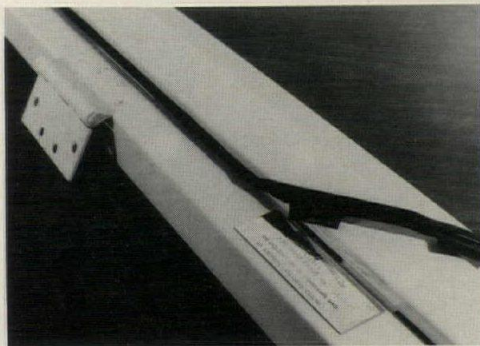
Three versions are available: armless side chair; side chair with arms; and a desk chair with tilt-swivel base, adjustable seat height and tension control. All seats may be ordered in either oak or walnut laminated wood frame, and in a choice of fabrics and colors. ■ Domore Office Furniture, Inc., Elkhart, Ind.

Circle 318 on inquiry card

**ACOUSTICAL TILE** / Structural glazed ceramic tile is now available in "Aztec Cameo Yellow/Brown". This textured acoustical tile provides a sound transmission coefficient of 46, for use in high noise-level areas such as swimming pools, gymnasiums, computer rooms and industrial areas. According to the company, the tile does not attract airborne dust; never needs painting; and can usually be cleaned by vacuuming and wiping with a damp cloth. ■ Stark Ceramics, Inc., Canton, Ohio.



Circle 319 on inquiry card



**STEEL DOOR FRAME** / This unitized, weather-stripped steel door frame—for masonry construction—now meets UL standards for fire-rated entrances. The synthetic rubber weather-strip material is not affected by extreme temperatures, and adds to the acoustical properties of the door opening according to the manufacturer. ■ Steelcraft, Cincinnati, Ohio.

Circle 320 on inquiry card

**INSTITUTIONAL SERVING CARTS** / The "ST-50" single-tray serving cart is designed for the health care institution on a tight budget, the manufacturer states. Both hot and cold meal portions are placed on one "Dual Temp" tray at a central station; the hot side maintains 180 deg F, the cold portion is kept at



40 deg F. A mechanical interlock prevents incorrect loading of trays. The cart has full wrap-around and vertical corner bumpers; flush-mounted push handles and recessed door pulls. Each unit comes with 20 trays. ■ Crimco, Inc., Decatur, Ga.

Circle 321 on inquiry card  
more products on page 153

# A QUESTION OF SPACE: How do you build a high-rise on a severely limited site?

## MONEY-SAVING ANSWER:



Adaptability to even limited-access areas is one of reinforced concrete's many attributes. Case in point: the 22-story Breckenridge Inn of the Spanish Pavilion, St. Louis, Mo.

The big problem was a new tower had to be built over an existing courtyard only 50-feet square. So a transfer platform was designed 20 feet above the original roof level.

Then five different structural systems were analyzed to determine the most practical at the minimum cost: (1) structural-steel framing; (2) lift-slab with post-tensioned floors; (3) pre-cast bearing walls and pre-cast concrete floors; (4) pre-cast walls with poured-in-place floors; and (5) cast-in-place walls and cast-in-place floors. This last system was found to be the most economical.

Designing the transfer platform in concrete instead of structural steel created an additional savings of approximately \$150,000.

The normal weight concrete walls are 6-inches thick, varying in strength from 7500 psi in lower stories to 4000 in the upper. The floor slab is lightweight concrete, 6-inches thick, with Grade-60 reinforcing steel.

Whether it's a question of tight space or tight money, you'll find time- and money-saving answers in reinforced concrete.

Architect: Henmi, Zobel & Fott, Architects & Planners, St. Louis.

Structural Engineer: Heinicke & Theiss, St. Louis.

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## THE ANSWER'S IN REINFORCED CONCRETE

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# Things are looking up for US.

After two years of severe pressure due to the economic recession and double digit inflation, things are looking up for the construction industry.

A 16% rise over 1975 spending for new construction has been predicted. Interest rates and other indicators are looking good too. That's a very good sign for the whole country.

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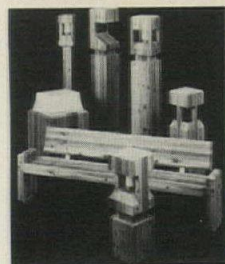
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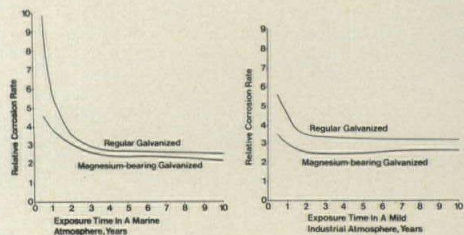
**REDWOOD LIGHTING FIXTURES** / Over 100 wall,



post or bollard lighting fixtures are now available in clear laminated redwood. Also included in this new series are benches, planters, ash urns and trash receptacles. The lighting fixtures are intended for outdoor accent lighting,

and are UL-listed. ■ WoodForm, Columbia Cascade Timber Co., Portland, Ore.

Circle 322 on inquiry card



**GALVANIZED STEEL** / A recently-developed galvanizing process results in an average 13 per cent increase in the corrosion resistance of the coating, according to actual 10-year atmosphere exposure tests. A small amount of magnesium produces a galvanized product with characteristics identical to the firm's Zincgrip steel, which it will replace under the same name at no increase in cost. ■ Armco Steel Corp., Middletown, Ohio.

Circle 323 on inquiry card

**CARPET UNDERLAYMENT** / A new grade of polyester pneumacel underlay-



ment called "Dunleith" is designed for contract installations requiring a single grade for both office and general-use areas; it provides a firm, but sink-in feeling, according to the manufacturer. A thicker grade is intended primarily for residential use. Both underlayments are lightweight, durable, and moisture and mildew resistant. ■ E. I. DuPont de Nemours & Co., Inc., Wilmington, Del.

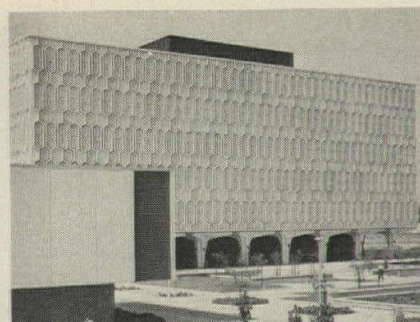
Circle 324 on inquiry card



**GRAFFITI-RESISTANT COATING** / "Hi-Bild" is a two-part, all-solids epoxy-resin-based coating suitable for dry, damp, or wet surfaces. The material will fill in pores in cinder block, concrete masonry, etc., and cures to a high-gloss, tile-like finish; two coats are recommended. Graffiti is easily removed using a cloth saturated with "Colma" cleaner, according to the manufacturer, even after spray-paint markings have cured. ■ Sika Chemical Corp., Lyndhurst, N.J.

Circle 325 on inquiry card

more products on page 155



## Announcing music systems that harmonize with your architecture.

Background music is the building material that gives character to brick, stone and glass.

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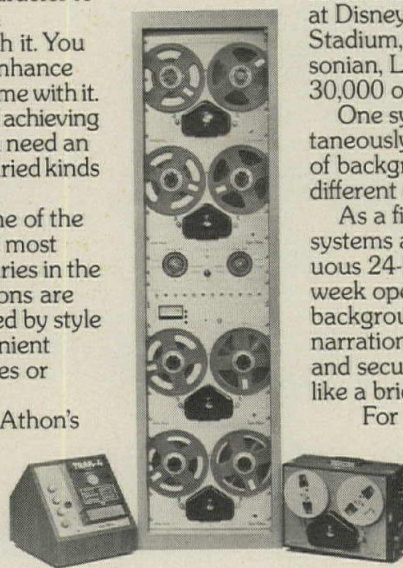
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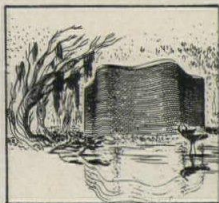
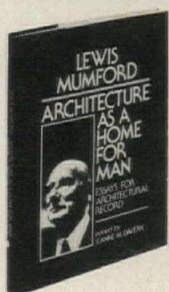


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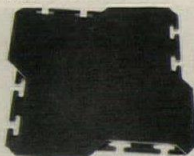


designed to save valuable, attractive trees from slow starvation when paved malls, walks or parking lots are placed near them. The system consists of a 13-in.-long, 4-in.-diameter PVC cylinder placed in an augered hole, then backfilled with aggregate. This cylinder contains a filter unit holding a fertilizer mixture, usually refilled yearly. Protruding only 3/32-in. above the paved surface is a durable ABS plastic collar fitted with either a perforated or salt-proof solid cap. One unit per inch/diameter of tree trunk is considered an adequate installation, depending on how close to the tree paving extends. ■ W.A.N.E. Tree Feeder System, Tampa, Fla.

ing a fertilizer mixture, usually refilled yearly. Protruding only 3/32-in. above the paved surface is a durable ABS plastic collar fitted with either a perforated or salt-proof solid cap. One unit per inch/diameter of tree trunk is considered an adequate installation, depending on how close to the tree paving extends. ■ W.A.N.E. Tree Feeder System, Tampa, Fla.

Circle 326 on inquiry card

### PLAYGROUND SURFACING / With 144 air pockets



per sq ft, "Safe Fall" modules provide a shock-absorbing surface for children's play areas. Vandal-resistant overlapping lock tabs and bolt-down perimeter anchors simplify installation. ■ El Monte Rubber Corp., South El Monte, Calif.

per sq ft, "Safe Fall" modules provide a shock-absorbing surface for children's play areas. Vandal-resistant overlapping lock tabs and bolt-down perimeter anchors simplify installation. ■ El Monte Rubber Corp., South El Monte, Calif.

Circle 327 on inquiry card



**PLASTIC PIPE /** Twelve-in.-diameter "Plasticast" pipe—made of Cycolac grade JS ABS engineering thermoplastic—comes in 4-ft sections that weigh only 14 pounds. Larger diameters, up to 72-in., are available. The pipe, shown at an agricultural drainage installation, is foam-cast, permitting thin-wall design with high structural strength. Shield deflection of 12-in. or more without joint separation is claimed. ■ Centaur Mfg., Inc., Milpitas, Calif.

Circle 328 on inquiry card

### INSULATING CEMENT / Composed of spun mineral-wool nodules and clay, "Super 1900" is a

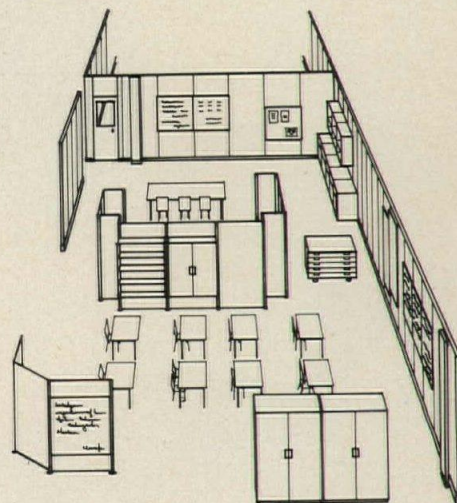


non-asbestos insulating cement designed for temperatures of up to 1900 deg. F. Said to have improved mixing and application characteristics, the cement is applied with a trowel to form a rust-inhibiting, non-corrosive insulation for heated surfaces. The product conforms to ASTM Specification C195-64, among others. ■ Keene Corp., Princeton, N.J.

insulation for heated surfaces. The product conforms to ASTM Specification C195-64, among others. ■ Keene Corp., Princeton, N.J.

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Full-height walls, screens, storage, chalk and tack, power/utility—all engineered by a single source to work together. . . all movable, changeable, variable by the user.

Educators Intraspace by Hauserman. . . It's been **proven**, at over 110 schools across the nation. Write today for details.



EDUCATORS DIVISION  
5711 Grant Avenue □ Cleveland, OH 44105  
Phone: (216) 883-1400

For more data, circle 73 on inquiry card





## Today's designs for today's buildings

Today's hospitals and commercial buildings deserve contemporary fixtures. Smart, smooth, modern fixtures and fittings that complement today's architectural statement.

From top to bottom, each of Eljer's nearly 300 commercial and institutional fixture designs accent the clean, no-nonsense lines built into today's commercial buildings.

The same contemporary appeal evident in the hospital fixtures shown here continues through the entire line of Eljer fixtures for hotels, apartments and offices.

Eljer's user research assures that the fixtures you specify are in tempo with the day to day needs of your clients. The crisp, sculptured look offers an easy to clean surface. And beneath it all is Eljer durability and reliability.

If you're designing commercial buildings today, specify the plumbingware designed for today's commercial buildings. Eljer fixtures and fittings.

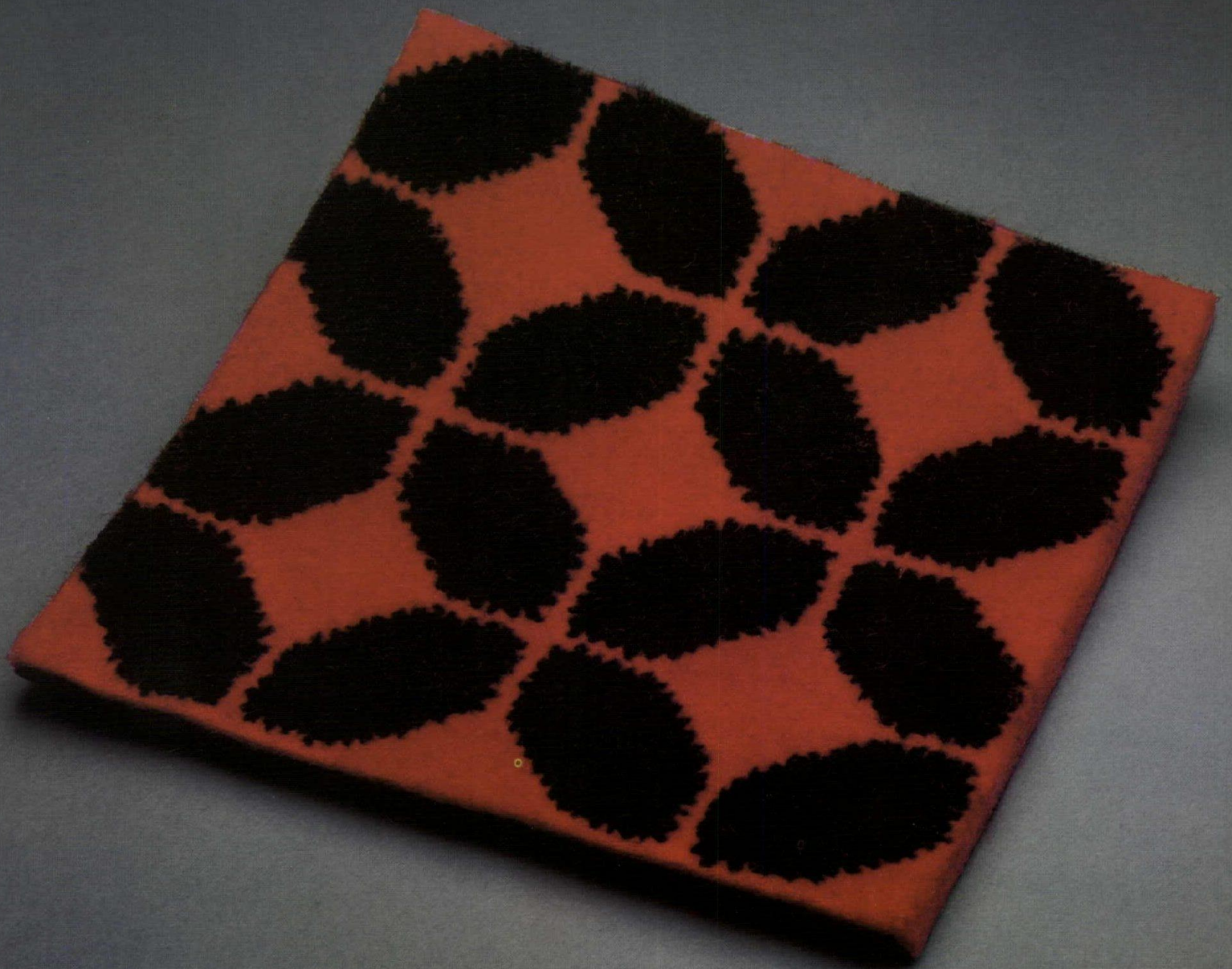
**ELJER PLUMBINGWARE**  
Wallace Murray Corporation  
Dept. AR, 3 Gateway Center  
Pittsburgh, Pennsylvania 15222

**ELJER**

**WallaceMurray**

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**Introducing**  
**THE KEMOS FUSION BONDING SYSTEM:**  
**A REVOLUTIONARY ADVANCE**  
**IN CONTRACT CARPETING.**  
**EXAMINE IT CAREFULLY.**



# HERE'S HOW IT WORKS:



The Kemos Fusion Bonding System produces carpeting with special abilities. To stand up to wear and tear. And to resist stains. These remarkable abilities are due to the remarkable fiber the carpeting is made with: Enkalure® II, soil-hiding nylon by Enka.

And they're also due to the Kemos process. In which jute backing is coated with liquid polyvinyl chloride. And fiber is

embedded in the vinyl, which is then heat-cured.

The result is a permanent, water proof seal over the jute, around the fiber. (The little diagram shows a cross section.) No dirt or stains can penetrate to the jute backing.

Nor will dirt or stains show in the fiber. Because Enkalure II hides surface dirt, with a unique multilobal construction, which reflects light and keeps the carpet looking clean.

What keeps the carpet going strong, under all kinds of wear and tear, is the fact that fusion bonding places all of the fiber on the surface.

Place Kemos Fusion Bonded Carpet of Enkalure II on your client's floor. It will stay there a long, long time.

# HERE IT IS AT WORK:

Clockwise from top left.

The Chalon Restaurant in Pasadena, California.

Co-ordinated Resources, Inc., in the new design center in Los Angeles, California.

The locker room of the Fairwood Country Club in Renton, Washington.

The Crescent Market in Oklahoma City, Oklahoma.

The Journey's End in Atlanta, Georgia.

**The Kemos Fusion Bonded Carpet.**  
**It wears like nobody's business because 98% of the fiber is surface pile.**  
**It hides dirt because 100% of the pile is Enkalure II soil-hiding nylon.**

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

No counterbalancing springs. No overhead struts.

Dead air in hollow sections provides positive insulating values.

Baked enamel finish coat on curtain.

Close fit at side guides minimizes draft penetration.

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

Sections not mechanically connected—easily removed for repair.

Special controls are included in bottom section to reverse door travel immediately on contact with any obstacle.

Motor location optional.

Operator mounted front, top or end; either side.

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

Manual operator for power failures.

Side guides and header box carry door's weight.

Heavy flexible weather strip along bottom.

Door locks and unlocks automatically in slot in side guide.

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

## THE INRYCO<sup>®</sup> TELESCOPING DOOR

The Inryco Telescoping Door has no counterbalancing springs or weights and few moving parts subject to wear and tear. Thus it eliminates the major causes of operating failure—provides the reliability so critically needed at high traffic openings. Outstanding resistance to damage—easy repair. Fast, quiet operation. Simple, all-steel construction, with two coat baked enamel finish on door panels. Standard sizes available for doors 100 to 400 sq. ft. in area. Custom doors furnished in smaller sizes and larger sizes thru 30 ft. x 30 ft.

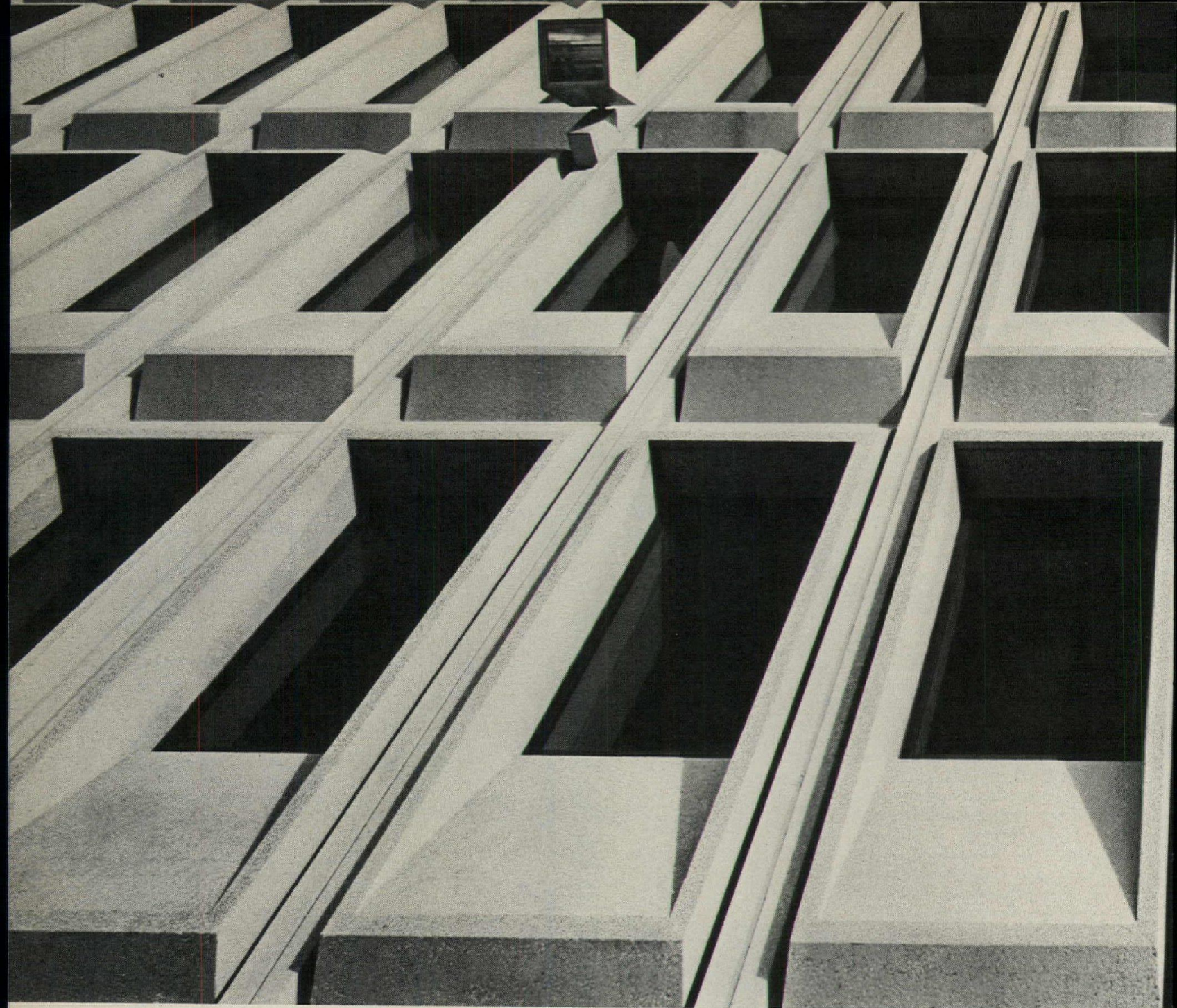
For further information, see Sweet's Arch. or Ind. Constr. Files, section 8.9/In. Or write to Special Products Group—Milcor Division; INRYCO, Inc.; Dept. F, 4033 W. Burnham St.; Box 393; Milwaukee, WI 53201.



**Inryco**  
an Inland Steel company

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

For more data, circle 76 on inquiry card



# Now...glazing that without going

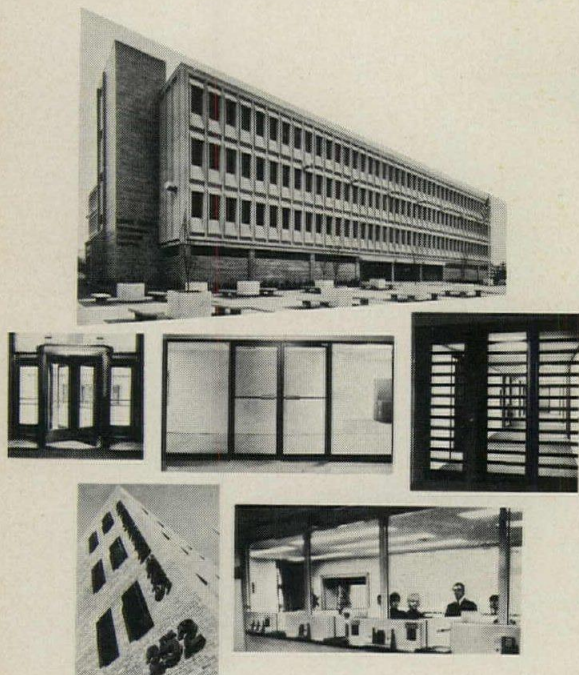
That's LUCITE® AR abrasion resistant sheet. This high-quality glazing material resists vandalism and breakage. And more — "Lucite" AR has a tough, clear fluorocarbon hide that makes it 15 times harder to abrade and haze than conventional plastic sheet.

Which means the glazing you specify can be cleaned year after year without losing its clarity. And exposure to all kinds of

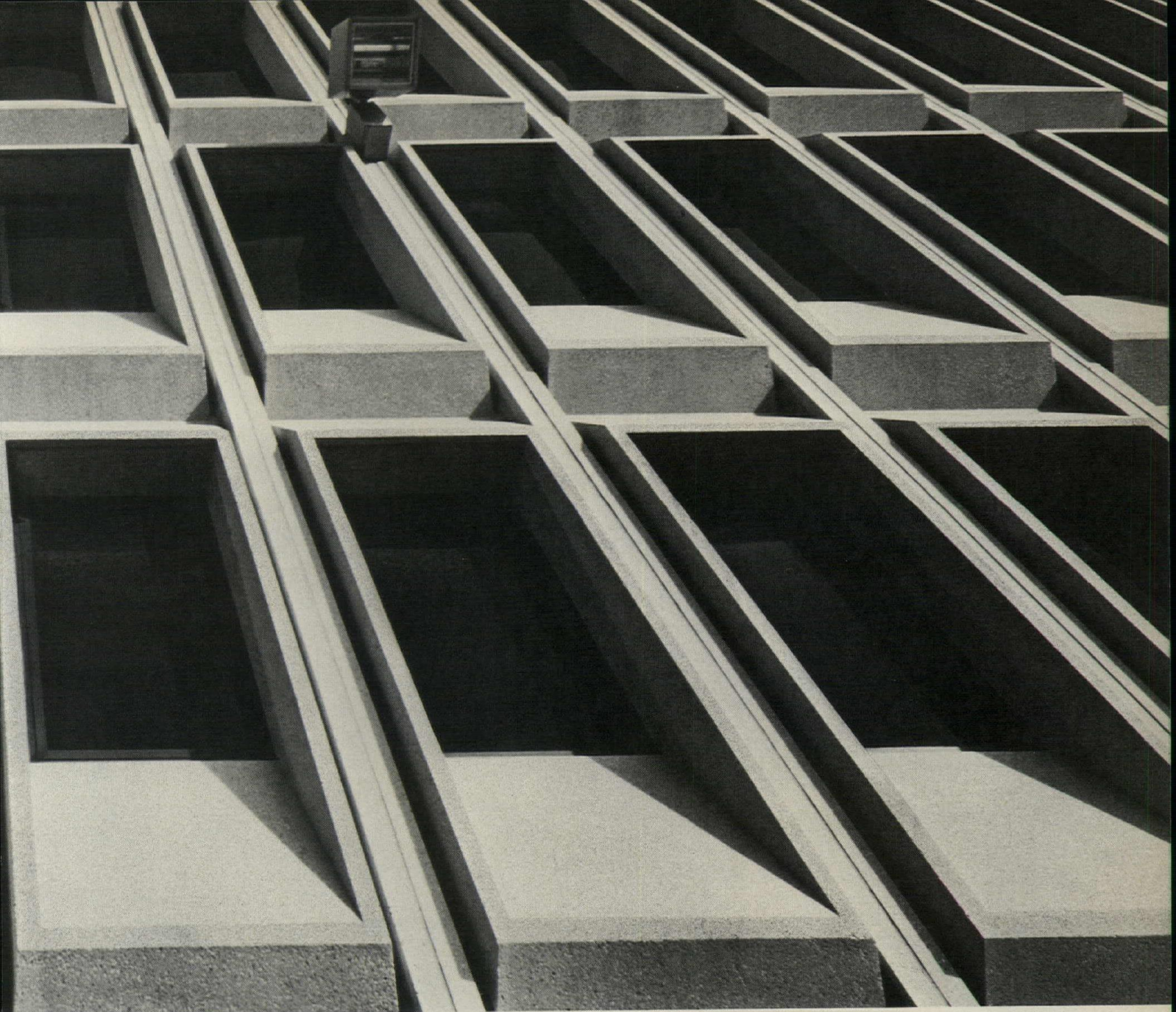
weather conditions leaves "Lucite" AR essentially unchanged.

These are the major reasons why Robert Moran, a West Orange, N.J. architect, specifies "Lucite" AR for school buildings such as the Essex County Technical Careers Center in Newark, N.J. And why an increasing number of urban school districts, from Philadelphia to Atlanta, are specifying it.

You can get "Lucite" AR in



Glazing applications of "Lucite" AR in public institutions, banks, door lights and partitions.



Essex County Technical Careers Center, Newark, N.J. Robert Moran, Architect

# gets tough on vandalism soft on abrasion.

solar tints to reduce air conditioning loads. Its low heat conductivity (K1.2) reduces winter heat loss. It is thermoformable and easily fabricated to meet your design requirements.

"Lucite" AR complies with ANSI Z97.1 1966/72 performance specifications for safety glazing used in buildings. It is finding increasing application as security glazing in banks, public institutions, and in bus


shelters, animal enclosures, door lights, partitions and hockey rinks.

Look for us in Sweet's Catalog (8.26/Du) or check "Lucite" AR abrasion resistant sheet yourself. Let us send you a test kit that demonstrates the abrasion resistance of "Lucite" AR. Write: Du Pont Company, Room 24940, Wilmington, DE 19898, or call (302) 774-2629.

The difference is clear with  
**LUCITE<sup>®</sup> AR**  
ABRASION RESISTANT SHEET



For more data, circle 77 on inquiry card



Martin Luther King, Jr. Vocational High School, Cleveland, Ohio  
Architects: Madison•Madison International, Cleveland  
Roofer: Korner Roofing & Sheet Metal Company, Cleveland

Photos by Abel Photographics

**TCS** AND THE VISUALLY  
SIGNIFICANT ROOF

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

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

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

TCS weathers naturally to a uniform dark gray and does not stain.

TCS provides galvanic built-in safeguards against failure which no competitive product can match.

TCS is reasonably priced and requires no maintenance.

**FOLLANSBEE**

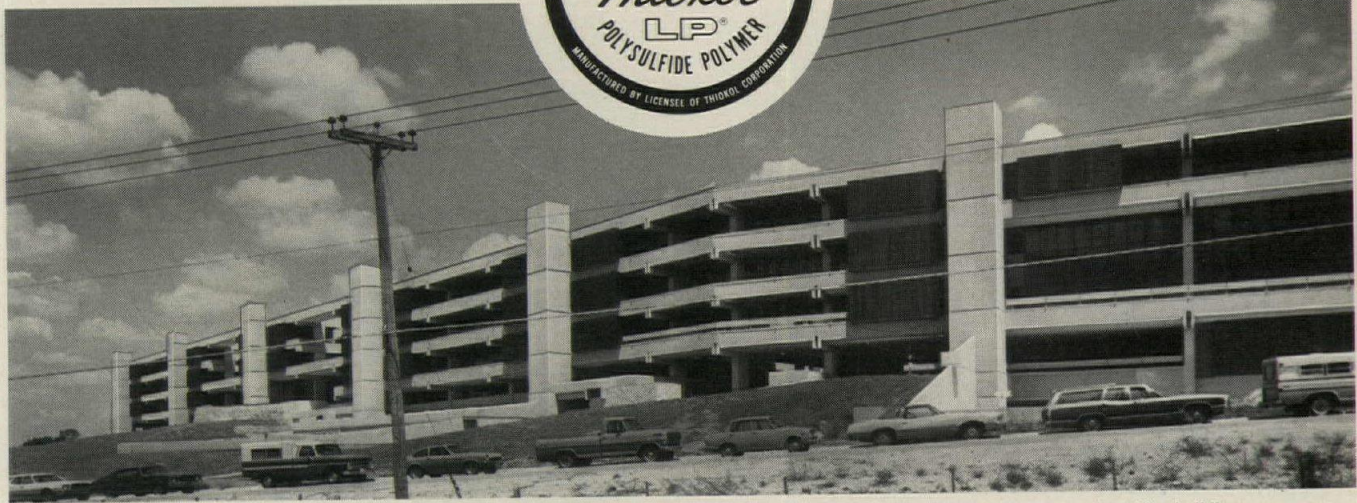
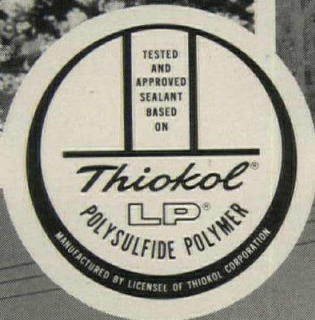
FOLLANSBEE STEEL CORPORATION  
FOLLANSBEE, WEST VIRGINIA



Washington Monument, Washington, D.C.



Applying an LP® polysulfide-base sealant.



United Services Automobile Association headquarters, San Antonio, Texas—after the Pentagon, the nation's largest low-rise office building.

## Long life for new structures. And new life for old ones.

This sprawling new building and the towering Washington Monument have more in common than you might think. Both required a sealant that could withstand joint movement, take the punishment of environmental extremes and still maintain a watertight bond. So both structures were protected with sealants based on LP polysulfide polymer.

After all, what other sealant can offer more than 25 years of successful performance under all kinds of conditions, including the notorious humidity of Washington, D.C. and the baking sun of San Antonio.

Polysulfide-base sealants are routinely subjected to torturous tests that simulate actual conditions . . . tests that require a compound to remain flexible and provide good

adhesion after being heat aged, soaked in water and exposed to cycles of extension and compression.

And only those polysulfide base sealants that come through with flying colors earn the right to wear the Seal of Security—the symbol of product quality and your assurance of long sealant performance.

So whether you're involved with specifying or applying sealants—on buildings new or old, low or high; in climates hot or cold, wet or dry—insist on those products that display the Seal of Security.

For a listing of Seal of Security sealants, write C. Kranz, Marketing Manager, Thiokol Corporation/Chemical Division, 930 Lower Ferry Road, Trenton, N.J. 08607.

# Thiokol

Specialty Polymers • Off-the-Road Vehicles • Synthetic Fibers • Sprayers • Propulsion • Educational Services  
Friction Materials • Ski Lifts • Pyrotechnics • Closures • Rubber and Rubber Chemicals • Radiation Curable Polymers and Coatings

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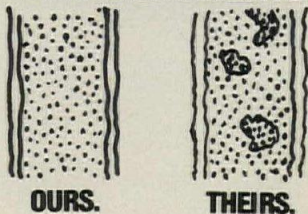


# IF THE COLD STORAGE DOOR YOU'RE CONSIDERING DOESN'T HAVE ALL THESE FEATURES, IT ISN'T A JAMISON MARK II.

## FIRST OF ALL, THE ONLY THREE-YEAR GUARANTEE IN THE INDUSTRY.

Effective August 1, 1975, Jamison guarantees to the original owner each new Mark II door and its component parts against defective materials and workmanship for three years after shipment.

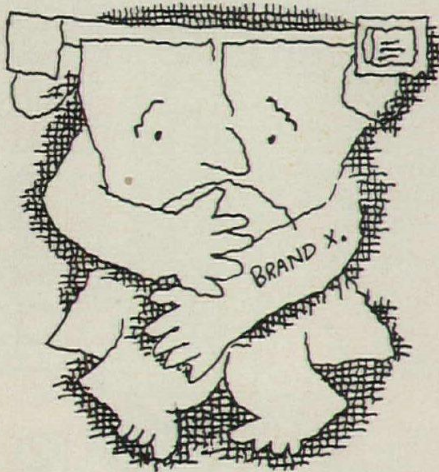
## THEN THERE'S INSULATION. OURS VS. THEIRS.



The insulation in some competitive doors has inconsistent cell structure, resulting in air pockets that contribute to refrigeration loss, weaken the structure, and can lead to corrosion due to condensation. Jamifoam® insulation in every Mark II door is Freon-expanded polyurethane. It's forced between the panels under controlled pressure, resulting in a cellular structure of uniform density, maximum strength, and high insulating efficiency.

## THE MARK II DOESN'T DRAG SHUT. IT GLIDES AND SPRINGS SHUT.

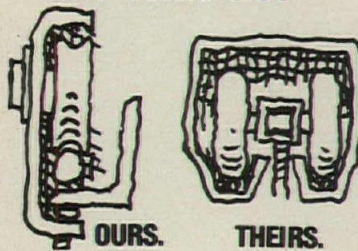
We call the Mark II action "down-and-in motion." Basically the door is designed with a



joggled track and spring-loaded mechanism to move the door into the frame upon closing and away from the frame on opening.

What you get is low-friction operation, longer motor life on power models, and easier handling on the manuals. And you also get longer gasket life, and a positive gasket seal.

## THE WHEELS ARE FORGED. AND THEY CLEAN THE TRACK AS THEY GO.

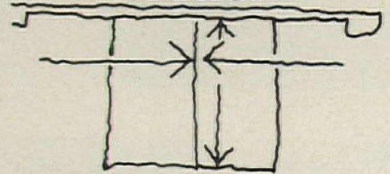


A problem with some competitive doors is dirt and ice accumulation in the tracks. With Mark II doors, the wheels ride *on* a track rail, not *in* an enclosed track. Our wheels actually keep the track free of ice and dirt during operation.

COLD STORAGE DOORS BY  
**JAMISON**

JAMISON DOOR CO • HAGERSTOWN, MD 21740

## OUR EDGES ARE SENSITIVE FOR THE FULL HEIGHT AND FULL TRAVEL OF THE DOORS.



Mark II sensitive safety edges are electrically actuated. Upon contact at any position in the closing cycle, the doors will instantly reverse to the open position.

## THE MARK II BACK-UP PROGRAM EVEN INCLUDES A SCHOLARSHIP. YOU'RE INVITED.



A Jamison Mark II door will outlast and outperform any door made, with a minimum of maintenance. We've set up seminars dealing with the care and feeding of the Mark II. They're free, and owners, prospective owners, maintenance people, and contractors are invited.

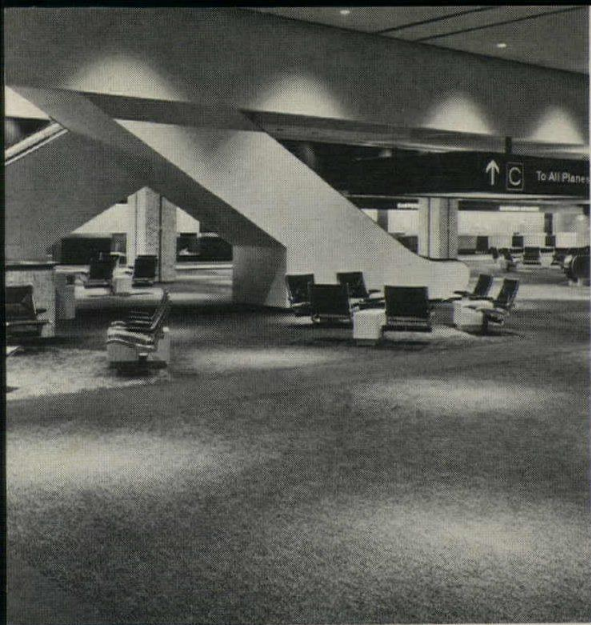
## THE MARK II IS A WHOLE LINE OF DOORS. THE BEST DOORS.

We make the Mark II in cooler or freezer, power or manual, horizontal or vertical or overhead models.

For the inside story on the Mark II line, it'll pay you to contact us today.

# THE MARK II COSTS MORE. NOW YOU KNOW WHY.

For more data, circle 80 on inquiry card



# P

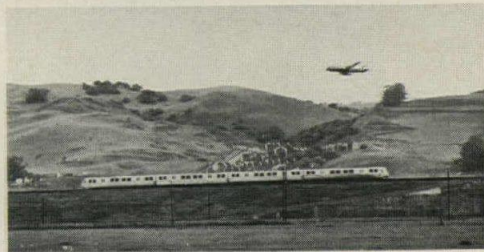
assenger  
after passenger  
after passenger  
travels on  
proven carpet  
by Bigelow.

If you're doing a public transportation job, terminal, passenger train, even a ship interior, you can create your own specifications for the carpet you want. And we can make it for you.

However, Bigelow has another practical suggestion: specify carpeting that has already proven it can take the hard use (not to mention abuse) passengers, guests and staff deal out. Carpet that has repeatedly demonstrated it can take a beating year after year after year.

Bigelow has that kind of proven in actual use carpeting ready for you in a wide selection of carpet styles and patterns. Carpet that is the result of research and development combined with the realistic experience gained in hundreds of transportation installations.

And Bigelow will do more than just sell you proven carpet. We'll give you expert counselling in installation and the best advice available on maintenance. It's a total package designed to assure you that you can specify Bigelow with total confidence.



**Bigelow**<sup>®</sup>  
RUGS & CARPETS SINCE 1825  
A SPERRY AND HUTCHINSON COMPANY

AMERICA'S MOST EXPERIENCED CARPET MAKER

For more data, circle 81 on inquiry card

Bigelow-Sanford, Inc., Dept. A.  
P.O. Box 3089, Greenville, SC 29602

I'd like to hear the proof on Bigelow's proven carpets for public transportation.

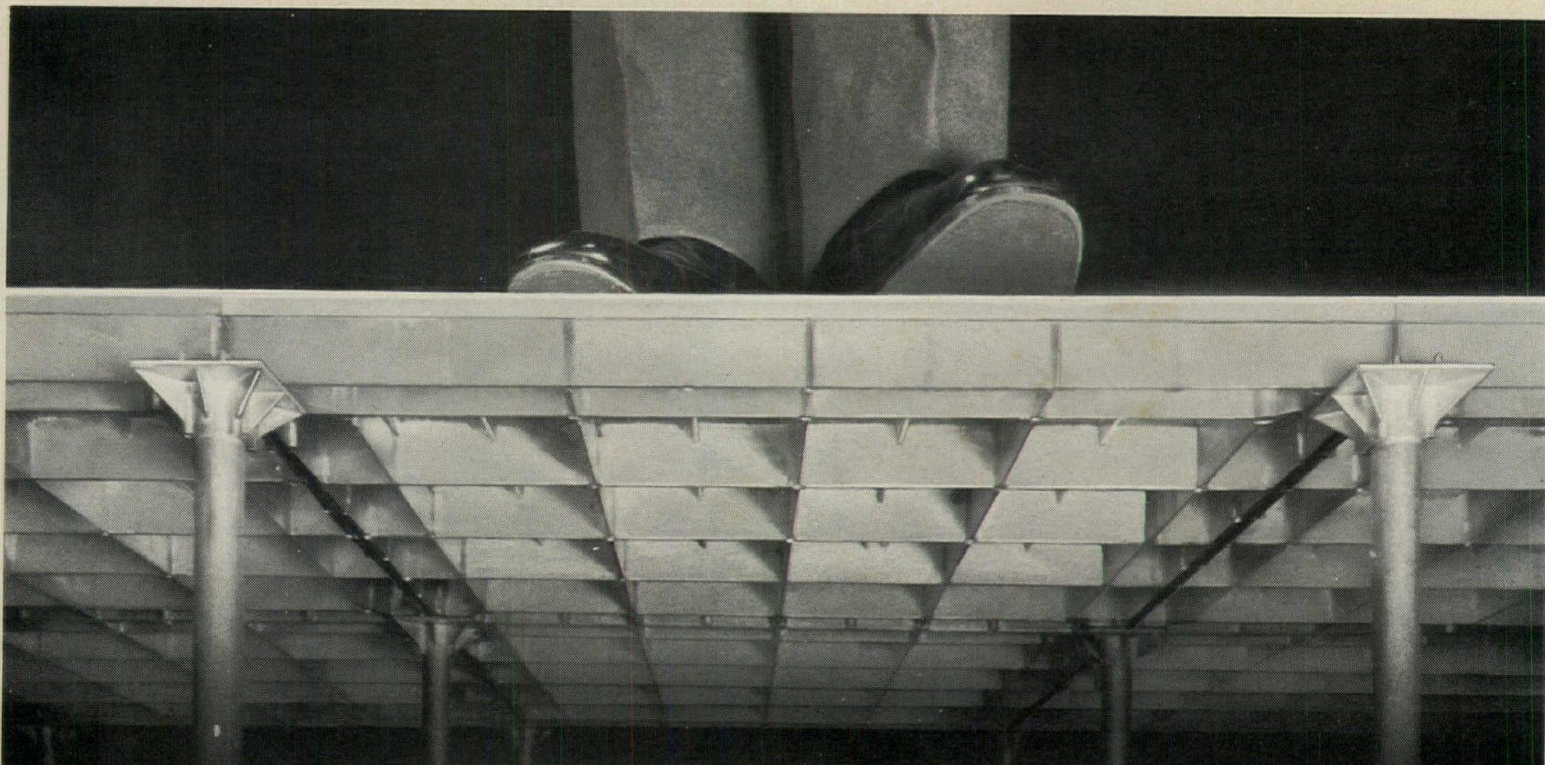
NAME \_\_\_\_\_ Print Clearly

TITLE \_\_\_\_\_

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CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_



# If you specify any computer floor but aluminum, it's a bad compromise!

Truth is that in 1956 when the need for raised flooring in computer rooms became apparent (with function the chief design criteria) a stringerless floor made up of pedestal mounted die-cast aluminum panels was the choice. That's how the Floating Floor System was developed. Since then, Floating Floors® have been providing trouble-free service in thousands of computer rooms.

Stringerless design makes Floating Floors the only true infinite access floor system. Male and female locking devices, at four corners of each floor panel, provide the highest lateral stability. In fact, Floating Floors meet Federal specifications for seismic zone #3 (San Francisco).

The sad truth is that in order to compete with Floating Floors, other manufacturers have had to promote floor systems of inferior materials and design such as stringer-supported wood and steel. While costing a little less initially, these other floor systems can represent a very bad investment over the long term.

Computer downtime due to electrostatic build-up or magnetic dust may result from one of these wood or steel stringer-supported floors. Costly delays are often caused by the inconvenience of working under stringers, or disassembling and re-assembling them.

Floating Floors on the other hand have proven to be problem-free even after as many as 20 years of service. Monolithic construction with aluminum ensures dissipation of static electricity. And since aluminum is non-magnetic and does not require painting, iron rust and paint flakes are not present to enter the air and interfere with computer operation. Aluminum will not of course, rust, warp or burn.



The Floating Floor system is designed to meet future expansions and changes. Components can be easily changed around since precision die cast and milled aluminum floor panels ensure a uniformity in size (machined to  $\pm .005 - .000$ ) not found in hand assembled products. And there is plenty of strength for the installation of new equipment.

In fact, the overall quality of Floating Floors is so good that we are able to give a FIVE YEAR UNCONDITIONAL GUARANTEE AND BUY-BACK PROGRAM with every floor installed.

For more complete information refer to Floating Floors bulletin 10.27 FL as shown in SWEETS under Specialties — Access Flooring. Call us for assistance.

FLOATING FLOORS, INC.  
6955 Wales Road, Toledo, Ohio 43619  
Tel: (419) 666-8750

IN CANADA: Bruce (EDP) Services Ltd.  
3650 Weston Rd.  
Weston, Ontario  
Tel: (416) 741-0854

**FLOATING FLOORS, INC.**

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*Available World-wide from Licensees and Distributors •  
Installations Coast to Coast*



Gown from the R.S.V.P. Collection by Gossard

Additional tour highlights are the Rondelle lavatories, with Alterna faucets in polished chromium. The Champagne toilet & Caravelle bidet. All in Pink Champagne. Come to Kohler. Key Largo is waiting. For more information, write Box CB, KOHLER CO. KOHLER, WISCONSIN 53044. Kohler products are available in Canada.

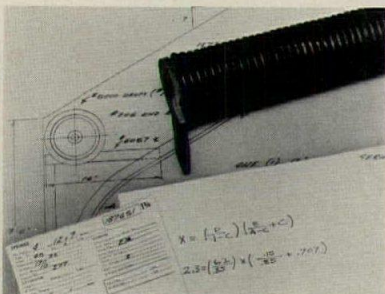
**Key Largo**—Come to a private place in Kohler's pinks & reds. Designed especially for the free spirit in you. For elegant bathing there's The Bath...a 5½' x 7' fiberglass bathtub, with shower stanchions, Alterna faucet controls & Roman spouts. Shown in Antique Red, The Bath is available in 13 other Kohler colors, including Parchment, Espresso, Blueberry, Tiger Lily & Sunflower.

**A  
KOHLER  
TOUR  
OF AMERICA'S  
BATHTHS**

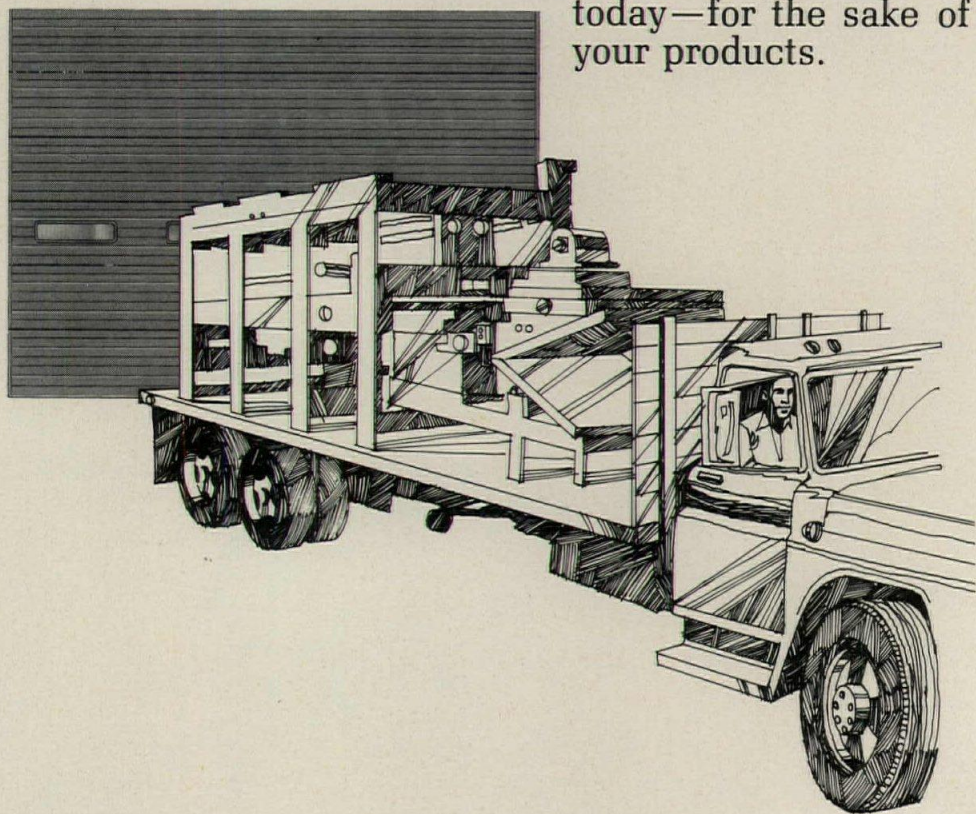
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# If It's Worth Manufacturing, The Building Deserves A Raynor Garage Door

Raynor offers one of the widest selections of garage door styles and sizes — in steel, aluminum, fiberglass or wood. This means you can job-match Raynor doors to your production facilities. Whether you manufacture small parts or huge industrial machinery, there's a Raynor garage door that's right for your needs. Every Raynor door has custom features, and they're yours at "stock" prices. Springs are custom wound and tested, all hardware is custom made just for



a certain door model. And if accidents ever occur, now or years later, all the detailed information is kept on data film at Raynor. Replacement of parts is sure. It's reassuring to know that Raynor takes extra steps in manufacturing doors. So that your products receive the trouble-free protection they deserve. Send for free Raynor catalog today—for the sake of your products.



**Raynor**  
**The Brand**  
**You Can**  
**Depend**  
**On**



**S** SEE OUR CATALOG IN SWEET'S

RAYNOR MANUFACTURING COMPANY Dept. AR-6 Dixon, Illinois 61021

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# The sky's the limit for new uses of Kynar 500\* based coatings.

Architects, owners, builders and applicators are developing new uses for Kynar 500 based coatings every day. Their interest in new applications is proof of the performance of these modern architectural coatings.

Only ten years ago, Kynar 500 based coatings were specified for wall panels, louvers, and miscellaneous trim on industrial and small commercial buildings.

Today these coatings have earned their way onto gravel stops, curtain wall panels, windows, sun screens, ceiling panels, roofing and signs—for office buildings, hospitals, apartments, stadiums, power plants, department stores, and residences.

It's easy to see why. Coatings based on Kynar 500 retain their original beauty and durability for years and are virtually maintenance-free. They also resist chipping, cracking, fading and peeling. In brief, Kynar 500 based coatings are a standard of quality in architecture today.

To learn more about the exceptional properties Kynar 500 imparts to coatings, contact the Plastics Department, Pennwalt Corporation, Three Parkway, Philadelphia, Pa. 19102. (215) 587-7519.

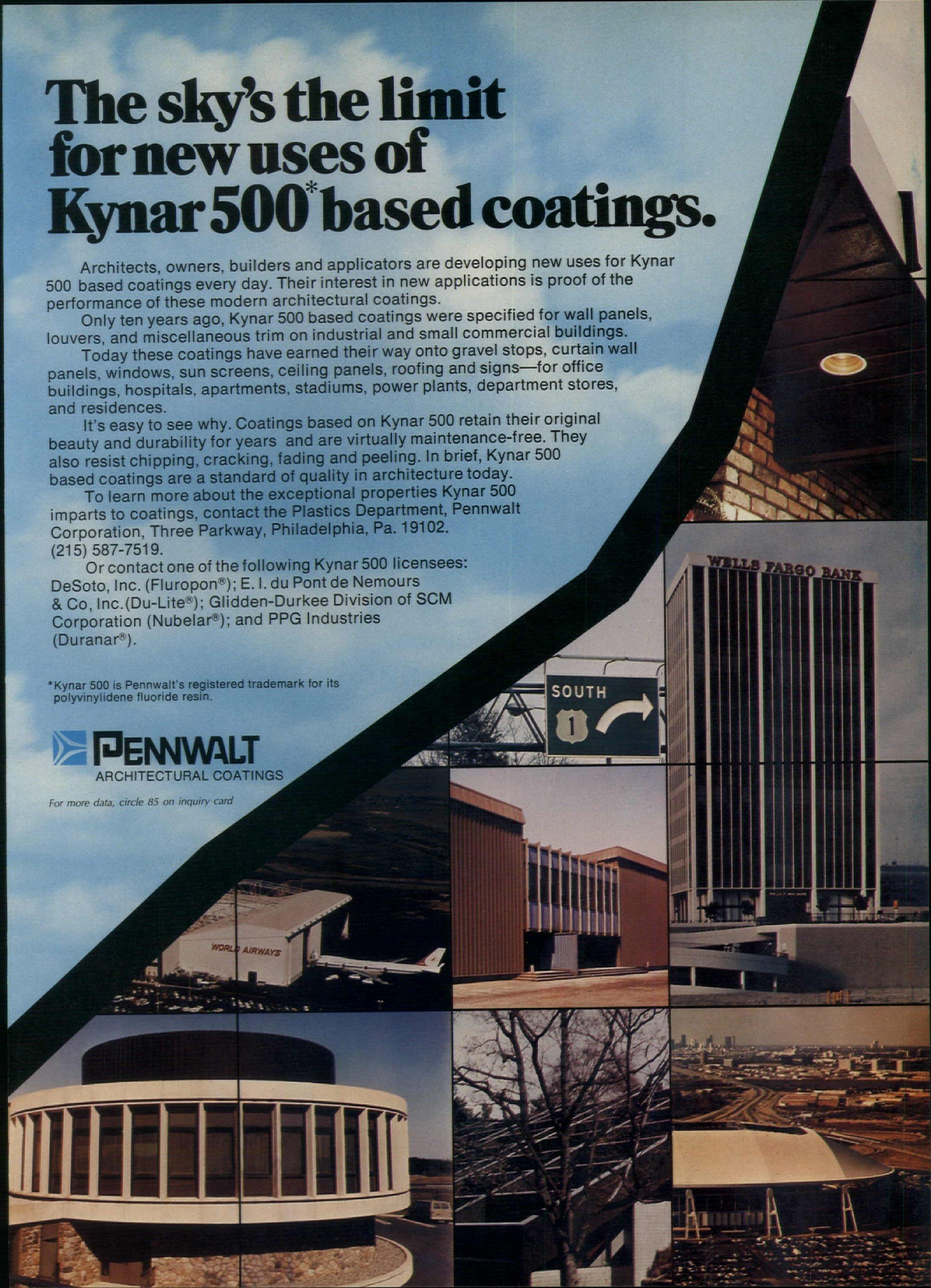
Or contact one of the following Kynar 500 licensees:

DeSoto, Inc. (Fluropon®); E. I. du Pont de Nemours & Co, Inc. (Du-Lite®); Glidden-Durkee Division of SCM Corporation (Nubelar®); and PPG Industries (Duranar®).

\*Kynar 500 is Pennwalt's registered trademark for its polyvinylidene fluoride resin.

 **PENNWALT**  
ARCHITECTURAL COATINGS

For more data, circle 85 on inquiry card





Outside, one of 11 colors available in our low maintenance, acrylic coated aluminum exterior.

Pella Clad Wood Windows overcome, beautifully, two common objections to weather-shielded wood windows. Lack of color choice. And lack of design freedom. In a Pella Clad window, all exterior wood surfaces are covered with an acrylic coated aluminum skin. A well-known and well-respected outside finish. Available in three standard (a) and eight special colors. On our Contemporary and Traditional Double-Hung, Casement, Awning, Fixed and Trapezoidal Windows. And Pella Sliding Glass Doors.



(a)

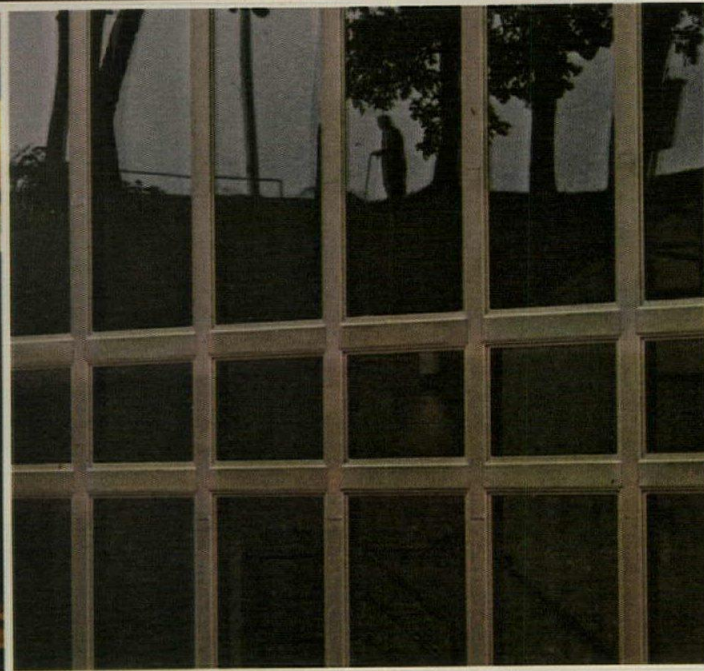
Inside, the unspoiled beauty of a carefully-crafted wood window.

Wood windows are known for their warmth. Visually. And because of their natural insulating value. And in designing the Pella Clad Wood Window, we left both of those properties unchanged. The exterior aluminum skin does not penetrate the frame or sash (b). Nor is it visible anywhere on the inside of the window. We recognized the need for a weather-resistant, low maintenance window. But seeing no reason to compromise the natural warmth of a wood window, we very carefully avoided doing just that.



(b)

**At the Minnesota Veterans Home,  
this Pella Clad window system  
adds a warm touch,  
inside and out.**



Architect: S. C. Smiley & Associates Builder: Arkay Construction Company Windows: Pella Clad Fixed Units and Contemporary Double-Hung

**In between, the built-in flexibility of Pella's exclusive Double Glazing System.**

The removable inside storm panel gives you any number of interesting options. Like using our unique Slimshade® (c) to control sunlight, privacy and solar heat gain and loss. Housed between the panes, this fully adjustable blind remains virtually dust-free. The system also accommodates our snap-in wood muntins, and the selective use of privacy panels. But flexibility is not the system's only strong point. The 13/16" air space between the panes does a better job of insulating than welded insulating glass.



(c)

**Afterward, the ease of washing a counterbalanced, pivoting sash double-hung window.**

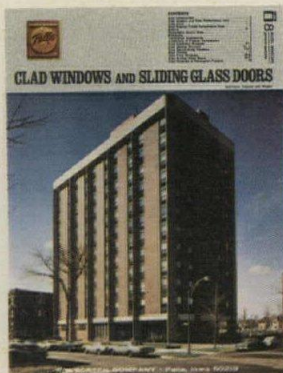
Window cleaning is another maintenance factor that must be considered. And here again, Pella design makes an easy job of it. Our Double-Hung Window has a spring-loaded, vinyl jamb liner which allows the sash to pivot. So the outside surfaces can be washed from inside the building. And because each sash pivots at its center point (d), the weight of the sash is counterbalanced. Which makes the whole job just that much easier. Reglazing can also be accomplished from inside, along with sash removal.



(d)



For more detailed information, send for your free copy of our 24-page, full-color brochure on Pella Clad Windows & Sliding Glass Doors. See us in Sweet's Architectural File. Call Sweet's BUY-LINE number or look in the Yellow Pages, under "windows", for the phone number of your Pella Distributor.



Please send me your 24-page brochure on Pella Clad Windows & Sliding Glass Doors. I am specifically interested in:  Double-Hung Windows,  Casement Windows,  Awning Windows,  Sliding Glass Doors,  Wood Folding Doors.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Telephone \_\_\_\_\_

Mail to: Pella Windows & Doors, Dept. T31F6, 100 Main St., Pella, Iowa 50219.  
Also Available Throughout Canada This coupon answered within 24 hours.

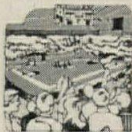


when you specify **SOUND** for:



church or temple

theatre or auditorium



arena or stadium

conference or lecture hall



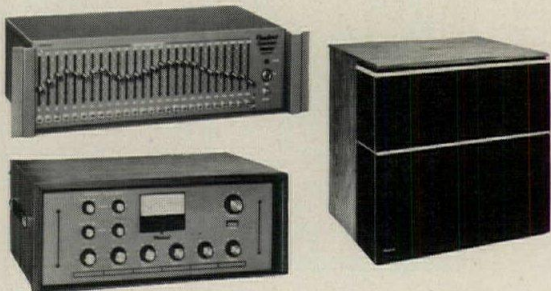
*let the leading professional line  
back up your reputation*

**SPECIFY** *Rauland*

Where your design calls for the spoken word or the musical sound to be reproduced to perfection and made audible to all, you can't afford to compromise with quality. You can specify RAULAND, today's new standard in Professional Sound, with absolute confidence, because RAULAND equipment and techniques are designed to develop optimum sound for any application. Look to the:

**leader in sound equalization systems**

Spectrum-Master Equalization is a unique system for instantly analyzing and correcting any environmental acoustics problem, so that clear and natural sound reaches *anyone, anywhere* in the listening area.



**leader in sound reinforcement systems**

Spectrum-Master professional, maintenance-free solid-state amplifiers and matched speaker systems may be ideally integrated to achieve theatre-quality sound, with crystal-clear voice intelligibility as well as the highest order of musical realism. Moreover, noise levels in even the largest gymnasiums, arenas, and stadiums pose no problems to Rauland systems.

**ASK FOR FULL DETAILS**

An Authorized Rauland Professional Sound Specialist in your area is ready to provide complete information and engineering data for your consideration and use. Write us today, or use the reader service card.



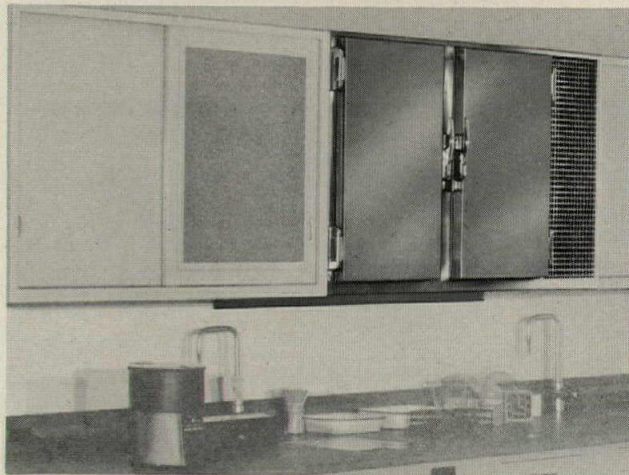
*quality's other name in  
Sound and Communications*

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Or write to Market Manager, Extrusion  
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Dept. 16W, One Gateway Center,  
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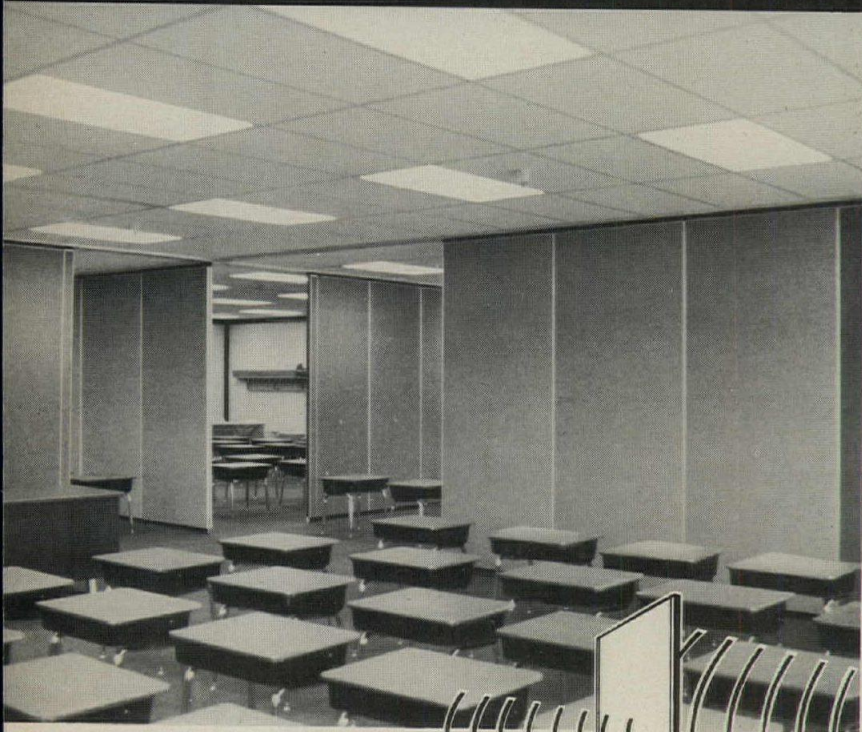
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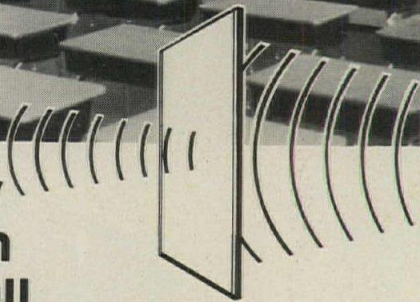
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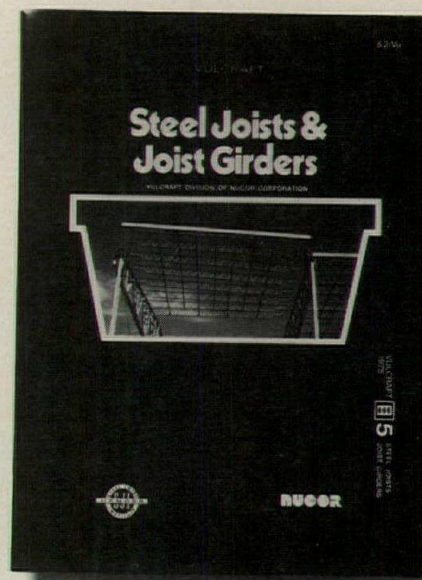


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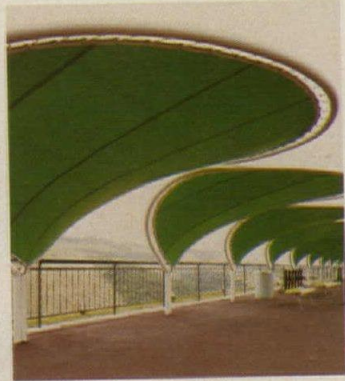
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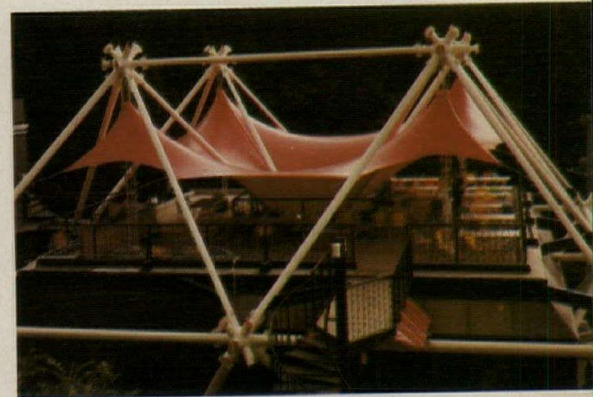
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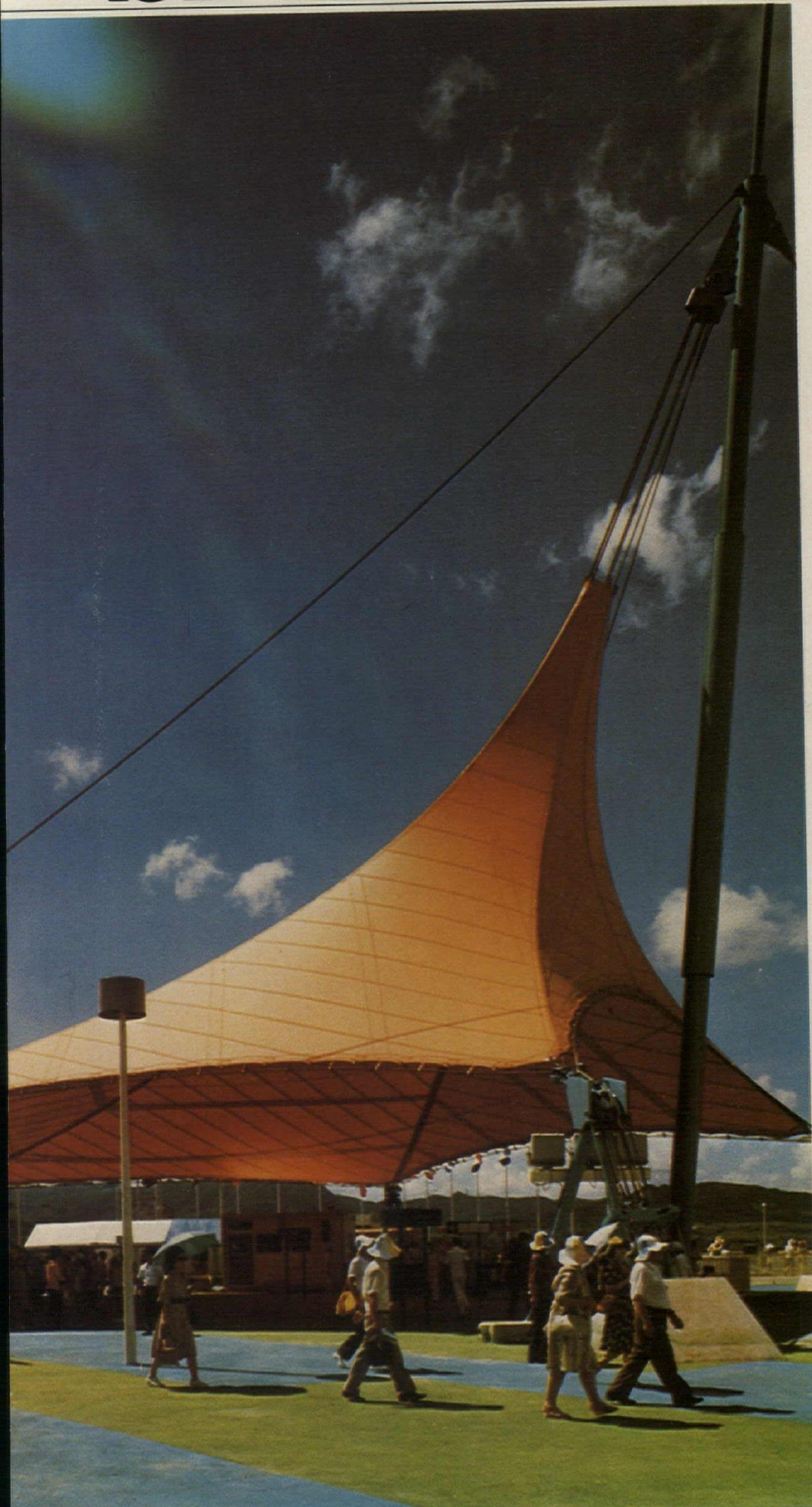


If you're working on a project where a membrane structure may be the answer, or if you'd simply like more information for future reference, write and tell us: Department R6, Helios Tension Products, Inc., 1602 Tacoma Way, Redwood City, CA 94063. Telephone: (415) 364-1770, Telex 345590.



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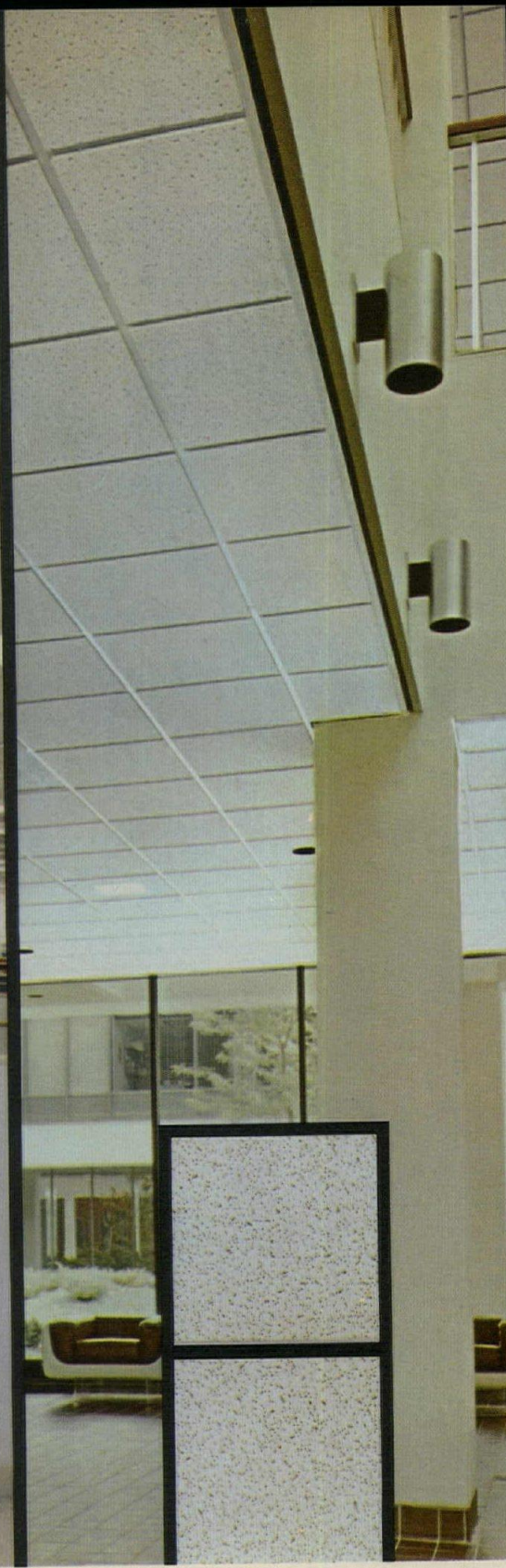
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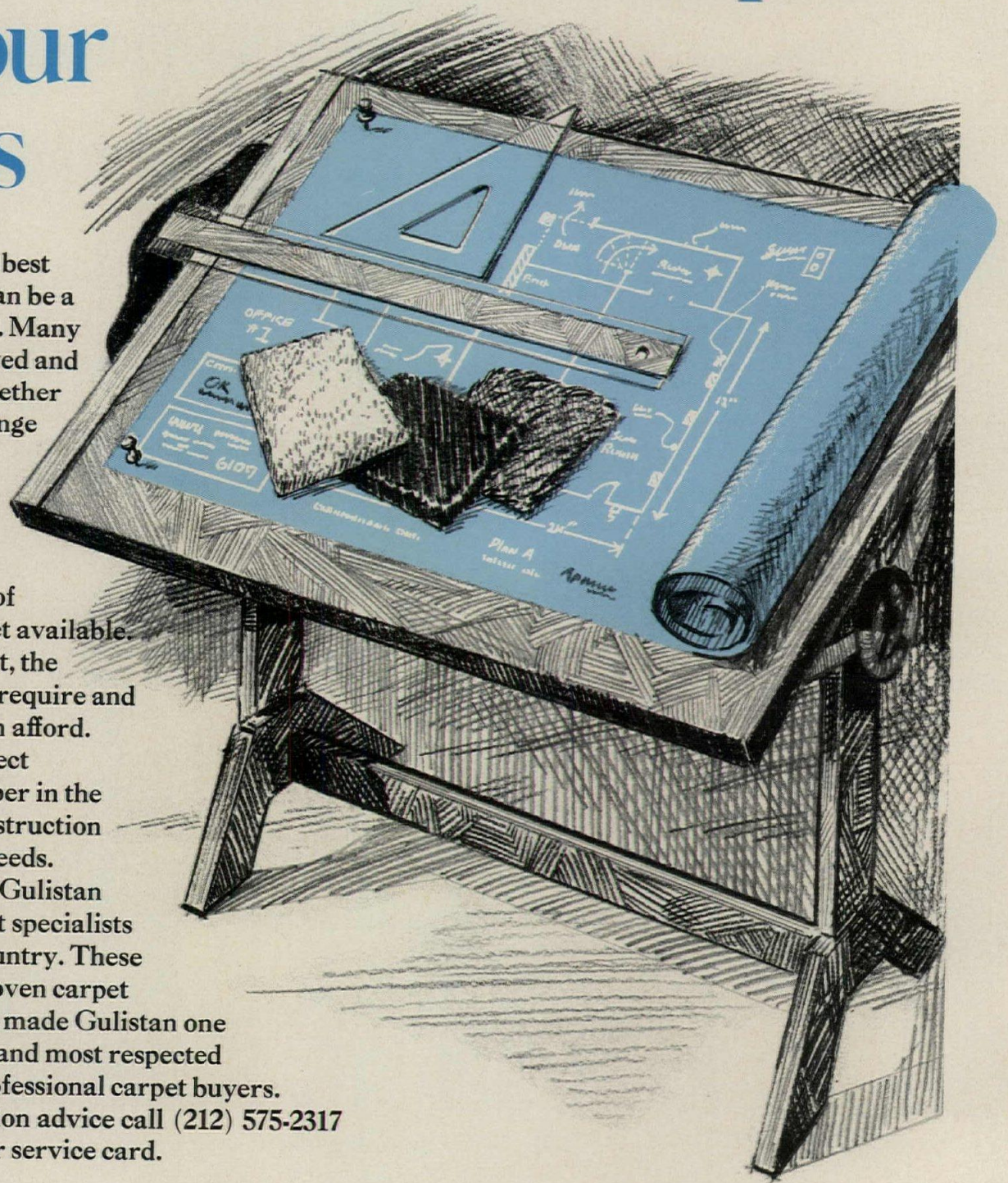


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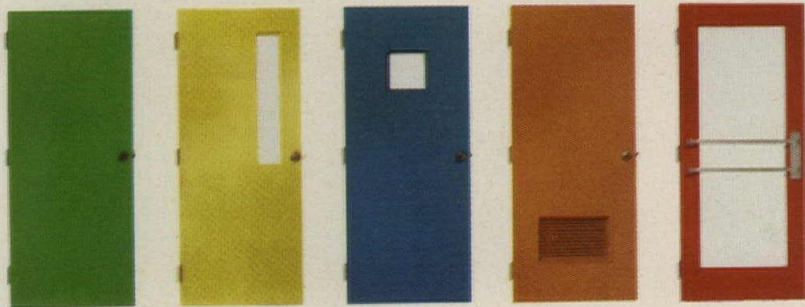
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## Colorful steel doors accent the new excitement in old St. Louis

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

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We've improved Zonolite® Thermo-Stud® to make it quicker and easier than ever to install. It's the most economical method of wall construction when insulation and interior drywall are required.

Talk about speed! Now each foam board is factory pre-grooved to make locating and imbedding of metal furring channels a snap. In addition, the furring channels are pre-set in the boards, can be easily removed and reset for difficult areas like those around windows and doors. The system is mechanically fastened to the substrate wall with a pneumatic nailer.

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Add up the benefits. Total insulation that reduces fuel and energy costs. Fast, easy installation that speeds construction and cuts construction costs.

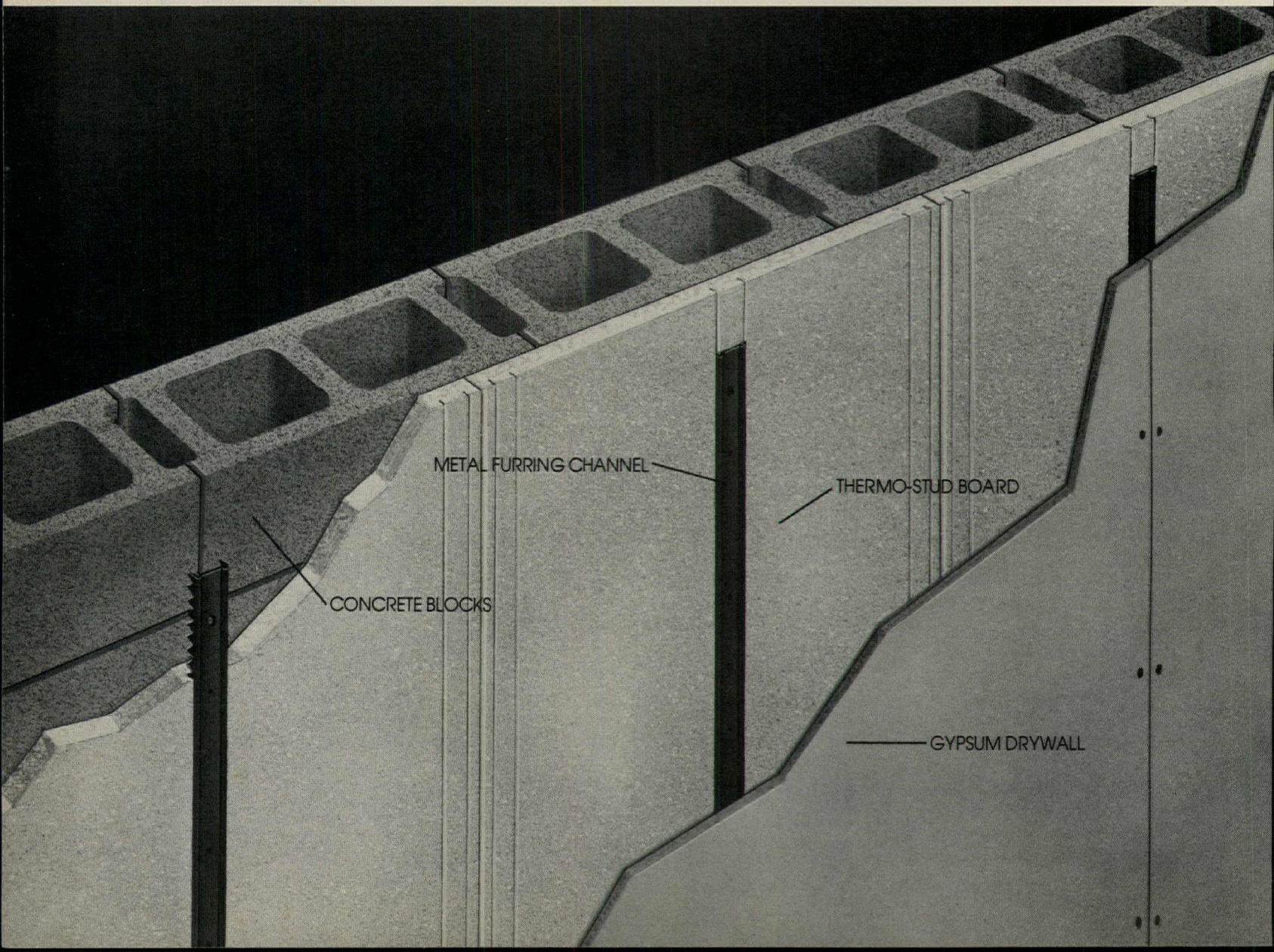
Ask your Zonolite representative to give you all the details about the improved Thermo-Stud insulation system, or write, W. R. Grace & Co., 62 Whittemore Avenue, Cambridge, Massachusetts 02140. In Canada, 66 Hymus Road, Scarborough, Ontario M1L 2C8.



## GRACE

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# Improved Zonolite® Thermo-Stud® insulation cuts costs, speeds construction.



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Architect: Richard L. Bowen & Associates, General Contractor: Hannon Construction Company, Ceiling Contractor: T&F Systems—Cleveland, Ceiling: Roper Eastern Snaplock.

# Kresge Company specified Roper Eastern ceiling grid for this Kmart store in Pennsylvania.

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8½ x 11", 288 pp., illus.

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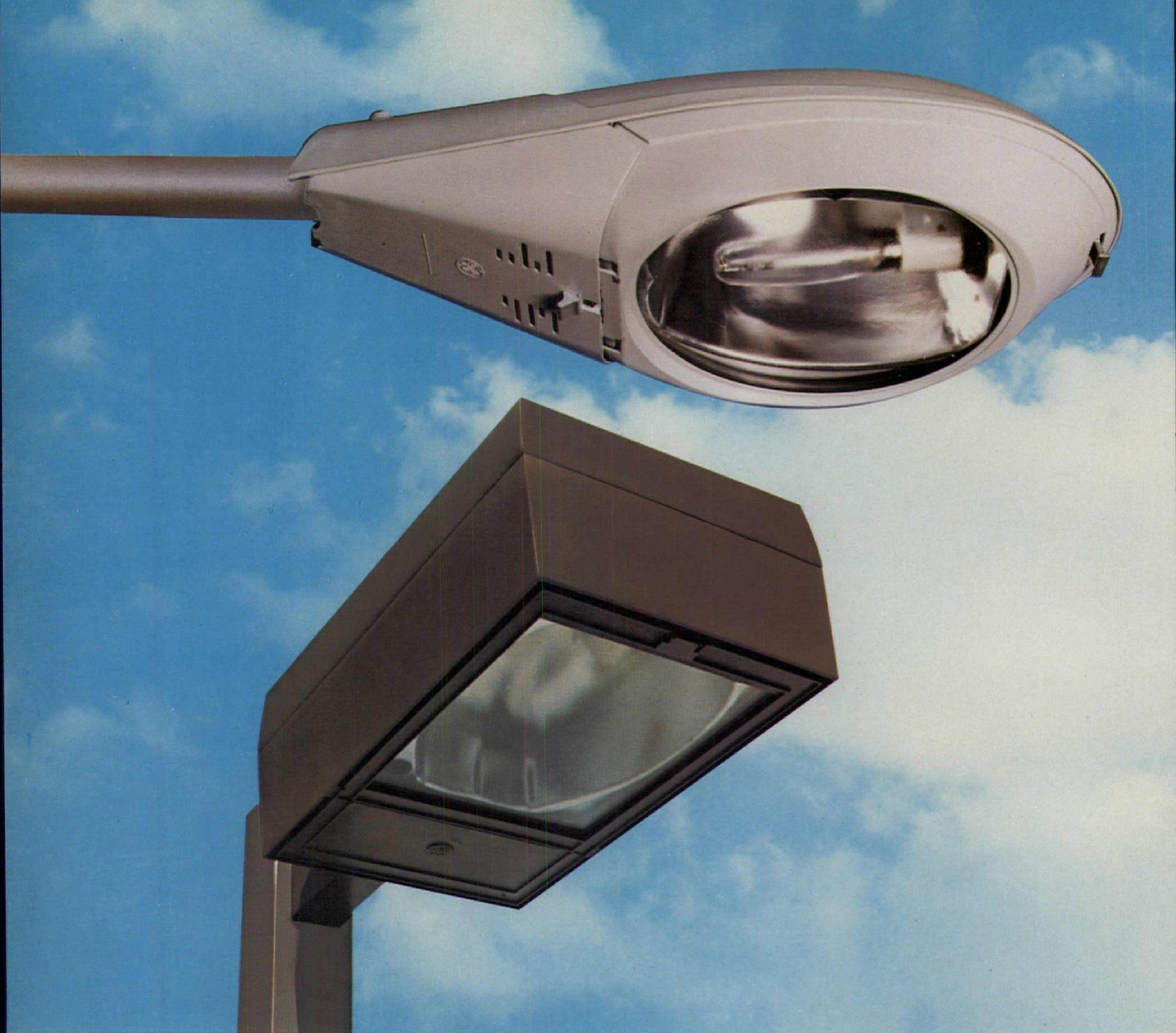
Terra Cotta is unglazed, and its textured surface endures even high-traffic commercial wear. And cleans with just a damp mopping.

Terra Cotta is one of the many earthy Primitive colors that are now available. See new Terra Cotta and the entire Primitive line...in many distinctive sizes and shapes at any American Olean Showroom or Color Center. For our new Primitive Brochure, write to American Olean Tile Company, 2303 Cannon Ave., Lansdale, Pa. 19446. Terra Cotta. It's the natural thing to use.™

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Choose between the Powr/Door<sup>®</sup> cut-off luminaire (upper left) or the Decashield<sup>®</sup> (lower left) for higher wattage applications. Both provide easy component accessibility for maintenance or upgrading. Or select

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The choice is yours. If you'd like to start putting efficient light where you want it, write for more information to: General Electric Company, Section 460-09, Hendersonville, N. C. 28739.



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# Announcing Grinnell's new Quick Response Actuator.



## It speeds sprinkler reaction time up to 75%.

Our new Quick Response Actuator, in combination with our Duraspeed Sprinkler, controls and puts out fires faster.

There's less chance of fatalities, less chance of injuries, less property loss.

The Quick Response Actuator offers excellent life-safety benefits in nursing homes, hospitals, hotels, condominiums, apartments and similar buildings where it may be difficult to evacuate occupants.

It also offers superior protection for high-value equipment and inventories wherever flammable materials present the potential for flash fires.

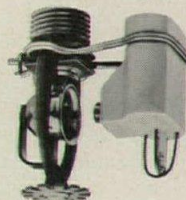
Under typical approval test conditions, a sprinkler with the new Quick Response Actuator activated in just 30 seconds compared to 115 seconds for a standard sprinkler without it.

The UL-listed actuator installs easily onto our new Horizontal Sidewall Extended Coverage Sprinkler (which gives you twice as much coverage as a standard sprinkler) and our Pendent and Sidewall Sprinklers.

You can order the unit as original equipment or it can be retrofitted into existing Duraspeed installations.

For information contact your nearest Grinnell representative listed in the Yellow Pages. Or write: Grinnell Fire Protection Systems Company, Inc., 10 Dorrance Street, Providence, Rhode Island 02903.

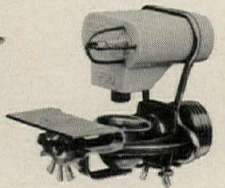
New Quick Response Actuator installs on these Grinnell Duraspeed models:



Pendent Sprinkler



Sidewall Extended Coverage Sprinkler

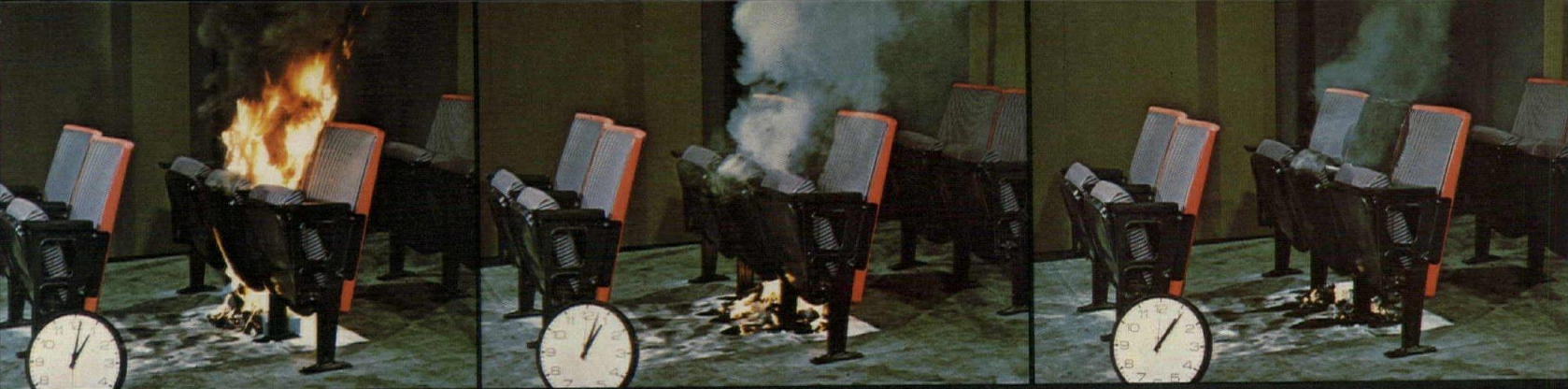


Standard Horizontal Sidewall Sprinkler



## GRINNELL

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**TEST ONE: DU PONT NEOPRENE**  
Time: 1 minute, 30 seconds after ignition.

Time: 3 minutes, 00 seconds.  
Center chair involved.

Major flames out. Time: 6 minutes, 00 seconds.  
Damage: 1 chair involved, fabric melting and smoldering on two adjoining chairs.



**TEST TWO: HR POLYURETHANE**  
containing flame retardants.  
Time: 1 minute, 30 seconds after ignition.

Time: 3 minutes, 00 seconds.  
Five chairs in two rows involved.

Major flames out. Time: 29 minutes, 30 seconds.  
Damage: 5 chairs in two rows involved.



**TEST THREE: STANDARD POLYURETHANE**  
Time: 1 minute, 30 seconds after ignition.

Time: 3 minutes, 00 seconds.  
Five chairs in two rows involved.

Major flames out. Time: 40 minutes, 00 seconds.  
Damage: All seven chairs involved.

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As the photographs above show, there was considerably less flame damage among the chairs cushioned with deep foam of Du Pont Neoprene than among those cushioned with other common cushioning foams.

### The Test Chairs

Test #1 used cushions of Neoprene deep foam. Test #2 used cushions of high resiliency (HR)

polyurethane foam containing flame retardants. The chairs in these two tests were otherwise identical, with upholstery fabric and plastic seat backs containing flame retardants.

Test #3 was conducted with a standard type polyurethane cushioning foam in chairs with untreated components.

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During each test, light obscuration by smoke was measured by photo cells six feet from the floor. Data gathered show the chairs cushioned with Neoprene produced less total smoke because only one chair was consumed by the fire.

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For complete test data, plus information on suppliers of Neoprene foam cushions or finished seats, write: Du Pont Company, Room 24402C, Wilmington, DE 19898.

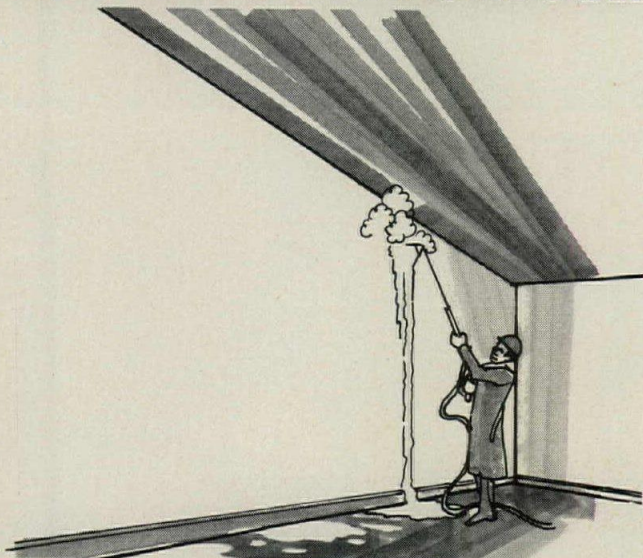
## Cushioning Foam of DuPont Neoprene



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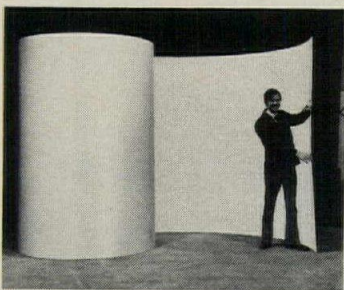
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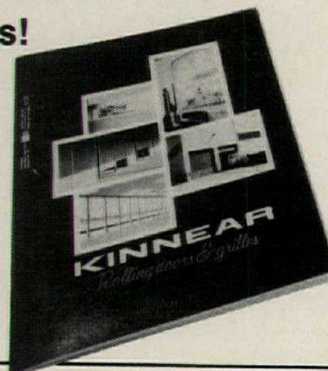
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"One of those NO SMOKING UNDER PENALTY OF LAW signs...stenciled...a big thing...right across my wall onto a painting."

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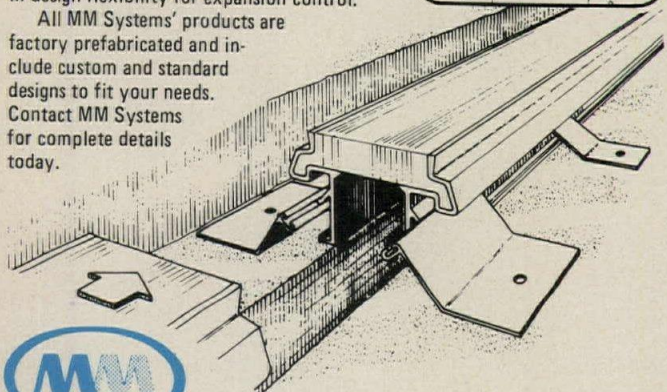
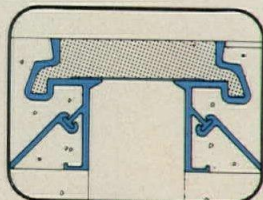
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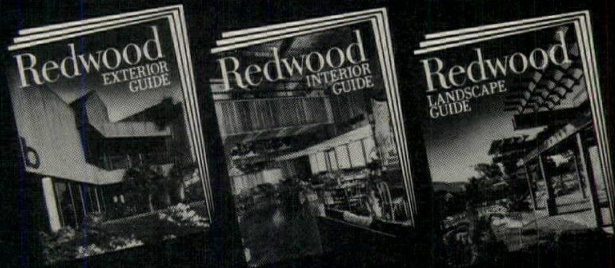
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**STEEL PILES** / A technical report entitled "Steel Pile Load Test Data" presents detailed results of 28 pile load tests and reviews applicable specifications and building codes as they apply to deep foundations. Tables of design specifications and allowable material stress for both H-Pile and Pipe Pile are also presented. ■ American Iron and Steel Institute, Washington, D.C.

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**DOCK LEVELER** / A six-page brochure on the company's standard 900 series dock levelers stresses the operational advantages of "Hydracheck," a lip holding device. The brochure also illustrates the company's positive emergency safety stop system, which provides extra protection for dock personnel, equipment and cargo. Listed are architectural specifications for a series of four levelers with capacities of 20,000, 30,000 and 40,000 lbs. ■ Rite-Hite Corp., Cudahy, Wis.

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**PROTECTIVE COATINGS** / Protective coatings for areas exposed to chemical, temperature and physical abuse are described in this bulletin. Finishes of neoprene, epoxy, mastic, vinyl and urethane are included, with a section on recommended primers, surface preparation procedures and application information. There is a chart containing characteristics of corrosion-resistant materials for nearly 200 substances. ■ Atlas Minerals & Chemicals Div., ESB Inc., Mertztown, Pa.

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**COLD STORAGE DOORS** / Featured in a new product bulletin is the "Electroglide" power-operated, double-leaf cooler or freezer door. Included are horizontal, vertical and overhead units, all covered by a three-year warranty. ■ Jamison Door Co., Hagerstown, Md.

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**PRE-INSULATED PIPING SYSTEMS** / *Copper-Gard* insulated pipe for underground distribution of hot and chilled water, domestic hot water, and condensate lines to 250 deg. F is explained in this four-page brochure. A chart shows typical heat gain/loss data for the copper pressure tubing. ■ Ric-Wil, Inc., Brecksville, Ohio.

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**STEEL DECKING** / A 32-page catalog covers the manufacturer's complete line of steel decks for floors and roofs. Section properties, load-span tables and dimensioned drawings are included, as well as sound-absorption data and fire ratings. The 2-in. "V-Grip" and "WireWay" floor decks and the "Strong-vent" roof deck are new additions to the 1976 product listing. ■ Bowman Construction Products, Cyclops Corp., Pittsburgh, Pa.

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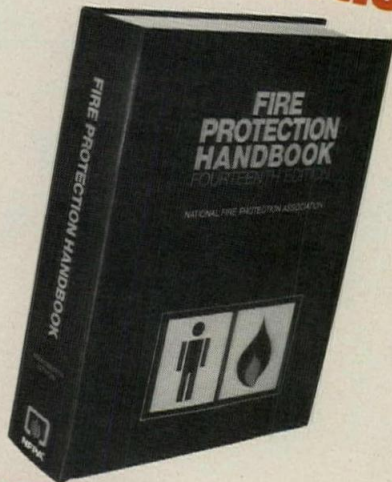


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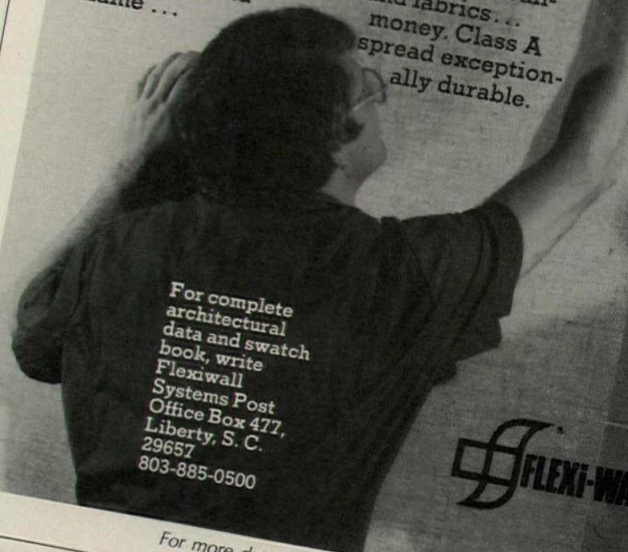
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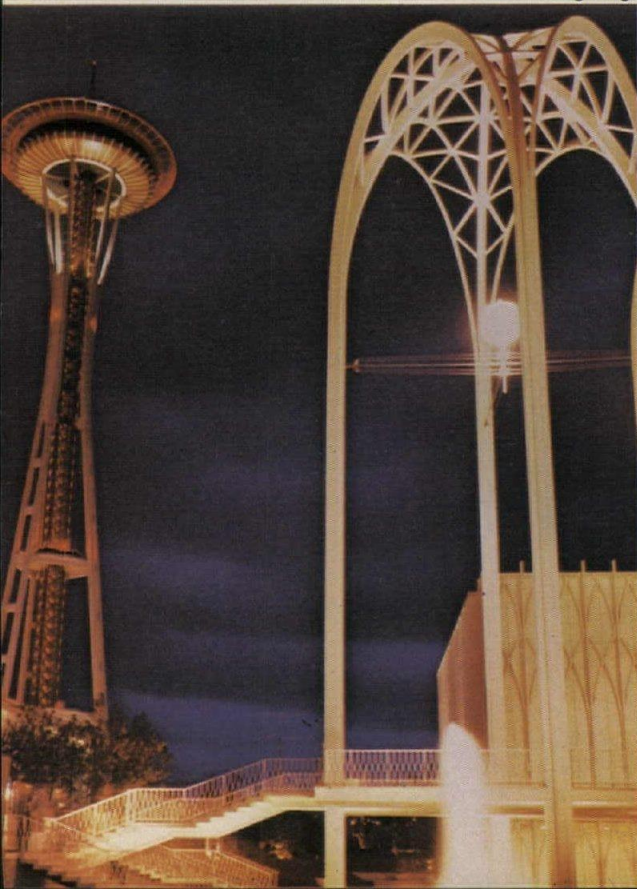
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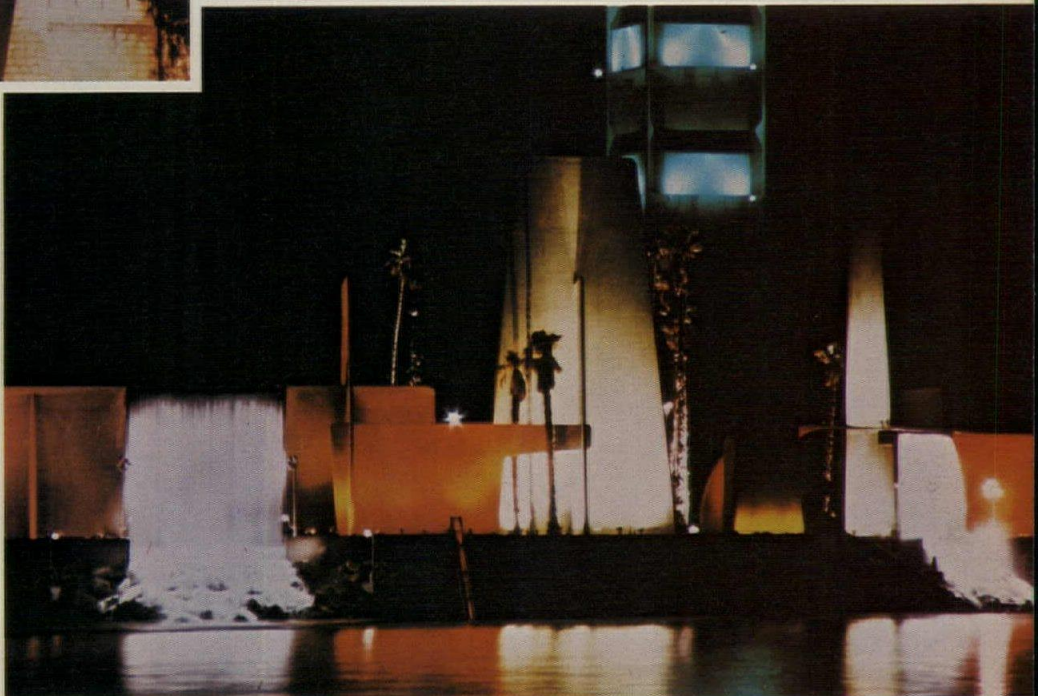
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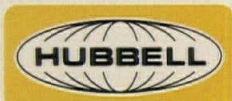
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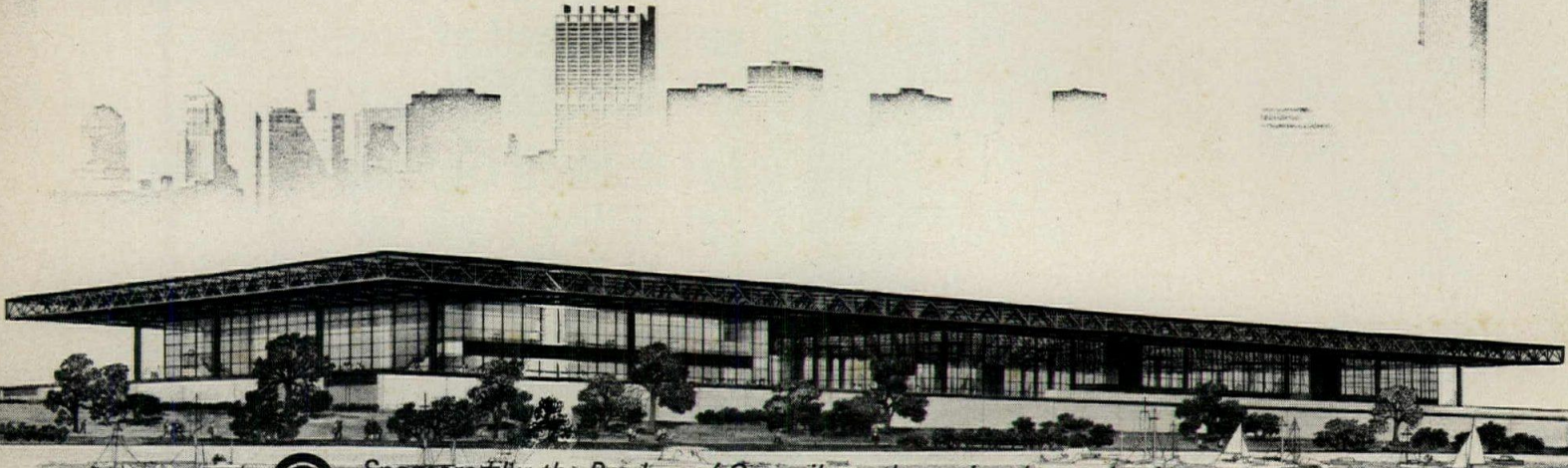
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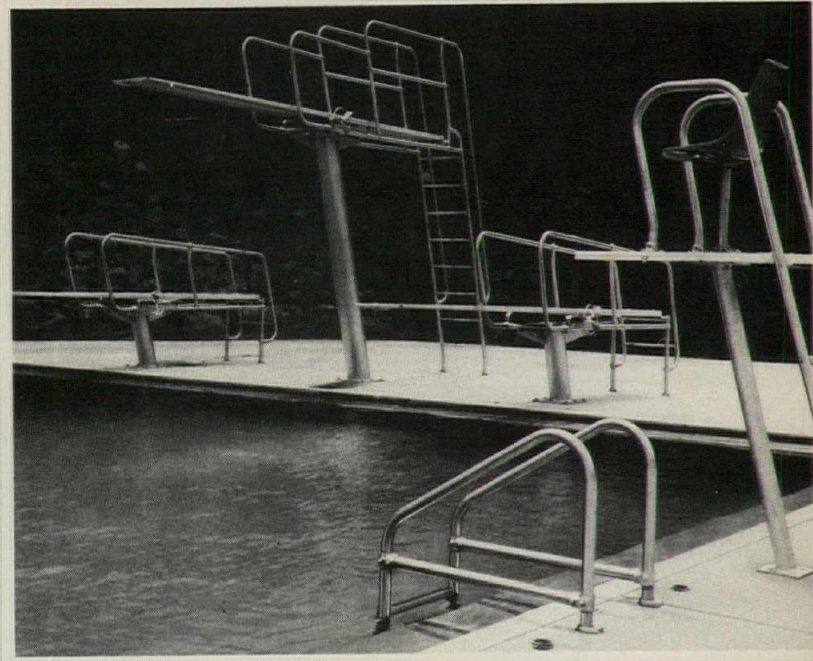
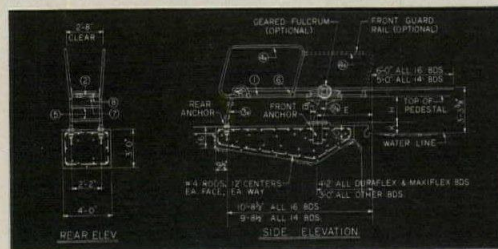
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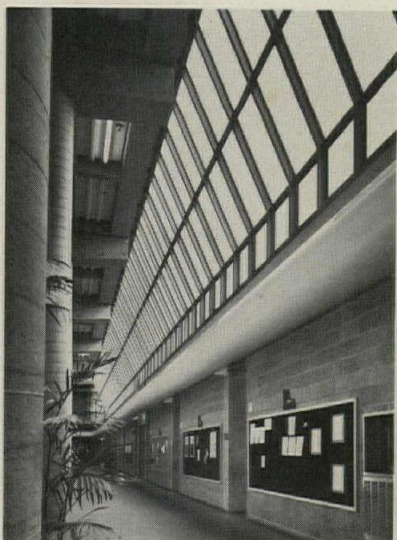




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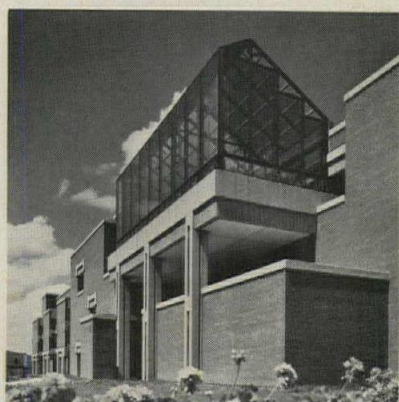
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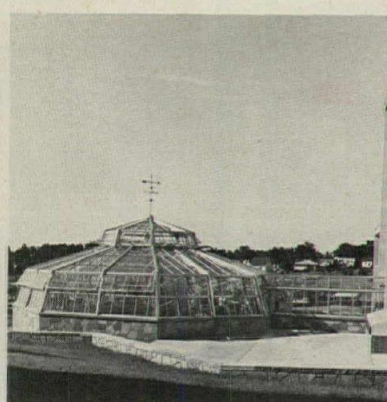
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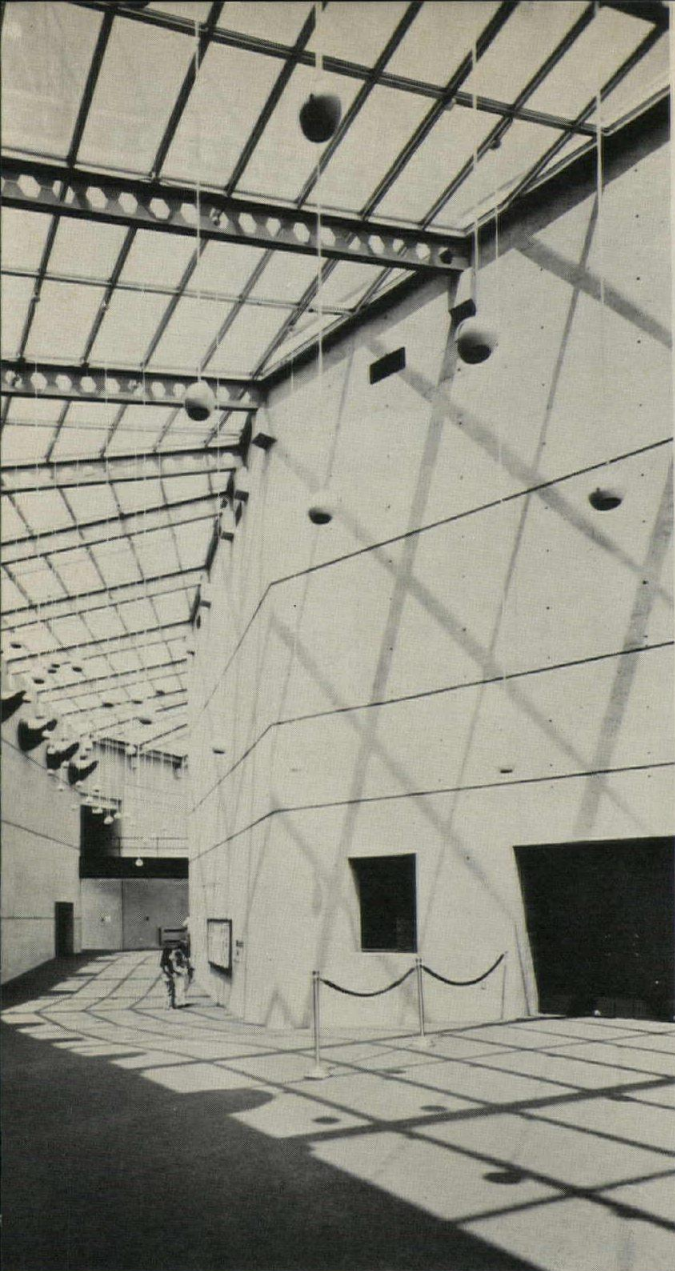
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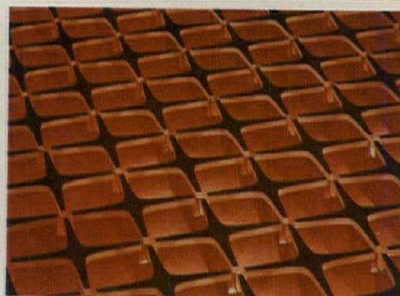
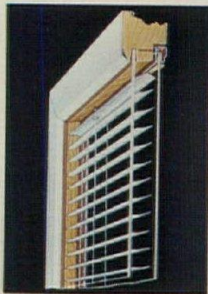
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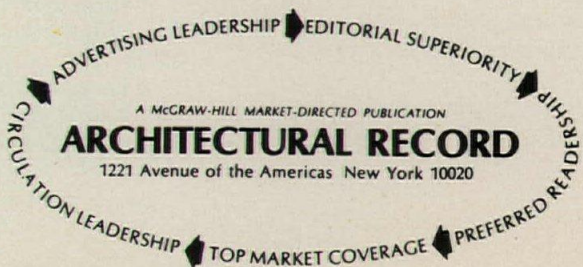
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**Name changes, new firms**

**Verge and Clatworthy, Architects and Associates** have established a new office in The Annandale Office Center in Los Angeles, California.

**Bernard A. Carmin, AIA Architect**, has reopened his office in the 1411 Fourth Avenue Building, Seattle, Washington.

**Charles H. Boelsen** announces the new location of his architectural office at 427 West 20th Street, Suite 100, Houston, Texas.

**Fanning & Howey Architects**, announce the opening of an Indiana office with Lee J. Brockway, AIA as principal-in-charge, located at 600 East 9th Street, Michigan City, Indiana the former location of Brockway Associates, Architects.

**Thomas W. McHugh architect/designer** has started a new interior design and architectural firm at 30 East 54th Street, New York, New York.

**Bernard Rothzeit, AIA, announces the formation of Bernard Rothzeit & Partners, P.C. Architects and Planners, AIA.** Carl Kaiserman, Peter Thomson and Carmi Bee have joined as officers of the firm.

**William E. Cullen AIA and Associates**, announces the opening of their new office in San Francisco, located at 166 Embarcadero, San Francisco, California.

Ken Rehler & Associates Inc., located at 84 N.E. Loop 410, Suite 180W, San Antonio, Texas, have changed their name to **Rehler, Vaughn, Beaty & Koone, Inc.** Principals are now Ken Rehler, George Vaughn, Michael Beaty, and John Koone.

Olaf Sööt Associates announces the formation of **Sööt & Harstead Associates, P.C.**, 432 Park Avenue South, New York, New York.

**Charles Terrence McCafferty and Associates** architects/community planners, have established a new firm at 555 Buhl Building, Detroit, Michigan.

William Wilde and Associates Inc. have changed their name to **Wilde Anderson DeBartolo Pan Architects Inc.**, located at 177 North Church, Tucson, Arizona.

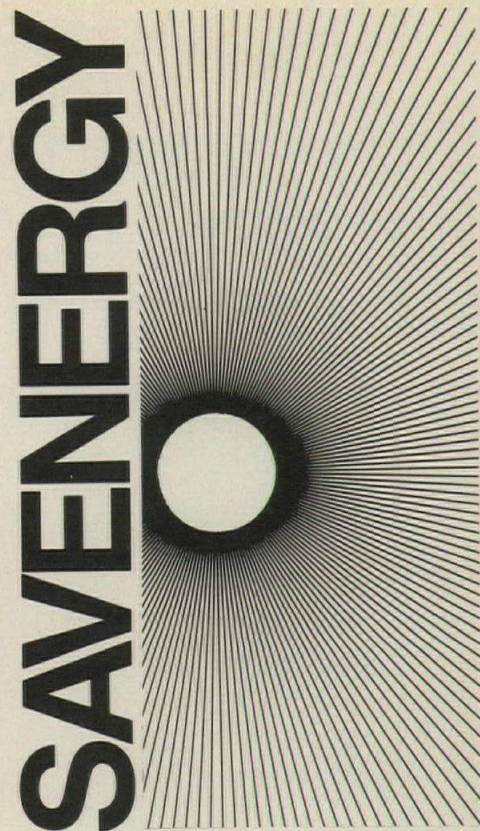
**New associates, promotions**

**Joseph A. Johnson**, has joined Schaefer, Schirmer & Associates, P.A., as managing director and will assume management responsibilities for the firm's offices in Wichita and Topeka, Kansas and Albuquerque, New Mexico.

Weidlinger Associates, consulting engineers, New York, announces the appointment of **Herbert Rothman, F.ASCE**, as general partner.

**Correction**

In the credits cited in the article on Columbus East High School that appeared in RECORD's April issue, the name of the consulting engineers and landscape architects was misspelled. The correct spelling should be: Clarke and Rapuano, Inc. RECORD apologizes for the mistake.



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- AIA National Convention. "An American City: The American Institute of Architect's national convention in Philadelphia"—Mar. 1976, pp. 103-108. "The question of ethics: the Convention takes sound action after sound debate," Editorial by Walter F. Wagner Jr.—June 1976, p. 13.
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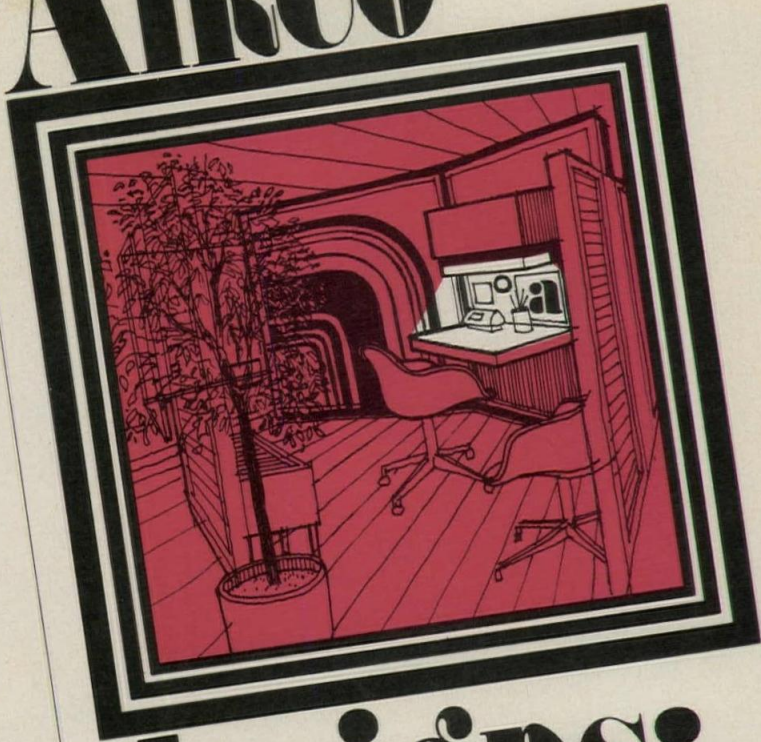
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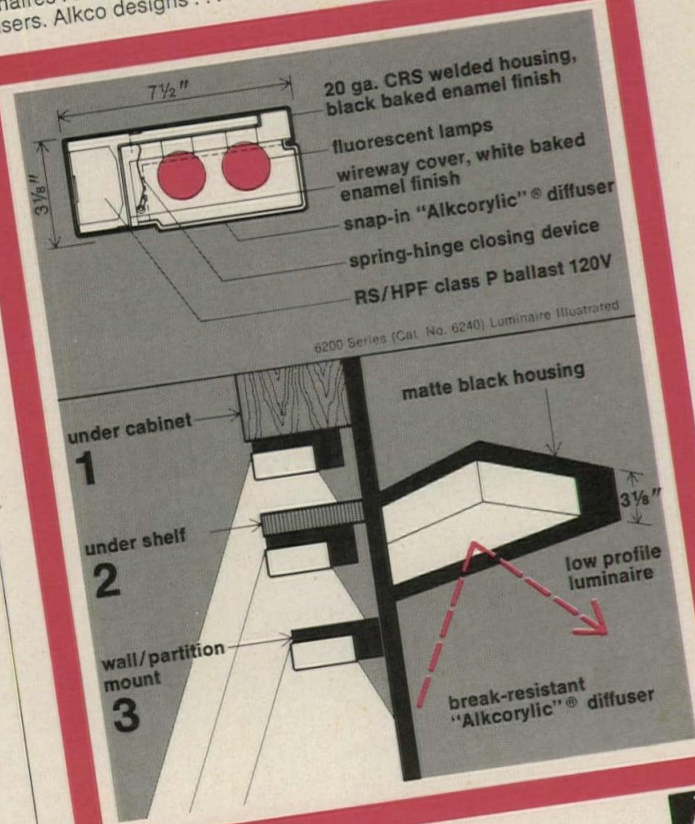
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