YMCA BY TAC: A CATALYST FOR NEIGHBORHOOD RENEWAL

BUILDING TYPES STUDY: DESIGN FOR THE CAMPUS

THE EVOLVING ARCHITECTURE OF ULRICH FRANZEN

HOW MATERIALS REACT TO SOLAR HEAT

FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

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Haydon Burns Library, Jacksonville, Florida. **Architect:** Hardwick & Lee, Jacksonville. **General Contractor:** The Auchter Company, Jacksonville. **Flooring Contractor:** Phillips Floor Service, Jacksonville Beach. **Interiors:** Hardwick & Lee.

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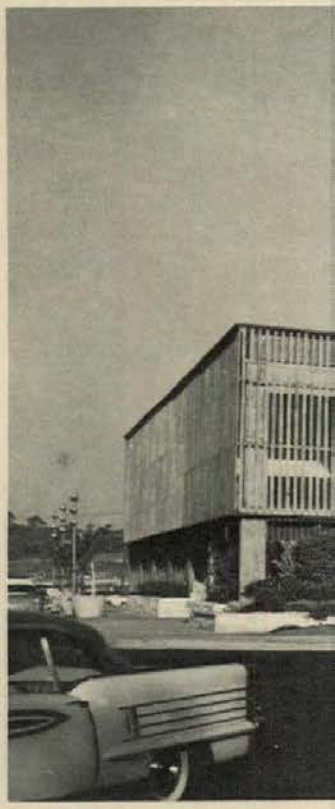
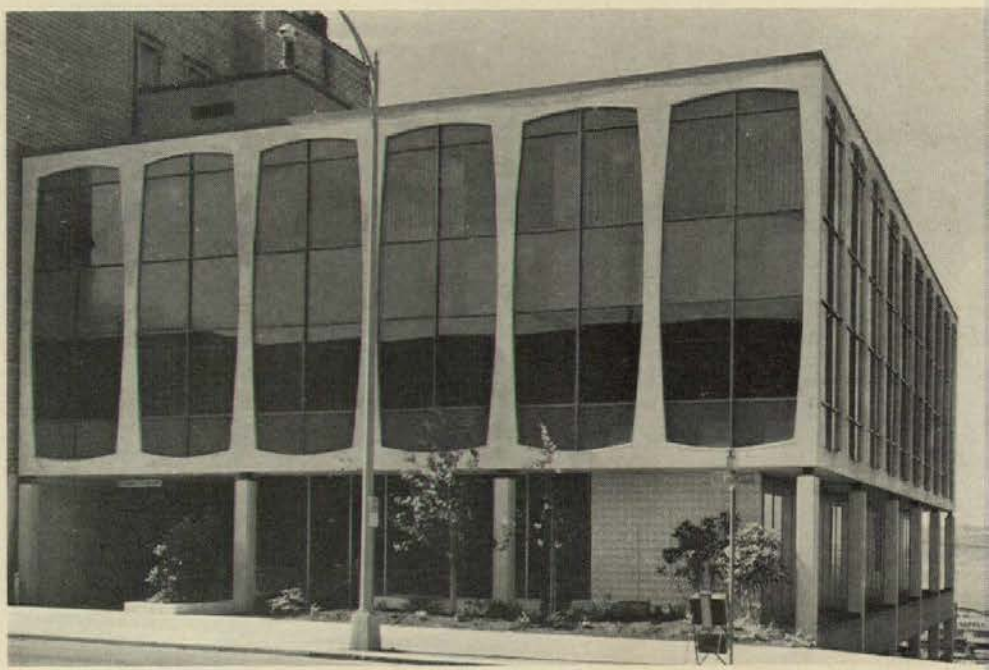


Above: MUSEUM OF ARTS AND SCIENCES, Evansville, Ind. *Architect:* Victor Gruen Associates, Los Angeles. *General Contractor:* Thorp Construction Co., Evansville. Dover Oildraulic Elevator installed by Ceder Elevator and Equipment Co., Evansville.

Top right: KAUFMANN'S DEPARTMENT STORE, Monroeville, Pa. *Architect:* John Graham, A.I.A., New York City. *General Contractor:* Ragnar Benson, Inc., Pittsburgh. Two Dover Oildraulic Elevators installed by Marshall Elevator Co., Inc., Pittsburgh.

Right: VANDERVEER BUILDING, Seattle, Wash. *Architects:* Mandeville and Berge, Seattle. *General Contractor:* Strand Incorporated Seattle. Dover Oildraulic Elevator installed by Sound Elevator Co., Seattle.



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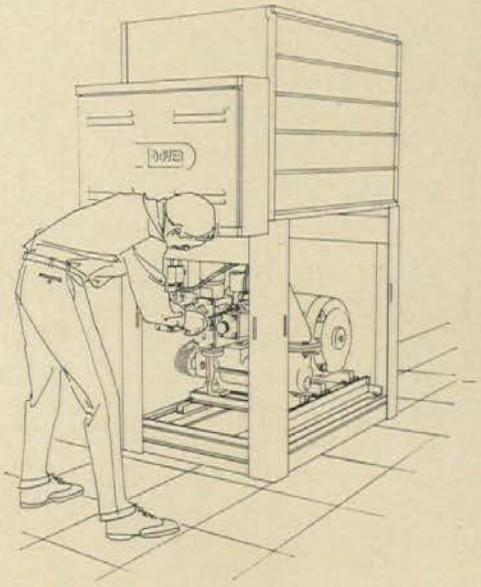

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DOVER

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Cover: Roxbury Branch YMCA, Boston, Massachusetts
Architects: The Architects Collaborative
Photographer: Louis Reens

FEATURES

BUILDING TYPES STUDY 358

Joseph W. Molitor

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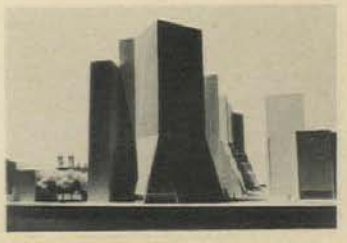
ARCHITECTURAL RECORD

CONTENTS: MAY 1966



COMING IN THE RECORD

NOTABLE INTERIORS FOR THE NEW CBS SKYSCRAPER

The headquarters building for the Columbia Broadcasting System, designed by the late Eero Saarinen, is distinguished for its interior design as well as its architecture. Florence Knoll was responsible for the design of the CBS executive floor interiors which will appear next month in a series of unusually fine color photographs by Robert Damora and Scott Hyde.

PRACTICE TECHNIQUES FOR INDUSTRIAL BUILDINGS

Next month's Building Types Study will provide a checklist guide to the factors involved in industrial site selection, a review of the latest theories about plant layout and materials handling, and case studies showing how different architects handle problems of cost control and speed of construction.

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WHAT IS SUITABLE ART FOR PUBLIC BUILDINGS?

One of the topics that generates much conversation around the office is Art and Architecture. Meaning, of course, the inclusion of the other arts in buildings. We seem to talk a lot about it and do very little, but it wouldn't be the first topic that got that sort of treatment. The reason is not mysterious.

The general situation was beautifully summed up by Emily Genauer in a recent issue of the New York section of the Sunday New York Herald Tribune. I trust she will not object to my giving it to you here:

"It's possible to drown in a sea of milk and honey. The other day, sitting in on a meeting at City Hall of the recently appointed Committee to Beautify New York City, the waves of good will oozing across the room left me gasping for air—and some evidence of real comprehension of the enormous and particular problems facing this dedicated group . . ."

The mayor had called the meeting, with the park commissioner, to discuss with architects and artists an executive order calling for one-half to 1 per cent of the cost of public buildings to be spent for fine arts—painting, sculpture, landscaping, and so on.

"How fine," continues Miss Genauer, "it will be when citizens are confronted at every turn by enriching and ennobling art! How constructive that hereafter the art conceived as embellishment for public buildings will figure in their architectural planning from its very inception, instead of being dragged in as an afterthought! How splendid that architects, rather than well-meaning but ill-informed public officials, too often susceptible to art pressure groups, will have the responsibility of selecting the artist! How important it will be to work on a neighborhood level," etc., etc.

". . . But if anyone at that meeting had the faintest idea of what art's really like these days, and of the problem that will be involved in bridging the tremendous gap between what some of the most imaginative artists in New York are doing and what the public expects in public buildings—or, in fact, what public officials and architects will accept—he was keeping his mouth shut."

". . . There are, as I see it, some very tough problems the committee must face up to, and I'm not reassured, judging from what I heard the other day, that the architects who will make the decisions even recognize them."

Well, I think that architects will recognize them all right, but they will certainly agree with Miss Genauer that coping with them is something else again. You see, architects are about as sympathetic as she is to imagination, vitality, experimentation, or whatever it is that motivates the hot young artists who make the shows. And if she is going to insist that "the new life in the new art makes it a natural for most new buildings" architects will have to fight their natural orientation if they disagree with her.

Miss Genauer makes a positive point in saying that, even if paradoxically, frequently the most novel works gain, not lose, significance with time. But there is a slight difficulty here—they will not gain significance just because they are novel. How do you pick the novel work that will make history?

She doesn't have much faith that most artists would respond with a sense of responsibility, that the artist would "willingly abandon his lonely quest." She doesn't believe, either, that most architects would "be visionary enough to select good art for their projects." She mentions some rather bad examples which we all have seen and talked about.

Well, nobody needs to remind her that architects are having their own troubles in their own field, when it comes to agreement on "good art." And if there is trouble in determining what is destined for history, in a field much more attuned to public responsibility than those of painters and sculptors, surely making selections in other arts is a real challenge.

Miss Genauer makes one suggestion: "The fact is that everybody needs education in this direction—public officials, architects, artists and the public, and that with so much at stake and time growing short, the education ought to start right now."

Architects are pretty well educated in the arts, Miss G, and if they have trouble, I don't have much faith in fast public education.

Perhaps it would be more hopeful to remind ourselves that while buildings might be around for 50 years, we usually can change the art with which we embellish them. —*Emerson Goble*

Drawn for the RECORD by Alan Dunn

"Sheer genius! What Pollock did for painting he's doing for architecture—"

Never mind the balconies, they're just too dirty

Some time ago (March 1963, page 9) I had something to say about balconies. I was fussing about architects pretending that balconies were really functional when they weren't ever used. I said quite a bit about acrophobia, and I still feel that many people are uncomfortable on open balconies at great height.

But a much more cogent reason for their disuse comes from a series of articles in the New York Herald Tribune —air pollution. The air in Manhattan is simply so dirty, so full of fly ash especially, that you just can't use any outdoor space, be it back yard, penthouse terrace or balcony. Your cocktail has soot specks in it before you can drink it down. You can't sit on the chairs, and grit grinds under your shoes. So you go back inside and forget it, that is if you haven't already made that decision long ago.

Construction budgets are for staying under

One of the difficulties of governmental efforts to improve buildings is that the government always has one hand to slap the other hand. The Comptroller General is in again with some remarks about costs in public housing projects, in a report to Congress entitled: "Inclusion of Balconies and Use of High-cost Brick in Constructing Low-rent Public Housing Projects." A few bits:

"Under the current Public Housing Administration policy, the local housing authorities are encouraged to improve housing through the use of new designs and better materials without necessarily increasing costs. We recognize the advantages of such a policy, where this can be economically accomplished; however, we believe that the incurrence of substantially higher costs for esthetic features not related to providing decent, safe, and sanitary housing is inconsistent with the legislative history . . . of the housing act."

Clearly those esthetic features are not related to decency.

"In our opinion, the increase in project development costs due to the inclusion of balconies and the use of high-cost brick is inconsistent with the legislative intent . . . and further demonstrates the need for adequate criteria" for the most inexpensive construction.

There is a challenge for Dr. Weaver; let's have some criteria for minimum-cost construction to demonstrate how wonderful our cities can become.

Or, "we believe that the practice . . . of using the maximum cost limitation as the sole criterion for developing projects in an economical manner permits the expenditure of all available monies without giving proper regard to the propriety of individual items . . ."

Somehow reminds me of Gilbert and Sullivan.

Auto design by committee with grey-flannel suits

Some years ago I attended a "design conference" at Ann Arbor. I wasn't exactly starry-eyed when I arrived, and anything but that when I left. For automobile designers were heavily represented, and their working philosophies were well exposed. I remember asking the chief designer for Packard what Packard was doing this time; he answered: "What General Motors is doing, naturally."

I was brought up to date on auto design recently by a piece in the Wall Street Journal; I can't do better than quote it directly:

"At Ford Motor Co. . . . the styling staff comprises more than 100 stylists, 250 clay modelers and 450 other persons in engineering, fabrication and administrative jobs. The four major U.S. auto makers as a whole have about 700 stylists and styling supervisors and hundreds more in the modeling and related fields. One man seldom designs much more than a taillight on any one car.

"If all this suggests the highstrung, smock-garbed maverick designers of the past are being replaced by young grey-flannelled-suit corporate types, the impression is correct. The typical stylist now has a college degree in industrial design, works under tight management rein and has his sights set on climbing the corporate ladder . . .

"The stylists, who currently are working on the 1968 and 1969 models while putting the finishing touches on the '67s, are responsible for convincing the car buyer that his new gleaming Beauty will be hopelessly out of date by fall. . . . As such they're apparently doing a good job. Most everyone here agrees that styling was the main stimulant in boosting last year's car sales 15 per cent to a record 8,750,000."

Architectural vitality extraordinarily high

While quoting from recent reading in other publications, I must not withhold one comment from the august New York Times about the architecture of our times. You will be encouraged, as I was, to learn this is an "age of exceptional architectural vitality, when the average of brilliant and even beautiful solutions to urgent building needs is extraordinarily high. . . ." *E.G.*

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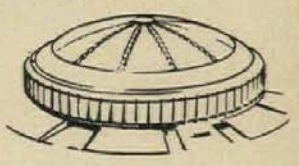

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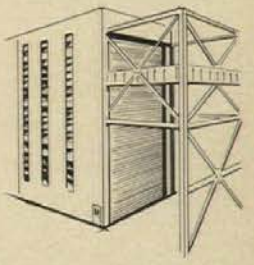

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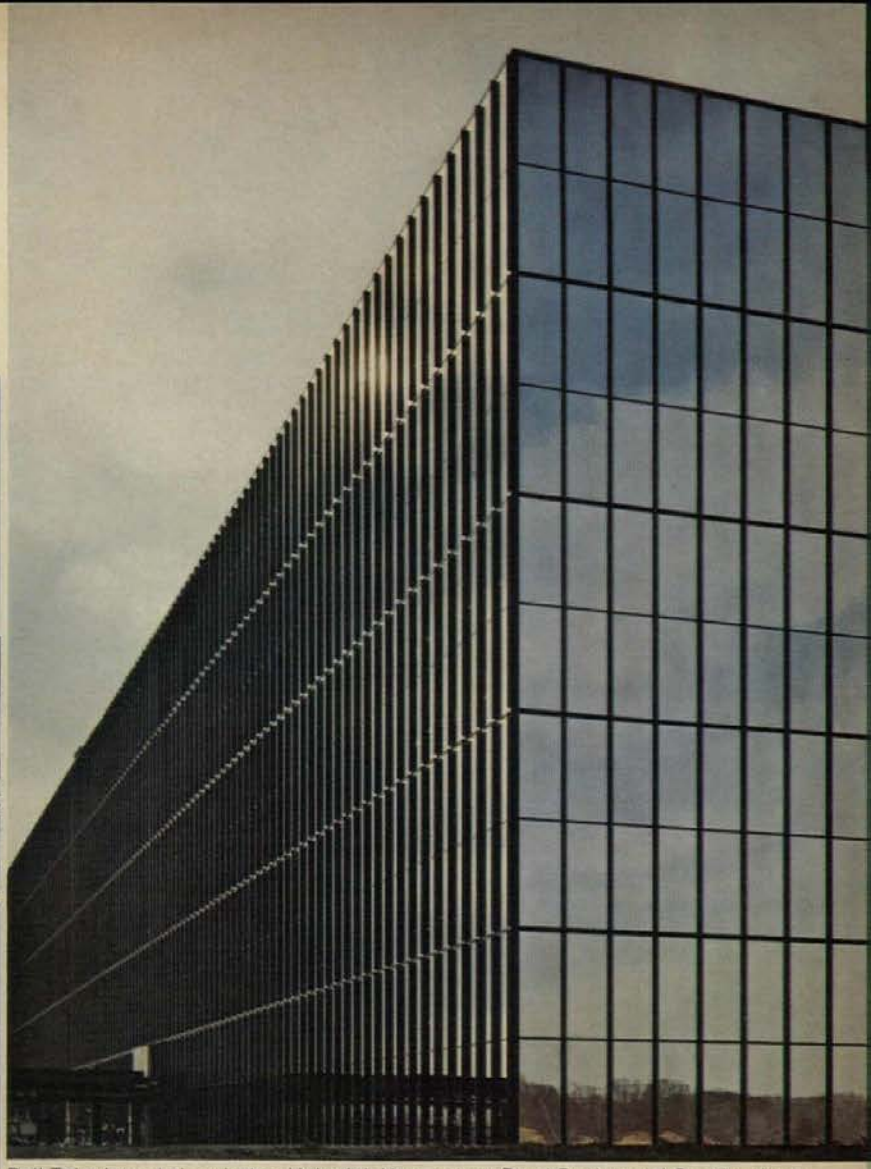

Bell Telephone Laboratories, Holmdel, New Jersey. Plant Design and Construction: Western Electric Co., Inc. Architect: Eero Saarinen and Associates.

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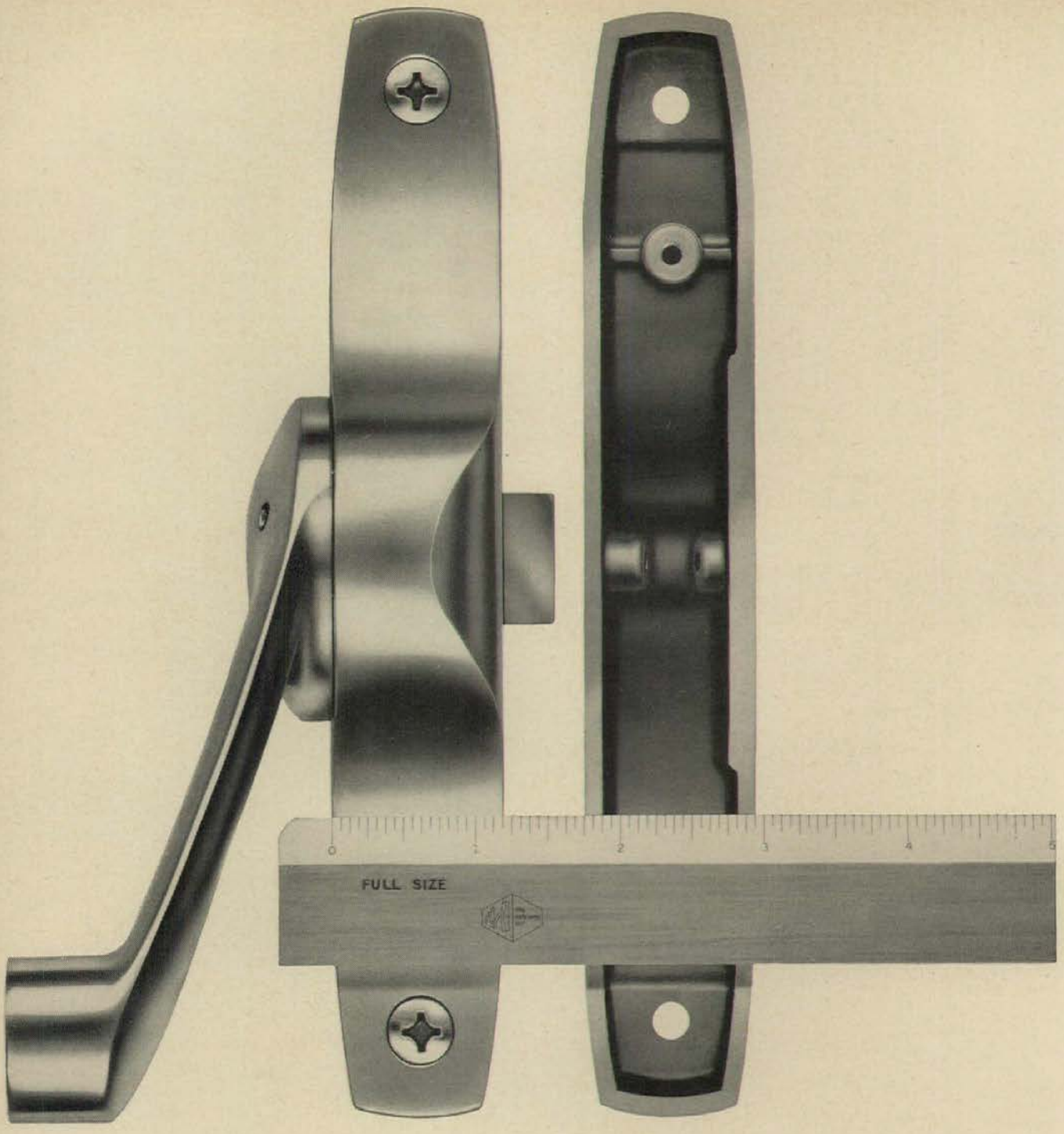

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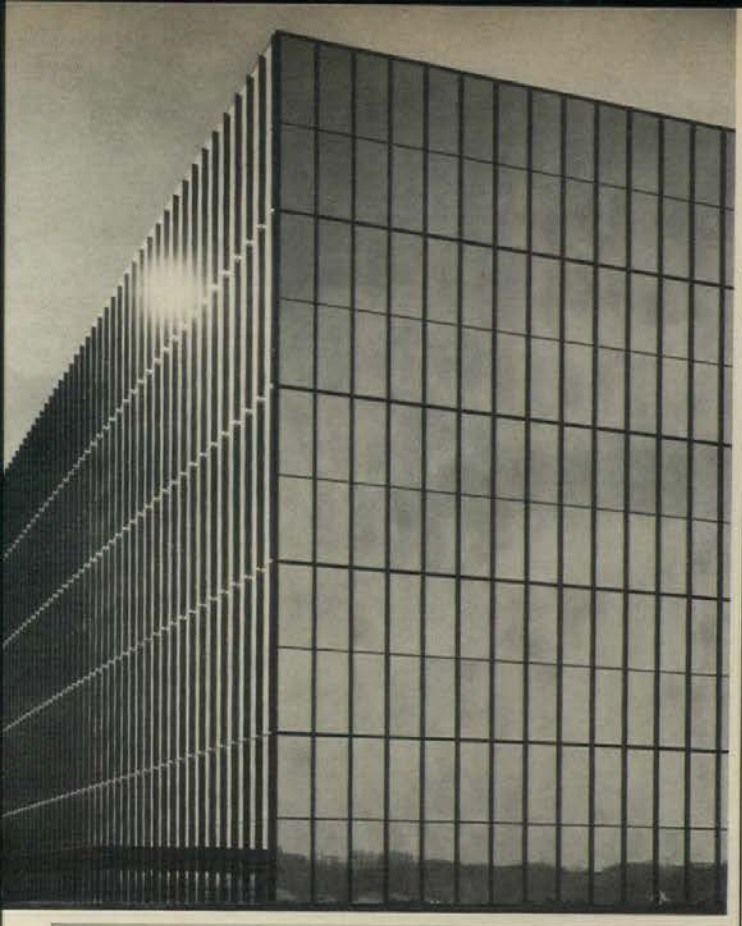

Bell Telephone Laboratories, Holmdel, New Jersey.
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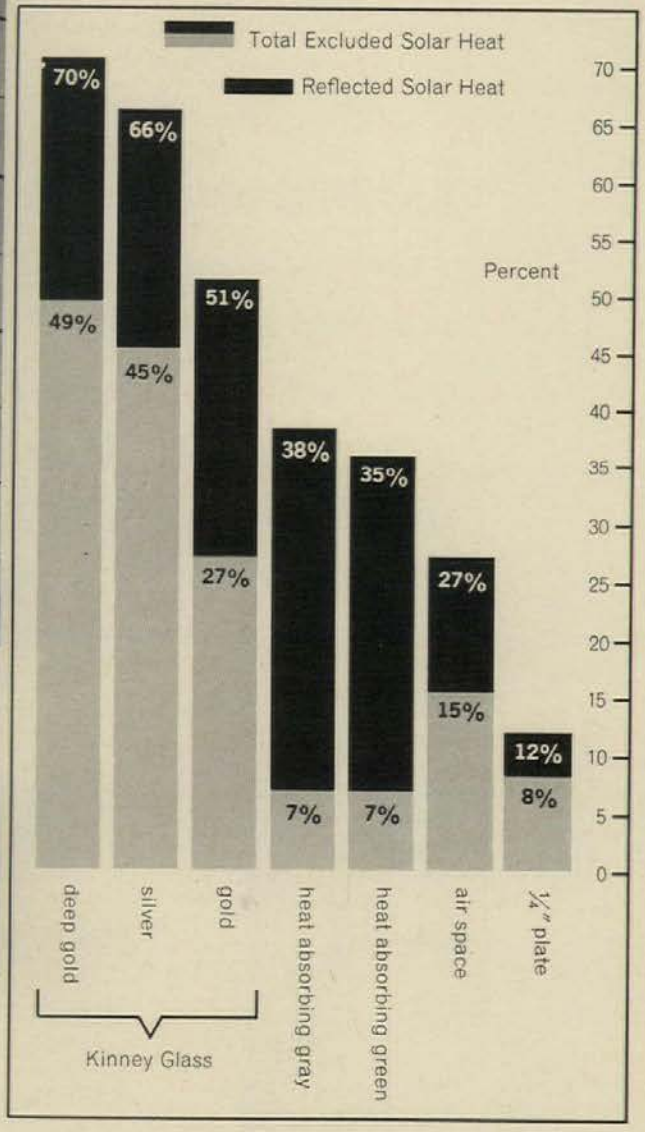

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by Frank S. Fitzgerald
Technical Director
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ASA A134.2-1966

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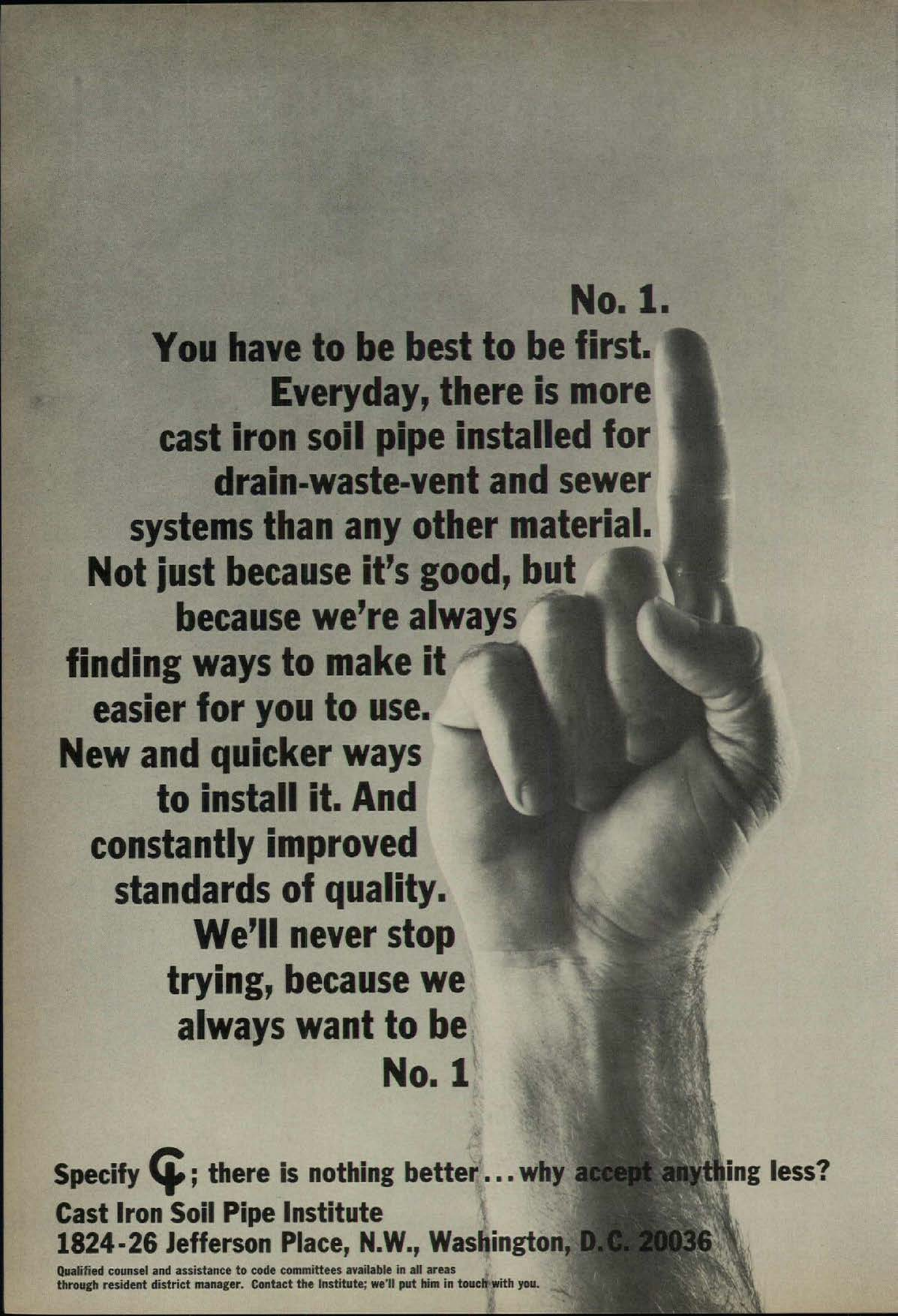
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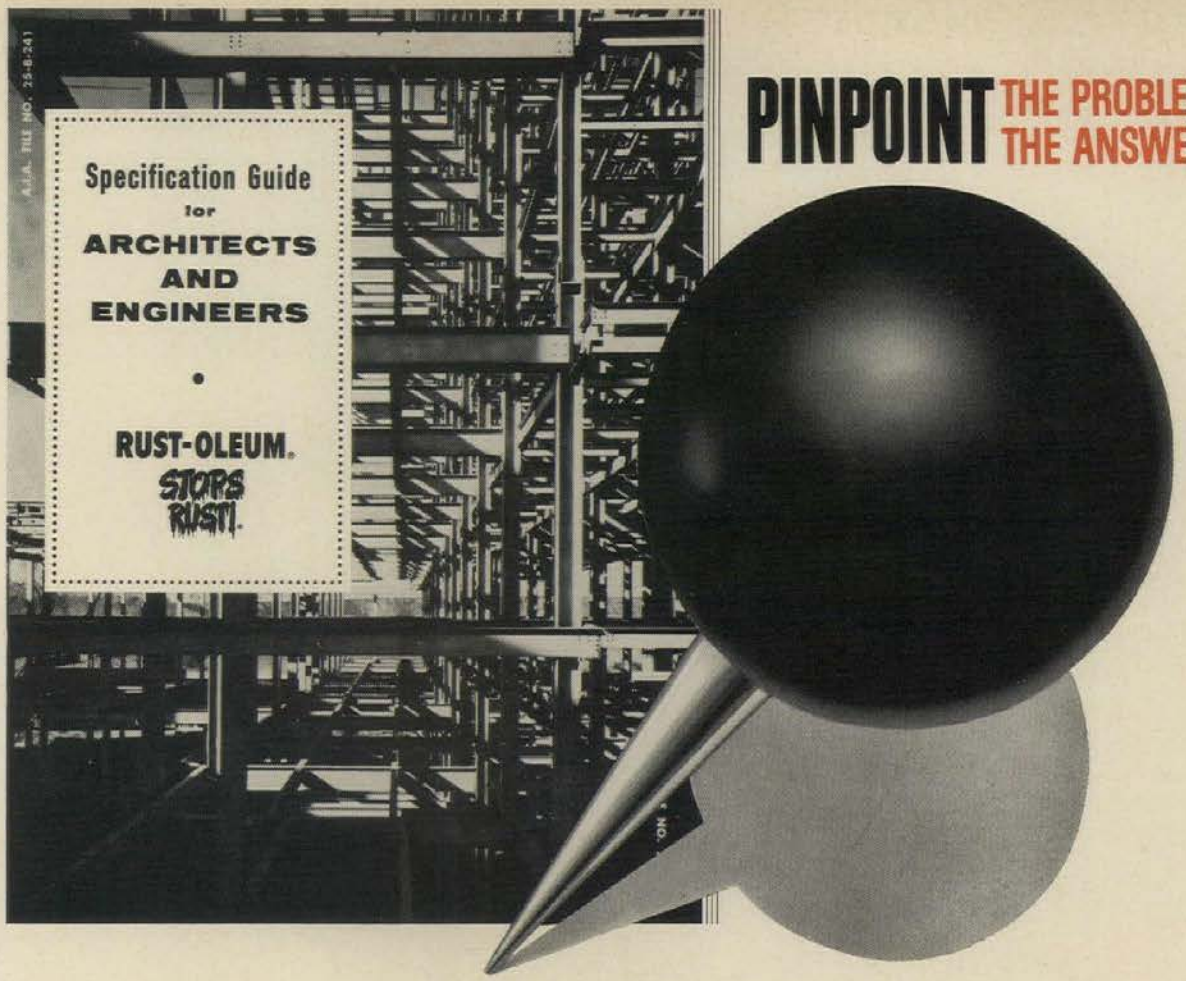

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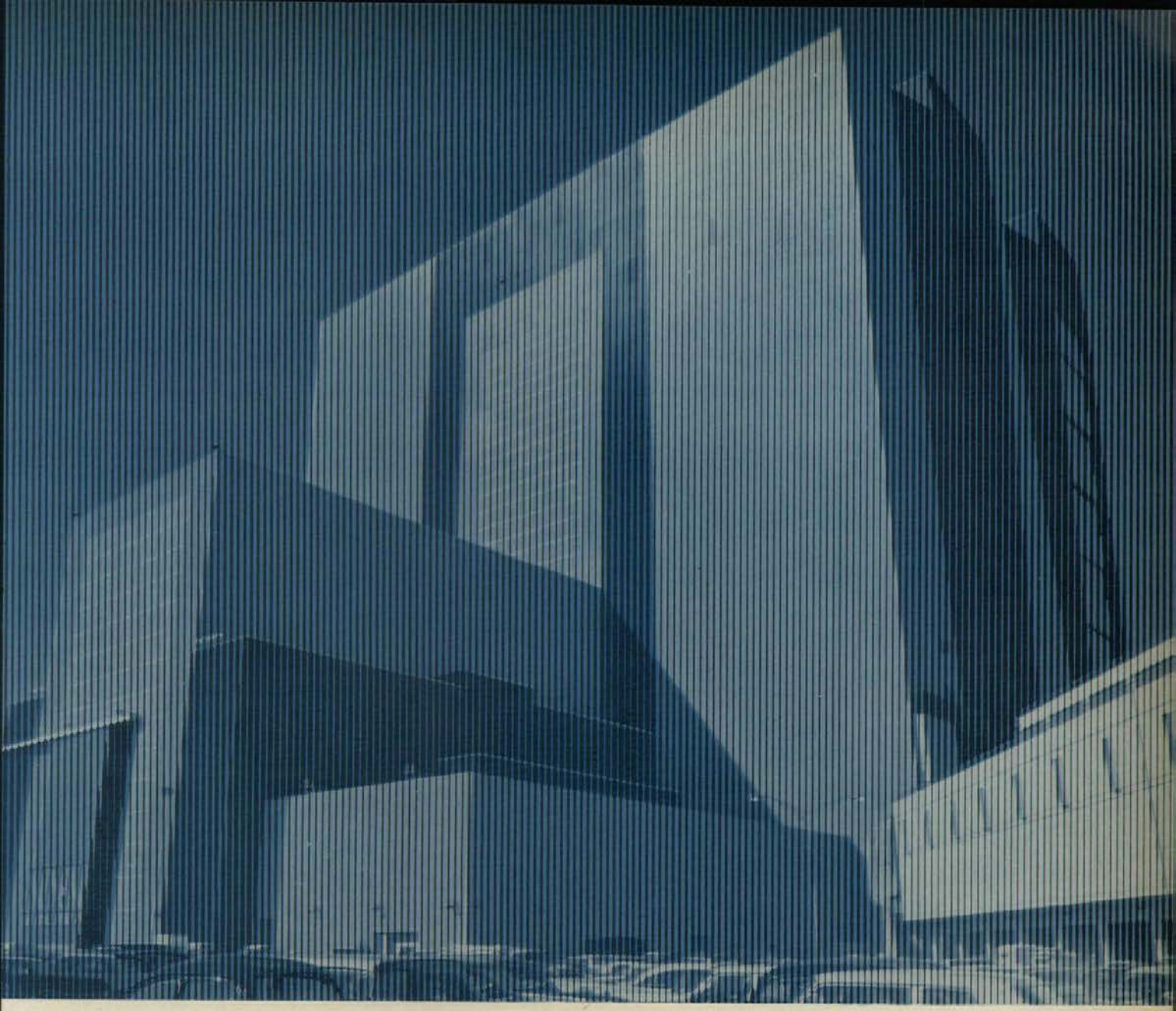

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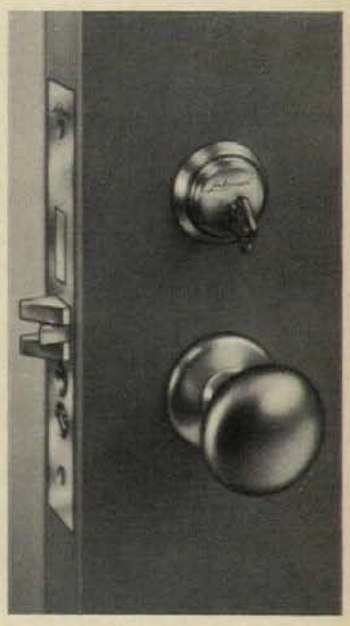

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hitects: *Urbahn—Roberts, Seelye, Moran—in conjunction with the U. S. Army Corps of Engineers*
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BREAKTHR

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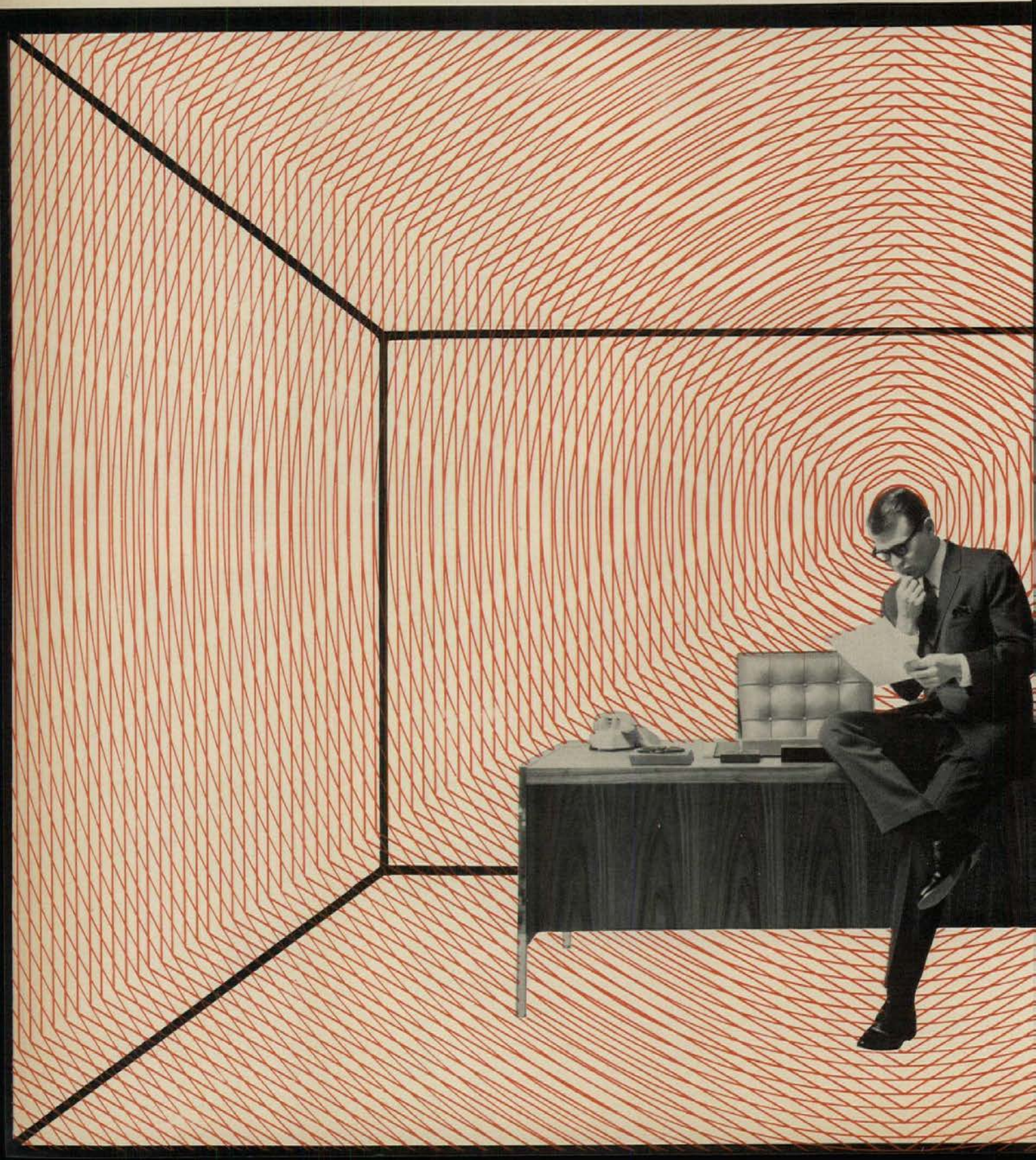

BOUGHT!

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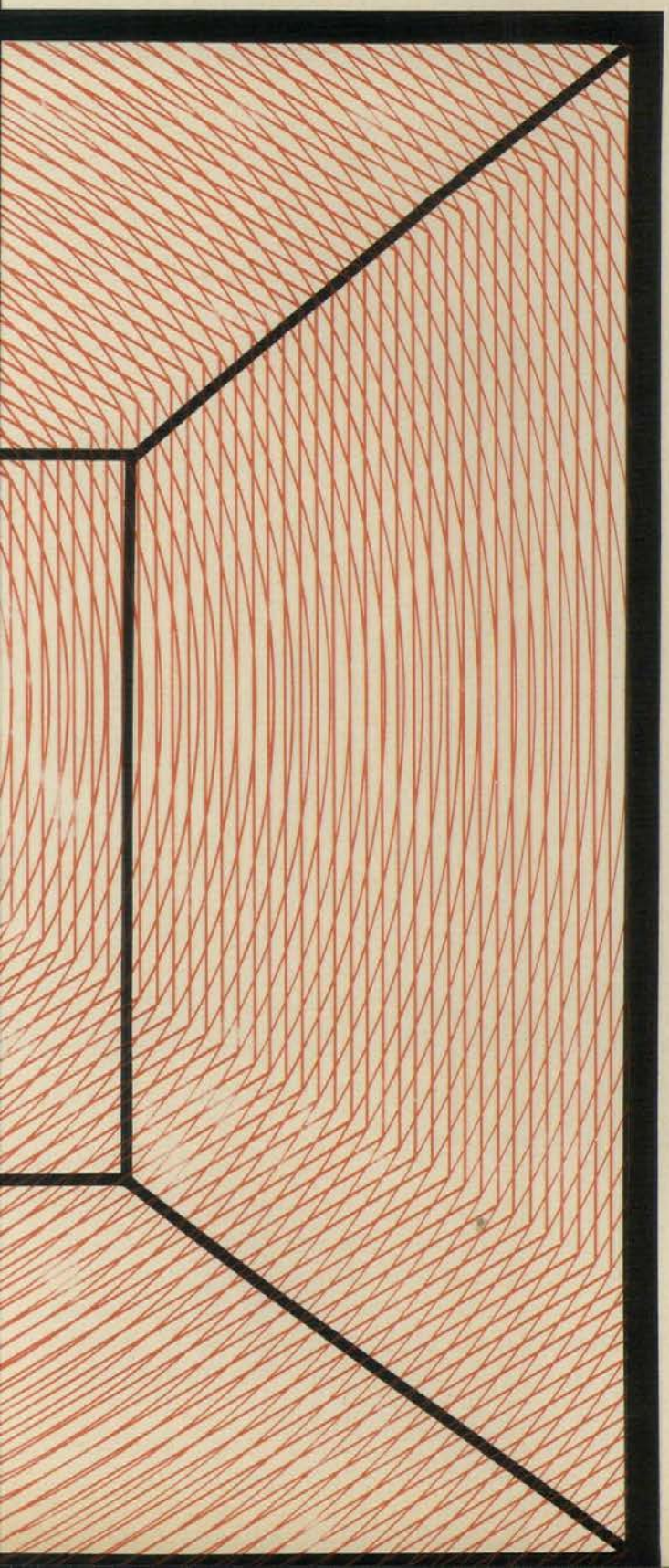

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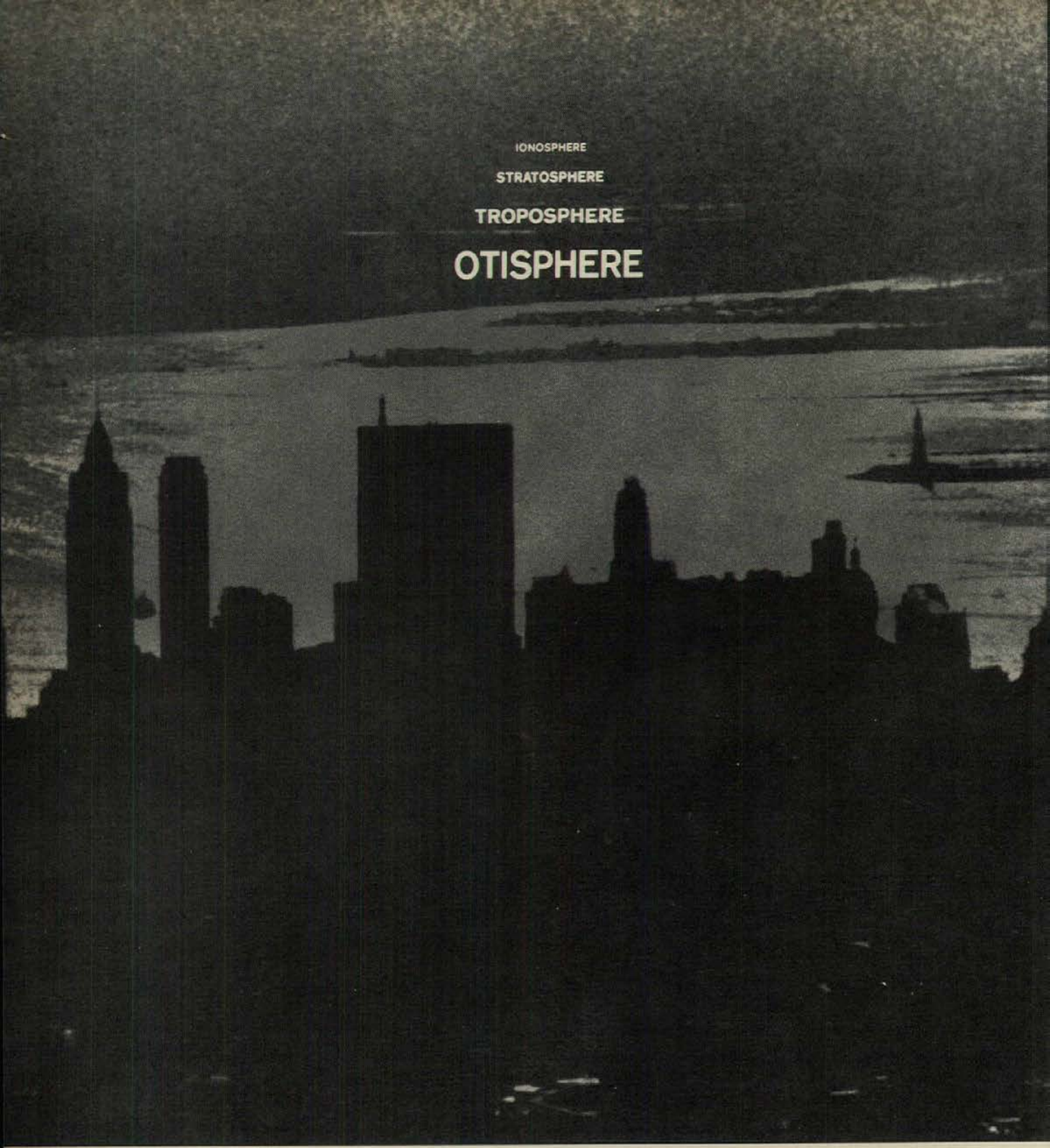

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Architect—Jules Gregory, Lambertville, N.J.
Contractor—Louis Hajdu, Inc., Alpha, N.J.

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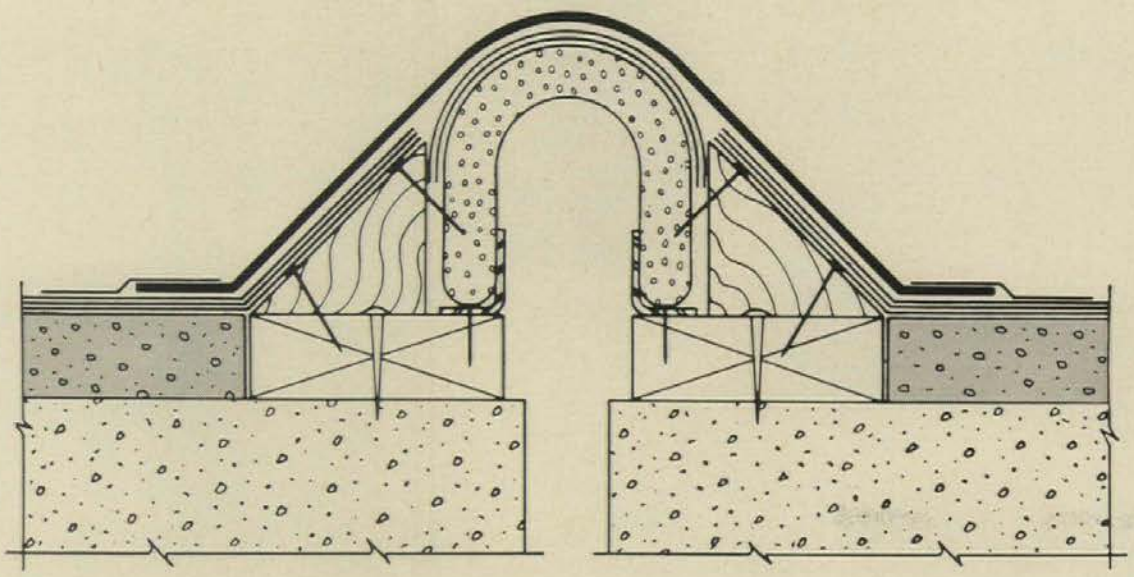

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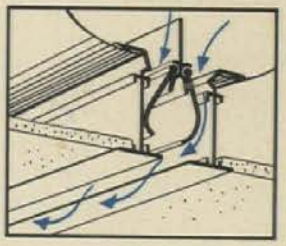
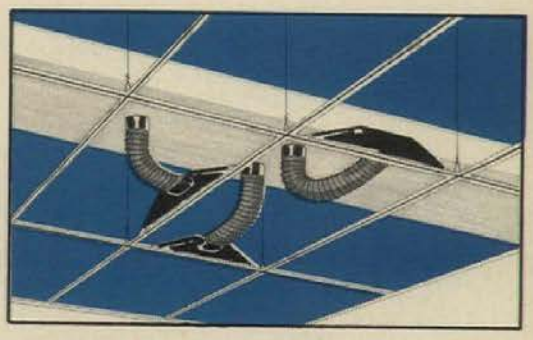
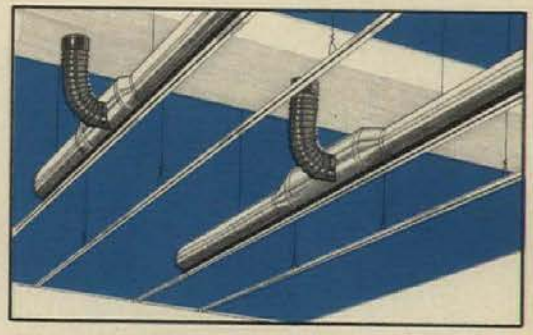




Titus Modular-Type T-LINE shown with Titus Engineered Diffusers which simply plug into Main-T suspension members.



Titus Linear-Type T-LINE shown with round snap-on ducts (air diffusing vanes located in Main-T suspension members.)

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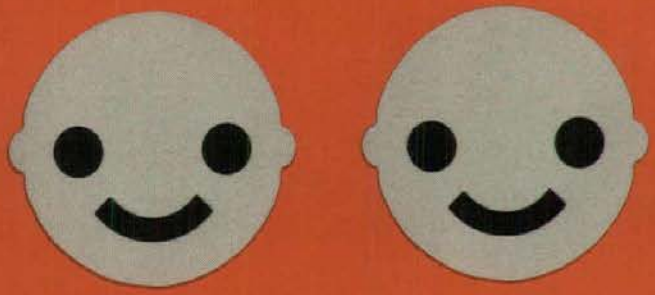

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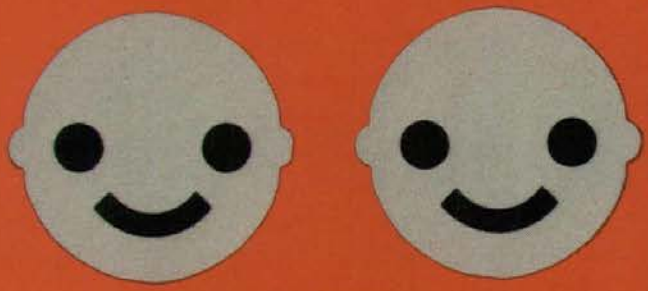

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Freeways: No!

To the delight of many and the despair of some, San Francisco has once again turned down two controversial freeway routes, the Panhandle and the Golden Gate freeways. Each would have affected a large section of the city. And neither would have been more than a partial solution to the traffic problems which plague the city. But there was a strong faction which supported these freeways. It took a lot of emotional, vocal expression to make clear that the freeways were unpopular – unpopular enough to make them an interesting political issue.

It would be nice to think that this unpopularity was due to the unhappy esthetic effect which the freeway routes would have on the city. But it is only realistic to recognize that much of the opposition had little if anything to do with esthetics. The issue was more political than esthetic, more influenced by economics than by planning.

But the fact remains that for the second time in seven years, San Francisco has turned its back on State-imposed routing of freeways and has spurned large federal funds. In so doing it has bought, however dearly, a second chance to do what it—and other cities like it, especially metropolitan cities—should have done in the first place: forge a master transportation plan for the city taking into account people as well as cars, neighborhoods as well as commuters, traffic impact as well as traffic pattern.

"Not who likes what, but why"

One of the esthetic problems in freeways is that there is a basic lack of understanding—or perhaps it is a misunderstanding—of architects by highway engineers, and of highway engineers by architects. At the annual California Street and Highway Conference in January, Wayne Snowden, a research engineer at the University of California's Institute of Transportation and Traffic Engineering, tackled the problem of explaining to highway engineers some of the esthetic aspects of highway design in a paper which he called, paradoxically, "Formulas for Beauty." Paradoxical because he makes it clear that he does not believe that beauty can be had through use of a formula. But he does believe that beauty can be achieved, and he points out a few means to that end:

"Understanding the novelty-familiarity fundamental of visual design provides the only possible basis for responding sensibly to the often-heard criticism that highway overpasses all look like boxes and all look alike. To this writer's eye, none look like boxes, few look alike and many are magnificent. The question, however, is not who likes what, but why. If square legs are replaced by round legs, someone is going to ask why all are round. And if each structure is endowed with a unique form, someone is going to ask why all are different. But if overpasses are conceived as a class, all sharing an identical function, and all sharing a style reflecting the physical standards that serve that function, and if—at the same time—each is conceived as fitting its environment, criticism of the results will be confined to differences in individual tastes and to shortcomings arising from the fact that very few things are done perfectly.

"If they are not done that way, the countryside will be dotted – at great waste of public funds—with curiosities which are mainly designed to counter current fashions in criticism, and which will be more criticized, quite rightly, in years to come. Examples are already in being.

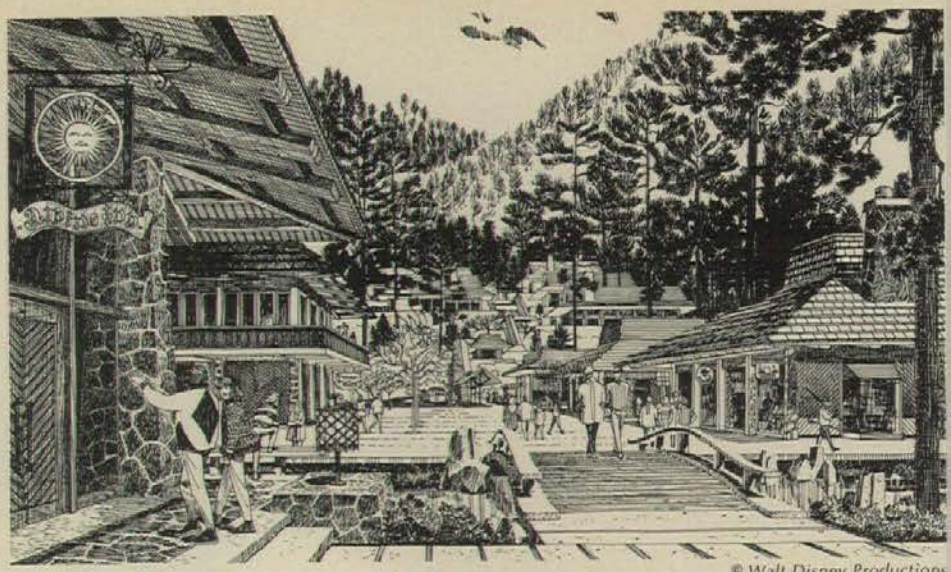
"The real difficulty... is that since the end product of visual design is a feeling or an emotion, its description must be at least partly subjective. This leads to statements which from the engineering viewpoint seem at first glance to be anything from vague to meaningless. If, however, the engineer understands that the visual designer is forced to speak in parables, the message may come through."

Visual beauty and structural beauty can be achieved in one structure, but not without this willingness to understand the aims and methods and language of each of the essential elements. And what goes for highways goes equally for freeways. And for buildings.

—Elisabeth Kendall Thompson

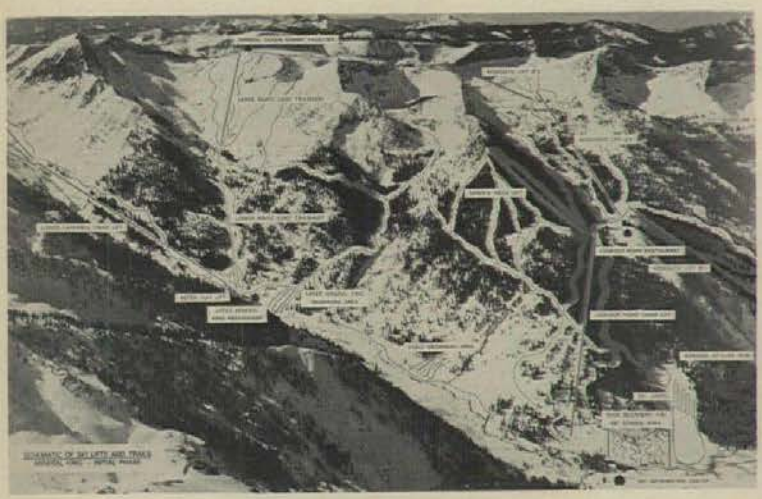
THIS MONTH'S WESTERN REPORTS:

Western Buildings in the News



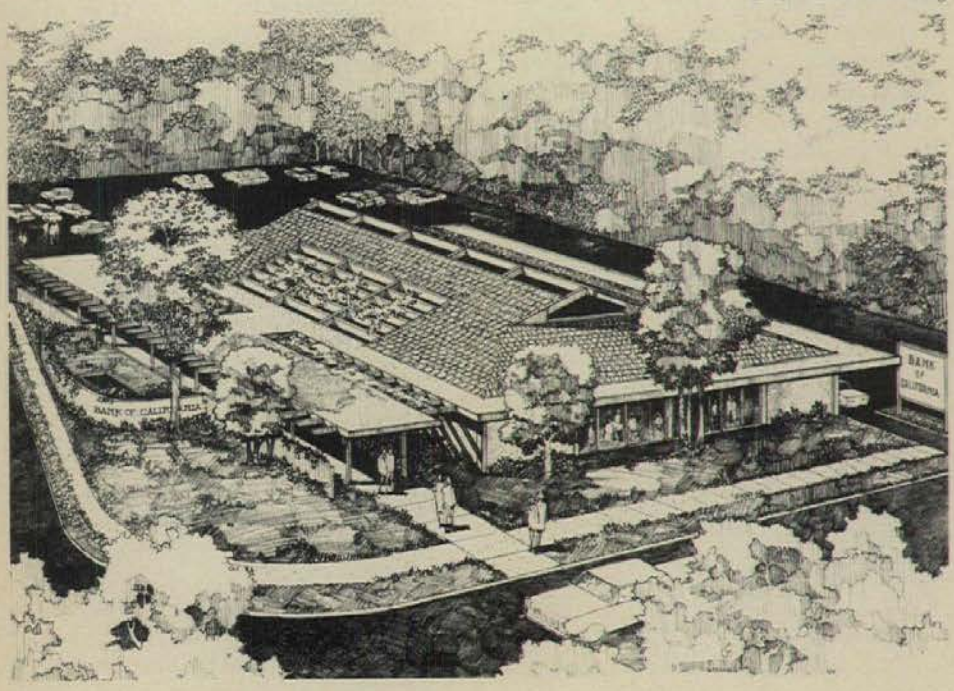
© Walt Disney Productions

Disney wins lease for all-year resort in unspoiled Sierra



Walt Disney has been selected from a field of six bidders to develop the fabulously beautiful, untouched and almost unknown alpine valley of Mineral King in California's High Sierra. The resort—"a recreation project, not an entertainment center," Disney stresses—will be developed on a lease of the land from the National Forest Service, which reviewed the bidders and their proposals. Included in Disney's plans are two large hotels, restaurants, cabins, ice skating rink, shops, conference center, hospital and a heliport. The last is especially important since there is only a one-way summer road into the valley, and even if crash funds were made available for development of an all-year road, it could not be opened for at least five years, according to state officials. Helicopter service would permit winter use of the excellent ski runs and bowls in the High Sierra area. The architects are: Ladd and Kelsey.

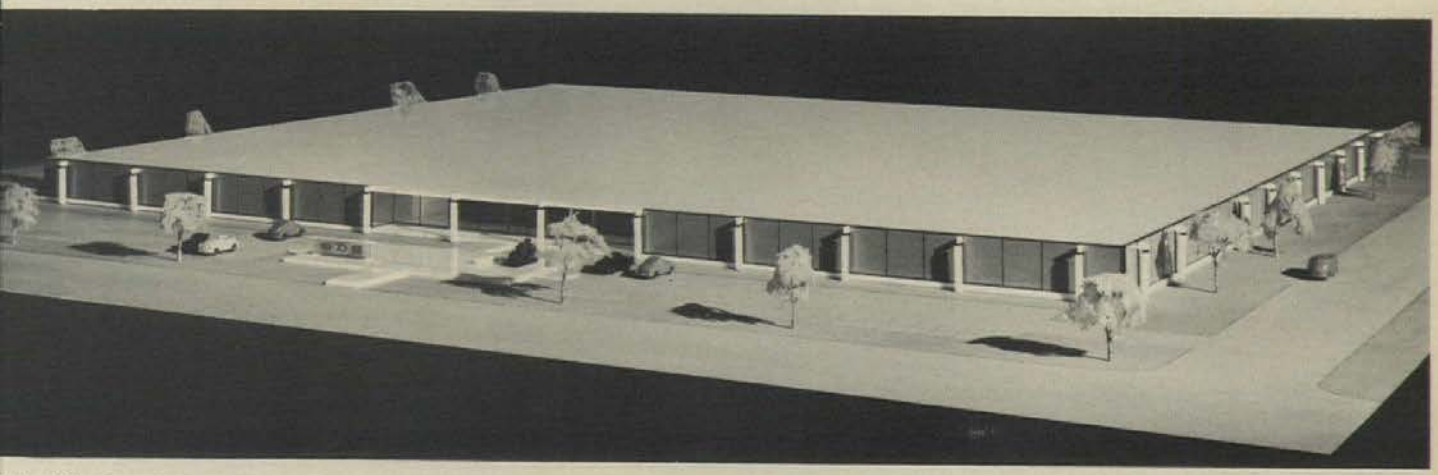
Ernest Burden rendering



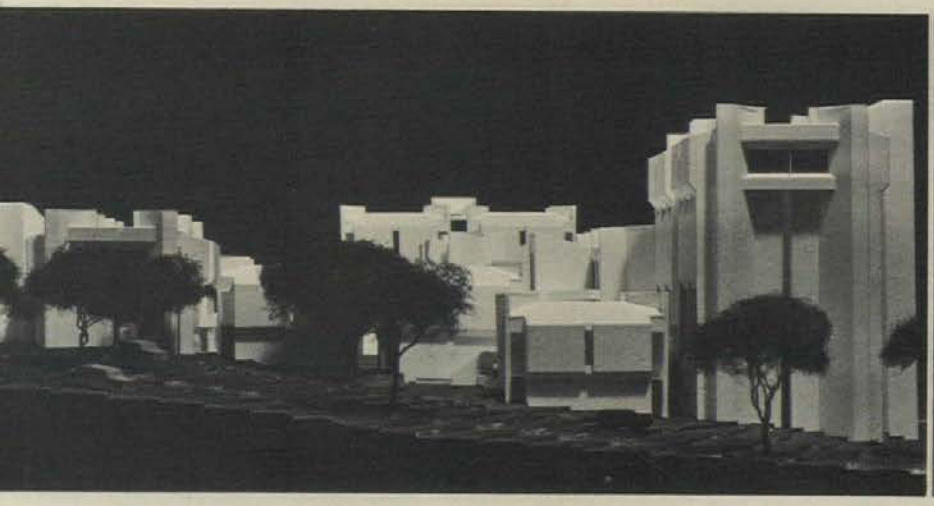
The Sunnyvale branch of the Bank of California reflects the bank's program of inviting informal buildings for its new Bay Area branches. Exposed rough-sawn heavy timbers, stained dark, form the frame. Exterior walls are heavily textured stucco with redwood trim. A well, formed by opening the roof ridge, permits housing the mechanical equipment out of sight, and admits light through clerestory windows to the main banking room. A covered walkway connects with a wood pergola which surrounds the landscaped entry court. Architects: Richard C. Marshall and Chester Bowles, Jr.

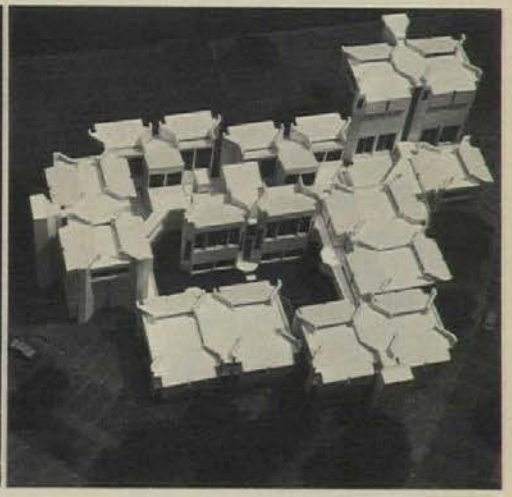
New studios for television station KTLA-5 in the Los Angeles area will provide headquarters for the Golden West Broadcasting Company. Located in North Hollywood, the $4.5-million complex contains executive and operational offices, two 100-square-foot, clear-span studios, and all the attendant facilities for television production. The three-story building has been designed to allow expansion without interruption of production activities. The roof composed of two levels, has a landing pad for the station's helicopter. Architects and engineers: Welton Becket and Associates; contractor: Del S. Webb.

Welton Becket Associates



Scientific Data Systems, Inc. is building the first of several structures which will make up its new plant in El Segundo, California. The one-story building now under way is of tilt-up construction, but with some special features: the exposed aggregate panels are precast with steel channels for forming frames which are left in position to become permanent frames and to simplify connection between panels and at floor-slab and roof-deck junctions. The building has an exposed steel frame. The structure encloses an area equal to four typical city blocks. Designers: Craig Ellwood Associates, Normal N. Rosen, associate architect; structural engineers: Mackintosh and Mackintosh; mechanical engineers: Starnel Engineers; electrical engineers: Sarvasy & Assocs.; contractor: C. L. Peck.





The University of Hawaii will add a new $3.3-million building group to its Manoa (Honolulu) campus to house the College of Business Administration, in accordance with the University's recently announced long-range development plan. The college will consist of a number of closely related structures arranged around an informal court. Open corridors and winding steps will offer varied circulation and unusual spatial experiences throughout the multi-level complex, and cantilevered balconies off classrooms and offices will overlook views of the interior court or of Honolulu. The college is being designed to take a student body of 2,000 by 1975. Architects: long-range plan, John Carl Warnecke & Associates; College of Business Administration, Leo S. Wou & Associates.

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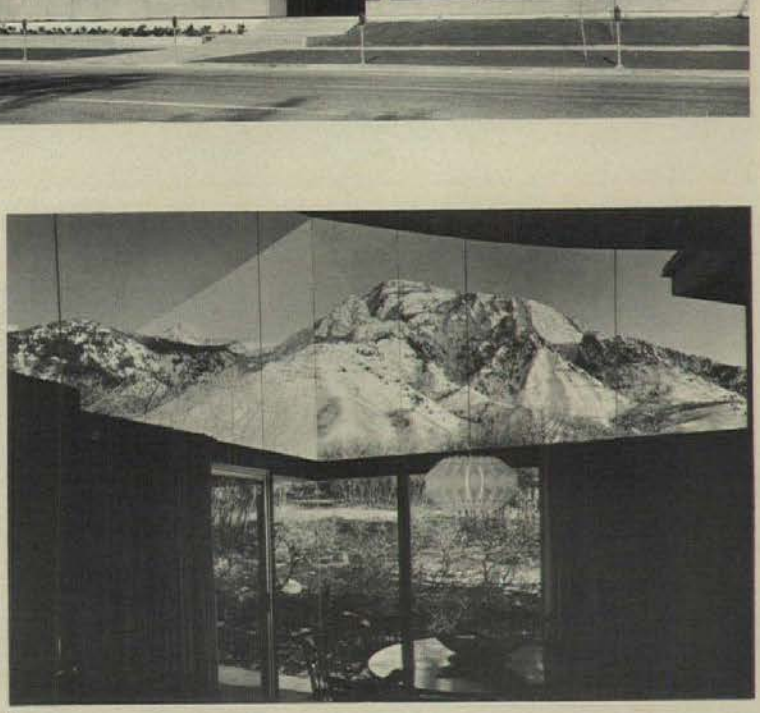

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3

Utah A.I.A. chapter honors ten

Two buildings—a residence and a public library—have won honor awards in the 1966 honors program of the Utah chapter, A.I.A. Four other buildings received merit awards and the jury gave special recognition to four additional buildings: Springville City Hall, Springville, Utah, architects: Dixon and Long; Industry Supply Company, Salt Lake City, architects: Scott and Louie; transmitter building for Radio Station KWIC, Salt Lake City, architect: Boyd A. Blackner; Electro-Ceramics Factory remodeling, Salt Lake City, architects: Brixen and Christopher.

Jury chairman was Claude Stoller of San Francisco. Other jurors were John O. Merrill Jr., and Norman Klein, also San Francisco architects. In common with other recent juries, the jury rendered a report which was evaluative as well as complimentary.

Honor awards: (1) Salt Lake City Public Library. Architects: Edwards and Daniels; structural engineer: Joseph F. Patrick; contractor: Culp Construction Company; (2) Residence, Salt Lake County. Architect: Boyd A. Blackner; contractor: Glendale Zerull. Merit awards: (3) First Security Bank of Utah Cottonwood Branch. Architects: Dean L. Gustavson & Associates; structural engineers: Hoffman C. Hughes, Page and Associates; contractor: Jericho Construction Company; (4) Residence, Salt Lake City. Architect: James W. Christopher of Brixen & Christopher; structural engineer: Edmund Allen; contractor: Ranch Snow Kimball; (5) Logan Avenue Townhouses, Salt Lake City. Architect: Glen Ashton Lloyd; contractor: Research Homes Construction; (6) Western Savings and Loan Company, Portland, Oregon. Architects: Dean L. Gustavson & Associates; R. Evan Kennedy; contractor: Teeples & Thatcher, Inc.

Ramon Winegar

4

5

Ansil Photos

6

Douglas Bliven

El Centro City Hall. Architects: Bryant, Jehle & Assocs.; contractor: Cotton Construction Corp.

George Lyons

Ryan Library, California Western University. Architects: Richard J. Lareau & Associates; structural engineers: A. J. Blaylock & Associates; contractor: T. A. Stanfield Company.

George Lyons

Bureau of Fisheries Oceanography Building, La Jolla. Architects and engineers: Frank L. Hope & Associates; contractor: M. H. Golden Construction Company.

Buildings win honors for concrete design

Seven buildings in the San Diego area have been selected for honors by the Portland Cement Association for their "unusual design ideas, structural innovations and construction techniques." The awards are the first in a new program intended by the Association to "recognize architects, engineers and contractors and to honor and promote progressive architecture, quality construction and new building techniques."

In addition to the buildings seen, the following were also honored: Center City Parking Structure, San Diego. Architects: Tucker, Sadler & Bennett; prestress consultant: James R. Libby & Associates; contractors: F. E. Young Construction Company.

Hillcrest North Medical Center, San Diego. Architects: Deems, Lewis, Martin & Associates; structural engineers: A. J. Blaylock & Associates; prestress consultant: James R. Libby & Associates; contractors: Peter Kiewit and Sons Construction Company.

Southwestern College, Chula Vista. Architect: George D. Foster; structural engineer: John Ruskin; contractors (joint venture): O. L. Carpenter, G. L. Cory, Cotton Construction Corporation.

La Jolla Branch, San Diego Trust & Savings Bank. Architects: Robert Mosher and Roy Drew; structural engineer: George R. Saunders; contractor: C. A. Larsen Construction Co.

WESTERN TOPICS

FLW's Marin court house under way

Two sets of bids had to be called for on the court house in Marin Center, north of San Francisco, because of a possible irregularity in one of the first bids, but the problems were ironed out and the second phase of the Center, which was one of Frank Lloyd Wright's last designs, finally got under way by mid-February. The irregularity was due to a first-round bidder having failed to list all subcontractors whose work would exceed one-half of 1 per cent of the total bid, as required by California law. The bidder argued that his firm was qualified to do the work and therefore did not require subs. Since the low bid was over the architects' estimate by 5 per cent, the county threw out all bids, cut down some of its requirements and reissued its call for bids. On the second round, the first low bidder came in high, the first high bidder was low.

The contract for $8,959,560 went to Robert E. McKee Corp. of South San Francisco. William Wesley Peters of Taliesin Associated Architects, and Aaron Green of San Francisco, associate architect, have carried on the work since Mr. Wright's death.

WESTERN EVENTS

MAY

21-22 "Creative Arts—the Living Culture of California." Presented by California State Arts Commission. St. Francis Hotel, San Francisco.

26-28 Urban Design Short Course West, 1966 Workshop, sponsored by American Institute of Architects. College of Environmental Design, University of California, Berkeley. Further information from University Extension, 2223 Fulton Street, Berkeley, California.

JUNE

3-5 Second annual conference, Parking Area Improvement Association. Doric Motor Hotel, Los Angeles.

7-9 Eighth annual Pacific Coast Builders Conference. Fairmont Hotel, San Francisco.

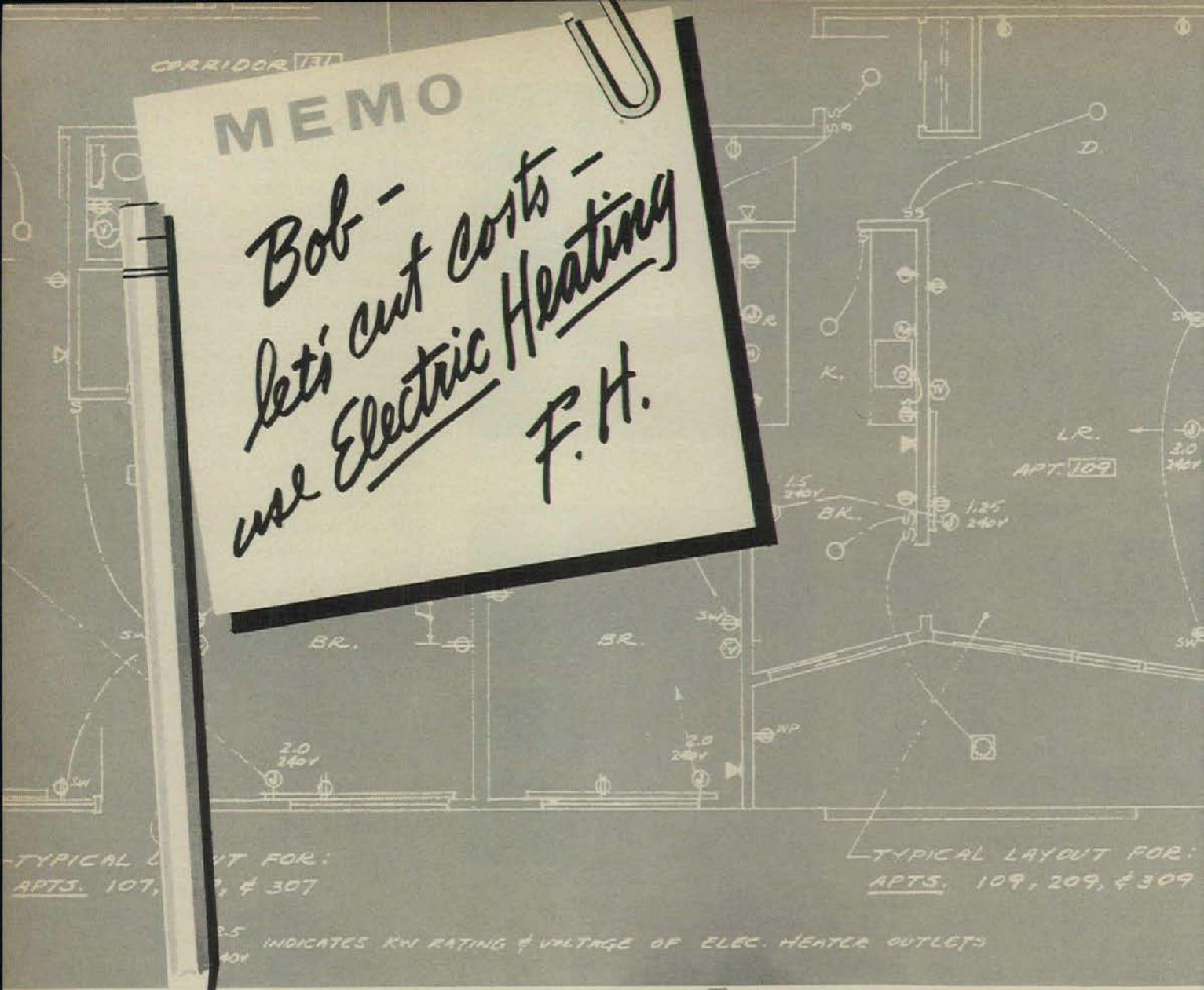
11 Opening, Oriental Wing, M. H. de Young Museum. Golden Gate Park, San Francisco.

15-16 Third annual Forest Industries Marketing Conference. Forest Industries Management Center, School of Business Administration, University of Oregon, Eugene, Oregon.

19-24 International Design Conference. Aspen, Colorado.

24-26 National Convention, Association of Collegiate Schools of Architecture. Hilton Hotel, Denver.

26-July 1 National convention, American Institute of Architects. Hilton Hotel, Denver.



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100,000 Volumes.
Architects: Austin, Field and Fry, Los Angeles.

NEVADA

University of Nevada, Reno, Nevada.
400,000 Volumes. The Noble H. Getchell Library
Architects: David Vhay, Reno; Robt. E. Alexander, Los Angeles.

OREGON

Oregon State University, Corvallis, Oregon.
510,000 Volumes. The William Jasper Kerr Library.
Architects: Martin & Hamlin, Eugene, Oregon.

UTAH

Brigham Young University
1,000,000 Volumes.
Architect: Lorenzo S. Young, Salt Lake City, Utah.

WASHINGTON

Central Washington College of Education, Ellensburg, Wash.
225,000 Volumes.
Architects: Bassetti & Morse, Seattle, Washington.

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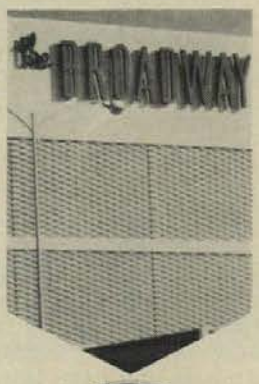
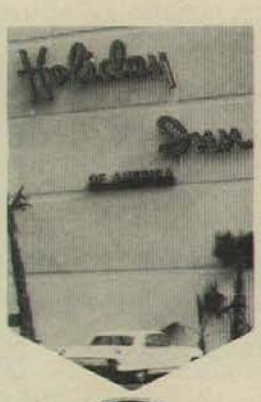
We've handed out quite a few "medals" lately.



Broadway Department Store
Whittier, California
Architect:
Charles Luckman Associates



Holiday Inn
Montebello, California

140 West Building
Covina, California
Architect:
David Jacobson, Jr.

First Federal Savings Building
San Marino, California
Architect:
Robert Clements Associates

Medical Building
4155 Outer Circle Drive
Long Beach, California
Architect: Richard O. Prior

Fontana City Hall
Fontana, California
Architect:
Grover W. Taylor

The word about all-electric buildings must be getting around.

Last year we gave out more than 1000 All-Electric Building Awards in Southern California (including the six "medal winners" above).

These latest all-electric buildings combine heating, lighting and air conditioning, which saves plumbing, ducting and space.

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Southern California Edison

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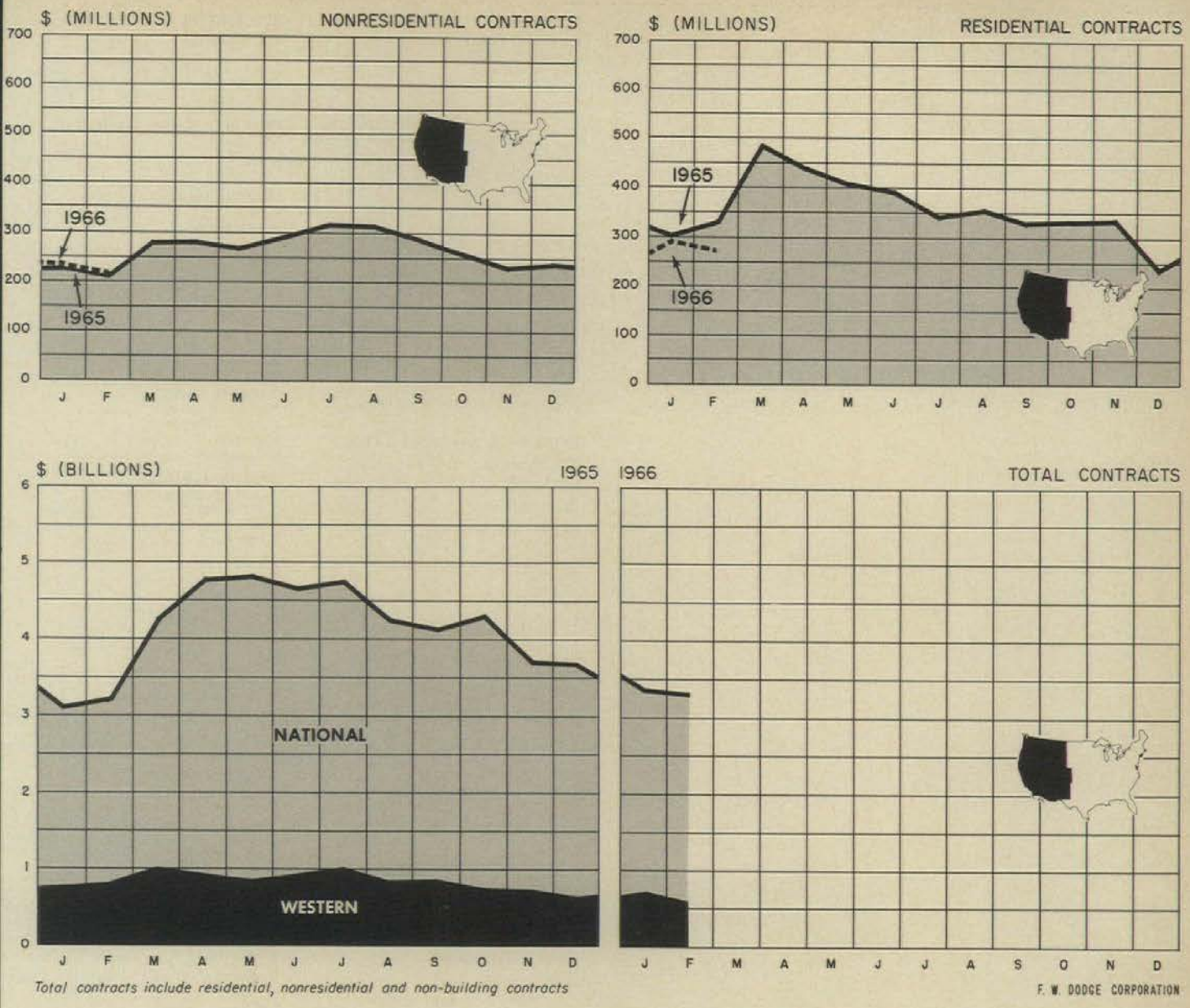

Total contracts include residential, nonresidential and non-building contracts

F. W. DODGE CORPORATION

Western construction trends

FOR ANALYSIS OF CONSTRUCTION TRENDS NATIONWIDE SEE PAGE 44

Construction activity in the 11 Western states experienced what must be called a major setback during February. Minus signs were the order of the day, as the value of construction contracts totaled only $616 million, a figure 24 per cent below a by-no-means-exceptional February 1965.

Most of the loss resulted from a huge decline—minus 53 per cent— in the nonbuilding category, last year's high flyer. The torrent of large projects that made 1965 such an exceptional year for nonbuilding construction in the West (by this time last year there were $187 million worth of projects individually valued at $10 million and over) has been reduced to one $16 million droplet so far in 1966, and that occurred in January.

A healthy 4 per cent gain in the nonresidential building category added some luster to the Western picture in February. The $215 million worth of nonresidential building contracts was primarily a reflection of the sharp gains made by the business-oriented components, commercial and manufacturing.

The West's economy, heavily dependent on the fortunes of the aerospace industry, has responded quite favorably to the recent turn-around in this vital area. Between late 1962 and the first quarter of 1965, Western aerospace firms, suffering from sharp cutbacks in government contracts, reduced their total work force by some 15 per cent. Approximately half of this decline had been restored by the end of last year, however, as a flood of private orders, mainly for commercial jets, moved in to plug the gap.

The effects of these and similar events have been filtering through the West's economy for several months now, creating a business climate that is much different from the one that existed a year ago. A key indicator of an economy's performance, the number of persons unemployed, has declined nearly 17 per cent in the 11-state region since February, 1965.

These more buoyant economic conditions will certainly exert a direct upward pressure on commercial and manufacturing contracts in the months ahead, and have indirect effects on those building types more remotely related to business conditions. Residential construction is another question, however. Here, the effects of the credit tightening loom large as a negative factor. The February figure for residential contract value, down 18 per cent from the year-ago month, is certainly not encouraging, but the first quarter of 1965 was last year's strongest for Western housing. The picture will become clearer as the year unfolds.

James E. Carlson, Associate Economist
F. W. Dodge Company,
A Division of McGraw-Hill, Inc.

Estimator's Guide: San Francisco Bay Area The Southwest

The Estimator's Guide alternates monthly among four Western areas. The prices at right are compiled from average quotations received by LeRoy Construction Services for commercial work of approximately $100,000-$250,000 total value. Except as otherwise noted, prices are for work installed including all labor, material, taxes, overhead and subcontractors' profit. Material prices include local delivery except as noted, but no state or local taxes.

EXCAVATION

MACHINE WORK IN COMMON GROUND

Large basement ..... CY .80-1.10
Small pits ..... CY 1.20-1.90
Trenches ..... CY 1.75-2.50

HAND WORK IN COMMON GROUND

Large pits & trenches ..... CY 8.00-12.00
Small pits & trimming ..... CY 12.00-16.00
Hard clay or shale, 2 times above rates.
Shoring, bracing & disposal of water not included.

SEWER PIPE MATERIALS

VITRIFIED

Standard 4" ..... LF .33
Standard 6" ..... LF .63
Standard 8" ..... LF .92
Standard 12" ..... LF 2.03
Standard 24" ..... LF 8.12

CLAY DRAIN PIPE

Standard 6" ..... LF .32
Standard 8" ..... LF .46

Rate for 100 LF FOB Warehouse

CONCRETE & AGGREGATES

GRAVEL, all sizes ..... TON 3.75

TOP SAND ..... TON 4.00

CONCRETE MIX ..... TON 4.10

CRUSHED ROCK

¼" to ¾" ..... TON 4.00
¾" to 1½" ..... TON 4.00
Lightweight aggregate ..... CY 10.75

ROOFING GRAVEL ..... TON 4.10

SAND (#1 & 2) ..... TON 5.00

CEMENT

Common, all brands (paper sacks)
Small quantities ..... Per Sack 1.40
Large quantities ..... Per Bll 4.45
Atlas White ..... Per Sack 3.80

Concrete Mix

6 sacks in 5-cy loads ..... Per Cy 15.65
Lightweight 105# cy ..... Per Cy 19.80

CURING COMPOUND

Clear, 5-gal drums ..... Per Gal 1.45

STEEL MATERIALS

SHEETS

Hot rolled ..... LB .11
Cold rolled ..... LB .12
Galvanized ..... LB .12

PLATE ..... LB .11

STRIPS ..... LB .13

STRUCTURAL SHAPES ..... LB .115

BARS

Hot rolled ..... LB .11
Cold finished ..... LB .15
Reinforcing ..... LB .105

REINFORCING MESH

6 x 6" #10 x #10 ..... SF .04
6 x 6" #6 x #6 ..... SF .07

2000# FOB Warehouse

STRUCTURAL STEEL

$375.00 and up per ton erected when out of mill.
$400.00 and up per ton erected when out of stock.

BRICK & BLOCK

BRICKS

Common 2⅛ x 3¾ x 8¼" ..... M 59.00
Jumbo 3⅛ x 3 x 11⅛" ..... M 103.00
Roman Red 3 x 2 x 11⅛" ..... M 84.00
Norman Red 3 x 2⅛ x 11⅛" ..... M 87.50
Norman Buff ..... M 116.00
Antique (used) Brick ..... M 69.50
Paving Brick ..... M 90.00

MANTEL FIRE BRICK

2⅛ x 9½ x 4½" ..... M 142.00

GLAZED STRUCTURAL UNITS

2 x 6 x 12" Furring ..... SF .60
4 x 6 x 12"—1 side ..... SF .91
6 x 6 x 12"—1 side ..... SF 1.32
4 x 6 x 12"—2 sides ..... SF 1.00
Add For Color ..... SF .25

CONCRETE BLOCKS

4 x 8 x 16" ..... EA .23
6 x 8 x 16" ..... EA .29
8 x 8 x 16" ..... EA .34
12 x 8 x 16" ..... EA .51
Add for color ..... EA .02

AGGREGATE

Haydite or Basalite
All sizes in bulk ..... CY 6.80

BRICKWORK & MASONRY

BRICK WALLS

Back Up Common 8" ..... SF 2.70
Back Up Common 12" ..... SF 3.80
Back Up Jumbo 4" ..... SF 1.10
Grouted Walls 10" ..... SF 3.60

CONCRETE BLOCK, REINFORCED

6" walls ..... SF 1.75
8" walls ..... SF 1.90
12" walls ..... SF 2.40

GLAZED STRUCTURAL UNITS

Facing 2" ..... SF 2.20
Partition 4" ..... SF 2.65
Partition 6" ..... SF 4.40

BRICK VENEER

4" Select Common ..... SF 1.60
4" Roman ..... SF 2.10
4" Norman ..... SF 2.10
3" Jumbo ..... SF 1.30

BUILDING PAPERS & FELTS

BUILDING PAPER

1 ply per 1,000-ft roll 4.20
2 ply per 1,000-ft roll 6.40
3 ply per 1,000-ft roll 8.75
Sisalkraft, reinforced, 500-ft roll 9.50

SHEATHING PAPERS

Asphalt sheathing, 15-lb
324 SF roll 2.17
30-lb 216 SF roll 2.93
Dampcourse, 216-ft roll 3.30

FELT PAPERS

Deadening felt, ¾-lb, 50 s.y. roll 3.00
1-lb, 50-s.y. roll 3.50

ROOFING PAPERS

Standard grade, smooth surface
432 SF roll,
Light, 45-lb 2.20
Medium, 55-lb 2.63
Heavy, 65-lb 2.85
Mineral surfaced 216 SF Roll 3.50

LUMBER

DOUGLAS FIR

Construction 2x4-2x10 MBM 98.00-106.00
Standard ....2x4-2x10 MBM 95.00-100.00
Utility .....2x4-2x10 MBM 80.00- 88.00
Economy ...2x4-2x10 MBM 60.00- 70.00
Clear, air dried ..... MBM 200.00-240.00
Clear, kiln dried .... MBM 235.00-270.00

REDWOOD

Foundation grade ... MBM 135.00-145.00
Construction Heart .. MBM 120.00-130.00
A Grade ..... MBM 230.00-270.00
Clear Heart ..... MBM 260.00-290.00

PLYWOOD (DOUGLAS FIR) **MSF**

¼" AB ..... MSF 90.00
¼" AD ..... MSF 70.00
¼" Ext. waterproof ..... MSF 77.00
⅜" AB ..... MSF 105.00
⅜" AD ..... MSF 95.00
⅜" CD ..... MSF 70.00
½" AB ..... MSF 140.00
½" AD ..... MSF 120.00
½" CD ..... MSF 91.00
⅝" AB ..... MSF 156.00
⅝" AD ..... MSF 136.00
⅝" CD ..... MSF 102.00
¾" AB ..... MSF 178.00
¾" AD ..... MSF 158.00
¾" CD ..... MSF 135.00
⅛" Plyform ..... MSF 170.00

SHINGLES **Square**

Cedar #1 ..... Square 17.00-19.00
Cedar #2 ..... Square 14.00-17.00

SHAKES

Cedar
½" to ¾" butt ..... Square 19.00-22.00
¾" to 1¼" butt ..... Square 21.00-24.00
Redwood
¾" to 1¼" butt ..... Square 21.00-24.00

INSULATION & WALL BOARD

FOB Warehouse

FIBRE GLASS INSULATION

foil backed **Per M SF**

1½" thick 40.75
2½" thick 48.75
3½" full thick 58.75

SOFTBOARDS—wood fiber

½" thick 60.00
¾" thick 128.50

ALUMINUM INSULATION

35# Kraft paper with alum. foil
1 side only 24.00
2 sides 30.00

HARDBOARDS—wood fiber
¼" thick, sheathing 58.00
3/16" thick, sheathing 71.00
¼" thick, sheathing 85.00
¼" thick, tempered 80.00
3/16" thick, tempered 105.00

CEMENT ASBESTOS BOARD
⅛" flat sheets 145.00
3/16" flat sheets 190.00
¼" flat sheets 255.00

ROUGH CARPENTRY

FRAMING
Floors .....BM .25-.30
Walls .....BM .31-.37
Ceilings .....BM .34-.42
Roofs .....BM .28-.32
Furring & blocking .....BM .42-.64
Bolted framing, add 50%

SHEATHING
1 x 8" straight .....BM .23-.29
1 x 8" diagonal .....BM .26-.31
5/16" plyscord .....SF .19-.24
⅜" plywood CC .....SF .27-.32

SIDING
1 x 8" bevel .....BM .45-.50
1 x 4" V-rustic .....BM .50-.60
Bolted framing, add 50%

DAMPROOFING & WATERPROOFING

MEMBRANE
1 layer 50-lb. felt .....SQ 10.00
4 layers dampcourse .....SQ 15.00
Hot coat walls .....SQ 9.00
Tricosal added to concrete ....CY 1.00
Anti-Hydro added to concrete..CY 1.50

ROOFING

STANDARD TAR & GRAVEL **Per Sq**
4 ply 17.00-22.00
5 ply 19.50-25.00
White gravel finish–Add..... 2.00- 4.00
Asphalt compo. shingles 20.00-24.00
Cedar shingles 24.00-28.00
Cedar shakes 27.00-33.00
Concrete tiles 45.00-65.00
Clay tiles 50.00-80.00

SHEET METAL

ROOF FLASHINGS
18 ga galv steel .....SF .85-1.25
22 ga galv steel .....SF .75-1.15
26 ga galv steel .....SF .65-1.05
18 ga aluminum .....SF 1.30-1.80
22 ga aluminum .....SF 1.10-1.25
26 ga aluminum .....SF 1.00-1.15
24 oz copper .....SF 2.45-2.85
20 oz copper .....SF 2.15-2.55
16 oz copper .....SF 1.85-2.35
26 ga galv. steel
4" OG gutter .....LF 1.20-1.45
Mitres and Drops .....EA 2.00-4.00
22 ga galv. louvers
22 oz copper louvers

CHIMNEYS, PATENT

FOB Warehouse
6" .....LF 1.45
8" .....LF 2.05
10" .....LF 2.85
12" .....LF 3.50
Rates for 10-50 LF

MILLWORK

All Prices FOB Mill
D.F., clear,
air dried S4S ... MBM 220.00-250.00
D.F., kiln dried S4S.. MBM 225.00-275.00

DOOR FRAMES & TRIM
Residential entrance .....17.00 & up
Interior room entrance ..... 9.00 & up

DOORS
1⅜" hollow core ..... 8.00 & up
1¾" solid core .....19.00 & up
1¾" Birch hollow core.....10.00 & up
1¾" Birch solid core.....22.00 & up

WOOD SASH
D/H in pairs (2 lts).....SF .55
Casement (1 lt) .....SF .65

WOOD CABINETS
¾" D.F. plywood with
¼" plywood backs:
Wall hung .....LF 10.00-15.00
Counter ..... LF 12.00-17.00
Birch or maple, add 25%

FINISH CARPENTRY

EXTERIOR TRIM
Fascia and molds ..... BM .50-.60

ENTRANCE DOORS & FRAMES
Single ..... 60.00 & up
Double .....100.00 & up

INTERIOR DOORS & FRAMES
Singles .....36.00 & up
Pocket sliding .....46.00 & up
Closet sliding (Pr.).....52.00 & up

WINDOWS
D/H sash & frames .....SF 2.00 & up
Casement sash & frames....SF 2.30 & up

SHELVING
1 x 12 S4S .....BM .30-.50
¾" plywood .....SF .40-.60

STAIRS
Oak steps, D.F. risers
Under 36" wide .....Riser 14.00
Under 60" wide .....Riser 19.00
Newel posts and rail extra

WOOD CASES & CABINETS
D.F. wall hung .....LF 15.50-20.60
D.F. counters .....LF 18.50-25.75

HARDWOOD FLOORING MATERIALS

OAK 5/16" x 2" STRIP
Clear .....M 195.00
Select .....M 190.00
#1 Common .....M 180.00

OAK 5/16" RANDOM PLANK
Select & better .....M 285.00
#1 Common .....M 235.00

OAK 25/32" x 2-1/4" T&G
Select .....M 260.00
#1 Common .....M 235.00

MAPLE 25/32" x 2¼" T&G
#1 Grade .....M 305.00
#2 Grade .....M 280.00
#3 Grade .....M 230.00

NAILS—1" FLOOR BRADS ....KEG 18.00

HARDWOOD FLOORS

Select Oak
Filled, sanded, stained and varnished
5/16" x 2¼" strip .....SF .50- .55
5/16" random plant .....SF .60- .65
½" x 2" strip .....SF .65- .75
25/32" x 2¼" T&G .....SF .75- .90

MAPLE
2nd grade and better
Filled, sanded, stained & varnished
25/32" x 2½" T&G .....SF .85-1.00
Wax finish, add.....SF .10
Dark stains, add .....SF .05

RESILIENT FLOORING MATERIALS

Linoleum, standard gage ....SY 2.65-2.85
Linoleum, battleship .....SY 2.95-3.10
⅛" Asphalt tile, dark .....SF .10- .11
⅛" Asphalt tile, light .....SF .14- .16
⅛" Rubber tile .....SF .40- .44
.080 Vinyl tile .....SF .55- .65
.080 Vinyl Asbestos tile.....SF .18- .19
⅛" Vinyl tile .....SF .78- .82
4" base, black .....LF .10- .11
4" base, colored ..... LF .11- .15
Rubber treads .....LF 1.60-2.30
Linoleum paste .....GAL .75- .90

FLOORS

⅛" Asphalt tile, dark colors..SF .23- .28
⅛" Asphalt tile, light colors SF .25- .30
¼" Rubber tile .....SF .60- .70
.080 Vinyl asbestos tile .....SF .35- .40
.080 Vinyl tile .....SF .75- .85
Linoleum, standard gage....SY 3.75-4.25
Linoleum, battleship .....SY 5.25-5.75
4" Rubber base .....LF .25- .35
Rubber stair treads .....LF 2.25-2.75

LATH & PLASTER MATERIALS

METAL LATH
Diamond 3.4# copper-bearing....SY .49
Ribbed 3.4# copper-bearing .....SY .53

ROCK LATH
⅜" thick .....SY .36

METAL
¾" Standard channel .....LF .038
1½" Standard channel .....LF .053
3¼" Steel studs .....LF .088
4" Steel studs .....LF .098
Stud shoes .....EA .03

PLASTER
Browning, hardwall .....Sack 1.58
Finish, hardwall .....Sack 1.75
Stucco .....Sack 2.50

LATH & PLASTER WORK

CHANNEL FURRING
Suspended ceilings .....SY 3.10-3.35
Walls .....SY 2.90-3.25

METAL STUD PARTITIONS
3¼" studs .....SY 3.15-3.45
4" studs .....SY 3.30-3.60
Over 10-0 high, add .....SY .25- .35

3.4# METAL LATH & PLASTER
Ceilings .....SY 4.60-5.40
Walls ..... SY 4.70-5.50
Keene's cement finish, add..SY .45- .65

ROCK LATH & PLASTER
Ceilings .....SY 3.45-3.95
Walls .....SY 3.55-4.05

WIRE MESH & ⅞" STUCCO
Walls .....SY 4.60-5.80

STUCCO ON CONCRETE
Walls .....SY 3.50-4.00
Metal accessories .....LF .25- .55

DRYWALL

METAL STUD PARTITIONS
1⅝" studs ..... .28
2½" studs ..... .31
3⅝" studs ..... .37

DRYWALL
½" Nailed on ..... .125
½" Screwed on ..... .145
⅝" Nailed on ..... .155
⅝" Screwed on ..... .19
Tape joints ..... .05

TILE MATERIALS

FOB Warehouse
CERAMIC TILE
4¼ x 4¼" glazed.....SF .72
4¼ x 4¼" hard glazed .....SF .74
Random, unglazed .....SF .72
6 x 2" cap .....EA .31
6" cove base .....EA .31
¼" round bead .....LF .18

QUARRY TILE
6 x 6 x ½" red .....SF .51
6 x 6 x ¾" red .....SF .53
6 x 9 x ¾" red .....SF .65
6 x 6" cove base .....EA .23

TILE & TERRAZZO WORK

CERAMIC TILE, stock colors
Floors .....SF 1.90-2.30
Walls .....SF 2.00-2.50
Cove base .....LF 1.25-1.60

QUARRY TILE
6 x 6 x ½" floors .....SF 1.80-2.20
9 x 9 x ¾" floors .....SF 1.95-2.40

TERRAZZO
Terrazzo floors .....SF 2.15-2.65
Cond. Terrazzo floors.....SF 2.30-2.80
Precast treads & risers .....LF 3.60-4.60
Precast landing slabs .....SF 3.00-4.10

WINDOWS

STEEL SASH
Under 10 SF .....SF 2.50 & up
Under 15 SF .....SF 2.00 & up
Under 20 SF .....SF 1.50 & up
Under 30 SF .....SF 1.00 & up

ALUMINUM SASH
Under 10 SF .....SF 2.75 & up
Under 15 SF .....SF 2.25 & up
Under 20 SF .....SF 1.75 & up
Under 30 SF .....SF 1.25 & up
Above rates are for standard sections and stock sizes, FOB Warehouse

GLASS—CUT TO SIZE

FOB Warehouse
SSB Clear, aver 4 SF .....SF .17
DSB Clear, aver 7 SF .....SF .28
Crystal, aver 16 SF ..... SF .35
¼" Polished plate, aver 50 SF..... SF .90
⅛" Obscure, aver 7 SF .....SF .35
⅛" Ribbed, aver 7 SF .....SF .45
⅛" Rough, aver 7 SF .....SF .45
¼" Wire plate, clear, aver 40 SF ..SF 1.90
¼" Wire plate, rough, aver 40 SF..SF .90
⅛" Heat absorbing, aver 7 SF.....SF .90
¼" Tempered plate, aver 40 SF.. SF 3.60
½" Tempered plate, aver 40 SF.. SF 6.40

GLASS BLOCKS
6" .....EA .70
8" .....EA 1.15
12" .....EA 3.10

GLASS & GLAZING

SSB Clear .....SF .55
DSB Clear .....SF .80
Crystal .....SF .95
¼" Plate.....SF 2.00
⅛" Obscure .....SF .80
⅛" Heat absorbing .....SF 1.35
¼" Tempered plate .....SF 4.75
½" Tempered plate .....SF 9.00
¼" Wire plate, clear .....SF 2.90
¼" Wire plate, rough .....SF 1.50

PAINT MATERIALS

All prices FOB Warehouse
Thinners 5-100 gal .....Gal .63
Turpentine 5-100 gal .....Gal 1.59
Linseed oil, raw .....Gal 2.36
Linseed oil, boiled .....Gal 2.43
Primer-sealer .....Gal 3.12
Enamel undercoaters .....Gal 5.54
Enamel .....Gal 5.58
White lead in oil .....LB .36
Red lead in oil .....LB .36
Litherage .....LB .32

PAINTING

EXTERIOR
Stucco wash,
1 coat .....SY .48
2 coats .....SY .80
Lead & Oil,
2 coats .....SY 1.10
3 coats .....SY 1.60

INTERIOR
Primer-sealer .....SY .45
Wall paint,
1 coat .....SY .54
2 coats .....SY .98
Enamel,
1 coat .....SY .65
2 coats .....SY 1.14
Doors & trim .....EA 14.00
Sash & trim .....EA 16.00
Base & molds .....LF .18
Old work, add 15-30%

VENETIAN BLINDS

RESIDENTIAL .....SF .45 & up
COMMERCIAL .....SF .55 & up
VERTICAL .....SF 1.25 & up

PLUMBING

Lavatories .....EA 250.00-300.00
Toilets .....EA 310.00-400.00
Bath tubs .....EA 370.00-400.00
Stall shower .....EA 200.00-250.00
Sinks .....EA 240.00-300.00
Laundry trays .....EA 135.00-200.00
Water heaters .....EA 125.00-385.00
Prices based on average residential and commercial work. Special fixtures and excessive piping not included.

HEATING

Furnaces—Gas-Fired, Average Job
FLOOR FURNACE
25,000 BTU .....EA 130.00-155.00
35,000 BTU 140.00-165.00
45,000 BTU .....EA 160.00-185.00
Automatic control,
add .....EA 36.00- 45.00

DUAL WALL FURNACE
25,000 BTU .....EA 170.00-200.00
35,000 BTU .....EA 177.00-210.00
50,000 BTU .....EA 206.00-230.00
Automatic control,
add .....EA 48.00- 60.00

FORCED WITH DUCTS
60,000 BTU .....EA 390.00-505.00
80,000 BTU .....EA 455.00-540.00
100,000 BTU .....EA 500.00-650.00
120,000 BTU .....EA 580.00-690.00

HEAT REGISTERS
Outlet 15.00-38.00

ELECTRIC WIRING

Per Outlet
Knob & Tube .....EA 12.00
Armor .....EA 20.00
Conduit .....EA 24.00
110-V Circuit .....EA 30.00
220-V Circuit Range .....EA 116.00

ELEVATORS & ESCALATORS

Prices vary according to capacity, speed and type.
Consult elevator companies.
Slow speed apartment house elevators including doors and trim about $3,500 per floor.

6500 custom-made steel ribs— enduring strength for a long, tough, rapid transit tunnel.

DESIGNS OF THE TIMES... IN STEEL

PROBLEM: Drive a twin-bore tunnel more than three miles through highly faulted earth zones—to carry people safely through the Berkeley Hills. Do it economically, quickly, and safely.

SOLUTION: Use steel tunnel support ribs—ribs made from rolled sections specially designed by Kaiser Steel for the new Bay Area Rapid Transit system.

RESULT: "This has been one of our roughest tunnel jobs because of its length and the type of terrain, but so far we're right on schedule. Kaiser Steel has provided us with everything we need in design assistance and finished product," says Ed Shea, Project Manager.

Twin-bore tunnel through Berkeley Hills for Bay Area Rapid Transit. General Contractor: Shea-Kaiser-Macco. A joint venture sponsored by J. F. Shea Co., Inc.

Kaiser Steel has produced 6500 of these tunnel ribs, 19 feet in diameter, at new production line rates to meet exacting delivery schedules. In addition to tunnel ribs, Kaiser Steel is furnishing more than 17,000 steel liners for bored subway tunnels for this world-recognized transit system. On this and other major tunnel jobs, Kaiser Steel has provided—and will provide on future requirements—design consultation service on the fabrication and application of tunnel ribs and liners.

For answers to your tunnel problems call Kaiser Steel Fabricating Division: Telephone 415/271-2703 (Oakland) or 213/685-4930 (Los Angeles).

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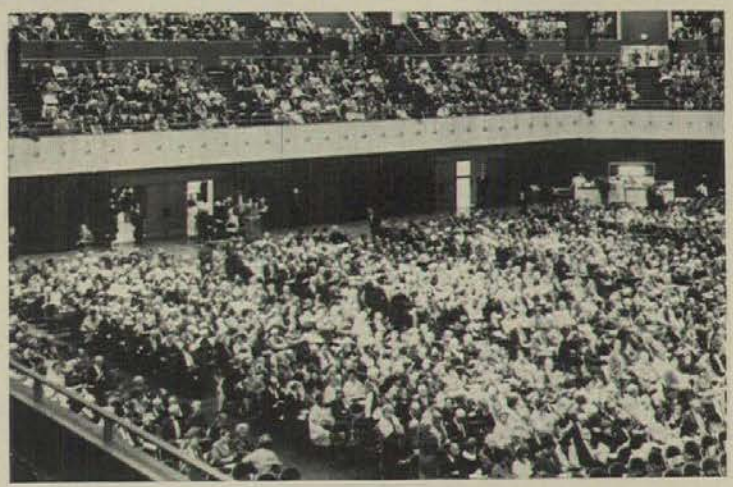
GAS AIR CONDITIONING IS THE QUIETEST WAY TO KEEP AN AUDITORIUM COOL



(or a nursery)

Gas absorption air conditioning is the nicest thing that's happened to the climate inside of buildings since windows. Since it cools air with a minimum of moving parts, a gas system is quiet. Maintenance costs are low, too. And it's durable. A home gas cooling and heating system, for example, is estimated to last the mortgage life of the house. No wonder more and more homes, stores, motels, and large buildings have *gas* air conditioning. For free booklets on gas air conditioning, plus facts on equipment and service, just give us a call.

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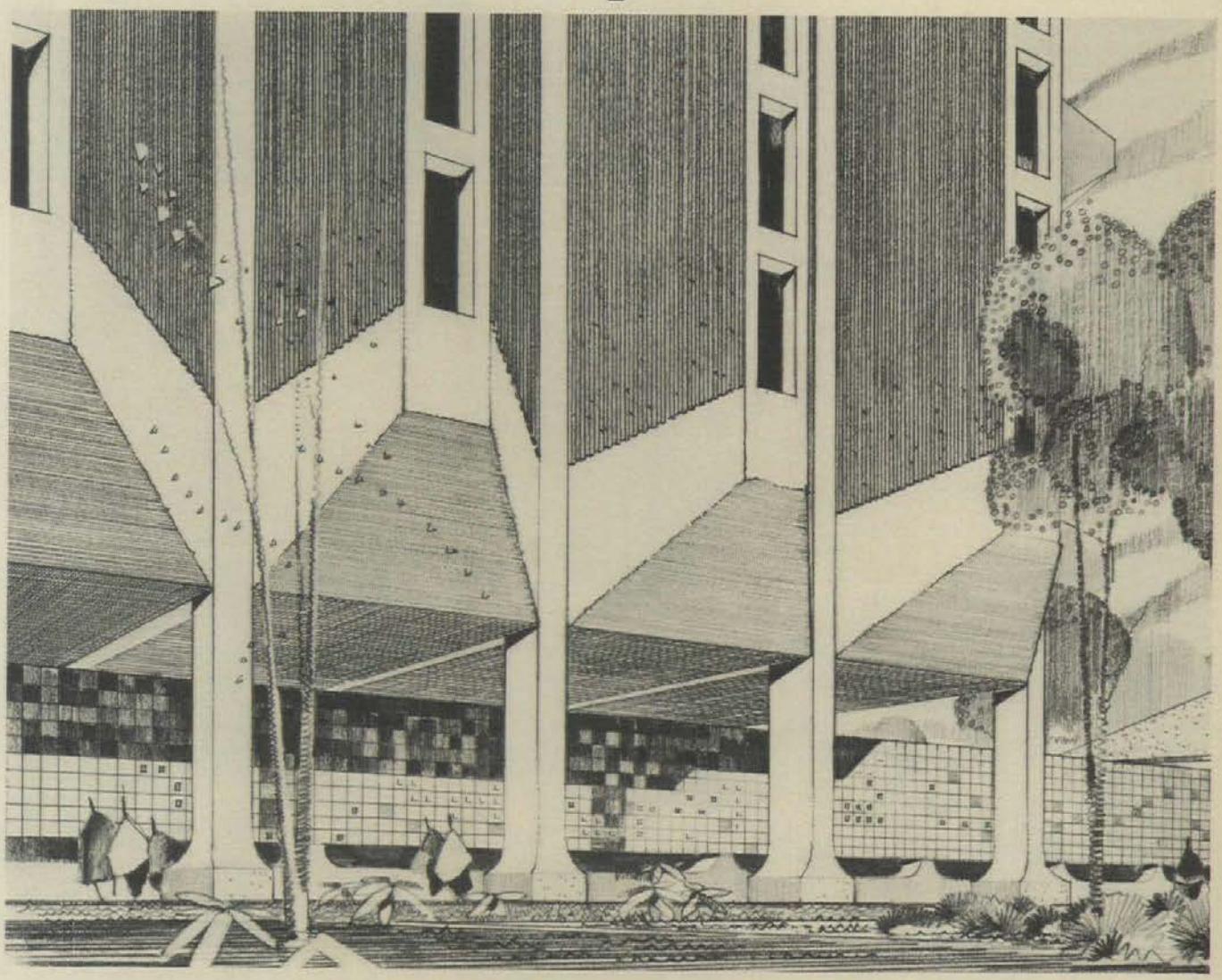
WHAT'S NEW IN ARCHITECTURAL CERAMICS ?



This pattern: Iron Cross

The newest and most flexible facade material, Contours® CV, recently introduced by INTERPACE. This facing has the authentic burned-earth look you find in INTERPACE ceramics. Its three-dimensional textures capture the intricate interplay of light and shadow, to add beauty and interest to interior and exterior walls. There is a wide choice of colors and patterns, to help you individualize designs. Or INTERPACE, with its talented design team, will work with you, if you wish, to develop original pieces from your own ideas.

Lightweight Contours CV is 11¾" x 11¾", with a nominal half-inch thickness and the advantages inherent in chemically inert ceramics. It is applied in the same way as adhesion CV or wall tile, and is priced to fit the budgets of most jobs. For helpful data on *all* architectural ceramics, both standard items and exciting new products, see the man from INTERPACE.

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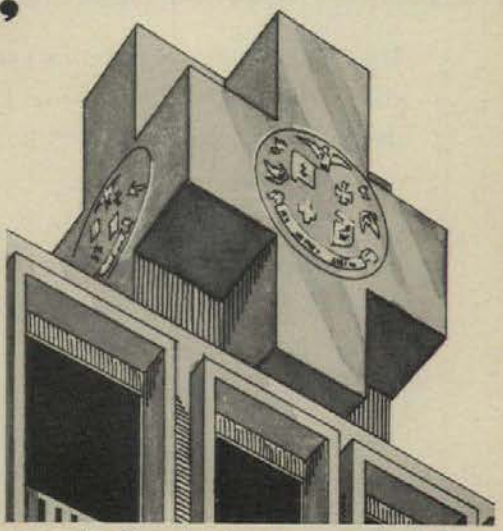
WITH GAS ABSORPTION AIR CONDITIONING:

"NO ACOUSTIC OR VIBRATION PROBLEMS...SAVES VALUABLE BASEMENT SPACE"



...says Building Supervisor Bernard L. Probert

"Our gas-energized air conditioning equipment changes the air in our 200,000 sq. ft. building every 7 minutes, 24 hours a day, 7 days a week, quietly and without a quiver," says Bernie Probert, Building Supervisor for the Blue Cross Building in Los Angeles. ■ "Because this equipment creates no acoustical or vibration problems, we were able to put the chiller on the roof, saving valuable basement space. That's partly why the owners switched to gas absorption air conditioning when they put up this building." ■ The other reason? "Operating economy," Mr. Probert answers. "Including energy cost and maintenance, our gas air conditioning system operates for a lot less money. And since using gas lowers our peak electrical load, we even save on the price per kwh we pay for electricity." ■ The Blue Cross Building uses a York EK28 steam-energized absorption unit of approximately 275 tons for cooling. Energy is supplied by 2 Cleaver Brooks 125 hp boilers that generate 14 pound steam. The cooling tower is a Marley Double Flow Aquatower. ■ What about that building you are planning? To find out how you can get a cooling system that runs for less and takes less space, call your Gas Company Representative. He has all the facts.

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Only G.E. makes fluorescent light you can buy by the square foot

General Electric has freed you from the limits of tubes or points of light. Now you can actually have light "by the square foot" . . . from the G-E Panel Fluorescent, the world's only square lamp. Coffered ceilings, small openings, signs, mobile units can use these new Panel Fluorescent lamps. Only General Electric makes them. Find out more about them from your G-E Large Lamp Agent or write: General Electric Co., Large Lamp Dept., C-604, Nela Park, Cleveland, Ohio 44112.

GENERAL ELECTRIC

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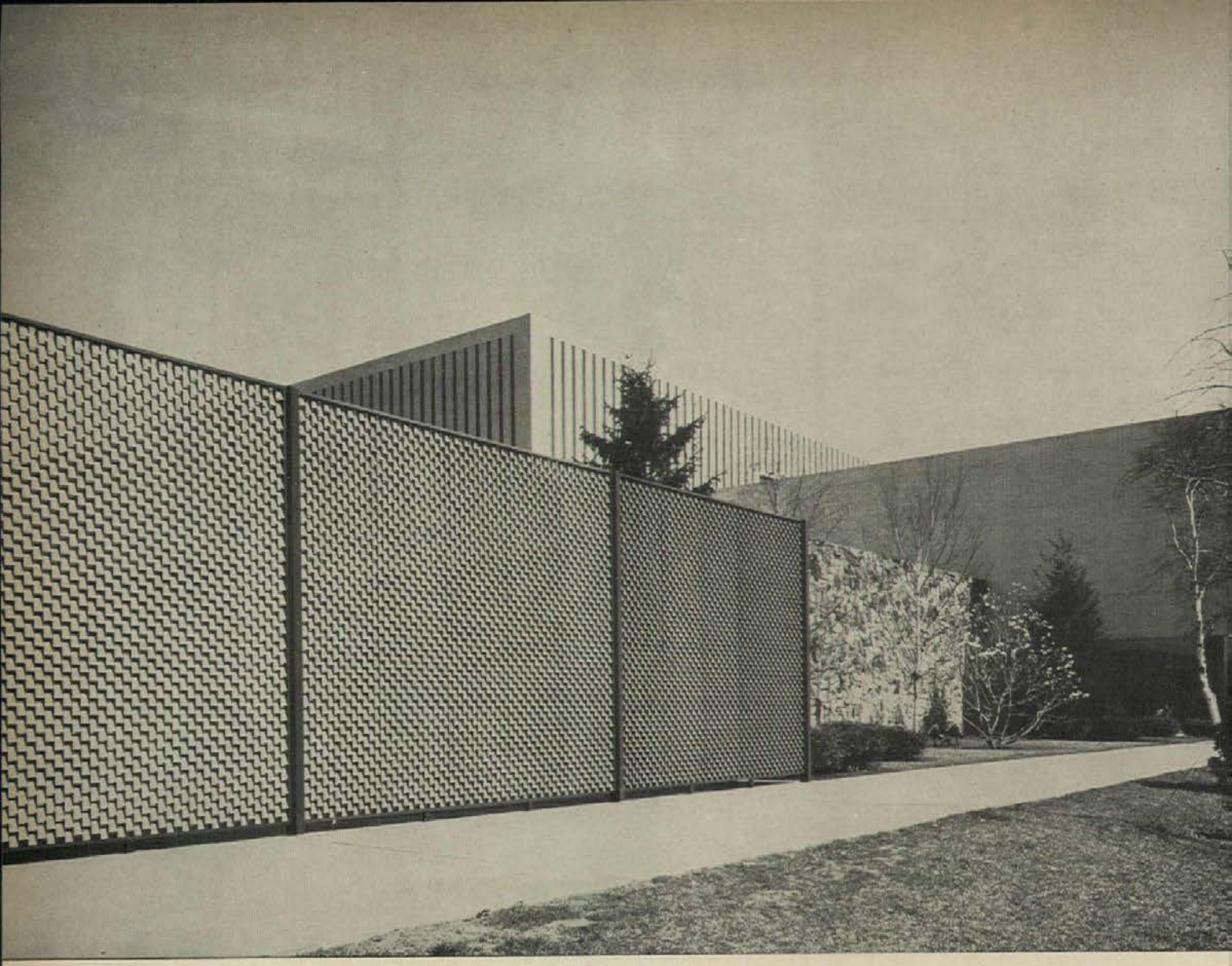

Architect: Abbott, Merkt & Co., New York City

BORDEN ARCHITECTURAL DECOR PANELS: DECA-GRID

Shown above: Custom-designed Borden Deca-Grid panels with tilted spacers, used to separate and screen the service area at Saks in Garden City, Long Island.

With the Deca-Grid style, specifications for spacings and spacer bar positions may be varied almost indefinitely. Another variation available for Deca-Grid is known as the Slant-Tab variation—here the spacers are mounted at angles of 30°, 45°, 60° or 90° and the spacers (called Slant-Tabs) may be altered in length, depending on angle of mounting selected.

All the Borden Decor Panel styles, including Deca-Grid Deca-Gril, Deca-Ring and Decor-Plank, are highly versatile in design specification and in application such as for facades, dividers, grilles, fencing, refacing of existing buildings, etc. Fabricated in standard or custom designs in sturdy, lightweight aluminum, Borden Architectural Decor Panels provide a handsome, flexible, maintenance-free building component.

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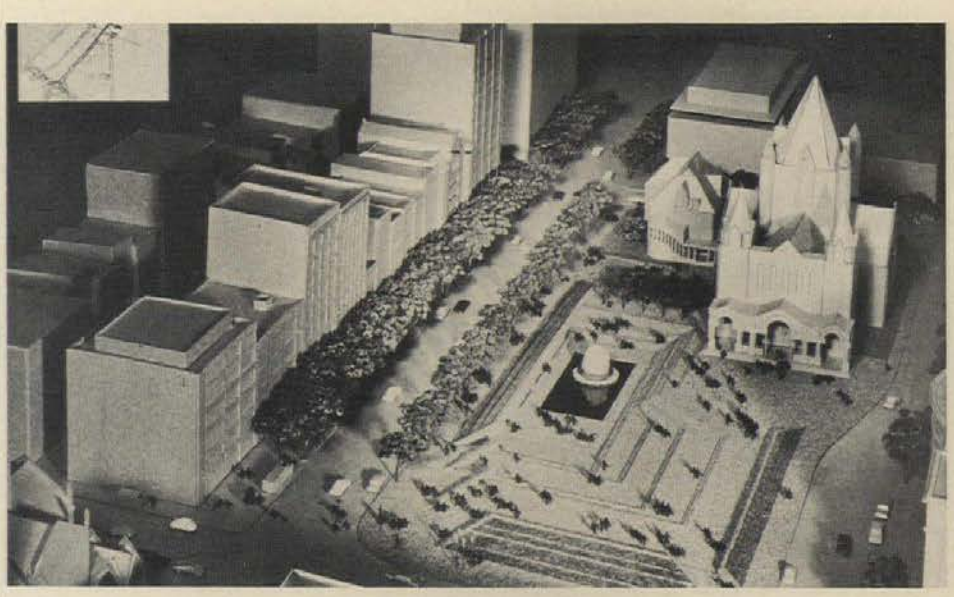
New England Survey Service Inc.



Landscape firm wins competition for Copley Square in Boston

The firm of Sasaki, Dawson, Demay Associates has been named winner in Boston's Copley Square competition, for design of a major urban space in that city. According to the designers, "The proposed plaza design recognizes the need for each building to have its own setting, yet relate to the Square. The symmetrical facades of the library and the hotel are acknowledged and brought into the composition. The offset siting of Trinity Church [designed by H. H. Richardson] is balanced by the sunken pool and fountain. Diagonal pedestrian movement is encouraged; the cascading steps gently entice the pedestrians visually and actually into the Square. While views from all sides into the plaza are unimpeded, once within the space, a sense of enclosure is provided . . ."

Second award went to Cooper & Auerbach, architects; third award to William A. Gould & Associates; first honorable mention to Herbert L. Hamilton Jr., Geoffrey Freeman, Peter Roudebush; and honorable mentions to Richard Foster, architect, and Earl L. Flansburgh & Associates.

Members of the jury were: Pietro Belluschi (chairman), Dan Kiley, Hugh A. Stubbins, Asa S. Knowles, Wilhelm V. von Moltke, Sidney N. Shurcliff, H. Russell Beatty, José Luis Sert, Roger C. Damon and Bryan E. Smith. Professional adviser was Charles G. Hilgenhurst.

Business and the arts combine interests in New York City

The holding of a conference, "Business and the Arts," at Lincoln Center in New York City on March 28 focuses attention on The New York Board of Trade, an organization nearly 100 years old, comprised of 1,200 major domestic and international companies based in the New York area. James T. Gill, vice president of Manufacturers Hanover Trust Company, is president of the organization. The Board's interest includes, but goes beyond, the maxim that "good design is good business," and it is actively involved in many programs to improve the total environment of the city and the region.

The Board of Trade (which, with Esquire Magazine, co-sponsored the recent conference) implements its objectives through two advisory councils: the Architectural Advisory Council and the Arts Advisory Council.

The Architectural Advisory Council, founded in October 1964 under the leadership of architect Max O. Urbahn, its first chairman, has concerned itself with such projects as a master plan for the city, waterfront development, and upgrading of neighborhoods. Mr. Urbahn saw its purpose as "largely educational in making business, industry, municipal agencies and civic groups more aware of the need for and the best means of making New York a more beautiful, efficient and inviting city for the millions of people who live and work here and for visitors around the globe."

Current chairman of the council is architect Lathrop Douglass. Other members include P. Whitney Webb, The Office of Max O. Urbahn, Architect, vice chairman; Morris Ketchum Jr., president of the American Institute of Architects; S. Hart Moore of Frederick

THE RECORD REPORTS ON:

Twenty-story office building will blend gold-colored elements 111

Space research center has modular flexibility 111

Office building consists of two superimposed blocks 318

Frost Jr., and Associates; Max O. Urbahn, now president of the New York Chapter, A.I.A.; and William E. Delehanty of Evans and Delehanty, Architects.

The Arts Advisory Council, founded in July 1965 as a result of a proposal made by Arnold Gingrich, publisher of Esquire Magazine, in an address at the Board of Trade's first annual "Business in the Arts" Awards Luncheon last June, has four objectives: to define a corporation's opportunities and responsibilities for improving the cultural life of the general community, including civic beautification; to provide management with guidelines on the formation of company policy on cultural affairs and the implementation of specific programs; to act as a clearing house for providing information on specific projects and programs in the fine and performing arts; and to provide professional art and cultural organizations with opportunities for management counsel in financial and organizational methods and proceedures.

Clyde Matthews, president of The Public Relations Board, Inc., New York is chairman of the council, which is made up of 25 members, most of whom are prominent members of the business community.

At an informal meeting last month, when Thomas P. F. Hoving, New York City Parks Commissioner, addressed both councils, it was decided that a special committee of The New York Board of Trade should be established to act as a liaison between the business community and Mr. Hoving to come up with creative ideas to implement solutions for the beautification and improvement of city recreational facilities. P. Whitney Webb will head the liason committee.

A competition is likely for design of V.P. residence

The Vice President of the United States will eventually have a $750,000 official residence in Washington, D.C., but—because of the administration's anti-inflationary policy—not in the near future. Last month Congress authorized the funds to build an official home on the 10-acre rolling hillside of the present naval observatory tract along embassy row. Senator Mike Monroney (Democrat, Oklahoma), author of the bill, says: "I am sure that the GSA will secure, through appropriate procurement procedures, the services of highly talented architects to assist in the planning of this residence. This project should inspire a public design competition of unusual proportions. Certainly, many of the leading architects of the nation will want to submit their ideas for a residence of this kind. And certainly, the Fine Arts Commission, whose members are well qualified to pass judgment on matters of this kind, should be consulted. The Commission's expertise will help insure a final design choice that will reflect the best, most artful resources now available in this country."

President Johnson said on April 10, agreeing with an earlier statement by Vice President Humphrey, that this was not an appropriate time to go ahead and he would so advise Congress.

Speakers and more honorees named for A.I.A. convention

Final plans are being completed for the 98th annual convention of the American Institute of Architects to be held in Denver from June 26 to July 1. The theme of the convention, "Technology, Environment and Man," will be expanded upon by a speaker for each topic—Isidor I. Rabi, winner of the Nobel Prize in Physics, on "Technology"; Robert C. Wood, under secretary of the Department of Housing and Urban Development, on "Environment"; and Sterling Moss McMurrin, provost and, E. E. Ericksen distinguished professor of philosophy at the University of Utah, on "Man." John Kenneth Galbraith, economist, social philosopher, and Harvard University professor, will be the keynote speaker. As previously announced, Dr. Nathan M. Pusey, president of Harvard University, will give the second annual Purves Memorial Lecture.

A series of 10 professional practice workshops will be presented during two afternoons of the convention. To be held concurrently on June 28 will be sessions dealing with organization for practice; utilizing construction systems; supporting personnel; community action; and "the image of the city." The five workshops which will be presented concurrently on July 1 are: "urban design short course"; emerging techniques; A.I.A. documents; legislation; and "industrial architecture 1966."

The winners of four more annual medals have been announced. New Jersey artist Ben Shahn will receive the Fine Arts Medal; architect Alexander Girard will receive the Allied Professions Medal; artist Harold Balazs will receive the Craftsmanship Medal; and design consultant Gideon Kramer will receive the Industrial Arts Medal.

Four men will be awarded honorary membership in the Institute for "distinguished service to the profession of architecture or to the arts and sciences allied therewith." The recipients are: Henry F. du Pont, of Winterthur, Delaware, member of the board of directors of E. I. du Pont de Nemours & Company; Harold Bismark Gores, president of the Educational Facilities Laboratories, Inc., Ford Foundation, New York City; James J. Rorimer, director of the Metropolitan Museum of Art, New York City; and John G. Flowers, of Austin, Texas, executive director of the Texas Society of Architects.

Main social events of the convention will be the host Colorado Chapter party "Night at Historic Central City," a command performance of "Carmen" in the old Opera House, and the Annual Dinner and Ball.

HUD names two appointees; William Slayton leaves post

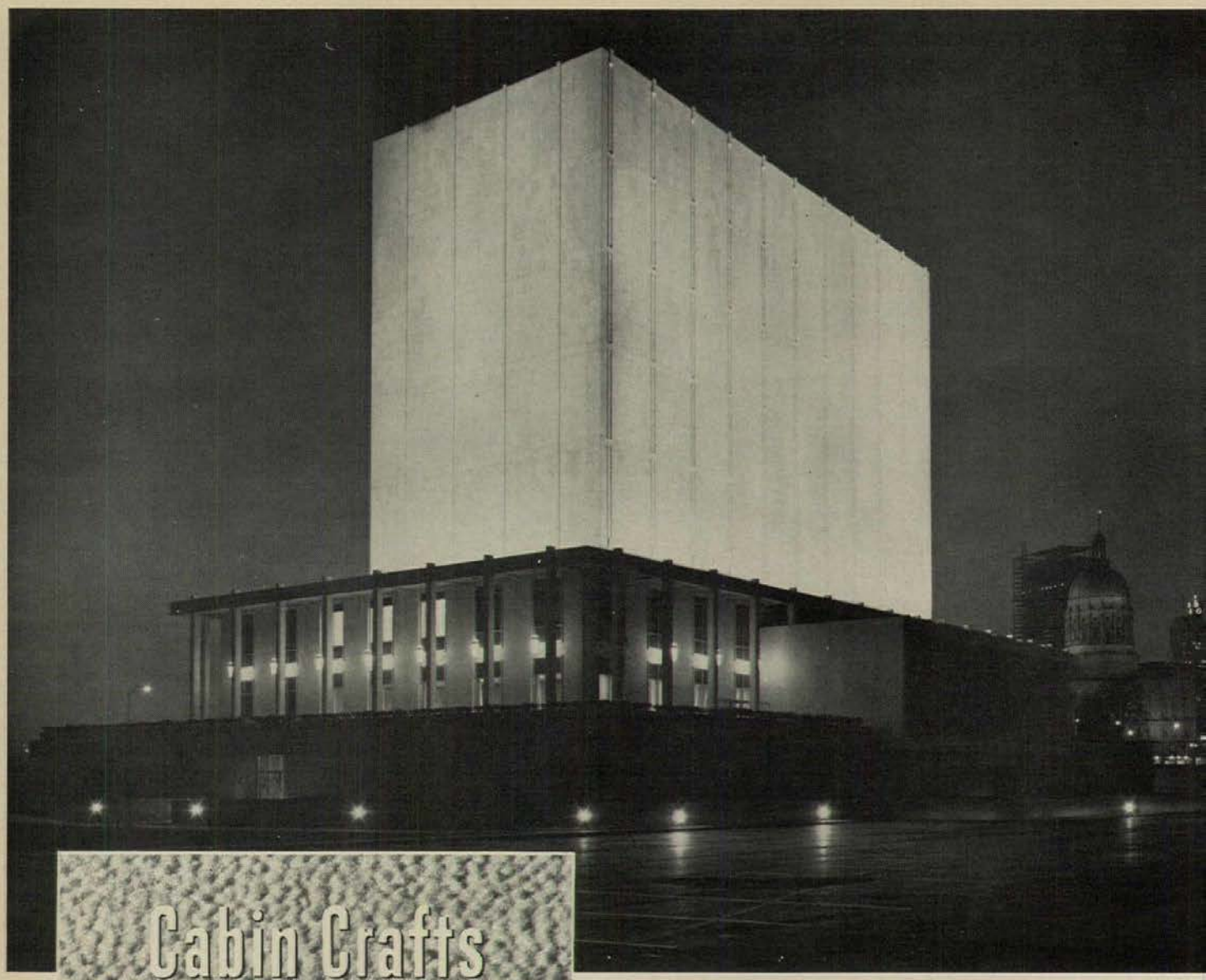
The Department of Housing and Urban Development has announced two new appointees. Wayne Phillips, former newspaperman and formerly a top staff member of the Democratic National Committee, has been named chief of public affairs for HUD.

Charles A. Dieman has been named Commissioner of the Federal Housing Administration for Technical Standards. He comes to HUD from the Post Office Department where he was in charge of the maintenance division that oversees upkeep of all post offices. Previously he had been in charge of building and maintaining all of the facilities of the National Bureau of Standards.

William Slayton, since 1961 administrator of the Urban Renewal Administration in the old Housing and Home Finance Agency, left HUD March 25 to become director of the new Urban Policy Center of Urban America, Inc. in Washington, D.C. To the regret of many architects, who have applauded Mr. Slayton's emphasis on design goals for urban renewal, Mr. Slayton was apparently not in line for the position of assistant secretary for renewal and housing assistance in the new Department.

Obituary

Charles Granger Jr., 52, partner in the Austin, Texas firm of Fehr and Granger, his wife, and their 14-year-old son Wallace Bruce Granger, were killed in a three-car automobile accident near New Braunfels, Texas, on March 20. Surviving the accident was a five-year-old daughter, Joan. The Grangers have two other surviving children: 15-year-old Charles Thomson Granger III, and 13-year-old Lauren Granger.



Cabin Crafts Makes the Contract Carpet That Makes Specifying Easy

Georgia's Department of Archives and History Building, a $6 million structure regarded as the most modern and efficient of its kind in the nation. Architect: A. Thomas Bradbury; Decorator Supplier: Ralph Dennard Co.; Interior Design: Ivan Allen Co.

Cabin Crafts uses Acrilan® acrylic to make a complete line of contract/commercial carpet engineered precisely to specifications. You specify. . .we supply.

Cabin Crafts contract/commercial carpets of Acrilan acrylic pile are specially styled as well as specially engineered to assure the performance, durability and "heft" required for heavy-traffic installations.

Name the quantity. . . any quantity, and we'll deliver it on schedule.

Cabin Crafts made the contract carpet of Acrilan that makes such a beautiful impression in Georgia's unique new Archives and Records Building in Atlanta. Such an architecturally interesting building demanded an aesthetically rewarding carpet . . . one that still met the practical demands of exact specifications and built-in performance. These features made it easy for the architect to specify. . . Cabin Crafts.

Cabin Crafts the choice for the new Georgia Archives Building

Cabin Crafts contract carpeting of Acrilan acrylic pile creates warmth in broad expanse of Archives Building.

Sound conditioning with Cabin Crafts carpeting of Acrilan in library and research area.

Quiet carpeting dramatizes stained glass and handrail (brought from original building) and steps to auditorium.

Fully carpeted auditorium of Cabin Crafts carpet of Acrilan fiber for finer acoustics.

Write for your free copy of Cabin Crafts Contract/ Commercial carpet brochure. Write Contract Advertising Department, Cabin Crafts, Inc. Dalton, Ga. 30720

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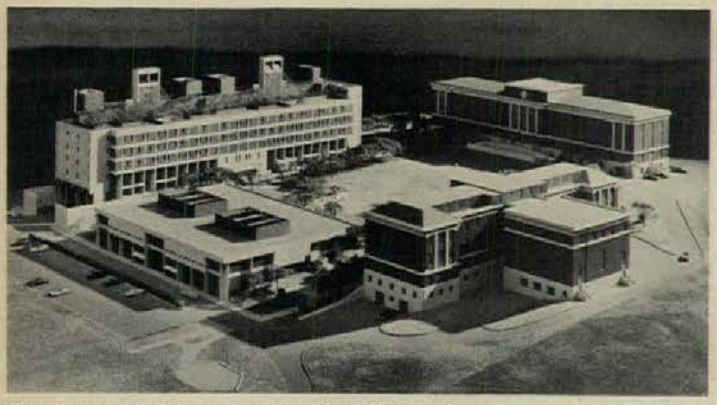

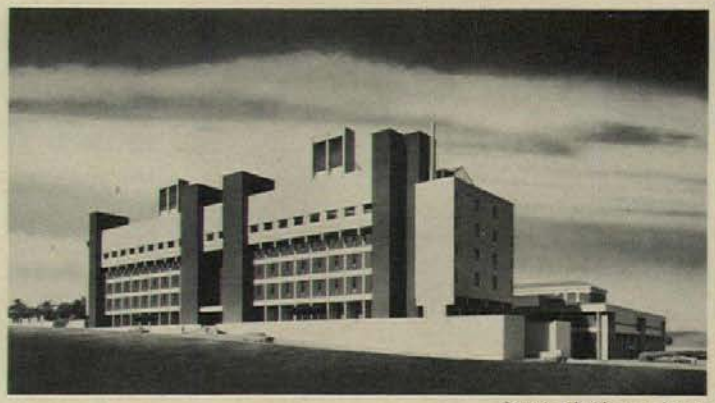

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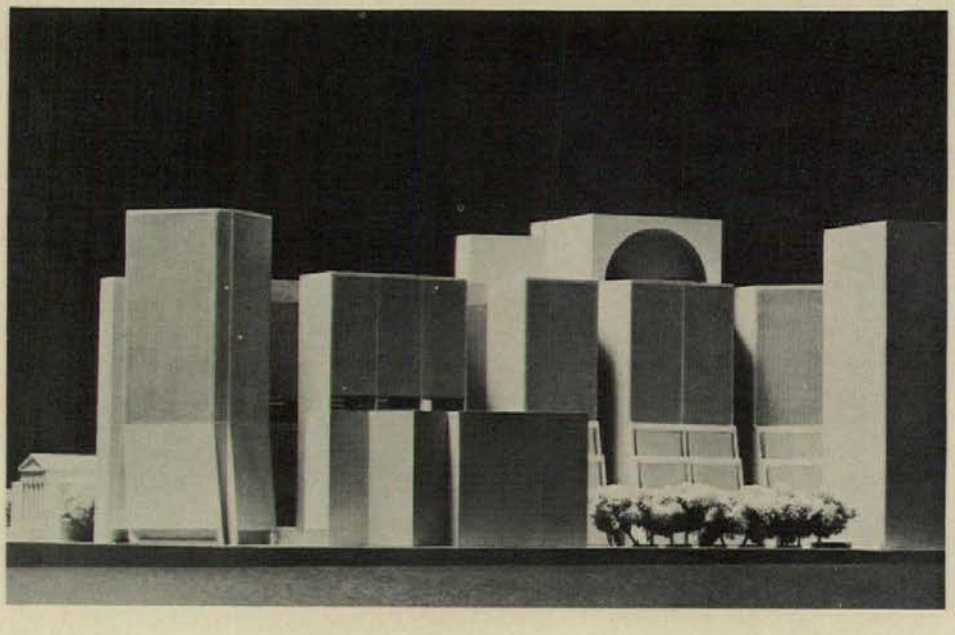
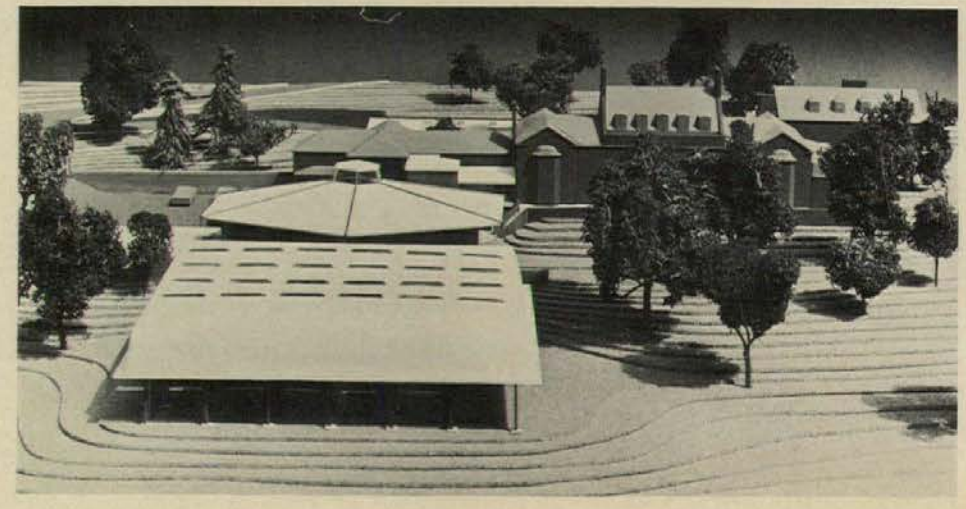
The Forest Biology Laboratory building and the library building at the New York State University College of Forestry, Syracuse, designed by The Office of Max O. Urbahn, complete a quadrangle with existing buildings. The biology building, with 12 greenhouses on the roof, arranges non-modular laboratories facing quadrangle. The library will contain 180,000 volumes.



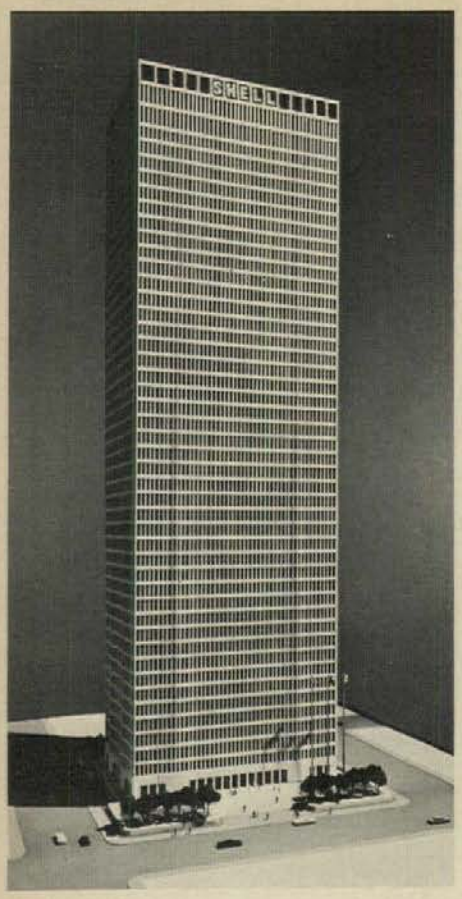
The new campus for the Philadelphia College of Art, designed by Louis I. Kahn, consists in part of a concrete and glass superblock of five interconnected structures. From left: the nine-story library tower, and then four instructional buildings connected at the rear by a spine which will contain offices and student areas. A low theater structure is located in front. The campus will be built in the next 10 years at a cost of $15 million.



The covered play area or "gymkhana" (from Hindi meaning a meet featuring sports) at the Elizabeth Morrow School in Englewood, New Jersey, designed by Delnoce Whitney Goubert, is a 27-foot-high semi-enclosed structure containing approximately 25 skylights and covering 10,000 square feet. Behind the gymkhana is a 400-seat, hexagonally shaped assembly hall, also by Mr. Goubert.

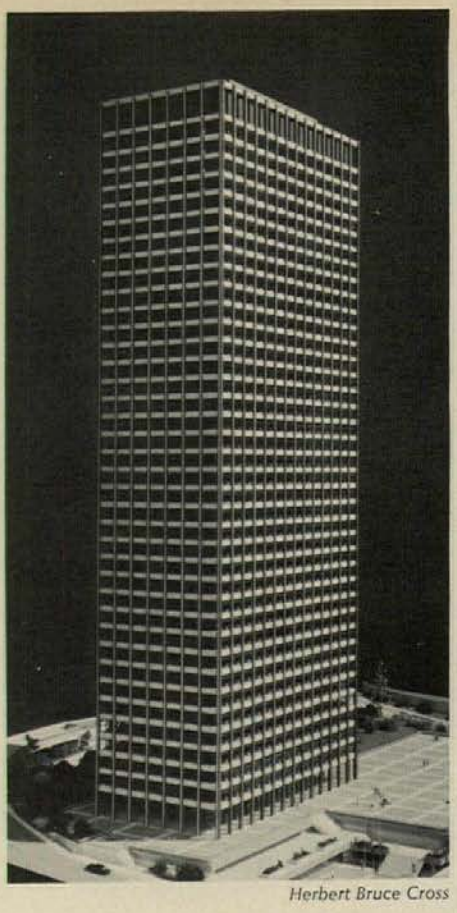
The new Metropolitan Opera House, designed by Wallace K. Harrison of Harrison and Abramovitz for New York's Lincoln Center, is *almost* ready to open; it has reached the stage of acoustical previews, and one of the grandest grand openings in history is scheduled for September 16. The hall is very grand indeed, both in size and spirit: 3,800 plush red mohair seats on six levels; 21 crystal chandeliers, gifts of the Austrian government; gold acoustical swirls on the ceiling; and panels of dark Congolese rosewood lining the walls. The 14-story, $45.7-million structure will have a stage area six times greater than the present house.

A distribution center in New York City, designed by Davis, Brody & Associates, will have the first 10 floors of the structure slant inward to comply with zoning regulations while avoiding setbacks. The 14-story building will contain 1,400,000 square feet of floor space. The center is part of a proposed $70-million commercial and housing development.



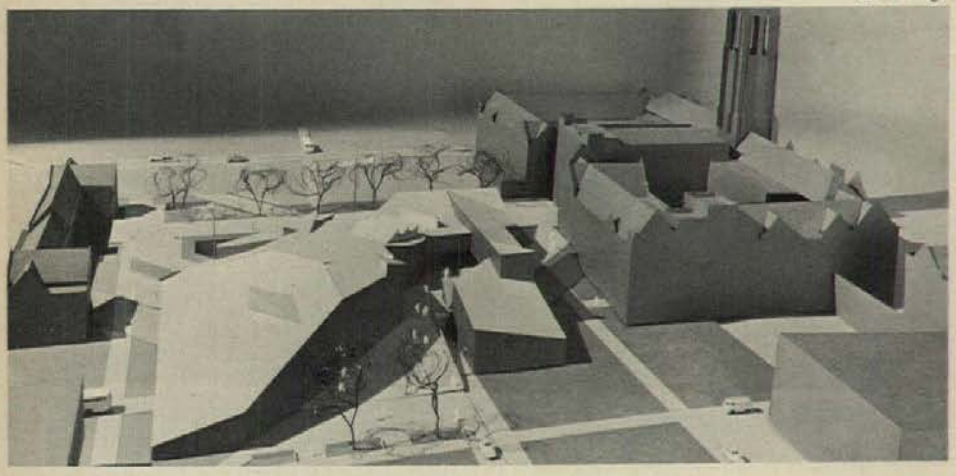
Left:
The Shell Building in Houston, designed by the Chicago office of Skidmore, Owings & Merrill with the Houston firm of Wilson, Morris, Crain and Anderson as associated architects, is a 650-foot-high, 47-story structure of reinforced concrete construction. Owner-builder is Gerald D. Hines Interests. Construction is expected to be completed in 1968-1969.

Right:
The Union Bank Square Office Building in Los Angeles, designed by Harrison & Abramovitz, is a 40-story tower on a three-acre landscaped plaza which will cover a garage. The building will have a structural steel frame braced by concrete seismic shear walls. Window walls are set back four feet for sun shading. The exterior is finished with exposed natural concrete and anodized aluminum.



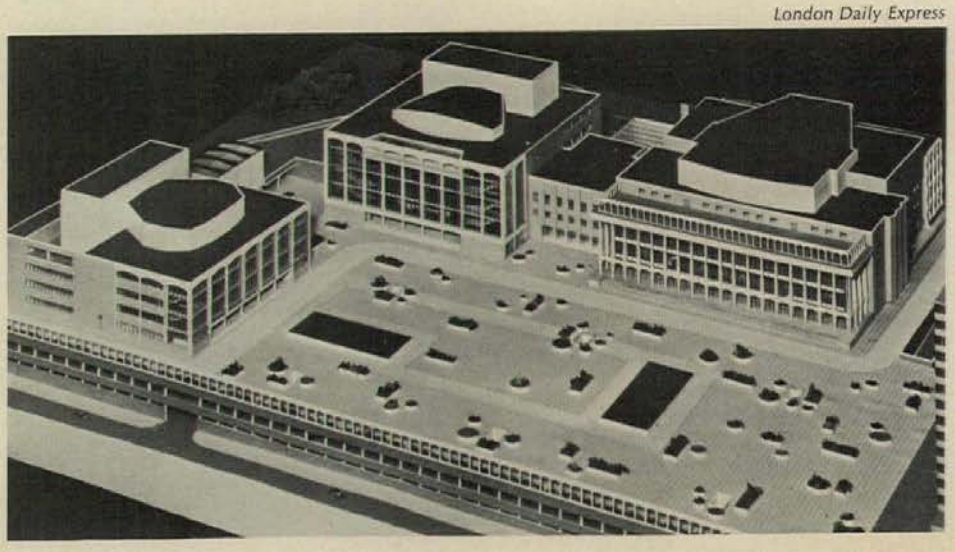
Herbert Bruce Cross

Gil Amiaga

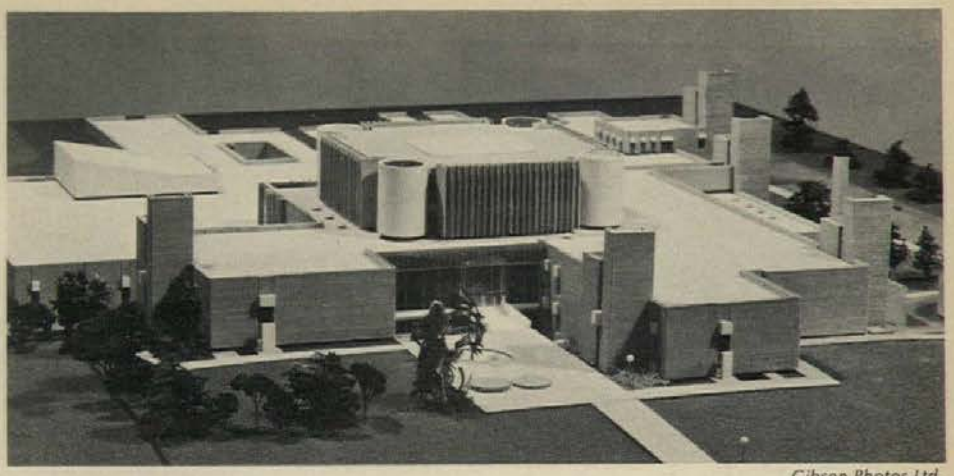


The performing arts center at the University of Toledo, designed by Hugh Hardy & Associates, is a $3.5-million complex which will contain a 500-seat chamber music hall, a 500-seat thrust stage theater, workshops, classrooms, library, music listening room and other study areas. Construction on first phase will begin later this year.

London Daily Express

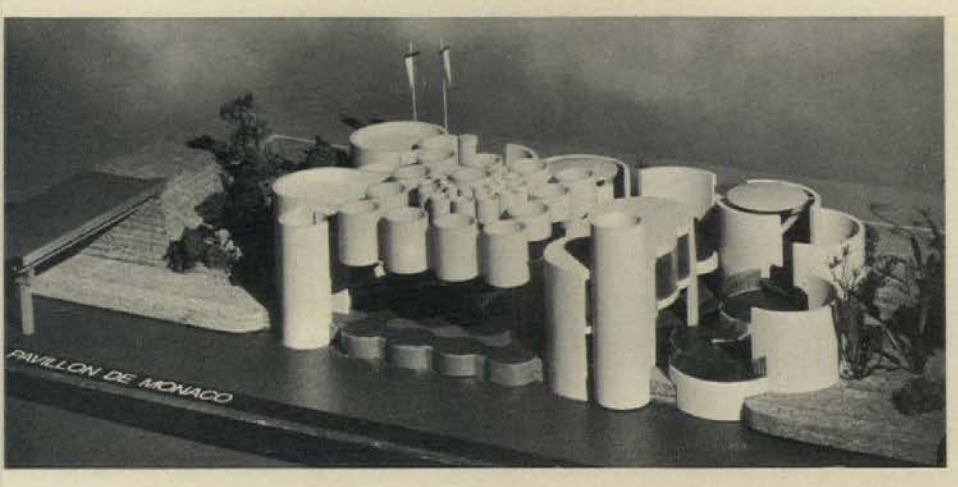


The Glasgow, Scotland, Cultural Center, designed by Archibald Jury, will group a repertory theater, a civic theater, an exhibition gallery, a restaurant, and a 2,500-seat concert hall around a large, landscaped pedestrian plaza. Under the plaza will be parking for 1,000 cars. Completion is set for 1970.



Gibson Photos Ltd.

The College of Veterinary Medicine at the University of Saskatchewan, Saskatoon, designed by Izumi, Arnott and Suciyama, is organized into five general areas for specific departments grouped around the central hub of the college. The four-level central area contains offices, three lecture-labs, library reading rooms and other facilities.



Monaco's pavilion at Expo '67, the Universal and International Exhibition to be held in Montreal in 1967, designed by Papineau, Gerin-Lajoie and Le Blanc, consists of 10 stucco cylinders surrounding a garden theater which will be covered by a huge multicolored parasol. The theme of the $450,000-pavilion is "The Joy of Living—the Reward of Men." Consulting engineers are Di Zazzo, Martinoli, and Vigneault.

©Louis Checkman

The Worcester Science Museum, Worcester, Massachusetts, designed by Edward Durell Stone, will house exhibit areas for life, physical, earth and space sciences. The building contains a planetarium with a 60-foot dome, an aquarium, a 200-seat lecture hall, a restaurant, libraries and other facilities. A small museum of rocketry is housed below a 175-foot-high observation tower.

Arber-French & Company

The Boston Architectural Center, designed by competition-winning architects Ashley, Myer & Associates, Inc., will be dedicated in week-long activities from May 8 to May 14, culminating in "The Future of Architecture" conference to be held on May 13-14 (April, page 35). The 30,000-square-foot structure will contain educational, display, administrative and social spaces.

Design and product improvement keys to building cost control

It's a pretty well-known fact that over the past 15 years or so, the rise in building costs has consistently outpaced the gain in most other cost indexes. And by far the largest part of this over-all increase in building costs has been confined to the construction *labor* component. Hourly wage rates paid to workers in the construction trades have *doubled* since 1950, while the price index for building materials has advanced only a shade over 20 per cent.

These high building wage rates have been getting more than the usual amount of attention and publicity lately —a condition which is perhaps best summarized by this comment taken from the latest (January 1966) annual report of the Council of Economic Advisors:

"Construction is clearly an industry that raises serious problems for wage-price stability . . . While estimates of labor productivity in construction are highly imperfect, they nevertheless suggest that the annual increase in output per man-hour is below the economy-wide average, and substantially below the annual increase in employee compensation."

The important relationship between wage increases and *productivity* that the CEA stresses puts this problem into its proper perspective. For if there is a way to solve the problem of high and fast-rising construction labor costs, it is through improvement in the productivity (output per man-hour) of the construction worker.

In most *manufacturing* industries, the long-accepted means of raising productivity is by increasing the amount of capital equipment per worker. In *construction,* however, the limits of this route are quickly met.

Yet even if on-site construction labor productivity cannot be significantly stepped-up by the introduction of assembly lines, semi-automatic machinery, and computers as in the factory, much of the same effect can be, and is being, had through important innovations in construction methods, design, and materials. In fact, it could be said that architects, engineers and building products manufacturers are to a large extent responsible for much of whatever improvement in building productivity has been realized in recent years.

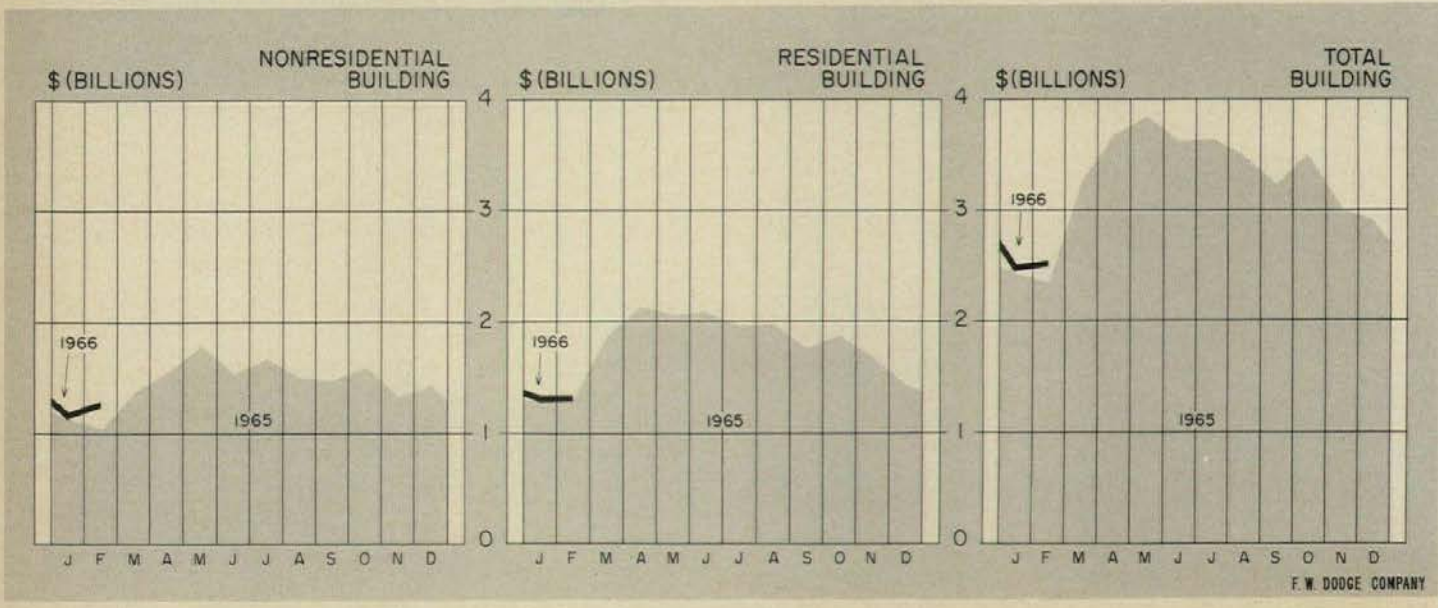
Illustrations of the development of new materials and the changes in building design and technology that go along with them are numerous. The use of sheet materials—plywood and wallboard—as basic coverings, or structural panels as higher-order applications of this principle, will do as an example. Roof trusses, prestressed concrete shapes, and other newly-developed structural members allow not only greater flexibility of design, but lower-cost construction as well.

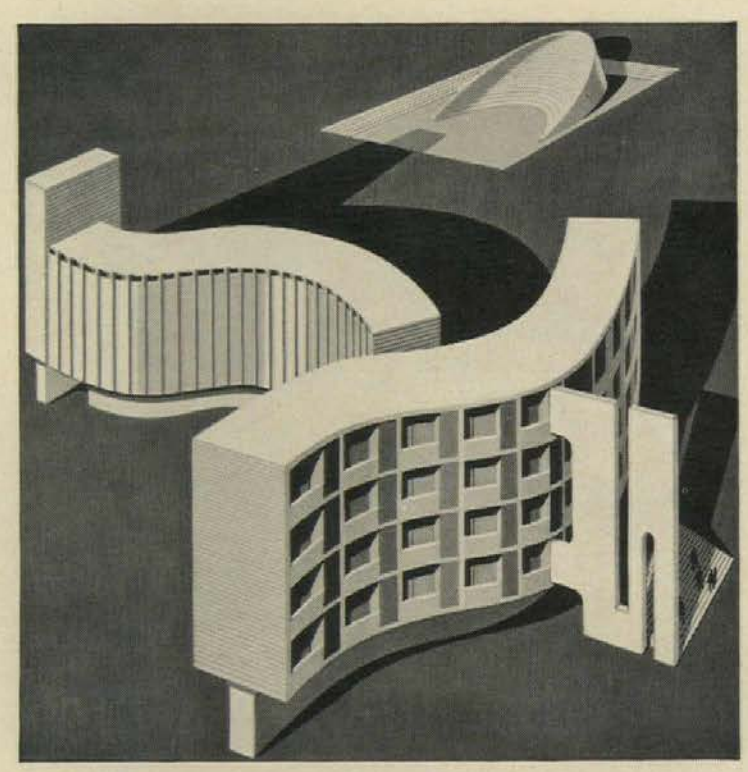
And when costs can be brought down in this way it is because such improvements in materials, design, and methods are actually providing the indirect solution to the problem of low job-site productivity. By designing some of the inefficient, high-cost labor out of the job altogether, or by taking it off the job-site and into the materials factory where labor can be used more efficiently, the architect and the building products manufacturers are boosting construction productivity in what is, after all, only a variation of the time-honored process of substituting capital for labor.

In the decade ahead we are going to be faced with a sharp acceleration in the demand for construction of all types. How much of this second-generation post-war building boom actually becomes a reality will depend on the industry's success in raising its rate of productivity.

George A. Christie, *Chief Economist*
F. W. Dodge Company
A Division of McGraw-Hill, Inc.

Building activity: monthly contract tabulations





Today's universities and colleges need modern communications: dormitory room phones, Tele-Lecture, Data-Phone* service, closed-circuit TV facilities, teletypewriter.

These complex communication services are essential not only in colleges but in all types of major buildings—plan for them in the blueprint stage and avoid costly alterations and unsightly wiring later.

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For further information on communications planning,
see Sweet's Architectural File 33a/Be
and Sweet's Industrial Construction File 19f/Be.

*Service mark of the Bell System

BUILDING CONSTRUCTION COSTS

The information presented here indicates trends of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). Information is included on past and present costs, and future costs can be projected by analysis of cost trends.

William H. Edgerton
Manager-Editor, Dow Building Cost Calculator, an F. W. Dodge service

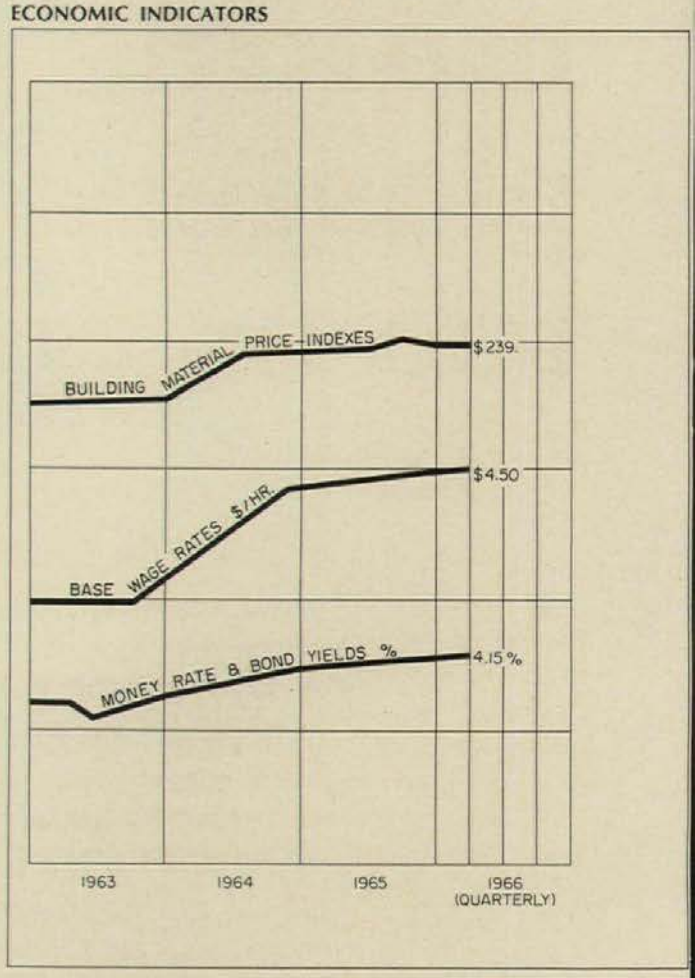
FEBRUARY 1966 BUILDING COST INDEXES

1941 averages for each city = 100.0

Metropolitan area	Cost differential	Current Dow Index residential	Current Dow Index non-res.	% change year ago res. & non res.
U.S. Average	8.5	273.2	291.1	+2.19
Atlanta	7.2	307.9	326.7	+1.67
Baltimore	7.7	276.5	294.1	+2.92
Birmingham	7.5	252.1	271.0	+1.40
Boston	8.5	247.9	262.4	+2.70
Chicago	8.9	301.9	317.6	+1.95
Cincinnati	8.8	262.3	278.8	+1.93
Cleveland	9.2	280.2	297.8	+3.75
Dallas	7.7	256.2	264.6	+1.83
Denver	8.3	280.7	298.4	+2.43
Detroit	8.9	275.4	289.1	+2.51
Kansas City	8.3	246.7	261.1	+2.38
Los Angeles	8.3	278.7	304.9	+3.11
Miami	8.4	268.8	282.2	+1.34
Minneapolis	8.8	272.2	289.3	+0.85
New Orleans	7.8	246.3	261.0	+1.86
New York	10.0	283.7	305.1	+1.57
Philadelphia	8.7	271.8	285.4	+2.21
Pittsburgh	9.1	256.5	272.6	+1.89
St. Louis	9.1	270.4	286.5	+2.61
San Francisco	8.5	352.3	385.5	+2.78
Seattle	8.4	249.4	278.7	+2.22

Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in the first city are 25% higher than costs in the second. Also, costs in the second city are 80% of those in the first (8.0÷10.0=80%) or they are 20% lower in the second city.

ECONOMIC INDICATORS



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

1941 average for each city = 100.00

Metropolitan area	1952	1959	1960	1961	1962	1963	1964	1965 (Quarterly) 1st	2nd	3rd	4th	1966 (Quarterly) 1st	2nd	3rd	4th
U.S. Average	213.5	255.0	259.2	264.6	266.8	273.4	279.3	279.5	281.0	288.7	284.9	286.3	–	–	–
Atlanta	223.5	283.3	289.0	294.7	298.2	305.7	280.6	280.5	281.0	284.7	285.7	322.2	–	–	–
Baltimore	213.3	264.5	272.6	269.9	271.8	275.5	260.9	261.2	264.1	264.9	265.6	288.6	–	–	–
Birmingham	208.1	233.2	240.2	249.9	250.0	256.3	252.1	251.7	252.6	256.3	257.8	267.1	–	–	–
Boston	199.0	230.5	232.8	237.5	239.8	244.1	306.6	306.5	307.3	310.2	311.7	258.5	–	–	–
Chicago	231.2	278.6	284.2	289.9	292.0	301.0	313.7	313.9	317.9	320.6	321.5	312.6	–	–	–
Cincinnati	207.7	250.0	255.0	257.6	258.8	263.9	269.5	269.4	270.2	272.9	274.0	274.7	–	–	–
Cleveland	220.7	260.5	263.1	265.7	268.5	275.8	283.0	282.3	283.4	290.8	292.3	293.0	–	–	–
Dallas	221.9	237.5	239.9	244.7	246.9	253.0	256.4	256.9	257.9	259.5	260.8	261.7	–	–	–
Denver	211.8	257.9	257.9	270.9	274.9	282.5	287.3	287.3	288.2	292.7	294.0	294.6	–	–	–
Detroit	197.8	249.4	259.5	264.7	265.9	272.2	277.7	277.7	279.3	283.5	284.7	285.5	–	–	–
Kansas City	213.3	239.6	237.1	237.1	240.1	247.8	250.5	251.2	252.0	255.0	256.4	257.3	–	–	–
Los Angeles	210.3	263.5	263.6	274.3	276.3	282.5	288.2	288.9	289.7	295.8	297.1	298.0	–	–	–
Miami	199.4	249.0	256.5	259.1	260.3	269.3	274.4	274.4	275.4	276.6	277.5	278.4	–	–	–
Minneapolis	213.5	254.9	260.0	267.9	269.0	275.3	282.4	283.4	283.6	283.9	285.0	285.7	–	–	–
New Orleans	207.1	237.5	242.3	244.7	245.1	248.3	249.9	250.5	253.1	255.1	256.3	257.1	–	–	–
New York	207.4	260.2	265.4	270.8	276.0	282.3	289.4	290.2	294.0	296.0	297.1	297.8	–	–	–
Philadelphia	228.3	262.8	262.8	265.4	265.2	271.2	275.2	275.5	276.4	279.5	280.8	281.7	–	–	–
Pittsburgh	204.0	241.1	243.5	250.9	251.8	258.2	263.8	264.0	264.9	265.9	267.0	268.9	–	–	–
St. Louis	213.1	246.9	251.9	256.9	255.4	263.4	272.1	272.9	276.1	279.9	280.9	282.2	–	–	–
San Francisco	266.4	321.1	327.5	337.4	343.3	352.4	365.4	366.6	366.9	367.7	368.6	376.2	–	–	–
Seattle	191.8	232.7	237.4	247.0	252.5	260.6	266.6	265.1	266.3	267.8	268.9	271.1	–	–	–

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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POOL DIRECTOR'S OFFICE

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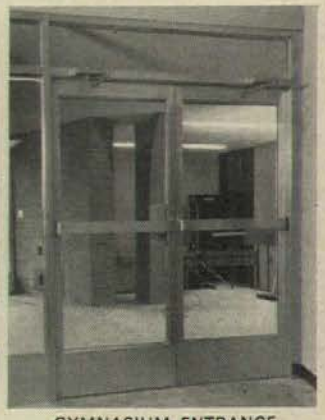

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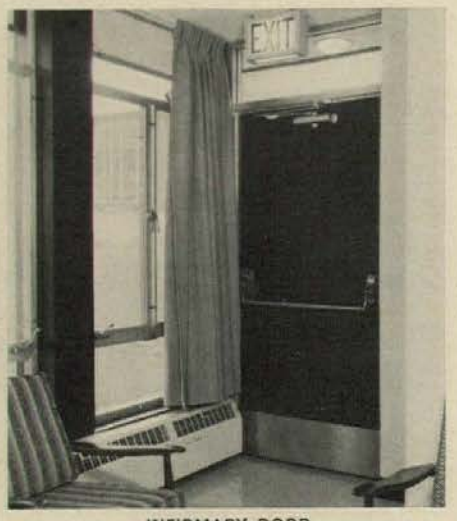

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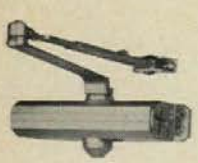

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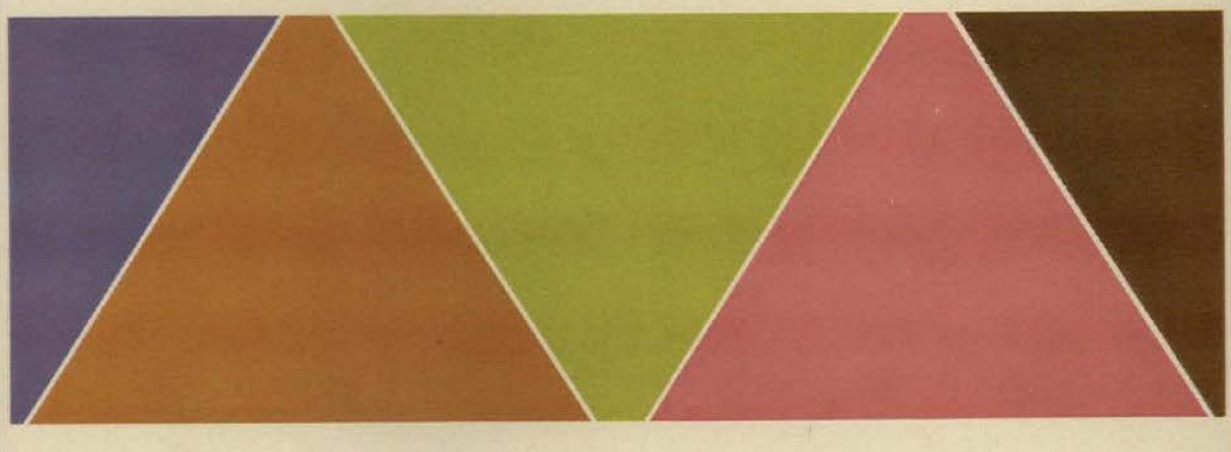

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*By the School Construction Systems Development project of the Educational Facilities Laboratories.

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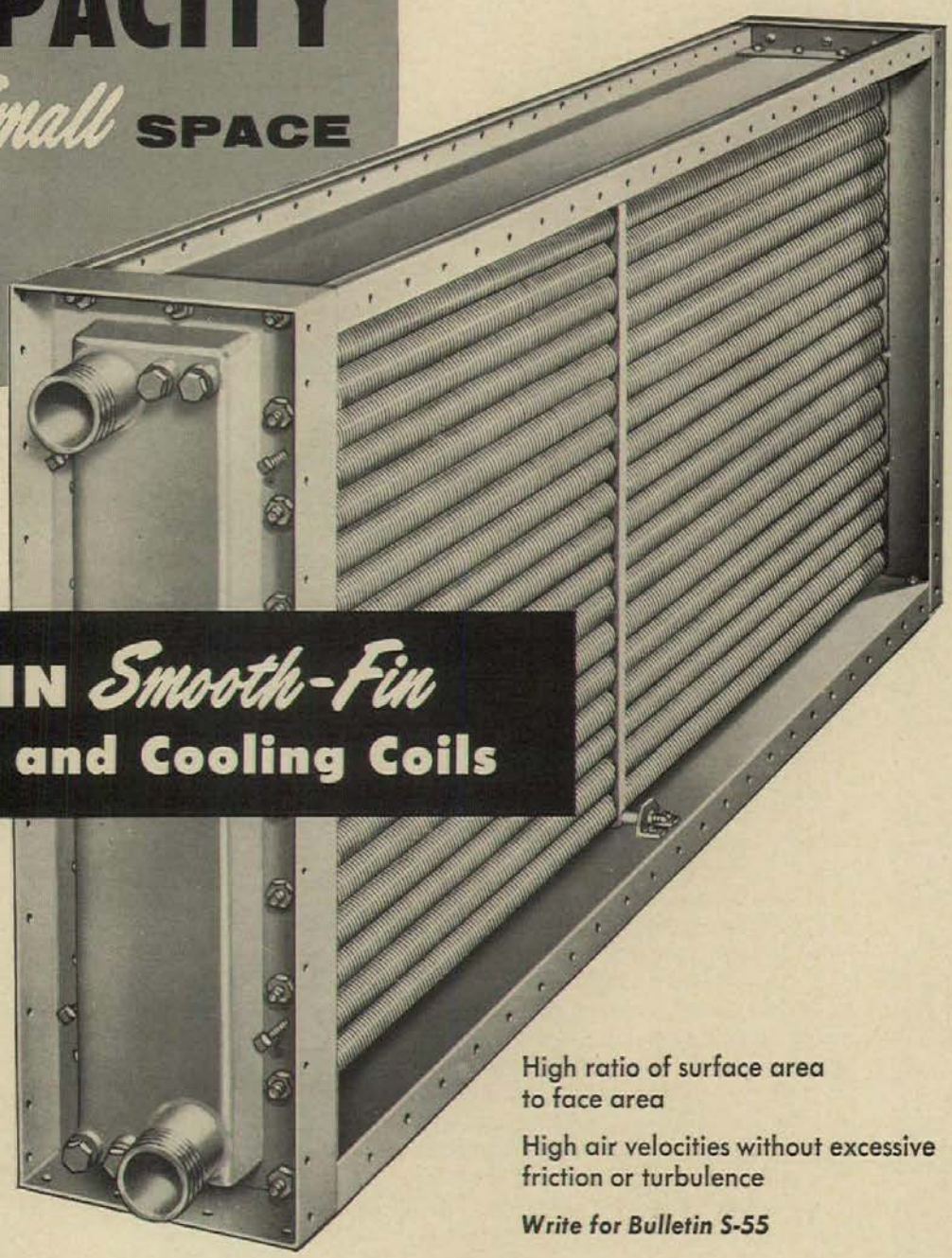

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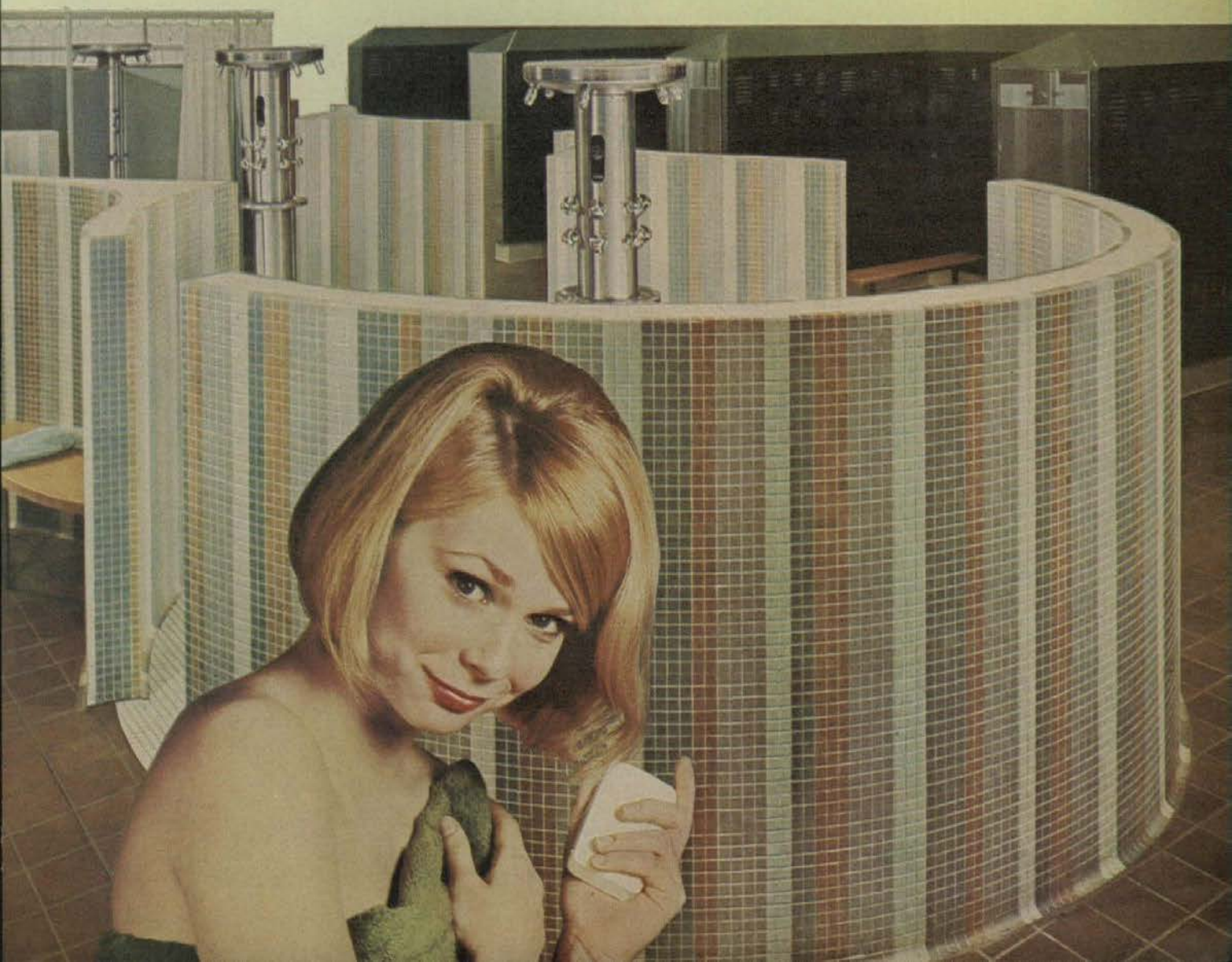

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For additional information on Veloure lenses, including photometric reports, write: Dept. H-5, Holophane Company, Inc., 1120 Avenue of the Americas, New York, N. Y. 10036.

Frank Lloyd Wright, Designer.

William Wesley Peters, Architect, Taliesin Associated Architects.

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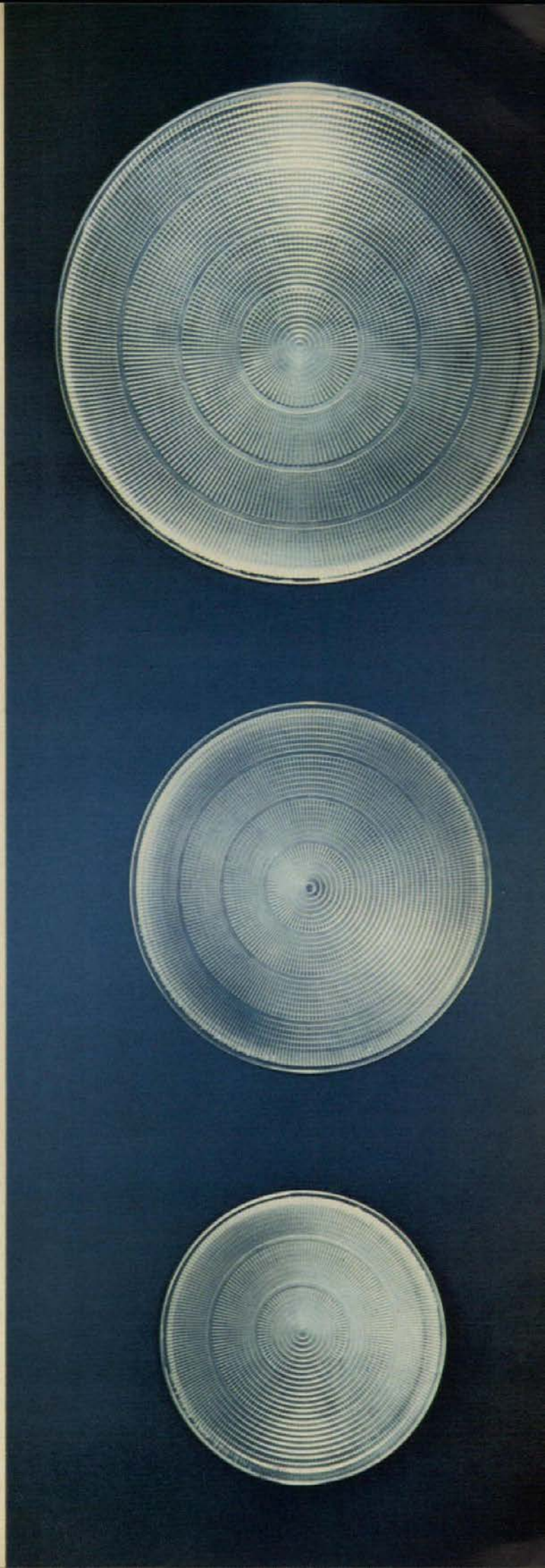

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continued from page 6

Houston won the new industry a the turn of the century, and Galveston fell into a Houston-centered-orbit and suffered its own decline. In the words of John Gunther, Galveston today is like "a fly in amber—not decayed but arrested." Its older, treasured buildings have remained intact. Many were designed by Nicholas J. Clayton, others by lesser names. Presented here are more than 100 black-and-white photographs—having the stylistic differences of Henri Cartier-Bresson and Ezra Stoller—which provide magnificient documentation of the buildings. Howard Barnstone, an architect and professor of architecture, assembled these photographs and has provided very helpful commentary and notes on the buildings.

Ekistics

URBAN RENEWAL AND THE FUTURE OF THE AMERICAN CITY. By C. A. Doxiadis. *Public Administration Service, 1313 East 60th St., Chicago, Ill. 60637. 174 pp., illus. $6.00.*

Doxiadis has turned his attention toward America in this study prepared for the National Association of Housing and Redevelopment Officials. His programs have caused an ambivalence of response in the architectural community.

This report is based on his understanding of human settlements as a whole. This understanding has been projected on to the human problem of urban renewal. In effect, the projection is a policy and a program for the reconstruction of urban areas to make them dynamic and habitable.

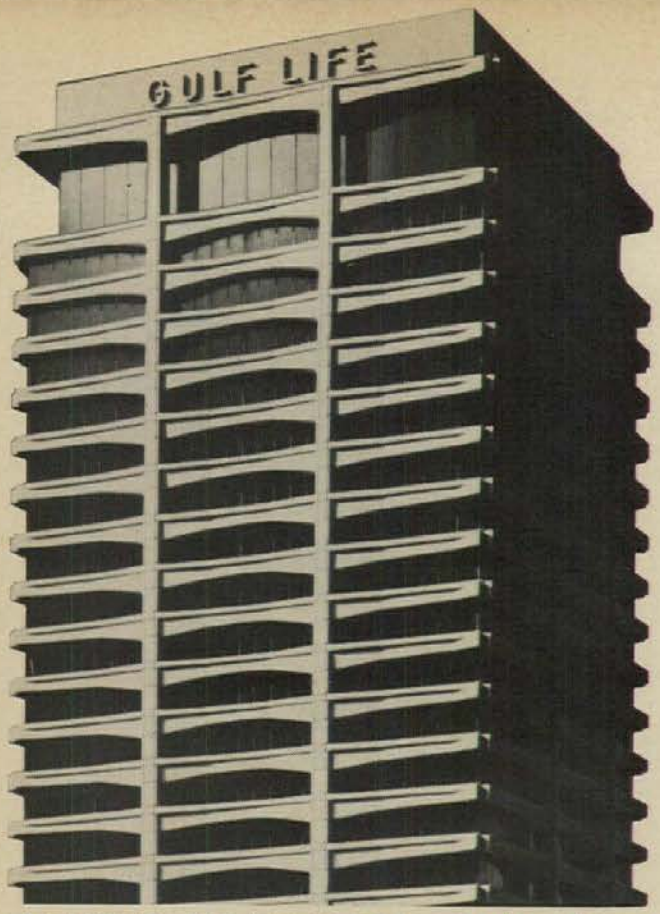
An international architect-planner, he observes that "urban renewal is an imperative need for the survival of our cities, in which we have invested so many of the values created by our civilization... the basic ideas that have inspired the work for this report are: 1) urban renewal is of the greatest importance; and 2) it can be successful if seen as one aspect of the over-all effort to save our cities and build the cities of the future."

BOOKS RECEIVED

MILANO. *Edited by Bruno Alfieri. Wittenborn and Company, 1018 Madison Ave., New York, N. Y. 10021 Unpaged, illus. $20.00.*

THE PLANNER IN EMERGING SOCIETY – A CONFRONTATION. *Proceedings of the 48th Annual Conference of the American Institute of Planners, 917 15th St., N.W., Washington, D. C. 20005. 104 pp. $4.00.*

continued on page 76



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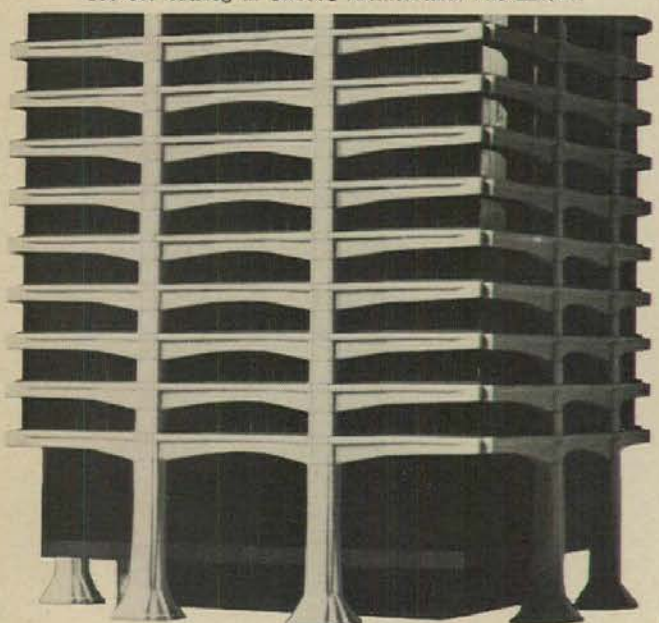

Gulf Life Tower, Jacksonville, Florida

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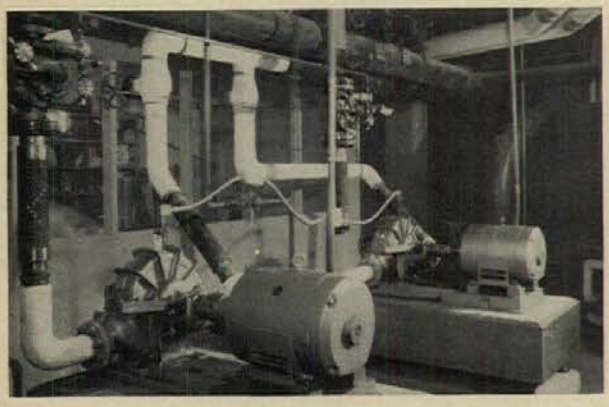
In Phoenix . . . the new Western Financial Center uses UNI-PRESSURE*



Installation photo of the Uni-Pressure System at the Western Financial Center. Equipment is designed to provide a maximum of 200 GPM and a system pressure of 132 psi.

Owner: **Western Savings & Loan Association**

Architect: **Bank Building and Equipment Co. of America**

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The increasing usage of the Uni-Pressure System in new buildings such as the Western Financial Center, Northwestern National Life Insurance Building in Minneapolis, Minnesota, Belle Plaza in Miami Beach, Park City West in Philadelphia, and Marina City in Chicago indicates the wide acceptance of this system. Over 600 system sales to date include the following advantages:

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continued from page 70

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AN INTRODUCTION TO BASIC SUPERVISION OF PEOPLE. *By Raymond J. Burby. Addison-Wesley Publishing Company, Inc., Reading, Mass. 175 pp., illus $4.95.*

THE ARCHITECTURE OF AMERICA. *By John Burchard and Albert Bush-Brown. Atlantic-Little, Brown, 34 Beacon St., Boston, Mass. 02106. 481 pp., illus. Paperbound, $3.95.*

THE SEARCH FOR ENVIRONMENT. *By Walter L. Creese. Yale University Press, 149 York St., New Haven, Conn. 360 pp., illus. $15.00.*

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THE RESTLESS ART, *A History of Painters and Painting 1760-1960. By Alan Gowans. J. B. Lippincott Company, East Washington Square, Philadelphia, Pa. 19105. 414 pp., illus. $9.95.*

THE WORLD CITIES. *By Peter Hall. World University Library, McGraw-Hill Book Company, 330 W. 42nd St., New York, N. Y. 10036. 256 pp., illus. Hardbound, $4.95; Paperbound, $2.45.*

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HIGH DENSITY LIVING. *By Rolf Jensen. Frederick A. Praeger, Publishers, 111 Fourth Ave., New York, N. Y. 10003. 245 pp., illus. $20.00.*

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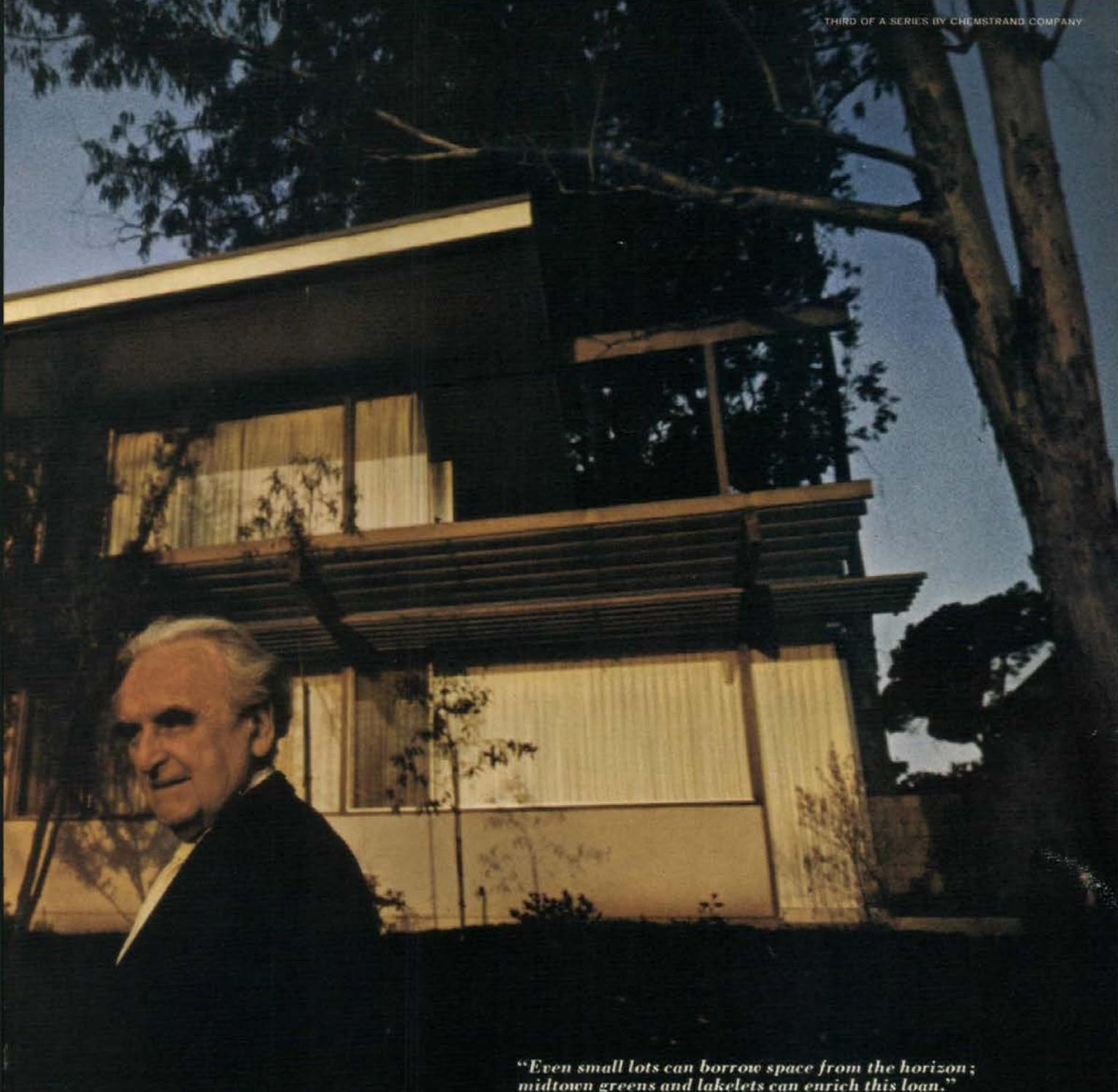
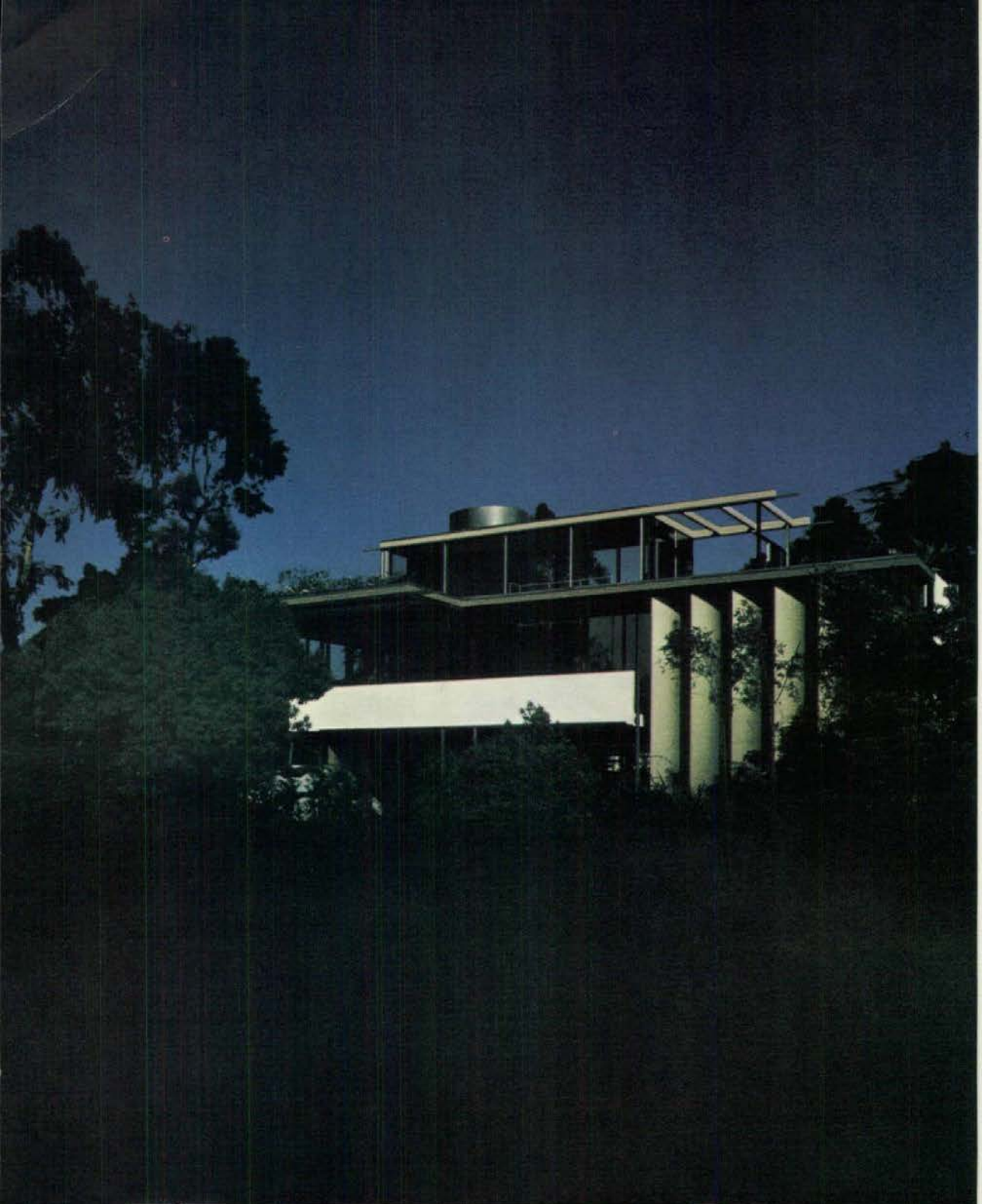
THE DOLLARS AND CENTS OF SHOPPING CENTERS 1966. *By the Urban Land Institute, 1200 18th St., N.W., Washington, D. C. 20036. 191 pp. $16.00.*

URBAN REAL ESTATE RESEARCH 1964. *By Jerome P. Pichard and Gene C. Tweraser. Research Monograph 11, Urban Land Institute, 1200 18th St., N.W., Washington, D. C. 20036. 90 pp. $4.00.*



"Even small lots can borrow space from the horizon; midtown greens and lakelets can enrich this loan."

RICHARD NEUTRA



The Space Saver Research House, first built by Neutra in 1932, tragically burned. Now again it faces Silver Lake. The charcoaled west front trees are replaced by tall shading louvers automated to follow the sun.
Bottom left picture "And the landscape of nature extends from the horizon right through our skin and millions of sense receptors into our innermost being." (The anti-heat glass penthouse island is surrounded by a reflecting water roof.)
Bottom right picture "Even in midtown architects cannot abandon the green and red-blooded world for one that is anemic, drab, humdrum, sensorially impoverished."
The Richard J. Neutra Institute's Research House, Los Angeles, California, 1966
Richard and Dion Neutra, architects

"Density amidst wide spaces is an age-old recipe." Neighborhood project, Channel Heights, Palos Verdes, California. Richard and Dion Neutra, architects.

n this article we report hard J. Neutra's views on hitecture and mass popu- on. Because we feel carpet- is the concern of the hitect, we confess to draw- Mr. Neutra out on the e of carpeting in a well- pled world.

'Population explosion uld be scientifically man- able, much more so than ce travel," says Neutra. rchitects can find ways to o—accommodating instead vaguely dreading mass ulations."

Even in the difficult prob- of mass habitation utra is steadfast in his re- ct for man's basic nature. very kind of structure and every kind of situation, is Neutra's philosophy. le and technique evolve urally from service to n's physiological-psycho- ical needs.

These primary needs stay n us; they do not obso- e, and when needed pro- s are designed with these ds in mind, they too will safe against obsolescence. h projects are often now staggering size, and we ply can't afford their de- n if they do not support and health."

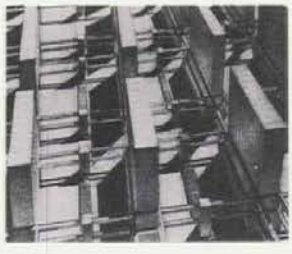
Neutra's studies for an al town, "Rush City Re- med," which he worked in the early twenties, are ainly not obsolescent. In , they are more pertinent ay with our increased pop- ulation, our far-flung suburban fringe, and our noisy, sprawling, spur-of-the-moment cities.

"There can be no doubt that the prehistoric biological plan of nature was for human beings to be well spaced in the landscape. In the future, physiological needs will have to be artificially fulfilled if ever greater population densities are made agreeable."

These needs are fulfilled in the Bewobau housing projects designed by Neutra and his collaborators recently near Hamburg, Frankfurt, Wiesbaden — German suburbia where land is scarcer than here. They contain hundreds of houses, some nine different types, on small plots. Interlocked yet protected by walls and hedges, each house is screened from the others, and lives within its own small, individually designed garden.

In this country the Richard J. Neutra Institute's Research House in Los Angeles, where Neutra tests theories, materials, and, above all, human responses, proves what can be done with a tiny, midtown plot of ground. The Research House is built on a 60- by 70-foot lot, but it has space for three families, get-togethers, and seminars. Facing Silver Lake, it is on a highly trafficked street, but you don't suspect this, once you're inside the green hedge keeping out the city sidewalk. Here

1.



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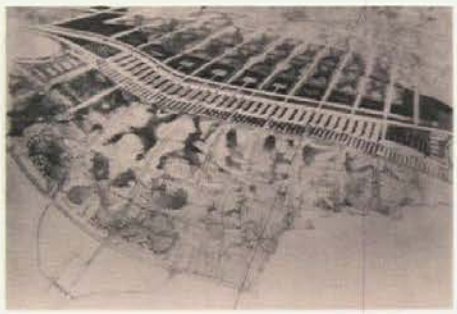
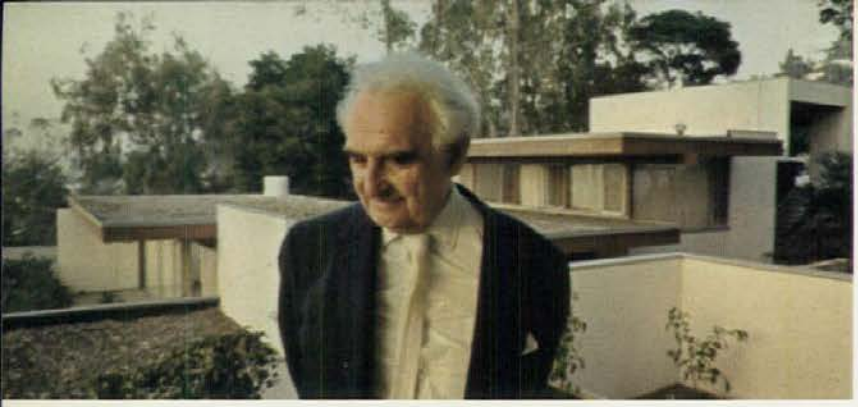


3.

4.

1. The freeway passes a commercial link between domestic zones.
2. One-structure-downtown. Rialto bridges, paralleled by intimate small shops, cross over landscaped or covered parking areas, with a world of rolling traffic beneath.
3. "Ribbon City" with a backbone of high rise buildings and lateral exfoliations of complete residential neighborhoods, each self-centered.
4. Main rapid transit station with helicopter top.
All four pictures are from R.C.R. Rush City Reformed studies by Neutra in 1923.

"The big problem with an ever smaller spacing between human beings is setting the scene so that, some of the time, they can sense each other less."
Bewobau housing project near Hamburg, Germany
Neutra and Associates, architects



"Mohammed, a successful, real politician, if there ever was one, said: 'If I had two coats, I would sell one and buy white hyacinths for my soul.'"

Neutra, the humanist, is also Neutra, the magician. Trees, foliage, and small pools here and there outside the glass fronts on the first, second, and third levels (Neutra calls these pools "psychological moats") make you feel you're within a woods. Reflecting glass, heat-mirroring in different degrees according to orientation, multiplies trees and shrubbery and sky and pools beyond their limits by day—and even more so by night with dim, indirect, white illumination melting with moonlight. And the inch-deep pools, gently wrinkled by the breeze, reflect space. You see and feel only a world of nature, and you forget that a man has contrived it all within the tight central area of a vast metropolis.

The "cures for tightness" continue inside the house. It is full of expanses and experiences. Here glass lets in light and sky and reflecting pools so that rooms seem to go on and on in space.

Carpeting is one of the "space variegators." It varies and defines space for both eye and ear. It half-consciously sections off an area for specific use. Here is a carpet-quieted space for relaxed talking. There is a carpeted dining or formal conference space. In between is wood, for Neutra likes to give the ear the variety of sounds one makes going from carpet to wood to carpet. He also likes a diversity of feeling for our many muscles which record resiliencies. He stretches space by inserting a "wealth of experience." It is not just a matter of square feet.

Perhaps his most surprising effects are achieved with lighting. At night by rheostatically dimming and again brightening lights, half-transparent glass superimposes mysterious images over floors and makes their surfaces seem to overlap and expand outward. Again a feeling of space is added. An entire room is given the warm glow of a fireplace with soft lighting from the toe recess of bookshelves skimming the carpet pile.

Having fully enjoyed the aesthetic, functional, and dramatic effects Neutra has achieved with carpeting, we asked him about its practicality in mass habitation.

"I once lived for a year in a Moslem harem, or rather, under the same roof with one. It had a great number of children and thin hardwood partitions. If populations reach that kind of density, the Oriental custom of rugs (which preceded our full-sized carpeting) seems a blessing, a foregone conclusion, almost a necessity for survival.

"We can hardly depend on choices or decisions of the individual tenant as to how he wants to support, or mitigate his weight and impact on the floor, or cut down vibrations in his room which are being originated by his moving around chairs, trick-tracking or dancing on a noisy sort of surface, selecting a television program which may not coincide with the choice of his neighbors on the side, or the people below. Thermal and visual problems within his four walls can be his own affair, but when it comes to his acoustical spread, he is a public menace. Shall we live with plugs in our ears?

"You ask me about carpeting. I am, with my zest for *science truly applied*, only interested in the mission of keeping humanity, in its ever remade setting, as sane and sound as we can. Well, carpeting may have been considered a luxury when people were scarce, and space between them large, but this will no longer be so when population densities are on the steep increase. To soothe nerves within and around rooms filled with ample humanity will be a formidably mounting job, unless people learn to move about as deftly as bats. I'm afraid they won't."

Neutra says he can see carpets used on ceilings, as partitions, or in lieu of them. "We can redirect sound where we want it, or swallow it up when we place such absorptive fabrics with judgment, underfoot, on walls, or overhead, as they best supplement each other."

Neutra went back to his main theme of how, in tightly populated cities, the architect must make up for man's loss of natural surroundings. "In the future they will have to be artificially substituted, and, nevertheless, their eternal role fulfilled if ever greater densities should be made bearable.

"Surfaces, however synthetic, must have a natural feel; that means they must tend to associate with ancient experience of mankind." Neutra mentioned how carpets have their link to grassy ground and the colorful spread of meadows in bloom.

"We shall never *learn* to be unnatural; rather we must learn to supply in much sensitive detail what our nature unavoidably needs."

One feels that no matter how many men cover this earth Neutra would build a house that favors a man's growing, the way a friendly greenhouse favors a plant's. For Neutra's first love is man.

See what happens when Contractor Ed Krygier meets up with one beautiful frame!

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Heather Browne

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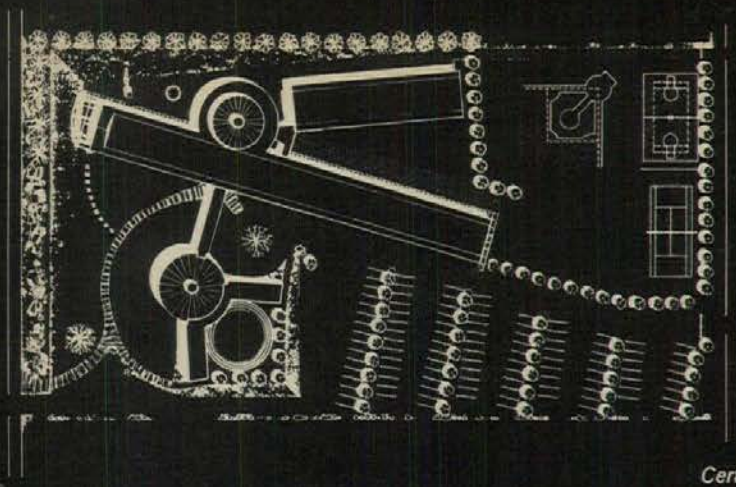
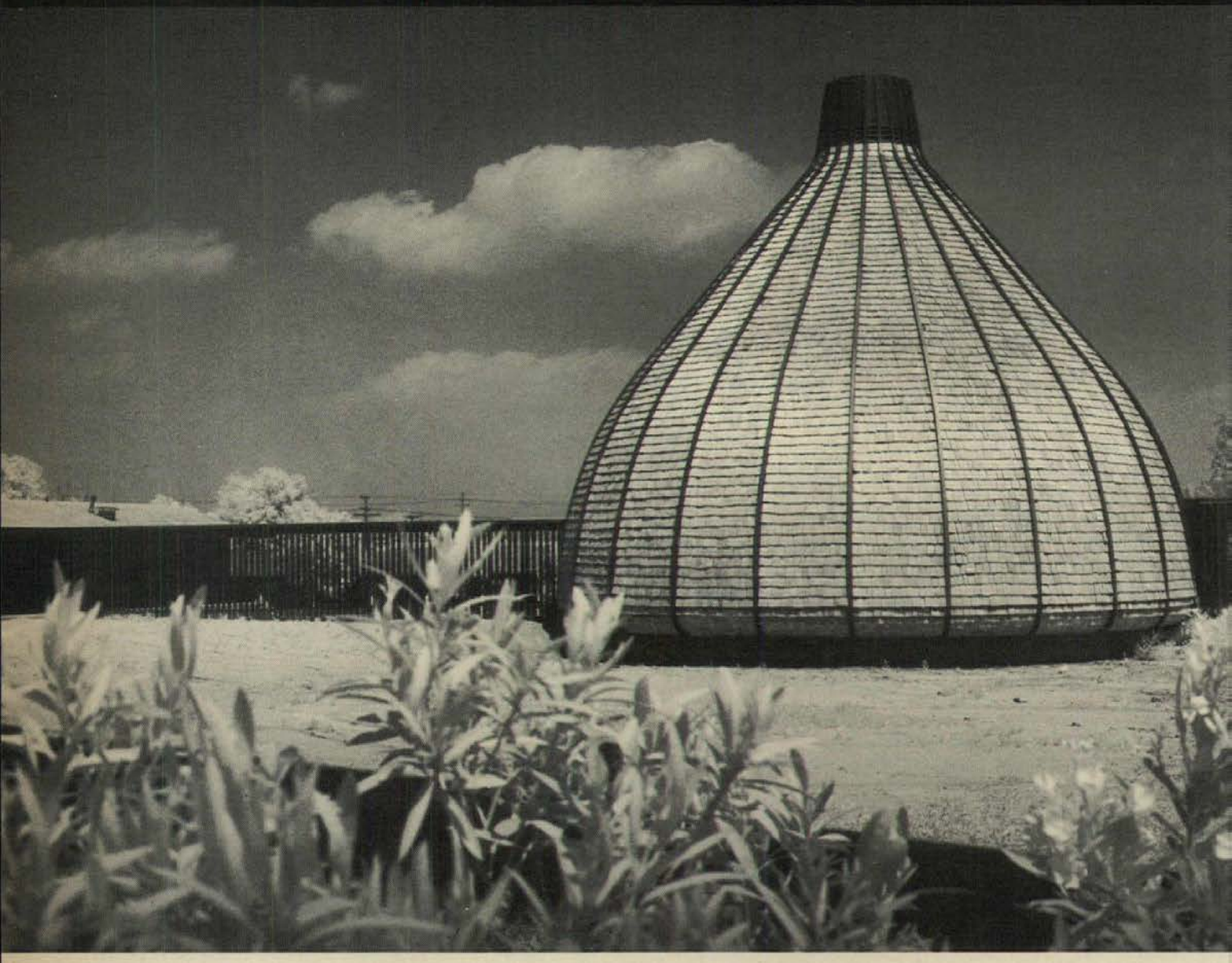


Church, Sepulveda, California
Architect: Frank F. Ehrenthal
Certi-Split Handsplit-Resawn Shakes, 24" x ¾" to 1¼", spaced ¼" to ⅜" apart with 10" to the weather.

THE CROWNING TOUCH OF QUALITY
RED CEDAR SHINGLES & HANDSPLIT SHAKES



Red Cedar Handsplit Shakes: Rustic formality to help a congregation feel at home.

The Worship Committee of this church asked the architect to "express the central concept of 'at homeness'." An exterior sheath of red cedar handsplit shakes was a significant part of his answer. Red cedar shakes have a way of looking appropriately formal at a moderate distance, yet growing increasingly "at home" as they are approached. Up close, they seem at once dignified and free of all pretense. And red cedar's honest qualities are more than skin deep. Each shake packs all the toughness and reliability that you might expect to find in one of the most durable woods on earth. There's more detailed information on Certi-Split handsplit shakes (and Certigrade shingles) in our Sweet's catalog listing, 8d/Re. Or give us a call, or write.

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JOINT-VENTURE PRACTICE

PROBLEMS, PROCEDURES AND OPPORTUNITIES

How one architectural office has developed the joint-venture technique for handling sophisticated problems in extraordinary commissions—whether the project is large or small.

A joint venture in architectural and engineering practice is a close contractual union, a "civil marriage" so to speak, between two or more professional firms for the purpose of bringing their combined resources to bear on the acquisition and/or execution of a commission. Usually, the commission is a complex one, and the union terminates on completion of the single job for which it was created. As with most marriages, civil or otherwise, there is a great iceberg of problem-solving savvy under the bright surface of compatibility.

These are some of the characteristics summarized by Max O. Urbahn in a review of some 20 years of experience with the joint-venture technique. Current participation in various joint ventures, although by no means an exclusive preoccupation of The Office of Max O. Urbahn, provides a broad view of the adaptability of this mode of operation to sophisticated problems. Some of these ventures, shown on following pages, include: the world's largest enclosed volume (the Vehicle Assembly Building at Merritt Island, Kennedy Space Center), the world's most powerful nuclear particle accelerator (a mile-diameter, 200-bev cyclotron for Lawrence Radiation Laboratories) and a relatively modest lecture hall and cafeteria for an international clientele (at AEC's Brookhaven facilities).

The joint venture operates somewhat like a partnership

The joint venture, Mr. Urbahn points out, has some of the operating characteristics of both a partnership and an association but differs from each at key points. The joint venture is more tightly drawn than the association in its joint commitments to the client and in the formal definition of member responsibilities. As in a partnership, all participating members of the joint venture are individually and jointly responsible to the client for completion of the whole job. Unlike the partnership, however, the joint venture has no continuing existence beyond its one-job purpose. As an entity, it retains no profits and is therefore not taxable. That is, all profits are disbursed to participating firms on an agreed basis and are taxable as income to those firms.

Joint ventures in which the Urbahn firm participates generally work under two agreements: first, the joint-venture agreement itself, which stipulates the purpose, composition and operating principles; second, the operating agreement, which details the day-to-day work assignments and contributions, financial and otherwise, of member organizations. Similarly, there are two checking accounts; one into which all monies received by the venture are deposited and from which withdrawals require signatures of two or more participating principals; the other is an operating account which receives its funds from the first and is disbursed by the single signature of a managing director designated by agreement of the joint venturers.

A policy board makes all the rules

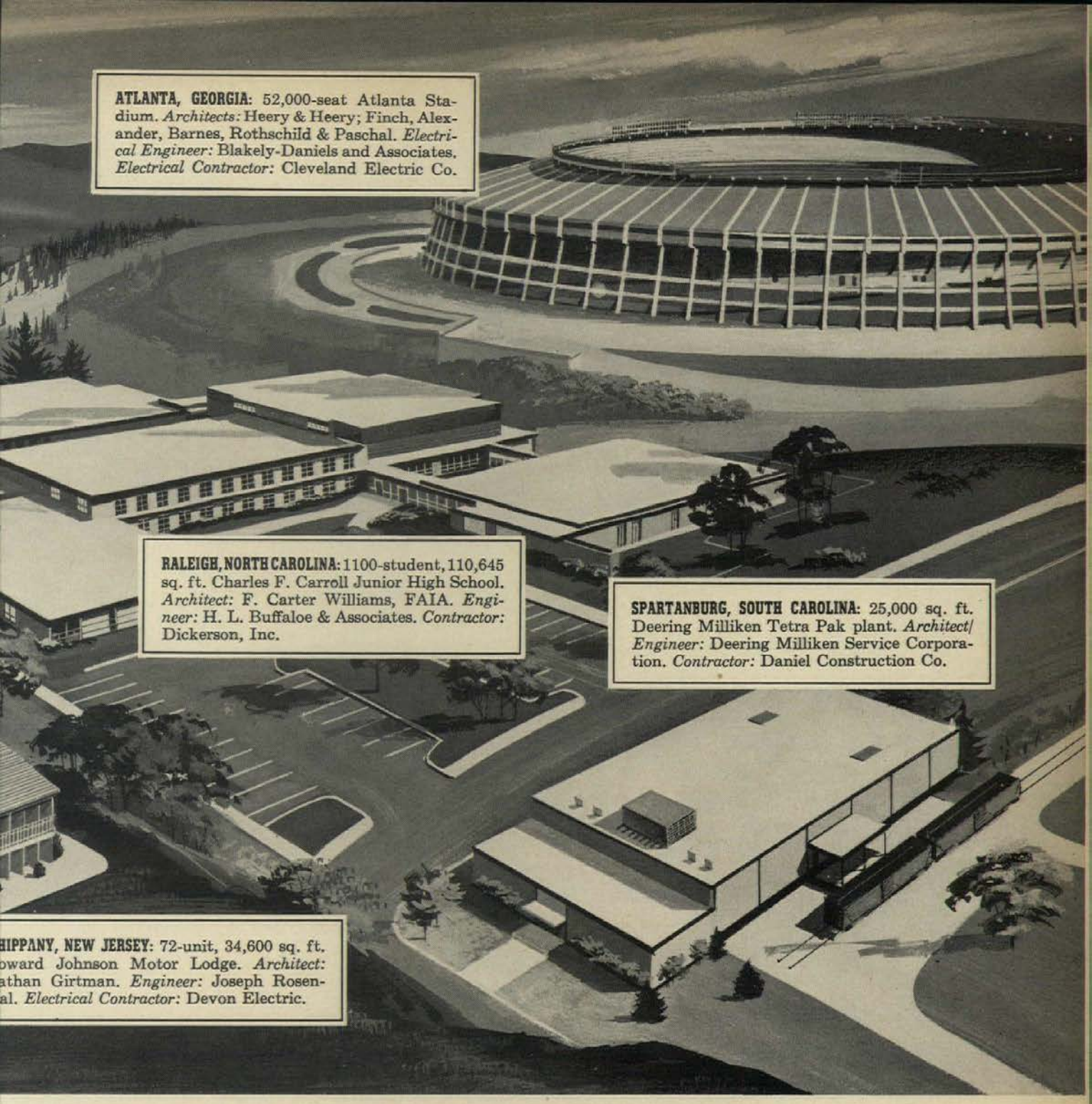
Such agreements, and all other matters of policy and joint commitment, are the province of a policy board or executive committee established specifically by terms of the joint-venture agreement. This board consists of a designated principal and alternate from each participating firm.

Regarding the operation of the board, Mr. Urbahn holds two strong opinions: first, that each of the member principals should be of equal status in his authority and responsibility to the client; second, that the board should operate on a basis of unanimous agreement in matters of management policy. It is possible, says Mr. Urbahn, to operate on a basis of majority rule. Or the joint venture can also operate under decisions of an executive elected by participating members. Either of those two methods, however, undercuts the

CHICAGO, ILLINOIS: (Left) 60-story, 2,200,000 sq. ft. First National Bank Building. *Architects:* C. F. Murphy Associates; Perkins & Will. *Contractor:* Gust K. Newberg Construction Co. (Right) 70-story, 900-apartment Lake Point Tower. *Architects:* Shipporeit-Heinrich; Graham, Anderson, Probst and White. *Engineer:* William Goodman. *Contractor:* Crane Construction.

FORT WAYNE, INDIANA: 30-room, 18,750 sq. ft. Immanuel Baptist Church. *Architect/Engineer:* Orus Eash. *Electrical Contractor:* Henry Electric Co.

Now...the big ones are going All-Electric!



More and more architects and engineers are finding that all-electric design, with flameless electric heating and cooling, can hold down first costs for clients in buildings of all types through the elimination of such items as boiler rooms, fuel storage, stacks and long pipe or duct runs.

Annual costs can also be reduced, since simpler control systems and lower maintenance require fewer employees.

Moreover, because of the wide variety of equipment types to choose from, all-electric design permits greater architectural freedom and flexibility. Expansion becomes easier, too. And all-electric design can also provide from 5% to 10% more usable floor space for additional building capacity.

For more facts about the proven advantages of applying all-electric design to your industrial and commercial buildings, call your local electric utility company. They will welcome the opportunity to work with you.

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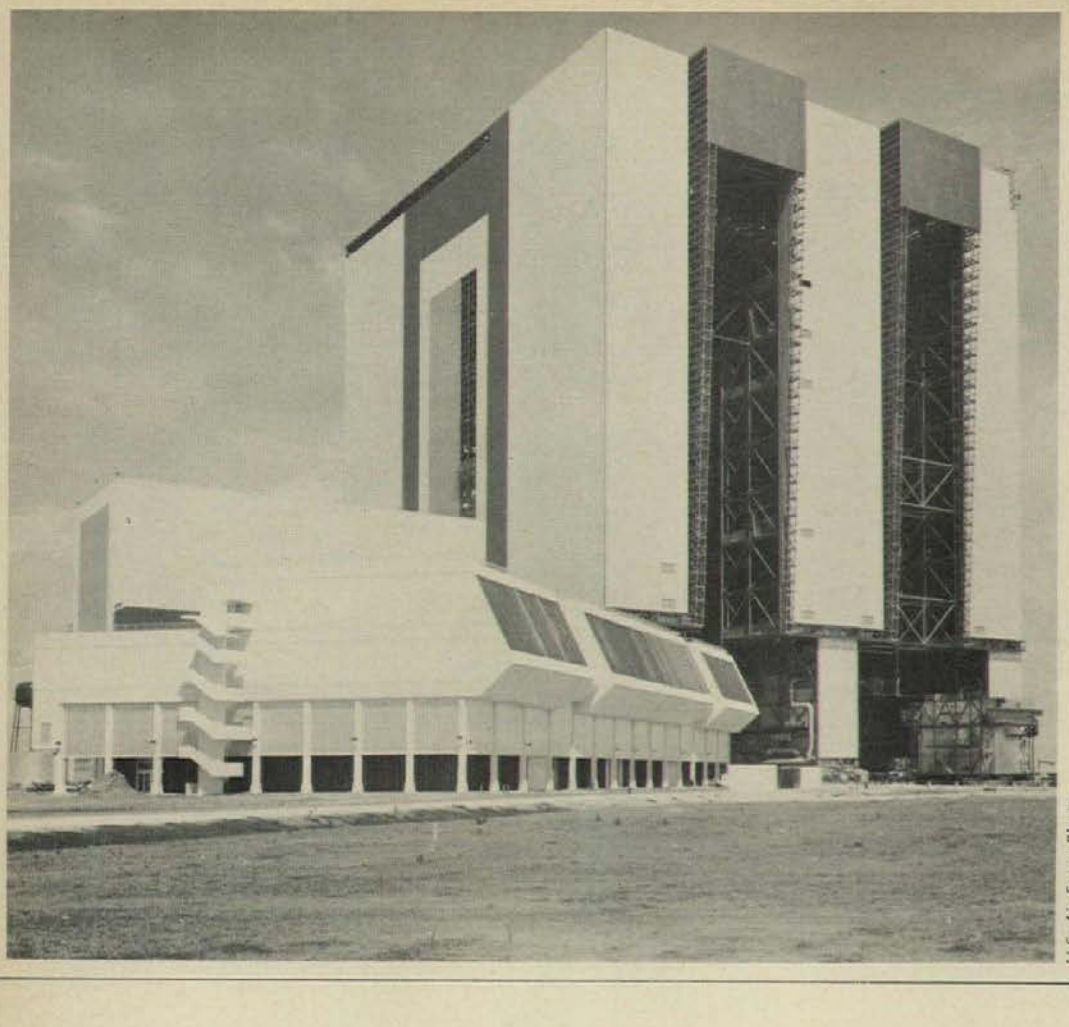


U.S. Air Force Photo

The world's biggest building

One of the notable joint ventur in recent years has been Ursa (from the initials of Urbahn, Rober Seeyle and Moran) now completi work on the world's largest enclos cubage, the Vehicle (formerly Ver cal) Assembly Building at Merr Island, Kennedy Space Center. Th superlatives of this structure ha been widely publicized—125.3 m lion cubic feet enclosed over 9 acres of floor space with doors 4 feet high opening to 526-foot-hi bays....The building is a major cor ponent of Launch Complex 39 whi received the 1966 outstanding ci engineering achievement award A.S.C.E.

Ursam is a four-firm ventur Its executive policy board consis of the following principals and a alternate from each firm: Max C Urbahn, managing partner of th group; Anton Tedesko from Rober and Schaefer Co., Inc., structur engineers; A. Wilson Knecht fro Seelye Stevenson Value and Knech Inc., civil, mechanical and electr cal engineers; Philip C. Rutledg from Moran, Proctor, Mueser ar Rutledge, foundation engineer William D. Alexander was appointe group project manager.

The four firms had worke together on various projects in co ventional consultation relationshi over many years. In the fall of 196 it became apparent to Max Urbah

principle of joint and individual responsibility and can result in both legal and personal complications.

The joint-venture agreement is a formal contract

The form of the joint-venture agreement can vary in depth and detail with complexity of the project and preferences of the members and their legal advisers. As a legal document of contract, however, it must be as explicit and comprehensive as possible. An agreement typical of the Urbahn operation has 17 items of consideration, each of which is detailed in unequivocal legal language.

At risk of losing something of the firmness of the document in translation from the legalese, it may be helpful to summarize. The purpose is not to present a pattern to be followed in detail, but to underscore the many facets of attention that must be given to this kind of contract.

An introduction dates the document, lists the participating offices to be known as the "joint venturers" and states the nature, location and ownership of the work contemplated. Specifics of the agreement are:

1. *Right of the parties.* Commits the parties to the terms of the agreement and to the conduct of all work of the undertaking contracted for by the joint venturers.

2. *The name.* States the name under which all activities of the venture are to be conducted.

3. *Interest of the joint venturers.* Specifies the percentage division among parties to the venture to be applied to profits, losses, working funds, liabilities and obligations.

4. *Representatives and policy board.* Designates membership of a policy board as a partner or associate from each firm to serve as principal representative and another partner or associate to serve as alternate to represent the firm in transactions of the joint ven ture and in dealings with other partie to the venture. Further stipulated ar provisions for absences or changes i membership of the board, meetings compensation (usually none for boar membership *per se*) and liability o members to the other joint venturer (none except for gross negligence o fraud).

5. *Supervision of the joint venture.* Gives the policy board full responsibil ity and authority for performance of th undertaking and for appointment of project manager who will be responsibl for management of the work and con tacts with the client.

6. *Financing of services.* Sets up a joint bank account with initial deposi determined by the policy board and contributed *pro rata* by joint venturers each of whom designates an authorized signer of checks and endorsements. Al receipts and payments in connection with the undertaking are made through

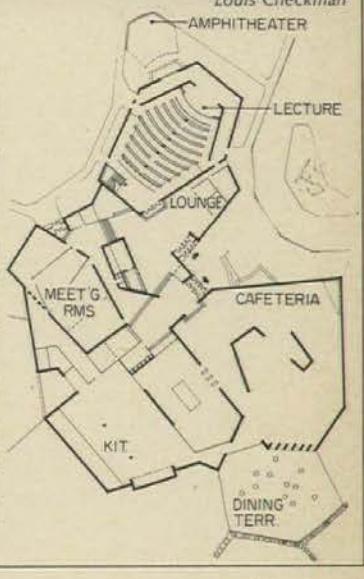
hat the surge of design and construction activity associated with the pace program not only represented n opportunity for service but demanded a degree of technical sophistication that could be best erved by the joint-venture approach. Design capability on a wide ront was a necessary prelude to onsideration for some of the larger vork. Ursam put together specific roposals for various NASA projects nd outlined the capabilities of the nember organizations. The commission for the Saturn V Vehicle ssembly Building followed.

Alexandre Georges photos

Louis Checkman

A study in precast planes

The joint venture is not ordinarily used for buildings as small as this lecture hall-cafeteria designed for the Brookhaven National Laboratory, and owned by the Atomic Energy Commission and Associated Universities, Inc. But its program of use as a miniature United Nations for visiting scientists, lecturers and students who come to this Long Island center from all over the world called for a combination of architectural innovation and functional efficiency that, says Max Urbahn, suited the capabilites of his office and that of Seelye Stevenson Value and Knecht, to both of whom the joint venture is a familiar mode of operation. The sculptural form is achieved in precast concrete panels for exterior walls and roof.



this joint account. In a multi-member venture, the board may designate fewer signatories and/or limit check amounts as it sees fit. The board may also require additional contributions from the venturers as they are required and assess penalties for delinquent contributions. When the board decides funds are in excess of needs, pro-rated distributions can be made. When the undertaking is completed and all bills paid, a terminal distribution is made.

7. *Performance of services.* Locates one or more places for doing business of the joint venture and gives the policy board power to determine which activities are to be performed in any offices maintained by the joint venturers. Arranges for reimbursement of members for an audited account of the cost of doing work on the undertaking and for payment of expenses incurred by the joint venture itself.

8. *Preliminary expenses.* Allows out-of-pocket expenses incurred by members prior to an award of contract by the client to be reimbursed out of joint-venture funds.

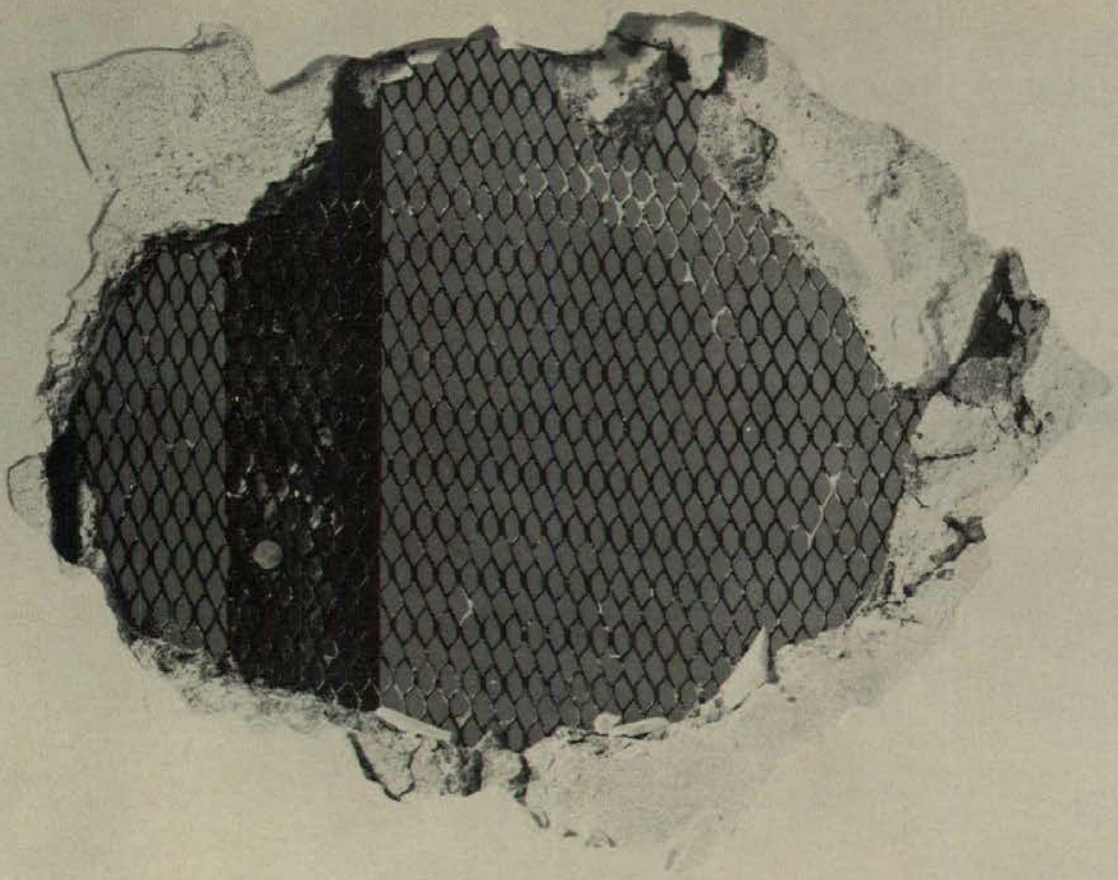
9. *Technical assistance of each joint venturer.* Makes personnel and resources of each venturer available for the undertaking to the extent that is "reasonable, necessary, or desirable to the end that the undertaking may be promptly and successfully carried out."

10. *Disputes and arbitration.* Provides that unresolved claims or disputes among venturers in connection with either the agreement or the undertaking shall, upon written request, be settled in accordance with rules of the American Arbitration Association and entered as judgment in an appropriate court having jurisdiction in such matters.

11. *Assignment of interest.* Prohibits any venturer or his firm from disposing of or encumbering his interest in the venture except as, with prior written agreement of other venturers, that interest may be assigned to a successor to the business of the venturer if the succession is voluntary and not from bankruptcy or for benefit of creditors. The right of any assignee, in any event, is limited to the stipulated share of the assigning venturer and may not be claimed until after completion of the undertaking and closing of the joint-venture account.

12. *Relationship of the parties.* Limits the engagement of each venturer toward all others as being confined to performance of the undertaking and specifically exempts the agreement from any implication of partnership or agency for any other work and from placing any limit on the freedom of the venturers to conduct their respective businesses. Nor does the agreement impose or imply any liability among venturers or their firms except in performance of its specific terms.

13. *Continuity and performance of the agreement.* Assures full performance



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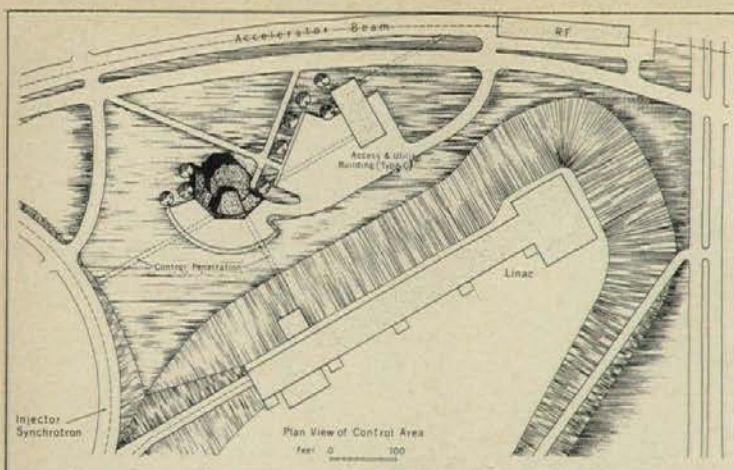
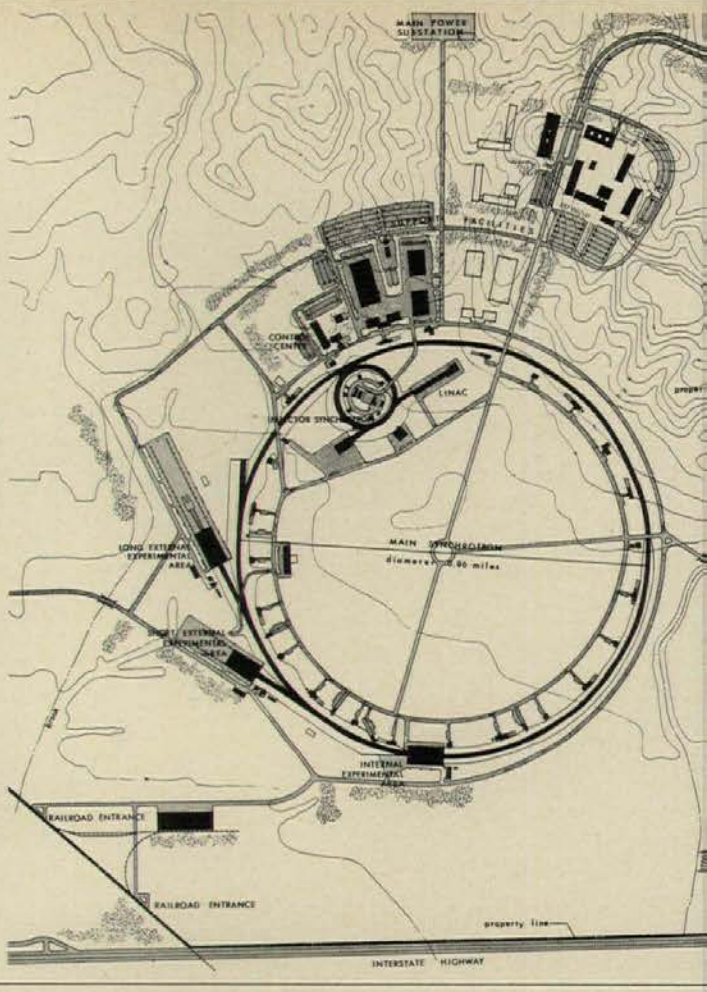




A mile-wide perfect circle

Preliminary studies for the world's largest and most powerful atom smasher, a 200-billion-electron-volt cyclotron, have been completed for the Atomic Energy Commission by a four-firm joint venture called Dusaf. Infinitesimal tolerances and gigantic forces applied over an unprecedented area called for an array of computerized architectural, engineering and construction capabilities for which the joint venture was a natural implement. A cyclotron is a circular channel in which a beam or burst of nuclear particles (protons or electrons) is kicked along by synchronized magnetic impulses to higher and higher velocities until it is peeled off the circle and smashed into a target. That's two-dimensional architecture, simple as a rifle range. But the invisible bullets approach the speed of light. They can be steered by magnets but not so as to correct much error in either radius or plane of the circle, in this case almost a mile in diameter. Further, the particles must be launched from a linear accelerator (linac, above) into a booster or injector synchrotron from which they are fed into the accelerator beam; and the whole process has to be observed and controlled through massive radiation shielding. Problems enough for Dusaf, a joint venture of Daniel, Mann, Johnson & Mendenhall; The Office of Max O. Urbahn, Architects; Seelye Stevenson Value & Knecht; and George A. Fuller Company.

of the undertaking by committing the parties, whether individual or corporate, and their executors, legal representatives, successors and assigns to full completion of the undertaking should any individual member die or corporate member be dissolved for whatever reason. Should any party withdraw from the joint venture for any reason, the others may, with the consent of the client, complete the work. If, upon completion, there is a profit, the withdrawing party will receive his pro-rated share as of the date of his withdrawal. If there is a loss, he must bear his share without regard to his withdrawal.

14. *Interpretation of the agreement.* Refers all questions relative to the execution, validity and interpretation of the agreement to be governed by the laws of the state in which it is executed.

15. *Terms of the agreement.* Terminates the agreement as of completion of the undertaking and satisfaction of terms of the agreement.

16. *Persons on whom agreement is binding.* Excludes all but the joint venturers and their legal assigns from provisions of the agreement.

17. *Notices.* Asserts that any written notices required under provision of the agreement shall be mailed to the principal offices of the venturers for whom they are intended.

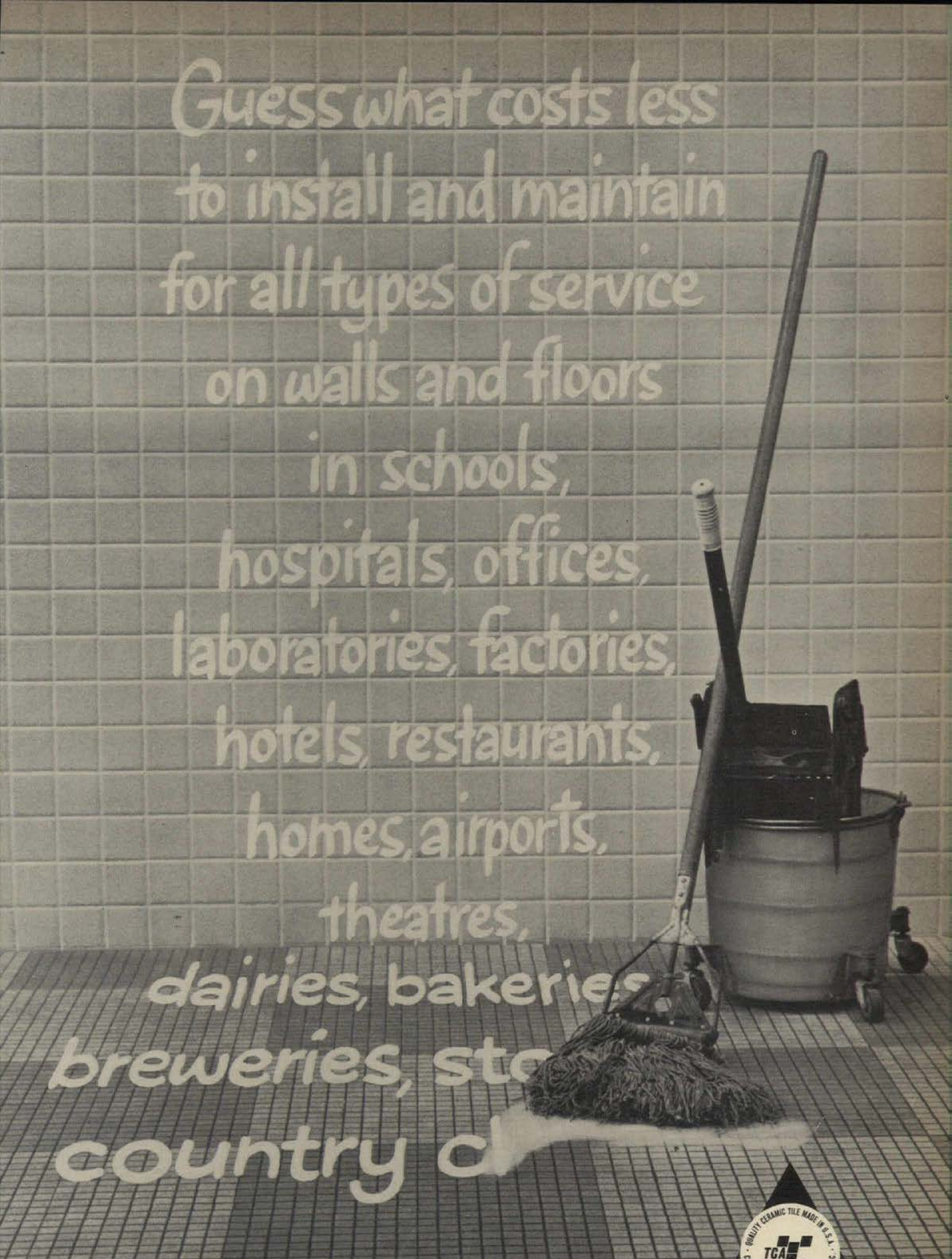
The operating agreement is made up as you go

As a practical means of getting things done and retaining the necessary flexibility for change or emergency action, the operating agreement can take the form of a series of numbered Executive Committee Memoranda. These are drawn up as the consensus of meetings and are headed by a statement such as: "The following agreements were reached by the Executive Committee and are hereby made a part of their contractual agreement dated——." The memoranda are then signed by all members of the committee.

The kinds of items of agreement covered in these memoranda are infinitely various. Following are a few examples: 1) Qualifications of executive committee members (as, for example, architects or engineers registered in a given state); 2) frequency of meetings and disposition of minutes; 3) compensation of members for administrative and technical time spent on the joint venture; 4) compensation of all others including employees of the joint venture and ground rules covering overtime, benefits, etc.; 5) basis of overhead computation; 6) bank accounts; 7) insurance; 8) accounting; 9) travel and entertainment; 10) reimbursement to the joint venturers from the control account; 11) reserve funds, etc.

How to succeed

Basic elements of the success of any joint venture, says Mr. Urbahn, are mutual trust and respect of the venturers and the clear delineation in writing of all elements, scope and limits of the working arrangement.



For walls or floors in light or heavy duty ceramic tile costs less in the long run. For a copy of the independent study which proves it, write Tile Council of America, Inc., 800 Second Avenue, New York, New York 10017.

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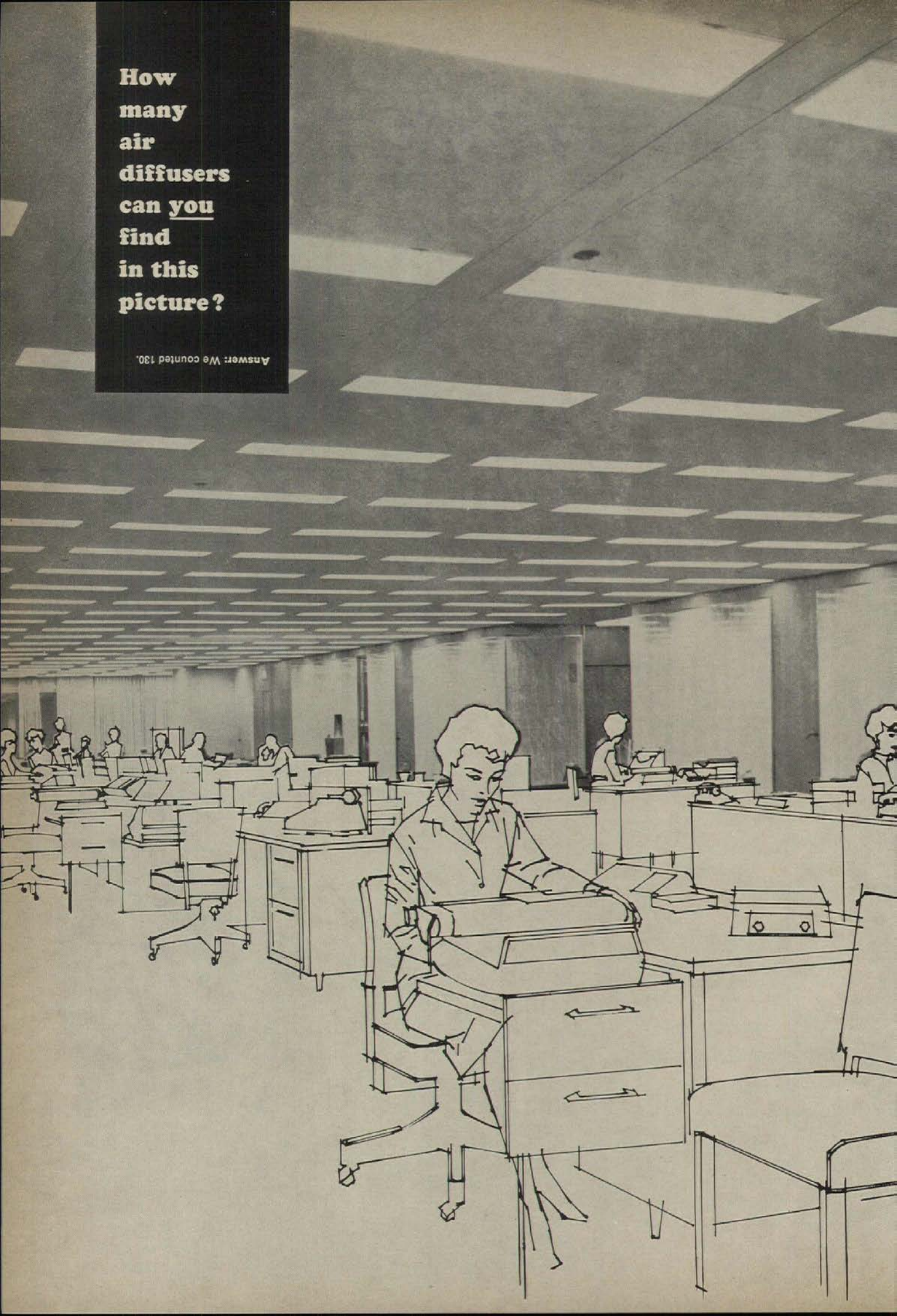
How many air diffusers can you find in this picture?
Answer: We counted 130.

"All air diffusers clutter and intrude."

says who?

The Barber-Colman Heat-of-Light System® uses diffusers that are practically invisible. And, they double as heat extractors to capture heat generated by lights and put it to work heating your building. Result: You realize major savings in the cost of air conditioning. Clip coupon for more facts.

"All air diffusers clutter and intrude." Says who? Instead of imposing design problems, Barber-Colman's Heat-of-Light System reduces the restrictions on architectural and engineering creativity.

With this system, you are now free to design building interiors for greatest aesthetic appeal and personal comfort —uncluttered ceilings . . . off-the-wall thermostat locations . . . movable walls wherever needed . . . zone comfort control for *every* occupied area, if desired.

"Invisible" air outlets add new beauty

Air diffusers used with Heat-of-Light Systems are practically invisible. The new Day-Brite/Barber-Colman combination air/light diffuser is a prime example:

It blends beautifully with any modern ceiling system. And, its beauty is more than skin deep. It lights . . . diffuses air . . . returns air . . . extracts heat . . . and it's an air exchanger.

What's more, it enables you to move the room thermostat off the wall and mount it where it works best—in a moving air stream. (New pencil-thin Barber-Colman electronic sensing elements fit *inside* air/light diffusers . . . detect changes in room temperature up to 15 times faster than wall-mounted thermostats.)

System harnesses light-generated heat

Because the Heat-of-Light System utilizes heat transfer light fixtures, it captures up to 85% of light-generated heat, keeping it out of the occupied space. (Heat from lights can account for 50% of the total heat gains in a building.) Barber-Colman Jetronic mixing units in the ceiling cavity put much of this heat to work maintaining comfort conditions in interior areas. The rest is available to offset heat losses at the building perimeter or for storage (to be used later during unoccupied hours). Result: You realize major savings in the cost of air conditioning (often eliminating the need for boilers and other fuel-fired heat sources).

Simple design provides major savings in system cost

With Barber-Colman Heat-of-Light Systems, hot air ducts, reheat coils, and piping are eliminated. Less pipe and duct insulation are required. You get the most possible air conditioning in the least possible space. Fluorescent lights operate at ideal temperatures (75 to 80°F), increasing light output 15 to 20% over "static" fixtures. Lighting levels can be doubled without increasing conditioned air load.

Free computer service evaluates Heat-of-Light for your building

You can evaluate a Heat-of-Light System for your building *before* it's installed. All that's needed is a one-page Feasibility Study, a short discussion between one of our field people and your design engineer, and a few minutes' work for our computer.

The computer carefully studies each floor in your building. It calculates heating and cooling air temperatures required for perimeter air systems, the number of light fixtures needed, supply air quantity and temperature, and primary air quantities. You get an answer quickly, often within 48 hours.

Get the facts! Clip the coupon below or contact your nearest Barber-Colman field office for a Feasibility Study. (More than 100 of our customers and prospects have already studied their building designs with the help of this Electronic Data Processing Service.) *And it's free!*

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Name_____

Title_____

Company_____

Street_____

City_____ State_____ Zip Code_____

For more data, circle 71 on inquiry card

20-story office building will blend gold-colored elements

The $10-million home for the Third National Bank in Nashville, Tennessee, scheduled for completion in 1967, will have a facade predominantly composed of gold metal columns and gold-tinted glass. At the base of the 331,000-square-foot, 20-story structure will be 16 white stone columns defining the building's three-story base. The tower section, which is set back from the base, will have a metal facing of aluminum with a gold finish. Architects are Brush, Hutchison & Gwinn and the general contractor is the Henry C. Beck Company.

Space research center has modular flexibility

The proposed $1.5-million radiophysics and space research center at Cornell University will have 38,000 square feet in four stories and a basement. The structure will contain a below-ground, 1,100-square-foot lunar research laboratory. In addition, there are 42 10-foot laboratory modules on three upper floors. By eliminating partitions, these spaces can be doubled or tripled. The building is jointly financed by the National Aeronautics and Space Administration and Cornell. The velour brown brick-faced structure was designed by The Ballinger Company.

For more data, circle 72 on inquiry card

Case Institute of Technology
Cleveland, Ohio

University of Washington
Seattle, Washington

Brown University
Providence, Rhode Island

Philadelphia
College of Bible
Philadelphia, Pennsylvania

Vermont College
Montpelier, Vermont

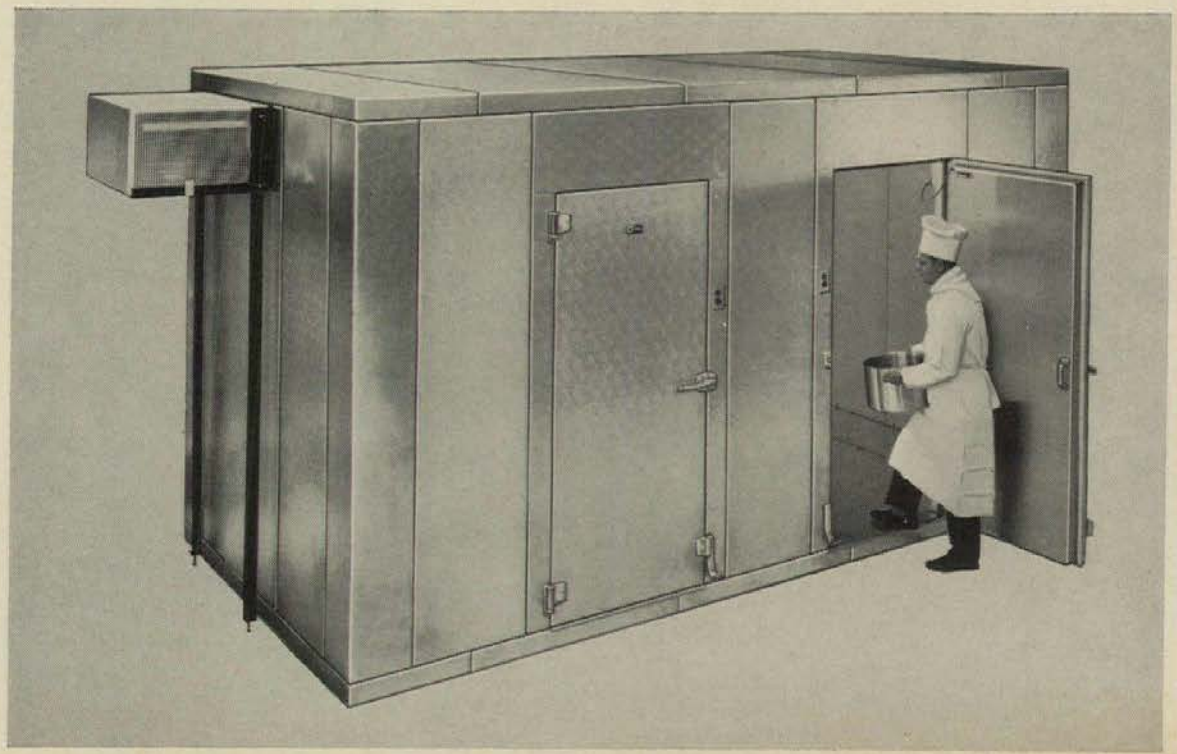
Eastern Arizona Junior College
Thatcher, Arizona

Carnegie Institute of Technology
Pittsburgh, Pennsylvania

Paulist Fathers' Novitiate
Oak Ridge, New Jersey

Stanford University
Stanford, California

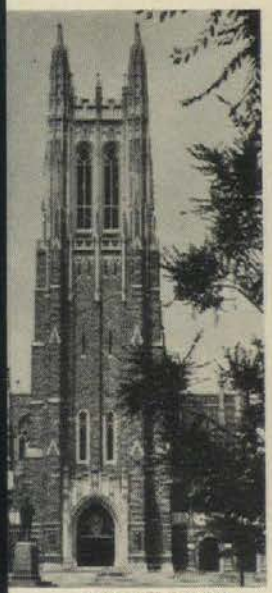
for college or university walk-in



Washington and Lee University
Lexington, Virginia

Cornell University
Ithaca, New York

St. Benedict's College
Atchison, Kansas



Duke University
Durham, North Carolina

University of North Carolina
Chapel Hill, North Carolina

Perkiomen School
Pennsburg, Pennsylvania

Lincoln College
Lincoln, Illinois

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Address all correspondence to Dept. AR-5.

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Architect: Ross, Fish, Duchesnes & Barrett. Schokbeton by Schokbeton Quebec, Inc.

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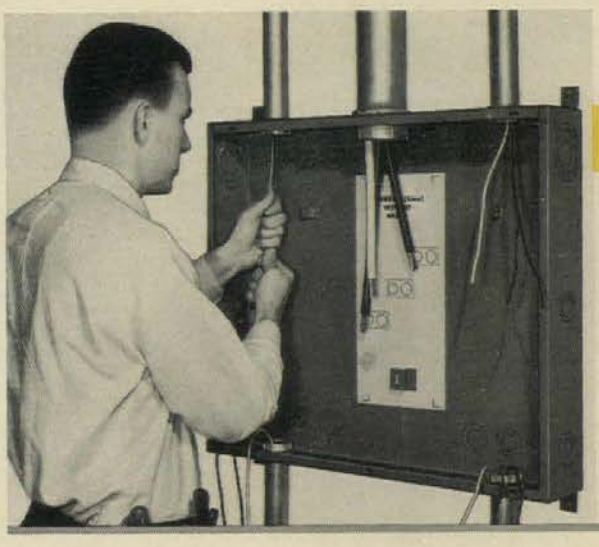
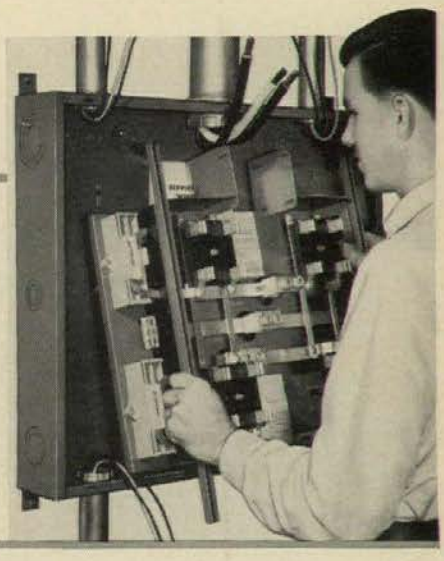


First... **mount the enclosure only**

Conduits can be attached to top, bottom, sides or back. Wires easily pulled with interior removed



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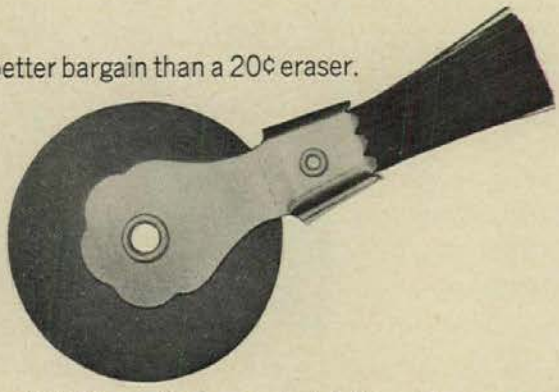
The $10,000 typewriter.

It's a better bargain than a 20¢ eraser.

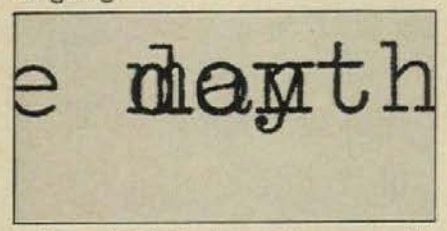


The new IBM Magnetic Tape Selectric® Typewriter, (MT/ST for short), costs ten thousand dollars.

And it's worth every penny.

Before, when a typist made a mistake, she had to stop typing and erase it. Or maybe even start all over again.

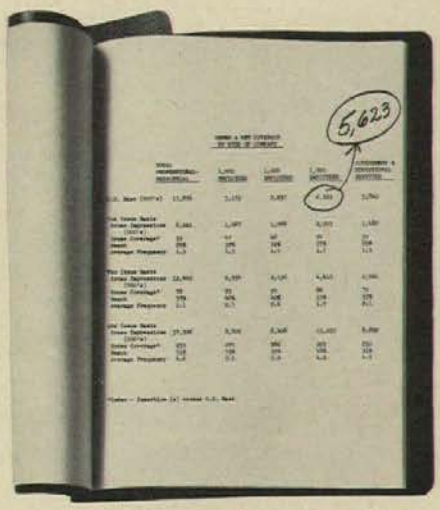
But with the new IBM® MT/ST, she simply backspaces, retypes, and keeps on going.



The mistake is changed on magnetic tape, where all typing is recorded and played back correctly at incredible speed. (Roughly 15 characters per second.)

That's not all.

Suppose you've had second thoughts about some words. And you want to make changes. No problem.



Only your changes are retyped. The rest is automatic.

Now for the $10,000 question: What does the new IBM MT/ST mean to you?

For one thing, a girl who types 80 words per minute won't end up averaging a slow 20 wpm because of constant retyping or restarting.

For another, the IBM MT/ST shortens the time gap between your first draft and the finished document.

In fact, you'll be able to handle correspondence, contracts, proposals, and building estimates more than 50 percent faster. (With less proofreading, too.)

The new IBM MT/ST: more power and more productivity. Ask your IBM Representative for the complete story.

Remember, you have to stop typing to use a twenty-cent eraser.

And that's the rub.

IBM

For more data, circle 76 on inquiry card

In your article "A Decade of Innovation," you stated that it is astonishing how many of the houses done recently by very young architects bear a marked resemblance to the work of Barnes, Franzen or Rudolph.

You might have added that the two houses you published by Mr. Franzen bear such a close resemblance to an earlier project by Corbusier, "Porte Maillot 50" (Corbusier 1946-52 published by W. Boesiger Zurich) in which the metal parasol or umbrella roof was employed similarly, that it is equally astonishing. Maybe the answer is that Mr. Franzen was a very young architect also in 1956.

Robert M. Fleming
A very young architect
Wilton, Connecticut

He was indeed!

Record Houses: too much innovation? To the many letters you must already have received in praise of your February reprise of "Record Houses 1956-1966: A Decade of Innovation," permit me to add only a grace note. Certainly we are all, within the profession and without, in your debt for your continuous and continuing concern for the field of domestic architecture: the more so in an increasingly de-humanized civilization where it is only too apparent that the designed private home is perceptibly, let us hope not inexorably, on the slow road to extinction, along with custom tailoring and custom aircraft and custom automobiles.

On another count, though, I find myself somewhat less than in accord with your effervescently effusive refrain of change and innovation. Particularly appalling to me is the very last sentence of your article: I can only hope you quote tongue-in-cheek, rather than with approbation, that ". . . recent remark of a fledgling architect about a certain new house: "But you couldn't like *that*—it looks like something out of the 1940's!' " To me, exactly the opposite would seem the valid goal: when I am told by skeptical visitors that my work of the 1940's looks as though it had been built only a couple of years ago, I take this as the highest compliment, and only hope my current corpus of residential work will join it in finding favor in the 1980's. If this be treason to our times, my apologies.

Landis Gores, architect
New Canaan, Connecticut

I couldn't agree with you more, and hope that few took the 1940's quote as anything other than tongue in cheek! When it was said to me, I found it extremely funny (and oddly aging).
Herbert L. Smith, Jr.

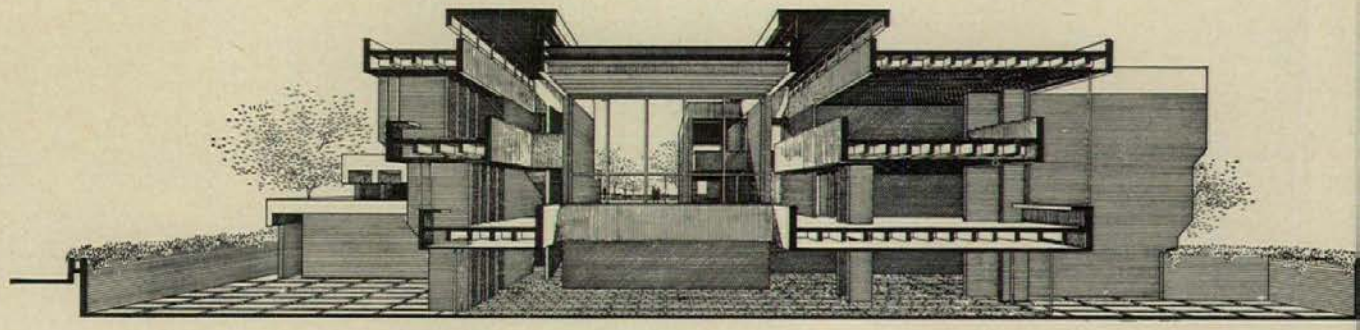
. . . use the opportunity, not the client Scanning the current issue of ARCHITECTURAL RECORD, I note with some shock that you have featured an interesting building. The M.I.T. Student Center is neither stage-set, *tour de force*, nor emphatic personal distortion. It is a thoroughly organized environment containing order, scale and body. . . .

Presenting the work of an architect, not a member of the play-boy jet set, is of itself unusual, but of more institutional interest is the fact that a major university has allowed one of its own faculty to undertake a responsible commission. Here the trust is certainly merited. Mr. Catalano has obviously used the *opportunity* rather than the *university*.

In conclusion I must say that my opinion of the RECORD grows. It grows in comparison to your competition, for here I see less of the current and tran-

continued on page 122

Zonolite prototype building #9: A college library



Marvin Hatami designs a college library.

Utilizing Zonolite® Masonry Fill Insulation in walls reduces initial equipment costs, saves $700 per year on fuel, substantially raises indoor wall surface temperature.

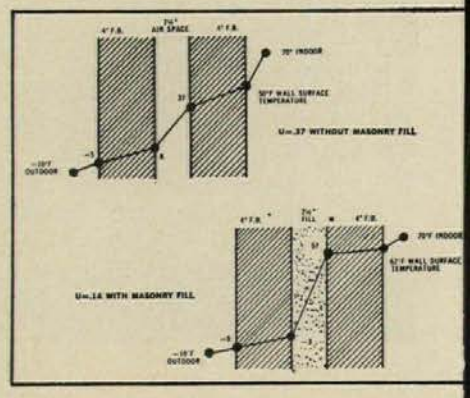
What would seem to be an added cost for insulation, in reality, is a highly profitable investment for your clients.

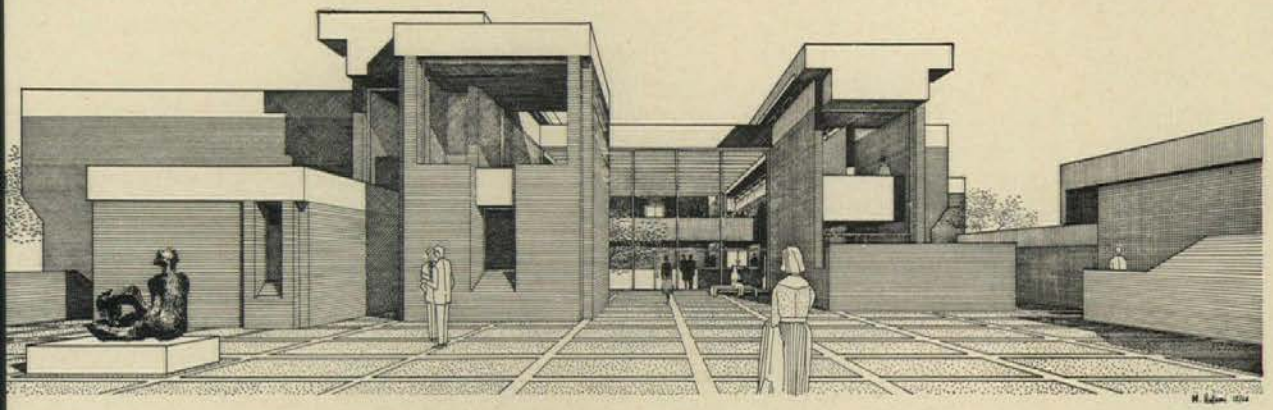
Consider this library designed by Marvin Hatami and engineered by Cator Ruma of Denver, Colorado.

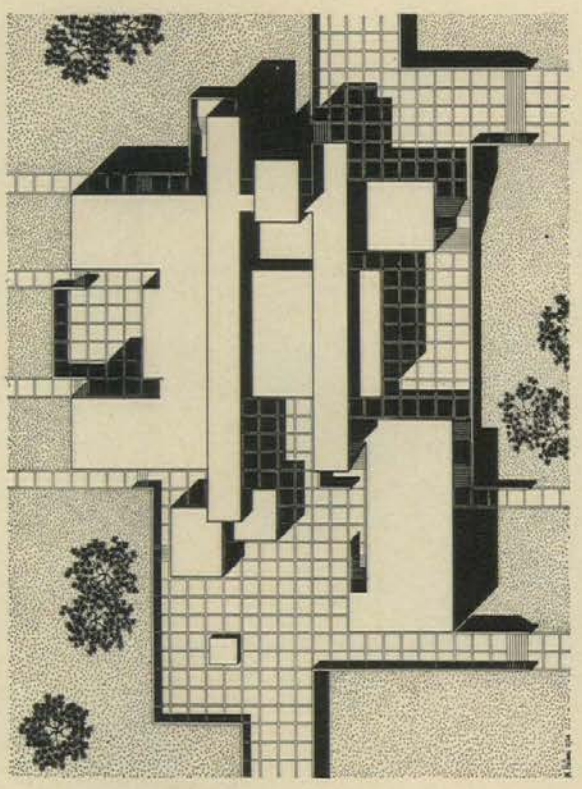
Its reinforced brick cavity walls feature Zonolite Masonry Fill Insulation. Installed cost? 10¢ per sq. ft. or $3245 total. As part of a 20-yr., 6% mortgage, it figures out to $279 annually.

For this investment, the client saves $700 per year on fuel. That's a direct 250% return on his yearly investment in Zonolite Masonry Fill Insulation.

There are indirect savings, too. (1) Smaller, less costly heating equipment can be used. (2) Indoor wall surface temperatures are raised from 50° to 62° F. This reduces body radiant heat exchange, minimizes wall surface downdrafts. (3) The interior surfaces of the walls can remain unfinished. And (4) the building is quieter because of Zonolite Masonry Fill Insulation's excellent sound absorption characteristics.







DESIGN CONDITIONS		Winter Heat Loss in BTU/Hr. Assuming 70°F Indoors —10°F Outdoors		Summer Heat Gain in BTU/Hr. Assuming 95°F, DB 64°F, WB Outdoors 78°F, DB 65°F, WB Indoors	
Without Masonry Fill	**With Masonry Fill**	Without Masonry Fill	**With Masonry Fill**	Without Masonry Fill	**With Masonry Fill**
4" Face Brick 2½" Air Space 4" Face Brick	4" Face Brick 2½" Zonolite Fill 4" Face Brick	962,000	**364,000**	201,000	**76,000**
Roofing, 3½" Concrete		225,000	**225,000**	107,000	**107,000**
4" Concrete on Grade		56,000	**56,000**	—	—
¼" Heat Absorbing Plate		730,000	**730,000**	443,000	**443,000**
15,000 DFM		1,080,000	**1,080,000**	229,000	**229,000**
175 Kilowatt		—	—	596,000	**596,000**
500		—	—	200,000	**200,000**
		3,053,000	**2,455,000**	1,776,000	**1,651,000**
ith Masonry Fill		$\frac{3,053,000-2,455,000}{3,053,000} \times 100 =$ **19.6%**		$\frac{1,776,000-1,651,000}{1,776,000} \times 100 =$ **7%**	

Additional facts of significant interest are available in our Bulletin MF-113. For your copy, please write Dept. A, Zonolite, 135 South LaSalle Street, Chicago, Illinois 60603

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For more data, circle 79 on inquiry card

continued from page 118

sient fad for aimless, formless, bumpy encrustations that our slums, bombs and urban frustrations have apparently gestated.

Charles Colbert
Architect-Planner
New Orleans

The March issue of ARCHITECTURAL RECORD leads off with some very impressive photos of an extremely handsome newcomer to the family circle at MIT. This reader is in complete accord with your editor's note that Catalano has produced some fine architecture, not withstanding the fact that the structure is the result of an approach which does not exemplify completely his "systems" theories. This fact tends to cast some shades and shadows on the validity of excessive theory about the means whereby buildings are created. Architects too frequently deem it necessary to rationalize their own achievements by overemphasizing techniques and by inventing a new "vocabulism." The jargon usually goes something like this: "Will SDT* eventually provide the architect with the necessary tools for development of TE,** assuming that IBM is working with an effectual CPM***?

I was amused, in addition, by Catalano's reference to Wells Bosworth's classic main building at M.I.T. as the "elder brother," an appropriate contrast to his own structure, the "younger brother." As your editor implies, Saarinen's two adjacent structures are relegated to the roles of "lost relatives" still unfound. Curiously enough, the Chapel sneaks into the photograph of the Student Center entrance façade on the right side of the picture, and the dome of the Auditorium (if I interpret correctly) is partly mirrored in the expansive glass walls shown at the left of the photo. Every family has its skeletons, but the closet door is ajar again.

R. L. Rotner
*RA,****
*VA*****
New York

*SDT – system design techniques
**TE – total environment
***CPM – critical path method
****RA–registered architect
*****VA – Vollmer Associates

Autos, autos, everywhere . . .

While architecture is probably at a high point in its long history, there are serious problems which face the future. One of which, and perhaps the most pressing, is the unwillingness of the sensitive architect to face the realities of the present in relation to the automobile. We see cities like London completely choked by the automobile, to the point where they don't operate any longer, and industry and commerce have to flee the city for adequate parking and adequate communication.

We see cities like New York, where they have just completed the Pan American Building to house during the day some 30,000 people, half of whom would bring their automobiles in the town if they could, and yet just 300 parking stalls are provided for in the building. We see the European cities making believe that the great bursting force of the automobile onto the city will not happen to them, yet hideous parking garages will soon take the place of the cathedrals.

How much better it would be were the architect to believe in the reality of the car, not to withdraw and say that public transportation, which nobody wants anymore, will do the job. The result of this withdrawal has been that the worst practitioners amongst us are designing the new environment. Who does the endless shopping center

continued on page 277

Architect solves complex roof problem with

REVERE COPPER

PROBLEM: To find a roof covering . . .

1—That must be on a warped surface, with a slope varying from 3/12 to 36/12

2—That has a texture and pattern which will complement a dramatic shape

3—Whose color will complement a natural wooded surrounding

4—Whose nature would be compatible with other permanent materials used, i. e. stone and glass

SOLUTION: COPPER—with standing seam pattern of lines running at right angles to the curving ridge to dramatize the changing slope.

This roof is yet another example of how you have so much more flexibility in expressing your ideas when you "Design with Copper in Mind."

Add to this the appearance of copper, with its distinctive patina, its long, maintenance-free life, and it becomes readily understandable why copper, man's oldest metal, is having a glorious renaissance in modern building construction.

As to the preference for Revere copper, Mr. Leo Muza, Muza Sheet Metal Company, contractor, had this to say, "We specialize in copper work and like to deal with people who know their business. We use Revere copper exclusively, and have had consistently good results. Revere also can provide technical assistance to the architects and to us . . . and they maintain good jobber relations."

ALL-FAITHS CHAPEL, State of Wisconsin's New Kettle Moraine Boy's School, Plymouth, Wisc., where 20,000 lbs. of Revere 16 oz. cold rolled copper were used for the unique, standing seam roof and fascia.

Architect: DAVERMAN ASSOCIATES, INC., Grand Rapids, Michigan. *General Cont.:* HUTTER CONSTRUCTION COMPANY, Fond du Lac, Wisc. *Sheet Metal Cont.:* MUZA SHEET METAL CO., Oshkosh, Wisc.

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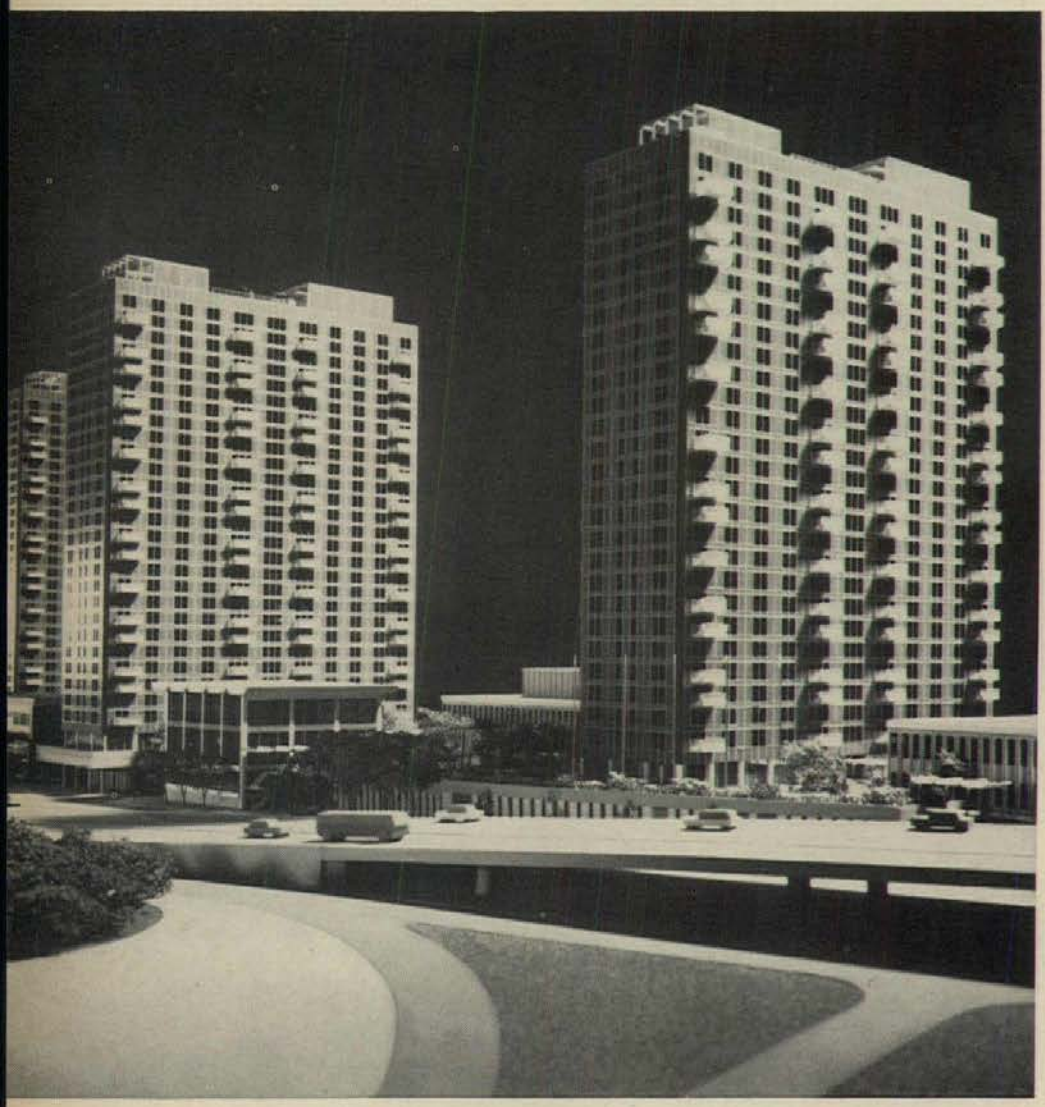
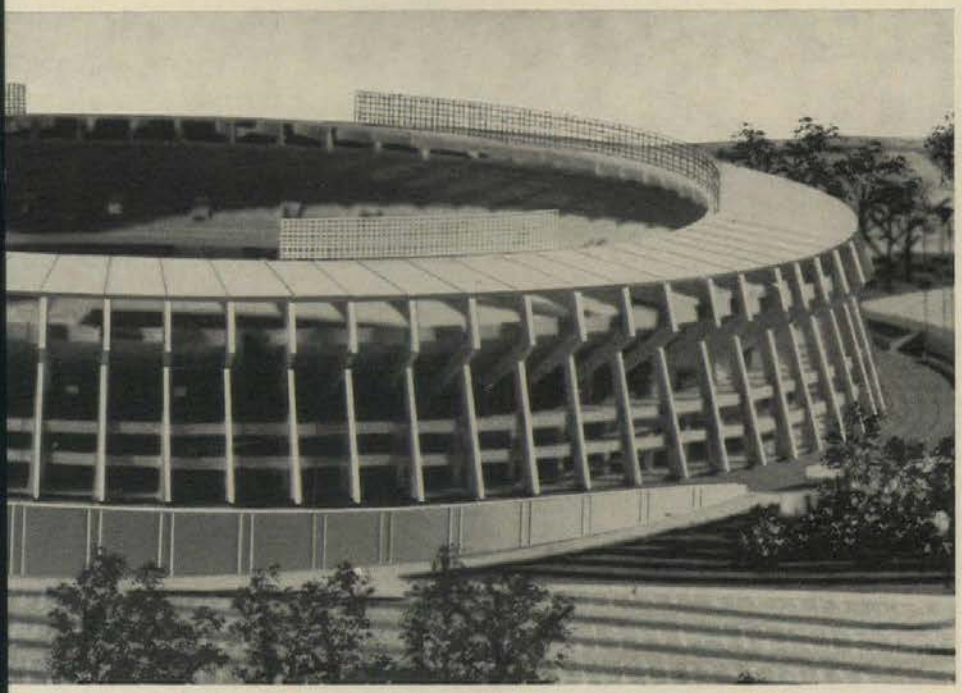
YORK AIR
DOES MORE



For an apartment home community

Mansion House Center, located on the banks of the Mississippi in St. Louis, Missouri, is a 6½-acre community with three 28-story residential towers and complete shopping, office, recreation and entertainment facilities for truly modern living. The apartment buildings are air conditioned by a York 3-pipe system that gives each occupant the climate he wants—all year 'round. Owner, Mansion House Center Development Companies; Co-developers, Paul W. Lashly, Lewis E. Kitchen, and the William J. Moran Company; Architect, Schwarz & Van Hoefen; Mechanical Engineer, Ferris and Hamig; General Contractor, Joint Venture of William J. Moran Company and Turner Construction Company; Mechanical Contractor, Thos. J. Sheehan Co.

CONDITIONING THAN COOL-LOTS MORE



or a major league stadium

Atlanta's new sports stadium is one of the most modern in the country. Offices, press boxes, concession stands and sponsors' lounges are air conditioned by York equipment. Both "packaged" units and "central station" systems are used, for maximum efficiency. Architects, Heery and Heery • Finch, Alexander, Barnes, Rothschild and Paschal; Mechanical Consulting Engineer, Lazenby and Borum; Mechanical Contractor, Lorne Company, Inc.; General Contractor, Thompson-Street Company.

When you specify air conditioning for any kind of building—whether it's a high-rise apartment, a sports stadium, or a private home—you can depend on York. For large apartment and office buildings, hotels and motor hotels, the York 3-pipe system enables each occupant to dial the climate he wants. Simultaneous heating and cooling are always available, for different parts of the building. Each room terminal is fitted with a special valve that admits either chilled water or warm water, as demanded by the room thermostat. This major advance in air conditioning was pioneered by York; and there are more York installations of this kind than by all other manufacturers, combined!

The latest advance in comfort conditioning from York is an exclusive odor control system that *destroys* most common odors, chemically—doesn't just mask or store them.

For complete specification data on York systems and equipment, contact your nearby York Sales office. Or write York Corporation, subsidiary of Borg-Warner Corporation, York, Pennsylvania.

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air conditioning and refrigeration

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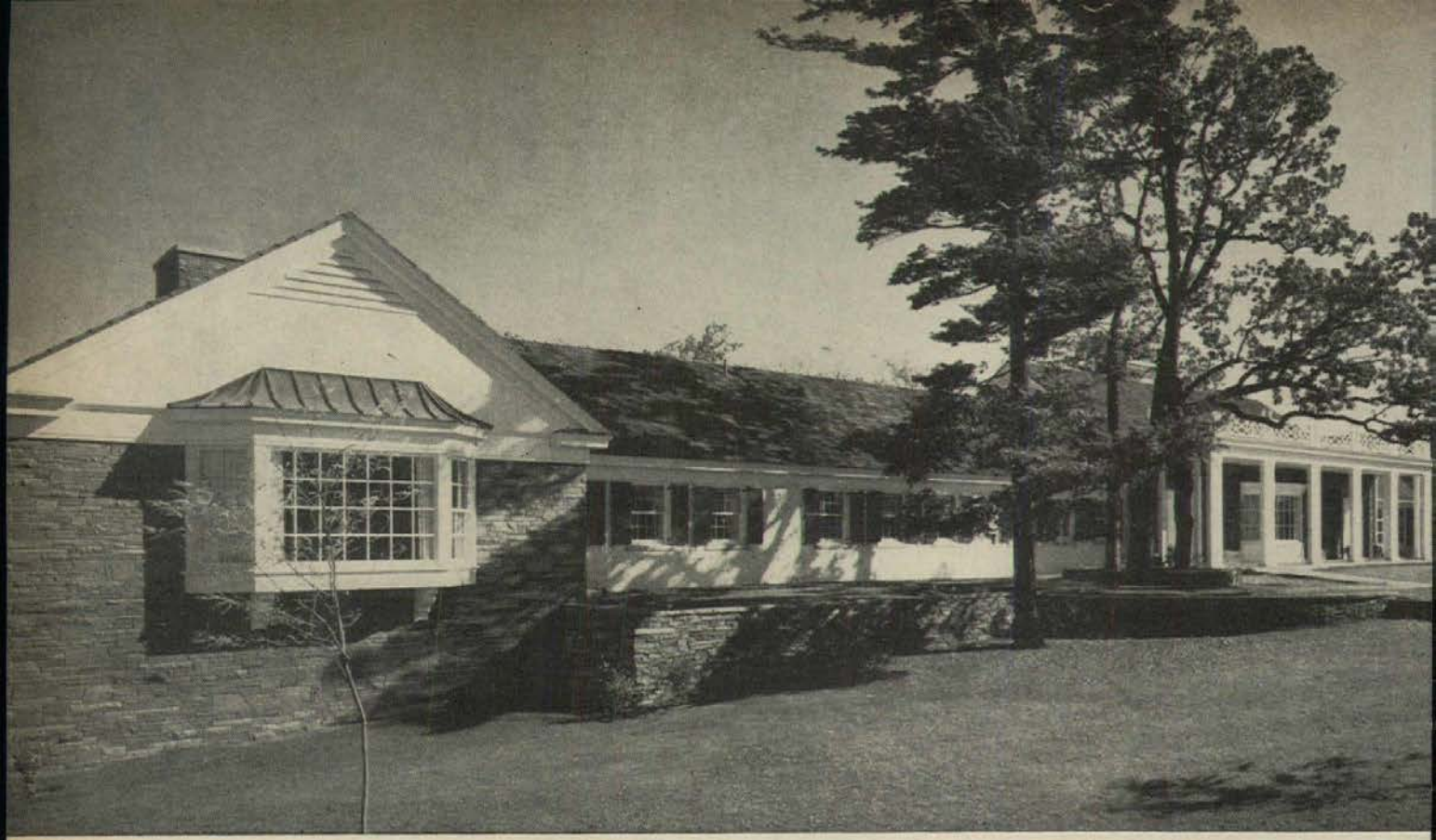

ALBANY COUNTRY CLUB, Voorheesville, N.Y. Architect: W. PARKER DODGE ASSOCIATES, Rensselaer, N.Y. General Contractor: JOHN P. SEWELL, INC., Albany, N.Y. Ready-Mix Concrete: PORT CONCRETE CORP., Albany, N.Y. Masonry Cement Dealer: PETER McCABE, INC., Albany, N.Y.

Exclusive Country Club Elects Lone Star Masonry Cement for Beauty and Durability

The Albany Country Club is one of the oldest in the country. And now, with a magnificent new $1-million-plus clubhouse, it is one of the most luxurious.

The clubhouse, a modified colonial design, is 310 feet long with 40,000 square feet of usable space. The architect used concrete, brick, stone and wood to achieve an unusually attractive combination of contemporary and traditional styles.

The exterior walls are of stone and brick, and the interior walls of masonry block. The roof is constructed of precast concrete plank and tile, adding a rustic effect in the country setting. In all, more than 2,000 cubic yards of concrete made with Lone Star Portland Cement were used in the floors and walls.

Lone Star Masonry Cement, to which the mason only has to add sand and water to produce a stronger, more uniform mortar, was used exclusively in laying up all masonry in this beautiful clubhouse.

Concrete combined with Pennsylvania Bluestone and rough red brick painted white are joined in the new clubhouse to achieve a look of luxury and dignity.

LONE STAR CEMENT CORPORATION

100 Park Avenue, New York 10017

ARCHITECTURAL RECORD
MAY 1966

Ezra Stoller Associates

THE SEARCH FOR APPROPRIATE FORM

The designs by Ulrich Franzen that appear on the following pages reflect Franzen's continuing concern for visually comprehensible forms that are appropriate to the character and requirements of individual situations.
While certain themes reappear in each of the buildings shown, Franzen is clearly increasing the range of both his architectural vocabulary and of his responses to environmental contexts.

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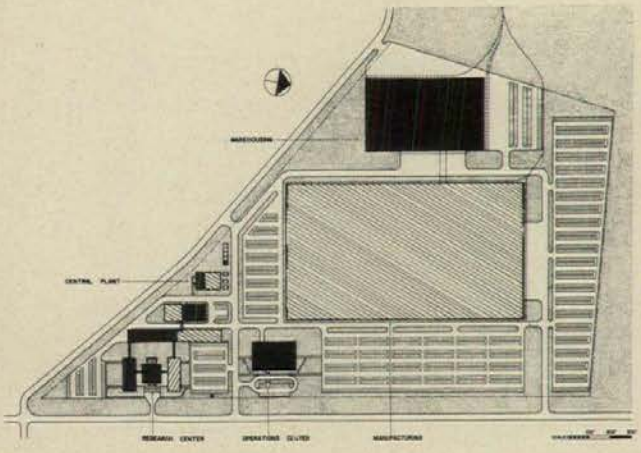
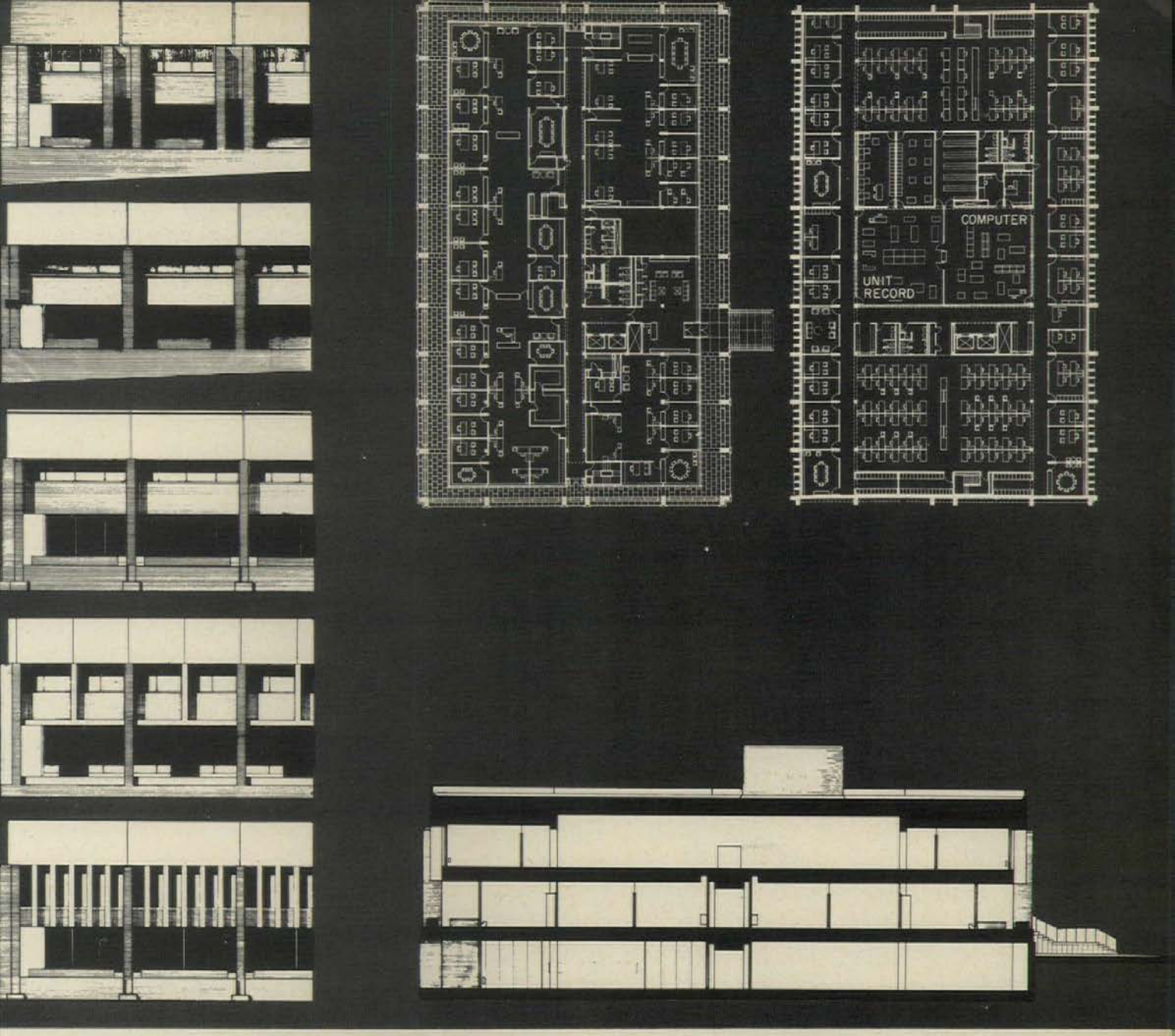
A classical study of elevations



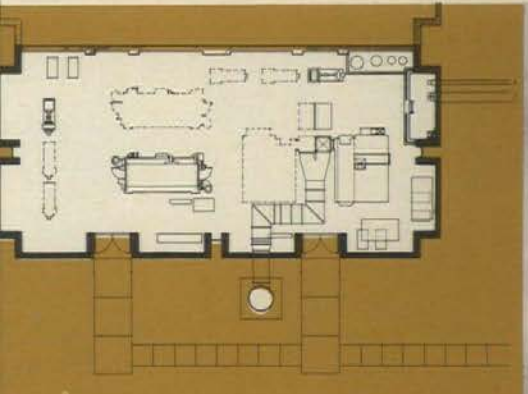
The complicated program for the operations center of Philip Morris, Inc. in Richmond, Virginia resolved itself into a series of office areas, grouped around a computer located on the top floor, and the executive offices which are located at the entrance level. Neither type of space suggested a strong exterior form; universal spaces don't have elevations. A building of this type, on a sloping site, could easily have looked like a box, or a slice out of a larger building. For an answer Franzen turned to the traditional classical apparatus: he treated the lowest floor of the building as a podium, the roof as a cornice, and placed the intervening stories behind a colonnade. In this way, as in Renaissance buildings, the elevation reads as a single story, creating a unified effect.

The operations center is part of a continuing construction program at Philip Morris. Earlier buildings, also designed by Franzen, appeared in the RECORD in October 1959. The site plan at left shows what has been built so far.

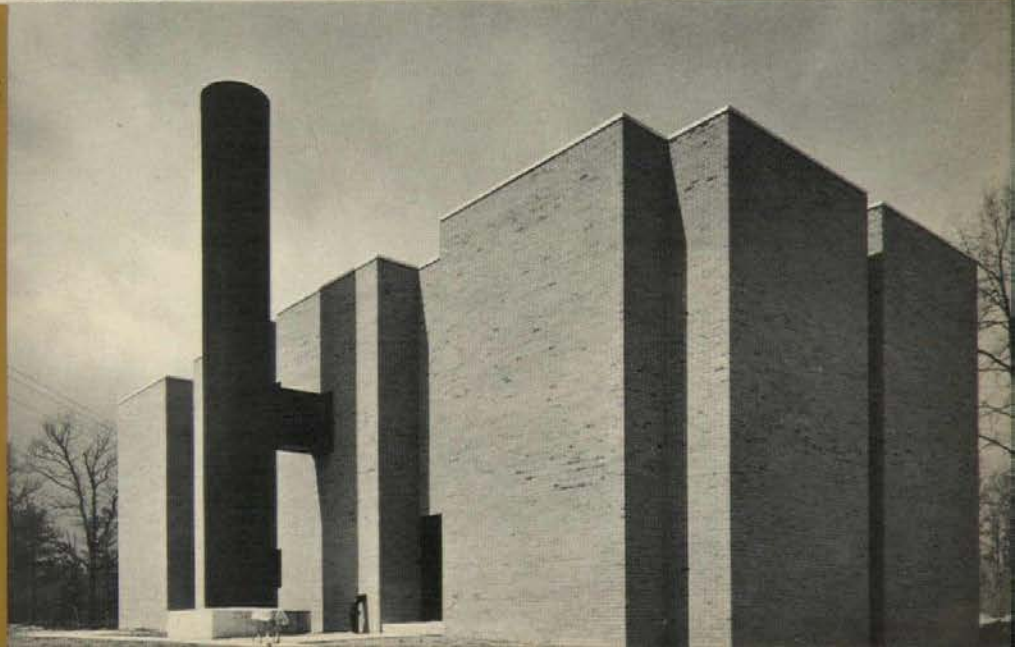


Alternate elevation treatments considered by Franzen in the design of the Philip Morris operations center. Section at right is twice the scale of the plans.

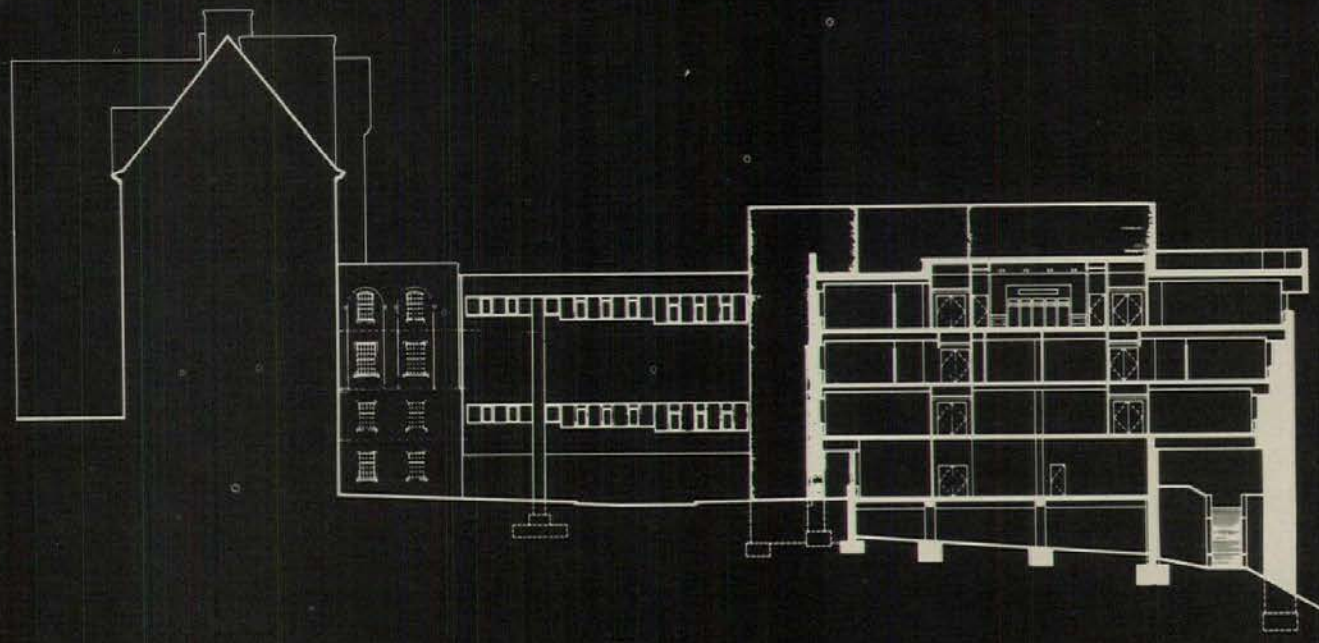
©Ezra Stoller Associates

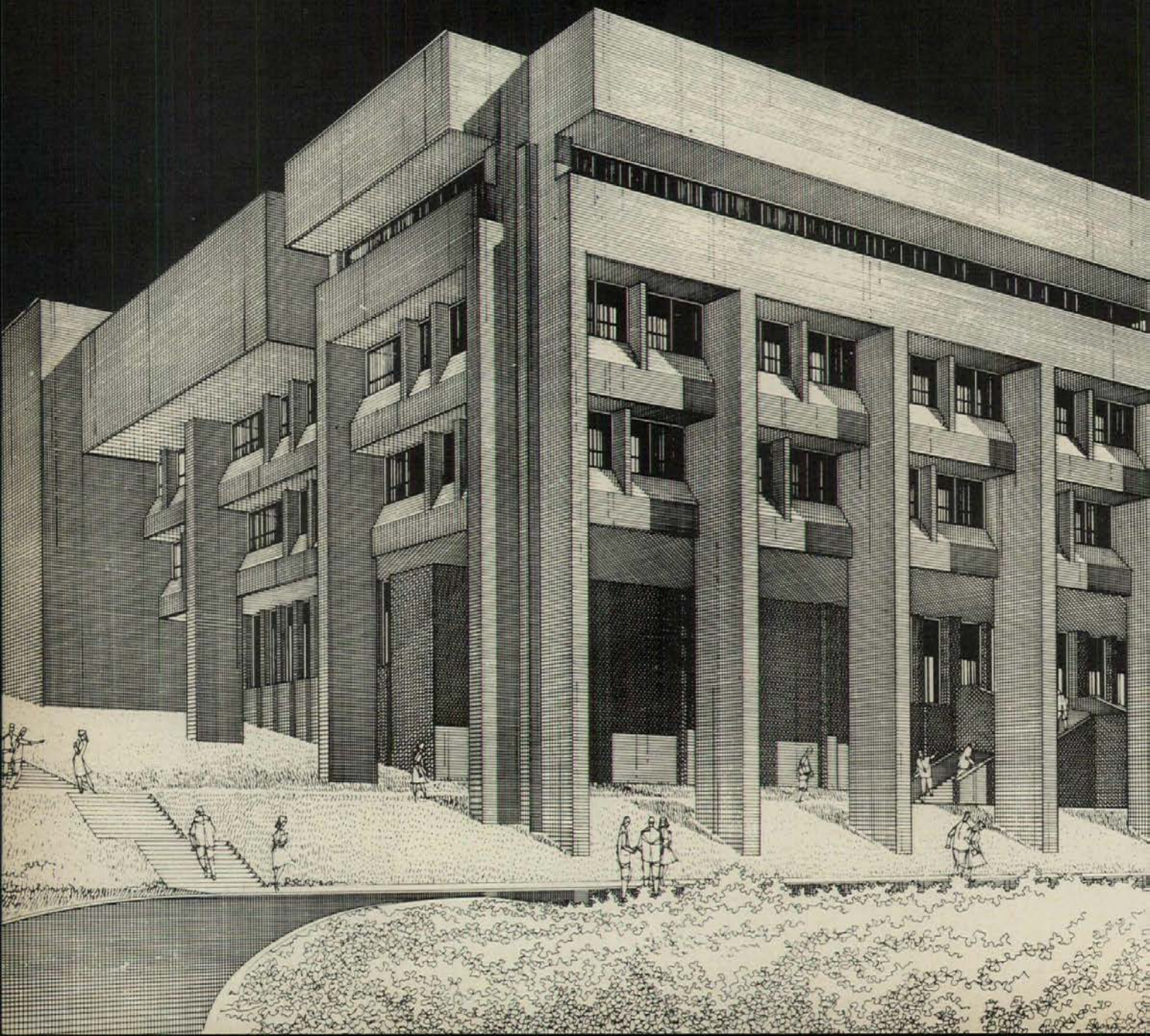


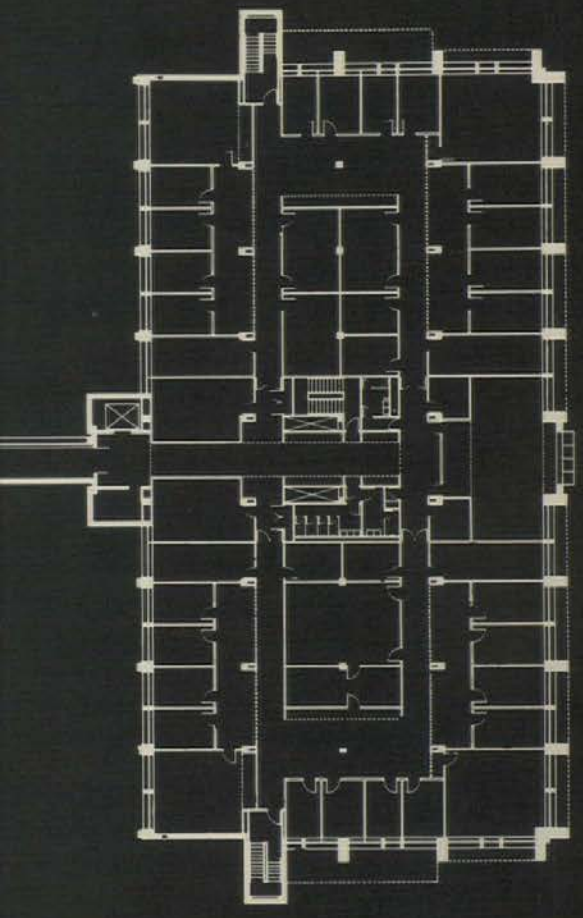
The elevations of the central boiler plant are composed of pavilion-like units. The building is designed to grow in increments, and the vertical emphasis of the exterior permits the building to grow horizontally without undue change in its character.



ULRICH FRANZEN

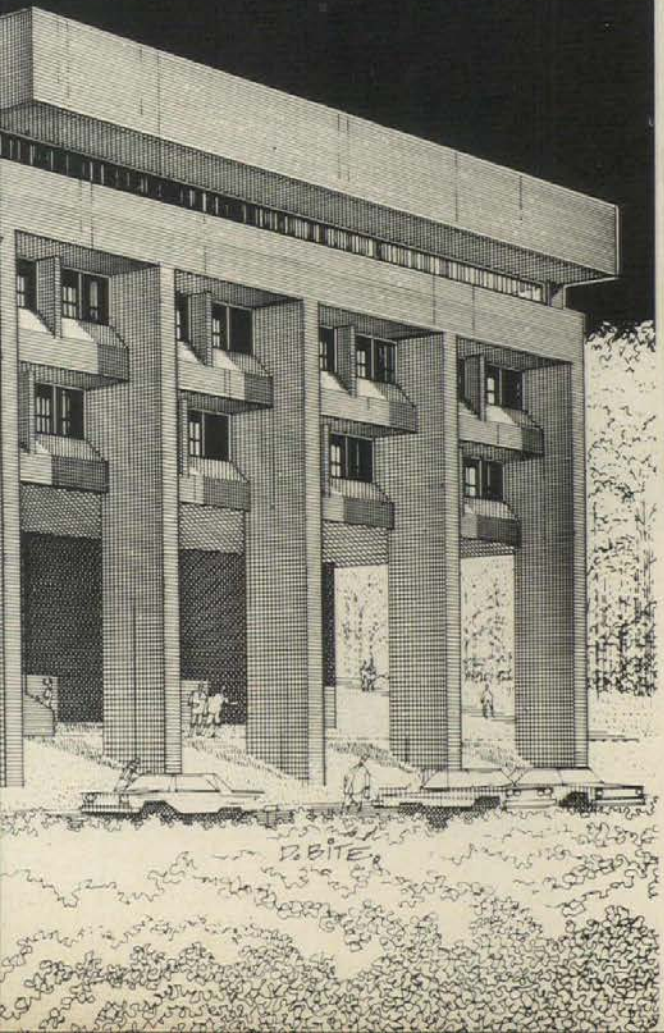






An esthetic of cantilevers designed in brick

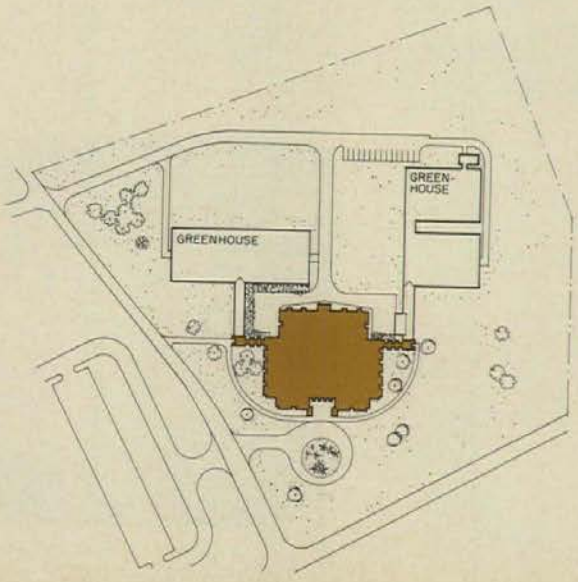
In the progression of elevations that Franzen studied for the Philip Morris center, an all-brick design was discarded in favor of a combination of brick and concrete, in which it was suggested that the brick elements supported the concrete ones. From a theoretical point of view such an expression may have been more faithful to the nature of the materials involved, but in this closely related building, an extension to the New York State University College of Home Economics at Cornell, Franzen chose to use a single material, brick, instead. At Cornell, the columns used at Richmond have become piers, and the podium is set back, sketched in as it were; but the expression still follows the classical format of base, column, and cornice, which is combined with the cantilever silhouette that only steel makes possible.



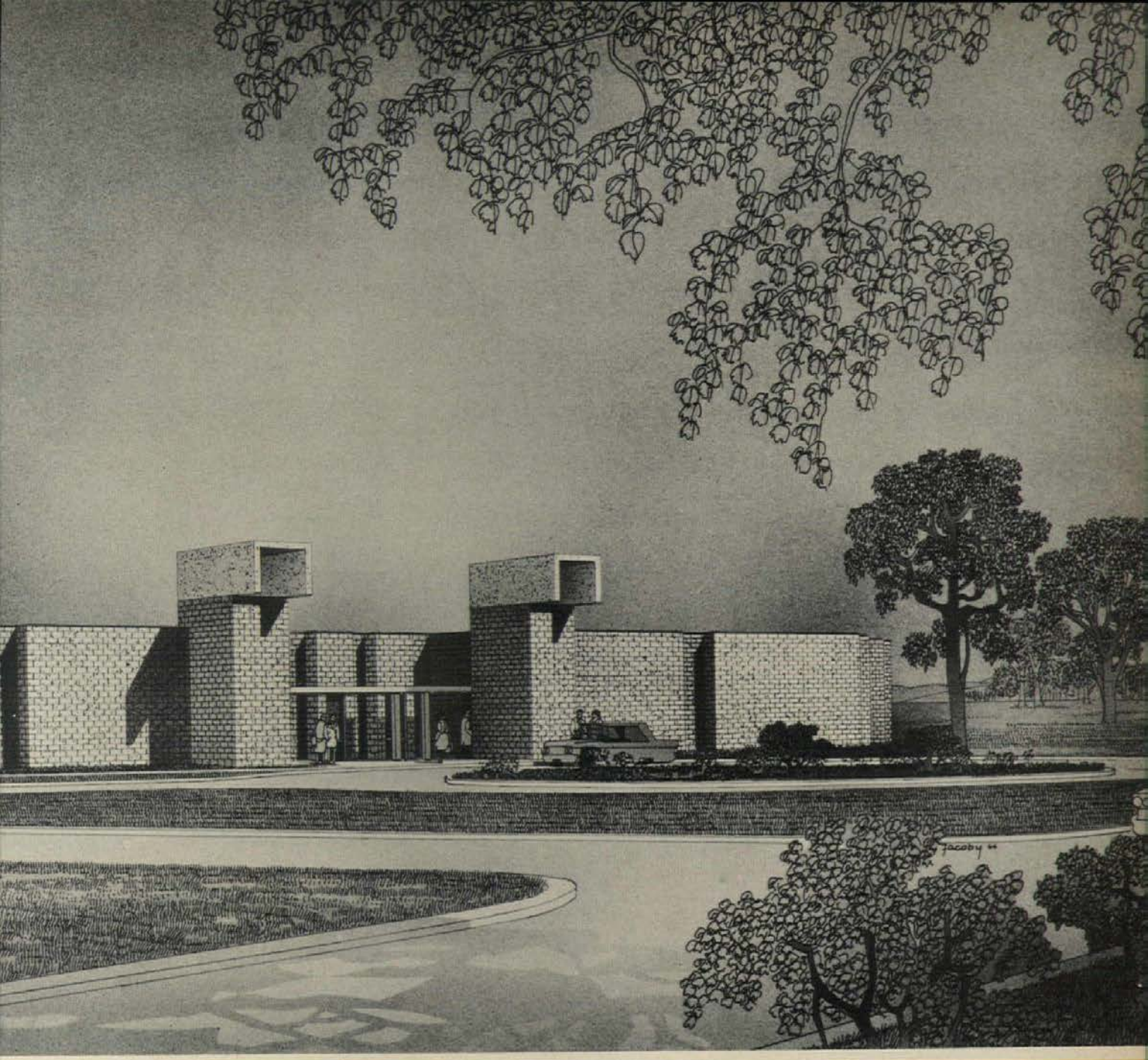
Franzen also designed the Agronomy Building for the New York State University College of Agriculture at Cornell (April 1965, pages 154-159). Model photo shows how the two buildings relate.

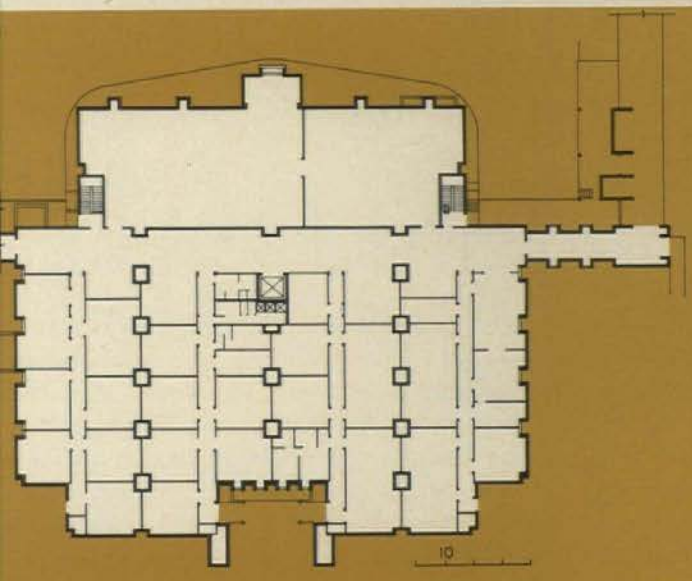
Igor Bakht

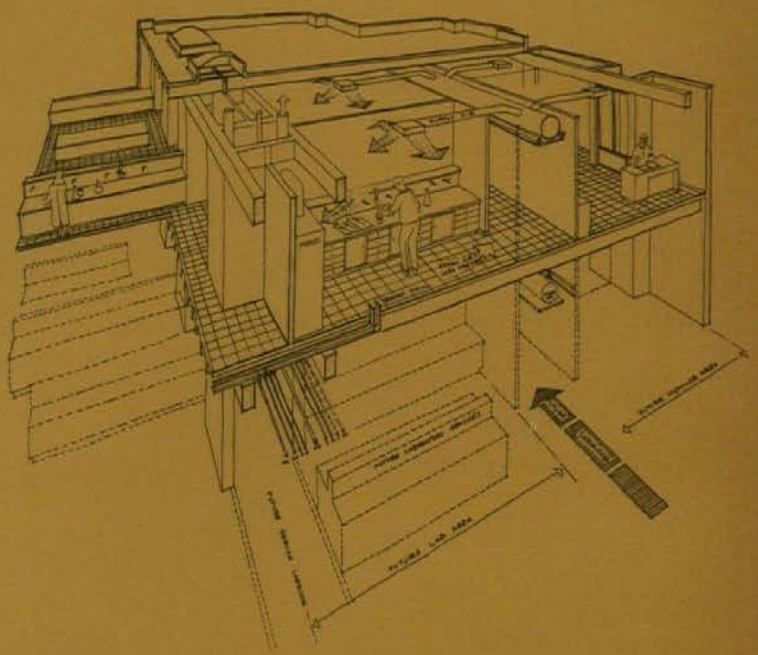
A definite shape for an indefinite building type



This building, also for the New York State University at Cornell will house a series of laboratories devoted to botanical studies. Buildings of this type very frequently tend to be sprawling and amorphous, but Franzen has taken the program and firmly given it a coherent form, and has done so within the ordinary budget and methods of construction. The laboratories have been grouped in a symmetrical organization with the entrance marked by two strongly expressed ventilating shafts. The elevation has been given a pavilion-like appearance that is related to that of the central boiler plant of the Philip Morris complex in Richmond, imparting shade and shadow to what would otherwise be an expressionless brick box. Study of the greenhouse form revealed that the traditional shape had evolved for sound functional reasons, so that conventional greenhouses are attached to the main corridor at both ends of the building.

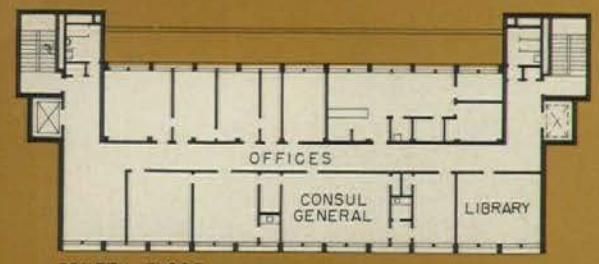




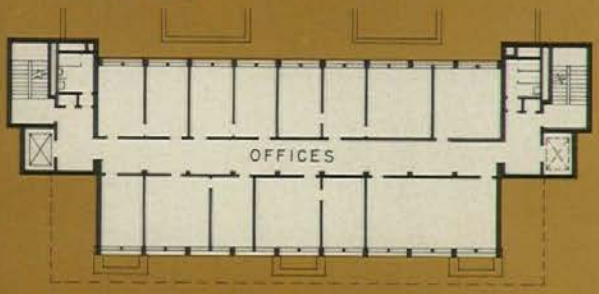


Cutaway perspective view shows organization of laboratories and services. The basement provides space for future expansion.

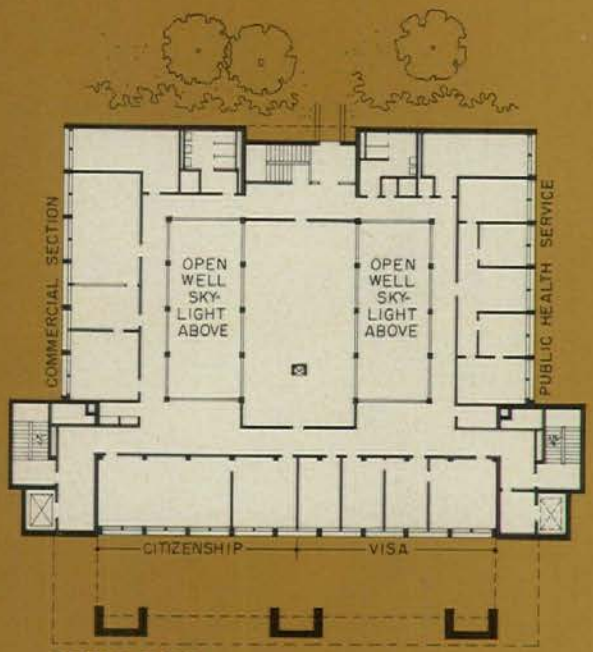
ULRICH FRANZEN



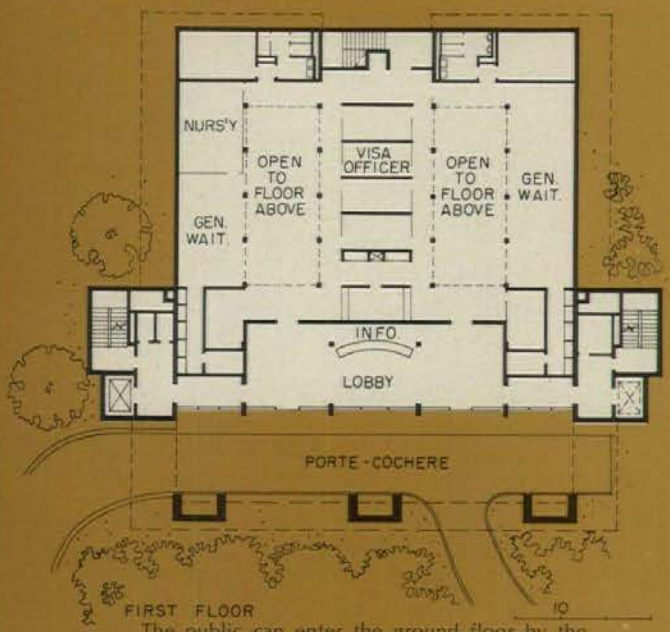
FOURTH FLOOR



THIRD FLOOR

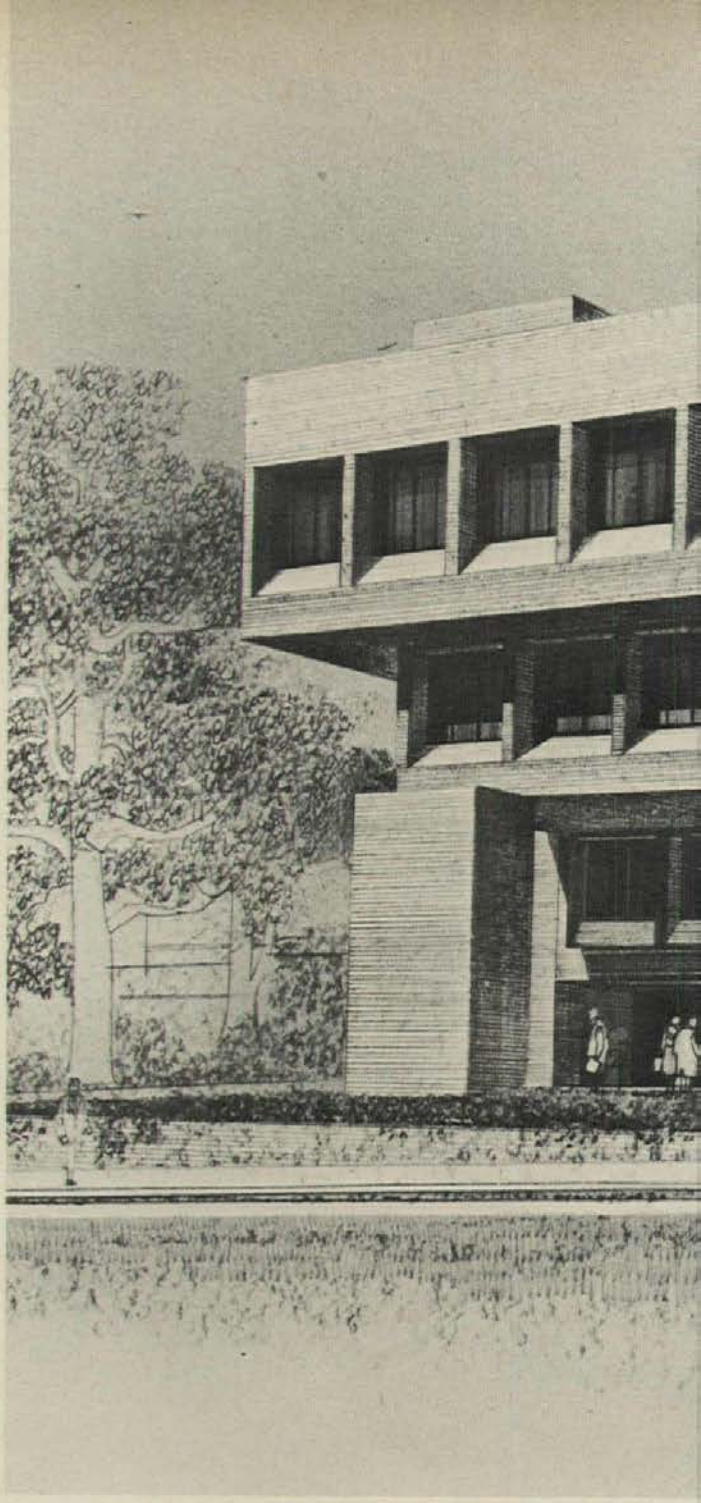


SECOND FLOOR



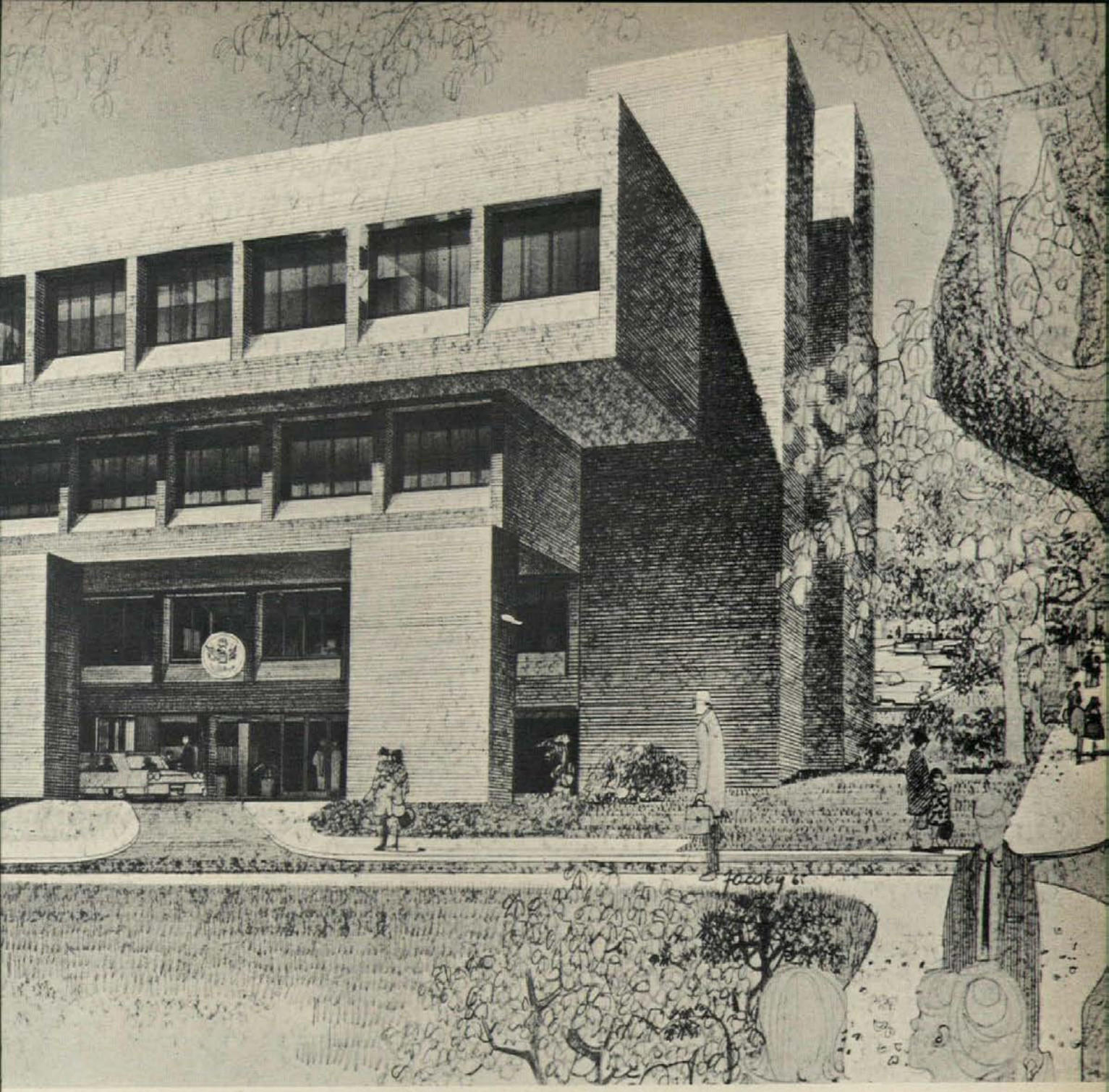
FIRST FLOOR

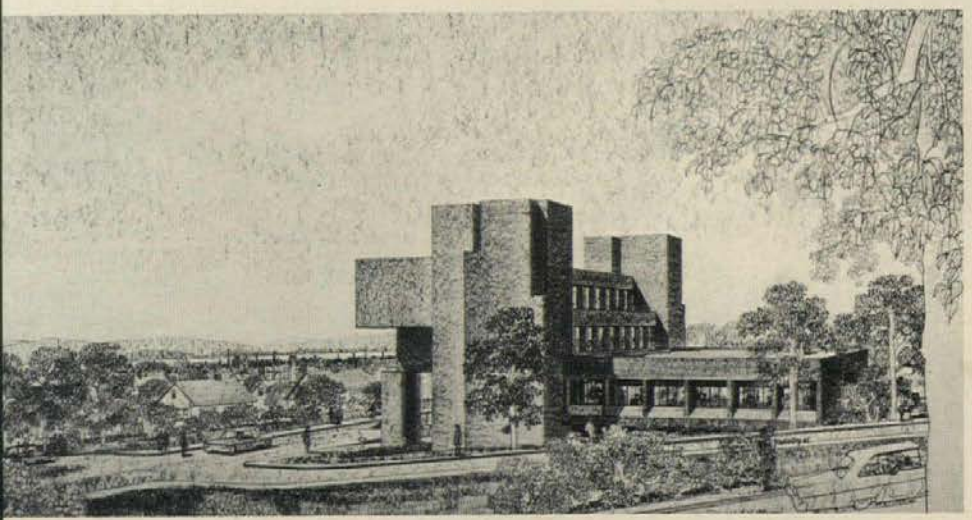
The public can enter the ground floor by the main entrance and the second floor directly from the parking lot at the rear of the site. These lower levels contain the services most frequently visited; offices occupy the upper floors.



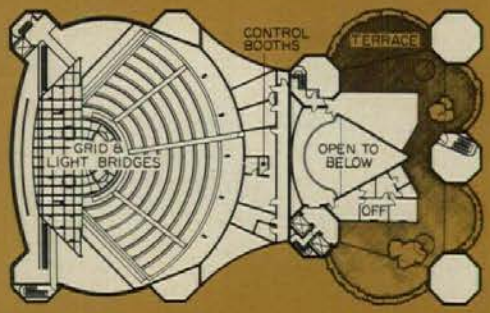
A consulate which is also a bridge

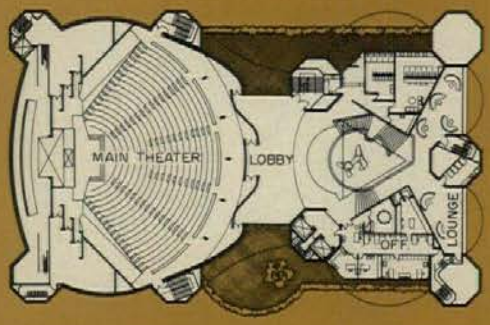
This design for the United States Consulate in Montreal has something of the appearance of a bridge, because the service and stair towers at either side seem to support the rest of the structure and anchor it to the site. It would be possible, no doubt, to consider the bridge as a symbol; but it is really a formal device for unifying two different types of function and two different scales. The two office floors at the top of the building are used far less often by the public than the first and second levels, where the visa, citizenship and commercial functions of the consulate take place. The expression of this fact by two different kinds of space also helps to make a transition between the residential buildings behind the Consulate and the scale of the main road on which it is situated.

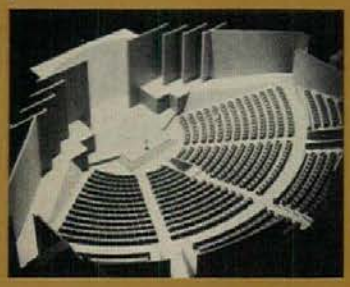


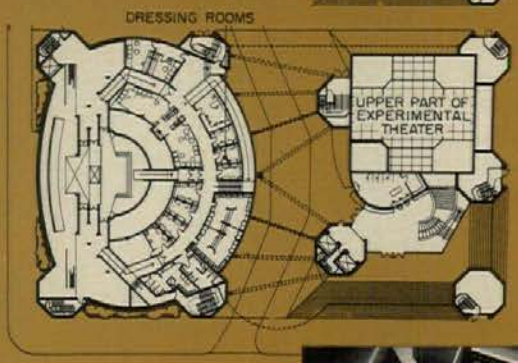


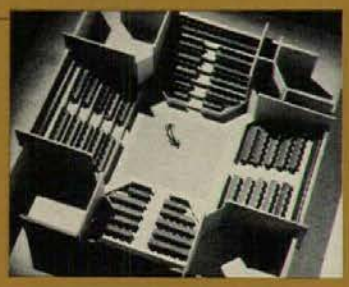
ULRICH FRANZEN

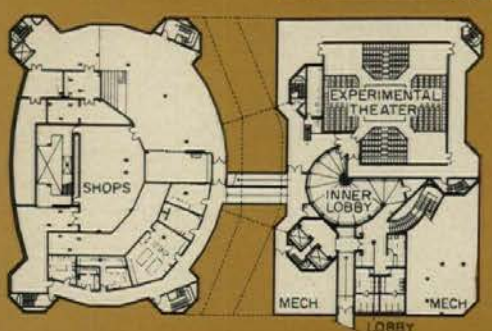




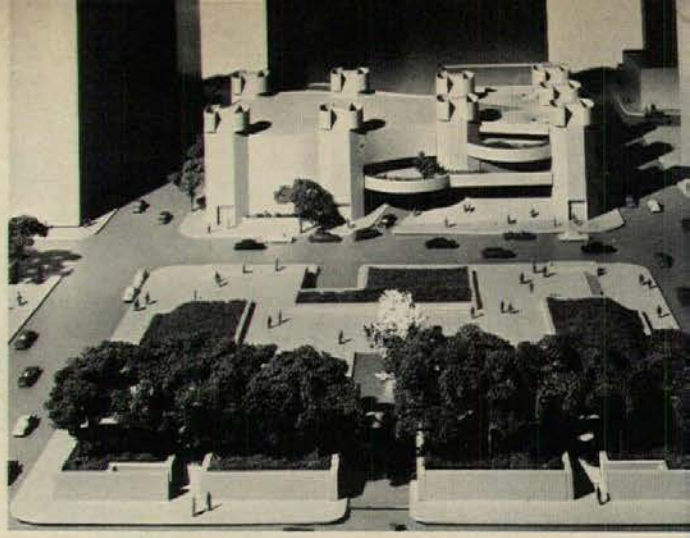






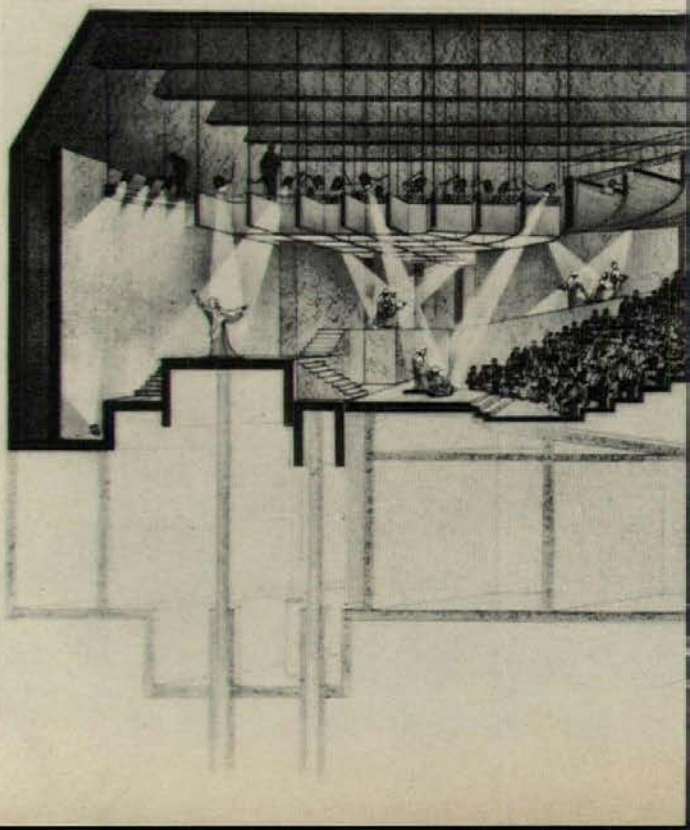


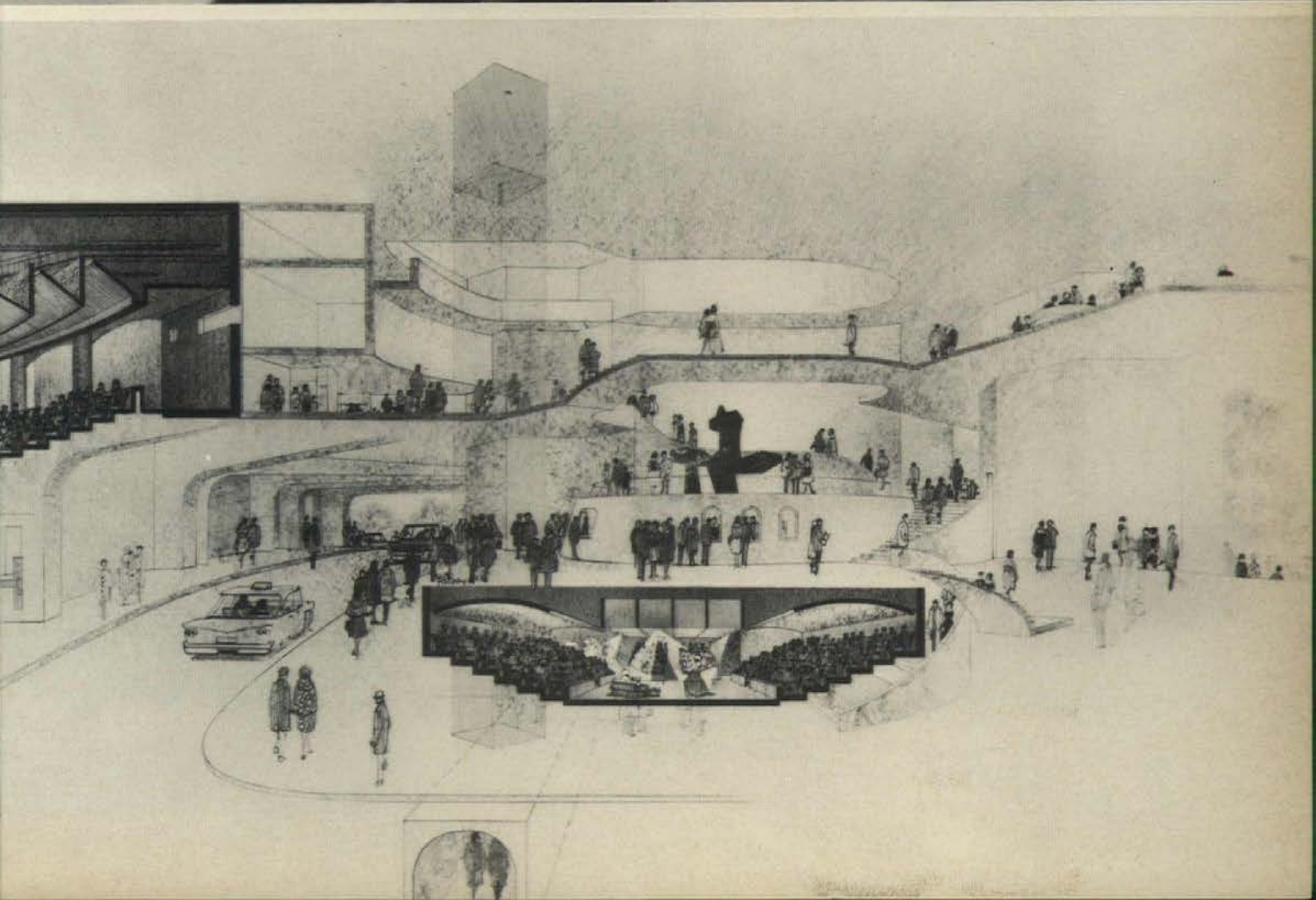
A tunnel connects the shops and dressing rooms under the main theater to the experimental stage. Lounges and lobby areas also serve both theaters.

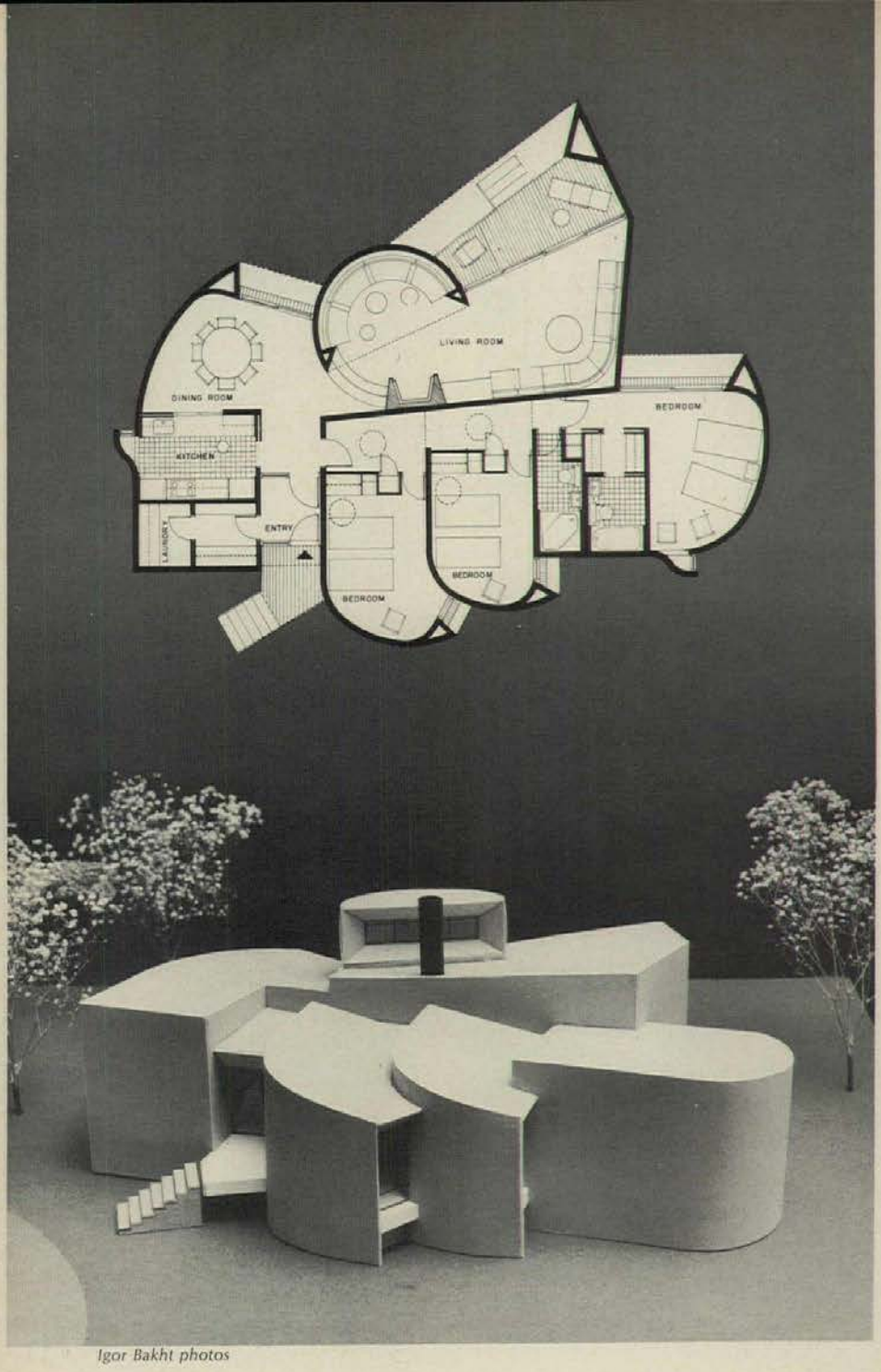


Towers that unify a complicated theater

Franzen used the towers of the Montreal Consulate to anchor the composition to the site, but in this new building for Houston's well-known Alley Theater the towers become the dominant, unifying element. The other major aspect of the design is the movement of the audience through complex circulation passages. The building is penetrated by an automobile driveway, which is also the main pedestrian access. From the entrance the audience either moves up, following a bridge across the driveway to the main theater, or down, through a passage that spirals like a snail shell, to the experimental arena stage. Both theaters were designed through a long process of consultation between Franzen and the Theater's director, Nina Vance, before the basic concept was established.

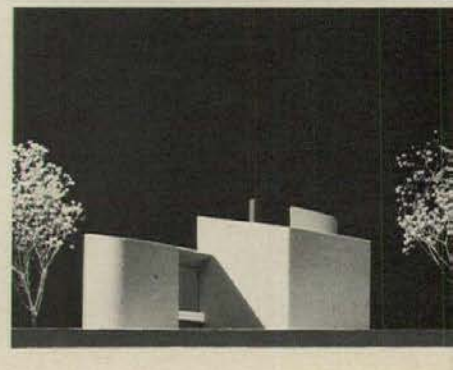






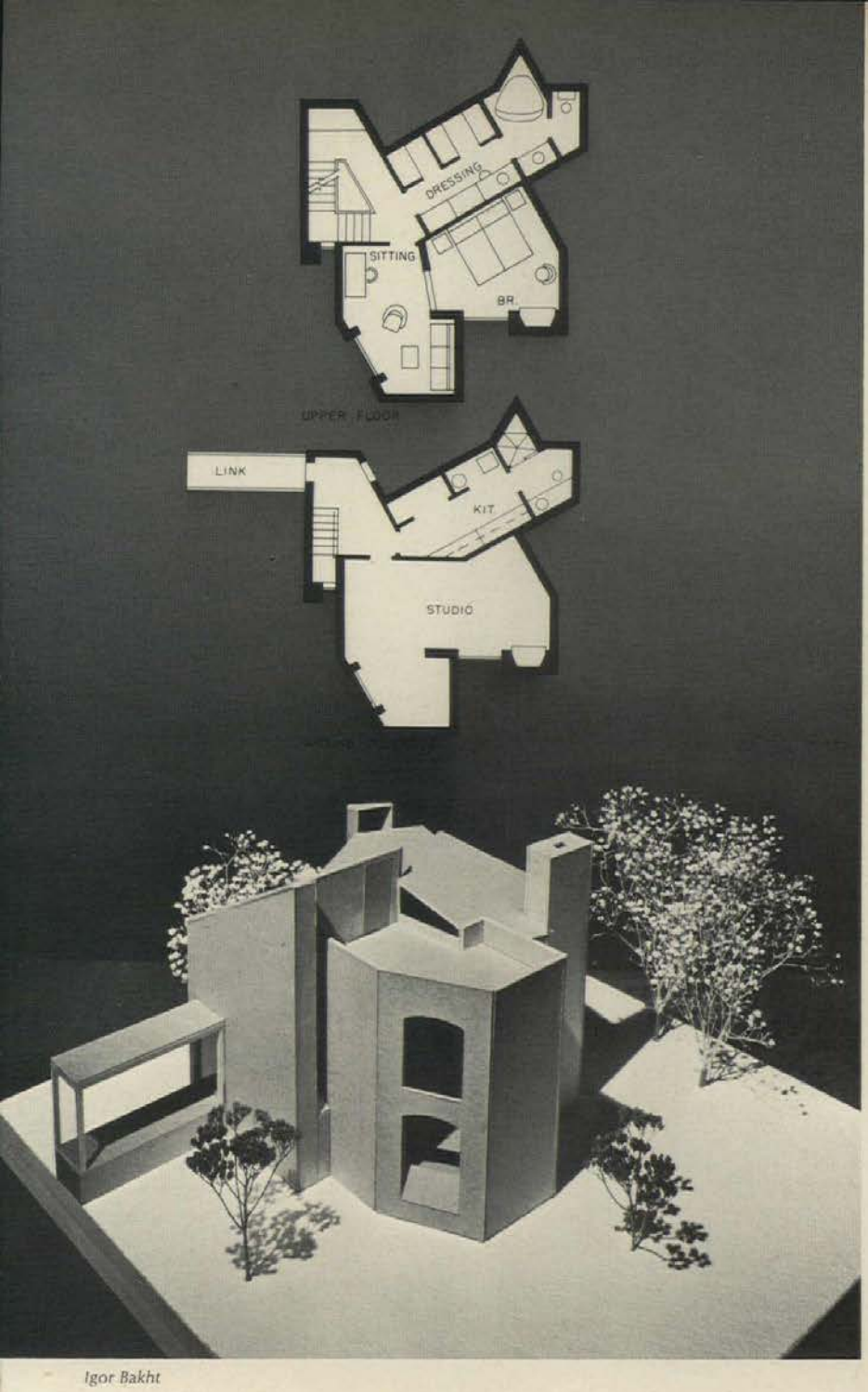
Igor Bakht photos

Elevations of model show the great variety o exterior aspects that this type of design cre ates. They contrast with the balanced organiza tion of much of Franzen's other work, where each elevation would reflect the others.



An exploration of naturalistic shapes

This house will be built of curving wood-shingle walls that fan out from a central pivotal point around the fireplace. Although the plan is actually much more tightly organized than the exterior would indicate, its somewhat accidental appearance is a departure from the balance and symmetry which have characterized most of Franzen's work. The curving, naturalistic shapes give indications of a system of architecture where results are not predetermined by geometry, but by a much more difficult intuitive approach, capable of varying types of growth in a wide variety of directions. The forms used in this house recall the amusing and individualistic aspects of Victorian country-house architecture. Similar designs for larger problems would be more complicated, but the possibilities are interesting.



Igor Bakht

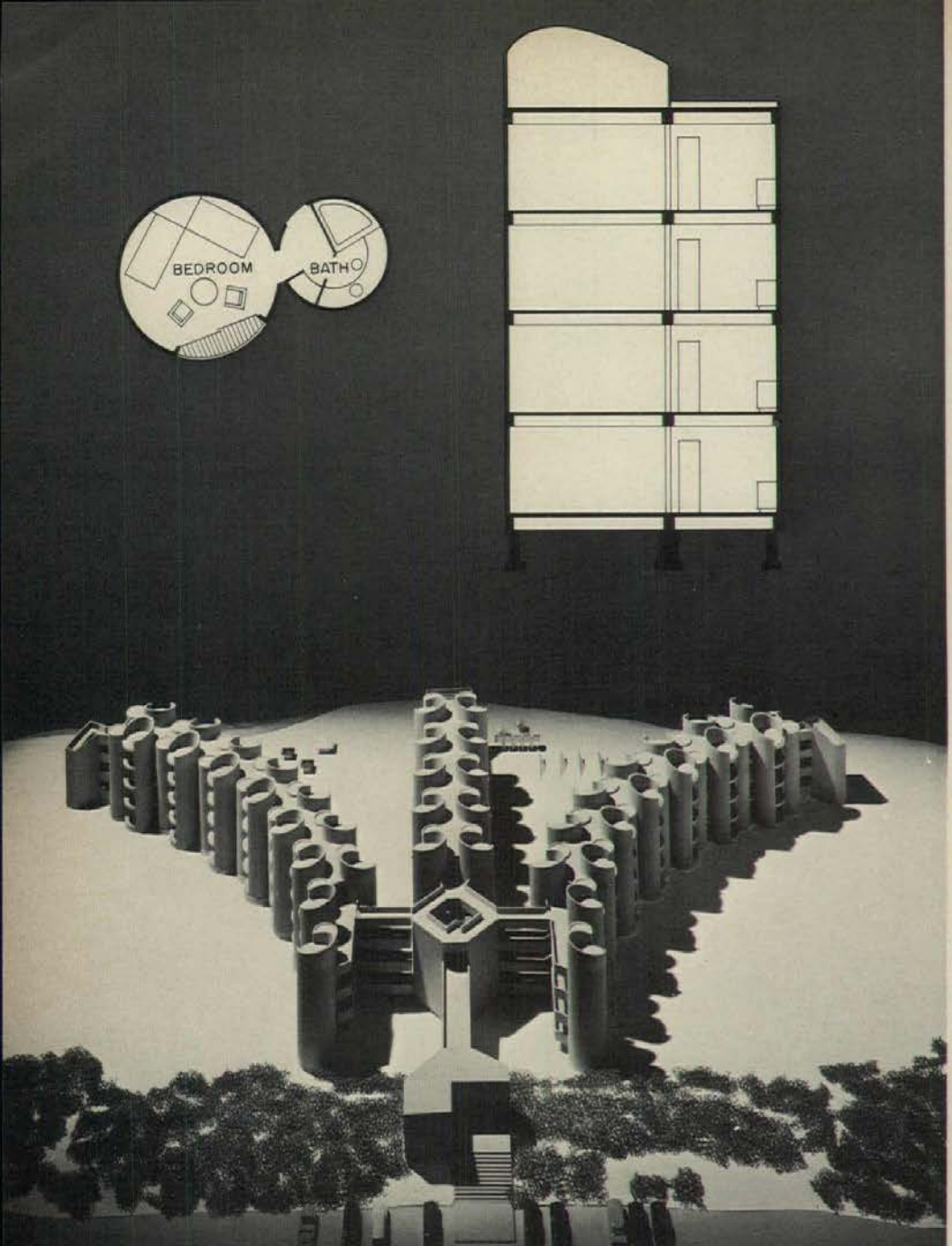
The ground floor contains a studio that doubles as a place for entertaining; upstairs is the master bedroom and study. A narrow glassed-in passage will form the connection to the original house.

Ben Schnall

Igor Bakht

A castle added to a pavilion

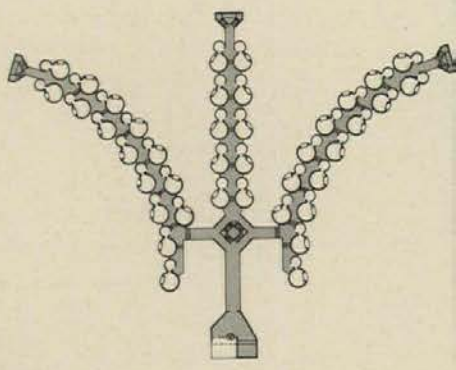
This little masonry building is an extension to an earlier Franzen house, and it is about as different from the original as it is possible to be. The first building was a symmetrically organized pavilion that made use of optical illusions to create an open appearance. The steel roof and frame were kept visually separate from the rest of the house, because all partitions and exterior walls stopped short of the ceiling and the intervening spaces were filled with glass. By contrast, the new wing uses solid masonry walls to articulate and enclose some highly individualistic areas. Like the house on the opposite page, this building captures some of the characteristic traits of 19th-century design, in particular the sense that a home, if not a castle, is very definitely an enclosed and protected place.



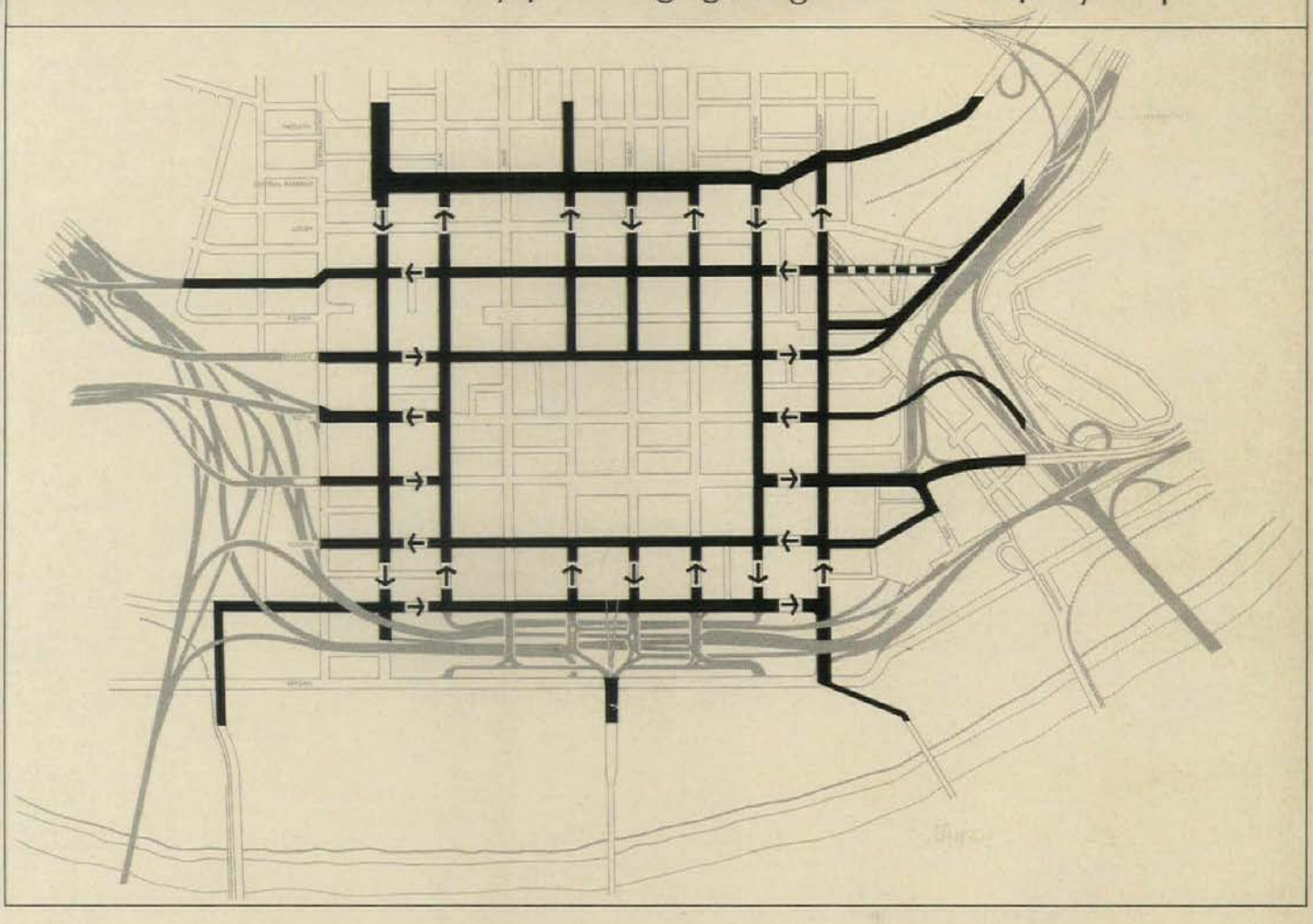
Each bedroom is one circular unit, its entrance hall and bath make a second. The cylinders are four stories high, but the design assumes a rise in the dunes so that occupants would not walk more than two flights up or down to their rooms.

A motel with intimations of infinity

The towers which Franzen has often used as a controlling element of a building here become the essential concept. This design was commissioned by the Weyerhaeuser Company as a demonstration of the use of wood; it is also a demonstration of Franzen's new preoccupation with forms that have no beginning or end, which are essentially different from the ordered, balanced finite shapes that have characterized so much of his work. It is true that this motel is still shown as a symmetrically organized building, but the implication of the form is that it is infinitely extendable in any direction. It can be read at a different scale as a series of circular buildings connected by a multi-level street; in that sense it has something to do with the English "clip-on" esthetic of the infinitely expandable city.



Cincinnati's formula for city planning: get agreement step by step



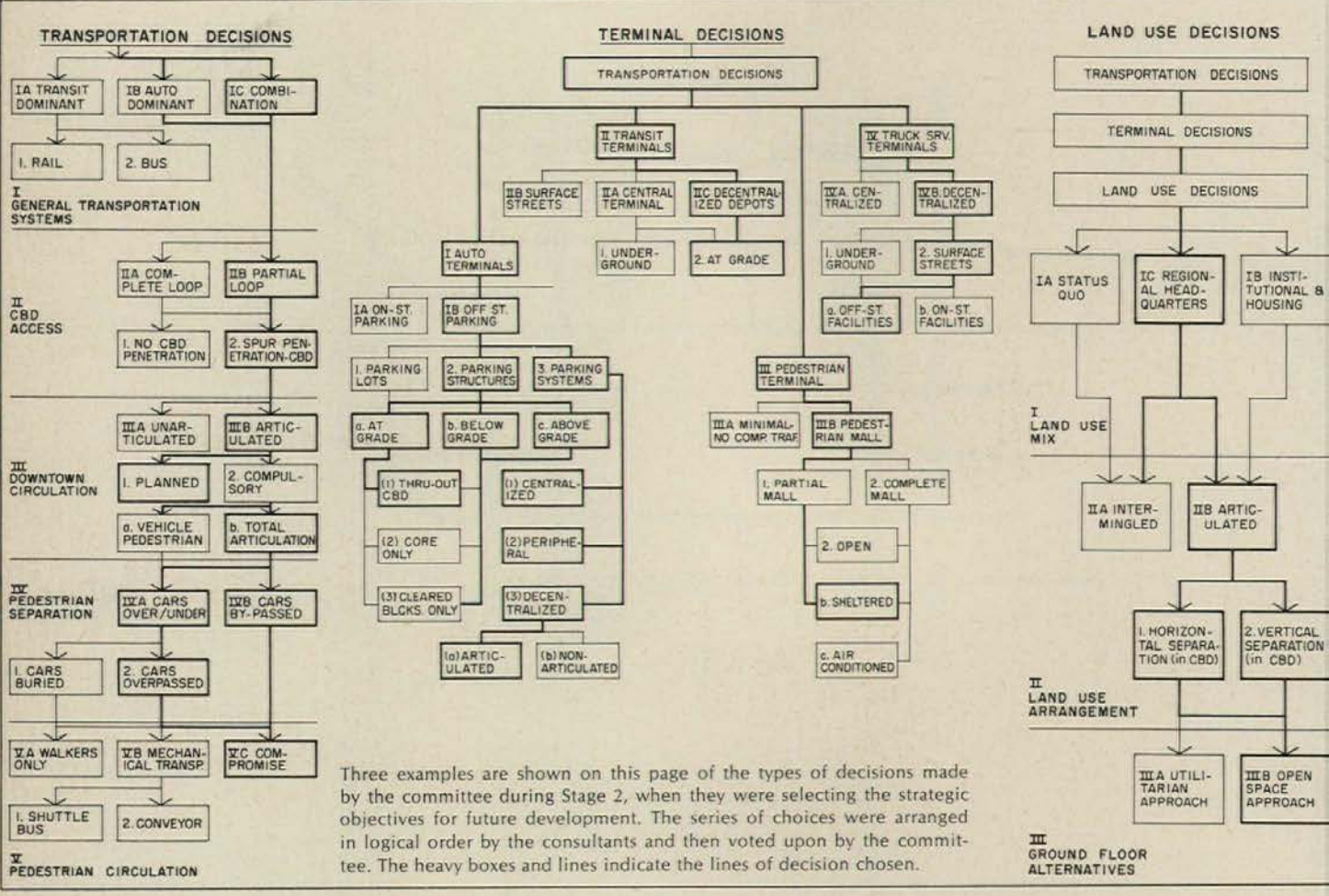
A NEW PLANNING PROCESS WITH BUILT-IN POLITICAL SUPPORT

By Jonathan Barnett

In 1963 the Cincinnati City Council found itself unable to adopt a downtown redevelopment plan because of deep disagreement on almost all the basic issues. With a developer selected and an urgent need to make decisions quickly, the city and its planning consultants, the Baltimore architectural firm of Rogers, Taliaferro, Kostritsky, Lamb, evolved a new method of city planning in which city officials and citizens participated in the decision-making process that produced the final design. In less than a year's time Cincinnati had achieved a downtown renewal plan by this method, and, because of the participation of elected officials, the plan was a legal document, fully agreed upon in all its detail and ready to be implemented.

The Cincinnati experience shows the advantages of tying city planning to the political process, and it also points up the difficulties of making certain important planning concepts politically viable. For these reasons, its history repays close study.

The planning process was programed as a series of choices...



Three examples are shown on this page of the types of decisions made by the committee during Stage 2, when they were selecting the strategic objectives for future development. The series of choices were arranged in logical order by the consultants and then voted upon by the committee. The heavy boxes and lines indicate the lines of decision chosen.

Between 1961 and 1963 Cincinnati had tried three of the conventional ways to arrive at a downtown renewal plan, and all of them had failed. The proposal drawn by Cincinnati's own city planning department had been shelved by the City Council over the issue of an underground garage and circulation system. A study of the city core by Victor Gruen Associates, which had been commissioned by a group representing downtown business and financial interests, was not accepted because it proposed closing a number of streets to vehicular traffic. A third study, drawn by Barton and Aschman on behalf of the real-estate group that had been selected as developers, was also unable to win approval. And that left the city of Cincinnati with a loan and grant application pending in Washington, a redeveloper already selected and financing assured, and no agreement on the design plan which was to be followed.

Fortunately for Cincinnati, the city had an over-all master plan drawn in 1948, and that plan embodied some significant decisions about the central business district, perhaps the most important of which was the location of major highways. The master plan had shown a series of roads ringing the downtown but not invading it, and, over the years, the state highways, and later the interstate system, had kept fairly close to the original design. To an unusual degree, the downtown had remained a compact and cohesive area, with four major department stores and several large corporate headquarters buildings. The exceptionally good automobile access to the core undoubtedly had a great deal to do with the relatively sound condition of the central business district. While renewal was necessary in some areas, there was still a strong context in which the renewal could take place. The City Council, however, was deeply split on such fundamental questions as future transportation systems, the location and type of parking garages, and pedestrian circulation.

There seemed only one way out of the impasse

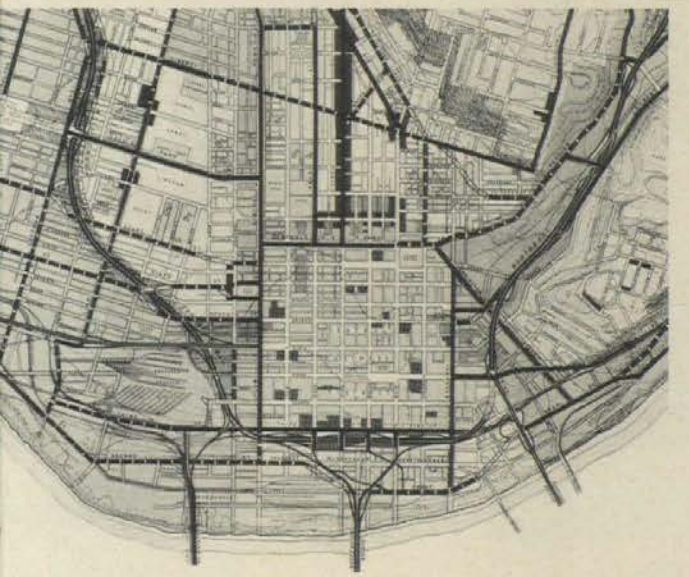
Herbert W. Stevens, the city planning director, put it very clearly in a letter to the city manager dated May 27, 1963:

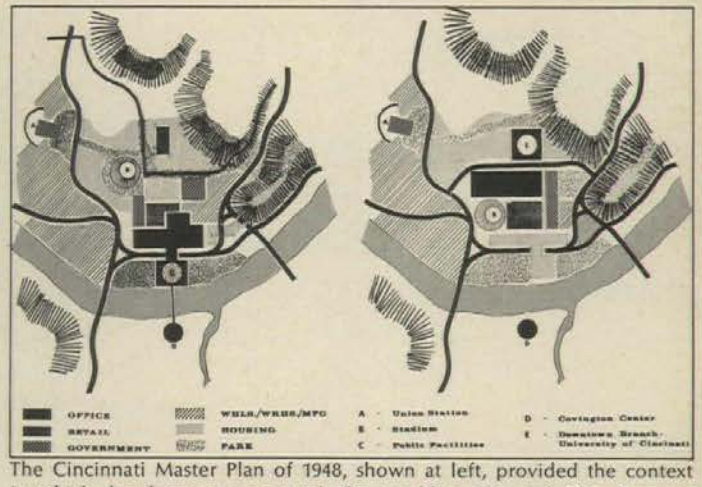
"It will be a waste of time to work on a new plan without a process for resolving differences, step by step, before the work has crystallized into proposals.

"Consequently, a process should be established whereby the City Planning Commission and City Council can work together, step by step, in creating a new plan which will lead up a ladder of planning decisions until a plan is developed which will be acceptable to both sides. The ladder of planning decisions would become an educational process, as well as a decision-making process."

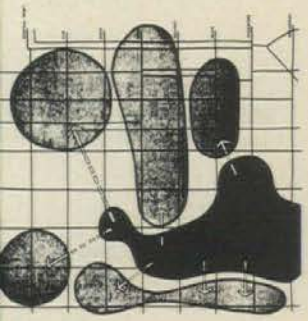
The letter went on to propose that a working committee be established composed of representatives from the City

...and a review committee had to vote on each one.

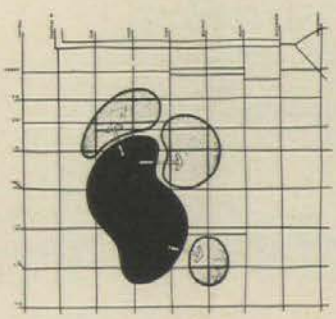




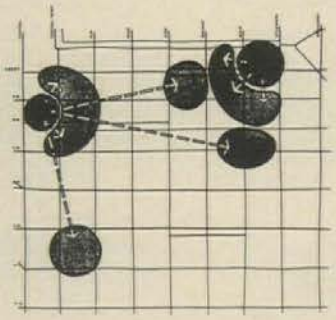
The Cincinnati Master Plan of 1948, shown at left, provided the context in which the downtown renewal plan could go forward. The diagrams above and below were made by the consultants for Stage 3 of the process, when the committee was choosing from among alternative strategies that would achieve the objectives selected in Stage 2.



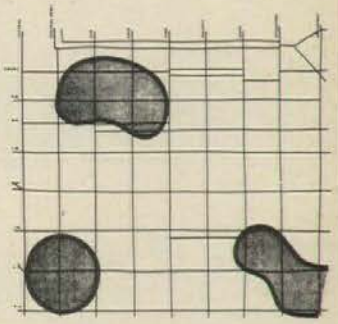
Office location alternates



Retail location alternates



Government location alternates



Residential location alternates

Council, the City Planning Commission and the Downtown Development Committee.

The city manager decided that it was necessary to have an outside planning consultant who could make a completely fresh start, and at the end of June the Council appropriated a sum of money for this purpose. The city manager then invited a working majority of both the Council and the Planning Commission to join him, three representatives from the Downtown Development Committee, and two from the developer, in forming a review committee. The committee met for the first time on July 12, 1963 and elected Mark Upson, who had recently retired from a top executive position at Proctor and Gamble, to be the committee chairman. Upson was a fortunate choice. He did not own property downtown and was not identified with any of the conflicting political interests; at the same time, he was able to command the respect of all parties.

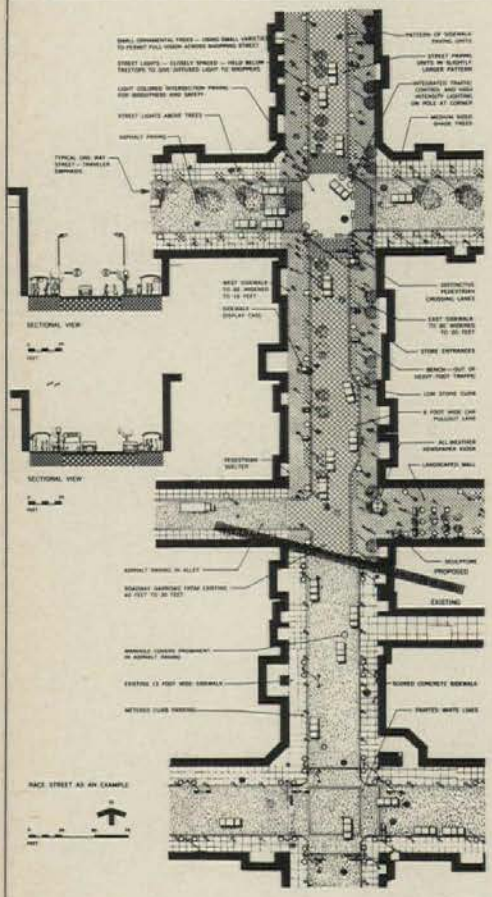
The city manager then set up a subcommittee and began a series of interviews with planning consultants. One of those contacted was Archibald Rogers of the Baltimore firm of Rogers, Taliaferro, Kostritsky, Lamb. Rogers recalls that he was not particularly anxious to become involved in Cincinnati, as his office had a heavy backlog of other planning work. He consequently gave the screening committee some very stiff answers to its questions, and refused to make any commitment about the length of time that would be needed to come up with a satisfactory plan. Then, confident that he had left his firm no chance whatever, he set out on his return trip to Baltimore. Herbert Stevens, the planning director, reached him at the airport: "You'd better cancel your flight, Arch," he said, "you've got the job."

What the screening committee wanted was for Rogers, Taliaferro, Kostritsky, Lamb to join forces with Alan M. Voorhees and Associates, the transportation consultants, and Hammer and Company Associates, economic consultants. The three firms agreed, a contract was drawn up, and it was approved and signed by the middle of September.

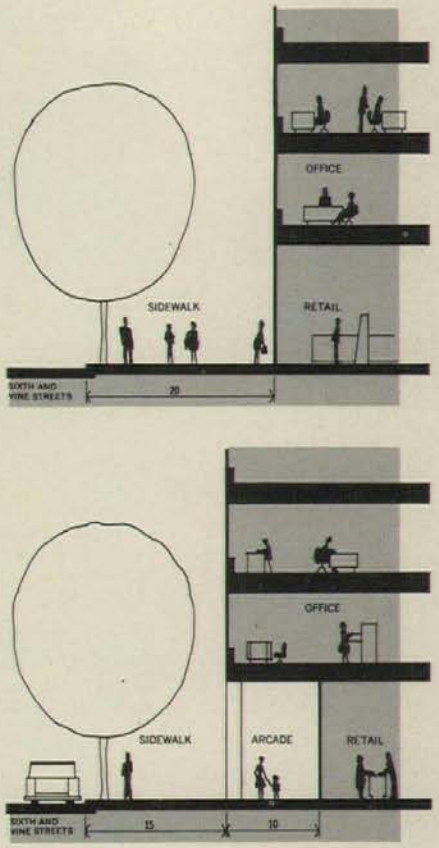
Then began an extraordinary series of meetings

They took place on a regular schedule every two weeks. It was agreed as procedure that each step in the planning process would be programed as a series of decisions, which would be voted on by the working review committee. In the interval between meetings, the decisions were to be ratified by the City Council and City Planning Commission. As working majorities of both bodies were represented on the committee, such ratification was expected. If it was not forthcoming, the matter was to be referred back to the working review committee. Each meeting took two days, the first for presentation by the consultants, the second for discussion and decision.

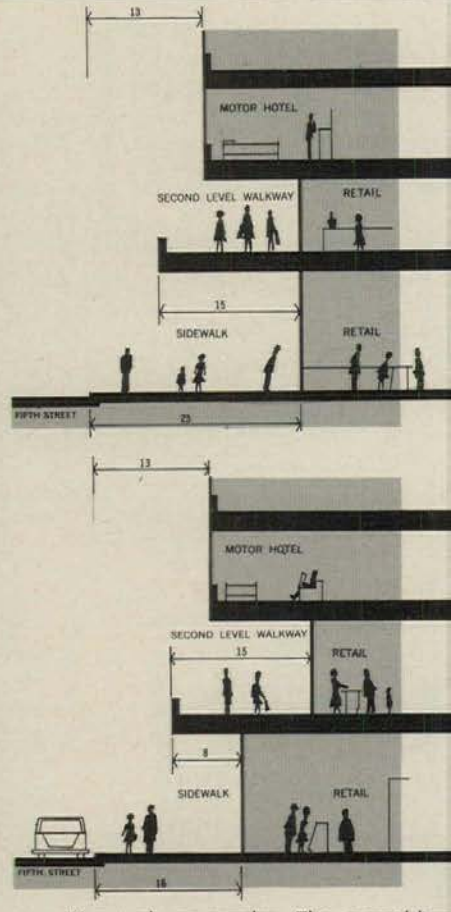
The committee's decisions were ratified by the City Council...



Drawing above shows the effect on main shopping street of requirements like those at right.



The plan provides developers with alternate sections designed to create an incentive for



amenities such as arcades. The second-leve walkway is definitely required in certain block

Everyone realized the decisions involved were crucial

In the words of Cincinnati's Congressman John Gilligan, who was then a member of the City Council: "When we went into the core area, we were going to do what amounted to open-heart surgery, where, in earlier projects, we had been trimming hangnails." The review committee meetings attracted a great deal of attention. They were open to the public, covered by the press, and anyone who wished to put forward his views could do so if he had made prior arrangements with the chairman.

The architects wholeheartedly accepted the concept of a working review committee and set out to put the emphasis on the working aspect of it. In Rogers' words: "We recognized that the committee was there to participate in making creative decisions, not just to review." It nevertheless fell to the consultants to investigate the alternatives and to make recommendations for courses of action.

Rogers describes four planning stages in military terms

Stage 1 is reconnaissance, a general survey of the existing situation.

Stage 2 is the selection of a series of strategic objectives.

Stage 3 is the consideration and selection of alternative strategies to achieve the objectives.

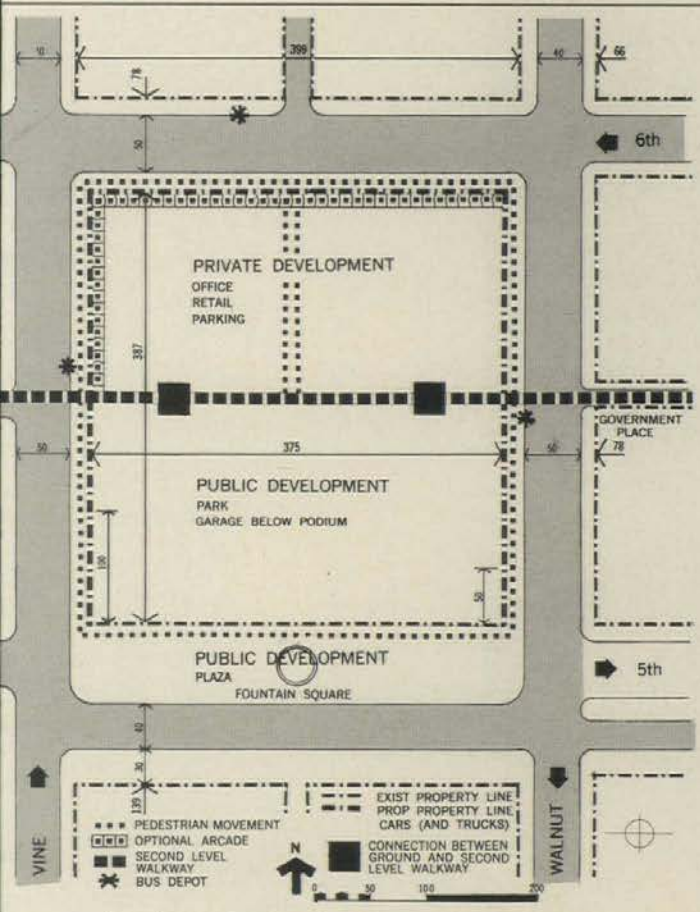
Stage 4, which is tactics, is the design process itself.

The reconnaissance phase naturally involved a great deal of technical research by the architects and their economic and transportation consultants. In addition, Rogers personally interviewed some 40 community leaders who represented the interests directly involved, and a "street-corner" attitude survey investigated popular opinion.

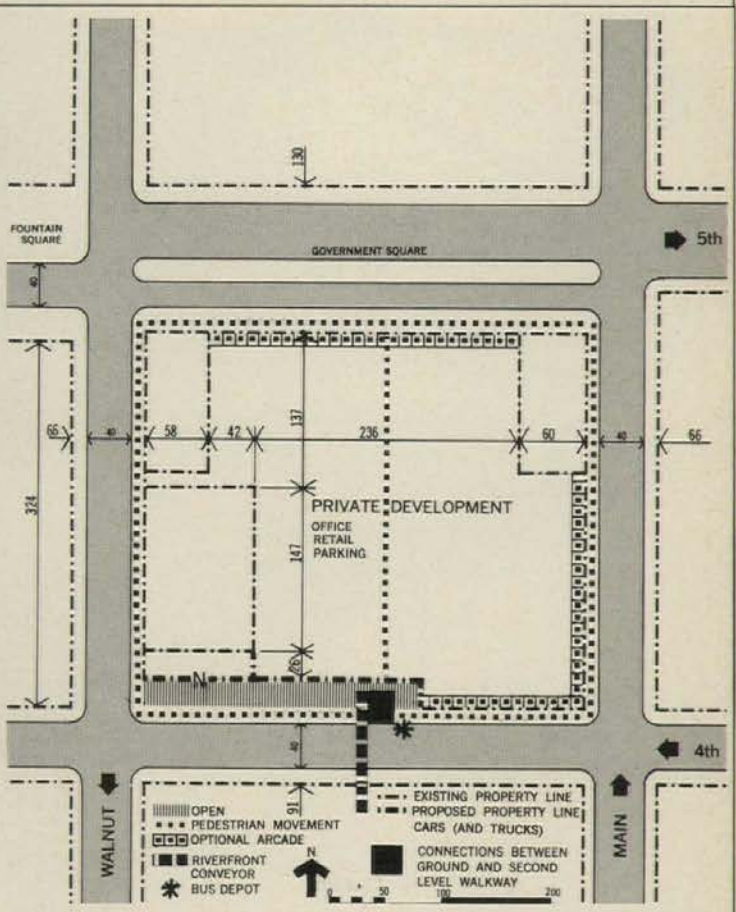
The five major problems identified by the interview process were certainly familiar plaints: the physical deterioration and tawdry appearance of parts of the central business district, a decline in weekend and nighttime activity, a decline in mass-transit use, the location and organization of parking facilities (but not the quantity of space available), and the traffic conflict between pedestrian and vehicles.

The impressions of the individuals interviewed were, of course, only part of the picture. Investigation demonstrated, for example, that the decline in mass-transit usage was not constant, but leveling off. The first research phase, however, made it possible for all concerned to agree on certain basic needs, which became the context for the rest of the planning process. It was agreed that any plan should result in increased property tax revenues from the downtown area, as a result of increased downtown employment and greater use of the core area by shoppers and visitors. In order to accomplish this aim, it was clearly necessary to improve the movement of vehicles and people both to and

...so that when the plan was completed it became the law.



Diagrams of blocks A and B show how requirements and restrictions are set down in the plan. Points of automobile and service access for each



block are also laid down by the plan, although they have been omitted from these drawings.

within the downtown, to provide adequate and inexpensive parking as close as possible to points of destination, and to improve the mass-transportation system. It was also clearly necessary to achieve these goals with the least expenditure by the city and the least disruption of downtown economic life, and all these objectives had to be accomplished in such a way as to create a handsome, as well as a functional, downtown area. A large order, but not an impossible one, as the planning process was to prove.

By the middle of December 1963, the committee was voting on a series of transportation, terminals and land use objectives following the sequence of decisions diagrammed at the top of page 142. The boxes with dark outlines represent the recommendations of the consultants.

By April 1964, the committee was voting on alternative strategies, such as the ones shown.

By mid-June, the review committee was well into tactics, and was deciding questions such as curb-parking policy for specific blocks. By July, the committee was considering the priorities of staging renewal block by block, and had decided to appoint an architectural review board to work with the developers of individual parcels.

After each committee meeting the City Council convened and, in most cases, approved the decisions that had just been made. The final plan exists as a series of some 250 ordinances that vary from expressions of philosophical intent to specific statements governing the width of sidewalks. As a legal document, the plan is organized in five parts. Under part one, the frame of reference, are the decisions relating to land use, transportation, and transportation terminals. Under part two, the system grid, are the decisions governing the traffic-and-street system, parking, the bus-and-transit system, and the pedestrian facilities system. The third part is a block-by-block consideration of the decisions governing development. The fourth part is devoted to implementation policies, the fifth to long-term plans. These basic decisions were ratified by the council and planning commission as the planning studies progressed, so that when the plan was completed it had already been adopted.

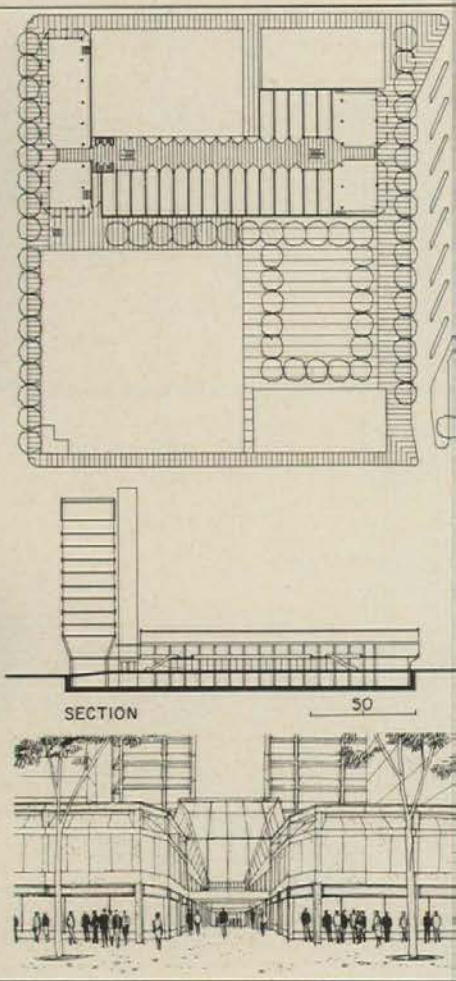
The descriptive plan, drawn by the consultants, is organized somewhat differently from the legal document, although it embodies the same decisions. It takes the characteristics determined for the individual blocks and organizes them in the form of a transportation plan, a functions plan, a terminals plan, and an amenities plan; then it presents a synthesis of all four as the urban-design plan.

The plan is a structural skeleton

The effect of the completed plan was to give each of the blocks in the renewal area a strongly delineated functional relationship with the rest of the core, laying down sidewalk

The architectural results so far are encouraging, the future still uncertain.

A parking garage and plaza, shown above, are being designed by Rogers, Taliaferro, Kostritsky, Lamb for block A, which adjoins Fountain Square, Cincinnati's traditional center. The architectural review committee, taking part in the decision-making process, agreed to relocate the fountain as shown. Building in the background of the model photograph will be by Harrison and Abramovitz.



A two-level shopping arcade and an office building are being designed for block B by Harry Weese and Associates. Preliminary design drawings are shown at right.

widths and access points, and suggesting arcade sections and second-level circulation; but there is virtually nothing to indicate the architectural relationships of the actual buildings. In Rogers' words: "What we have in the plan is a very strong skeleton, and I am not too concerned about the architecture that is going to be strung out on it." The structural emphasis was, in any case, a result of the consensus process, because the representatives of the developer steadfastly obstructed all decisions that affected the character of actual buildings. Ironically, the actual developers have since turned out to be an entirely different real-estate group from the one that participated in the planning study, but the developer's position might well have been the same in any case.

An architectural review committee was established in July 1964

It was created to make sure that the principles of the plan were continued through the design of the actual buildings. Mark Upson was elected chairman of this committee, too, but it lacks the participation of the business leaders and elected officials that made the original review committee so effective. Congressman Gilligan puts it this way: "When we reached the end of the planning process, zing, everybody shook hands with the committee and dismissed it." It is too early to tell if a great deal of ground will be lost because of this distinction between planning and architecture. The course of development so far has been uneven. On the positive sid of the ledger are the design of block A, where Rodgers, Talia ferro, Kostritsky, Lamb have made the underground parkin garage the basis for Cincinnati's first major civic space, an block B, where Harry Weese is designing an arcade of shop and an office building. Designs for the other blocks are sti before the architectural review committee.

The lesson of the plan itself is clear

The creation of political and popular support for planning clearly the crucial ingredient of success, not, as has bee so often believed, the shielding of planning from the pres sures of the political process. The downtown plan approve by the committee was not essentially so different fro the three plans that had been rejected earlier; it was th process that made the difference. Some of the ingredients o success may well have been special to Cincinnati; the pe sonalities of Upson and Rogers were certainly important, a was the fact that they were able to work closely with eac other and command the respect of the committee. Un doubtedly the compact nature of the existing core was als helpful. On the other hand, a city with a stronger visu character than Cincinnati might well be easier to pla In any event, the Cincinnati experience seems to have evolve a planning process well worth trying in other situations.

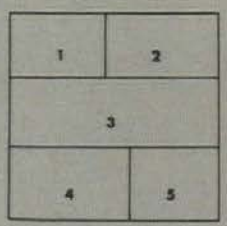
FIVE SMALL OFFICE BUILDINGS

These buildings are presented for several reasons: because they offer a variety of solutions to a common problem; because each is visually attractive and serves to improve the appearance of its neighborhood or countryside; and because their designs relate interior spaces, exterior treatment, scale, and over-all configuration to the micro-environment that contains them.

Happily, these examples do not come in crazy shapes, nor do they trace odd-ball profiles against the sky, nor are they composed of overweight masses of concrete with pitted or tortured surfaces. They tend, instead, to be polite but not stuffy, restrained but not dull, sprightly but not spectacular. They are—in a phrase—commercial architectural of high quality.

Landscaped courtyards are a planned element in four out of the five buildings, yet do not occur just for the sake of having a courtyard. Each fulfills a specific purpose and becomes a functional part of the spatial pattern of an individual project.

—J. S. H.



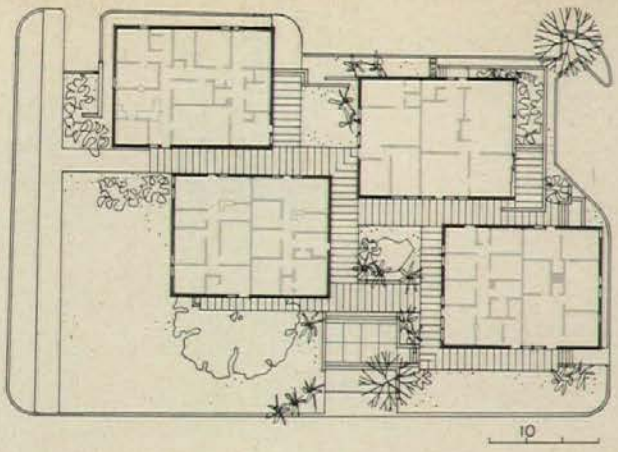
1. Design Center, Springfield, Illinois. Architects: Ferry and Henderson.

2. IBM Branch Office Building, Data Processing Division, Endicott, New York. Architects: Sherwood, Mills and Smith.

3. Executive Headquarters of Asgrow Seed Company, Orange, Connecticut. Architects: Office of Douglas Orr, deCossy, Winder and Associates.

4. Valdosta Professional Building, Valdosta, Georgia. Architects: Ellis & Ingram.

5. Import Motors of Chicago—Volkswagen Distributor, Deerfield, Illinois. Architects: Hausner & Macsai.



TAKE-APART SCHEME FOR FOUR UNITS

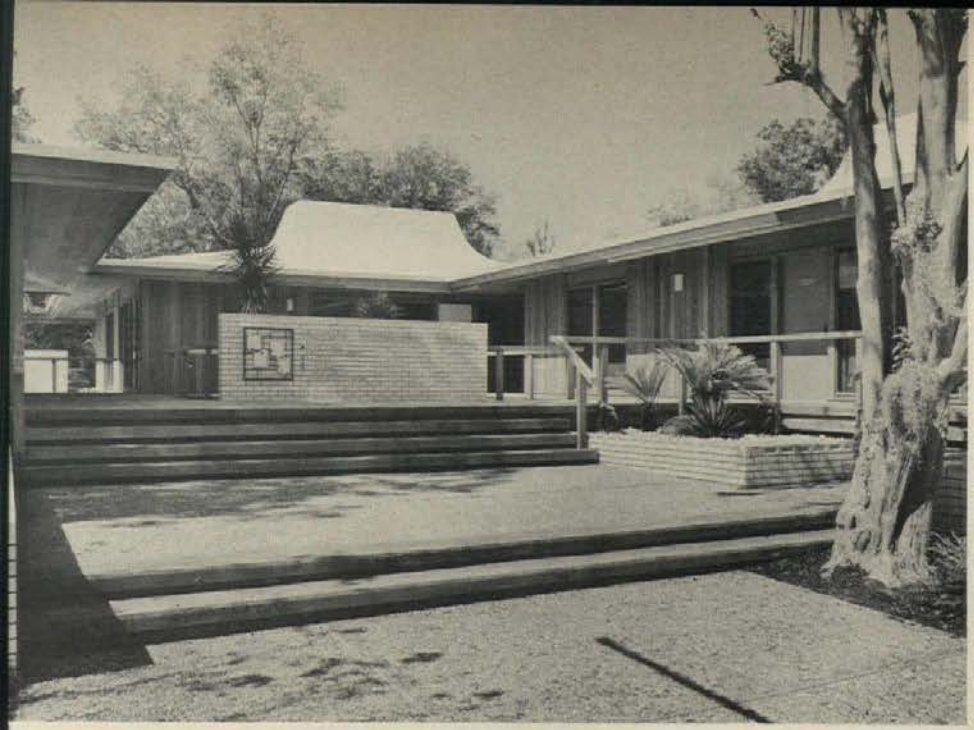
This group of one-story office units is designed as a unified cluster, yet is also arranged so individual units can be moved to a new site in the future, leaving this property free for multi-story development. The connecting walkways of precast concrete are raised to provide plenum spaces that serve the crawl spaces under the buildings so ducts and piping can be rearranged as needed.

Interestingly enough, this group is built on two adjoining pieces of property separately owned, but with easements set up to assure each owner access to all walks and grounds. The common property line runs vertically through the center of the plan as shown at left. A dentist and architect Ellis are the two owners; each has office space for his needs, plus rental area.

The project is located near the main business section, but in a neighborhood primarily residential in character. Continuing growth indicates a larger development will be desirable in the future, but unsympathetic to the neighborhood as it now appears.

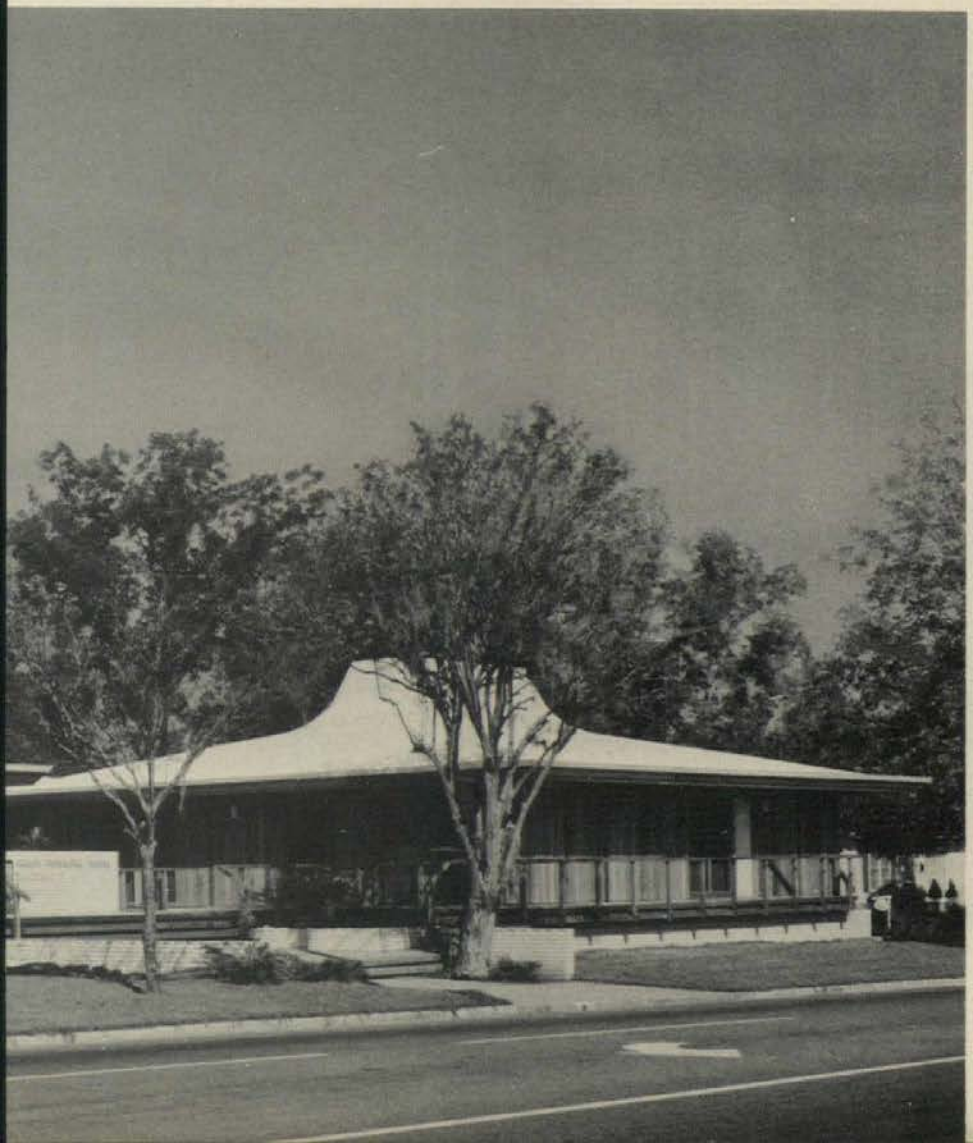
The local climate permitted outdoor corridors for circulation, making the individual units possible. Roof overhangs shelter the walkways.

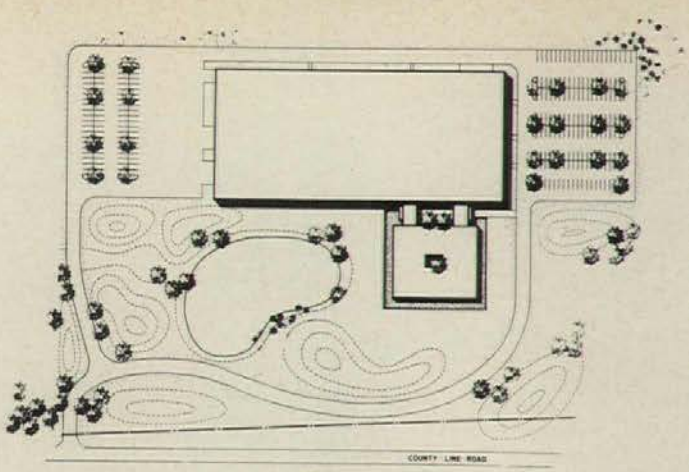
G. Wade Swicord photos



VALDOSTA PROFESSIONAL BUILDING, VALDOSTA, GEORGIA
ARCHITECTS: *ELLIS AND INGRAM*
STRUCTURAL ENGINEERS: *LINDSEY, TUCKER & RITTER*
GENERAL CONTRACTOR: *H & H CONSTRUCTION COMPANY*

The interesting roof profiles came about by placing all mechanical equipment for each unit in the center of the roof space and molding the surface as shielding. Otherwise, no protuberances mar the visual flow of the white plastic covering—specified white for maximum heat reflection. The 35- by 46-foot units have redwood exteriors.





DIFFERENTIATED OFFICES AND WAREHOUSE

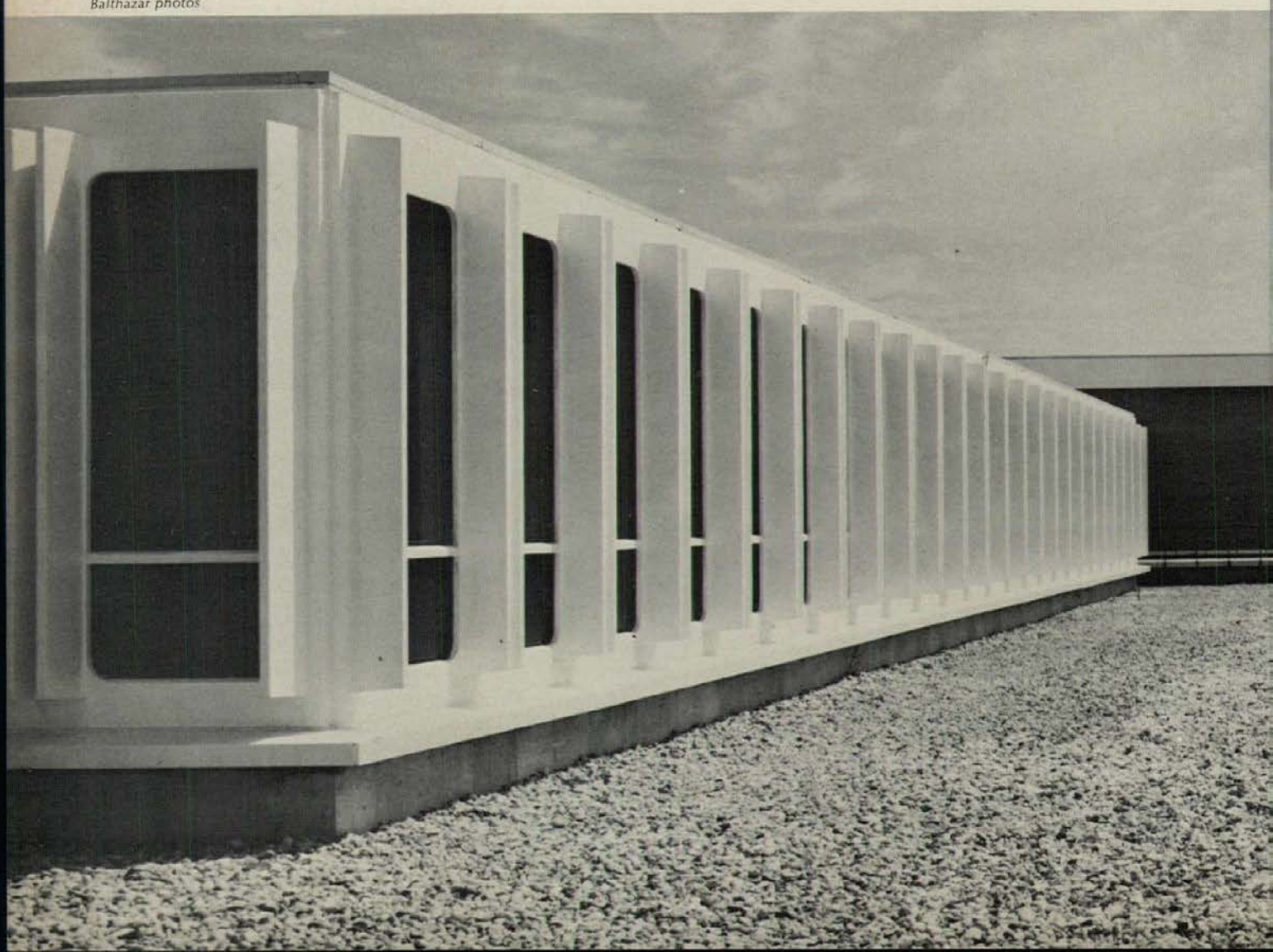
Architect John Macsai points out that "It was possible—in designing this office and warehouse project—to express the dual nature of the problem by providing two differentiated volumes, each meeting its own needs. Common elements that serve both—the entrance lobby and the employes' cafeteria—act as connecting links (see plan, right).

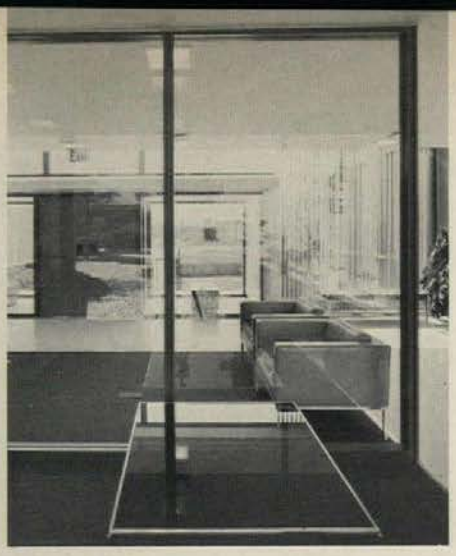
"The 110,000-square-foot warehouse and technicians' training area had to have 70-foot clear spans and be of fire-resisting construction, for insurance advantage. A precast, prestressed concrete structure was provided, with blue glazed brick infilling.

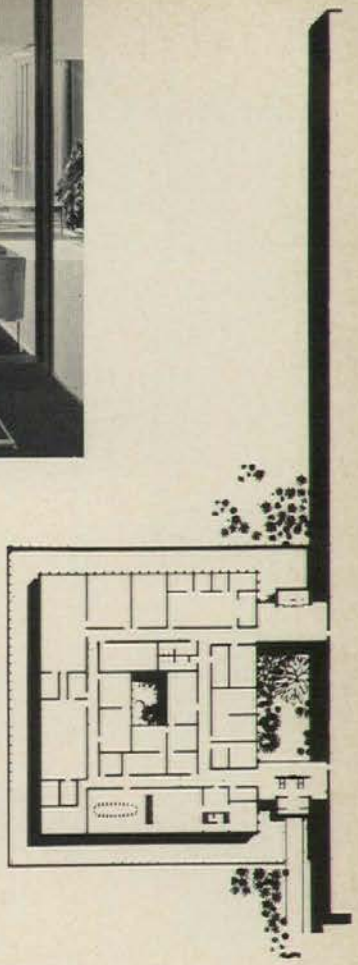
"The exposed concrete frame was made a unifying element and carried over to the 20,000-square-foot office building in the form of precast, tilt-up, load-bearing window-wall units, which were glazed with gray glass. All exposed concrete was given a white finish coat.

"A large number of daylighted spaces were required in the office building, so two interior courts were created; one within the building and one between the office and warehouse units. The latter provides an attractive background for the entrance link and a pleasant outlook for the cafeteria."

Balthazar photos







IMPORT MOTORS OF CHICAGO–VOLKSWAGEN DISTRIBUTOR, DEERFIELD, ILLINOIS

ARCHITECTS: *HAUSNER & MACSAI*, IN CHARGE: *ALFRED J. HIDVEGI*

STRUCTURAL ENGINEER: *ROBERT M. DARVAS*

MECHANICAL AND ELECTRICAL ENGINEERS: *GAMZE, KOROBKIN, DOLPHIN & ASSOCIATES*

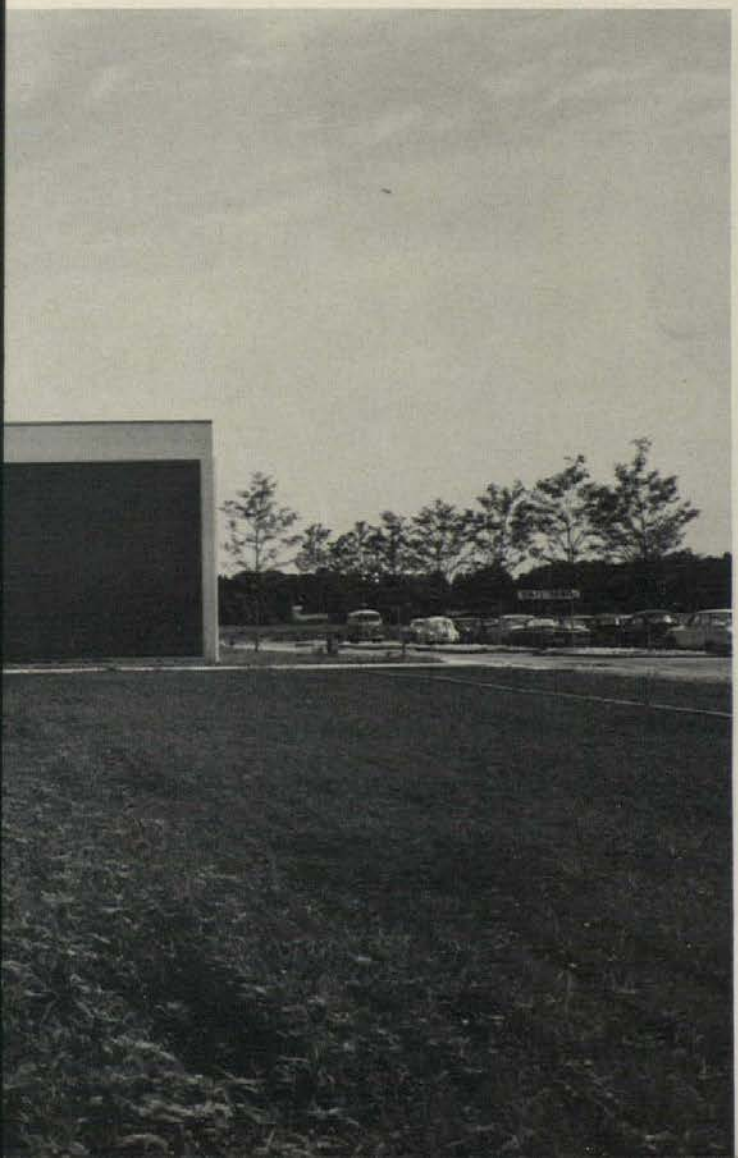
LANDSCAPE ARCHITECTS: *THEODORE BRICKMAN COMPANY*

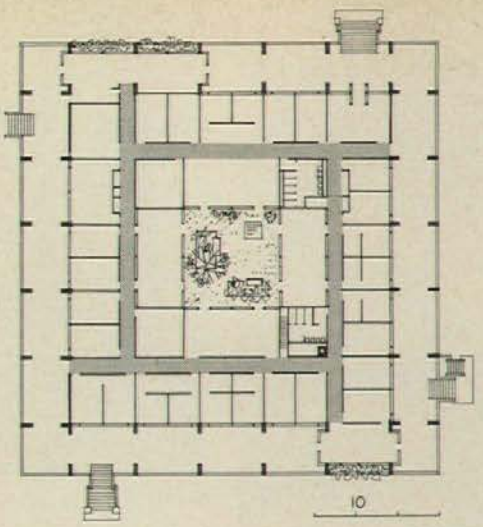
GENERAL CONTRACTOR: *THE GEORGE SOLLITT CONSTRUCTION COMPANY*

The photos immediately above and below show the entrance and reception area from both inside and outside; the picture at left shows the pleasant courtyard between the office and warehouse units; the large photo below shows the differentiated character and scale of the two units.

The project received a Citation of Merit in the 1965 Honor Awards Program jointly sponsored by the Chicago Chapter, A.I.A., and the Chicago Association of Commerce and Industry.

The foundations consist of caissons and grade beams; the floors are concrete finished with vinyl tile; the ceilings are of an acoustical material.





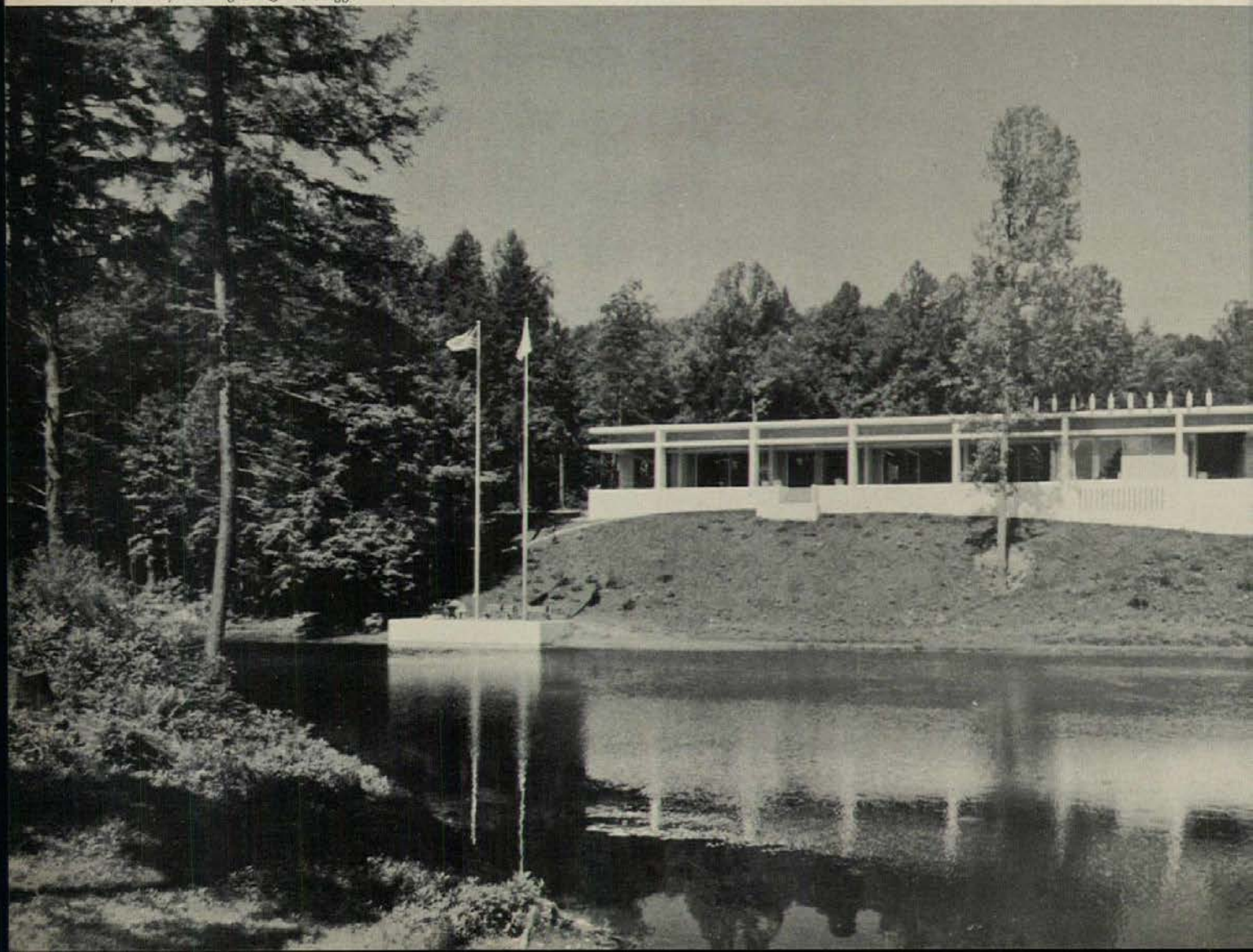
OFFICES THAT OPEN INWARD OR OUTWARD

This compact arrangement of offices, which flank a double-loaded corridor in a square doughnut plan with central courtyard, makes the most of two outdoor worlds. Some of the offices open to the landscaped atrium; the remainder look out to the appealing wooded site, complete with pond.

The owner requested a non-institutional building for the rural site, and one which could readily be expanded by a limited 20 per cent. In explaining the design concept, architect Edwin William deCossy says, "With consideration for business 'image' and operations, the design represents an attempt to restate in contemporary terms the working-farm villas of Palladio. Classical in organization, the building is completely symmetrical, with a central open atrium courtyard and a loggia around the perimeter. The 18-foot-wide loggia area will accomodate future expansion to the predictable limit without significantly altering the appearance of the building."

All outside walls have glazing from floor to ceiling to take full advantage of the outlook. Ceilings are 10-feet high; floors are carpeted; offices are thus inviting, yet properly dignified. Clerestory sun screens modify sky glare.

Two photos by Cunningham © Werdnigg



The site borders the Wilbur Cross Parkway, and is a 165-acre tract of wooded land which is part of a farm owned by the Asgrow Company for more than a century. The architects placed the office building on a small hill overlooking a man-made, three-acre pond, partially screened from the highway by a knoll. The building is reached by way of a paved driveway through cleared woodland which connects with a parkway access road.

The building is constructed over an exterior frame of concrete and an interior frame of steel; cost about $22 per square foot.

Two photos by Stuart M. Langer

EXECUTIVE OFFICES OF ASGROW SEED COMPANY, ORANGE, CONNECTICUT

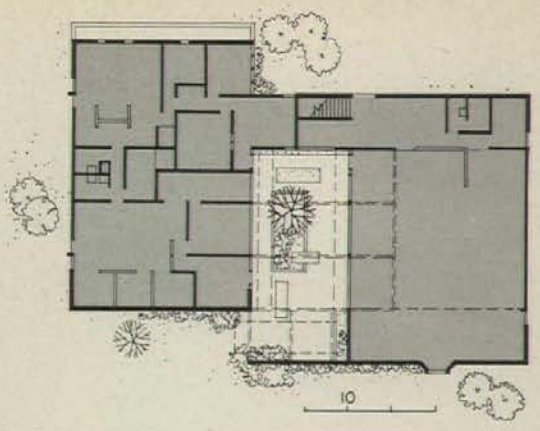
ARCHITECTS: *OFFICE OF DOUGLAS ORR, DE COSSY, WINDER & ASSOCIATES*

STRUCTURAL ENGINEER: *HENRY A. PFISTERER*

MECHANICAL AND ELECTRICAL ENGINEERS: *VAN ZELM, HEYWOOD AND SHADFORD*

LANDSCAPE ARCHITECT: *MARIANNE MAC MASTER*

GENERAL CONTRACTOR: *DWIGHT BUILDING COMPANY*

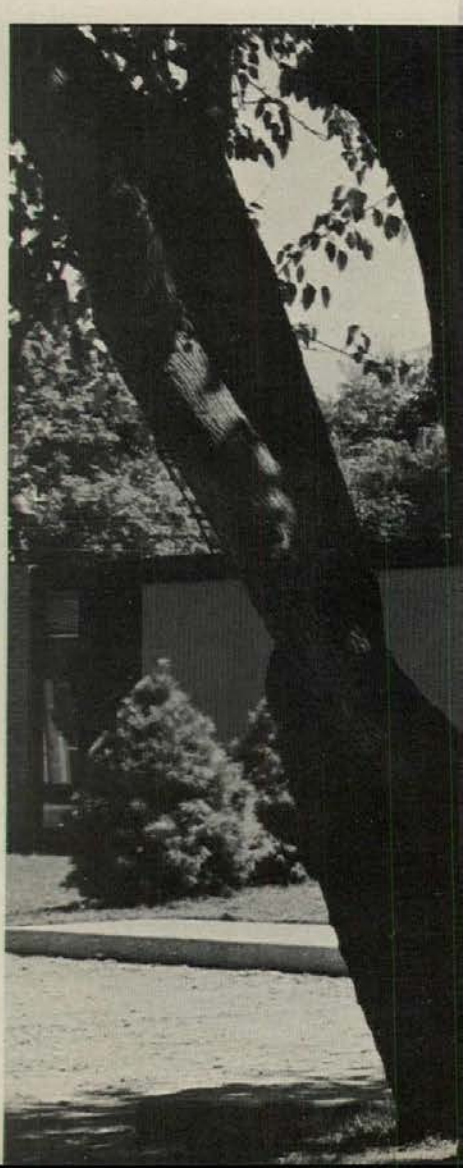


GROUP FACES INWARD TO QUIET GARDEN

Although the idea of turning a group of buildings inward to a landscaped entrance courtyard is surely not a new one, its realization—by the completion of this office and commercial group—created quite a stir in Springfield, Illinois, where architects are still fighting the battle of modern versus traditional. Happily, reaction has been largely favorable. The project also won an Honor Award in the annual competition of the Central Illinois Chapter of the A.I.A.

The building group, called the Design Center, houses a modern furniture studio (as principal tenant), and offices for the architects and a consulting engineer. Architect Earl W. Henderson Jr. says, "Since a generous site was available, with no existing structures on any side, the design evolved as an inward-looking group in a park-like setting providing easy access and adequate parking. A single window faces west to the street, while the prime show windows of the furniture studio face north to the court. The studio roof—supported by laminated beams—curves upward toward the court to provide clerestory lighting above the show windows. The office wing is of more conventional steel and dry-wall construction."

Richard Koch photos



DESIGN CENTER, SPRINGFIELD, ILLINOIS

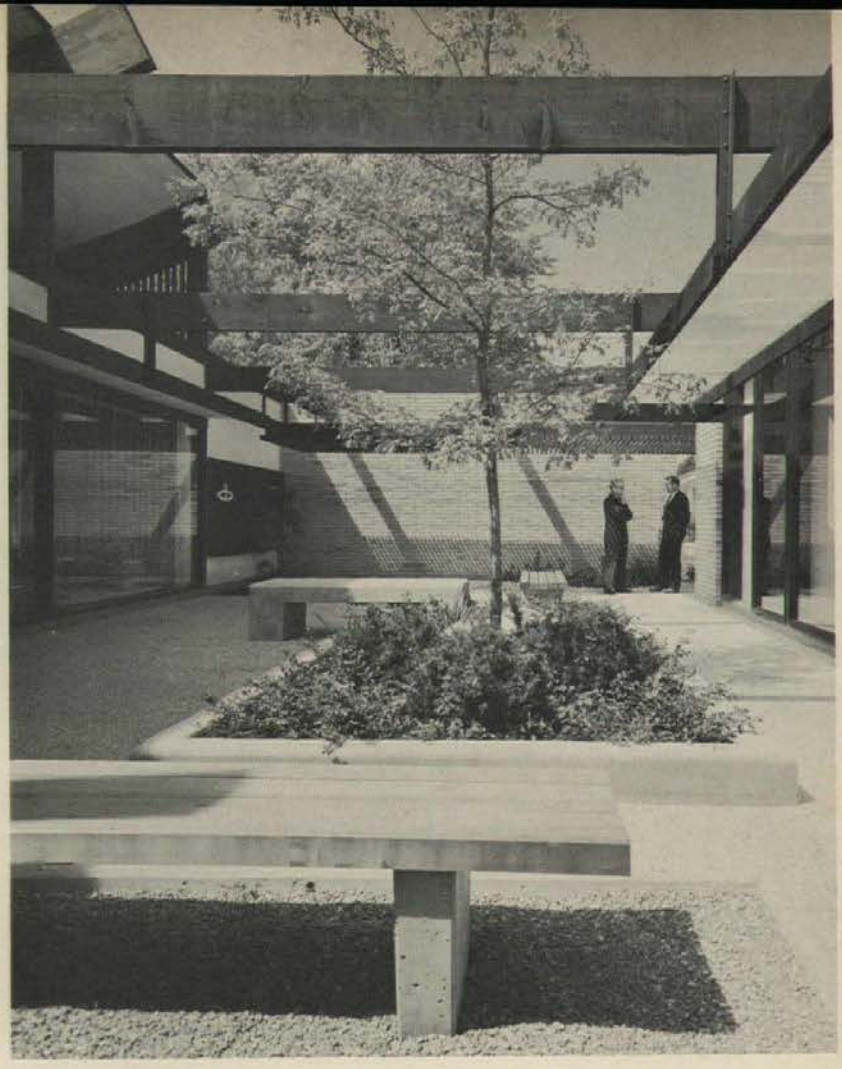
ARCHITECTS: *FERRY AND HENDERSON*

STRUCTURAL ENGINEERS: *COLLINS AND RICE CONSULTING ENGINEERS*

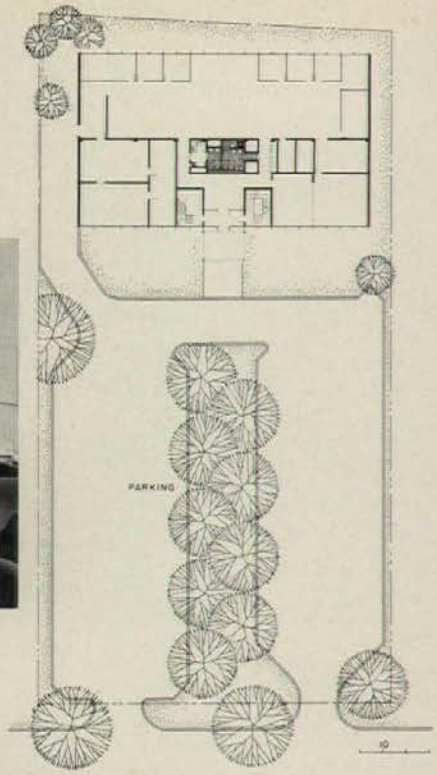
MECHANICAL ENGINEER: *EDWARD J. LONG*

LANDSCAPE ARCHITECT: *DAVID P. SPENCER, SPENCER AND SPENCER*

GENERAL CONTRACTOR: *TRUMAN LANCASTER CONSTRUCTION COMPANY*



The photographs above and at right show the attractive central courtyard, which is equipped with benches and night lighting. The buildings themselves have exterior walls of tan brick; structural steel frames; and partitions of gypsum board on wood studs. The floors are concrete slabs finished with vinyl-asbestos tile; the ceilings are acoustic tile; sash are aluminum; and the store front construction is of natural wood.



OUTSIDE COLUMNS SAVE SPACE

Architect Carrell S. McNulty Jr., Sherwood, Mills and Smith partner in charge of this two-story IBM branch, explains that the structural column-mullions were placed outside the plane of the wall to provide a clean inner surface and furnish more usable space within the building. The exposed vertical supports are spaced six feet on centers and receive the fixed, double-glazed sash, which in turn serve as complete infilling and thus reduce cost by eliminating the need for any further curtain wall construction.

The heating and air-conditioning system consists of finned convection at the glass walls plus a ceiling plenum that operates through porous acoustical ceiling tile suspended on T's. This arrangement, plus modularly spaced recessed lights, provides complete flexibility of partitioning. The second floor —with separated access and occupied at present by other IBM departments— will serve as future expansion space.

IBM BRANCH OFFICE BUILDING, ENDICOTT, NEW YORK

ARCHITECTS: *SHERWOOD, MILLS AND SMITH*

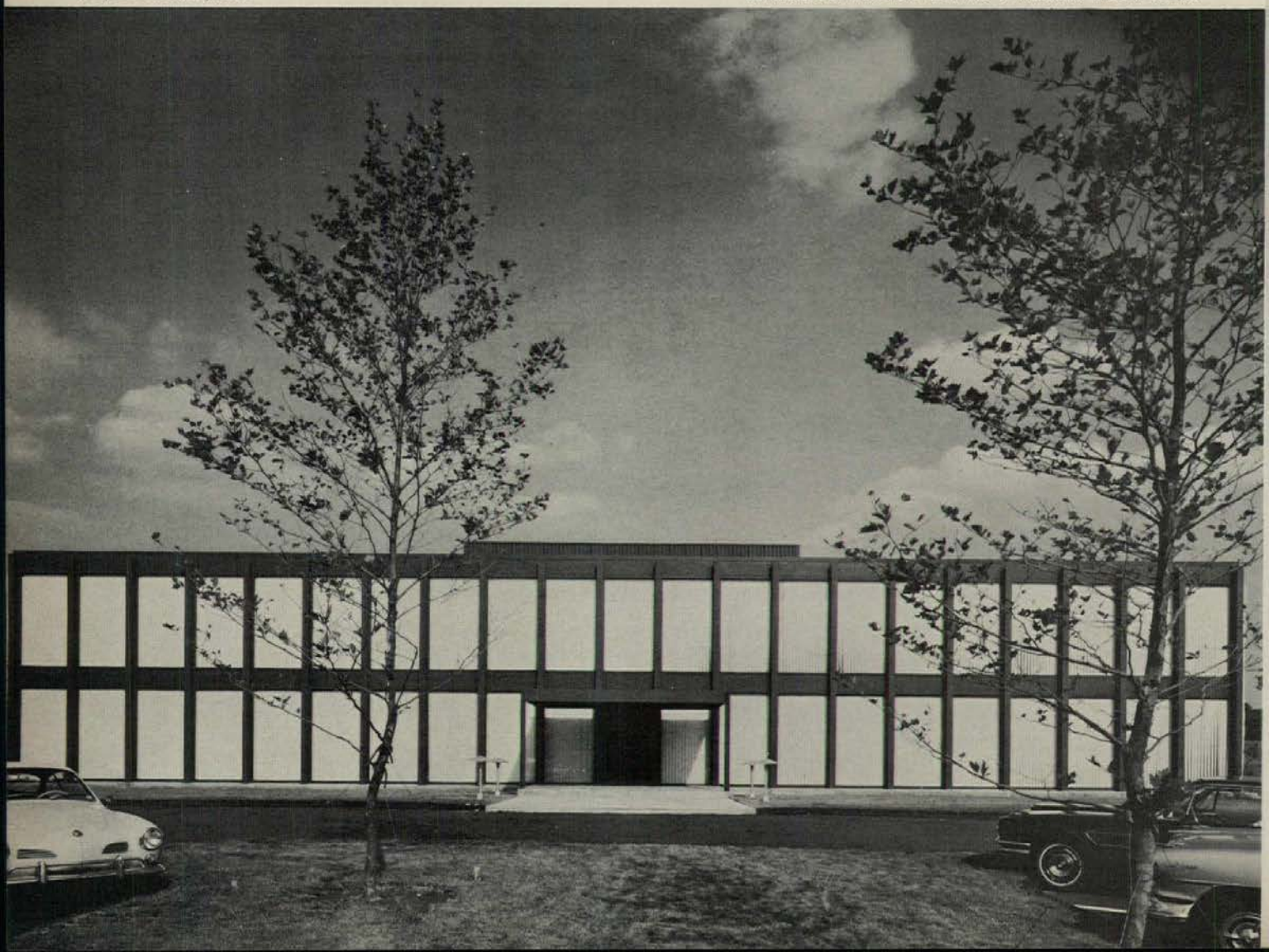
STRUCTURAL ENGINEERS: *FROMME & VOSGANIAN*

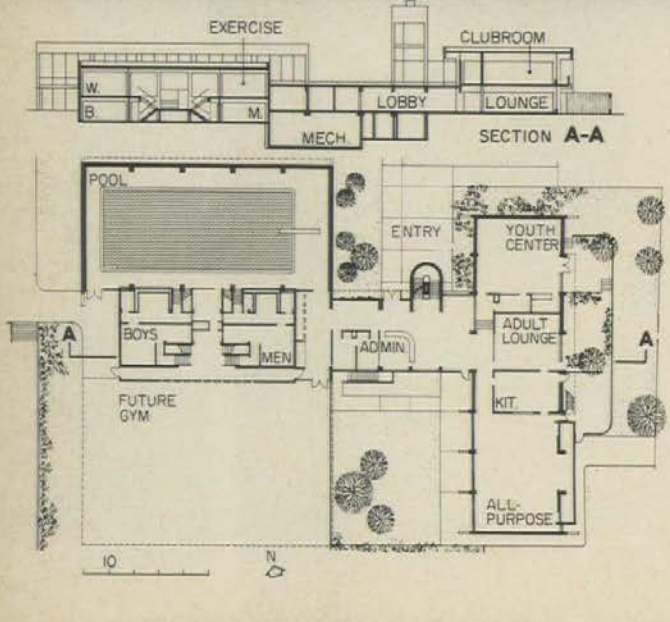
MECHANICAL AND ELECTRICAL ENGINEERS: *SMITH & HESS*

LANDSCAPE ARCHITECT: *GEORGE CUSHINE*

GENERAL CONTRACTOR: *EDWARD L. NEZELEK, INCORPORATED*

Joseph W. Molitor photos

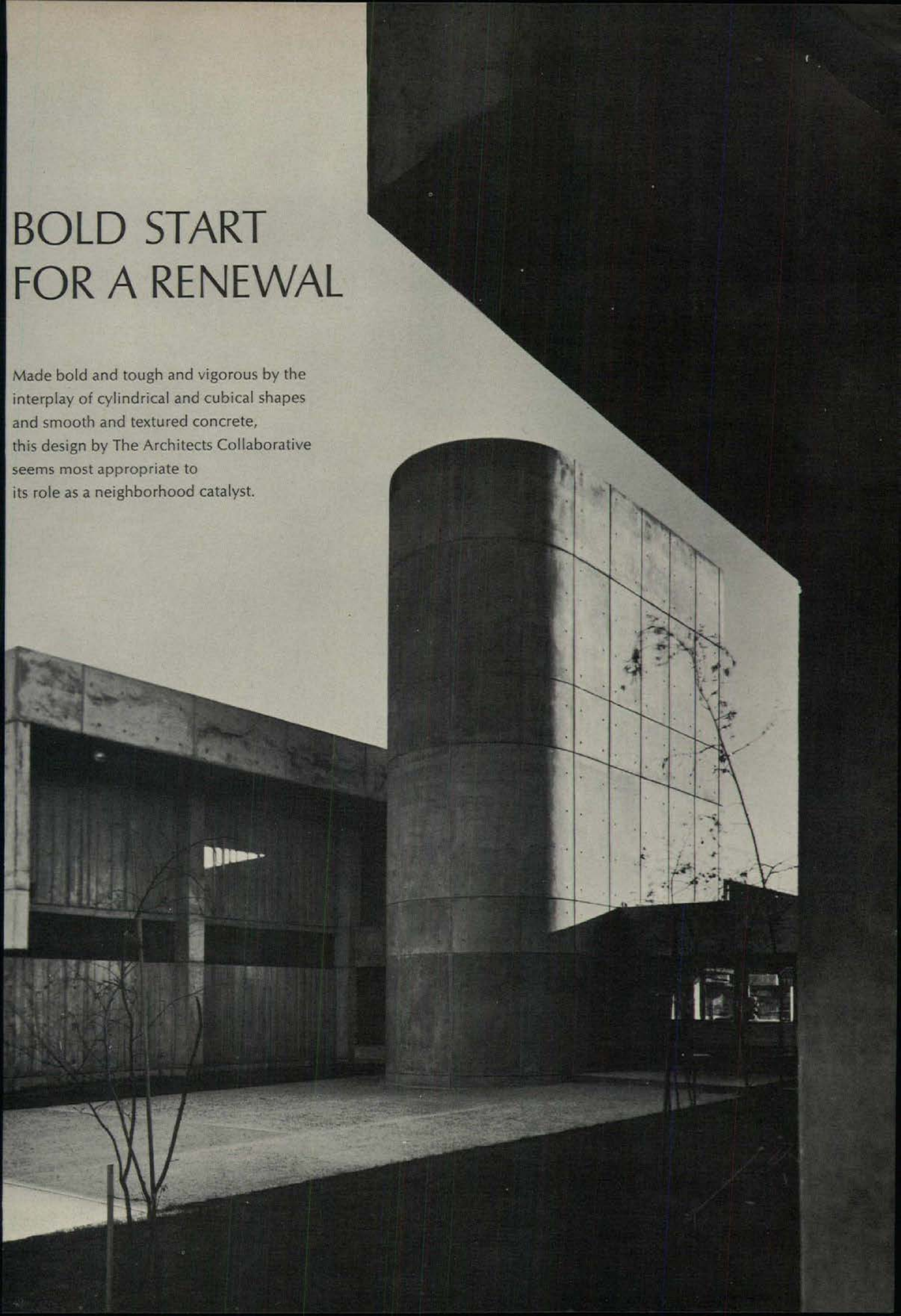




Strong and monolithic, with a finish and with forms that are more often seen in much bigger buildings, this relatively small (26,140-square-foot) YMCA was designed as much more than a community center. As the first structure to rise in a major Boston renewal program, it brings freshness and color (see cover) to an old and blighted area. In the kind of place where impermanence is common, the building's strong shapes and finishes suggest commitment. Yet there is nothing of the fortress about the design. Indeed, sculpture and art "integral with the very stuff of the building" (see photos) add a non-functional value too seldom realized in tight-budget settings like this where it is most needed.

BOLD START FOR A RENEWAL

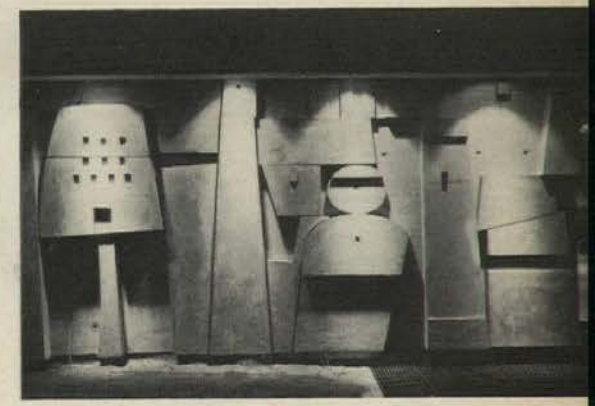
Made bold and tough and vigorous by the interplay of cylindrical and cubical shapes and smooth and textured concrete, this design by The Architects Collaborative seems most appropriate to its role as a neighborhood catalyst.



Photographs: Louis Reens

Bold and massive curve of the stairtower dominates the entrance courtyard. Behind, on the entrance wall, is a relief sculpture by Harris Barron (see also photo, below right). Free-standing sculpture is planned for the open rear patio (photo opposite), and as a focal point for the playfields.

On the street side, the reinforced concrete structure is essentially closed on the pedestrian level; but the second level and the rooms open to the interior courts have large glass areas. Both plastic-coated and random vertical-board forms were used to vary the texture of the unfinished concrete.



ROXBURY BRANCH YMCA, Boston. Architects: *The Architects Collaborative—Norman C. Fletcher,* principal in charge, *Howard Elkus,* job captain, design, *Arthur Hacking,* job captain, construction; structural consultants: *Sousa & True;* mechanical consultants: *Fitzemeyer & Tocci;* electrical consultants: *Vern Norman Associates;* general contractor: *George B. H. Macomber Co.;* sculpture and mural: *Harris Barron* and *Ros Barron.*

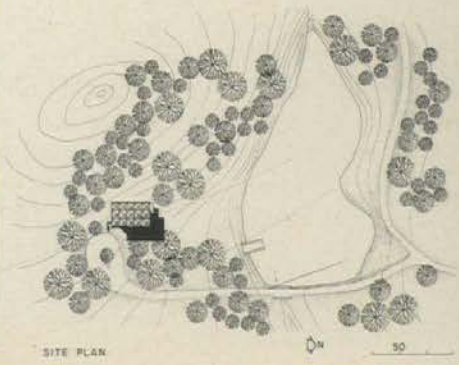
The interiors are spare, but get color and texture from the forming of the concrete, the use of red oak paneling, and—in the teen-age meeting room—a strong, bright mural painting covering one entire wall (photo, lower right). The interior includes a large multi-purpose room, above, which opens to the open rear courtyard; an adult lounge; the pool, which has hot-air inlets around the entire periphery to minimize condensation; locker units in a split-level arrangement to maximize control and minimize changes in level between the lockers and the pool; three club rooms, and an arts and crafts center; a darkroom; a kitchen and a hi-fi listening room which, for both practical reasons (acoustical privacy) and symbolic reasons is located at the head of the stair-tower. A gymnasium is planned for the future. Building and site work cost $611,741. Total cost per square foot: $25.32.

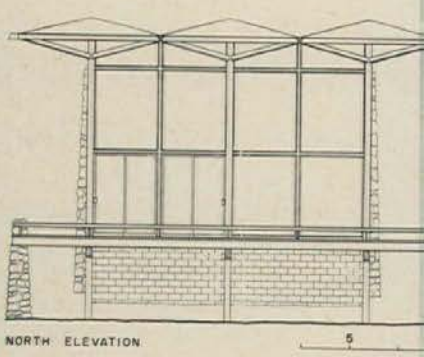
Mountain pavilion makes use of local materials

To build a house on a site of such magnificence can be both easy and difficult: easy if you adopt the attitude that in such a setting "who cares about the house"; difficult if you try to create a structure which is a positive but harmonious element in the natural scene.

When the Wyle family bought this mountain ranch, they were anxious to build a "mountain cabin," but were extremely concerned about the siting and the design of the building—indeed, they spent a year just to decide on the exact site. They wanted a house which would be comfortable and open to the view, but with enough solidarity and permanence to blend with the surrounding forest.

The solution by architects Douglas Honnold and John Rex seems to fulfill these requirements very well. The use of locally quarried granite, and natural-

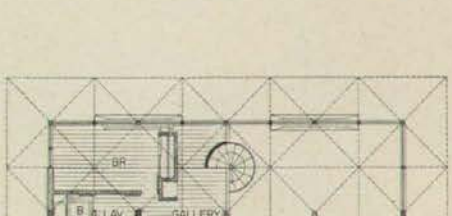




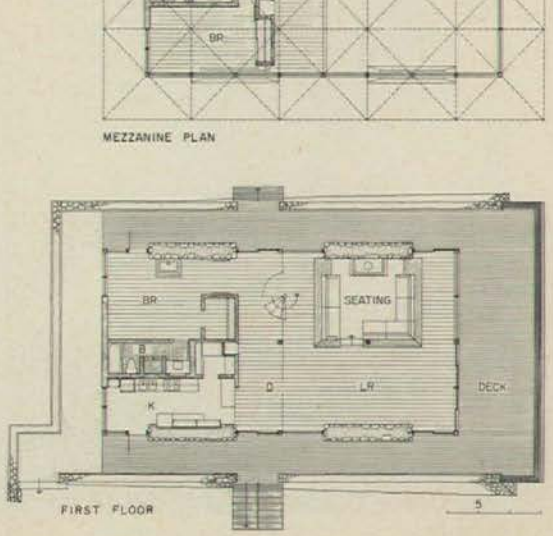
finish cedar, oak and redwood—al
from the area – effectively highligh
regional characteristics; the umbre
roof treatment and large areas of gla
create an open, floating quality to t
house while the solid stone buttre
walls provide the sense of strength a
permanence.

Structurally and visually, the ro
is the most interesting element of t
design and is esthetically satisfyi
from inside and out. The dark-stain
exposed Douglas fir structure contra
dramatically with the redwood ceili
deck; while the depth and openness
the roof-ceiling formation gives add
height and spaciousness to the room
Outside, the peaks of the individu
modules lighten and relieve the co
ventional built-up gravel surface.

Inside, the house has a large tw
story living room, master suite and k
chen on the first floor, overlooked
a gallery leading to the two secon
floor bedrooms. The basement space
occupied by a studio-utility room.



MEZZANINE PLAN



RESIDENCE FOR MR AND MRS JOHN WY
North Fork, California. Architects: *Doug
Honnold and John Rex;* engineers: *Greve
O'Rourke;* contractor: *Dean Farrar.*

Generous decks around the building substantially increase the living areas and seem to extend the house right into the surrounding woodlands, giving views of a canyon and a large artificial lake which was created by damming a small stream. The roof overhang provides much needed shelter from a heavy annual rainfall. Subtle or dramatic lighting effects can be created with the rheostat-controlled pendant light globes. At night, views of the lighted house from the woods and reflected in the lake are particularly exciting.

Furniture is kept simple and functional so as not to detract from the effect of the strong use of natural materials. The huge stone fireplace is flanked by a seating well with U-shaped leather couches. The black iron used for stairway and fireplace hood is almost the only non-local material in the living room.

A high standard of workmanship and finish was demanded by owner and architects, and local craftsmen working with local materials were responsible for the meticulously executed detailing. The result is a highly sophisticated structure with none of the rough, woodsy effect one might expect in such a setting. Structure of the house is essentially Douglas fir frame on a concrete foundation. The fir is stained a deep brown-black shade to blend with the bark of the surrounding trees. Exterior and interior walls are western cedar, and redwood plywood is used for the roof decking.

DISTINGUISHED ARCHITECTURE FOR A STATE UNIVERSITY

Joseph W. Molitor

The dormitory tower, low-rise student housing and dining hall shown at left are a segment of a $36-million residential complex now being completed for the University of Massachusetts. The architectural design and site planning for the entire complex were done by Hugh Stubbins, within the context of a farsighted master plan developed by Hideo Sasaki, and assisted by the guidance of Pietro Belluschi, architectural consultant to the University. Other large-scale projects finished or in project form are by a group of notable architects: Kevin Roche of Saarinen Associates, Marcel Breuer, Gordon Bunshaft of Skidmore, Owings & Merrill, Campbell, Aldrich and Nulty, Edward D. Stone, and, more recently, I. M. Pei. The administrators of this rapidly expanding institution, once a modest agricultural college referred to by nearby Smith girls and Amherst boys as "Mass Aggie," are handling its physical planning and design problems with great skill. This is attested by the participation of leading architects who work only for clients who give them a real chance.

UNIVERSITY OF MASSACHUSETTS CAMPUS PLAN: BOTH FLEXIBLE AND FIXED

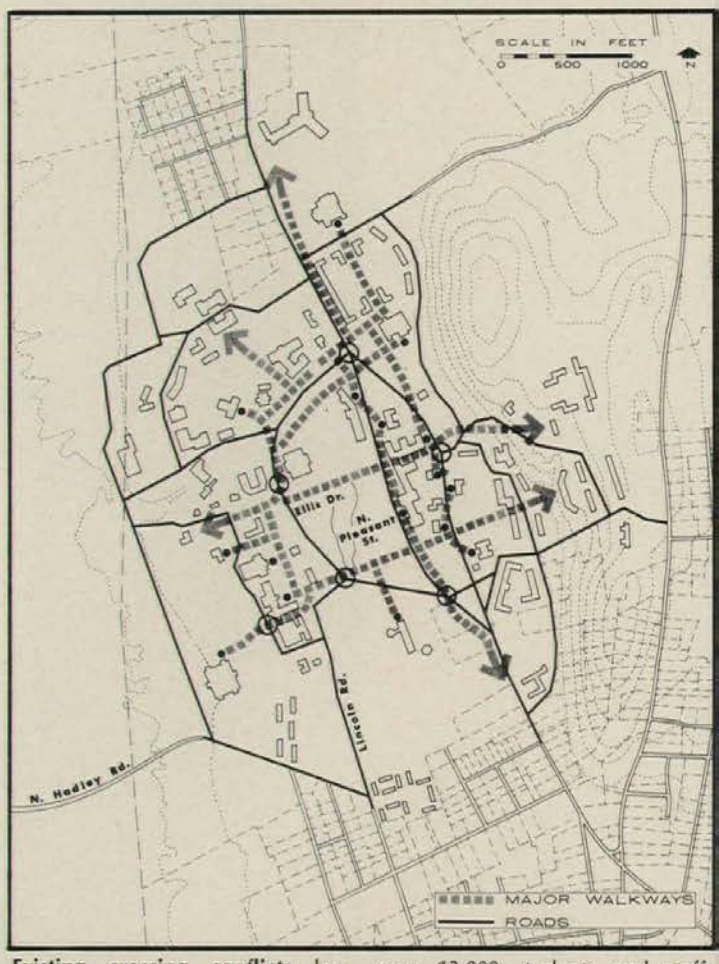
Existing patterns of circulation differ only to a limited extent from those indicated in this aerial photograph taken several years ago. As money is appropriated by the Commonwealth, present automobile and pedestrian circulation routes will be gradually altered or phased out, and roads and paths will be added as the diagrams on these pages show. By this and other means the campus, now over one hundred years old, will acquire a physical legibility in its spaces and functions which it has never had.

Most architects must still do campus work which is restricted to the design of single buildings to be paid for out of currently budgeted funds and to house functions which serve immediate needs. These structures may or may not be adequate within five years. Only rarely is surrounding site development included in the budget. The master plan, if it exists, often consists of an out-of-date formal arrangement by an architect or site planner no longer under contract, which has been made obsolete by changing reality.

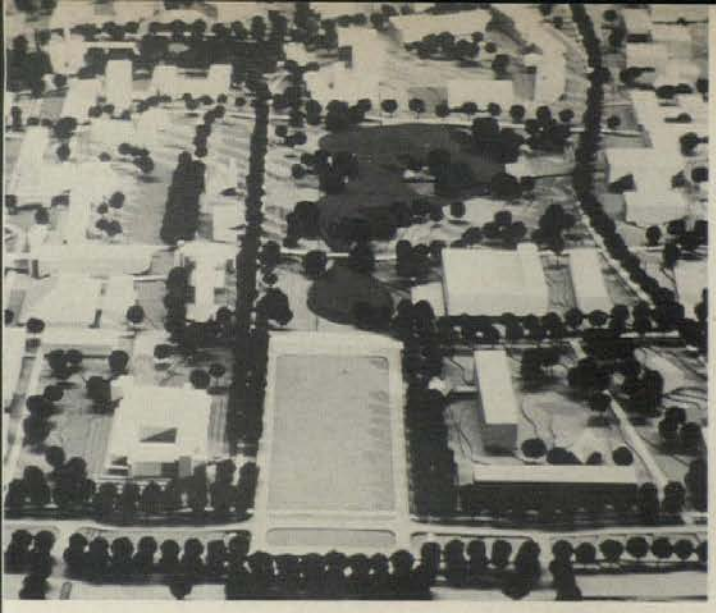
The University of Massachusetts is doing much better than this. The approach to design being taken by its administrators could serve as a guide to expanding colleges and universities everywhere.

The problems

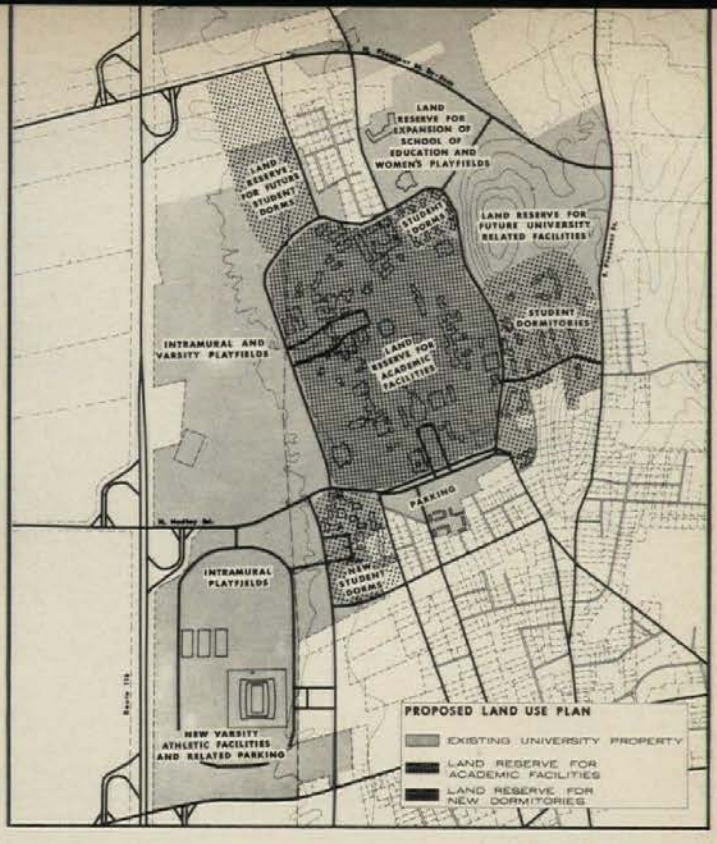
In 1954, the University of Massachusetts had 4,000 students; in 1964 there were 10,497; and the president, John W. Lederle, and the treasurer, Kenneth W. Johnson—who are responsible for planning and development at the university—must now devise and implement a program which will serve 24,800 students by 1972. Most of the colleges and universities in the state of Massachusetts are private institutions which draw their students from all over the nation, and can therefore offer few places to these young people. Not many of the projected 24,800 applicants will be able to afford the costs of private or out-of-state education, and unless the University is able to meet its expansion goals many qualified students will be denied the opportunity of college. Last year the Commonwealth of Massachusetts ranked a shameful 50th among the 50 states in its support of higher education. It is clear that under these circumstances the University cannot afford to make mistakes in its physical expansion program. It is also evident that Massachusetts taxpayers, with or without children approaching college age, must become more aware of

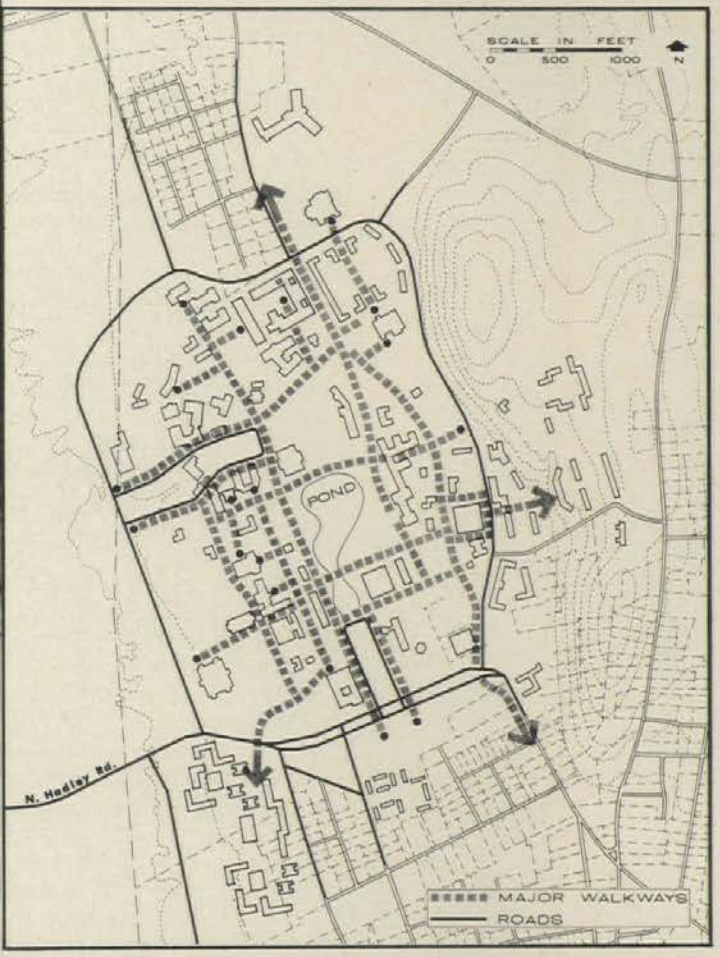


Existing crossing conflicts between automobile and pedestrian routes, in which major student paths must cross as many as three streets in relatively short distances, are exacerbated by the fact that the major campus roads, laid out and originally constructed at the turn of the century for a small agricultural college of less than 800 students, now must support an invasion of cars and service vehicles for a university of over 13,000 students and staff. The campus' academic center is bisected by a state highway (North Pleasant Street) which has reached the limit of its capacity. Present buildings can be reached from most directions directly by car and this uncontrolled access brings two-thirds more cars into the campus than can be handled by the university's paved facilities. The presence of hundreds of parked cars blights the campus.

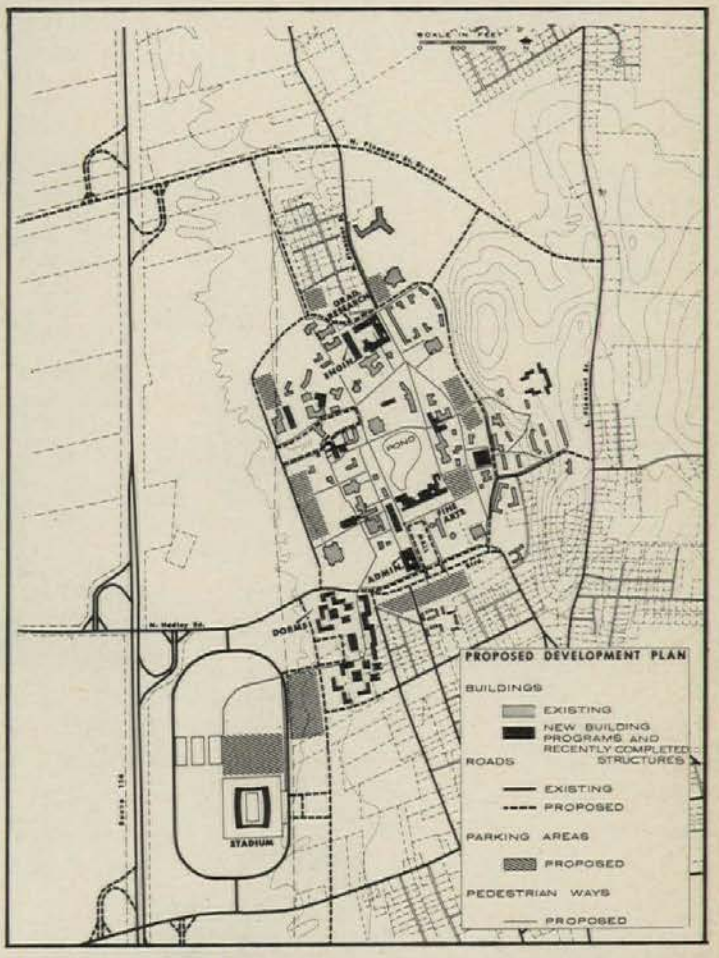


The model for the future, which is shown at approximately the same scale and vantage point as the aerial perspective on the page opposite, indicates that buildings and circulation elements to come will be related to existing elements in a way which will create new and well defined space relationships. The building density called for by a rapidly expanding enrollment is also in better scale for a campus which must significantly decrease the time required and the space covered in getting from class to class.





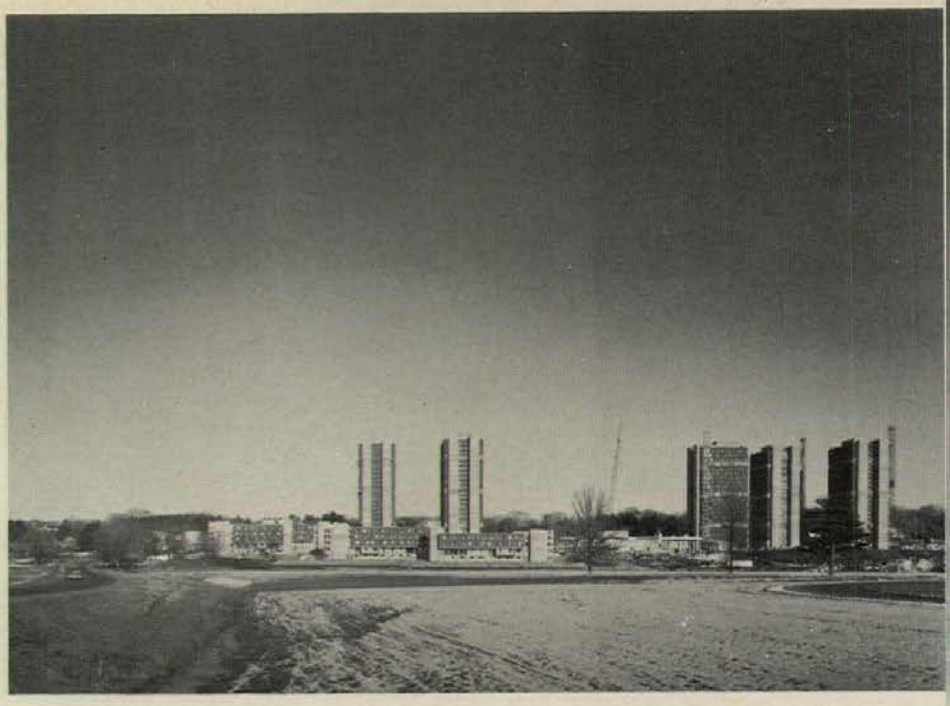
The proposed circulation plan for the campus shows a loop road surrounding the academic center. Short drives will give access to important public facilities such as the Student Union and the proposed Fine Arts Center. All other buildings will be reached by service drives and paths from the loop road. Parking will be at perimeter locations. The interior will thus be free of the existing dangerous crossings of vehicles and students. The University will be more easily accessible from all directions. A major new boulevard, planned to be as wide as Boston's Commonwealth Avenue will link North Hadley Road and North Pleasant Street and provide an appropriately scaled main entrance to the University. This boulevard will be directly accessible from the southwest and south, the direction of greatest traffic flow from the town of Amherst and other points.

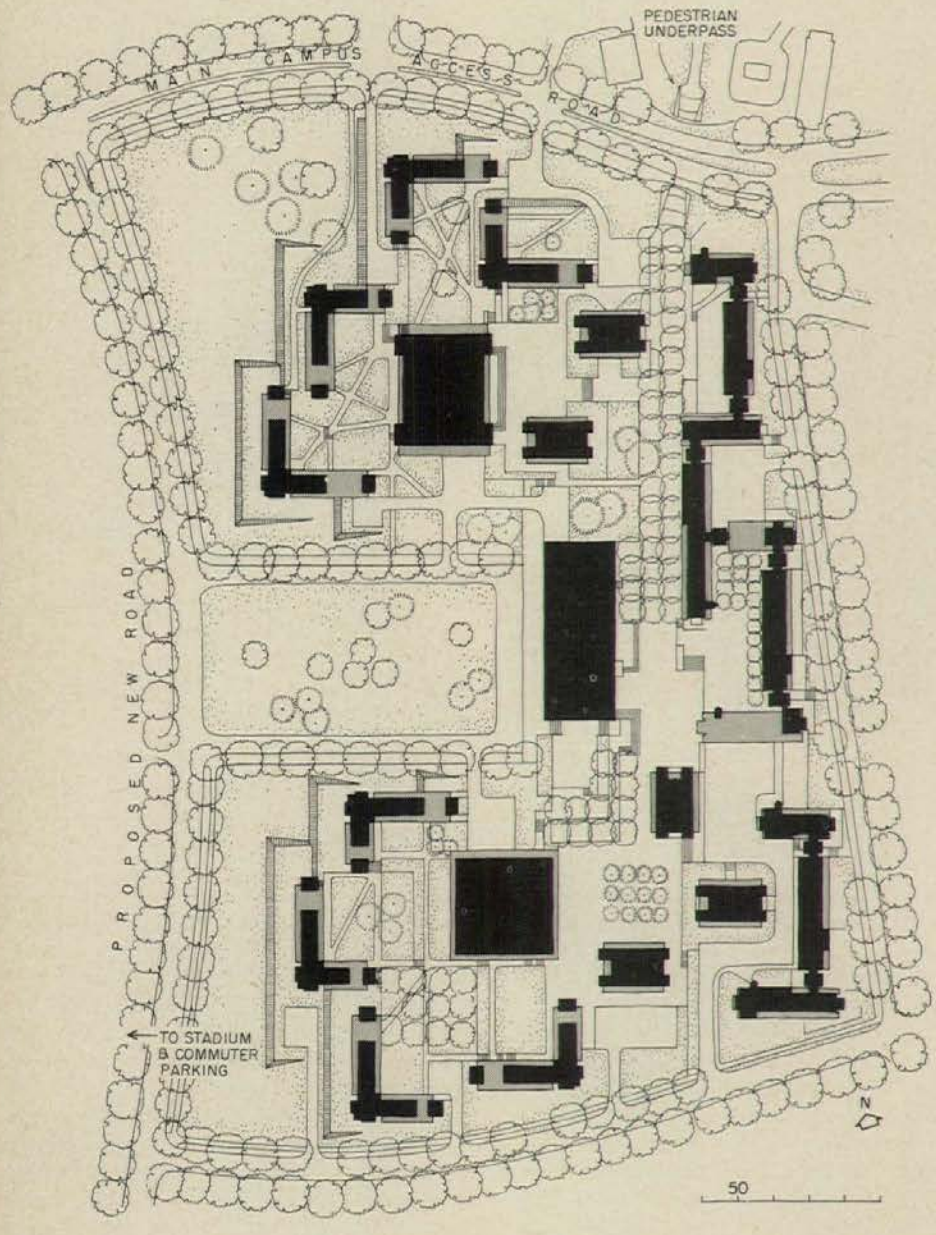


The proposed land use plan (shown at top of page) reserves 200 acres of land at the center of the campus for existing and future academic facilities. The great central lawn and existing pond will be maintained and those facilities central to the functioning of the University, such as the Fine Arts Center and the Central Library will be built around it. A new dormitory complex shown on pages 168-169 is being constructed to the southwest, and another, conceived as a complete college, is being planned by I. M. Pei for a northwest location. The stadium and playfields accessible from Route 116 are so placed that they cannot draw large volumes of traffic to the campus center. Indicated on the development plan are recently completed structures or projects awaiting financing some of which are shown on the pages which follow.

HUGH STUBBINS DEVELOPS A MASTERFUL ORGANIZATION FOR COMBINED HIGH-RISE AND LOW-RISE DORMITORIES WITHIN THE CONTEXT OF THE MASTER PLAN

Joseph W. Molitor Photos





The nearly completed dormitory towers rising at the edge of the plain are boldly visible to travelers driving east or west on Route 9 from Northhampton to Amherst and are seen to even better advantage, as in the photo above, from the main access road leading to the campus. These powerfully shaped buildings proclaim that the University of Massachusetts is getting some architecture and knows where to put it.

The site of the Southwest Dormitory and Dining Hall Complex is bounded to the north by the main campus access road and a new road with an entrance loop is planned to the west. This road will border one of the major perimeter parking lots used by commuters and visitors to the athletic facilities and has been so placed to minimize conflict between pedestrian and vehicular movement. It can be seen that architect Stubbins has organized his buildings on the site to facilitate the expected pedestrian flow through it. He could not have planned for this circulation had he not been developing his site within a master plan which had established the location of such elements as parking, streets, and sports facilities. The sequence of spaces to be traversed by pedestrians are as handsome as the photographs suggest. The complex will have three dining halls, one of which appears opposite.

AN EARLIER APPROACH TO MASTER PLANNING, LIMITED IN SCOPE, HAS A NEGATIVE EFFECT ON ARCHITECTURAL QUALITY

The Orchard Hill Dormitories and Dining Hall are merely good buildings; the Southwest Dormitory and Dining Hall Complex shown on the preceding two pages is a brilliant, integrated design. Hugh Stubbins was the architect for both projects. The difference is significant.

Orchard Hill is located well within the campus property line and is subject to influence by future development. It is symmetrical in organization as the site plan (bottom of page) shows. It could just as well have been assymetrical. Any configuration which would have resolved the limited program requirements into handsome, orderly dormitories would have done as well as any other in this area, where no clear master plan determinants had yet been developed. Architect Hugh Stubbins was merely adding four seven-story units to a series of twelve dormitory structures which had been designed over a period of years by other architects and erected as needed. Stubbins was commissioned to design the dining commons as well. (See plans at right and below and photograph on opposite page.) The total campus area taken up by these 16 units and dining commons is less compact than the Southwest Dormitory and Dining Hall Complex, it houses fewer students, and lacks the visual coherence of the group now being executed entirely by Stubbins.

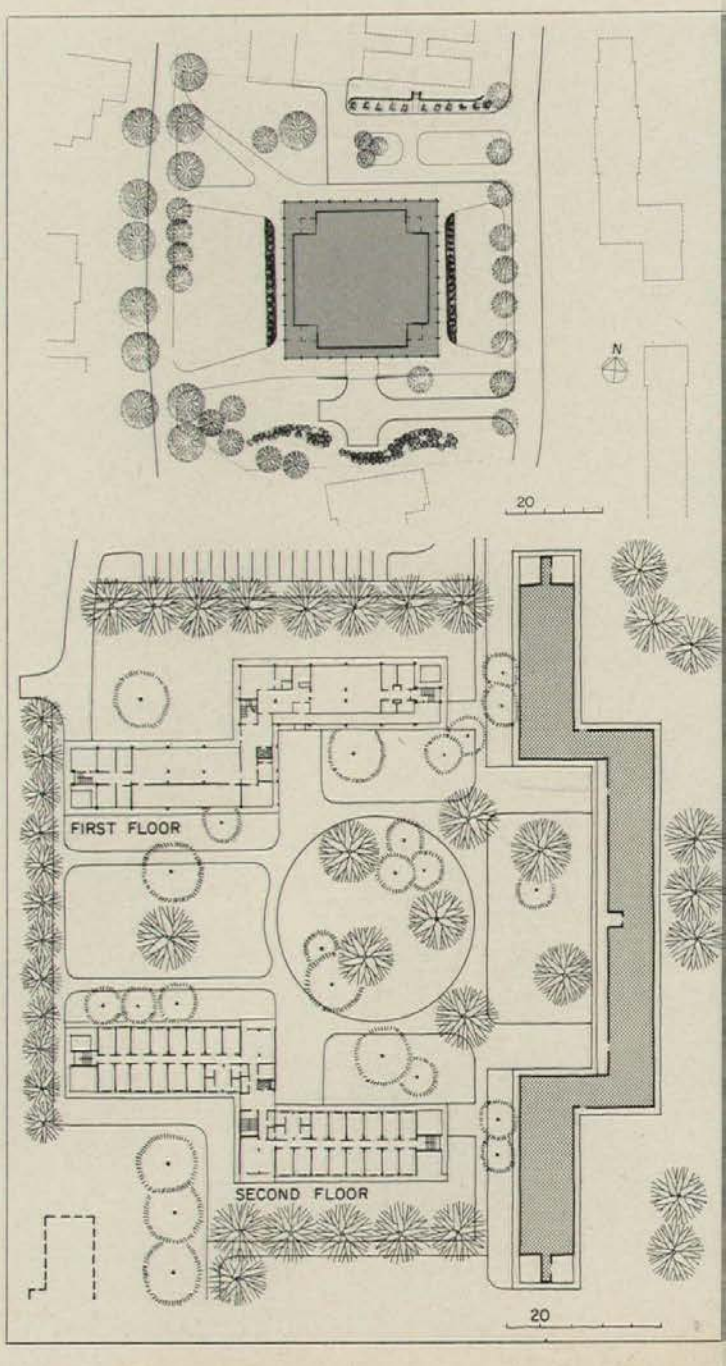
Stubbins, while struggling with the insufficiently defined problem at Orchard Hill, strongly urged the University to hire Sasaki's firm to renew master planning activity and suggested that Pietro Belluschi be urged to become design consultant.

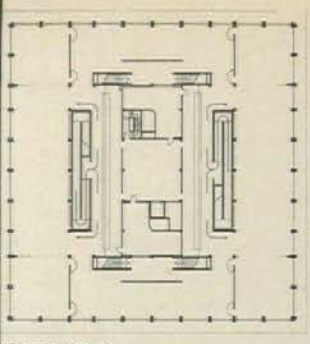
continued from page 166

the existence of their university, identify with it, and become proud of it. Good campus design cannot be considered a luxury in the face of this challenge. Physical improvements such as the prominently located, easily reached new football stadium help, so will the creation, now taking place, of attractive campus spaces articulated by well defined circulation and handsome buildings.

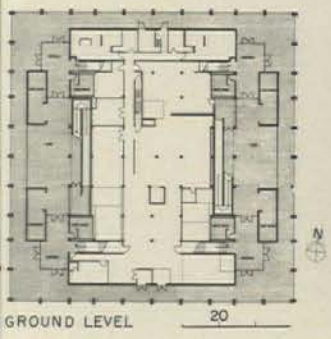
Strengthening the planning and design process

The firm of Sasaki, Walker and Associates, Inc. was hired by the University in 1961 to review the campus planning policy of the preceding eight years. It has guided the development of the campus ever since, while in the course of its own growth changing its name to Sasaki, Dawson, DeMay Associates, Inc. Hideo Sasaki's original report to President Lederle, submitted early in 1962, recommends a master planning approach which has been substantially followed by the University. He urged the school to strengthen the planning process: "first by formulating a complete development program based on a strong statement of educational policy; second by clearly defining the planning structure at the University and the roles of its various parts, disseminating this information to the University community and establishing close liason between the planning staff and the responsible parties in the University community; third by employing the services of a professional planner, as a full-time member of the University's administrative staff, for the purposes of co-ordinating all planning activities at the University, and to aid in the task of formulating policy as it relates to planning." He recommended that the administrators improve the quality of design at the school: "first by employing the services of a design consultant to aid the University in the selection of architects and to review proposed buildings [the



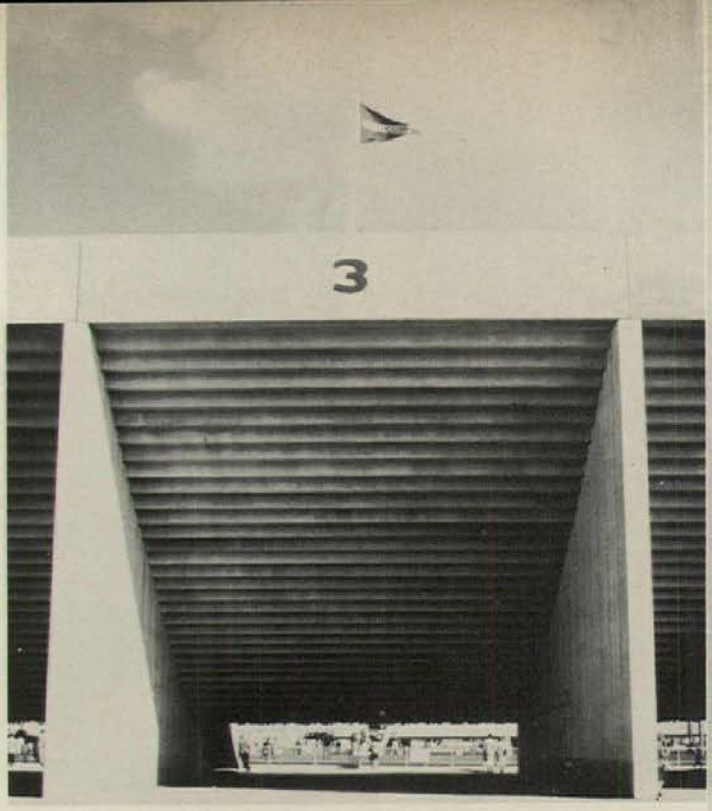


UPPER LEVEL



GROUND LEVEL

U. OF MASSACHUSETTS STADIUM— DESIGNED FOR EASY ACCESS BY CAR AND PEDESTRIAN



continued from page 170

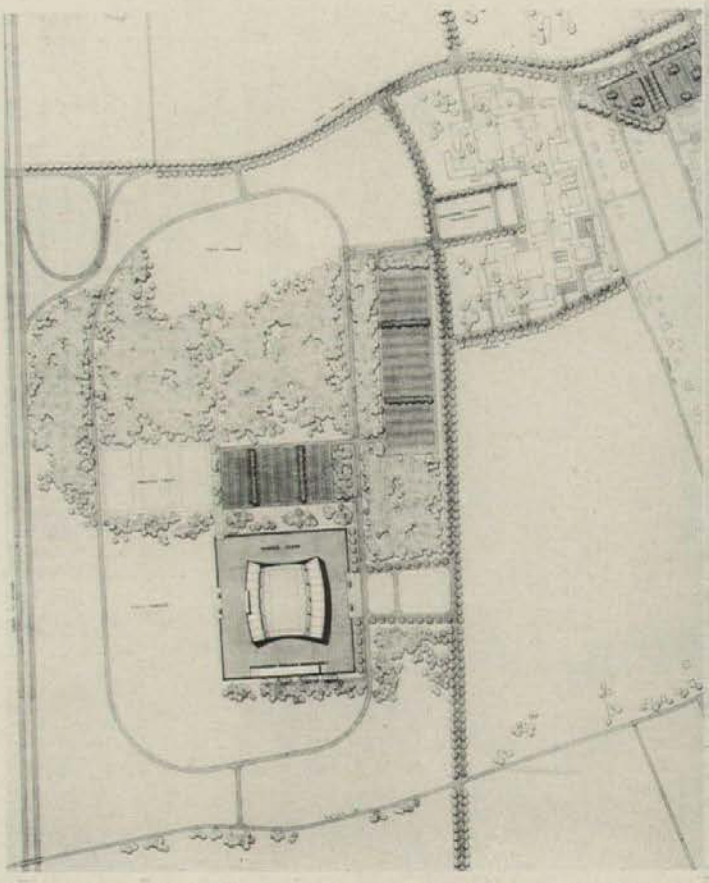
role now played with great discretion and finesse by Pietro Belluschi]; second by seeking the controlling role in the selection of architects [the state until recently had a free hand in the selection of architects for the University all of whom were required to practice in the state and presumably contributed to the party of their choice]; third by developing a co-ordinated landscape program which would finish those areas of the University which will receive no major new buildings, and include the costs of site improvements when preparing budgets for new buildings."

The role of the architect

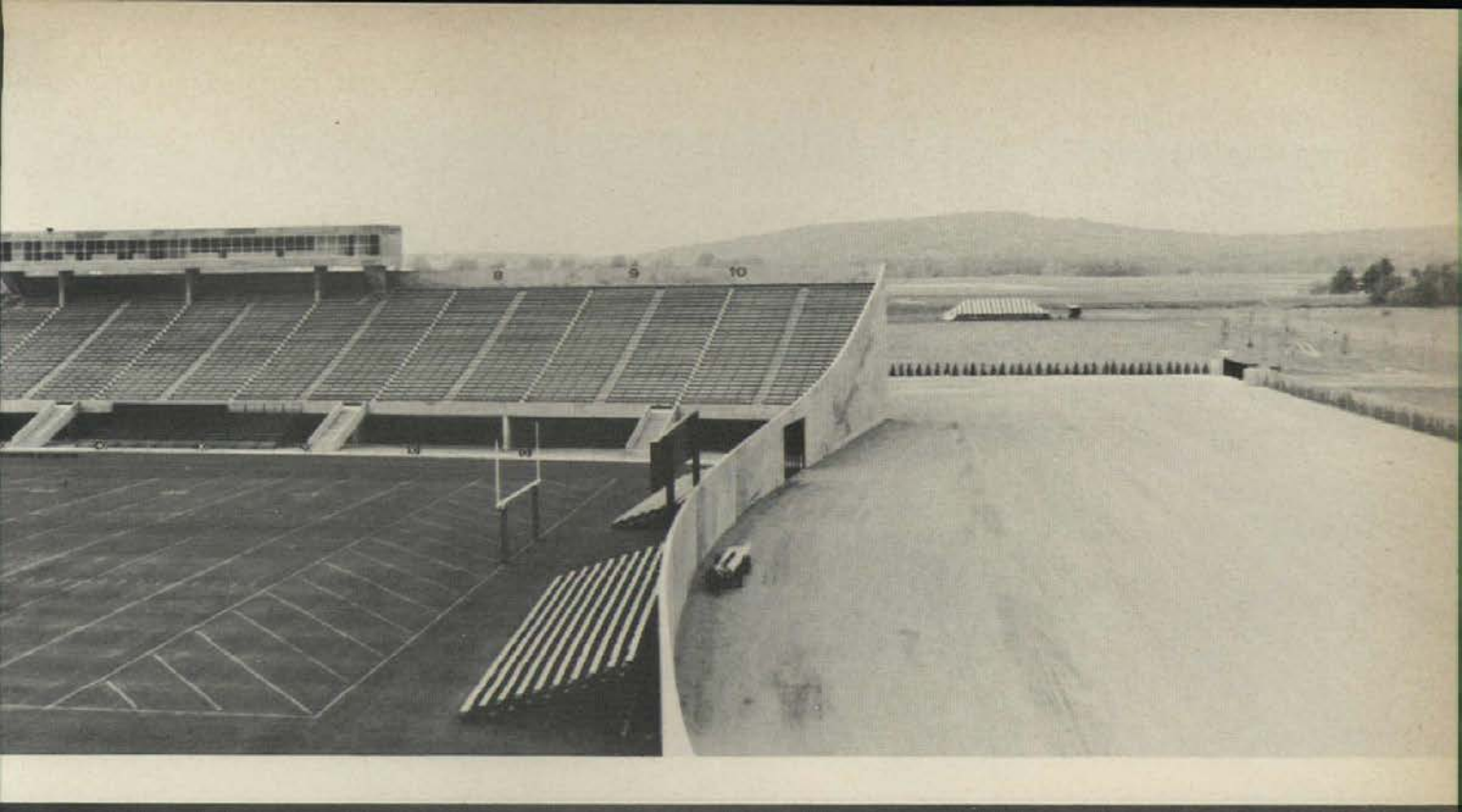
In his first report Sasaki made the key point that "much of what is esthetically pleasing on a campus cannot be controlled in a master plan. Architecture, use of materials, and treatment of landscape demand a much finer scale of thinking and design than is possible in a general development plan. A master plan does establish a design framework within which the architect and landscape architect can detail their work."

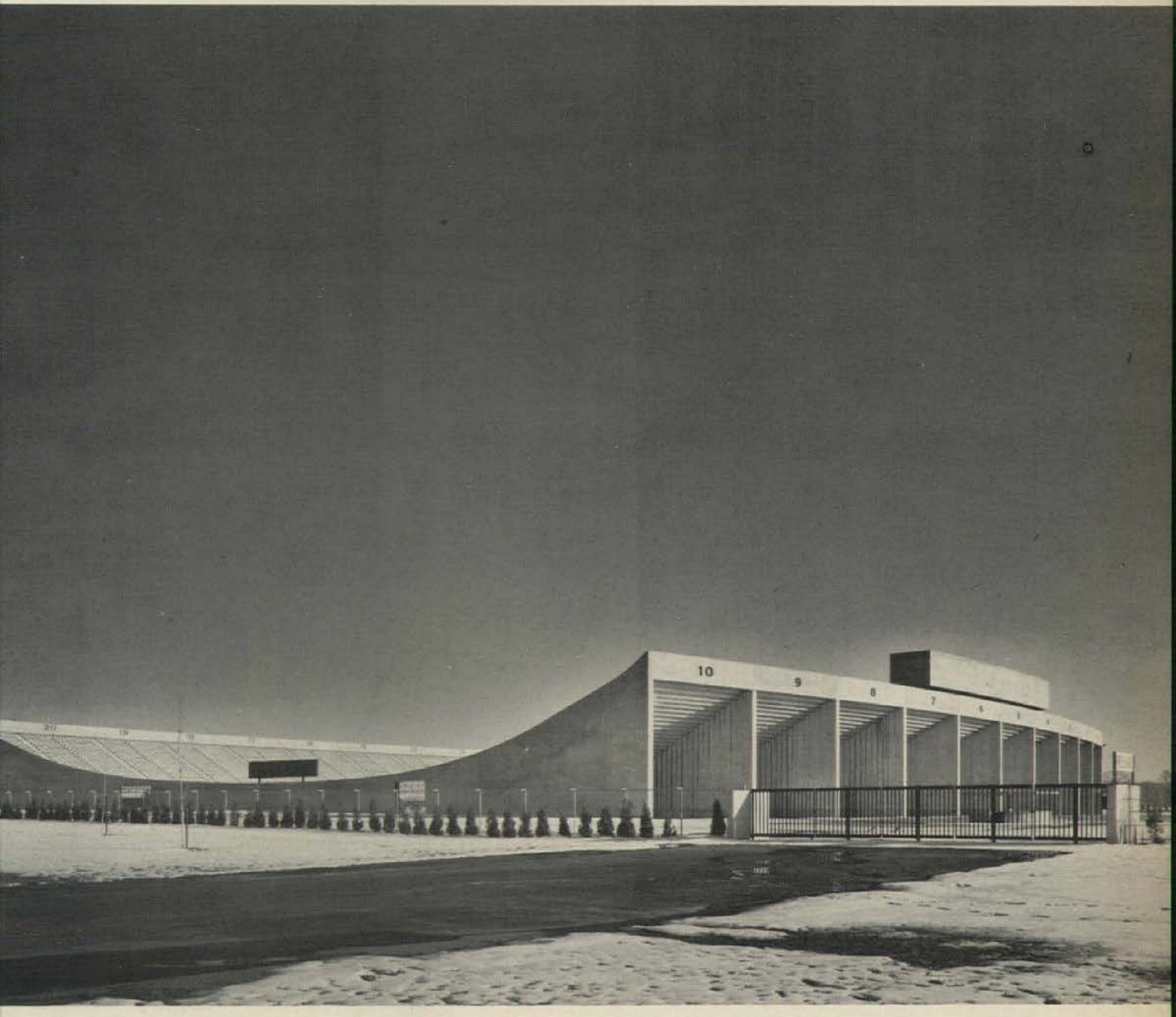
The experience at the University of Massachusetts so far proves that good architects are able to do exceptionally fine work within the context of the planning and design process which Sasaki recommended to the University administration and which the president and treasurer had the foresight to establish. This process is applicable to other types of large-scale work although its most successful use so far has been in campus planning, where correct and politically judicious decisions are not made easily, but where the problems and political pressures are more limited in scope than those which face those responsible for the planning of towns, neighborhoods and cities. Methods developed to impose order and form on the campus should be studied by architects and planners attempting to design within similar environments.

Mildred Schmertz



The stadium site is close to the center of the town of Amherst and was planned in cooperation with the town's circulation consultant to conform to that community's long-range circulation goals. Sasaki's master plan called for the surfaced rectangular apron in which the stadium is composed. Large crowds approach and leave their seats through openings between the reinforced concrete structural walls which support the stands as shown in the photograph above. Tickets are sold and pedestrian movement controlled at gates on the apron perimeter. The plan provides approximately 52 acres of local and visitor parking for this 17,000-seat structure, much of it provided in open meadows adjacent to the elliptical parking service road. Crossing movements do not occur. Vehicles move from the parking service road directly toward the stadium and into the parking areas. It was designed by Paul Weidlinger with Gordon Bunshaft of Skidmore, Owings & Merrill acting as design consultant. Cost: $1.4 million.

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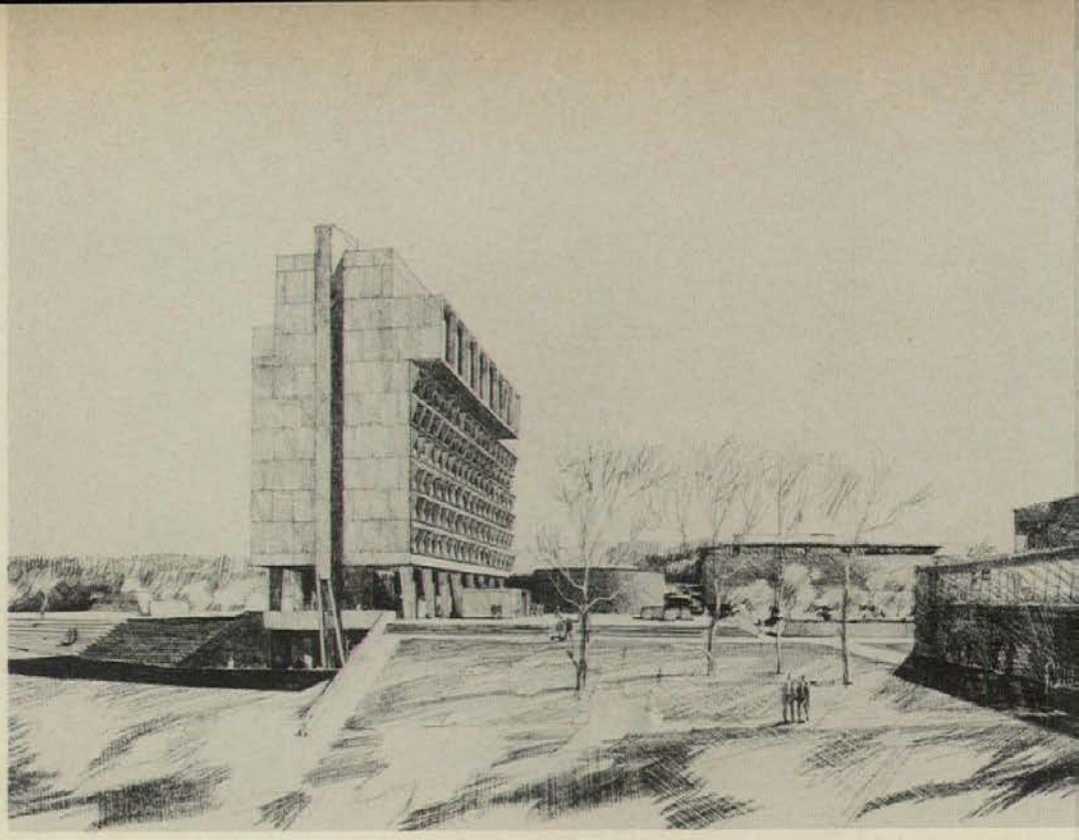
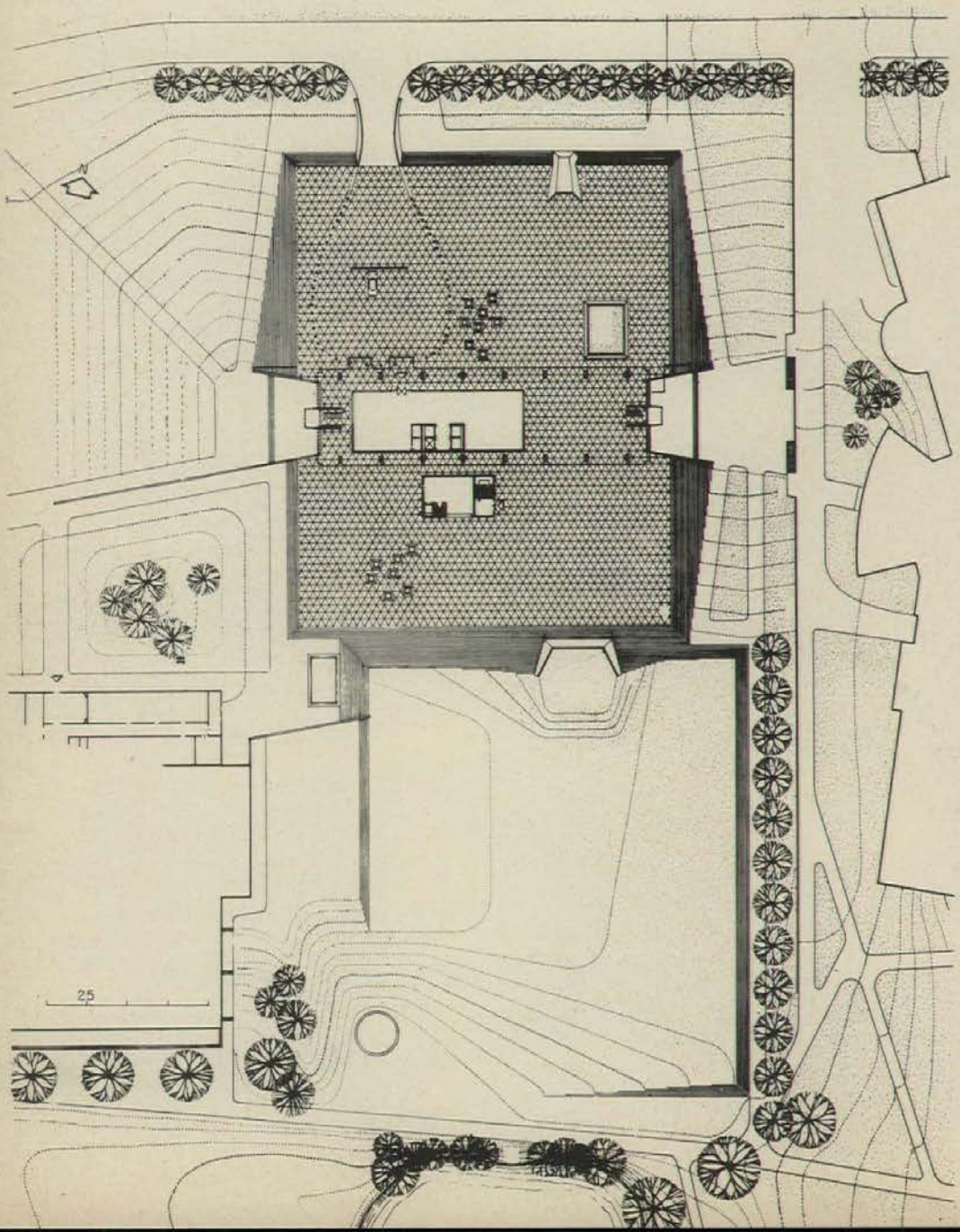
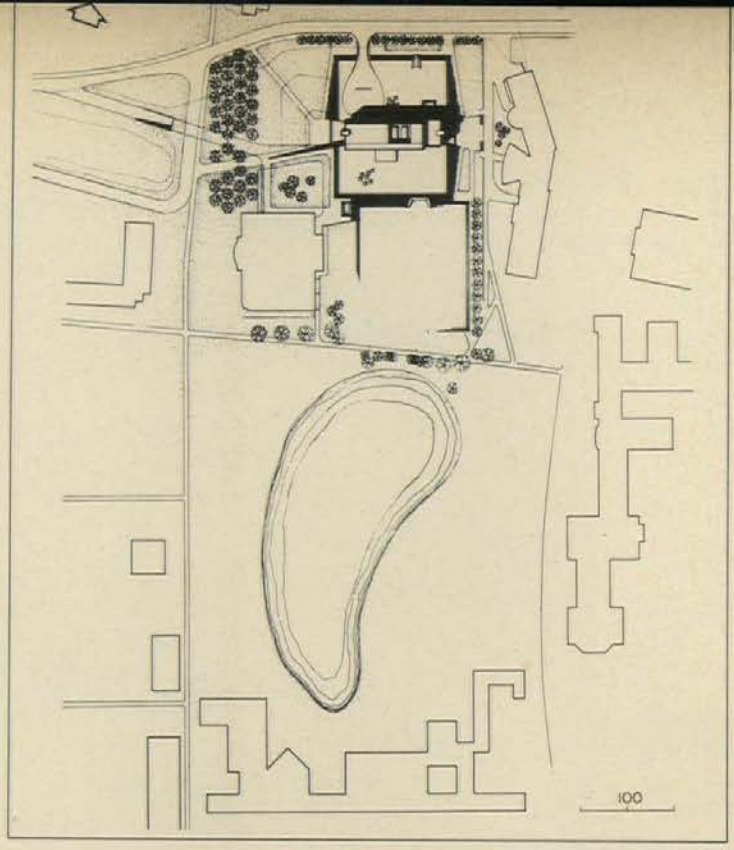
BIG SPACE NEEDS ON CRAMPED SITE. THE SOLUTION: GO UNDERGROUND





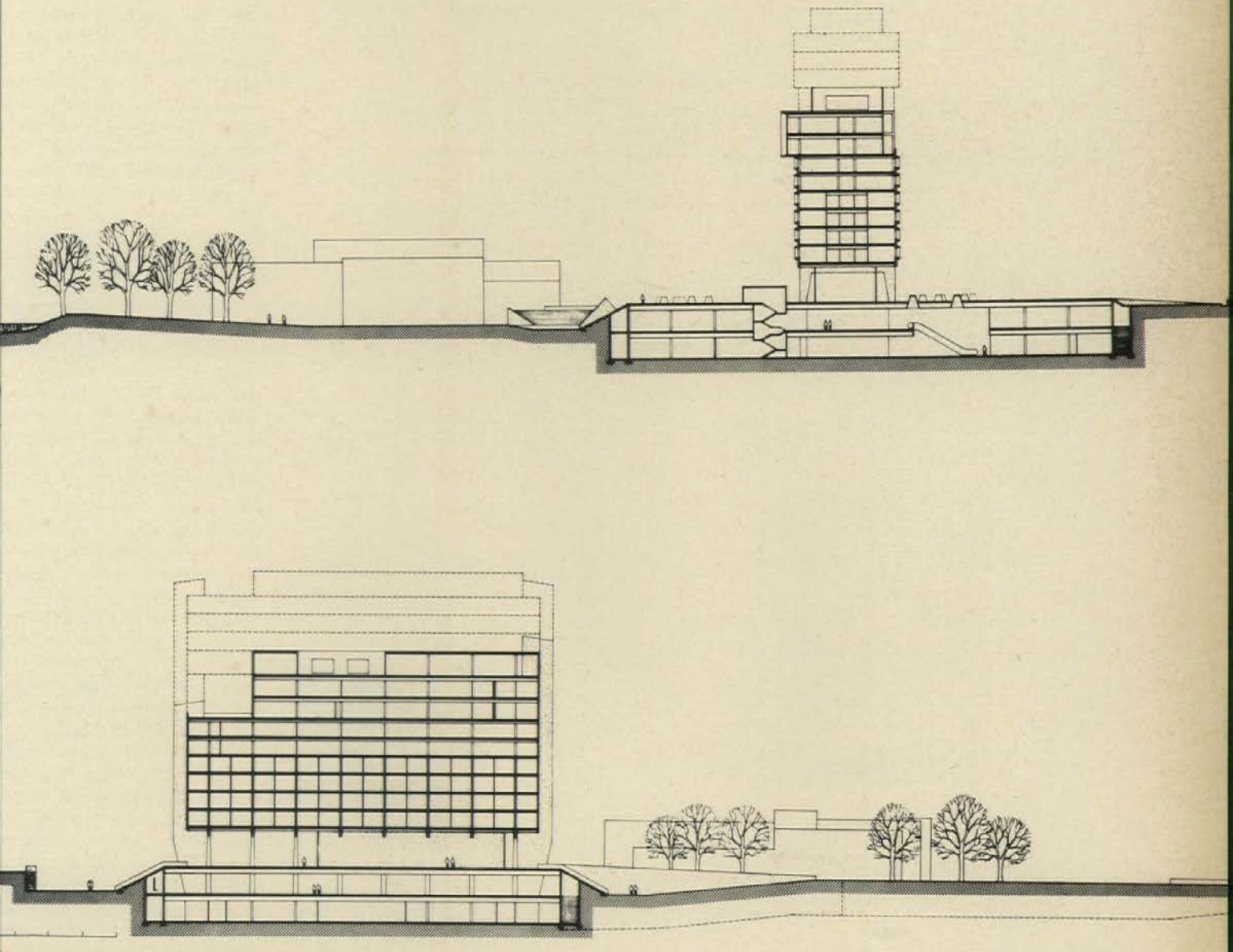
The sculptured earth planes at the base of the tower in the sketch above do not signal that the earthworks of old forts have necessarily replaced the towers of St. Gimignano as design inspiration for some of our leading architects. Approximately one half of the space requirements of the Continuing Education Center designed for the University of Massachusetts by Marcel Breuer had to be buried because the site is too small. Since the building's functions are essentially an expansion of the facilities now provided in the Student Union which adjoins it to the west, the proposed structure had to be tucked into an area defined by the Student Union, the Physics Building, the college pond and the automobile service road on the northern boundary of the site. The tower was deliberately kept small as shown in the sketch, but even when future additions are made to its height as indicated in the sections (opposite page) it will remain a modest size.

The large elevated terrace has sloping embankments into which great holes are punched to provide access by service vehicles or pedestrians to the subterranean quarters within. Other handsomely shaped punctures provide light for spaces surrounding courts or for rooms along the perimeter wall. The terrace developed by Breuer will provide an unimpeded view southward across the college pond toward the magnificent facade of Kevin Roche's Fine Arts Building. The broad terraces conceived by Roche face north.

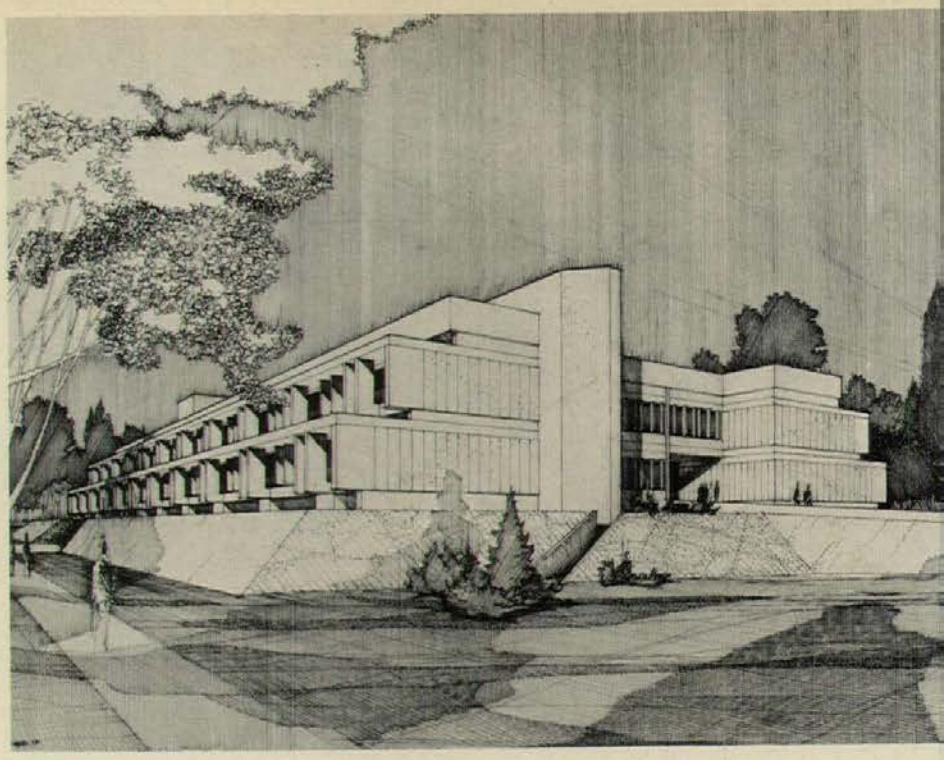


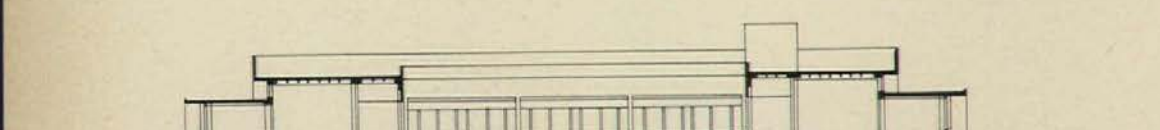
The axes of the new complex are aligned with the Student Union to the west and the Fine Arts Center at the opposite end of the pond. Architects Marcel Breuer and Hebert Beckhard point out that a planning factor of importance imposed by the master plan is the limited automobile access. Solution: underground service by ramp and tunnel. Special visitors to the academic center will be permitted to park temporarily on a restricted portion of the terrace.

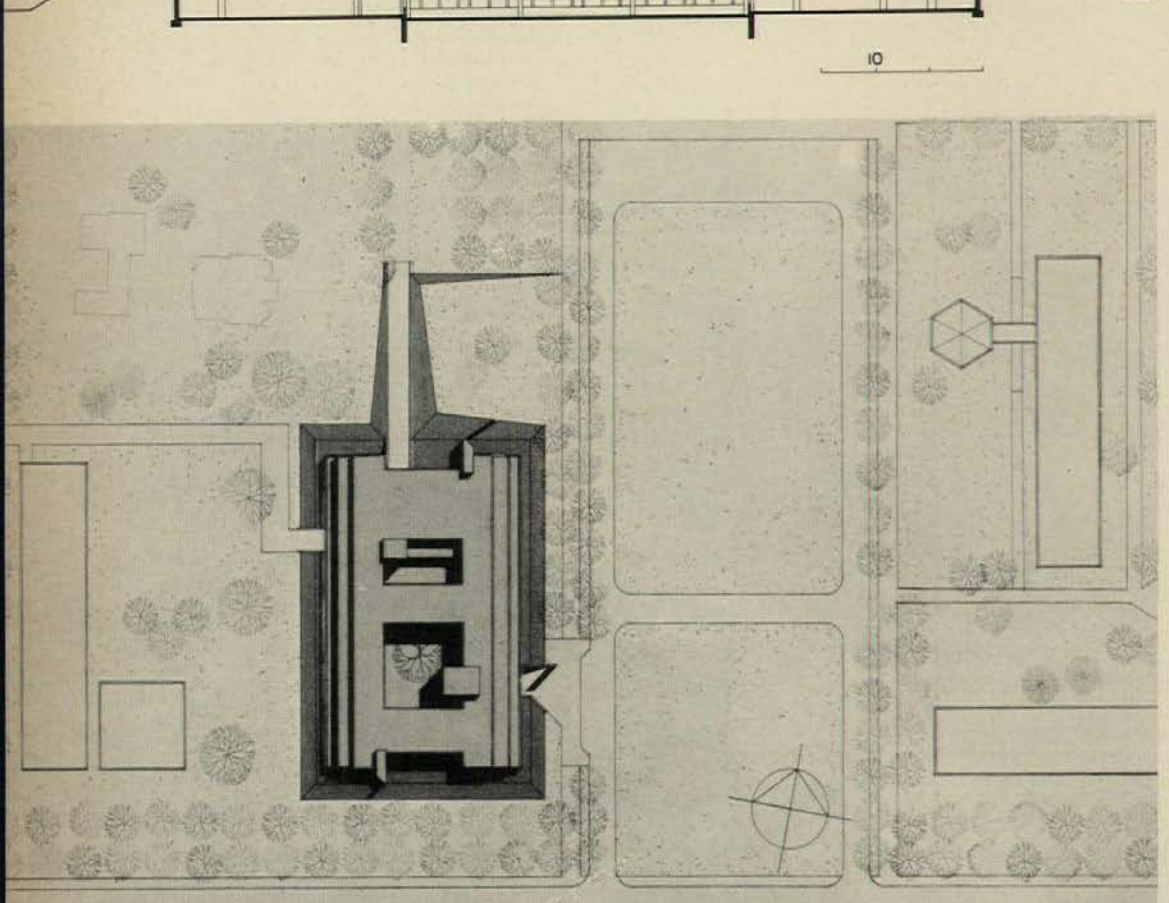
The Breuer scheme possesses many amenities which were not originally programed. The terrace will become a "downtown crossroads" of the University. The steps to the terrace which extend to the south form an amphitheater which, as the architects point out, was previously an open but not defined space. It will be used for outdoor ceremonies.



ADMINISTRATION BUILDING IS MOVED TO MAKE WAY FOR A MALL



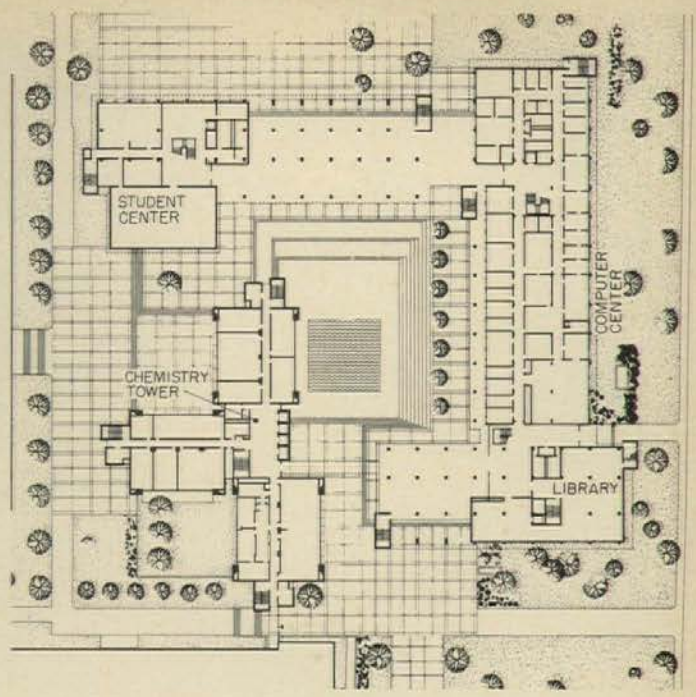




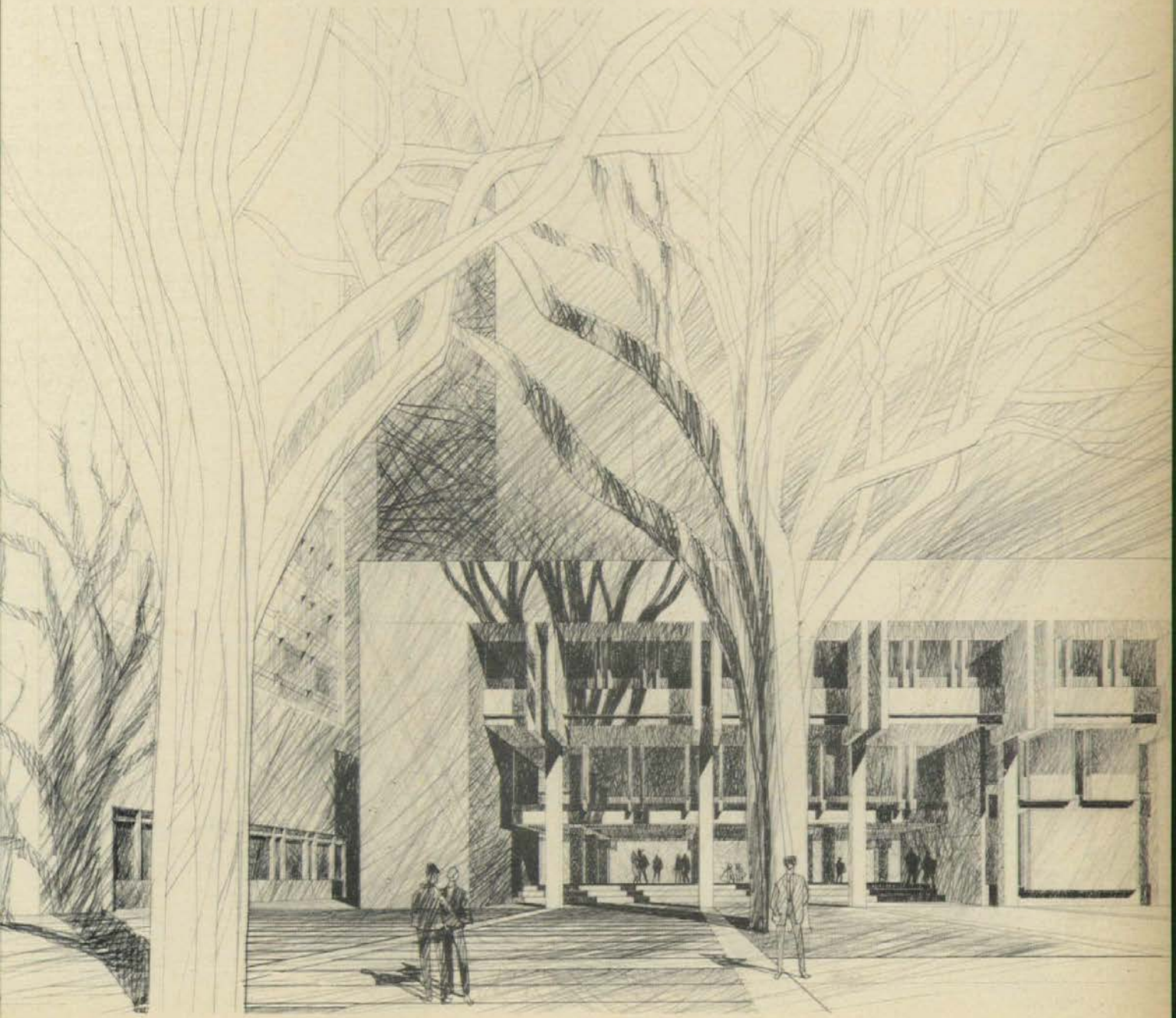
SITE PLAN

"The fine entrance mall would have been lost, and the site fo Kevin Roche's Fine Arts Cente would have been lost, "said Sasaki, "had we been only pro gram planners instead of desig planners." He is referring to th fact that the Administration Build ing, designed by Campbell Al drich and Nulty, and now unde construction was moved westward while still in the working-drawing stage and disassociated from th completed School of Business Ad ministration and its hexagonal au ditoriums also designed by thi firm (see proposed developmen plan, page 167). The program planning which predated the wor of Sasaki had already grouped th three by category. Sasaki's desig planning later predicated that th campus interior should be free o through streets and that majo buildings on the perimeter of th core should be served by loop roads. The Fine Arts Center wa established at the heart of th campus on the southern edge o the pond. It is to become th campus activity center and gate way. The major campus road t the south will become a tree lined boulevard from which th necessary loop road, now de signed as a great mall will lead t the chief portico of the Fine Art Building. The projected Adminis tration Building lay right in it path and had to go. It now wi enjoy a favored and properly ac cessible position to the west o the mall as shown in the plot plan

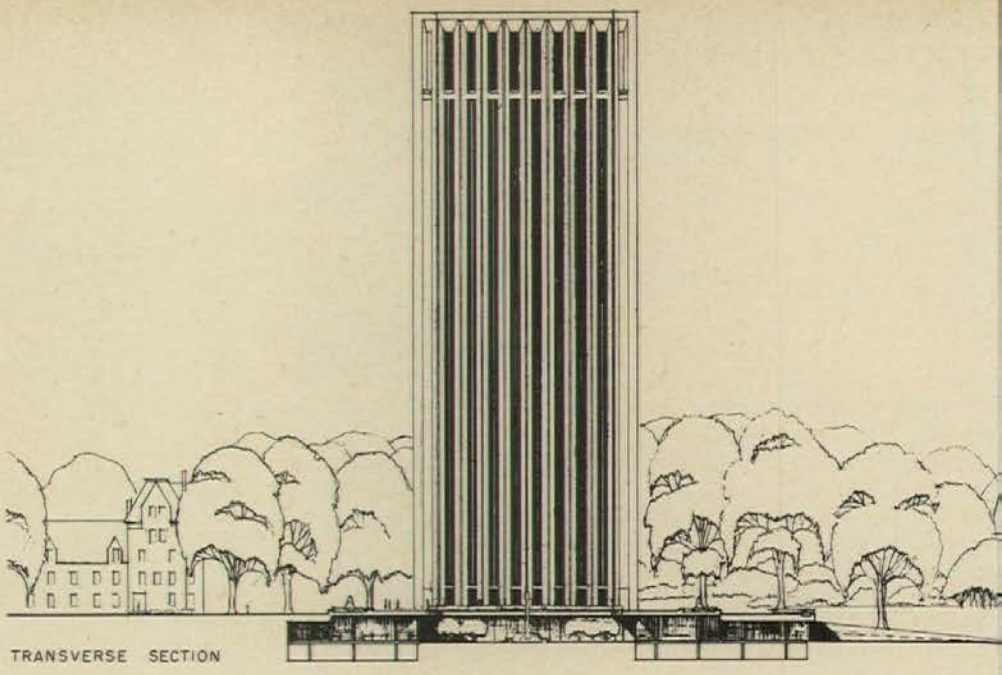
GRADUATE RESEARCH CENTER IN PHASE WITH MASTER PLAN



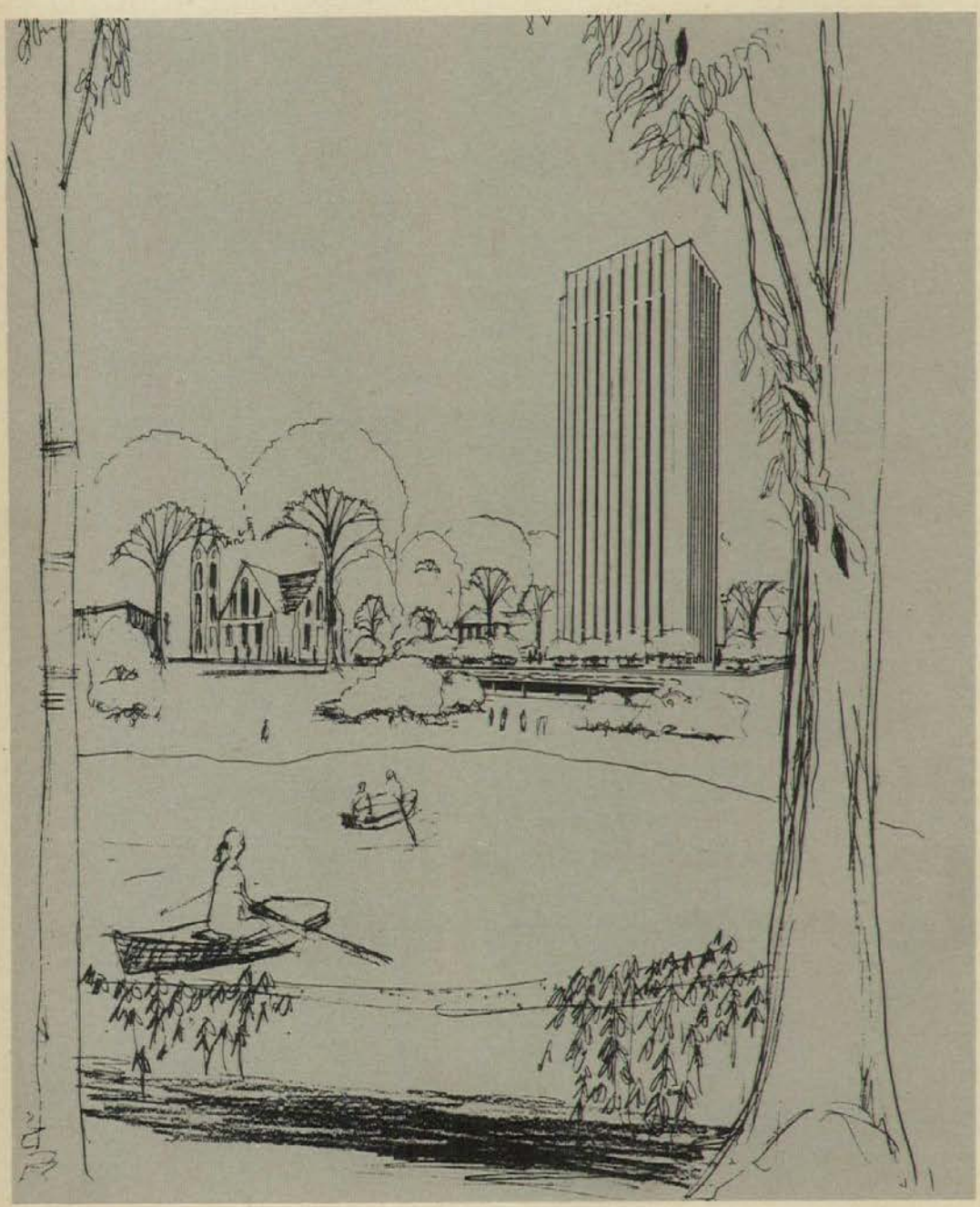
"A 16-story chemistry tower is unusual," Nelson Aldrich of Campbell Aldrich and Nulty has said "but if you are going to do a phasing job you add vertical rather than horizontal elements." The laboratories of this $2.8-million facility are in the towers, but since more students are taking more classes at shorter intervals and thus potentially increasing elevator requirements, the classrooms are located on the lower floors. In response to the master planning requirements that the complex be designed to be built in phases, the architects have resolved the program into clearly definable elements, each subject to the many changes which occur when a total organization is completed in increments over a period of years.



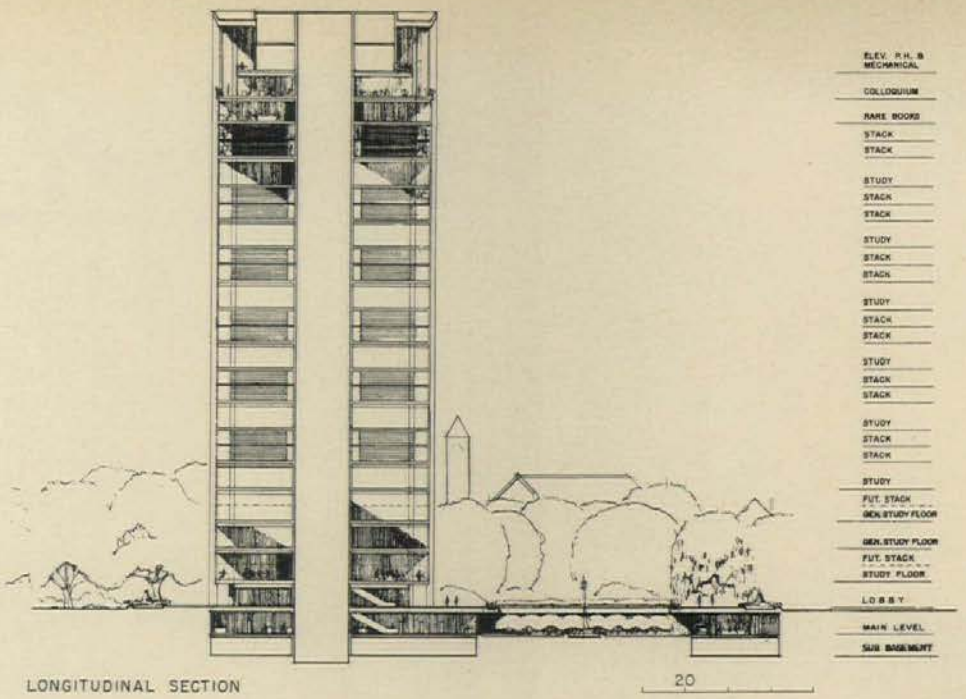
WHERE SHOULD THE LIBRARY BE?



TRANSVERSE SECTION



One of the most important functions performed by Pietro Belluschi and Hideo Sasaki, as architectural consultant and master planner to the University of Massachusetts, is their role as watchdogs. The master plan, as has been said before, is a broad framework within which the individual architect is not put into a strait jacket, but is merely advised as to major orientations and circulations. Edward D. Stone, whose appointment as architect of the University Library was made at the urging of Endicott Peabody, then Governor of Massachusetts, recommended in his first *parti* that the Library tower be placed at the very heart of the campus, in the center of the old college pond. Beloved by generations of students, the pond is part of the romantic landscape at the center of the academic area, and is natural in shape. In Stone's first proposal it was to have become a great classic reflecting pool. A cynic has suggested that were Endicott Peabody still Governor of Massachusetts, Edward Stone's library would still be in the pond. It suffices to say that part of the contribution to the University being made by Sasaki and Belluschi results from their continuing affirmation of the already agreed upon values particular to this campus. Thus . . . as the plot plan on the opposite page and the sketch at left show, the Library tower will now occupy a site to the west of the pond and will be readily accessible by automobile from one of the loops which stems from the perimeter road. The Roche and Breuer structures will overlook the quiet pond.



LONGITUDINAL SECTION

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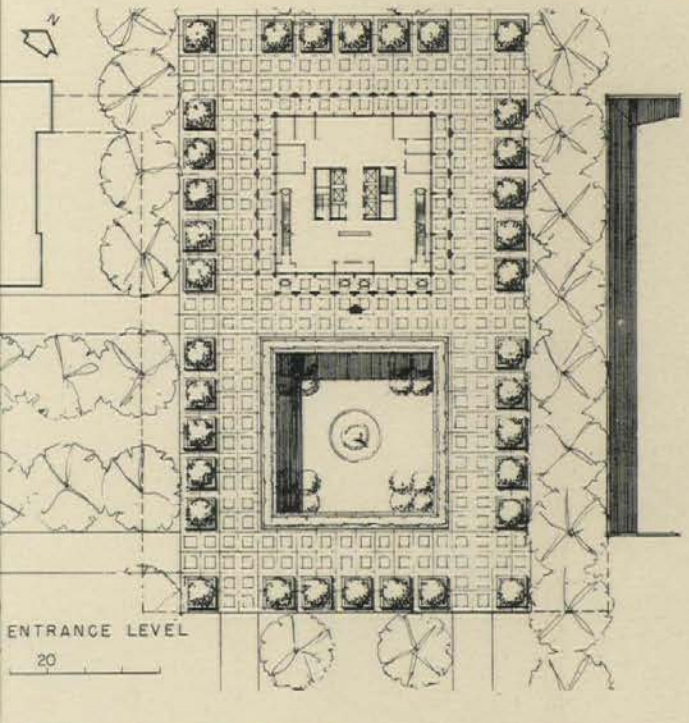

ENTRANCE LEVEL

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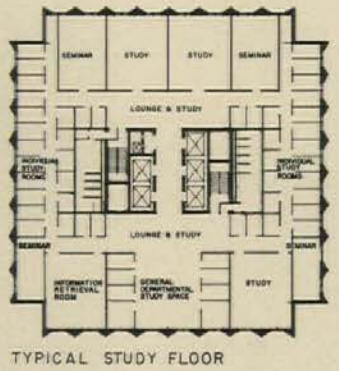
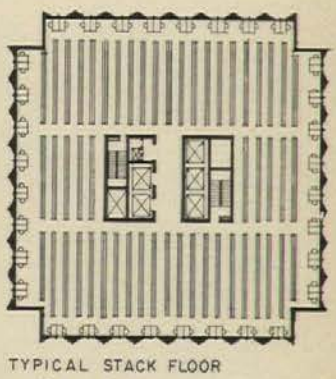


TYPICAL STUDY FLOOR



TYPICAL STACK FLOOR

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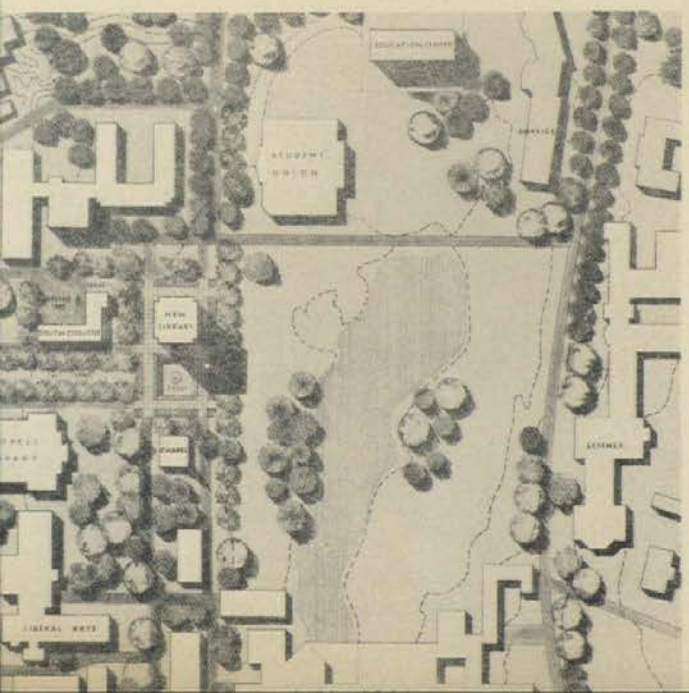

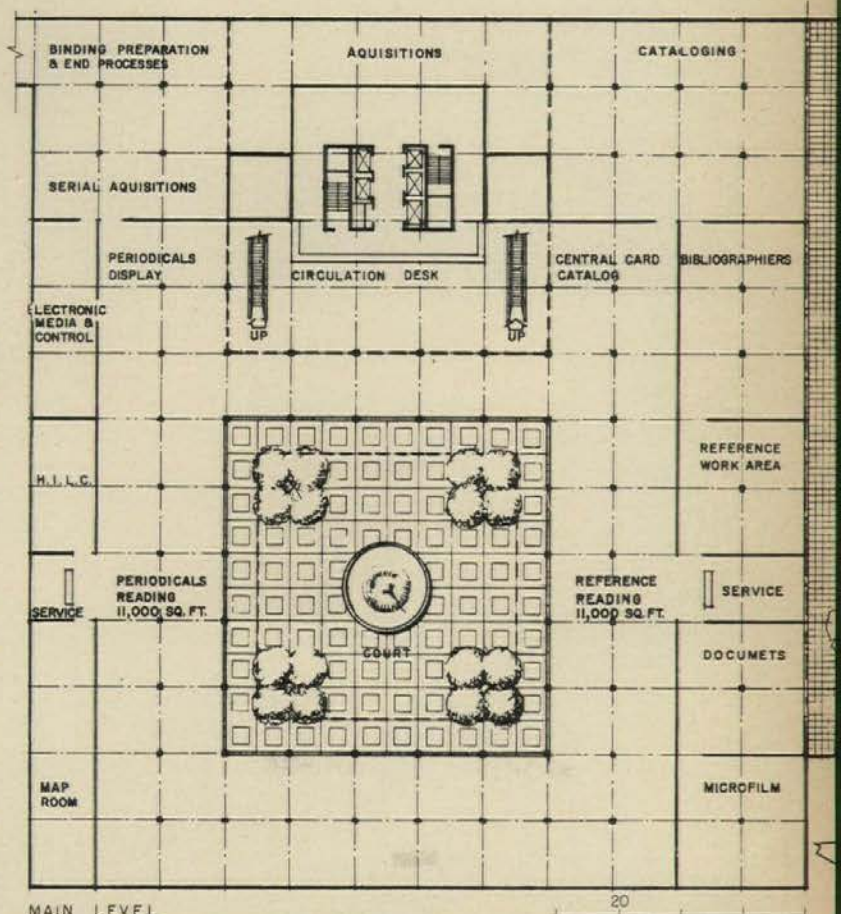

MAIN LEVEL

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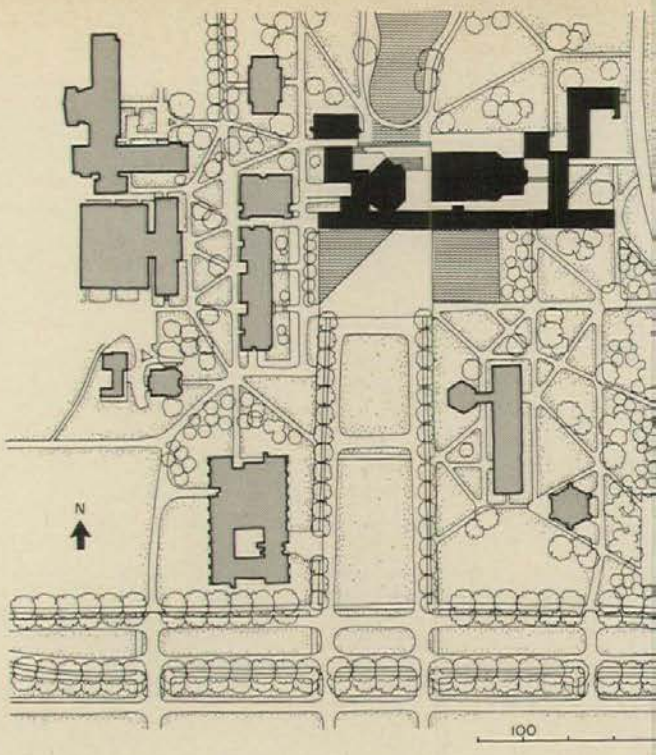
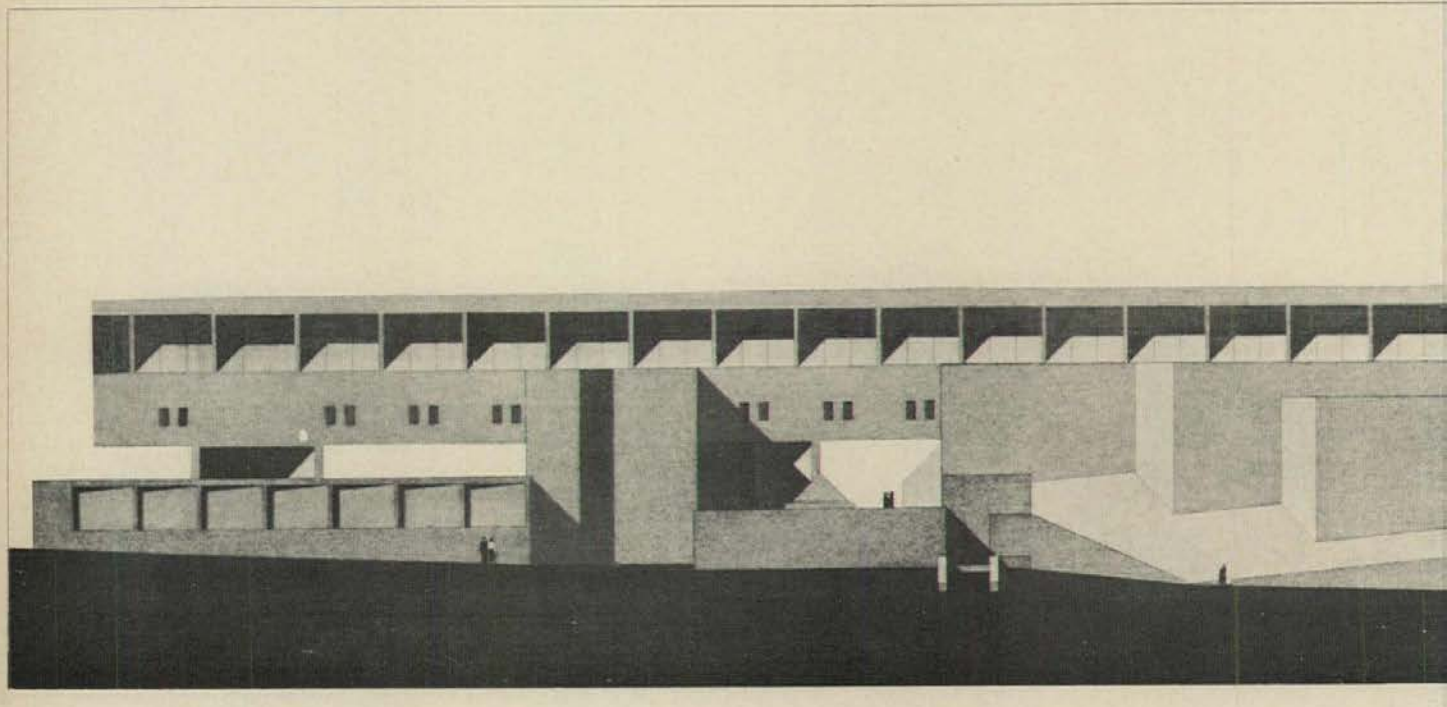
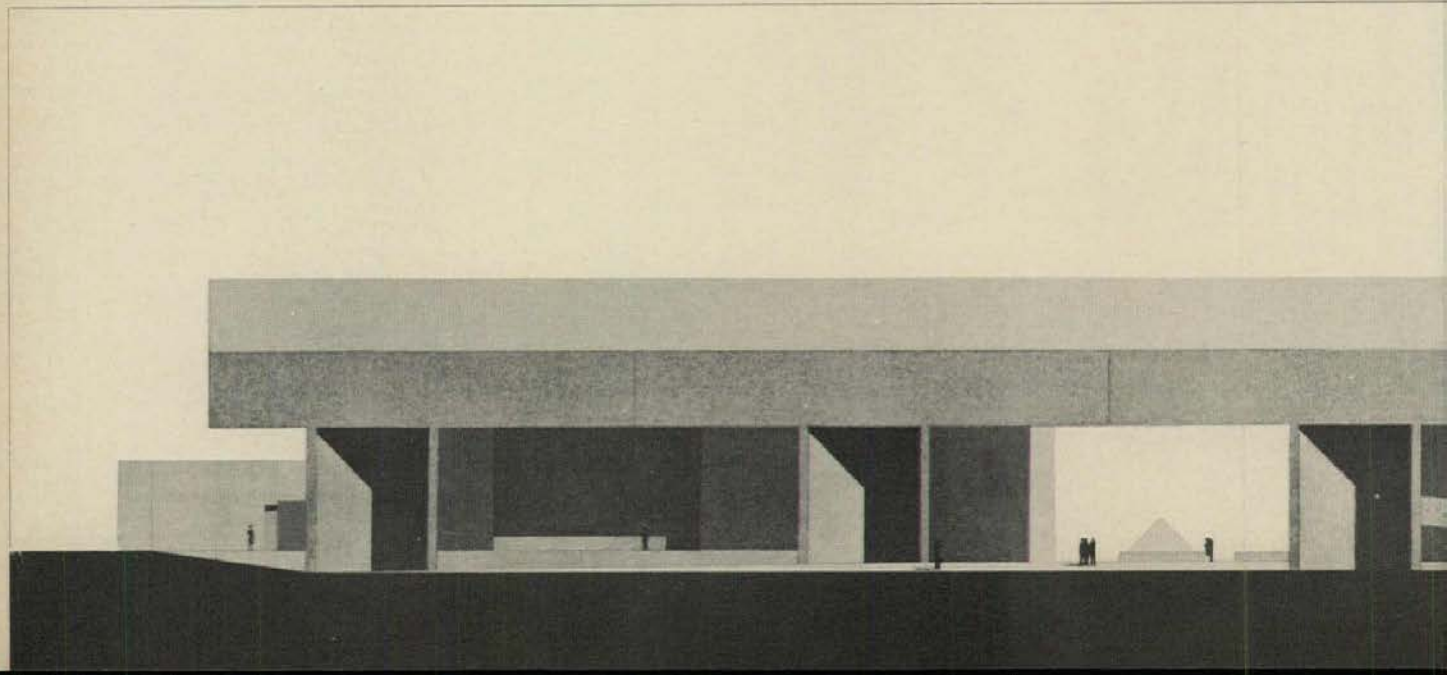
THE FINE ARTS BUILDING
BY KEVIN ROCHE
OF EERO SAARINEN AND ASSOCIATES
IS DESIGNED AS ACTIVITY CENTER
AND CAMPUS ENTRANCE

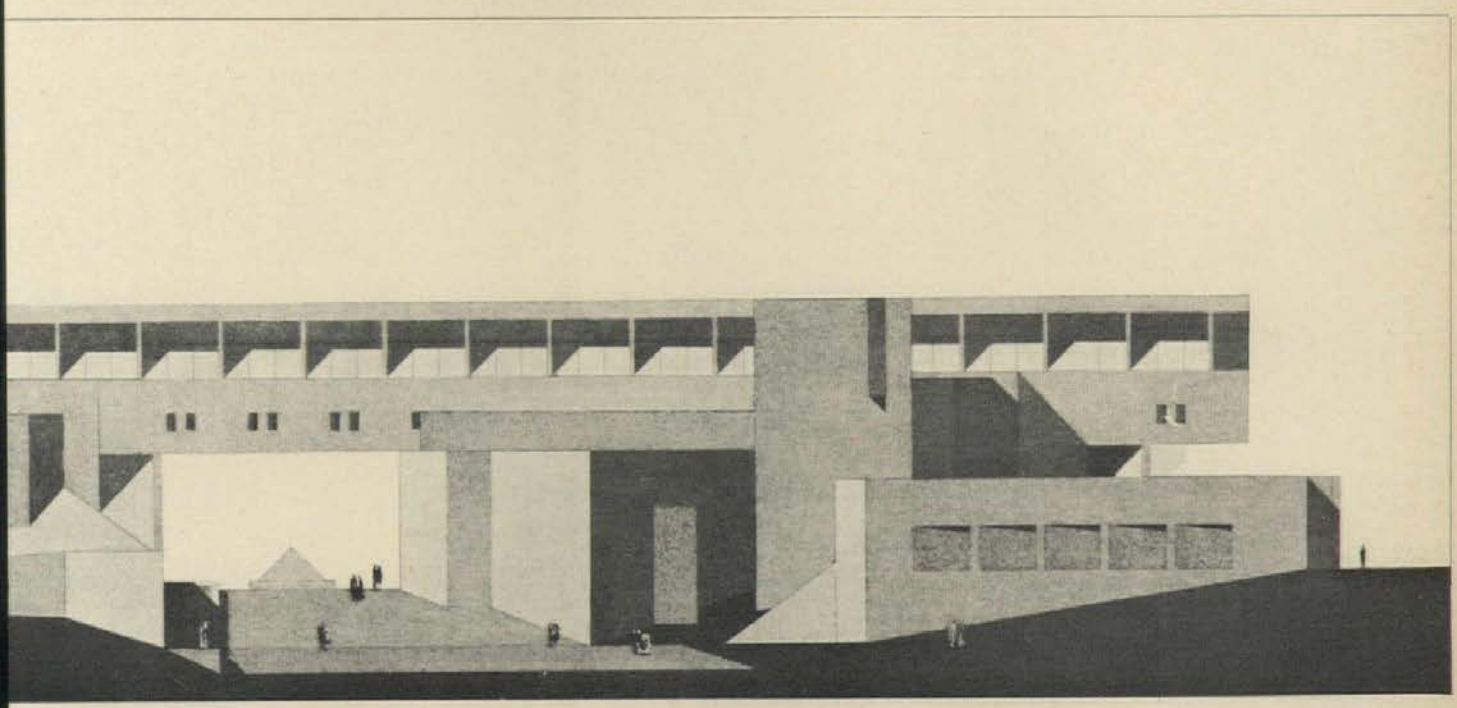


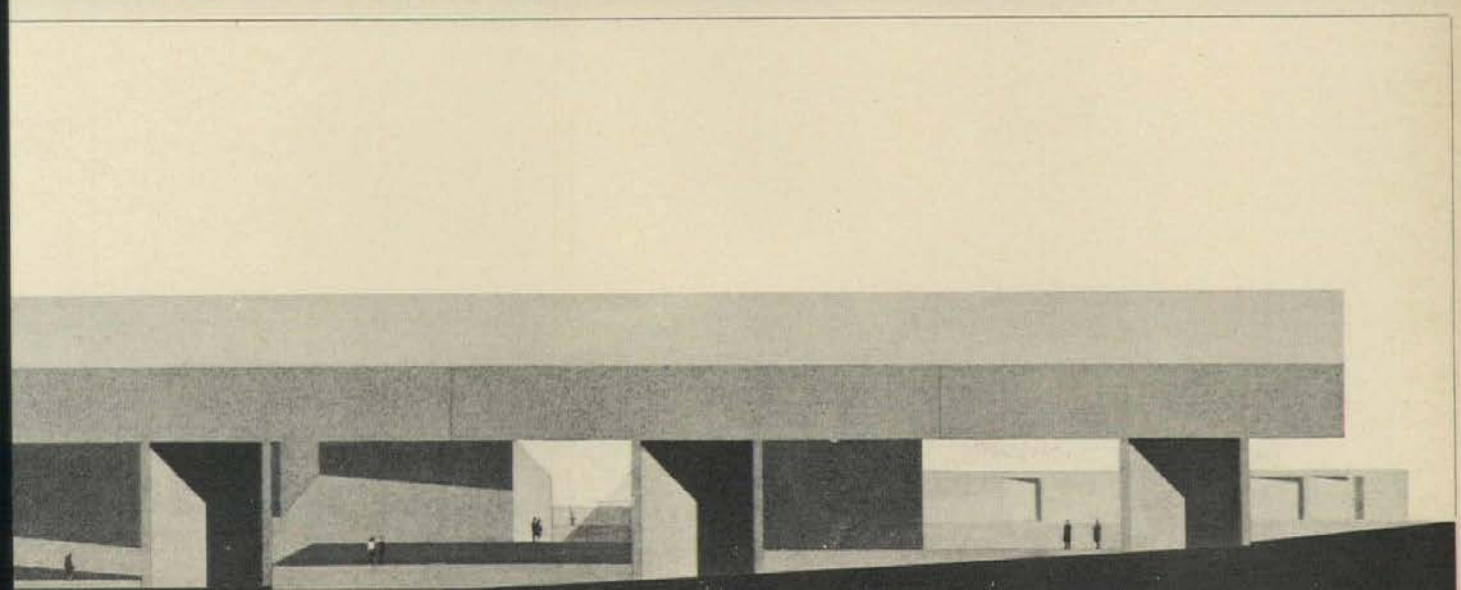
Chalmer Alexander Photos



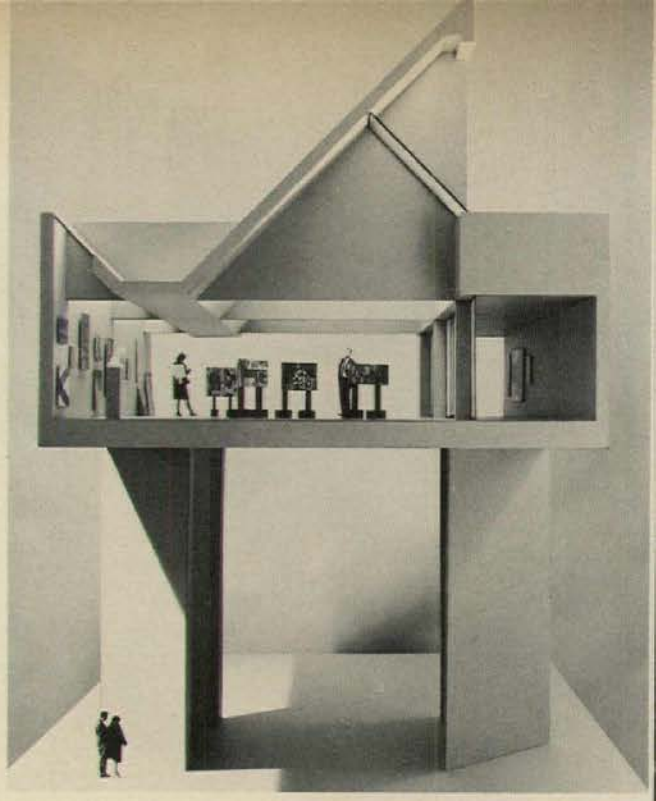


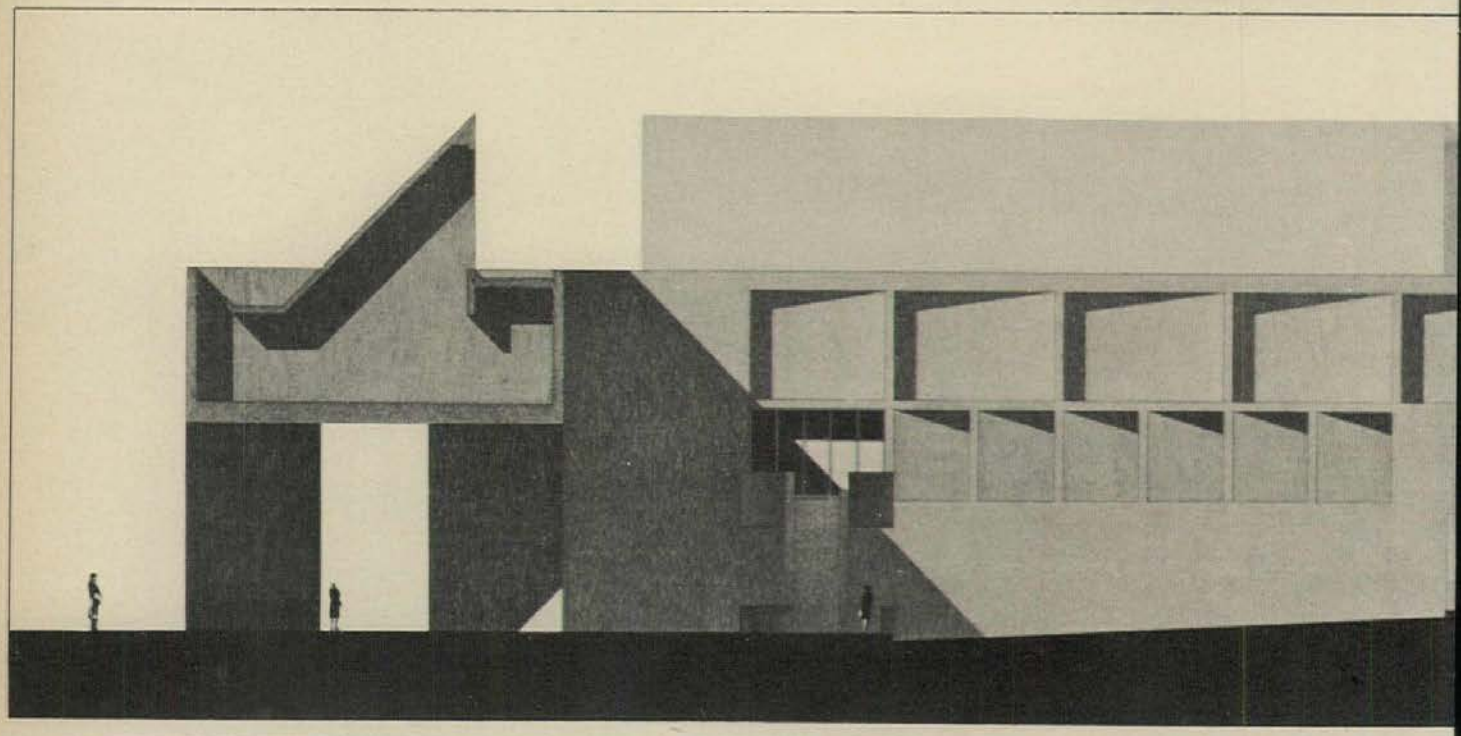
Theaters, auditoriums, studio space and other elements of a typical university arts program might—in the hands of another architect—have produced five buildings. But these elements have been resolved by Kevin Roche into one brilliantly organized structure which Pietro Belluschi believes will be the most distinguished fine arts complex to be built on any campus in the United States. Richard Galehouse, a Sasaki associate who has played a large part in developing the University of Massachusetts master plan is equally enthusiastic about the scheme. Said he: "In most cases it is now a mistake to design a campus building with a front and a back. Such structures are becoming large enough to be multi-faced. One of the wonderful things about Roche's building is that you can enter it from many places." And another wonderful thing about it is the manner in which Roche has composed his multi-faced elements. Spanning the most-prized site at the academic center of the campus, overlooking the pond and adjoining what will become the main entrance mall to the campus, the splendid location afforded by the master plan reflects the growing importance of the fine arts to the life of the University, to the nearby colleges, Amherst, Mt. Holyoke and Smith, and to the public.

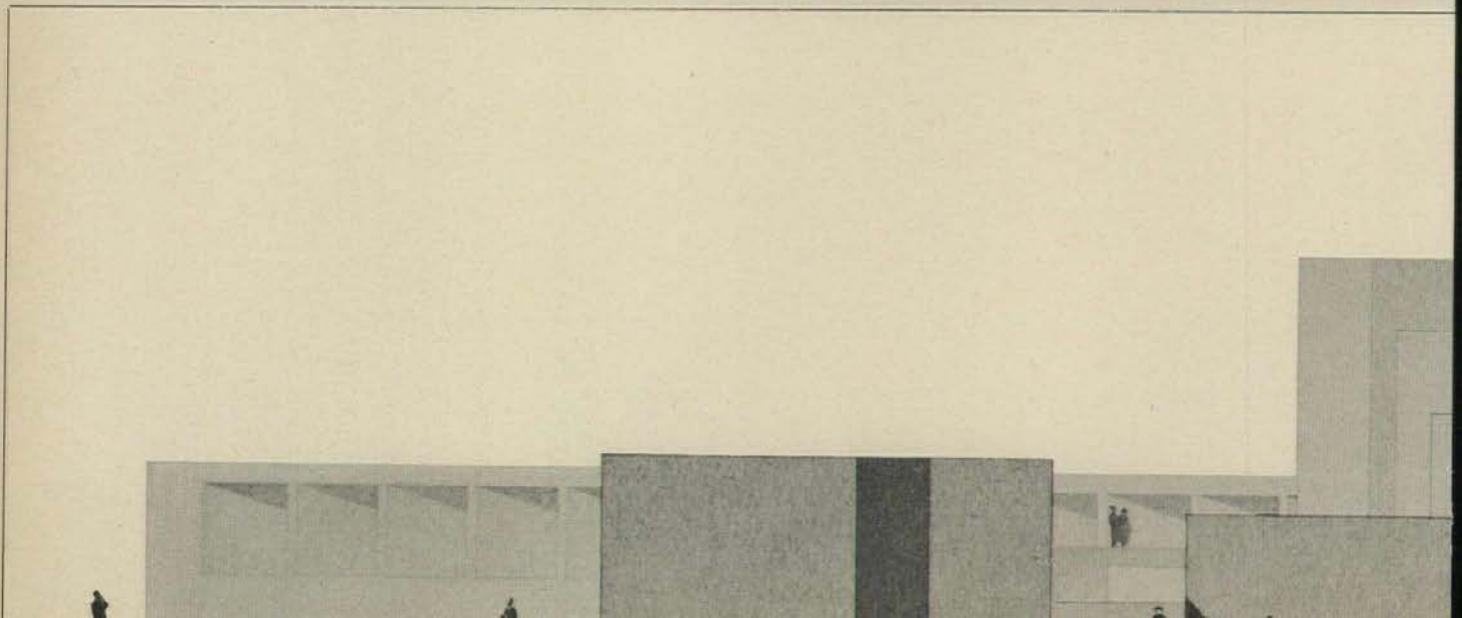




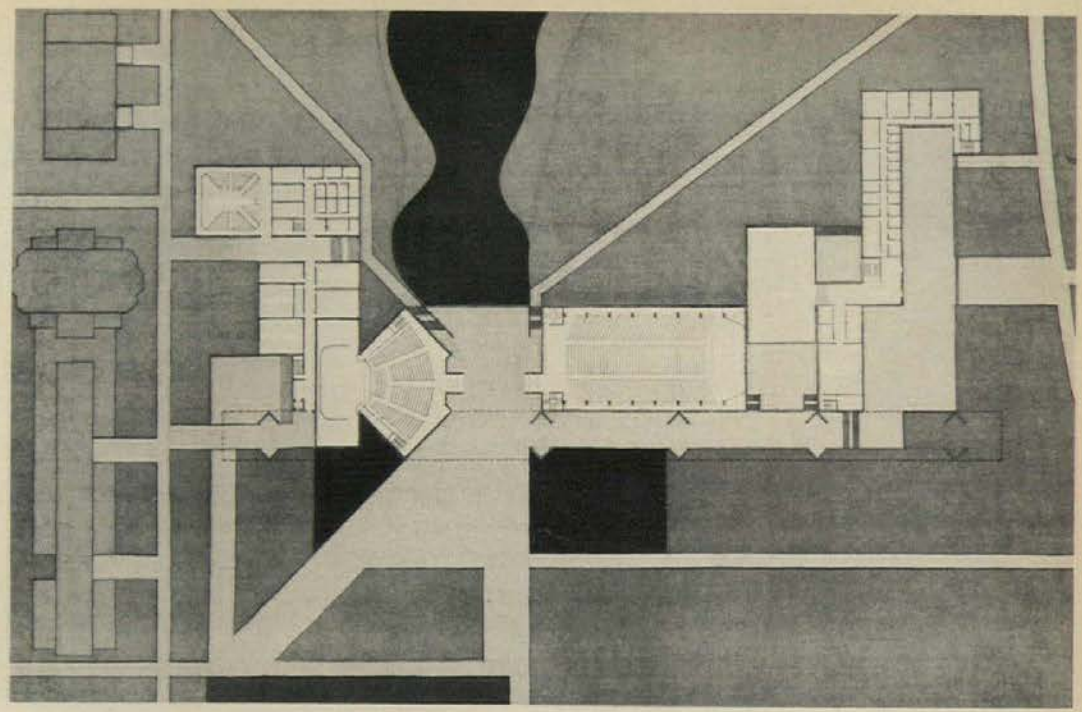
UNIVERSITY OF MASSACHUSETTS: FINE ARTS BUILDING

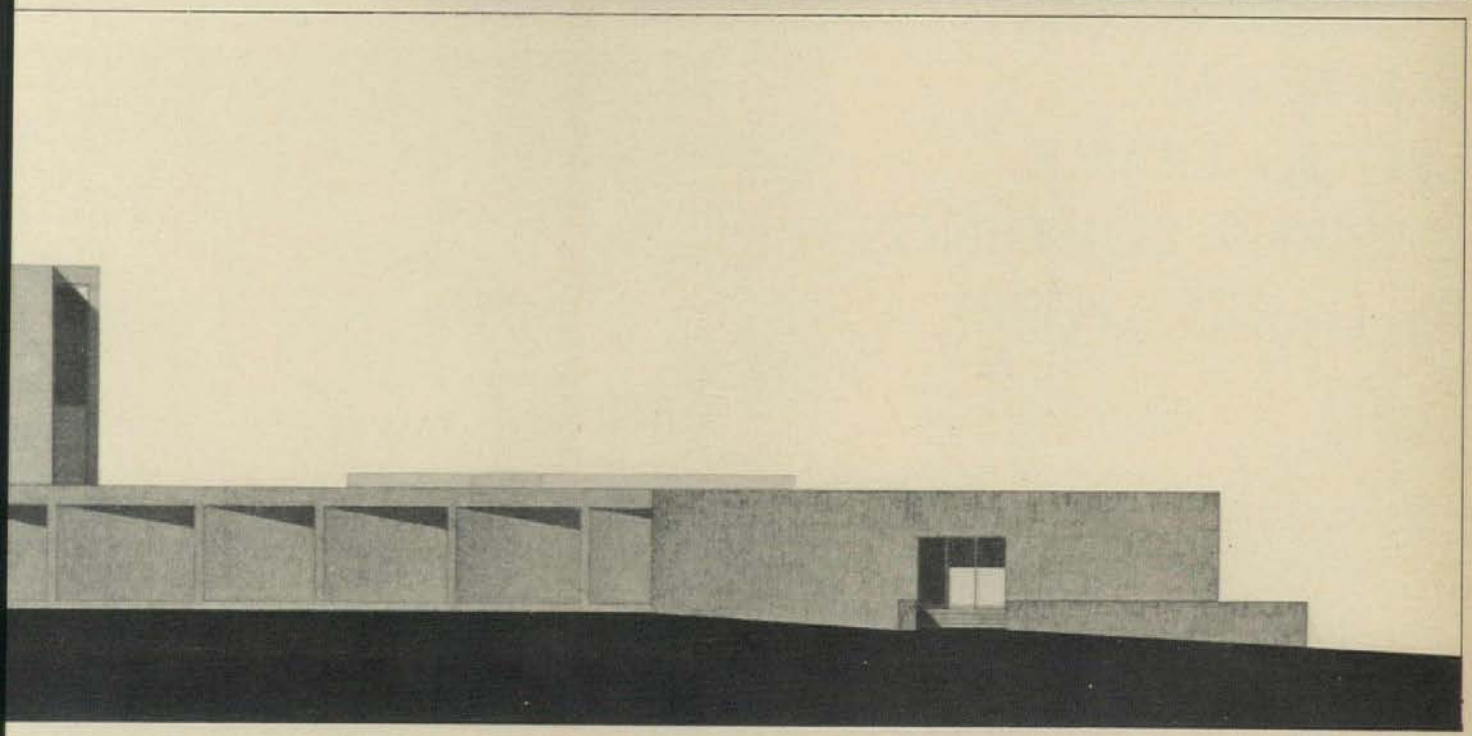


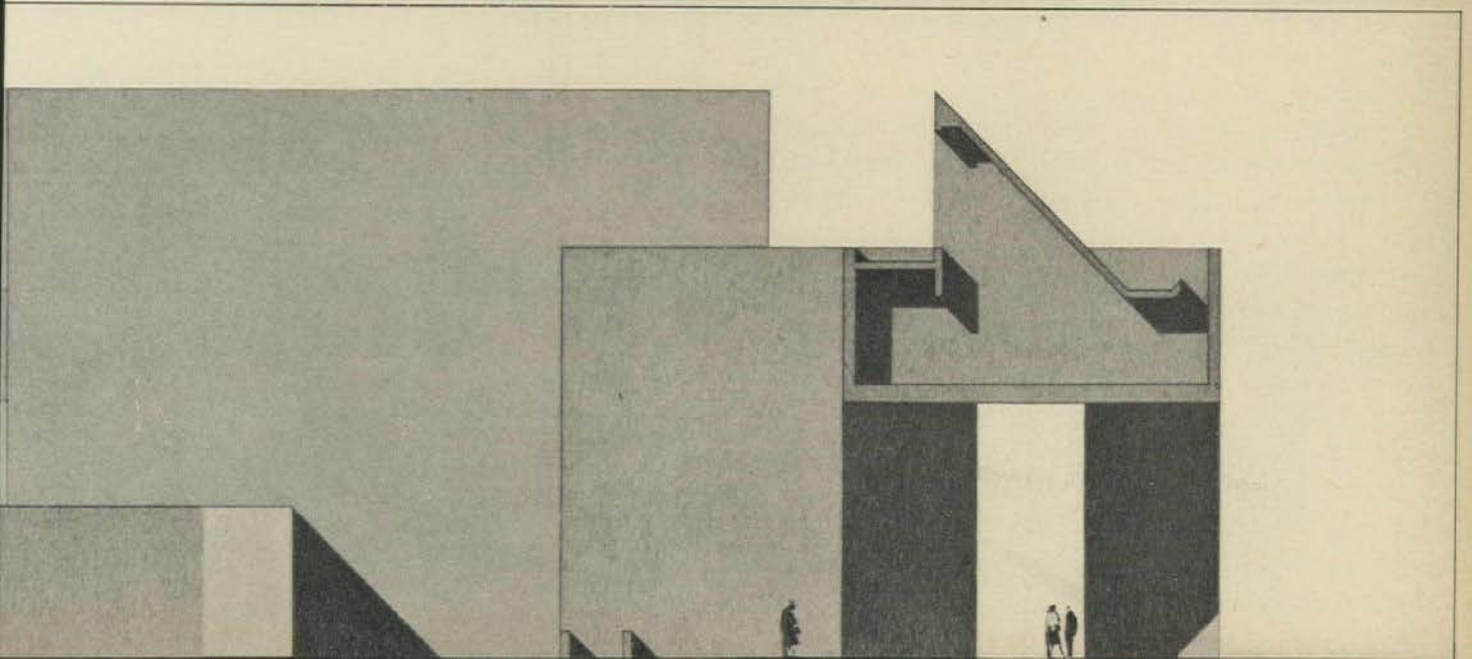


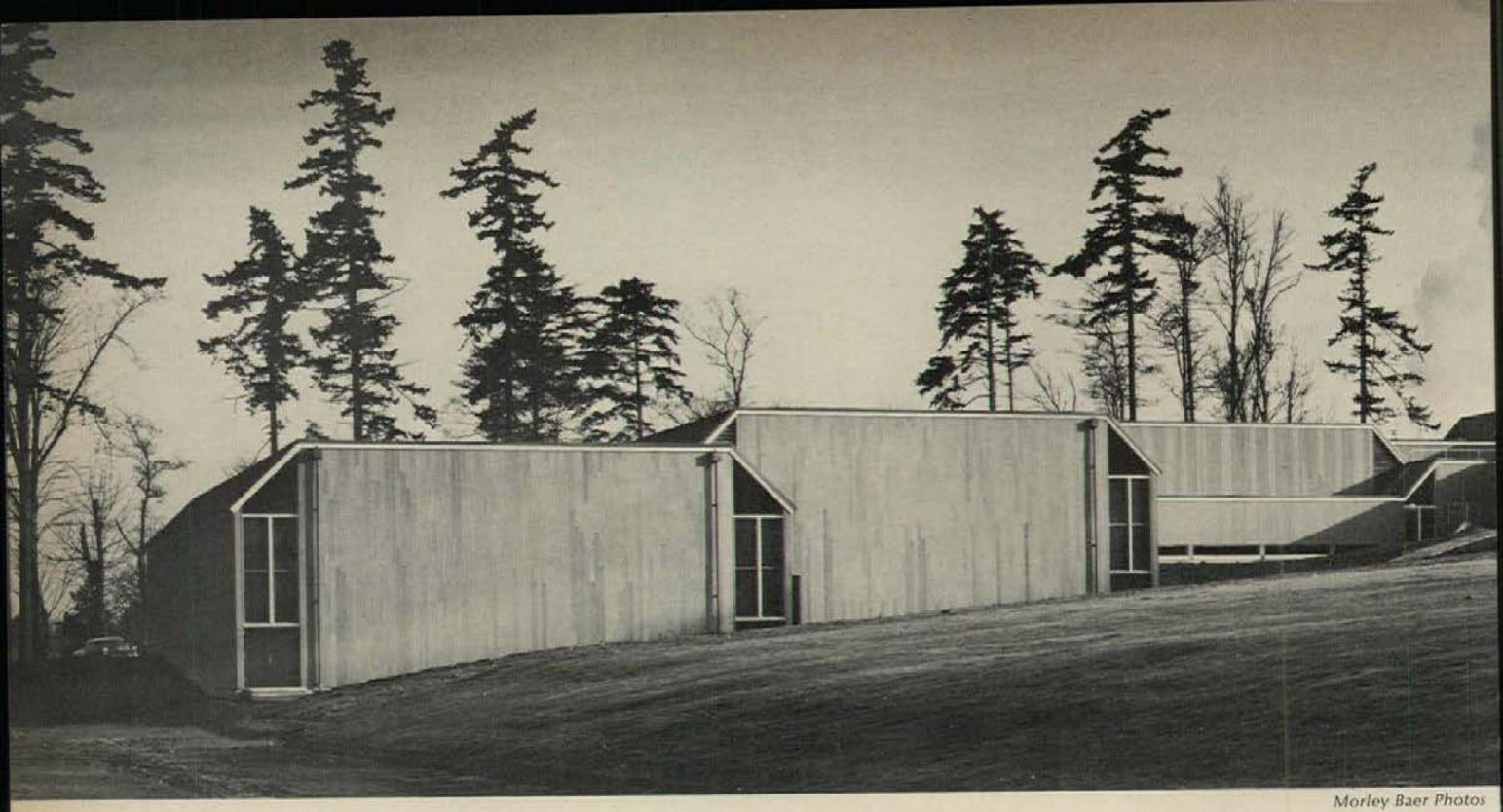


"We have tried to construct a sun machine," said Roche, "but we haven't managed yet." All his buildings are studied in model form under lighting conditions which carefully approximate the movement of sun across their surfaces. Roche points out that the scheme for the Fine Arts Building has been organized around a network of paths which create a series of points at which the pedestrian can enter or pass through the structure. The principal entrance and passthrough is located at the critical point at which the theater and concert hall entrances are located. The facade which faces the mall is essentially continuous; that which faces the pond is broken into segments of roughly the same scale as those of the existing campus buildings to the east of the pond. Studios are sky lit.







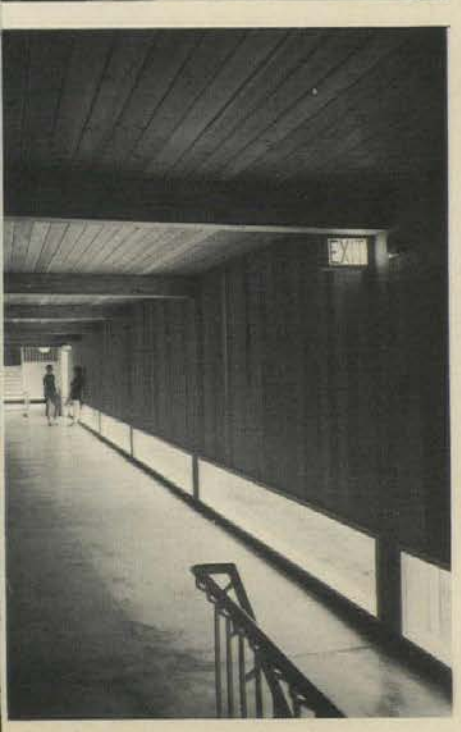


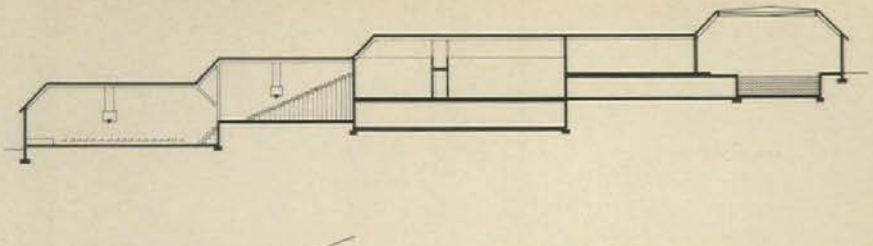
Morley Baer Photos

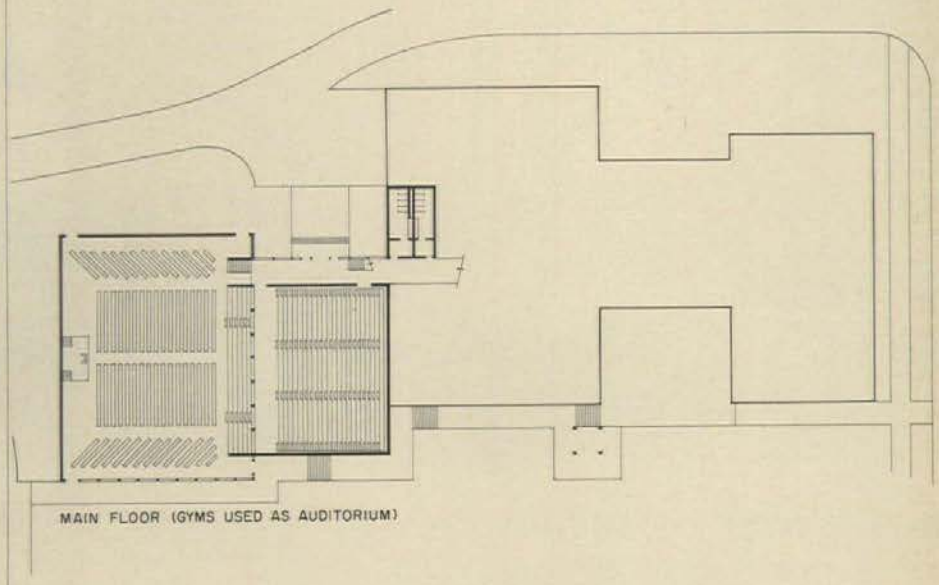
INFORMAL WOOD FRAME CAMPUS BUILDINGS BY HARRY WEESE

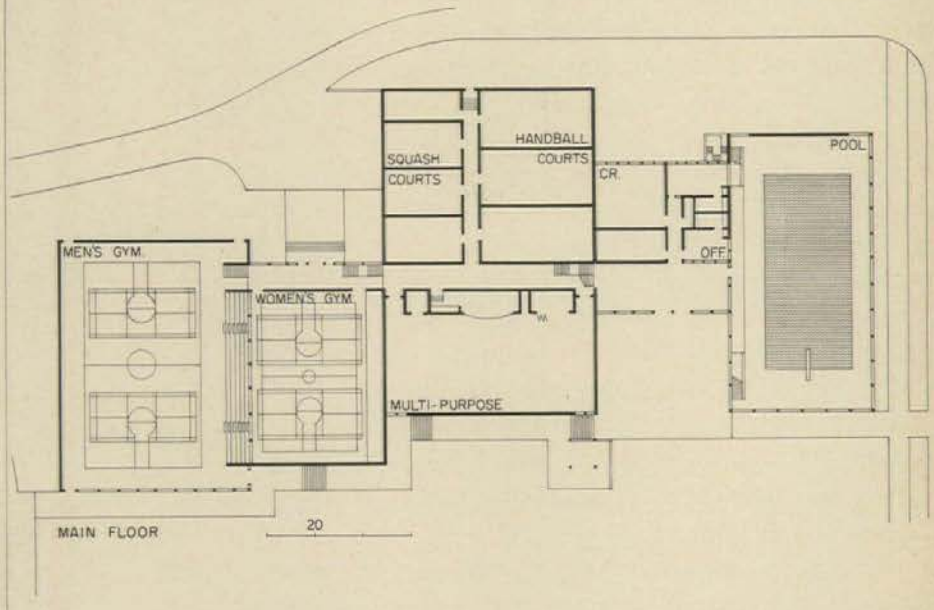
THE REED COLLEGE SPORTS CENTER

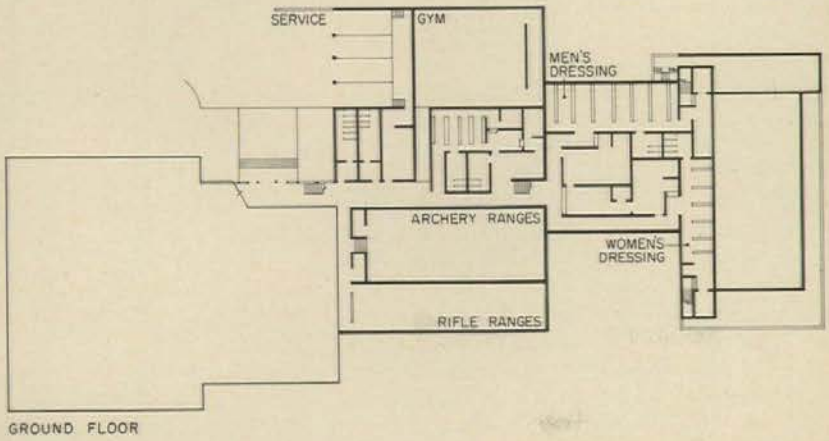
Designed as a simple structure, it is broken into five individually articulated segments which ascend a gentle slope from the playing fields at the foot of the hill to the campus proper at the top. Each of these segments is framed by timber trusses. The various elements extend to the north or south of a central corridor spine which has three sets of stairs to accommodate changes of level. The corridor is airy and well lit as the photographs on the opposite page reveal. Movable partitions separate the men's and women's gymnasium permitting the two spaces to be thrown together to form a 1,500-seat assembly room. The plans show the building as it was in the project stage when the pool was conceived as an indoor-outdoor facility. The building includes an administration unit with classrooms and offices, a multi-purpose room, dance studio and racquet court area. On lower levels are arranged complete locker facilities, wrestling and judo rooms, and archery and rifle ranges.

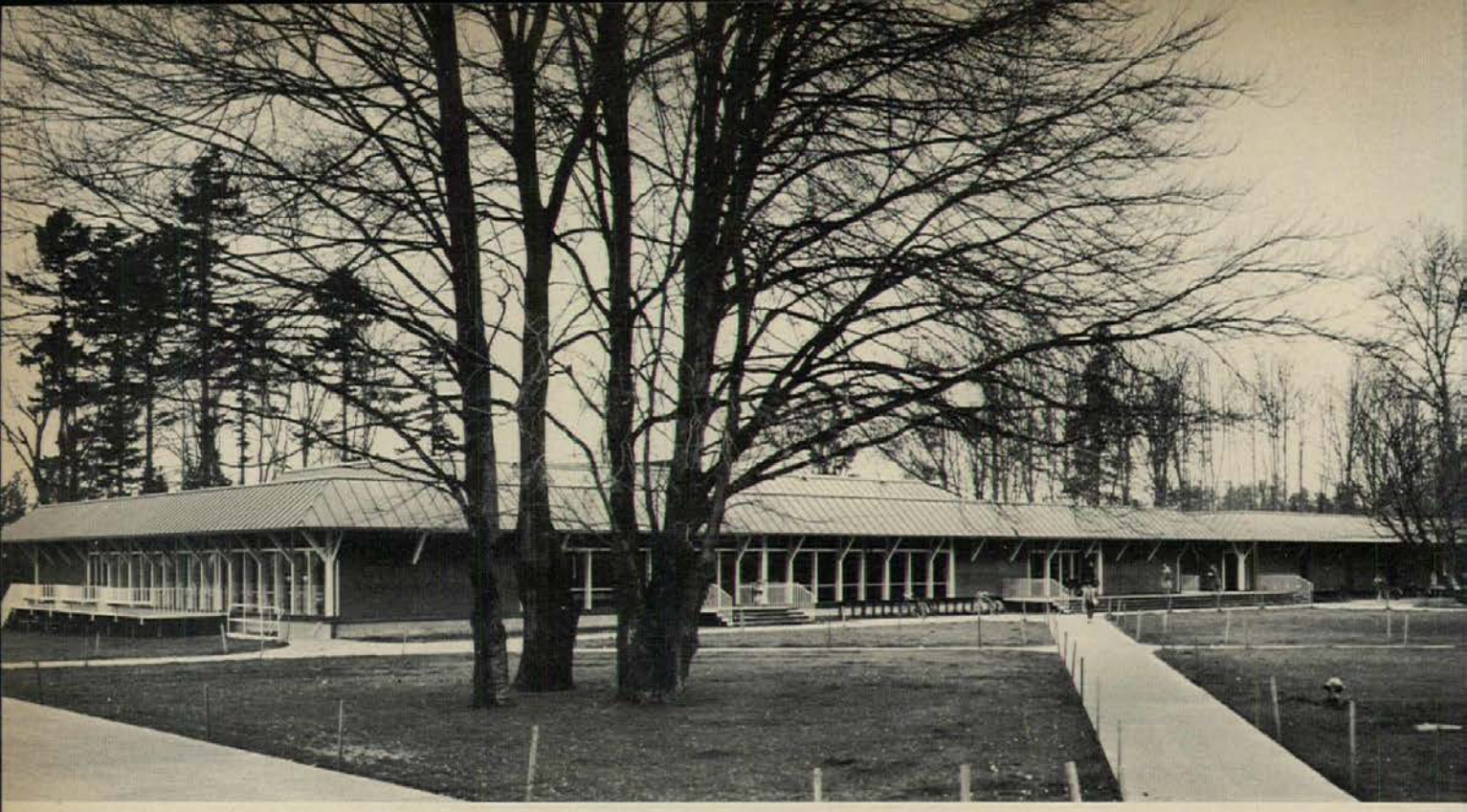





MAIN FLOOR (GYMS USED AS AUDITORIUM)


SQUASH COURTS
HANDBALL COURTS
CR.
POOL
OFF.
MEN'S GYM.
WOMEN'S GYM.
MULTI-PURPOSE
MAIN FLOOR
20


SERVICE
GYM
MEN'S DRESSING
ARCHERY RANGES
WOMENS DRESSING
RIFLE RANGES
GROUND FLOOR

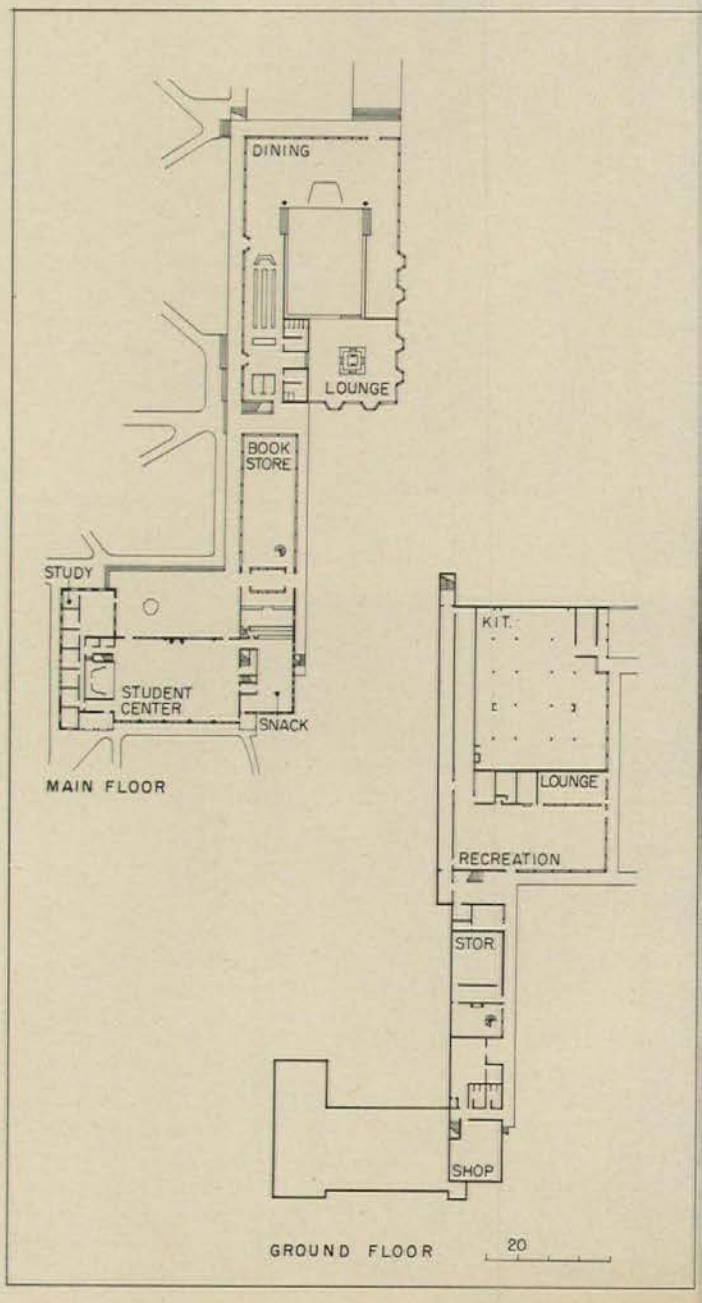


REED COLLEGE COMMUNITY CENTER

Immediately to the east of the sports center, it connects to the older Commons building shown in the photograph at the bottom of the opposite page. The wood construction of the Commons suggested to Weese the character to be achieved in the new building. The natural wood finishes, lofty trussed spaces and broad wood-planked verandas are very much in the spirit of the older building. The standing-seam metal roof of the community center contrasts well with the steeply pitched dark asphalt shingle roof of the Commons.

The site plan for the new structure creates a fine relationship between the building and groups of old campus trees. The land slopes gently to the rear. Here the main floor extends beyond the ground floor and becomes a sweeping veranda with pleasant outlooks to the woods and lake. Its projection forms an arcade at the ground level.

Included in the community center are a browsing room, dining room, coffee shop, barber shop, bowling alleys, hobby workshop, game room, dark room, music listening rooms, bookstore and activities headquarters.



SPORTS CENTER, Reed College, Portland, Oregon. Owner: *Reed Institute.* Associated architects: *Harry Weese and Associates and Gordon, McGoodwin and Hinchliff;* structural engineers: *The Engineers Collaborative;* mechanical and electrical engineer: *Samuel R. Lewis;* landscape architect: *Arthur Ehrfeld;* consultant for master plan: *Dan Kiley;* lighting consultant: *William C. Lam;* general contractor: *Elmer E. Settergren.* COMMUNITY CENTER, Reed College, Portland, Oregon. Owner: *Reed Institute.* Associated architects: *Harry Weese and Associates and Gordon, McGoodwin and Hinchliff;* structural engineer: *James G. Pierson;* mechanical engineer: *Omer T. Jacobson;* electrical engineer: *J. R. Downing Associates;* landscape architect: *Arthur Ehrfeld;* consultant for master plan: *Dan Kiley;* lighting consultant: *William C. Lam;* kitchen planning consultants: *Flambert and Flambert;* general contractor: *General Investment Company.*

The dining space is framed by great laminated wood trusses. Kitchen chimneys and hoods are exposed and handsomely treated as part of the decor. The fire place is a strongly sculptured element located at the center of an intimate lounge area.

ARCHITECTURAL ENGINEERING

What affects glass strength?

As fenestration areas have grown larger, and more heat-absorbing and tinted glasses are employed, those factors that determine glass strength have become increasingly significant.

Surface condition is one of the most important factors determining glass strength, reported Robert W. McKinley, manager of the Technical Services section of Pittsburgh Plate Glass Company at a recent conference in Cleveland. In contrast, he stated, edge flaws are likely to be significant only when a light of glass is supported on fewer than four sides, or when a light is exposed to thermally induced edge-tension stresses, as with heat-absorbing glass.

Flaws in glass can be expected to increase with weathering and other abrasive exposures, McKinley said. Windows can be damaged during cleaning if alkaline solutions are not rinsed off quickly. Alkali in soap used to mark glass in newly glazed windows has been known to cause surface damage. Alkali attack also has been observed where glass is subject to "wash" from adjacent concrete or masonry surfaces when alkalis are leached out by cleaning or by rain wetting.

While glass manufacturers know in principle how to make stronger glass for windows, there is no practical way to protect the surfaces from strength-degrading flaws caused by airborne dust or by the glazier's hand, McKinley remarked. (In experiments, light rubbing of pristine glass with a soft cloth reduced the surface strength of the glass by 25 per cent.)

Since glass fails in tension, it can be strengthened by putting the surfaces into compression by thermal or chemical tempering. While the rated strength of chemically tempered glass is about four times that of ordinary glass, sizes available are small, cost is high, and the surfaces are sensitive to abrasion.

McKinley's paper, Structural Aspects of Glass—New Data for Design, was presented at the Industrial, Institutional and Commercial Building Conference this spring.

Reverberations of S.C.S.D.

"The day when we can standardize components for proper building design as the situation demands is here," according to Robert H. Sohn, associate of Caudill-Rowlett-Scott, architects and engineers.

Thus it seems that architects are responding with some interest to basic tenets of California's S.C.S.D. project (School Construction Systems Development).

Sohn says that while the architectural profession has been taking advantage of some economies in volume purchasing, it has not designed into building the uniformity that can mean real volume purchasing as well as ease of maintenance.

Speaking before the Illuminating Engineering Society at its February meeting, Sohn told how his own firm, Caudill-Rowlett-Scott, had approached the concept of volume purchasing of lighting fixtures for a school district. One of the items selected for volume purchasing was a standard fluorescent lighting fixture. Sohn said that while many standard lighting fixtures met some requirements, none met all the needs for the district. So Caudill-Rowlett-Scott designed a fixture that met the requirements of appearance, lighting quality, ease of maintenance and economy. According to Sohn, the cost of the component fixtures was appreciably below other standard fixtures of equal quality.

This has been a positive view on the components approach. But obviously there have been some negative reactions. Both the pros and the cons are to be discussed at the Building Research Institute's Spring Conferences this month, under the heading, "Comprehensive Building Systems: Threat or Promise."

In a program announcement, B.R.I. says: "Comprehensive building systems are the result of industry's search for markets, clients' desire for shorter schedules and lower costs, and the growing complexity of building technology which requires the architect to depend on industry for research and development.

"Significant questions are raised by this trend. Will industry dominate architecture? Can the architect respond to this challenge in his practice? Can a workable relationship be developed between architect and industry?"

THIS MONTH'S AE SECTION

Rapid-transit system installed for demonstration project

Those who advocate rapid-transit systems to solve our city traffic problems will be watching with interest the progress of the $5-million demonstration Westinghouse transit expressway sys-

tem which was dedicated in January at South Park near Pittsburgh. The project, which is receiving local, state and Federal financial support as well as support from Westinghouse and other participating companies, consists of a 9,340-foot concrete loop track on which rubber-tired *"Skybus"* vehicles operate under computer control. These vehicles can operate singly or in trains of up to 10 vehicles over a roadway system which can be elevated, at ground level or underground. The system is designed to give continuous service at two-minute intervals. Steering and locking the vehicles to the twin-concrete roadways is achieved by a center rail which is "hugged" by horizontal pneumatic-tired guide wheels on the bottom of the cars.

Discussing the demonstration project, Mr. D. C. Burnham, president of Westinghouse, said that a transit expressway system—complete with *"Skybus"* vehicles, roadways, stations and computer control—could be built for $1.5 million per mile, excluding right-of-way.

1966 Engineering Foundation research conferences

Six special engineering conferences have been scheduled by the Engineering Foundation for July 25 to August 26. They will focus on topics of current importance to the engineering profession. These are: (1) Technology and Society; (2) Industry and the Young Engineer; (3) Interdisciplinary Team Approaches in Engineering; (4) Changing Science and Technology—Its Effect on the Professional Engineering Societies; (5) Technology and the City Matrix; and (6) Particulate Matter Systems—Their Simulation and Optimization. The first four conferences will be held at Proctor Academy, Andover, New Hampshire, the fifth conference at the University of California at Santa Barabara, and the sixth conference at the University School of Milwaukee.

A sandwich of sandwiches for building panels

Plastic walls are being used for the exteriors of some multi-story buildings in Belgium and England, according to Albert G. H. Dietz, professor of architecture and civil engineering at M.I.T. and well-known authority on plastics in building. Speaking before the New York chapter of the Construction Specifications Institute, Dietz reported that the Belgians are using glass fiber polyester for deeply molded window surrounds. A British panel will have a reinforced core of lightweight foamed concrete made with a latex additive. Dietz said that the latex not only imparts toughness to the foamed concrete, but it also improves the bond to the facings. The inside of the panel will be an asbestos-fiber-reinforced gypsum—thus a sandwich of sandwiches. The panel, which is to be used in buildings of the London County Council, has the required fire resistance and the panels are very easily handled during erection.

Glass doors and the unwary

Pennsylvania now has a law which requires glass doors in commercial and public buildings to be provided with safety glazing materials or else be painted or marked at eye level, according to the publication, Shopping Center Reporter. The Reporter item stated that the legislation was introduced shortly after Governor Scranton suffered slight injuries when he accidentally walked into a glass door in Allentown.

Last year the Reporter treated at some length a decision of the United States Court of Appeals for the Eighth Circuit affecting glass doors. The gist of the decision, it was said, is to require that glass doors in buildings used by the public be fitted with some type of decoration or legend to serve as a warning to unwary persons.

Guide for designing heating with light

New environmental systems are making it possible to control heat from lighting systems and to utilize this heat in providing comfort for the building's occupants. Comprehensive research data on this new concept of heating with light has been presented in a new report by the Illuminating Engineering Society's Committee on Lighting and Air Conditioning.

The committee's report is divided into five basic sections. The first three sections deal with lamps, luminaires and lighting systems as energy sources. According to the committee, a great deal of basic research work was done on how luminaires dissipate lighting heat. The total energy distribution from lighting fixtures was thoroughly studied through a variety of methods.

Complete lighting systems were analyzed by the committee from a theoretical standpoint to determine how much heat energy is directed into occupied space and how the structure modifies this distribution.

The last two sections of the report discuss methods and systems for controlling lighting heat. Thermo-electric devices, gases or liquids were considered as heat-control media, and several methods were developed for using air and water in various lighting systems.

New life for old monuments

A liquid formula of water, barium hydroxide and urea may provide the answer to the problem of erosion, which is threatening stone monuments around the world at an ever accelerating rate because of air pollution. The formula, developed by Dr. Seymour Z. Lewin at the Conservatory Center of the New York University Institute of Fine Arts, is described by him as "duplicating in the laboratory what nature takes millions of years to do . . . strengthening and hardening limestone to make it as hard as marble." The liquid apparently causes "recrystallization of the particles that compose limestone without (as far as can be seen) in any way changing the shape, color, or texture of the stone." During the recrystallization, the small particles tend to bridge across, fuse and join up with one another to form a three-dimensional network, which causes the stone to be harder and less susceptible to erosion.

If the formula lives up to its early promise, the potential is of course tremendous, not only for the preservation of stone, but also possibly for the repair of broken stone. In Dr. Lewin's view a "third potential application—we don't know anything about this yet—may be the upgrading of poor and not economically usable limestone into good, high-quality building material."

Landmarks in concrete technology

Some fact-finding research by the Portland Cement Association in connection with its 50th anniversary this year brings out some interesting items on or related to buildings:

1903—The first tall building to use a reinforced concrete frame was the 16-story Ingalls Building in Cincinnati.

1910—The first application of tilt-up construction in multi-story hotel.

1936—The first folded-plate concrete shells to be used in the U.S. were built.

1938—The first U.S. prestressed structure was the shell dome of a water califier tank.

1950—Hyperbolic paraboloid shells began appearing in the U.S.

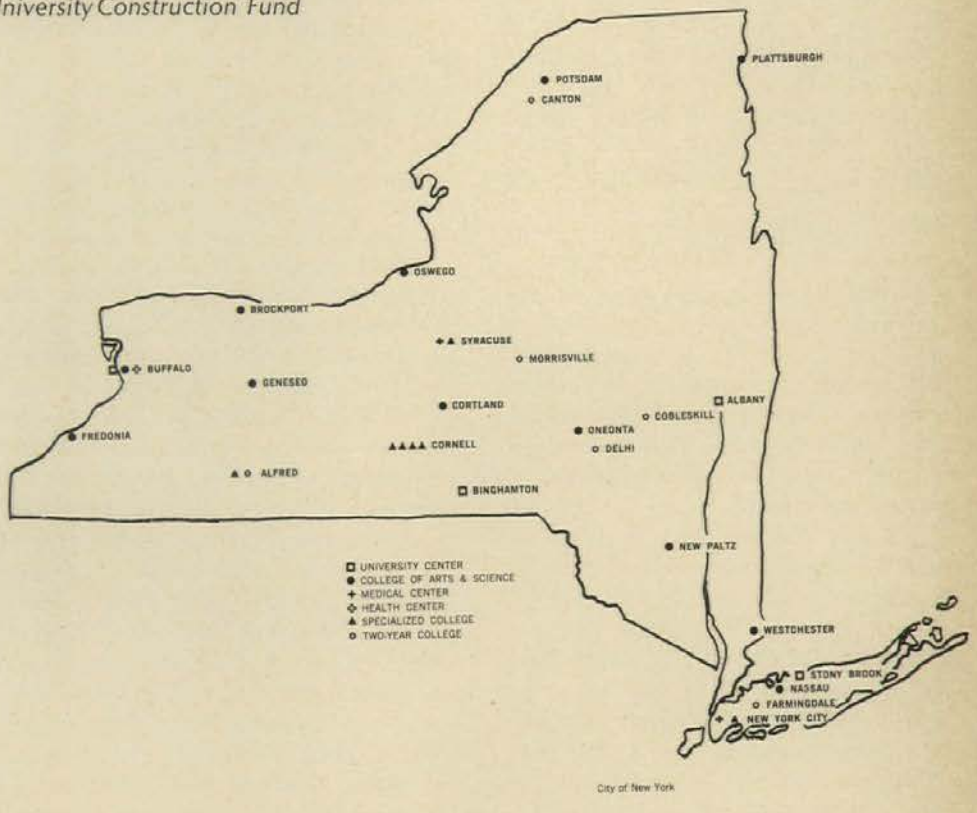
1951—Pretensioned concrete started.

1962—The foundations were laid for Montreal's Place Victoria, the world's tallest concrete building.

1965—Construction is started on the Lake Point Tower in Chicago, which will be the world's tallest concrete building.

PERFORMANCE CRITERIA — a system of communication for mobilizing building industry resources

By Richard G. Jacques
Supervisor of Planning and Design Research
New York State University Construction Fund



The New York State University Construction Fund is calling upon private resources in developing a massive tool for upgrading building productivity in its $1.5-billion campus construction program.

A vast program to test and demonstrate the efficacy of performance criteria for building design and construction (as opposed to the formulary criteria typical of much government-supported construction) is well launched in New York State—under auspices of the State University Construction Fund, which will spend about $1.5 billion to double the enrollment capacity of the state's entire university system during the decade ending in 1970.

Performance criteria are conceived as a series or library of documents, each pertaining to a specific area of concern: lighting, acoustics, structure, finishes, etc. The documents undertake to relate the function of a building project to the means for its accomplishment in generic terms compatible with the state of the art rather than in specific formulas of area, structure, degree, or material. They are drawn up in language intended to be comprehensible to all parties to the construction process: owner, architect, engineer, consultant and contractor.

This library of performance criteria is envisioned as a means of communication for which the building industry has felt dire need for many years—not only to help free the industry from the handwrought methods that are limiting its productivity, but also to free the design professions from the proscriptions of formulary criteria that have tended to freeze inventiveness and artistry, especially in buildings that are controlled by public funds.

The disproportion between man's building needs and the production capacity of the building industry is a serious worldwide problem, as was forcefully attested at the April 1964 seminar in Prague held by a United Nations committee on housing, building and planning. Although the U.S. building industry accounts for roughly one-sixth of the Gross National Product, it is seriously lagging behind the productivity and technological development of other major industies. A comparison is especially apt with the aircraft and automotive industries, which have successfully applied performance criteria to their processes—which are essentially those of construction.

This nation is faced with the task of doubling the present volume of building within the next 30 years to cope with population increases. The New York State University program, in that it will double the capacities of some two dozen campuses, which are virtually small cities of 40,000 or more population each, is a condensed and accelerated version of this task. The decision of those who implement the State University Construction Fund to invest in the research and hard work of developing performance criteria may be one of national significance.

New York has enlisted private industry in development of performance criteria

To assist the Construction Fund, more than 60 private architectural firms have been commissioned to develop 22 comprehensive campus plans and to design and supervise the construction of more than 700 projects. In addition, many special consultants have been retained by the Fund for particular problems and for the development of performance criteria.

In context with an objective of increasing productivity of the building industry, the Fund is committed to a major research effort to develop performance criteria for a prototype campus. In essence, the objective is a system by which the Fund, as owner's agent, can communicate with and evaluate the potentials of all sectors of the building industry. As a system of language, the performance technique al-

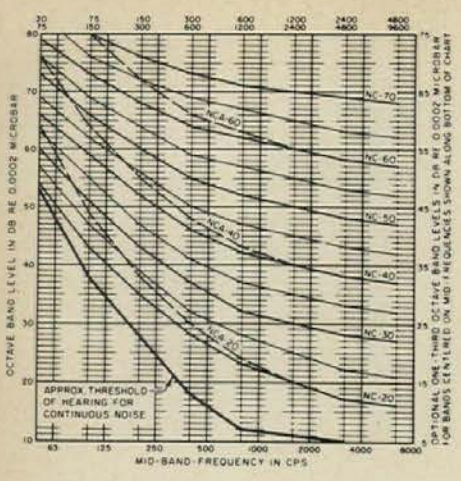


Figure 1. Noise criteria curves, from "A.S.H.R.A.E. Guide and Data Book."

lows each level in the building process to understand the next and to release its creative energies in solving complex problems of design and construction. There have been and will be problems, but the Fund is seriously committed to the performance approach and is making definite progress.

Basic to the approach is identification and classification of the forces and disciplines which shape the campus. These must be synthesized with clear understanding of their interrelationships. The over-all concept of natural forms of influence (climate, land structure, etc.) and man-made forms (function, occupancy, structure, etc.) was adapted from the Development Index by K. L. Holm and C. T. Larson published in 1953 by the University of Michigan. This concept was further refined by breaking the total campus design problem down into 12 component disciplines called "building systems" although they encompass the campus-wide process. These systems are: spatial organization, structure, exterior walls, interior walls, finishes, vertical circulation, specialties, equipment, plumbing, heating-ventilating-air-conditioning,electrical systems and site. Each of these is further broken down into sub-systems and components.

For purposes of program administration, the actual process of developing performance criteria has followed a nine-phase course: 1) identification of a specific need; 2) definition of scope and relationship to other projects; 3) assignment of project staff, usually a private consultant or university team; 4) development of total approach through studies and conferences; 5) production of preliminary report; 6) preliminary workshop seminar of a small group at which criteria are reviewed in depth in the light of real needs of the building industry; 7) review by Fund staff in relation to over-all program needs; 8) large group workshop with all fund consultants to review first draft including any results of previous reviews; 9) refinement of criteria based on industry reactions and publication of the final draft which is then integrated into the program of the Fund.

As a matter of operating policy, the Fund has reached out not only to retain top-flight consultants but also to set up key people in the building industry to serve as advisors throughout the life of each research project. Current research being carried out within the system described relates to the areas of environment, function, operation and maintenance. In each case, there is in-depth evaluation of both initial and ultimate cost of building.

Environmental criteria define goals for acoustics, lighting, etc.

Current environmental research for the Fund is being carried on in acoustics, lighting, color and climate. Although there has been a vast amount of research reported in these areas in the past 20 years, most of it has not been related to a specific building program and might therefore be considered as having been done in a vacuum. Few of its results have ever been implemented, and divergent opinions have caused much confusion in the building industry. Although the Fund has had to rely on environmental standards which have been adopted by the design professions, its concurrent investigations indicate that many of these guides have not, in fact, been developed from a scientific approach. It has been found that those primarily responsible for setting these standards have been sectors of the industry involved in development and sale of products or services. Following are essential aspects of research by the Fund leading to development of environmental performance criteria.

Contents of acoustical specification

Research on the acoustic environment, done in collaboration with Bolt, Beranek and Newman, has evaluated audio requirements of about 410 kinds of spaces that might be found in a major university. These spaces could be categorized into eight generic groups by principal function and further divided into about 68 sub-classifications; but the acoustical situation in all of these categories can usually be assigned to one of three degrees of criticality: 1) spaces used predominantly for speech, where the fre-

Figure 2. Sample room criteria, from "Criteria for Acoustic Treatment for University Buildings (Interim Report)" by Bolt, Beranek and Newman, Inc.

Table I

Minimum Noise Levels*

Frequency in cps	63	125	250	500	1000	2000	4000	8000
No Ventilation: Rural	48	36	30	25	15	15	15	15
No Ventilation: Urban	58	49	41	35	31	29	28	27
Low Velocity Diffusers: Rural	48	36	30	25	20	19	15	15
Low Velocity Diffusers: Urban	58	49	41	35	31	29	28	27
High Velocity Diffusers: Rural	48	36	30	25	30	29	24	17
High Velocity Diffusers: Urban	58	49	41	35	31	29	28	27
Induction Units: Rural	48	36	30	29	30	29	24	17
Induction Units: Urban	58	49	41	35	31	29	28	27
Fan Coil Units: Rural	48	36	32	34	35	33	29	27
Fan Coil Units: Urban	58	49	41	35	35	33	29	27

* These noise levels are typical values to be used for design purposes only when specific data on manufacturers' equipment are not available.

Room Criterion Sheet No. 1

Classroom (Lecture)

1. Recommended Ambient Noise Level: a) Top limit NC-35
   b) Expected Masking noise: See Table I
2. Recommended Reverberation Time, Seconds:

Frequency cps	500
a) Top Limit	1.0
b) Bottom Limit	0.5

   Generally, covering the outer 50% of the ceiling with sound-absorbing material and the center portion with hard sound-reflecting material will provide the desired reverberation time and at the same time allow useful sound reflections from the center ceiling area.
3. Recommendations for Proper Shape: Usually not a problem. Avoid circular plans and domed or vaulted ceilings.
4. Echoes: No problem due to small size.
5. Flutter Echoes: Usually not a problem due to wall-mounted equipment, windows, etc.
6. Noise Levels Likely to Occur in This Room (in db re .0002 dynes/cm^2)

Frequency, cps	31.5	63	125	250	500	1000	2000	4000	8000
Design Levels	46	55	65	73	77	71	63	55	48

7. Sound Amplification Requirements: Wall-mounted loudspeaker high on front wall desirable for motion picture, TV and intercom use.
8. Probable Severity of Impact Noise Sources Originating in This Room as It Affects the Room Below: Moderate - in an all-male school the problem is somewhat less severe than in a co-ed or all-female school.

PERFORMANCE CRITERIA IN WORK FOR NYSUCF—STATUS AS OF FEBRUARY 1966

PROJECT	SCOPE		STATUS	
Acoustics	Development of parameters for the sonic environment. Study of impact noise, ambient noise, isolation, shapes and reverberation.	Bolt, Beranek & Newman	First Draft Completed	Industry Advisory Group Review/ Workshop, Feb. 1966 Final Draft and Industry-Wide Seminar, April 1966 Study Publication, July 1966
Lighting	Development of parameters for the visual environment. Study of lighting based on quality not quantity. Role of lighting/color in total design concept. Study of glare, contrast and reflectance.	Pratt Institute and William Lam	First Draft Completed	Definition of Further Basic Research to Undertake Scope Agreement with E.F.L. by March 1966 First Draft Re-study, Oct. 1966 Industry-Wide Seminar, Jan. 1967 Final Publication, April 1967
Climate	Development of parameters for the thermal, humidity and air environments. Study of interrelationship of these factors as they effect human activity and the building function.	Pratt Institute	Data Gathering Being Done	First Draft Report, March 1966 Advisory Group Review and Workshop, April 1966 Further Schedule to Come
Finishes	Development of measurable physical properties of interior finishes based on function, user requirements and operating objectives. Study to include finish systems now available that will meet performance criteria.	Building Materials Research Institute New York, N. Y.	Detailed Work Program Being Defined	Outline of Study, Feb. 1966 First Draft Report, April 1966 Advisory Group Review and Workshop, June 1966 Final Draft and Industry-Wide Seminar, July 1966 Final Publication, Aug. 1966
Disabled	Development of guide for planning for the physically disabled. Study of site requirements and requirements for general and special facilities. Emphasis being placed on techniques of planning and design which will not differentiate between able and disabled.	Fund Staff: Steven Cotler and Francis Zuccardy	Interim Guide Completed	Development of Comprehensive Materials for Re-study, Feb. 1966 Advisory Group Review and Workshop, April 1966 Final Draft and Industry-Wide Seminar, June 1966 Final Publication, Aug. 1966
Concrete	Development of criteria for design and construction of concrete structures. Particular emphasis on exposed architectural and precast and prestressed concrete in contemporary structure.	Irwin Speyer, New York, N. Y. and Fund Staff: Bertold Weinberg	Final Draft Completed	Final Publication, March 1966
Aggregates	Development of criteria for cements and aggregates for concrete construction. Special emphasis on requirements of materials exposed to the weather. Includes survey of available cements and aggregates in New York State.	I. M. Pei, New York and James Dunn Assoc., Geologists	First Draft Completed	Plan for Joint Publication with other Agencies, Feb. 1966 Industry-Wide Seminar, April 1966 Final Publication, June 1966
Site Products	Development of criteria for planning, design and installation of site lighting, graphics, signals and furniture. Emphasis is on man/machine components of design system. Integration of separate systems and the elimination of product proliferation included.	Harold Lewis Malt Industrial Designer	First Draft Being Done	First Draft Report, March 1966 Advisory Group Workshop, April 1966 Industry-Wide Seminar, May 1966 Final Publication, Aug. 1966
Site Planning	Development of criteria for planting, paving, earthwork and site structures. Study of requirements of environments, function and maintenance.	Not selected	Definition of Scope and Consultant Selection	Consultant Selection, Feb. 1966 Project Work Outline, March 1966 First Draft Report, July 1966 Advisory Group Workshop, Aug. 1966 Final Draft and Industry-Wide Seminar, Oct. 1966 Final Publication, Jan. 1967
Equipment	Development of guide for programing, planning, design and installation of equipment with particular emphasis on science and research disciplines. Requirements for integration of electro-mechanical, structural and equipment systems.	Project being carried on by Fund Staff: J. G. Horine	Information and Data Gathering Being Done.	Final Materials Organization and First Draft Study, March 1966 Advisory Group Workshop, April 1966 Final Draft and Industry-Wide Seminar, June 1966 Final Publication, Aug. 1966
1. ECONOMIC STUDIES		**Other Fund Research Projects**		
Cost Control	Development of a technique of controlling cost during the several design phases.	Staff Project: Harry McAllister	First Draft and Interim Guide Completed	Final Publication, April 1966
Budgets "A"	Development of valid budgets and area economic indices based on past and current building experience in New York.	Wood and Tower	Study Completed and Published	Undergoing Continuing Up-dating and Expansion as Working Tool
Budgets "B"	Development of program budgets based on requirements of function, environment and code.	Staff Project: J. G. Horine	Format for Considerations Developed	Determining Hierarchy and Interrelationship of Considerations by Space/Use Categories, March 1966 Advisory Group Workshop, July 1966
Budgets "C"	Development of budgets for site work.	Clark and Rapuano	Final Draft Completed	Detail Editing and Publication of Study, March 1966

Research in work for N.Y.S.U.C.F. (continued)

PROJECT	SCOPE		STATUS	
2. PROCESS STUDIES				
Campus Planning Guide	Study of approach to comprehensive campus planning. Development of techniques of program evaluation, research analysis, plan development and presentation, organization of time and cost elements, and statement of "design vocabulary."	Staff Project: John Litynski	Study Published	Expansion/Restudy Based on Recent Planning Experiences, April 1966
Utilities Planning Guide	Study of planning/design aproach to the development of campus-wide utility networks.	Syska and Hennesy	Study Published	Continuing Up-dating
Facilities Planning Guide	Study of rational approach to facility planning. Synthesis of the function/cost/time considerations.	Hirsch • Hammerberg • Kaestle	First Draft Completed	Final Organization, Editing of Draft, April 1966 Publication, June 1966
Design Vocabulary	Development of a process for communicating the design philosophy/intent to insure the continuity of visual form of the campus.	Damaz • Pokorny • Weigel	Basic Materials Developed	Refinement of Basics and Presentation of Findings, April 1966
3. COMMUNICATIONS				
Building Monographs	A series of brief summaries of data on buildings under construction.	Architects and Staff	Format and Prototype Study	Printing of Prototype, Feb. 1966 Complete Monographs, April 1966
Construction Documents	A study of the content and format of the construction documents. Emphasis on these as related to use/responsibility requirements.	Hirsch • Hammerberg • Kaestle	First Draft Completed	Editing and Coordinating Study with Fund Operations, Feb. 1966 Study Publication, May 1966
Resource Center	A center for the housing of library materials and displays of materials and products appropriate to university building.	Staff Project: William Sawyer	Center Set Up and Organized	Continuing Up-dating and Renewal
4. BUILDINGS				
Service Groups	A special study into the impact of basic planning decisions and building form on the cost of construction.	Staff Project	Published	Feedback into Program
Lecture Centers	Study of design criteria and eight design solutions for the new communications. Lecture hall centers.	Alan Green • Mort Gassman	First Draft Completed as Interim Guide	Refinement of Materials for Final Presentation, March 1966 Publication, June 1966
Science Buildings	Comparative analysis of new science 2 facilities with emphasis on laboratory planning module, service/structure integration, ability of systems to be reorganized for changing needs.	Staff Project: Steven Cotler	Comparative Data and Graphics Being Done	Presentation of Preliminary Findings, March 1966 Study Publication, June 1966

quency range of concern is 250-500 cps; 2) concert halls, where critical response must be from 125 to 2,000 cps; 3) noncritical areas such as athletic facilities, cafeterias and library reading rooms, where reasonable noise control is a simple absorption technique not complicated by perceptual requirements.

Since human acceptance, sometimes emotionally motivated, is a considerable element in the success or failure of an acoustical design, there is a broad area in the design approaches to critical spaces where good judgment is an important factor. In these situations, the solutions are not so much a matter of knowing how to make the sound waves behave in a given way as they are of finding out what the listener wants to hear. This division requires the development of acoustical criteria related to what man has to hear (functional) as opposed to what man wants to hear (psychological). Research so far indicates there is much to be done in relating acoustics to psychology.

The performance criteria for acoustics cover the following specific characteristics: ambient noise levels, reverberation time, sound reflections, echoes, sound transmission, and amplification.

Ambient noise criteria are related to the familiar *noise criteria* (NC) curves of standard references (see Figure 1). There are 68 room criterion sheets for various kinds of spaces similar to the one shown in Figure 2 for classrooms. The table of expected ambient masking noise (table I) to which these sheets refer is also useful in deciding whether sound barriers are required between adjacent spaces.

Reverberation is defined as a persistence of sound within a space after the sound source has been stopped. If reverberation time is short, speech will be clear but music will sound dry and brittle. The performance criteria give methods for calculating reverberation time, and the room criterion sheets give the recommended time for various spaces.

Sound reflection is described as a useful (when controlled) means of distributing sound to listeners in a space: A high degree of control is available to the designer through placement of sound reflecting surfaces oriented to distribute the sound uniformly throughout the listening area. The design tool used to establish optimum positions is a ray diagram analogous to an optical diagram in which the angle of reflection is assumed to be equal to the angle of incidence. Acoustical ray diagrams are shown in Figure 3, and the criteria report gives instructions for their use. Some conclusions: most of the ceiling of a large lecture room should be made of hard material; *under no condition* where live sound is to be heard should the entire ceiling of an auditorium be covered with sound-absorbing material.

Echoes are reflected sounds which reach the listener more than 1/17 of a second later than the direct sound. Figure 4 shows a ray analysis of a possible echo and suggestions for improving the situation. Strong reflected sound from a large flat or concave surface should never be allowed to return to a listener if it has more than 70 ft greater path length than the direct sound. Echo problems can be handled by: 1) applying sound absorbing materials; 2) reorienting the reflecting surfaces; 3) reshaping surfaces to scatter sound in a random way. A minor but annoying manifestation of echo is called "flutter echo," which occurs when sound

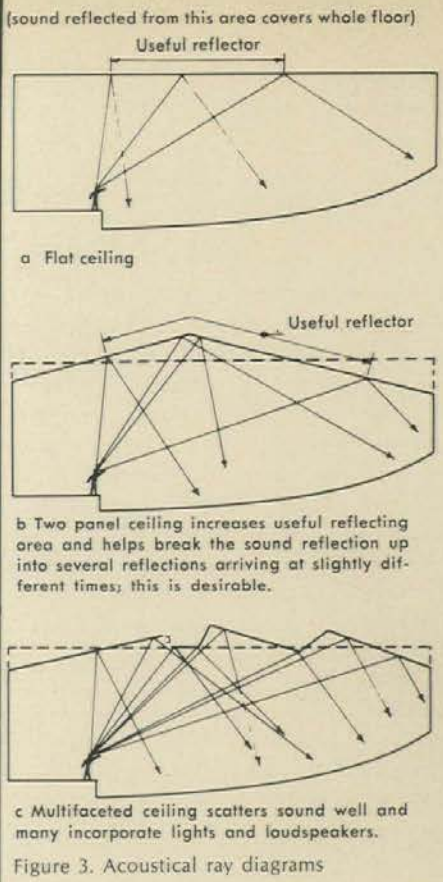


Figure 3. Acoustical ray diagrams

bounces back and forth between two hard surfaces, usually parallel walls. The remedy is to splay the walls and is especially important in portions of the room where a speaker or musician is likely to be stationed.

Sound transmission of two types is identified: air-borne and structure-borne. Air-borne transmission, either within a space or between adjacent spaces, can be attenuated by: increasing distance between source and listener; applying sound-absorbing materials; or interposing sound-isolating barriers. The criteria describe situations where each of these modes might apply. The likelihood of impact and structure-borne transmission is classified as severe, moderate and minor, and the room criterion sheets (Figure 2) indicate for each kind of space the degree of the problem. Thirteen floor constructions are illustrated to deal with the various degrees of impact probability and severity. Those for control of severe impact are shown in Figure 5.

Sound amplification systems are discussed as to quality and application. Broadcast quality (vs. public-address quality) is recommended for campus use in spite of higher cost—partly because of occasional use of the system for music in spaces designed for other purposes, and partly because of long-term, maintenance-free operation. Applications of central and distributed systems of loudspeakers are described, and the importance of time-delay circuitry for distributed systems is emphasized. One recommendation: in all important rooms requiring sound reinforcement, a control console must be provided *whose location is within the coverage of the loudspeakers* and is representative of average listening throughout the room.

The search for lighting criteria shows the Fund means business

In the area of lighting, the many divergent opinions of the results of research have caused unprecedented confusion in the building industry. In most cases, the ultimate building users and the design professionals have made no significant impact on development of realistic environmental standards.

The volume of research in the field of lighting probably exceeds the work done in related environmental fields. Because most of this work was not carried on in relation to specific program demands, it has been difficult to understand and interpret or use in a practical way. Much of this research has, in fact, been adopted as professional standards without an awareness of the full implications of its conclusions.

During the past year, the Fund commissioned the School of Architecture at Pratt Institute to study all of the existing work that had been done by lighting researchers during the past fifty years. From all of these studies, it was impossible to draw a consensus that would have any validity in terms of the general approach to lighting design. Studies for the Fund so far do indicate, however, that design parameters such as brightness balance, reflected glare, orientation focus and distraction are as critical if not more so than the actual level of lighting on the particular task. Recommended levels of lighting have risen by 300 to 800 per cent in the last thirty years in the United States. This has occurred through repeated extrapolations by the Illuminating Engineering Society of a long series of experiments by H. Richard Blackwell. In spite of their unproven validity, these high levels of illumination have found

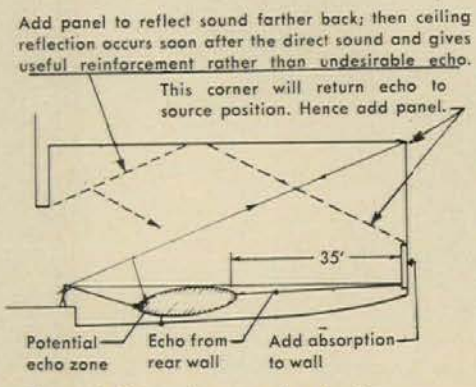


Figure 4. Correcting an echo situation

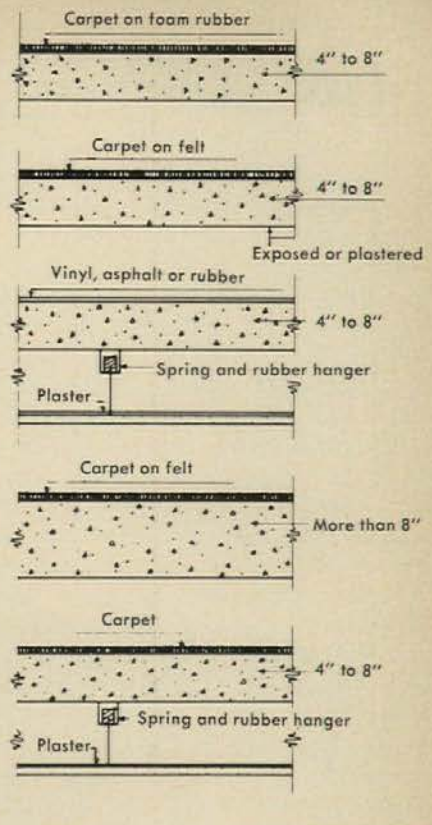


Figure 5. Floor constructions that relieve severe impact noise problems

their way into the design standards of the industry.

Because of the great conflict of research results summarized in the Pratt Report to the Fund, the decision was made not to average out existing criteria in the field in order to produce still another inconclusive guide to lighting design. The Fund program was expanded by retaining lighting consultant William M. C. Lam under a grant from the Educational Facilities Laboratories to spearhead a comprehensive study and analysis to reconcile field observations with research findings, to seek out areas of agreement, and to probe deeply into areas which remain matters of conjecture.

The library grows

Scope of the New York Fund effort is reflected in the accompanying chart reporting the current status of various projects, not only in the development of performance criteria but in the clarification of other documentary aspects of the construction process such as budgets and contract documents. It is not intended that these criteria will become a static requirement. Nor will they be offered to the Nation as a universal solution. But if these criteria are effective in accomplishing their objectives and intent within the considerable scope of the New York State University program, they could indeed set a pattern of approach that might revolutionize the construction industry.

HOW MATERIALS REACT TO SOLAR ENERGY

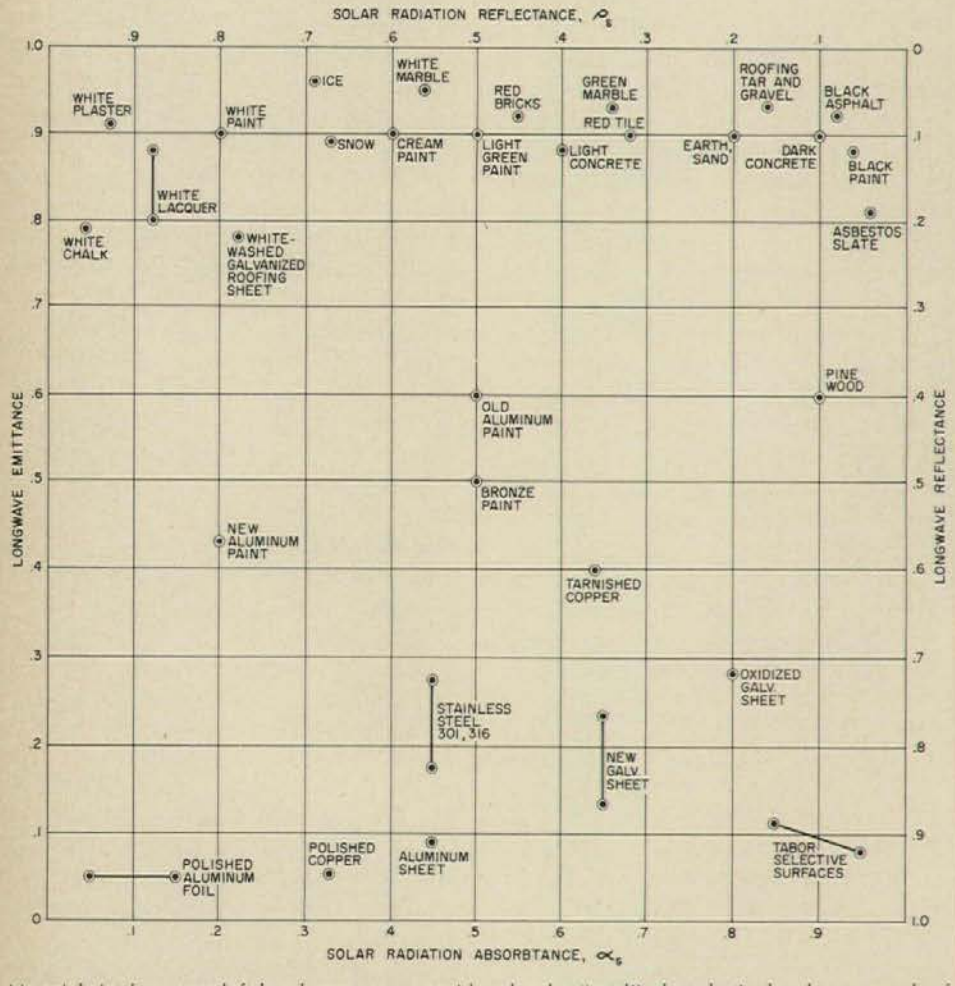
By JOHN I. YELLOTT *Director of the Yellott Solar Energy Laboratory in Phoenix, lecturer in the College of Architecture at Arizona State University and chairman of the A.S.H.R.A.E. Technical Committee on Fenestration*

The sun's heat was not much cause for concern in building design until the recent era of lightweight cladding materials, large exterior glass areas, insulated roof decks and air-conditioned interiors. Designers of heavy masonry structures built years ago had to contend with a certain amount of expansion and contraction, but were not faced with designing for the fantastically large temperature swings experienced by some of today's building components.

For example, a built-up roof on a well-insulated roof deck may be subjected to a temperature change of 100 degrees or more within 24 hours. Such a radical change has been cited as the cause for many of the roofing failures of recent years, and for this reason manufacturers of roofing materials have introduced techniques which let the roofing move without rupturing.

Similarly, metal curtain walls must take movement into account so that expansion and contraction will not cause creaking noises or sealant rupture. Solar gain through glass must be calculated more carefully in determining air-conditioning loads and glass surface temperatures.

Many of these solar effects are now well known. But not so obvious is the greatly varying degree to which various materials soak up or reject solar rays; and, once the solar energy has been absorbed, how well these materials get rid of it. Oddly enough, many materials that one might expect to be good "reflectors" of the sun are not as good as other materials usually assumed to be poor reflectors. Item: some polished metals will get hotter than concrete or brick under the same solar conditions.



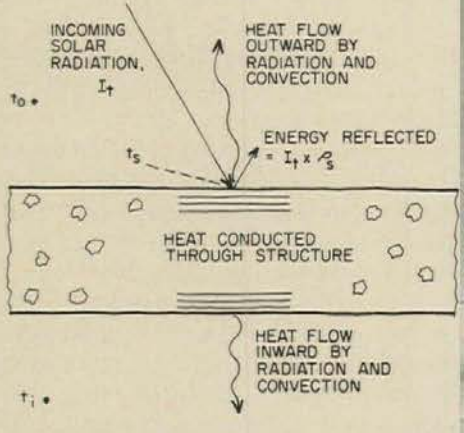
Materials in the upper-left-hand corner are considered to be "cool"—they don't absorb very much of the solar heat that strikes them, and they are good radiators of the heat that is absorbed. But materials in the lower-right-hand corner are "hot"—they absorb a lot of the sun's heat but they don't reradiate much of that absorbed. Some materials in the upper-right-hand corner (when the construction is not massive) may experience wide temperature swings (roofing more than 100 F in 24 hr).

What happens to the solar rays?

Solar radiation striking an opaque surface is partly absorbed, and the rest reflected; none is transmitted directly. The absorbed energy causes the temperature of the material to rise until the resulting heat is dissipated by radiation and convection to the atmosphere and by conduction inward.

The ability of a material to absorb solar radiation is called absorbtivity; the opposite is reflectivity. A material's ability to lose heat by radiation is called emissivity. (Quantitatively, the terms are referred to as absorptance, reflectance and emittance.)

While radiation from the sun is short-wave, the radiation from low-temperature emitters such as building materials is long-wave. For many materials the short-wave solar properties are much different from the long-wave in-



frared absorptance and emittance, and this can very much affect whether a material will be "hot" or "cool" when exposed to the sun. So called "hot" materials have high solar absorptance and low long-wave emittance—they soak up the sun's heat, but don't lose it easily by radiation. "Cool" materials, on the other hand, have low solar absorptance and high long-wave emittance. This wave-length selectivity is the basis of controlling the temperature of spacecraft, where all heat transfer takes place by radiation.

The long-wave emissivity of a building material—its ability to lose heat by radiation—depends on the nature of its outer surface. In general polished metals can be expected to have low emittance while most non-metallic materials have high emittance. But highly polished materials rarely stay bright and shiny

when exposed to the weather, so while they may begin their service with low emittance, they soon develop medium or high emittance. The chart on the opposite page shows the emittances and short-wave absorptances for a wide variety of building materials and related materials such as earth, water and ice. The implications of different values of absorptance and emissivity for a building material such as roofing will be apparent from the table below.

Black roof				
Solar absorptance = 0.92				
Long-wave emittance = 0.98	**wind speed**	**surface temp.**	**heat flow**	*Btu*
Insulated (u = 0.10 Btu)	1 mph	193	12	
Uninsulated		162	87	
Insulated	7 mph	153	8	
Uninsulated		133	58	

White roof				
Solar absorptance = 0.40				
Long-wave emittance = 0.90	**wind speed**	**surface temp.**	**heat flow**	*Btu*
Insulated	1 mph	137	6	
Uninsulated		128	53	
Insulated	7 mph	120	4.5	
Uninsulated		110	35	

Btu = Btu / hr / sq ft

Heat lost from exterior materials

The dissipation of heat to the outdoors from a sunlit building surface takes place both by radiation and convection. On hot summer days when there is little or no wind, little heat is lost to the air, and heat loss by radiation to the sky becomes particularly important.

What determines just how much heat is lost by radiation? First, the amount of heat that a material itself will radiate depends on its emittance and its temperature. However, this is complicated by the fact that not only does a material radiate toward the sky, but the sky itself radiates energy which will be absorbed by any exposed material on the earth.

When the sky is covered with clouds, the effective sky temperature is about the same as the air temperature at the base of the clouds. When the sky is clear, however, the water vapor in the atmosphere acts something like a venetian blind which can open to allow the radiation from the surface of a material to pass out into the emptiness of space. With low humidity the imaginary venetian blind is open, while high humidity tends to close the blind.

During the daylight hours, the effect of long-wave radiation exchange between a roof and the sky is largely masked by the much greater effect of solar radiation, but at night the radiation from the surface to the sky can become very strong. On a still, clear night, surfaces which "see" the sky can be cooled far below the ambient air temperature and this accounts for the formation of frost and even layers of ice during nights when the air temperature does not approach 32 F.

As an example, consider a spring night in Arizona when the air temperature near the earth is 40 F, the relative humidity is 32 per cent, and the dew point temperature is 12 F. If there is no wind, the surface will cool about 14 F below the air temperature.

Differences in the emittance of materials have relatively little effect when the wind is blowing, because heat loss then is governed by convection. For example, for a black roof at the standard summer condition of 7.5 mph, about 70 per cent of the heat loss is due to convection, and only 30 per cent to radiation. With still air conditions, however, the difference in radiation becomes quite significant.

Table 1: Apparent atmospheric emittance for varying dewpoint temperatures

Dewpoint Temperature near Earth, F	0	10	20	30	40	50	60	70	80
Atmospheric Emittance	0.70	0.75	0.77	0.79	0.82	0.84	0.86	0.88	0.89

While materials always radiate some energy to the sky, this loss of heat at night can be considerable. More heat is lost when the night air is dry because the atmosphere then radiates less energy.

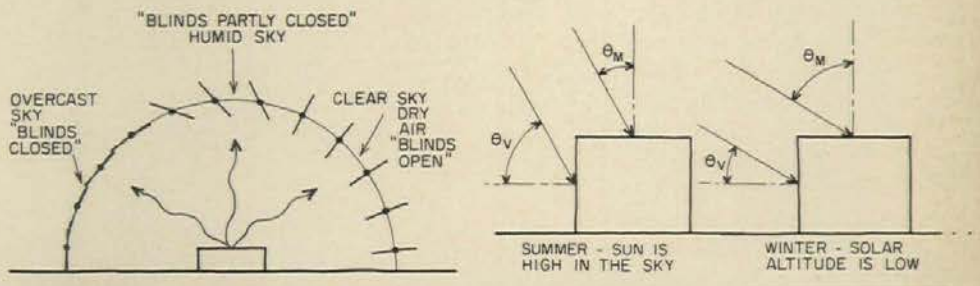


Table 2: Absorptance of smooth black surface at incident angles from 0° to 90°

Incident Angle	0	20	40	50	60	70	80	90
Absorptance	0.96	0.95	0.94	0.92	0.88	0.82	0.67	0.00

Solar angle has a double effect on energy absorbed. First, there is less radiation striking the surface as the angle moves from the vertical. Second, the absorptance is less moving from the vertical.

Effect of solar angle

Still another factor that influences how much solar radiation is absorbed by roofs and walls is the direction of the solar rays. The angle of incoming rays in relation to the surface controls both the intensity of the solar beam and the extent to which the surface will absorb the radiation. The absorptance of smooth surfaces, regardless of their color, drops off rapidly as the incident angle increases above 50 degrees (see table 2). Because of the dual role played by the incident angle, solar-thermal effects on vertical walls are at their maximum for south exposures in winter and for east and west surfaces in summer.

Many metals are "hot"

In general, bare metallic surfaces tend to be hotter than non-metals under the same conditions of solar radiation and ambient air temperature because their long-wave emittance is generally low.

To illustrate, consider a roof covered with new galvanized sheet laid over a 1-in. wood deck. Its solar absorptance would be 0.65 (see page 196); its long-wave emittance, 0.20; and the conductance of the structure, 0.8. Assume the air to be virtually still, the solar radiation 300 Btu/hr/sq ft, the outdoor air temperature 100 F. With these conditions, the surface temperature would be about 170 F. The inward heat flow would be 76 Btu/hr/sq ft.

If the sheet is whitewashed, the solar absorptance will drop to about 0.22 and the emittance would rise to 0.78. The surface temperature would be 114 F and the inward heat flow would be 31 Btu/hr/sq ft.

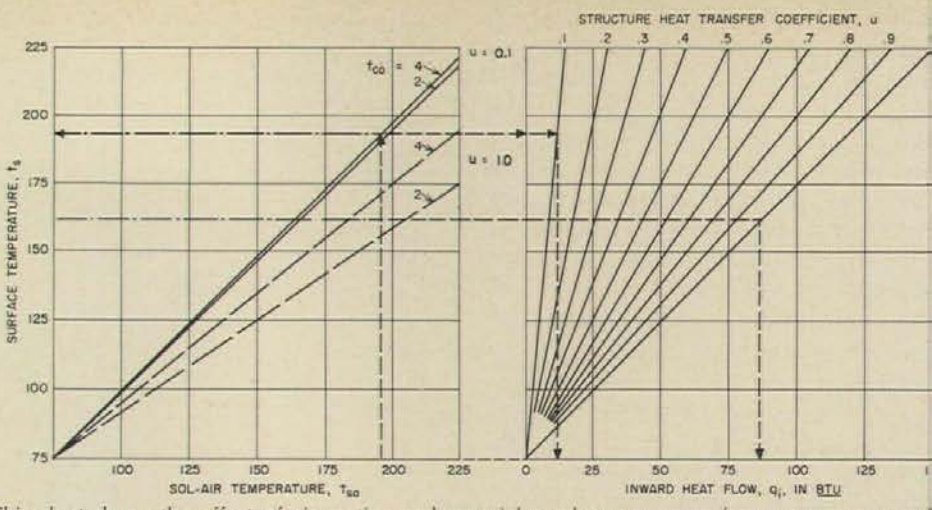
Aluminum and stainless steel tend to be hot materials because they have solar absorptances between 0.40 and 0.50, with low long-wave emittances. It is for this reason that some airplane cabins get so hot when the plane is sitting on the ground. The skin of an aircraft is commonly made of aluminum and, under low wind and bright sunshine, the sol-air temperature* of the

*Sol-air temperature is a ficititious outdoor air temperature which, in the absence of sunshine, would cause the same heat flow as that experienced under combined actual air temperature and solar radiation.

upper surface can readily reach 196 F. By painting the upper surface white, the sol-air temperature will drop to 125 F.

Stainless steel will run much hotter under still air and bright sunshine than, for example, concrete or brick. For stainless steel, the sol-air temperature can reach 190 F while light concrete under the same conditions would have a sol-air temperature of 172 F.

There are certain applications such as solar heat collectors where the highest possible surface temperatures are desired. The selective surfaces developed by Dr. Harry Tabor at the National Physical Laboratory of Israel in Jerusalem can attain solar absorptances of 0.90 with long-wave emittance of 0.10, and heaters using these surfaces can actually generate steam. In general, the architect seeks cool surfaces.



This chart shows the effect of air motion and material conductance on surface temperatures and inward heat flow. The example is of a black roof on a 95 F day, with a sol-air temperature of 197 F. The sloping lines on the left-hand chart indicate outer surface coefficients (combining both radiation and convection effects) of 2 and 4 with slopes shown for material conductances (u) of 1.0 (broken lines) and 0.1 (solid lines). The example assumes a surface coefficient of 2.7. A coefficient of 2.0 is for still air, and 4.0 for a mild wind. Note that a change in the coefficient has proportionately less effect for an insulated material, and that surface temperatures are much higher.

What difference does shade make?

The difference in temperature between the sun-lit and shaded sides of a structure can be very marked indeed, since the irradiation on the sunny side can reach 250 to 275 while the shady side receives only 35 to 50 Btu/hr/sq ft. Thus the sol-air temperatures under still air conditions and 100 F outdoor temperatures for brick or concrete structures would be about 160 F on the sunny side and 110 F on the shady side. In general, this difference will simply mean that the heat gain will be greater on the sunny side, but with a large metallic structure, major differences in thermal expansion can exist.

Keeping a black roof cool

As mentioned earlier, conventional built-up roofs with tar-and-gravel surfaces have very high solar absorptance, but their long-wave emittance is also high. Thus the temperature which they attain may well be lower than for oxidized metals with high absorptance but low emittance.

One of the major problems with black roofs is the very high temperature differentials which they experience. At mid-day, the sol-air temperature for a well-insulated black roof may be as high as 198 F, and the corresponding surface temperature would be close to 190 F. Just before dawn on that same day, if the sky is clear, the outdoor air temperature might be about 60 F, but the roof would be even cooler because of the outgoing radiation to the sky. The roof may, then, have to endure daily temperature swings of more than 100 F, with the resultant expansion and contraction. Studies carried out in Arizona during the summer of 1965 showed that intermittent sprays could effectively reduce the temperatures of black roofs until the average roof temperature was essentially the same as the average air temperature. The sprays can be used equally well on tilted or horizontal roofs, while ponds are restricted to horizontal roofs.

Table 3: Approximate time lags for typical building components

Component	Building Material	Time lag, hours
Roof	Uninsulated sheet metal	0
	Light wood with tar paper waterproofing	½ to 1
	Medium construction, insulated, with built-in roofing	1.5 to 2.5
	Heavy concrete, with built-in roofing	2.5 to 6
Wall	Typical frame with 2 in. by 4 in. wood siding and plywood studs,	
	no insulation	0.5 to 1.0
	insulated	1.5 to 3.0
	Brick, stone, or concrete	
	4 in. thick	2.3 to 2.6
	8 in. thick	5.0 to 6.0
	12 in. thick	7.0 to 8.0
Fenestration (No time lag for the *transmitted* component)	Single glazing	0
	Double glazing	0.0 to 0.5
	Glass block	1.0 to 2.0

Notes

The heat stored in the structure itself causes lags of varying duration between the times when the solar radiation is absorbed and when its effect is felt within the building.

The table above gives approximate values of the time lags which may be expected with various types of construction. In general, when the time lag is low, the rate of heat flow through the building component is high and this tends to lower the surface temperature. When the time lag is high, the surface temperature also tends to be high.

Time lag has a beneficial effect upon the air-conditioning load because the maximum heat gain for a thick, heavy wall takes place long after the highest heat through the fenestration on that exposure. It is only for lightly-constructed, poorly-insulated areas that the two components of the cooling load are likely to come at the same time.

What does it all mean?

Well known is the fact that light-colored materials reflect solar heat. Not very well known is the fact that many "light-colored" metals are pretty good absorbers of solar heat. Also not well known is the fact that a black asphalt roof will not only absorb a lot of solar heat, but it can lose it rapidly at night.

The architect, being aware of these solar effects, will want to be more careful about provisions for expansion and contraction in light-weight metal-skinned buildings to avoid "creaking" and "popping" noises. He will need to understand the reasons for care in the design and specification of built-up roofs to avoid rupture of the surface. He will know that an absorptive roofing material can considerably increase the amount of heat transfer through a lightweight roof structure, unless it is very well insulated. He will sense trouble if a highly absorptive exterior surfacing material is bonded to a back-up material having different thermal characteristics than the surfacing.

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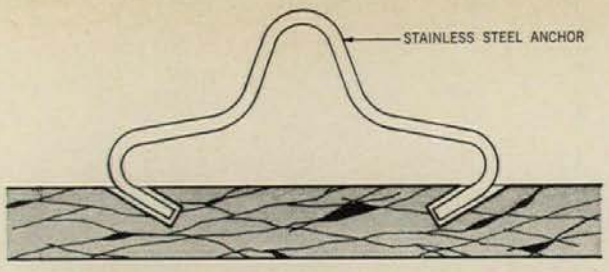
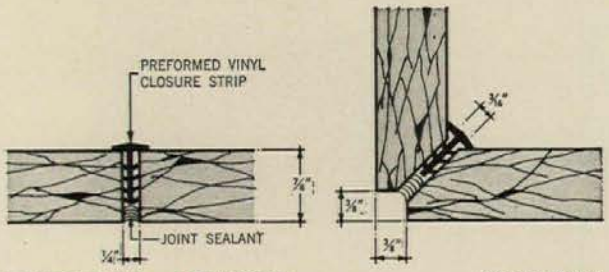


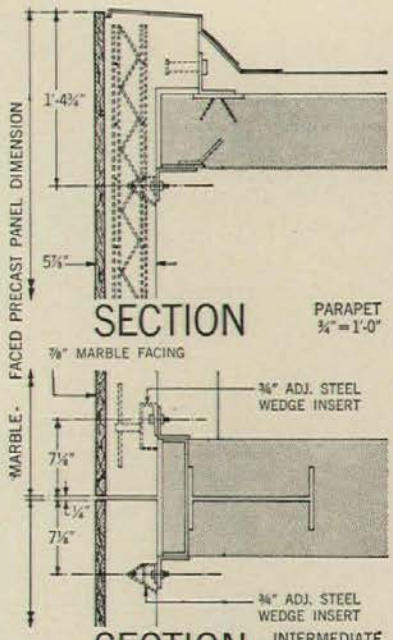
TYPICAL ANCHOR

MARBLE-FACING HALF FULL SIZE



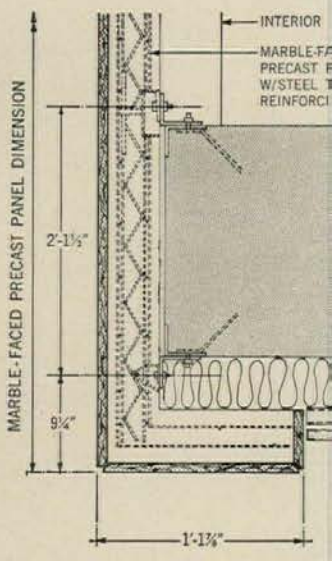
TYPICAL JOINTS

MARBLE-FACING HALF FULL SIZE



SECTION PARAPET ¾"=1'-0"

SECTION INTERMEDIATE ¾"=1'-0"



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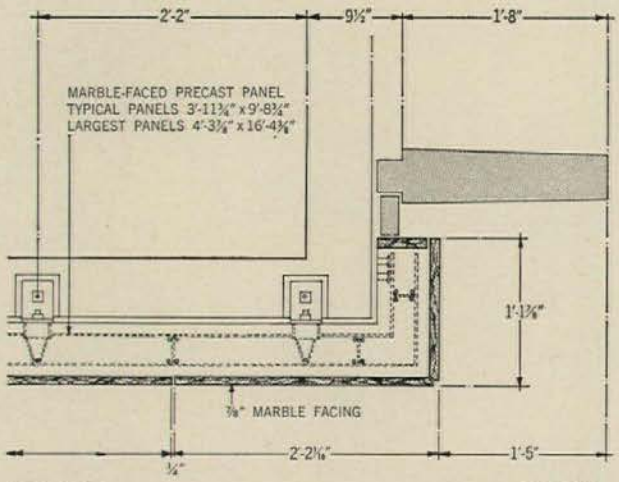

PLAN

END PANEL ¾"=1'-0"

For more data, circle 84 on inquiry card

marble-faced precast

adorns award-winning design for the headquarters for hemisphere health.

It's an outstanding addition to the panorama of the Foggy Bottom area of Washington. It houses both the Pan American Health Organization and the regional office for the Americas of the World Health Organization.

This design, featuring an unusual application of American-quarried marble, won the competition which solicited designs from all countries throughout the Americas. The end walls of the curved Secretariat Building are distinguished by marble-faced precast panels up to 4 x 16 feet in dimension.

Marble helps good design come to life . . . at a surprisingly small percentage of any building budget. Members of the MIA are ready to assist you with design counsel, technical assistance or any information you might need in the application of marble, exterior or interior.

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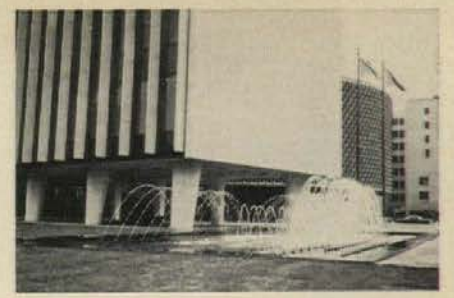
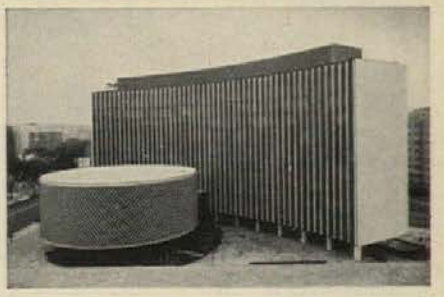
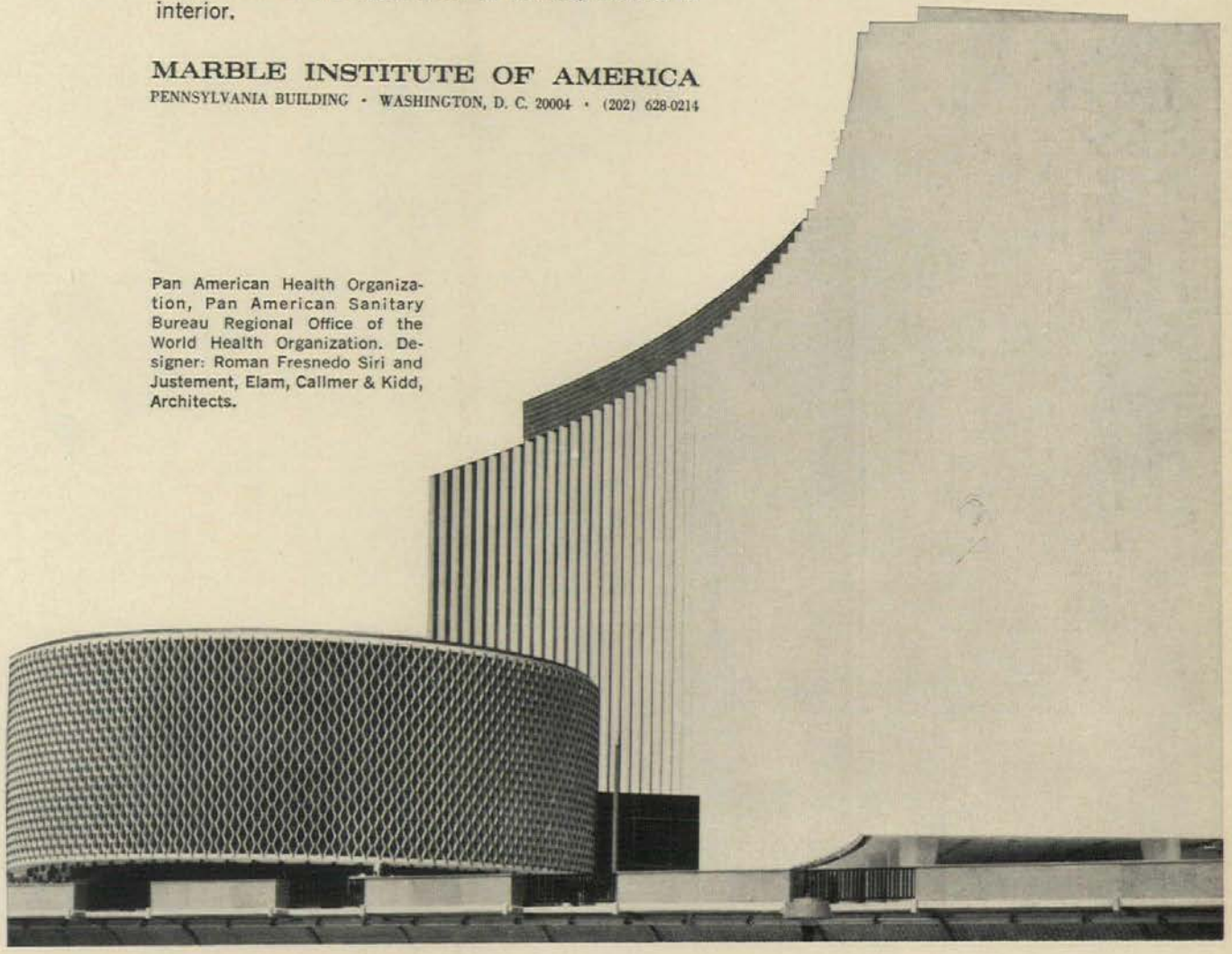
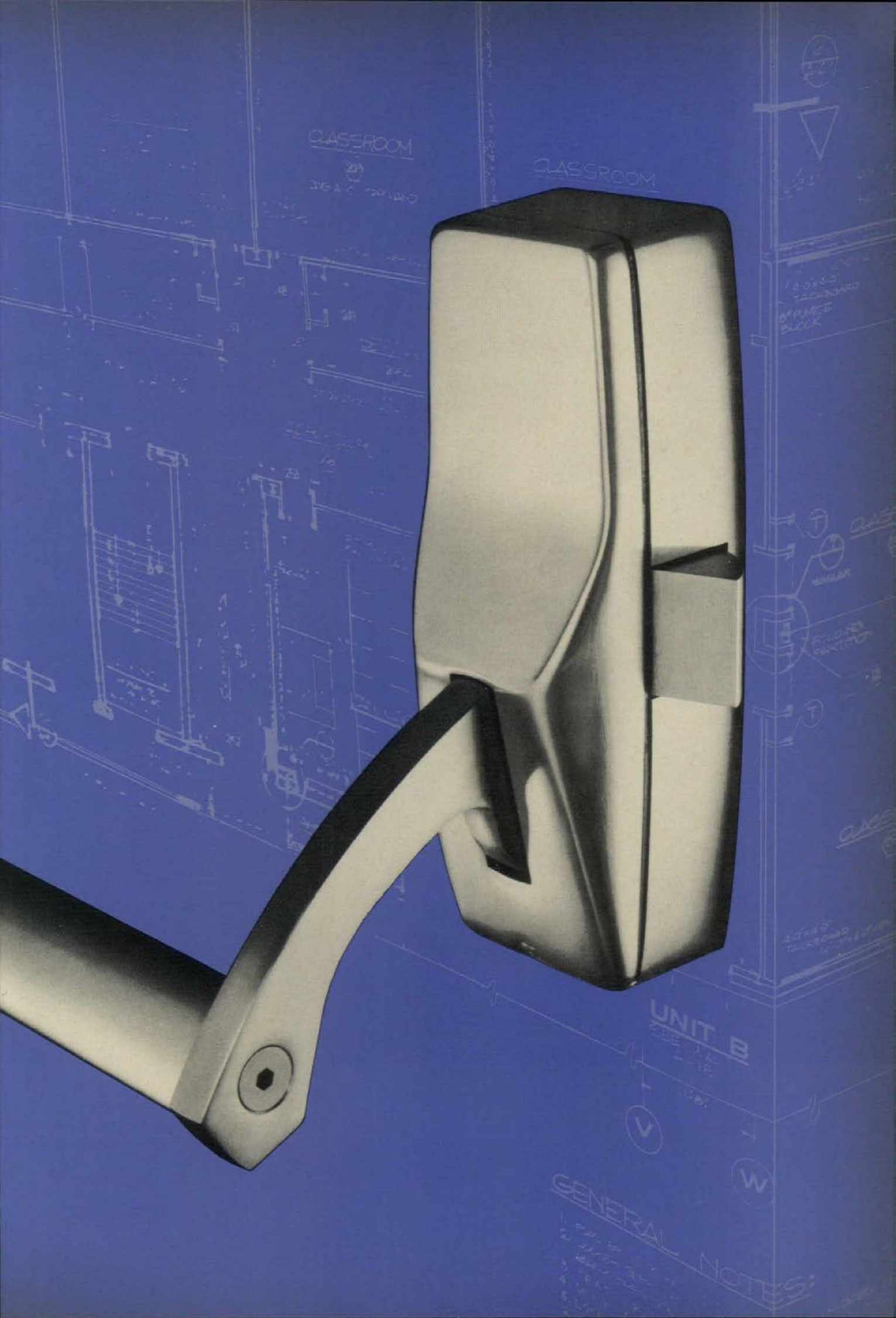


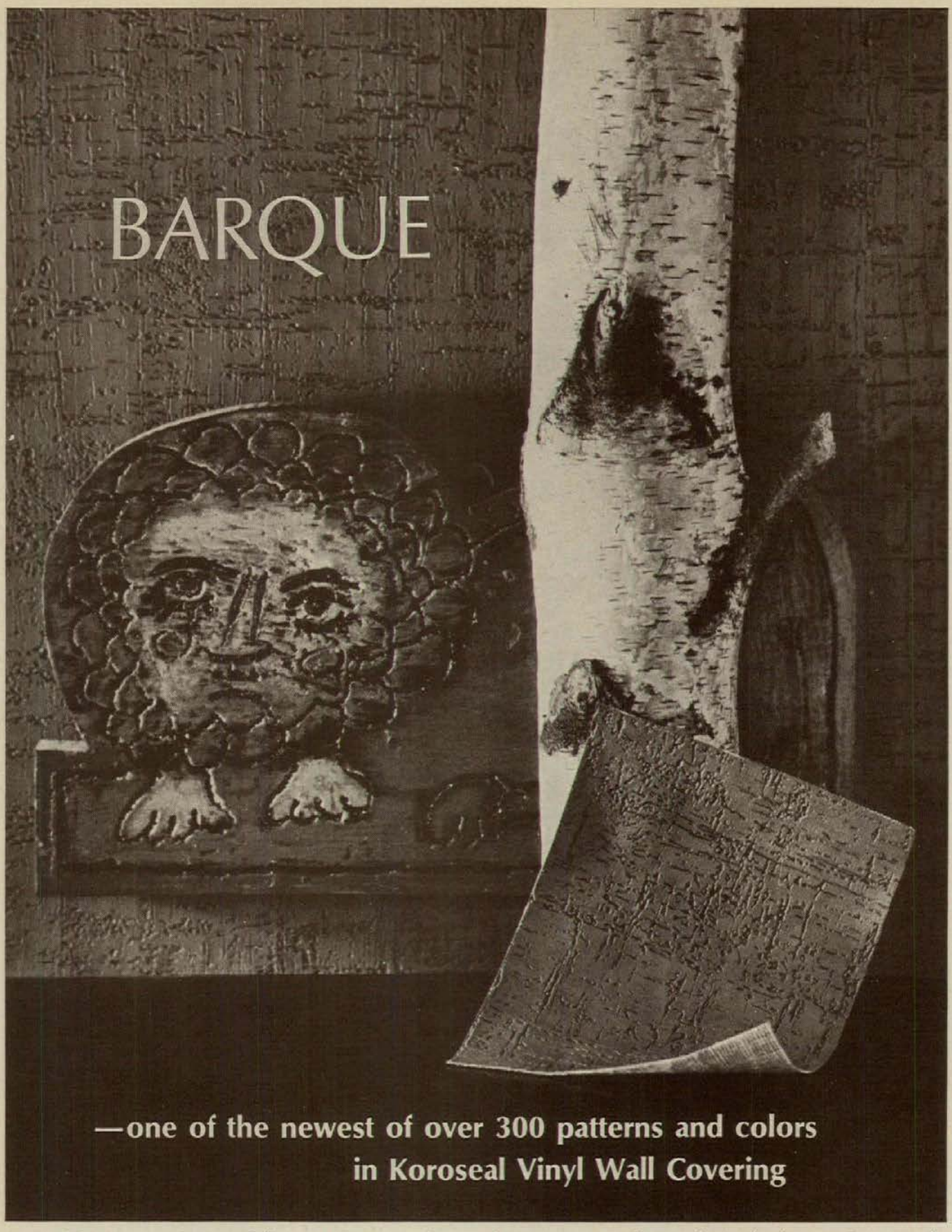




Pan American Health Organization, Pan American Sanitary Bureau Regional Office of the World Health Organization. Designer: Roman Fresnedo Siri and Justement, Elam, Callmer & Kidd, Architects.

For more data, circle 85 on inquiry card


CLASSROOM
CLASSROOM
UNIT B
GENERAL NOTES:



Beautiful, isn't it? And it's available in 12 designer colors. Our new Barque pattern with its dimensional, authentic look is proof again that nothing says vinyl wall covering like Koroseal. Because Koroseal offers you such a wide variety of patterns and colors. Because Koroseal stays fresh-looking longer—resists scuffs, scratches and stains, too. For a swatch of new Barque and the name of the Koroseal distributor who is nearest to you write The B.F.Goodrich Company, Consumer Products Marketing Division, Dept. E-3-B, 277 Park Avenue, New York, N.Y. 10017. Or call New York—922-2730.

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Consumer Products Marketing Division

For more data, circle 87 on inquiry card

Many varieties of glass panels to control and diffuse light

By C. W. Clarkson, Building Products Department, Corning Glass Works

Glass has, in the past few years, undergone a transformation which has significantly enlarged its capabilities for panels in lighting fixtures.

Diffusing panels

The first purpose of lighting panels is to conceal bare bulbs, improving appearance and reducing direct glare by diffusing the light over a larger surface.

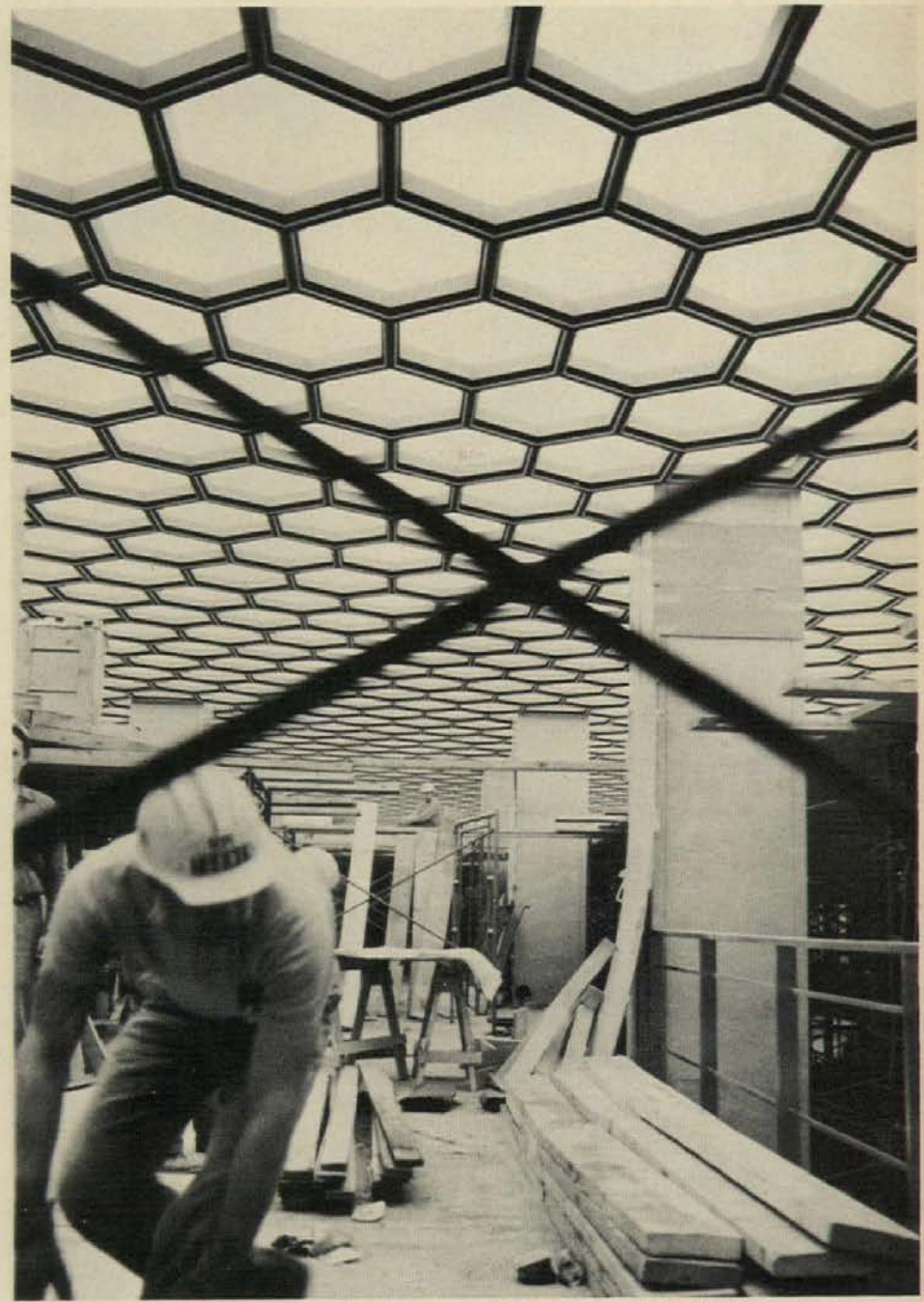
Two basic types of panels serve these purposes: the opal panel, which simply diffuses the light, and the prismatic panel, which controls it more exactly by bending the light rays down so that more light reaches the work surface and less escapes into high-angle brightness zones.

Glass panels, of course, are available in both types. But the revolution in the composition and manufacture of glass panels now extends the capabilities of glass far beyond these basic functions.

For example, the composition of some opal glass panels gives them a capability unique among diffusing panels. In most opal panels, diffusion is obtained by suspending relatively opaque pigment in otherwise clear panel material. Clear diffusing panels, however, are produced by combining two crystal glasses having different indexes of refraction. The diffusion is obtained as the light passing through the glass is refracted and reflected internally. Because there is no opaque pigment, these panels are more efficient than regular opal panels—yet they provide the same diffusion.

New glasses can cope with heat

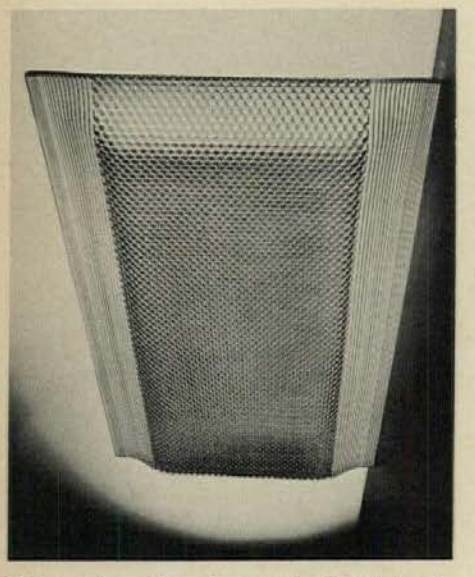
The special properties of some glass make it ideal for applications involving high-temperature light sources such as incandescent or mercury vapor lamps.



Glass can be fabricated to virtually any design. Example: luminous ceiling of opal glass in hexagonal frames diffuses light in Morgan Guarantee Trust Company; Rogers and Butler, architects.

Small hexagonal prisms in glass panels direct light toward work surface, away from eyes.

Opal diffusing panels obtain light diffusion through glass composition, not a pigment.



This panel combines hexagonal prism design in center with linear prisms along the side.

In outdoor accent lighting, borosilicate glass lenses are normally used because they can withstand extreme temperature shocks—for example, cold rain falling on a hot lens.

Another special function that can be provided by glass panels is in heat-extraction troffers. A heat- or infrared-reflection coating can be applied to the glass, which intercepts an even greater percentage of lighting heat and prevents it from entering the room. This transparent coating of tin oxide, which is permanently bonded to the glass substrate, reflects the heat radiated from the luminaire back up into the troffer where it can be more efficiently exhausted, but allows 70 per cent of the light to come through.

Also available: special-purpose glasses

A glass panel of similar construction is produced for use in areas housing sensitive electronic equipment. In some cases, radio-frequency interference generated by fluorescent lamps may cause erroneous or erratic readings, or disturbing static, in such equipment. Electrically conductive glass panels, with a transparent oxide film grounded to the fixture, intercept this interference and prevent it from entering the occupied space.

Safety is another function for which special glass panels are particularly suited. In recreation areas, mental institutions and prisons, one of the chief concerns with regard to lighting panels, regardless of material, is the possibility of breakage. When broken, most panels, regardless of material, fracture into jagged pieces of various size. As a result, tempered glass panels have traditionally been used in these applications. Tempered glass not only resists breakage; but, if it *is* broken, dices safely into harmless particles with blunt edges. A new chemically-strengthened glass panel is now being used for these applications. Although it is only about half as thick as ordinary ¼-in. tempered glass, it is even stronger, and retains the same excellent dicing characteristics. Indeed, this new chemical strengthening method now makes it possible to use glass panels in large-area lighting fixtures. A new flush-mounted crystal prismatic glass panel strengthened by this method is U.L. approved for any size up to a nominal 4- by 4-ft panel.

Glass for appearance

The versatility of glass lighting ware is not restricted to one of pure function—it can be an esthetic element as well. Surface-etched opal glass panels can offer exceptionally even light diffusion, completely hiding the lamps. In addition, the etching completely eliminates surface reflections. The result: a luminous ceiling, with a velvet-like appearance.

However, opal diffusing panels are less efficient than crystal-clear prismatic panels. In the past when lighting efficiency has been of prime importance, prismatic panels have been used rather than opal panels, at the expense of a "soft" appearance. But now a new glass panel, a crystal prismatic, has been developed to provide both efficiency and the warm, soft look of opal.

The economy of glass

While—not long ago— the cost of glass panels was generally considerably higher than plastic panels, it is now much more competitive in initial cost. A new crystal prismatic panel is about the same price as acrylics.

The efficiency of a glass panel depends on the type of glass used in its manufacture. In some rare instances, ordinary lime glass is used. You can recognize lime glass by looking at its edge, which will be distinctly green. This cast is caused by the impurities in lime glass. Of course, in light transmission, color is subtractive. A green appearance means that the impurities in the glass are filtering out some of the other colors, which means they are filtering out light. So although lime glass is relatively inexpensive, it does sacrifice efficiency.

Most glass lighting panels are made of crystal glass. And, as its name implies, crystal glass is water clear. Viewed from the edge, it has no color. For example, the effective transmittance (the ratio of the light output of a fixture with the panel installed vs. the light output without the panel) of the most widely used crystal prismatic glass panels is about 83 to 89 per cent, depending on the type of fixture, lamp spacing, and number of lamps used. This compares to an effective transmittance of about 70 to 76 per cent for lime glass panels.

Even opal glass panels are extremely efficient, because, rather than relying on dispersions of opaque pigment for their diffusion, they are made from two crystal glasses with different indexes of refraction.

In short, glass today is a family of materials with characteristics, capabilities, and uses far broader than in the past. And these capabilities have greatly extended the services it provides in lighting ware. Yet its natural beauty and permanence—the qualities that have for centuries commended glass to architecture—remain as important in design as they always have been.

for more information circle selected item numbers on reader service inquiry card, page 293-294

Newly designed electrical fixtures have neat, compact appearance

1. The new *G6-LA* power and telephone service fitting has a specially designed base for use with both underfloor and header-duct systems. The large inside area of the low potential section can accommodate up to three Amphenol telephone connectors. Buzzers or screw-type connectors can be easily fastened to the fitting base. Brackets which will hold up to four 44a connector blocks can also be mounted.

The low-silhouette, satin-aluminum enclosure gives minimum floor obstruction and fits in well with different types of floor finishes.

Provision is made for possible future upgrading of telephone service without requiring any additional modification of the fitting. ▪ Square D Company, Lexington, Ky.

Circle 300 on inquiry card

2. An electric fan-coil thermostat for four-pipe heating/cooling units has recently been introduced. Because the new device includes an integral two-speed fan switch, it can substitute for the separate thermostat and switch at present used in some installations. The new device is designed to fit in a standard electrical outlet box.

The thermostat is designed to prevent sudden switching between heating and cooling as a result of minor room temperature fluctuations. Automatic sequencing of heating and cooling is provided. Thermostat range is from 55 to 95 F, with a simply marked "warmer/cooler" scale.

The switch, which is designed to handle large and small units, has high-low-off positions, and when in the off position automatically closes the cold-water valve. Rating for the switch is 4.4 amps at 120 volts ac; and 2.2 amps for 240 volts. The thermostat is rated at 0.32 amps at 120 volts, and 0.16 amps at 240 volts, which is adequate for the small motorized valves normally used on fan-coil units.

For installations where separate switches are already supplied, the new device is available as a thermostat only. Both thermostat cover and mounting plate are finished in satin chrome. ▪ Honeywell Commercial Division, Minneapolis, Minn.

Circle 301 on inquiry card

3. Recommended for installation whereever unauthorized use of switches can endanger life or property, the new *4600* weatherproof assembly with locking cover is installed flush with the wall and cannot be pried open, thus affording protection from vandals and extreme weather conditions.

The adapter, frame and cover are of heavy cast aluminum making them suitable for outdoor use—although they can also be used indoors. All other metal components are of non-ferrous metals to eliminate the possibility of rust or corrosion.

The new assembly can be used with Pass & Seymour outlets up to 50 amps, and 15.20 and 30 amp switches.

Concealed heavy screws and mortars hold the unit in place, while a neoprene gasket seals the cover to the frame. ▪ Pass & Seymour, Syracuse, N. Y.

Circle 302 on inquiry card

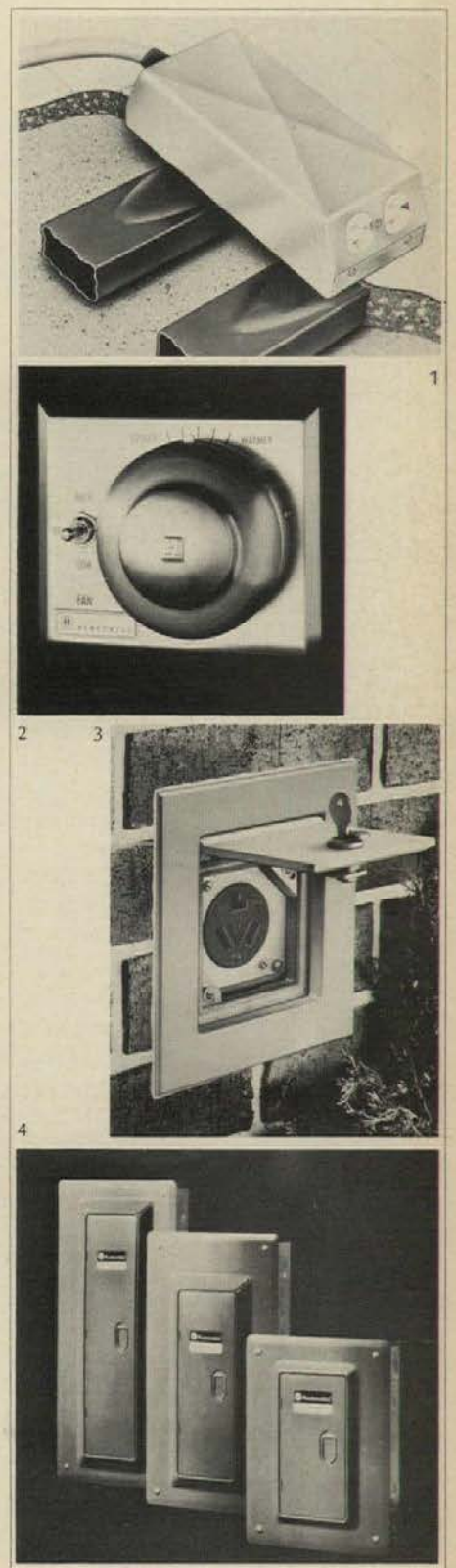
4. Residential and commercial circuit-breaker load centers made by I-T-E have been redesigned to give additional safety and a neat appearance for both in-wall and on-wall installations. The new *Pushimatic ElectriCenter* features a combination front with a flat door which has recessed hinges and a pull ring. A tumbler-type protective locking device can be installed in the pull-ring recess without affecting the appearance of the panel front.

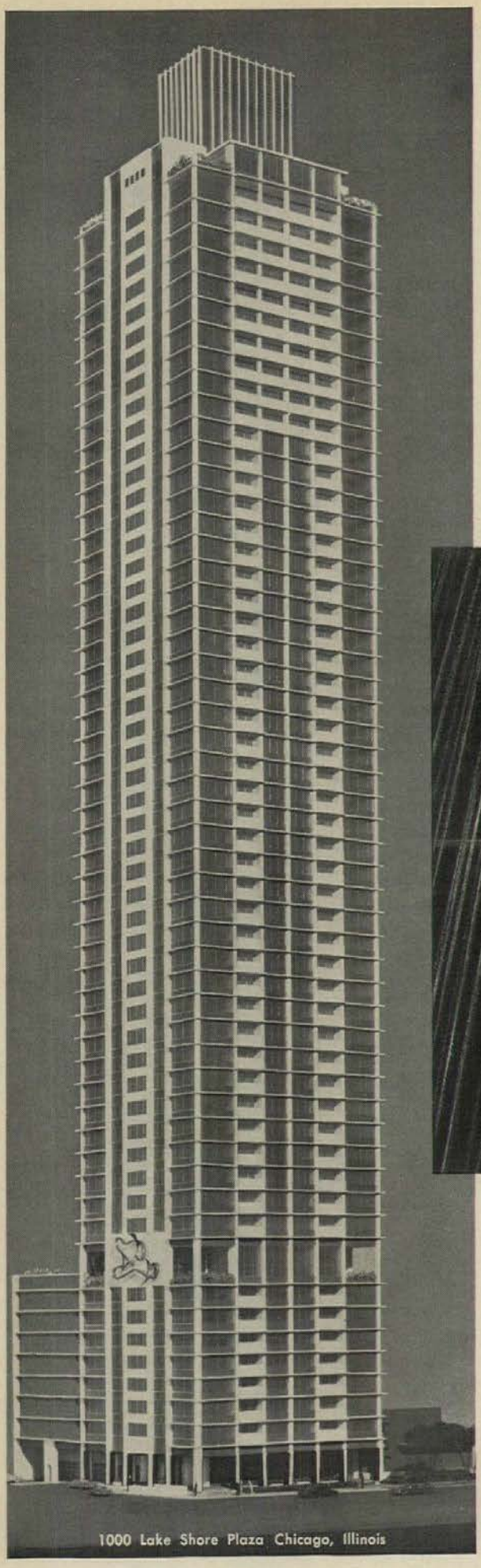
The centers are available for from two to 40 circuits. The box, interior and combination front will be packaged as a single unit to facilitate handling and distribution.

The new center is designed to cover all box connectors and to eliminate exposed sharp edges. ▪ I-T-E Circuit Breaker Company, Philadelphia.

Circle 303 on inquiry card

more products on page 214





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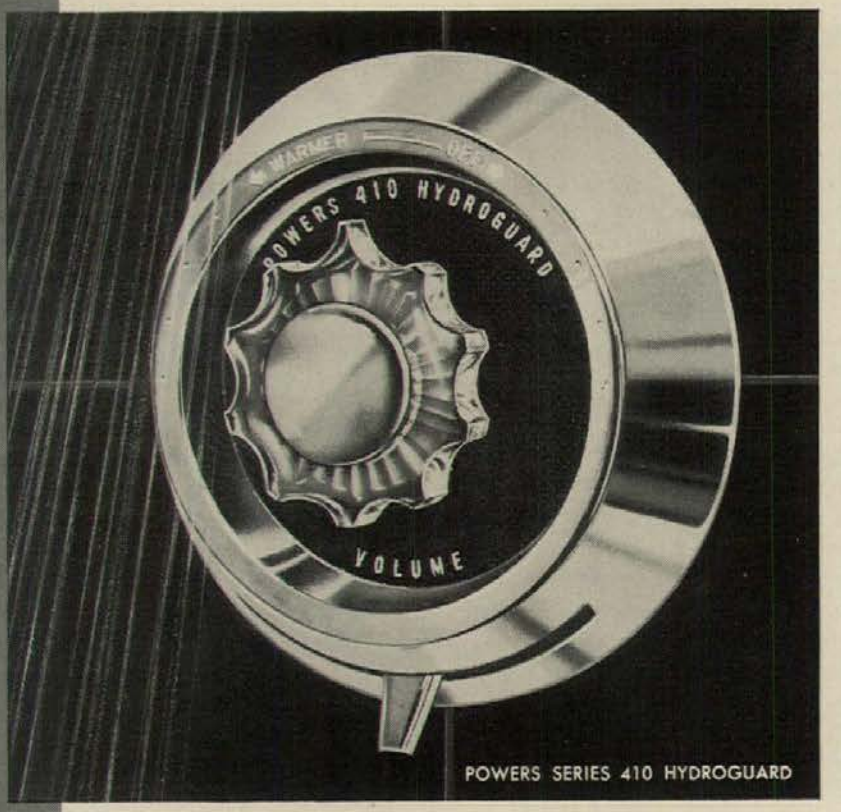
ON CHICAGO'S "GOLD COAST"

The finest of appointments for luxurious urban living have been incorporated into Chicago's new 1000 Lake Shore Plaza. Included is the finest in bathing comfort and luxury. Each bath and shower is controlled by a Powers Hydroguard. Regardless of pressure fluctuations anywhere in the building, Powers Series 410 Hydroguards always maintain bather-selected water temperatures.

For bathing comfort, convenience and safety — always specify Powers Hydroguards.

OUR 75th YEAR



POWERS SERIES 410 HYDROGUARD

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Harold L. Perlman, Chicago, Ill.

Architect:
Sidney H. Morris & Associates, Chicago, Ill.

Consulting Mechanical Engineer:
Nachman Vragel & Associates, Chicago, Ill.

Plumbing Contractor:
Great Lakes Plumbing & Heating, Chicago, Ill.

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CONTROL SYSTEMS SINCE 1891

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THE POWERS REGULATOR COMPANY
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For more data, circle 88 on inquiry card

for more information circle selected item numbers on reader service inquiry card, pages 293-294

STEEL PIPE RADIANT HEATING SYSTEMS / A 36-page booklet has just been issued which contains useful data on radiant-heating systems installed in floors, walls and ceilings. The history of radiant-panel heating, its advantages, design and installation techniques are discussed and illustrated with photos, detail drawings and performance charts. The fabrication of grids and coils, coil installation techniques and methods of providing for expansion are dealt with in considerable detail. Cutaway diagrams show typical installations in concrete slab and wooden floors in single and multi-story buildings, beneath finished floors, between joists, and in walls and ceilings. ▪ Committee of Steel Pipe Producers, American Iron and Steel Institute, New York City.

Circle 400 on inquiry card

DOOR OPERATORS / Automatic door operators, for concealed, overhead or surface mounting to suit a wide range of needs are on display in an illustrated catalog. Photographs of models, detailed description and specifications are given in addition to a selector chart which enables buyers to choose the exact model to suit individual requirements. Photos and details of the company's switching equipment and accessories are also given. ▪ Norton Door Closer Division, Yale and Towne Inc., Bensenville, Ill.*

Circle 401 on inquiry card

GUIDE TO TRANSFORMERS / A new 28-page publication describes General Electric's complete line of *QHT* dry-type general-purpose transformers for use in industrial facilities, office buildings, schools, hospitals and stores. The new series includes ratings of 25 va through 1000 kva for control, small power, buck-boost, lighting and similar applications. The transformers incorporate a large number of improvements which are said to provide increased performance levels, greater reliability, lower sound levels, and easier handling and installation. The illustrated bulletin contains price and ordering information, dimension and wiring diagrams, operating characteristics and application suggestions. ▪ General Electric Company, Schenectady, N. Y.*

Circle 402 on inquiry card

POST-TENSIONING FOR PARKING / The advantages of *Atlas* post-tensioning systems for multiple-level clear-span parking structures as well as information on their use to provide roof parking in buildings are given in a booklet which includes case histories, construction details and detailed engineering information. Statistics of 24 different post-tensioned structures with capacities from 142 to 1,566 cars are presented in tabular form. Information given includes: owners names, number of cars, plan dimensions, number of levels, slab and beam span and thickness. ▪ Atlas Prestressing Corporation, Van Nuys, Calif.

Circle 403 on inquiry card

STORAGE BATTERIES / Complete specification data for medium-rate nickel-cadmium alkaline storage batteries have been published in the form of a new illustrated brochure. The batteries described are suitable for such applications as switchgear control, inverter systems, emergency lighting, and alarm and communication systems. The brochure includes performance and dimensional data in convenient tabular form for both steel and plastic container batteries; discharge characteristic curves are shown as are recommended float voltage settings for charging. ▪ NIFE Incorporated, Copiague, Long Island, N. Y.

Circle 404 on inquiry card

PLATE GLASS / The fifth edition of the company's architectural data handbook giving basic information on all the company's products used by the architectural profession has just been published. Information is given on various types of flat glass products, architectural metals, doors and entrance materials, sealants, fiber glass, *Foamglas* insulation, glass-block building units, and paints for interior and exterior application. Information is organized into sections on different product types and is supplemented by a general data section. Generic term headings are on the right-hand pages with product name headings on the left. The 136-page, pocket sized book also contains detailed graphs, diagrams and charts to illustrate the text. ▪ Pittsburgh Plate Glass Company, Pittsburgh, Pa.*

Circle 405 on inquiry card

ELECTRIFIED TRACK LIGHTING / The *Lytespan* system of spot and flood lighting by means of an electrified track which can be recessed as well as surface or stem mounted is described in an illustrated brochure. The track itself and the different kinds of *Lytespot* lighting units which can be used with it are fully illustrated with relevant performance and ordering data. A slide rule is also included which, given approximate mounting distance, aiming angle and required footcandles, shows the appropriate lamp type, beam height, spacing and available *Lytespots* which can be used to produce the desired lighting effect. ▪ Lightolier, New York City.*

Circle 406 on inquiry card

LABORATORY EQUIPMENT / Furniture and accessories for school, research and arts-craft laboratories are presented in a handsome catalog. As well as tables, benches, storage cabinets, table tops, hoods and blowers, there are sections on electrical and other service fixtures, drain fittings, door and lock hardware. Notes are included on the general principles of laboratory planning, and a special pull-out supplement gives details of modular components which can be used as the basis of many different types of laboratory design. Letter requests to ▪ Labcraft, Division of Metalab Equipment Company, Hicksville, Long Island. N. Y.

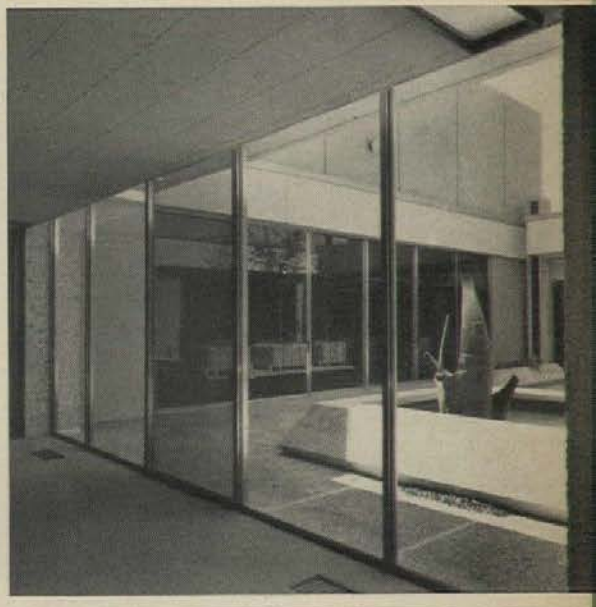
FIRE FIGHTING EQUIPMENT / An up-to-date listing of the company's current line of interior fire-fighting equipment is contained in a comprehensive new catalog. Among the items described and specified are: hose cabinets, extinguisher cabinets, combination hose and extinguisher cabinets, angle valves, fire hose nozzles, portable fire extinguishers, and a wide range of accessories. The new catalog contains a condensed cabinet-specifying form which is said to facilitate the ordering of complete hose and/or extinguisher cabinets with appropriate fittings and components and suitable accessories. ▪ The Fyr-Fyter Company, Customer Services Department, Dayton, Ohio.*

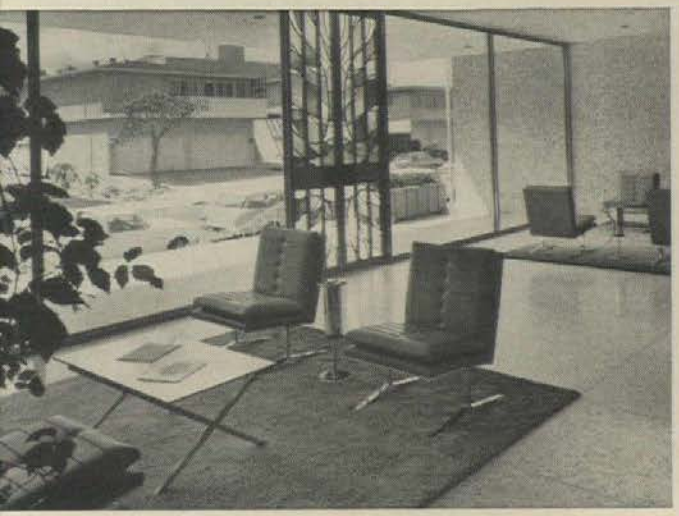
Circle 407 on inquiry card

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

more literature on page 252

OPEN
INVITATION
TO ARCHITECTURAL
ELEGANCE





Sumitomo Bank of California* and Western Conference of Teamsters Building/Shigenori Iyama, A.I.A., architect
Entrance doors by The Alumiline Corporation, Providence, R.I./Sliding doors by Carmel Steel Products, Downey, Calif.

The strength of lustrous stainless steel eliminates the unnecessary, unsightly bulk that obstructs natural light. Its warp-resistance keeps doors and frames perfectly aligned and snug-fitting, so heat stays in and weather stays out. Its rugged resistance to forcible entry stops intruders, adds maximum security. And of course, its resistance to corrosion and marring means minimum maintenance.

Yet with all these practical advantages, stainless steel doors and entrances invite architectural elegance too. They enrich airy facades; they brighten massive masonry; and they gleam—lastingly and appropriately—in city streets or country highways.

Now—as the result of new fabrication techniques—slim-line doors and entrances of stainless steel are available from stock at a price that puts them within reach of every architectural budget. Contact the manufacturers credited above for detailed information on stainless doors and entrances. Write to our Architectural Services for further information on stainless steel.

STAINLESS

Jones & Laughlin Steel Corporation
STAINLESS and STRIP DIVISION • Detroit 48234

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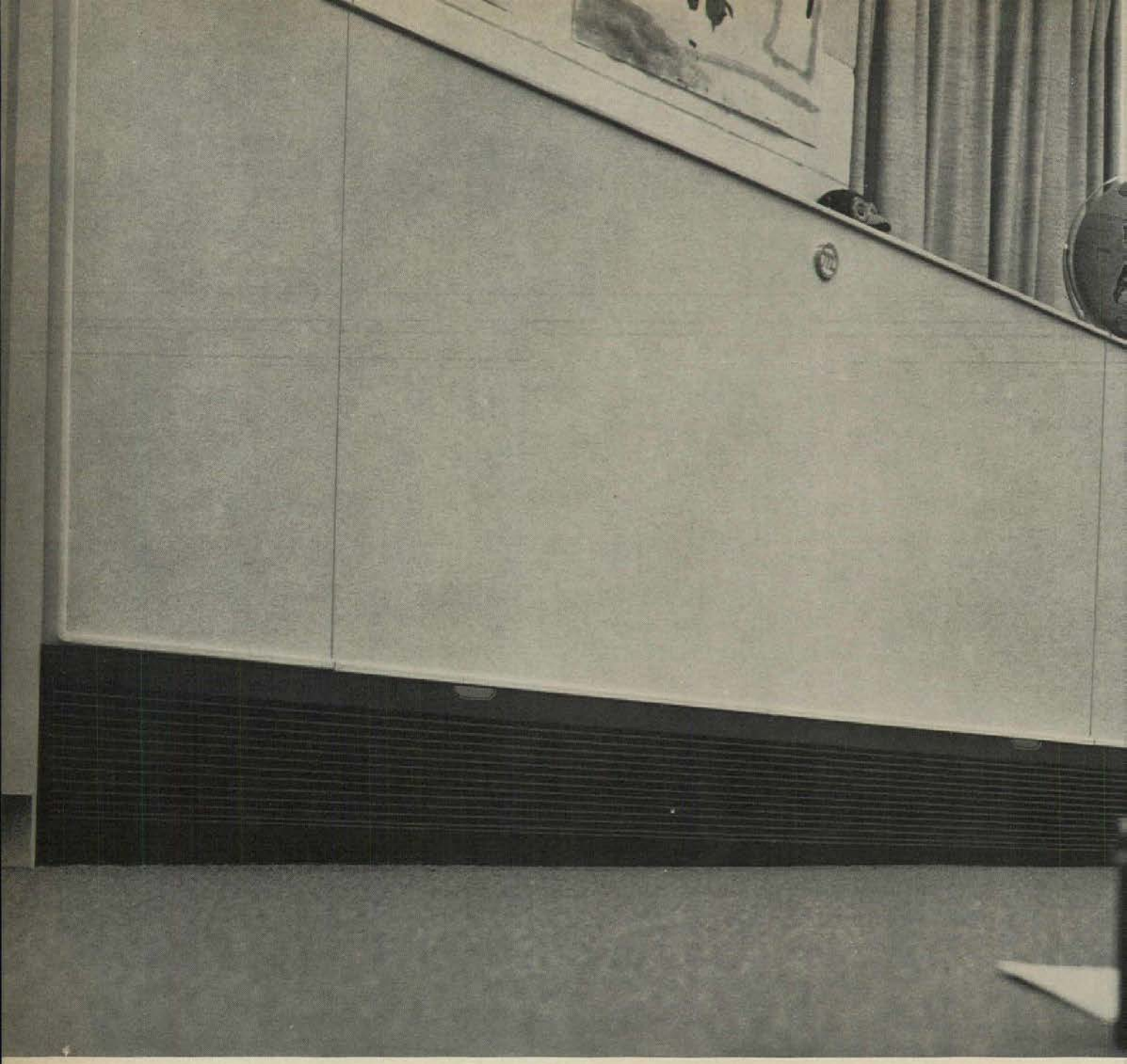
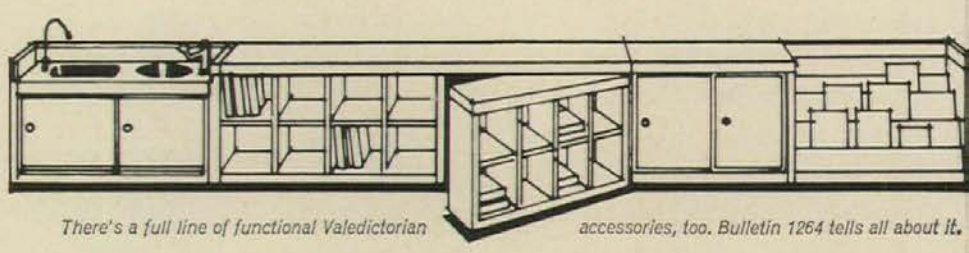


1 of 21 reasons



There's a full line of functional Valedictorian accessories, too. Bulletin 1264 tells all about it.

why Central chose Modine Valedictorian

This reason's name is Jenny. Some f the other reasons are Janet, Char-e, Kim . . .

After all, they're the most im-portant reasons why anyone should hoose a modern Valedictorian unit entilator for classrooms. It creates perfect environment for them—omfortable, and healthful, too.

That's because Valedictorian is lesigned to handle the *entire* air conditioning function — heating, cooling, ventilating and dehumidification (or any part, if you like).

A built-in "weather center" controls Valedictorian's unique full damper system. It stays sensitively alert to the class' needs and responds with fresh, filtered air at the right temperatures — before Jenny or any of the other "reasons" even begins to feel discomfort.

The response is automatic.

By the way, Valedictorian is so quiet you can whisper over it. Listen to one and hear for yourself.

The name is Valedictorian. It comes from Modine in a rainbow of decorator-color enamel and vinyl finishes. And it costs a lot less than you might think.

How many reasons do you have to use Valedictorian in your school?

V1524

MODINE

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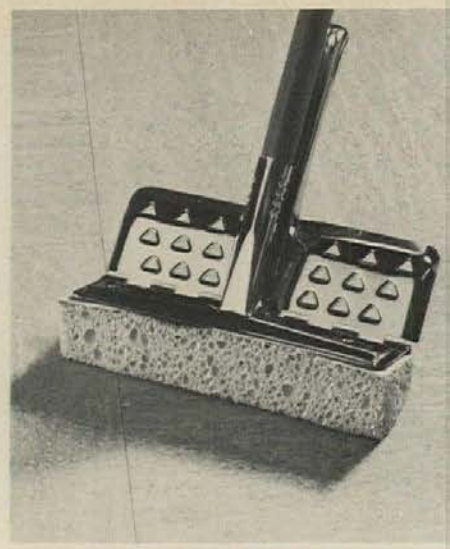
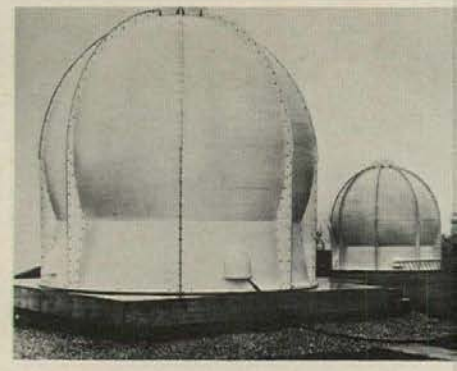
For more data, circle 90 on inquiry card

continued from page 207



ABRASION RESISTANT FLOORS / Recommended for elevated floor systems in computer rooms, clean rooms, and other similar installations, *Doublewear* Micarta laminated plastic is said to resist the accumulation of dirt and dust, does not indent under normal heavy equipment, and requires no wax or polish but can be cleaned with a simple damp cloth. A special process is used to bond fibrous sheets to thermosetting materials to form a flint-like nonporous surface. Available in large tile sizes ⅛-in. thick, the material can be supplied in six different patterns. ▪ Westinghouse Decorative Micarta Division, Hampton, S.C.

Circle 304 on inquiry card



FIRE RETARDANT POLYESTER RESIN / This new product, *IC-6006*, is said to be 20 per cent lighter in weight than resins of comparable flame retardance, but has very high strength and resistance to impact. The new nonchlorinated resin has an A.S.T.M. flame retardant rating of 50 to 80 and was specially developed to speed up and assist the manufacture of a number of glass-fiber reinforced products, including building material components, space and defense equipment, marine equipment, automobile bodies. ▪ Inter-Chemical Corporation, Clifton, N. J.

Circle 305 on inquiry card

more products on page 217

Nurses' station and reception area

Count on

St. Charles

for designed efficiency in custom casework

Knowing the proper utilization of space is of major concern in the building or remodeling of hospitals, St. Charles creates custom casework that fulfills the ultimate in convenience, flexibility, efficiency and economy. Excellence of design and craftsmanship are traditional with St. Charles. But tradition doesn't limit St. Charles' technical and productive resources. Their versatility assures the solution of every modern requirement, every space problem, every decorative theme . . . perfectly.

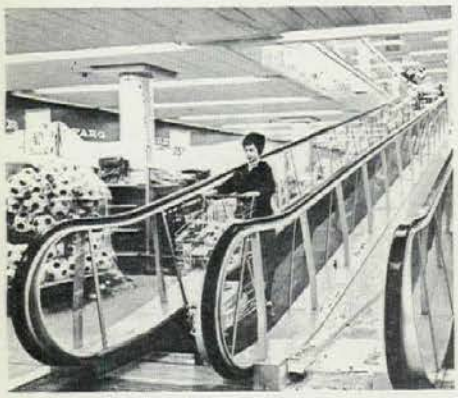
30 years of leadership in creating custom casework

"St. Charles Hospital Casework" available upon request.

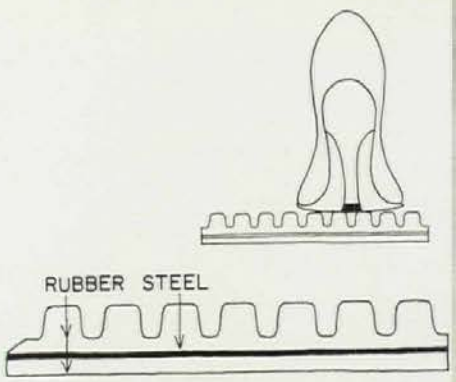
HOSPITAL CASEWORK DIVISION

ST. CHARLES MANUFACTURING COMPANY
ST. CHARLES, ILLINOIS

continued from page 224



MOVING SIDEWALKS / The Sandvik Steel company has formed a new division to deal exclusively with the manufacture of moving sidewalks, known as *Movators*. A special, rubber-covered steel-belt construction provides a combination of strength and rigidity with a non-slip surface. Longitudinal grooves molded in the rubber cover facilitate the use of these sidewalks for wheeled carriages and carts, but are sufficiently narrow so as to prevent women's stiletto heels from catching. Typical areas of application for the *Movator* include

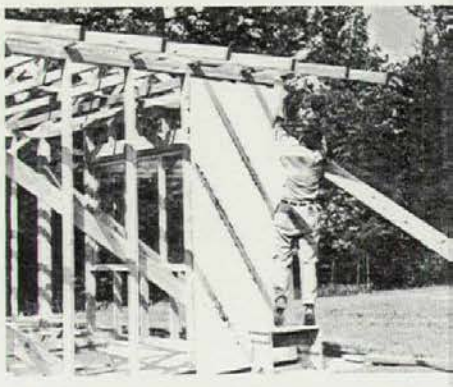


transport of passengers between airplanes and airport terminals, between stadiums and parking lots and up and over steep outdoor terrains, at subway transfer stations and in stores. ▪ Sandvik Steel Inc., Fair Lawn, N.J.

Circle 310 on inquiry card

AREA LIGHTING HIGH-INTENSITY LAMP / Minor modifications of the Crouse-Hinds' *Profile Light* for general area illumination have successfully adapted it for use with General Electric's high intensity *Lucalox* lamp as well as longer life metallic vapor and mercury light sources. The *Profile Light*, which was introduced last fall, is based on a specially designed asymmetrical reflector which gives maximum beam utilization on the lighted area. The combination of this design with the high intensity lamp is said to make possible new high levels of area lighting. ▪ Outdoor Lighting Department, Crouse-Hinds Company, Syracuse, N.Y.

Circle 311 on inquiry card



WEATHERPROOF BUILDING PANEL / *Reynoply*, a new building panel which functions as combined sheathing and siding and when installed produces a board-and-batten appearance, is at present being test marketed. The plywood panel which has painted aluminum sheet laminated to the exterior side and reflective aluminum foil on the reverse side can be applied directly to studs in a single operation. ▪ Reynolds Metals Company, New York City.

Circle 312 on inquiry card

more products on page 248

Beauty and Permanence for a House of Worship

ST. ANDREWS PRESBYTERIAN CHURCH
Tucson, Arizona

ARCHITECTS:
Cain, Nelson and Wares, P.C., Architects

TILE by LUDOWICI:
Designer Pattern Smooth Gray

WIDE SELECTION OF OTHER PATTERNS, TEXTURES & COLORS

Modern Designer Smooth Gray, selected by the architects, is one of a variety of patterns and colors permitting creative flexibility—especially important where the roof plays a significant role in the overall design.

For full information on Ludowici-Celadon roofing tile, write for our colorful brochure sent free on request.

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Manufacturers of quarry tile, the nation's largest producer of roofing tile and Nailon facing brick.

For more data, circle 104 on inquiry card

or more data, circle 103 on inquiry card


MODERN makes a low-cost
movable wall system
that's a real lemon.
(Color, that is!)
And if you don't like lemon, you have a choice
of 33 other colors, 16 wood-grain finishes and 6 striking patterns!

It's also crack, chip, peel, stain and fade resistant... because the surface panels are

VIDENE by GOODYEAR

Modern's new Videne surfaced wall systems offer you beauty and color styling unlimited: 34 colors, 6 patterns and 16 wood grains all architecturally coordinated. Videne surfaces are exceptionally tough and durable. They cost little more than wet finishes, last infinitely longer. Finishes are low-gloss, easy to clean, unaffected by temperature changes, and are highly moisture resistant.

For style, beauty, quality and economy, Modern wall systems, surfaced with Videne paneling by Goodyear, are in a class by themselves. If you'd like to know more about them, just write us. We'll be happy to assist you in developing a custom-designed movable wall system for any project you may have in mind.

The Videne wood-grain panels have realistic texture and figure... the natural beauty and feel of fine woods.

Here's some essential information about Modern movable walls with Videne surfaces.

Modern offers you four movable wall systems, to provide for the widest variety of styling, special requirement and budget situations.

Colors and designs—40 in all—have been styled to meet the most rigorous standards for architecturally oriented interiors. Special colors can be developed for larger projects.

Color stability. All colors are non-fading; color vibrance and intensity are assured for many years.

Wood-grain finished panels have a non-repetitive uniformity of pattern and grain that blend together without painstaking matching.

Wearing qualities. The Videne panel surfaces are tough and mar-resistant for long life, lasting beauty—up to three times as abrasion resistant as high-pressure laminates. Videne surfaces are dimensionally stable.

Maintenance is minimal. Smooth, low-gloss surfaces are easy to clean—shed dust and dirt. Highly resistant to stains. Surface abrasions and scratches can be removed, original luster restored, with ordinary cleansers.

Installation is quick, simple, low-cost. Panels are easy to saw, rout, joint, drill or shape with conventional tools. Extra-large, built-in raceways reduce wiring costs.

Maximum flexibility. Completely modular, non-progressive wall systems allow removal of any section without disturbing wiring or adjacent panels.

Several sound cores available—STC ratings from 30 to 43.

Matching Videne panel system for fixed walls. Complete with all moldings, match Modern movable partitions.

Matching doors, Videne surfaced, in a wide choice of styles.

Custom treatments. A choice of trim, and other special effects enable you to achieve individualized interiors.

Quality control of Modern movable walls is continuous throughout production. Extremely high standards of materials and workmanship eliminate costly on-site labor, assure life-long satisfaction.

SWEET'S CATALOG FILE NO. 22A/MO VIDENE,™ for paneling, doors and molding systems. The Goodyear Tire & Rubber Company, Akron, Ohio 44316

MODERN PARTITIONS, INC. MODERN HOLLAND, MICHIGAN 49423

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Air conditioning costs putting the heat on your budget?

Switch to International® gas power.

"Trouble-free, quiet." — maintenance superintendent, Howard Johnson's Motor Lodge, Somerset, Massachusetts.

Whatever you've got to cool, you can beat the peak demand with International gas power. Chances are you can save a significant amount—by taking advantage of low gas rates.

You'll be ahead on dependability, too. International builds gas engines to run for thousands of hours of trouble-free operation.

Check us out. Our full line of gas engines, 45 to 310 intermittent horsepower, can be combined to meet your exact needs. Contact the Engine Sales Department, International Harvester Company, Melrose Park, Illinois 60160.

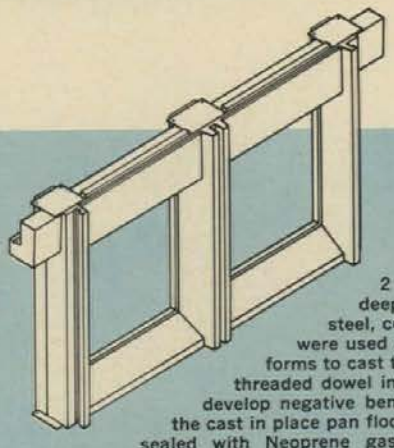
INTERNATIONAL ENGINES

NEW CREATIVITY
IN ARCHITECTURAL
CONCRETE

Huntington Trust Building, Columbus, Ohio. Associated Architects: Skidmore, Owings & Merrill, New York, N. Y. and Benham, Richards and Armstrong, Columbus, Ohio. Gen. Contractor: Frank Messer & Sons, Cincinnati, Ohio. Structural Engineers: Weiskopf & Pickworth, New York, N. Y. Precast Units: by the Marietta Concrete Company, Marietta, Ohio.

The tallest to date . . . 12 stories of precast load bearing panels made with MEDUSA WHITE

17 ton precast load-bearing units for the tallest structure of its type are made of Medusa White . . . the original white Portland Cement . . . used for developing a tinted matrix with silica gravel and sand blasted for architectural exposure. Because of Medusa whiteness, the material is ideally suited for this use. Ask your precast producer about Medusa White . . . or write us direct.



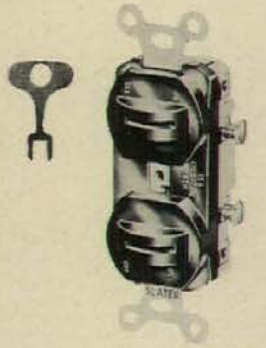
Typical load-bearing precast unit is 12 feet high x 23 feet, 8 inches wide and 2 feet 7¾ inches deep. Combinations of steel, concrete and plastic were used to construct 12-ton forms to cast the units. 1"-3", #5, threaded dowel inserts were used to develop negative bending moment with the cast in place pan floor system. All joints sealed with Neoprene gaskets. 22 different shaped units were incorporated requiring 6000 psi concrete in 28 days.

MEDUSA PORTLAND CEMENT COMPANY
P. O. Box 5668, Cleveland, Ohio 44101
WHITE AND GRAY PORTLAND CEMENTS • WHITE, GRAY AND CUSTOM COLOR MASONRY CEMENTS • ChemComp SHRINKAGE-COMPENSATING CEMENT

For more data, circle 107 on inquiry card

Remember way back

when a switch was used just to turn lights on and off?

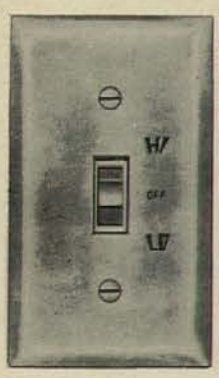


KEY-OPERATED LOCKING TYPE SWITCH # 690

Prevents operation of lighting, motors and equipment except by authorized personnel. Key operated. A.C. quiet switches are available in several ratings, in duplex or in combination with a receptacle or a red pilot light indicator.

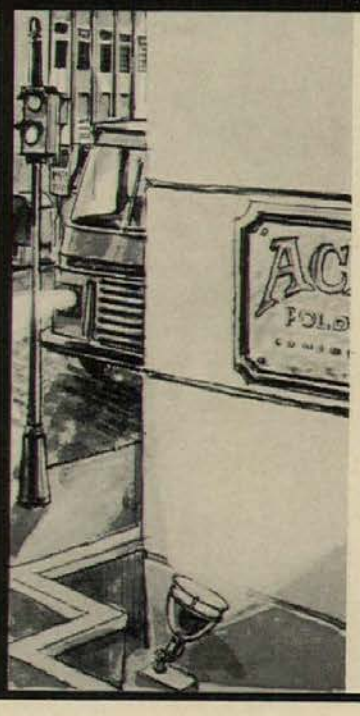
PILOT LIGHT COMBINATION SWITCH # 682

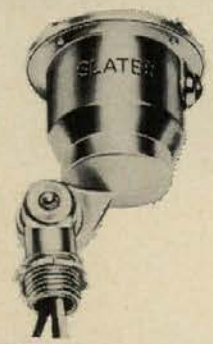
AC quiet switch can be wired as pilot light so neon glows when switch is on . . . or as a night light so neon glows when switch is off. Dozens of uses for safety and convenience—such as control of outdoor and basement lighting in the home, and all switches remote from the device or light they control—in both residential and commercial applications.



HI-LO DIMMER #HL-300

Incandescent dim switch provides economical 2-stage lighting for functional effect, such as a TV viewing room, or dramatic effect, such as a dining room. Hi (100% light)—Lo (30% light—off positions. Lo setting extends bulb life 40 times. Installs in a single-gang box.





PHOTOELECTRIC CONTROL SWITCH #PS-4

Weatherproof swivel photoelectric switch automatically turns light on at dusk and off at dawn. Residential applications include garage or porch night lights, post lanterns, driveways and walks. Commercial applications include entrances, parking areas, signs and displays, store night lights, etc. Provides safety, convenience, security.

Slater
MANUFACTURER OF MEDALIST
SLATER ELECTRIC INC. • GLEN COVE, N.Y.

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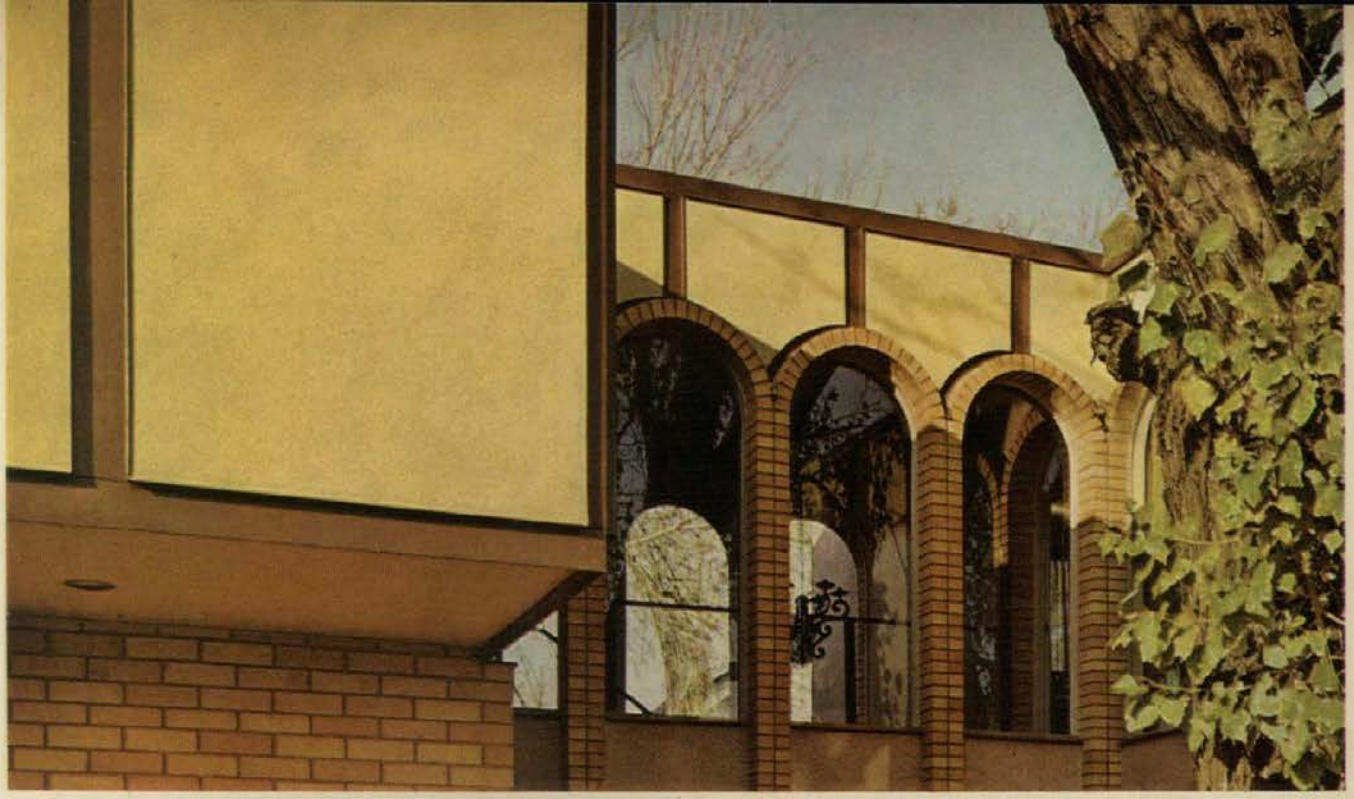


Epoxy/aggregate plywood walls give a masonry-like appearance to the Intrade Building, Salt Lake City, Utah. These low-cost walls are available in a wide selection of natural stone textures and colors. (Architect: Roger Merrill Van Frank; Builder: Calvin J. Moss Construction Co., Owner: William E. Buchanan.)

Epoxy/aggregate finishes based on Shell Epon® resin give plywood siding an attractive pebbled texture—cut building costs

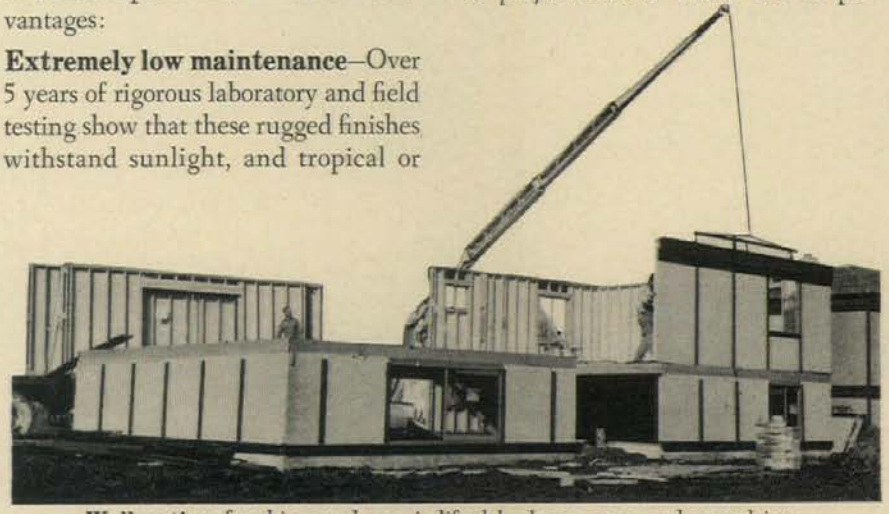
Factory-finished Hycon 75® Sanspray® siding, manufactured by Hodges Chemicals Co., Burlingame, Cal., will give many years of trouble-free service.

Now there's a new attractive look for economical plywood exterior siding. It's a remarkably durable finish consisting of natural stone aggregates and Shell Epon resin. Here are the advantages:

Extremely low maintenance—Over 5 years of rigorous laboratory and field testing show that these rugged finishes withstand sunlight, and tropical or sub-zero temperatures without cracking. They resist weathering, humidity, salt and fresh water and have an estimated service life of many years. Hycon 75 Sanspray epoxy/aggregate plywood has earned a Certificate of Qualification from the American Plywood Assn., meets FHA standards.

Low building costs—This new construction material offers the economy of *prefabrication*. Walls can be pre-assembled in any height up to 16 feet and to any desired width. They can be erected on 6 in.-wide concrete foundations. No painting, priming or staining needed before or after installation. Semi-skilled workmen can easily cut and nail the walls.

Pebbled texture of durable Hycon 75 Sanspray epoxy/aggregate plywood flatters the crisp modern lines of the Intrade Building.



Wall section for this new house is lifted by boom crane and moved into position for installation. Interior wall is completed with foil-faced fiber insulation and ½ in. dry walls. Prefabricated walls are erected quickly and easily.

Interested? Write to Shell on your letterhead at 110 W. 51st Street, New York, New York 10020 and we will refer you to the manufacturer of Epon resin/aggregate plywood siding.

Shell Chemical Company
Plastics and Resins Division

SHELL

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INTRODUCING THE NEW LIBRARY FURNITURE GROUP
BY AMERICAN DESK MANUFACTURING COMPANY

Designed by American Desk as an adjunct of Custom Quadraline,® the supreme quality, custom grade of America's most highly regarded luxury line of contemporary educational furniture, this new American Desk Library Furniture is as quiet as wooden library furniture . . . and lighter, stronger, more durable, more comfortable and more economical than wooden furniture. As for beauty, what can compare with American Desk's Char-Color Plan for custom color design? For full details on this American Desk Library Furniture Group and its Char-Color Plan for custom color design, see your American Desk representative or write

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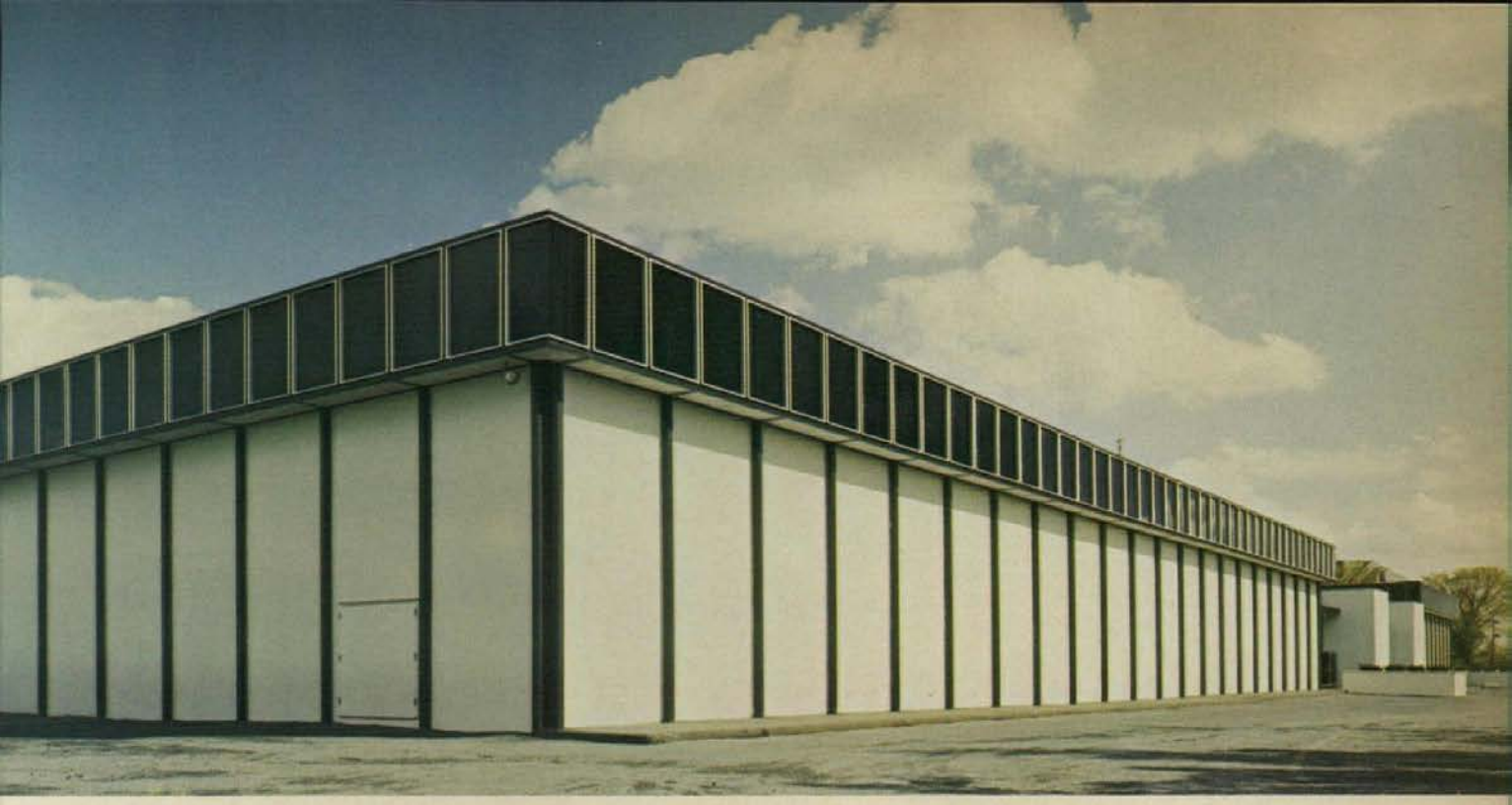

Architects: Donald J. Stephens Associates, Loudonville, N.Y.

Glazed with PLEXIGLAS® for control of breakage, glare and solar heat

The windows in the new athletic building of Albany Academy, Albany, N. Y., are glazed with transparent grey #2064 PLEXIGLAS acrylic plastic, ¼″ thick, framed in aluminum in light sizes of 4′8″ by 6′. The window design and the PLEXIGLAS provide a comfortably daylighted interior environment with low initial, operating and maintenance costs.

Solar Heat and Glare Control—Grey #2064 PLEXIGLAS transmits only 44 per cent of total solar energy with a light transmittance value of 27 per cent. The light filtering characteristic of this acrylic plastic reduces sky and solar glare with the effectiveness of sunglasses.

Breakage Resistance—One-quarter inch thickness PLEXIGLAS has nearly *twice* the breakage resistance of tempered glass in the same thickness, based on falling ball tests. Test data available on request.

To Get Further Information—For technical, specification and installation data on the full range of transparent PLEXIGLAS tints to suit varying solar energy and light transmittance values, just write to us for our new catalog, "PLEXIGLAS in Architecture, PL-688".

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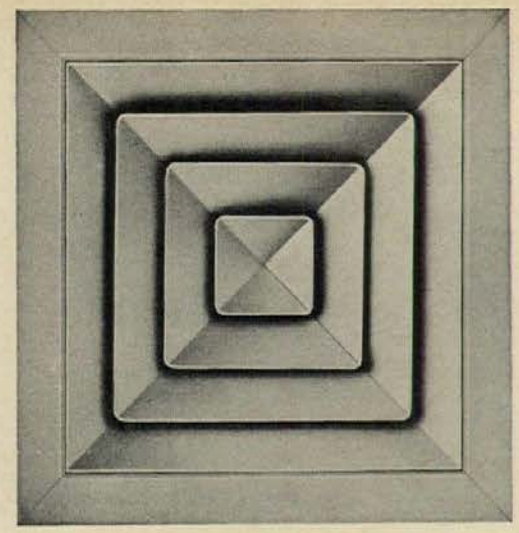
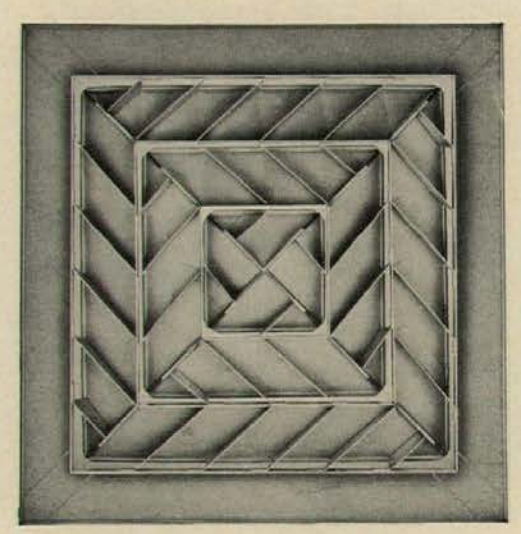


You see the FRONT...

Now look at the BACK...



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*Agitair Diffusers control all 3 dimensions of the space served.

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Terrazzo installation made with ATLAS WHITE portland cement. Westland Shopping Center, Detroit. **Architects:** Victor Gruen Associates, Los Angeles & New York; and Louis G. Redstone, Associate Architects, Detroit. **General Contractor:** Darin & Armstrong, Inc., Detroit. **Terrazzo Contractor:** Boston Tile & Terrazzo Co., Detroit.

The world's most unusual shopping center has the flooring of a lifetime—terrazzo

Detroit's new Westland Shopping Center is totally enclosed. It has two great courts, a mall and space for 55 stores and services under one roof. It also has a fountain, flowers, exotic fish, songbirds—and restful green-and-white terrazzo flooring. This flooring is invitingly beautiful now. And it will remain just as beautiful for decades to come. Long, high-traffic use cannot fade the color and pattern of terrazzo. It will never lift, curl or wear thin. The first installation is the last. ■ When you plan distinctive terrazzo floors, wainscots, counters, stairs for a lifetime of service, specify a matrix of ATLAS WHITE portland cement. Its uniform whiteness brings out the true color tones of aggregates and pigments. Ask your local terrazzo contractor. Or for an informative brochure containing actual-size color plates, write direct to Universal Atlas, 100 Park Avenue, New York, N.Y. 10017.

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Universal Atlas Cement Division of United States Steel

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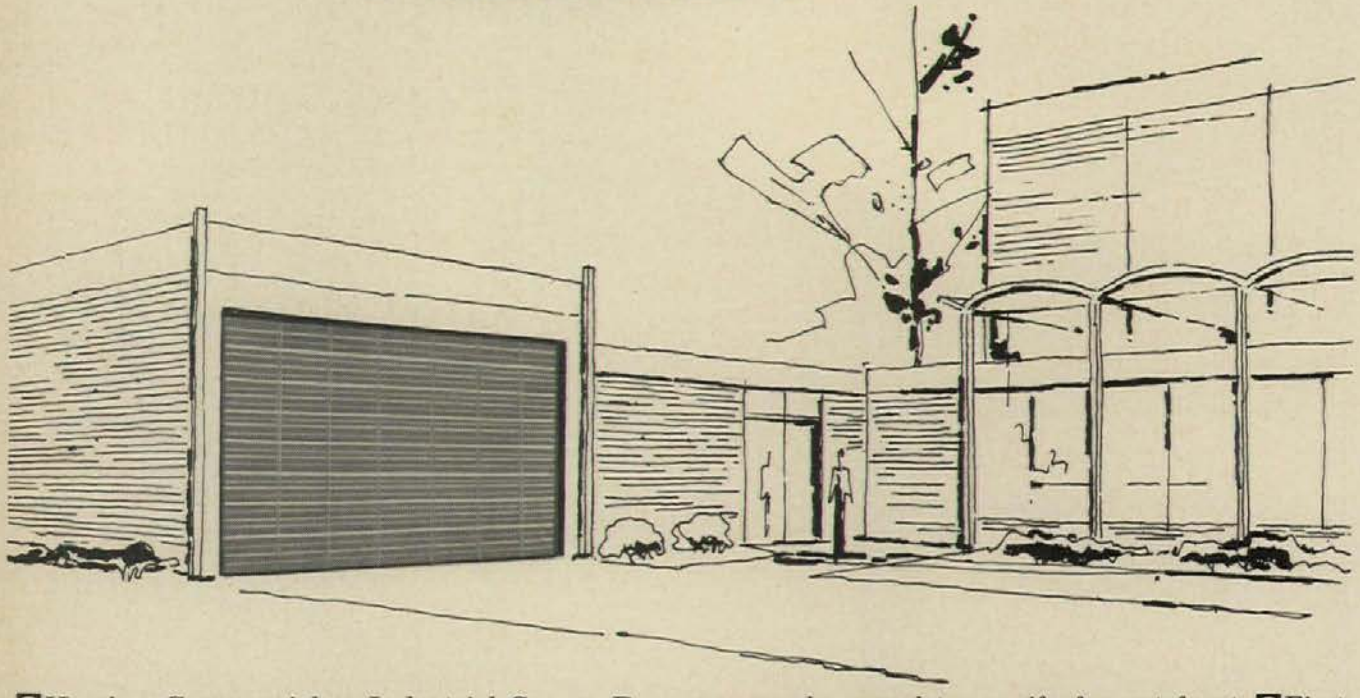
WHY YOU SHOULD CHOOSE OUT FRONT QUALITY OF FILUMA®



☐Here's a Commercial or Industrial Garage Door you can be proud to specify for out front. ☐First of all, Filuma has out front good looks with its color clear through (available in white, tan, coral or green) fiberglass that is sculptured to give it a longer look. ☐Second, Filuma has out front ruggedness that is unmatched for features like: Patented Pressure Sealing* of aluminum rails to fiberglass panels for a watertight, dust-proof bond that's also much stronger; specially designed zinc plated hardware that resists rust and wear; ball bearing rollers for smooth operation; perfect balancing for easy fingertip lift. ☐Weatherproof section joints with double overlapping meeting rails, pliable vinyl bottom weatherstrip, and an exclusive spring door holder that secures the door to the header all add to weathertightness. ☐A new chrome handled cylinder lock operates from either side. ☐ And Filuma needs virtually no maintenance . . . only an occasional hosing to keep it sparkling. Frantz will build Filuma to fit your requirements in one-inch increments up to 24′ wide by 20′ high. Special hardware for Low Headroom, High Lift and Vertical Lift requirements. ☐So you see, garage doors *can* contribute to the out front design and inside function of your buildings. Eliminate the need to hide your Industrial Garage Doors "out back" . . . use Filuma by Frantz. ☐For complete details see us in Sweet's or write:

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**Filuma Garage Doors are protected under U.S. Patent Nos. 194094, 3104699, 3160612*

THE NATION'S FOREMOST MANUFACTURER OF FIBERGLASS/ALUMINUM GARAGE DOORS

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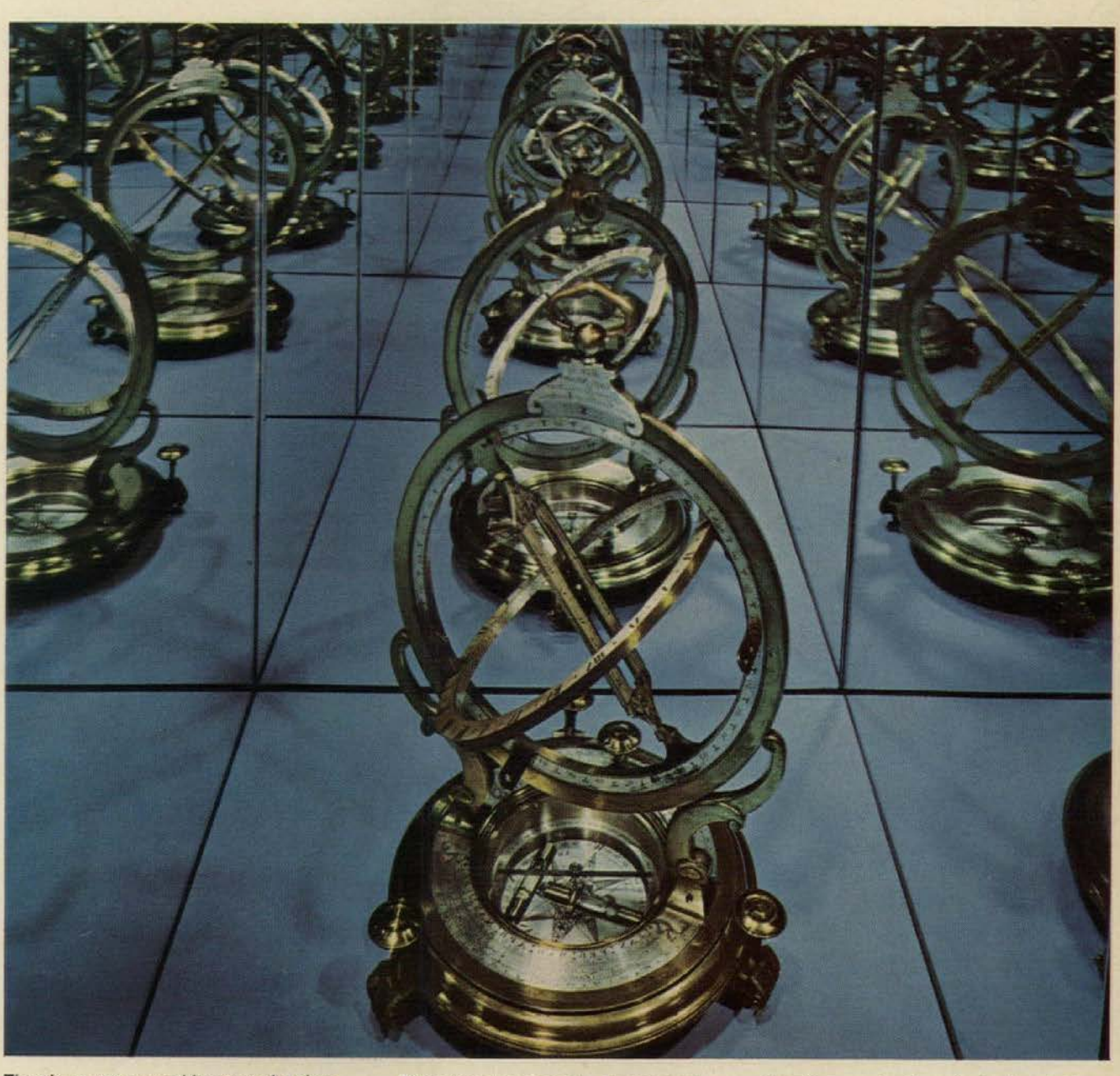
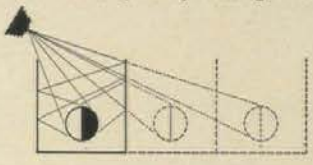
lead the world in glassmaking



There's no more searching test of a glass than to make it into a mirror, and reflect an object in it again and again. There's no doubt which glass makes today's finest, truest mirrors. It is Float glass invented and developed by Pilkingtons.



Pilkington glass is made or processed in up-to-date plants in nine countries, and behind every product are the vast resources of some of the glass industry's largest laboratories, working on quality control, and on research and development. Pilkington research and development produced Float glass which, with its new clarity and brilliance, outdates Plate glass in modern building, for mirror making and for toughening into safety glass. For the finest glass specify Pilkingtons.

There's an up-to-the-minute glass in the Pilkington range for every building need: Float • Plate • Sheet • Patterned • Wired • Heat-Absorbing • British Structural Glass • 'Armourplate' and 'Armourcast' Doors • Coloured Cladding Glass Domes • Glass Blocks • 'Insulight' Double Glazing Units • Diffuse Reflection Glass • Louvre Blades

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PILKINGTON BROTHERS LIMITED, ST. HELENS, LANCASHIRE, ENGLAND.

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Planning an x-ray department?

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There's nothing clearcut or routine about planning an x-ray department. Efficient planning requires an intimate knowledge of the advanced radiological technics used today. It also requires a thorough understanding of the complex new x-ray equipment and special procedure apparatus now being installed in many new departments.

Your General Electric x-ray representative has this knowledge. And standing behind him is the entire G-E architectural planning staff — an experienced group of planners who have worked side-by-side with architects, radiologists and administrators to help plan thousands of x-ray departments throughout the world.

Your G-E x-ray representative, along with the architectural planning staff, will work with you to define your objectives. They will study patient flow and traffic patterns . . . help prepare floor plans and submit detailed recommendations on plumbing, power, wiring and radiation protection — recommendations you'll find invaluable in the planning of a modern, efficient department. And they'll do it without cost or obligation.

To take advantage of General Electric's installation planning service, contact your G-E x-ray representative or write General Electric Co., X-Ray Dept., Milwaukee, Wis. 53201, Room C-47.

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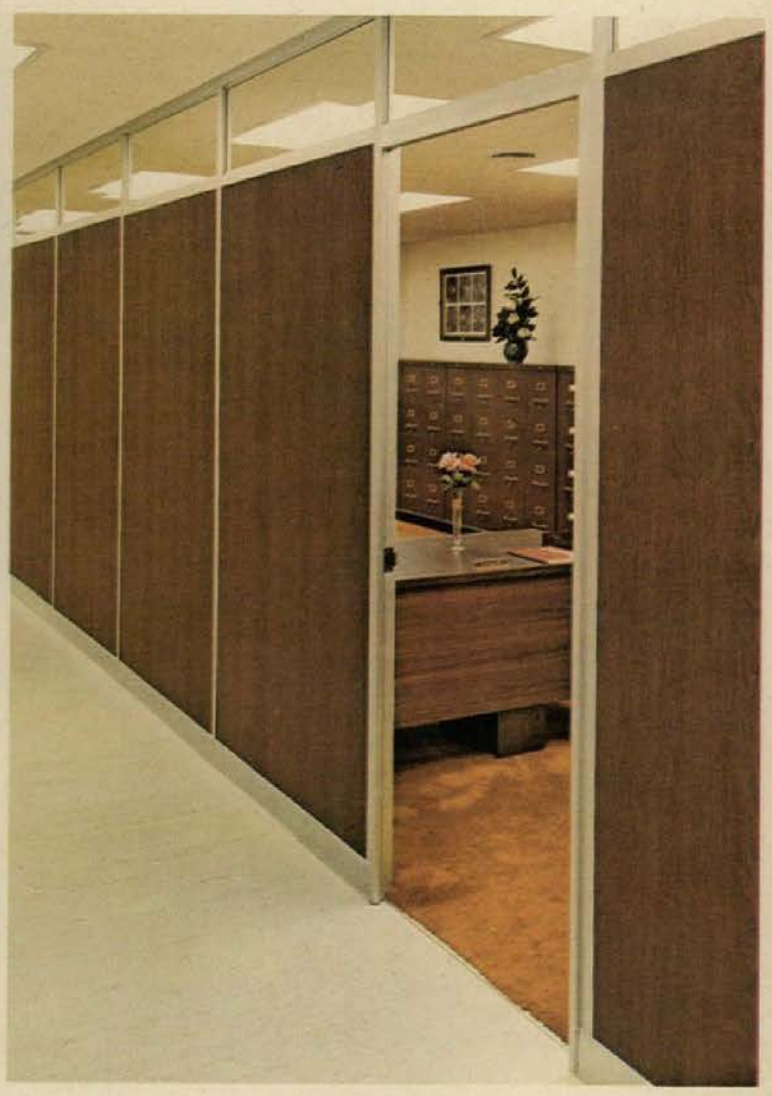

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Please send me the full-color booklet on O'Brien Quick Change Movable Partitions by Masonite.

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City _____ State _____ Zip code _____

For more data, circle 117 on inquiry card

The place:

Spacious executive offices
of Martin Marietta's Sinclair & Valentine Division,
New York City

The man:

Harold B. Cahn, A.I.D.
Harold Cahn & Associates
Frederick, Maryland

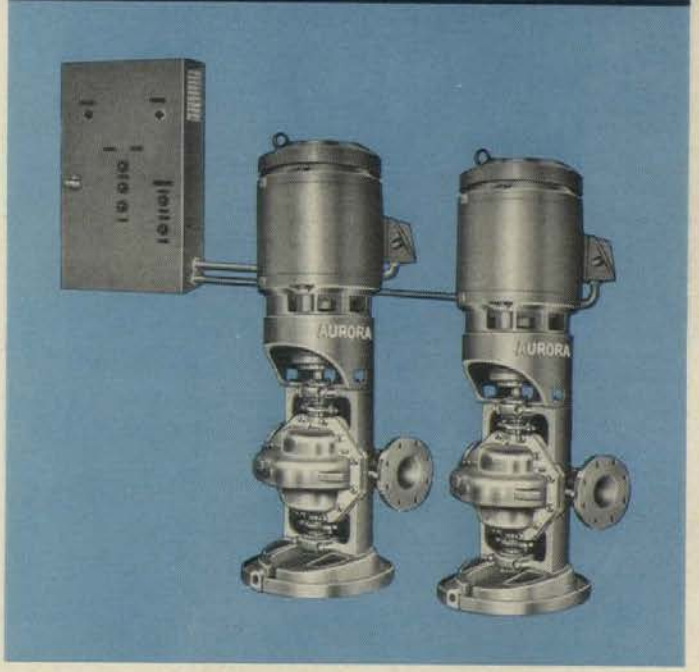
The carpets:

Bigelows. Mr. Cahn specified handsome Gropoint® Director throughout the stylish Sixth Avenue offices. Anchor Carpet Company of New York installed it.

Why do designers like Harold Cahn specify Bigelow? Because they know that for every office, hotel, or commercial building, Bigelow has or can custom-create the perfect carpet. We've done it since 1825. Our carpet counselors will give you all the help you need in solving any kind of carpet problem – at no charge. Simply call your nearest Bigelow sales office. Or for a colorful, free brochure on commercial carpets, write Dept. A., 140 Madison Avenue, New York, N. Y. 10016. Find out for yourself why

people who know buy Bigelow

Bigelow sales offices are located in Atlanta, Boston, Chicago, Cleveland, Dallas, Denver, Detroit, Los Angeles, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, Seattle.



The completely automatic solid state

AURORA® APCO-MATIC

constant pressure system is a must!!

The Apco-Matic system is ideal for installations where constant pressure must be maintained—high rise buildings, hospitals, apartments, hotels, office buildings, municipal booster stations, sewage treatment plants, chilled water service and golf courses.

Pump speeds are automatically varied to meet the system demand at any time of the day or night. The system consists of a standard A-C squirrel type, open drip-proof vary speed motor, an Aurora centrifugal pump; a solid state control center which monitors the discharge pressure and activates the motor speed controller.

Completely automatic operation. All-electric operation automatically keeps output pressure constant. The Apco-Matic reduces power consumption by taking advantage of available suction pressures. You simply mount in place, provide power, and you're in business.

Space-saving. The system eliminates pressure and storage tanks, unnecessary piping and special valving, hydraulic or mechanical variable drive devices between the pump and motor, and in some cases, unnecessary pumps. It further saves space when it incorporates Aurora's vertical series of OJV or AJVA pumps.

Tailored to your requirements. Your choice of Simplex, Duplex or Triplex models . . . vertical or horizontal pumps. Capacities to 7000 gpm; speeds 1550 to 3100 rpm; heads to 450 ft.

Write for Bulletin 710.

AP-122

AURORA PUMPS

AURORA PUMP DIVISION
THE NEW YORK AIR BRAKE COMPANY
LOUCKS AT DEARBORN, AURORA, ILLINOIS 60507

For more data, circle 124 on inquiry card

continued from page 252

RAISED FLOORING AND CLEAN ROOM COMPONENTS / A new 12-page bulletin offers complete dimensions and specifications on steel and ply-metal floor panel systems plus accessories in average installation.

Two clean room components include a combination filter-diffuser unit installed as an integral part of a ceiling and a perforated steel floor panel with adjustable openings for air flow through an elevated floor system. Both components are illustrated and described in a four-page bulletin which gives the results of filtering tests. ▪ Weber Showcase & Fixture Company, Grand Rapids.

Circle 415 on inquiry card

LIGHTING/The *Lytempo* series of square and rectangular fluorescent lighting fixtures for semi-recessed, surface, pendant or wall mounting are described and illustrated in a fold-out brochure. The fixtures are available in a range of natural wood or aluminum housings and 32 variations of interchangeable louvers, diffusers and lenses. The series were specially designed to give visual continuity throughout a building whatever the range of mounting requirements that might be involved. ▪ Neo-Ray Products Inc., New York City.

Circle 416 on inquiry card

SUN CONTROL / Aluminum sunshading devices for a wide range of building needs are described in a 16-page brochure. Information is given on fixed and operating sun controls, sun curtains and canopies, including the company's *Airfoil* shading devices and ornamental *Demi-Fins*. Detail drawings, specifications and project illustrations are among the data given in the brochure. ▪ Construction Specialties, Inc., Cranford, N. J.*

Circle 417 on inquiry card

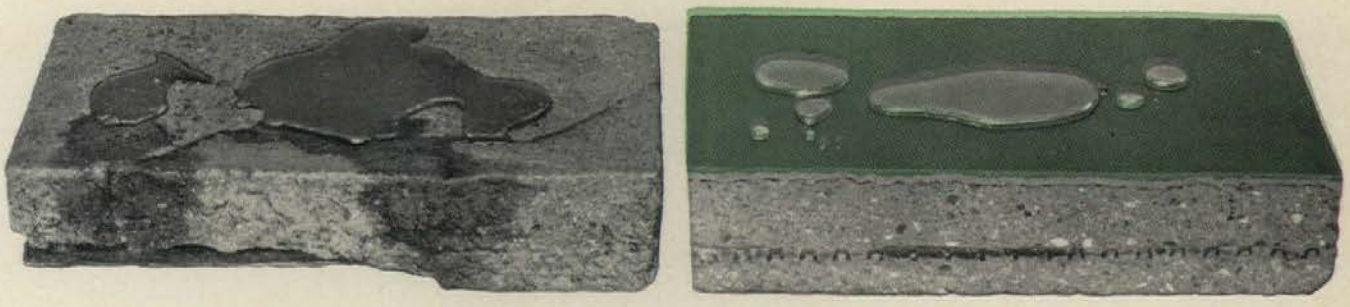
MIRRORS / "Designing with Mirrors" is a 24-page handbook planned to illustrate the effectiveness of mirrors to create depth and dimension, brightness and reflected interest. The variety of unusual mirror applications ranges from bank vaults to supermarkets, from teachings aids to television screens, from department stores to home use. The handbook supplies information on the various types, on finishing and edging techniques and on proper installation. ▪ National Association of Mirror Manufacturers, Washington, D.C.

Circle 418 on inquiry card

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

more literature on page 268

Concrete disintegrates...



...G-E Silicone Traffic Topping doesn't!

Let it snow and rain.
Let it freeze and thaw.

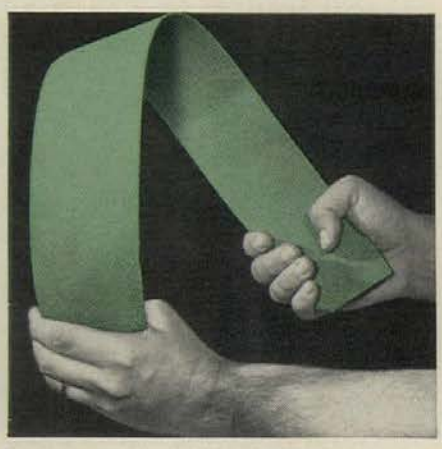
General Electric's new silicone rubber Traffic Topping protects walkways, ramps, parking areas, porches, swimming pools, balconies and other traffic areas against moisture damage.

Once on, Traffic Topping stops costly maintenance. It won't let water in, yet "breathes" to let any moisture out. Because the base material is silicone rubber, the most durable, weatherproof elastomer known (the same as Silicone Construction Sealant), Traffic Topping stays flexible and moisture proof.

Traffic Topping won't crack, it's not brittle, and it forms a tough bond to concrete, wood, steel and other floorings. It's remarkably skidproof and is not damaged by salt. Grease and oil are easy to remove. It never needs painting.

To date, no other outdoor coating has been able to stand up to weather and wear for very long. Traffic Topping will. For many years. On patios, steps, garages, runways, for instance. Anywhere there's water and traffic. For complete specifications, test results, application data, color selection and local distribution, please write Section BG5201, Silicone Products Dept., General Electric Co., Waterford, N.Y. 12188.

Quick, easy application. Just prime the surface, add catalyst to Traffic Topping, mix and trowel on. No expensive equipment needed. Only one coat is usually required, so application costs are low.



Permanent flexibility. Traffic Topping is resilient . . . expands and contracts without cracking even at temperatures as high as 300°F, as low as —65°F.

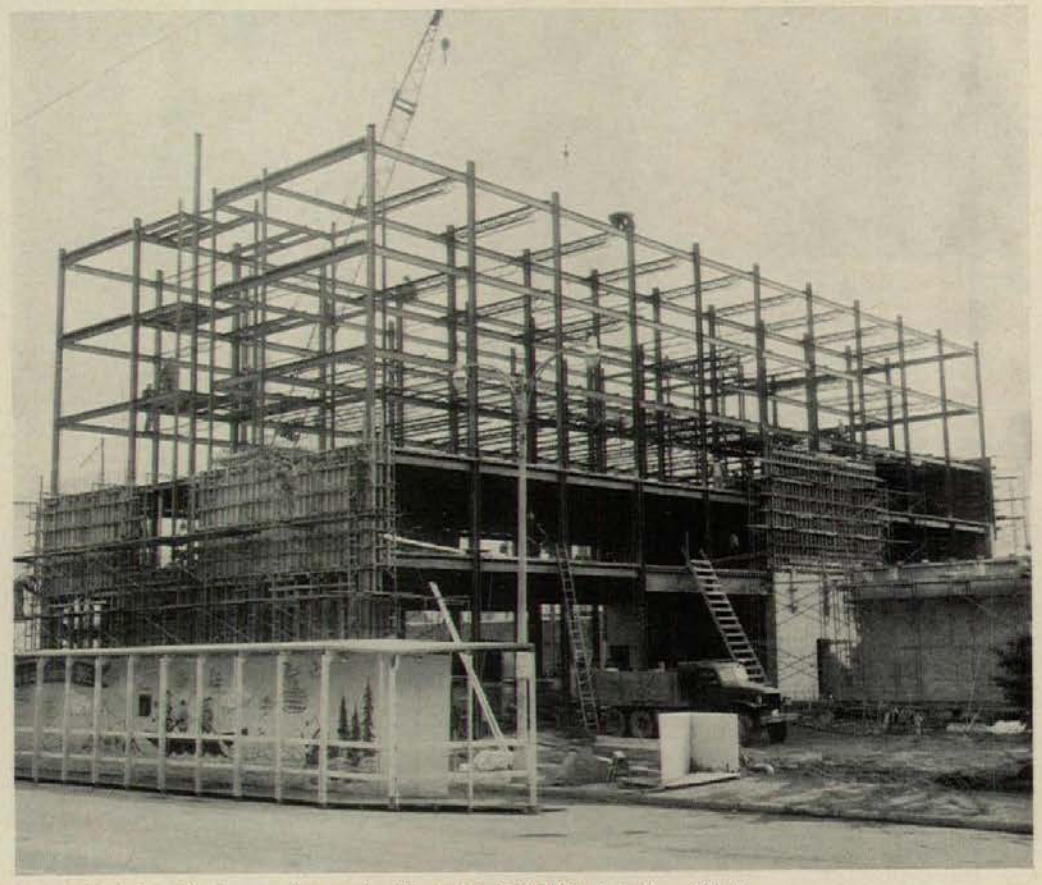
Safe, anti-skid surfaces. Even when wet, Traffic Topping provides superior traction. Excellent wear and abrasion resistance make it ideal for heavy traffic areas.

GENERAL ELECTRIC

For more data, circle 126 on inquiry card

Captain Cook Hotel, Anchorage, Alaska
OWNER: Hickel Investment Co., Walter J. Hickel, Principal
ARCHITECTS: Edwin Crittenden Architects & Associates, Anchorage, Alaska; Lovegren & Helms, Seattle, Washington
STRUCTURAL ENGINEERS: Kelly & Pittelko, Seattle and Anchorage
STRUCTURAL STEEL CONTRACTOR: Leckenby Company, Seattle, Washington
STEEL ERECTION: York Steel Company, Anchorage Alaska
SUPPLIER SHEFFIELD JOISTS: Zesbaugh, Inc., Seattle, Wash.

Captain Cook Hotel...



Captain Cook Hotel is shown under construction in late Fall, 1964. Selection of Sheffield Open Web Joists helped meet demanding construction timetable. Use of all-steel structural system permitted good progress even in severe weather.

Sheffield Joists helped keep construction on schedule in Anchorage

Steel

Less than four months after the devastating March 27, 1964 earthquake in Anchorage, Alaska, construction was started for the new 10-story Captain Cook Hotel. Owners wanted the Hotel ready for the tourist season in the spring of 1965—a tall order considering the severity of the weather and total of 86,000 square-feet in the structure. Yet the construction schedule was met!

To help achieve this goal, designers specified floor support of open web steel joists. Sheffield H-Series Joists got the assignment. Total amount used in this application was 85 tons, principally in 12- and 14-inch joists depths.

Sheffield H-Series Joists are based on chord design stress in tension of 30,000 psi and use chords made of 50,000 psi minimum yield point steels.

Sheffield Joists, including the J- and H-Series, LA- and LH-Series, DLJ- and DLH-Series, are readily available through leading fabricators and constructors. For complete data on Sheffield Joists, write for our latest catalog, or see Sweet's Architectural File. Armco Steel Corporation, Department W-2086A, 7000 Roberts Street, Kansas City, Missouri 64125.

ARMCO STEEL

ARMCO

For more data, circle 127 on inquiry card

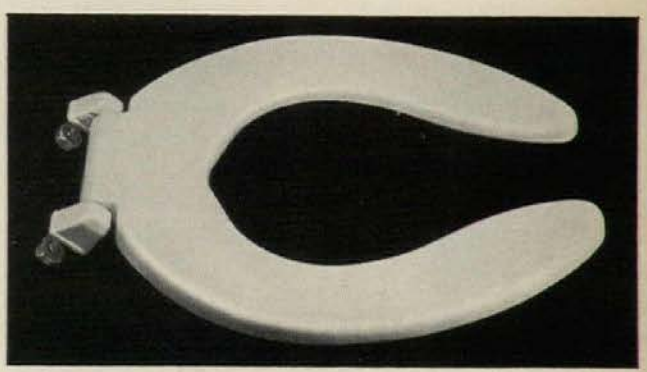
Your service-free answer to heavily trafficked installations.

NEW #795 S/S MELAMINE ENRICHED MOLTEX SEAT

Here's a moderately priced, low overhead answer for heavily trafficked rest rooms where harsh use and abuse is routine!

The new Church No. 795 S/S is molded from one of the toughest seat materials ever formulated. Dense Melamine enriched Moltex is stainproof, color fast and highly resistant to scratching and marring. It's also rated self-extinguishing by ASTM code tests and hence unaffected by cigarettes and matches.

The new Church #795 S/S is fitted with an exclusive stainless steel hinge housed in a high impact plastic housing. It's self-sustaining and features a rugged check. Tension is quickly and easily adjusted by turning a slotted recess in bottom of post with a screwdriver... no need to loosen hinge post when loose tension is desired. Send for details today!

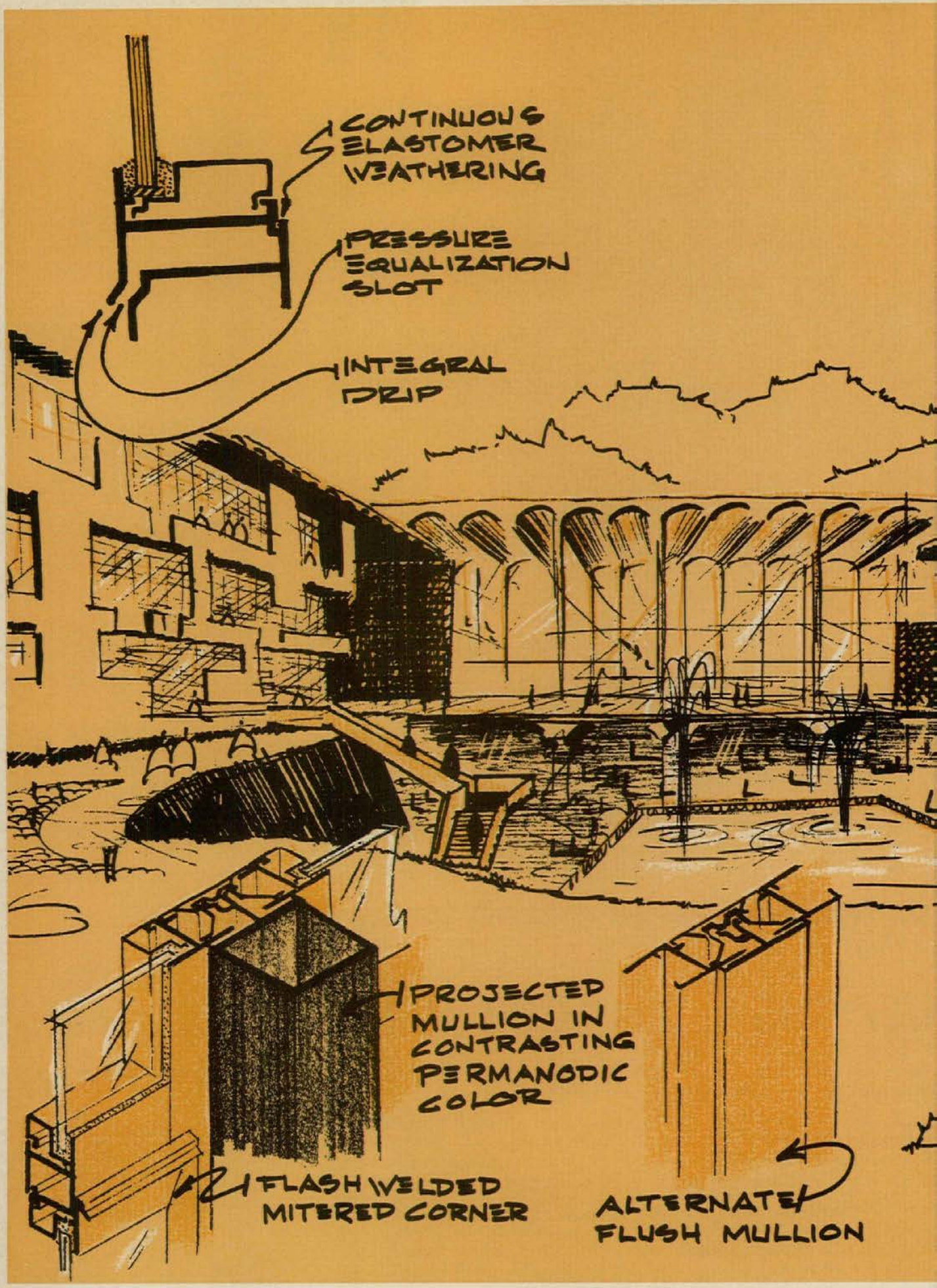


CHURCH

"THE BEST SEAT IN THE HOUSE"®

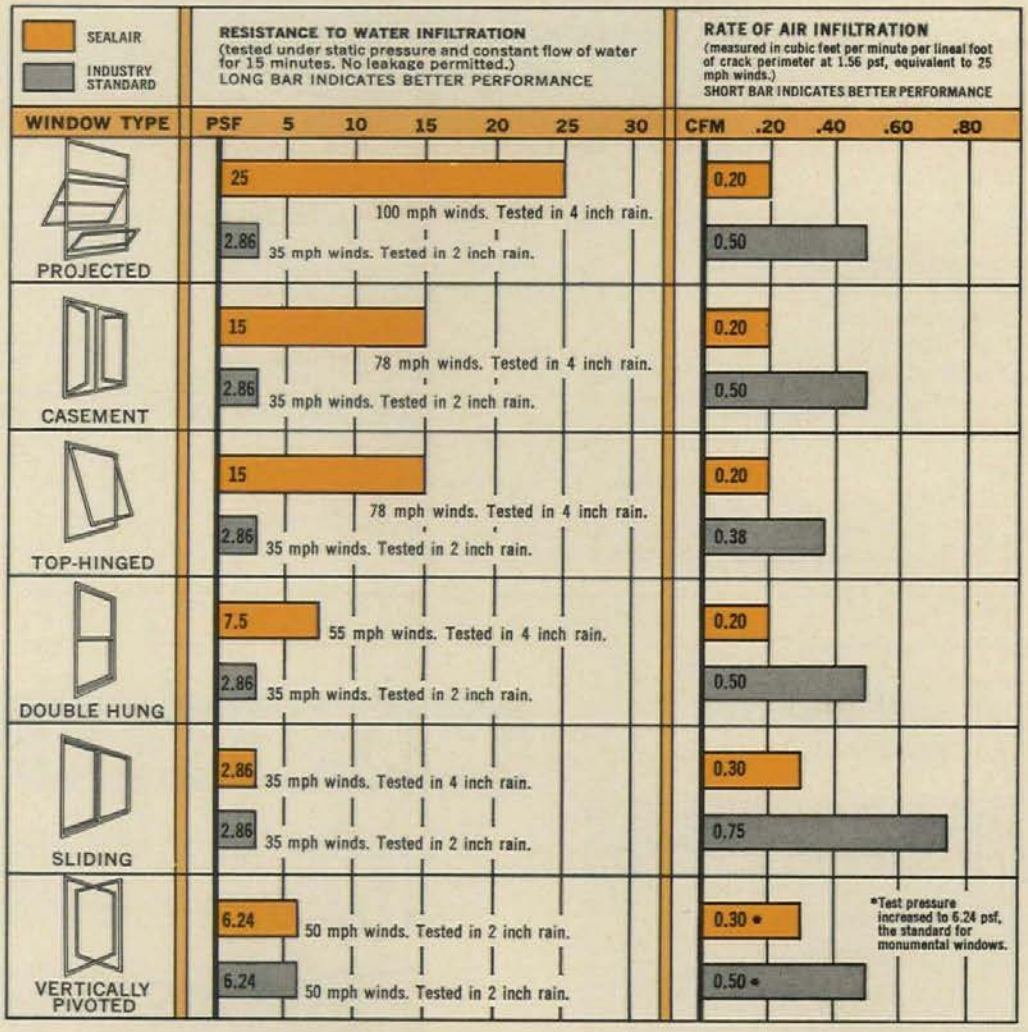
AMERICAN-Standard

40 West 40th St., New York, N. Y. 10018


CONTINUOUS ELASTOMER WEATHERING
PRESSURE EQUALIZATION SLOT
INTEGRAL DRIP
PROJECTED MULLION IN CONTRASTING PERMANODIC COLOR
FLASH WELDED MITERED CORNER
ALTERNATE FLUSH MULLION

All Kawneer Sealair Windows Exceed Industry Standards For Weathering Performance!

Before your firm specifies another window, read this comparison of window performance in Static Pressure Chamber tests against water and air infiltration.



UNMATCHED WEATHERING PERFORMANCE MADE POSSIBLE BY KAWNEER'S EXCLUSIVE PRESSURE EQUALIZATION SLOT, JOINERY AND ENGINEERING.

Sealair Projected Windows are watertight, even when subjected to 4-inch rain and winds of 100 mph. That's 774% better than Industry Standards *at twice the amount of water spray required for Industry Tests.* In air infiltration tests, the Sealair Projected was 150% better, with only 0.20 cfm leakage versus the Industry Standard of 0.50 cfm. ■ With Sealair windows, building interiors are free of drafts, reducing loads on heating and cooling systems . . . and free of dust, reducing cleaning expense. ■ What accounts for this far better than standard performance in projected, casement, top-hinged and double hung windows by Kawneer? An ingenious pressure equalization slot that keeps pressure within window sections equal to that outside the building. Hence, no siphoning action . . . no leakage. ■ Choose the finish that's best for your design. 204R1 Alumilite is standard. Or you can add warmth by specifying a *Permanodic hard color in light bronze, medium bronze or black. These optional hard color finishes are non-fading and abrasion-resistant. ■ Write for complete information. Address Kawneer Products Information, 1105 N. Front St., Niles, Michigan.

Kawneer

Kawneer Company, Inc., a Subsidiary of American Metal Climax, Inc.
Niles, Michigan • Richmond, California • Atlanta, Georgia • Kawneer Company Canada, Ltd., Toronto, Ontario • Kawneer de Mexico, S.A. de C.V., Mexico City, Mexico • Kawneer Company (U. K.) Ltd., London • Kawneer GmbH, Rheydt, Germany • Showa Kawneer, Tokyo, Japan

For more data, circle 129 on inquiry card

Prestressed concrete single tees swing into place

Exterior walls erected in five days

Up so fast the community called it an "instant church"

Sacred Heart Church, Prosser, Washington—Architect: Doudna, Williams, and Phipps—Engineer: Lyerla & Peden

EXPOSED PRESTRESSED CONCRETE COMBINES STIMULATING DESIGN WITH ULTIMATE ECONOMY

The dramatic, contemporary design of this church illustrates an inspired use of exposed single tees. It is an outstanding example of an imaginative architect's use of exposed prestressed concrete to achieve a striking effect coupled with measurable economy. On-site labor costs were reduced, and future maintenance of the exposed concrete will be negligible.

Original concepts and creative designs can be fully expressed with prestressed concrete. Simple techniques of manufacture permit virtually unlimited variations in economical standard sections. Prestressed concrete—a truly cooperative architectural-structural material—accommodates the most imaginative designs.

Send for our free booklet—"Prestressed Concrete—Applications and Advantages"

PRESTRESSED CONCRETE INSTITUTE

205 WEST WACKER DRIVE • CHICAGO, ILLINOIS 60606

ARCHITECTURAL STRUCTURAL

838 Apartments, Springfield, Ill.
Architect: Ferry & Henderson

Exposed precast prestressed concrete single tees create a pleasing architectural pattern. Tees become both ceiling and the floor above it. Fewer elements to handle during erection keep costs down.

Kessel's Bakery, St. Paul, Minn.
Architect: Stanley Fishman
Engineer: Meisch & Stevens

Lighting fixtures and ductwork are channeled conveniently between exposed structural double tee stems. Prestressed concrete's long spans eliminate columns, give more useable floor space.

For more data, circle 131 on inquiry card

Only Honeywell makes 8 different systems to automate any building

Here's a quick guide to them all...
what they do and where you use them...
from Honeywell
the people
who invented building automation

Only Honeywell makes 8 different systems to automate your clients' buildings . . . ranging from one so simple a secretary can run it to a computer-controlled building operations center. You get the system your client needs. No compromises.

But as different as they are, these 8 Honeywell systems have a lot in common. For one thing, they'll all save your clients 33⅓% annually on their investment.

And they all feature contemporary styling . . . so handsome you can even install them in the lobby.

They all include indication and adjustment of control points . . . monitoring, logging, communication and alarm display functions are available.

Other Honeywell advantages? We're the only supplier that makes computers (including a new one specifically for building automation) . . . the only one who can furnish telemetering.

We're the only company with a separate field staff of Building Automation Systems Engineers who can work with you to make sure your client gets the payoff he deserves.

And only the Honeywell man can call on 8 separate divisions for help . . . taking advantage of our pioneering in diverse fields like process control and space guidance to keep your client's system from becoming obsolete in a few years.

In short, *only Honeywell can design, build, install, guarantee and service the complete system your client needs.*

And we're ready to help you now. Mail the coupon or call.

Honeywell

FREE BOOKLET ON ALL 8 SYSTEMS

New, full color booklet gives design and operating features of each Honeywell automation system.

To: Mr. W. N. Wray
Honeywell
Dept. AR5-107
Minneapolis, Minn. 55408

Name_____
Title_____
Firm_____
Address_____
City_____
State_____ Zip Code_____

1—PNEUMATIC SUPERVISO DATA CENTER

SYSTEM DESCRIPTION

Ideally suited to single buildings (s office buildings, schools, and instituti with 10 or fewer mechanical syste Provides graphic representation of chanical systems from a central loca . . . temperature indication and ad ment, starting and stopping equipm and damper adjustment.

Since this is a pneumatic system, t mission runs are normally limited to feet or less.

ADVANTAGES

Centralized operation yields great ings. Convenience of a central loca saves time of operating people.

A low cost system because: 1) sig are transmitted pneumatically (tr ducers aren't needed) and 2) stan panels are used with customized dis

5—SYSTEM 10—BUILDING CONTROL CENTER

SYSTEM DESCRIPTION

A means of centrally controlling monitoring up to 100 remote mecha systems with ten or more inputs per tem. Solid-state scanner checks poin 60 per second; yet can locate any on 1,000 remote alarm contacts in less 2 seconds. Alarm printer provides per nent record of time, point address, category of alarm.

ADVANTAGES

It's the most efficient, lowest cost "m agement-by-exception" system on market today. Great reliability; high sp

Instant print-out of trouble points; limited points.

Low wiring and installation costs du time-shared wiring techniques.

2—ELECTRIC SUPERVISORY DATA CENTER

SYSTEM DESCRIPTION

Generally applicable to single buildings (schools, office buildings, institutions) with 10 or fewer mechanical systems. Makes possible centralized operation of an all electric or electronic temperature control system . . . or one that employs electric or electronic sensing with pneumatic actuation. Provides graphic representation . . . temperature, pressure or humidity indication either continuously or selectively with single high-precision indicator with ¼% scale accuracy. Continuous pilot-light alarm indication.

ADVANTAGES

This system combines the instantaneous indication of alarms, ¼% scale accuracy with the ability to accommodate long transmission runs.

3—SELECTOGRAPHIC DATA CENTER

SYSTEM DESCRIPTION

Suited to large single buildings and multi-building complexes (hospitals, industrial buildings, colleges and office buildings) where it's practical to carry signals by wires. Provides display and control of many mechanical systems in a desk-size console only 24″ x 48″ x 52″. Signals are transmitted electronically.

ADVANTAGES

An economical way to display and control many systems in a minimum space. Operation is simplified.

Installation costs are reduced dramatically because a single set of controls can be used for all systems displayed. And, time-shared circuits mean that one set of wires is used to control a number of different systems.

4—LOGGING AND SCANNING SYSTEM

SYSTEM DESCRIPTION

This is a low speed, automatic data collection system for use in buildings (office buildings, research centers, utilities, hospitals) where moderate amounts of data, and/or critical data are required. Scans 1 point per second up to 1,000 points. Prints sensing point information . . . value and type (such as degrees, gallons, etc.) . . . in groups according to a predetermined timing schedule. Off-normal conditions print in red.

ADVANTAGES

This is the first step toward the automatically operated building. System provides simultaneous reading and collection of data; permits more efficient use of data.

Also yields properly related data . . . critical readings taken simultaneously.

6—SYSTEM 11—BUILDING SUPERVISORY CONTROL CENTER

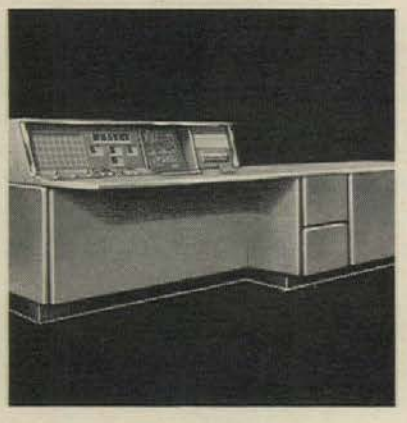
SYSTEM DESCRIPTION

This system also can centrally control and monitor up to 100 remote mechanical systems. It differs from System 10 in the following ways: it can scan temperature points and analyze them on a quantitative basis at the rate of 10 per second; it can print-out trouble-point information (where trouble occurred, when, and the value); alarm recording occurs on a change of status basis . . . copy printed only when a point goes into alarm or returns to normal.

ADVANTAGES

Solid-state reliability; high-speed operation. All advantages of System 10 including time-sharing of circuits.

7—SYSTEM 20—BUILDING OPERATIONS CENTER



SYSTEM DESCRIPTION

A high-speed, solid-state computerized data acquisition system that can handle up to 250 remote mechanical systems with 10 or more inputs per system. Unlimited points accommodated; scans 100 points per second on contacts . . . 40 points per second on quantitative values. Operations include: start-stop programming; flow and BTU measurement, computation, and totalization; change-of-state alarm recording. Two printers run at same time . . . one prints out alarms; the other prints out important operating data.

ADVANTAGES

Automatically starts and stops equipment according to a stored program; provides computation and action-taking capability.

8—SYSTEM 30—BUILDING OPERATIONS COMPUTER CENTER

SYSTEM DESCRIPTION

System 30 can operate more than 250 remote mechanical systems with up to 20 inputs per system. It performs all the functions of System 20 (logging of selected inputs, start-stop programming, command functions, etc.). In addition, System 30 provides full, on-line control of air-conditioning, heating and ventilating systems as well as central chillers, boilers, and utilities.

ADVANTAGES

System 30 is the automatic building. It analyzes, makes a diagnosis, and takes corrective action. It runs the building.

And, on-line control permits operation for minimum energy costs as well as monitoring machine efficiency for better maintenance scheduling.

continued from page 258

SHELF ANGLE INSERT / Descriptive data and information on uses, installation, dimensions and specifications are available in a six-page illustrated brochure which features an analysis of strength tests. ▪ Gateway Erectors, Inc., Chicago.*

Circle 419 on inquiry card

VENDING MACHINES / A complete line of food, beverage, snack, confection, dairy and cigarette merchandisers is illustrated in a six-page brochure. ▪ The Vendo Company, Kansas City, Mo.

Circle 420 on inquiry card

SERVICE DOORS / A selector guide for floor, pit, sidewalk and vault styles describes single and double-leaf aluminum and steel doors and includes special features, functions and technical data. All are flush doors, designed to meet a specific function, have either springs or torsion bars and a standard locking device. ▪ The Bilco Company, New Haven, Connecticut.*

Circle 421 on inquiry card

SIGN LIGHTING / The principles, types, techniques, design data and maintenance of sign lighting are discussed in a new, 24-page technical publication. Detailed descriptions are given of the four basic sign-lighting techniques currently in use—exposed lamp signs; luminous-panel signs; floodlighted signs; and silhouette signs. Factors affecting legibility of all these types are outlined, and special attention is given to the types of lamp available for each kind of sign, and the methods by which they may be most effectively applied. ▪ Dept. TP-124, General Electric Company, Cleveland, Ohio.*

Circle 422 on inquiry card

UNIT VENTILATORS / An eight-page technical bulletin on large capacity units provides complete dimensional data and schematics. ▪ Ross Engineering Division, New Brunswick, N. J.

Circle 423 on inquiry card

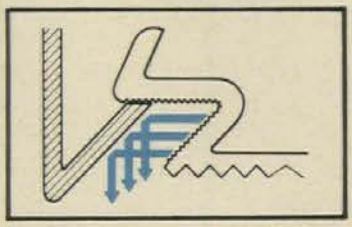
INTERIOR HARDBOARD PANELS / A 20-page booklet, illustrated in color, covers accessories, prefinished moldings, peg-board fixtures, basic and special types of hardboard panels and their uses, product characteristics, joint treatments, and tips on working, bending, conditioning and finishing. ▪ Masonite, Chicago.*

Circle 424 on inquiry card

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

NEW "Z" FRAMELESS - closest yet to a modular lens

Here is the closest thing yet to a modular lens. Wakefield's "Z" lens configuration actually gives greater lens surface, greater efficiency, least metal show of any flanged troffer or surface unit. For photometric and aesthetic variety three lens patterns are available in all four surface and recessed unit sizes—1x4, 1x8, 2x2 and 2x4. Lenses hinge from either side. Fixed metal pins project from the housing and slip into new, stronger, injection-molded end caps attached to the lens by ultrasonic fusing. End of all lenses are light-sealed to fixtures. Luminous joints between fixtures in rows, with no metal showing at joints. Here is the luminaire you've been seeking to fulfill today's aesthetic requirements. Call your Wakefield man and see the full luminous beauty of the "Z" Frameless. Or write for brochure.



"Z" lens gives all-luminous look

ITT WAKEFIELD LIGHTING DIVISION
WAKEFIELD CORPORATION
P.O. Box 195, Vermilion, Ohio 44089
A SUBSIDIARY OF INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

For more data, circle 134 on inquiry card

Amarlite Curtain Walls

Design . . . Strength . . . Function
. . . all packaged with
on-the-job service!

It's architect designed . . . engineered to more precise specifications . . . for one to one-hundred stories . . . finished with anodized hard-coat . . . in a wide range of standard systems (or custom walls) with greater strength and more dramatic exterior styles! Most important, we provide nation wide on-the-job supervision by our own engineering professionals to assure smooth-going and fast-installation. ▪

Select from Sweet's, or write Amarlite, Main Office, P. O. Box 1719, Atlanta, Georgia . . . for product information or the name of our representative in your area . . . for *ALL THAT'S NEW!*

Catalogs Available!

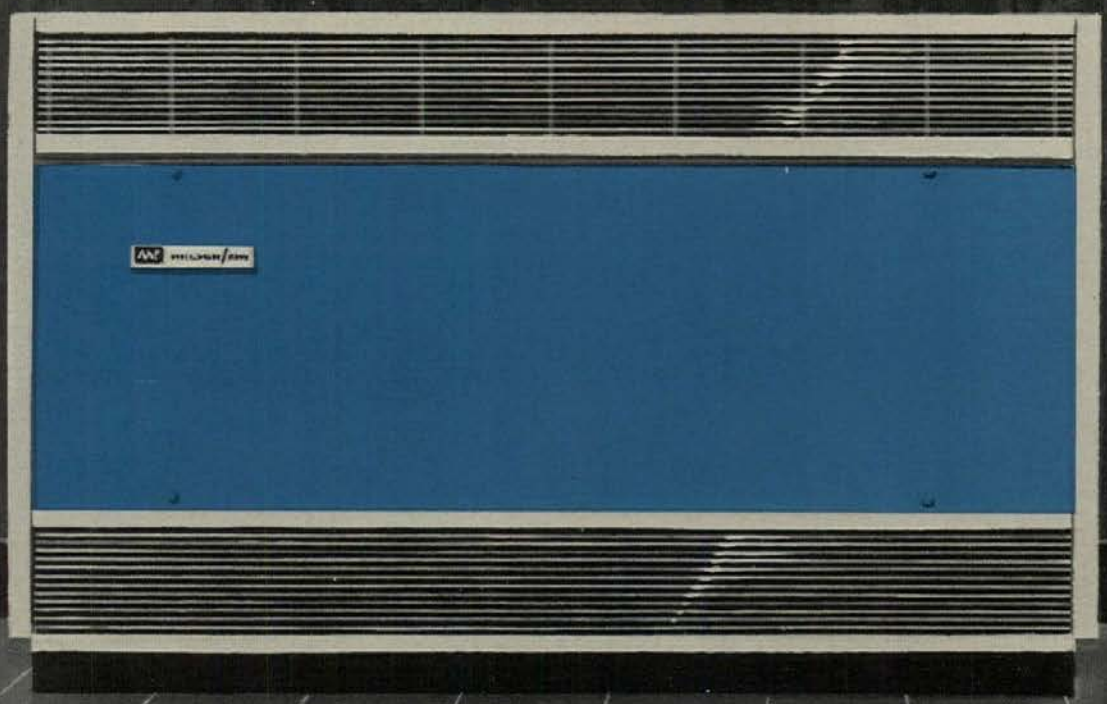
ENGINEERED FOR DISTINGUISHED ARCHITECTURE . . . **Amarlite®** OF ANACONDA ALUMINUM

Atlanta • Chicago • Cleveland • Dallas • Paramus, N.J. • Los Angeles • Export throughout the Free World

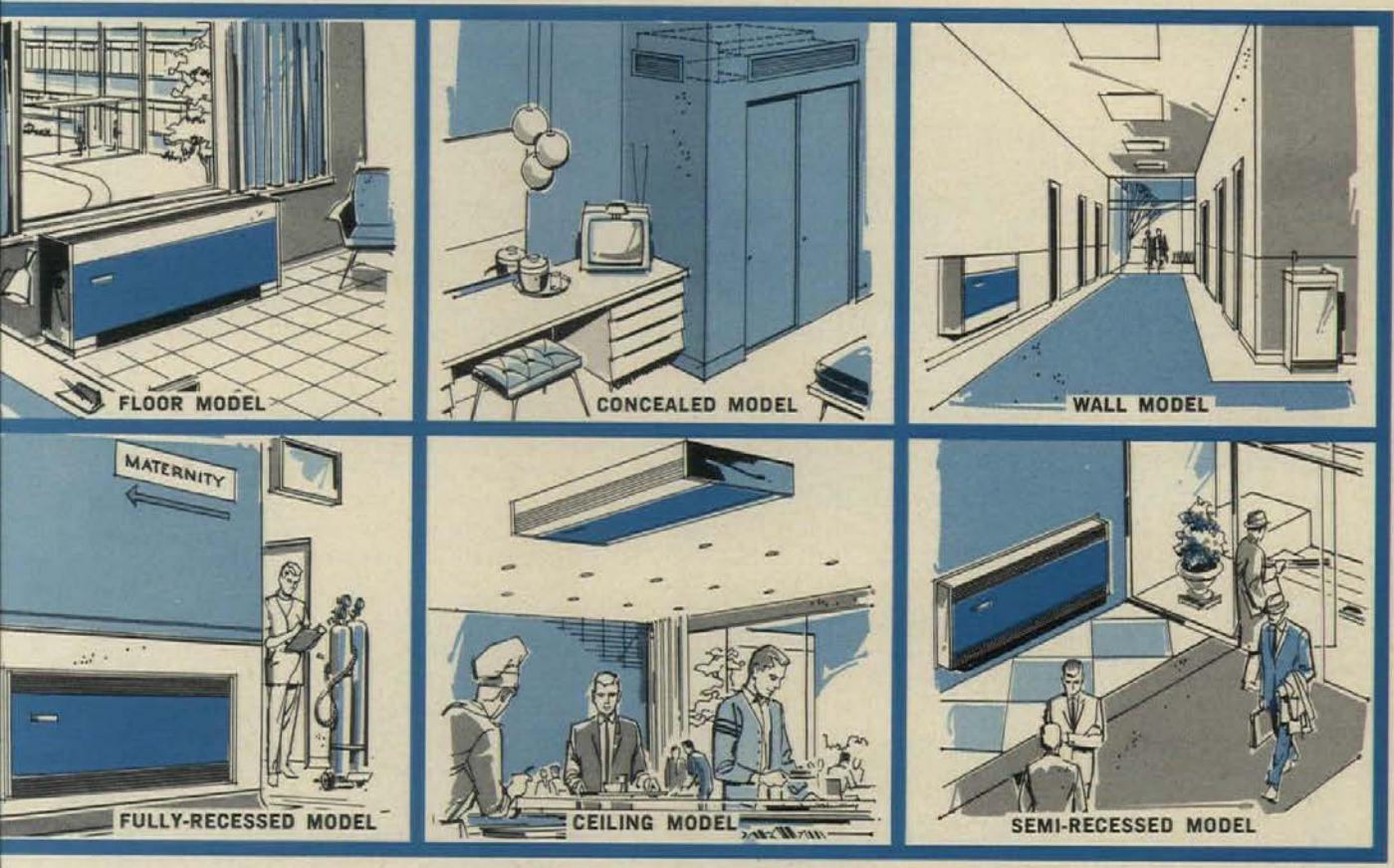
For more data, circle 136 on inquiry card

AAF NELSON/aire means . . .

unsurpassed DESIGN FREEDOM



There are 289 ways to design the NELSON/aire cabinet unit into your buildings. Here are 6 of them.



There's virtually no end to the ways you can design this NELSON/aire heating, ventilating, and air conditioning unit into your buildings. It's part of the flexibility we build into *all* our products.

But we don't stop there. This particular unit also offers industry's thinnest profile (all models only 9¾″ deep), six decorator and four base colors to choose from, baked-enamel finish, option of two fresh-air ventilating dampers (25% and 100%), from 200 through 1350 cfm in eight sizes, precise temperature regulation through Damper-Guard face and by-pass control, plus a "through-the-wall" unit featuring self-contained refrigeration.

Ask your AAF/Herman Nelson man about the NELSON/aire or write: American Air Filter Company, Inc., 215 Central Avenue, Louisville, Kentucky 40208. Available in Canada.

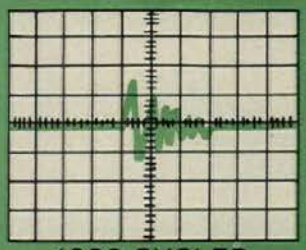
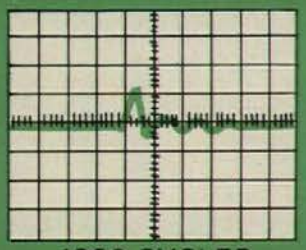
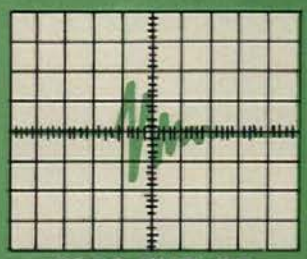
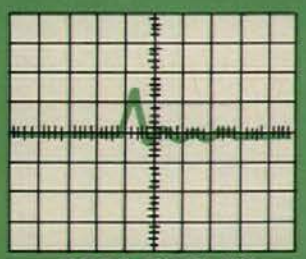
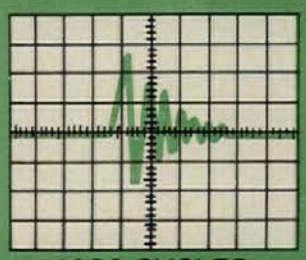
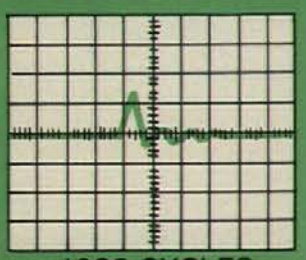
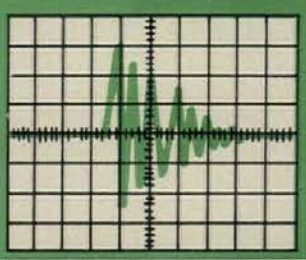
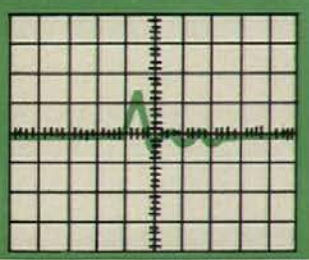
American Air Filter

BETTER AIR IS OUR BUSINESS

Let's end the argument:

AIR CHAMBERS VS. *which are better?*

Test their Performance . . .

AIR CHAMBER	ABSORBOTRON® SHOCK ABSORBER
 1000 CYCLES	 1000 CYCLES
 2000 CYCLES	 2000 CYCLES
 4000 CYCLES	 4000 CYCLES
	
AIR CHAMBER FAILS AT 4500 CYCLES EXCEEDING 300 P.S.I.	10,000 CYCLES SHOCK ABSORBER CONTINUES TO PERFORM INDEFINITELY

TEST CONDITIONS

To evaluate the shock absorbing efficiency of air chambers and the Josam Absorbotron, a series of tests were conducted by a leading independent laboratory*.

A 50-foot length of 1" pipe with water at 60 P.S.I. flow pressure and a velocity of 10 feet per second was used in these tests. The oscillographs compare the efficiency of the Absorbotron with a fully charged and properly sized air chamber 1¼" pipe, 50" high.

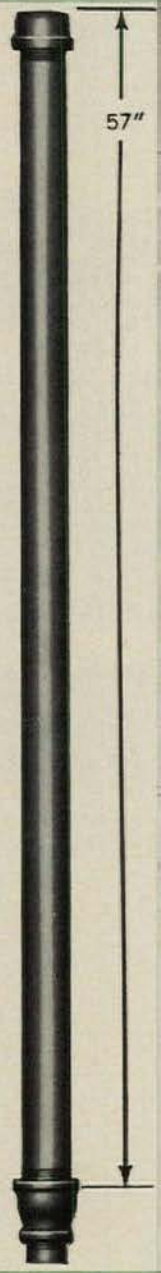
RESULTS

The air chamber failed after approximately 4500 cycles (in some instances, only a month's operation). The ABSORBOTRON continued to function with no difference in effectiveness even after 10,000 shocks.

The air in the air chamber is slowly absorbed by the water, and the air chamber becomes ineffective unless re-charged.

ABSORBOTRONS may not only cost less to install, but certainly far less if you add the cost of recharging the air chambers one or two times.

**For the complete details on the "Positive Control of Water Hammer", write for Manual SA-3.*

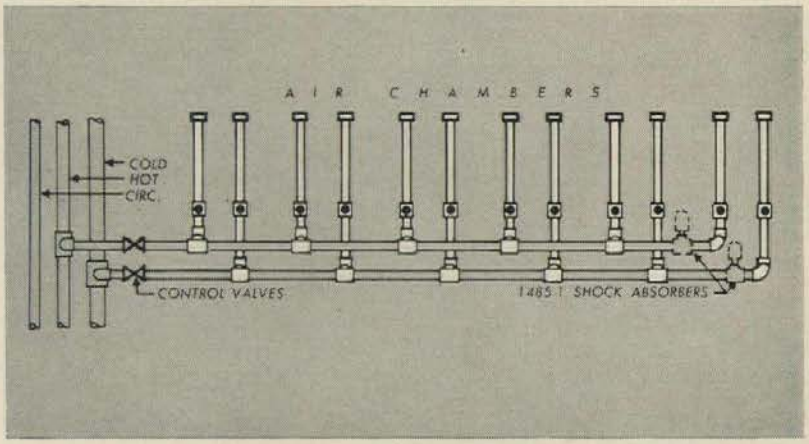


Look at the SAVINGS IN SPACE—an 8" high Absorbotron provides permanent protection against water hammer while a 57" air chamber does not!

ABSORBOTRON® SHOCK ABSORBERS

which cost less?

Compare their Costs . . .



The above installation shows the usual placement of air chambers for hot and cold water branch lines serving 6 lavatories. The air chambers may be either the same size, or one size larger than the supply lines, and from 12 to 24 inches high, taking up excessive chase space. The branch lines shown require a total of 12 air chambers, but can be serviced by two of the smallest size shock absorbers, together costing from $25 to $30. The air chambers cost approximately $5 to $8 each, depending on material, length and diameter of pipe used. Some may claim $5 is too high a cost figure for an air chamber. Let's look at the total calculations when we assume the air chambers are cheaper than $5.

12 Air Chambers @ $5 each = $60 total
12 Air Chambers @ $4 each = $48 total
12 Air Chambers @ $3 each = $36 total
12 Air Chambers @ $2 each = $24 each

Only the 12 cheapest air chambers (if they can be made at this price considering cost of materials and labor) initially cost less than the two shock absorbers at $25-$30. But to the cost of the air chambers, you must add the cost of periodic recharging.

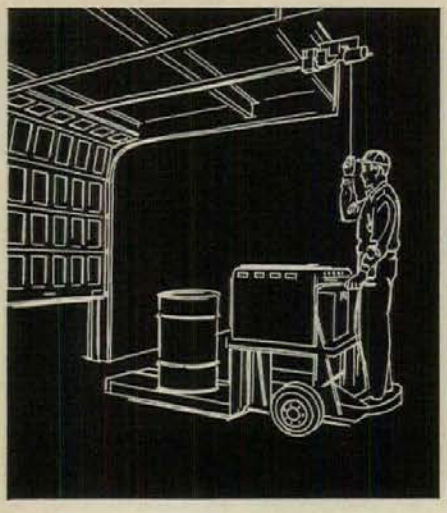
For some installations, shock absorbers may cost more to install than air chambers but it is now definitely proved that ...

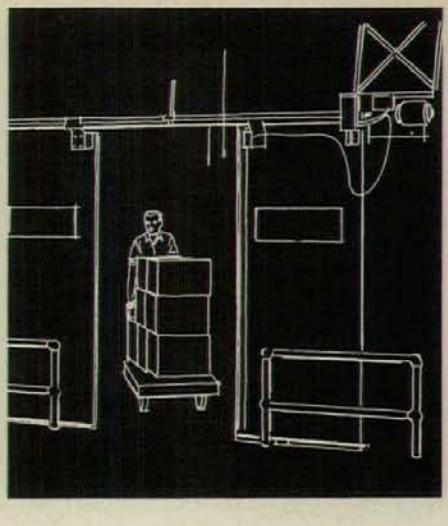
Shock Absorbers very often cost less to install! Always cost less over the service life of the installation!

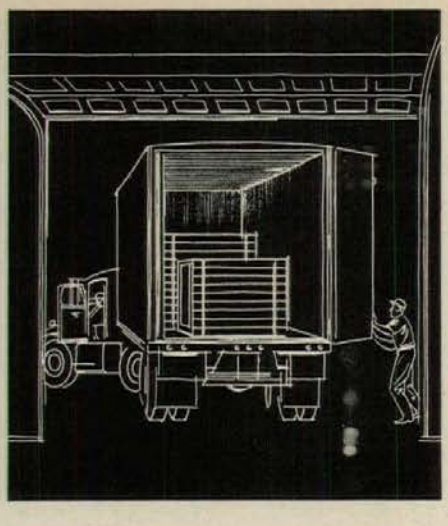
JOSAM

JOSAM MANUFACTURING CO.
MICHIGAN CITY **INDIANA 46360**
Representatives in principal cities

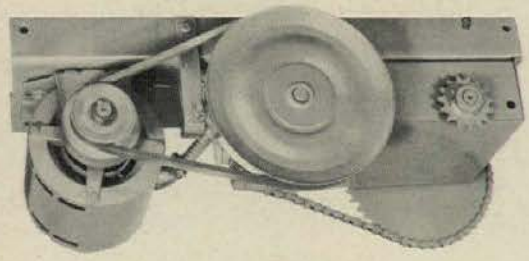
For more data, circle 138 on inquiry card

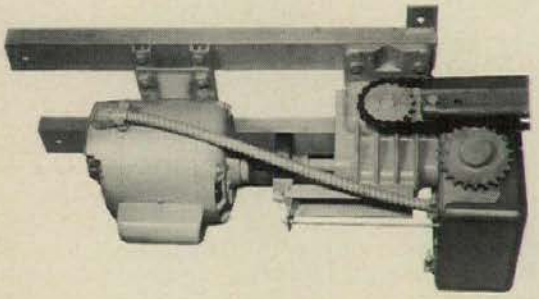


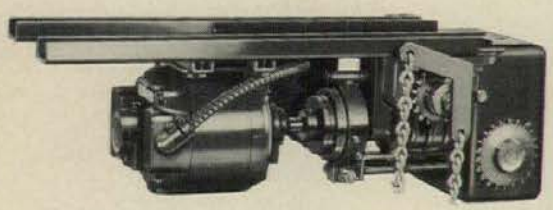




New... cost-cutting products and performance by BARCOL







Automatic door operation substantially reduces building overhead and operating costs. Specifically, the loss of temperature—controlled air . . . inefficient materials handling . . . expensive "walking labor" to open and close doors . . . unnecessary door replacement from accidental damage . . . employee injury . . . all constitute profit-robbing costs that can be be fully *controlled*.

Barcol offers the flexibility needed to reduce these unnecessary costs . . . for all jobs. Three big, power-packed operators meet every requirement for door opening frequency, door size, weight and safety . . . for *all* budgets.

MODEL XL . . . Overhead-Type or Sliding Doors—operating up to 200 cycles per day—and up to 196 square feet in area.

Centrifugal clutch, solenoid-actuated brake and permanently adjusted limit relay are *standard* and *exclusive* with Barcol . . . are designed, engineered and tested to assure long-lasting, dependable operation.

Unique chain-sprocket and belt-drive provide smooth, quiet operation. 110V, 1/3 h.p. motor and overload protector are standard. Drawbar release is for manual operation.

MODEL LR . . . Overhead-Type or Sliding Doors—operating up to 200 cycles per day—and weighing up to 800 lbs—and up to 240 square feet in area.

Engineered for heavier duty, higher frequency door operation. High quality components are designed for longer lasting, trouble-free performance and operating efficiency. Features precision-machined speed reducer, centrifugal clutch, automatic brake, instantly reversing 1/3 h.p. motor (110, 220, 440V), thermal overload protector and disconnect switches as standard. Drawbar release for manual operation. (Clutch release optional).

MODEL MR . . . Overhead-Type, Sliding Doors or Sliding Gates—with unexcelled dependability for high-frequency usage—maximum performance, long life at low cost—greater flexibility in applications and operation.

This heavy duty operator is soundly engineered and designed to withstand rugged high performance on virtually all new and existing doors. Heavy duty speed reducer, centrifugal clutch, clutch release, automatic dual-brake band assembly, reversing relays, thermal overload and disconnect switches, 1/4, 1/3 and 1/2 h.p. motors (110, 220, 440V) are standard. All switch controls also furnished.

WRITE FOR CATALOG D-13015. ALSO SEE SWEET'S.

BARBER COLMAN

BARCOL

BARCOL OVERDOOR COMPANY

Sheffield, Illinois • Subsidiary Barber-Colman Company

For more data, circle 139 on inquiry card

continued from page 122

in our suburbs, who designs the regional centers, who does the motels, who designs the complex of highways? These are all intrinsic to the car and designed by the least talented among our profession. This is the work that the well-trained, highly attuned architect will have nothing to do with, and yet, in reality, this is our future.

No real change can come until the total consciousness of the car is realized as an extension of the foot, and something which we hold with us. The hope for the future city is that good architects will involve themselves with the reality of our time. We are never going back to the 18th century. The medieval parts of London and Paris and the renaissance portions of Boston, New Orleans and Williamsburg are just curiosities—they have very little to do with the real life at hand. The aim of each of us, whether we ride a Rolls Royce or a Volkswagen, is to go from our home to our office, to our recreation, to our friends, by car, as quickly and conveniently as possible. Nothing that any master planner says or does is going to change this. No amount of stainless steel, trains, monorails, or horizontal moving sidewalks is going to change this aim. We are creatures of the car. Why don't we plan for it?

Howard Barnstone
Howard Barnstone and Partners, Architects
Houston

On finding time to design

There are too many things an architect is supposed to attend and support. Just add up the conventions alone: AIA, Society of Architectural Historians, AIP, school conventions, New York Society of Architects, Guild for Religious Architecture, American Society for Church Architecture, regional and state conventions and three-day parleys.

There are the fun treks to Japan and Europe, the A.I.A. and Architectural League dinners, the local planning boards and the never-ending list of committees. There are testimonial dinners and luncheons, cocktail parties for rugs, paints, lighting fixtures, producers' councils, wallpapers, fabrics, authors, etc. Then we must see all the salesmen, artists (for stained glass, murals, sculpture, painting, mosaics), technical books, vendors, etc. etc.

We haven't mentioned a client, or drawn one line, yet! Thus another year has passed. Couldn't we have the conventions every other year?

Edgar Tafel, Architect, A.I.A.
New York

Permalite does what?

New Super-Bond Surface

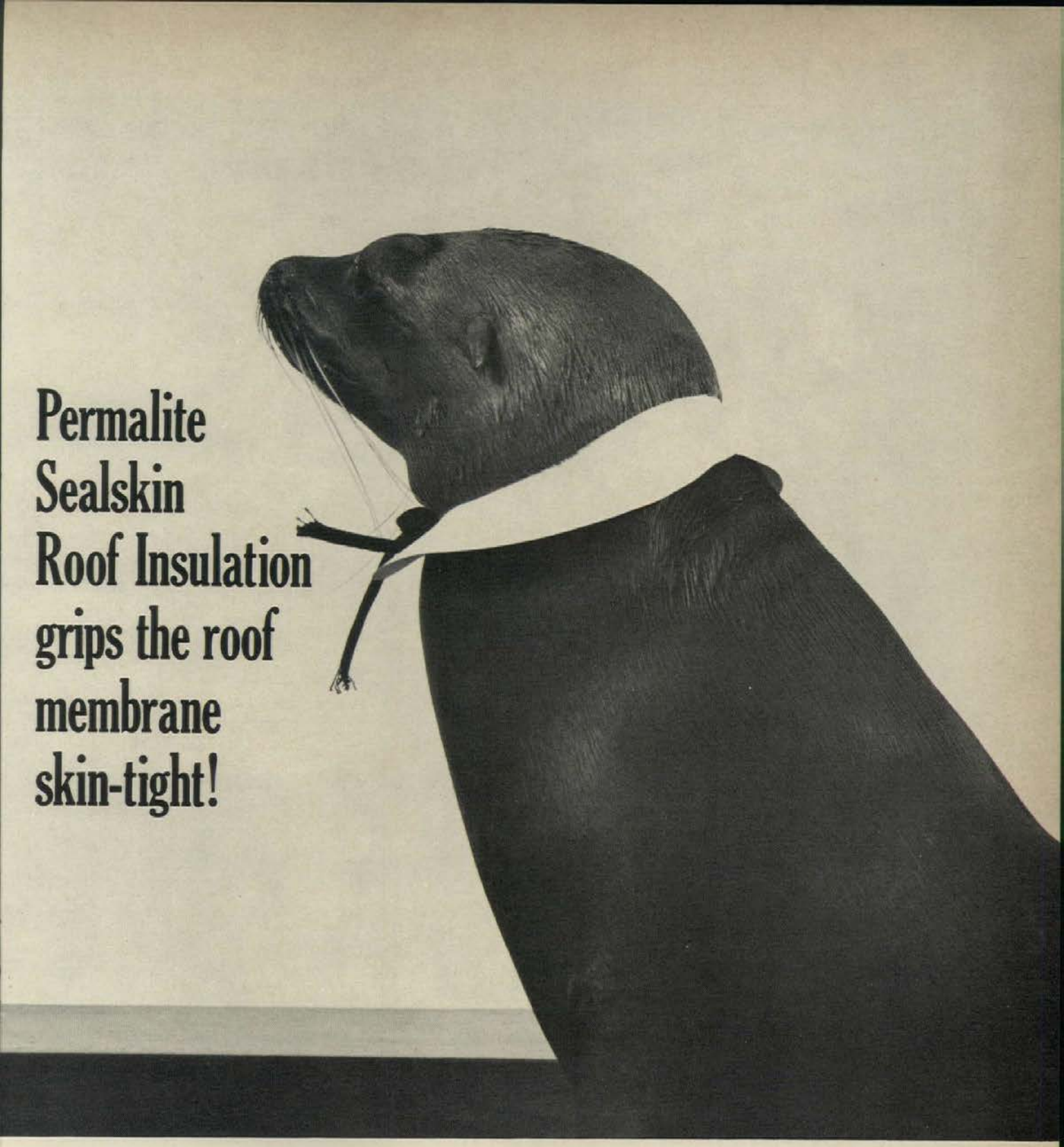
This new integrally formed surface grips asphalt like glue, forming a solid, uniform bond of insulation board to roofing membrane. Resists bitumen soak-up. Establishes a uniform tackline between insulation board and roofing membrane. Now, more than ever, this moisture-resistant, non-combustible, mineral board is, in total, the ideal roof insulation for Class 1 metal deck construction.

P.S. (Permapak System): GLC provides three permanent, U.L. and F.M. listed roof elements which combine to provide high efficiency the mal and vapor control for Class 1 metal de construction:

1. Permalite Mineral Roof Insulation Board.
2. Permalite Aluminum PVC Vapor Barrier.
3. Permalite Cold Adhesive.

All carry U.L. and F.M. labels and are ava able from one source, insuring undivid responsibility for delivery and performanc Write for samples and literature.

Request "THE GLC STORY," a brochure covering the many prod services and facilities of Great Lakes Carbon Corporation.

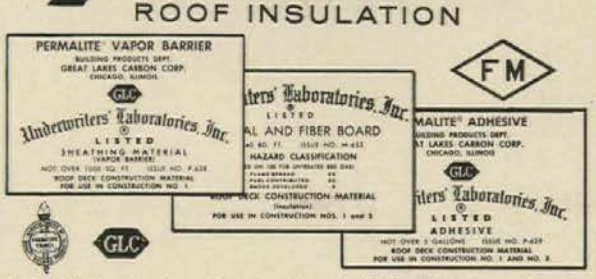


Permalite Sealskin Roof Insulation grips the roof membrane skin-tight!

PHYSICAL DATA:
Permalite Rigid Insulation Board

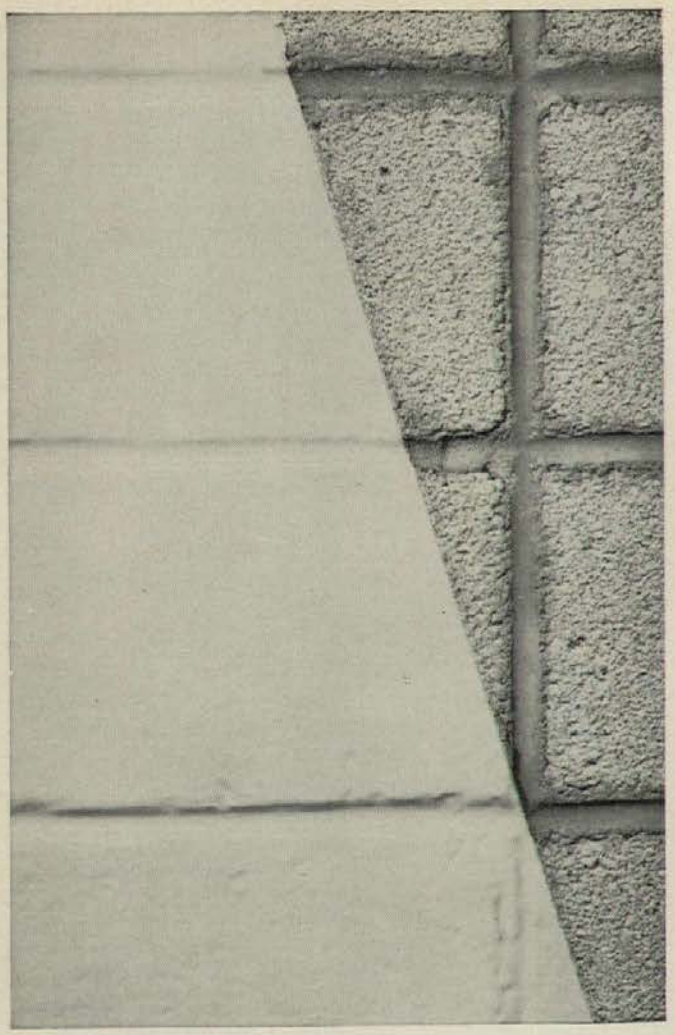
(Conductance Value) 1" Nominal Thickness . 0.36
ater Absorption (% by Volume)
. . 1.5 @ 2 Hrs. Total Immersion (No Capillarity)
apor Permeability
. 15 Perms @ 73° F. and 51% Relative Humidity
oncentration Load Indentation . 1/16" @ 77 lbs.
ompression Resistance 185 PSI (50% Consolidation)
ungus Resistance . . . . . Complete
ame Spread . . . . . 25 (Non-combustible)
moke Developed 5
t./Sq. Ft./1" Thick . . . . 0.8 lbs. Approx.

RIGID
Permalite®
ROOF INSULATION



Great Lakes Carbon Corporation, Building Products Dept.
333 N. Michigan Avenue, Chicago, Illinois 60601

For more data, circle 141 on inquiry card



O'Brien's New *Mira-Plate*

The miracle strength epoxy that goes on like paint, looks and lasts like ceramic tile!

Here's superior protection and tile-like beauty—at a fraction of tile's cost. O'Brien's MIRA-PLATE beautifully coats everything paintable—including new or previously painted plaster, brick, concrete, wood, metal. Ideal for heavy traffic areas. Superior to paint. Defies wear, weather, chemicals, fumes, peeling, and cracking. Unique waterproofing properties defy moisture. Brush it, roll it, or spray it on—and MIRA-PLATE may be recoated or retouched at any time. Many popular colors and attractive fleck patterns. Ask your O'Brien dealer, your painting contractor, or simply send the coupon.

To: The O'Brien Corp., Dept. AR-5
South Bend 21, Indiana

Please send me complete information about MIRA-PLATE, your miracle-strength coating that goes on like paint, looks and lasts like ceramic tile.

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CITY_____ ZONE____ STATE_____

The O'Brien Corporation, South Bend 21, Indiana · Baltimore · Oklahoma City · San Francisco · Los Angeles

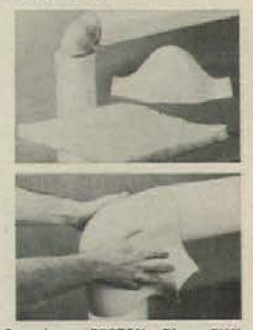
For more data, circle 142 on inquiry card

INSULATION EFFICIENCY PLUS A NEAT LOOKING, PROFESSIONAL FINISHED FITTING

This new method of insulating pipe fittings will not only make all fittings look better but will also increase insulation efficiency.

Materials used are: molded fiber glass insulation and one-piece ZESTON (patent pending) Fitting Cover. Other insulating materials can be used.

Fiber glass insulating material is placed over bare pipe and tucked in.



One-piece ZESTON Pipe Fitting Cover is placed over pipe and insulating material and "snapped" into place.

Cover may be banded, stapled or taped in place. . . . ever seen a more attractive finished fitting!

- Excellent vapor barrier — Ideal for chilled water systems
- Glossy off-white finish can be cleaned with soap and water or painted any color • Costs less than present methods
- Reusable — easy to remove and replace for maintenance on pipe
- Versatile — fits screwed or welded elbows
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- Weatherproof — withstands water, acids, alkalies or chemical washdowns. Resists alcohols and oils. • Will not support combustion

Write for free literature and samples

ZESTON, Inc.

744 State Street • Perth Amboy, New Jersey 08861

For more data, circle 155 on inquiry card

They're foiled again... by the TRIPLE point Entrance Door SECURITY offered with the W & F #6000 Series Deadlock.

This versatile mechanism will actuate any combination of jamb bolt, header bolt, and threshold bolt to meet the Single, Double, or Triple locking point requirements of your entrance.

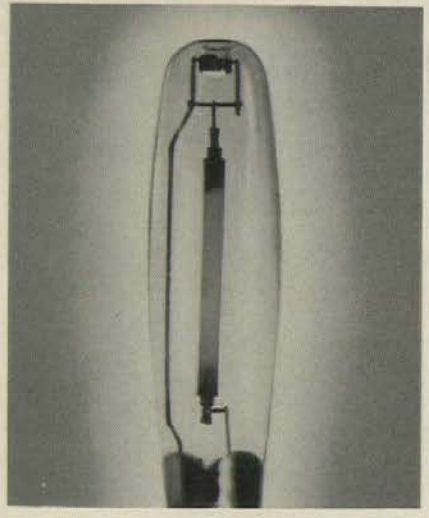
For detailed information, please contact:

W. & F. MFG., INC.

811 Air Way, Glendale, Calif. 91201 • Phone: (Area Code 213) 245-7441

For more data, circle 169 on inquiry card

Look what just happened to the revolution we started in good light and good looks.



Lucalox.® From G.E.

You agreed with us that our new Profile™ light is a real revolution in outdoor lighting.

Now we give you another important option. For your light source you now can specify General Electric's new Lucalox lamp. Lucalox puts out 105 lumens per watt, and because all of this light is concentrated in a cigarette-size arc, maximum optical control can be obtained. Combination of Profile Light and Lucalox intensifies the rectangular revolution and makes possible new levels in general area lighting.

So now you can choose Lucalox, color-true metallic vapor, or conventional mercury lamps. You can put any of them to work in our revolutionary Profile Light, the only luminaire with an asymmetric reflector. The only luminaire that lets you put predictable rectangles of uniform light precisely where you want them.

And rugged, weathertight Profile Light is sleek looking, contemporary in design. Good light. Good looks. An unbeatable combination. Get all the facts from your Crouse-Hinds distributor. Or write: Crouse-Hinds Company, Outdoor Lighting Dept., Syracuse, New York 13201.

Lucalox is a Registered Trademark of General Electric Company

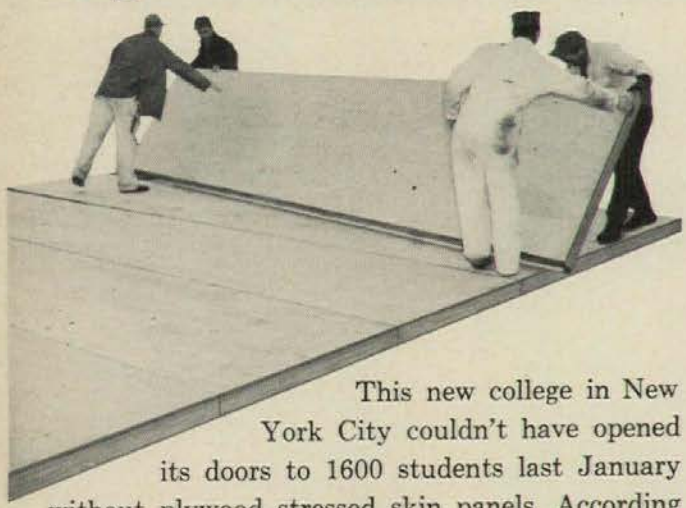
CROUSE-HINDS®

The hurry-up school.

Queensboro Community College. 22 buildings. 62 days from footings to completion.

How?

Plywood components.

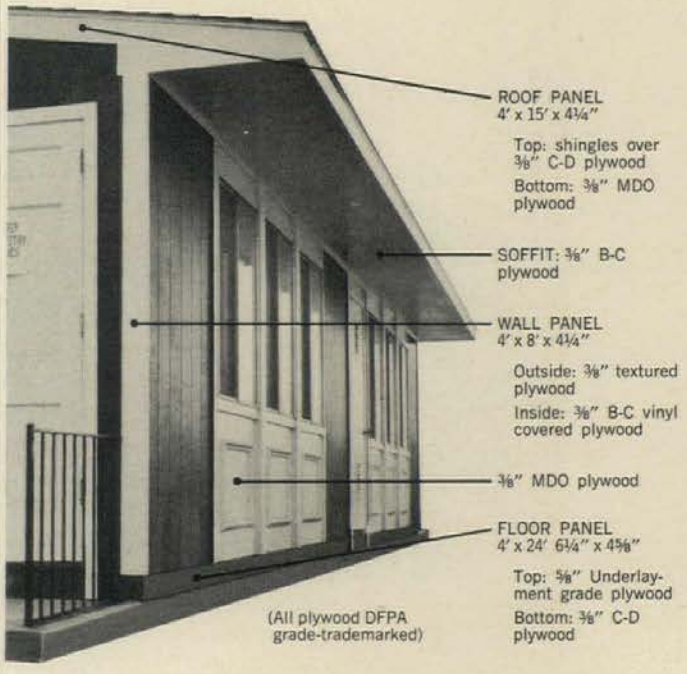


This new college in New York City couldn't have opened its doors to 1600 students last January without plywood stressed skin panels. According to the contractor's architectural consultant, the plywood component system was the best possible solution to the tight schedule – less than three months from plans to finish. The panels were used for floors, walls and roof.

The 22 buildings were prefabricated in Tulsa at the rate of one a day. Panels were prepainted, then trucked or piggy-backed to New York. Floor components are 24 feet long, the full width of the building. Roof panels span 12′ 6″, and are supported by a ridge gluelam, 7″ by 17⅞″.

On-site finishing consisted largely of installing carpet, furniture, plumbing, and equipment. Actual site work took just over two months.

Queensboro Community College, Queens, New York City / Owner-Lessor: CIT Educational Buildings, Inc., New York City / Fabricator and Contractor: Southern Mill Fabricators, Inc., Tulsa, Oklahoma / Architects: H. A. Tucker, Tulsa; and M. J. Goodman, consulting architectural engineer for CIT



The 18 classroom buildings are 24x40; the library, faculty offices and rest rooms are 24x32.

This is another example of the way plywood components can provide simple, good-looking structures in a hurry. But they're also versatile enough to solve sophisticated design problems involving unusual shapes such as curved roofs, folded plates and space planes. For more information on plywood components and other plywood building systems, send the coupon.

ON THE CALENDAR

MAY

16-17 Illinois Structural Engineering Conference—Chicago Circle Center, University of Illinois.

21-27 5th International Congress of the Precast Concrete Industry—Royal Garden Hotel, Kensington, London.

JUNE

6-10 National Plastics Exposition, Society of the Plastics Industry, Inc.—Coliseum, New York City.

7-9 National Plastics Conference, Americana Hotel, New York City.

7-10 61st Annual Meeting, American Association of Museums—The Pick-Congress Hotel, Chicago.

11-18 Fifth Congress of the International Federation on Prestressing—Paris.

13-17 Polymer Conference Series, "Flammability Characteristics of Polymeric Material"—Wayne State University College of Engineering, Detroit.

19-24 16th Annual International Design Conference—Aspen, Colo.

26 Annual Convention, American Institute of Architects—Hilton Hotel, Denver; through July 1.

26 69th Annual Meeting and 17th Materials Testing Exhibit, American Society for Testing and Materials—Chalfonte-Haddon Hall, Atlantic City; to July 1.

29 1966 Convention, National Council of Instructors of Landscape Architecture—University of Wisconsin, Madison; through July 2.

JULY

4-15 International Seminar on Ekistics and The Future of Human Settlements, Athens Center of Ekistics—Athens.

OFFICE NOTES

OFFICES OPENED

Harry T. Miyachi, A.I.A., 1806 S. King St., Suite 33, Honolulu.

The Washington office of **Richardson, Severns, Scheeler & Associates, Inc.,** architects of Champaign, Ill., is at 1647 Wisconsin Avenue, N. W.

NEW FIRMS, FIRM CHANGES

Over 30 Canadian consultants in engineering, architecture, city planning, economics, education, sociology, psychology, agriculture, medical science, etc. headed by **Dr. J. M. Schmidt** have formed the **Amalgamated International Planning Consultants** in Vancouver, B.C.

Campbell & Patterson, Architects is the new firm of **Thomas R. Campbell, A.I.A.** and **James M. Patterson, A.I.A.,** 208 Austin Savings Building, 1010 Lavaca, Austin Texas 78701,

J. Franklin Clark, Jr., A.I.A. and **W. Reaves McCall, A.I.A.** have announced that Clark, McCall & Leach, A.I.A. is now **Clark and McCall, A.I.A** with offices in Hartsville and Kingstree, S. C.

Eggers and Higgins, architects of New York City, announce the establishment of **API Designs Ltd.** specializing in architecturally planned interiors. **John E. Crocco** has been appointed vice president and general manager.

Rolf Sklarek and **Sydney H. Brisker** are vice presidents of **Victor Gruen Associates,** architectural, engineering and planning firm of Los Angeles.

Harley, Ellington, Cowin and Stirton, Inc., architects-engineers-planners of Detroit, have appointed **M. Fred Bennett** project administrator and **Alvin F. Blair** administrative designer.

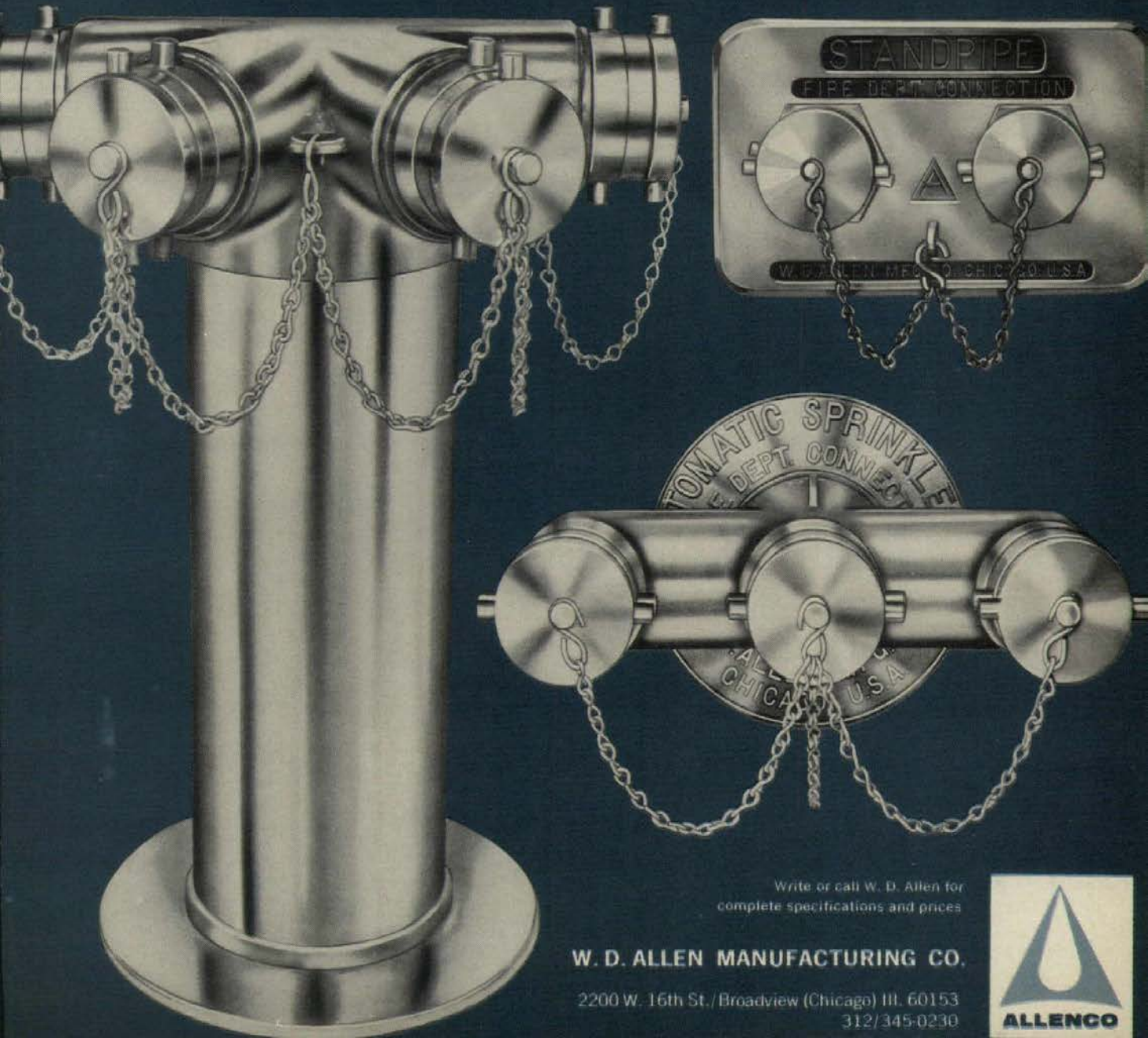
continued on page 302

20th century siamese are made, not born, come in threes and fours as well as twos

An integral safety specification for large buildings, siamese connections allow use of a building's water source as a supplement to fire department hydrants

You can specify W. D. Allen siamese for sidewalk or wall, flush or projecting installations, rough or polished brass or chrome, 2-way, 3-way, 4-way

There is no style siamese W. D. Allen does not make, and you can specify the 4-way only from W. D. Allen



Write or call W. D. Allen for complete specifications and prices

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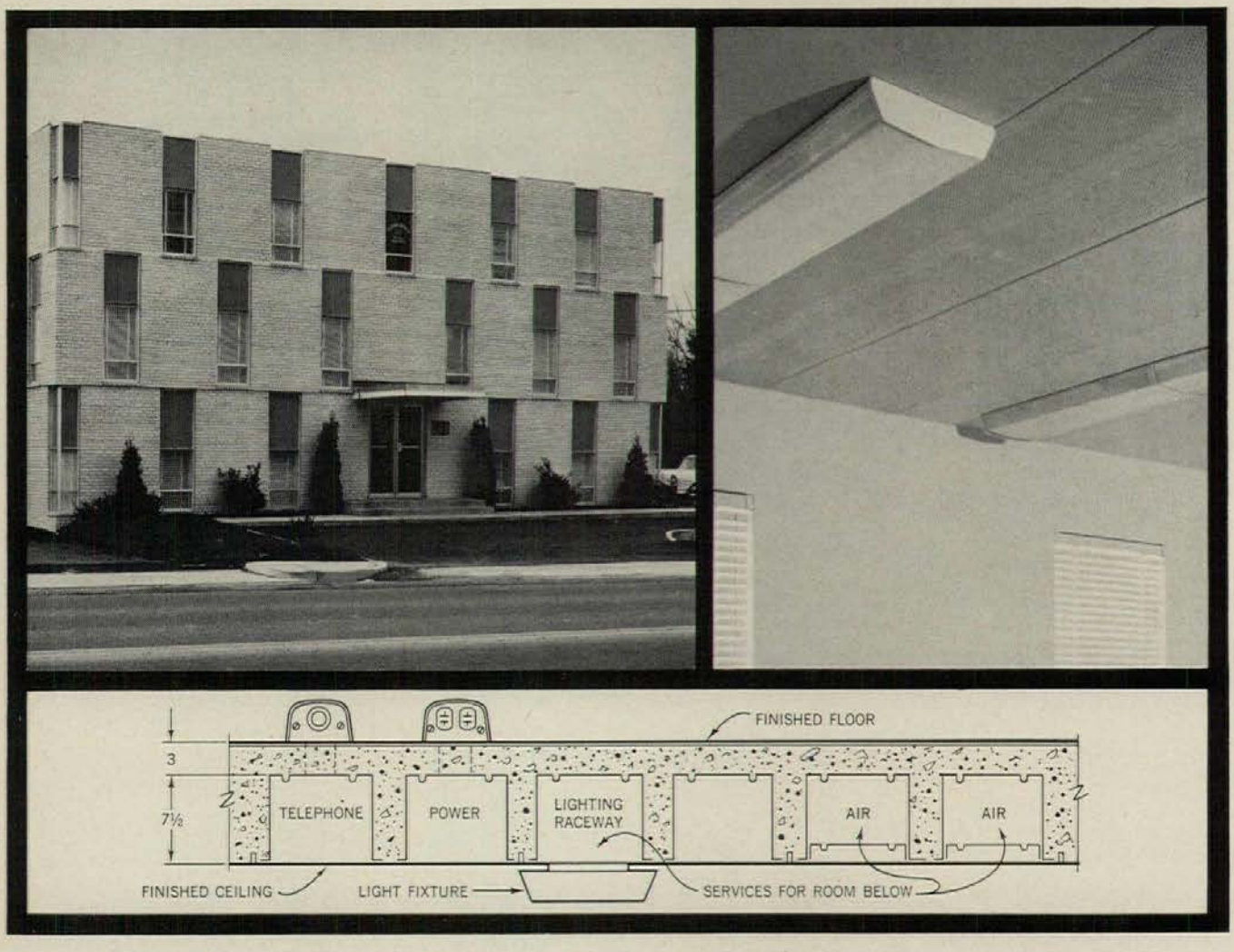
ALLENCO

MAHON
IS IDEAS
IN BUILDING PRODUCTS



SEE HOW MAHON "HIT THE CEILING"

to give architects more room to plan

Seven-and-a-half inches.

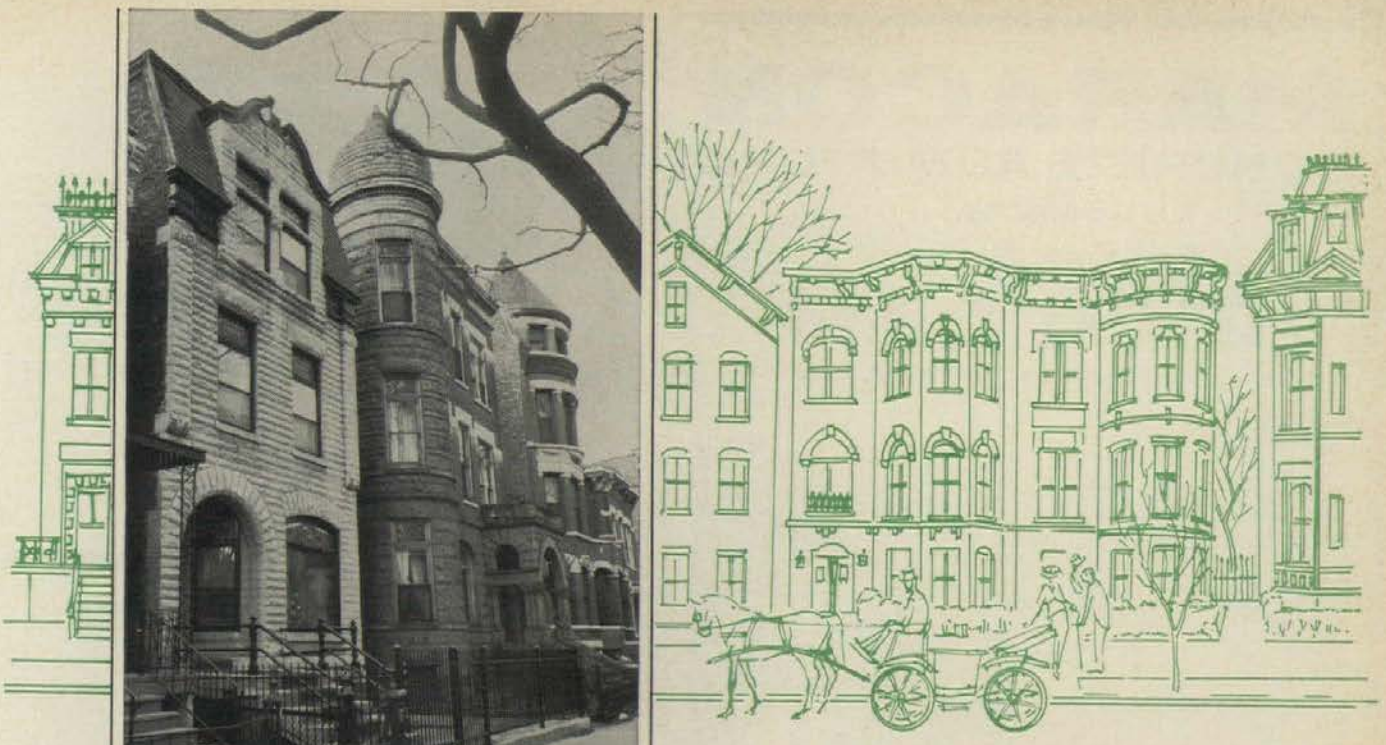
That's all the depth taken up by a Mahonaire® ceiling.

In that 7½ inches, architects for a three-story office building had room for hot and cold air distribution, communications, lighting, acoustical treatment—all with more than adequate support. Total floor-to-floor height is 9′ 4¾″ permitting a clear floor-to-ceiling height of 8′ 6¾″.

Small wonder that architects and builders are going in a big way for this modern approach to ceiling treatments. It enables them to save time and money. They also experience greater flexibility and convenience than ever before possible with conventional joist and air-handling methods.

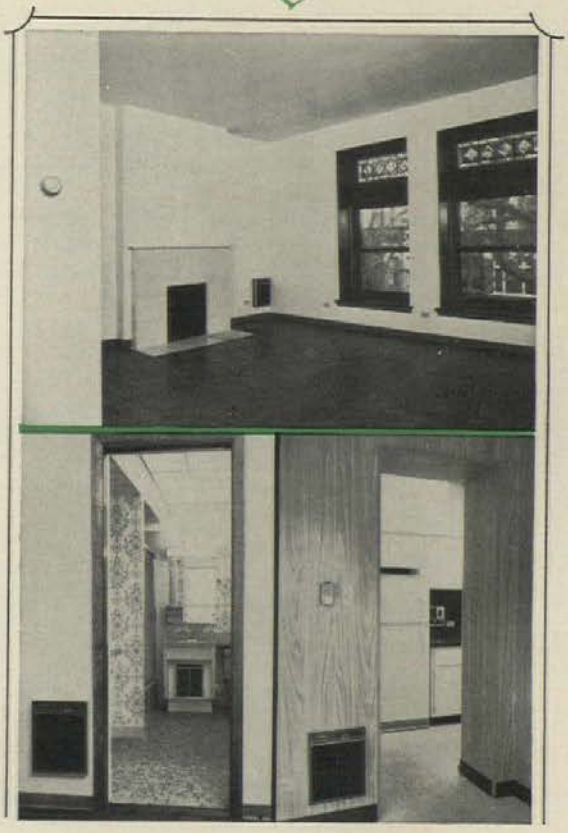
Mahon is ideas in building products. Next time you have a design or construction problem, talk it over with a Mahon Building Product Specialist. He has many ideas that can save you time and money through improved building techniques. Write...The R. C. Mahon Company, 6565 East Eight Mile Road, Detroit, Michigan 48234.

For more data, circle 147 on inquiry card



19th Century Charm
20th Century Comfort

Electromode FLAMELESS ELECTRIC HEAT



2218 Fremont Street, in Chicago's Old Town (white faced building in above photo) represents a new trend in urban renewal that has attracted nation wide attention . . . restoring the faded glory of former elite neighborhoo

Instead of tearing everything down building anew, architects and builders retaining 19th Century Victorian cha while adding 20th Century comfort ar convenience.

Modern Electromode electric heat has helped make this trend both feasible and economical with flexible, low cost equipment and controls that are easily installed. Electromode facilitates this blending of the old with the new to offer people who rent and those who buy the incomparable safety, cleanliness and comfort of automatic electric heat with individual room temperature control.

The complete story of 2218 Fremont Street and its modern Electromode electric heating system is told in folder CH-29. Send for your free copy today.

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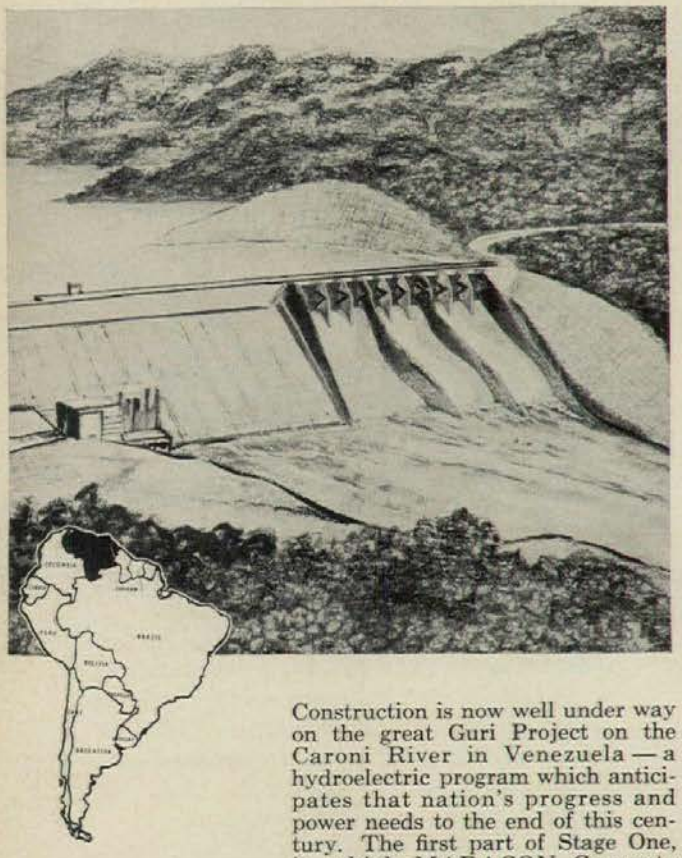
MARACON*
CONCRETE ADMIXTURE
Selected
For First Stage of
GURI DAM
IN VENEZUELA



General Contractor — Consorcio de Guri: Kaiser Engineers and Constructors, Inc.; Macco International; Tecon International; Merritt, Chapman and Scott, Inc.; and Christiani and Nielsen Corp.

Construction is now well under way on the great Guri Project on the Caroni River in Venezuela — a hydroelectric program which anticipates that nation's progress and power needs to the end of this century. The first part of Stage One, in which MARACON Concrete Admixture is being used, is scheduled for completion in 1968 and provides for a concrete gravity dam 348′ high and 1040′ long, a spillway capacity of 1,250,000 cu. ft. per second and a powerhouse capable of producing 527,250 kilowatts.

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*MARACON is the registered trade name for a series of concrete admixtures manufactured by American Can Company, Chemical Products.

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Please attach to your company letterhead. A-5

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a helpful portfolio on controlling condensation in built-up roof construction

2 ways to help stop failures in built-up roofs

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If you are a qualified architect, consultant, engineer, or contractor, your free copy of OLP-1066 will be delivered by your nearest G-E Sales Engineer—a good man to know.

Write us on your professional letterhead and mail to: Outdoor Lighting Dept., General Electric Co., Section 460-78, Hendersonville, N. C. 28739.

GENERAL ELECTRIC

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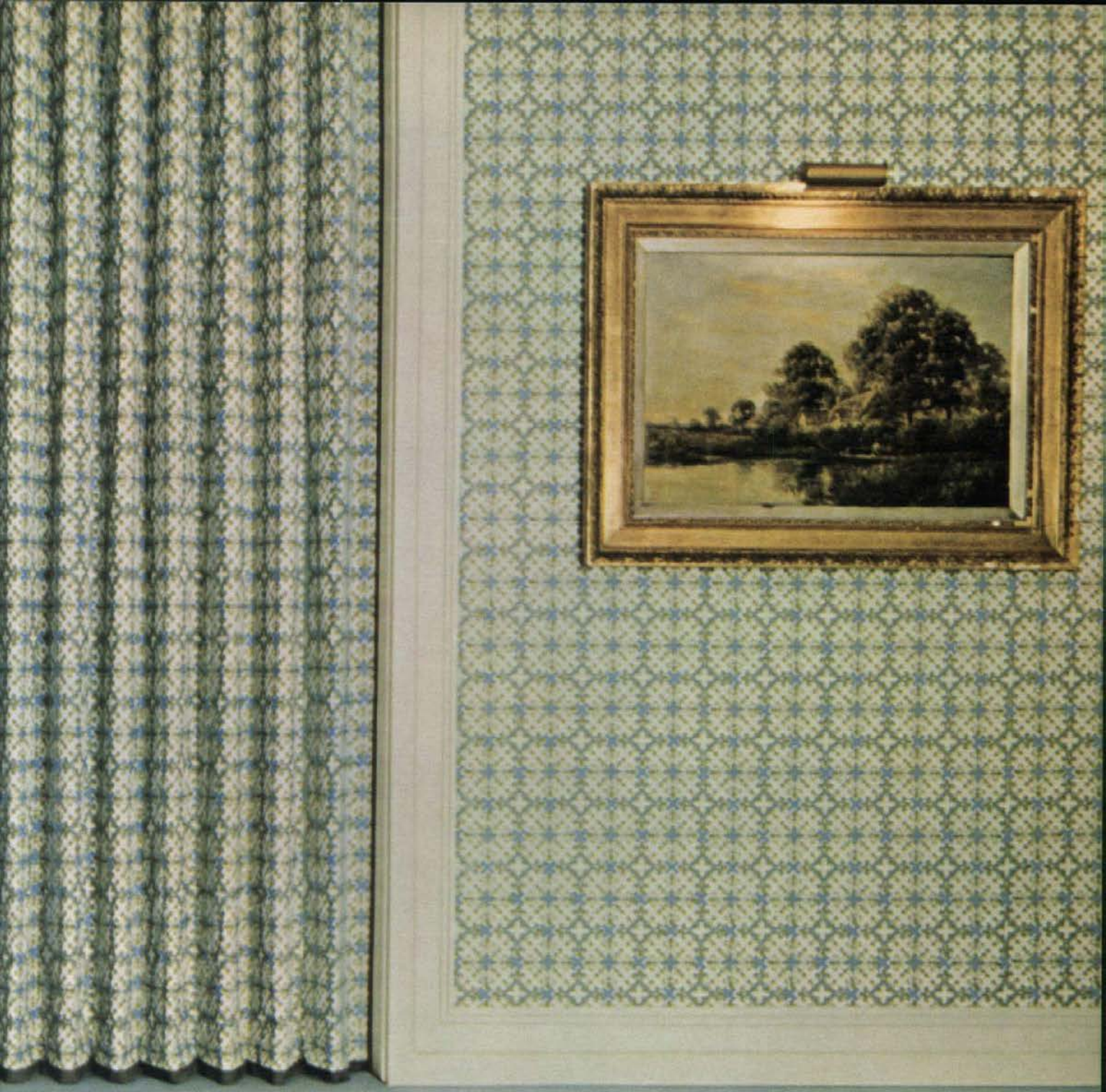
For more data, circle 150 on inquiry card



esigns . . . to harmonize, contrast or match any interior setting

nd "Cord Mesh" vinyls for Modernfold's oundmaster. We can supply Cord Mesh 5 and 48 in over 400 color options, in ozens of textures. Variations include silk-creened patterns from our own designer ollection; your own custom designs, or ven corporate logos and emblems. For e first time you can combine space flexibility with exciting operable wall finishes.

Possibilities exist for special fabrics in all types of commercial buildings—hotels, motels. restaurants, offices, conference rooms —even in schools. We cannot offer everything, but we think we can offer more than anyone else in the industry. We would like to show you all we can do.

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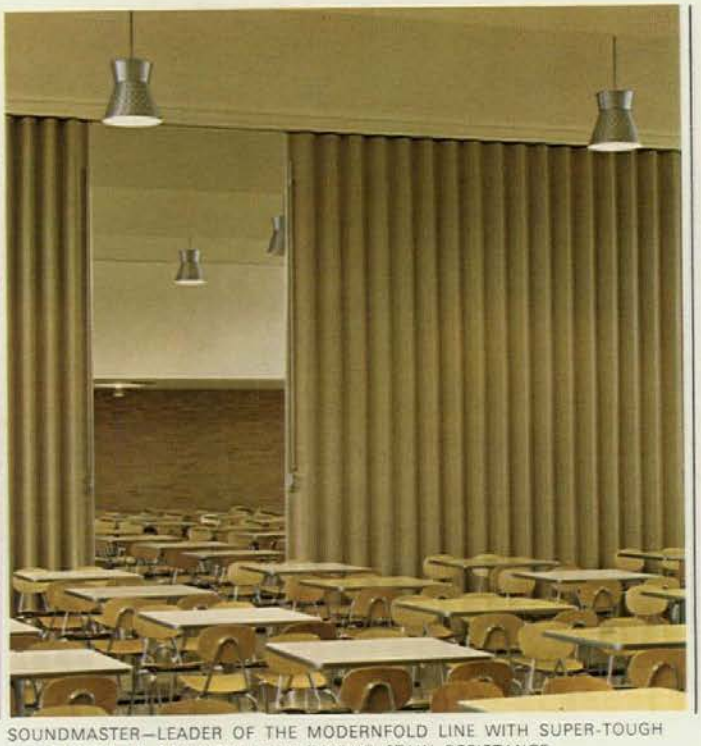
Now Modernfold offers 'Tedlar'* on operable walls

(makes vinyls as stain-resistant as ceramic tile)

ACOUSTI-SEAL 51—BEST SOUND CONTROL OPERABLE WALL MADE. STC 51. (TEST DATA AVAILABLE UPON REQUEST.)



SOUNDMASTER—LEADER OF THE MODERNFOLD LINE WITH SUPER-TOUGH CORD MESH 48 CAN NOW HAVE TEDLAR STAIN RESISTANCE.

"Tedlar" is an optional extra, when specified, that stops staining agents that are foes of all vinyls . . . oil, grease, wax, lipstick, crayon, marking pen . . . even ball-point pen. "Tedlar" is so inert that stains hardened by time can be removed with such strong solvents as acetone, without harm to the vinyl. □ Vinyl is virtually maintenance-free—"Tedlar" surfacing makes it even better. □ It is easy to specify "Tedlar":

Soundmaster—Outer covering shall be "Cord Mesh 48" with "Tedlar" polyvinyl fluoride film laminated to surface.

Acousti-Seal—Panels shall be surfaced in (specify one: Moderncote 33, 33L or Newport) with "Tedlar" polyvinyl fluoride film laminated to surface.

*Dupont registered trademark.

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New Castle, Indiana

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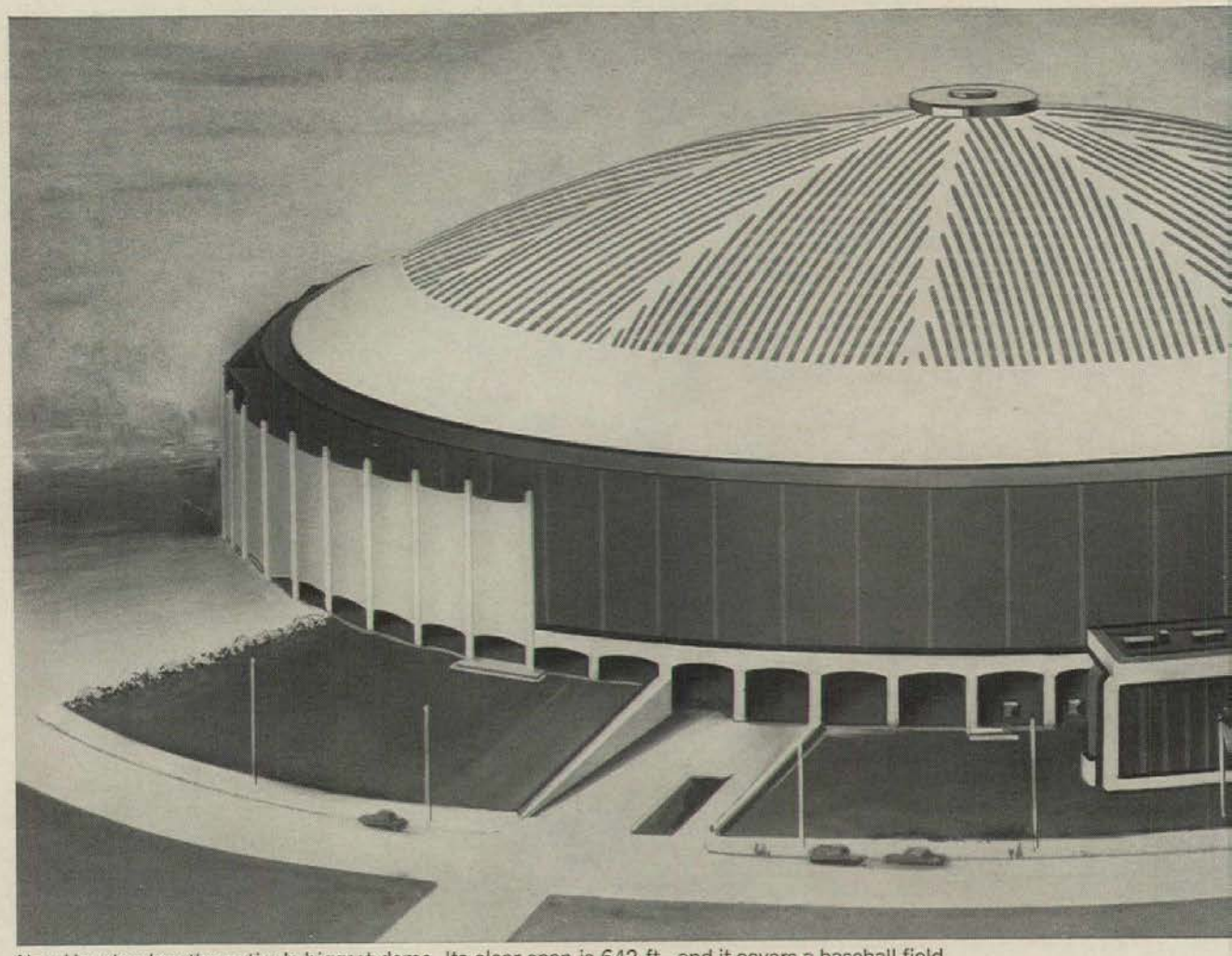
In 1960, Pittsburgh's 415-ft. clear span dome was the biggest in America. (And it's retractable, no less.)



Now Houston has the nation's biggest dome. Its clear span is 642 ft., and it covers a baseball field.

American Bridge built both of them—from steel, naturally.

Nearly all of today's large domes—and many small ones—are built with steel, because steel has the best weight-strength-cost combination of all building materials. It can be erected in any season, fast. At Houston's Harris County Stadium (the Astrodome), for example, American Bridge erected the 2,900-ton dome—and the other 6,600 tons of steelwork—in less than four months.

If you're planning to build, let American Bridge help you in the early stages. (We've been building the big ones—and small ones—for over 50 years.) Call or write American Bridge Division of United States Steel, Room 605, Five Gateway Center, Pittsburgh, Pa. 15230.

This mark tells you a product is made of steel. Steel

USS TRADEMARK **American Bridge**
Division of United States Steel

continued from page 284

John Gallagher, A.I.A. has become a partner in the New York architectural firm of **Hoberman and Wasserman.**

Holforty Widrig O'Neill & Associates Inc., consulting engineers of Troy, Mich., have elected **Arthur W. Buttery, Arne Leppanen,** and **Raymond V. Perry** associates, and have promoted **Calvin J. Saari** to head of structural detailing and **David Silberg** to production manager.

Frank L. Hope & Associates, architects and engineers of San Diego have appointed **Francis B. Peacock** and **James E. Petteway** to the board of directors. Mr. Petteway has also been selected director of architecture.

Keyes, Lethbridge & Condon, Architects of Washington have made **Colden l'H. R. Florance, A.I.A.** and **Roscoe Reeves, Jr., A.I.A.** associate partners and **Roger L. Pompei, A.I.A., John David Reddick, Jr., R.A., Thomas B. Simmons, R.A.** and **Gary E. Sunderland, R.A.** associates. **Joseph A. Wilkes, A.I.A.** who served as director of technical information and standards, has entered private practice and Mr. Reeves has been appointed to that position.

King & Lewis, Architects and Engineers, Inc., Detroit, has appointed **Robert S. Tarske** director of engineering.

Abraham Landow, R. A., has appointed **Lloyd J. Landow, R. A.** a partner in the firm to be known as **Landow and Landow Architects,** 837 Hempstead Turnpike, Franklin Square, L. I., N. Y.

The Detroit architectural firm of **Levine Alpern and Associates** has advanced **Kurt Weber-Stroebele, A.I.A.** to chief architect and **Bernard Remer** to chief designer.

Levin Kovacs and Associates, Engineers have opened offices at 344 Hamilton, Birmingham, Mich. Partners are **Bernard J. Levin, P.E.** and **Donald J. Kovacs, P.E.**

Louis J. Marino & Associates have opened architectural offices at 21515 Chagrin Blvd., Cleveland.

William H. Metcalf, Jr., A.I.A. and **Donald J. Neubauer, A.S.C.E.** have announced **Metcalf and Associates, Architects and Engineers** with Gerald F. Oudens an associate, 1156 19th St. N.W., Washington.

Naramore Bain Brady & Johanson, Seattle architects, have named **Robert S. Hooper** an associate.

Nolen-Swinburne and Associates, architects and planners of Philadelphia, have appointed **J. William O'Neill, Jr.** and **Sanford C. Cassell** senior associates and **John A. Glen** and **Ronald C. Turner** associates.

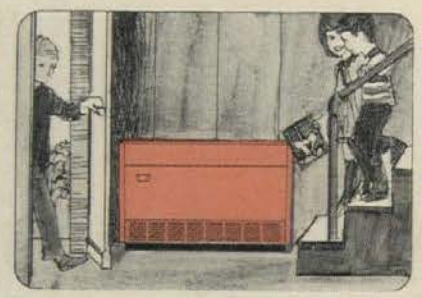
continued on page 311

Look to Chromalox®

for the right answers to electric comfort heating/cooling problems in buildings

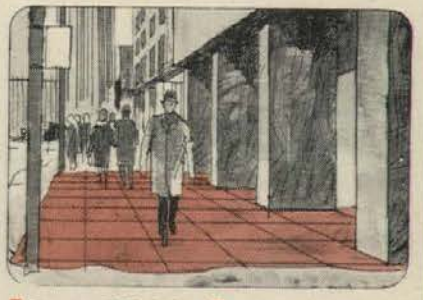
[Office Areas] Chromalox Modulaire year-round Air Conditioners are compact, through-the-wall, self contained units which provide complete comfort conditioning including electric heating, refrigeration cooling, dehumidification, ventilation and air filtering for lounges, classrooms, offices, meeting rooms, churches and similar areas needing air conditioning.

Request Bulletins F03100 and F03102



[Entranceways] Chromalox Electric Cabinet Unit Heaters are compact, blower type, high capacity heaters designed primarily for applications in entranceways, corridors, lobbies. They are available in decorator style models for floor, wall and ceiling mounting; free standing, semi-recessed and fully recessed units.

Request Bulletin F22100



[Snow Melting] Chromalox Electric Heater Mats and MI Heating Cable are embedded in concrete or asphalt sidewalks, driveways, ramps and steps to keep surface areas free of ice and snow. They eliminate manual labor and related costly agents such as salt, cinders and chemicals which often are tracked indoors to stain rugs and floors.

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[Marquees] Chromalox Electric Infrared Marquee Heaters provide spot comfort whatever the weather outdoors. They project radiant warmth on people and help keep sidewalks free of ice and snow at building entrances. Easy to install, designed for either recess or surface mounting.

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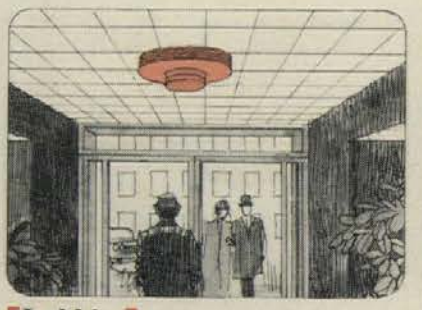

[Lobbies] Chromalox Type VUH Ceiling-Mounted Electric Vertical Unit Heaters are installed in entryways and stairwells to form a warm air barrier to cold outdoor air. Optional discharge air diffusers provide a choice of five heat distribution patterns. Larger sizes up to 50 KW are ideal for high bay mounting.

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[Reception Areas] Chromalox Electric Sill Line and Baseboard Units are available in a wide range of models and heating capacities. Sill lines are usually mounted under windows, baseboards at floor level for continuous wall-to-wall heating in offices, reception areas, corridors and similar applications.

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- ☐ Infrared Heaters (F70100)
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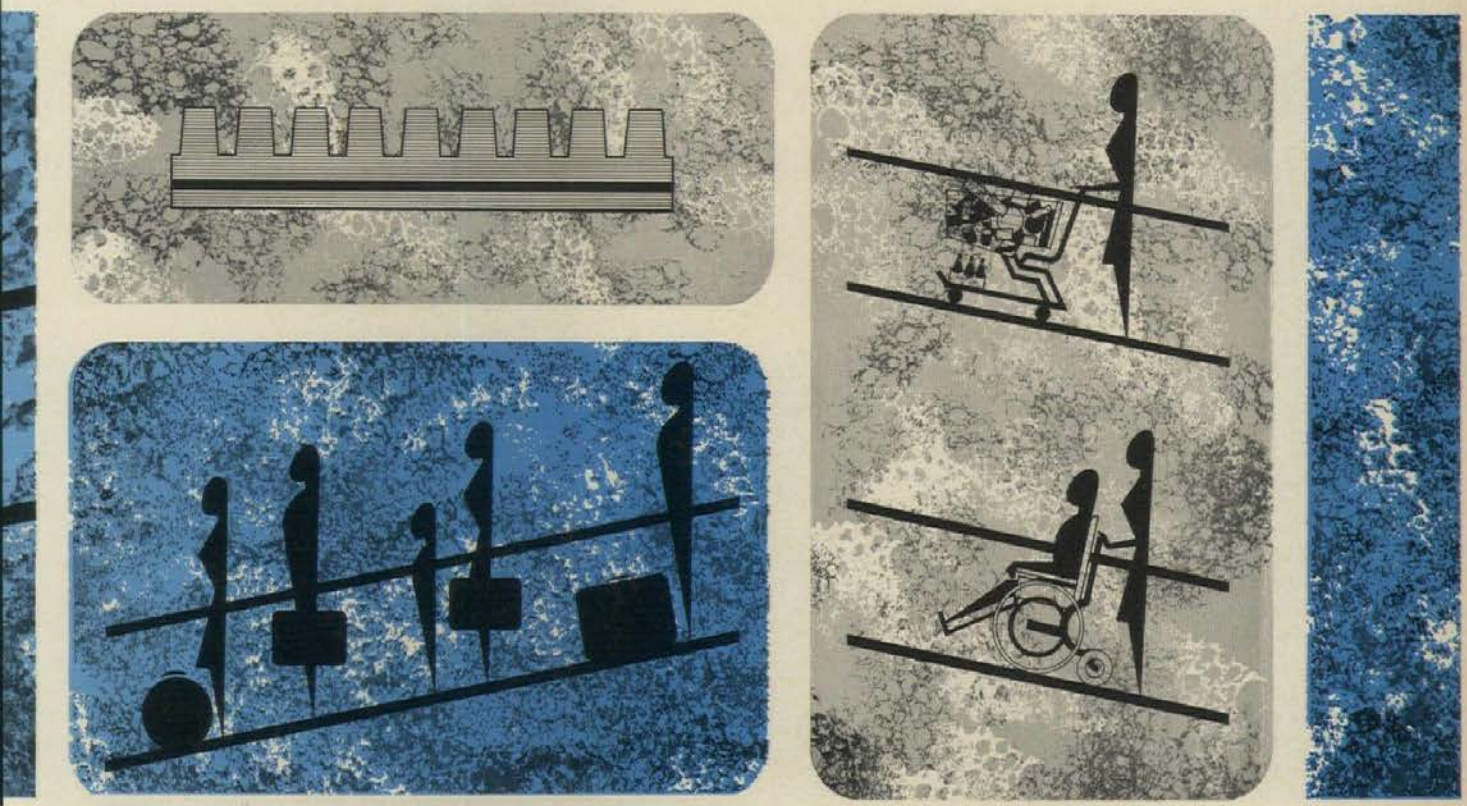

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July's Architectural Record will present a subject so import
that...for the first time in its history, the Record will suspe

THE NEV
ARCHIT

In the July Architectural Record, the editors will evaluate the great
third of the 20th century-the same challenges and problems that build

POPULATION EXPLOSION!

The bulk of the U.S. population growth is in its metropolitan areas. Between 1960 and 1965 — the metropolitan population increased almost twice as fast as the nonmetropolitan population. On the other hand, farm population has continued to drop, decreasing about 21 per cent during the five year period, while the nonfarm population increased 10 per cent, according to the Department of Commerce. The twelve million persons now living on farms represent about six per cent of the total population.

Today . . . 67 per cent of the nation's population is jammed into nine per cent of the land. 130 million people live in 224 U.S. metropolitan communities. By the year 2,000, some 80 per cent of all Americans—more than today's entire population will be city dwellers, according to government figures.

People, Automobiles and Progress

To cope with this population explosion in our cities, President Johnson has warned that in the next 35 years, "we have to build in our cities as much as we have built since the first colonist arrived on these shores." The continuing proliferation of people, automobiles, and new concepts of progress demand it, he said. Our metropolitan centers are expanding at such a rate that we must build the equivalent of one whole new Chicago every year, devouring a million acres of countryside.

Order and Greatness

How promising is that whole new Chicago every year? Is there hope for order and perhaps even greatness? Architects and engineers are the vital key to the biggest building boom in the history of the world.

The July Architectural Record will examine the challenges and opportunities brought about by the population explosion in our cities.

TECHNOLOGICAL EXPLOSION

The big problems facing architects and engineers today are: (1) dete mining what the design criteria should be, (2) writing meaningful pr grams which establish appropriate goals for different kinds of building (3) conceiving and designing systems which complement one anoth rather than ones which act as separate entities, or worse than that, wo at cross purposes, (4) accomplishing all the foregoing while also pr viding installation and operating economies.

Materials and Systems

Today the range of materials and systems available to architects a structural engineers offer limitless possibilities in span, height and sha to suit any building purpose. And the environment—thermal, visual a acoustical—can be controlled to meet practically any design criteria.

Architect and Engineer

The architect and the engineer have a plethora of new systems a techniques by virtue of improved materials and growth of sophisticati in engineering analysis. Not only are all the basic materials abundan available, but building product manufacturers are offering materials higher strengths and quality, and a larger variety of structural, mecha cal and electrical components. On the negative side, this knowled permits practically anything to be built, regardless of architectural me On the positive side, structures can be designed to work with fines rather than by brute force, thus leading to better architectural solutio as well as engineering solutions.

How will this technological explosion affect the architect and practice of architecture? The July Architectural Record will examine t challenges and crucial problems brought about by this great techn logical explosion.

The July issue marks the 75th year of Architectural Reco

architects, engineers, and building product manufacturers
regular features to devote the entire July issue exclusively to...

AGE OF
ECTURE!

ges and crucial problems that face architects and engineers in the last
oduct manufacturers must face in "The New Age of Architecture"

CONSTRUCTION EXPANSION!

he dimensions of the future are enormous, and the numbers that easure them are difficult to put into perspective. How big is $100 bilon worth of construction? By 1980, the annual volume of new construction will be more than half again this amount. How this total will be eached and how the demand patterns for the many diverse types of uildings and other construction will unfold can be shown by a closer ook at the individual markets.

Residential Building

he outlook for homebuilding through the Seventies is exceptionally ood. The earlier years will provide a gradually rising demand from the urrent 1.5 million housing units to an annual rate of about 1.8 million y 1970. Then the rate will begin to accelerate more rapidly, reaching bout 2.2 million by 1975. The types of housing to be built will change ver this period, reflecting the needs of a different population age ructure.

Nonresidential Building

he demand for stores, restaurants, and other retail establishments will crease greatly beginning around 1970. Office building will maintain a gorous upward trend. Industrial building will still have its cyclical exansions and contractions, but the trend will certainly be advancing rongly throughout the years between now and 1980. Growth in exenditures for schools can be expected to rise sharply after 1970.

By 1980, the value of all new construction put in place will have eached a total exceeding $150 billion—more than double today's rate f expenditure.

How will this enormous construction volume affect the architect and is practice of architecture? The July Architectural Record will examine he challenges and crucial problems brought about by this great conruction expansion.

ADVERTISING OPPORTUNITY!

In addition to this unique editorial climate, advertisers in the July issue will have all the outstanding advertising values of Architectural Record working for them . . .

circulation—more architects and more engineers subscribe to the Record—pay more for their subscriptions—and the Record has the highest renewal rate . . .

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readership—architects and engineers have voted Architectural Record "preferred", "most helpful" and "most useful" in 196 out of 213 independently sponsored studies . . . making it architecture's best-read publication.

If your company has a stake in the New Age of Architecture, then you'll want to be in the Record's July issue. Without a doubt—it will be the most valuable and comprehensive issue ever published by Architectural Record. It will be required reading for architects and engineers and "required advertising" for building products manufacturers. Write, phone or wire your reservation today!

CLOSING DATE: JUNE 8

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vice to architects, engineers and building product manufacturers

A four-pipe system isn't always the answer.

Why waste a penthouse view on a cooling tower?

There's a rent-paying tenant atop this new office building—because it's heated and cooled with G-E Zoneline.

At first, the F&A Development Corporation was considering a four-pipe system for the new People's Savings Bank office building in Bridgeport, Conn. "But as plans evolved," says Bennett Delle Bovi, project engineer of F&A, "it became obvious that General Electric Zoneline would do everything a four-pipe system would do—and free an extra 5% to 10% in usable, rentable floor space."

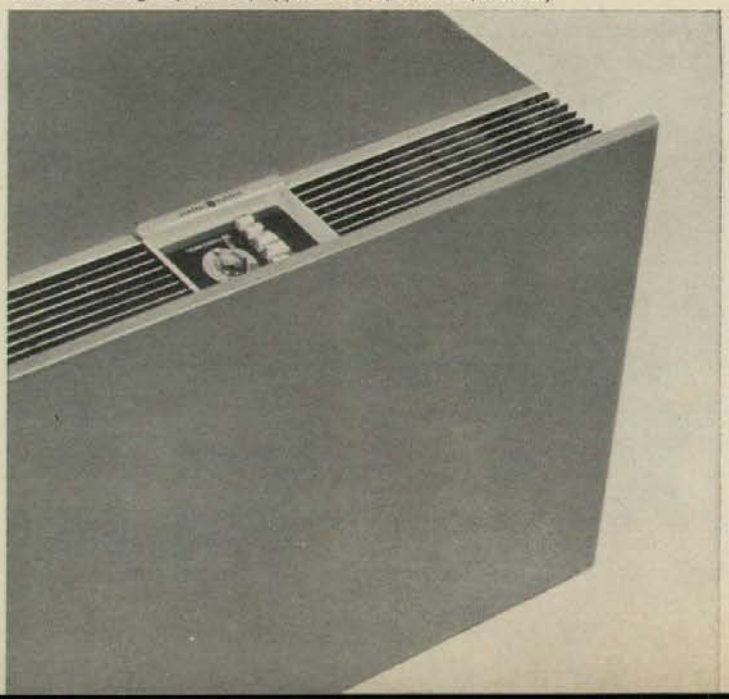
Here are some other benefits F&A found in G-E Zoneline:

NO PIPES, ductwork, valves, compressors, storage tank or boiler with G-E Zoneline. But enough added space on the roof for penthouse offices that give a net return of $15,000 a year. Overall, a gain of 5% to 10% in usable, rentable floor space.
40% SAVINGS on first cost, compared with the estimates for a four-pipe system.
CHOICE OF STYLE in exterior grillwork. A special grille was designed for the Peoples's Savings Bank to complement the building's architectural styling.
INTERIOR FLEXIBILITY was a consideration, too. Zoneline units will fit over doors (Marina Towers, Chicago) or under window seats (Century House, Lincoln, Neb.).
ROOM-BY-ROOM CONTROLS provide individual, year-round comfort. A tenant who is chilly can turn up his heat at the same time another is running his air conditioning.

For motels, dormitories, garden apartments, nursing homes and medical centers—and high-rise construction like the People's Savings Bank office building, G-E Zoneline heating/cooling systems can almost always make dramatic savings in space and first cost. Call your General Electric Zoneline Air Conditioning Sales Representative for the facts.

GENERAL ELECTRIC

Air Conditioning Department, Appliance Park, Louisville, Kentucky



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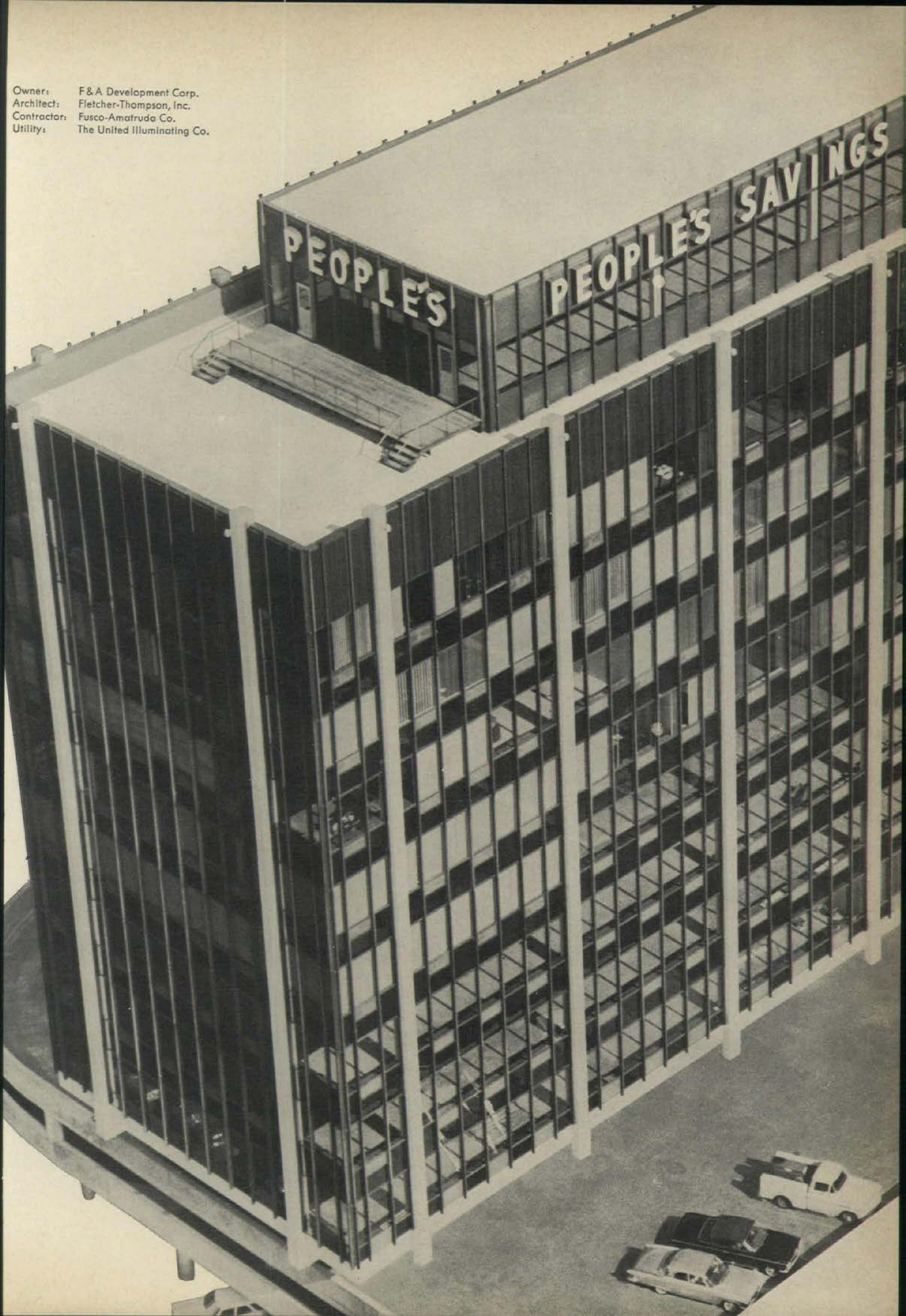
Owner: F & A Development Corp.
Architect: Fletcher-Thompson, Inc.
Contractor: Fusco-Amatruda Co.
Utility: The United Illuminating Co.



OFFICE NOTES

continued from page 302

Parsons, Brinckerhoff, Quade & Douglas, consulting engineers, and **Lord & Den Hartog & Associates** have formed a new architectural affiliate, **Lord & Den Hartog,** architects / engineers / planners with **Perry D. Lord** and **Maarten D. Den Hartog,** registered architects, as operating principals, 165 Broadway, New York City.

Pecsok & Jelliffe, A.I.A., Architects and **J. Parke Randall, A.I.A. Architect** have joined to form **Pecsok, Jelliffe & Randall, A.I.A. Architects** with offices at 660 E. 46th St., Indianapolis.

Donald L. Rigoni and **Stuart H. Reich** have formed **Rigoni and Reich, Architects,** 156 East 52nd Street, New York City.

Rogers, Taliaferro, Kostritsky, Lamb, Architects / Planners, with offices in Baltimore, have made **Mario L. Schack** an associate.

Shepley Bulfinch Richardson and Abbott, architects of Boston, have announced that **George R. Mathey, Robert McIntosh** and **William R. Spilman** have become associates.

Smith, Hinchman and Grylls Associates, Detroit architectural, engineering and planning firm, have appointed **Kami Targal** head of their new civil engineering department.

Carl Russell, Jr. who has become an associate and vice president of **John Carl Warnecke and Associates,** architects and planning consultants with main offices in San Franciso, is office manager of the Bay Area office.

NEW ADDRESSES

John Case & Associates, structural engineers, 6330 N. Figueroa St., Los Angeles.

Holforty Widrig O'Neill & Associates Inc., consulting engineers, 177 West Big Beaver Road, Troy, Mich.

Howard Garrett & Associates, designers, 1425 S. 21st St., Birmingham, Ala.

Gerhard E. Karplus, A.I.A., 277 Park Avenue, 47th floor, New York City.

King, Benioff & Associates, consulting engineers, 13701 Riverside Drive, Sherman Oaks, Calif.

Tasso Katselas, Architect, 4951 Centre Ave., Pittsburgh.

Swan, Wooster Engineering Co. Ltd., consulting engineers, 1525 Robson St., Vancouver 5, B.C.

Due to fire, **Sylvan R. Shemitz and Associates,** lighting consultation and design, are temporarily located at 1294 Chapel St., New Haven, Conn.

John A. Taras, A.I.A. Architect, 213 Grand Ave., Pacific Grove, Calif.

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shy tious

ies—including the mills where that original teel comes from—are geared to a quality level hat guarantees consistency from order to order.

So if you want to decorate a new building or enovate an old one or specify a load of pre-ngineered roofdeck or simply install a sure-ooted catwalk, you now know just the place o come to.

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On-time delivery? You've got it. What you want, where you want, when you want.

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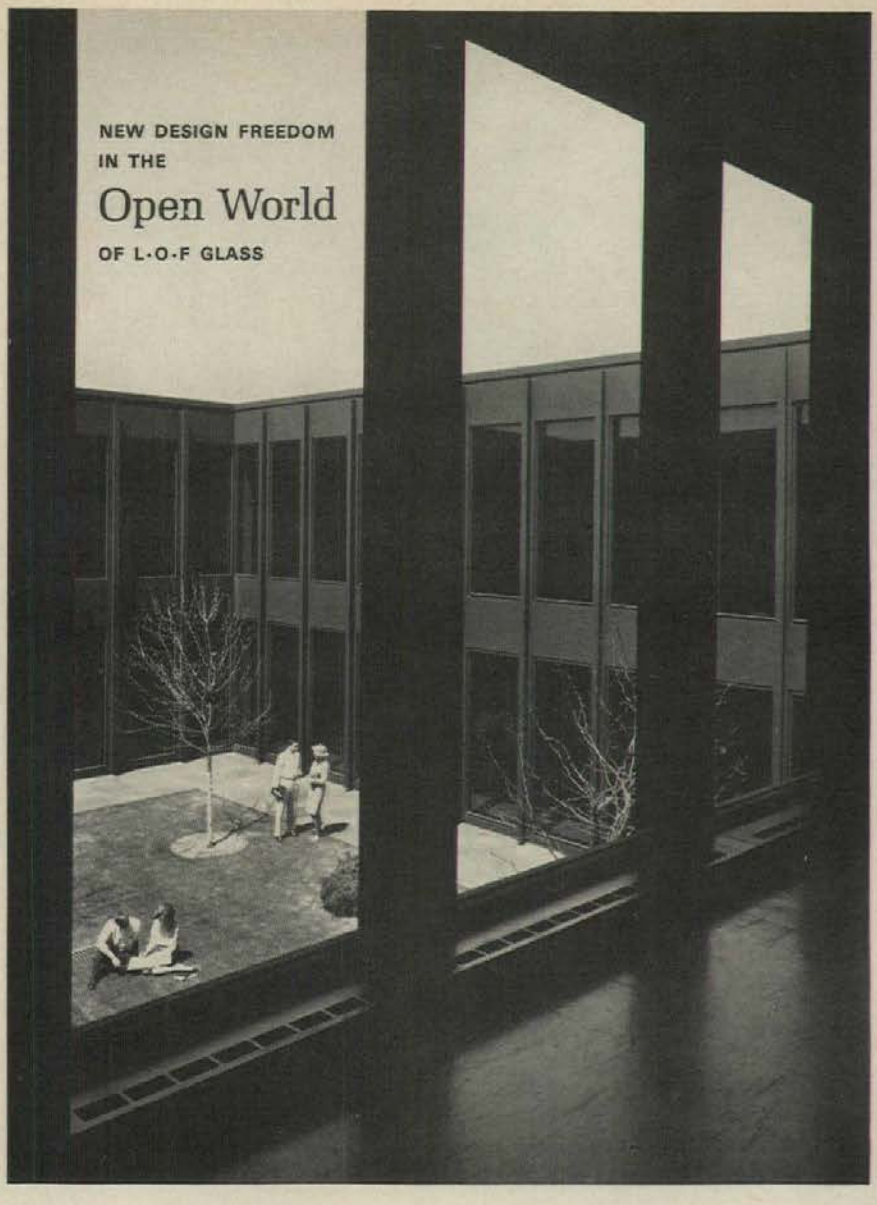
Have you looked at Wheeling lately?

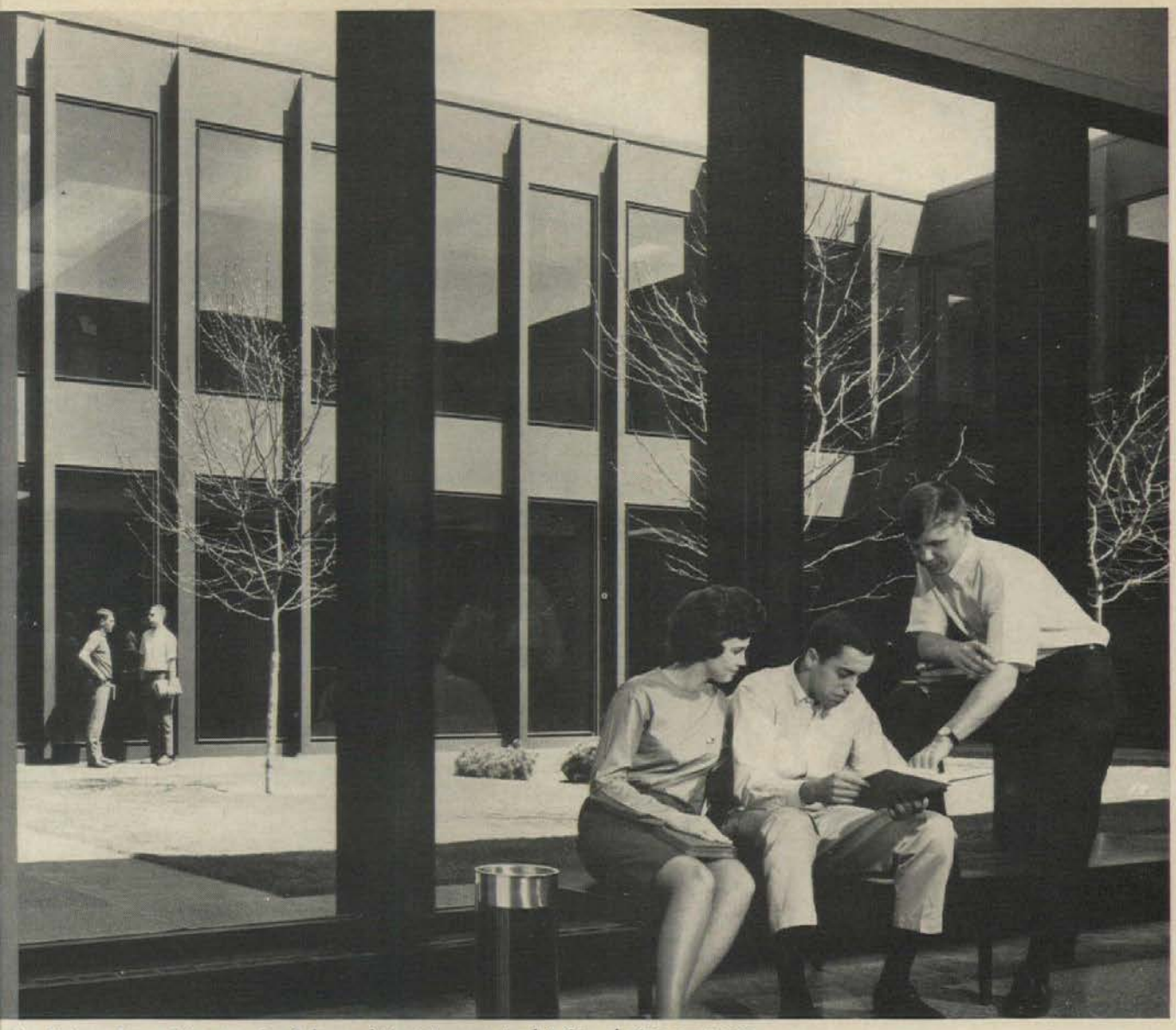
Wheeling

Wheeling Corrugating Company, Wheeling, West Virginia



E. T. Meredith Memorial Hall, Drake University,

Look what you can do with 44x66 feet of space



Des Moines, Iowa. Mies van der Rohe, architect. Forman Ford & Co., glazing contractor.

You can wrap a classroom building around it, as Architect Mies van der Rohe did. To brighten hallways and offices on all four sides by surrounding the atrium with walls of glass. To provide visual relief for occupants around the complete perimeter.

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LOF GLASS

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Sam isn't much of a lunch date

He'll start talking shop before they bring the menu.

Give you a rundown on vinyls during the entree.

Warm up to epoxies while his coffee gets cold.

With Sam, a business lunch is all business. Because he knows you want facts.

Not folderol.

Facts about the flash point of a new wood sealer.

About a water-repellent coating for limestone.

About hardeners for concrete floors.

That's "table talk" to Sam. And Jesse. And Roy.

And every Man from Devoe.

They know you get enough of the glad hand.

Now try a helping hand.

You can depend on the **Man from Devoe.**

DEVOE

A DIVISION OF CELANESE COATINGS COMPANY

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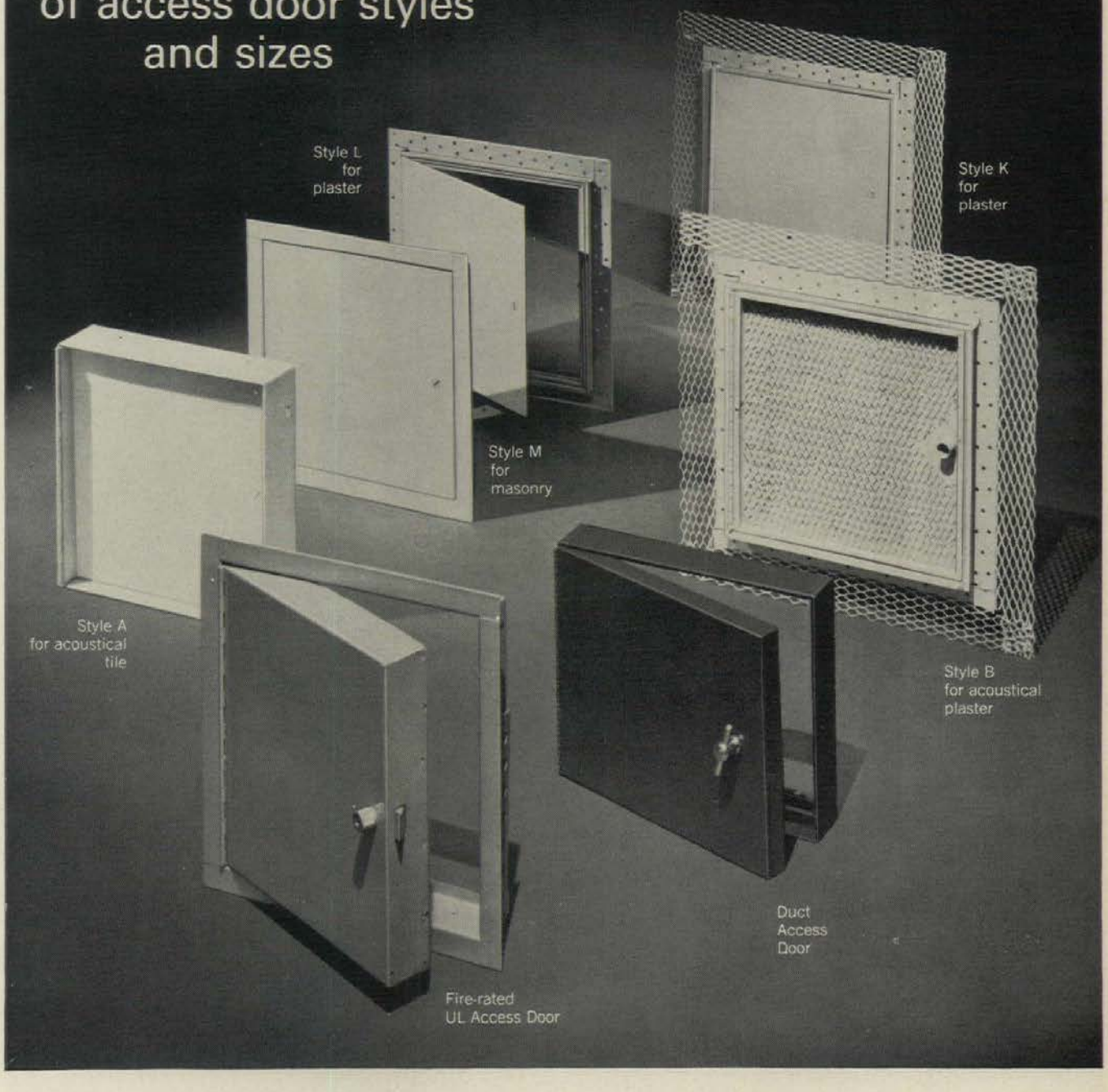
Office building consists of two superimposed blocks

The first of twin office buildings which will form a gateway to the EUR (Esposizione Universale Roma), a business and government center in Rome, consists of two superimposed blocks of three and two floors respectively, both over 400 feet long and separated by an intermediate floor of management offices. The lower block is faced with a dark bronze-aluminum curtain wall, while the upper block has a white marble facing. The 250,000-square-foot building, to be occupied by Esso Standard Italiana, was designed by Professors Vittorio Ballio Morpurgo and Luigi Moretti, with Lathrop Douglass as consulting architect for Esso Standard.

COMPLETE SELECTION

of access door styles and sizes



In buildings everywhere, Milcor Steel Access Doors provide service openings in any surface without encroaching upon design. They are carefully made and rigidly constructed for minimum maintenance—economically installed, without on-site cutting and fitting—readily available in seven styles and a wide range of sizes. See Sweet's, section 16K/In. Write for catalog 210-6.

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BS-18

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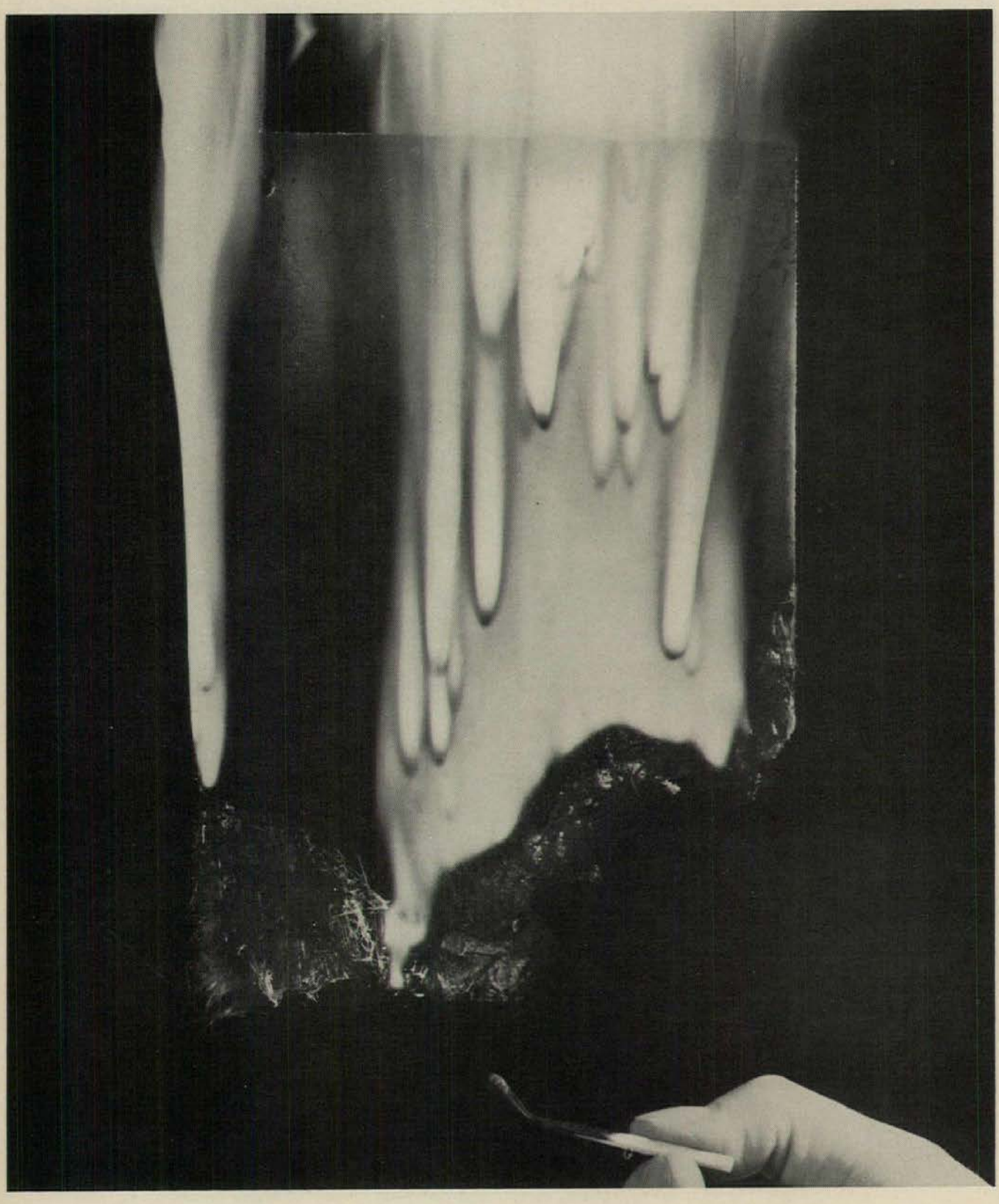
Here's one thing Hetron®-based panels won't do.



Hetron-based panels won't support combustion.

That means you can use them as skylights or siding on almost any building, almost anywhere—and not add a nickel to fire insurance costs.

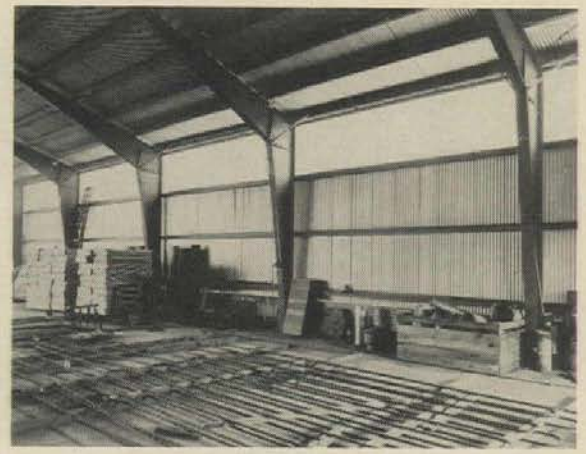
Hetron-based translucent panels have a flame-spread rating as low as 30. They meet rigid codes and are qualified to carry the Factory Mutual Seal and the U/L label.

And that's not all.

They won't shatter. Or let in a glare of light. They resist corrosion and moisture. Transmit heat slowly. Cost about half as much to install as conventional materials.

So why not consider fire-retardant, Hetron-based plastic panels for your next project?

For a list of fabricators and more information on Hetron—the polyester resin that makes panels safer—write us. Durez® Plastics Division, Hooker Chemical Corporation, 8005 Walck Road, North Tonawanda, N.Y. 14121.



HOOKER CHEMICALS PLASTICS

DUREZ PLASTICS DIVISION

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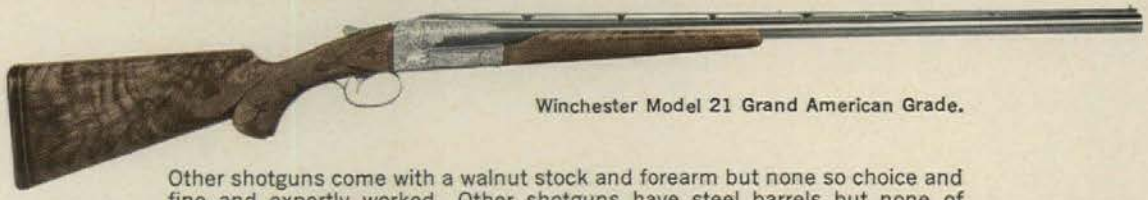
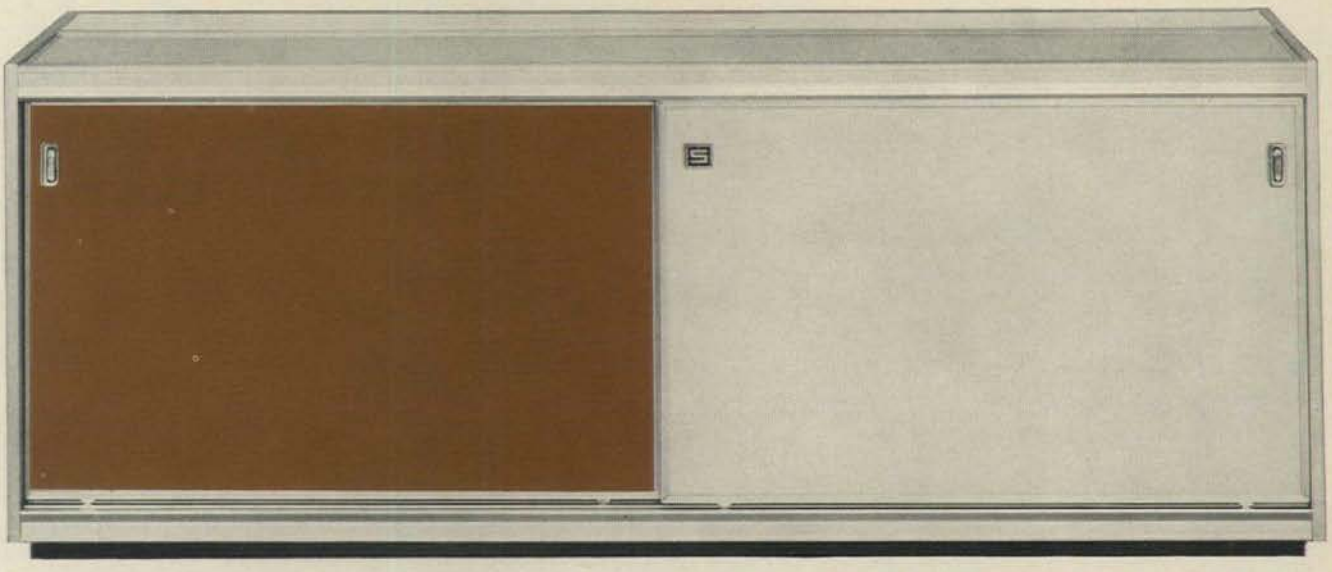
There are all kinds of shotguns... but none can equal the beauty and brilliant performance of this hand-crafted firearm!



Winchester Model 21 Grand American Grade.

Other shotguns come with a walnut stock and forearm but none so choice and fine and expertly worked. Other shotguns have steel barrels but none of such unusual hardness and strength with parts so perfectly fitted. *This* is a *shotgun* . . . for those who demand the best — and all the advantages that *only* the best of its kind can unconditionally offer. It is a firearm without equal.



Schemenauer Classroom Unit Ventilators Are Also Without Equal

Other unit ventilator manufacturers may *talk* trouble-free performance but Schemenauer *delivers* it — *for the life of the classroom.* Who else but Schemenauer has a "valve control" of fresh air supply for maximum economy of operation . . . an advanced design fan wheel of corrosion-free aluminum . . . solid, one-piece anodized aluminum air grilles located along the back, *where they belong* . . . and heavy duty *doors,* not cake pan construction, that glide freely on roller bearing steel wheels and open the *full width?* A unit designed to go in quickly and correctly without a staggering punch-list. No other unit ventilator is so *thoughtfully engineered* with attention to details that *mean something* to the end user—and every *serious-minded* architect. *This* is a unit ventilator. *This* is your opportunity to pick the best engineered cooling/heating equipment. Get *separate* prices. Analyze them. Discover *what* is offered for the money in terms of *client needs.* Everyone gains when *you* specify *up to a standard!*

Basic Data For Decision-Makers

Schemenauer Unit Ventilators are for steam, hot water, electric heating and chilled water cooling. Twelve architectural colors *plus* a wood grain finish. Matching accessories of various lengths *and* heights offer utmost design freedom. Numerous engineering exclusives provide for peak long-term economy, trouble-free performance and ease of installation. Nationwide sales and service. Field help.

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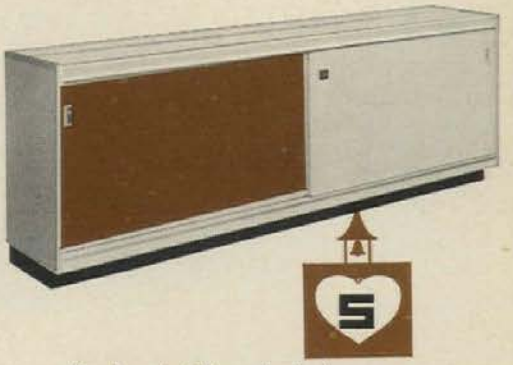
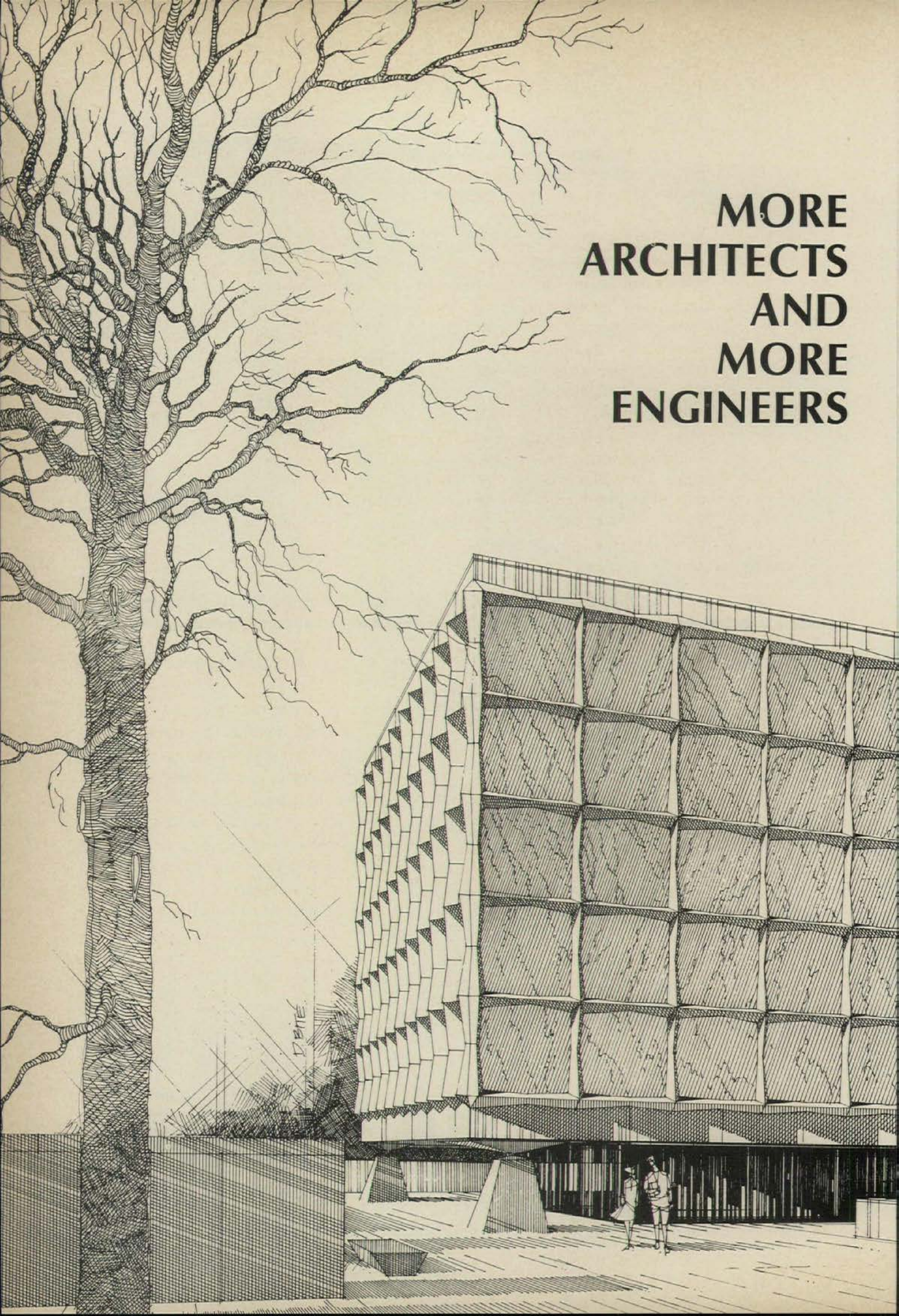
"Designer-manufacturer of a complete line of heating-cooling-air handling apparatus for institutional, industrial and commercial applications."



the heart of the school classroom

For more data, circle 170 on inquiry card

MORE ARCHITECTS AND MORE ENGINEERS



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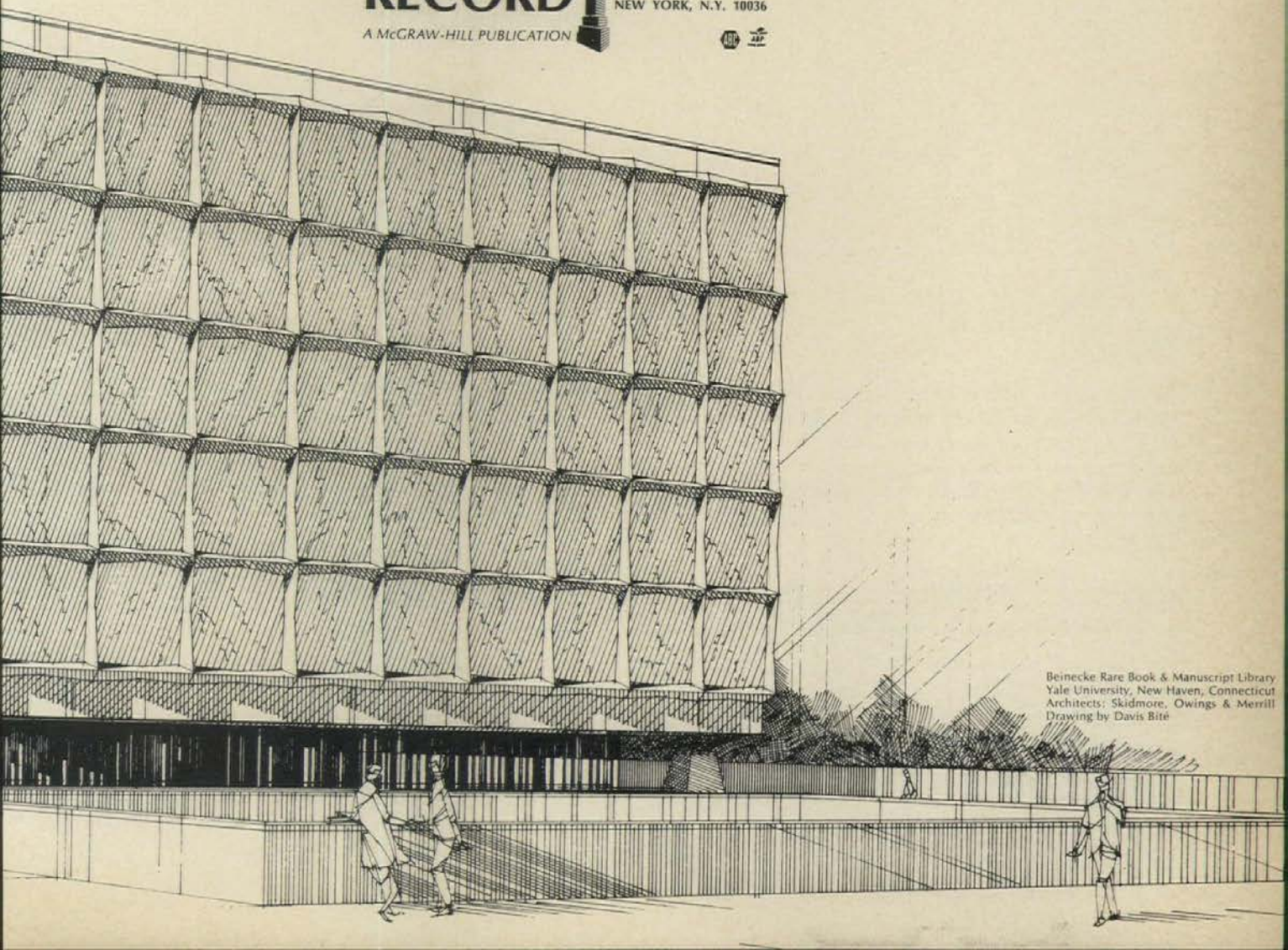

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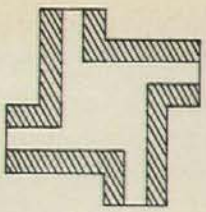
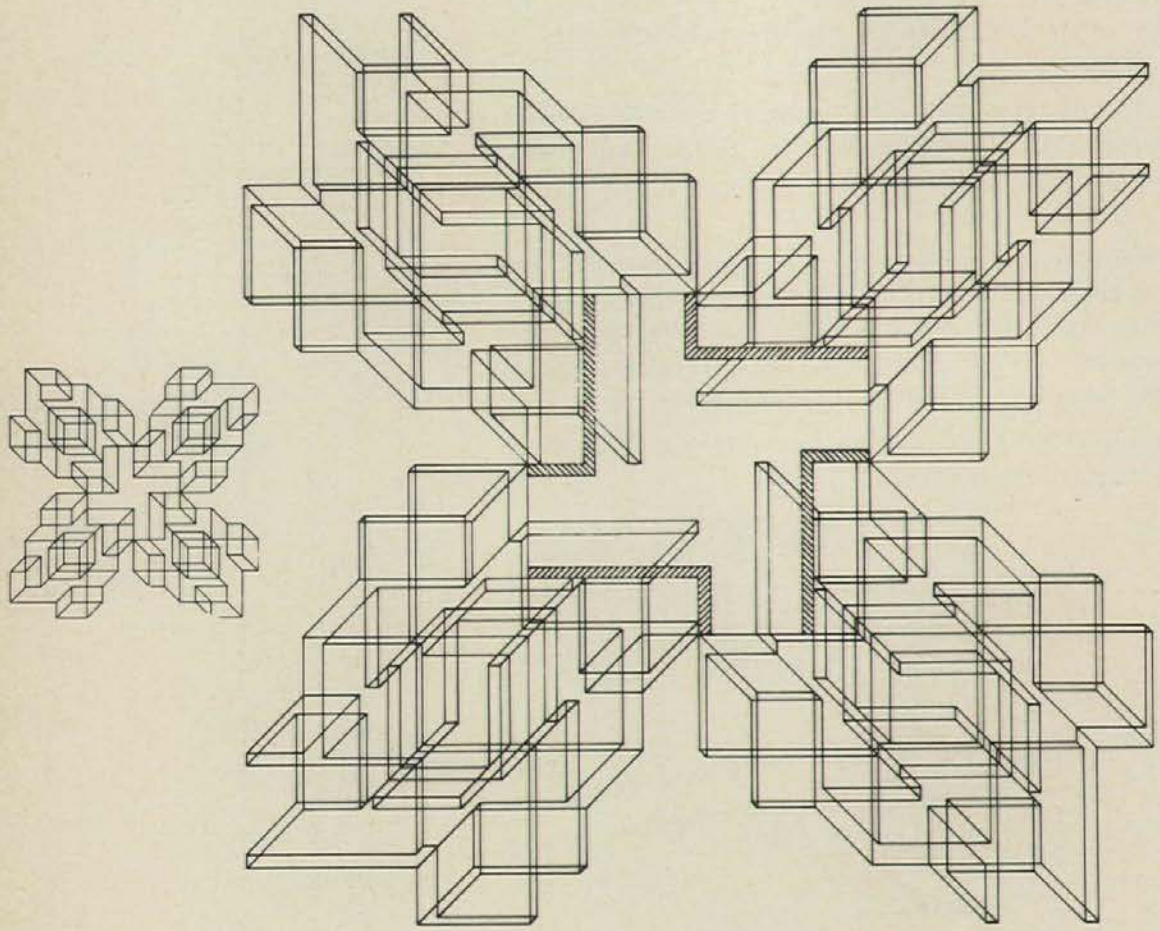
Architects: Skidmore, Owings & Merrill
Drawing by Davis Bité

The formal generators of masonry structure:

The pinwheel

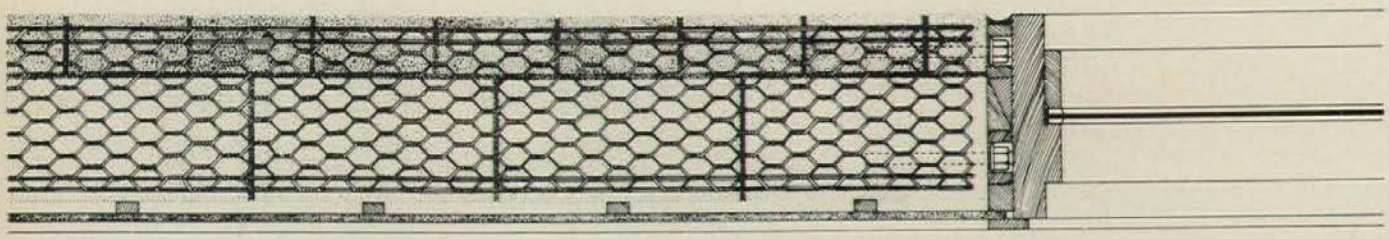


no. 3 of 36

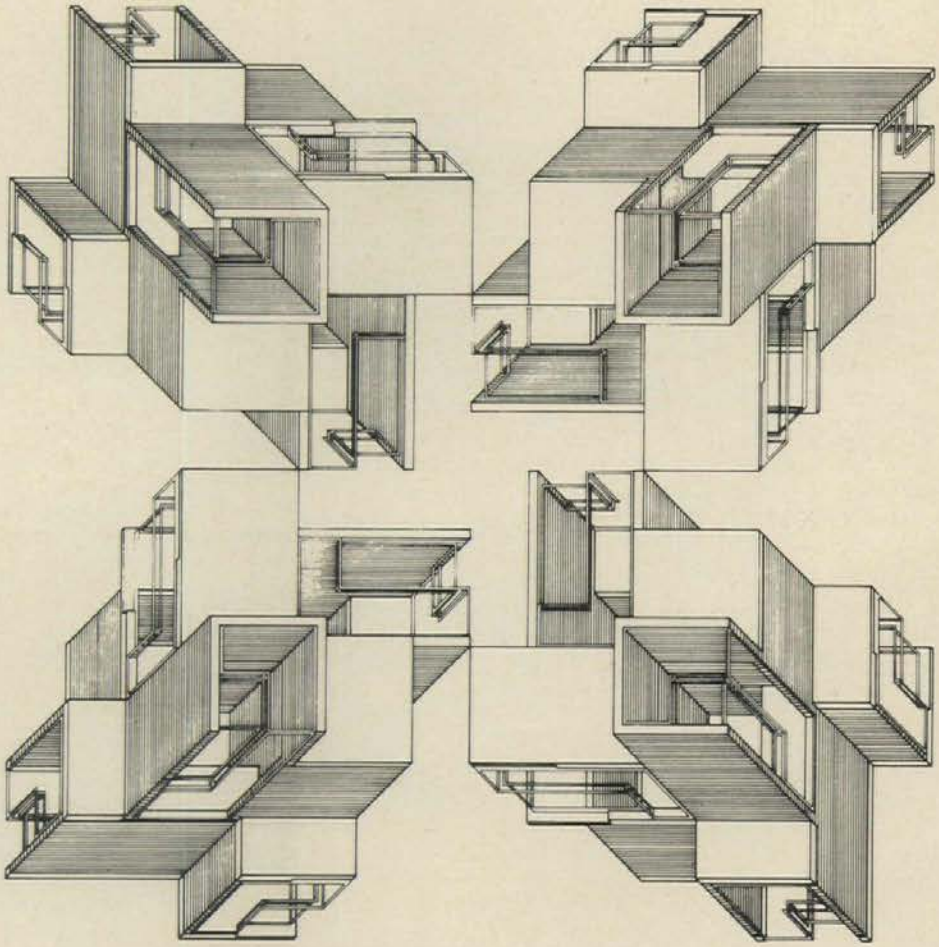


The exploration of masonry's formal generators is continued here by architect Stanley Tigerman. From a pinwheel projected three dimensionally, Mr. Tigerman proceeds from parti to floor plan to complete structure—here utilizing load-bearing walls. You are looking at the top of the complete structure.

Throughout this series, we shall continue to show how the basic orthogonal shapes of masonry construction—the square, lozenge, rectangle, pinwheel, cross and linked form—can be developed and projected. We hope the drawings offered here will serve as both idea-stimulators and time-savers.



Jamb sections: 12" masonry wall, 4" face brick, 8" block, and ½" taped sheet rock on 1" x 2"'s. Wood fixed sash with ¼" plate glass.



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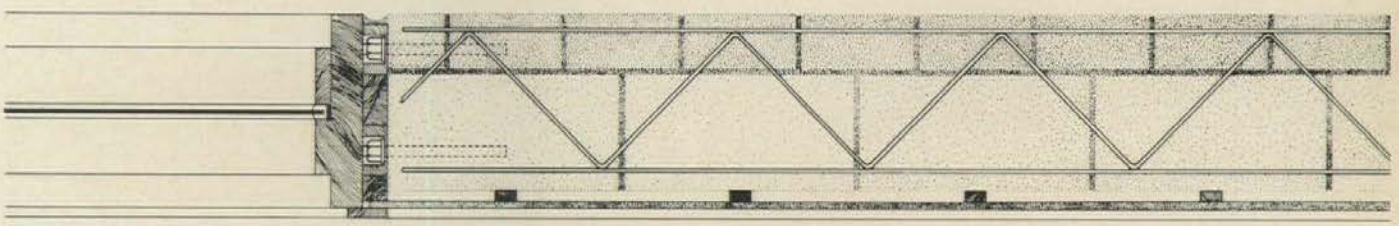

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A Architectural File (green)
I Industrial Construction File (blue)
L Light Construction File (yellow)