



# ARCHITECTURAL RECORD

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BUILDING TYPES STUDY: HOSPITALS

ARCHITECTURAL DETAILS: WALTER GROPIUS

SKYSCRAPER BY YAMASAKI FEATURES STEEL BEARING WALL

FULL CONTENTS ON PAGES 4 & 5





## This school cost less with ceramic tile

More than 13,000 sq. ft. of American Olean ceramic tile were used in this New York state school—in corridors, shower rooms, lavatories, kitchen and on the building exterior which features a colorful tile mural.

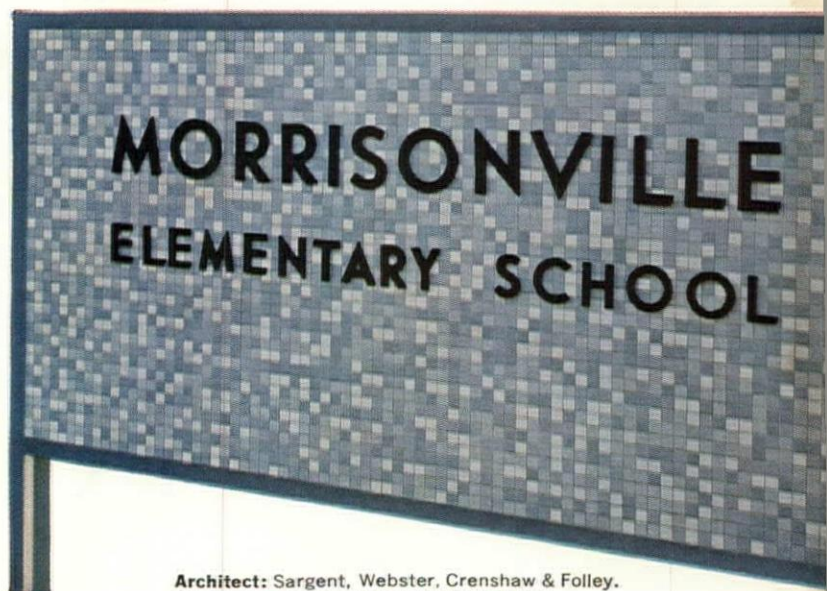
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**Exterior walls** (above) are 1" x 1" ceramic mosaics in assorted colors with mural design in Cobalt and Emerald. Plate 508.

**Corridor walls** (below): 4 1/4" glazed tile in 345 Cr. Cobalt, 42 Aqua Mist, 97 Gardenia, 76 Sage Gray, 52 Daffodil. Plate 509.



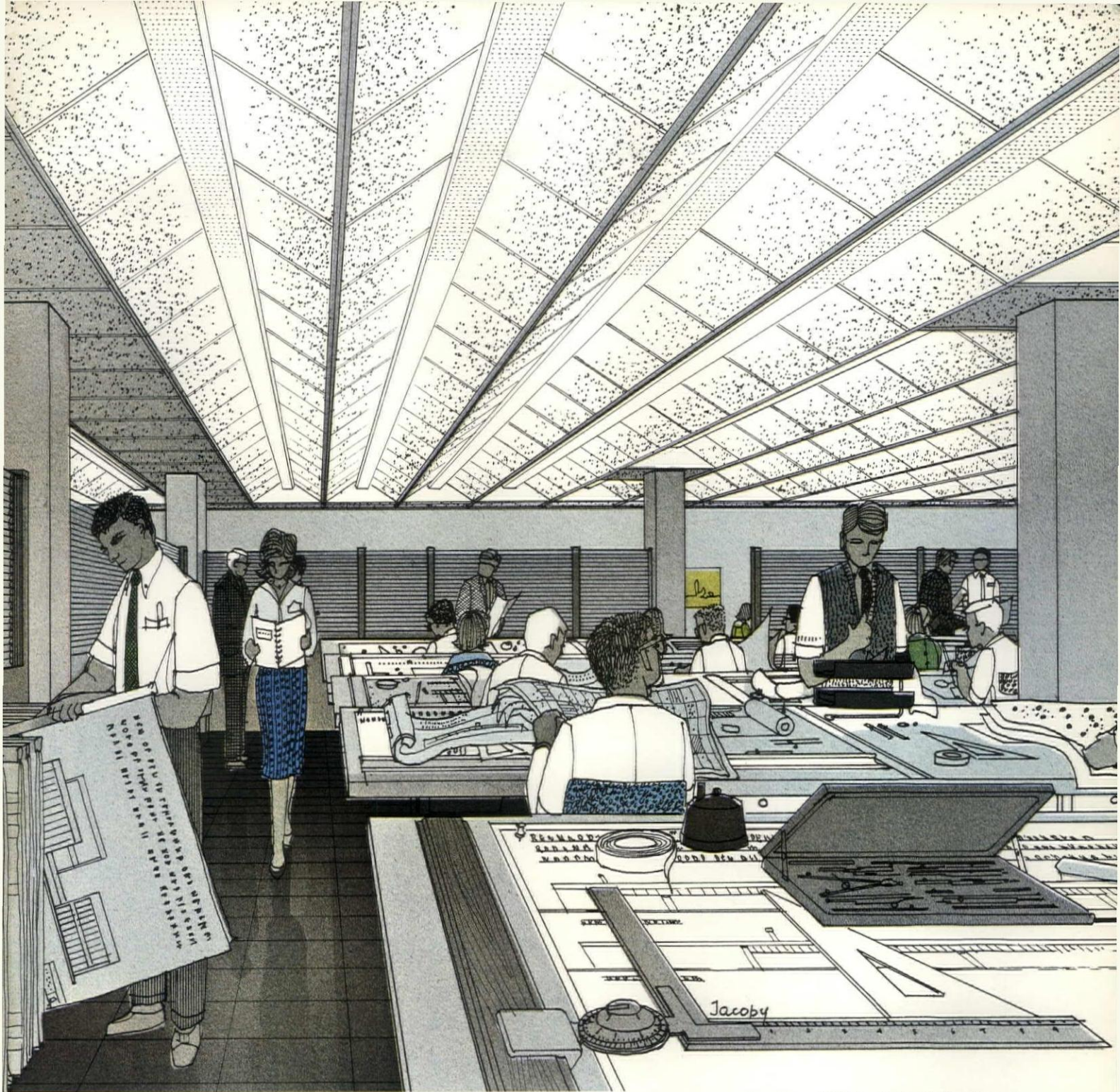
**Architect:** Sargent, Webster, Crenshaw & Folley.  
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*General Contractor:* McGraw Constr. Co., Middletown, O.

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**Cover:**

The Carleton College Men's Gymnasium. Architect: Minoru Yamasaki. Photograph by Warren Reynolds

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### NEW DIRECTIONS IN SCHOOL DESIGN

As the nation considers presidential recommendations for a vast expansion of its educational program, its architects continue to design new kinds of school buildings in response to the active educational experimentation of the last several years. Some of the more relevant recent design results—ranging from a one-campus school “district” to educational “substations”—will be discussed in next month’s *Building Types Study on Schools*. The study will also include a full range of examples of new schools from pre-school through community colleges.

### NEW LOOK IN FEDERAL ARCHITECTURE?

Heartening words and even official statements of policy on public architecture have been coming out of Washington for the last few years, but how about the architecture? A special feature will present preliminary designs of the four major new Federal buildings developed for the National Capital since Karel Yasko has been assistant commissioner of design and construction of the Public Buildings Service.

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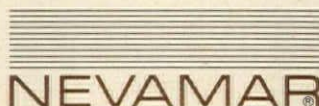


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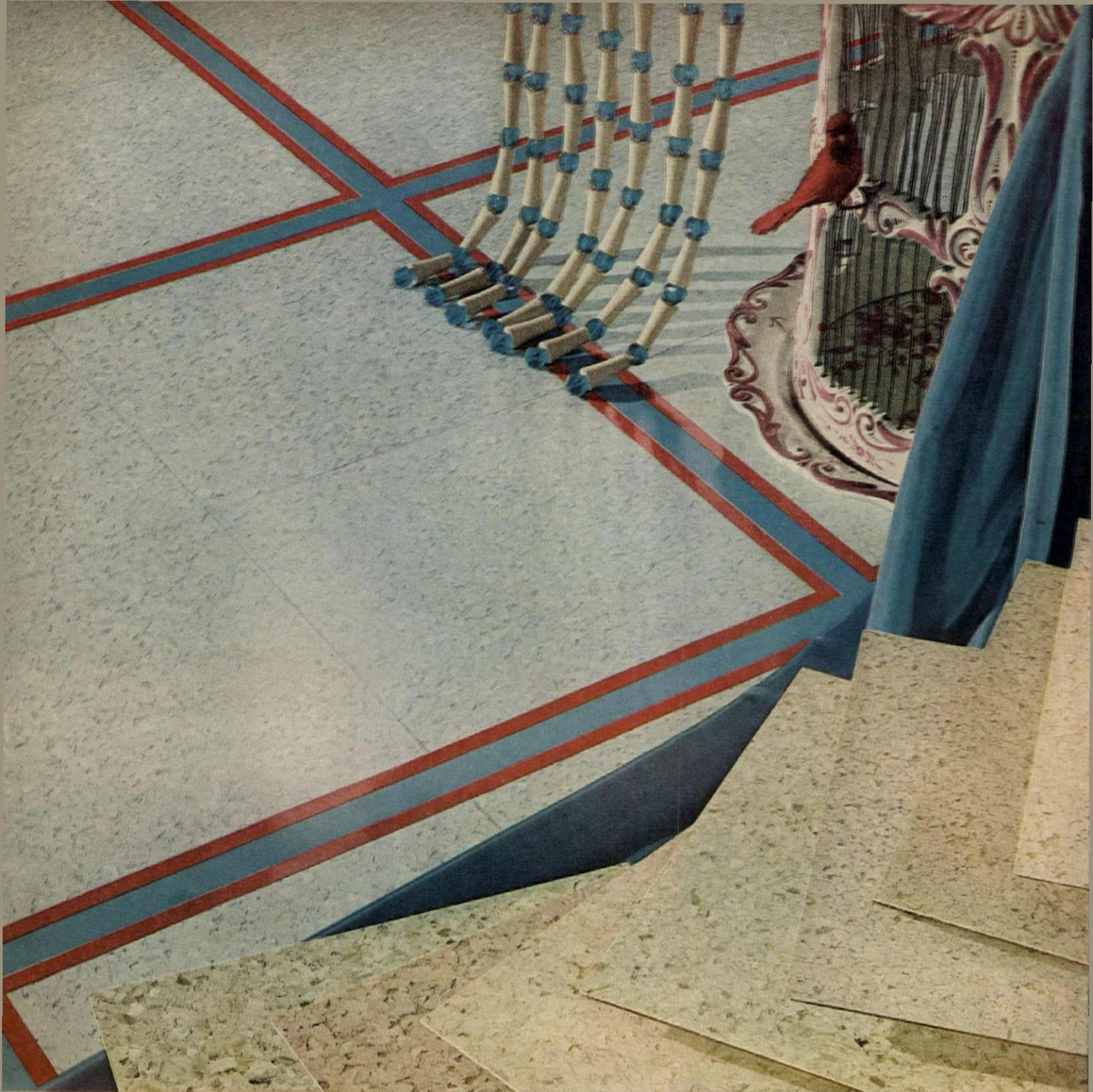
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## "Now is the Time for all Good Men . . ."

Among the rather all-embracing promises of the President's State of the Union message, there were two which architects will do well to remember. They were what might be called: (1) beauty in the American scene; (2) planning for better urban living.

True, these two concepts run together and overlap continually, and the President intermingled them in his talk; indeed he connected them to many other ideas and promises in the address. The two are separate, however, in the manner of their achievement, and I should like to treat them separately in two pieces, confining this first one to the rather broad idea of beauty across the land.

There is new hope when the President says things like:

"More ideas for a beautiful America will emerge from a White House conference on natural beauty which I will soon call.

"I propose we increase the beauty of America and end the poisoning of our rivers and the air that we breathe.

"A new and substantial effort must be made to landscape highways and provide places of relaxation wherever our roads run.

"Within our cities imaginative programs are needed to landscape streets and transform open areas into places of beauty and recreation.

"We must also recognize and encourage those who can be pathfinders for the nation's imagination and understanding.

"To help promote and honor creative achievements, I will propose a national foundation of the arts."

And: "I propose we honor and support the achievements of thought and the creation of art."

Now let's have no cynical remarks that that last bit need not necessarily follow under the topic of America the Beautiful. Seriously, of course, the encouragement of the arts is not exactly the same as the effort to pre-

serve the country's natural beauty or remove its man-made ugliness. But the point of this reminder is that architects, landscape architects, artists of all kinds and persuasions, are the natural leaders in a broad campaign of beautification. And President Johnson is proclaiming his intent to follow President Kennedy's lead, and to push further toward realization.

The urgency of it all is that you realize that the mountain is beginning to move. Architects and all their allies are used to the feeling of talking into the wind; it is important to take advantage of the favorable breezes that are stirring in the air.

There are many other manifestations of aroused sentiment for conservation of natural beauty, for restraints on perpetrators of ugliness, for active promotion of beauty, cleanliness and order.

Interior Secretary Udall has been adding new national parks and seashores. Congress has authorized the setting aside of new wilderness areas, and there are funds to help states develop more open space and recreation areas.

Federal housing commissioners have been pushing for better housing design.

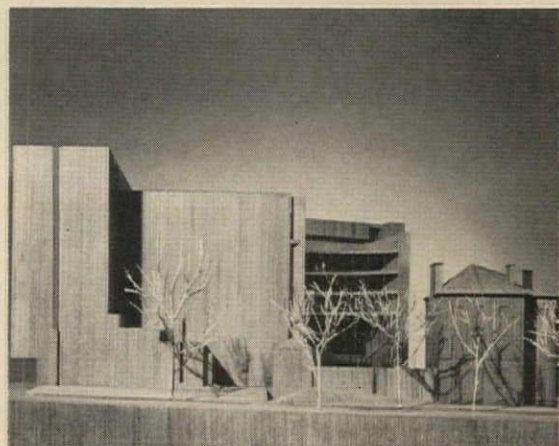
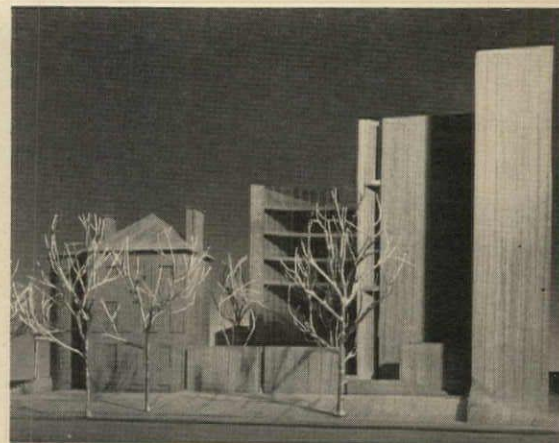
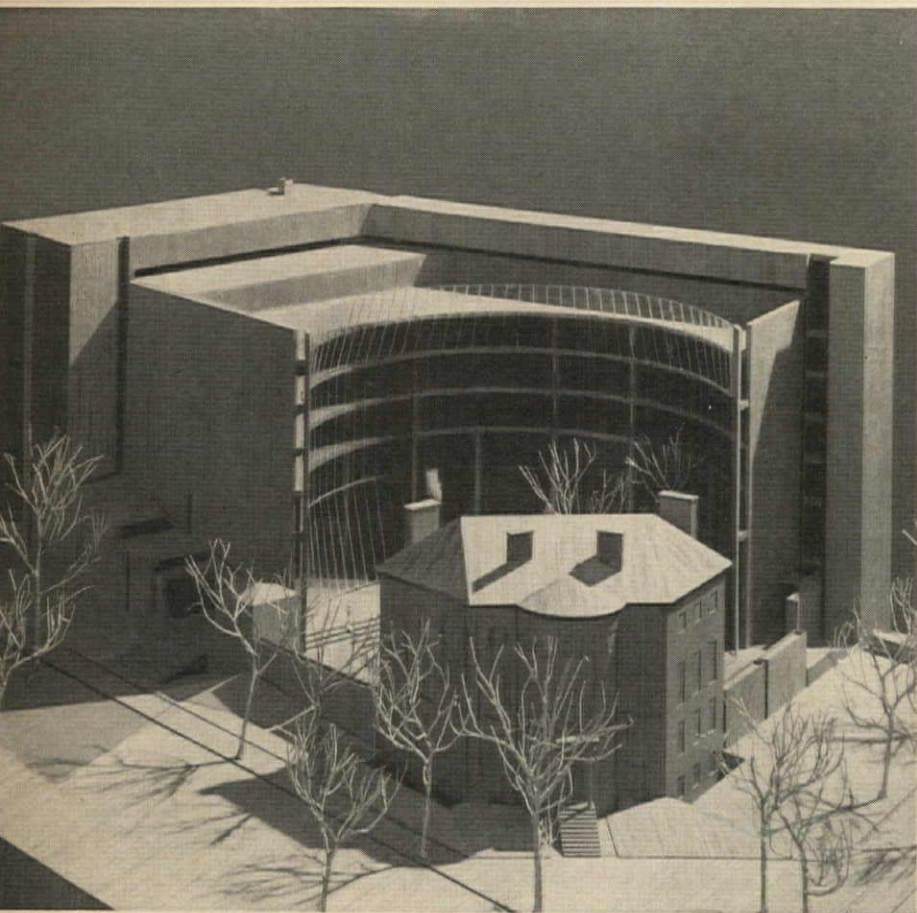
Many cities—Cincinnati is a notable example—are developing architectural control boards with real powers. California has a Commission for California State Planning, definitely planned to watch the development of the state from the standpoint of esthetic control.

The A.I.A. has had many meetings on the general topic of esthetic responsibility. Local chapters are pushing their own efforts to control depredations of the landscape and to spread the gospel of better building.

Now is the time for all good men to get up and shout; the audience might just be beginning to listen.

—Emerson Goble





## MITCHELL/GIURGOLA WIN A.I.A. COMPETITION

The Philadelphia architectural firm, Mitchell/Giurgola Associates, has won the competition for design of the headquarters building for the American Institute of Architects in Washington. The winning design was selected from seven finalists in the two-stage competition which originally included 221 submissions.

The new building will be erected at an estimated cost of \$1,450,000, with an additional \$30,000 allocated for the use of sculpture or other fine arts. The red-brick structure, five-stories in height, will emphasize a

semi-circular wall with liberal use of glass embracing the gardens and the Octagon House.

According to the architects: "The building order develops naturally from the condition of the site, oriented toward the gardens facing the Octagon, a form completed only by its presence. The garden is a quiet place to stay, a meeting ground of the historically traditional and the contemporary.

"The important relevant space of the building is the exhibition gallery (on the ground floor), a significant area for communication between the public and the architect. . . .

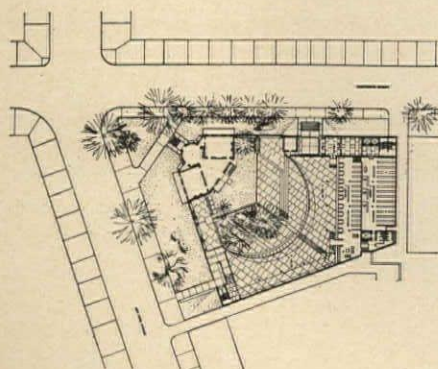
"In total the building aspires to be a sequence of environments within a unity of space, the garden, the Octagon, the exhibition gallery, library, the executive offices and the business of the headquarters.

"The Octagon and the new structure are defined in their own terms, their strengths preserved, their independence described, their interdependence designed."

The jury for the competition consisted of Hugh Stubbins, F.A.I.A., chairman; Edward Larrabee Barnes, A.I.A.; J. Roy Carroll Jr., F.A.I.A.; O'Neil Ford, F.A.I.A.; and John Carl Warnecke, F.A.I.A. A. Stanley McCaughan, A.I.A., was professional adviser.

Mr. Stubbins said of the design: "Most important, perhaps, is that the concept fulfills the stated requirement of demonstrating that a distinctive contemporary building can live in harmony with fine architecture of a former time."

Other finalists in the competition included I.M. Pei Associates, New York City; the Perkins and Will Partnership, Chicago; Charles R. Colbert, F.A.I.A., New Orleans; Donald Barthelme, F.A.I.A., Houston; Jean Labutut, F.A.I.A. and Carr Bolton Abernethy, Princeton, New Jersey; and C. Julian Oberwarth & Associates, Frankfort, Kentucky. The designs of these finalists were not released by the A.I.A. when the winner was announced.







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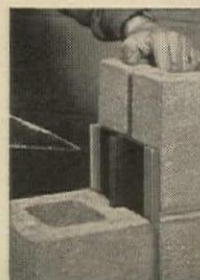
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## SOUTH ATLANTIC REGION A. I. A. GIVES AWARDS

Four Honor Awards, shown here, and nine Awards of Merit were presented at last fall's conference of the South Atlantic Region of the American Institute of Architects in Greenville, South Carolina. The jury consisted of Morris Ketchum, F.A.I.A., chairman; Lawrence Perkins, F.A.I.A., and John B. Parkin of John B. Parkin, Associates, Toronto, Canada. Honor Awards chairman for the South Atlantic Region was George C. Means Jr., A.I.A., professor of architecture at Clemson College, Clemson, South Carolina.

Recipients of Awards of Merit were: Clemmer and Horton, Associates, architects, for the design of the Voigt R. Cromer College Center at Lenoir Rhyne College, Hickory, North Carolina; Lyles, Bissett, Carlisle and Wolff, architects and engineers, for the designs of the Richland Technical Education Center, the Forest Lake Club, and the Administration Building and Bell Tower at Elmwood Cemetery, all in Columbia, South Carolina; Haskins and Rice, architects, for the design of the Memorial Auditorium renovation, Raleigh, North Carolina; J. Hyatt Hammond, Associates, architects, for the design of the Faculty Club at North Carolina State College, Raleigh, North Carolina; Toombs, Amisano and Wells, A.I.A., architects, for the designs of the Northwestern Mutual Insurance Building, and the Peachtree Palisades Office Building, both in Atlanta, Georgia; and Joseph N. Smith, A.I.A., architect, for the Key Biscayne Presbyterian Church, Key Biscayne, Florida.



**HONOR AWARD:** K Mart Plaza Bay Station  
Greenville, South Carolina

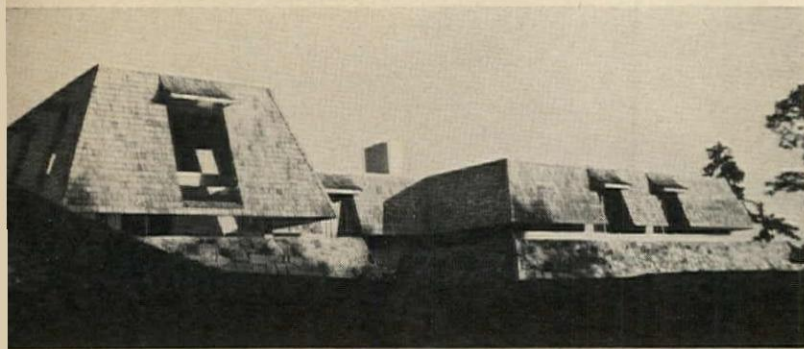
Architects: W. E. Freeman Jr. & Associates

Structural engineer: J. D. Sykes Jr.

Owner and developer: Center City, Inc.

General contractor: E. L. Jones & Son, Inc.

Jury comment: "Commended for straightforward simplicity and restraint in a field of buildings desperately lacking these virtues. The jury hopes the owners will appreciate all they have and forego the gaudy sales aids by which other similar structures have been degraded."



**HONOR AWARD:** Residence for Mr. and Mrs. William H. Benton, Atlanta, Georgia

Architects: Martin and Bainbridge

Structural engineers: Drake and Funsten

General contractor: W. H. Benton

Jury comment: "A residence which proves that rules are sometimes there to be broken and that architecture can be fun."



**HONOR AWARD:** Pharmacy Building, University of Georgia  
Architects: Toombs, Amisano & Wells; Abreu & Robeson; and Aeck Associates

Structural engineers: Chastain & Tindel

Mechanical engineer: Guerrero

Acoustical engineers: Bolt, Berenek & Newman, Inc.

General contractor: Mathis Construction Company

Jury comment: "In spite of the underplayed presentation of the plans, the building reads as an excellent example of a bold, competent architectural solution."



**HONOR AWARD:** Winter Park Center, Winter Park, Florida  
Architect: Toombs, Amisano & Wells, A.I.A.

Structural engineers: Smith, Hardaker & Huddleston

Mechanical engineers: Newcomb & Boyd

Landscape architects: Sasaki, Walker & Associates

Owner and general contractor: S. S. Jacobs Company

Jury comment: "In the welter of cast concrete envelopes adorning so many of today's buildings, this shopping center keeps its head and serenity and shows tremendous craftsmanship."

Clyde May, Photography, Inc.

Alexandre Georges



## Tapered Bank Building Will Rise in Chicago

The First National Bank of Chicago Headquarters Building will rise in a sweeping curve from a 55,000-square-foot base to a 29,000-square-foot tower. Architects for the 60-story building are C. F. Murphy Associates and the Perkins & Will Partnership. Utility cores will be located on the east and west ends of the building, permitting unobstructed space on the lower banking floors. Scheduled for completion in 1969, the \$60 million plus building will contain two million square feet. The new structure will be erected on land now occupied by the 46-story Morrison Hotel, 17-story Hamilton Hotel and 15-story Hartford building in the heart of Chicago's Loop.



## Office Building Will Replace Savoy Plaza

A 48-story white tower will rise in New York City on a site now occupied by the 33-story Savoy Plaza Hotel, the 15-story Madison Hotel and the four-story Emmet arcade building. The office building, in which General Motors is a major tenant, was designed by Edward Durell Stone and Emery Roth & Sons, associated architects. The building will rise from a low landscaped podium and will be placed 100 feet back from the Fifth Avenue building line. In the space created by the setback will be a sunken plaza which will be surrounded by shops. Mr. Stone said he has set out "to create a building that will salute the skyline and enhance one of New York's finest neighborhoods. We have sought the quality of permanence, and have designed for the future as well as the present and the past. That is to say, we have also considered that in its particular location, this building should harmonize with the neighboring buildings which are primarily built of masonry."

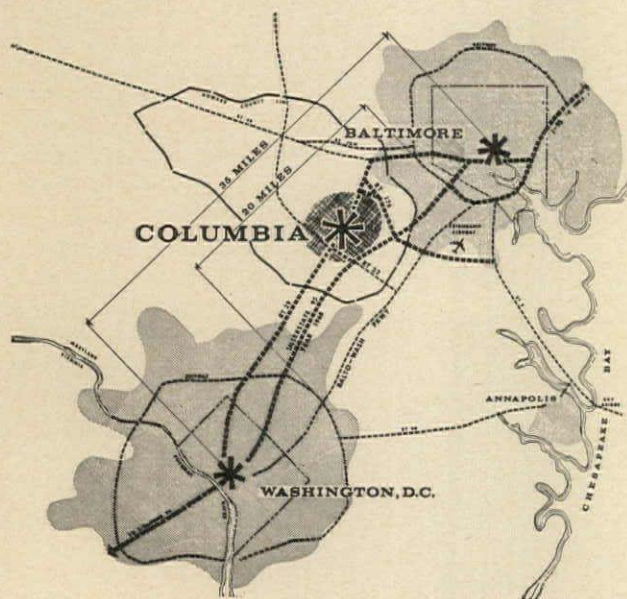






Ezra Stoller Associates

## NEW TOWN OF COLUMBIA PROPOSES 10 VILLAGES TO ACCOMMODATE 110,000



The design for Columbia, Maryland, a complete new town for 110,000 people, will be a series of 10 villages of nine to 12 thousand people each around a town center. It is being developed by Community Research and Development, Inc., Baltimore, on a 15,200-acre site.

William E. Finley, former director of the National Capital Planning Commission, is project director for Columbia. Chief designer on the project is Morton Hoppenfeld, also a former member of the N.C.P.C. and of the Philadelphia City Planning Commission. Staff architects include Robert Tennenbaum, another former N.C.P.C. staff member, Richard Stauffer and William Gillitt.

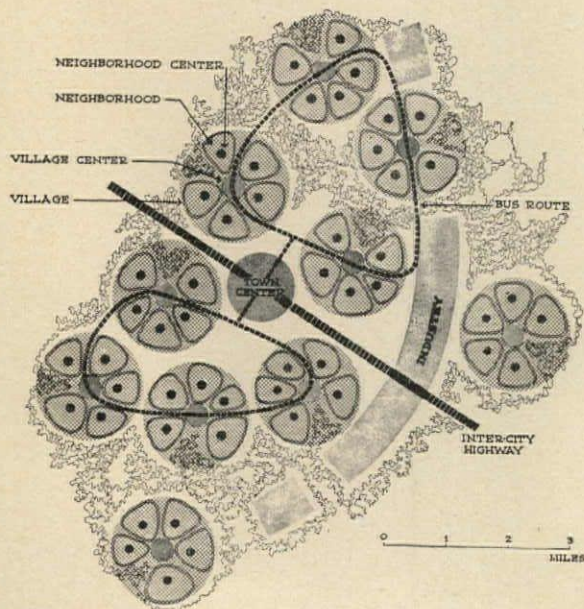
Columbia is located in the heart of the transportation corridor between Baltimore and Washington in Howard County which now contains 48,000 people.

Each of the villages will contain from 2,500 to 3,500 families. In each village will be a center which is the heart of its community.

Columbia's typical village will consist of five or six neighborhoods of 500 to 600 families each. Within each space is provided for a neighborhood center.

The villages are clustered around the town center (above). The town center, located on a lakefront, will contain public and municipal facilities, as well as structures for commercial and recreational use.

In the total project, expected to be completed by 1980, there will be 29,000 dwelling units and employment for 30,000. There will be 3,469 acres of permanent open space; 1,674 acres for industrial and primary employment; 6,739 acres for residential; 346 acres for commercial; and 1,780 acres for miscellaneous use. There will be five lakes totaling more than 600 acres of water surface.





## Designed for "Dynamic Care"

Designed by the office of Max O. Urbahn, architect, the proposed 18-story, 901-bed "Dynamic Care" building will be constructed in an over-all \$40 million hospital-medical research complex at Meadowbrook Hospital, East Meadow, Long Island, New York. The present concept of a hospital of so many beds with "ancillary facilities," the architects note, is slowly giving way to the concept of services for ambulatory patients supported by areas of scientific and technical skills with a control center for persons in acute distress; and this, they say, is the basis of their concept of "dynamic care." The entire 913,000-square-foot structure consists of a 14-story Y-shaped tower on a four-story large curvilinear base building.



*Louis Checkman*



## IBM Building Completes Place Ville Marie

Construction has started on the IBM Building which will complete the Place Ville Marie development in Montreal, Canada. Architects are I. M. Pei and Associates, and associate architects are Affleck, Desbarats, Dimakopoulos, Lebensold and Sise. The general contractor is the Foundation Company of Canada Limited. At plaza level the exterior of the building will comprise of a series of arches which will form a vaulted arcade around the entire 14-story building. Rising from this base will be a vertically accented system of precast exposed aggregate frames into which will be set gray-tinted glass panels. The structure is designed to relate to the other buildings of the Place Ville Marie complex, also designed by I. M. Pei.

*Lawrence S. Williams, Inc.*



## New Bank in Philadelphia

The Operations Center and Office Building of the Provident Tradesmen's Bank and Trust Company, Philadelphia, has been designed by Vincent Kling and Associates, Architects, with a 42-foot clear span to provide column-free interior work space for maximum flexibility in the arrangement of partitions and desks. General contractor is the Turner Construction Company. The \$7,200,000 structure will have a glass enclosed lobby, 12 office floors and a penthouse. The structure will be sheathed with limestone on three sides. The service core forming the fourth wall will be faced with brick.



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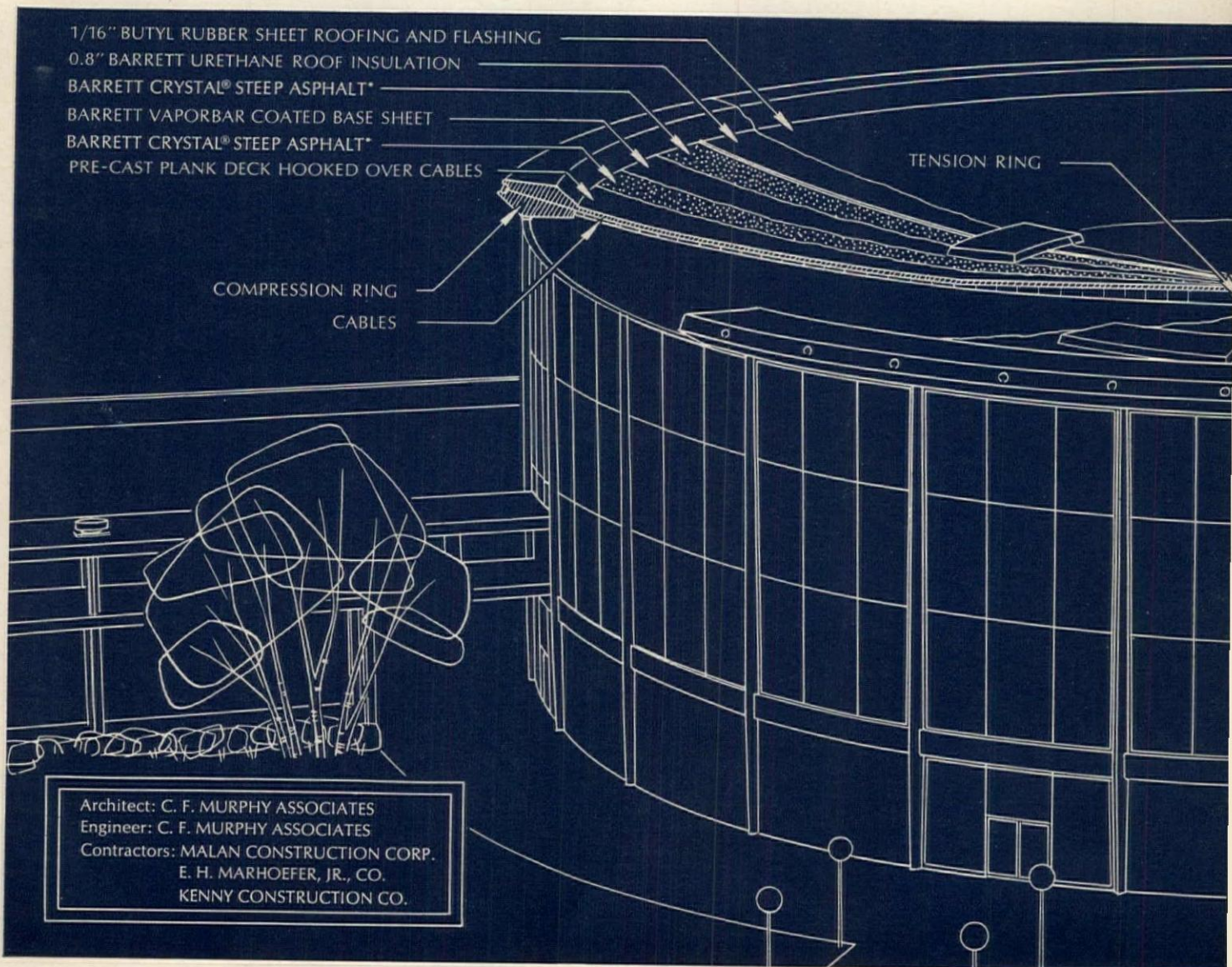


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You'll find Barrett Urethane Roof Insulation permits new design freedom for your next project. Ask your Barrett representative for full details about it and about our complete line of exciting new building materials. Or write today: Barrett Division, Allied Chemical Corporation, Department AR-2, 40 Rector Street, New York City, New York 10006.



A Barrett 20-year bonded Built-Up Roof of 580 squares and a Barrett S.I.S. steep roof of 55 squares, protect this ultra-modern Indianapolis City County Building. Architects: Allied Architects & Engineers, Inc.



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## CALIFORNIA DESIGN CONFERENCE CALLED BY GOVERNOR TO ENCOURAGE EXCELLENCE IN STATE ARCHITECTURE

The Governor's Conference on Good Design, held in Sacramento on December 8 and called by California Governor Edmund G. Brown, was a unique effort to make state employees whose decisions affect design more conscious of the implications of their decisions for design and conscious of good design as a public objective.

An architect headed the Governor's advisory committee for the conference. Nathaniel A. Owings of Skidmore, Owings and Merrill, San Francisco, was chairman of the advisory committee. Serving on the committee with Mr. Owings were another architect, Robert E. Alexander of Los Angeles; Cyril Magnin, president of the San Francisco Port Authority; Dr. Martin Meyerson, dean of the College of Environmental Design at the University of California at Berkeley; and Mrs. June C. Wayne, director of the Tamarind Lithography Workshop, Los Angeles.

The conference was sponsored by the Department of General Services, Department of Finance and the State Personnel Board and was attended by

some 200 state employees. Robert L. Harkness, director of the Department of General Services was conference chairman, with John L. Stanford, deputy director of General Services, as conference vice chairman.

In his keynote address "Who is Responsible for Good Design?," Mr. Owings pointed out that everyone at the conference was responsible for good design, and that the greatest single influence for better design can be the government, since every aspect of our lives is touched by some aspect of state government. The great problem, according to Mr. Owings is the carrying out of good design, because "the carrying out involves the development of an awareness in each decision-maker of the dual character of his average decision. His decision is dual in the sense that it may be made on the basis of price rather than true cost, or on the basis of false economic standards. Misuse of either of these results is the long term sacrifice of good design."

Robert Alexander substituted for Charles Eames, of Charles Eames &

Associates, who was to speak on the topic "What is Good Design?" Mr. Alexander speaking on the same topic, related some of his personal experiences in dealing with public administrators in reference to design.

"The taxpayer is betrayed by the delinquent trustee of public funds who squanders these public funds on ugliness," according to Mr. Alexander. "The taxpayer deserves one dollar's worth of beauty for every 10 dollars he spends. He needs beauty as well as toilets for his dollars." The state official is responsible for good design, and he should take greater care in exercising this responsibility because he determines what the architect can do.

"When we have something to communicate, we want to energize somebody into making a response, and design—good design—is an excellent tool for sparking that response," said Walter Landor, San Francisco industrial designer, in his speech "How to Use Visual Communications."

"For design is not a passive thing, to be stored away in a museum of beautiful but useless objets d'art. It is, itself, a response to the vital forces of our culture: informing, persuading, stimulating us in our everyday activities. It has become an active force in private industry and given the opportunity, it can become just as active in government."

Governor Brown, addressing the luncheon meeting of the conference, summarized the progress made in the past two years in California since his second inaugural address, in which he called for the state to "take the lead in a campaign to improve the quality of architecture . . . both public and private. I said we would insist on the highest quality of design for state buildings, and that the state should actively foster interest and participation in the performing and graphic arts."

The Governor outlined a nine-point progress report: "First, we created the California Arts Commission. . . . Next, we concentrated on making progress in the use of good design in state government. . . . Third, we have improved master planning for state college campuses. . . .

*continued on page 254*



1. Albert M. Dreyfuss, chairman, Capitol Building and Planning Commission (left) and Robert L. Harkness, conference chairman, and director, Department of General Services. 2. Hamer P. Balabanis, member, California State Art Commission (left) and Martin Dibner, executive secretary, California State Art Commission. 3. Robert Alexander, member, Governor's Advisory Committee (left) and Carl McElvy, California State Architect. 4. (left to right) Arthur Drexler, director, Department of Architecture and Design, Museum of Modern Art, New York; Nathaniel Owings, chairman, Governor's Advisory Committee; Governor Edmund G. Brown of California; Karel Yasko, assistant commissioner, Design and Construction, General Services Administration; and Walter Landor, industrial designer, San Francisco





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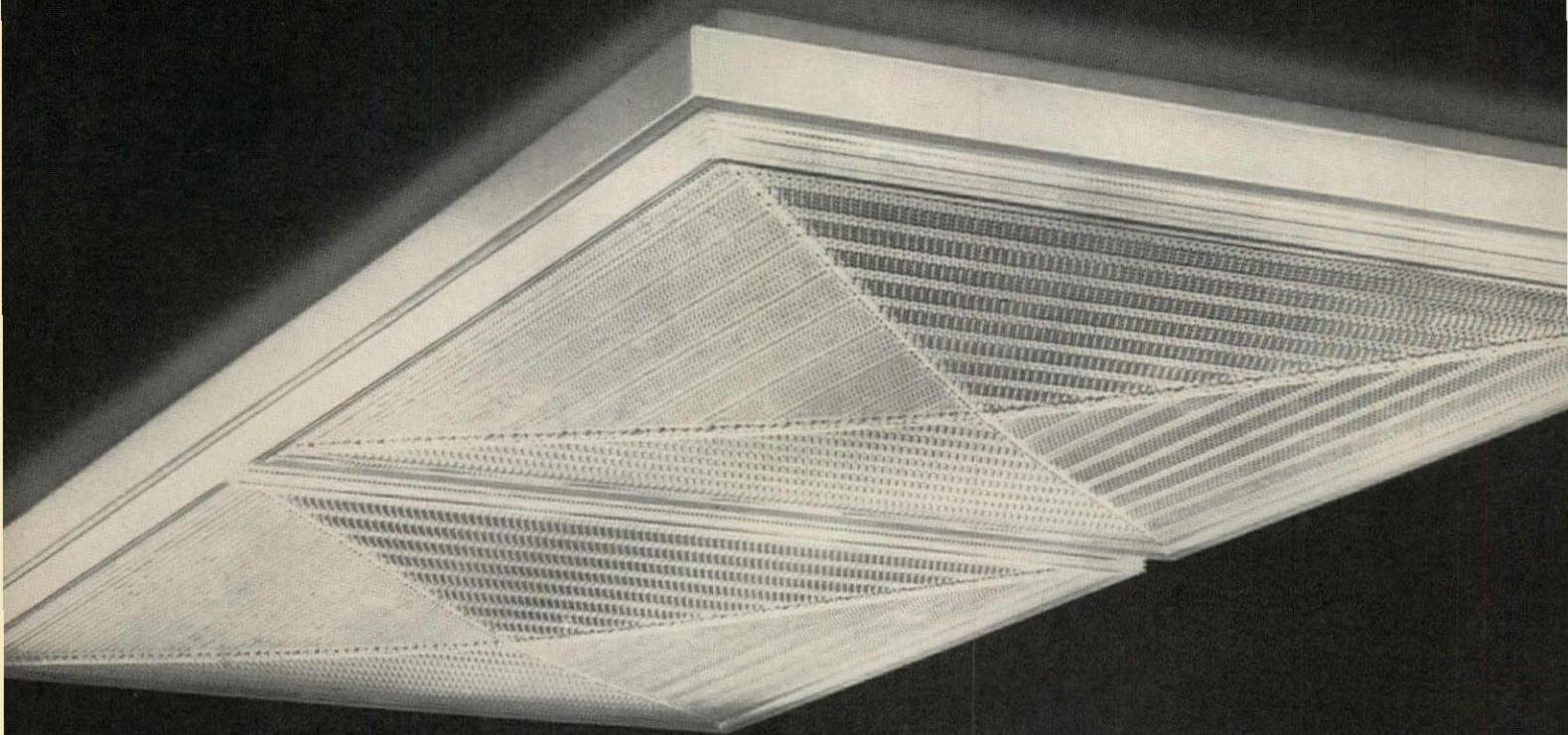
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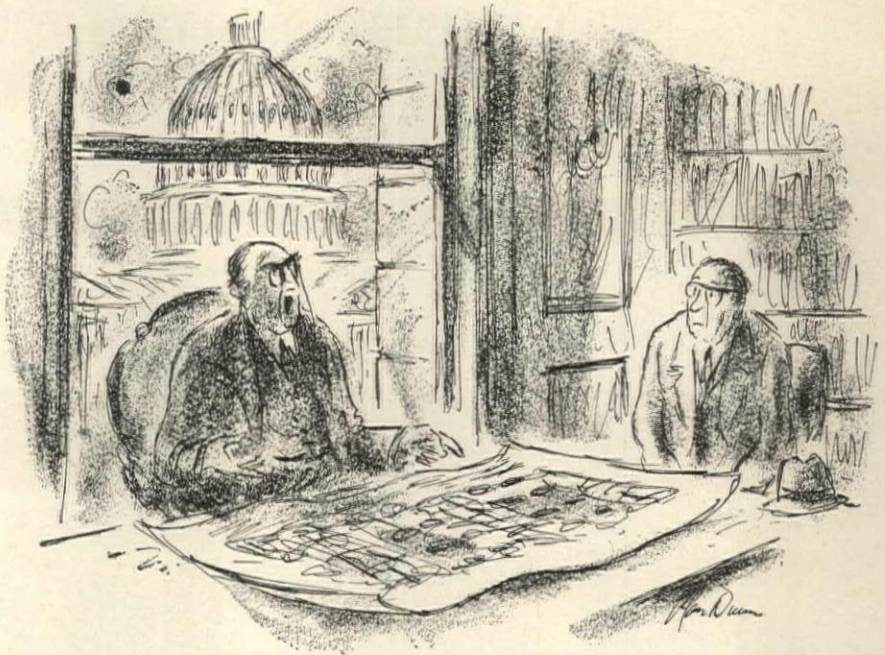


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Drawn for the Record by Alan Dunn

"Aha, privacy! So you want to spend government money on frills."

## PRESIDENT PROPOSES PROGRAMS SUPPORTING PLANNING, THE ARTS AND "NATURAL BEAUTY"

President Lyndon B. Johnson came out strongly for planning at the city and regional levels in his State of the Union address presented before a joint session of Congress on January 4. He also called for the establishment of a department of housing and urban development, a program to landscape highways, increased air and water pollution programs, the establishment of a national foundation of the arts, and funds for a study of high speed transportation between urban centers.

Specifically, the President made the following proposals which are of major concern to architects:

"I propose that we launch a national effort to make the American city a better and more stimulating place to live.

"I propose we increase the beauty of America and end the poisoning of our rivers and the air that we breathe. . . .

"I propose we honor and support the achievements of thought and the creation of art."

"An educated and healthy people require surroundings in harmony with their hopes.

"In our urban areas the central problem today is to protect and re-

store man's satisfaction in belonging to a community where he can find security and significance.

"The first step is to break old patterns—to begin to think, work and plan for the development of entire metropolitan areas. We will take this step with new programs of help for basic community facilities. . . . of health and recreation.

"New and existing programs will be open to those cities which work together to develop unified long-range policies for metropolitan areas.

"We must also make important changes in our housing programs if we are to pursue these same basic goals.

"A department of housing and urban development will be needed to spearhead this effort in our cities.

"Every citizen has the right to feel secure in his home and on the streets of his community. . . .

"A new and substantial effort must be made to landscape highways and provide places of relaxation and recreation wherever our roads run.

"Within our cities imaginative programs are needed to landscape streets and transform open areas into places of beauty and recreation.

"We will seek legal power to pre-

vent pollution of our air and water before it happens. We will step up our effort to control harmful wastes, giving first priority to the cleanup of our most contaminated rivers. We will increase research to learn more about control of pollution.

"We hope to make the Potomac a model of beauty and recreation for the entire country—and preserve unspoiled stretches of some of our waterways with a wild rivers bill.

"More ideas for a beautiful America will emerge from a White House conference on natural beauty which I will soon call.

"We must also recognize and encourage those who can be pathfinders for the nation's imagination and understanding.

"To help promote and honor creative achievements, I will propose a national foundation of the arts."

The President also touched upon the problem of transportation planning by commenting:

"I will ask for funds to study high-speed transportation between urban centers. We will begin with test projects between Boston and Washington. On high-speed trains, passengers could travel the distance in less than four hours."



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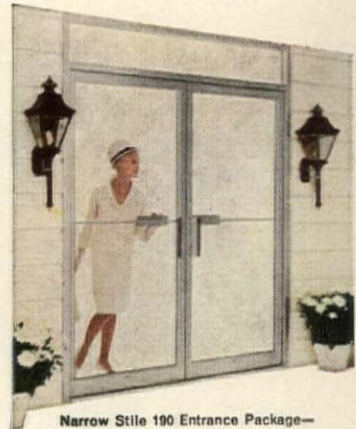
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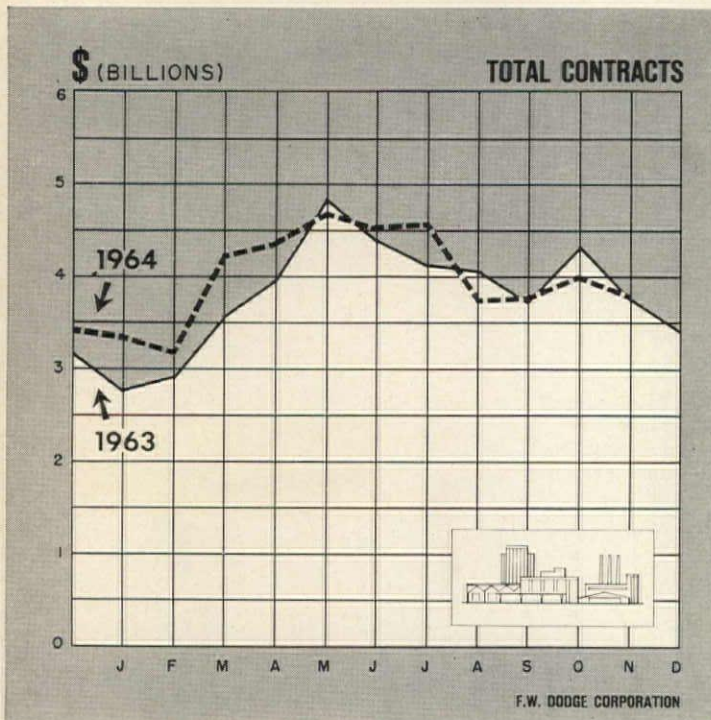
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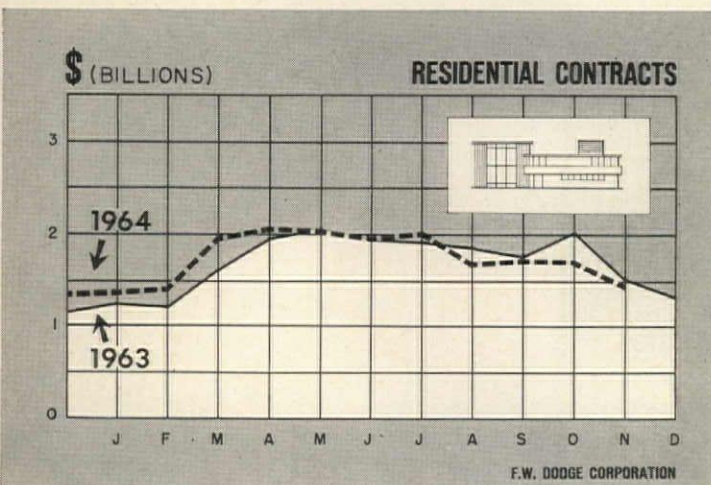
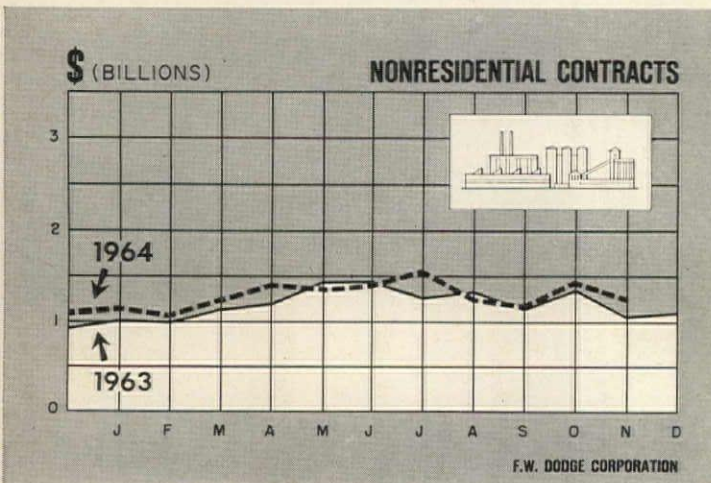
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## 1964 ANALYSIS SHOWS MANY NEW RECORDS



Total contracts include residential, nonresidential and non-building contracts



With all but the last few weeks of 1964 construction activity safely in the record books, it's time to look back over the past year's performance and assess its significance.

1964 brought another computer-full of brand new records for construction value totaling more than \$47 billion—up 3½ per cent from 1963's \$45.5 billion. The Dodge Index (1957-1959 = 100) for 1964 worked out to 138, up six points.

In spite of its net gain for the 12 months as a whole, 1964 was *not* a year for continuing the steadily upward, quarter-by-quarter trend of contract value that had been the pattern of the three previous years. Last year led off with its best quarter (an average index, seasonally adjusted, of 143), offering a bit more promise than it was ever capable of fulfilling.

New contracts for construction of all kinds eased back slightly in the second quarter, dipped briefly but sharply (to 121 in August) during the third, but by year-end had regained nearly all of the lost ground, finishing close to the same high level on which the year began.

Pin-pointing construction's weak spot in 1964 is not hard. After consecutive annual gains of 12 and 14 per cent in 1962 and 1963, the value of new residential building barely held even last year. And even that measure fails to give an adequate picture of housing's softness in 1964. On a seasonally adjusted basis, the year was one long downward slide. Measured in terms of housing starts, the opening quarter showed a rate of nearly 1,650,000 units; the closing quarter, less than 1,500,000.

And not all of the blame can be put on the volatile apartment building market either. When all the totals are in, they'll show that *both* single family homes *and* apartments were cut back a few percentage points in 1964. Last year's single-family homes were bigger and more expensive, though, and despite the smaller number, their total building value turned out larger by a fraction. Apartment value dipped along with the declining number of units.

Nonresidential building markets were where the records were broken in 1964. This group of industrial, commercial, and institutional building types began the year strong and finished even stronger for an over-all gain of 6 per cent. And over the period since early 1961 (when the last recession brought the upward trend of nonresidential building to a brief halt) to the present, contract value has shown a steady advance amounting to more than 30 per cent.

Of all the diverse building types included in the nonresidential category, two have been showing exceptional growth patterns. Manufacturing building contracts, reflecting the heavy surge in business capital spending of the past few years, swelled by more than 25 per cent in 1964 to just under \$3 billion. And this on top of a 9 per cent advance in 1963.

Hospital building contracts have also been rising sharply throughout most of the 60's, and the past year's better-than-5 per cent gain brought the current level to nearly double what it was as recently as 1960!

Commercial building reached a new high in 1964, and did it without the help of one of its major components, office buildings, which declined last year. Most of the growth in commercial building came from stores and warehouses, up nearly 10 per cent for the year.

George A. Christie, Chief Economist  
F. W. Dodge Company  
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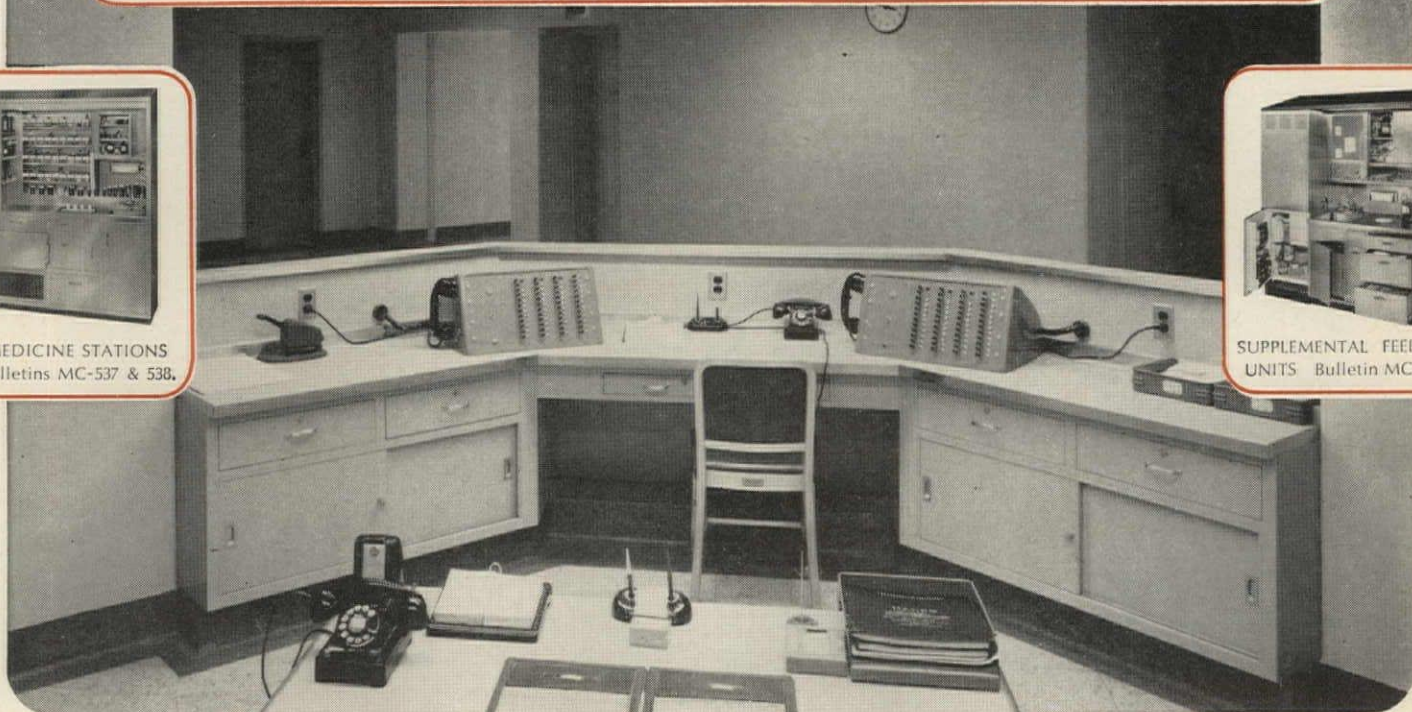
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# Building Construction Costs

By William H. Edgerton

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

The information presented here permits quick approximations of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). The tables and charts can be used independently, or in combination as a system of complementary cost indicators. Information is included on past and present costs, and future cost can be projected by analysis of cost trends.

A. CURRENT BUILDING COST INDEXES—JANUARY 1965  
1941 Averages for each city = 100.0

Metropolitan Area	Cost Differential	Current Dow Index		Per Cent Change Year Ago Res. & Nonres.
		Residential	Nonresidential	
<b>U.S. AVERAGE—21 Cities</b>				
	8.5	266.7	284.0	+1.67
Atlanta	7.1	299.8	318.0	+2.08
Baltimore	8.0	268.6	285.7	+1.29
Birmingham	7.4	246.3	264.9	+1.31
Boston	8.4	241.9	256.1	+2.85
Chicago	8.8	296.2	311.6	+1.38
Cincinnati	8.8	257.4	273.6	+1.61
Cleveland	9.3	270.6	287.5	+2.12
Dallas	7.8	250.5	259.5	+0.94
Denver	8.3	273.5	290.7	+1.09
Detroit	8.9	267.7	281.0	+1.42
Kansas City	8.3	242.9	254.4	+0.64
Los Angeles	8.4	269.8	295.2	+1.54
Miami	8.4	265.0	278.2	+1.36
Minneapolis	8.9	269.3	286.3	+2.16
New Orleans	7.9	239.4	253.7	+0.16
New York	10.0	275.9	296.7	+2.04
Philadelphia	8.7	265.7	278.9	+1.02
Pittsburgh	9.1	251.4	267.3	+1.69
St. Louis	8.9	260.8	276.3	+2.83
San Francisco	8.5	342.2	374.4	+3.24
Seattle	8.5	245.3	274.1	+1.79

B. HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES  
1941 average for each city = 100

Metropolitan Area	1952	1957	1958	1959	1960	1961	1962	1963 (Quarterly)				1964 (Quarterly)			
								1st	2nd	3rd	4th	1st	2nd	3rd	4th
<b>U.S. AVERAGE 21 Cities</b>															
	213.5	244.1	248.9	255.0	259.2	264.6	266.8	269.4	270.3	273.4	275.0	274.7	276.8	278.6	279.3
Atlanta	223.5	269.6	277.7	283.3	289.0	294.7	298.2	302.0	303.0	305.7	307.5	310.0	312.3	313.4	313.7
Baltimore	213.3	249.4	251.9	264.5	272.6	269.9	271.8	272.3	272.9	275.5	277.1	277.2	279.3	280.5	280.6
Birmingham	208.1	228.6	233.2	233.2	240.2	249.9	250.0	251.3	252.0	256.3	257.8	258.0	259.9	260.1	260.9
Boston	199.0	224.0	230.5	230.5	232.8	237.5	239.8	240.4	241.2	244.1	245.6	246.1	247.9	251.3	252.1
Chicago	231.2	267.8	273.2	278.6	284.2	289.9	292.0	296.4	296.4	301.0	302.8	302.2	304.5	305.1	306.6
Cincinnati	207.7	245.1	250.0	250.0	255.0	257.6	258.8	260.0	260.7	263.9	265.5	265.1	267.1	268.9	269.5
Cleveland	220.7	258.0	257.9	260.5	263.1	265.7	268.5	272.3	272.8	275.8	277.4	276.3	278.4	282.0	283.0
Dallas	221.9	228.4	230.5	237.5	239.9	244.7	246.9	251.5	252.2	253.0	254.5	253.7	255.6	255.6	256.4
Denver	211.8	245.6	252.8	257.9	257.9	270.9	274.9	275.0	275.4	282.5	284.2	282.6	284.7	287.3	287.3
Detroit	197.8	237.4	239.8	249.4	259.5	264.7	265.9	276.1	267.9	272.2	273.8	272.7	274.7	277.7	277.7
Kansas City	213.3	230.5	235.0	239.6	237.1	237.1	240.1	242.3	242.9	247.8	249.3	246.2	248.0	249.6	250.5
Los Angeles	210.3	248.4	253.4	263.5	263.6	274.3	276.3	279.1	279.7	282.5	284.2	284.0	286.1	286.1	288.2
Miami	199.4	234.6	239.3	249.0	256.5	259.1	260.3	262.4	266.7	269.3	270.9	270.1	272.1	273.1	274.4
Minneapolis	213.5	235.6	249.9	254.9	260.0	267.9	269.0	271.4	272.1	275.3	276.9	275.0	277.1	281.6	282.4
New Orleans	207.1	232.8	235.1	237.5	242.3	244.7	245.1	246.5	246.5	248.3	249.8	247.1	248.9	249.3	249.9
New York	207.4	240.4	247.6	260.2	265.4	270.8	276.0	280.9	280.9	282.3	284.0	284.8	286.9	289.7	289.4
Philadelphia	228.3	255.0	257.6	262.8	262.8	265.4	265.2	265.6	265.6	271.2	272.8	271.1	273.1	274.5	275.2
Pittsburgh	204.0	234.1	236.4	241.1	243.5	250.9	251.8	255.0	256.1	258.2	259.7	260.8	262.7	262.9	263.8
St. Louis	213.1	237.4	239.7	246.9	251.9	256.9	255.4	260.1	262.4	263.4	265.0	266.8	268.8	271.4	272.1
San Francisco	266.4	302.5	308.6	321.1	327.5	337.4	343.3	350.1	250.1	352.4	354.5	358.2	360.9	364.1	365.4
Seattle	191.8	221.4	225.8	232.7	237.4	247.0	252.5	256.5	257.8	260.6	262.2	260.1	262.0	265.7	266.6

**HOW TO USE TABLES AND CHARTS:** Building costs may be directly compared to costs in the 1941 base year in tables A and B: an index of 256.3 for a given city for a certain period means that costs in that city for that period are 2.563 times 1941 costs, an increase of 156.3% over 1941 costs.  
TABLE A. 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 first city are 25% higher than costs in second. Also, costs in second city are 80% of those in first ( $8.0 \div 10.0 = 80\%$ ) or 20% lower in the second city.

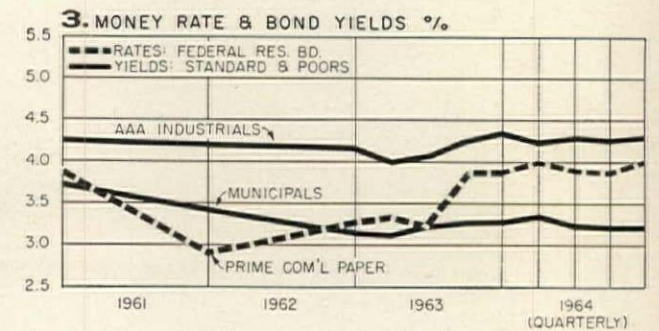
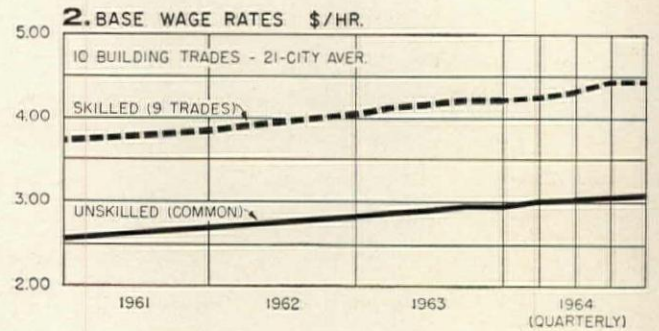
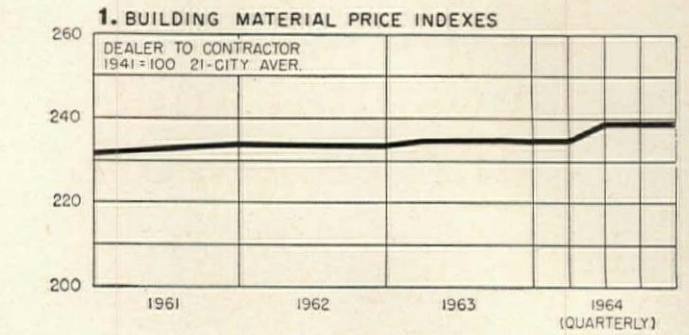
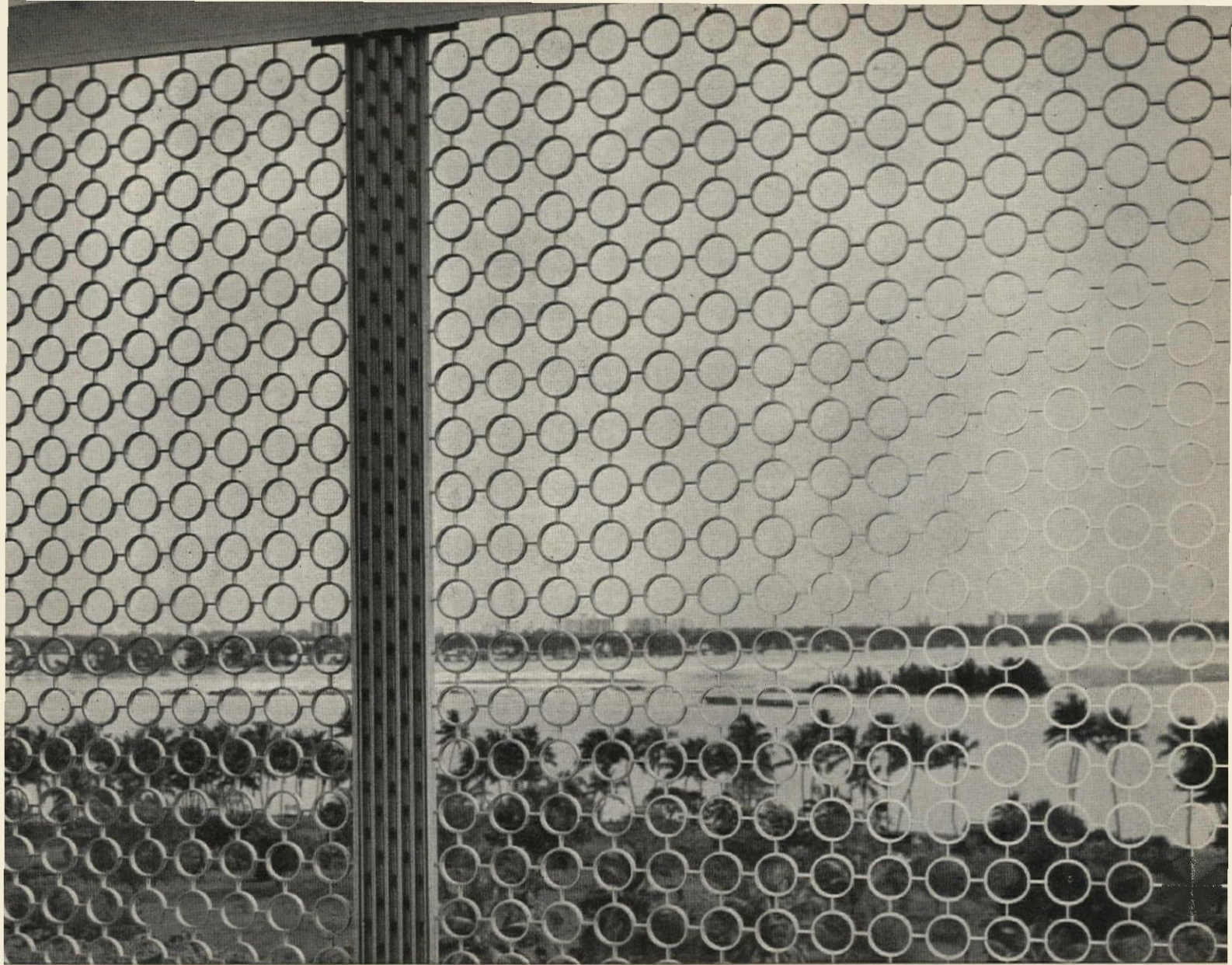


TABLE B. Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other: if index for a city for one period (200.0) divided by index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than those of the other. Also, second period costs are 75% of those of the other date ( $150.0 \div 200.0 = 75\%$ ) or 25% lower in the second period. CHART 1. Building materials indexes reflect prices paid by builders for quantity purchases delivered at construction sites. CHART 2. The \$1.20 per hour gap between skilled and unskilled labor has remained fairly constant. CHART 3. Barometric business indicators that reflect variations in the state of the money market.





Architect: Rader and Associates, Miami, Fla.

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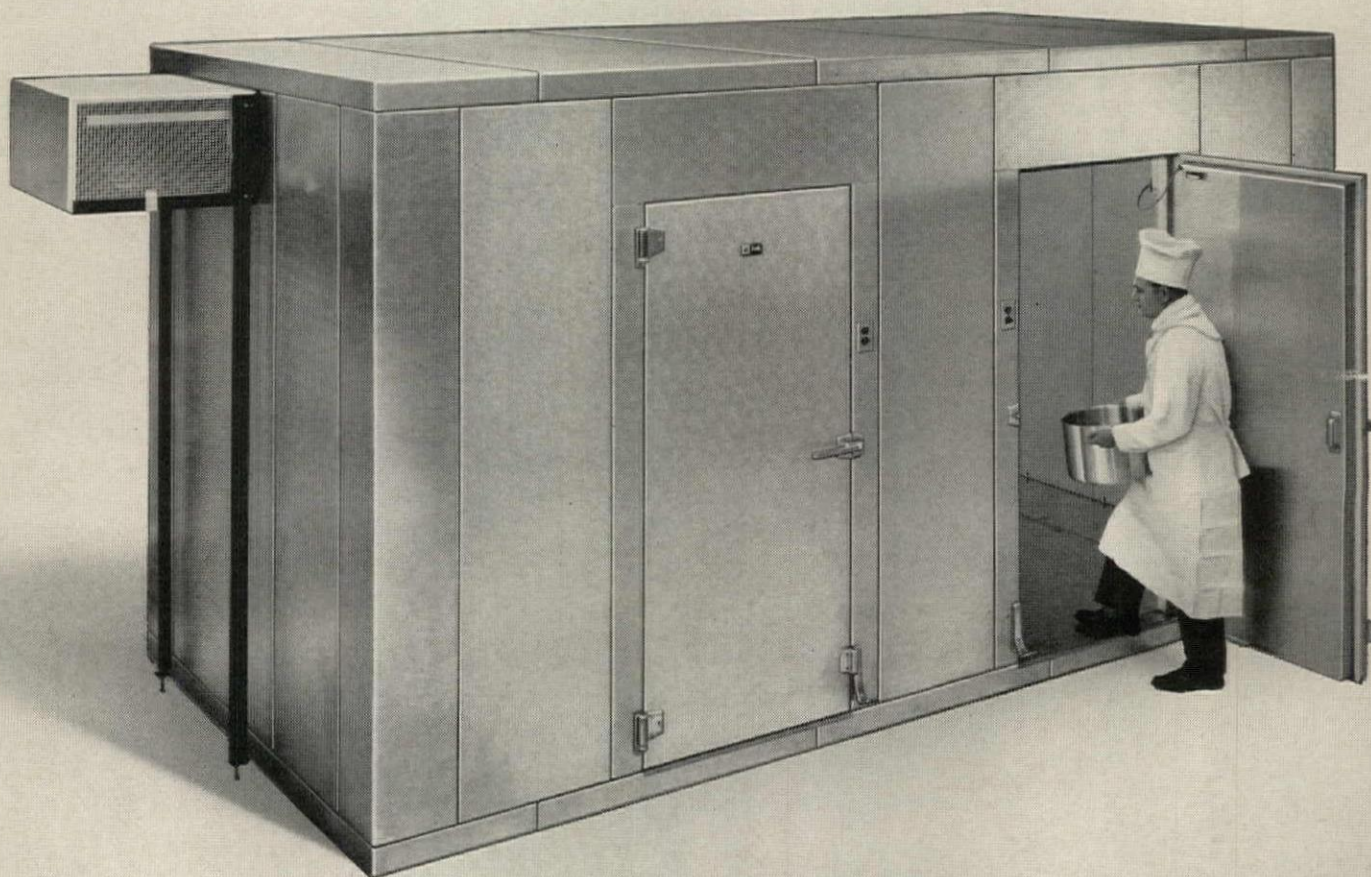
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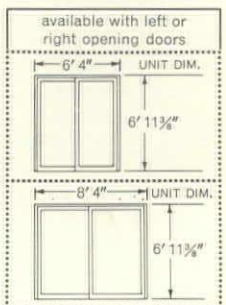
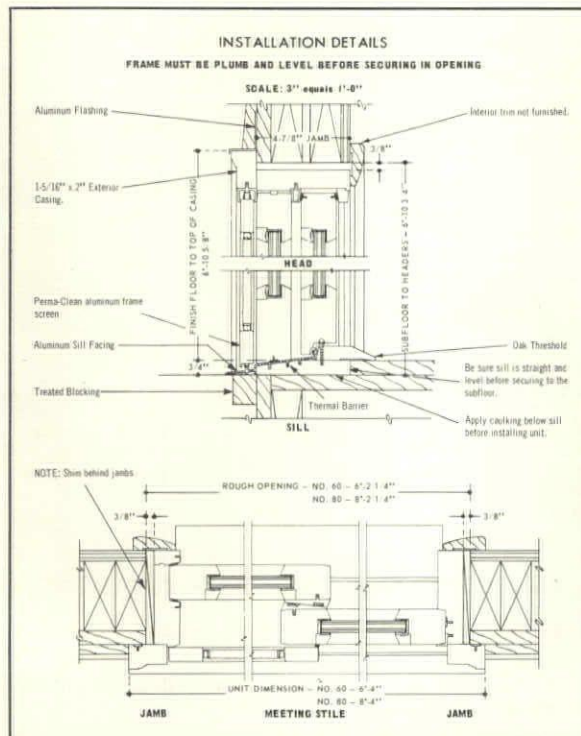


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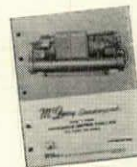
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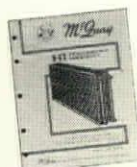


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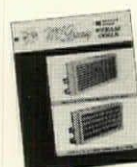
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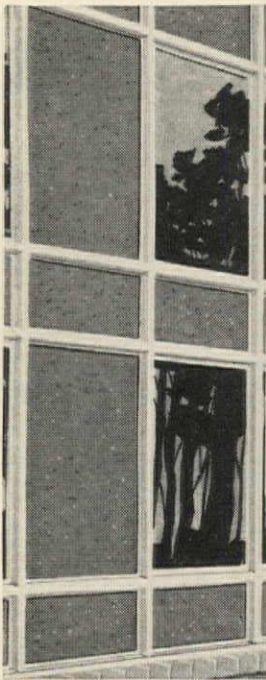
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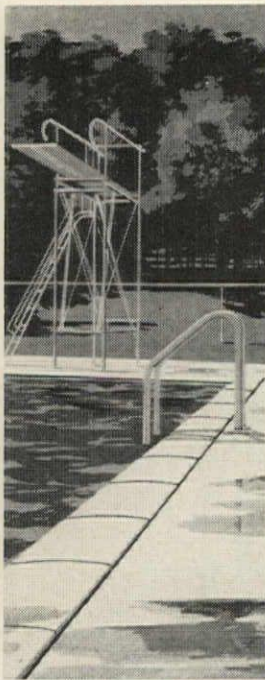
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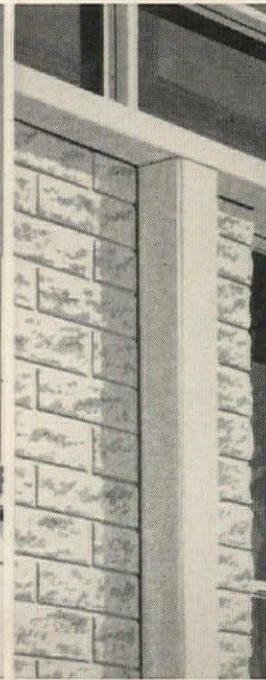
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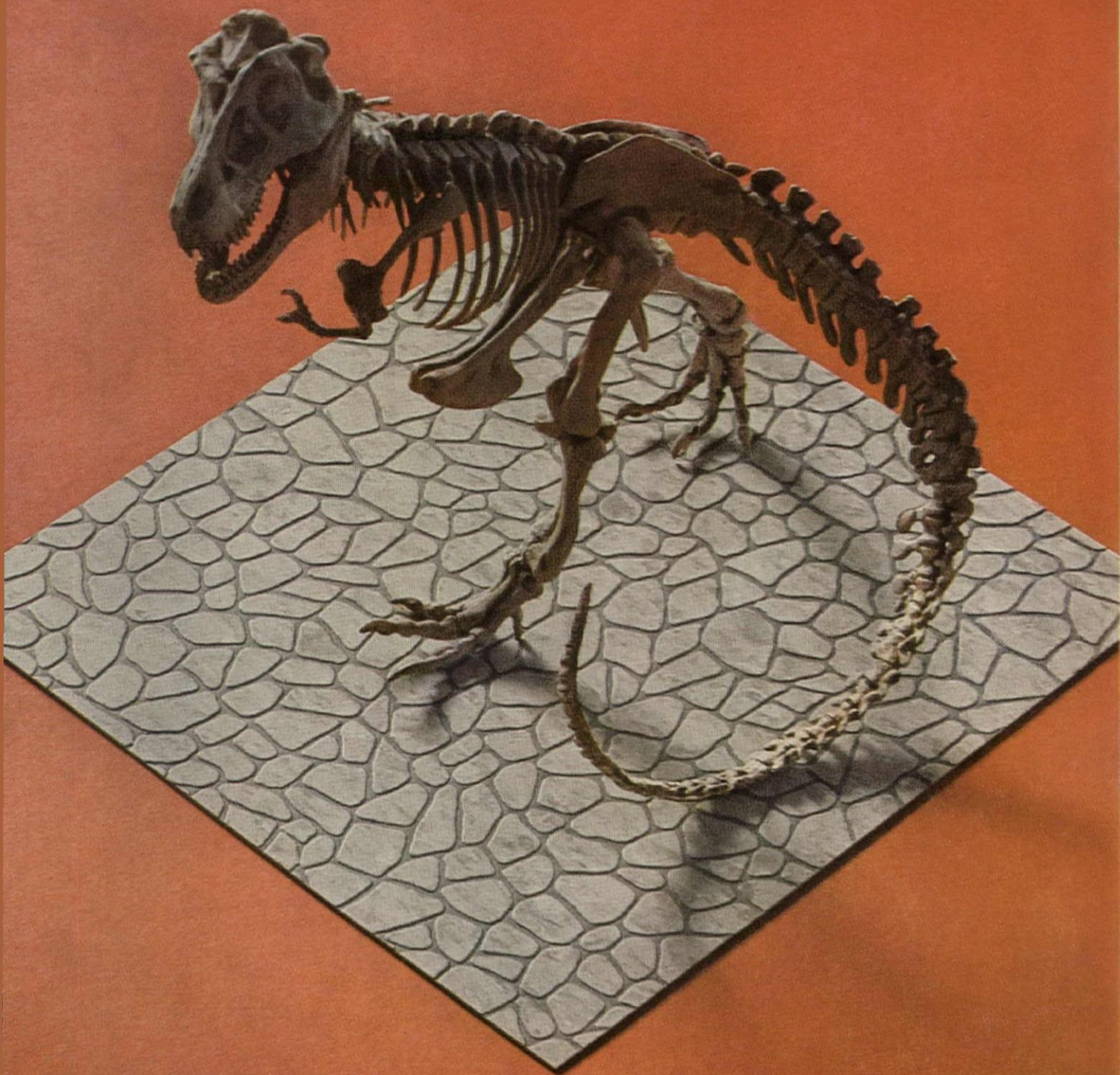
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A monthly roundup of reports on new books of special interest to architects and engineers

### Pictorial History

THE GREAT AGES OF ARCHITECTURE—*from Ancient Greece to the Present Day.* By Bodo Cichy. G.P. Putnam's Sons, New York. 440 pages, illus. \$25.

A survey notable for its photographs, though not one to buy for its coverage of modern architecture, which is limited to 19 pages and 23 photographs. But the book offers a copiously illustrated survey of architecture from Greek and Roman through early Christian and Byzantine to Romanesque, Gothic, Renaissance, Baroque and Rococo and finally on through architecture of the late eighteenth and nineteenth centuries and the twentieth.

The book was first published in Germany in 1959 and a French edition appeared in 1961; but it is now published in English for the first time. The author has edited a number of art books and was co-author of "The World of Great Architecture" and "Twenty Centuries of Great European Painting."

The illustrations include 112 full-page plates, including 65 in four-color, 360 monochrome photographs and more than 150 drawings; and the book is superbly printed. There are an illustrated glossary of architectural terms (some 400 entries) and a comprehensive index.

### Modern Architecture

THE BEST IN 20TH CENTURY ARCHITECTURE. *Pictures and texts chosen from L'Oeil, The International Art Review.* Edited by Georges and Rosa-

mund Bernier, Reynall & Company, New York. 279 pages, illus. \$15.

This collection of articles which originally appeared in *L'Oeil*, the International Art Review, makes a spectacular handsome book; and the reproduction, particularly of the four-color photographs, is of the quality one associates with *L'Oeil*.

The work shown is familiar—Wright, LeCorbusier, Gropius, Mies and Breuer, Aalto, Nervi, Niemeyer, Eero Saarinen, Johnson, Bunshaft, Scharoun and others; but the excellent photographs are numerous, generous in size and include 21 in full color. The texts are here available in English for the first time.

The book is organized in five sections. The first, on "pioneers," includes articles on Viollet-le-Duc, Charles Garnier and Gaudi as well as a provocative article (illustrated with wonderful drawings) on late-nineteenth century "Forerunners or Utopians." Another deals with "creators"; a third, on "a new way of life," has an excellent article on the Finnish new town of Tapiola among more familiar works. A fourth section includes articles on the evolution of the skyscraper and prefabrication and the fifth focuses on materials—glass, metals, concrete and plastics.

### Housing and the City

THE URBAN COMPLEX. By Robert C. Weaver. Doubleday & Company, Inc., Garden City, N.Y. 297 pages, \$4.95.

An analysis by the Administrator of the Housing and Home Finance

### This Month's Books

#### REVIEWS

- Georges and Rosamund Bernier, *The Best in 20th Century Architecture* . . . 50  
Bodo Cichy, *The Great Ages of Architecture* . . . 50  
Bernard J. Frieden, *The Future of Old Neighborhoods* . . . 50  
Alan Gowans, *Architecture in New Jersey* . . . 54  
Robert C. Weaver, *The Urban Complex* . . . 50  
Gaston Weit, *Cairo* . . . 54

#### BOOKS RECEIVED . . . 58

Agency of the major problems of the American city and the relationship of the urban renewal program to them.

The book begins with a discussion of the impact of urbanization on our society, describes the rise and development of urban renewal and in a long chapter on "Urban Renewal Today" outlines the workings of the Federal program and offers an assessment of its successes and failures. There is a chapter on planning and research, with emphasis on the increased emphasis over the last few years on metropolitan planning. Economics and the problem of the Negro in the city are also considered.

THE FUTURE OF OLD NEIGHBORHOODS. By Bernard J. Frieden. *The M.I.T. Press, Cambridge, Mass.* 209 pages, \$7.50.

In a book developed with the aid of a research fellowship at the Joint Center for Urban Studies of M.I.T. and Harvard, Mr. Frieden offers proposals for countering some of the problems arising from large-scale clearance programs.

Loss of valuable housing resources and needless uprooting of many people from old neighborhoods with which they have strong ties could be avoided, Mr. Frieden believes, if a policy were adopted of rebuilding old areas gradually and continuously, keeping pace with the abandonment of housing and replacing only surplus houses. On the basis of studies in New York, Los Angeles and Hartford, he argues that such a policy can be made economically feasible, and details a number of approaches.

*continued on page 54*



THE BEST IDEAS ARE  
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North Shore Congregation Israel Synagogue, Glencoe, Ill. Architect: Minoru Yamasaki & Associates, Birmingham, Mich. Structural Engineers: Worthington, Skilling, Helle, and Jackson, Seattle.

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\*Structural Clay Products Research Foundation.

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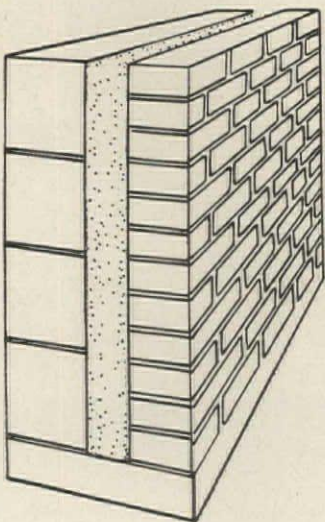




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## Required Reading

*continued from page 50*

### New Jersey Architecture

ARCHITECTURE IN NEW JERSEY. *Volume 6 in the New Jersey Historical Series. By Alan Gowans. D. Van Nostrand Company, Inc., 120 Alexander St., Princeton, N.J. 161 pp., illus. \$2.95.*

Alan Gowans' thesis that architecture is "history in its most tangible form" is here developed with particular reference to the architecture of New Jersey. The book is one of a series of historical works which are being published to mark the 300th anniversary of the state.

Although, as Dr. Gowans points out, New Jersey is not notable for individual buildings of great significance, a history of its architectural development is nonetheless of interest: "New Jersey has always been more a corridor for the transmission of people and ideas than an originating center of culture, and its architecture is therefore an unrivaled record of the development of American civilization. It is precisely because New Jersey architecture has always been at once so uncomplicated by greatness or originality and so open to diverse influences from all sides, that it manifests the great ideas, the changing tastes, the permanent values of Western civilization generally and American life in particular, with unusual clarity and completeness."

### History of Cairo

CAIRO. *By Gaston Weit, translated by Seymour Feiler. University of Oklahoma Press, Norman, Okla. 170 pp. \$2.75.*

Cairo, from the time of the early capitals to the end of the 15th century, is the subject of this recent volume in the Centers of Civilization series. Gaston Weit's account of the inhabitants of Cairo, their rulers, houses, markets and often gruesome forms of entertainment, is colorful and informative. Anyone interested in the history of Islamic culture will find this a rewarding study.

*continued on page 58*

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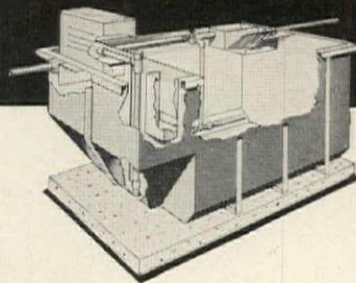
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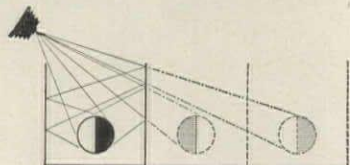


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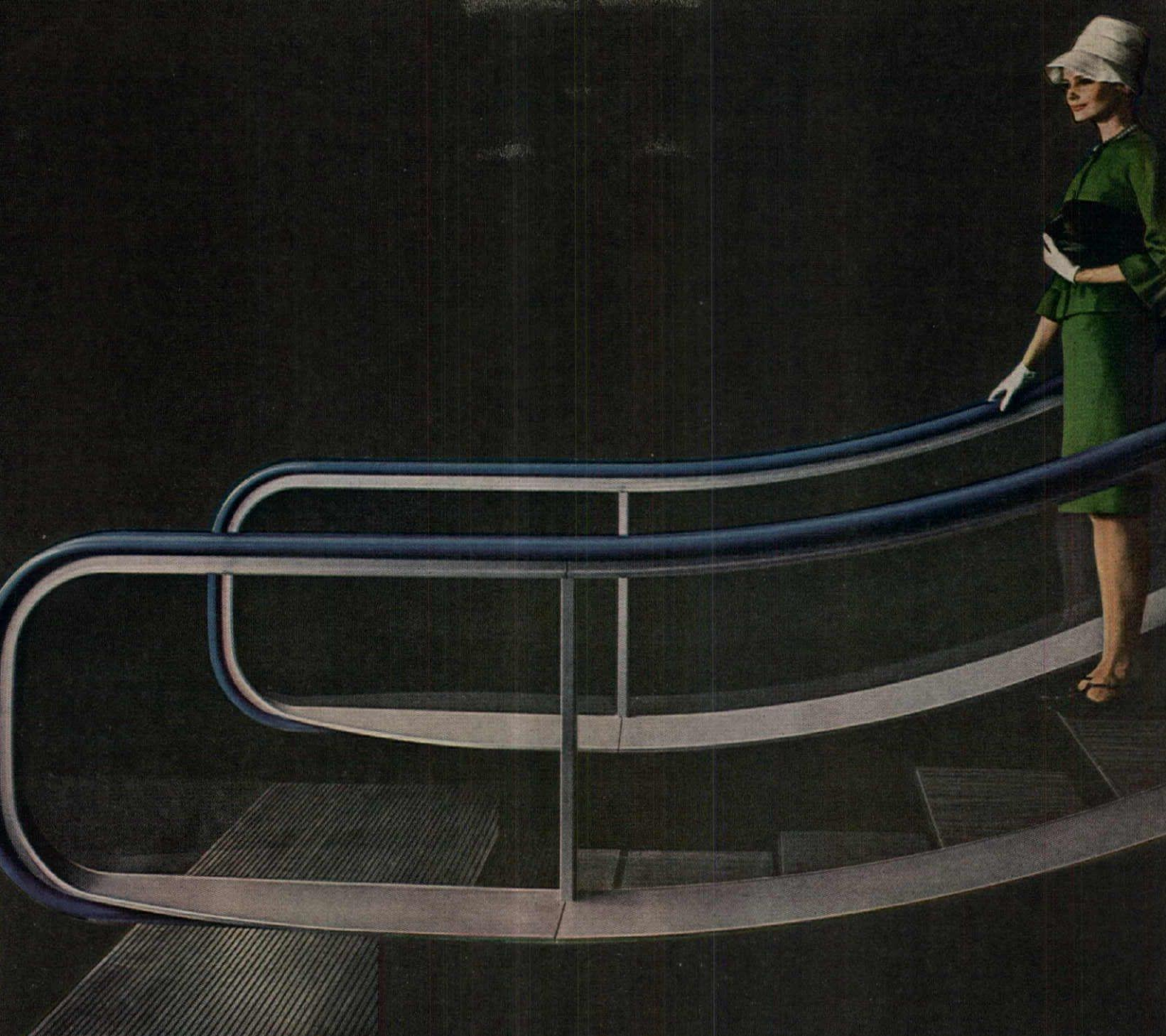
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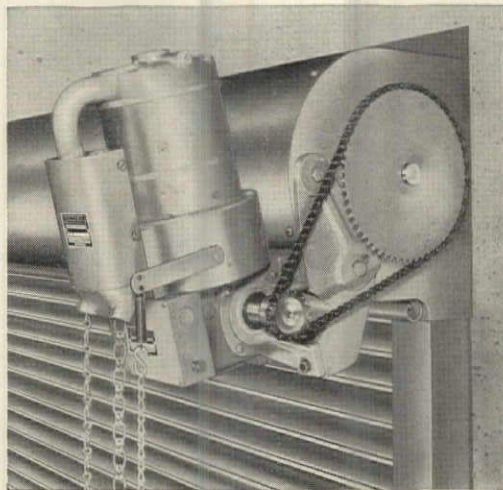
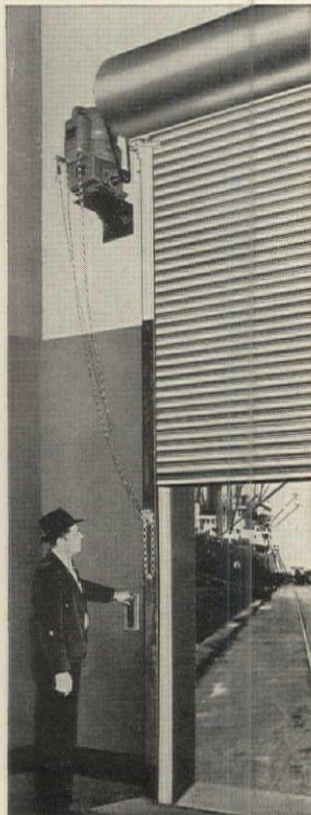
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Offices and Representatives in All Principal Cities

### Required Reading

continued from page 54

### Books Received

THEATRES AND AUDITORIUMS, 2ND EDITION. By Harold Burris-Meyer and Edward C. Cole. Reinhold Book Division, 430 Park Ave., New York, N.Y. 376 pp., illus. \$20.00.

CLEVELAND: VILLAGE TO METROPOLIS. By Edmund H. Chapman. The Western Reserve Historical Society and The Press of Western Reserve University, 2029 Adelbert Rd., Cleveland 13, Ohio. 166 pp., illus. \$7.50.

CONSTRUCTION OFFICE ADMINISTRATION. By George E. Deatherage. McGraw-Hill Book Company, 330 W. 42nd St., New York, N.Y., 10036. 311 pp., illus. \$13.50.

THE LIFE AND WORK OF JENS JENSEN. By Leonard K. Eaton. The University of Chicago Press, 5750 Ellis Ave., Chicago 37, Ill. 240 pp., illus. \$10.00.

INDUSTRIAL ARCHAEOLOGY. By Kenneth Hudson. Dufour Editions, Chester Springs, Pa. 179 pp., illus. \$7.50.

SEAPORT, ARCHITECTURE & TOWNSCAPE IN LIVERPOOL. By Quentin Hughes. Percy Lund, Humphries & Co., Ltd., 12 Bedford Square, London WC1. 180 pp., illus. 50s.

THE MAKING, SHAPING AND TREATING OF STEEL. Edited by Harold E. McGannon. United States Steel Corp., Office Service-Stores, 1509 Muriel St., Pittsburgh, Pa. 1300 pp., illus. \$10.00.

TOWN PLANNING IN LONDON. By Donald J. Olsen. Yale University Press, New Haven, Conn. 245 pp., illus. \$12.50.

LAND OF EMPERORS AND SULTANS. By Merry Ottin. Crown Publishers, Inc., 419 Park Ave. South, New York, N.Y., 10016. 300 pp., illus. \$10.00.

WEEK IN YANHUITLAN. By Ross Parmenter. The University of New Mexico Press, Albuquerque, N. M. 375 pp., illus. \$5.00.

THE NATURE OF DESIGN. By David Pye. Reinhold Publishing Corp., 430 Park Ave., New York, N.Y., 10022. 96 pp., illus. Paperbound, \$1.95.

ARCHITECTURE WITHOUT ARCHITECTS. By Bernard Rulofsky. Doubleday & Co., Inc., Garden City, N.Y. 143 pp., illus. \$6.95.

MEXICAN HOMES OF TODAY. By Verna Cook and Warren Shipway. Hastings House Publishers Inc., 151 E. 15th St., New York, N.Y., 10022. 249 pp., illus. \$12.95.

FURNITURE IN BRITAIN TODAY. By Dennis and Barbara Young. Wittenborn and Company, 1018 Madison Ave., New York, N.Y., 10021. Unpagged, illus. \$10.50.

THE ARCHITECTURE OF THE EUROPEAN SYNAGOGUE. By Rachel Wischnitzer. The Jewish Publication Society of America, 222 N. 15th St., Philadelphia 2, Pa. 312 pp., illus. \$6.00.

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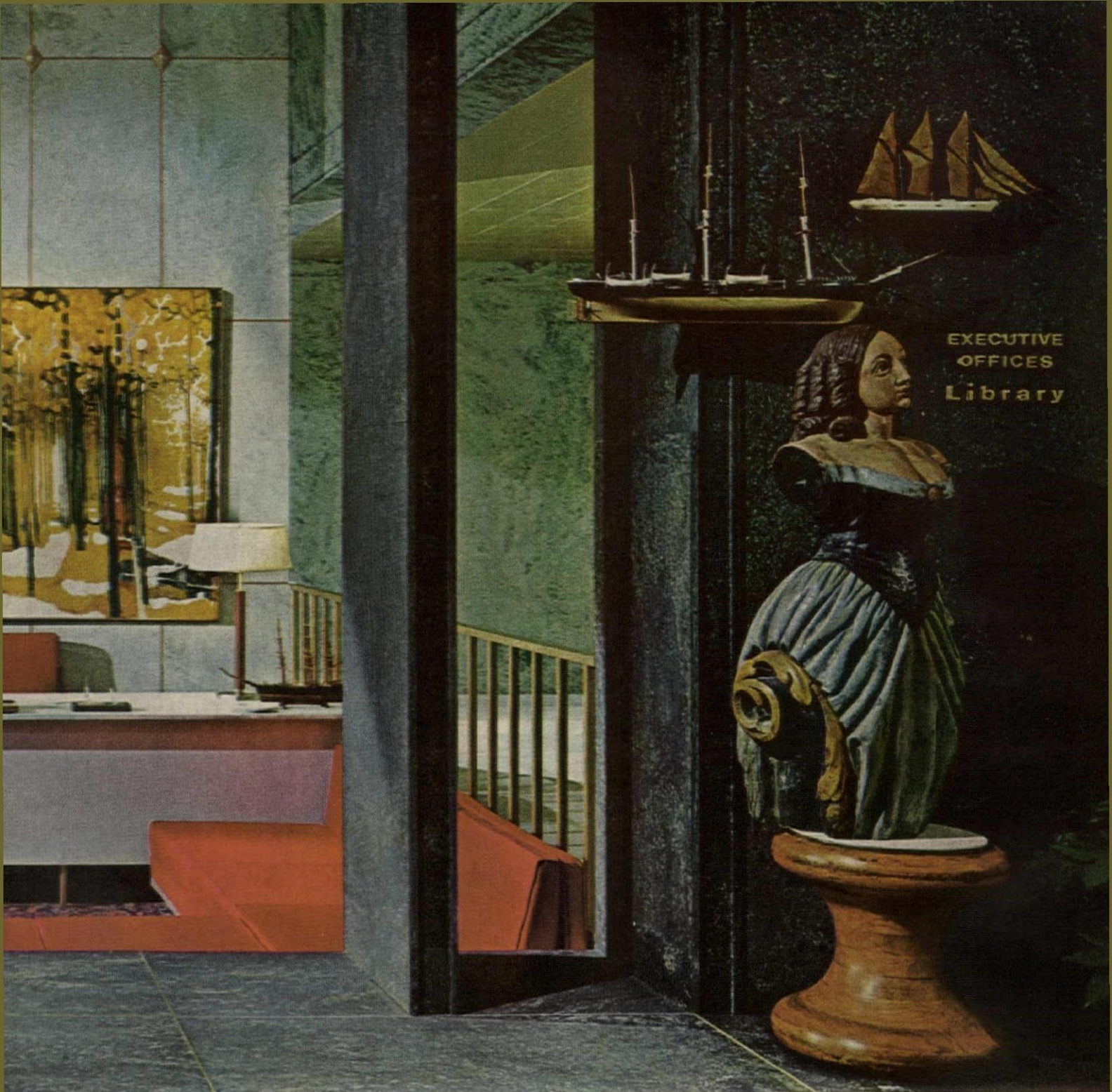
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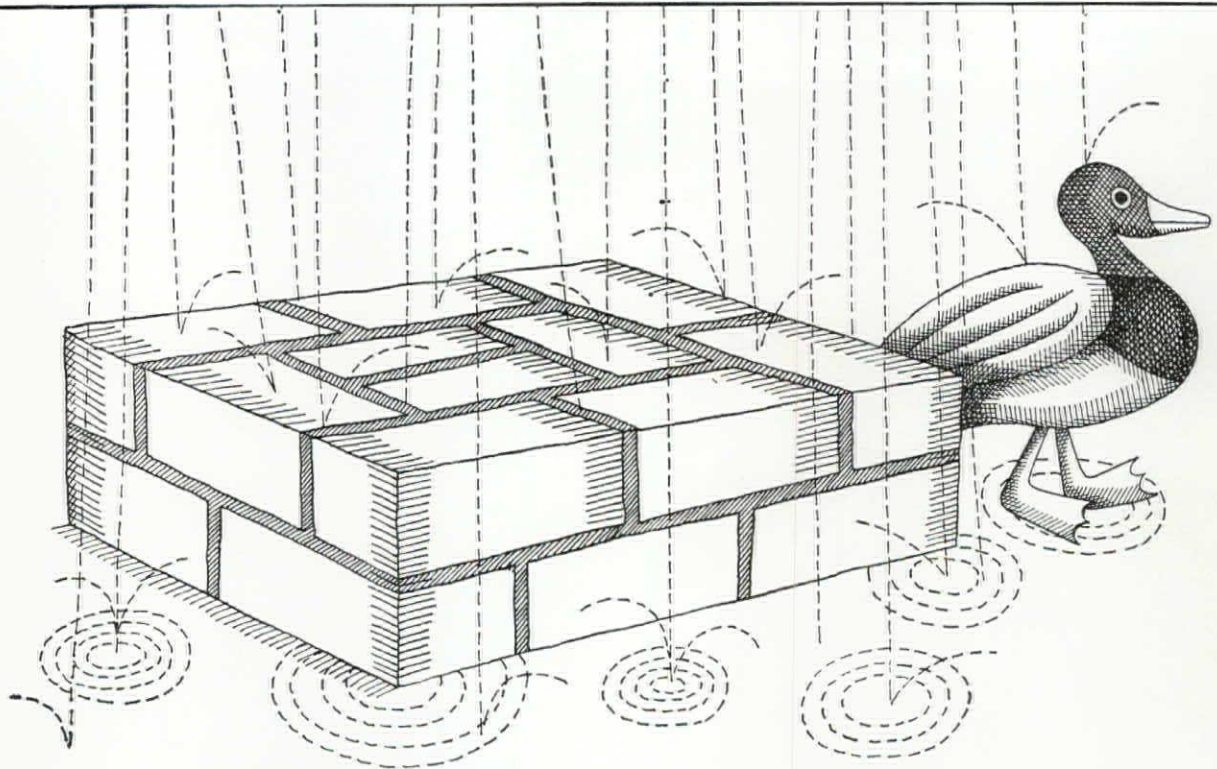
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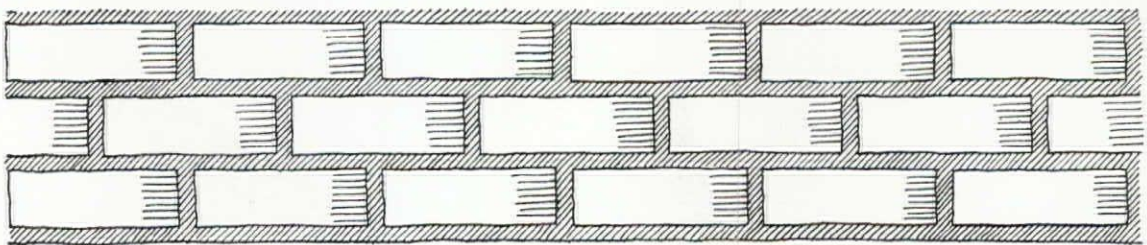
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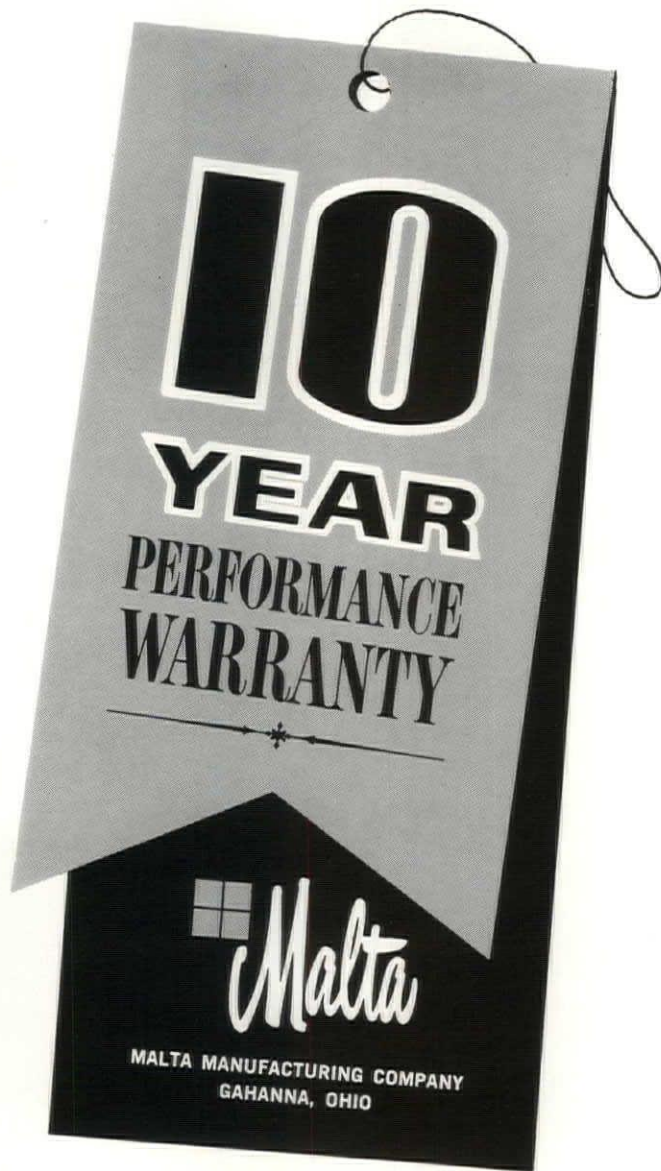


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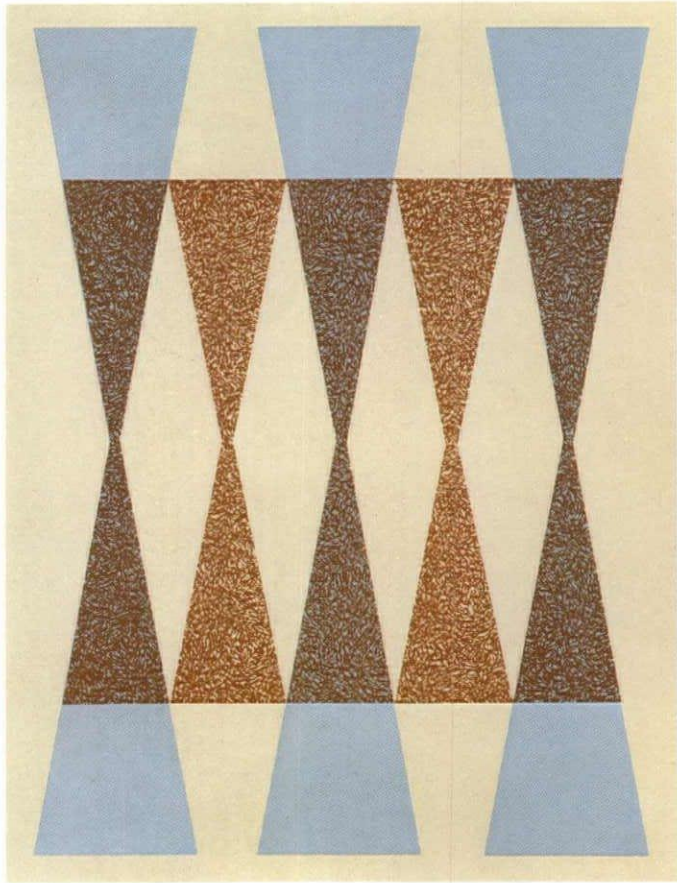
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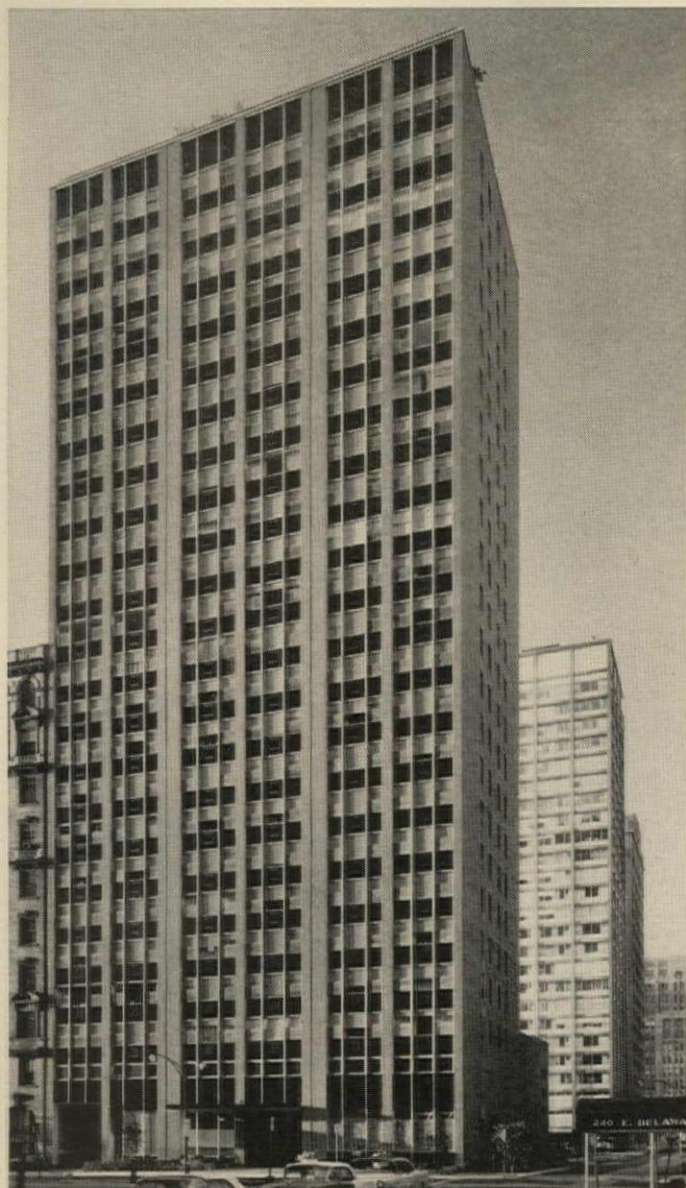
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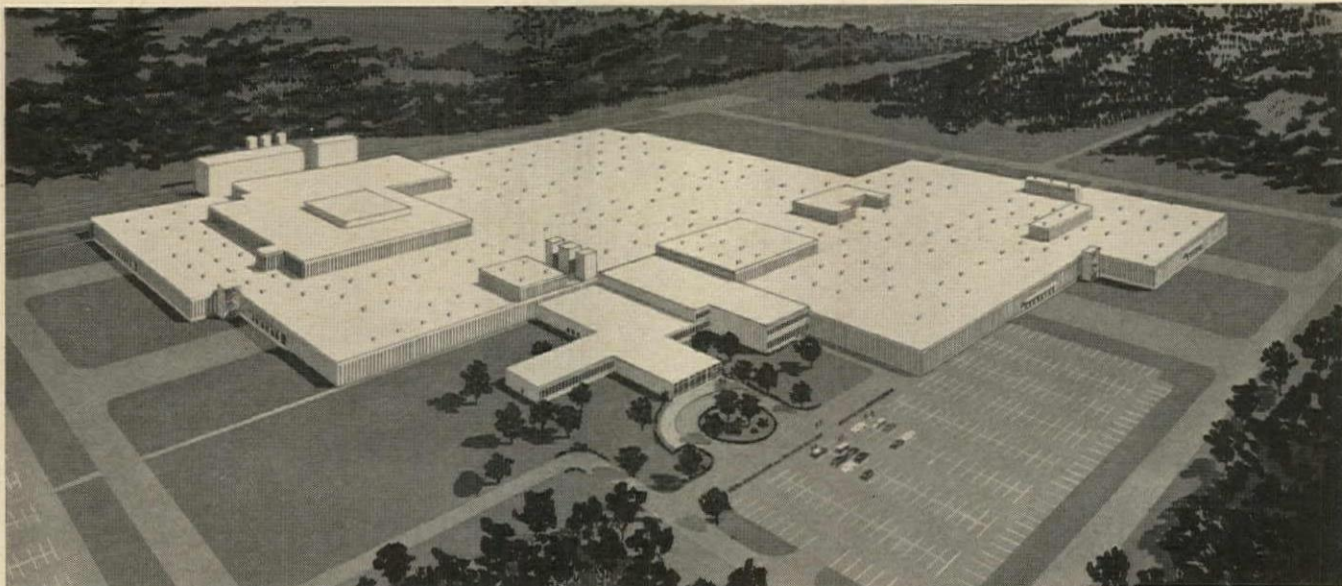
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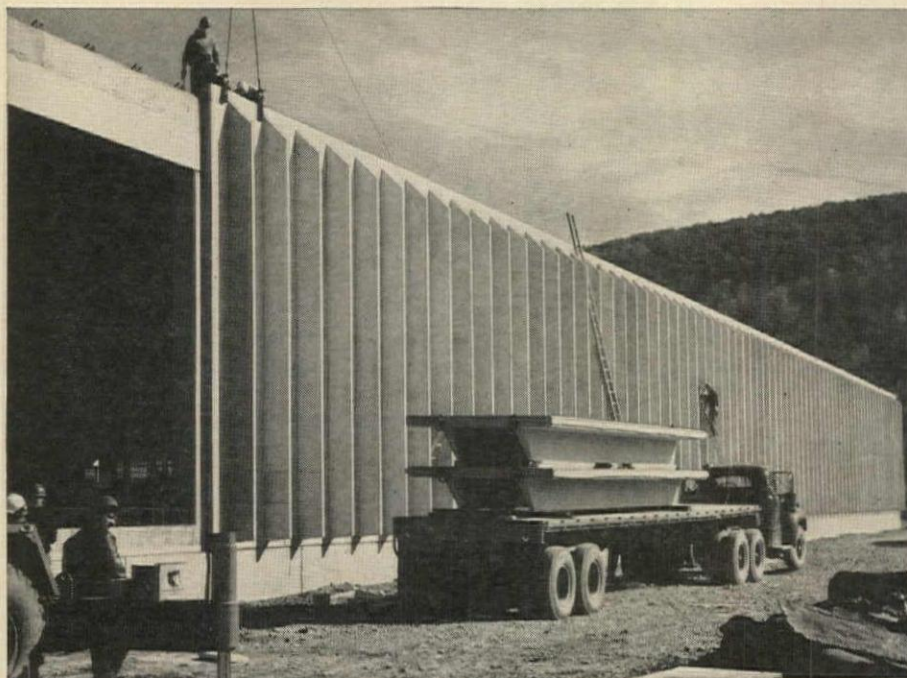
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*Designer, Engineer & Constructor:*  
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*Precast Concrete Manufacturer:*  
Dickerson Structural Concrete Corp.,  
Youngwood, Pa.

*Precast Concrete Erector:*  
W. P. Dickerson & Son, Inc.,  
Youngwood, Pa.

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(1) the Main Pavilion; (2) the Federal Pavilion; (3) the four-tier restaurant; (4) the five state pavilions



One of the state pavilions



The Federal Pavilion

## BUILDINGS WILL GIVE DESIGN UNITY TO PARK

The privately financed America-in-Minature Park, to be completed by 1968 at a cost of \$20 million, will feature three acres of ground landscaped in the shape of the United States, on which 2,500 miniature replicas of America's natural, industrial, economic, and cultural resources will be placed in their proper relationships to one another. Architectural and engineering firm for the 100-acre park is the Chicago office of Skidmore, Owings and Merrill. The park will be located in Montgomery County, Maryland, 12 miles from the District of Columbia.

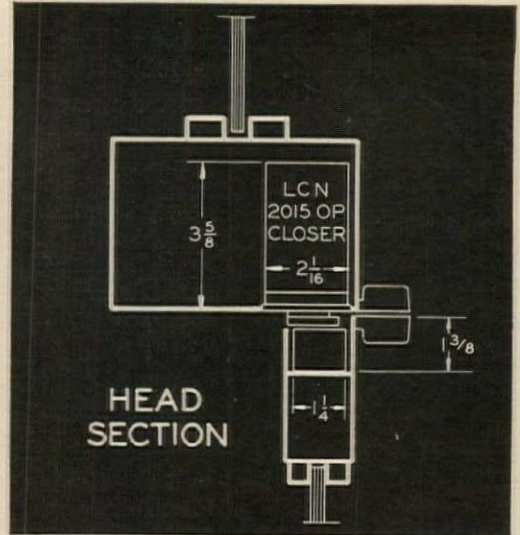
Surrounding the symbolic America will be high terraces which will provide vantage points for viewing the miniature nation. These terraces will support a 340-foot-long entrance building, a Federal Pavilion, 50 state information centers and a four-tier restaurant.

William E. Dunlap, a general partner of Skidmore, Owings and Merrill, emphasizes that the buildings will be of architectural simplicity to eliminate visual competition with the main attraction, the landscaped "map." "Our goal," Mr. Dunlap says, "is to incorporate all the features of the park into a unified design concept, wherein each of the supporting facilities would compliment the others. Great care has been taken in the over-all design to eliminate many of the conflicts of scale between the 'real world' and that of the miniature America."

The Federal Pavilion is a long span steel structure open, for the most part, to the outside. The marble walls of the Pavilion will enclose a 500-seat auditorium.

The Main Pavilion will be a 340-foot-long steel structure which will house a cafeteria, administrative offices and other commercial facilities. The 50 state information centers will be contained in five low steel-frame buildings.

The architectural focal point of the park will be a four-tier restaurant, located on the highest terrace of the park.

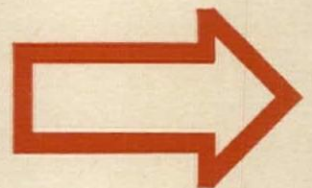


## Construction Details

for LCN overhead concealed door closer  
installation shown on opposite page

The LCN series 2010.OP closer's main points:

- 1 Efficient, full rack-and-pinion, two-speed control of the door
- 2 Mechanism entirely concealed in head frame and top of door; arm shows when door opens, is hidden when door is closed.
- 3 Hydraulic back-check cushions door if thrown open violently, saving door, wall, etc.
- 4 Hold-open available at 75, 85, 90 or 95 degrees setting.
- 5 Closers are made for heavy duty and long life



Descriptive matter on request—no obligation, or see Sweet's 1965, Section 19e/Lc

# LCN

LCN CLOSERS, PRINCETON, ILLINOIS

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Canada: LCN Closers of Canada, Ltd.,  
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**LCN**

Closers concealed in head frame

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Architects

**LCN CLOSERS, PRINCETON, ILLINOIS**

Construction Details on Opposite Page





No. 6100-U  
SIDE CHAIR

No. 6005-U  
PEDESTAL SIDE CHAIR



No. 6000-U  
STACK CHAIR

## New UPHOLSTERED comfort in Krueger fiberglass chairs



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SIDE CHAIR

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**Durable? YES!**—Fitted fabric-backed Naugahyde cover, invisibly seamed—easy to clean.

**Sturdy? YES!**—Heavy-gauge, tubular steel legs are welded into integral unit, then unitized to shell.

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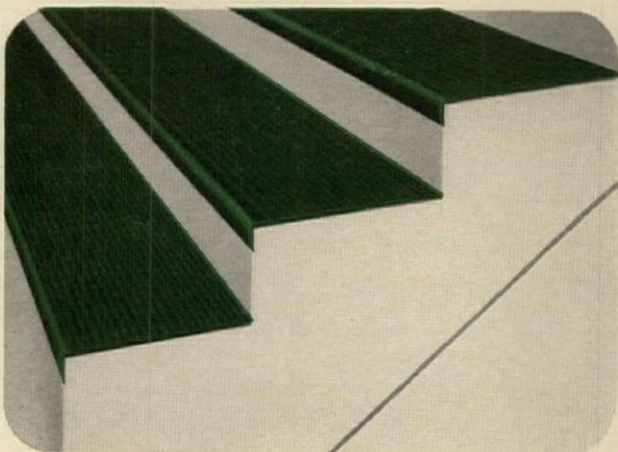
Write for Special Catalog Sheet  
and price information

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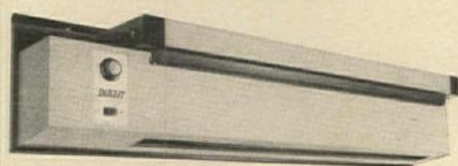


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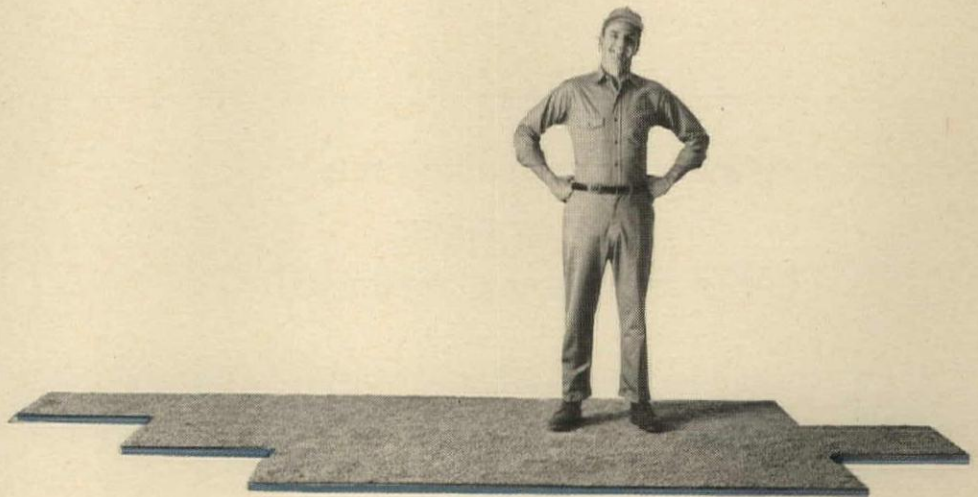




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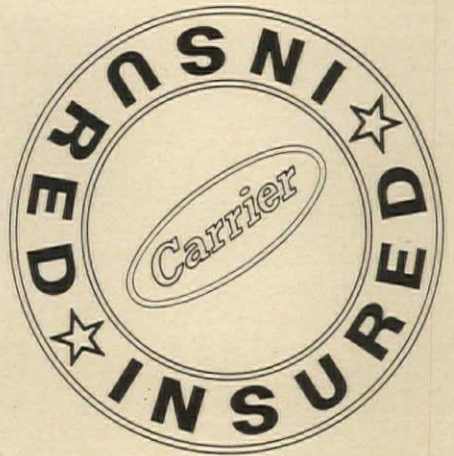


## OK. Now forget it.

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Look at it this way.

We make the best equipment we know how—to do a good honest job.

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The service we offer is, in a sense, insurance—insurance that the equipment you use will remain in top-notch operating condition.

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We offer it to your clients in three forms: (1) Overall Maintenance Ser-

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It can save them costly headaches. Dollars for parts. Dollars for labor. Dollars for downtime.

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We take equivalent care in every detail with everything we do.

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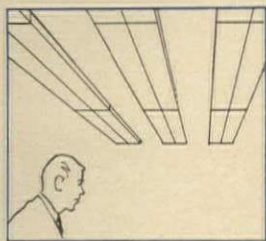
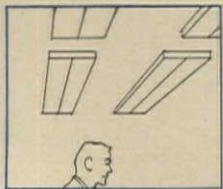
**Carrier** Air Conditioning Company

More people put their confidence in Carrier air conditioning than in any other make

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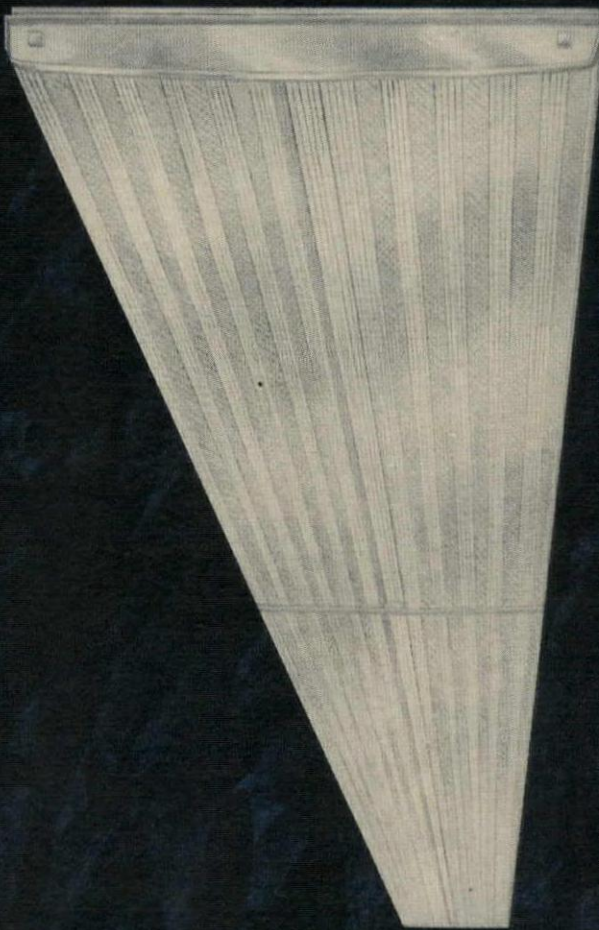
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## DUDLEY NAMED AS DEAN AT U.C.L.A.

George A. Dudley has been named first dean of the new School of Architecture and Urban Planning at U.C.L.A. Mr. Dudley is the present dean of the School of Architecture at Rensselaer Polytechnic Institute.

The new school was authorized two years ago by the Regents of the University. The school is expected to open in the fall of 1966.

Mr. Dudley has been dean of Rensselaer since 1962. In that year he became a trustee of the New York State University Construction Fund.

After World War II, Mr. Dudley joined the architectural firm of Harrison and Abromovitz, New York. From 1948 to 1959 he was president of the Ibec Housing Corporation under the chairmanship of Winthrop Rockefeller, a company responsible for housing projects in Latin America, Puerto Rico, Iraq, Iran, Kuwait and India.

## AALTO HONORED BY COLUMBIA

Alvar Aalto, Finnish architect, was awarded the degree of Doctor of Humane Letters by Grayson Kirk, president of Columbia University in a special convocation at the university on November 30.

Mr. Aalto was cited as follows: "For 40 years you have been recognized as one of the master architects of our contemporary world. Throughout your own country, libraries, cultural and civic centers, hospitals, factories, and homes stand as enduring evidences of your genius. Far beyond the frontiers of Finland, other countries, among them Germany, Italy and the United States, have enriched their architecture by specimens of your work. Decorated by many governments, honored by membership in professional societies in many lands, you have received the world's acclaim which your talents so greatly justify. Continuity and innovation, solidity and boldness, strength and refinement, faithfulness to the ideals of truly organic architecture—these qualities have marked your work. For them, Columbia University is pleased to confer upon you the degree of Doctor of Humane Letters, *honoris causa*."

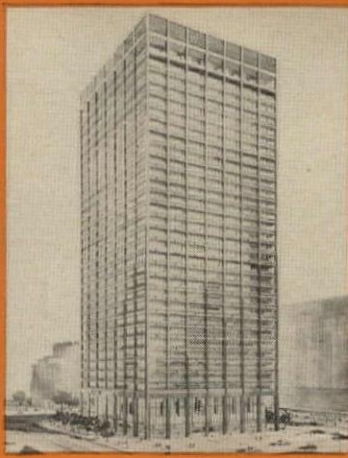




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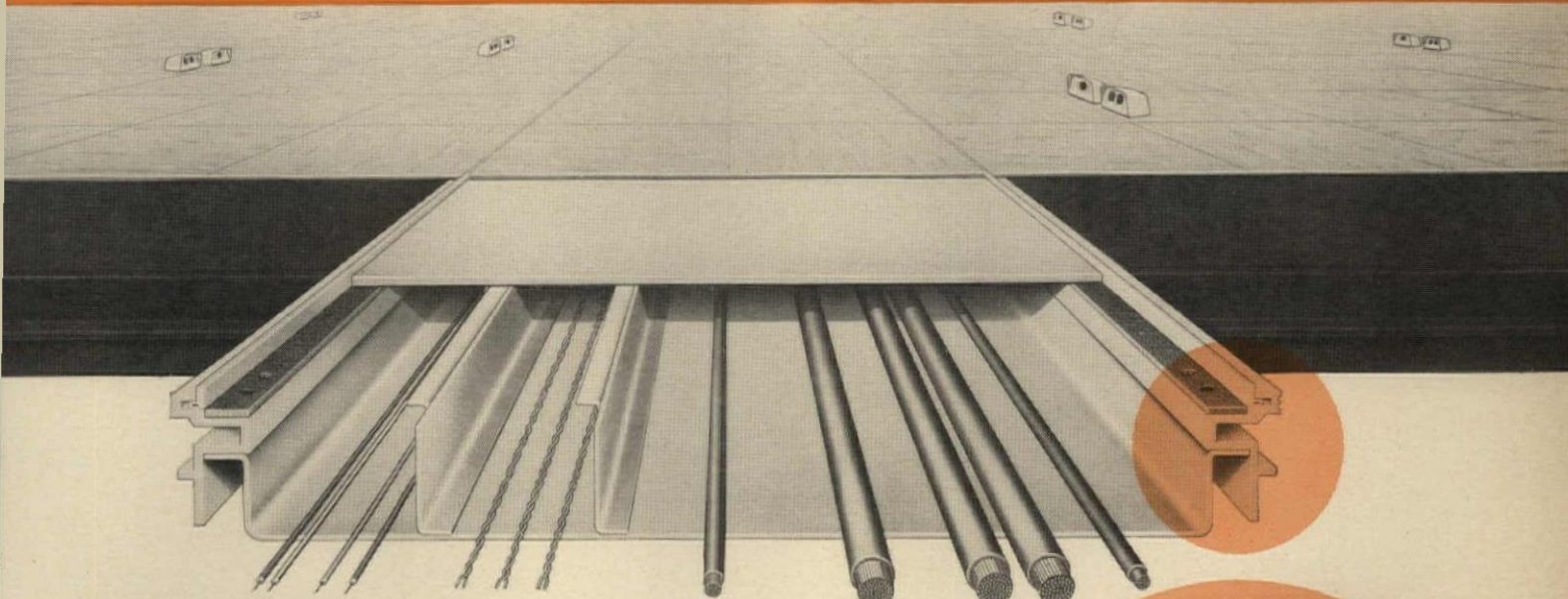
SUN LIFE INSURANCE CO., Baltimore, Md.; Warren A. Peterson and Emery Roth & Sons, Archs.; Joseph Loring & Assoc., Elec. and Mech. Engrs.; Cogswell Const. Co., Contr.



TENNESSEE GAS TRANSMISSION CO., Houston, Texas; Skidmore, Owings & Merrill, Archs.; H. P. Foley Co., Elec. Contr.; W. S. Bellows, Const. Corp., Contr.



PHOENIX MUTUAL LIFE INSURANCE CO., Hartford, Conn.; Harrison & Abramovitz, Arch.; Theo. D. Bross Elec. Co., Elec. Contr.; George A. Fuller Co., Contr.

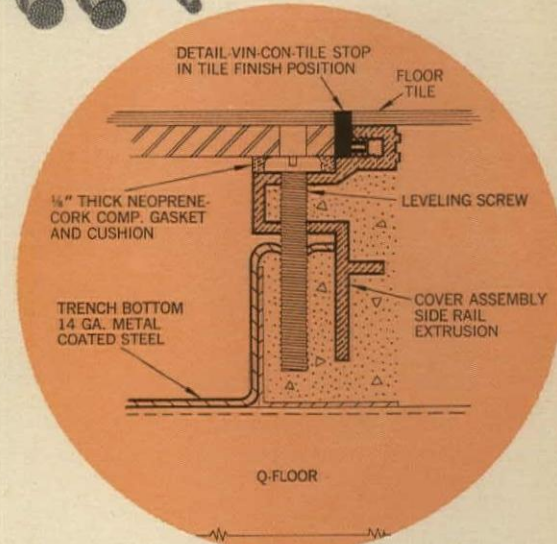


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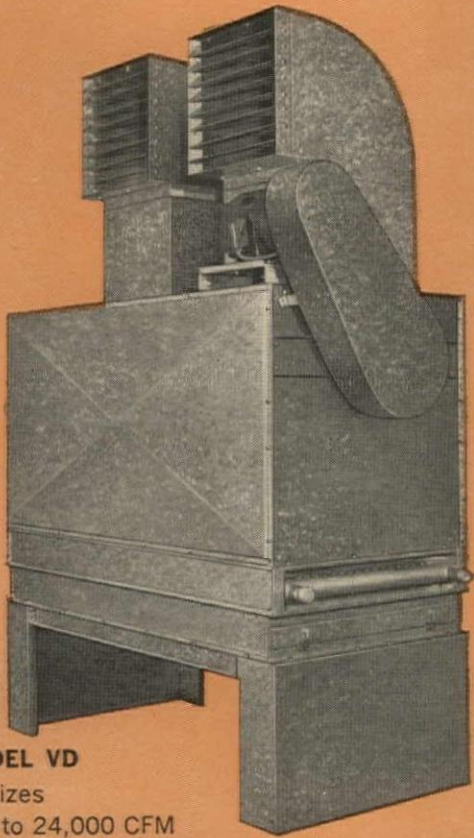
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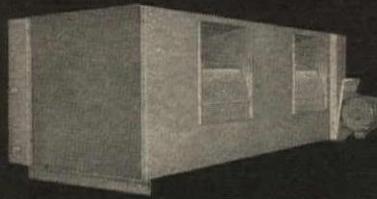
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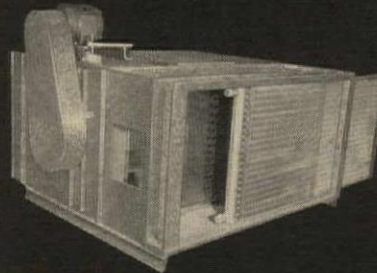
HEATING AND VENTILATING UNITS...



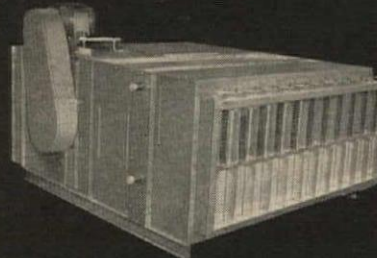
**MODEL VD**  
12 sizes  
900 to 24,000 CFM



**MODEL HD**  
Draw-thru horizontal unit consists of fan section and compact coil section.  
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900 to 56,000 CFM



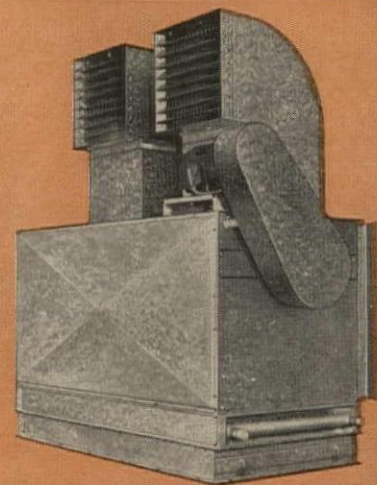
**MODEL HB**  
Blow-thru horizontal unit primarily for systems requiring large amounts of fresh air.  
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Multi-zone unit serves several areas, each with its own temperature control.  
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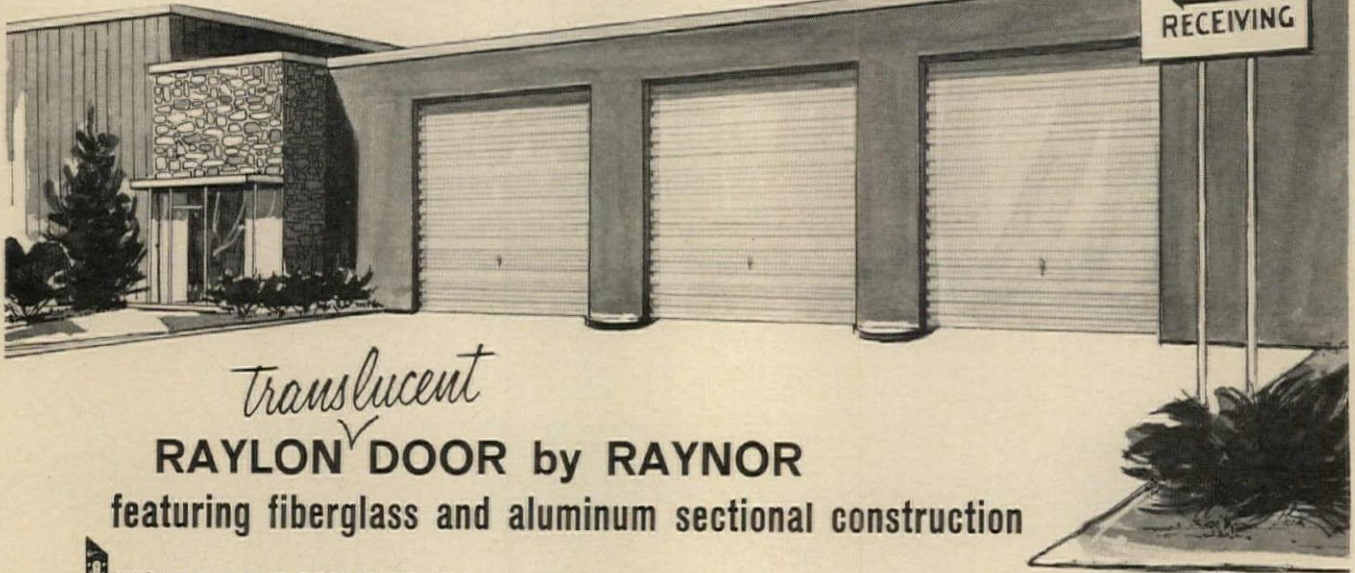
A DIVISION OF UNIVERSAL AMERICAN CORPORATION

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# for any door

# in

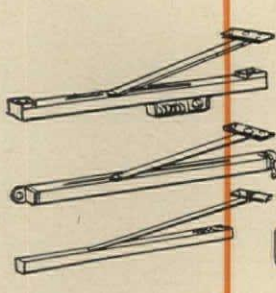
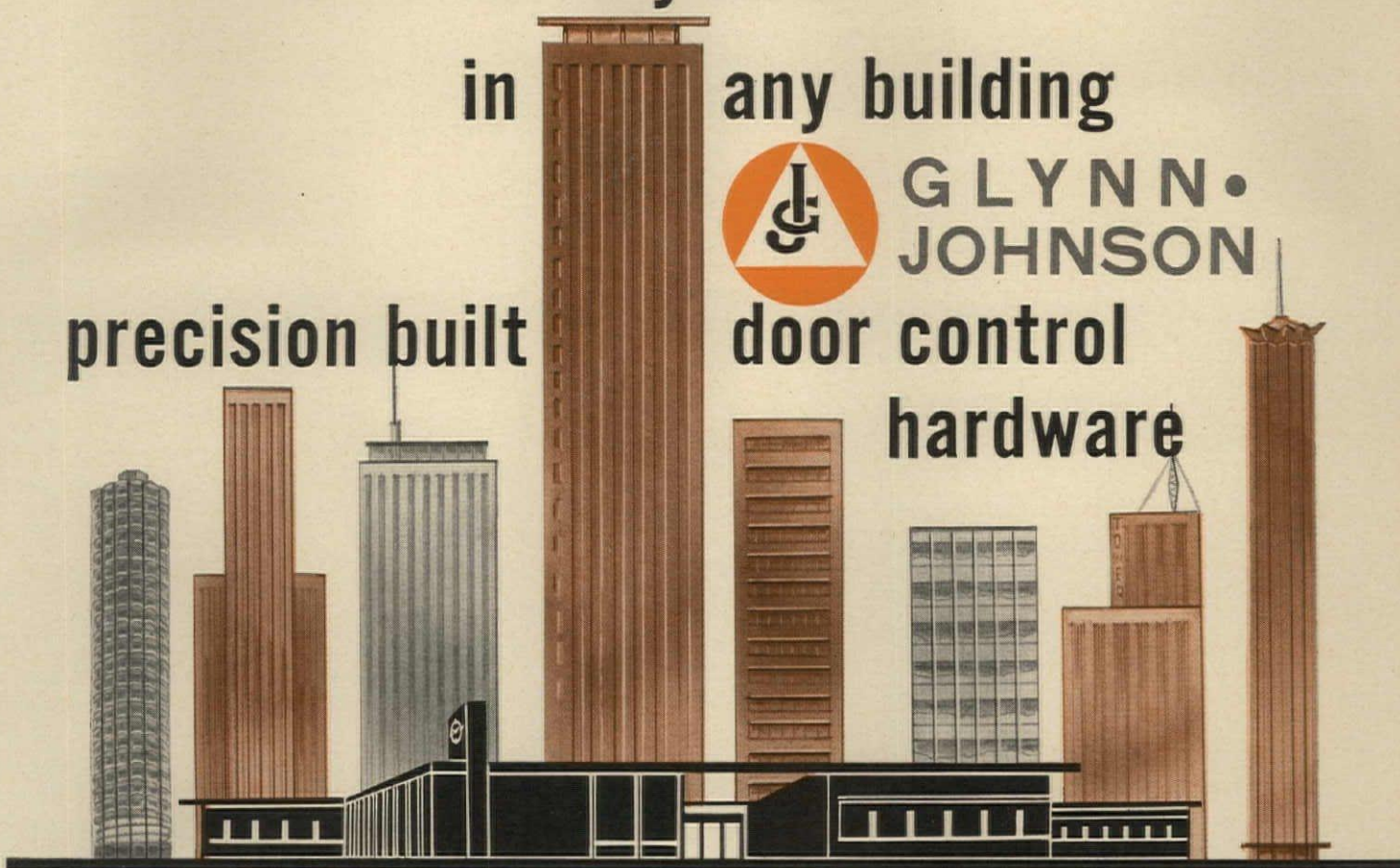
# any building

# precision built

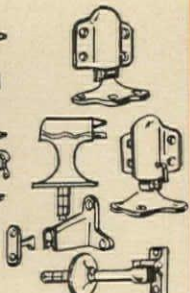


# GLYNN • JOHNSON

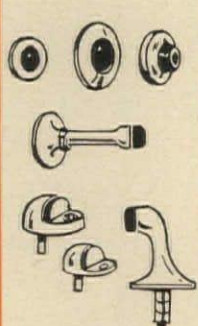
# door control hardware



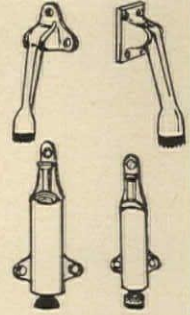
Overhead door holders and shock absorbing stops for interior and exterior doors opening up to 110°. Overhead—means out of the way.



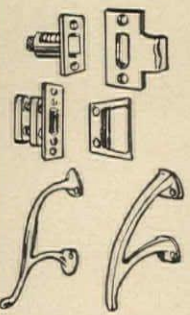
Floor and wall type door stops and holders for interior and exterior doors opening to any degree. Automatic, semi-automatic or manual hold-open function.



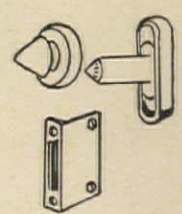
Floor and wall type door bumpers. Styles to suit varying conditions and preferences.



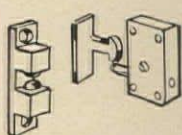
Lever and plunger type door holders. Hold door at any degree of opening. Styles to suit varying budgets and door sizes.



Roller latches engage and hold door silently. Arm pulls facilitate door opening. An ideal combination for Hospital Patient Room Doors.



Door mutes and silencers that "hush" door slamming and absorb shock.



Cabinet and door latches for varying budgets and conditions.

*write for details on any GJ product*



**GLYNN • JOHNSON CORPORATION / 4422 n. ravenwood ave. / chicago, ill. 60640**

For more data, circle 71 on Inquiry Card





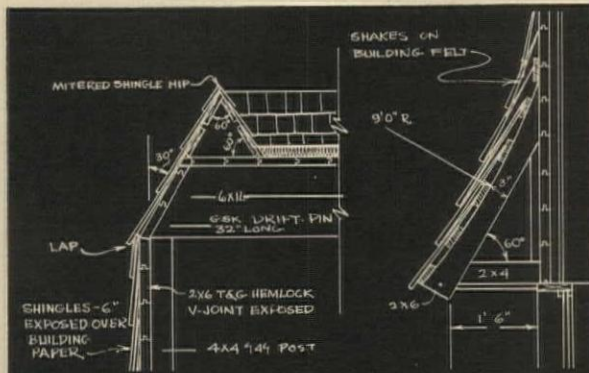
Highly adaptable:

**Red Cedar Shingles and Handsplit Shakes**



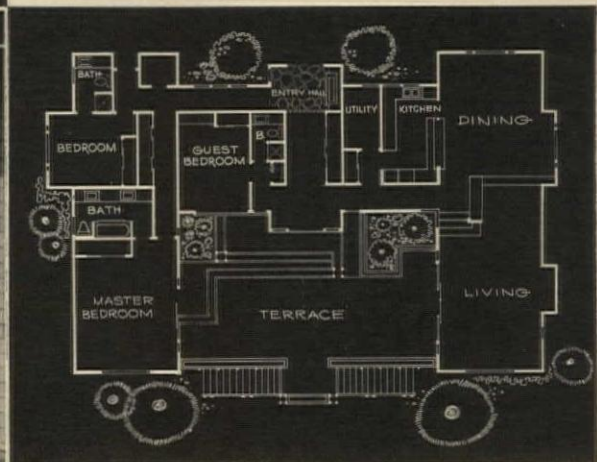
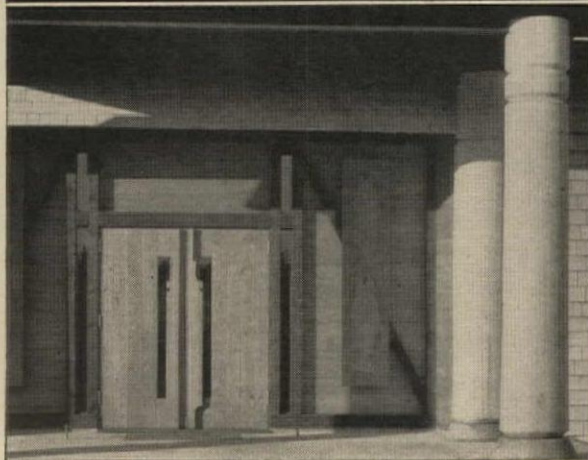


Red cedar shingles and handsplit shakes have a disarming way of looking right almost anywhere. They can blend in quietly. Stand out. Or — if you want — they'll do something in between. The Swinomish Indian Community Hall (left) is rustic but dignified right down to its shingled eyebrow windows. The Lake Tahoe vacation home, on the other hand, sports a roof that seems to say, "Park your Homburg and relax." And the practical advantages are no less impressive than the aesthetic. Red cedar shingles and handsplit shakes are strong, lightweight, durable and dimensionally stable as well as insulative. If you'd like more information, just write us, the Red Cedar Shingle and Handsplit Shake Bureau, 5510 White Bldg., Seattle, Wash. 98101. (In Canada: 1477 West Pender St., Vancouver 5, B.C.)



Architect Henry Klein specified Certi-Split 24" x 1/2" - to - 3/4" handsplit-resawn shakes with 9" exposure for the upper sidewalls, and Certigrade No. 1 shingles, 16" long with 6" weather exposure below. The central tribal meeting room can be used as a basketball court, while border rooms contain kitchen, locker and Indian artifact display facilities.

The vacation house at Lake Tahoe, designed by architect James D. Morton, is roofed with Certigrade No. 1 shingles, 16" long, with a 4 1/4" weather exposure.







*Where  
multiple  
building use  
is required -*

High-rise and Low-rise Hussey Telescopic Platforms in fully extended position at Tulsa Assembly Center, Tulsa, Oklahoma.

Here's one of the greatest innovations in spectator seating, versatile, adaptable, flexible. FOR AUDITORIUM, GYMNASIUM, OR ARENAS

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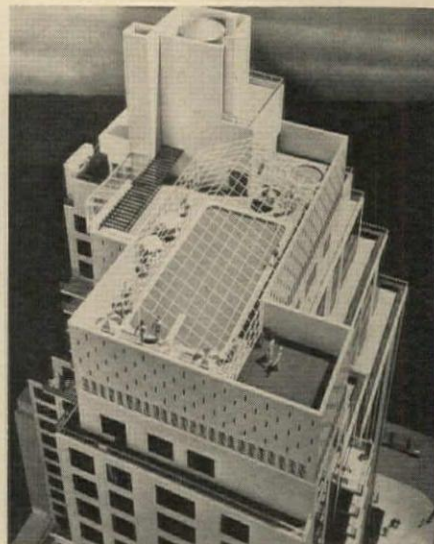
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FEB. 13 TO 17.



**HUSSEY MFG. CO., INC.**

North Berwick, Maine 03906

For more data, circle 73 on Inquiry Card



## YEAR-ROUND POOL TOPS APARTMENT

A 23- by 40-foot swimming pool, enclosed by an 18-foot-high glass shelter, will permit year round recreation for tenants of the 23-story Rivers Bend apartment house in New York. Designed by the firm of Paul and Jarmul, the recreation area also contains a wading pool, quarry-tiled lounging areas, and a solarium with a redwood platform. In the summer, the walls of the swimming area can be lowered to take advantage of the weather.

## \$5,000 GRANT AIDS BUILDING CODE

The New York Chapter of the American Institute of Architects is presenting a \$5,000 grant to aid the development of New York City's new building code.

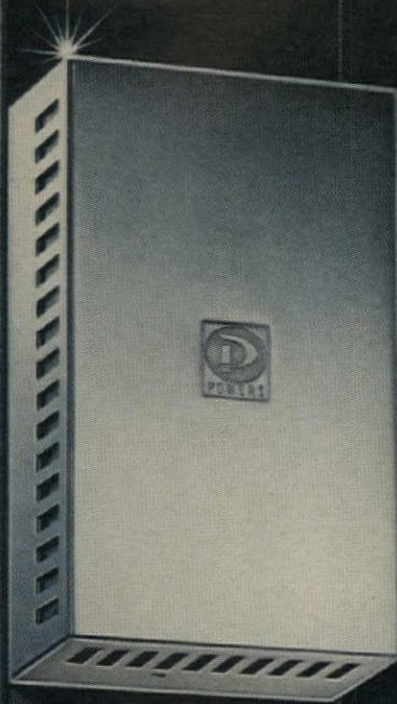
"The new building code is one of the most significant programs the city has launched in the area of building construction," William D. Wilson, Chapter president, said. "The present code, written in the late 1890's, has not kept abreast of technological advances in engineering and of new construction methods. Further, it hasn't evolved sufficiently to assimilate the vast new resources in building materials," Mr. Wilson added.



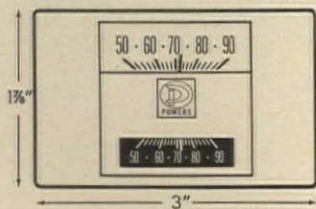
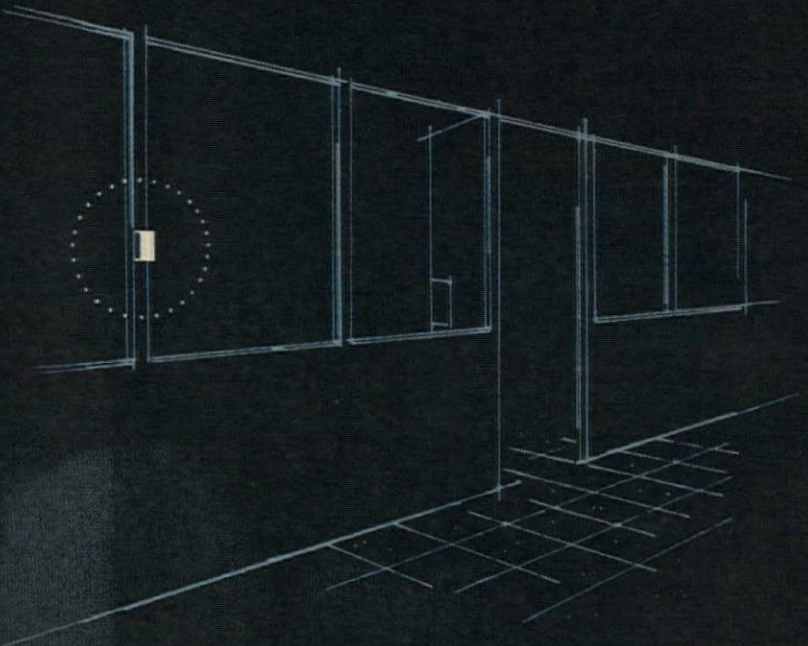
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# The only roof insulation with sealed glass cells that keep water out

This micro-photograph shows you what makes FOAMGLAS the only waterproof roof insulation—it's the sealed glass cells that make up FOAMGLAS. Water or vapor could no more penetrate any of these cells than leak through a drinking glass.

Once your FOAMGLAS Roof Insulation is down, our 20-year guarantee protects your client completely. We can make that guarantee because FOAMGLAS will always keep its original insulating efficiency. Why? FOAMGLAS permeability (moisture absorption) is zero. No other roof insulation can claim that. Check it!

All other insulations will absorb moisture if the roof leaks or if vapor migrates from within the building. That can mean expensive repair or replacement.


Investigate the only waterproof roof insulation . . . available in 2' x 4' FOAMGLAS®-BOARD in thicknesses of 1½", 1¾" and 2". Test it yourself. Use the reader-service number to get a free sample and literature. Pittsburgh Corning Corporation, Dept. AR-25, One Gateway Center, Pittsburgh, Pennsylvania 15222.



Unretouched micro-photograph of FOAMGLAS and drop of water 24 times actual size. It's impossible for water to penetrate the sealed glass cells. Each sealed cell is a separate unit.

For more data, circle 75 on Inquiry Card





Architect: Dan A. Carmichael  
Consulting Eng.: Drake & Ford  
General Contractor: E. L. Ford, Inc.  
Mechanical Contractor: The Geisling Co.

## Dedication built it. Carrier and Gas cool it.

The newly expanded Bert W. Martin Memorial Hospital in Mount Vernon, Ohio, is one of the most modern—and most comfortable—in the Midwest, with the last word in operating, recovery and comfort facilities... two-way communication between patient and nurse... Gas-operated absorption cooling by Carrier.

The Carrier absorption machine is the ultimate in operating simplicity. Quietly and efficiently, it converts steam into chilled water for cooling. The same Gas-fired

boiler heats in winter, and year-round fuel costs are rock-bottom—because of economical Gas.

Is your hospital expanding? Building? Converting? Get *all* the advantages of modern cooling with Carrier and Gas. Check them: clean, cool, circulated air, dependability, and unbeatable fuel economy.

For more information, call your local Gas Company. Or write: Carrier Air Conditioning Company, Syracuse 1, N.Y. AMERICAN GAS ASSOCIATION, INC.

**For heating and cooling... Gas is good business**

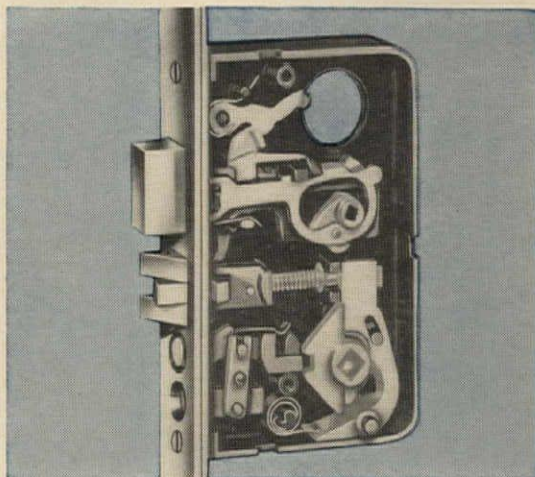


SEE THE CARRIER GAS-POWERED ABSORPTION OPERATING EXHIBIT AT THE FESTIVAL OF GAS PAVILION—N.Y. WORLD'S FAIR 1964-1965

For more data, circle 76 on Inquiry Card



# 39 JEWEL LOCK

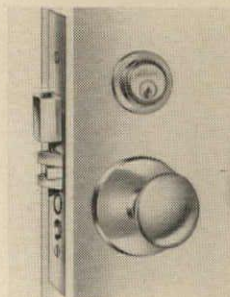


**Clocks and Locks?** They have something in common. Take this Lockwood mortise lock for example—it's built like a clock. Every one of its 39 working parts is a real jewel. All the important ones are extruded of brass or bronze for corrosion resistant, dependable operation.

Just as with every high quality timepiece, these parts are carefully *hand assembled* by master craftsmen who know their product and are proud of it.

Any one of the dozens of trim designs which are available with this lock will enhance any door.

But, it is the lock itself that makes it tick and keeps it ticking —  
" 'til the end of time."



**LOCKWOOD**

LOCKWOOD HARDWARE MFG. CO.  
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# WHY THEY SELECTED

# MONO<sup>®</sup>

LASTO · MERIC

1-Part Acrylic Terpolymer Sealant

## To Re-seal The Washington Monument

*Considering labor and scaffolding costs, they might have used gold if it would have resulted in a more effective joint sealing job on this world famous 555 foot obelisk. Instead, The National Park Service and general contractor, D. C. Taylor agreed upon using MONO, proved most powerfully adhesive construction joint sealant known. Here's why:*

- Security of Performance; 20 year minimum life expectancy.
- Economical and safe; 1-part factory-mix eliminates hazards and high cost of job site mixing.
- Does not require primer or surface conditioner to secure adhesion.
- Ability to match structural material without excessive pigment loading which often results in sealant failure.
- Meets Government Specifications: U. S. TT-S-00230; Canadian 19-GP-5

**"92% of sealant failures result from loss of adhesion"—TMC SURVEY**

To prevent this, those concerned with rehabilitating the famous landmark relied on Tremco. Let the record speak for itself:

In 1934, monument sealed with a Tremco Caulking & Pointing Compound, considered the best at that time.  
In 1964—30 years later—re-sealed with Tremco's revolutionary MONO!

### Some modern structures made weathertight with MONO

- 4-Penn Center Plaza, Philadelphia, Pennsylvania**  
Architect, Emery Roth & Son, New York City
- Georgia Mental Health Center, Atlanta, Georgia**  
Architect, A. Thomas Bradbury, Atlanta, Georgia
- Le Cartier Apartment, Montreal, Quebec**  
Architect, Menkes & Webb, Montreal, Quebec
- Liberty Mutual Building, Boston, Massachusetts**  
Architect, Perry, Shaw, Hepburn & Dean, Boston, Massachusetts
- Mayo Clinic, Rochester, Minnesota**  
Re-sealed by Surety Waterproofing Co., Rochester, Minnesota
- Toronto City Hall, Toronto, Ontario**  
Architect, Viljo Revell and John B. Parkin Assoc., Toronto, Ontario
- Equitable Life Assurance Society Building, New York City**  
Architect, Skidmore, Owings & Merrill, New York City
- Farmer's & Mechanic's Savings Bank, Minneapolis, Minnesota**  
Architect, McEnary & Krafft, Minneapolis, Minnesota

Cost of re-sealing the Washington Monument can be astronomical if sealant fails. Those concerned didn't take chances. They decided MONO would provide optimum security at minimum cost.

For information on Tremco Sealants Check Sweet's

**THE TREMCO MANUFACTURING COMPANY** 10701 Shaker Blvd., Cleveland, Ohio 44104

## TREMCO

PRODUCTS AND TECHNICAL SERVICES FOR  
BUILDING MAINTENANCE & CONSTRUCTION

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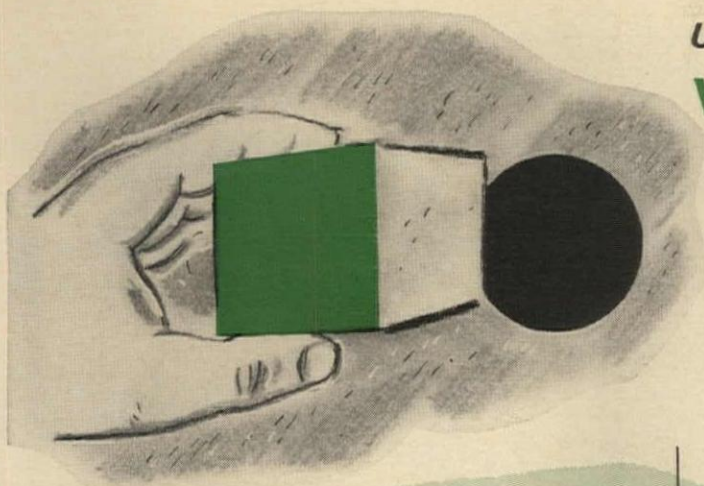


Using a square peg in a round hole?

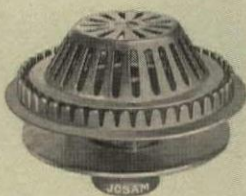
## WHY COMPROMISE?



designed these  
**NEW**  
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to meet the need  
exactly!



No. 3750 "Super-Flo" Level-eze heavy duty floor drain for use in floors of heavy construction as in meat packing plants.



No. 4760-X Roof Drain for pre-stressed concrete slabs and similar construction where no hung ceiling is specified. Feather-edge top flange for flush installation.



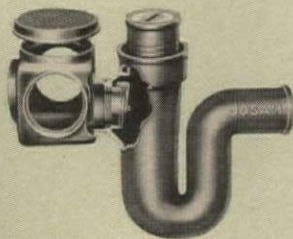
No. 0170-A Drain for planting areas on roofs, gardens and terraces to prevent build-up of excess moisture in the soil.



No. 7380-C "Super-Flo" Promenade Roof Drain with 4" wide deck flange and membrane clamping ring for use with Dex-O-Tex and similar roofing materials.



No. 5100-B Floor Drain for use in areas where a square hinged top drain is required with sediment bucket, for easy access to line.



No. 1240-ZZ Drain Tile Sump square body with 3 tile inlet connections, loose set cover, deep seal trap with floor cleanout and backwater valve.



No. 300-A-SF Floor Drain with Super-Flo strainer for kitchen and shower areas. Greater strainer free area increases flow through drain. Perimeter slots permit water to keep drain clean.



No. 5300 Floor Drain with square frame, tractor grate and sediment bucket for use in industrial plants to salvage materials discharged with waste water.



No. 690 Floor Drain with square hinged top which permits quick access to piping and provides easy installation in brick, tile or similar floor construction.



No. 0740-B Supply Fitting for swimming pools. V-port valve provides positive adjustment of flow into pool, square strainer to match tile, adjustable between body and face.

As new designs and new methods of construction create new problems of plumbing drainage, Josam provides new products to meet the problem exactly. Shown are just a few of the newer Josam drains and fittings developed to solve a particular need. These and many other new products eliminate the problem of changing the method of construction or the drainage . . . save time and money in installation . . . provide tailor-made performance. Don't compromise on drains — call your Josam Representative for information or write direct.

It costs you no more to have the best on your jobs — and the best is Josam!



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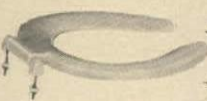
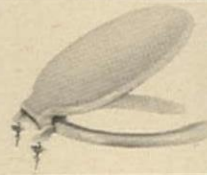
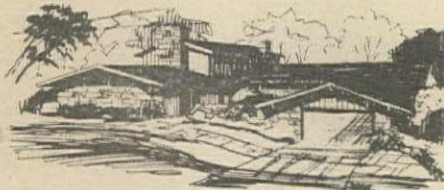
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Molded of high impact plastic, Bemis seats feature a sparkling luster that will not fade, chip or peel. Absolutely fade-proof color is throughout the heavy section solid plastic.

To satisfy every requirement, Bemis provides a complete line of styles, and colors to match any major fixture manufacturers' color. The broad range encompasses regular, elongated and heavy duty models . . . including varied hinge constructions. All seats are exceptionally durable and designed for easy maintenance. Bemis solid plastic seats . . . an excellent choice for every market. Look for us in Sweet's catalog directory. No. 26a/Be; A.I.A. File No. 29-H-22.

May we send you our completely illustrated catalog?

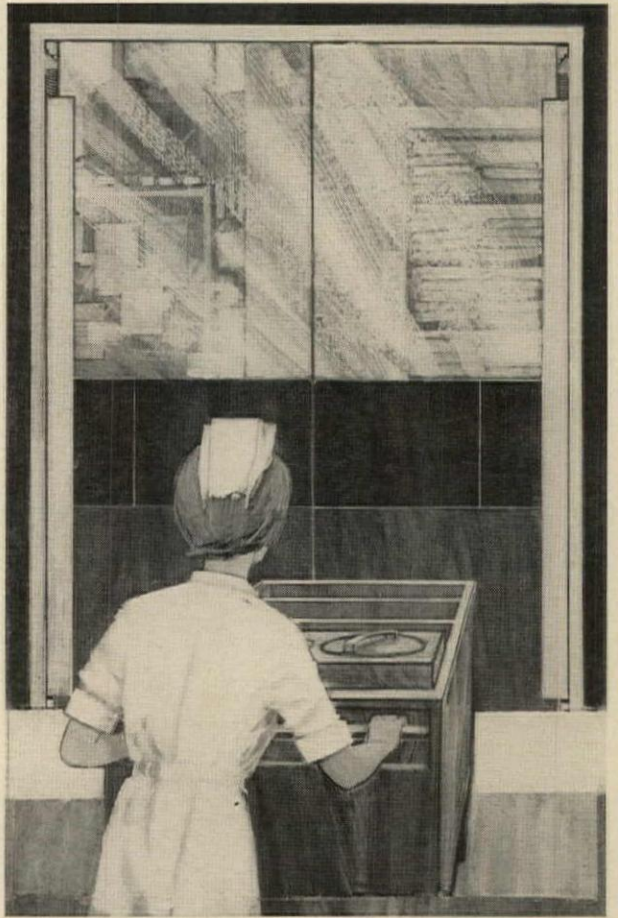
*be seated by...* **BEMIS**

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Since 1954 Rubbair Double acting service Doors have been in constant use in high traffic areas of several major hospitals. And they are still providing quiet, trouble-free service. In basement areas, washing and food storage, trash disposal and central sterile supply sections, RUBBAIR Doors have withstood the high impact of beds, laundry baskets, linen, food, mail carts, and other hospital equipment.

Rubbair Doors are ruggedly fabricated of multi-layer natural rubber casing laminated to tough, extruded rubber channel frames. They are internally cushioned with non-packing, neoprene coated curled hair padding. Multi-vision panels provide AMPLE visibility. The Doors flex with impact, absorb shock . . . provide protection for personnel and equipment. RUBBAIR Doors open easily, close quietly and automatically, require only minimum maintenance.

Good reasons why more hospital planning committees and architects are specifying long lasting RUBBAIR Doors for replacement or original equipment.

For full details on specifications and application information write

Also referenced in Sweet's Architectural File

**RUBBAIR DOOR DIVISION**

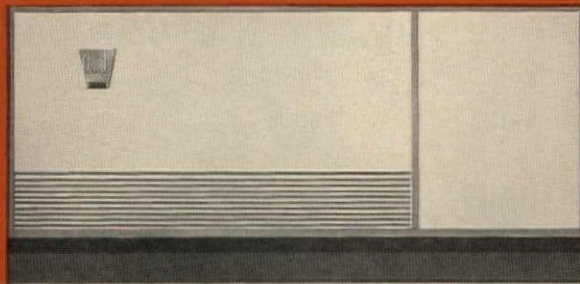
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**Specify Modulaire by Chromalox® . . . the year-round electric self-contained air conditioner**

for customized comfort heating □ cooling □ dehumidifying □ circulating □ filtering and ventilating □ **Cooling capacity:** 18,000 BTU at 95 F. outdoor temperature—air to air operation □ **Heating capacity:** Up to 6,000 watts (20,500 BTU). heating in four control stages. Optional connections available for additional 2000 watts flanking "Draft Barrier" heat. □ **Ventilation capacity:** 0 to 150 CFM. Setting made at factory per order □ **Supply voltage:** 208, 240 or 277 volts, single-phase, 60-cycle □ **Electrical protection:** 2 pole 40 amp circuit breaker (by others) □ **Evaporator fans:** 600 CFM at high speed, 550 CFM at low speed. □ **Evaporator coil:** 3-row staggered ½" O.D. copper tube, corrugated aluminum fins, low 300 FPM face velocity for high humidity removal. Condensate evaporated to outdoors; no plumbing or drain lines needed □ **Dimensions:** Exterior cabinet 54" long, 26" high, 16¼" deep. Wall opening 41" long, 18⅞" high □ **Mounting weight:** Approximately 400 lbs. □ **One Modulaire** for rooms 400—600 sq. ft. in area □ **Two Modulaires** (one Master and one Syncro) in typical classroom with 700—1000 sq. ft. area.



**Chromalox Modulaire** for new and existing classrooms □ churches □ restaurants □ laboratories □ larger offices □ libraries □ conference rooms □ other commercial and institutional applications.

WC-50A

Request Bulletin F03100 for complete information.

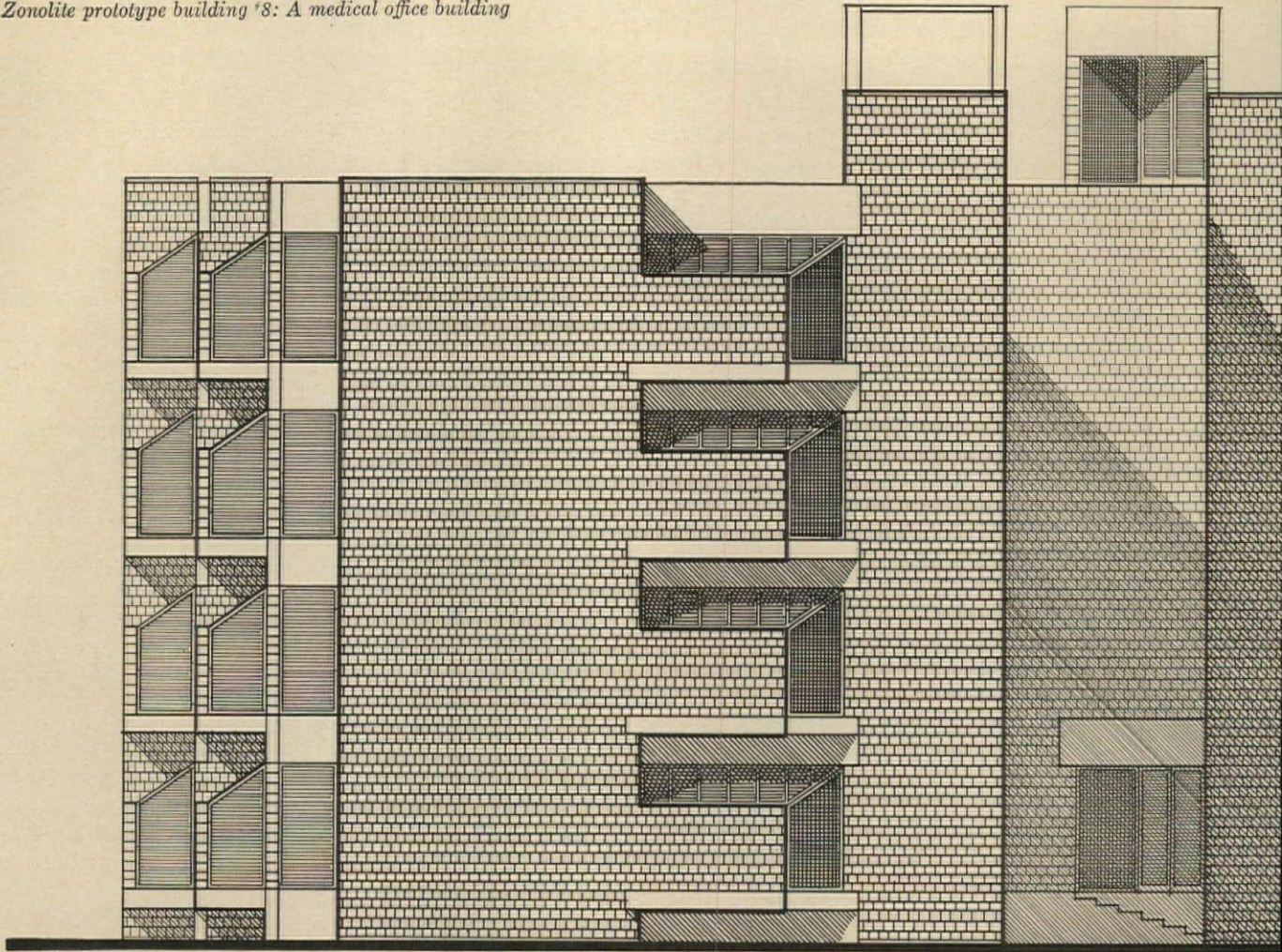


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*electric HEATING/COOLING*

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## Martin Price designs a medical office building

**Mr. Price was able to design less expensive walls by fully utilizing the advantages of Zonolite\* Masonry Fill Insulation.**

**Annual heating costs are also cut 17.8%**

Martin Price and Consulting Engineer Marvin M. Serot have found that Zonolite Masonry Fill Insulation has unique advantages above and beyond its ability to cut heating and cooling costs.

Such as cutting the cost of constructing the wall itself.

These are simple 8"x8"x16" concrete block walls with water repellent Zonolite Masonry Fill Insulation poured into the cores. This effectively insulates the walls, so all that needs to be done on the interior is to paint them and that's all. This lowers the cost considerably

because fewer trades and fewer materials are needed.

As for the insulating value, using Zonolite Masonry Fill Insulation in this building reduces heating costs 17.8% and cooling costs 5.7%.

This adds up to an annual savings on heating costs of \$357.

This figure does not truly represent the savings to the client, however.

Mr. Serot found that the installed cost of the insulation (financed as part of the 20 year mortgage at 6%) costs about \$223.56 per year.

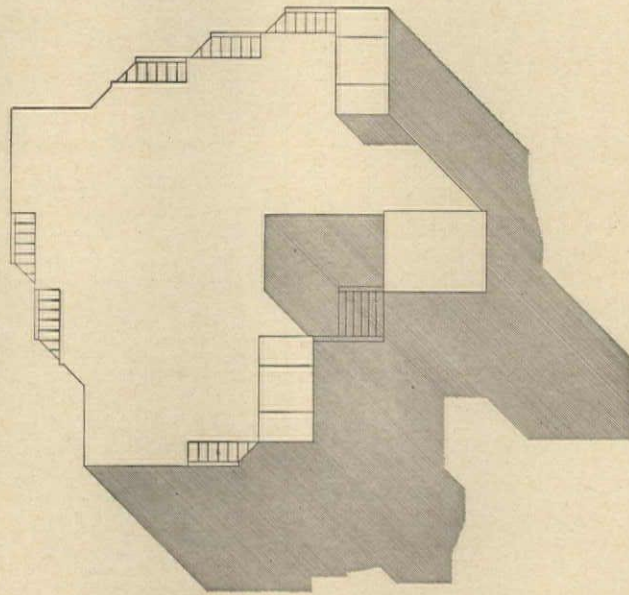
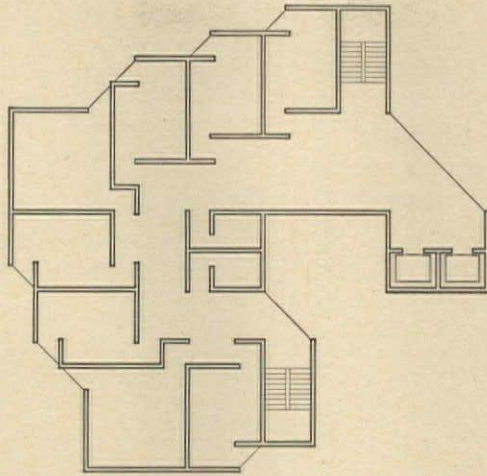
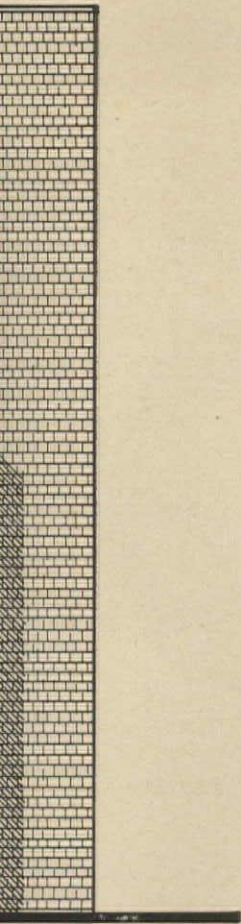
Compared with the annual heating and air conditioning savings of \$357, this makes a 160% return on the annual investment in insulation.

One reason for this high return are low installed costs:

approx. installed costs per sq. ft. of wall	6" block or 2½" cavity	8" block	12" block
	10¢	13¢	21¢

The cost is low because the material is just poured out of the bag into the block cells.





Additional facts worth investigating are contained in our Bulletin MF-83. Write Dept. AR-25, Zonolite, 135 South LaSalle Street, Chicago, Ill. 60603.

\*A registered trademark of Zonolite Division of W. R. Grace & Co.

**ZONOLITE**  
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	Without Masonry Fill	With Masonry Fill	Winter Heat Loss BTU/Hr.		Summer Heat Loss BTU/Hr.	
			Without Masonry Fill	With Masonry Fill	Without Masonry Fill	With Masonry Fill
<b>Walls</b>	8" x 8" x 16" Sand & Gravel Hollow Core Block	8" x 8" x 16" Sand & Gravel Hollow Core Block with Masonry Fill	740,000	500,000	174,000	122,000
<b>Roof</b>	Built Up Roofing, 4" Concrete, 2" Insulation		34,000	34,000	19,500	19,500
<b>Floor</b>	4" Concrete on Grade		10,000	10,000	—	—
<b>Glass: Solar &amp; Transmission</b>	¼" Clear, Single Plate		198,000	198,000	119,500	119,500
<b>Ventilation</b>	5,000 Cubic Feet Per Minute		380,000	380,000	175,000	175,000
<b>Lights</b>	80 Kilowatt		—	—	285,000	285,000
<b>People</b>	280		—	—	154,000	154,000
<b>Totals</b>			1,362,000	1,122,000	927,000	875,000
<b>% Savings with Masonry Fill</b>			$\frac{1,362,000 - 1,122,000}{1,362,000} \times 100 = 17.8\%$		$\frac{927,000 - 875,000}{927,000} \times 100 = 5.7\%$	

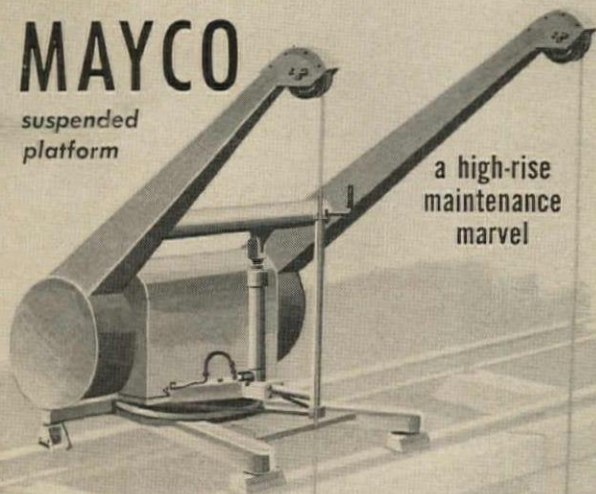
NOTES: 1. FUEL: No. 6 oil @ 7.5¢ per gallon. 2. DEGREE DAYS: 4,989 per year.  
 3. DESIGN CONDITIONS: Winter, inside 70°F, outside 0°F.  
 Summer, inside 78°F, 50% RH, outside 95°DB, 78°WB.

For more data, circle 83 on Inquiry Card



# MAYCO

suspended  
platform



a high-rise  
maintenance  
marvel

The facade or "face"  
of a building speaks for  
its occupants...  
and the architect!

How can you be assured that the "face" of your building will receive the proper maintenance to perpetuate its original concept? By installing a MAYCO SUSPENDED PLATFORM. All areas of your structures are then easily and safely reached, eliminating the major problem of exterior maintenance. A MAYCO unit can be installed on any building. They have proved their worth on high-rise structures throughout the world.

Standard models available on horizontal roof tracks, on parapet-mounted vertical tracks, or on trackless rubber wheels.

All-aluminum gondola is equipped with modern safety features

Remote pushbutton controls in gondola speed up maintenance work

Investigate the completely electrical MAYCO SUSPENDED PLATFORM. For free descriptive literature write:



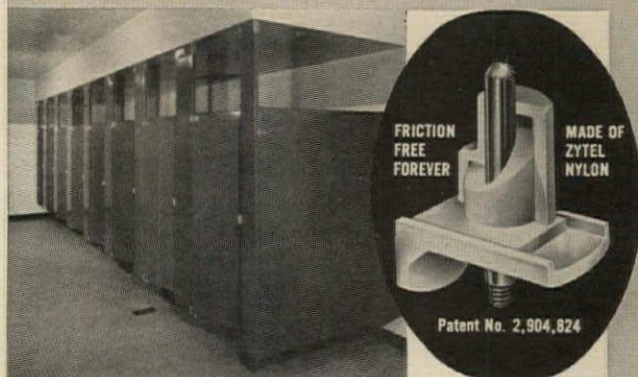
## MAYCO crane corp.

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USE MAYCO EQUIPMENT: Tower Cranes • Material Towers  
Tusky & Jumbo Portable Hoists • Grandstands • Scaffolding  
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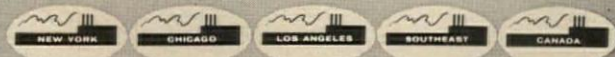
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## FIAT® TOILET ENCLOSURES FIRST IN FEATURES/PERFORMANCE/DELIVERY

- Quality of product and design backed by 40 years of manufacturing experience and experimentation.
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- Only FIAT offers you the advantage of 5 factories strategically located to save on shipping and expedite delivery.



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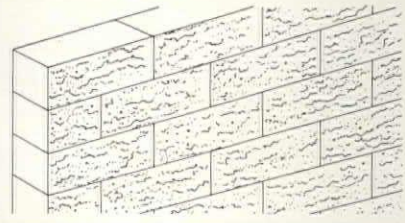
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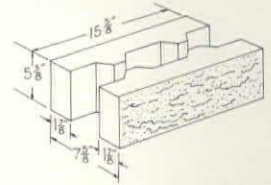
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**SPLIT BLOCK  
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*Quality shapes of split block with projections give this department store wall added richness and reinforcement. The cavity between the two Q BLOCK faces is filled solid with concrete.*

Architect: Welton Becket & Associates

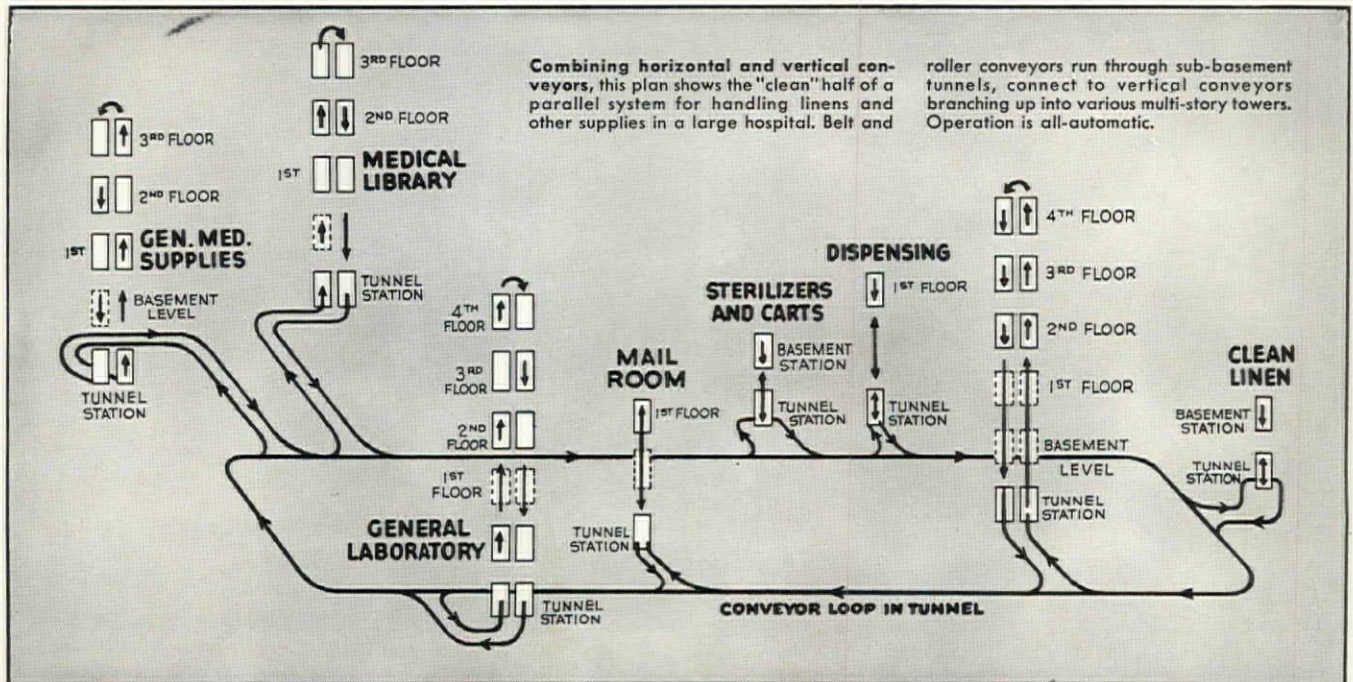
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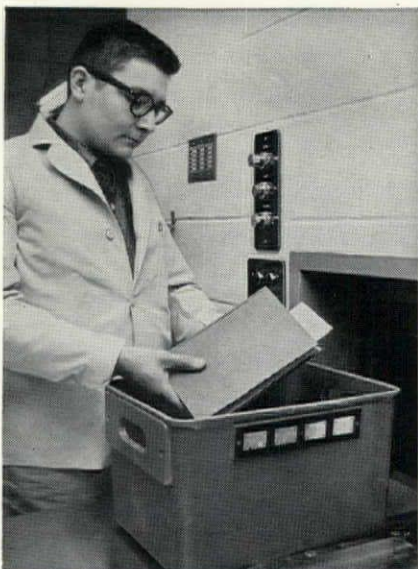




Combining horizontal and vertical conveyors, this plan shows the "clean" half of a parallel system for handling linens and other supplies in a large hospital. Belt and

roller conveyors run through sub-basement tunnels, connect to vertical conveyors branching up into various multi-story towers. Operation is all-automatic.

## Pushbutton conveyor system speeds hospital supplies to any of 17 stations



Automatic control is an integral part of a Recordlift System. It employs the magnetic tab principle of conveying encoded digital information—one of the most reliable, economical, maintenance-free systems devised.

Operation is fast and automatic. Operator simply loads the basket, places it on the loading station, pushes the proper button for the desired destination—and away it goes!

PLANNING for materials handling in multi-story buildings can become an easy matter—when you specify a STANDARD CONVEYOR Recordlift System.

A Recordlift System unifies a building. General supplies, mail, records, files and other materials go up, down, and throughout the building at the push of a button. The cost and congestion of inter-floor messengers is saved—speed and efficiency are gained.

### Ideal for hospitals

Widely used in office buildings, banks, libraries, etc., Recordlift Systems have long proved ideal for handling hospital supplies.

The plan above, for example, shows the "clean" portion of an extensive double Recordlift System being designed for a new 700-bed hospital.

### Has two-lane traffic

Two separate horizontal-vertical conveyor systems will run side-by-side throughout the building complex. One will handle clean linen; the other, soiled. The systems will also handle mail, books, records, forms, publications, medical supplies, instruments and lab specimens.

There are 17 pushbutton stations on the clean system, 14 on the soiled. The entire double system has about 4,300 feet of conveyor—3,000 feet horizontal. The vertical footage includes 8 Recordlifts and 12 reciprocating lifts.

Provisions are included for adding 7 more stations to the clean system and 8 more to the soiled.

### Dispatching is simple

Any station can send to any other station in each separate system. For reasons of cleanliness, the two systems do not connect at any point.

Dispatching is simple, fast and selective. The operator merely loads the 20½" x 17½" x 10" container (2 will hold a complete change of linen for 3 beds), pushes the button for the proper station, and the system delivers it.

### Write for data file

If you are concerned with multi-story buildings which call for streamlined distribution of everyday supplies, be sure to investigate STANDARD CONVEYOR Recordlift Systems.

Write today for an illustrated data file. Or simply clip this ad to your letterhead and mail it.

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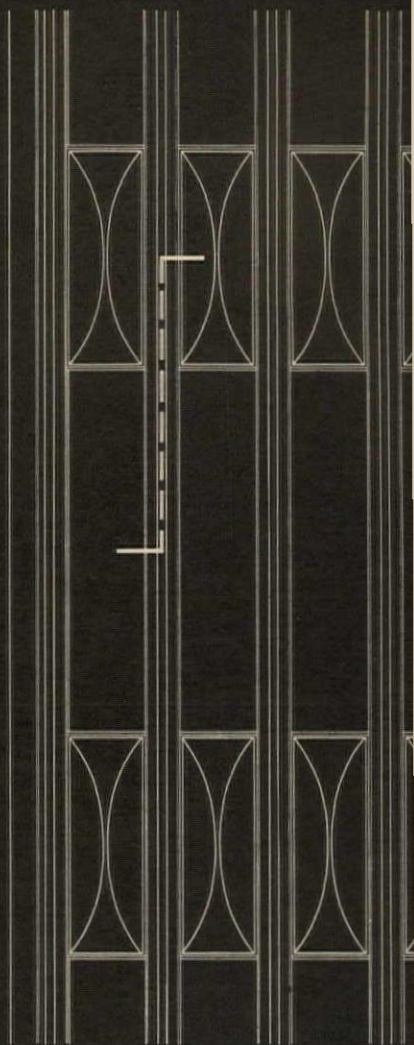
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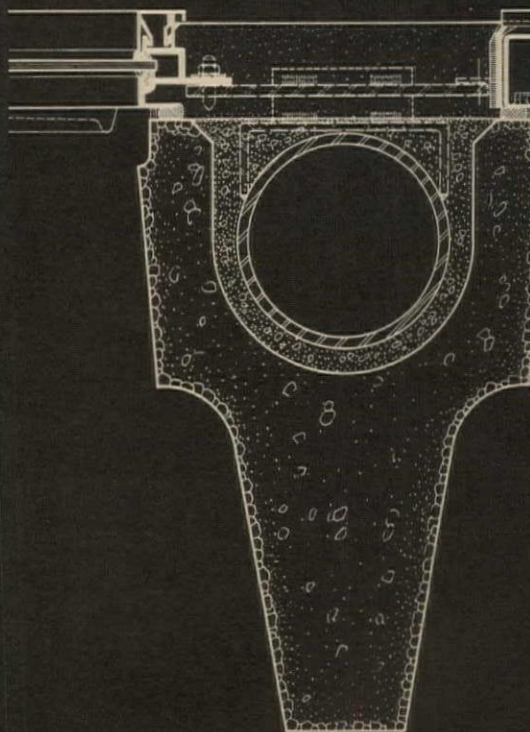
# BEARING WALL EXPRESSED IN A SKYSCRAPER



The IBM Building in Seattle—designed by architect Minoru Yamasaki and engineer John Skilling—features a fine-grained vertical pattern expressive of advanced tall building technology



*Above:* An elevation of a portion of the structure at one-quarter-inch scale. *Below:* A sectional plan of a typical column-mullion at three-inch scale. Loaded by high-strength (70,000 pounds per square inch) of four and one-half inches outside diameter, with two feet four inches on centers. Tapered sleeves of quartz aggregate precast concrete—grouted in place—provide both exterior finish and fireproofing. Interior finish is plaster. Aluminum spandrel panels and the gray glass have a bronze-colored, hard anodized finish.









## THE BUILDING IN CONTEXT

By James S. Hornbeck

The IBM Building in Seattle is one of a new breed of bearing wall skyscrapers, and the most distinguished member of that family to date. Its fine-grained vertical pattern—uninterrupted by columns—is a pleasing expression of a wall at work; a manifestation of the first basic advance in tall building structure since its skeleton and skin beginnings in Chicago 75 years ago. Now that the American skyscraper has broken out of its constricting cage, the pervasive sprinkling of bulky columns is gone—from interior spaces and outer wall—and so is the familiar bay pattern. In IBM Seattle, for example, the only conventional columns



are hidden in the core; the bay divisions have given way to a floor area of clean space bounded by continuous walls. The importance of this development is obvious; where this new freedom will lead architecture is anybody's guess. The first several bearing wall buildings were acceptable but not distinguished commercial architecture, despite their structural ingenuity. Eero Saarinen's design for the CBS Building approaching completion in New York will deserve careful assessment when finished. Sufficient to say here that its character differs radically from that of our example; CBS is ponderous, bold, large in scale, and has a strong vertical pattern.

An encouraging note on architectural practice appears in the IBM Seattle story when one learns that architect Yamasaki and structural engineer John Skilling worked closely together, from the beginning, on the design. The result is a highly sophisticated building that avails itself of the most advanced technology and the newest materials—including three grades of high-strength steel. Such a result could scarcely have been conceived 25 years ago, when the architect-engineer dichotomy was a reality.

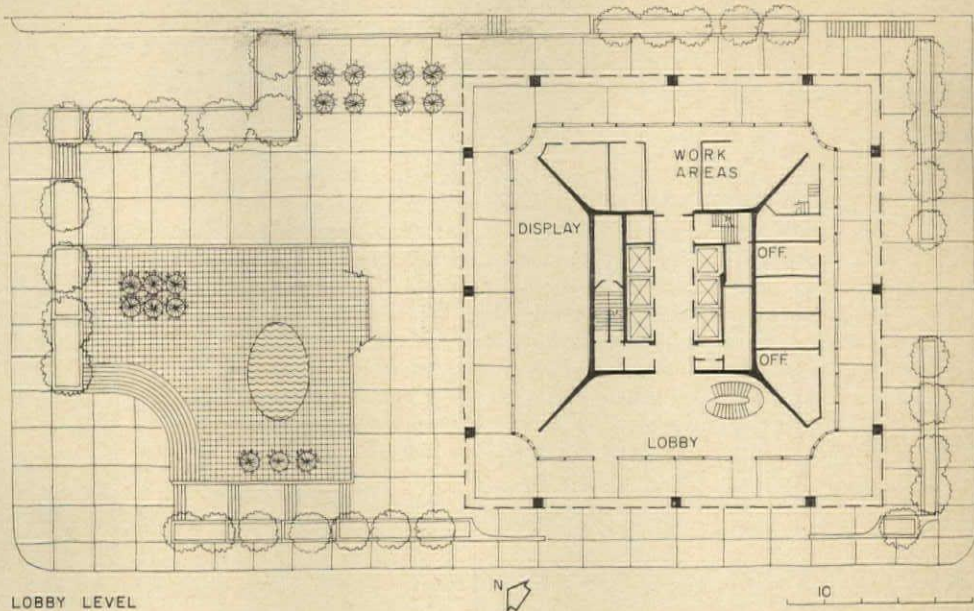
The bearing wall works on the same principle as a Windsor chair, dividing the stresses among a multitude of slender members rather than concentrating them in a few heavier ones. The loads are carried by high-strength steel pipes, set at 2 feet 4 inches on centers and covered by sleeves of precast concrete. (Refer to the detail on page 123.) One immediately wonders if metal covering might be more symbolic of the real structure—a more truthful expression. It might be, but would require two operations (fireproofing and finish) instead of one, since the precast covering provides fireproofing and finish. This theoretical question dissolves under the discipline of the commercial building budget, provided one is content to evaluate the building as commercial, not monumental architecture. I think one must be, since the building cost less than \$25 per square foot. However, one *can* quarrel with the deep (13½ inch) reveals, which tend to be self-defeating in a closely-spaced design. They obviously strengthen the verticality of the pattern, when one's angle of view is normal to the facade. But the pattern's effectiveness dilutes rapidly when seen at an angle, and is transformed into a solidity of concrete reveals at 30 degrees. Mullion-columns just a few inches shallower would surely carry the pattern—since the spandrels and glass are dark in value—and would ameliorate the angular aspect to a degree.

*continued on page 127*





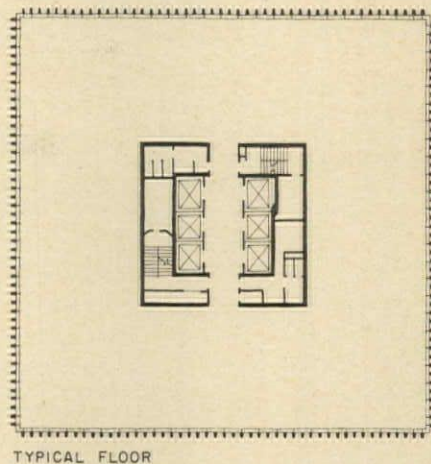




continued from page 125

From inside, the wall has decided virtues. Its small module makes for commendable flexibility in partitioning, while its wide (9 inch) mullions and narrow (19 inch) windows offer comfort to those inclined to acrophobia. The general interior effect is very pleasant (see page 128).

A well-conceived horizontal element terminates the tower mass satisfactorially at the top, while a two-story-high base serves to provide the necessary large openings at ground level. The division of the building into two parts is clearly an expression of the difference in scale and function of the upper and ground level spaces, yet one stubbornly questions such a positive division. The CBS tower will have 5-foot-wide typical openings, making it possible to carry the upper building pattern to the ground. The result is visually powerful, but sets up an arbitrary pattern of inadequate openings for the first floor. The ideal solution may lie between the two extremes. At any rate, the IBM base is handled skillfully, and rests on a multi-level plaza which might serve as a lesson in how to cope with a sloping site. The base is a series of ultra high-strength steel arches sheathed in white Vermont marble, spaced in accordance with the needs of the garage below. The arches set up a graceful, looping rhythm, and turn the corners boldly on a rising note. Although the arch crowns are 4 feet in depth, Palladio would surely have been appalled at their apparent inadequacy! Such wishful imagining is to say that our rapidly advancing technology is creating its own esthetic. If architectural judgment is to be based on the beautiful expression of structure—and I believe it should be—then its esthetic must perforce be in tune with the technological times, lest it suffer in perception and validity. Yamasaki, with his usual offhand modesty, describes IBM Seattle as “a step towards the World Trade Center.” If this is so, then it is indeed a big step.

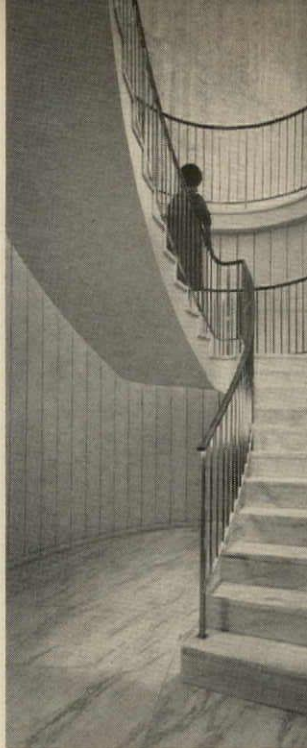


TYPICAL FLOOR



*Right:* The elliptical stair of bronze and white marble leads from the building lobby to the lower level rental area, which will have a restaurant as principal tenant. The glass walls of the restaurant will open to the landscaped courtyard, visually centering on a fountain designed by James FitzGerald.

*Below:* A view of a typical corner office, showing the interior of the structural bearing wall. The continuous air-conditioning units below the windows have a sill height of 13 inches and provide a sill 14 inches wide. The corner is actually composed of two glass panels meeting in a clean right angle, hidden from view in this photo by the drapery stack



*IBM Office Building  
Seattle, Washington*

**OPERATOR:**

*University Properties*

**ASSOCIATED ARCHITECTS:**

*Naramore, Bain, Brady  
Minoru Yamasaki and A*

**STRUCTURAL ENGINEERS:**

*Worthington, Skilling,  
Helle & Jackson*

**MECHANICAL AND ELECTRICAL**

**ENGINEERS:**

*Bouillon, Griffith,  
Christoffen & Schairer*

**AIR-CONDITIONING CONSULTANTS:**

*Jaros, Baum & Bolles*

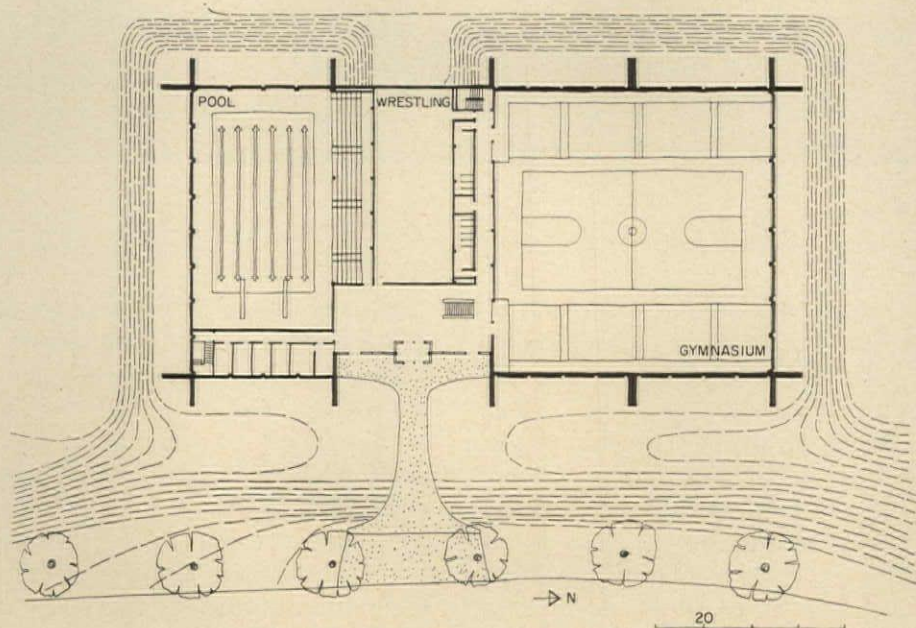
**GENERAL CONTRACTOR:**

*Howard S. Wright Construction  
Company*



# “NATURAL, APPROPRIATE” USE OF CONCRETE SHELLS

The Carleton College Men's Gymnasium, designed by architect Yamasaki, is enclosed by three concrete shells  
Result: graceful shapes, economy, uncluttered space







### Carleton College Men's Gymnasium

The design of the Men's Gymnasium at Carleton College is an example in architect Minoru Yamasaki's continuing search for "the beautiful expression of structure." Discussing the design, he says: "Since shells have been springing up all over the country like some sort of disease, we have been hesitant about their use. However, this seemed a natural and appropriate place to use them because of the large spans needed to enclose the pool and the gymnasium. Also, the building is situated away from all the other build-

ings on the campus, on the edge of the athletic fields. The other campus buildings are on a plateau, at a considerable elevation above the site and located on the other side of a state highway. Therefore, the roof configuration of the gymnasium is very important, since the building is viewed from above from the main campus.

"This particular kind of shell was selected because the natatorium is approximately one-half the size of the gymnasium. Hence, we could logically develop the





Warren Reynolds photos

three-time use of the shell, and benefit in terms of economics by re-using the formwork twice.

"The parti is a relatively simple one. Entrance is at the upper level between the gymnasium and pool; the same level from which spectator stands are reached. Lockers, showers, storage rooms, etc., are under the entrance area and at the same level as the gymnasium floor and pool. Access from the higher level of the highway led to the idea of an entrance bridge; a feature that seems to have worked particu-

larly well. Glass was limited to a narrow strip under the overhangs and was made dark gray because of the problem of shooting baskets into bright daylight; yet there was a desire for some daylighting inside. In addition, it was important to limit the amount of glass drastically because of the severe Minnesota cold. This is particularly so for humid areas such as the swimming pool. The building is set on an earth podium for looks, and because the adjacent athletic fields are a flood plane for the nearby river.





**FACTS, MATERIALS, FINISHES**

The gymnasium seats 1,800 in folding bleachers; the pool stands seat 300; the swimming tank is Olympic size, with five lanes. The concrete shells rise to a height of 40 feet, and are covered with a neoprene roofing material. The reinforced concrete structure rests on a foundation of steel piling; exterior wall infilling panels are of face brick; the wood sash are glazed with gray glass. Ceilings are form board; interior partitions are of concrete block, either natural or plastered or painted; the gymnasium floor is wood; the pool floor is of ceramic tile; floors of public spaces are variously of rubber or asphalt tile



*Men's Gymnasium Building  
Carleton College  
Northfield, Minnesota*

ARCHITECTS AND ENGINEERS:  
*Minoru Yamasaki and Associates*

STRUCTURAL ENGINEERS:  
*Worthington, Skilling, Helle & Jackson*

GENERAL CONTRACTOR:  
*O. A. Stocke & Company*



# ARCHITECTURAL DETAILS

## 5. WALTER GROPIUS

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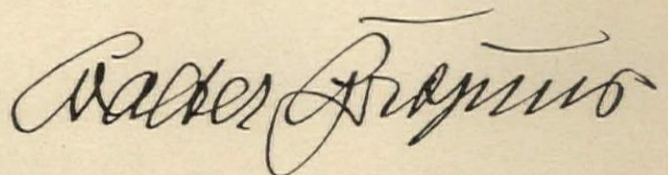
Fifth in a series of  
presentation details of  
significant architecture  
by master architects

The effect of a building will be intense only when all requirements for human scale have been fulfilled for any potential distance or point of view.

From far away the silhouette of a building should be simple so that it can be grasped at a glance as a symbol even by an ever-so-primitive spectator, as well as by people passing in automobiles. When we approach more closely, we start to distinguish protruding and receding parts of a building, and their shadows will serve as scale regulators for the new distance. And finally, standing close by and no longer able to see the whole edifice, the eye should be attracted by new surprises in the form of refined details and textures.

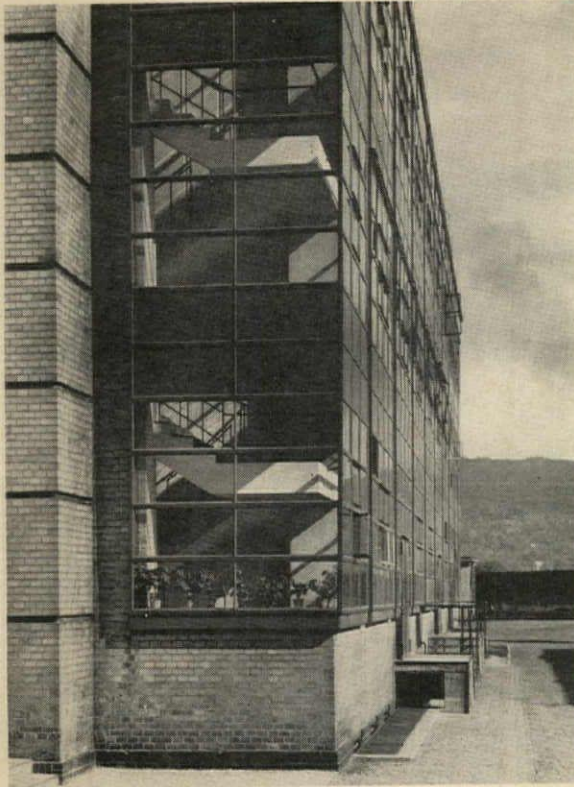
During the 19th century such refinement of buildings had deteriorated into added-on adornments. In contrast, the modern architectural revolution demanded that details and refinements must be constituent parts of the building's structure and derived from functional considerations, in both the practical and psychological sense.

The designer can establish a significant personal handwriting with the selection of the details and their proportions from an infinite potential variety of functional solutions. His credo becomes apparent from the degree of the consistency and peculiarity of the details and proportions which serve as elements for the creation of architectural prose or poetry.



WALTER GROPIUS





Erich Müller

## CURTAIN WALL PROGRESSION IN THE WORK OF WALTER GROPIUS

### 1. THE FIRST GLASS WALL, 1911

SHOE LAST FACTORY, FAGUS G.m.b.H.  
ALFELD a.L., GERMANY

**Gropius:** This is the first curtain wall construction. It was built against heavy odds caused by opposition of the authoritative building department and by the extremely limited choice of steel profiles.

Fenestra window details and bent sheet steel were used to build up the large, three-story windows.

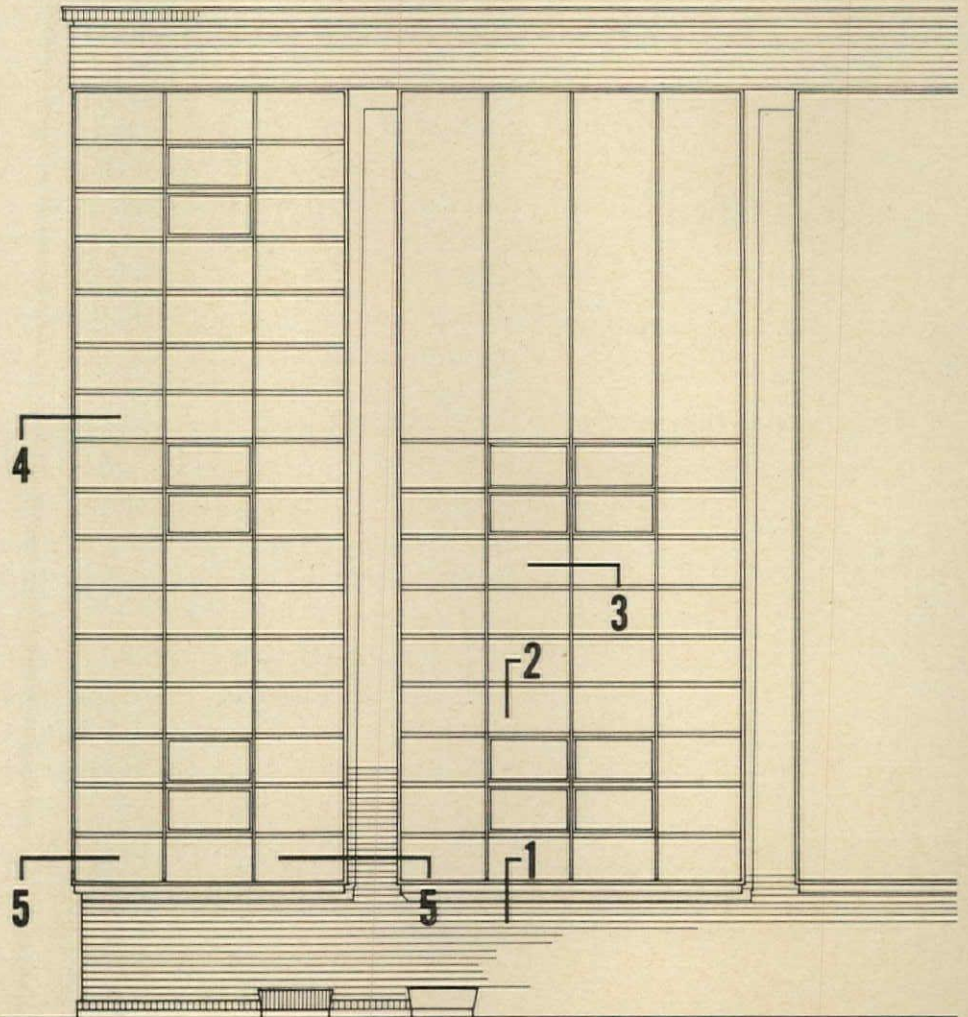
Note the columnless building corners! By cantilevering the edge beams at the corners, one column on each side could be saved, causing economic advantage as well as the esthetically desirable greater buoyancy of the building.

Architects: Walter Gropius with Adolf Meyer



WALL SECTION

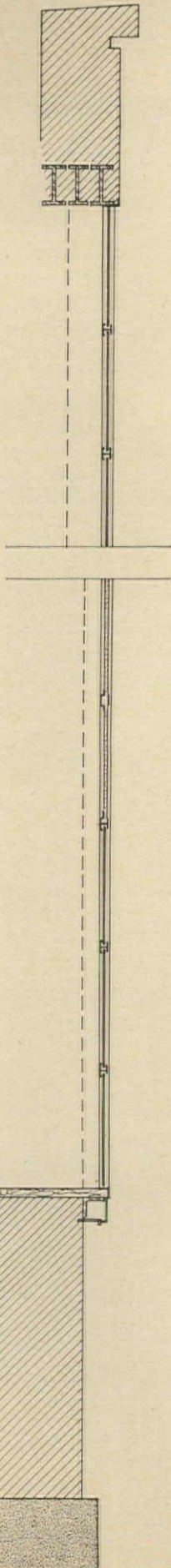
SCALE 1/8"-1'-0"



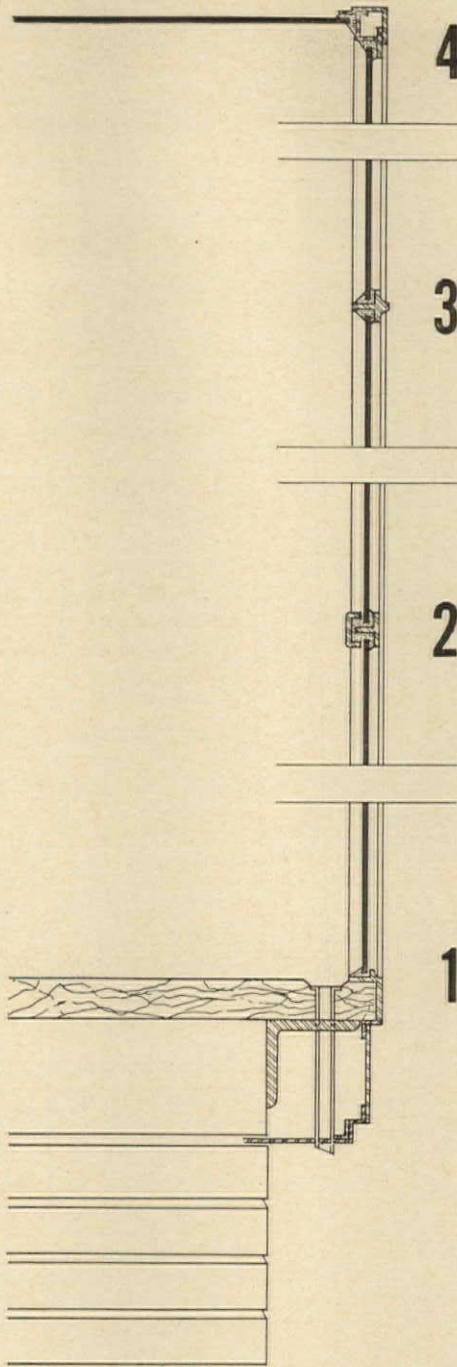
WALL ELEVATION

SCALE 1/8"-1'-0"





**SECTION**  
SCALE 3/8"-1'-0"

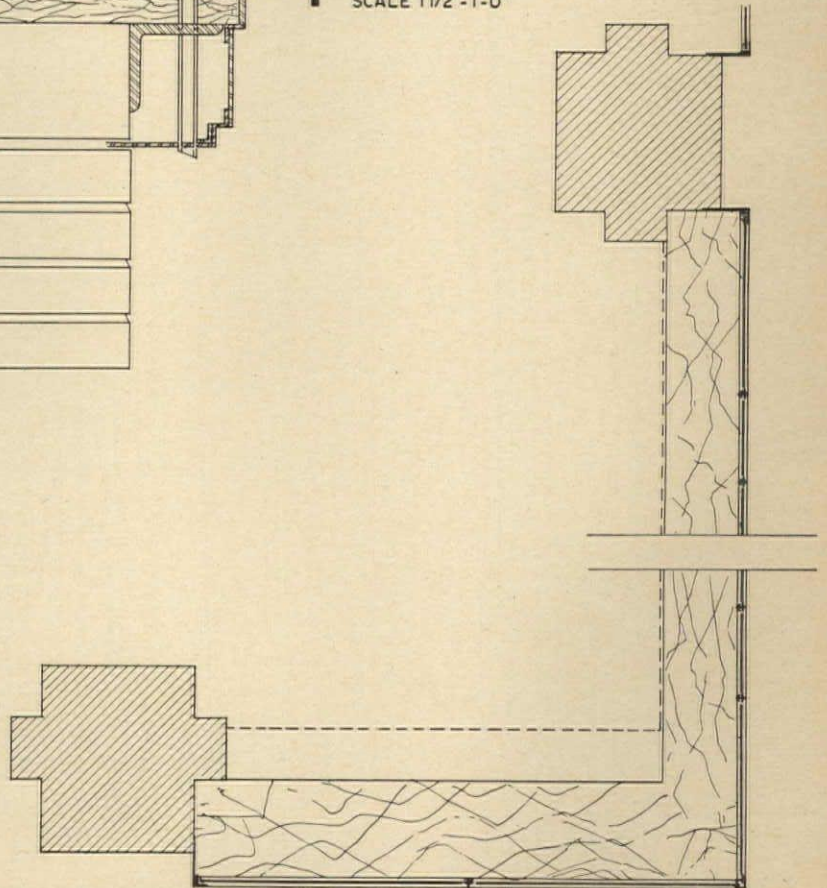


**4** CORNER  
SCALE 1 1/2"-1'-0"

**3** VERTICAL MULLION  
SCALE 1 1/2"-1'-0"

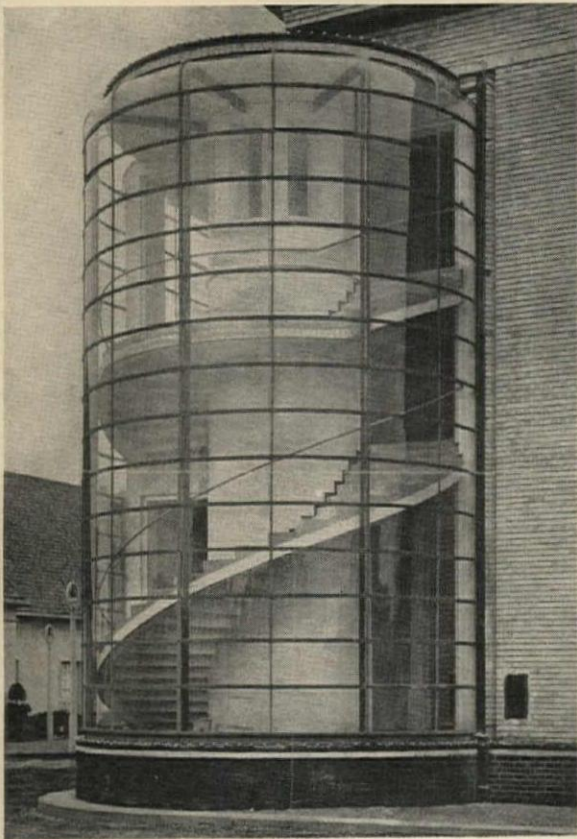
**2** HORIZONTAL MUNTIN  
SCALE 1 1/2"-1'-0"

**1** SILL  
SCALE 1 1/2"-1'-0"



**5** PLAN AT STAIR  
SCALE 3/8"-1'-0"





## CURTAIN WALL PROGRESSION IN THE WORK OF WALTER GROPIUS

### 2. FIRST FREESTANDING CURVED GLASS WALL, 1914

#### OFFICE BUILDING AND EXHIBITION HALL WERKBUND EXHIBITION, COLOGNE

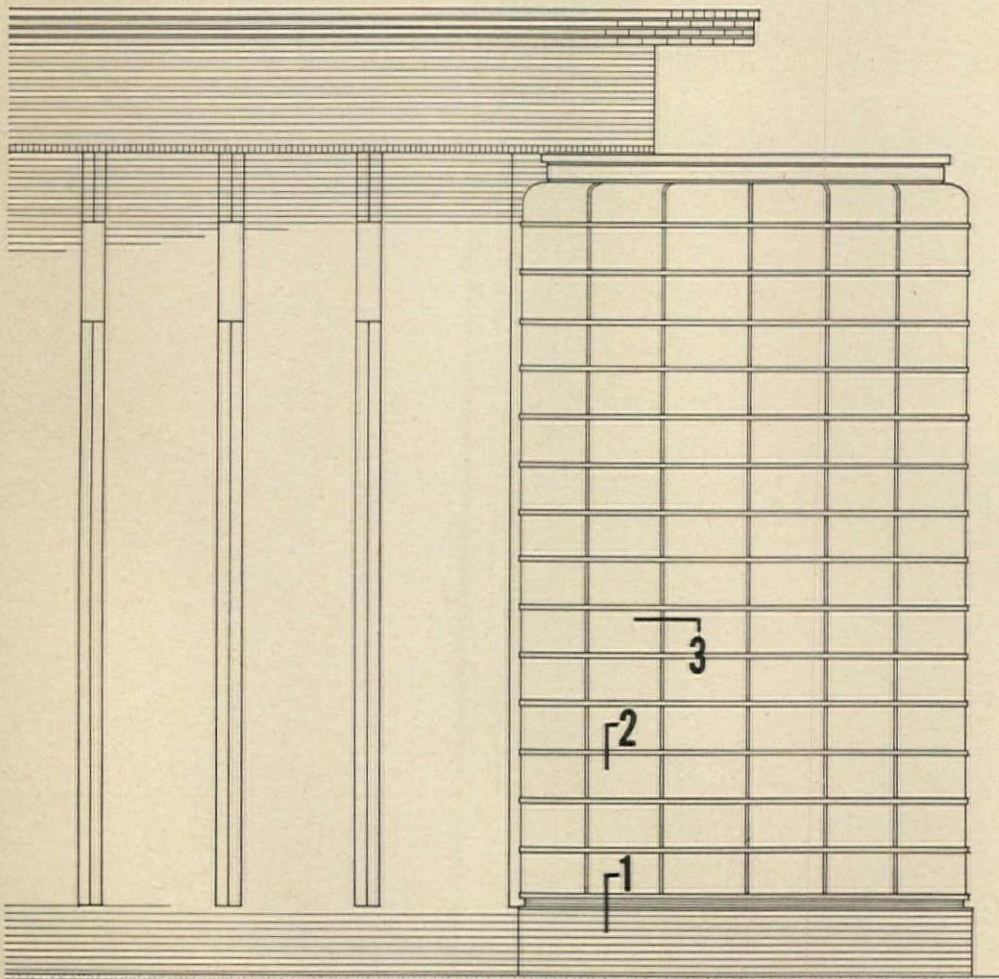
**Gropius:** Freestanding glass curtain wall. Flat window areas and round stair tower windows made from small scale fenestra window profiles. Note that the vertical mullions have narrow flanges and deep webs; horizontal muntins vice versa, short webs and wide flanges. This combination yields an appearance of greater lightness.

The staircase steps are of concrete cantilevered from a solid center.

The Exhibition Hall is built up of large steel bents which offer continuous, unobstructed space.

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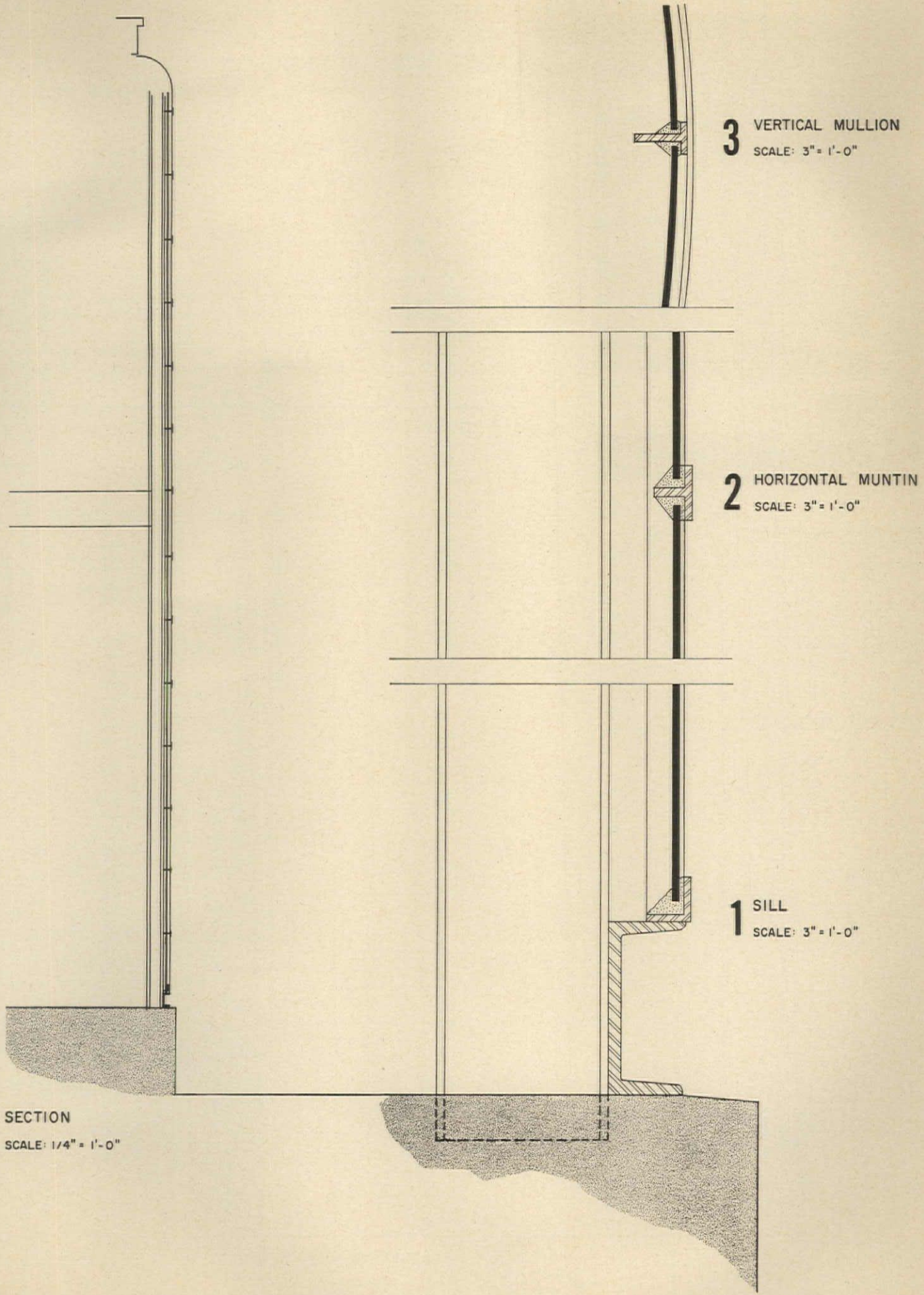
Architects: Walter Gropius with Adolf Meyer



ELEVATION

SCALE: 1/8" = 1'-0"





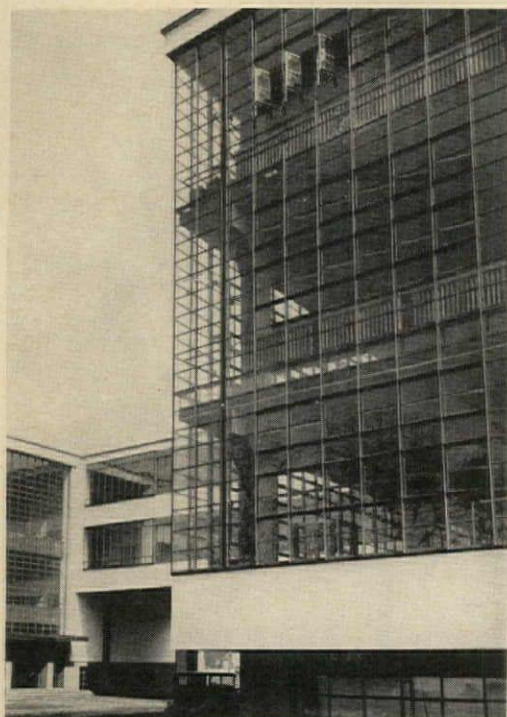
SECTION  
SCALE: 1/4" = 1'-0"

**3** VERTICAL MULLION  
SCALE: 3" = 1'-0"

**2** HORIZONTAL MUNTIN  
SCALE: 3" = 1'-0"

**1** SILL  
SCALE: 3" = 1'-0"





## CURTAIN WALL PROGRESSION IN THE WORK OF WALTER GROPIUS

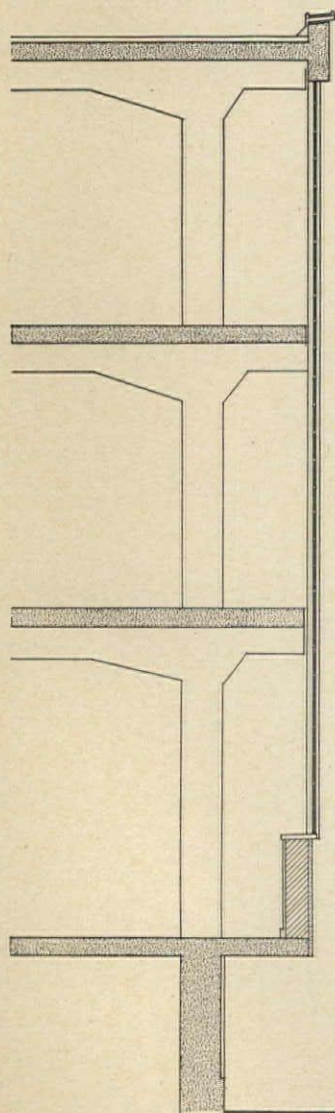
### 3. FIRST GLASS WALL FREE OF COLUMNS, 1925

#### BAUHAUS BUILDING, DESSAU

Gropius: Freestanding three-story glass curtain wall made up of double-grooved profiles and connected to the cantilevered floor edges. This is the first attempt to dissolve the exterior wall in its entirety into fenestration.

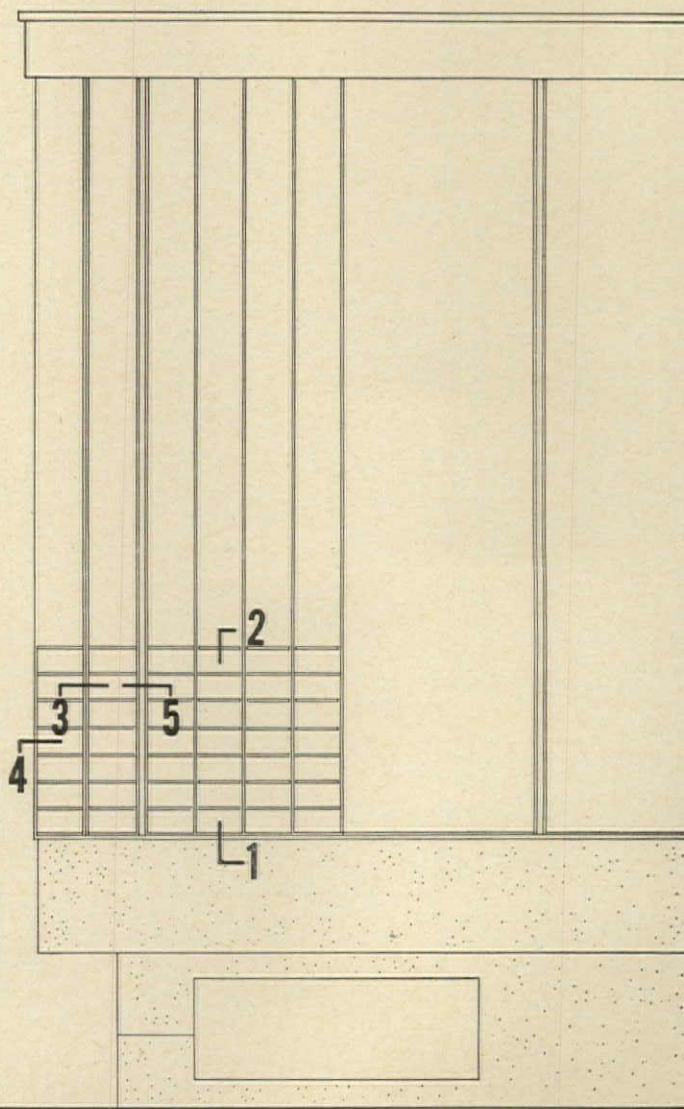
The location of the columns in back of the glass plane—reducing the span—is not only economically favorable, but also offers working places between the columns and the glass. Radiators are strung out in full length under the windows.

Architect: Walter Gropius



SECTION

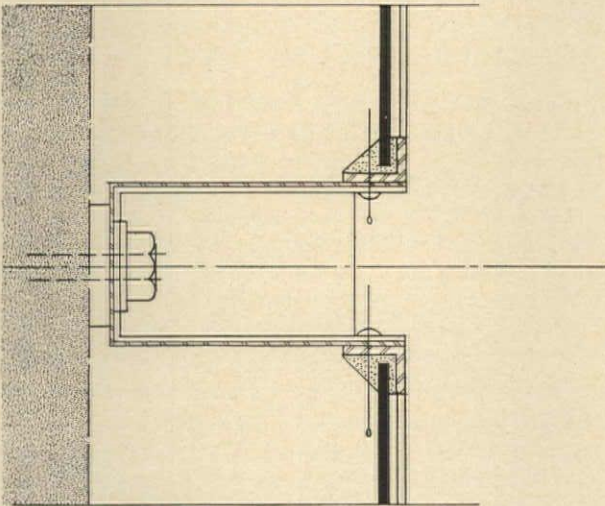
SCALE: 1/8" = 1'-0"



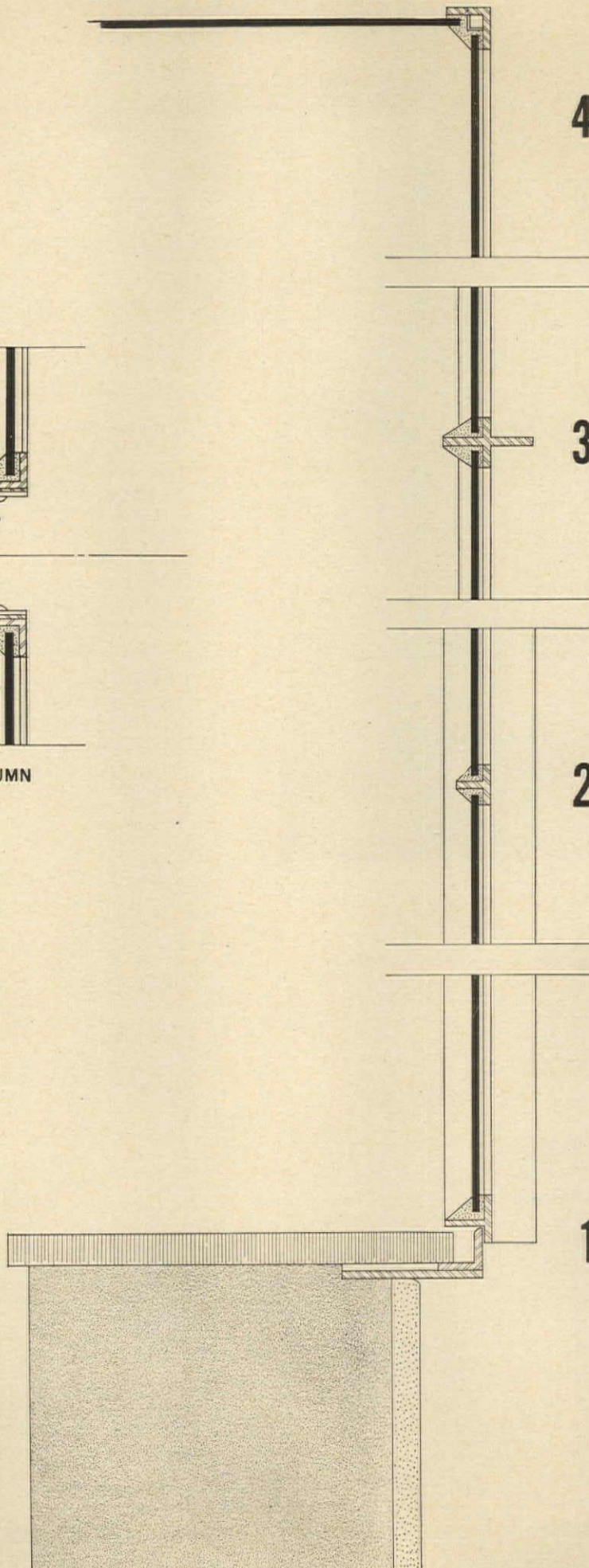
ELEVATION

SCALE: 1/8" = 1'-0"





**5** VERTICAL SECTION AT COLUMN  
SCALE: 3" = 1'-0"



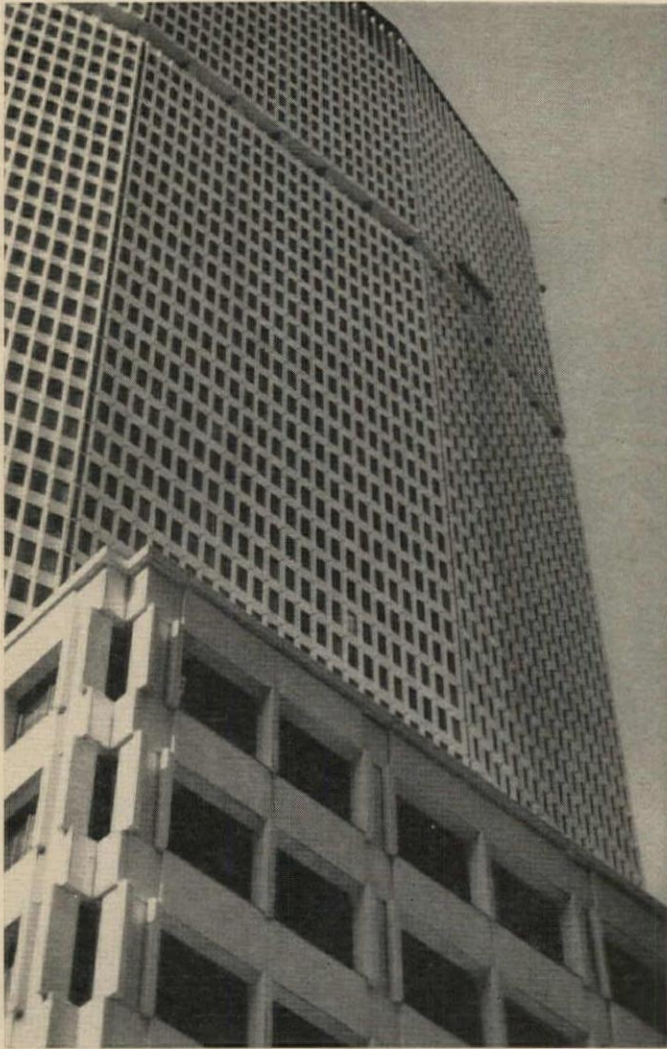
**4** CORNER  
SCALE: 3" = 1'-0"

**3** VERTICAL MULLION  
SCALE: 3" = 1'-0"

**2** HORIZONTAL MUNTIN  
SCALE: 3" = 1'-0"

**1** SILL  
SCALE: 3" = 1'-0"





Joseph W. Molitor

## CURTAIN WALL PROGRESSION IN THE WORK OF WALTER GROPIUS

### 4. PRECAST CURTAIN WALL, 1962

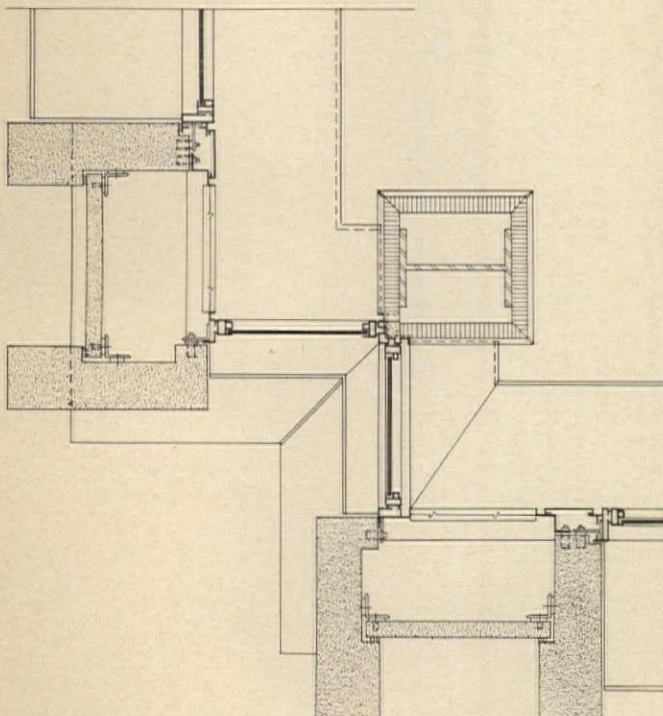
#### PAN AM BUILDING, NEW YORK

**Gropius:** 59-story building with steel skeleton. All exterior walls of precast concrete floor-to-floor wall panels housing 4- by 8-foot window units. Exposed aggregate of coarse white pebbles.

Considering the building's urbanistic context: we have learned from the Wall Street area the obvious advantage of verticalism for business, with its wholesome consequence of reduced vehicular traffic. The same trend, vigorously and intelligently promoted in the Grand Central area, would decongest it in spite of its building density.

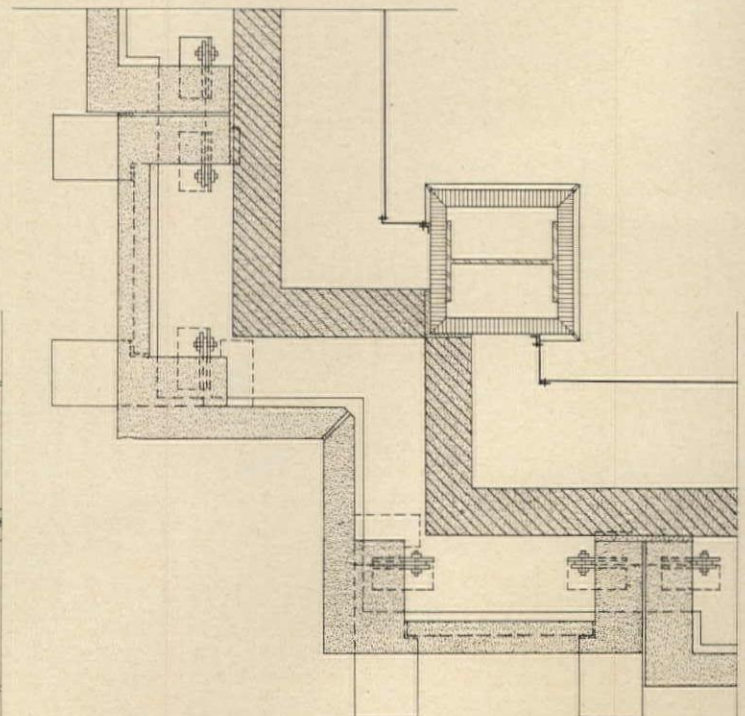
Architects: Walter Gropius (The Architects Collaborative) with Pietro Belluschi and Emery Roth and Sons; consulting engineer: James Ruderman; mechanical engineers: Jaros, Baum & Bolles

#### LOW-RISE DETAILS



PLAN ABOVE STOOL, NORTHWEST CORNER

SCALE: 1/2" = 1'-0"

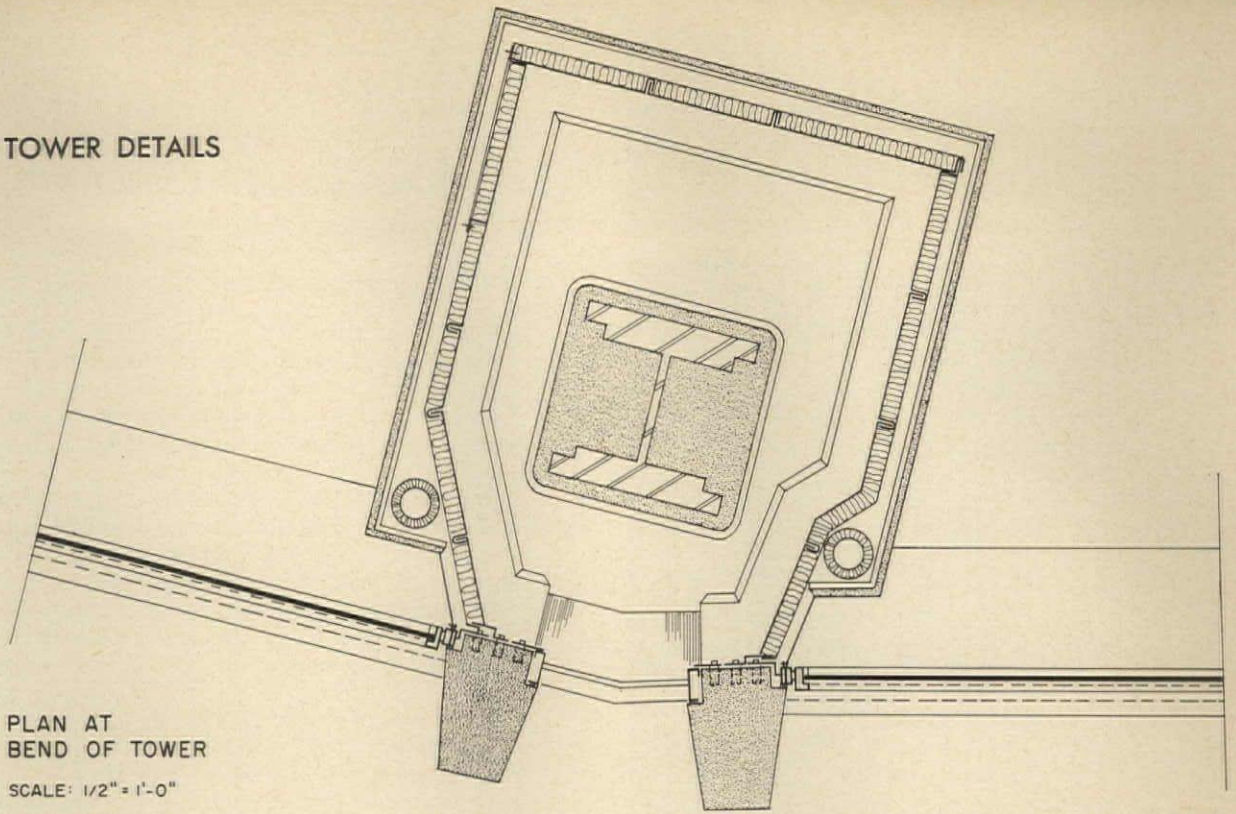


PLAN BELOW STOOL, NORTHWEST CORNER

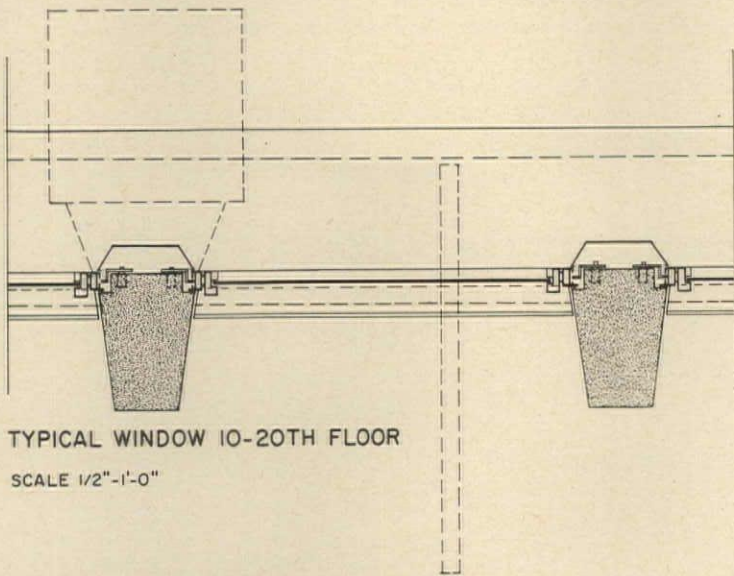
SCALE: 1/2" = 1'-0"



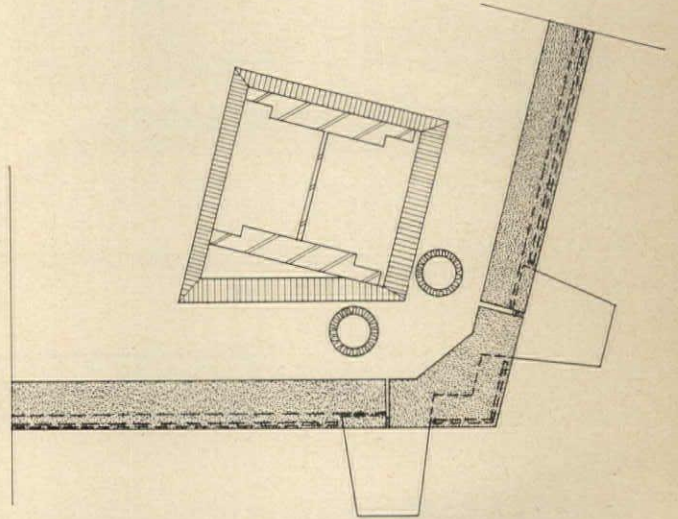
TOWER DETAILS



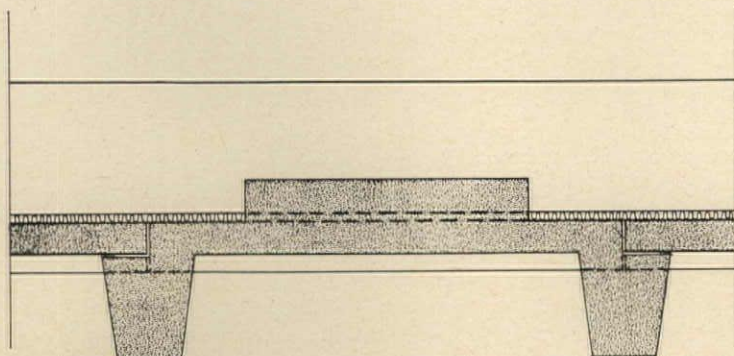
PLAN AT  
BEND OF TOWER  
SCALE: 1/2" = 1'-0"



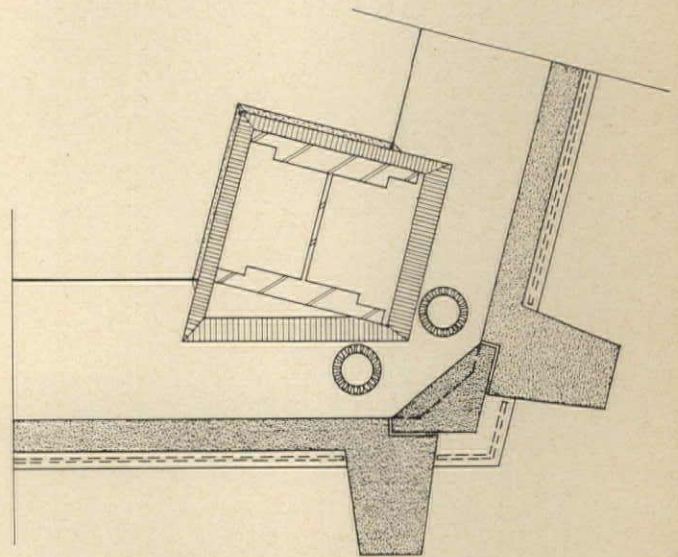
TYPICAL WINDOW 10-20TH FLOOR  
SCALE 1/2"-1'-0"



TYPICAL CORNER COLUMN BELOW FLOOR  
SCALE 1/2"-1'-0"

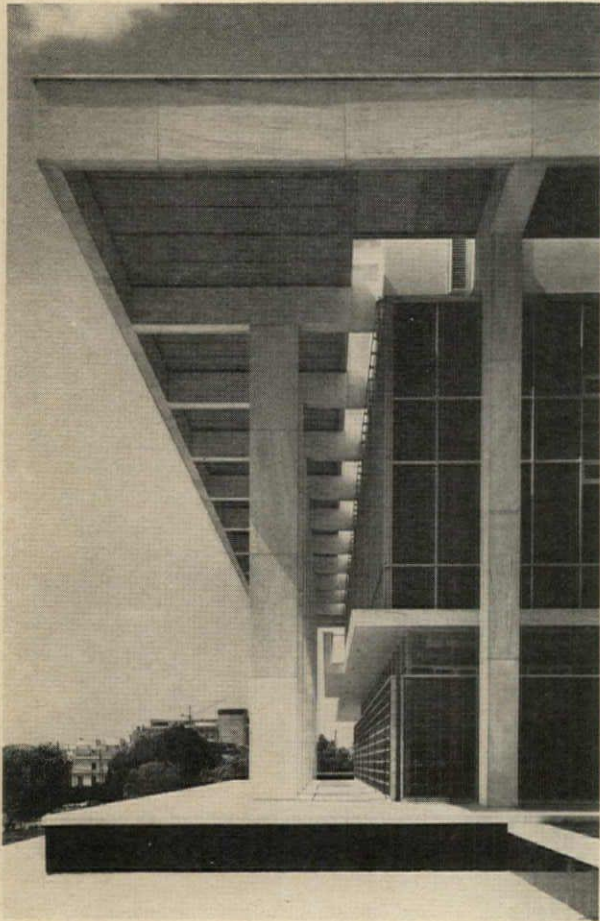


TYPICAL PANEL BELOW STOOL  
SCALE 1/2"-1'-0"



TYPICAL CORNER COLUMN BELOW STOOL  
SCALE 1/2"-1'-0"





## SHADED, HANGING STRUCTURE, 1960

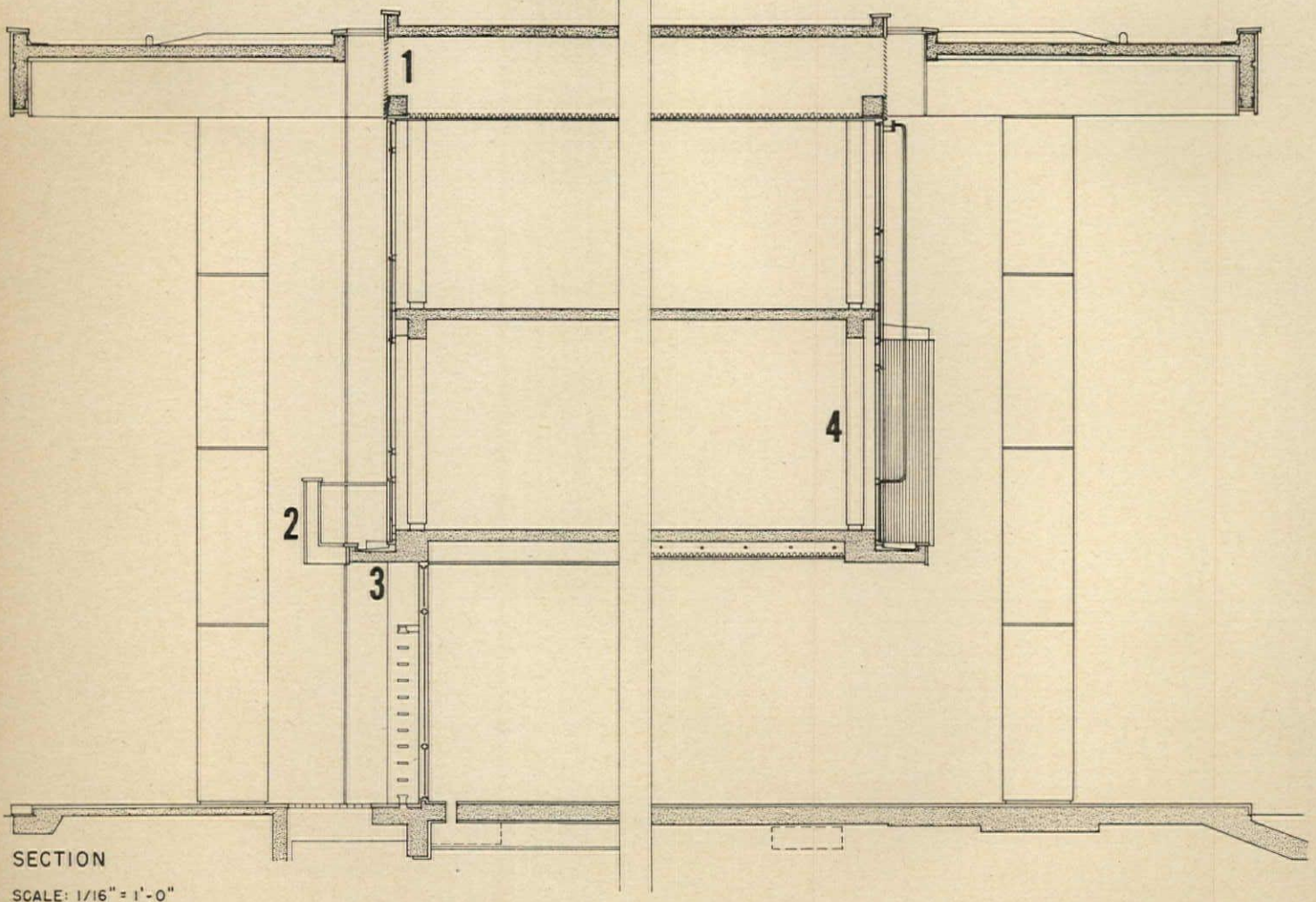
### UNITED STATES EMBASSY, ATHENS, GREECE

**Gropius:** The structure is of reinforced concrete sheathed in white Pentellic marble. The two upper floors are hung from large concrete girders, each carried by a pair of tall columns placed peripherally around the exterior walls and interior patio walls. This structural arrangement calls forth a light, hovering effect.

The main structure supports a 20-foot overhanging "umbrella" roof which shields the two upper floors from the intense glare of the Greek sky. It has open slots to allow the hot air to escape. The roof itself is double-layered to protect the uppermost floor against the sun. Aluminum grills between the girders ventilate the roof space. This device is similar to a tropical tent which has two sheets of canvas for cross ventilation between them.

The large glass curtain wall of the second and third floors is of aluminum, with spandrels of structural glass. Gray glare-reducing glass is used, vertical Venetian blinds, orange in color, offer additional protection against sun and glare for the offices on these two floors.

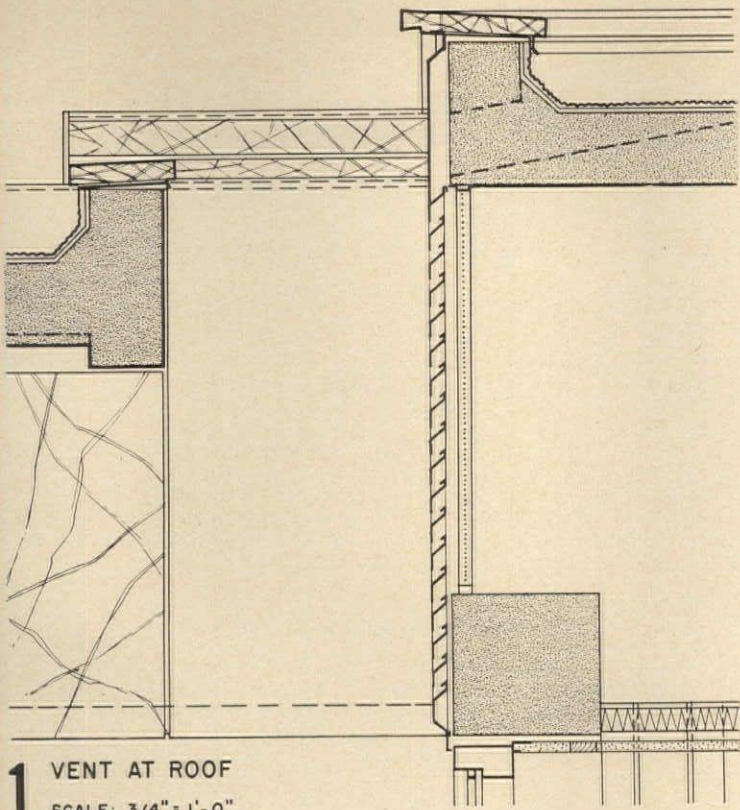
**Architects:** The Architects Collaborative, Walter Gropius and Morse Payne, in charge; consulting architect: Pericles Sakellarios; structural engineers: Paul Weidlinger, Mario Salvadori; mechanical engineers: General Engineering Associates



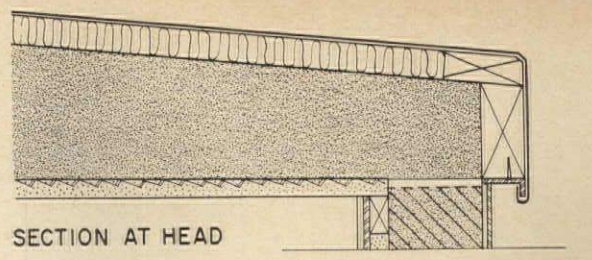
SECTION

SCALE: 1/16" = 1'-0"

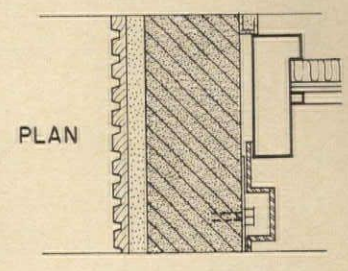




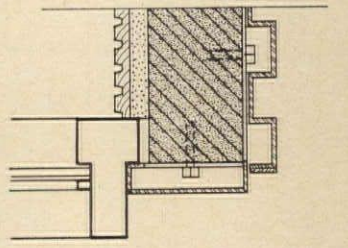
**1** VENT AT ROOF  
SCALE: 3/4" = 1'-0"



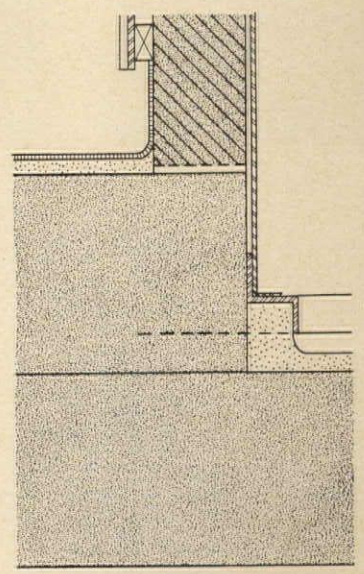
SECTION AT HEAD



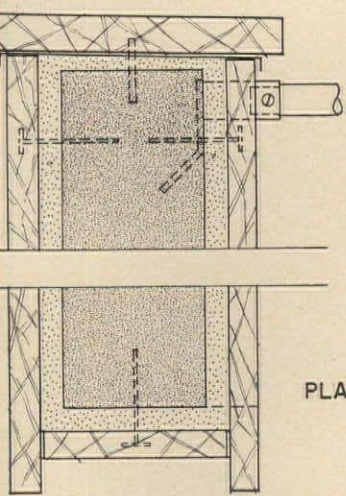
PLAN



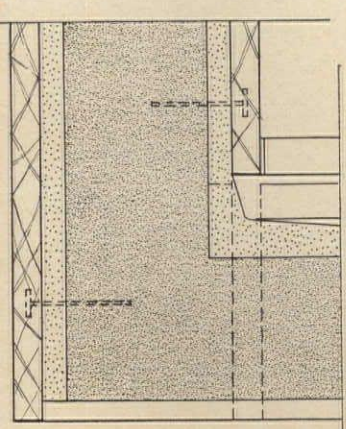
PLAN AT END



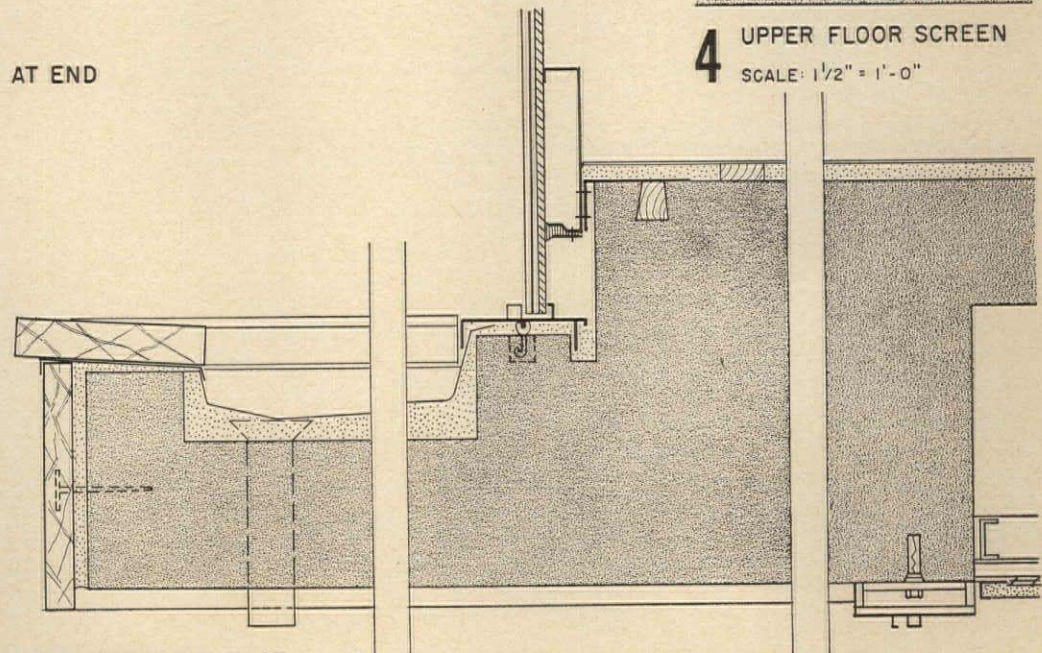
SECTION AT BASE



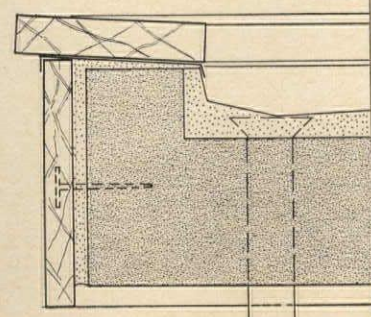
PLAN AT END



**2** PARAPET  
SCALE: 1/2" = 1'-0"

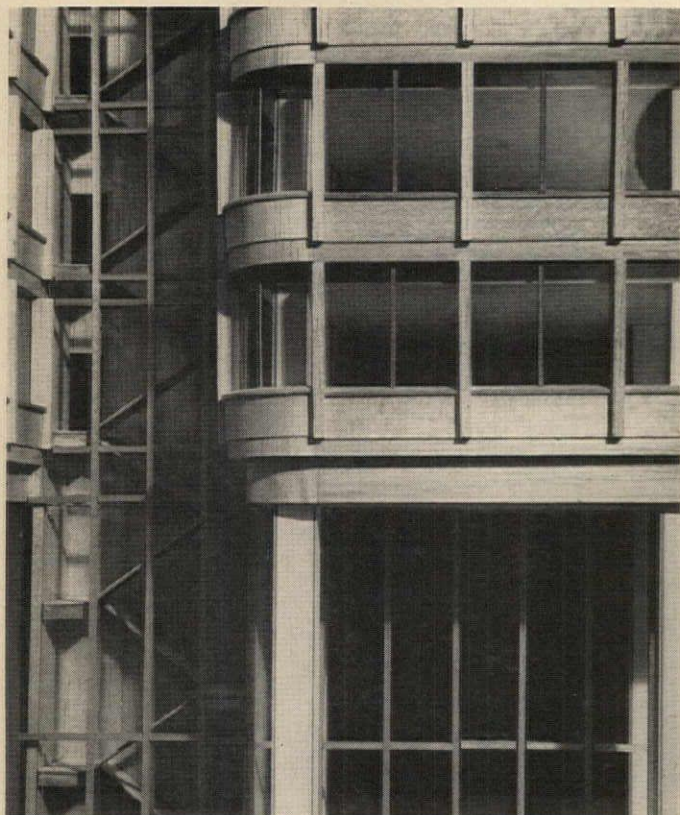


**4** UPPER FLOOR SCREEN  
SCALE: 1/2" = 1'-0"



**3** CURB AND BASE  
SCALE: 1/2" = 1'-0"





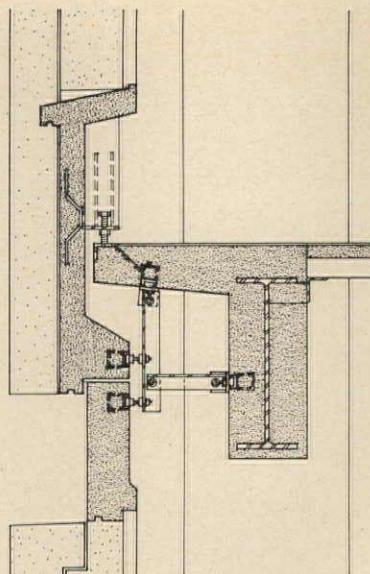
STEEL TOWER ON CONCRETE BASE  
under construction

JOHN FITZGERALD KENNEDY  
FEDERAL OFFICE BUILDING, BOSTON

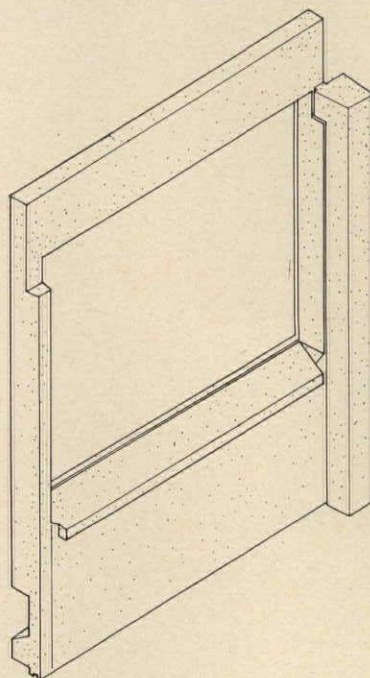
Gropius: Although technically one building, it is divided structurally into two parts: a 26-story double tower and a four-story low building. The four-story base is of standard reinforced concrete flat slab construction; the 26-story tower has a steel framework.

Completely flexible office space is achieved by modular planning based throughout on a 4-foot, 10-inch-square grid carried into the facade and fenestration as well as throughout the interior, to coordinate ceilings, lighting, heating and cooling, partitions, and under-floor electric and telephones lines.

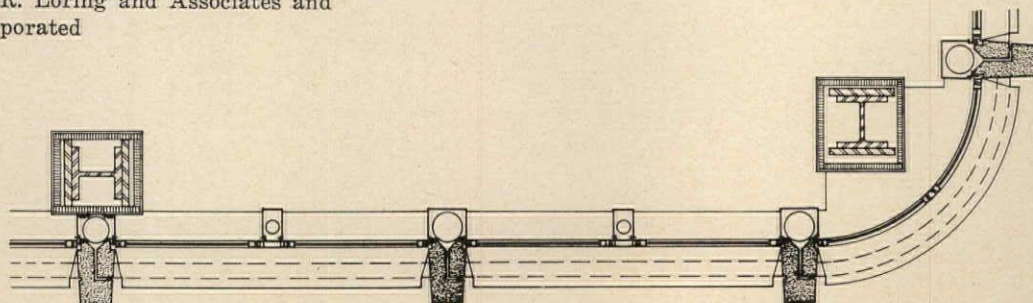
Architects: The Architects Collaborative, Walter Gropius and Norman Fletcher, in charge, and Samuel Glaser Associates; structural engineers: William J. LeMessurier and Associates; mechanical engineers: Joseph R. Loring and Associates and Guy B. Panero Engineers, Incorporated



PRECAST CONCRETE DETAIL  
SCALE: 3/8" = 1'-0"

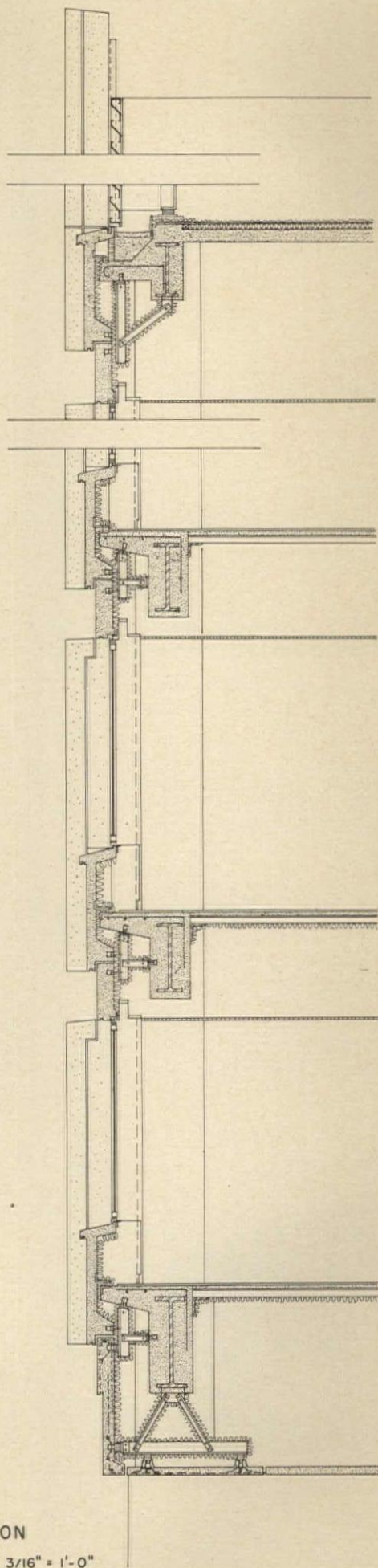
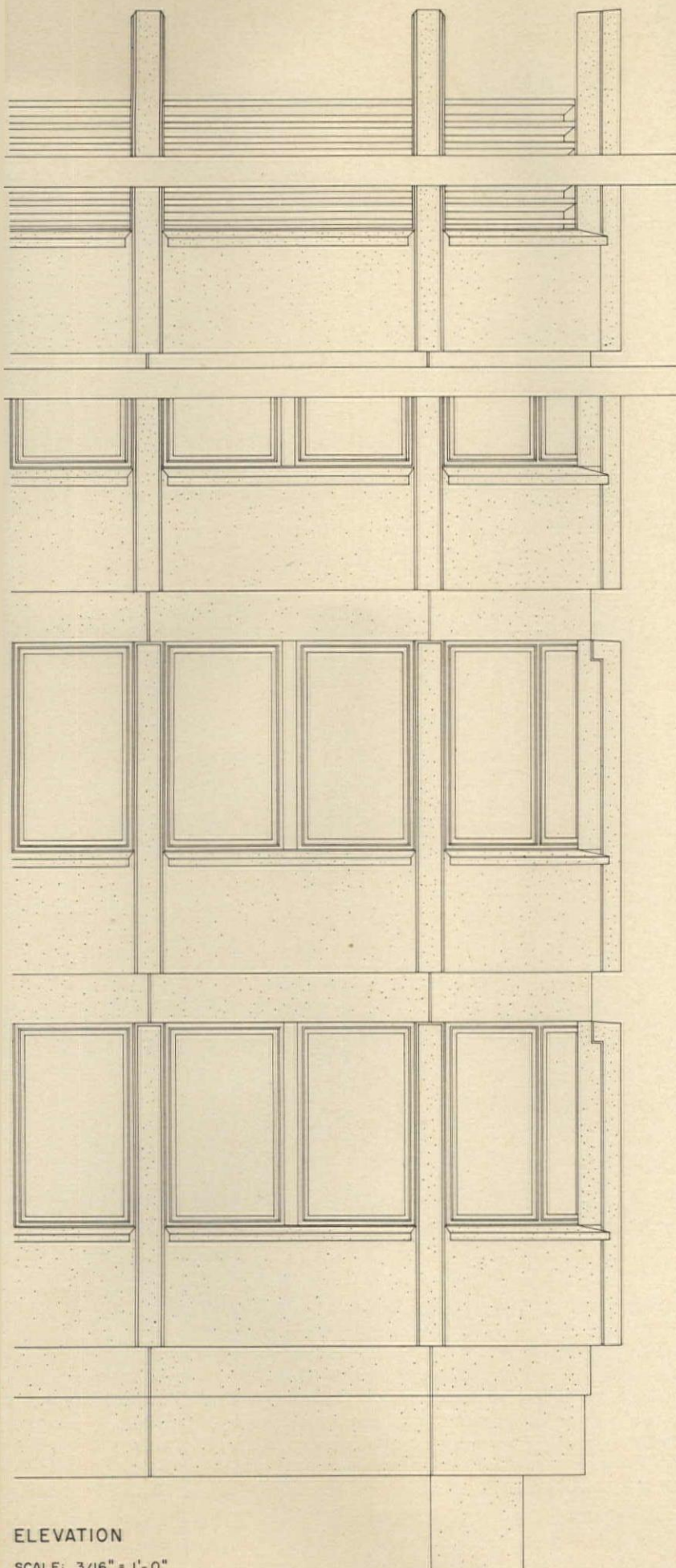


ISOMETRIC OF PRECAST PANEL  
OUTSIDE VIEW



PLAN  
SCALE: 3/16" = 1'-0"

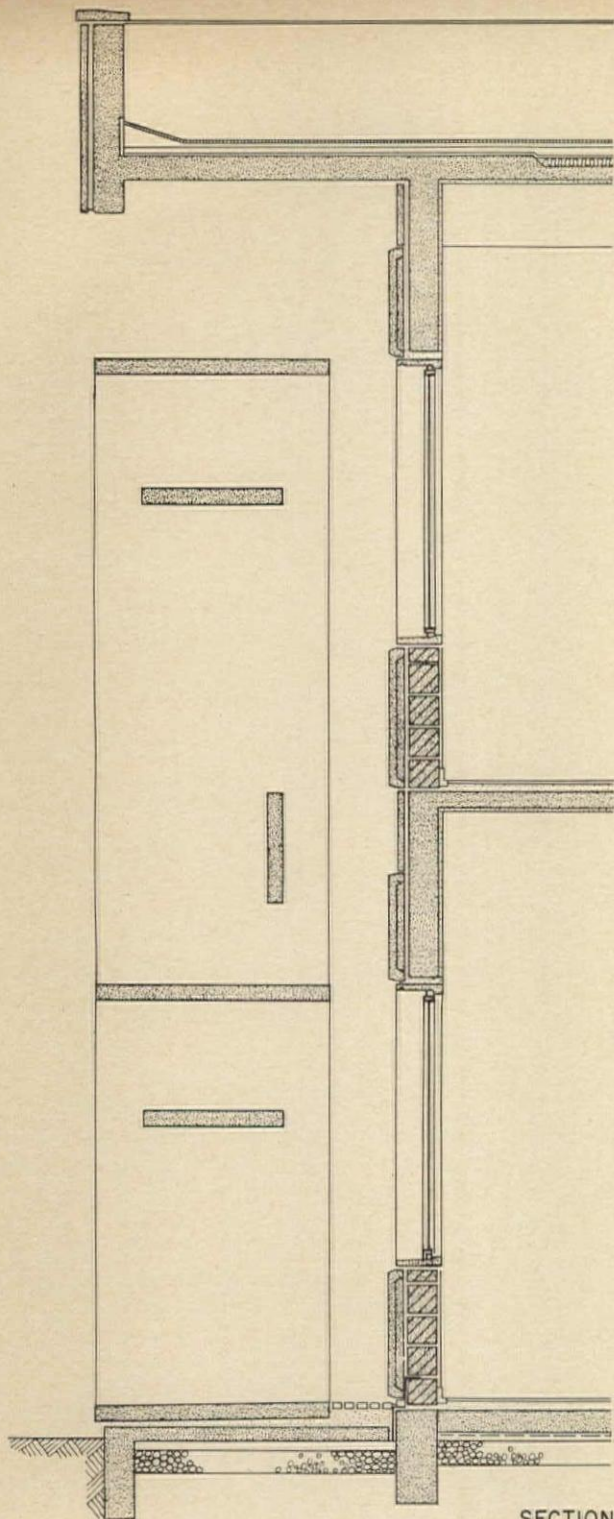




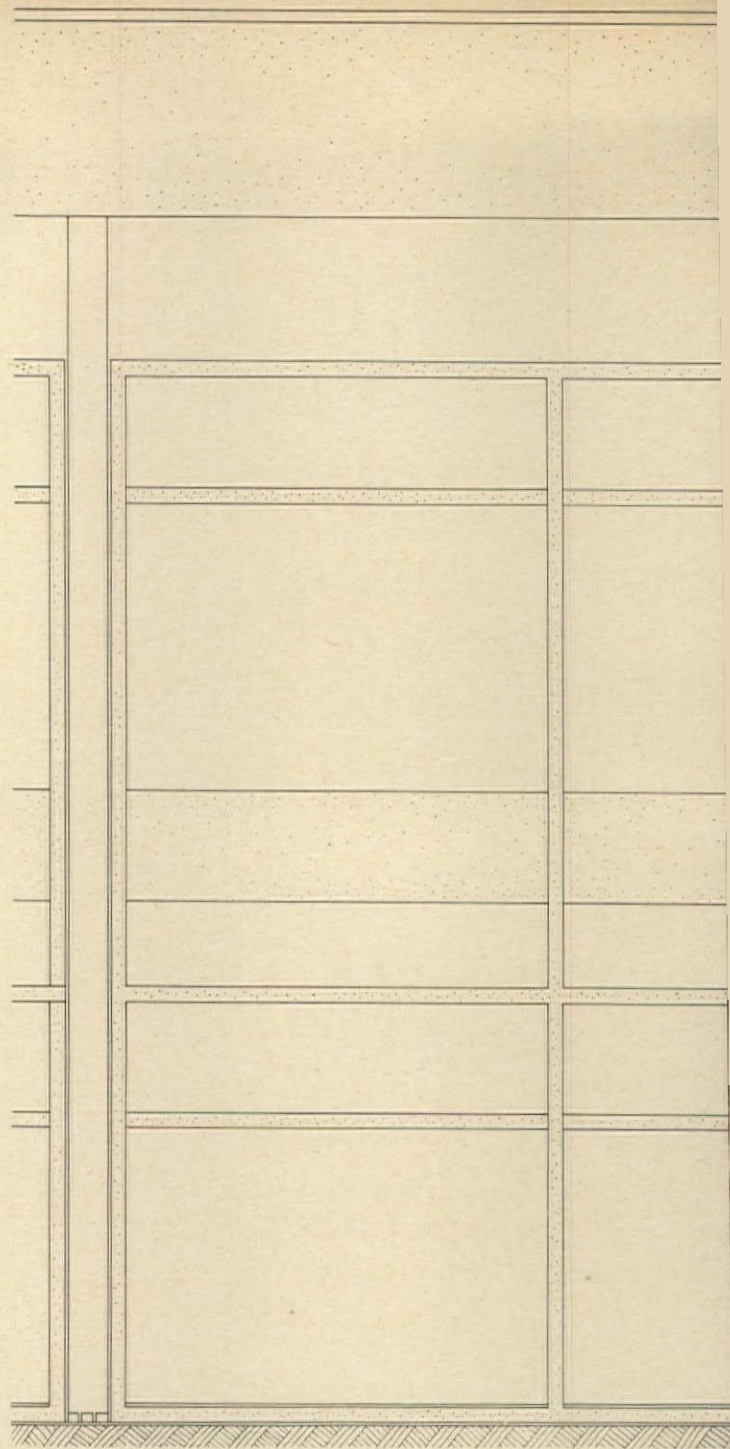
ELEVATION  
SCALE: 3/16" = 1'-0"

SECTION  
SCALE: 3/16" = 1'-0"





SECTION



ELEVATION OF SUNSHADE



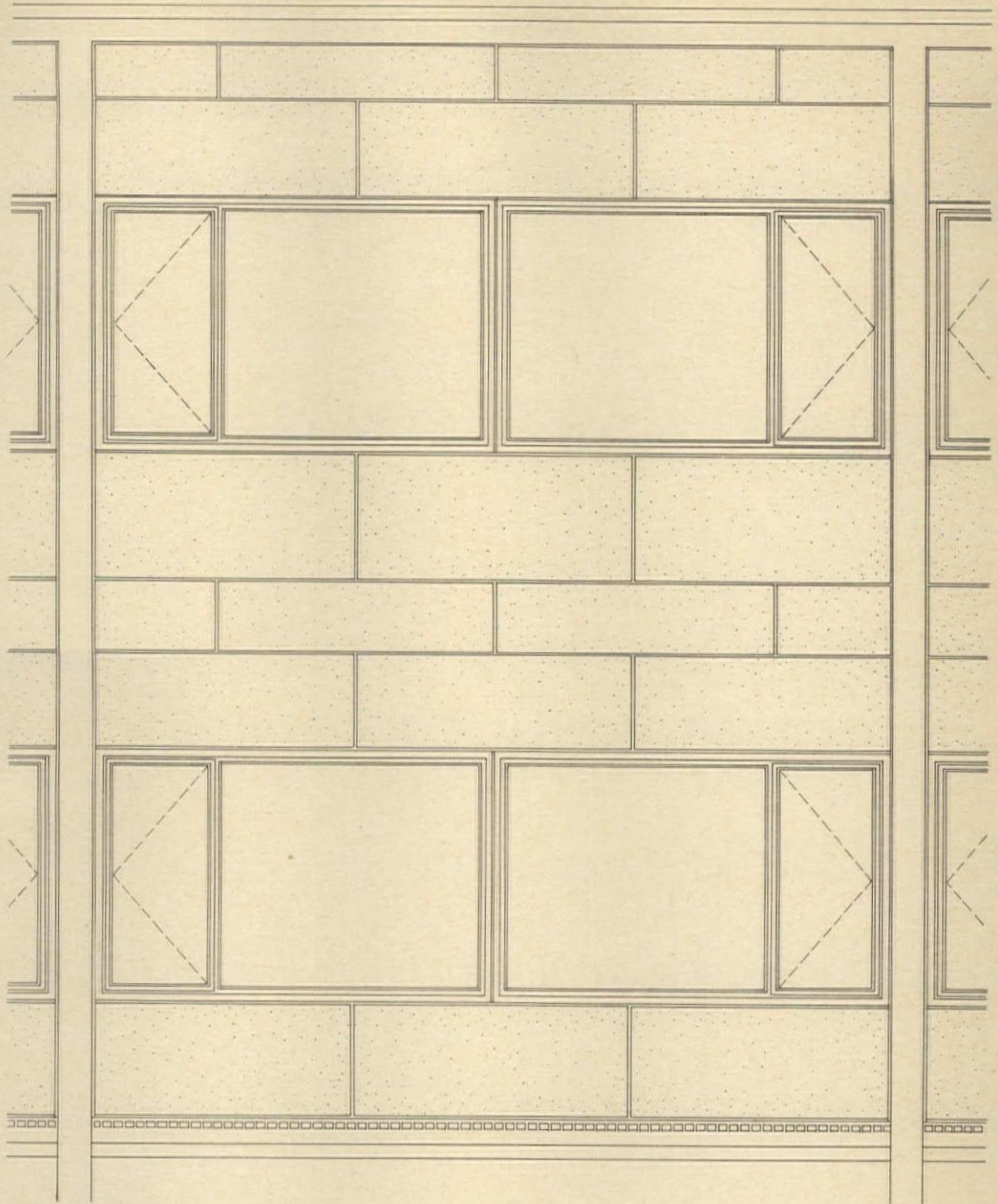
## CONCRETE SUNSHADES, 1960, under construction

### UNIVERSITY OF BAGHDAD, IRAQ

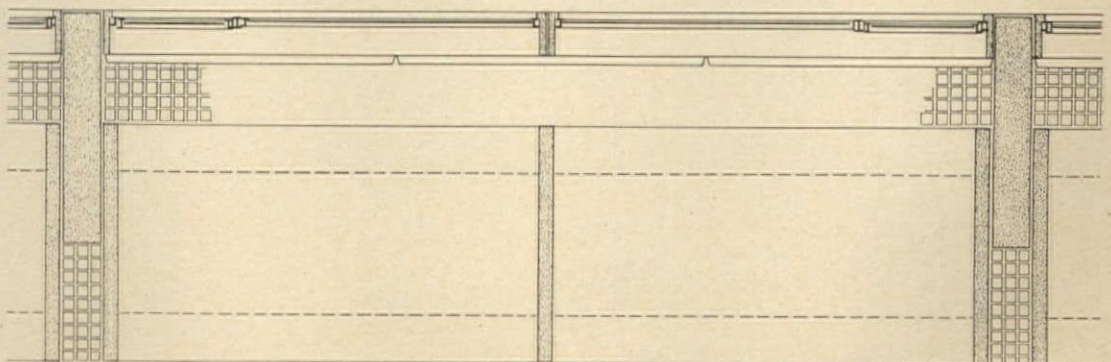
**Gropius:** Typical academic classroom building for humanities, engineering and science. In order to protect the building against the extremely hot sun in Iraq, a system of sun louvers made of thin precast concrete slabs was devised. The varying sun angles from east, west, north and south made it necessary to devise different arrangements of the louvers, resulting in a variety of patterns. Three of these are shown; one above and two on the following page.

Architects: The Architects Collaborative International Limited, Walter Gropius, Louis McMillen and Robert McMillan, in charge; structural and mechanical engineers: Panero-Weidlinger-Salvadori





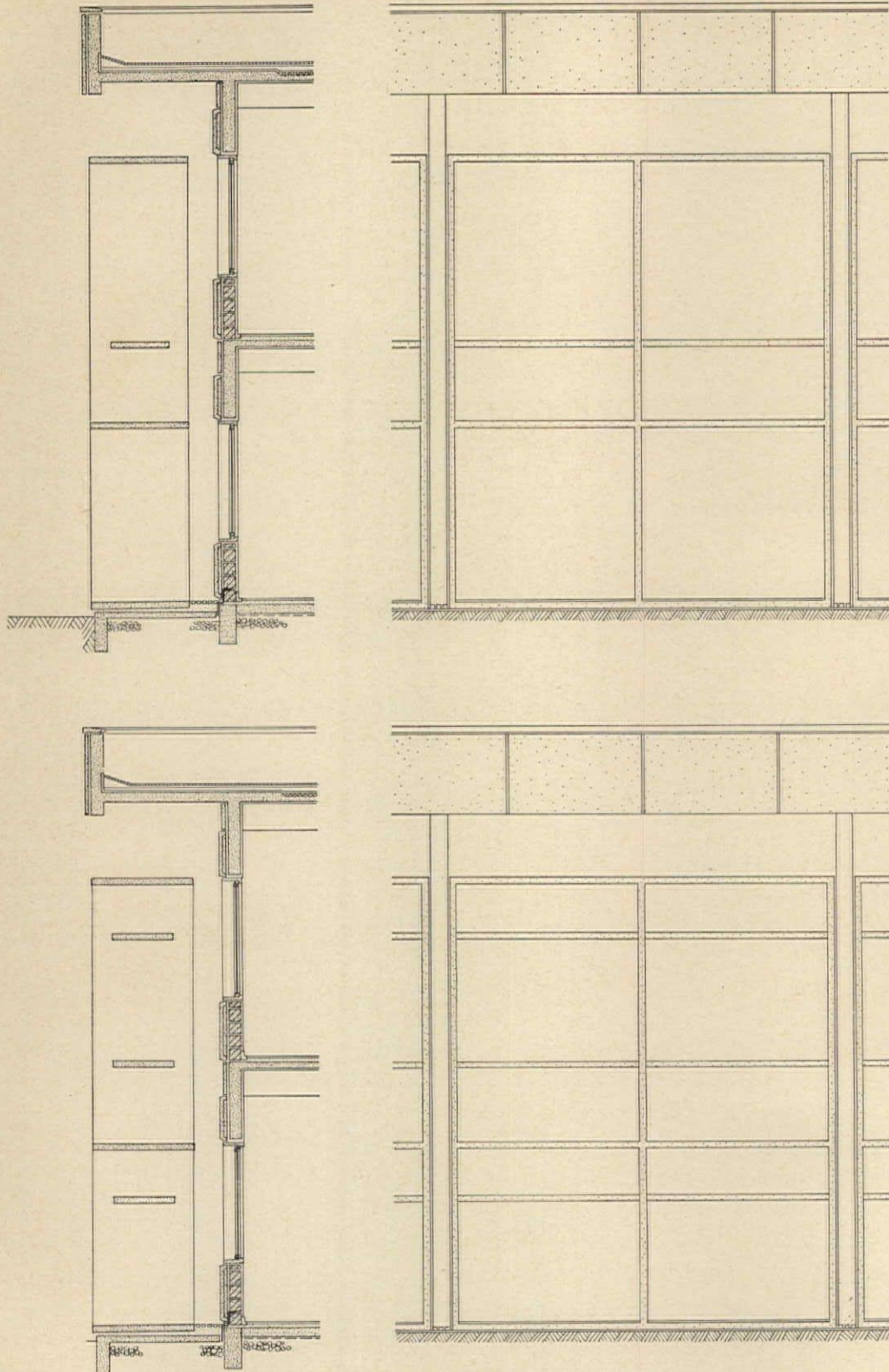
ELEVATION OF WEATHER WALL



PLAN

ALL DRAWINGS SCALE: 1/4" = 1'-0"





SECTIONS AND ELEVATIONS OF ALTERNATE SUNSHADES

SCALE: 1/8" = 1'-0"

UNIVERSITY OF BAGHDAD

Above are shown further alternates of precast sun-shade louvers, each designed to break down the sun according to varying sun angles resulting from different orientations.





## NOTABLE LOW BUDGET BUILDING

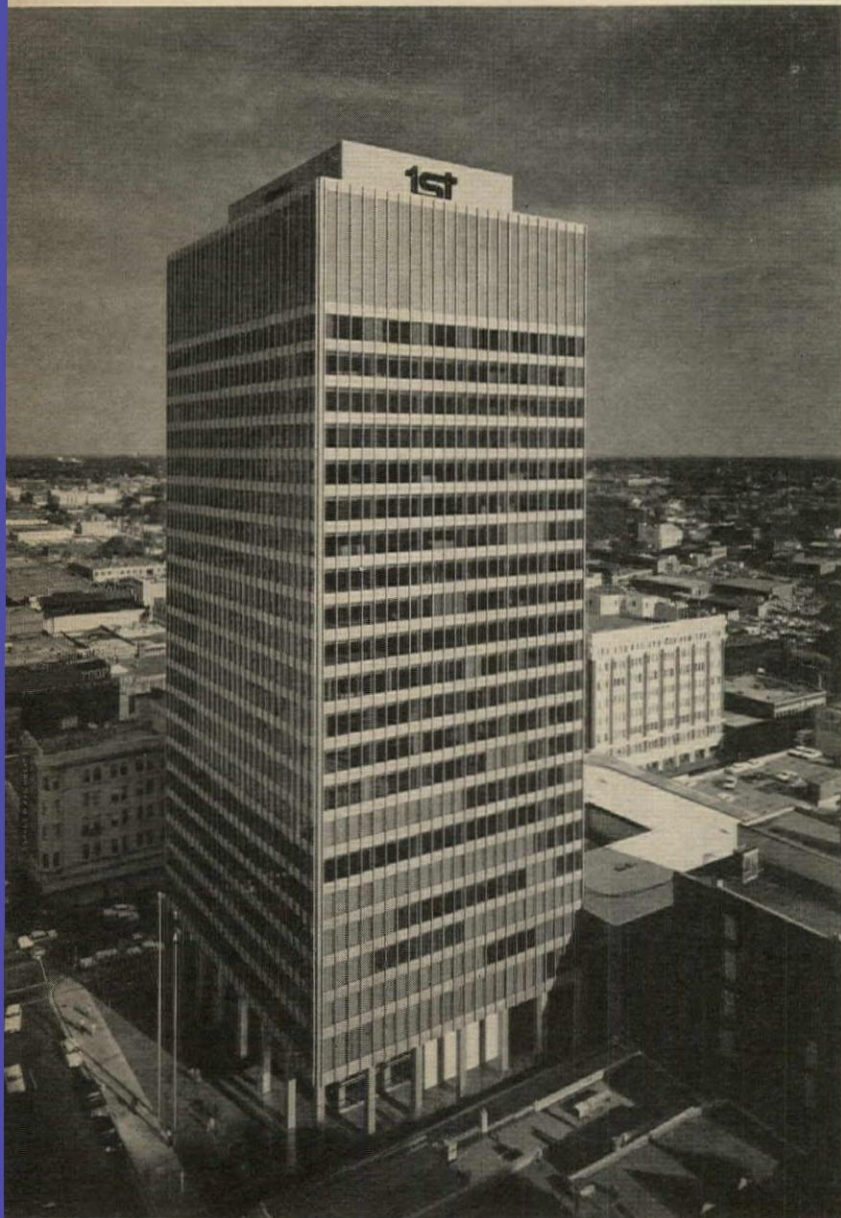
Designed by the Office of Walk C. Jones Jr. — with interior consultants I.S.D. — the First National Bank of Memphis office tower adds a bright new note to downtown Memphis

The First National Bank of Memphis was built at surprisingly low cost without sacrificing architectural quality. Its well-designed interiors resulted from a smooth-working and fruitful collaboration of interior designer and architect.

The 25-story tower, plus a three-story banking pavilion and three sub-basement levels, was built for \$10.2 million, or \$17.25 per gross square foot. Architect Francis Mah explains: "Cost was a dominant factor in every design consideration or alter-

nate. Rather than submit to cheaper materials, we tried to meet the challenge in architectural terms. That means coordinating, developing, and synthesizing the complex program into clear and simple forms based on repetitive standard components. This lacks the originality of creating new forms, but its disciplines are no less rigorous." Floors are set at 11 feet 5 inches to reduce building bulk; all steel beams are identical in size, length and connection; curtain wall elements are repetitive over the entire exterior.





Alexandre Georges photos



## THE BUILDING

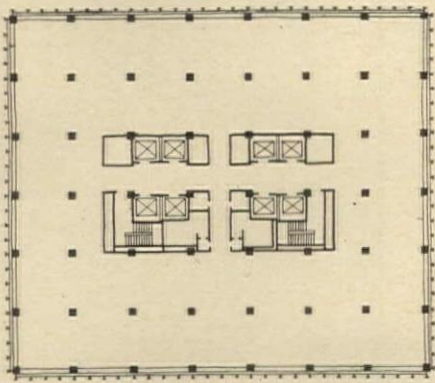
The 25-story tower of aluminum and gray glass rises 332 feet over its one-acre ground area and provides 590,000 square feet of usable area. The bank presently occupies the first nine floors and the 23rd, which is devoted to private dining rooms, a lounge and a gallery; the remaining floors are leased. The three-story pavilion is occupied by the main banking room (two stories high), with executive offices and board room above. Directly below, there is a three-level garage which will accommodate 200 cars. Banking requirements determined the structural system of four, 4-foot 10-inch modules, translated in turn into

19-foot 4-inch-square bays. This spacing is optimum for office layouts; the yield ratio was 86 per cent net rental of gross area.

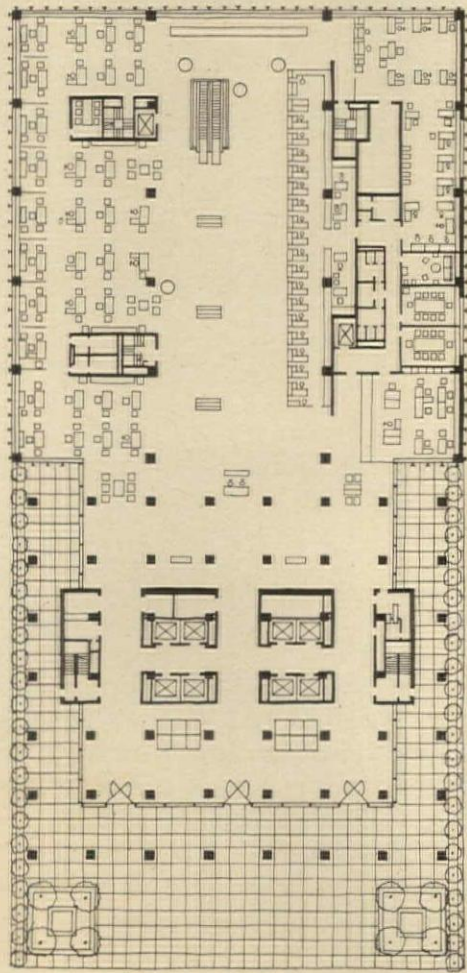
Subgrade work was complicated by heavy water strata due to the proximity of the Mississippi. A system of well points was established and water level lowered until all subgrade work was complete and watertight. A permanent pumping system continues to relieve hydrostatic pressure on the basement slab.

Mechanical equipment is located on the 24th and 25th floors; the basic system of down-fed air is supplemented by equipment on the fourth floor.





TYPICAL FLOOR



FIRST FLOOR

10







## BANK INTERIORS

Interior designers I.S.D. were commissioned upon the recommendation of the architects, and brought in early; an important factor in securing the best possible result, and in developing a felicitous relationship. A mock-up was made for tenant rentals; a  $\frac{1}{2}$ -inch scale model of the entire first floor was provided; and  $\frac{1}{4}$ -inch plans showing colors and materials for all of the bank's areas were presented. Except for special pieces, all





furniture, fabric, and carpeting were selected from standard stock, readily available, and on inventory for the next 10 years. The general concept for interiors was that colors, materials, and finishes be appropriate for the character of the building, but likewise proper for an old, conservative banking institution.

Four views of the main banking area are shown here. The carpet is a rust-colored tufted fabric; columns, counter die and vertical wall panels are of Roman travertine; the banking counter top is of black Tennessee marble; wood wall panels are of book-matched teak, sliced from 22-foot logs; the ceiling is of fissured acoustical tile with narrow lateral slots for air-conditioning supply.



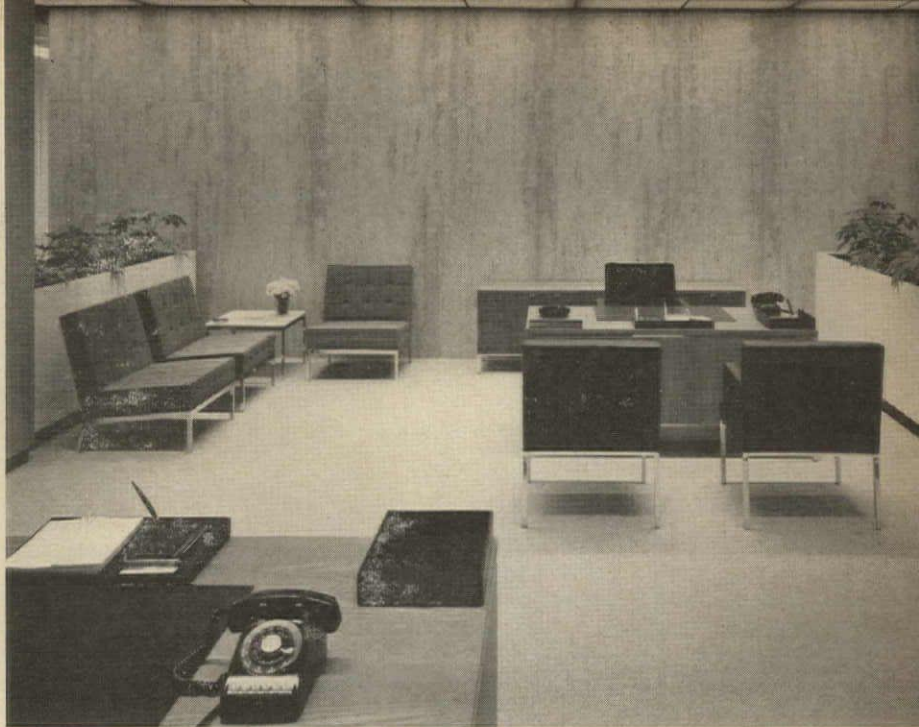
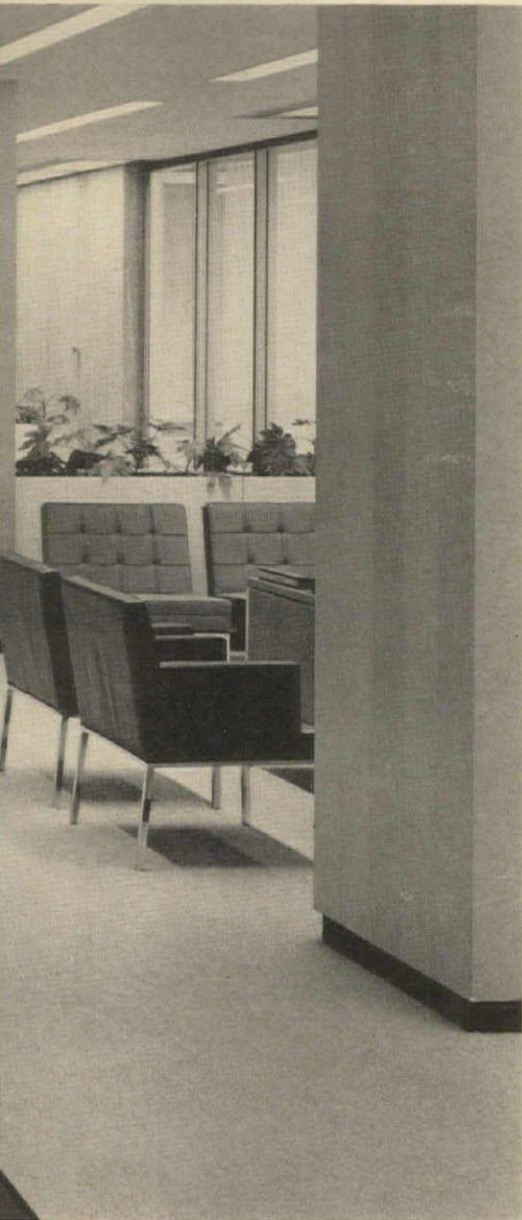




## OFFICE INTERIORS

These photographs show several of the bank's office areas. The large picture above and that at top right are of the Business Development Department, located on the second floor mezzanine that overlooks the main banking room. The color scheme for all offices is reversed vis-a-vis the banking area: beige-gray carpet, neutral walls and color in the furniture rather than the floor. Colors lend visual interest but are on the conservative side—olive-blue, brown, etc. Columns are clad with vertical panels of natural aluminum; wall panels repeat the travertine of the bank below. The





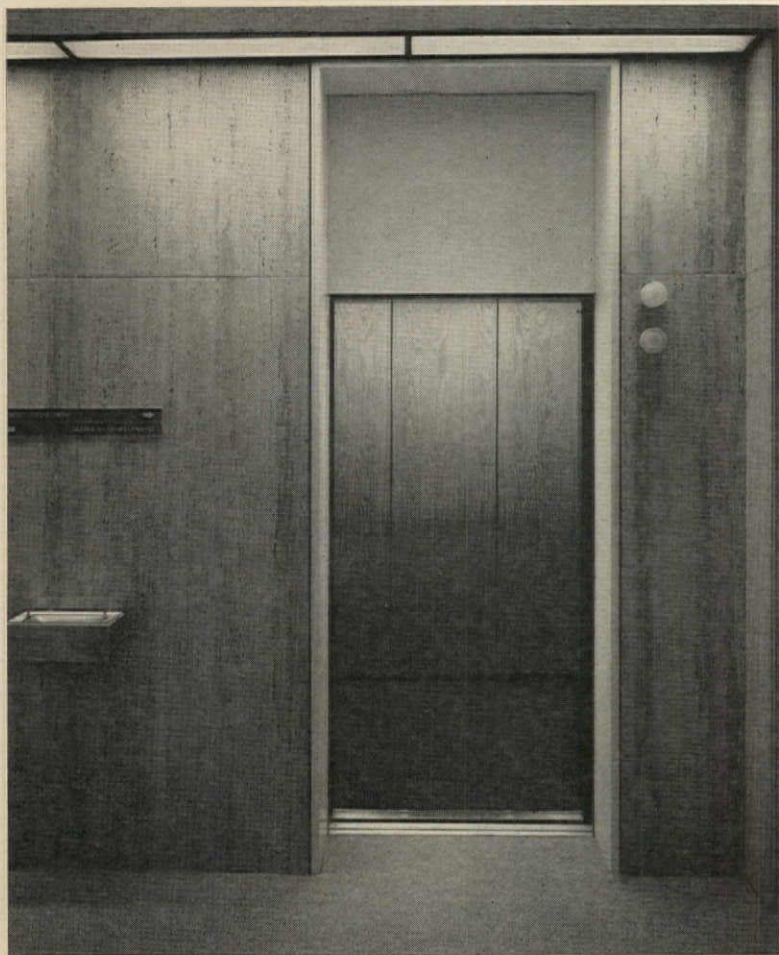
planter-dividers are in white plastic and incorporate storage in most of their volume.

At left and at bottom right respectively are views of the third-floor Trust Department reception area and of a trust officer's quarters. The paneling and doors are walnut throughout, partitions are of walnut and plate glass, and the carpeting is beige. The white hangings used in all areas dealing with the public are of a white synthetic fabric of open weave to permit flow of air and provide a translucent effect.

The senior vice president's office shown at the right center has coarse weave gray arm chairs, deep red sofa and straight chairs.







*The First National Bank of Memphis  
Memphis, Tennessee*

ARCHITECTS:

*Office of Walk C. Jones Jr.  
Walk C. Jones Jr., Francis Mah,  
Walk C. Jones III*

*Project Director: Jack G. Rose*

STRUCTURAL:

*Engineers: Gardner & Howe  
Consultant: James Ruderman  
Foundation Consultants:  
Moran, Proctor, Mueser & Rutledge*

MECHANICAL AND ELECTRICAL:

*Engineers: Allen & Hoshall  
Consultants: Jaros, Baum & Bolles*

INTERIOR DESIGN:

*I.S.D., Incorporated  
Project designer and director:  
Louis M. S. Beal*

ACOUSTICAL CONSULTANT:

*Michael J. Kodaras*

LIGHTING CONSULTANTS:

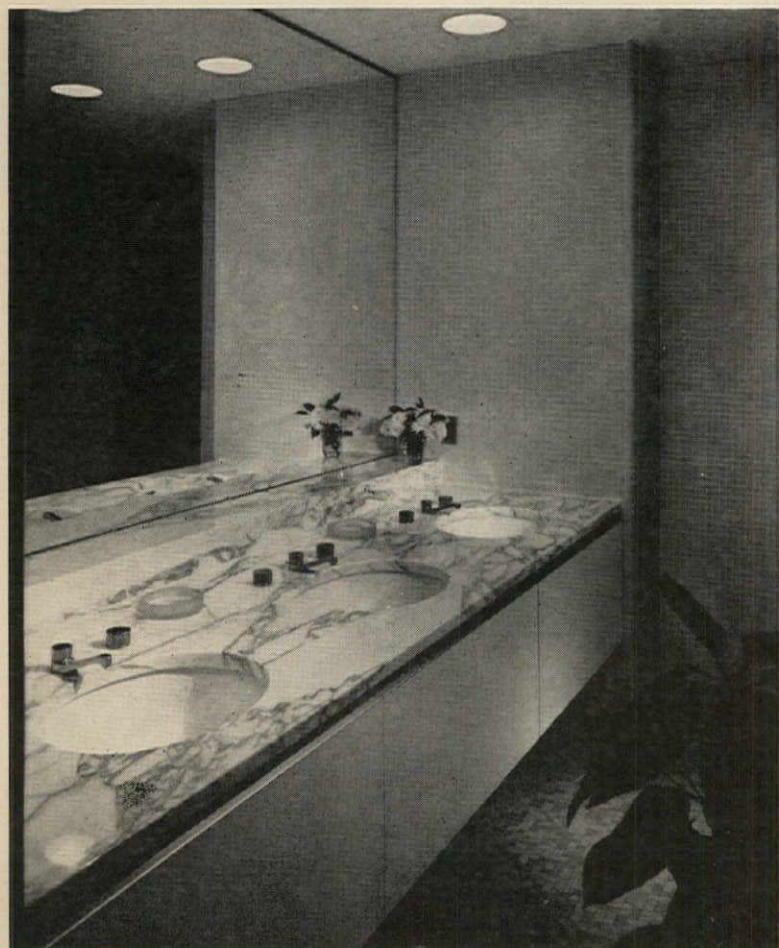
*Lighting by Feder*

GRAPHICS:

*Boatright, Bailey & Huckaba*

GENERAL CONTRACTOR:

*J. A. Jones Construction Company*



## DETAILS

Architects and interior designers jointly produced the details shown here: an elevator entrance and an executive lavatory. The elevator cab is oak, with white entrance set in a travertine wall; the lavatory has a top of cremo marble and a front of white plastic; the tile walls are gray, the floor gray and white.



Hedrich-Blessing photos



## SLIDING ROOF GIVES HOUSE YEAR ROUND USE OF PATIO

Keck and Keck design a family residence  
where living spaces surround an indoor-outdoor pool

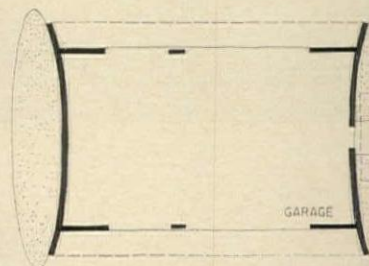
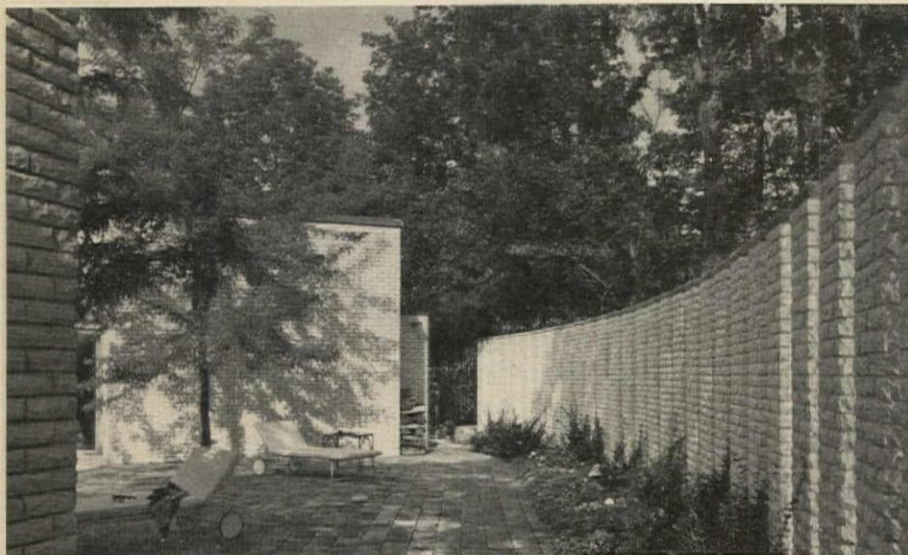




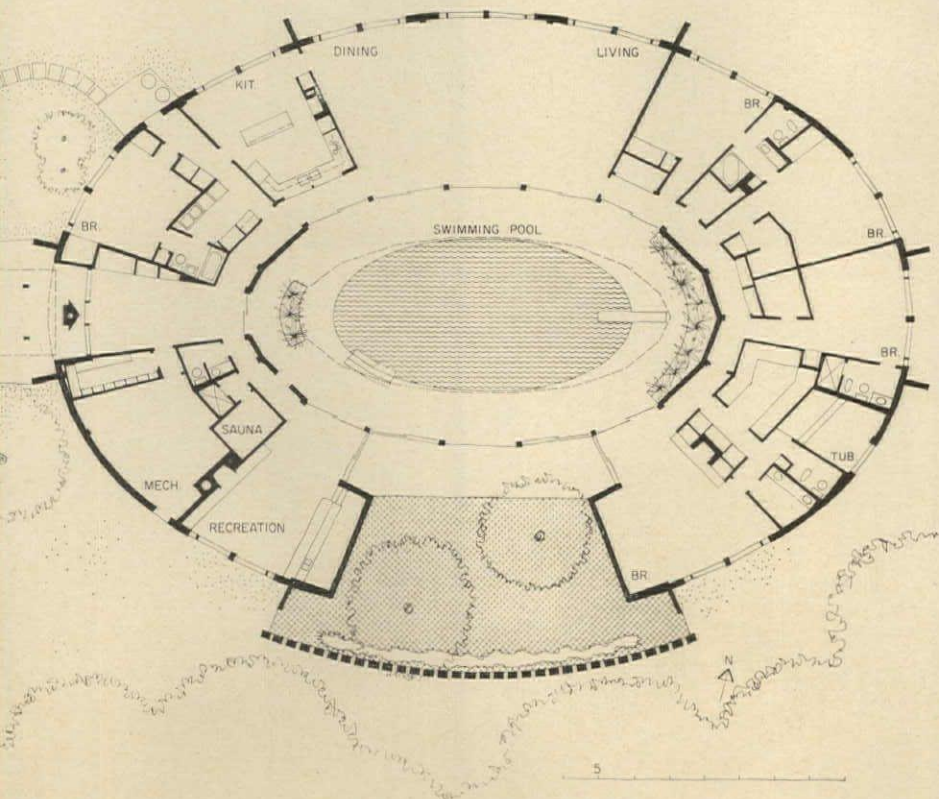
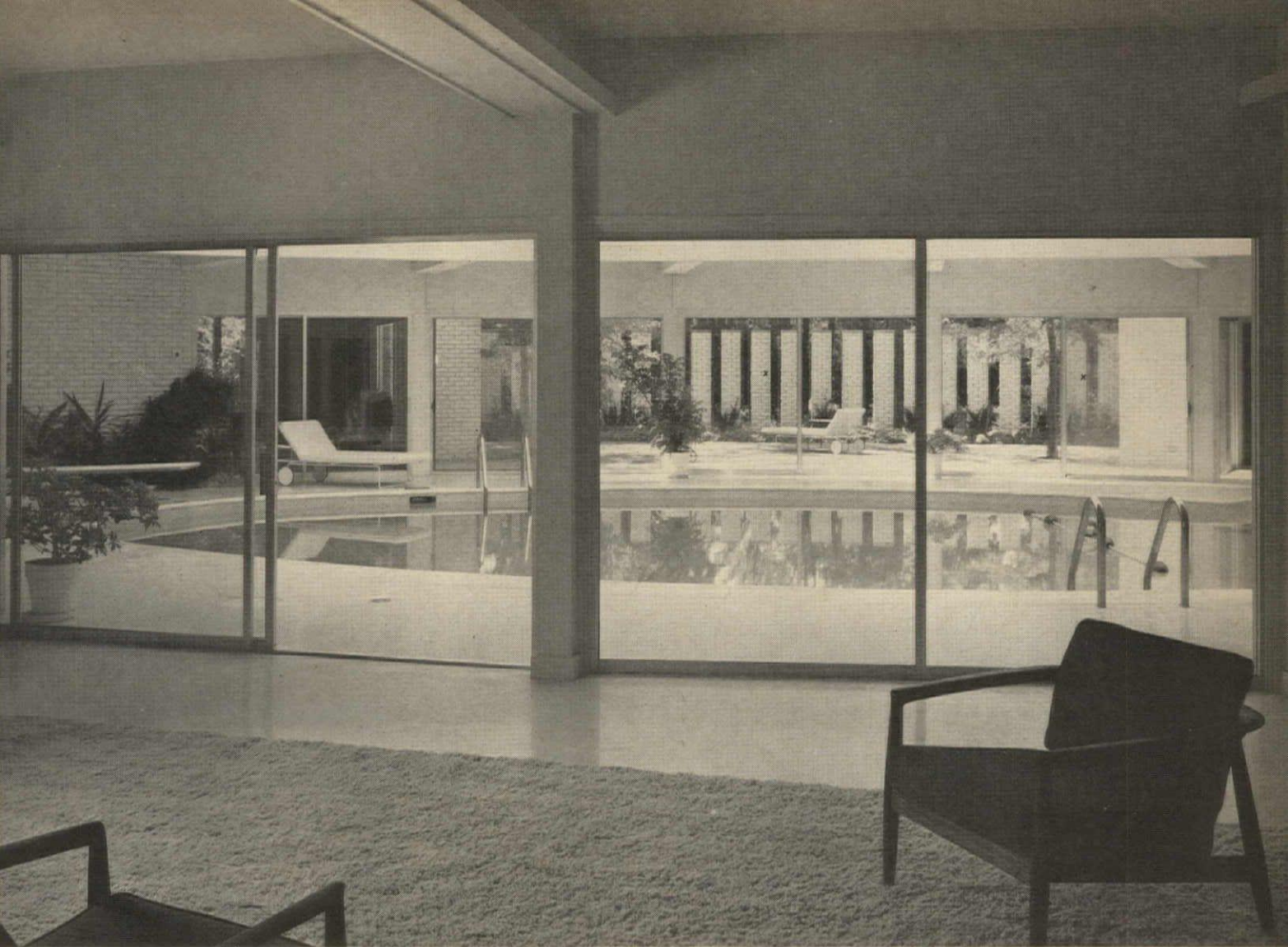
The unusual shape of this house derives from the clients' principal requirement, which was year round swimming for all the family. Mr. and Mrs. Weinrib wanted a pool which would be pleasant in all seasons, and which could be used without danger by their two small children. Despite the difficulties of condensation and other water problems, it was decided to place the pool in the center of the house, and to organize the plan around it so that the pool could be seen from all the living areas. This made for easy supervision of the children's activities, and took full advantage of the attractive appearance of the pool. On the south side, glass doors lead from the pool to a pleasant sun bathing court which is shielded by a curved line of brick pillars, giving continuity to the oval contours of the house. A covered walk links the front entrance with the garage, which is designed as

a drive-through unit in the middle of a large turning circle.

Although the house is comparatively large, its oval shape makes it look deceptively small from the outside. Rooms provided include large living areas, a sizeable master bedroom with adjoining sunken bath, four bedrooms, very adequate recreation space, a sauna and a wine storage room with evenly controlled temperature. The house is built of light-colored brick on concrete slab foundation. Reinforced concrete was used for the swimming pool. The house is carefully designed to avoid the difficulties which can arise from an oval-shaped plan. Living areas take advantage of the long sweep of the oval, while service areas and circulation space are grouped at the ends. Most of the bedrooms open outwards to give privacy from the pool area.







*Residence for  
Mr. and Mrs. Norman Weinrib  
Highland Park, Illinois*

ARCHITECTS:  
*George Fred Keck—William Keck*

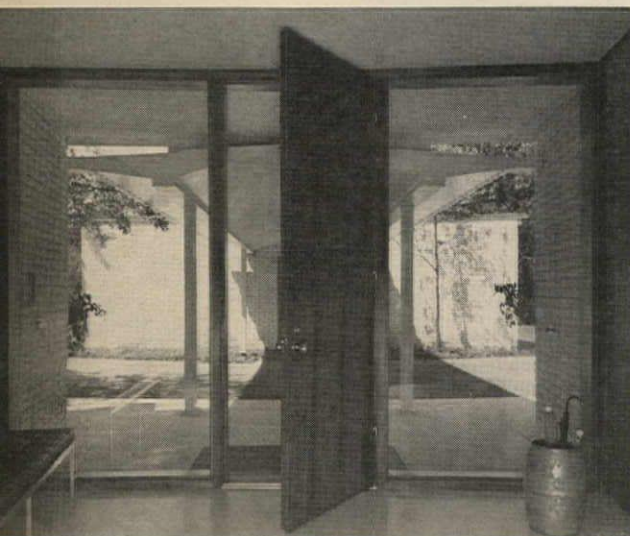
CONTRACTOR:  
*Max Weinrib*

INTERIOR DESIGNER:  
*Marianne Willisch*



The interiors of the house have been kept simple, with the focus in almost every room being on the views of the pool. Even the kitchen (*bottom right*) has a peephole view above the sink of the swimming pool. Interior walls and ceilings are plaster; flooring throughout the house is terrazzo. Windows are double glazed with adjustable louvers for ventilation, which are operated from inside. The radiant hot water heating, cooling and air-conditioning system are provided for the pool area as well as for the house.

Although the pool is an integral part of the design, it can be completely closed off from the house, which can function as an independent unit; except, of course, visually.





More than a billion dollars in Federal grants and loans for construction of hospitals and health facilities will be disbursed in the next five years under the Hill-Harris amendments to the Hill-Burton Act, signed into law in August, 1964. Among \$276 million in grants to states under the Mental Retardation Facilities and Community Mental Health Centers Act of 1963 is authorized for disbursement during the three years beginning fiscal 1965. Considering that about 60 per cent of total hospital construction is done without Federal aid, the Department of Health, Education and Welfare projects a 1966 *annual* rate on the order of \$2 billion for all hospital construction, of which the Hill-Burton Federal share will be about 12 per cent.

Perhaps more significant than the dollar volume stimulated by the Federal program are the Hill-Harris changes of emphasis on building types and location. A new grant program for modernization or replacement of public and nonprofit hospitals and other health facilities gives special consideration to those located in the more densely populated areas. This is a change from the original Hill-Burton priority accorded facilities for additional beds, which had its major effect in rural and suburban communities.

Other provisions of the 1964 amendments were (1) to set up project grants to help develop area plans, either regional or local, for needed health facilities; (2) to combine nursing homes and chronic disease hospitals into a single category of long-term care facilities with an increased annual appropriation ceiling raised from \$40 million to \$70 million.

The degree to which new urban activity will affect architectural commissions will vary with state and municipal regulations and provisions for supplementary aid. A recent New York Times report, for example, tells of four New York City hospitals which are discussing plans to merge and build a new, full-service, 600-bed hospital complete with staff housing and university teaching affiliation. Suggestion for the merger came from the state's Hospital Review and Planning Council (which, incidentally, has veto power over the start of any new hospital), and financing will be sought under both Hill-Burton and the state's public housing (Mitchell-Lama) laws. A similar, though differently financed merger of four hospitals in Boston is well advanced. Opportunities for expanded services exist in the varying climates of enabling and controlling legislation and the urgent needs for new and updated facilities.

Reports in publications of the Department of Health, Education and Welfare indicate that the nation should have about 25 per cent more general hospital beds than now exist, almost three times as many long-term care and rehabilitation facilities, twice as much capacity for mental patients.

In the special case of mental retardation, the need is even more urgent. So much so that the Public Health Service program of Title VII grants for construction and equipment of health research facilities, now in its ninth year on a 50 per cent matching fund basis, was enabled by 1964 legislation to provide 75 per cent of funds for construction of mental retardation research facilities. A recent grant in this program was for \$6 million to the University of Washington. There will be some basic research in mental retardation also in a new seven-story research wing of the New York University Medical Center's Institute of Physical Medicine and Rehabilitation which was awarded a grant of \$1,355,000 last year on the prevailing 50 per cent basis. Largest grant last year was \$3,424,000 to Cornell for a 10-story clinical research building.

Variety, then, and accelerating activity along a broad front of needed facilities will characterize the coming months of medical construction. The examples on following pages represent the range of demanding programs that will be encountered in general hospitals, rehabilitation centers, nursing homes and hospitals for the mentally retarded.

# HOSPITALS

BUILDING TYPES STUDY 342

®

"I propose we begin a massive attack on crippling and killing diseases."

— Lyndon B. Johnson,

January 4, 1965





## COMPLETE CENTER FOR THE MENTALLY RETARDED

The Hissom Memorial Center was designed to be a diagnostic, treatment, rehabilitation, training and research facility for the mentally retarded. To encompass this variety in a community-oriented center serving both in-patients and out-patients, a campus plan provides the traffic patterns and outdoor spaces which are especially important in the treatment of the mentally retarded.

The program for the Hissom Center (named for the donor of the 85-acre site) was developed out of conferences headed by Dr. T. Glyne Williams, then director of mental health for the state of Oklahoma, in consultation with Dr. George L. Wadsworth, superintendent of the Tennessee Cloverbottom Home and Dr. Gunnar Dybwad, executive director of the National Association for Retarded Children working with architects for the master plan and associated architects on the 26 buildings in the project.

Facilities for special education and recreation are central to patients' housing and include a building for administration, clinic and research. Nearby are a chapel and hospital for the more dependent patients. A central kitchen serving all patient areas and an employe cafeteria is also in this central group clustered about a unifying plaza which is at the entrance to the campus.

Peripheral to this group of buildings are utility buildings and vocational education facilities adjacent to a number of pre-placement cottages which house patients preparing to return to the community.

The ultimate plan provides for 1,172 resident patients of all ages and degrees of retardation with a mental age of nine years and below. The institution allocates patients on a basis of a functional classification (as distinguished from I.Q.)

The more dependent patients will be cared for in four infirmaries totaling about 400 beds. Twelve cottages will house approximately 576 patients who are eligible for training. About 96 patients engaged in adult vocational education will be housed in the four pre-placement units. A psychiatric treatment ward of about 108 beds will be provided.

*The Hissom Memorial Center  
Sand Springs, Oklahoma*

OWNER: *State of Oklahoma  
Department of Public Welfare*

ARCHITECTS:

*Murray-Jones-Murray*

ASSOCIATE ARCHITECTS

AND ENGINEERS:

*McCune, McCune and Associates*

STRUCTURAL ENGINEERS:

*Owen, Mansur and Steele*

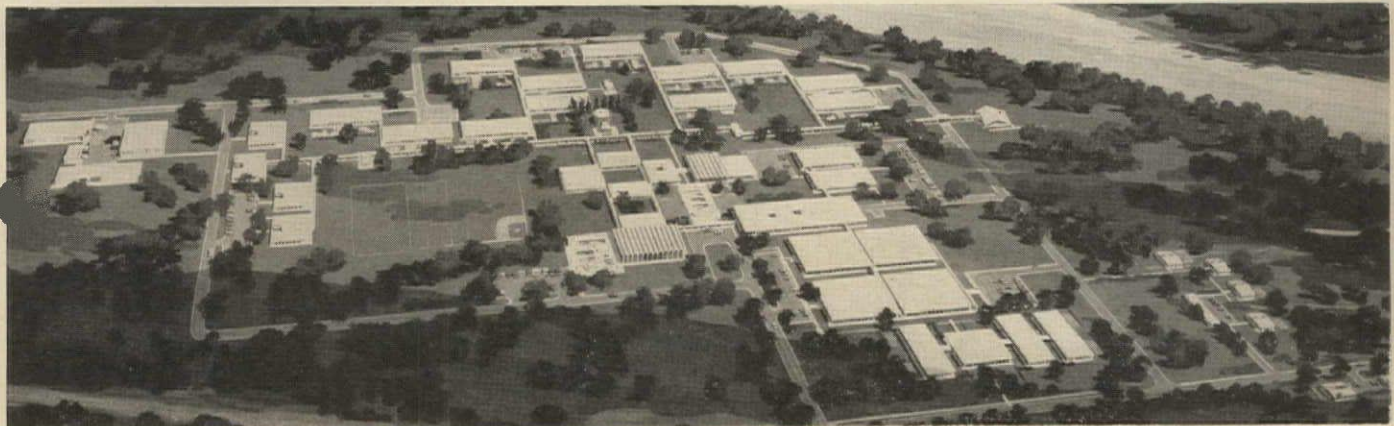
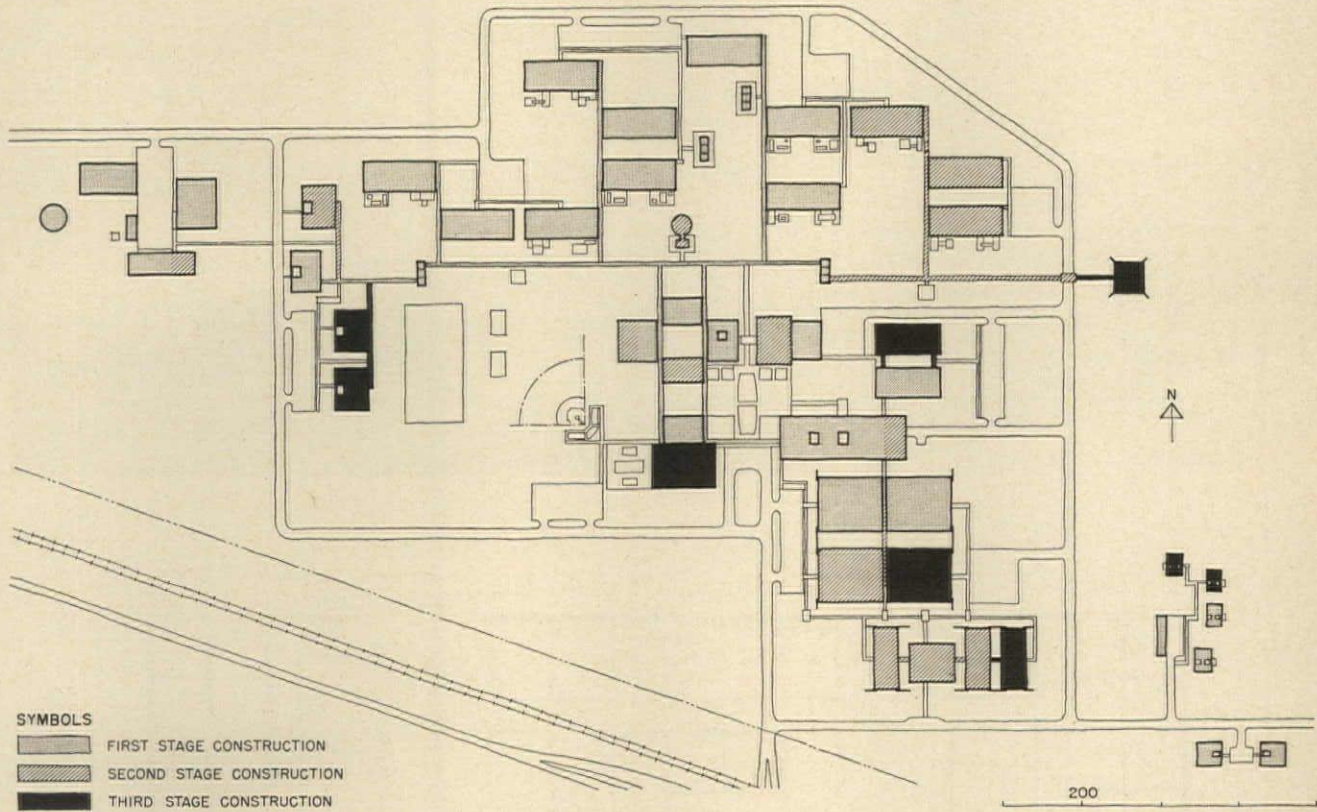
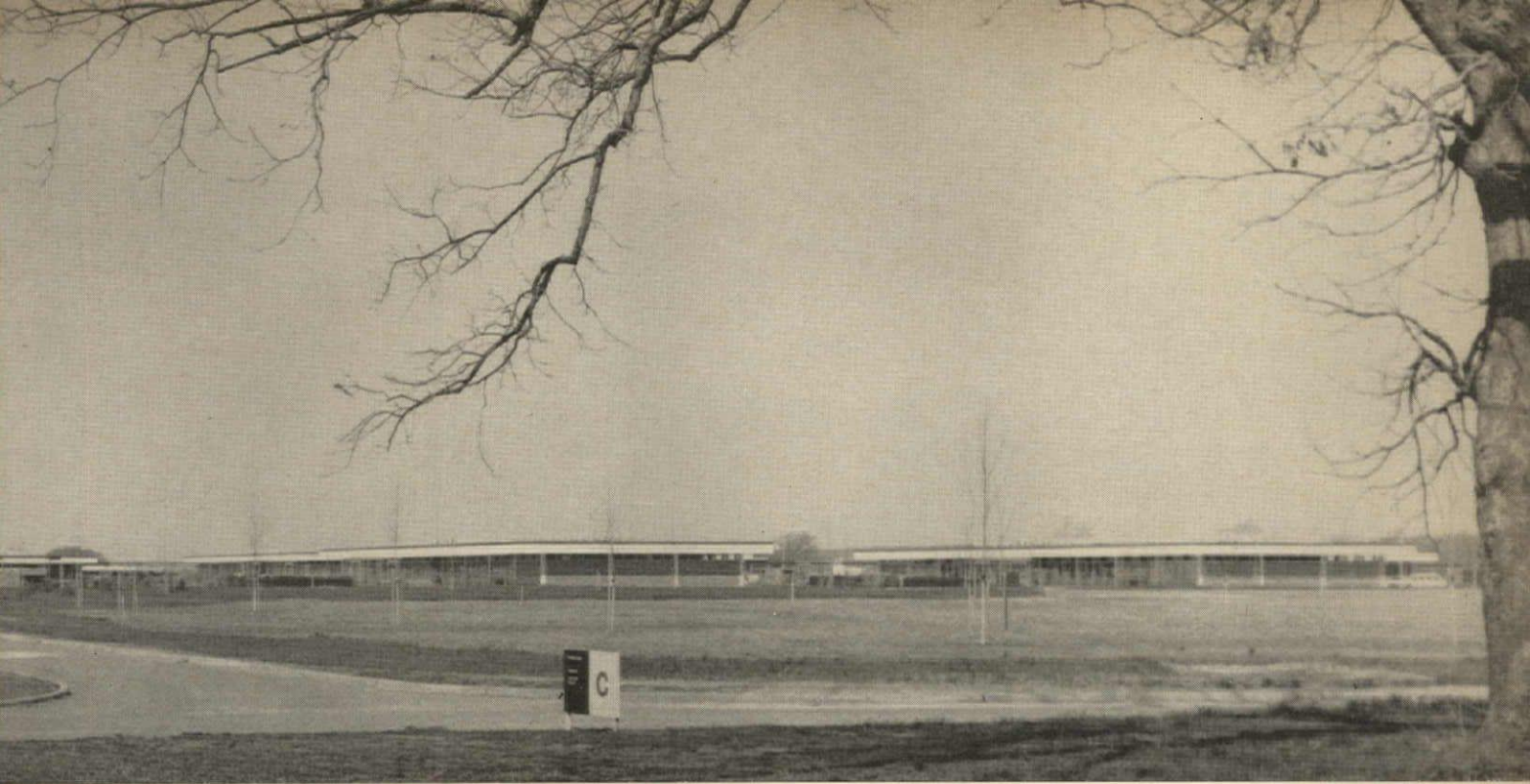
CIVIL ENGINEERS:

*Curry Engineering Company*

GENERAL CONTRACTORS:

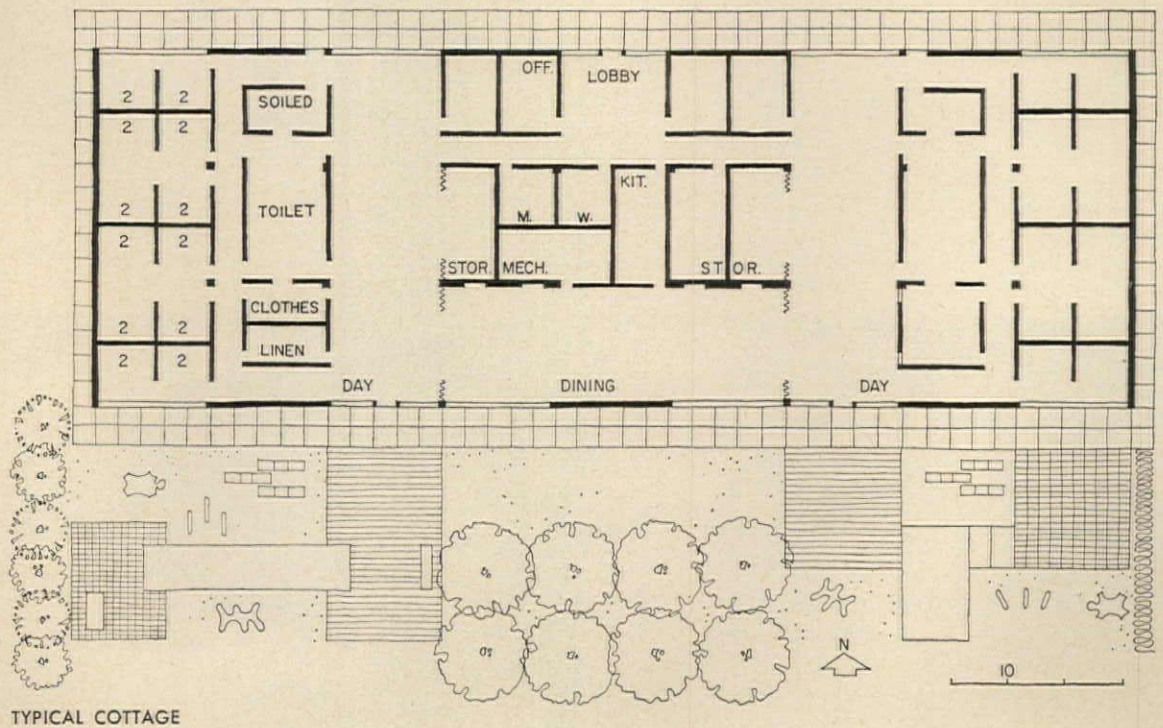
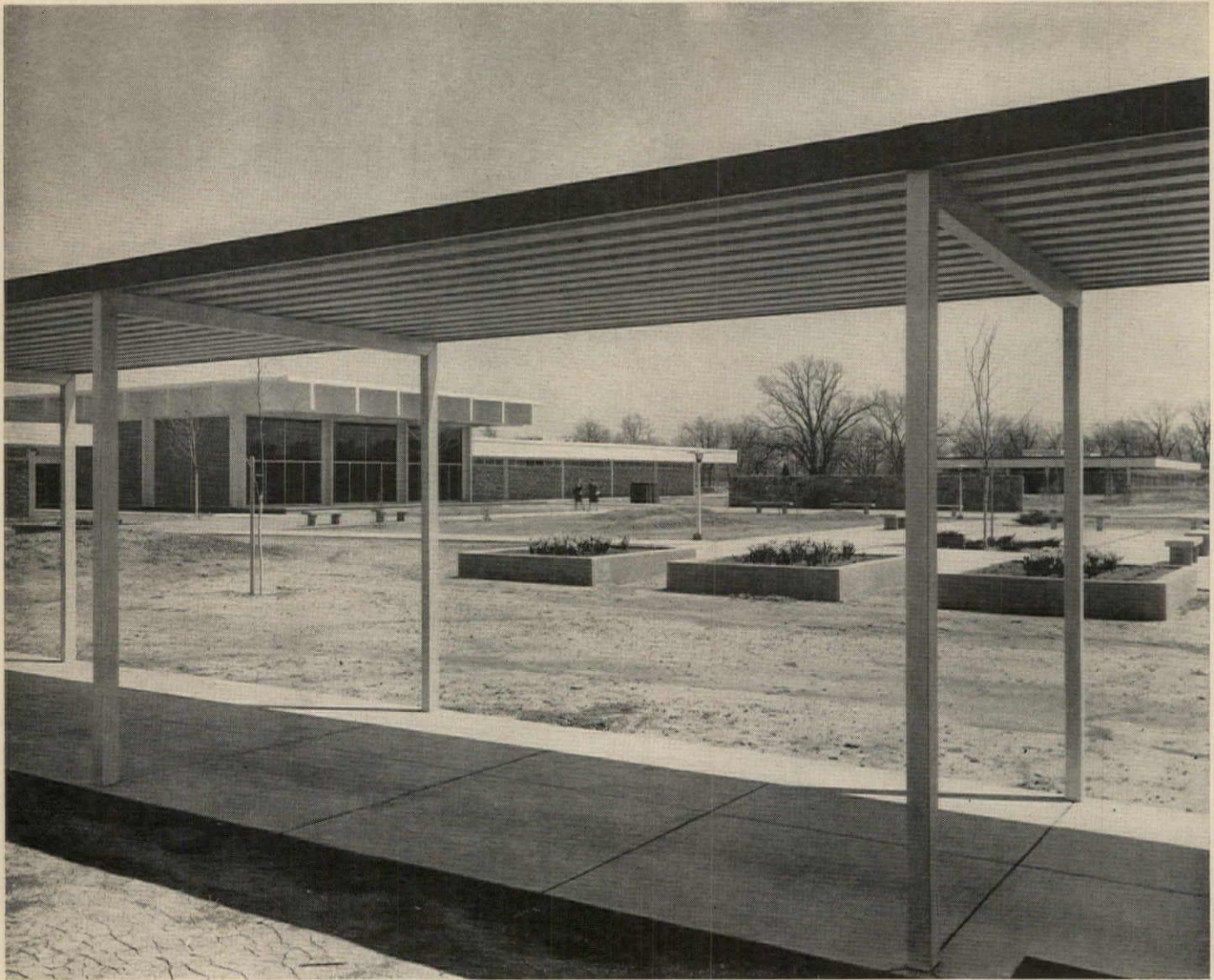
*W. R. Grimshaw Construction  
Company*





Ben Newby





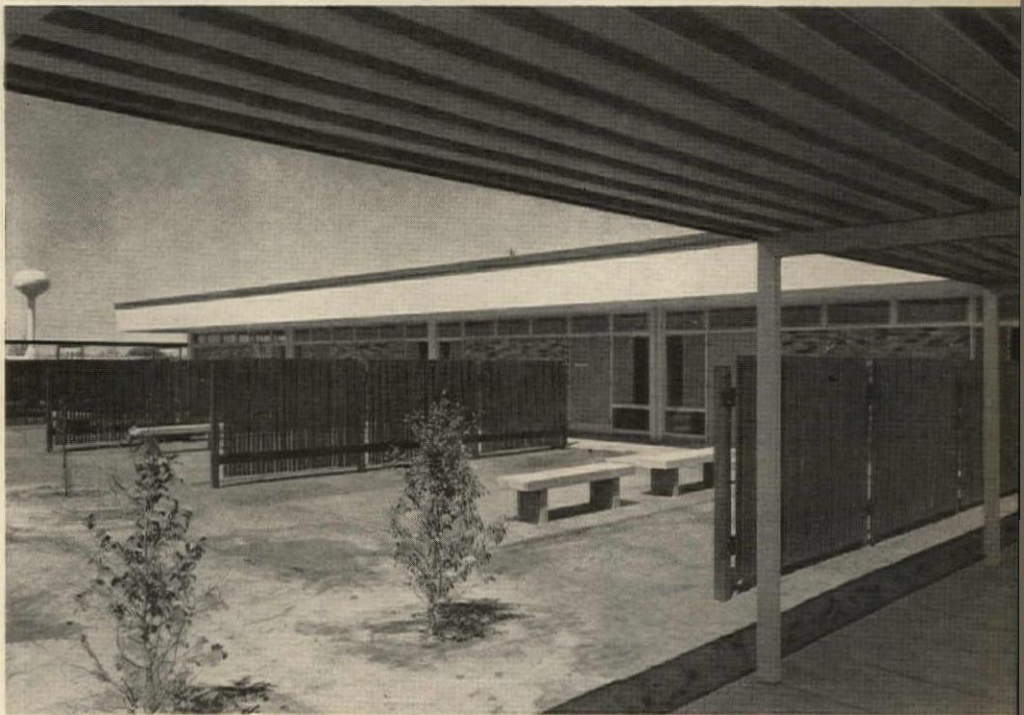
TYPICAL COTTAGE



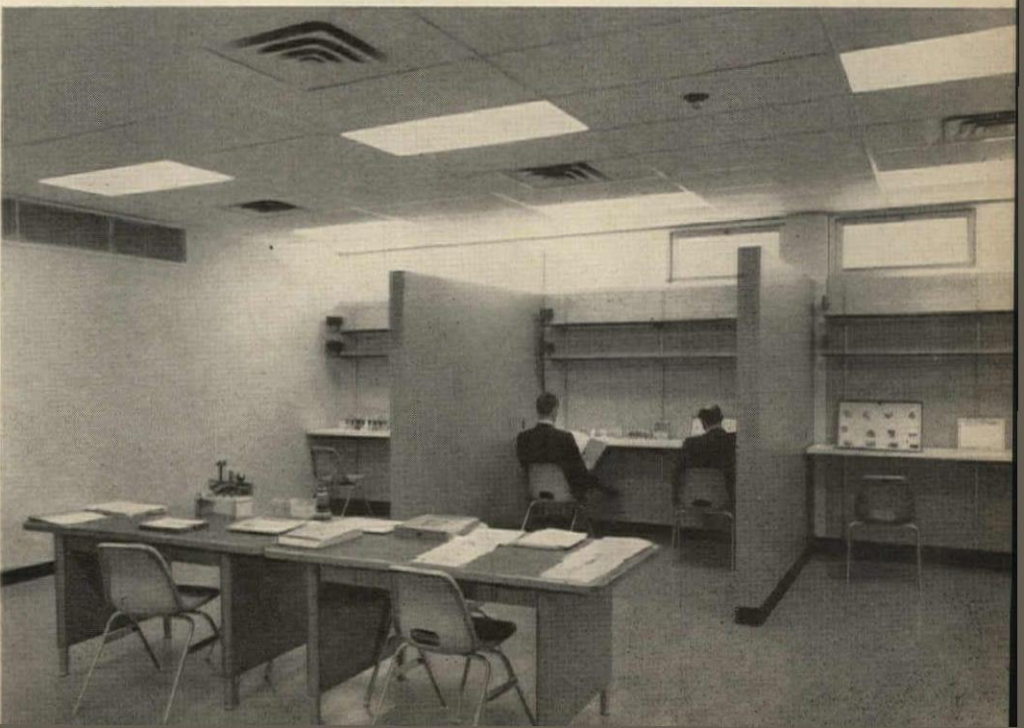
First stage of construction provides the basic staff-clinic building, hospital, kitchen, nine cottages, staff quarters, play shelters and utility building totaling about 173,000 square feet at a building cost of about \$5 million to which development and landscaping will add another \$1.5 million. A second and third stage of construction will bring the total project cost to about \$11 million



Unity and spaciousness of aspect with opportunities for separation of activities indoors and out



Testing area (right) in administration-clinic building will help evaluate patients' capabilities and progress in response to training and treatment







1. Aldersly Danish Home, San Rafael, California; owner: Aldersly Danish Home Foundation; associated architect: Peter Rounds

## DIVERSE PROGRAMS FOR THREE NURSING HOMES

Three nursing homes from the office of Rex Whitaker Allen and Associates demonstrate the wide variety of programing requirements confronting designers of facilities for the aging. The post-retirement Aldersly Danish Home places its emphasis on a stimulating environment for ambulatory residents, preserving the feeling of independence and personal responsibility as long as possible and providing unobtrusive facilities for long-term care of semi-ambulatory and nursing home patients. The Lawton House is a convalescent hospital for 75 patients designed to achieve a maximum in supervision and efficient operation. The Mercy Nursing Home is a long-term facility for 100 patients with some emphasis on rehabilitation and a community-oriented arrangement of chapel and reception area.

### *Three Nursing Homes*

#### ARCHITECTS:

*Rex Whitaker Allen & Associates  
Louis E. Gelwicks, partner in charge*

#### STRUCTURAL ENGINEERS:

*Gilbert, Forsberg, Diekmann & Schmid*

#### MECHANICAL ENGINEERS:

*Kasin, Guttman & Associates*

#### ELECTRICAL ENGINEER:

*Mel Camisa*







2. Lawton House, San Francisco, California; owner: American Convalescent Hospitals, Inc.

*Gerald Ratte photos*

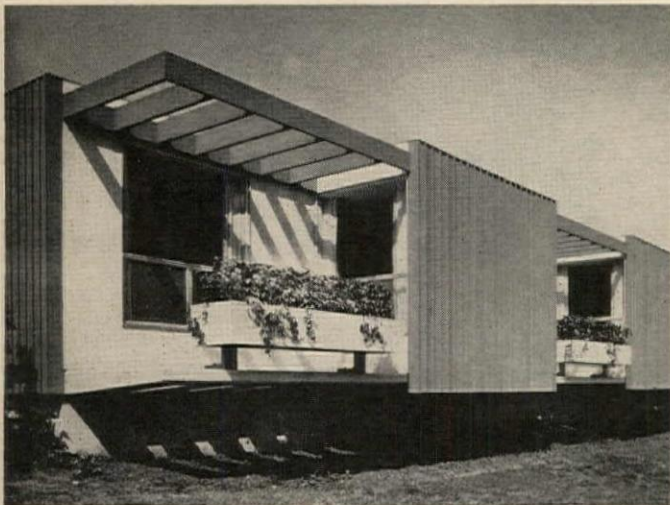
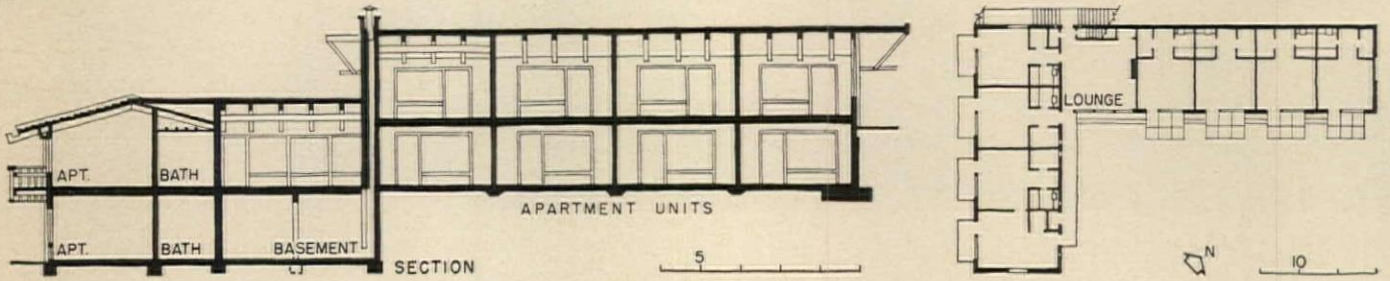


3. Mercy Nursing Home, Sacramento, California; owner: Sisters of Mercy

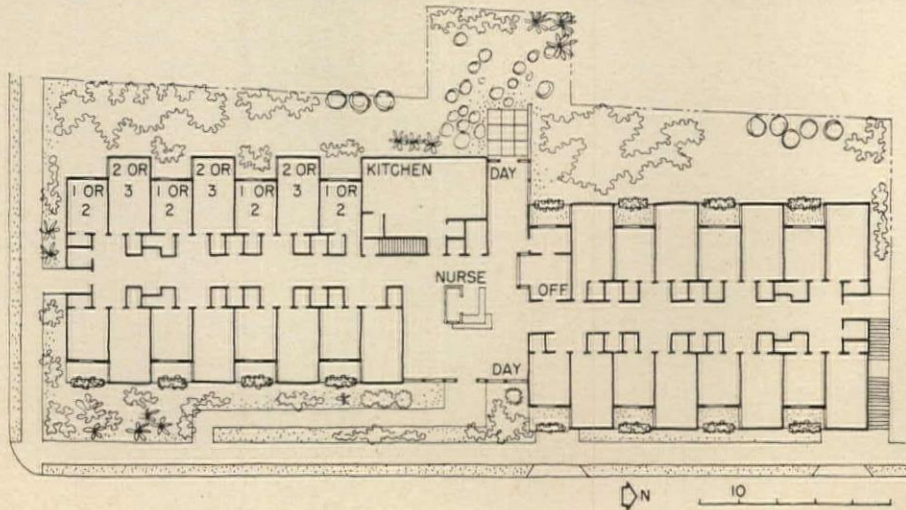




1



2





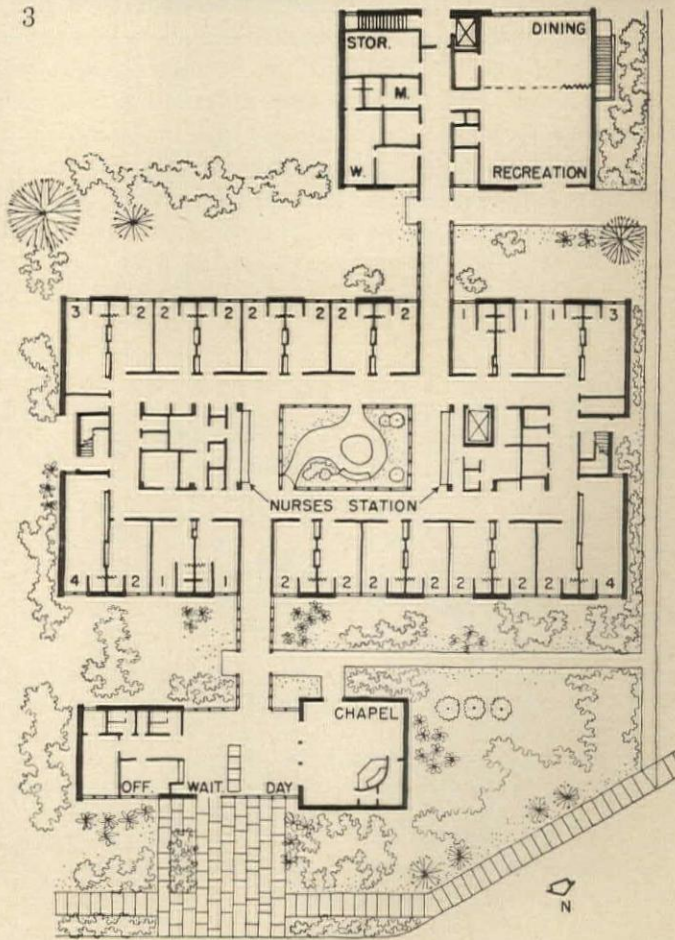
1 Master plan of the Aldersly Danish Home, designed with Peter Rounds as Associate Architects, is arranged in a series of interlocking gardens. Advantage is taken of a sloping site to provide each apartment for ambulatory residents with direct ground-level access. Thus, a feeling of independent living is encouraged while eliminating the cost and institutional atmosphere of interior corridors. Covered paths lead from each unit to the central dining hall. Quarters for semi-ambulatory residents and nursing home patients adjoin the dining and recreation buildings and are provided with sitting areas between pairs of rooms. Spacious gardens are arranged for sitting, walking and outdoor activities. Each group of eight also has access to a common lounge equipped with a small kitchen. Apartments are designed as studio rooms with private bath, wardrobe and closet. Each has a private patio or balcony. The bathrooms have supplementary heaters and emergency call buttons



2 The Lawton House is a convalescent hospital which seeks to avoid the institutional character. The corridor with controlling double nurses' station has been offset to increase its apparent length and is provided with a series of sky-lit bays which provide natural light for patients through both windows and doors of their rooms. Recreation and sitting areas are placed near the main entrance and nurses' station. This gives ambulatory patients a choice of view of an active area at the front of the building or a quiet area off the rear garden. The nurses' station is treated with redwood and planters to avoid the overly aseptic aspect of hospital nurses' stations. The patients' floor is elevated over utility spaces to provide a better view of city street activity and to make full utilization of high-cost urban land



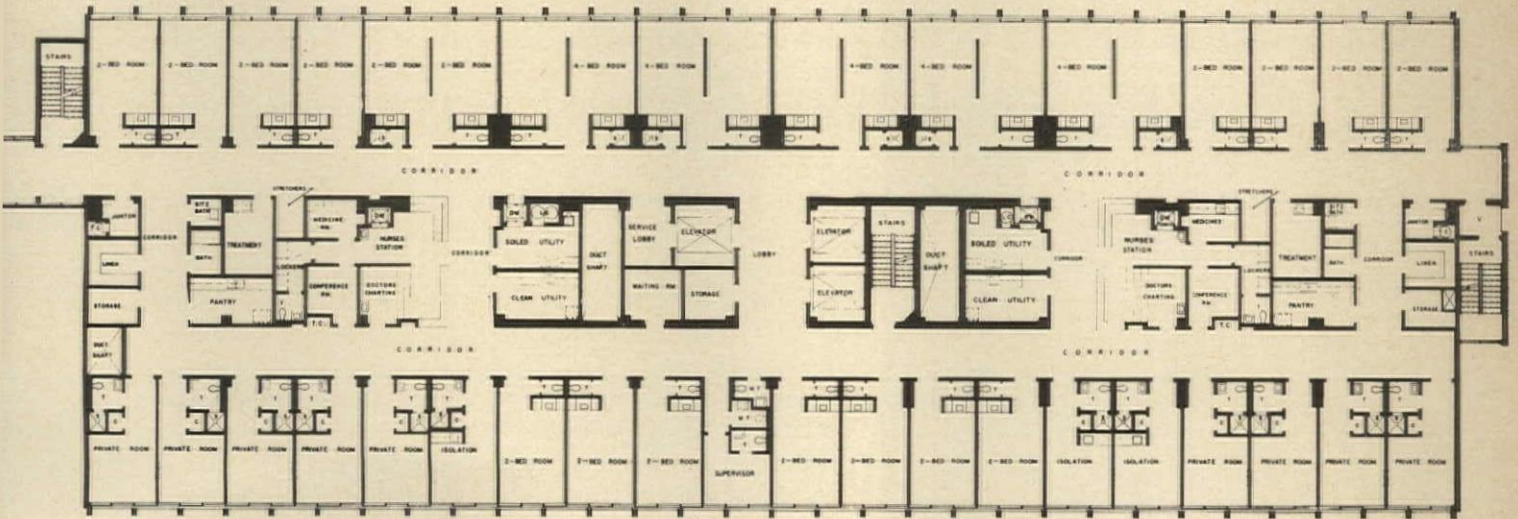
3 Mercy Nursing Home has day-room, offices and a chapel established as a separate unit near the street and connected by a glazed passage to a double-corridor central nursing unit and by a second glazed passage to a dining, recreation and utility building at the rear of the plot. Patient rooms in the nursing building are arranged around a central court so that most patients have garden views on both exterior windows and doors. Two nurses' stations face each end of the court, providing visual control over all corridors. Warm-tone, textured jumbo brick is the prevailing material for the exterior and is also carried inside in the chapel and dining-recreation rooms



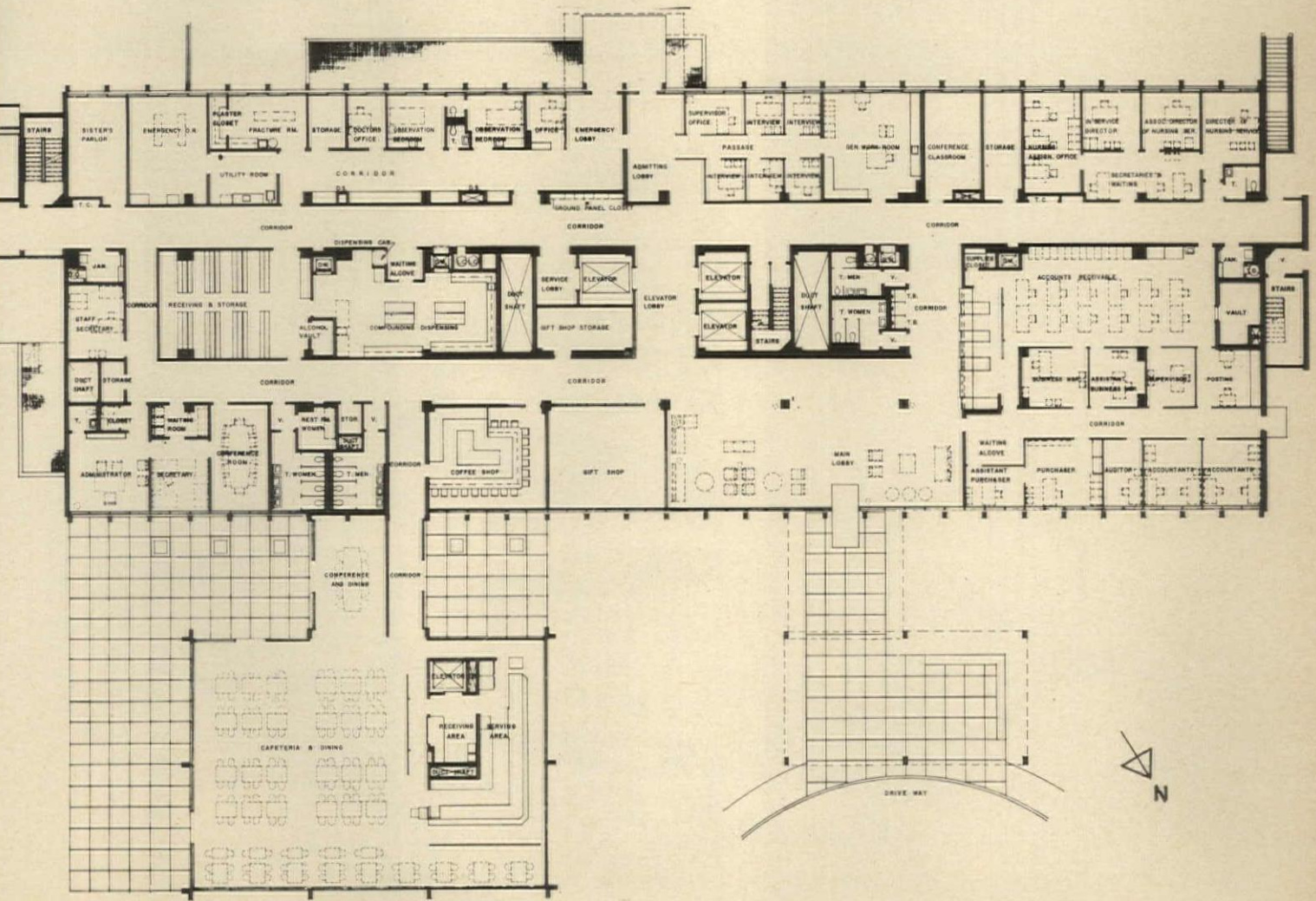








TYPICAL NURSING FLOOR



MAIN FLOOR

10





*continued from page 170*

shop and coffee shop adjoin it. Also included on the first floor are hospital administration, business office, admitting, nursing service office, pharmacy, and a large emergency department.

The second floor surgical suite includes eight major operating rooms; one of which is designated for open heart surgery. To provide a close working relationship with surgery, 14 intensive nursing care beds, cardiocatheter facilities and an intensive treatment center are on the same floor.

On the third, fourth, and sixth floors are six medical and surgical nursing units, two to a floor, with a total of 198 beds. Two maternity nursing units including a total of 44 beds are on the fifth floor, along with normal, premature, observation and suspect nurseries.

Opposite the main entrance of the previously existing five-story building is a new chapel of precast concrete panels in a folded plate design. Entrance to the chapel is through oak doors in a taverine marble end panel above which glass panels in steel frame complete the facade. Glass in sidefolds extend to ground level where a gravel pad is continued indoors. The interior will seat 108 persons in pews with extra space for wheelchair patients. Indirect lighting is from ground level around the periphery. Cost of the new wing and chapel is \$5.5 million.







Chester Freden

## AN EXPANSIBLE COMMUNITY HOSPITAL

*Community Memorial Hospital  
Winona, Minnesota*

OWNERS:

*Winona General Hospital  
Association*

ARCHITECTS-ENGINEERS:

*Schmidt, Garden & Erikson*

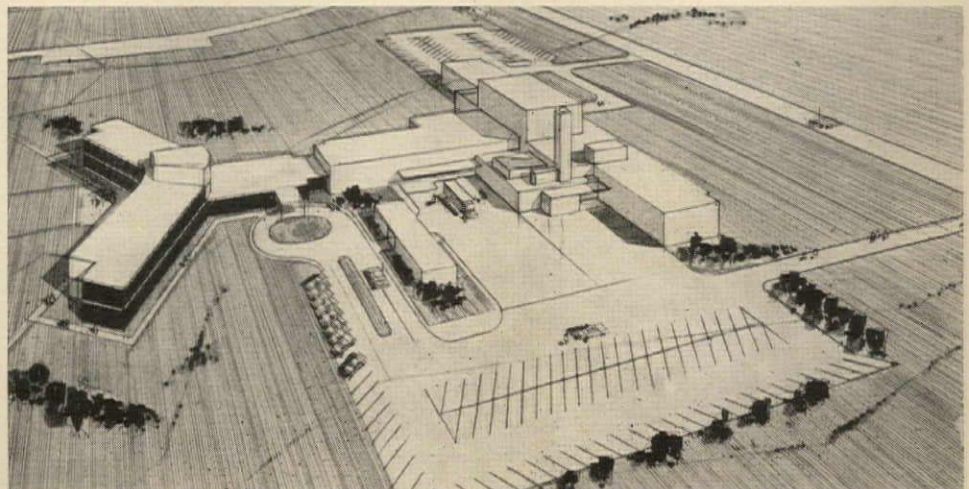
CONSULTANTS:

*Booz, Allen & Hamilton*

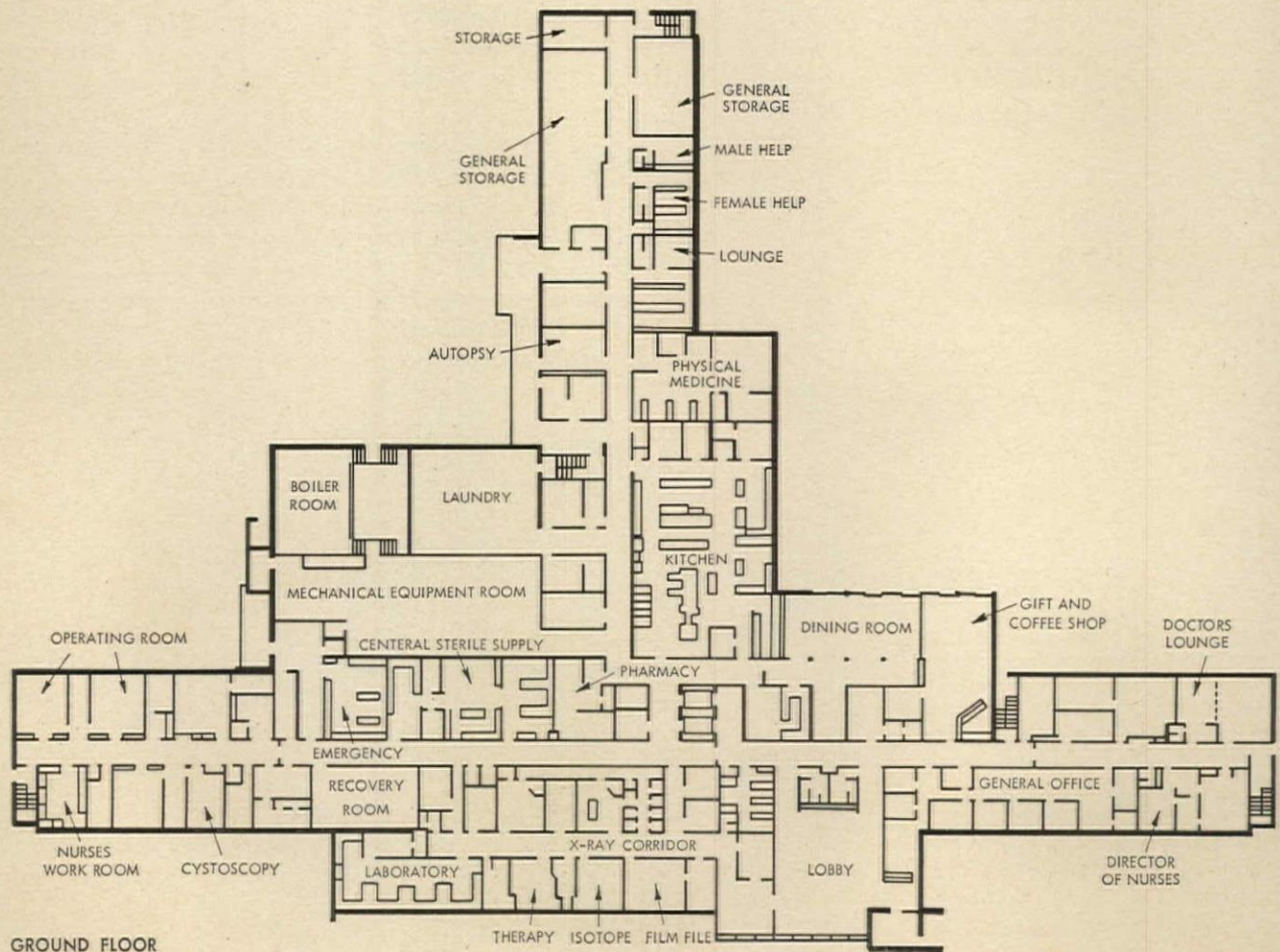
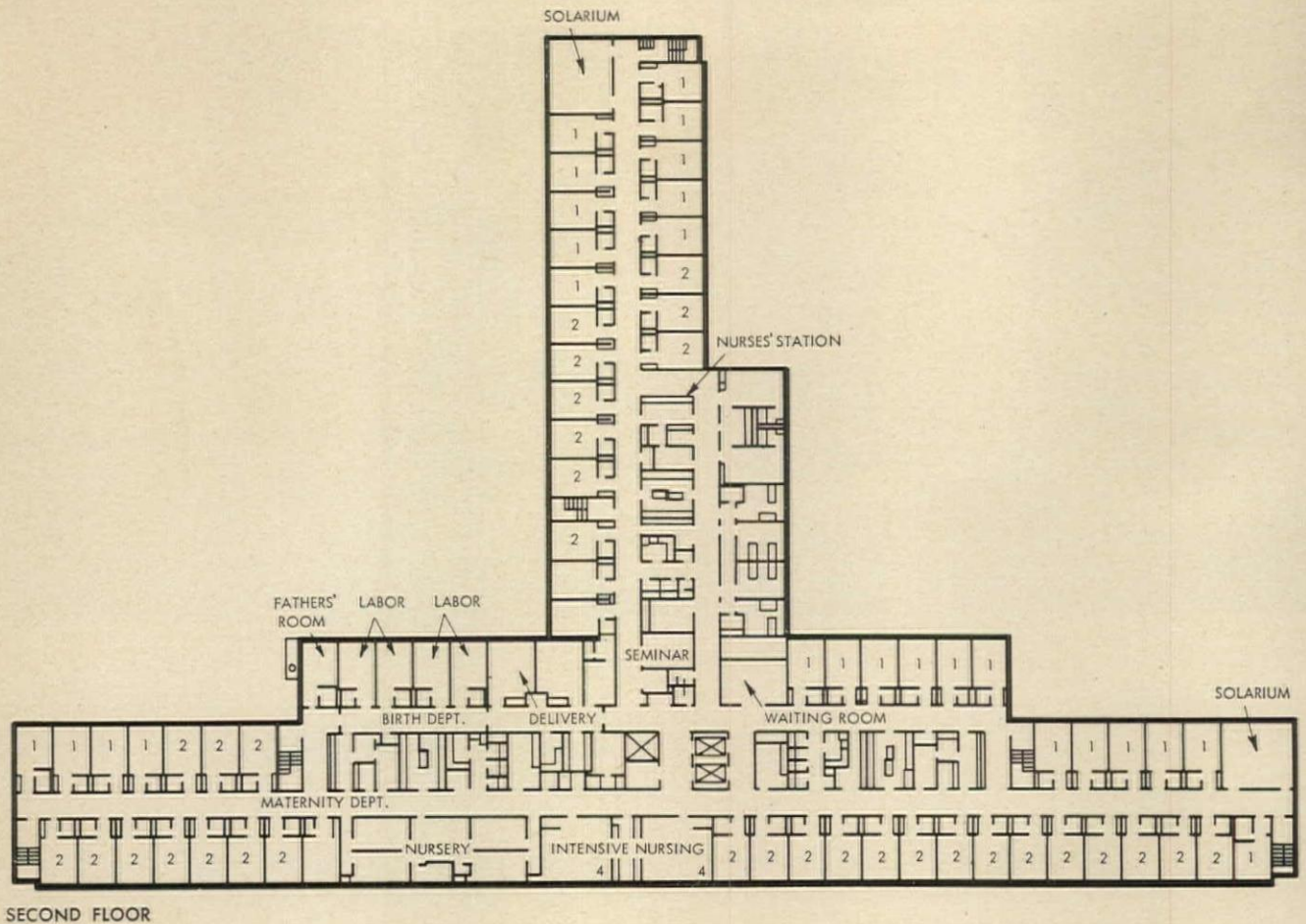
The first phase of construction of the Community Memorial Hospital comprises two floors with utility and cooling tower elevated to accommodate a third floor which will eventually double the acute bed capacity (and improve massing of the building). Ancillary and service facilities were designed to accommodate the eventual three-floor capacity. First phase provides a 114-bed, 28-bassinet general hospital for a city of 25,000, hub of a trade area of approximately 60,000 people. It offers full services in maternity (22 beds), surgical (50 beds) and medical care (42 beds).

Elevations are long and low, and addition of the third floor will mask the obtrusion of the tower-like cooling equipment penthouse. First floor windows are grouped in long horizontal aluminum frames which project 2 inches beyond the face brick. Second floor windows are individually framed in stone which also project 2 inches. Each window has a larger framing formed by square panels of brick separated by blue brick vertical stacks topped by blue terra cotta coping.

Owing to a soil problem of alluvial silt, the hospital was constructed without basement on piling foundation using light steel skeleton construction.









The first floor of the building houses offices, emergency and utility spaces. The second floor provides three separate nursing units in a T-shaped plan: a surgical, medical and obstetrical unit each assigned to one leg of the T



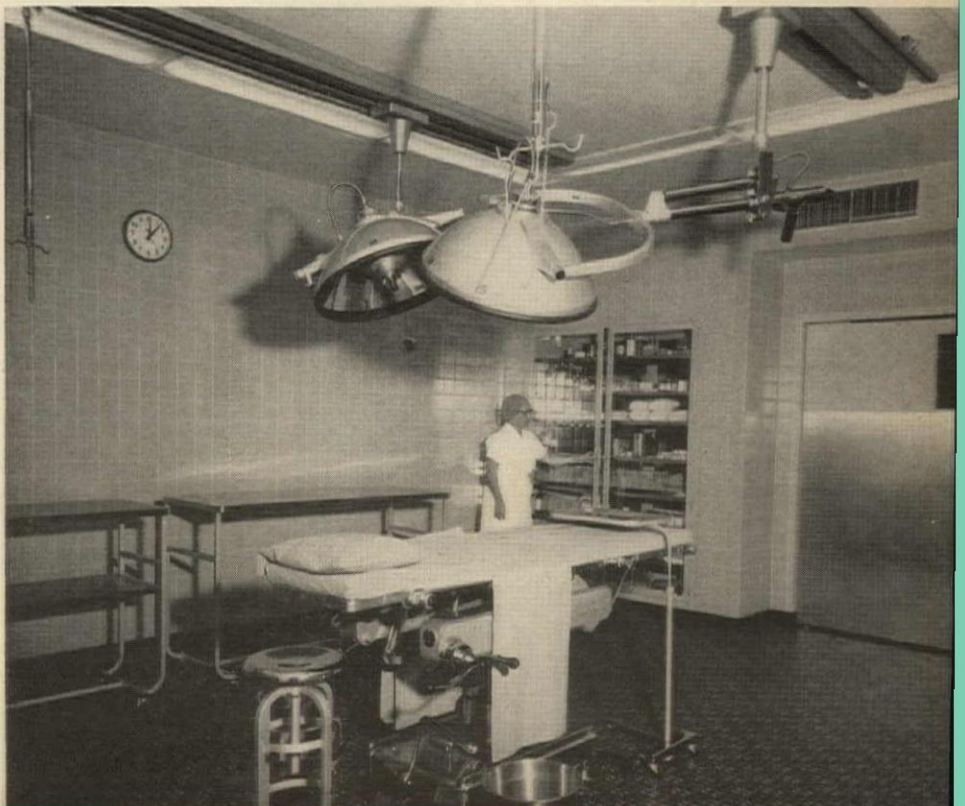
Administrator Earl W. Hagberg has been quoted as expressing his wish that maternity beds had been placed adjacent to medical or surgical beds to allow greater flexibility for a fluctuating census. This, and some expression of regret that the emergency room with its limited load might better have been located near the switchboard where the nursing supervisor could have better surveillance from her office in evening and night hours, were the only negative notes in a long enthusiastic comment by Mr. Hagberg.

Separation of main traffic lines to emergency, out-patient and other services is well accomplished in spite of rather long horizontal distances from the two central elevators to surgery or to central storage



The building is located on 18.6 acres of former park property at the east end of lake Winona. This provides pleasant views from all rooms especially from solariums and day-rooms provided in each of the medical and surgical nursing units.

A four-room nursery permits the use of one room for premature infants and three rooms for a cohort system of rotating occupancy so that each room is vacant periodically for complete sterilization







## A THREE-LEVEL REHABILITATION CENTER

The Ben R. Meyer Rehabilitation Center is an addition to the Cedars of Lebanon hospital group comprising general medical, surgical, pediatric and clinical services.

Land restrictions enforced a three-level solution in which hydro-therapy, mechanical and storage spaces occupy the basement; reception area, offices and treatment areas are on the first floor; library, vocational training and social services are on the third floor. The building is designed to accommodate two additional floors which would be used for rehabilitation beds. Resident patients now occupy beds in the attached hospital building.

The pool area includes special agitator baths, and the visual limitations of its basement location are offset by a large photo mural and a skylight panel of fluorescent lights directly over the pool. Exercise rooms and occupational therapy areas on the first and second floor have a uniform pattern of ceiling eye-bolts to provide flexibility for all types of supporting trapezes. A one-way mirror between the library-conference room and pre-vocational training area on the second floor is used in the hospital's teaching program. An audio testing suite on the second floor is a completely floating unit set on isolation springs with surrounding sound-barrier partitions.

The clinic handles both in-patient and out-patient services and offers complete programs in corrective therapy, vocational guidance, psycho-social treatment and medical-social services.

*Ben R. Meyer Rehabilitation Center  
Los Angeles, California*

OWNER:

*Cedars of Lebanon Medical Center*

ARCHITECTS:

*Faxon, Gruys & Saylor*

ELECTRICAL ENGINEERS:

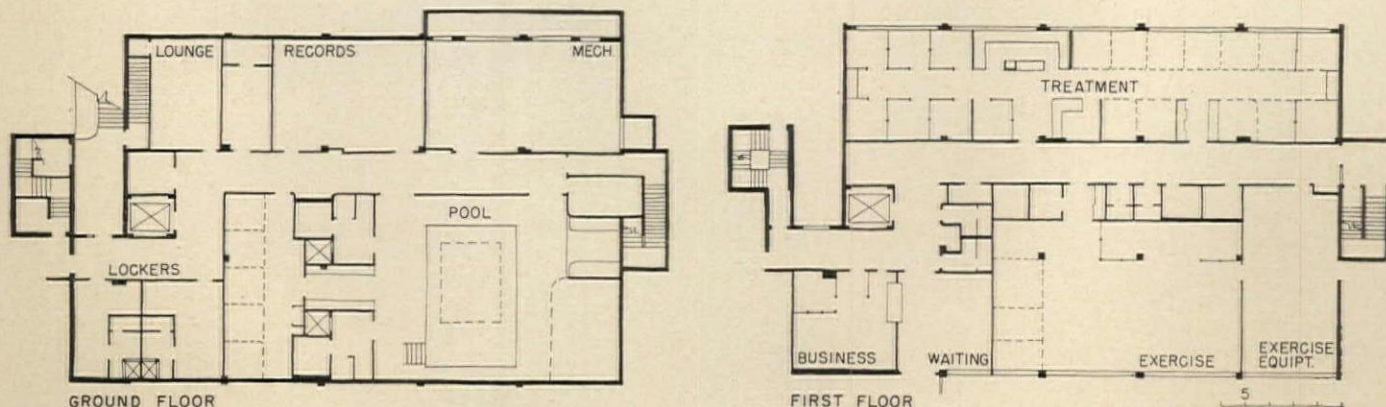
*John E. Silver & Associates*

MECHANICAL ENGINEERS:

*Levine & McCann*

GENERAL CONTRACTOR:

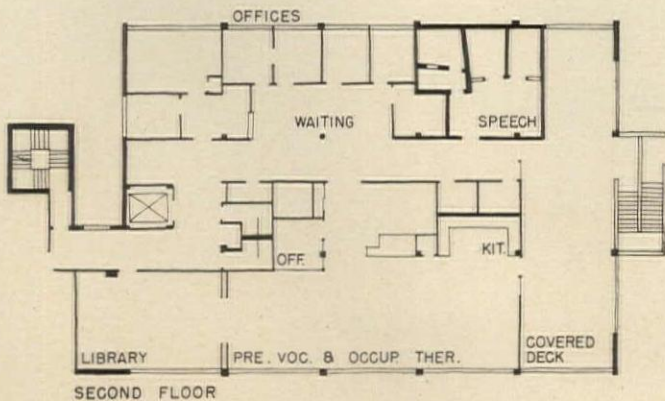
*Myers Brothers*







Rehabilitation equipment needs plenty of space and sound structural planning. New devices include traction equipment and agitators in the therapy pool, heated sand beds, hot pack equipment, quadriceps table (right), etc. Training equipment includes a standard home kitchen modified only for wheelchair operation



Julius Shulman photos





## A PRIVATE GERIATRICS HOSPITAL

This is a 97-bed, privately owned hospital specializing in acute and sub-acute geriatric medical cases as well as convalescent and rehabilitation patients. Ancillary services include laboratory, X-ray, physical therapy and out-patient departments. With the addition of surgery and obstetrical suites the building would contain all the facilities of a general hospital.

All patient rooms are sized for double occupancy with the exception of four single rooms for intensive care. Rooms are arranged around the perimeter of the building and around two inner courts creating a modified double corridor plan. End zones of the rectangular building contain offices, reception and out-patient areas in one end and kitchen, dining and utility spaces in the other. Two nursing stations are centrally located, each overlooking recreation or visiting rooms and the corridors on either side of the courts.

Interior finishes are gypsum board walls and ceilings with vinyl wainscot in the corridors. Floors are vinyl asbestos except for quarry tile in the lobby and carpeting in the lounges. Exterior materials include red wood siding and framing with red wood shakes on the high roofs. Walls are a stained olive green and posts and beams are dark brown.

*Terra Linda Valley Hospital  
Marin County, California*

ARCHITECTS:

*Del Campo and Clark*

STRUCTURAL ENGINEERS:

*Gilbert, Forsberg Diekmann,  
Schmidt*

CIVIL ENGINEER:

*Carlos E. Gonzales*

MECHANICAL AND

ELECTRICAL ENGINEERS:

*G. L. Gendler and Associates*

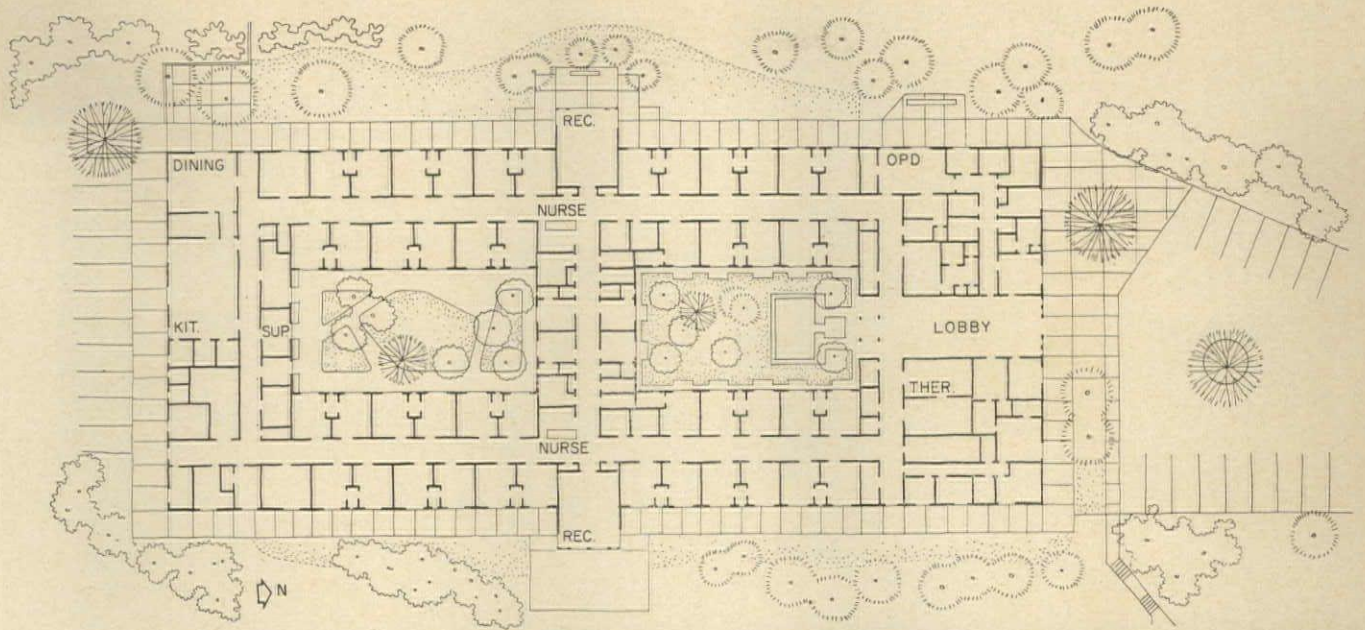
LANDSCAPE ARCHITECTS:

*Lawrence Halprin and Associates*



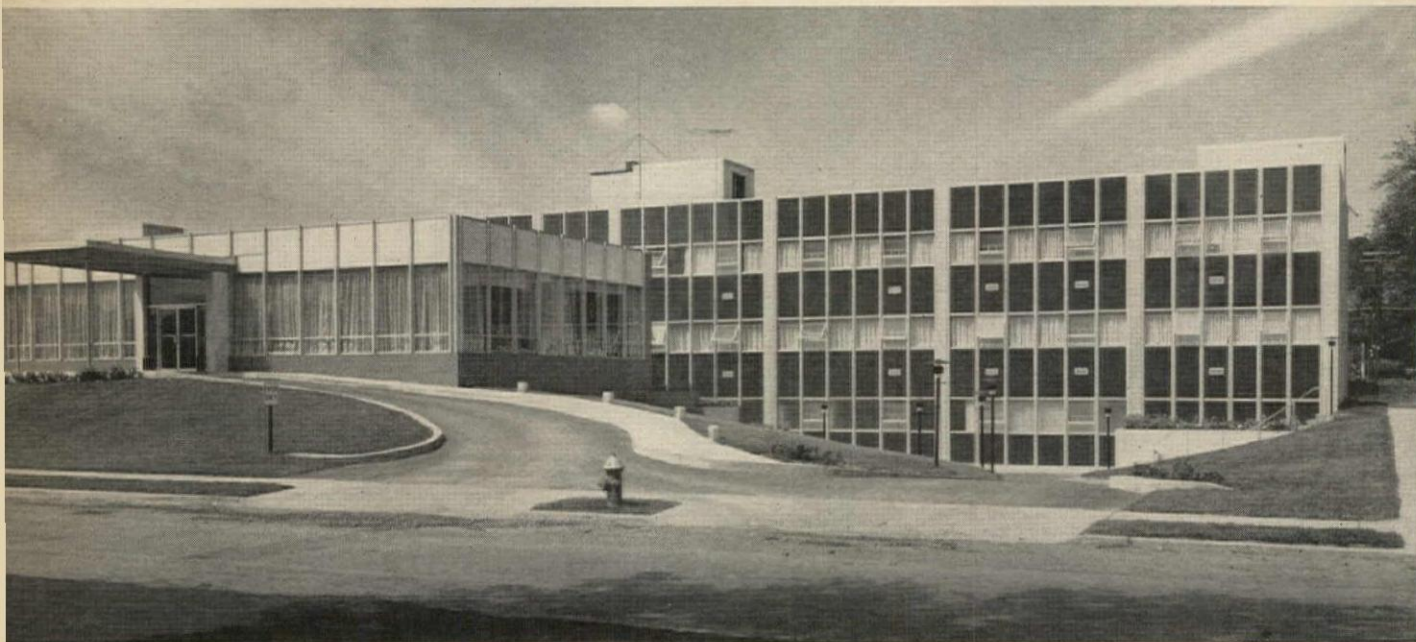
Karl H. Risk photos





Truss roof construction is carried through the entrance lobby and recreation rooms. Lobby opens directly onto one of the courtyards where lighted fountains and plantings extend the outside view



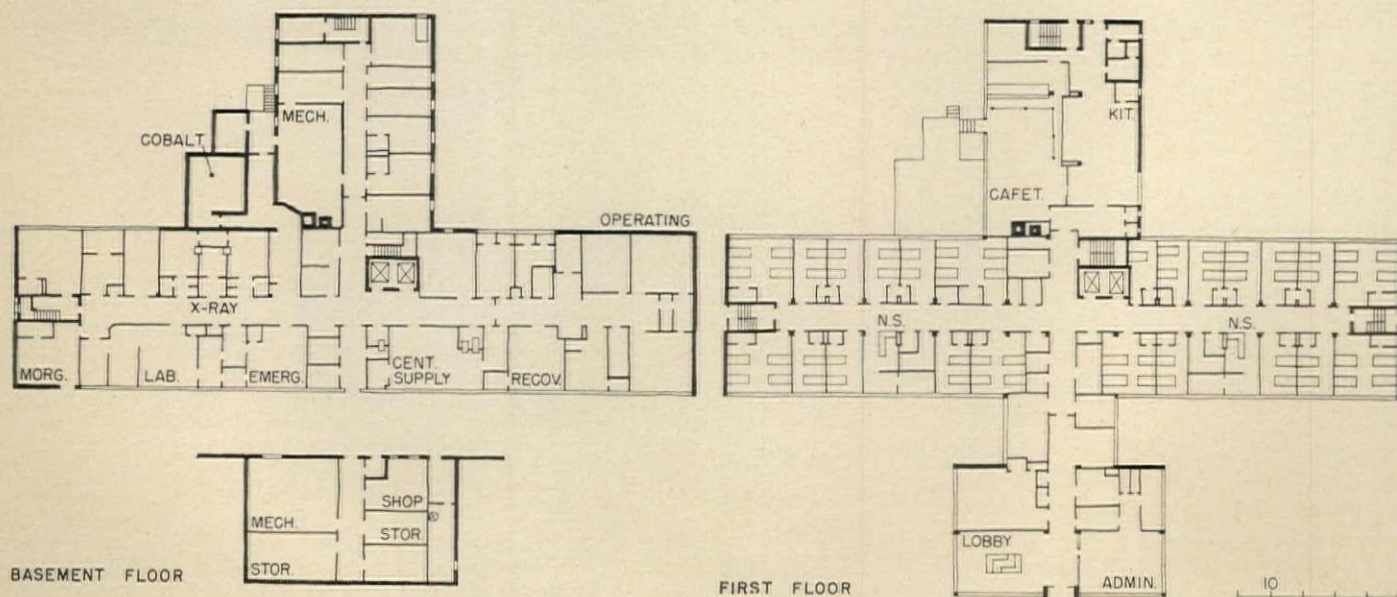


Gottscho Schlesinger, Inc.

## A SPLIT-LEVEL COMPACT FOR ECONOMY

Improvement of efficiency and reduction of construction and maintenance costs by planned reduction of travel distance were the objectives in the "split level" design of this 116-bed hospital. By taking advantage of site contours, two levels of access are provided. A driveway to the basement ambulance and morgue entrances curves under a bridge formed by a first floor administration and lobby level. A second drive approaches the main entrance at this upper level. By concentrating treatment and diagnostic departments at the front of the lower level taking advantage of natural light, while X-ray and operating rooms are at the rear, the architect was able to provide short vertical transport to nursing floors above. The liberal (if not excessive) use of double and four-bed rooms cut the gross area per bed to 365 square feet and the construction cost to \$10,300 per bed. Total area of the hospital is 42,580 square feet, fully air-conditioned.

*Doctors Hospital  
Staten Island, New York*  
OWNER:  
*Concord Enterprises of S. I. Inc.*  
ARCHITECT:  
*Victor Bohm*  
ENGINEER:  
*John C. Carlisle*  
GENERAL CONTRACTOR:  
*Krauss Construction Company*





# Architectural Engineering

## Man-Made Earthquakes

Man-made "earthquakes" applied to two high-rise buildings now under construction at the University of California, San Francisco Medical Center, are providing new information on the resistance behavior of steel-framed buildings to lateral loads. The structures are being systematically subjected to artificial vibrations generated by two specially designed mechanical vibration generators.

The buildings are being tested at various stages of construction to obtain data on the damping characteristics of different structural elements, such as moment resistant frames, floor slabs, wall partitions and curtain walls. The 15-story Health Sciences Instruction building and the 16-story Research Unit I building at the Medical Center are both square and measure 107 ft on a side. A common free-standing elevator tower, approximately 30 by 30 ft, stands between and serves both buildings, and both buildings have a free-standing mechanical service tower measuring 20 by 36 ft (all towers are 230 ft high). Each of these five, free-standing structures will be shaken separately for test purposes. The main buildings are supported by just 12 steel columns placed inside peripheral cantilevered corridors. Long-span steel framing spans 93 ft between the columns providing an unobstructed interior.

The vibration machine consists of two pie-shaped "cages," or rotors, which produce a centrifugal force as a result of the rotation. The two rotors are mounted on a common shaft, but rotate in opposite directions. When they are lined up on one axis, both rotors exert a centrifugal force in the same direction applying a lateral load to the structure.

The Medical Center was designed by Reid and Tarics, architects-engineers of San Francisco.

## Criteria for Cast-in-Place Concrete

Criteria for workable and economical dimensional tolerance limits for cast-in-place concrete have been developed by a task force of the Federal Construction Council to help avoid legal snarls regarding the acceptability of cast-in-place concrete work which does not coincide with contract requirements. The task group conducted interviews and field inspections to determine current methods used to describe standards of concrete construction and the actual results. Also, they analyzed concrete work specifications and field inspection procedures. The task group recommended that in Federal agency construction dimensional variations be permitted, but also be explicitly stated in contract documents according to a given set of criteria. The report, "Dimensional Tolerances for Cast-in-Place Concrete," is available from the Printing and Publishing Office, National Academy of Sciences, Washington, D.C., 20418 for \$2.00.

## Plastic Piping for Relocatable Houses

Over 1,000 relocatable houses were built for dependents' housing on military bases in 1964, using PVC drain, waste and vent piping made from rigid vinyl plastic, according to a report from B. F. Goodrich. The house was designed with hinges in the floor, ceiling and end walls, enabling it to be folded into a compact, complete unit for shipping.

Built in their expanded condition on factory assembly lines, the houses were nearly complete before being shipped. At the site the units were placed on individual pier-type foundations and unfolded. The drainage, waste and vent system had to have permanent joints, be light in weight, and, in order to fulfill production schedules, had to be made of a material which could be pre-assembled and handled as a complete plumbing tree. The entire in-plant assembly and installation of the DWV system for a house with one and a half baths is reported to have taken about 40 minutes. The only work left to do at the site was to install the building drain line which ran from the plumbing tree to the sewer line.

## This Month's AE Section

*HIGH-RISE APARTMENT STRUCTURES OF MASONRY*, page 182. *AIR CONDITIONING MATCHES LABORATORY LOADS*, page 188. *BUILDING COMPONENTS: Time-Rated Acoustical Ceiling Assemblies*, page 197. *Products*, page 199. *Literature*, page 200.



# HIGH-RISE APARTMENT STRUCTURES OF MASONRY

By R. M. Gensert, Consulting Engineer

The use of wall-bearing masonry in low-rise buildings has been accepted on its economic merits for hundreds of years. Only recently has attention been focused on its use in so-called high-rise buildings. (Presumably, high-rise means anything over four stories.)

Up to 12 stories and a height-to-width ratio of less than 2 to 1, steel or concrete skeletons are stressed more from vertical loads than horizontal loads. Since masonry can carry

horizontal as well as vertical loads, it seems reasonable that the masonry might double for both structure and the vertical infill.

The largest cost item of a high-rise masonry structure will be the masonry itself. Factors affecting the economic picture include the strength of brick, hollow concrete block, solid concrete block, strength of mortar, and thickness of walls and piers. The use of reinforced masonry should be limited for economic rea-

sons to basement walls and retaining walls, where heavy earth pressures are encountered. Reinforced masonry walls in the superstructure would tend to slow down the construction. However, a reinforced masonry wall would be a logical solution to the problem created by building codes when the thickness of an unreinforced wall is governed by height of building and not by stresses or unbraced lengths. (Examples are given on pages 186 and 187)

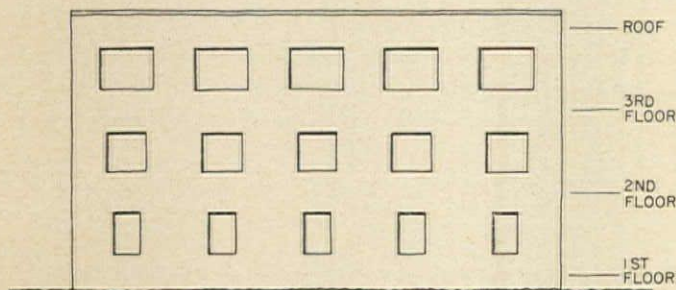


Figure 1: Proper placement of openings

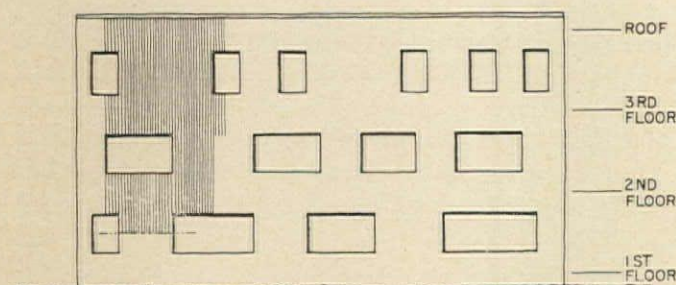


Figure 2: Improper placement of openings

**THE BEARING WALL.** Although mortar provides a bond between adjacent units, it does not produce a monolithic mass in itself. For this reason, the bonding or knitting of units by overlapping becomes very important to the strength of the wall. When slabs and beams bear on the inside edge of a wall, local stresses are not necessarily uniform across the width of the wall. It then becomes desirable to continue the knitting of masonry in a transverse direction (headering) as well as the longitudinal direction (lapped bonding). The use of metal ties between various wythes of a wall may not be enough.

Bearing stresses will increase with height of building and span of floors. Bearing stresses are also directly related to the size of openings in the wall. To avoid compounding bearing stresses from successive wall openings, it is important to place openings directly above those in stories below, Figure 1. In Figure 2, the lower left pier receives a disproportionate load from upper levels. It is possible that the design of this pier could penalize the entire first story, since it is

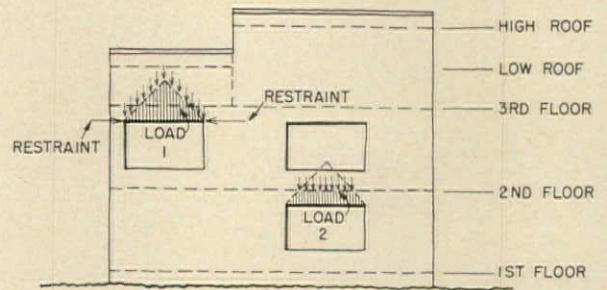


Figure 3: Load distribution of lintels

preferable to change wall thicknesses or masonry composition by stories rather than by piers.

Lintels over openings in masonry bearing walls can be critically loaded depending upon the relationship of opening to floor level above and to the confinement of masonry at point of bearing of lintel. Figure 3 illustrates the usual triangular load of wall on a lintel when the masonry is uninterrupted, thus allowing arching of masonry over the openings. The lintel is designed for the triangular weight of masonry only. Each arch creates a thrust at the spring line, and so a restraining force must be developed to maintain stability of the arch. If the opening is too close to the end of the wall as in Case 1, the shear stress across the masonry pier to the left may be too much for the masonry. Should this be the case, the opening need not be moved, but the lintel should be designed for the full weight of wall and roof above it.

Opening 2 illustrates the effect of a floor load and wall opening just above a lintel. In this case the triangular loading diagram is interrupted by the opening in the second story, and the arch action is destroyed. This lintel should be designed for the full floor load and the entire weight of masonry just above it.

Horizontal chases in bearing or shear walls greatly reduce the strength. Vertical chases, however, when properly located will not impair the strength of a wall.

The allowable stresses to be used in the design of a bearing wall or shear wall depend on the type of masonry unit, the type of mortar and the thickness of the wall. Besides these variables, there is also the possibility of varying the cross sections of hollow concrete block units. The table next page may be used as a guide for the design of walls. All designations are those of ASTM.

*continued on page 183*



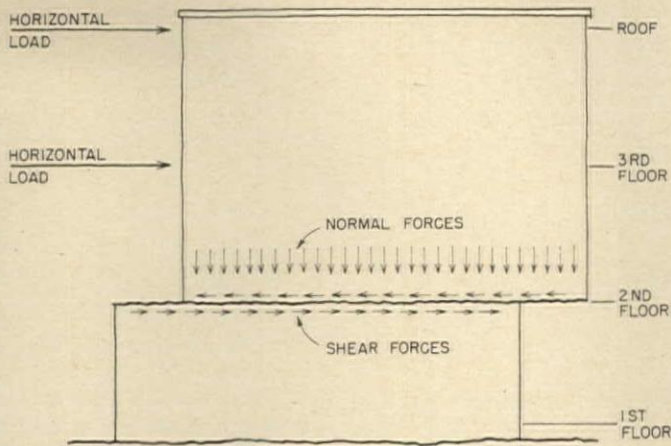


Figure 4: Shearing action

In addition, the table indicates minimum requirements for masonry walls according to the American Standard Building Code Requirements for Masonry.

**THE SHEAR WALL.** Shearing resistance of the mortar is critical. Shear resistance of walls can be increased by increasing the cross sectional area, or by increasing the internal friction with a higher normal force; i.e., the dead load acting in the wall, Figure 4.

Tensile stresses from the flexural action of the wall in its own plane should be avoided. The principle of keeping the resultant force within the middle third of the wall is a design criteria. By so doing, tension stresses on the windward side

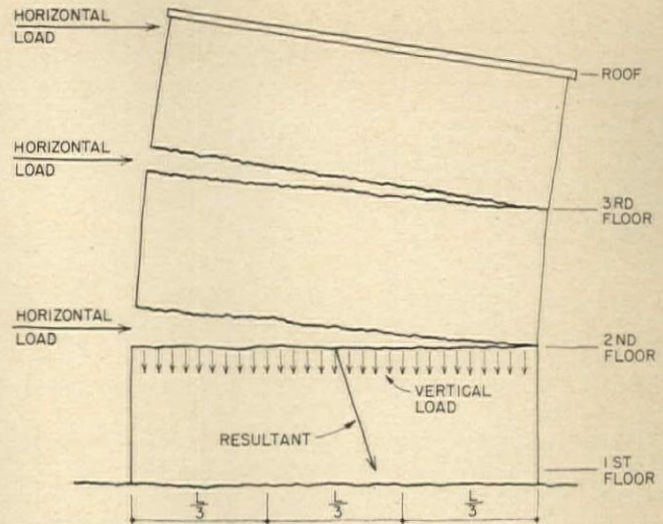


Figure 5: Bending action

of a shear wall will not occur, Figure 5. At times the engineer is hard pressed to eliminate tension in the wall. Walls running perpendicular to the shear wall could be included as a flange to increase the moment of inertia of the wall and thus reduce the tensile stresses. The effective flange on either side of the shear wall should be limited to three times the thickness of the wall, and the walls must be bonded to each other at their intersections.

The overturning moment of the entire building is countered by the resisting moment. Various building codes require a factor of safety between 1.5 and 2.0. Since the resisting moment is developed only in the shear walls, their spacing and the dead load they sustain becomes critical.

**DESIGN COMPRESSIVE STRESSES FOR MASONRY WALLS**

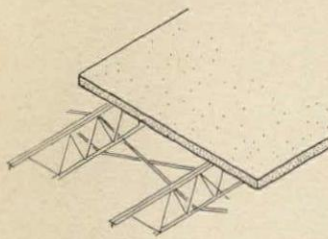
Mortar							Allowable Compressive Strength in Masonry in psi									
Type	Prior to 1954	Portland Cement (Parts by Volume)	Masonry Cement (Parts by Volume)	Hydrated Lime or Lime Putty (Parts by Volume)	Aggregate, Damp Loose Condition (Parts by Volume)	Average Compressive Strength at 28 days	Type	Grouted, Brick Masonry Units		Solid Brick Masonry Units		Solid Concrete Masonry Units		Hollow Concrete Masonry Units	Cavity Walls Brick and Hollow Concrete Masonry Units	Piers of Hollow Units, Cellular Spaces filled with Concrete or Type M or Type S Mortar
M	A-1	1 1	1 (Type II)	1/4	Not less than 2 1/4 and not more than 3 times the sum of the volume of the cement and lime used	2,500 psi	M	8,000+ 4,500-8,000 2,500-4,500 1,500-2,500	500 350 275 225	8,000+ 4,500-8,000 2,500-4,500 1,500-2,500	400 250 175 125	Grade A 175 Grade B 125	85	Grade A 140 Grade B 100 Hollow 70	105	
S	A-2	1/2 1	1 (Type II)	over 1/4 to 1/2		1,800 psi	S	8,000+ 4,500-8,000 2,500-4,500 1,500-2,500	400 275 215 175	8,000+ 4,500-8,000 2,500-4,500 1,500-2,500	350 225 160 115	Grade A 160 Grade B 115	75	Grade A 130 Grade B 90 Hollow 60	95	
N	B	1	1 (Type I or Type II)	over 1/2 to 1 1/4		750 psi	N	8,000+ 4,500-8,000 2,500-4,500 1,500-2,500	300 200 155 125	8,000+ 4,500-8,000 2,500-4,500 1,500-2,500	300 200 140 100	Grade A 140 Grade B 100	70	Grade A 110 Grade B 80 Hollow 55	90	
O	C	1	1 (Type I or Type II)	over 1 1/4 to 2 1/2		350 psi	O			8,000+ 4,500-8,000 2,500-4,500 1,500-2,500	200 150 110 75	Grade A 100 Grade B 75				
K	D	1		over 2 1/2 to 4		75 psi	K			8,000+ 4,500-8,000 2,500-4,500 1,500-2,500	100 100 75 50					

Type M and S Mortars: Reinforced masonry, masonry below grade and in contact with earth, and cavity walls  
 Type N Mortar: Exposed masonry above grade  
 Type O and K Mortars: Non-bearing walls only

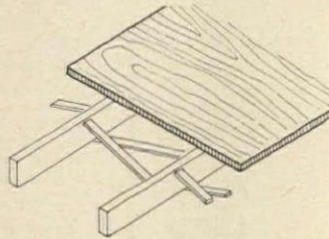


**FLOOR SYSTEMS.** Proper selection of the structural floor system depends on load carrying capacity, ability to accommodate openings and cantilevers, deflection resistance, sound

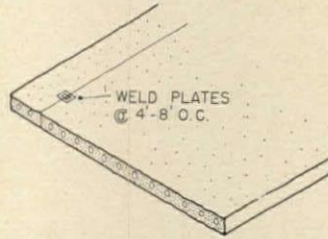
transmission, diaphragm action and cost. Figure 6 (*directly below*) shows four types common to wall bearing construction:



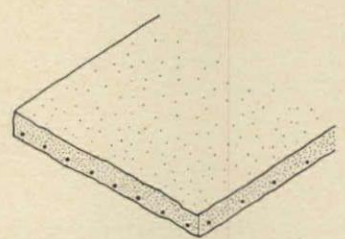
**TYPE A** Steel joists and 2½-in. concrete deck  
15- to 25-ft simple spans  
Cantilevers feasible for roof overhangs but not for balconies



**TYPE B** Wood joists and plywood deck  
10- to 20-ft simple or double spans  
Cantilevers feasible for roof overhangs and for small balconies in one direction



**TYPE C** Precast concrete panel  
15- to 30-ft simple or multiple spans  
Cantilevers feasible for roof and balcony overhangs in one direction



**TYPE D** Cast-in-place concrete slab  
10- to 20-ft multiple spans  
Cantilevers feasible for roof and balcony overhangs in two directions

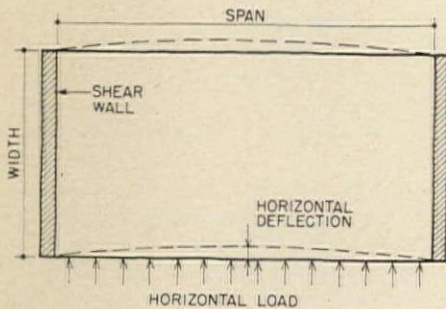


Figure 7: Span-to-width ratios of floor diaphragms

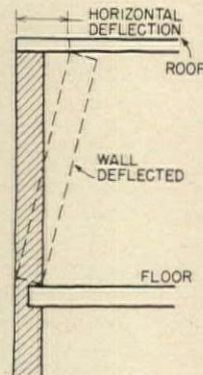


Figure 8: Secondary wall stresses

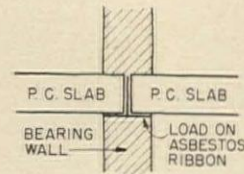


Figure 9: Bearing pads

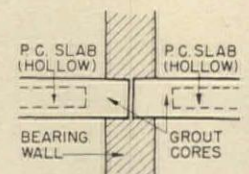


Figure 10: Grouted cores

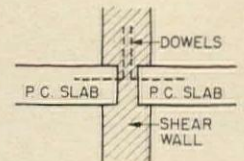


Figure 11: Slab anchored to shear wall

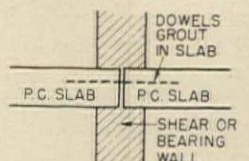


Figure 12: Slab continuous across wall

**INTERACTION OF FLOORS AND WALLS.** Floors transmit horizontal forces to shear walls which may or may not be bearing walls. Spacing of shear walls depends upon the diaphragm action of the floors, connection of floors to walls, and the dead load in the shear wall that keeps it from tipping over or coming apart from the overturning moment of the horizontal forces.

Since the shear resistance of masonry walls is increased by the normal or vertical loads acting in the wall, their spacing and height of building will primarily depend upon the dead load of the floor construction. Thus, the employment of concrete floor slabs may become a necessity. It is obvious that a shear wall also acting as a bearing wall will develop a large resisting dead load moment, allowing for a tall and narrow building or a greater spacing between shear walls.

The table (*below*) represents a suggested maximum span-to-width ratio for proper diaphragm action of a floor, Figure 7:

Floor Construction	Span-to-width
Cast-in-place solid concrete slab	4:1
Precast concrete interconnected	3:1
Metal deck with concrete fill	3:1
Metal deck with no fill	2:1
Cast-in-place gypsum deck (roof)	3:1
Plywood deck	2:1
Precast composition tile and subpurlins (roof)	2:1

The above ratios are satisfactory for the proper horizontal transfer of load without over-deflecting masonry walls running parallel to the direction of span of the diaphragm. However, should the masonry walls have a large number of openings, their piers should be checked as cantilevers being dis-

placed by the deflection of the diaphragm, Figure 8.

A critical item regarding the interaction of bearing walls and large precast floor slabs lies at the point of bearing. Wide precast slabs require an extended mortar bed. It is virtually impossible to place the mortar bed and erect the slab before the mortar reaches its initial set. The preferred method is to place a slab without a bed. Since masonry may be uneven at the point of bearing there will be high concentrations of stress where it comes in contact with the slab, which will cause distress either in the slab or the wall. Asbestos or lead ribbons have been used with some success; however, their cost and installation must be carefully evaluated, Figure 9.

Hollow precast floor slabs in the lower floors of a building must transmit the stresses in the bearing wall above them to the wall below. It is possible that the stresses within the precast slab from beam action and the stresses from the weight of wall above will be too high when combined. To overcome this problem, it may be necessary to grout the hollow cores in the precast slabs at their ends, Figure 10.

The transfer of horizontal forces from the floor system into the shear walls should be carefully considered. It may be necessary to grout reinforcing dowels from the precast elements into the masonry, or it may be necessary to provide steel shear lugs on the precast elements embedded in the shear walls, Figure 11.

Certain configurations of shear and bearing walls may require tying the structure together over several spans. This may be accomplished by welding adjacent units together at their ends, or by grouting reinforcing bars into adjacent units, or by providing reinforcing in the topping continuous across the bearing point, Figure 12.



**ORIENTATION OF WALLS.** *Scheme A:* Long walls are bearing walls and serve as shear walls in longitudinal direction. Short walls at stairs and at each end of building as well as party walls (not shown) offer shear resistance to horizontal forces acting in the transverse direction of the building.

*Scheme B:* Transverse walls are bearing walls and serve as shear walls in the transverse direction. Walls surrounding stair towers and possible end wall returns must serve as stiffening elements in the longitudinal direction.

*Scheme C:* A random placement of bearing walls can offer a high shear resistance about both axes of a building. Use of a poured concrete slab avoids the need for beams and piers.

Since the primary action of this type of structure is that of shear resistance, the relative stiffness of one wall to another is not critical. What is critical, is the relative placement of one wall to another. Should the resultant of the acting horizontal forces be eccentric to the center of resistance, torsion will increase the shear stresses acting in the walls. The wall at the extreme right in Figure 14 will receive a higher shear than other walls in this plan.

Linear displacement from shrinkage of cast-in-place concrete slabs or thermal expansion of the roof deck may present problems that can be resolved with proper layout of walls. Consider the case where a return wall or a stair tower is placed at the end of the building. If the section of wall parallel to the linear displacement is too stiff, the wall may shear off, Figure 15.

As an alternative solution, end walls that do not return in a longitudinal direction will be flexible, Figure 16.

**INTERACTION OF FOUNDATIONS AND WALLS.** Spread footings under piers and strip footings under walls are economically desirable. Piles or caissons with grade beams supporting walls can be economical in some cases. Although concrete mats can be structurally adequate when designed as rigid elements, their cost may offset the advantages of masonry construction.

Where walls are not braced as is the case with the interior walls in Scheme B, Figure 13, rotation of the footing may produce an unstable condition. Settlement of the substrata becomes critical and may require something other than spread footings. If spread footings are used with this unbraced wall, it will be necessary to tie all floor units together in the longitudinal direction of the building.

When a number of openings occur in the bottom story of a masonry wall, and yet their spacing does not necessarily create piers (width to height ratio of  $\frac{1}{8}$  to  $\frac{1}{10}$ ), it may be desirable to continue a constant wall footing for the full length of the wall. The load in this case will not be uniform on the footing, thus introducing variable deflections. The depth of wall between the ground floor and the footing, which is usually 3 to 4 ft could be treated as a reinforced masonry beam in order to evenly distribute the wall load to the substrata.

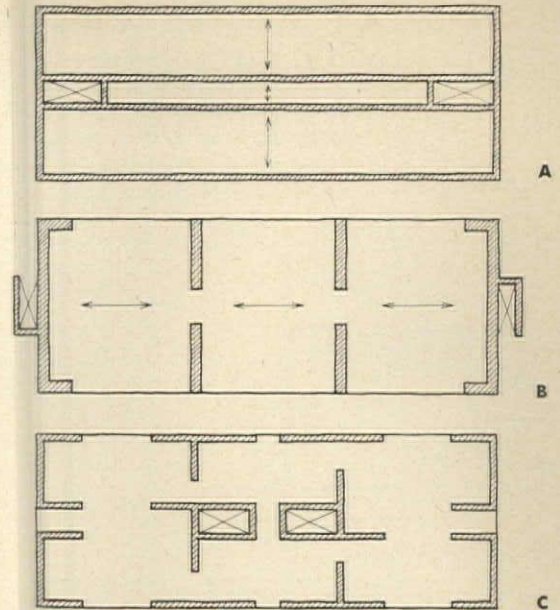


Figure 13: Orientation of walls

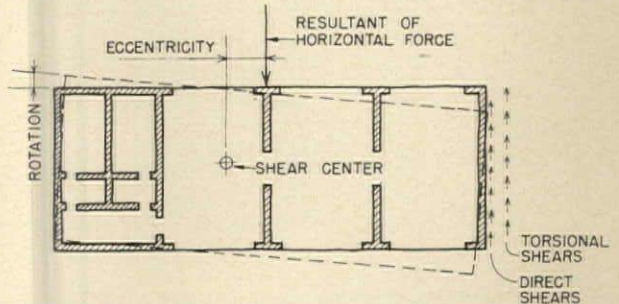


Figure 14: Torsional shears and shear walls

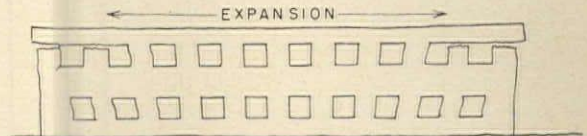


Figure 15: Shear distortions in walls from expansion of roof

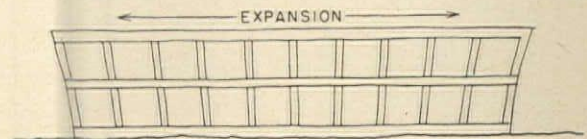


Figure 16: Bending distortions in walls from expansion of roof

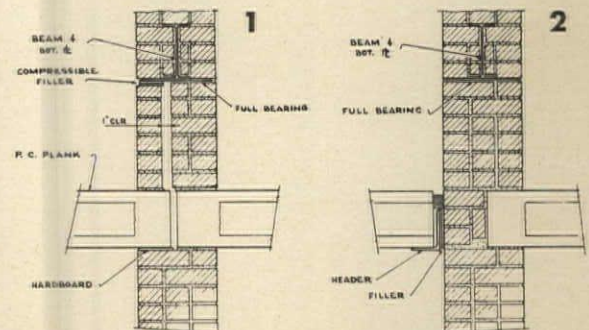
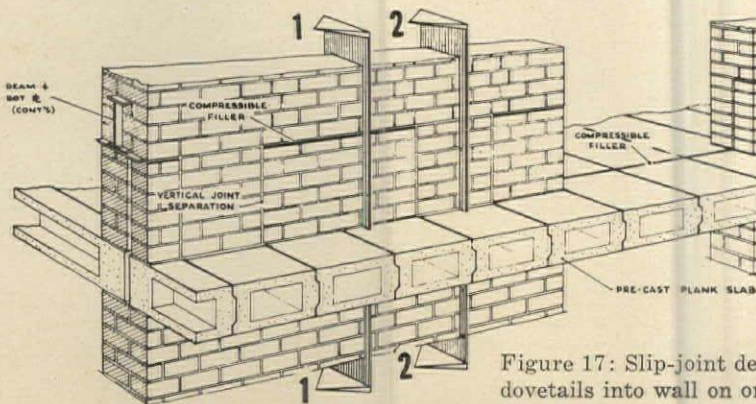


Figure 17: Slip-joint detail allows floor slab expansion. In Section 2, precast plank dovetails into wall on one side; on opposite side, header carries plank load to two adjacent planks detailed as in Section 1. In Section 2, dovetail is free to move because load of upper walls arches through solid section of wall



**REQUIRED WALL THICKNESSES FOR VARIOUS HEIGHTS.** Drawings on the following two pages show how thick masonry walls need to be and the maximum allowable spacing of lateral supports. Values are based on American Standard Building Code Requirements for Masonry (National Bureau of Standards Miscellaneous Publication 211) and Building Code Requirements for Reinforced Masonry (National Bureau of Standards Handbook 74). The center drawing in Figure 18 shows, for example, that un-reinforced masonry bearing walls braced at 12-ft intervals may be 12 in. thick for the top six stories of a 12-story building and 16 in. thick for the lower six stories

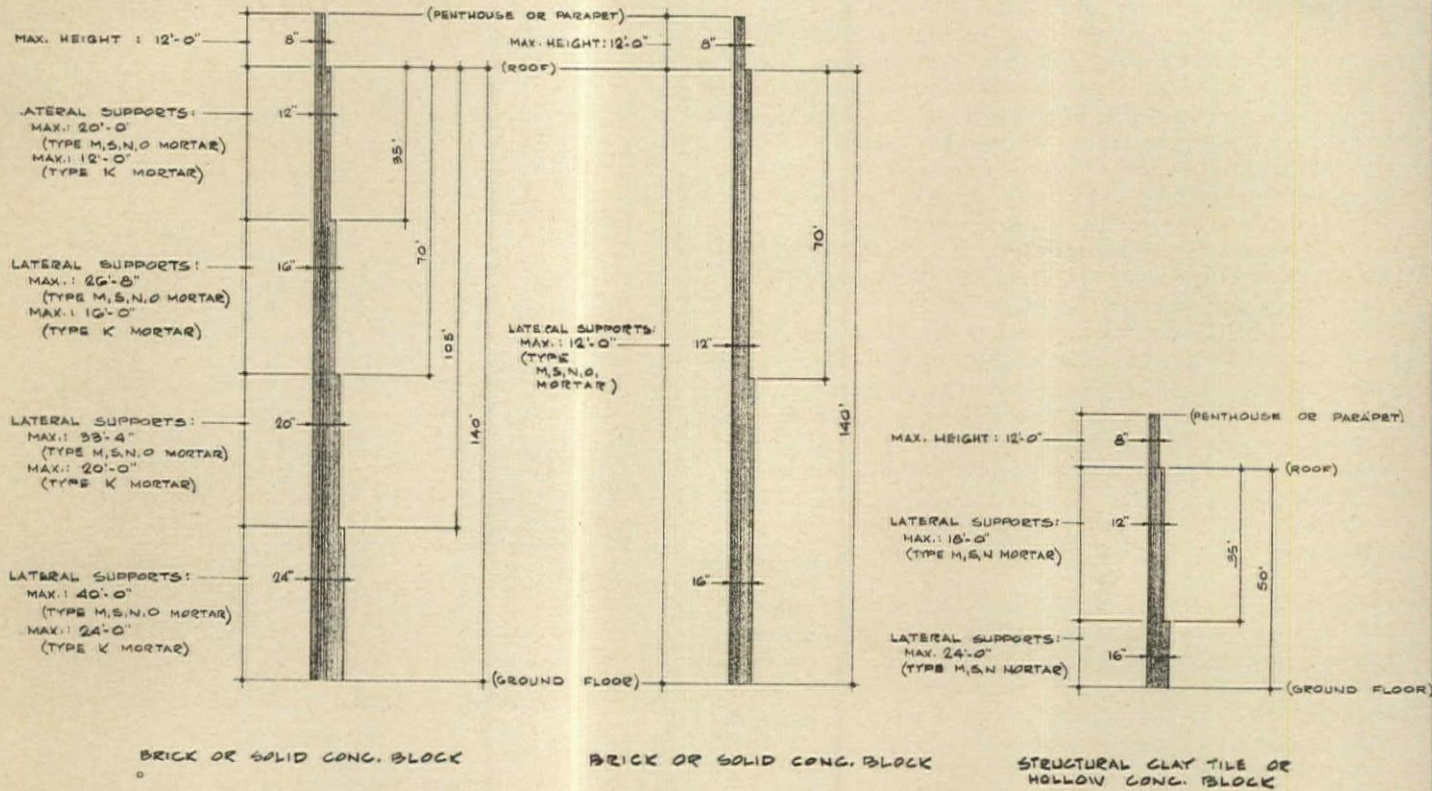


Figure 18: Un-reinforced bearing walls: wall thickness and bracing requirements

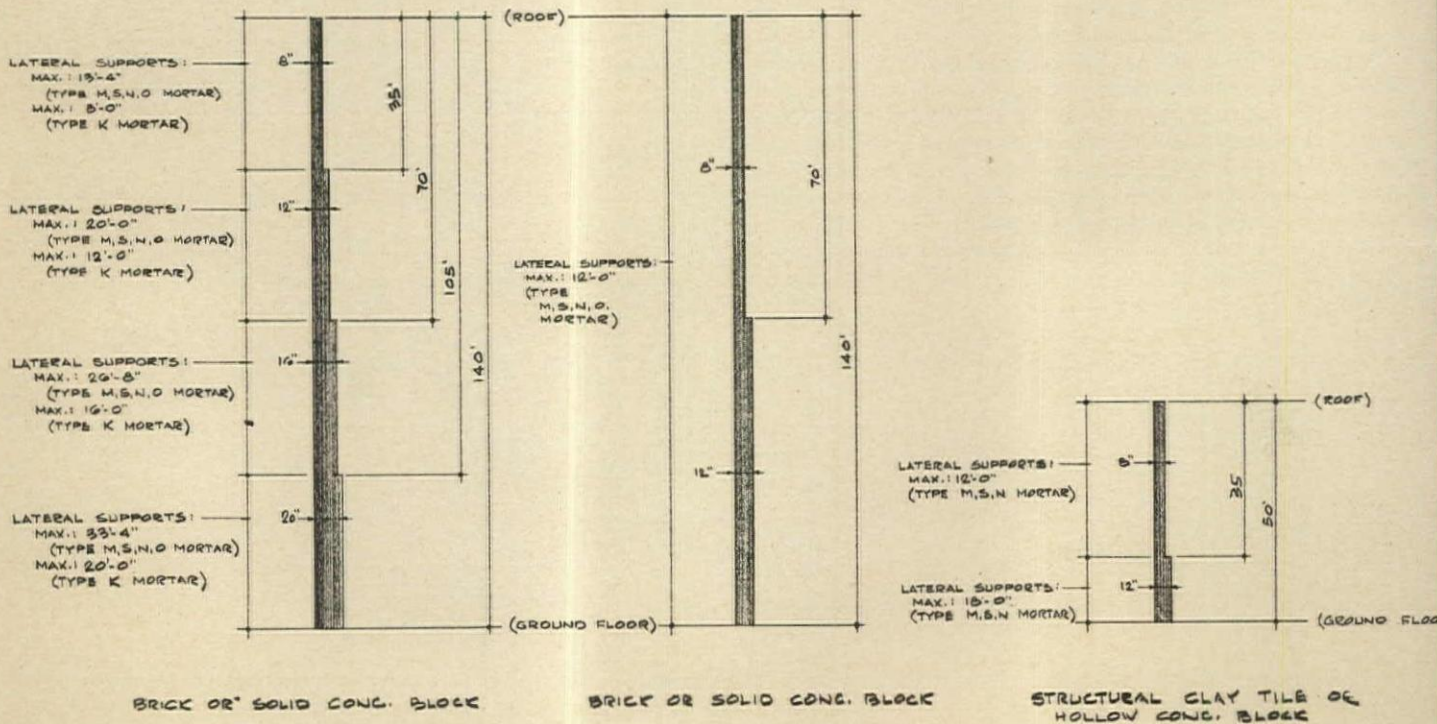


Figure 19: Un-reinforced non-bearing walls: wall thickness and bracing requirements



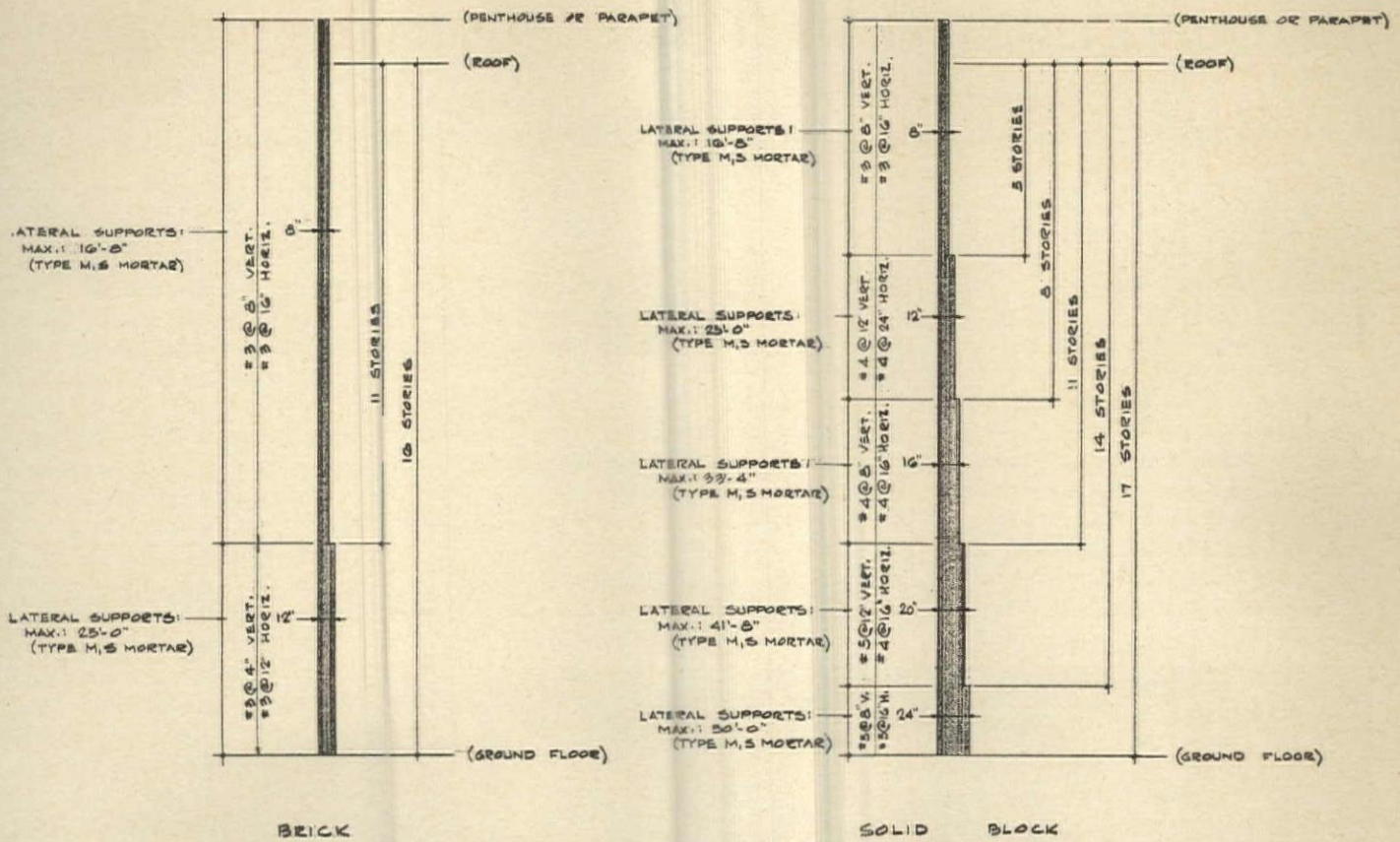


Figure 20: Reinforced bearing walls: wall thickness and bracing requirements. Thickness of reinforced bearing walls is determined from stresses. This scheme is valid for a typically loaded structure with minimum reinforcement provided

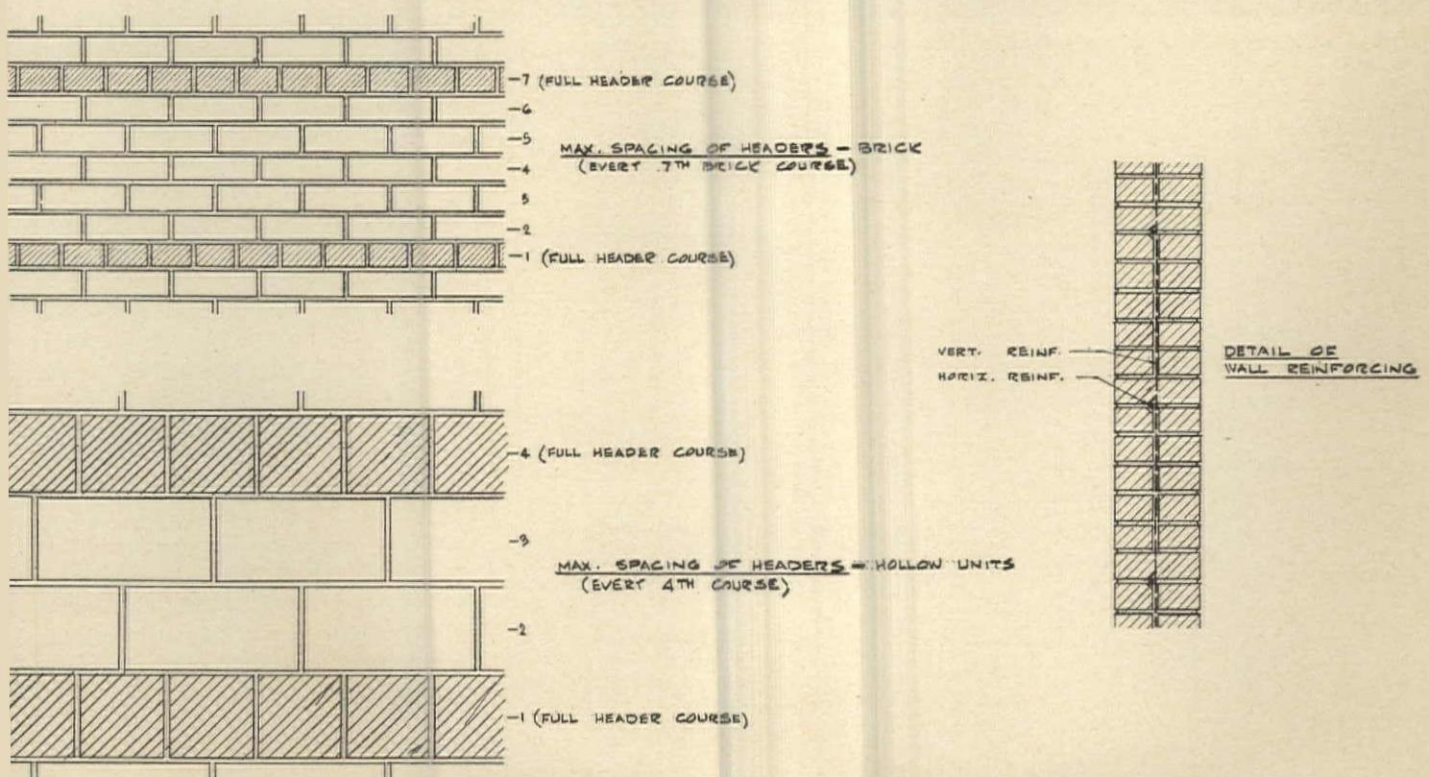


Figure 21: Header locations and reinforcing detail



# AIR CONDITIONING MATCHES LABORATORY LOADS

System supplies only enough air to handle fluctuating hood exhaust and heat loads

A highly flexible laboratory air conditioning system will be used in the Medical Sciences I Building at Duke University Medical Center to match the fluctuating exhaust air and heat load requirements of this type of building. Other important features of the system include: (1) flexibility for additions and changes; (2) controls that are simple to operate; and (3) easily maintained equipment.

The plan is very well suited to ef-

ficient and flexible distribution of services. The floor structure is of prestressed channel slabs spanning between the outside walls and the mechanical shaft in the center of each lab block, providing horizontal runs for the services and columnless space in the labs; vertical piping to lab benches is set in spaces left between the channel slabs.

How the architectural design evolved is described by F. Lee Coch-

ran, partner of Perkins & Will: "The original approach comprised buildings of large area with laboratories grouped along utility cores in a linear pattern. There were no windows in the laboratories or offices, but certain areas at the ends of corridors provided small gathering spaces with windows.

"When it came time to plan the building for the specific use of the departments of physiology, pharmacology, biochemistry and genetics, the heads of these departments and their investigators indicated the need for a quite different approach. There were objections to the modular character of the laboratories and the rigid relation to the vertical pipe shafts. Rather than taking the individual laboratory unit as a basic module, it was decided to use a 5- by 5-ft unit of space as a module.

"There also were objections to the interior labs—at any rate to offices without the possibility of windows.

"The present design emerged as an answer to these objections, and as an expression of the more individualized concept which the members of the sciences department desired. The utilities are distributed horizontally from vertical utility shafts.

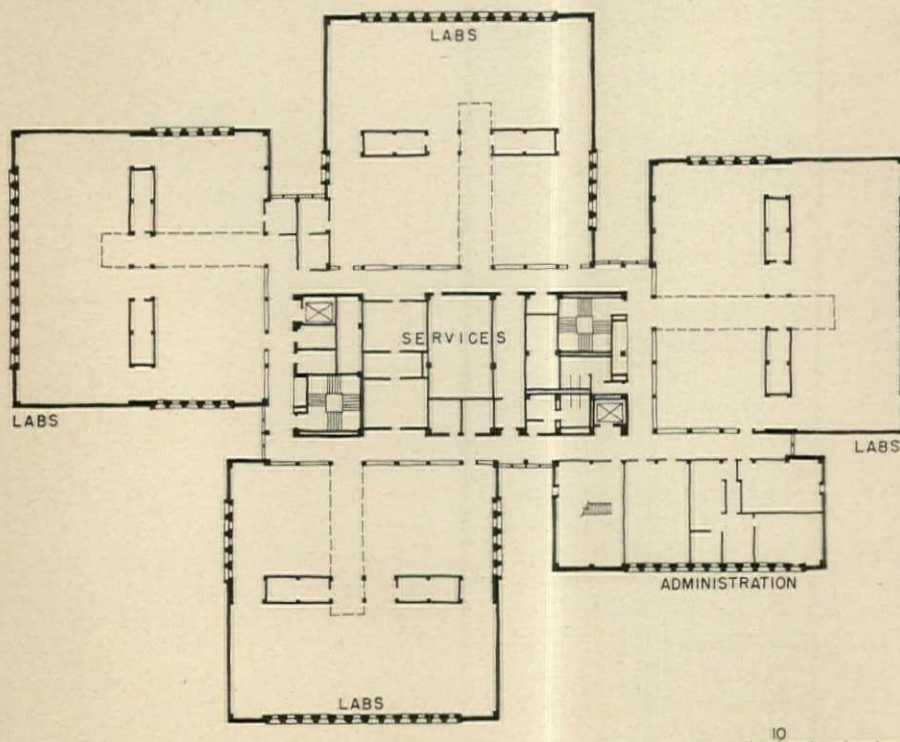
"The scheme utilizes a central core around which are arranged four identical lab blocks and an administration block. Each lab block is served by two vertical utility shafts. Prestressed concrete channel slabs span from outer walls to the utility shaft area to provide column-free space. An ample 14-ft floor-to-floor dimension provides adequate space above a suspended ceiling for the horizontal distribution of all utilities so that any 5-ft-square module can be serviced readily. The central core contains such elements as elevators, toilets, stairways and utility closets. Other facilities include cold rooms, ice makers, machine shop and some special labs."

## Variable Volume System Chosen

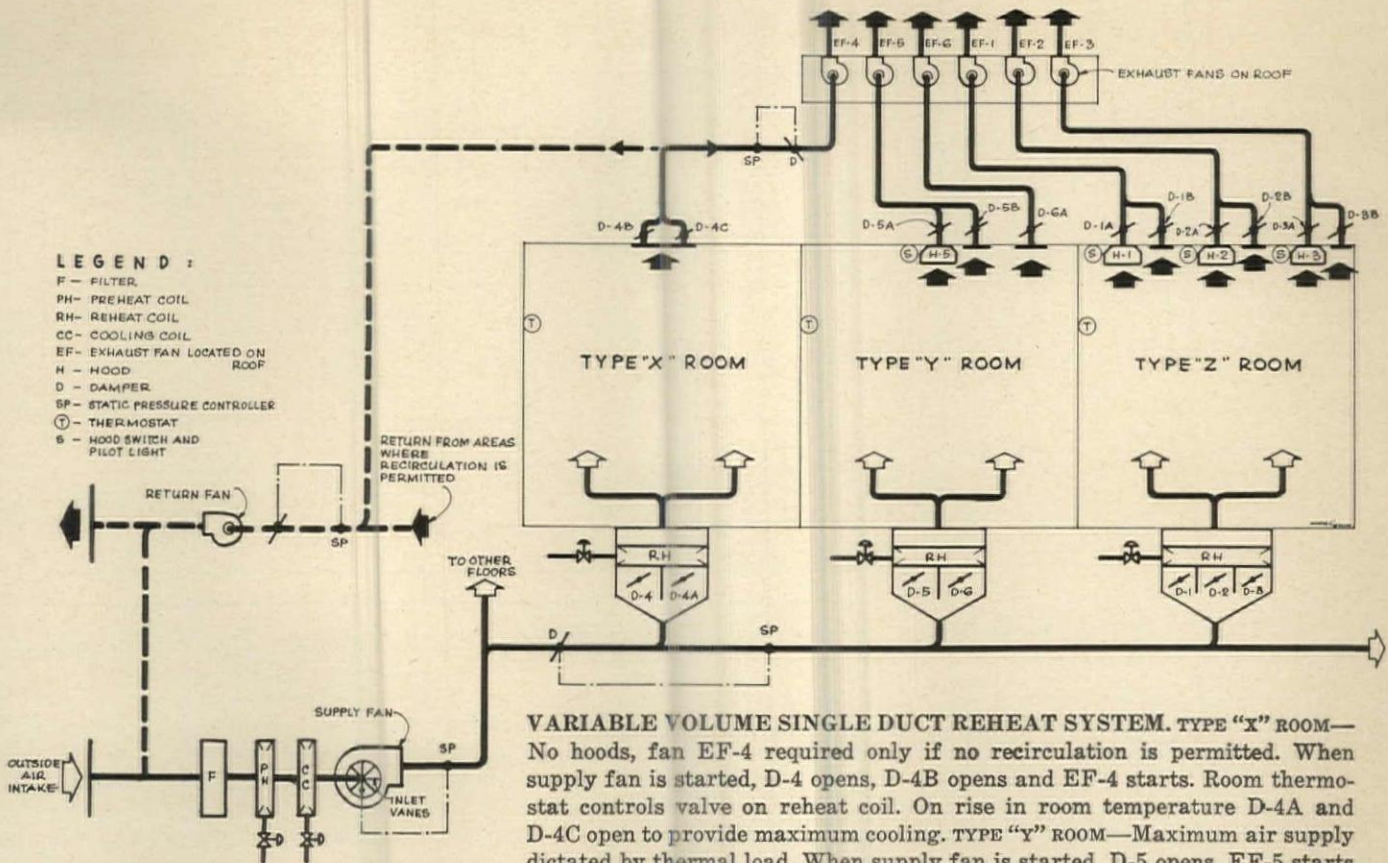
The following discussion of the mechanical system was prepared by



Proposed Medical Sciences I Building at Duke University Medical Center







Architects: E. Todd Wheeler and the Perkins & Will Partnership; mechanical engineers, Cosentini Associates; structural engineers, Garfinkel and Marenberg

E. J. Losi, D. Michaeli, and A. Tinfo, principals of Cosentini Associates, with the assistance of Mr. S. Quart (technical material) and Mr. A. Kelijis (drawings):

In any typical research laboratory, the total air quantities are dictated either by the thermal load or hood exhaust requirements. The peak load condition does not occur simultaneously in all laboratories due to usage diversity, although sufficient capacity must be available for each laboratory to satisfy the peak demand. Initial and operating cost economies as well as flexibility for changes or additions are the main features of the variable volume single duct reheat system designed for this building. This system takes advantage of the diversity factor without compromising over-all performance characteristics. The demands that the mechanical system for this laboratory building must satisfy are as follows:

1. Flexibility in services to accommodate the system to new or changed techniques and procedures.

2. Flexibility in operation to permit the operation of individual laboratories during off hours and weekends without involving operation of the entire system at its full capacity.

3. Maintenance of proper levels of temperature and humidity, with proper controllability for comfort as well as experimental conditions.

4. Availability of sufficient quantities of fresh air to satisfy all hood exhaust and general exhaust requirements.

5. Installation of an adequate hood exhaust and general exhaust system, with individual hood exhaust ductwork to outside, wherever necessary, and sufficient provision for additional hoods in the future.

6. The system must maintain a negative pressure in all laboratories which will produce noticeable quantities of odors, contaminants, irritants, dust, etc.

7. Adequate filtration of all supply air for protection of equipment, as well as maintenance of cleanliness in the laboratories.

8. Provisions for proper cooling capacity to handle all thermal loads in a laboratory.

9. Easy maintenance of all mechanical equipment, which preferably should be located in one or two central machine rooms.

10. Ease of operation of hood fan switches and room thermostats. Each hood should have its own switch and pilot light.

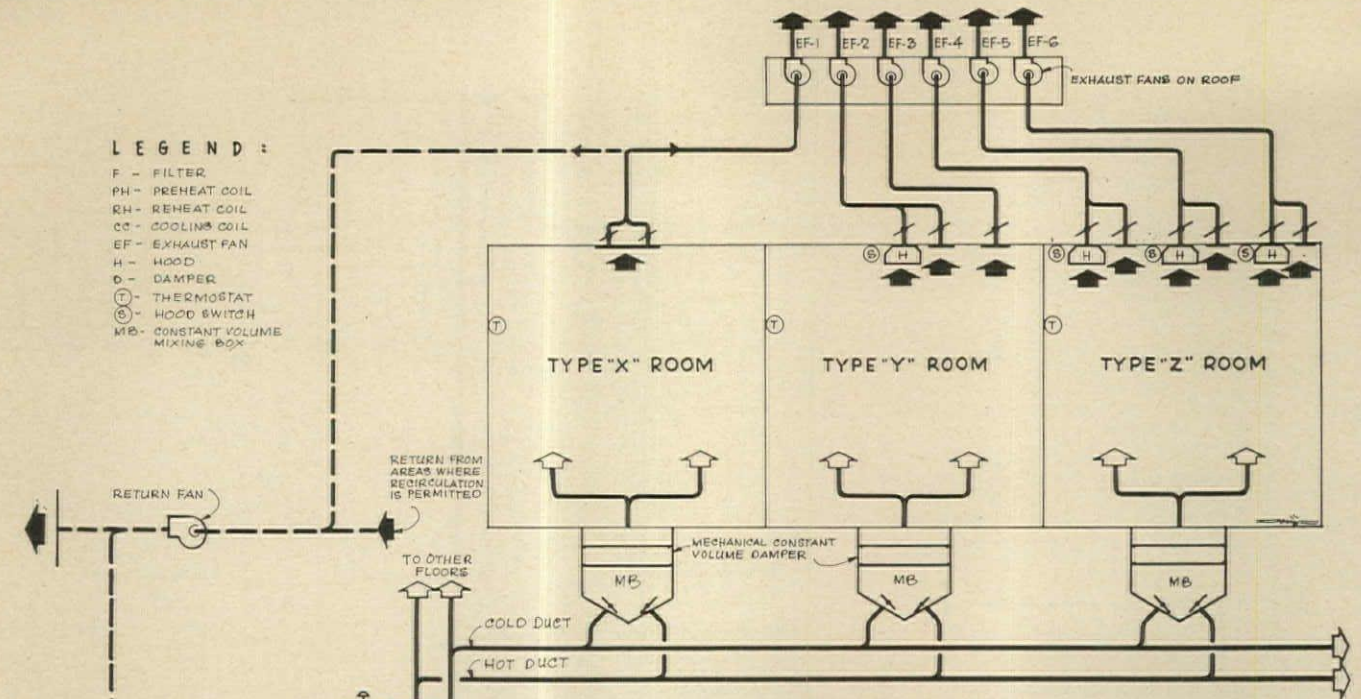
11. Economy of installation and operation of entire system.

To help select the most suitable mechanical system, the following three systems were analyzed and compared:

1. Variable volume single duct reheat system
2. Double duct constant volume system
3. Single duct variable volume and room fan coil unit system

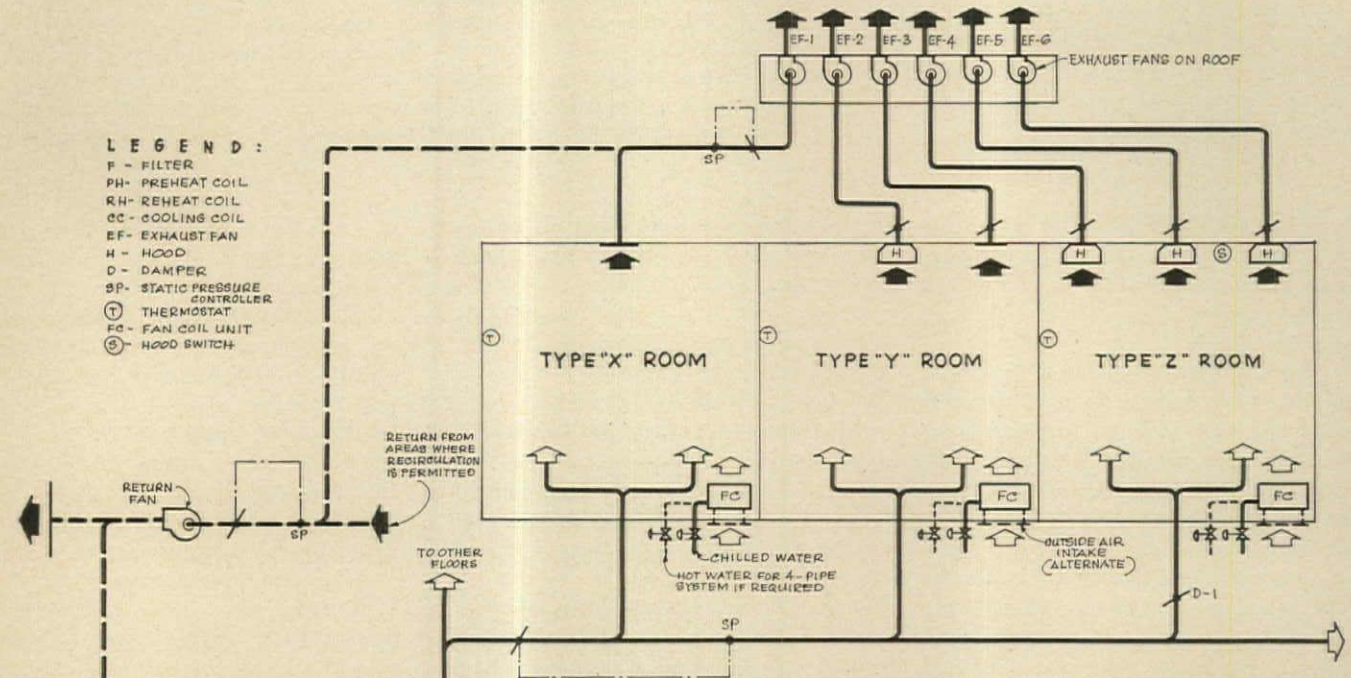
In analyzing and comparing these different systems, each of which can have a number of variations, the following assumptions were made concerning system operation:





- LEGEND :**  
 F - FILTER  
 PH - PREHEAT COIL  
 RH - REHEAT COIL  
 CC - COOLING COIL  
 EF - EXHAUST FAN  
 H - HOOD  
 D - DAMPER  
 T - THERMOSTAT  
 S - HOOD SWITCH  
 MB - CONSTANT VOLUME MIXING BOX

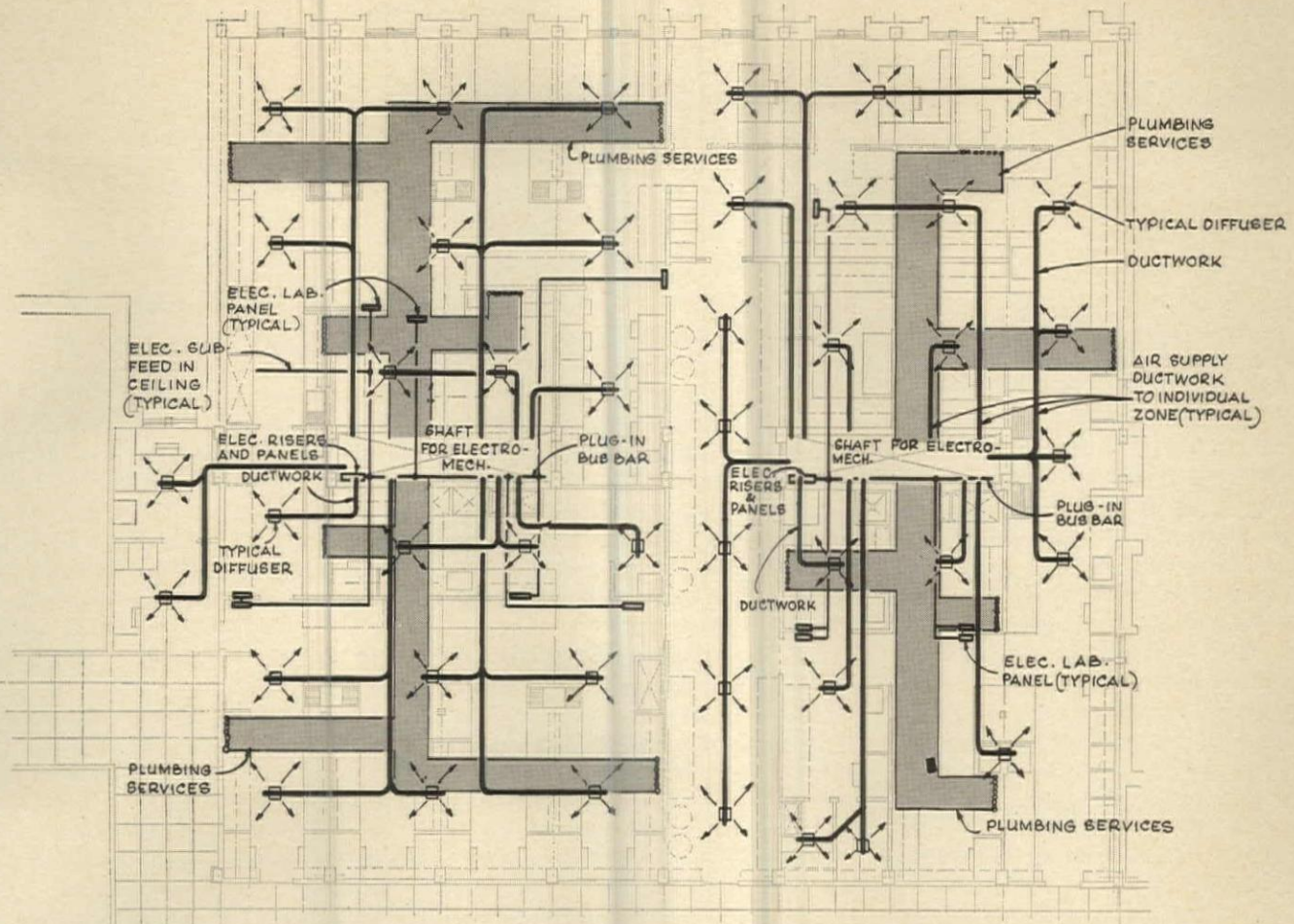
**DOUBLE DUCT CONSTANT VOLUME SYSTEM. TYPE "X" ROOM**—No hoods, fan EF-1 required only if no recirculation is permitted. Constant supply air quantity dictated by thermal load. **TYPE "Y" ROOM**—Constant supply air quantity dictated by thermal load. **TYPE "Z" ROOM**—Constant supply air quantity dictated by hood exhaust requirements. **ROOM TEMPERATURE CONTROL**—Room thermostat controls hot and cold mixing box dampers. **HOOD CONTROL**—Each hood is furnished with an individual switch and pilot light. When supply fan is started, exhaust fans will run. When hood is in use, the by-pass damper closes, hood damper opens and pilot light is on



- LEGEND :**  
 F - FILTER  
 PH - PREHEAT COIL  
 RH - REHEAT COIL  
 CC - COOLING COIL  
 EF - EXHAUST FAN  
 H - HOOD  
 D - DAMPER  
 SP - STATIC PRESSURE CONTROLLER  
 T - THERMOSTAT  
 FC - FAN COIL UNIT  
 S - HOOD SWITCH

**SINGLE DUCT VARIABLE VOLUME & ROOM FAN COIL UNIT SYSTEM. TYPE "X" ROOM**—No hoods, fan EF-1 required if no recirculation is permitted. Supply fan is interlocked with exhaust fan and provides neutral dehumidified air to satisfy either the ventilation of exhaust requirements. **TYPE "Y" ROOM**—Maximum air supply dictated by ventilation requirements. When supply fan is started EF-2 and EF-3 start. **TYPE "Z" ROOM**—Maximum air supply dictated by hood exhaust. When supply fan is started, D-1 opens to minimum position and EF-4 starts. Common switch for remaining hoods starts respective exhaust fans and opens D-1 to maximum position. **ROOM TEMPERATURE CONTROL**—Recirculating fan coil units controlled from room thermostat maintain space temperature. **ALTERNATE**—Fan coil units with minimum and maximum connections to outdoor air provide entire air and cooling or heating requirements





Schematic layout of ductwork (solid lines) and plumbing services (gray tone)

1. All supply air will be 100 per cent outside air. (In laboratory buildings with large office areas, air from these areas may be recirculated.)
2. Due to summer humidity conditions, no outside air will be introduced directly to the space during high humidity weather without first being dehumidified.
3. Dehumidification will be accomplished for all systems by cooling; reheating of the air will be done whenever dehumidified air temperature is too low for space comfort conditions.
4. All supply air must be heated to a minimum of 50-60 F in winter.
5. Maximum supply air quantity to each space will be based on whichever of the following requirements is the greatest: (a) cold air required for thermal loads; (b) air required for hood exhaust; (c) minimum air required for ventilation.
6. Each hood will have its own hood exhaust fan.

**SYSTEM 1. Variable Volume Single Duct Reheat System**

The system consists of a main supply air rig, single cold air distribution ductwork, sectionalized volume control dampers and reheat coils for

each laboratory or zone.

When the supply fan is started, the filtered, cooled and dehumidified or preheated air—depending on the season—is distributed to the various laboratories. In each laboratory the minimum supply air damper section opens and one specifically designated hood exhaust fan or general exhaust fan starts.

A room thermostat, upon sensing a rise in temperature, closes the reheat coil water valve and upon a further rise in temperature, increases the supply of cold air to the space by opening the next supply air damper section and starting the next hood exhaust fan automatically. When this occurs, the hood exhaust fan exhausts air from the space through the hood bypass position.

When a hood exhaust fan is switched on by a worker, it automatically assumes the face position and its corresponding supply damper section opens, providing the correct supply air quantity for the hood exhaust, while the thermostat and reheat coil maintain space temperature.

The supply air fan, through inlet vane control from a static pressure

sensing element in the main supply ductwork, reacts automatically to the air volume variations in the system. The system hence supplies at all times only the correct amount of air required, without incurring significant waste of energy.

The supply damper is sectionalized with each section being interlocked with its corresponding exhaust fan, in order to maintain air balance in each space at all times.

Full advantage is thus taken of the load diversity in the building. The supply air rig, the refrigeration plant and the main ductwork can be sized for appreciably less than total peak load.

Single duct distribution permits a high degree of flexibility—only the addition or replacement of a reheat coil and a damper section is required for either zone or hood exhaust fan changes or additions.

**SYSTEM 2. Double Duct Constant Volume System**

This system is comprised of a main supply air rig, hot and cold air distribution ductwork, constant volume mixing boxes for each laboratory or zone and hood exhaust fans. The supply air quantity to each space is



constant, the room thermostat regulates the mixture of hot and cold air to satisfy space temperatures.

Hood and general exhaust fans are interlocked with the supply fan, and run whenever the supply fan is running. Individual hood switches change the hood exhaust dampers from the bypass to the face position whenever energized by occupants.

The double duct system permits utmost flexibility in room changes which at most involve only the reconnection of mixing boxes to the hot and cold ducts. But it is, however, limited in its capacity to accommodate additional new hoods in a building used primarily as a laboratory having a large number of hoods. The total supply and exhaust air quantities must be equal at all times and no advantage of hood diversity of operation is possible. The system must be sized for 100 per cent of air load and sufficient heating or cooling capacity must be available to dehumidify and cool or heat the entire air quantity.

#### SYSTEM 3. *Single Duct Variable Volume and Room Fan-Coil System*

This system utilizes individual room fan-coil units or unit ventilators to

satisfy the entire space thermal loads. Room thermostats control the chilled water valve to the units (unit cycling not being recommended) to maintain the various space temperatures.

Filtered, cooled and dehumidified or preheated air—depending on the season—is distributed to each laboratory or space. Air is also reheated in winter to satisfy heating loads of exterior rooms. (This can be omitted with a four pipe system.)

Since the supply air is a variable volume system, operation is similar to System 1, "Variable Volume Single Duct Reheat System." However, chilled water to the fan-coil units is required year-round.

One variation to the system includes direct outside air connections to fan-coil units instead of central air supply system. Outside air quantities to each room are then adjusted for on-hood, off-hood operation, to introduce only minimum outside air to a space when hoods are inoperative. In certain cases, a four-pipe rather than two-pipe water system is required, since both heating and cooling may be required at the same time in different areas.

#### Summary

This system is basically a more advanced application of standard, well proven, mechanical and electrical components.

It is well known that while make-up air provisions for a considerable number of exhaust hoods, and cooling capacity for thermal loads of appreciable magnitude must be built into many laboratories, not too many of these loads will be coincident.

The system is simple and quite fool-proof. Problems such as air balancing are greatly minimized by the pairing of damper sections—designed for specific air quantities—and use of hood exhaust fans of somewhat higher capacities, assuring negative pressures in all laboratories.

Additions and changes can be easily accomplished with most of the work (such as work on damper sections and reheat coils) being performed in the shaft itself, thus minimizing disturbances to laboratory work.

Maintenance is concentrated in central, well-defined areas, and the quantity and type of parts required is kept to a minimum.

SYSTEM COMPARISON TABLE	*Best or least expensive	**Average	***Poor or most expensive
	SYSTEM 1 VARIABLE VOLUME SINGLE DUCT REHEAT	SYSTEM 2 DOUBLE DUCT CONSTANT VOLUME	SYSTEM 3 SINGLE DUCT VARIABLE VOLUME AND ROOM FAN COIL UNIT
<b>OPERATING COSTS</b>			
Includes filter life and energy requirements for refrigeration, heating and fan h.p.	*Costs are low as the amount of air pumped and system pressure are proportioned to loads developed	***Costs are high as the entire air system must be pumped at all times	**Costs are low for fan h.p. of central air system. There is some waste in water year-round heating and cooling by fan coil units
<b>BASIC CRITERIA</b>			
Flexibility within limits of installed equipment	**Changes easily accommodated by reconnection of reheat coils and damper sections	*Changes easily accommodated by reconnection of mixing boxes	***Changes easily accommodated by reconnection of dampers and fan coil units
Flexibility for additions exceeding installed equipment capacity	*Due to inherent diversity extensive additions are feasible	***No substantial additions are feasible	**Extensive additions are feasible. Limitations are imposed by refrigeration capacity only
Operating flexibility (off hour operation)	*System can be operated at very low capacity due to variable volume feature and inlet van fan control	***Due to constant volume characteristics of system, no significant off hour operation cost savings can be achieved	**Same as for System 1 except that chilled water from refrigeration plant may be required in winter
Maintenance	**System utilizes primarily equipment which is concentrated in central locations	*System utilized primarily major equipment which is concentrated in central locations	***In addition to the central air, system fan coil units require maintenance
<b>INITIAL COSTS</b>			
Basic supply air Rig (Fans, filters, coil, etc.)	*75% of peak requirements	***100% of peak requirements	*70 per cent of peak requirements (no thermal load) single duct system
Ductwork and insulation	**Cold insulated ductwork only	***Hot and cold insulated ductwork	*Single non insulated ductwork
Automatic Controls	***One thermostat and one control for reheat coil plus one control motor for each hood required	*One thermostat and one control motor required	***One thermostat and two control motors required
Water Piping	**Hot water piping in shafts only	*No piping required	***Chilled (and possibly hot) water and drain piping to local units
Terminal Cooling Devices	*Sectionalized dampers and reheat coil	**Mixing boxes	***Damper and fan coil unit
Refrigeration and boiler plant, plus auxiliary equipment	*Installed capacity 75 per cent of peak load	***Installed capacity 100 per cent of peak load	**Installed capacity 85 per cent of peak load due to inability of system to utilize cool dehumidified air for thermal loads





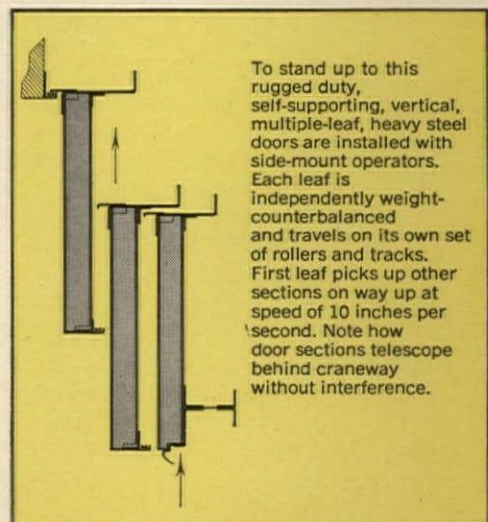
Multiple-leaf "OVERHEAD DOOR" stands up in Iron Range Country.

## A rugged problem in dependability solved by new "OVERHEAD DOOR"

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To stand up to this rugged duty, self-supporting, vertical, multiple-leaf, heavy steel doors are installed with side-mount operators. Each leaf is independently weight-counterbalanced and travels on its own set of rollers and tracks. First leaf picks up other sections on way up at speed of 10 inches per second. Note how door sections telescope behind craneway without interference.

For more data, circle 98 on Inquiry Card



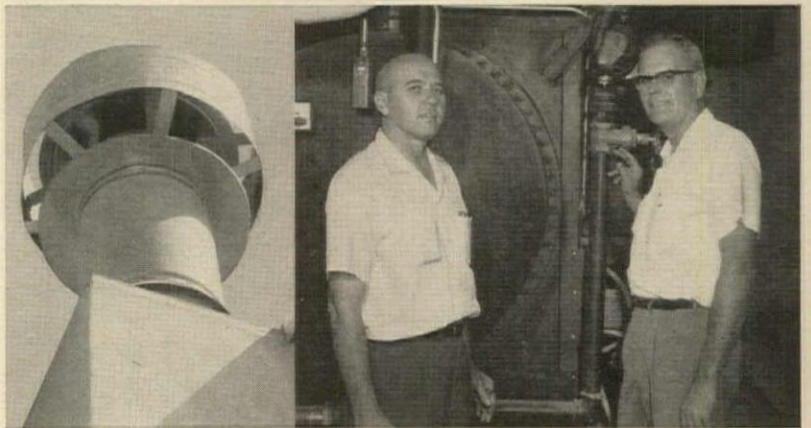
# How to solve the weight

**CONTINENTAL APARTMENTS, AMARILLO, TEXAS**  
**BUILDER:** Kemmons Wilson, Memphis.  
**ARCHITECT:** Louis G. Ost, Jr., Memphis.  
**CONSULTING ENGINEER:** Campbell & Campbell, Memphis.



## **METALBESTOS VENT AND CONTRACTORS**

At immediate right is QC Ventilator Top for 20" gas vent installed. At far right, Forrest Stockdale (1) discusses boiler installation with prime mechanical contractor, Jim Reynolds. Mr. Stockdale, sheet metal specialist, installed over \$30,000 in ducts, registers and grills.





# Problem in high-rise venting

**Answer: With a modern, light-weight gas vent that costs less to install than heavy, old-fashioned stacks. Its name: Metalbestos QC.**

The Continental Apartments, Amarillo, Texas, are marked with the thoughtful planning that characterizes a Kemmons Wilson project. Each of the 118 units is provided with modern, year-round heating and cooling with a system designed by John Campbell, of the engineering firm, Campbell & Campbell, Memphis, Tennessee.

The heart of this central heating and cooling arrangement is a six-million BTU, gas-fired Thermo-Pak boiler and a 200-ton Carrier air-conditioning unit. Each apartment has its own air handler for the hot and chilled water system. Air circulation is through furred ducts and averages 800 c.f.m. per apartment with two registers for each living room, and one for each bedroom, bathroom and the kitchen.

## NEW VENTING TECHNIQUE

"We are constantly seeking improved methods in high-rise heating and cooling," Mr. Campbell reported. "And we were certainly interested when Metalbestos people came up with a light-weight gas vent for central heating boilers."

The product specified by Mr. Campbell for the Continental was 20" diameter, Metalbestos QC. In a 10-story installation, this large diameter gas vent has a capacity up to 6,700,000 BTU—more than ample to handle the input of the gas-fired boiler installed.

"Jim Hignight of Metalbestos supplied us with complete technical data on this new venting technique," Mr. Campbell said.

This information clearly indicated the superiority of Metalbestos to the type of stack originally contemplated.

## INSTALLER SAVED \$1,200

Metalbestos QC proved to be of particular value to the prime mechanical contractor, Jim Reynolds, and his sheet metal specialist, Forrest Stockdale, both of Amarillo.

"Metalbestos turned a loss into a profit for me on this job," Mr. Stockdale reported. It cut my installation costs by 75% and saved me \$1,200 over the old-fashioned type stack installation."

Below is the actual comparison made by Mr. Stockdale between new Metalbestos QC and a typical prefabricated fire clay stack.

ACTUAL COMPARISON OF METALBESTOS TO PRE-FAB FIRE CLAY			
	Pre-Fab Fire Clay	Metalbestos	Metalbestos Advantages
VENT SIZE	24" flue. 28" O.D.	20" flue. 21" O.D.	25% less floor space
WEIGHT	250 lbs. per ft. 25,750 total lbs.	10 lbs. per ft. 1,050 total	1/25th the weight
VENT SUPPORT	Concrete footing required	No footings	No special support
FRAMING	Special framing required to support heavy fire-clay walls of chimney	Light-weight support installs between bar joists	No special framing. Support plates/spacer furnished
INSTALLATION TIME	Estimate: four men, four days. 128 man hours	32 man hours	1/4th installation time
TOTAL INSTALLER'S COST (inc. labor)	Estimate: \$3,500	\$2,300	1/3rd less cost

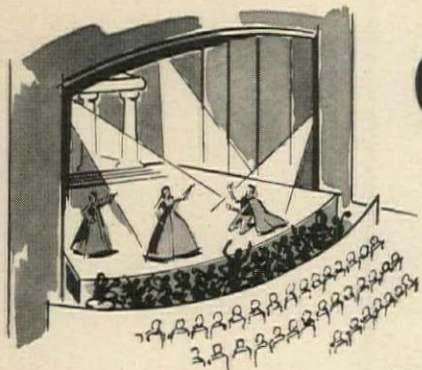
FOR COMPLETE INFORMATION ON COMMERCIAL AND INDUSTRIAL VENTING PRODUCTS, WRITE: METALBESTOS, P.O. BOX 137, BELMONT, CALIF.



For more data, circle 99 on Inquiry Card



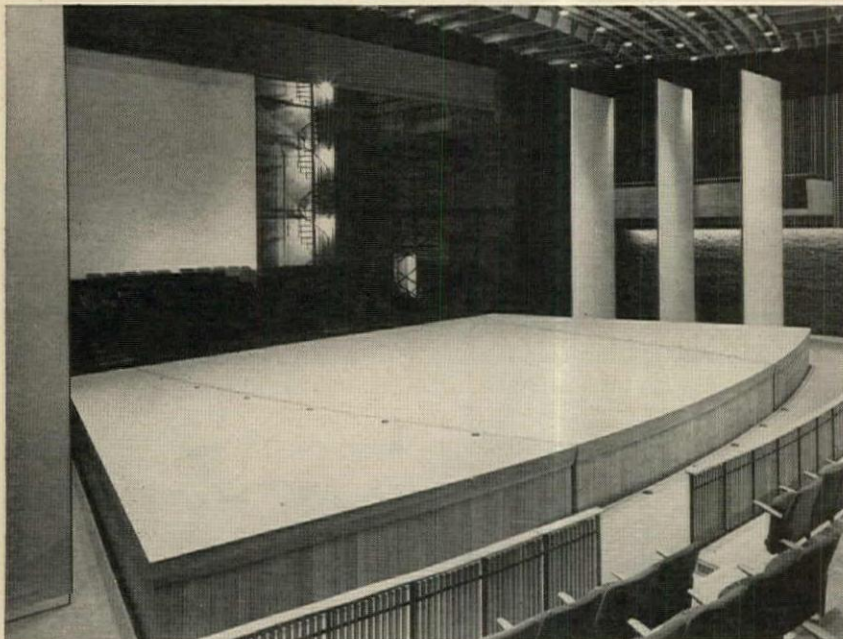
# Stage Lifts



# Orchestra Pit Lifts

# Organ Lifts

# Special Theatrical Lifts



Four Dover Rising Stages in Loeb Drama Center at Harvard help create three theaters in one. Stage sections may be operated independently or in any combination of units.

Dover is a specialist in the design of stage lifts. Applying Oildraulic Elevator power for dependable, quiet and economical operation, Dover Rising Stages add to the flexibility of the hall and to the dramatic effects possible. They are custom built to meet your requirements of design, size and capacity. Among more than 60 installations are: Harvard's Loeb Drama Center, McCormick Place, Houston Music Hall, Jacksonville Civic Auditorium.

**COMPLETE DESIGN, ENGINEERING, MANUFACTURING AND INSTALLATION SERVICE**

**DOVER  
ELEVATORS AND  
LIFTS**



*Mail for catalog and list of installations*



Dover Corporation, Elevator Division.  
Dept. Q-1, P.O. Box 2177,  
Memphis, Tenn. - 38102

Please send data on Stage Lifts to:

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_

For more data, circle 100 on Inquiry Card



## TIME-RATED ACOUSTICAL CEILING ASSEMBLIES

*Based on material supplied by the Acoustical Materials Association*

The behavior of horizontal structural assemblies—floors, roofs, ceilings—is of major importance to the fire safety of a building in terms of both life and property. Because of this, the fire-resistant characteristics of these assemblies are given prime attention in building codes and in the calculation of fire insurance premiums.

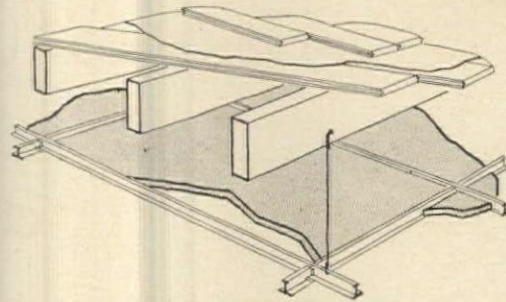
Until recently, ceilings of acoustical panels or tiles were not considered a contributing element in such fire-resistant structural assemblies. Code requirements and insurance rating treated them as interior finish, and demanded the use of other material above them to protect structural members. In the past five years, however, code and insurance authorities have recognized the contribution which ceilings of acoustical panels or tile can make to structural and fire safety, and new acoustical ceiling systems have been developed which add fire protection to an extensive engineering and design potential.

The most obvious advantage of these new ceiling systems is in buildings for which codes include specific, designated requirements for fire-resistant construction of horizontal structural assemblies. These requirements vary, depending on local or regional practice, but there are now in existence a large number of acoustical ceiling systems which, in combination with a broad range of structural members and flooring or roofing materials, can satisfy code requirements.

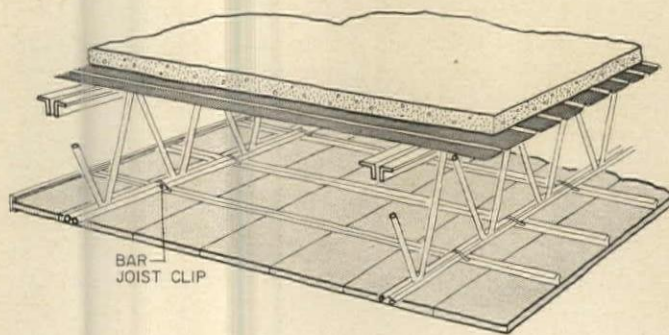
Even in buildings where designated fire resistance for structural assemblies is not required, there may still be an advantage in using these new ceiling systems, as they often qualify for more favorable insurance ratings for their fire-resistant qualities.

### UL Tests and Time Ratings

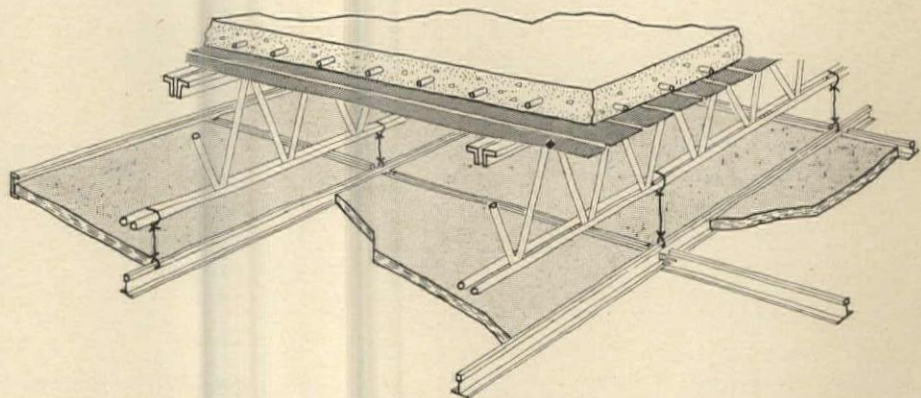
The testing and listing service which is normally considered authoritative



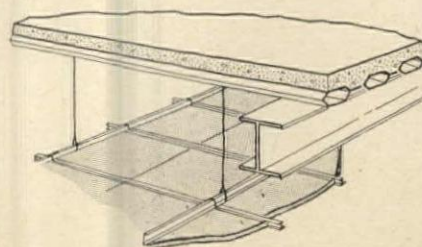
1 1/2-hour rating



2-hour rating



2-hour rating



3-hour rating (beam 5 hours)



for both code and insurance purposes is provided by Underwriters' Laboratories, Inc. The prime result of the tests are given in the familiar time-rating terminology—4 hr, 2 hr, etc. It is important to realize that this rating applies to a whole assembly, not to any specific products used in the assembly. There is no "2-hr rated ceiling panel," but there are several panels which can be combined with other elements in a number of structural assemblies to yield, for the assembly as a whole, a 2-hr rating. When a roof-ceiling or floor-ceiling assembly is granted a 2-hr rating by the Underwriters Laboratories, this means that it has withstood carefully controlled increasing temperatures, in a realistic fire situation, for over two hours but less than three hours, without its upper surface—unexposed to the fire—reaching a certain critical temperature and without its structural strength weakening beyond specified limits, measured primarily in terms of deflection and joist temperature.

One other aspect of UL testing is worth remembering. In addition to the floor-ceiling and roof-ceiling assemblies, in which bar joists, wood joists, steel decking, etc. are included as intermediate structural members, many test mock-ups also include a steel beam, so that the extent to which this prime structural member is protected by the assembly can also be tested. The result of this phase of the test, like that for the whole assembly, is rendered in a time-rating. For example, if a certain assembly is shown to have a "3-hr beam rating," it means that the temperatures recorded on the beam above the ceiling have not exceeded critical limits until between three and four hours after the test began.

UL tests involving acoustical ceilings are usually made at the request and expense of the manufacturers of acoustical materials. The laboratory reports of those tests which the manufacturers wish to release for building code and insurance consideration are then sent to the UL's Fire Council for approval; the council consists of fire protection specialists throughout the country. Assuming that such a report on a particular assembly is approved by the council, a description of the assembly is inserted in the Underwriters Laboratories Building Materials List, which is an annual publication kept up to date

with bimonthly supplements. In the Building Materials List, each tested assembly is assigned a "Design Number," and these numbers are cataloged in sequence in the "Floor or Roof, and Ceiling Constructions and Beam Protection" section in the part of the book which deals with fire resistance classification. The time rating is integrally connected with the design number assigned to each assembly.

Manufacturers whose products have undergone these testing and classification procedures are entitled to attach UL labels to their products. In the case of acoustical materials, there are two types of UL tests, both of which are referred to on the labels, whenever the product has been involved in both. In the *fire resistance* tests, with which this article is mainly concerned, the product has been part of a complete floor-ceiling or roof-ceiling assembly, and the test results are measurements of the entire assembly's ability to withstand and confine the effects of fire. UL *fire hazard* tests, on the other hand, are conducted on individual products, which are included in mock-ups representing customary methods of installation, to determine their characteristics with regard to surface flame spread. The two tests are entirely different, both in their purposes and their procedures. The relative importance of their findings depends on individual code and insurance requirements for different situations. However it is important to remember that it is only the *Fire Resistance classification* which grades an acoustical ceiling according to the contribution it makes to the time-rated fire safety performance of a building's basic structural assemblies.

#### Interpretation of UL Tests

The Underwriters Laboratories tests of course carry no final authority in themselves. It is up to the code and insurance officials to decide whether or not a certain new UL tested design meets their specific requirements.

There are, however, three ways in which the basic tests can be reinterpreted to cover new situations. First, as test experience with a certain family of acoustical products develops, UL is able to broaden the scope of the individual tests involved. For example, if one pattern of the product succeeds in a certain 2-hr rated assembly, and other patterns of the same product are shown conclusively in other tests to have equal fire resistance characteristics, UL can include these other patterns as qualifying in the original 2-hr assembly, and list and label them accordingly. This is the reason for the use of the term "Design Number." A "Test Number" could never refer to anything but the specific test experience of a particular panel or tile in an assembly, whereas a "Design Number" can eventually embrace an entire product line, provided that the complete series of tests indicates that all units of the line behave the same.

The second way in which these tests can be re-interpreted is if code and insurance officials themselves accept and make logical deductions from a group of UL test results. For example, if one floor-ceiling combination has been successful in gaining a 2-hr rating in two tests once with light fixtures and other penetrations in place, and once without—the official can justifiably approve such penetrations in other floor-ceiling combinations whose products and construction characteristics have been shown in other tests to have comparable or superior fire resistance qualities.

Finally, code and insurance officials can often draw upon their own fund of knowledge and experience to deal with new situations. For example, given just one UL tested design, such as a 2-hr assembly of steel bar joists, concrete slab, and a particular suspended acoustical ceiling with large light fixtures, an official might consider the following variations acceptable for the reasons given:

USED IN TESTS	POSSIBLE SUBSTITUTE	LOGICAL REASON
H&T Suspension System	Other systems of equal quality	Does not affect fire retardance
24- by 48-in light fixtures	Smaller area fixtures	Actually reduces possible fire penetration area
Minimum plenum	Deeper plenum	Insulating air space adds to protection
Concrete Slab	Pre-cast units or poured gypsum roof deck	Substitutes have higher insulating value increase protection
Concrete slab on bar joists	Concrete on steel decks, with steel beams	Equal or higher structural and insulation quality



For more information circle selected item numbers on Reader Service Inquiry Card, pages 259-260

## 1. TRASH CAN ENCLOSURE

*Trashmaster* rolling front containers for trash cans are available in a range of sizes for residential, commercial, industrial or institutional use. The frames are constructed of heavy gage galvanized steel with the base supported by steel runners. The Midget Slat Closure front coils around a shaft, which contains a special mandrel-wound spring for easy operation. *The J. G. Wilson Corp., P.O. Box 599, Norfolk, Va., 23501*

CIRCLE 300 ON INQUIRY CARD

## 2. CHAIR DESIGNED ON CIRCULAR BASIS

Lawrence Peabody designed this chair as one of a series of pieces based on the segments of the circle. The *Formula Pi* chair is set on a polished chrome base, which is made in two curved sections to follow the circular outline of the chair. Upholstery is a dark-felted wool. Other pieces in the series are a sofa, a settee, a bench and a table. *Richardson/Nemschoff, Sheboygan, Wis.*

CIRCLE 301 ON INQUIRY CARD

## 3. MORE NEW FURNITURE

The *MS-1101* leather sling chair with polished stainless steel frame is part of a new collection of Edgewood furniture, designed under the direction of architect William Armbruster. Among the other items on display is a leather-covered oval credenza with a front tambour closure in dark walnut. *Edgewood Furniture Company, Inc., 208 East 52nd St., New York, N.Y.*

CIRCLE 302 ON INQUIRY CARD

## 4. NEW VERTICAL FILING SYSTEM

*Stacor Print/Clamp* vertical filing units are said to be ideal for economical storage of whiteprints—architectural and engineering drawings—in widths up to 48 in. The file units are made of electrically welded heavy gage steel. The clamps, which suspend the sheets, are of extruded anodized aluminum; each clamp can hold from 1 to 100 sheets of average thickness. *Stacor Corp., 285 Emmet St., Newark, N.J.*

CIRCLE 303 ON INQUIRY CARD

## 5. BRONZE-CLAD CURTAINWALL

A standard bronze-clad steel curtainwall known as *Fenclad*, the first of its kind to be developed, is said to be considerably cheaper than solid bronze curtainwall.

Basic grid units are galvanized 12-gage carbon steel, strong enough to allow verticals to be placed 6- 7- or 8-ft apart and still carry the re-

quired wind loads. The bronze cladding components are channel shapes, brake formed from metal sheet. In-fill panels, sash inserts and glass are retained by leakproof neoprene gaskets (shaded dark in picture). *Architectural Products Div., Fenestra Inc., P.O. Box 1085, Buffalo, N.Y., 14240*

CIRCLE 304 ON INQUIRY CARD  
more products on page 202



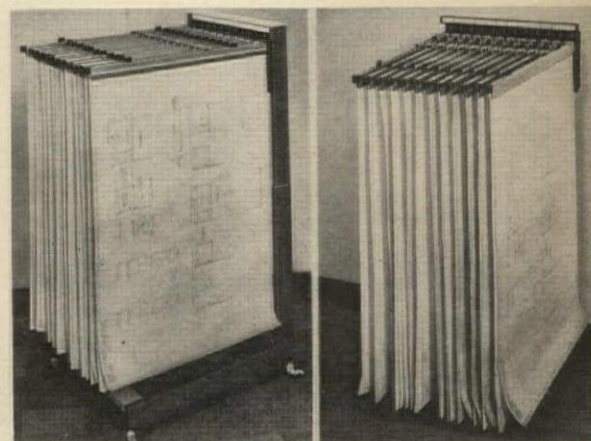
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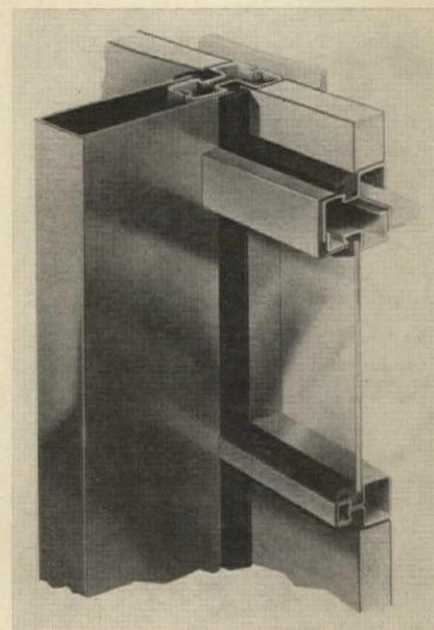
2



3



4



5



# Office Literature

For more information circle selected item numbers on Reader Service Inquiry Card, pages 259-260

## SKYLIGHTS AND FIRE-VENTS

The company's range of aluminum skylights, roof curbs, and fire-vents is covered in a 24-page catalog. Single and double pitch, circular, rolling and operating sash skylights are described by means of excellent diagrammatic drawings. Full glazing specifications and dimensions are also included. *O'Keefe's Inc., 75 Williams Ave., San Francisco, Calif.\**

CIRCLE 400 ON INQUIRY CARD

## STRUCTURAL INSULATING PANELS

*Thermo-Bord* structural insulating panels are described in a new four-page brochure, which includes a number of typical installation photos of the board in use in partitions, window walls, roof decks and exterior walls. The board is composed of two 1/8-in. asbestos-cement surfaces between which an asphalt-treated rigid insulation core is bonded with a moisture-resistant bond. *The Philip Carey Mfg. Company, 320 South Wayne Ave., Cincinnati, Ohio, 45215\**

CIRCLE 401 ON INQUIRY CARD

## MODULAR ENCLOSURES FOR CONTROLLED ENVIRONMENT

*Modulab* prefabricated packages containing wall and roof panels, assembly hardware, control units and optional features as specified by the customer, are fully described and illustrated in a recent booklet. Construction and installation features are given as well as a plan and elevation of a standard enclosure. Typical installations are described in some detail to show how *Modulab* enclosures can be adapted for use in many different fields. *The Sheffield Corp., Dayton 1, Ohio*

CIRCLE 402 ON INQUIRY CARD

## PENTHOUSE CATALOG

A 10-page brochure, catalog L-63 Supplement A, gives details of the company's *Penthouses* and related accessory equipment. A sizing table and fold-out sizing chart are features of the brochure. *Penn Ventilator Co. Inc., 11th St. and Allegheny Ave., Philadelphia, Pa.*

CIRCLE 403 ON INQUIRY CARD

## ELECTRICALLY HEATED SCHOOLS

Herman Nelson's new brochure, No. 600-A27, features unit ventilators and discusses the advantages of the "draw-through" system in which fans draw air through the heating element, rather than blow air over it. Information is included on cabinet and unit heaters, air handling units, convectors, strip-radiation heating, and a new *SC Univent* unit ventilator with self-contained refrigeration. *Herman Nelson School Products Dept., American Air Filter Company Inc., 215 Central Ave., Louisville, Ky.*

CIRCLE 404 ON INQUIRY CARD

## STEEL JOIST MANUAL FOR 1965

The 1965 edition of Standard Specifications and Load Tables for open web steel joists has recently been published by the Steel Joist Institute. The 36-page book constitutes a complete working manual, which contains the necessary information for the specification of joists in all sizes and load bearing capacities, in spans up to 96 ft. The book covers the following joists: J-Series, joists made from 36,000 psi minimum yield strength steel; LA-Series, longspan joists compatible with the J-Series; H-Series, high strength joists made from 50,000 psi minimum yield strength steel; and LH Series-longspan joists compatible with the H-Series. *The Steel Joist Institute, 1346 Connecticut Ave., N.W., Washington, D.C., 20036\**

CIRCLE 405 ON INQUIRY CARD

## SOUND DEADENING CONSTRUCTION BOARD

Installation procedures and properties of *Silent-Cor* construction board, a flat sheet laminate with a core of closed cell polystyrene foam and paper facings, are given in a recent booklet. When used under gypsum board, *Silent-Cor* is said to be an effective and economical means of reducing the level of sound transmitted through wall partitions. The material can also be used successfully in floor and ceiling systems. *Department 804, Monsanto Company, Building Products Dept., St. Louis, Mo.\**

CIRCLE 406 ON INQUIRY CARD

## COLUMNAR SPEAKER SYSTEMS

Data sheets are now available on five different columnar speaker systems for public-area sound. The five systems covered are medium- and heavy-duty general service types, medium- and heavy-duty concert-service types, and one model designed especially for areas of severe reverberation. *R. T. Bozak Manufacturing Company, Darien, Conn., 06821*

CIRCLE 407 ON INQUIRY CARD

## CONCRETE CONSTRUCTION JOINT

Details of the *Jahn Screed Key Joint* are given in a four-page brochure which shows how this joint can be used to control shrinkage cracking in on-grade concrete slabs. *Jahn Concrete Forming Method, 6359 East Evans Ave., Denver, Colo.*

CIRCLE 408 ON INQUIRY CARD

## WOOD ROOF DECKING

*Lock-Deck* roof decking, available in different types of pine, fir and cedar, or combinations of two or more woods is described in an eight-page colored brochure. Information is given on patterns, sizes, insulation and fire resistance factors, nailing and span systems, deflection, allowable stresses and pitched-roof design. *Wood Products Div., Potlatch Forests Inc., P.O. Box 8850, Chicago, 60666*

CIRCLE 409 ON INQUIRY CARD

## GUIDE TO THE USE OF SKYLIGHTS

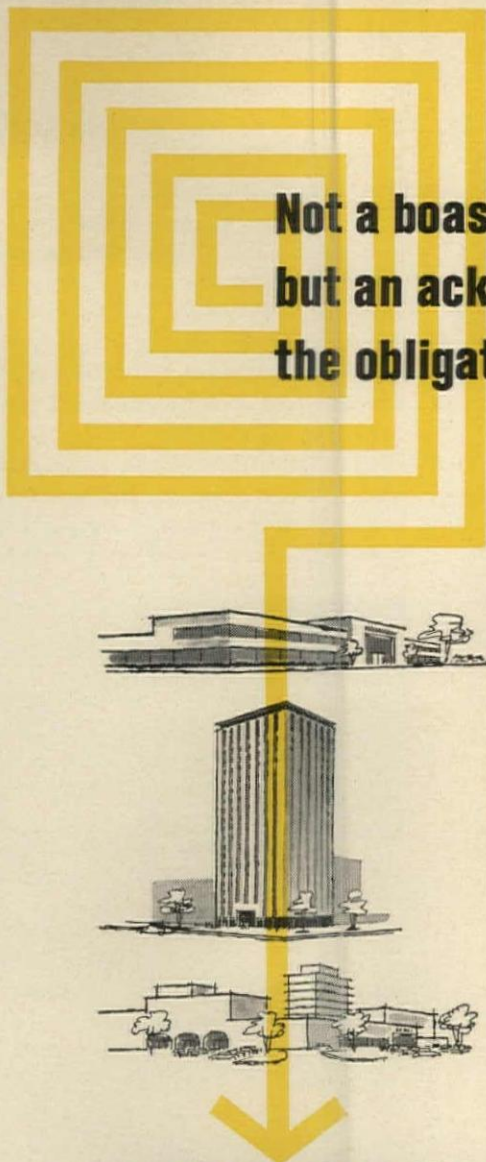
"Daylighting Guide" is the published result of daylight research conducted by the company. Sections are included on each of the following topics: size and spacing of skylights, dome materials, solar heat gain and the economics of skylights. The guide can be used to select skylights for various levels of illumination in industrial and commercial buildings and schools. Selection charts are given for specific design conditions. *Naturalite Inc., 5115 East Grand Ave., Dallas, Texas, 75223\**

CIRCLE 410 ON INQUIRY CARD

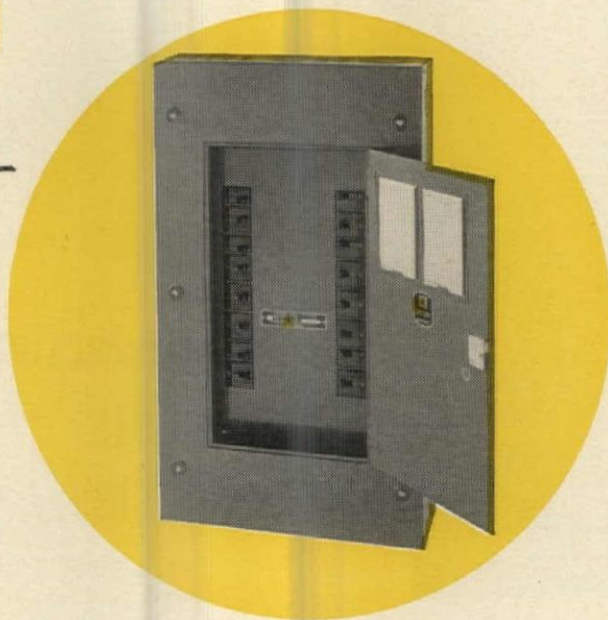
\*Additional product information in Sweet's Architectural File

more literature on page 238





**Not a boast...  
but an acknowledgement of  
the obligation of leadership**



## **SQUARE D SELLS MORE PANELBOARDS THAN ANY OTHER MANUFACTURER**

• There are three reasons for Square D's predominance in the panelboard field...

First, the line is complete. Whether the requirement calls for AC or DC or both; lighting or power distribution or both; fusable or circuit breaker; plug-in or bolted construction; Square D has the right panelboard for practically any given job.

Even more important is the quality which

is built into every Square D panelboard—difficult to define but a very important combination of many details.

Availability is always an important factor—and here Square D rates especially high. Regional manufacturing and assembly facilities for "specials," combined with a national network of stocking distributors for standard panels, provide exceptional delivery and service.

write for Bulletin SD-126. It tells the quality story in detail  
Square D Company, Mercer Road, Lexington, Kentucky

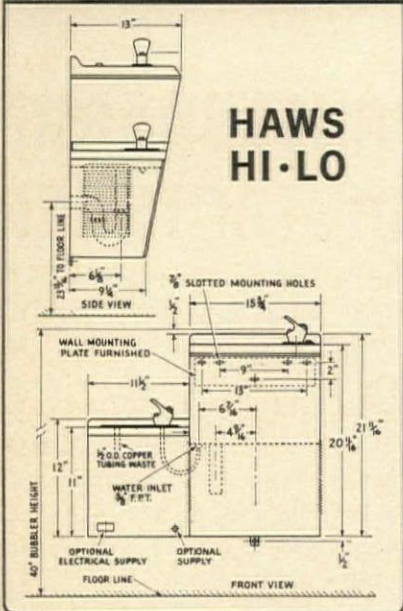
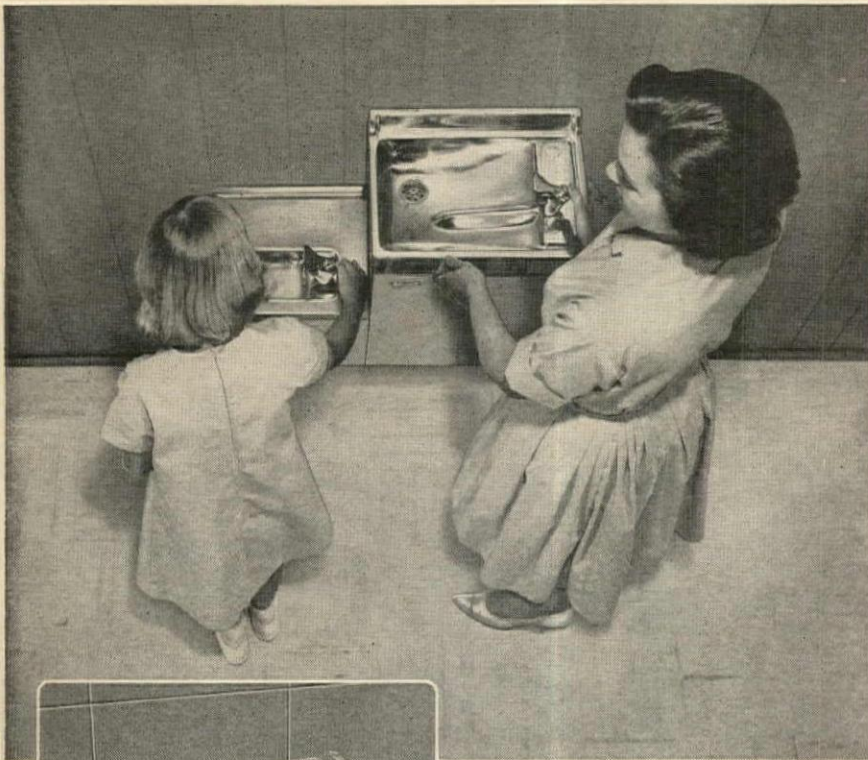


**SQUARE D COMPANY**

*wherever electricity is distributed and controlled*

For more data, circle 101 on Inquiry Card





## Utmost satisfaction to little thirsts and big thirsts...

Maybe you wouldn't mind being picked up around your middle because you decided you wanted a drink of water. Maybe, even if you were struggling with a lot of packages, you wouldn't mind picking up someone around his or her middle because he or she decided he or she wanted a drink. But maybe you would.

Haws Hi-Lo series off-the-floor water coolers feature the unique convenience of an additional low-level bubbler at the proper height for children... and are ideal for stores, supermarkets, schools and public buildings of all types. Write for detailed specifications.



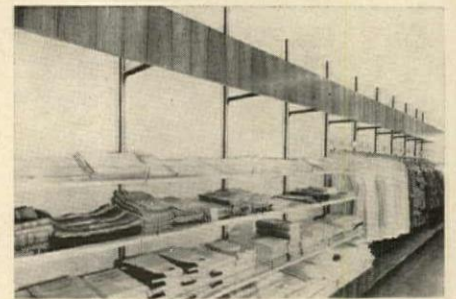
Since 1909

**HAWS DRINKING FAUCET COMPANY**  
Fourth and Page Sts., Berkeley, California 94710

manufacturers of wall and pedestal drinking fountains • electric water coolers  
emergency eye-wash and shower units • laboratory fixtures • Haws flush valves

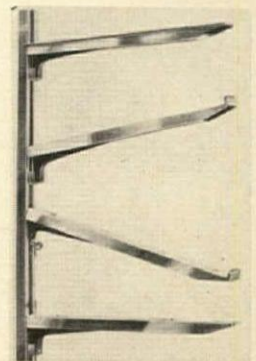
## DISPLAY FIXTURE LINE HAS MANY USES

The *Av/Aweso* display fixture line consists of an integrally-designed series of anodized aluminum or steel uprights with interrelated arms and modular components and accessories. The simplicity of the construction procedure permits installations, rearrangement or interchangeability in a matter of minutes. Originated in Switzerland, the system has already been widely used in Europe for a variety of purposes ranging from light to extra-heavy load bearing.



Stock lengths of uprights range from 24 to 144 in. Straight or adjustable up or down slant arms for glass or wood shelf applications are available in graduated lengths from 3 to 30 in.

Installation requires no special tools or awkward measuring procedure. Appropriate arms simply insert and lock into numbered shelf height location holes in selected wall-mounted or free-standing uprights.



The system can be adapted for a wide variety of uses including residential wall cabinets and shelves, shop display shelves, heavy lumber storage, etc. *Albert Voight Industries, Inc., Hicksville, Long Island, N.Y.*

CIRCLE 305 ON INQUIRY CARD  
more products on page 206

For more data, circle 102 on Inquiry Card



AN  
EXECUTIVE  
POSTURE CHAIR  
FROM  
OUR 900 LINE  
DESIGNED  
BY KNOLL



PLEASE WRITE FOR BROCHURE

SHOWROOMS  
AND DEALERS  
IN ALL  
PRINCIPAL CITIES

**ART METAL INC**  
JAMESTOWN, NEW YORK

For more data, circle 103 on Inquiry Card



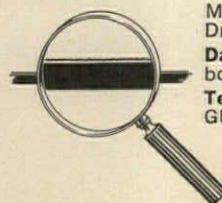
# New Kohler buy-word **SAFEGUARD**

## ...textured bathtub bottom for stand-up safety

Kohler has developed the slip-resistant bathtub to protect bathers from falls. It increases safety especially for children and older people. Kohler SAFEGUARD is not an accessory. An integral part of the tub, it consists of a textured section of the tub bottom which provides a firm footing—but also comfortable to sit on. This section is the same acid-resisting, easy to clean, smooth

and beautiful enamel used on all Kohler tubs.

SAFEGUARD is optional at slight extra cost on any bathtub made by KOHLER. Specify SAFEGUARD when ordering, and add "S" to the bathtub plate number. Sell SAFEGUARD as a desirable extra in all installations to be used by young children and the elderly. For details write, SAFEGUARD, Kohler Co., Kohler, Wisconsin.



Magnified Cross-Section  
Drawing Shows:  
**Dark area**—cast-iron tub  
bottom  
**Textured surface** is SAFE-  
GUARD enamel

## KOHLER OF KOHLER

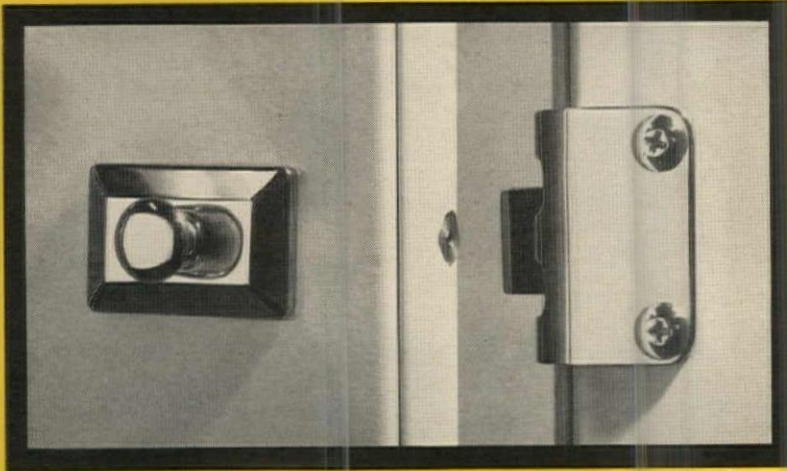
Kohler Co., Established 1873, Kohler, Wisconsin

ENAMEL IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL-BRASS FITTINGS • ELECTRIC PLANTS • AIR COOLED ENGINES • PRECISION CONTROLS

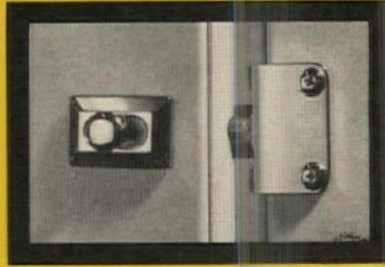
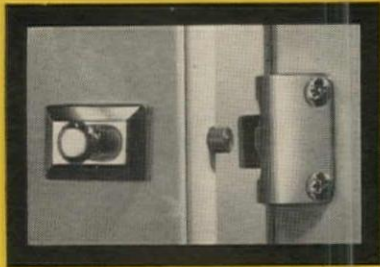
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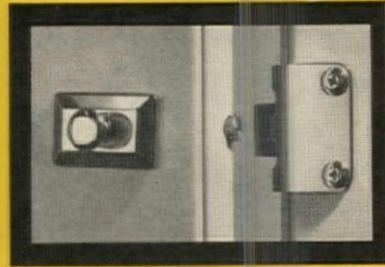
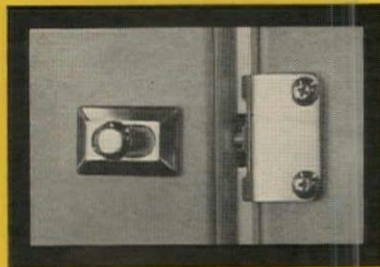
# New recessed lift free LATCH



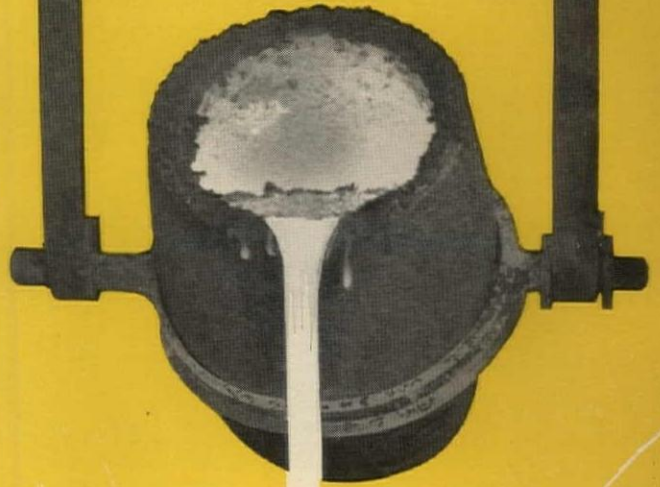
## SOLID BRASS



WITH STAINLESS STEEL BOLT



THAT AUTOMATICALLY RETRACTS



When the Weis representative brings a model of the Weis Toilet Compartment to your office, examine its surface mounted hinge and recessed latch. Note the smooth, uncluttered exterior of the entire compartment. The keeper wraps snugly around the stile; there are no projections above or below the door. No cutouts either. While inspecting the model, simulate slamming the door with the bolt extended. At contact see how the bolt immediately retracts, preventing damage to bolt, door, and stile...  
*For an early demonstration—please write.*

HENRY WEIS MFG. CO., ELKHART, INDIANA

See Weis in Sweet's

IF DOOR IS SLAMMED



For more data, circle 105 on Inquiry Card

# WEIS



# WHEN YOU SPECIFY ALTEC SOUND EQUIPMENT, ALSO SPECIFY THAT IT MUST BE INSTALLED BY AN AUTHORIZED ALTEC SOUND CONTRACTOR



Northwest Sound Service, Inc., is typical of Altec Sound Contractors who have the laboratory test equipment to assure optimum adjustment and performance of the sound system.

Even Altec—the very finest sound equipment—can perform to its utmost only if it's installed properly. That's why it's imperative to carefully spell out in your specification that an Altec Sound Contractor do the job. No one else is so well or so reliably qualified.

In fact, there are only about 250 truly capable sound contractors in the country who can be entrusted to survey a job, assist in preparing the specifications, install per the specs, and then adjust and service the sound system properly. And practically all of these are already Authorized Altec Sound Contractors.

## CONTINUOUS TRAINING ASSURES UP-TO-THE-MINUTE "KNOW-HOW"

For this select group, we provide the most intensive training programs in the industry. National Audio Seminars are held periodically at our factory. These week-long "refresher courses" are attended by contractors and their staffs. Every year our engineering staff conducts 3-day Audio Clinics in key cities throughout major regions of the country.

## TECHNICAL ASSISTANCE BY FACTORY ENGINEERS

Only Authorized Altec Sound Contractors may call upon our engineering staff for assistance. Additional consultation is also available to each of them from the Altec Field Representative in the Contractor's immediate area.

## HOW TO MAKE SURE THAT THE SYSTEM IS INSTALLED BY AN AUTHORIZED ALTEC SOUND CONTRACTOR

Be sure to write into your specification that the sound contractor must be an authorized, qualified Altec Sound Contractor. For your own protection—and as a positive guarantee of client satisfaction—remember that only a *bona fide* Altec Sound Contractor can have us send you *factory certification* that he is really an Authorized Altec Sound Contractor. Or, you may get certification of his official authorization directly from us.

Authorized Altec Sound Contractors will honor their bids by delivering Altec equipment as specified, and will not cut corners in order to increase their profits by substituting cheaper equipment of inferior quality.

So, to ensure successful completion of the Altec Sound System you specify, be sure to include in your specification that "the equipment shall be installed by an Authorized Altec Sound Contractor, and that he shall furnish you with certification of his authorization from the manufacturer."

## CONSULT THE YELLOW PAGES FOR THE ALTEC SOUND CONTRACTOR NEAR YOU

See Sweet's: Architectural File 33a/AL. Industrial File 17f/AL

Check now to find the Authorized Altec Contractor in your area. Or, for further information, write Dept. AR2.



**ALTEC**  
LANSING CORPORATION

**ALTEC LANSING CORPORATION**  
LTV A Subsidiary of  
Ling-Temco-Vought, Inc.  
ANAHEIM, CALIFORNIA

©1965 ALC

For more data, circle 106 on Inquiry Card

## Product Reports

continued from page 202

### REDESIGNED EMERGENCY CALL BOXES

Modifications have been introduced in the design and operation of fire and *Phon-O-Matic* emergency call boxes, which are used principally in industrial plants, military installations, etc. The *Phon-O-Matic* fire alarm and emergency communication system can be identified by new call boxes with fiberglass sides finished in bright red. A stainless steel hinged door has the words "Fire Emergency Phone Inside" printed in large red letters. The word "Pull"



appears on the handle of the alarm station, which can be opened by any passer by without a key or breaking any glass. Once the handset telephone inside is removed from its cradle, an automatic signal indicating its location is flashed to the central remote control receiving station. The new *Phon-O-Matic* stations are designed for wall, pole or pedestal mounting. *Notifier Corp.*, 3700 No. 56th, Lincoln, Neb.

CIRCLE 306 ON INQUIRY CARD

### FLEXIBLE POLYURETHANE SEALANT

*Rubber Calk TM220 Sealant* has been specially developed to seal expansion and contraction joints where extensive structural movement is encountered. The new sealant is a two-part self-leveling polyurethane sealant which the company claims cures at ambient temperatures to a firm, flexible, abrasion resistant rubber. The sealant is said to have high resistance to prolonged weather exposure and to have excellent adhesive properties when bonded to primed metal and concrete surfaces. *Products Research Company*, 2919 Empire Ave., Burbank, Calif.

CIRCLE 307 ON INQUIRY CARD  
more products on page 210



...does a client need signs?

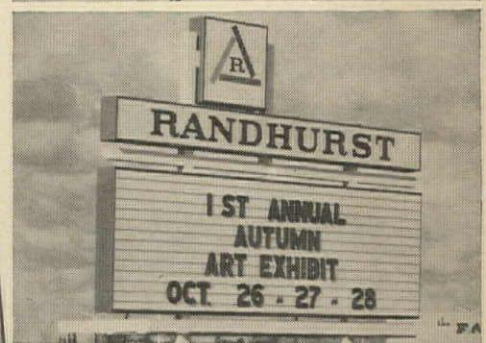
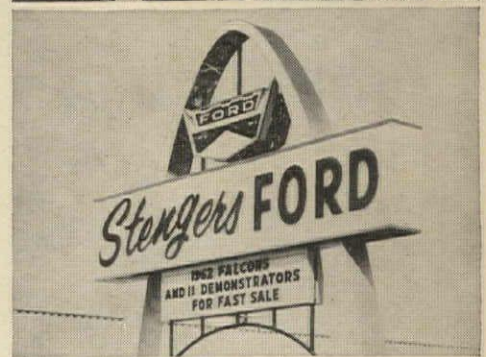
## THIS FREE WAGNER FOLDER MAKES SELECTION SIMPLE

Wagner Changeable Letter Copy Boards will satisfy your customers' most varied requirements for attractive, highly visible signs.

Up-to-the-minute timeliness, economy, and versatility are their outstanding advantages. The Wagner Copy Board File Folder, specifically designed to fit easily into your files, covers a wide variety and price range of copy board types, from large permanent frame-and-glass installations to economical Plasti-Bar signs.

Wagner Changeable Letter Copy Boards are being used as an integral building and grounds element in the design of Restaurants, Hotels and Motels, Theatres and Auditoriums, all types of chain and independent retail stores, Realtors and Savings Institutions, Churches, Industrial Safety and Municipal Promotion, and many other applications. In fact, whenever a message is to be communicated with high visual impact at relatively low cost . . . and the unique ability to change copy at will.

Be sure you have the complete Wagner story close at hand. Use the handy coupon to send for your free copy of the Wagner Copy Board File Folder today.



WAGNER COPY BOARD FILE FOLDER

SIGN SERVICE, INC.

**WAGNER**  
SIGN SERVICE, INC.

Wagner Sign Service, Inc.,  
209 So. Hoyne Avenue, Chicago, Illinois 60612

Please send me the Wagner Copy Board File Folder

Name \_\_\_\_\_

Firm Name \_\_\_\_\_

Address \_\_\_\_\_

For more data, circle 107 on Inquiry Card





*Here's what Bob Frymire, President  
Frymire Engineering Company,  
Dallas, Texas, says about*

## **COPPER DWV**

"Since we've started using copper for DWV lines we never even consider other materials. And here's why!

- "Copper is light . . . easy to handle.
- "Copper requires fewer joints; and the leakproof, solder joints you do make are made fast and easy.
- "Copper can be installed in the tightest corners, with ease and speed . . . you save space.
- "Copper doesn't rust.
- "Copper won't clog because of its smooth interior, gun-barrel finish.
- "Copper DWV lines fit into standard partitions.
- "Copper is no trouble to prefabricate . . . you don't have to worry about joints loosening up. Because of their light weight and strong joints copper assemblies are readily handled without damage.
- "Copper makes material and waste easy to control.
- "NATURALLY, WITH ALL THESE ADVANTAGES, COPPER DWV LINES COST LESS TO INSTALL. AND THAT'S WHAT EVERYBODY'S LOOKING FOR, A QUALITY JOB AT THE LEAST POSSIBLE COST."



# REVERE

**HAVE YOU SEEN REVERE'S FILM ON  
COPPER WATER TUBE? IT'S FREE!**

This is a 16mm, 30-minute, sound-color motion picture entitled, "COPPER TUBE IN BUILDING CONSTRUCTION." It is the first and only film covering the entire subject of proper piping practices. Covers full range of building applications and joining techniques. Now available for group showings. Descriptive folder on request. We will be glad to help you with staff sales meetings. Write your local Revere office or Dept. "R" at address shown below.



## **REVERE**

**COPPER AND BRASS INCORPORATED**

*Founded by Paul Revere in 1801*

**Executive Offices: 230 Park Ave., New York, N.Y. 10017**

**Sales Offices in Principal Cities • Distributors Everywhere**

For more data, circle 108 on Inquiry Card



THE VIKING: Dallas, Texas  
Owner and Builder: HAL ANDERSON  
Plumbing, Heating & Air Conditioning Contractor:  
FRYMIRE ENGINEERING COMPANY  
Revere Distributor: INTERNATIONAL SUPPLY COMPANY  
All of Dallas, Texas

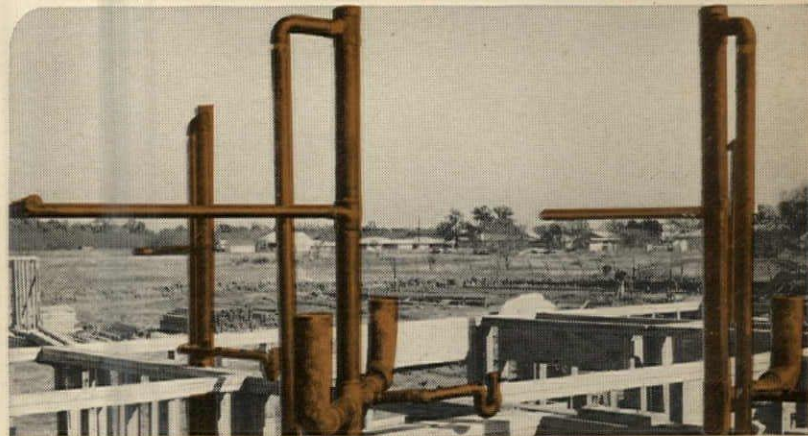


67-UNIT VIKING APARTMENT DEVELOPMENT FITTED OUT WITH 30,000 LBS. OF  
**COPPER WATER TUBE and DWV**

When you consider the many advantages of copper DWV as stated by Mr. Frymire (see opposite page), it is readily understandable why 1963 sales rose 28% over 1962 with the total consumption of DWV in 1963 put at 65.8 million pounds . . . and a new record for 1964 is virtually certain. Follow the overwhelming trend to copper water tube and copper DWV . . . GO COPPER ALL THE WAY! And, when you specify, be sure to name the brand that bears the oldest name in copper . . . REVERE.

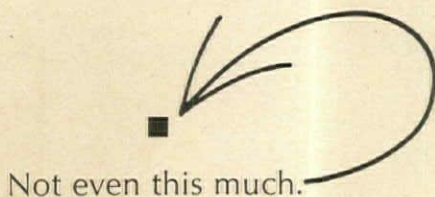
**PREFABRICATION AT THE JOB SITE** — one of the many reasons contractors are using an increasing amount of Copper DWV. You need fewer tools. Strong, soldered joints that can't crack or loosen make it easy to handle.

**THE ROUGHING-IN STAGE**—another place where you save installation time when you use Copper Drainage, Waste and Vent Lines. Standard studs and partitions . . . no special bracing . . . soldering is easy in the tightest corners.





# How much space should a laundry take up in your hospital?



Not even this much.

Not a jot. Not a whit. Not a speck. Not a smithereen. Not even the shadow of a shade. Not any. None. Zero.

Laundry? Who *needs* it? What hospitals need is bed space, operating rooms, prep rooms, office space, storage space. What they don't need is a space-consuming laundry facility with its huge investment, equipment, personnel problems and operation and maintenance expenses. Brrrrr; even a smidgeon of a laundry in your plans is far too much.

Your local linen supplier has a laundry. A huge, modern, efficient laundry. *He* needs one. He'll supply clean linens, towels and uniforms galore, when they're needed. For one low monthly charge, based on actual linens used (less than it would cost from your own laundry).

Give him a call. He's in the yellow pages under "Linen Supply" or "Towel Supply." He's an expert on the subject.

#### FREE DESIGN GUIDES!

They give case histories and suggestions for providing more efficient linen supply service in hospitals, motels, hotels, schools and restaurants, as well as for commercial firms, professional offices and various institutions. Write today.

LINEN SUPPLY ASSOCIATION OF AMERICA  
975 Arthur Godfrey Road, Miami Beach, Florida 33140

For more data, circle 109 on Inquiry Card

## Product Reports

continued from page 206

### PORTABLE PARTITIONS

These new portable partitions can be locked together to form classroom dividers, and can be quickly disassembled and converted into banquet tables. *Porta-Class Table Wall* units are finished in cherry grained *Masonite Duolux*, and are available in panels of 3 by 7 ft. The surface is mounted to a warp free 1¼ in. honeycomb core and framed with solid oak molding. When used as free-standing partitions, panel sections



are tightly joined by a tension rotary lock, using either 90 deg or T directional posts. The sections are assembled or separated with a standard *Allen* wrench. No floor or wall attachment is necessary. *Church Interiors Inc.*, Tacoma, Wash., 98402 and *Masonite Corp.*, Chicago, Ill., 60606

CIRCLE 308 ON INQUIRY CARD

### NEW FUSES FOR SAFETY AND CONVENIENCE

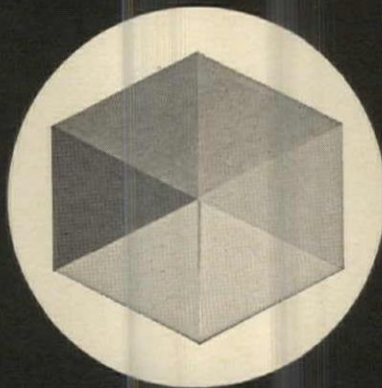
*Buss Type SC* fuses have been designed to meet the protection requirements of the ever increasing electrical load in homes, commercial and industrial installations. They have an interrupting rating of 100,000 amp and can safely handle very heavy fault currents. As they have a voltage rating of 300 to the ground they can be used on 120/208, 120/240 and 277/480 volt circuits. Sufficient time delay has been built into these fuses to prevent the operation of protective devices as a result of harmless overloads. A comparatively low watt loss reduces the heating of the fuses. Physical dimensions have been reduced to allow the use of smaller fuse panels. *Bussman Mfg. Div.*, *McGraw Edison Co.*, St. Louis, Mo., 63107

CIRCLE 309 ON INQUIRY CARD

more products on page 214



creating new concepts  
for beauty and quality  
in lighting



## ONE IN A MILLION (a lighting prism by K-S-H)

It's perfect. The other 999,999 will be, too. There are 10,000 prisms in a 1 x 4 K-Lite panel. A million of them in many buildings. If they weren't all perfect, you'd have problems. When prisms have slightly curved surfaces, for example, the light goes wild. You get hot spots and streaks. If the prism angles aren't true, you get high levels of brightness. A single imperfect prism is a visible flaw.

K-Lite plastic panels are made by *lighting* people who fully understand what you want from prismatic fixtures. As a result, far more K-Lite is used than any other plastic lenses made.

The lens is a small fraction of total lighting costs. But it controls the final result. Make sure *your* clients get K-Lite by K-S-H. In acrylic, polystyrene and the new "Tedlar" film-protected. Available from most major fixture manufacturers *if you specify them!*

"Tedlar" is a Du Pont registered trademark

**K-S-H PLASTICS, INC.**  
10212 Manchester • St. Louis, Mo. 63122

**KLITE**<sup>®</sup>  
LIGHTING PANELS

For more data, circle 110 on Inquiry Card



**It's  
moving day  
for  
thermostats!**





**"Room thermostats belong on the wall"**

# **ridiculous!**

**New Barber-Colman Heat-of-Light System puts the thermostat where it works best—in a moving air stream. Result: Temperature changes are detected up to 15 times faster than with wall-mounted thermostats. Clip coupon for complete information.**

**R**oom thermostats belong on the wall." Ridiculous! Walls soak up heat (or cold). Wall-mounted thermostats pick up this heat or cold, so response to room temperature changes is slowed, resulting in overheating (or overcooling).

#### **New temperature sensing element mounts in ceiling diffuser**

Thermostats work best in a *moving* air stream. That's where Barber-Colman puts them in the Heat-of-Light System. Conventional, wall-mounted thermostats have been replaced by pencil-thin electronic sensing elements that fit in the air-handling system (in air/light diffusers, under-the-window units, ceiling diffusers). This new development in thermostat design and application means that the moving air surrounding the people in the room can be continuously sampled. Changes in temperature are detected and acted upon up to 15 times faster than with wall-mounted thermostats. Temperature control is more accurate and uniform.

What's more, moving the thermostat off the wall reduces installation costs. No drilling or channeling for electrical conduit or pneumatic tubing—low-voltage wires connect the electronic sensing element to the control system. Walls and panel dividers can be moved without altering the temperature control system. The costs of re-installing and recalibrating thermostats every time a partition is moved are eliminated.

#### **New system combines lighting, heating, and cooling functions**

Today, lighting levels of up to 150 foot-candles (or more) are common. Up to 85¢ of every dollar you spend for light at these higher levels ends up as

heat. With the new Barber-Colman Heat-of-Light System, much of the heat generated by light, as well as people and equipment can now be put to work heating the building.

Air-handling lighting fixtures remove up to 85% of light-generated heat from the occupied zone. Barber-Colman's Jetronic mixing units capture this heat and use it to warm interior zones and offset heat losses at the building perimeter. Result: Ideal operating temperatures for fluorescent lights (75° to 80°F) are maintained—increasing light output by 15 to 20% over "static" fixtures. Lighting levels can be doubled (up to 200 foot-candles or more) without increasing conditioned air load.

And, there are other important benefits: You realize major savings in the cost of air conditioning. Steam boilers and other high-output heat sources can be reduced in size (or eliminated).

Hot air ducts, reheat coils and piping are not required. Less pipe and duct insulation are needed. And, you get more air conditioning in less space.

#### **Computer helps you evaluate Heat-of-Light for your building**

Now, take the guesswork out of designing your next air conditioning system. A simple one-page Feasibility Study (plus a few minutes work by our Transac 2000 computer) lets you evaluate a Heat-of-Light System before it's installed. The computer carefully studies each floor in the building. It calculates heating and cooling air temperatures for perimeter air systems ... the number of light fixtures required ... supply air quantity and temperature ... and primary air quantities. You get an answer quickly—often within 48 hours. (More than 100 of our customers and prospects have used this computer service in the past six months.)

**Get the facts!** Clip coupon below or contact your nearest Barber-Colman field office for a Feasibility Study.



## **BARBER-COLMAN COMPANY**

ROCKFORD, ILLINOIS 61101

In Canada: BARBER-COLMAN OF CANADA, LTD.

Toronto, Ontario

... where originality works for you

#### **Barber-Colman Company Rockford, Illinois 61101**

- Please have your local representative call me to arrange a computerized Feasibility Study.
- Please send me your NEW booklet on the Barber-Colman Heat-of-Light System.

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

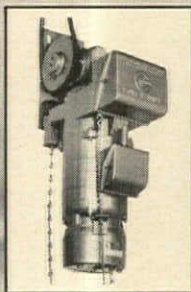
For more data, circle 111 on Inquiry Card



# NOW AVAILABLE... U. L. LABELED ROLLING FIRE DOOR WITH MOTOR OPERATION

and look  
what it does!

It combines the full efficiency of motor operation with complete fire protection.



The Cookson "Servire"<sup>®</sup> (Service plus Fire Protection) Motor Operated Steel Rolling Fire Door carries the approval of Underwriters' Laboratories and Factory Mutuals.  While manual operation of fire doors has long been regarded as a necessary evil, this is no longer true.  Cookson now offers a motor operated rolling fire door—something that building owners, operators and tenants have been waiting for. *Under average conditions, a motor operated fire door will pay for itself in about four months\* based on labor savings over manual chain operation.*  Push-button control, or remote radio control from fork-lifts or other vehicles, speeds up operations without diminishing the fire safety factor. When the safety link fuses at 160° F., the Automatic Drop Mechanism takes over. Here again Cookson provides extra protection: the speed of descent of the door can be adjusted and pre-set to prevent injury to personnel or damage to equipment.  Write for our catalog, or see Sweet's.

\*Savings estimated on an average door raised and lowered five times a day.



"BEST WAY TO CLOSE AN OPENING"

## COOKSON

The Cookson Company • 700 Pennsylvania Avenue  
San Francisco 7, California

ROLLING DOORS • FIRE DOORS • GRILLES • COUNTER DOORS • COILING PARTITIONS

For more data, circle 112 on Inquiry Card

## Product Reports

continued from page 210

### OUTDOOR LIGHTING

This company has recently introduced a complete line of 12-volt garden, walkway and underwater lighting, designed for quick and trouble free installation. Units are available with different colored lenses, so that a wide variety of effects can be achieved. A feature of the series is a



*Garden Lite* do-it-yourself kit consisting of six sealed beam lamps mounted in spiked housings, 100 ft of low voltage cable, a *Power Pac* transformer complete with weather proof housing, circuit breaker, plug-in-cord, mounting bracket and adapter. *Coronado Manufacturing Co., P.O. Box 2108, Long Beach, Calif.*

CIRCLE 310 ON INQUIRY CARD

### LONGER STEEL JOISTS

Two new series of deep longspan steel joists, *Ceco DLH* and *DLJ* series are designed for spans up to 144 ft in length, and can be ordered in depths to 72 in. The new series are intended particularly for the construction of supermarkets, gymnasiums, industrial plants, bowling alleys and other buildings requiring column free floor area. Both series are designed and fabricated in accordance with standards recommended by the Steel Joist Institute. *Ceco Steel Products Corp., General Offices, 5601 West 26th St., Chicago, Ill., 60650*

CIRCLE 311 ON INQUIRY CARD



more products on page 218





## Shelter for A House of Worship

As stone and brick was used for permanence in the construction of Temple Emanuel, so Ludowici-Celadon roofing tiles were chosen for their everlasting beauty and strength. Easily adapted to any design, these tiles soundly reject any and all elements. Available in a variety of shapes, styles and colors to complement any design for the life of the building.

Whether planning a new structure or replacing your present roof, be sure to consider the architectural advantages of a Ludowici-Celadon tile roof.

A special brochure is available upon request.



**TEMPLE EMANUEL,**  
Chicago, Illinois

**ARCHITECT:**  
Loebl, Schlossman  
and Bennett

**ROOFING  
CONTRACTOR:**  
Hans Rosenow  
Roofing Company

**ROOFING TILE**  
By Ludowici

**LUDOWICI-CELADON CO.**  
75 EAST WACKER DRIVE • CHICAGO 1, ILLINOIS

Please—by return mail—send me your special architectural brochure illustrating Ludowici roofing tiles in full color.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

**LUDOWICI-CELADON COMPANY • 75 East Wacker Drive • Chicago 1, Illinois**

For more data, circle 113 on Inquiry Card



Radiologists, hospital administrators and architects have long relied on the Installation Planning Service of General Electric's X-Ray Department in the preparation of complete plans for hospital x-ray departments. Now an extension of that service makes it possible to quickly determine the best utilization of space for the most efficient and practical factoring of work load and traffic flow. Fabricated scale models of major x-ray apparatus (one inch equals one foot) let you visualize in true perspective each room of your proposed x-ray department. They virtually bring your plans to life, help form more than just a mental picture of the proposed facilities.

## ***How to see the x-ray facilities... you've only begun to plan***

scale models  
of equipment  
bring your  
plan to life...

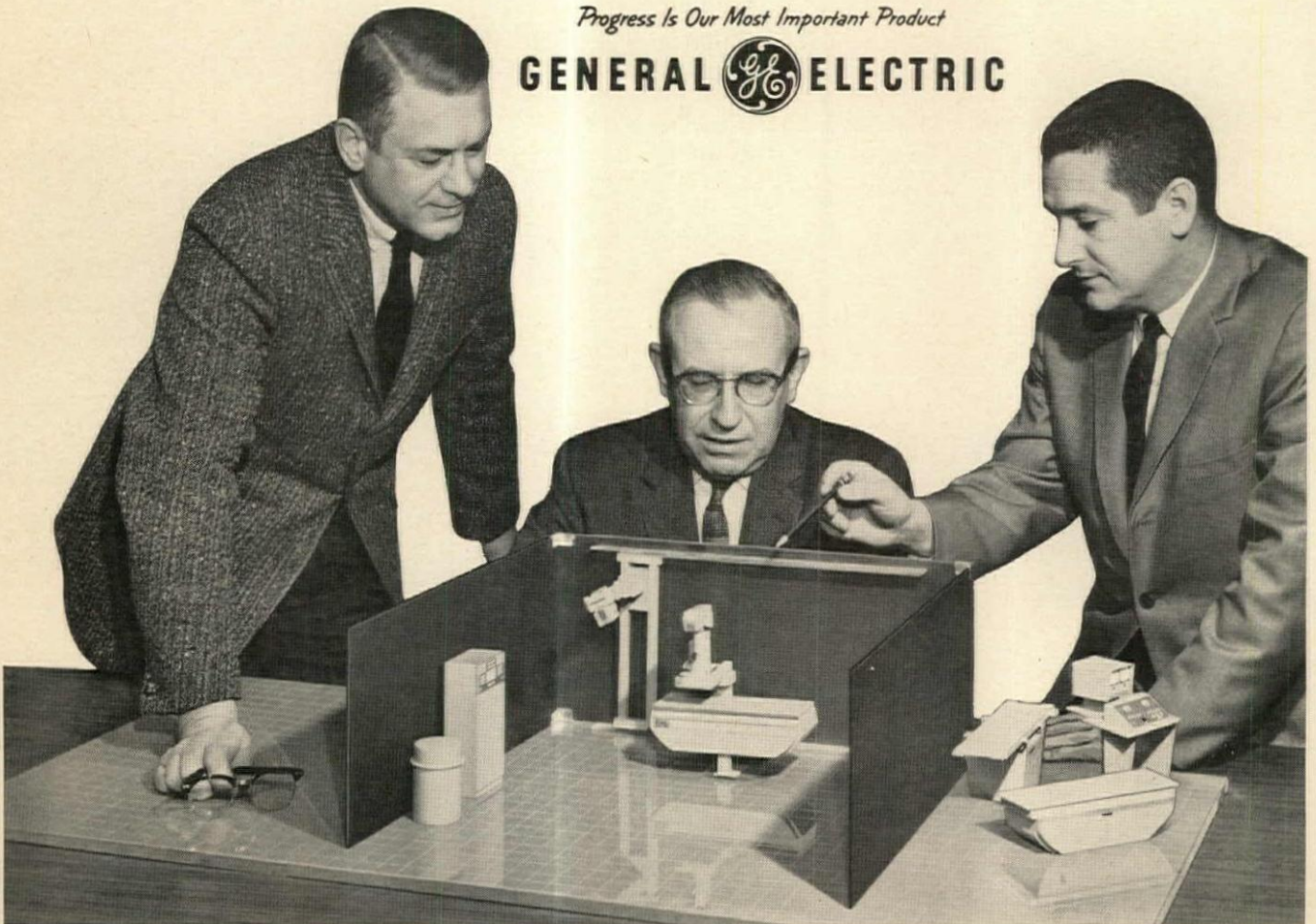
*speed final  
approval!*

Your local G-E x-ray representative will be glad to reserve the models to help you bring your plans to life. His assistance can simplify the planning of a modern x-ray department, which today encompasses a variety of complex electronic apparatus that must function as a complete system. With the local G-E man as liaison, our Installation Planning Service will prepare preliminary layouts for you. After approval, detailed layouts of each section of the proposed department will be prepared to supply you with precise plumbing, power, wiring and x-ray protective requirements.

Your G-E representative is a source of experienced and immediate assistance—without cost or obligation. Call him at the office nearest you. It's listed under "X-Ray" in the Yellow Pages, or write X-Ray Department, General Electric Co., Milwaukee, Wisconsin 53201. Room C-27.

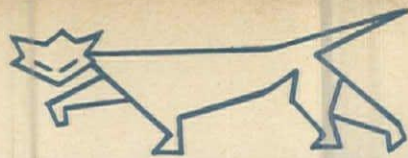
*Progress Is Our Most Important Product*

**GENERAL  ELECTRIC**



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# SILENT GLISS

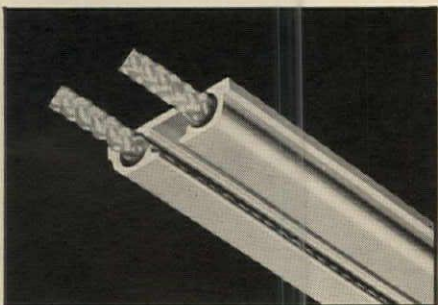
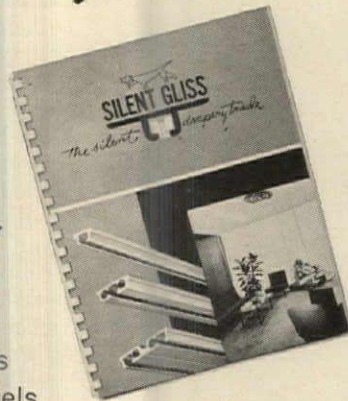


*the silent drapery track<sup>®</sup>*

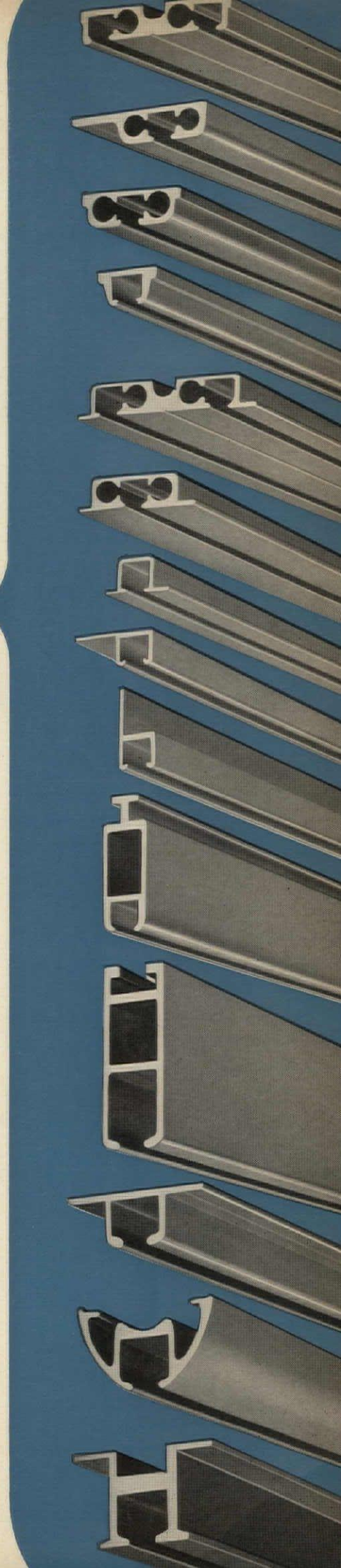
Whatever you may read, hear, or be told — one thing is sure: *there is no other track to equal Silent Gliss.*

The reasons are clear: ■ No other track has the patented system of cords traveling in separated, semi-enclosed channels (to prevent drooping, tangling, and other problems of tension systems). ■ No other track features the silence of satin-smooth rounded nylon carriers traveling in precisely fitted channels (no annoying "echo chamber" roller noise.) ■ No other track has the slim, trim lines of Silent Gliss (with the gracious contours of the thoroughbred).

Silent Gliss offers *fourteen* track styles to choose from: tracks for surface mounting, bracket mounting, or recessing . . . tracks for cord traversing or hand operation . . . tracks for cubicle, extra-duty or specialty use. All are shown and described in the complete illustrated catalog shown above. Write for full details today; address Dept. AR-2.



□ Here is the *secret of Silent Gliss* . . . with its all-nylon cord, traveling in patented, *separated* channels. This means minimum maintenance, because there's no drooping, no tangling *ever*. It's one of the reasons why Silent Gliss is the *prestige* track, chosen for quality installations the world over.



## SILENT GLISS, INC.

*Distributing Companies*

Angevine Co., Freeport, Illinois

Drapery Hardware Mfg. Co., Monrovia, California

THREE OF THE **Newell** COMPANIES

*Manufacturers of Quality Drapery Hardware Since 1903*

For more data, circle 115 on Inquiry Card



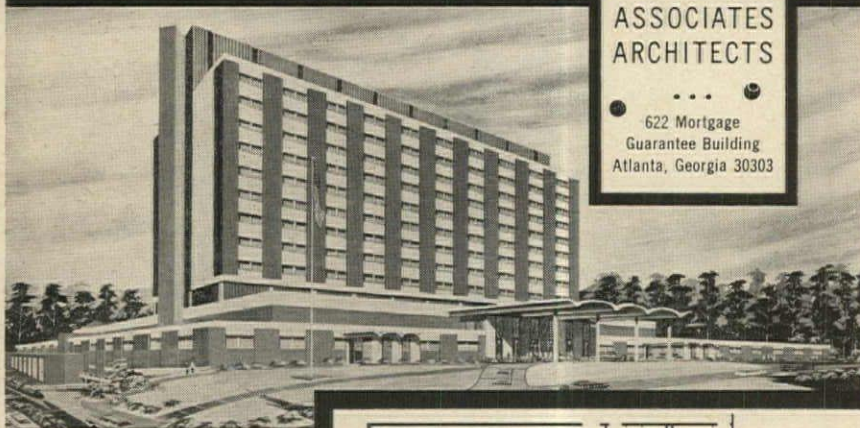
# TROY®



equips the new 580-bed  
V.A. Hospital in Atlanta for  
**HIGH-PRODUCTION LAUNDRY**

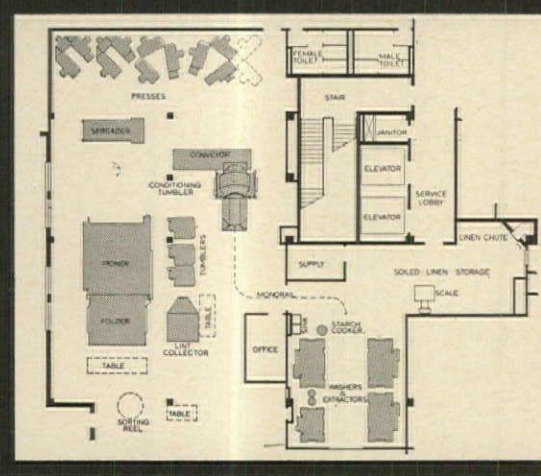
GREGSON &  
ASSOCIATES  
ARCHITECTS

622 Mortgage  
Guarantee Building  
Atlanta, Georgia 30303



Laundry layout at the new Atlanta V.A. Hospital includes four Troy WX® Washer-Extractors, an 8-roll Troy Speedline® Ironer, Troy Fleximatic® Air-Jet® Folder plus tumblers, presses and other equipment from the **complete** Troy line.

At Atlanta's new veterans' hospital now under construction laundry facilities will be completely Troy-equipped. Architect Wilfred J. Gregson states:



“ Troy Laundry Machinery was very energetic in meeting the laundry requirements for this modern hospital. The layout represents the last word in sanitary handling of hospital laundry and streamlined processing. The specifications for the equipment were very rigid to assure the highest, most efficient laundry output. ”

For your next hospital or other institution requiring **dependable** laundry facilities, contact your Troy Representative or write for complete information and service . . . from the world's oldest manufacturer of power laundry equipment.



## TROY LAUNDRY MACHINERY

A DIVISION OF AMETEK, INC.  
EAST MOLINE, ILLINOIS

For more data, circle 116 on Inquiry Card

## Product Reports

continued from page 214

### COMMERCIAL WATER HEATER

The model B-180-A small gas-fired booster heater meets the revised American Standard Association code requirements covering venting in commercial kitchens. Designed for restaurants, lunch counters, diners



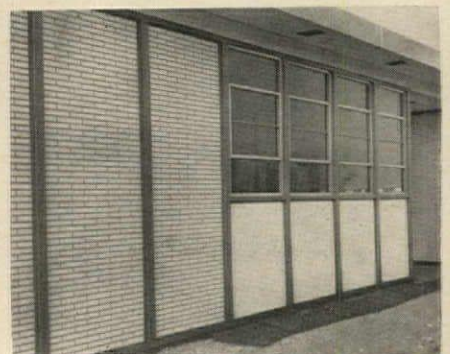
and other facilities requiring 180 deg water, this heater is rated at 50,000 Btu, and has a tank capacity of eight gals. It can heat 42 gph at 100 deg rise. The unit is 30½ in. high, with a 19-in. diameter and weighs 185 lb. A. O. Smith Corp., Consumer Products Division, Kankakee, Ill.

CIRCLE 312 ON INQUIRY CARD

### CURTAIN WALL PANELS

New low-cost curtain-wall panels are produced by applying a thin durable masonry surface over insulated panels. The finish is said to be waterproof and stain resistant, and is applied with a special process which simulates the colors, design and texture of brick. Century Brick Corp. of America, Century Brick Building, 4506 West 12th St., Erie, Pa.

CIRCLE 313 ON INQUIRY CARD



more products on page 226





**When disaster strikes...**  
**He is there**  
**(even when he's not!)**

The Principal's voice: calming—reassuring—instructing—directing... eliminating possible panic and confusion... through STROMBERG-CARLSON's new Automatic Fire Alarm System with VOX-Guide\*. The instant a fire alarm sounds, VOX-Guide automatically delivers a message—spoken by him—to every student in every corner of the school. The sound of a relaxed, familiar voice *can* prevent panic in a school emergency. Yet only STROMBERG-CARLSON has VOX-Guide... the Automatic Talking Fire Alarm. Isn't it worth investigating?  
*"There's nothing finer than a Stromberg-Carlson"*

\*Trademark of General Dynamics Corporation

**STROMBERG-CARLSON**  
 A DIVISION OF GENERAL DYNAMICS

STROMBERG-CARLSON • 1463 N. Goodman Street • Rochester, N. Y. 14601

Please forward me:

- A brochure on your Fire Alarm Systems.
- A brochure on all your school communications products.

NAME .....

TITLE .....

ORGANIZATION.....

ADDRESS .....

CITY ..... STATE .....

← For more data, circle 117 on Inquiry Card

For more data, circle 118 on Inquiry Card



*Another example of AAF environmental control*

One,

two, three.

Architects: Yount, Sullivan and Lecklider, Dayton;  
Consulting Architects: Potter, Martin, Tyler & Roth,  
Cincinnati; Consulting Engineers: Helmig, Lienesch &  
Associates, Dayton; Mechanical Contractors: Reiniger  
Plumbing & Heating Company, Dayton and Tibbetts  
Plumbing & Heating Company, Dayton; Sheet Metal Con-  
tractors: Shriber Sheet Metal & Roofers, Inc., Dayton.



# ...different types of air filters at this hospital

## ...and they're all AAF!

No single type of air filter can economically do the complete cleaning job in a modern hospital.

Here at the Charles F. Kettering Memorial Hospital and School of Nursing in Kettering, Ohio, planners made sure that interior air would always be prescription clean. From AAF's complete line of filters, they selected three different types.

The bulk of the hospital's clean-air needs (211,000 cfm) is met with AAF's Rollotron. This is the one filter which offers (1) the efficiency of an electrostatic precipitator, and (2) the minimum maintenance of a renewable media filter. Certain critical areas of the hospital, such as the ten operating rooms, require

a second type of filter—AAF's high-efficiency DRI-Paks. And a third type of filter provides clean air for the School of Nursing's classrooms, living quarters, auditorium and offices. Here AAF's Type H Roll-O-Matics are on the job, cleaning themselves automatically as they clean the air.

Make sure you get an optimum correlation of filter cost, efficiency and maintenance. Talk with the *one* company that makes all kinds of filters—AAF.

For more information on AAF's complete line of hospital filters, call your local AAF representative. Or write direct for Booklet 249-P3. Address: Robert Moore, American Air Filter Company, Inc., 339 Central Avenue, Louisville, Kentucky 40208.



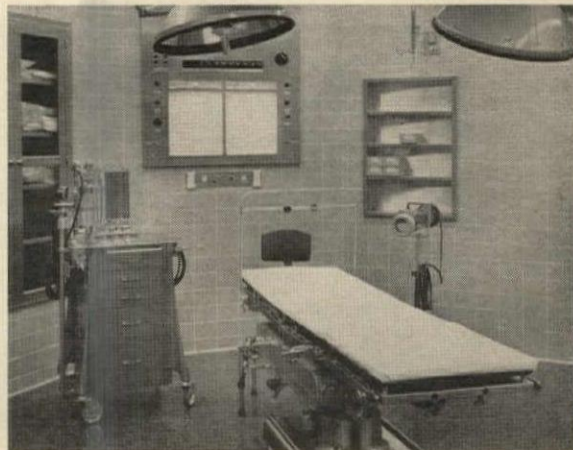
**American Air Filter**  
BETTER AIR IS OUR BUSINESS



*Keeping hospital air clean at Kettering Memorial is primarily the job of AAF's Rollotron filters.*



*More critical areas of the hospital are doubly protected with high-efficiency DRI-Pak unit filters.*







*darling...*

*nobody but nobody  
delivers a disposer with  
more quality features  
than In-Sink-Erator*

Surveys prove women want homes with disposers. This disposer is engineered to set quality and performance standards others would like to live up to!

In-Sink-Erator Model 77 gives the Lady what she wants! Grinds in both directions, doubles shredder life, thanks to patented automatic reversing switch. Exclusive Self-Service Wrench frees accidental jams quickly, cuts customer complaints and costly call-backs. Special Detergent Shield guards against corrosion damage from caustic agents. Nobody offers a 5-year protective warranty the equal of In-Sink-Erator's! Models for homes and apartments in every price range.

Write for full information. If you prefer, a representative will call at your convenience.

**ISE<sup>®</sup> In-Sink-Erator<sup>®</sup>**  
Originator and perfecter of the garbage disposer

IN-SINK-ERATOR MANUFACTURING COMPANY • RACINE, WISCONSIN

For more data, circle 120 on Inquiry Card

## Product Reports

*continued from page 218*

### SNOW MELTING CONTROL THERMOSTAT

Snow melting equipment can be turned on automatically by the new Chromalox TWT-63 snow control thermostat.

The new machine detects snow fall automatically after the first few flakes hit its heated funnel. The temperature difference between the melted snow and collector cup on a bi-metallic bridge causes contacts to



close. This actuates the snow melting equipment. An integrated thermostat pre-set for 35 deg F prevents operation above that temperature. About 45 minutes after the last snowflake is collected, the electrical connection to the snow melting equipment is broken and melting operations stop. Advertising Dept., Edwin L. Wiegand Company, 7500 Thomas Blvd., Pittsburgh, Pa., 15208

CIRCLE 314 ON INQUIRY CARD

### AUTOMATIC WATER CONDITIONER

The new *Ultima* water conditioner is available in three models, the U-9, U-18 and U-36. The company claims that these three models can satisfactorily condition 95 per cent of all the waters throughout the United States.

The unit contains no solenoid valves, diaphragms or sliding pistons and the complete operation is performed within one tank without the need for an extra salt storage tank. A lifetime warranty is given on all tanks. Universal Water Softener Co., 1400 Reed Rd., Geneva, Ill.

CIRCLE 315 ON INQUIRY CARD

*more products on page 230*



## Facades:

**Weldwood® Glasweld® is a permanent mineral coated panel particularly suitable for facades:**  
**Completely inert, weatherproof, incombustible and appears optically flat.**

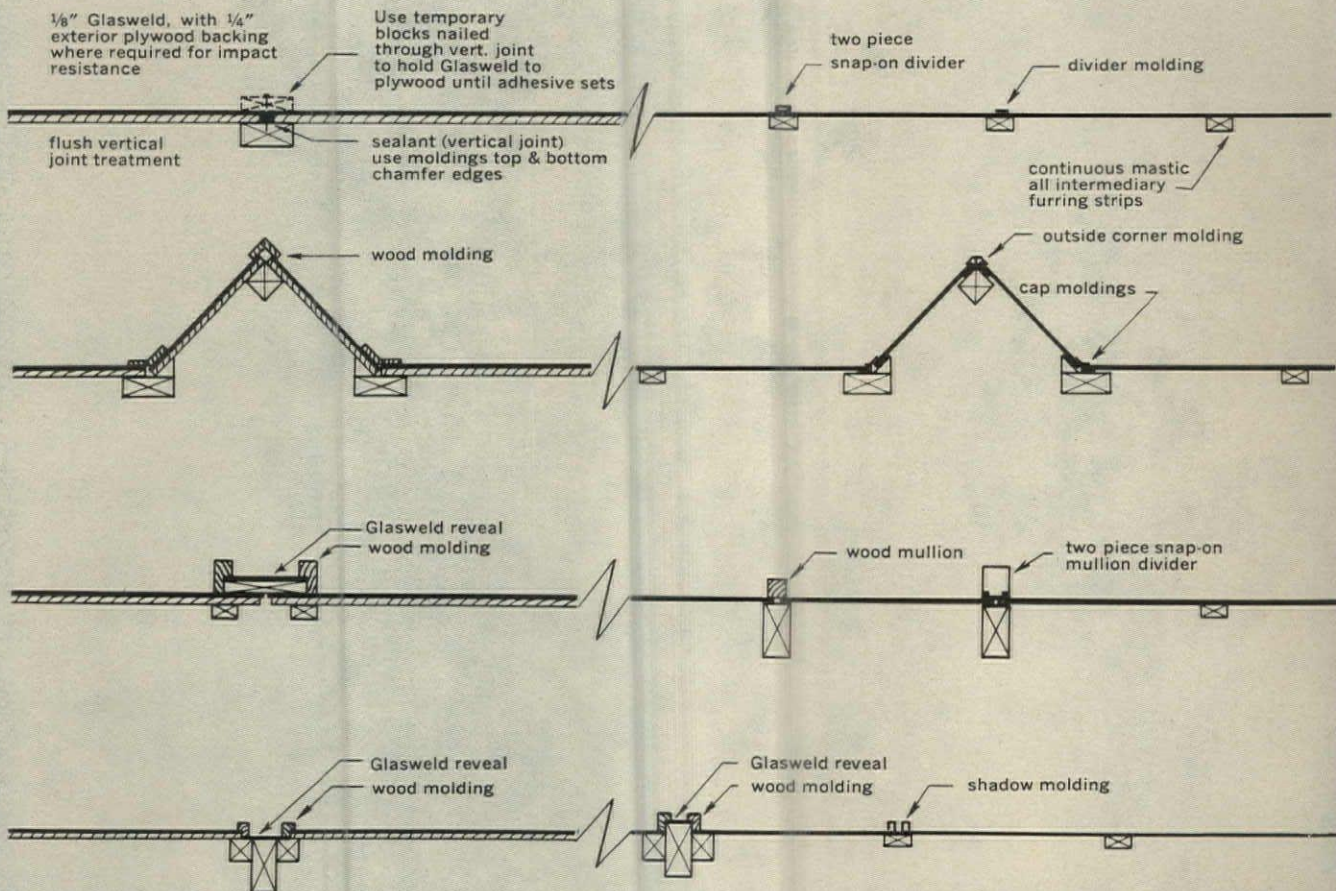
Weldwood®

**GLASWELD®**

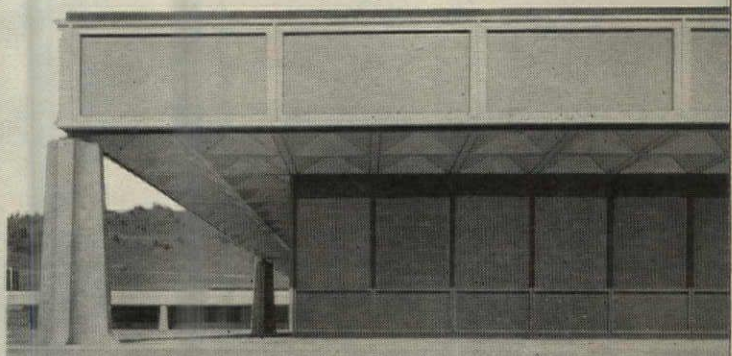
**United States Plywood**  
 777 Third Avenue  
 New York, N. Y. 10017

Come take a walk through our woods. See our new showroom in the United States Plywood Building.

### Plan section showing various Glasweld facades



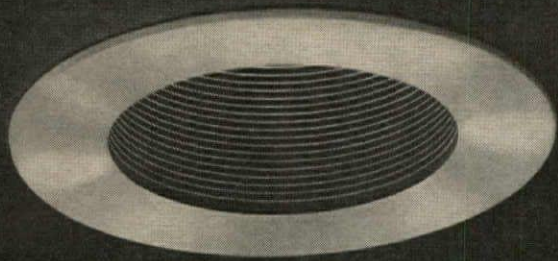
Glasweld's unique characteristics permit the architect to design a wide variety of facade effects. These can be achieved by installing 4' x 8' or 4' x 10' sheets as detailed above. In Glasweld you have a permanent mineral coated asbestos-reinforced panel that will stay flat. It is rustproof, rotproof, and 100% incombustible (Underwriters Laboratories, Inc., Listing 0-0-0). You can specify Glasweld with complete confidence that you are providing low maintenance facades that are color fast. Select from 28 stock colors or request special color matching.



Oregon Technical Institute, Klamath Falls, Oregon. Architects: Skidmore, Owings, and Merrill, Portland, Ore. Glasweld used for fascias, coffered soffits and insert panels beneath windows.

For more data, circle 121 on Inquiry Card



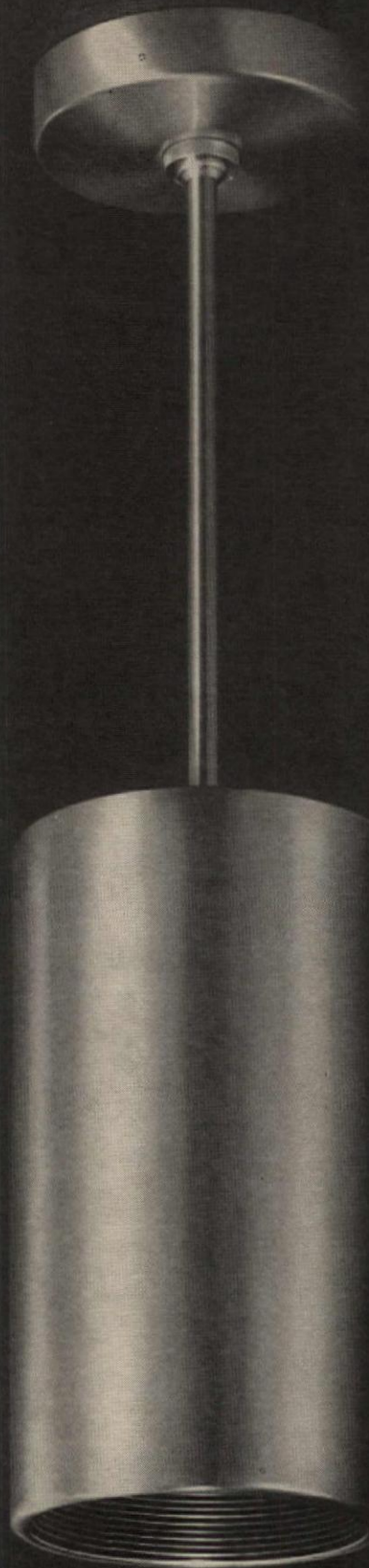


**We go to any  
lengths to solve  
your downlighting  
problems**

From a completely recessed fixture all the way down to a stem-mounted one, Lightolier gives you the most efficient downlighting in these simple, handsome Calculite® designs.

Lightolier engineering has a solution to your number one problem in downlighting—surface brightness. In the type above, for example, Lightolier's answer is the exclusive Multi-Groove\* downlight—42 ring baffles, arranged  $\frac{1}{8}$ " apart, one above the other, so that each





baffle puts the vertical surface just below it in total shadow. It provides a finer texture than the coarse pattern of the conventional unit.

This Multi-Groove Baffle Calculite is just one of 16 types of precision downlighting instruments in a total of 96 sizes and styles. All these Calculites have unique mechanical, installation and design features. All provide the efficient lighting and clean, crisp design which have made Lightolier the preferred name in lighting. For

more information on Calculites, write for Brochure 31, Lightolier, Jersey City 5, New Jersey, Department AR-2.

\*PATENT PENDING

## **LIGHTOLIER**

Showrooms in New York, 11 East 36th Street; Chicago, 1267 Merchandise Mart; Dallas, 1718 Hi-Line Drive; Los Angeles, 2515 South Broadway. Calculites are stocked by the Authorized Lightolier Distributors.

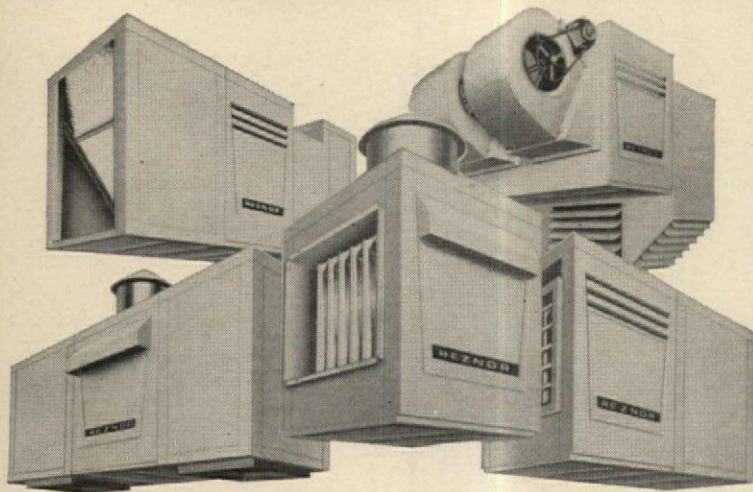




# PROVED IN USE

YOU DO GET MORE WITH

# THERMOCORE



## ARCHITECTS SELECT EQUIPMENT QUICKLY FROM REZNOR'S COMPLETE LINE

Why? Because they can easily choose the proper job-required system from a variety of ducted, non-ducted, and combination heating and heating/cooling packages to satisfy customers with the best in heating comfort. Assemblies come pre-engineered, fully packaged... designed around the THERMOCORE heat core. High quality plus special installation and service features save time and money. REZNOR has been in the gas heating business exclusively since 1888. Now performances everywhere prove that THERMOCORE does give you MORE reliability, MORE adaptability and MORE serviceability.

See your local representative. Look for REZNOR in the Yellow Pages. For our latest THERMOCORE Catalog write today to Dept. C5-1A.

**ITT**

HEATING AND AIR CONDITIONING GROUP • INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION



**REZNOR MANUFACTURING COMPANY**  
Direct Fired Equipment Division  
1150 Chesapeake Avenue • Columbus, Ohio 43212



## Product Reports

continued from page 226

### LIGHTED DRAFTING TABLE FOR ARCHITECTS

This new drafting table for engineers, architects and artists features a uniformly lighted work surface with variable intensity light control. The top, which is lighted by a bank of fluorescent tubes, provides a shadow-free surface for making engineering layouts and drawings, and for tracing and graphic art work. The table top is one fiber glass molding including the light tray. The work surface is glass with an acrylic plastic diffuser beneath. The top glass is provided with a removable clear transparent plastic overlay which gives a softer drafting surface, and prevents compass and divider points



from slipping on the glass. Peripheral reinforcing strips molded into the top provide for attachment of parallel straightedges or drafting machines. Access holes are provided for replacing the fluorescent lamps when necessary, and to provide ample ventilation to keep the work surface cool during prolonged periods of use. The electrical switch and intensity control are readily accessible, and an outlet is provided for the use of electrical drafting accessories.

The table is available in 5- and 6-ft lengths, and in 30- or 37½-in. heights. The top is 42 in. wide with the lighted area 37 in. wide by 52 or 64 in. long, depending on the table length. The top tilts to 30 deg for convenience. The pedestal type table base is steel and has provision for a selection of drawer units for storage. *American Research and Manufacturing Corp., 640 Loftstrand Lane, Rockville, Md.*

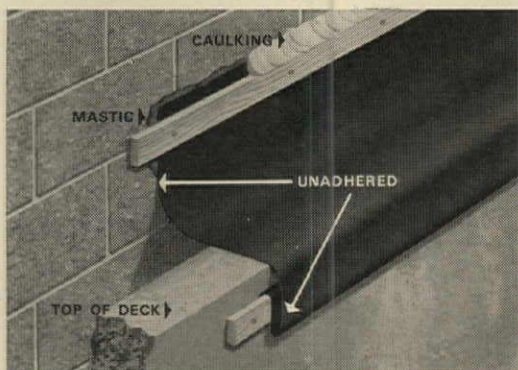
CIRCLE 316 ON INQUIRY CARD  
more products on page 234

For more data, circle 123 on Inquiry Card



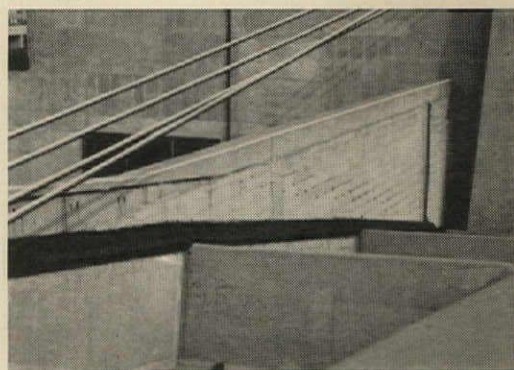


## FLOATING ROOF CREATES WATERPROOFING PROBLEM...



TOP: Pan American Airways Hangar 14, John F. Kennedy International Airport, Jamaica, N. Y.

LEFT: Unadhered loop of BFG Flashing, mechanically fastened at top and bottom, spans gap between roof and wall to allow for movement.



RIGHT: The finished job . . . neatly installed and completely watertight regardless of movement.

## BFG FLEXIBLE VINYL FLASHING SOLVES IT!

Shown here is one of Pan Am's Hangars at Kennedy International Airport. Its roof, covering nearly five acres, is of folded plate design, suspended by steel cables anchored to center columns. To accommodate anticipated movement, a six-inch opening was provided between deck ends and adjacent walls, creating a hard-to-flash area.

The original flashing, which failed after two years, was replaced with BFG FLEXIBLE VINYL FLASHING. This installation has been completely satisfactory and even now shows no evidence of deterioration. It's easy to understand because BFG Flashing is extra tough, flexible over a wide temperature range and weathers extremely well.

The same desirable characteristics that make BFG Flashing the ideal choice for the "tough" jobs apply equally to everyday ap-

plications. Specify and install BFG Flexible Flashing for that extra margin of safety.

Need help with your flashing problems? Call on BFG's technical service team. Write BFG Building Products Dept. RE-11, The B.F. Goodrich Company, Akron, Ohio 44318.

**BFG**  
FLEXIBLE VINYL FLASHING

BUILDING PRODUCTS DEPT. RE-11  
The B.F. Goodrich Company  
Akron, Ohio 44318

Please send technical data and samples:

- BFG FLEXIBLE VINYL FLASHING
- BFG VINYL WATER BARRIERS
- BFG VINYL WATERSTOPS



Name \_\_\_\_\_

Company \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

For more data, circle 124 on Inquiry Card

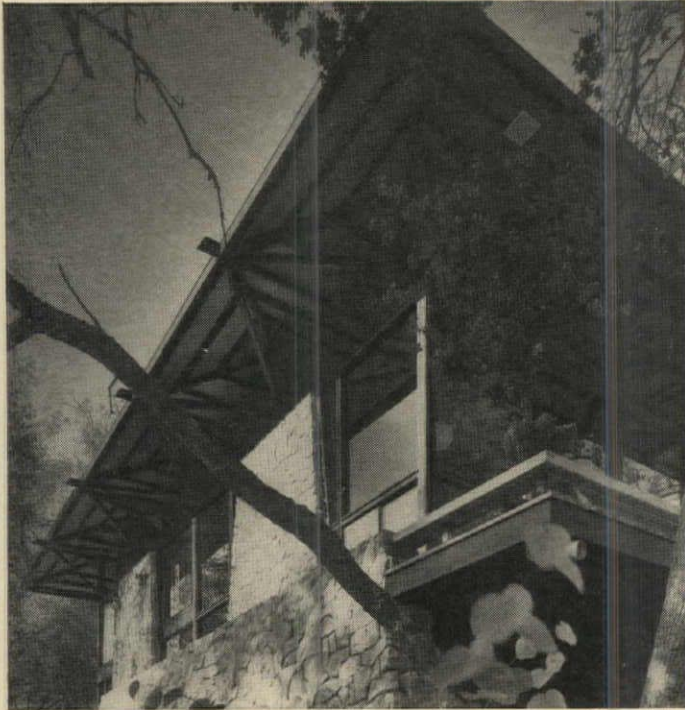




This daring ceiling design is the height of elegance, working with the wide wall of windows to create a comfortable feeling of freedom. Note the beautiful blending of beams, balcony, and built-ins.



*For an air of elegance far exceeding its cost*  
use the uniqueness of **WOOD**



Even the eaves are elegant, as they extend the interior ceiling concept to the exterior of this Los Angeles home . . . a perfect complement to its charming wooded environment. Architects: Honnold and Rex.

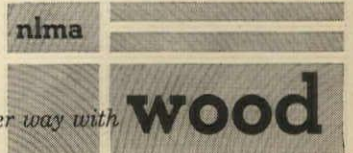
The look of luxury comes easily, and naturally, when you design with wood. Using wood's many beautiful species, tones, and textures encourages complete freedom in your design . . . and assures complete satisfaction for your client.

Readily available, wood is functional as well as elegant. Its insulation qualities make wood a positive protection against all kinds of weather. Wood's acoustical qualities put the soft pedal on all kinds of noise. And its easy workability and remodelability make changes easy, when needs or ideas change.

Wood adapts perfectly to newly devised systems of planning . . . like UNICOM, the modern method of modular construction. For practically all residential and light commercial structures, UNICOM helps reduce on-site time and costs . . . assuring elegance, economically.

For more information on using the uniqueness of wood, including a free booklet describing UNICOM, write:

**NATIONAL LUMBER MANUFACTURERS ASSOCIATION**  
Wood Information Center, 1619 Massachusetts Ave., N.W., Washington, D.C. 20036

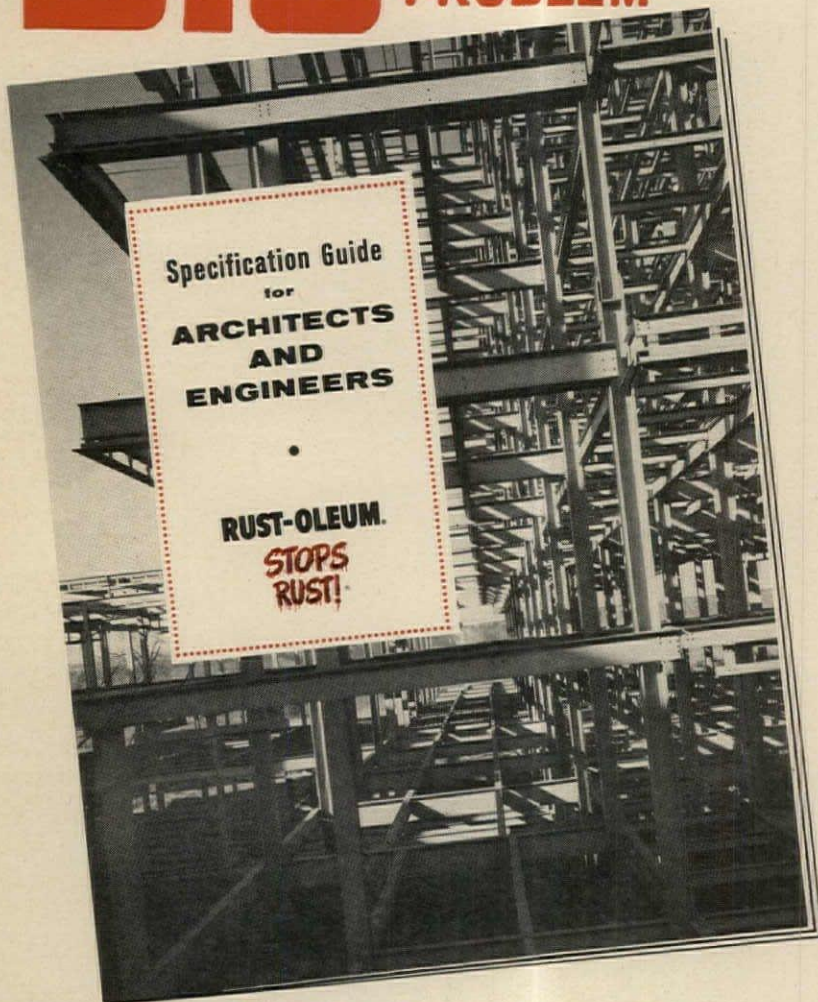


Wood paneling and built-ins carry elegance right into the kitchen, which has a step-saving arrangement of work space and an easy accessibility to the wood-and-window dining area.

For more data, circle 125 on Inquiry Card



# BIG ANSWER TO A BIG PROBLEM



ALL NEW! This Specification Guide will help architects and engineers achieve *long life* and *low maintenance costs* in structures they design. The handy Selector Chart recommends the proper Rust-Oleum Coating Systems to protect steel, concrete and masonry surfaces from dampness, coastal atmospheres, submersion, chemical fumes, spillage, abrasion and heat. Rust-Oleum is available from Rust-Oleum Distributors everywhere. Get your copies of the new Rust-Oleum SPECIFICATION GUIDE for Architects and Engineers *today!*



Rust-Oleum Long Life helps you achieve the lowest cost per square foot per year of protection!

**RUST-OLEUM®**  
**STOPS RUST!**

Plants in Evanston, Ill., U.S.A. and in Haarlem, Holland

CLIP COUPON TO LETTERHEAD FOR FREE MAINTENANCE GUIDE

RUST-OLEUM CORPORATION  
2463 Oakton St., Evanston, Ill.

Gentlemen: At no cost or obligation, please send me \_\_\_\_\_ copies of the Rust-Oleum "Specification Guide for Architects and Engineers," and \_\_\_\_\_ copies of the Rust-Oleum "Long Life Facts" booklet.

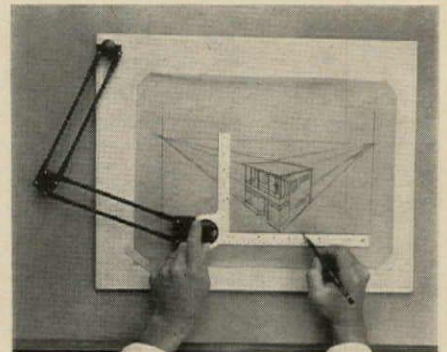
For more data, circle 126 on Inquiry Card

## Product Reports

continued from page 230

### PORTABLE DRAFTING MACHINE

A 360-deg protractor and a 6- by 9-in. one-piece aluminum scale, calibrated in 16ths—or the engineering-metric scale—are features of the *Draftette 9* portable drafting machine. The unit can be obtained by itself or mounted to a 16- by 21-in. light-weight drafting board. Constructed of anodized aluminum, the



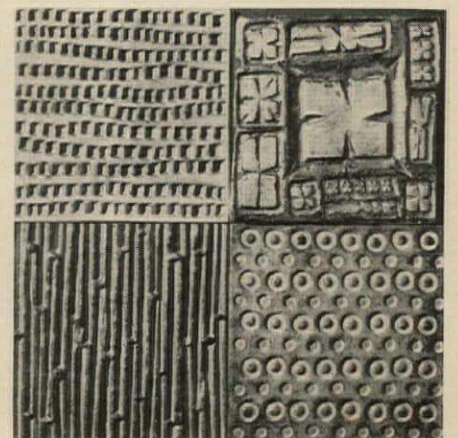
*Draftette 9* weighs only 6 oz, and combines the features of a T-square, triangle and protractor in one self-contained unit. *Draftette Company*, P.O. Box 794, Beverly Hills, Calif., 90213

CIRCLE 317 ON INQUIRY CARD

### NEW DESIGNS IN CERAMIC TILES

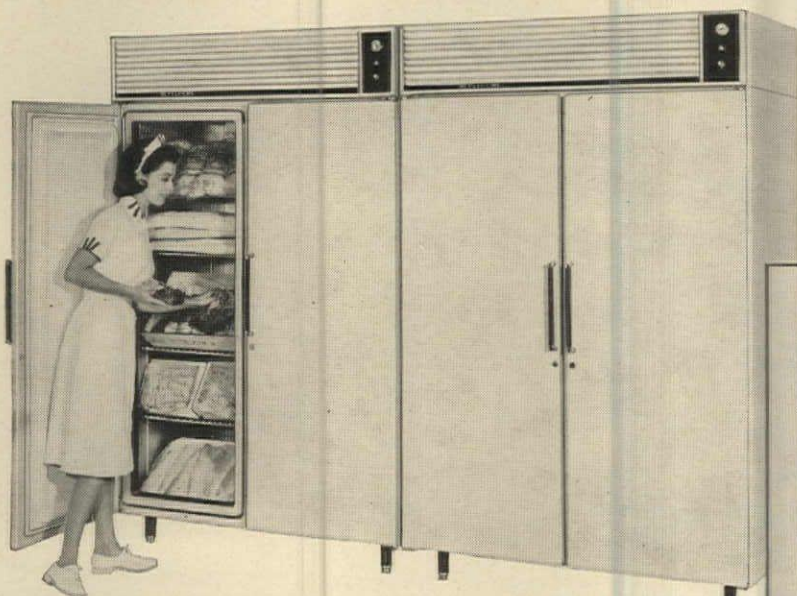
Contours CV 400 series of ceramic tiles consists of 14 patterns in a wide range of different colors. The units which are said to be frost and weatherproof, are modular 12-in. squares, including 1/4-in. joints. *International Pipe and Ceramics Corp.*, Ceramics Division, 2901 Los Feliz Blvd., Los Angeles 39, Calif.

CIRCLE 318 ON INQUIRY CARD

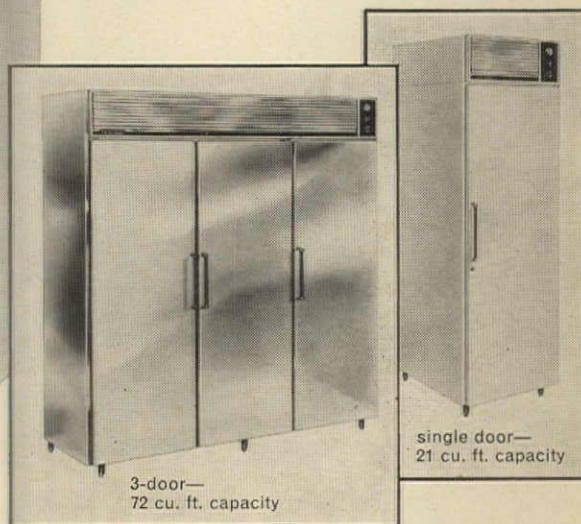




# NEW FROM TYLER



Lineup of 2-door (47 cu. ft. capacity) Reach-Ins at famed Plentywood Farms Restaurant, Bensonville, Illinois.



3-door—72 cu. ft. capacity

single door—21 cu. ft. capacity

**Reach-Ins that make space  
... and save it, too!**

These new slender-wall units offer 21.7% more usable capacity in the same floor space. The secret: super-efficient Tysulite® foam insulation. Tyler's "exclusive" Tysulite foam has better than twice the proven insulation value of conventional glass wool insulation. Bonded between the steel walls of Tyler Reach-Ins it permits a thinner yet stronger and better insulated shell.

That's not all. Tyler Reach-Ins are All-New for top-to-bottom value. Features include: top mount condensing units for easy maintenance • heavy-duty refrigeration coils • snap-on anti-sweat cables • "built-in" control center including thermometer, safety light and heater control • illuminated interior • automatic condensate evaporator • Tyler exclusive Torsion-Bar Self-Closing

Doors with "self-sealing" vinyl magnetic gasketing • adjustable sanitary legs.

Tyler Reach-Ins come in 1-, 2- and 3-section models (solid or glass in full length or half-size doors) for normal or low temperature application. All carry a five-year warranty on the motor compressor and refrigeration coil. For information on Tyler Reach-Ins and the Clark-Tyler Finance Plan, mail the coupon.

**Tyler Refrigeration Division, Dept. AR-2  
Clark Equipment Company, Niles, Michigan**

- Send additional information.  
 Send details on Finance Plan.

Name \_\_\_\_\_ Title \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_



Tysulite permits thinner walls, greater storage space in less floor area.

**TYLER REFRIGERATION DIVISION, CLARK EQUIPMENT COMPANY, NILES, MICHIGAN**

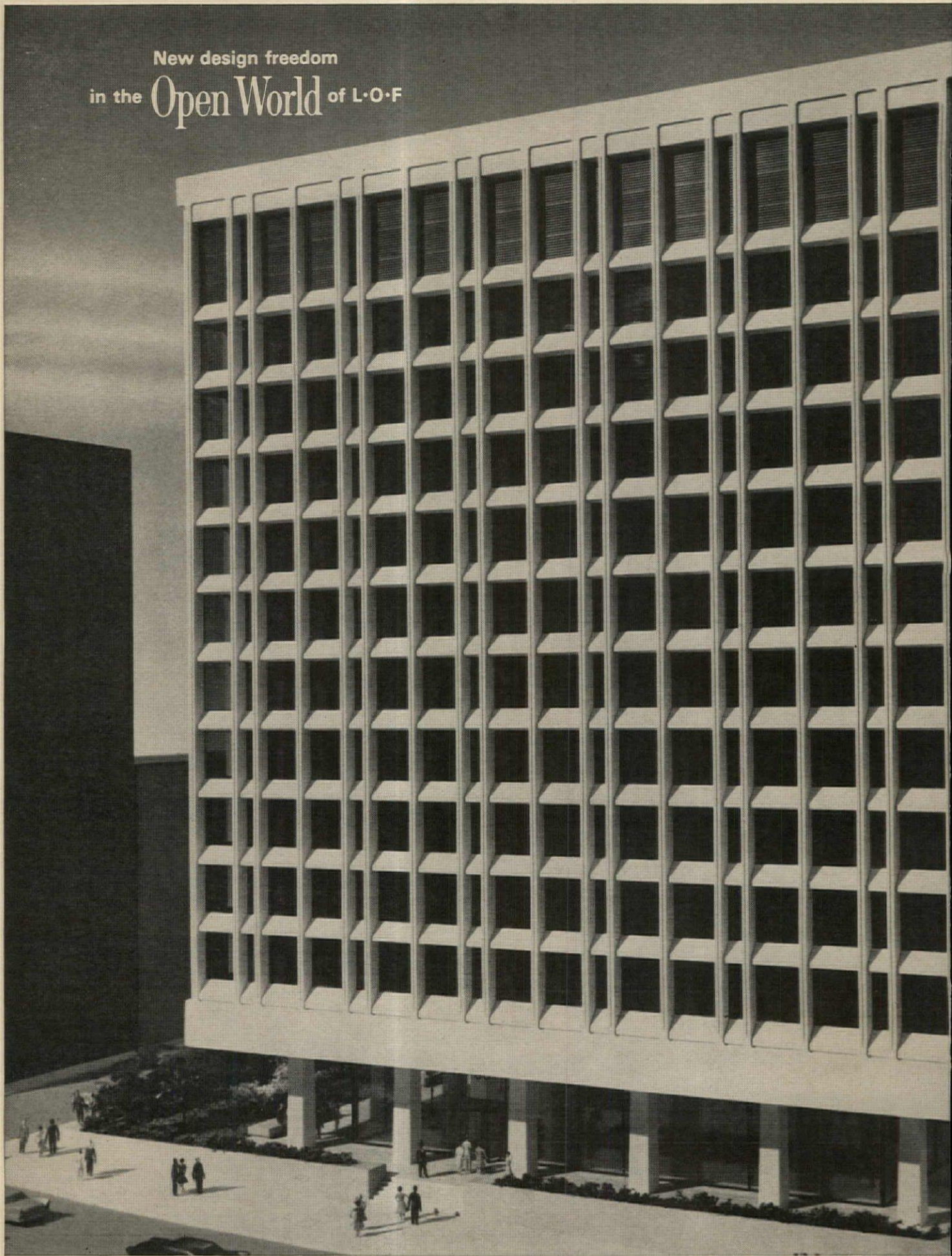
Canada: Tyler Equipment Sales Ltd., 732 Spadina Avenue, Toronto, Ontario (Export: Tyler Refrigeration International, C.A., Niles, Michigan)



For more data, circle 127 on Inquiry Card



New design freedom  
in the *Open World* of L·O·F





# L·O·F offers New Glass Cost Analysis\* for any building on your boards

An analysis that compares the economics of using single glass vs. *Thermopane*® insulating glass; grey, bronze or heat absorbing plate glass vs. regular plate.

It considers heat gain and loss through each type of glass: effect of heat gain on air-conditioning load; comparison of glass costs, taxes, insurance; all other factors

affecting costs for the life of the building. **Ask for an L·O·F Glass Cost Analysis.** Your L·O·F Architectural Representative is prepared to work with you, or your mechanical engineer, in selecting the most economical type of glass on the basis of your plans. Give him a phone call. Libbey-Owens-Ford Glass Co., Toledo, O. 43624.

MADE IN U.S.A.



## Libbey-Owens-Ford

Toledo, Ohio

### \*Example

An L·O·F Glass Cost Analysis for the Huntington National Bank Building compared the economics of *Thermopane* insulating glass (with an outer pane of  $\frac{1}{4}$ " *Parallel-O-Bronze*®) with  $\frac{3}{8}$ " Heavy Duty *Parallel-O-Bronze* plate. The glass sizes and wind loads were such that  $\frac{1}{4}$ " plate glass could not be used, while *Thermopane* because of its 50% added wind load resistance and  $\frac{3}{8}$ " plate met the requirements.

The study showed that *Thermopane* with its resulting air-conditioning and heating savings reduced both the initial and the annual cost of owning and operating the building. A summary of the costs follows.

	<u>Thermopane</u>	<u><math>\frac{3}{8}</math>" Parallel-O-Bronze</u>
Initial glass cost (36,492 sq.ft.)	\$200,706	\$164,214
Initial cost of air-conditioning equipment to overcome heat gain through glass (\$700/ton)	65,800	105,700
Initial cost of glass and air conditioning	\$266,506	\$269,914
Total annual cost of owning and operating building	\$ 35,257	\$ 40,786

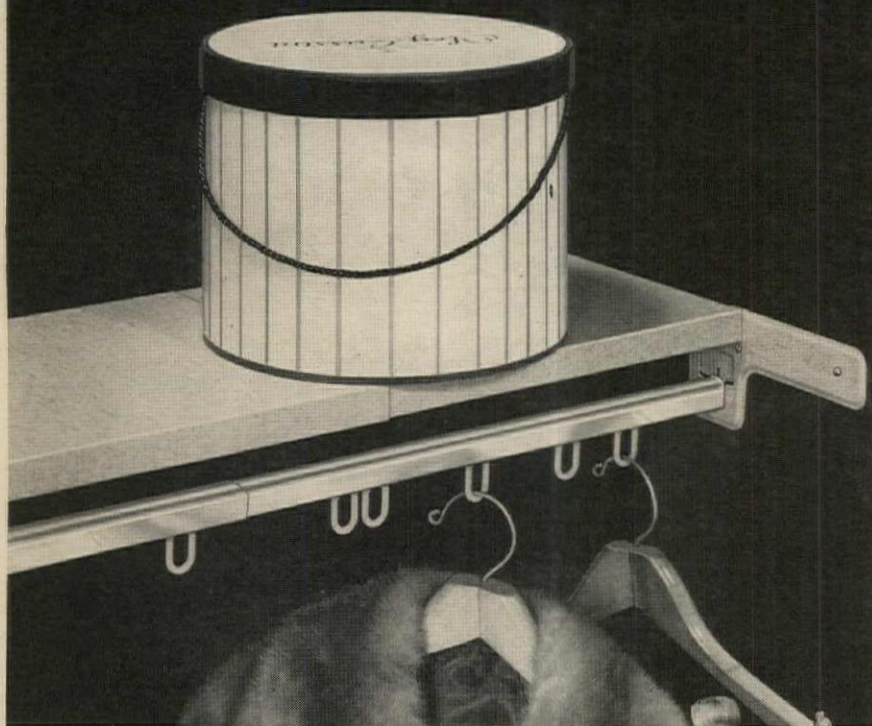
The added initial cost for the *Thermopane* was offset by the lower cost of the air-conditioning equipment needed for the glass, resulting in a net initial cost savings for the building of \$3,408.

Model of the Huntington National Bank Building, Columbus, Ohio. Associated Architects: Benham, Armstrong & Richards; and Skidmore, Owings & Merrill.

For more data, circle 128 on Inquiry Card



# X-Panda Shelves architecturally styled for beauty, utility



## X-PANDASHELF

"sales glamour" to the first place a woman looks in your new home or apartment. There are X-Panda Shelf styles to fit every type of closet or storage application . . . providing solid, strong, durable steel shelving that instantly expands to fit space without sawing or planing. X-Panda is now factory-finished in four fashion colors . . . never needs painting . . . actually costs far less than installing conventional wood shelving. Send coupon today for complete details.



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illinois

Please send information on X-Panda Shelf, plus other proven products in the Home Comfort line as follows:

VENT-A-SYSTEM attic ventilation     LOUVERS & SHUTTERS

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

For more data, circle 129 on Inquiry Card

## Office Literature

continued from page 198

### ROLLED, FIGURED AND WIRED GLASS

The company's complete line of glass patterns for installation in industrial, commercial, school, church, institutional and residential structures is described and illustrated in the 1965 16-page brochure. Photographs of typical installations are given as well as of individual patterns. Light distribution charts and transmission data are also included. *Mississippi Glass Company, 88 Angelica St., St. Louis, Mo., 63147\**

CIRCLE 411 ON INQUIRY CARD

### DECORATIVE FOUNTAINS

"Guide to Better Fountain Design" contains a wide selection of different kinds and styles of water fountains on a domestic and institutional scale. Among these are a number of self-contained fountains, waterfalls and water displays which can be shipped to the customer and only require the addition of water to make them immediately operable. Hints on pump selection and notes on the most suitable locations for different types of water displays are also included. *Roman Fountains, 14847 Bessemer St., Van Nuys, Calif., 91401*

CIRCLE 412 ON INQUIRY CARD

### DRAFTING TEMPLATES

A new 32-page catalog describes some 440 templates and gives illustrations of most of them to aid in identification. In addition to the company's own line of Lietz ellipse templates, other leading American manufacturers' products are also featured. *A. Lietz Company, P.O. Box 3633, San Francisco, Calif.*

CIRCLE 413 ON INQUIRY CARD

### STEEL STORAGE RACKS

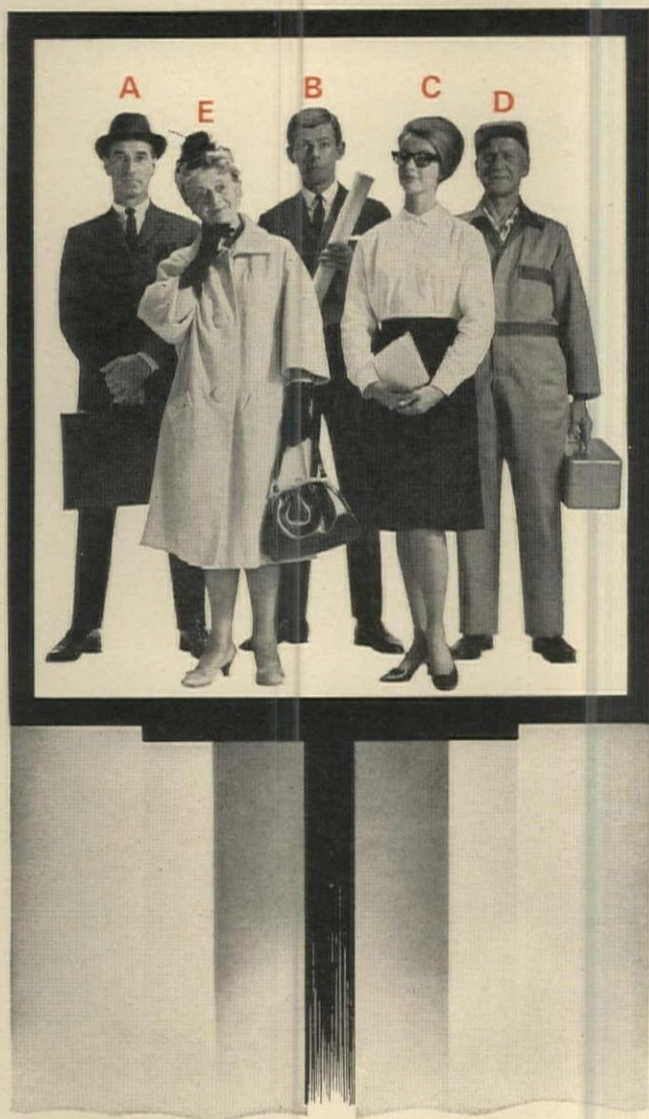
A new line of AIM Brand storage racks is described in a 16-page catalog, No. AD-602. Included in the booklet are data on beam specifications, frame capacities in relation to varying individual shelf loads, drive-in and drive-through rack construction. *Acme Steel Company, 195th St. and Perry Ave., Chicago, Ill., 60627*

CIRCLE 414 ON INQUIRY CARD

\*Additional product information in Sweet's Architectural File  
more literature on page 242



# THINKING ABOUT HYDRAULIC ELEVATORS?



**A Businessman** "Cost less to install and operate . . . maintenance costs are down . . . the general office efficiency is up . . . Fewer holdups."

Hydraulic Elevators cost less to buy . . . to install . . . to operate . . . to maintain. Controls are designed for simplicity.



**B Architect** "A sensible investment for a good many buildings up to 7 floors . . . Hydraulic elevators require no penthouse construction . . . work equally well in apartment houses, office buildings and factories . . . Take any kind of cabs and doors."

No penthouse "overhead" . . . saves on construction costs . . . wide range of cab designs and colors . . . perfect leveling.



**C Secretary** "That floor indicator light is the only way you can see the elevator is moving. It just floats you up. The cab design is a real dream too."

Smoothness of operation is perhaps the outstanding feature of a quality hydraulic system.



**D Maintenance Man** "They don't need to see you too often. No complaints from tenants . . . just a regular checkup . . . all systems go on these Turnbull Hydraulics. Wish they were all like that . . ."

Long life and little actual maintenance are to be expected when hydraulic systems are installed.



**E Housewife** "My goodness . . . this elevator feels so safe and steady! And it's so good looking."

All modern elevators are safe madam . . . but we agree with you about the smooth ride and good looks of a Turnbull Hydraulic Elevator.



For information and illustrated brochure contact:

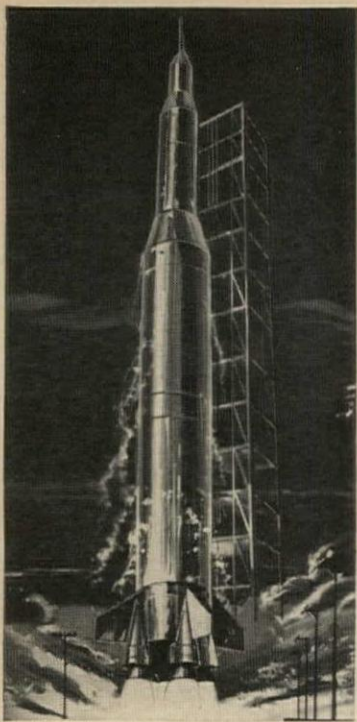
- Electric and Hydraulic Passenger and Freight Elevators
- Dumbwaiters
- Moving Walkways
- Power Scaffolds



Executive Offices: 311 W. 43rd Street, New York 38, N.Y. / Sales Offices: Atlanta, Georgia; Philadelphia, Pa.; Columbia, S.C.; San Francisco, Los Angeles, Calif. / Canada: Head Office: Toronto / Branches in Principal Cities

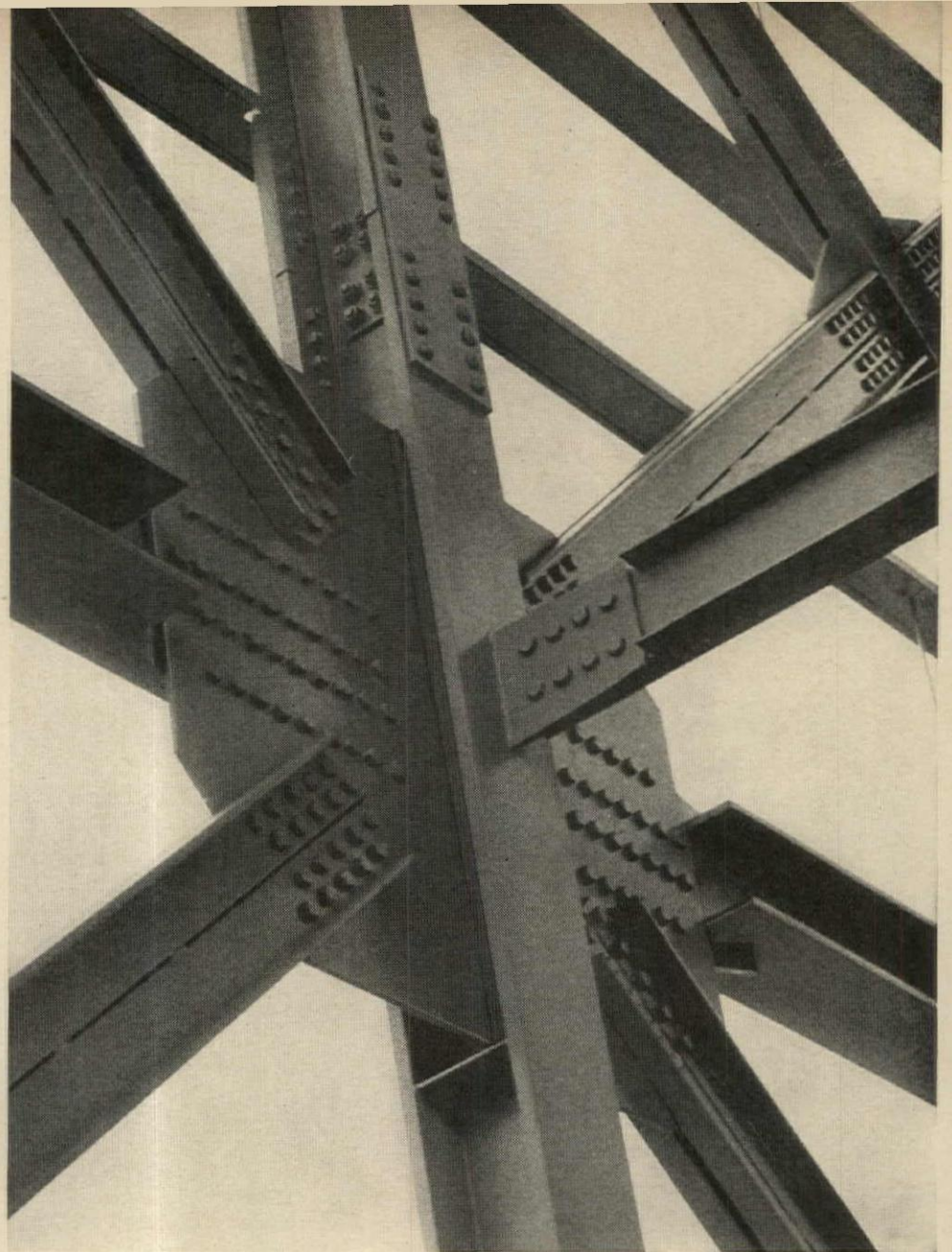
For more data, circle 130 on Inquiry Card





# HOW TO SHOOT THE MOON

(without leaving the ground)



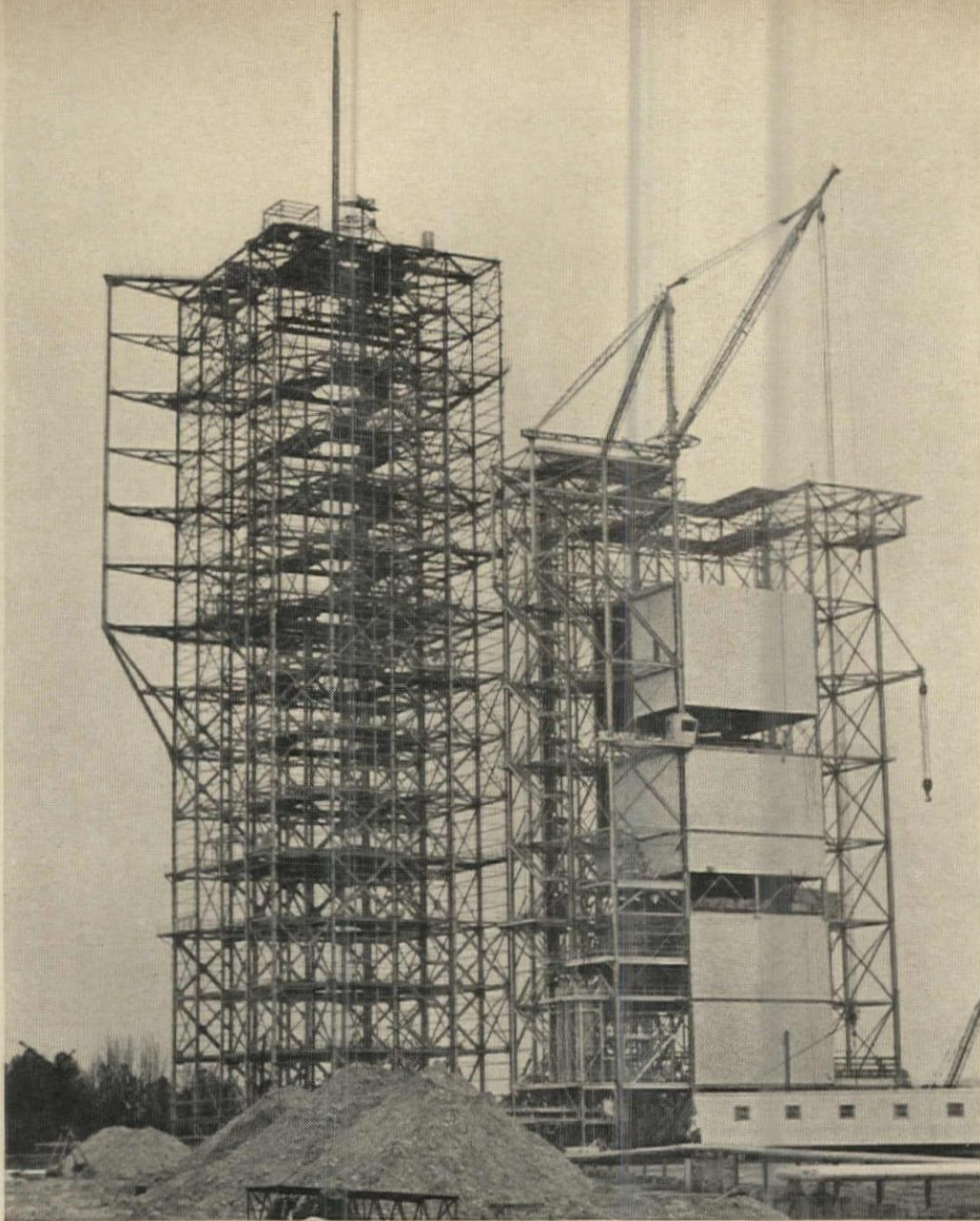
## First, build a flight test tower using 200,000 Republic High Strength Bolts

In 1967, Saturn V, the largest, most powerful space vehicle ever launched, will thunder into flight for the first time. But, before this giant step in man's now certain journey to the moon, NASA's Apollo program engineers must have complete preflight knowledge of Saturn type vehicle's vibration and bending characteristics.

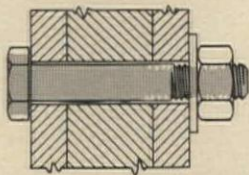
As one means of verifying the ability of the Saturn vehicles to resist stresses of launching and early flight, NASA's Marshall Space Flight Center, Huntsville, Alabama, has built the 360' dynamic test tower, shown at left in the photo above. The Saturn V boost vehicle will be placed in this tower and subjected to extreme vibrations, simulating actual flight conditions. Information thus gained will then be incorporated in the design of the vehicle's electrical control systems.

Obviously, for such a test to be possible, the test tower itself must be capable of withstanding the same violent strains applied to the space vehicle. Republic High Strength Bolts used in the test tower are equal to the task. New Republic Heavy Head





Bolt design permits tightening to greater clamping loads than ever before. This tightening force is transferred to joints as clamping strength—an advantage impossible to duplicate with any other fastening method. In addition, thread length has been shortened to remove threads from the shear plane and assure maximum shear strength. Saving both time and cost in construction, Republic High Strength Bolts are the original *and* final fasteners—and saving more cost, no washers need be used under new AISC and AREA recognized “turn-of-the-nut” tightening methods.



Could there be better proof that Republic High Strength Bolts are the ultimate in reliability? You don't have to be “shooting the moon” either, to take advantage of this remarkable new fastening method. Just call

your local Republic representative, or send the coupon. It's worth your time, whether you're trying to rise to a one-story completion date or a 196x rendezvous in space.

This STEELMARK of the American Steel Industry on a product assures you it is made of modern, versatile, economical Steel. Look for it on the products you buy.



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Hydroment improves hardness, density, wearability, corrosion resistance and appearance of concrete floors — institutional, commercial, industrial. Easily applied by the dust-coat method when concrete slabs are poured; requires no additives or mixing at the job site. Non-toxic, odorless, waterproof; ideal indoors and outdoors — new construction or remodeling. Non-dusting; non-rusting. Proved superior in over 20 years' use by architects and contractors everywhere. Write for catalog and color card.

**THE UPSCO COMPANY**

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In the West . . . HYDROMENT, INC., 829 N. Coffman Drive, Montebello, Calif.

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## Office Literature

continued from page 238

### ALUMINUM EXTRUSIONS

"Shape Design Manual" is an 88-page hard-cover booklet which is specially written for architects, designers, and engineers to explain the intricacies of aluminum extrusion shape design. The manual contains thumb indexed chapters on alloy selection, shape design, assemblies, tolerances and shapes at work. A 10-page case study is also included illustrated by a number of diagrams. *Aluminum Limited, 111 West 50th St., New York, N.Y.*

CIRCLE 415 ON INQUIRY CARD

### GYPSUM WALLBOARD SYSTEMS

*Celotex* gypsum wallboard systems for wall, partition, and ceiling-floor construction are described in a recently published 28-page booklet. Details are given in selector guide form of more than 70 wall, partition, and ceiling assemblies. Where applicable, fire rating, sound transmission class, cost index, thickness, weight and sound transmission loss are given for each system. *The Celotex Corp., 120 La Salle St., Chicago 3, Ill.\**

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### ACOUSTICAL CEILING CATALOG

The company's 1965 catalog contains a comprehensive listing of its acoustical ceiling products. Acoustical tiles and various types of ceiling boards and panels are fully described. The booklet also contains a separate section on acoustical environment control products which describes in detail a number of specialized acoustical treatment ideas and techniques. *Elof Hansson, Inc., 711 Third Ave., New York 17, N.Y.\**

CIRCLE 417 ON INQUIRY CARD

### ELECTRICAL DISTRIBUTION

The 1965 *Speedfax* catalog was prepared to provide comprehensive ordering information on standard I-T-E products. Products covered, including latest additions to lines, are safety switches, circuit breakers, load centers, panelboards, etc. *I-T-E Circuit Breaker Company, Philadelphia, Pa., 19130*

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

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We'll send you, free, a Western Wood paneling idea booklet, and the WWPA Western Lumber Technical Manual. Just include your name and address and send to Western Wood Products Association, Dept. AR-165, Yeon Building, Portland, Oregon 97204.

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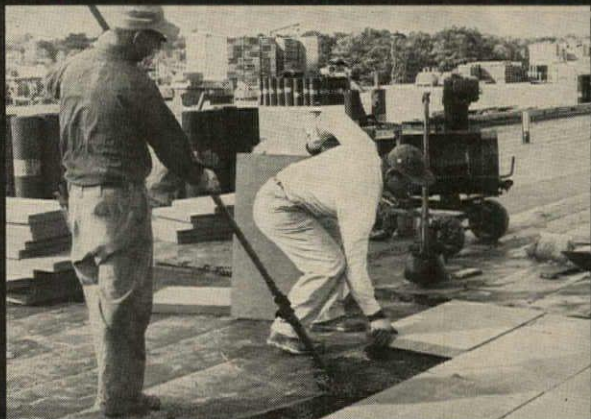







### PHYSICAL DATA

C (Conductance Value) 1" Nominal Thickness: 0.36  Water Absorption (% by Volume): 1.5 @ 2 Hrs. Total Immersion (No Capillarity)  Vapor Permeability: 15 Perms @ 73° F. and 51% Relative Humidity  Concentration Load Indentation: 1/8" @ 77 lbs.  Compression Resistance: 185 PSI (50% Consolidation)  Fungus Resistance: Complete  Flame Spread: 25 (Non-combustible)  Smoke Developed: 0-5  Wt./Sq. Ft./1" Thick: 0.8 lbs. Approx.





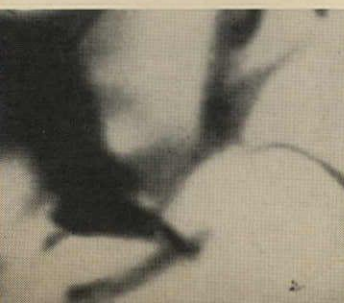


Photomicrograph of cross section of a grain of flame-exploded perlite.

# designed explosion

**B**orn within  
the intricate architecture  
of a grain of  
flame-exploded perlite  
is the lightness,  
the non-combustibility,  
the moisture-resistance,  
the thermal efficiency,  
the compression resistance,  
the permanence,  
the strength,  
that characterizes  
what is today,  
totally, the ideal  
rigid roof  
insulation board.

**RIGID**  
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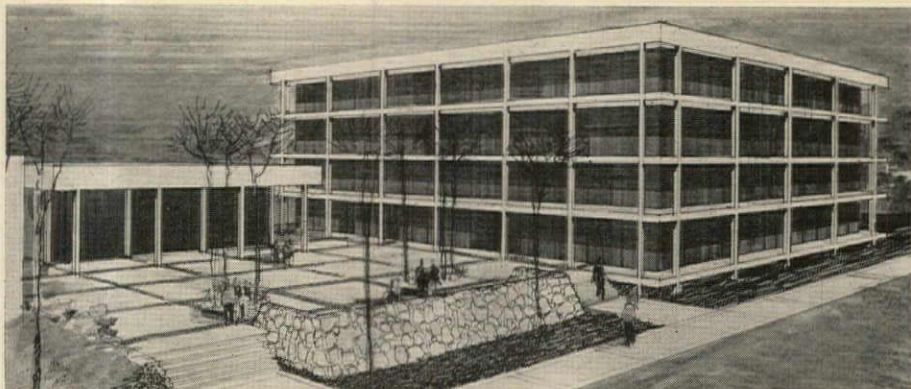


Building Products Department, Great Lakes Carbon Corporation,  
333 North Michigan Avenue, Chicago, Illinois

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# CONSTRUCTION INDUSTRY MUSEUM IS PLANNED IN CALIFORNIA



## THE FINISHING OF INTERIOR REDWOOD

When FactriSawn redwood is given a clear finish, it harmonizes beautifully and naturally with other materials. On the other hand, a dark stain is often used to provide a handsome background for the owner's prized possessions. To receive your copy of "REDWOOD INTERIOR FINISHES", write Dept. 63-A, California Redwood Association, 617 Montgomery Street, San Francisco, Calif.



The Tongue and Groove paneling shown is FactriSawn® a trademarked Certified Kiln Dried product of these mills... UNION LUMBER CO. • THE PACIFIC LUMBER CO. • WILLITS REDWOOD PRODUCTS CO. • SIMPSON TIMBER COMPANY MILLER REDWOOD COMPANY • GEORGIA-PACIFIC CORPORATION • ARCATA REDWOOD COMPANY... which form the CALIFORNIA REDWOOD ASSOCIATION.

A national construction industry museum and science center to be financed by a group headed by Clint Murchison Jr. is projected for the campus of Pepperdine College in Los Angeles. Architects are Welton Becket and Associates.

The project will include a three-story science-exhibit center and a separate 300-seat auditorium on two sides of an open courtyard. Walls of the science center will be extended one floor for future expansion.

As an integral part of the center's development, Pepperdine's President M. Norvel Young and his staff have developed a new degree program called Technical Management in Construction. The program will offer both undergraduate and graduate degrees.

The reinforced concrete buildings will have strongly exposed structural framework, with glass walls recessed from the structural cage to facilitate maintenance and to provide partial sun control. Columns will elevate the main building 3 to 4 feet to place the structure on a level with the auditorium and courtyard. The knoll will establish a podium effect and control drainage. Construction of the \$2 million project will start in mid-1965.

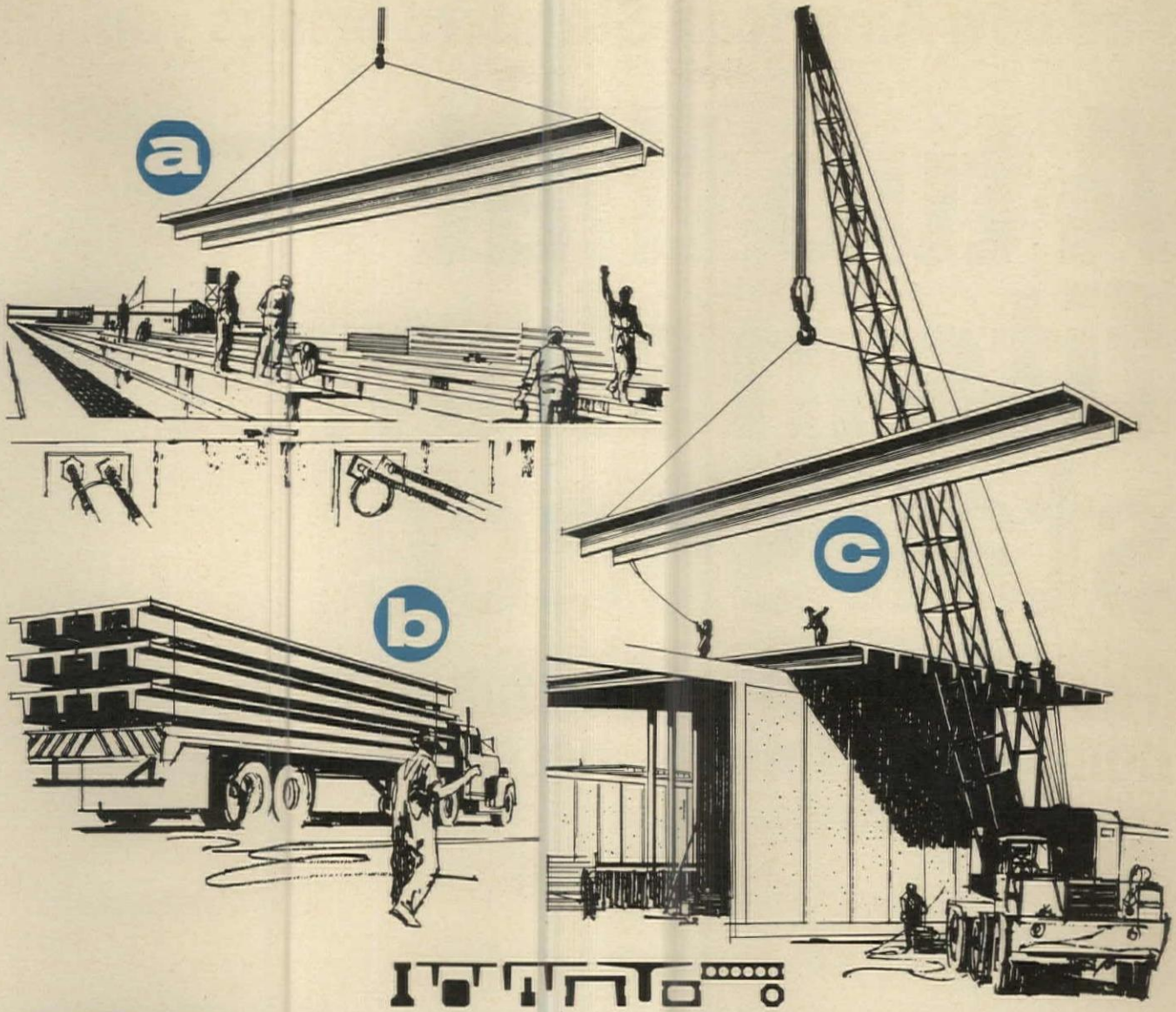
"Our design for the one- and a third-acre complex, expressing clean, simple contemporary styling, will compliment Pepperdine's existing architectural design," architect Welton Becket says. "Structural lines are intentionally unadorned so that the center can blend in with the future expansion of the college."

The major construction industry display area, which will honor significant leaders and events, will be on the first floor of the main building.

The central core on each floor of the structure will contain a tiered lecture room and specialized museum, with laboratories, classrooms and faculty offices around the periphery.

For more data, circle 135 on Inquiry Card





# ABC's OF PRESTRESSED CONCRETE

Here's flexibility in design . . . speed and economy in construction . . . continued savings in permanent, quality structures!

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Long spans of gracefully proportioned prestressed concrete beams eliminate columns to provide more usable space. No painting or

maintenance is required and little or no waterproofing. Durability and fire resistance mean low insurance premiums. Two-hour Underwriters' Laboratories label service is available on commonly used prestressed concrete members. Advantages like these account for the continuing growth in the use of prestressed concrete in almost every type of structure.

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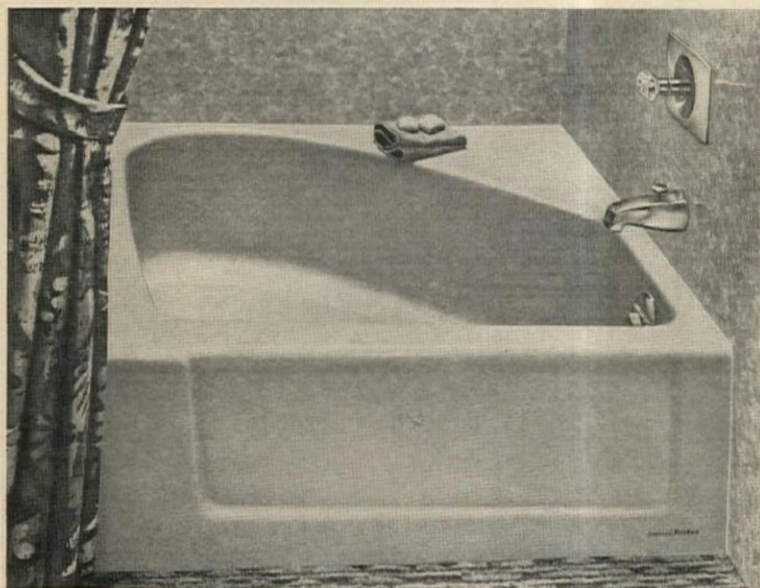
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And now American-Standard brings you

# A tub that fits in shower stall space

The new Restal\* makes full baths in homes, apartments, hotels and motels



Here's a great little American-Standard bathtub with big-bathtub ideas. It takes only 38 by 39 inches of floor space—or about the same as a conventional shower receptacle. But it permits relaxed, deep-suds bathing that only a tub can provide. The sculpted ledge may be used as a seat when bathing or as a footrest when showering. The compact size makes cleaning easy. Construction is of lifetime cast iron,

\*Trademark AR&SS Corp.

finished with fused-on, acid-resisting enamel in a choice of seven smart bathroom colors and white.

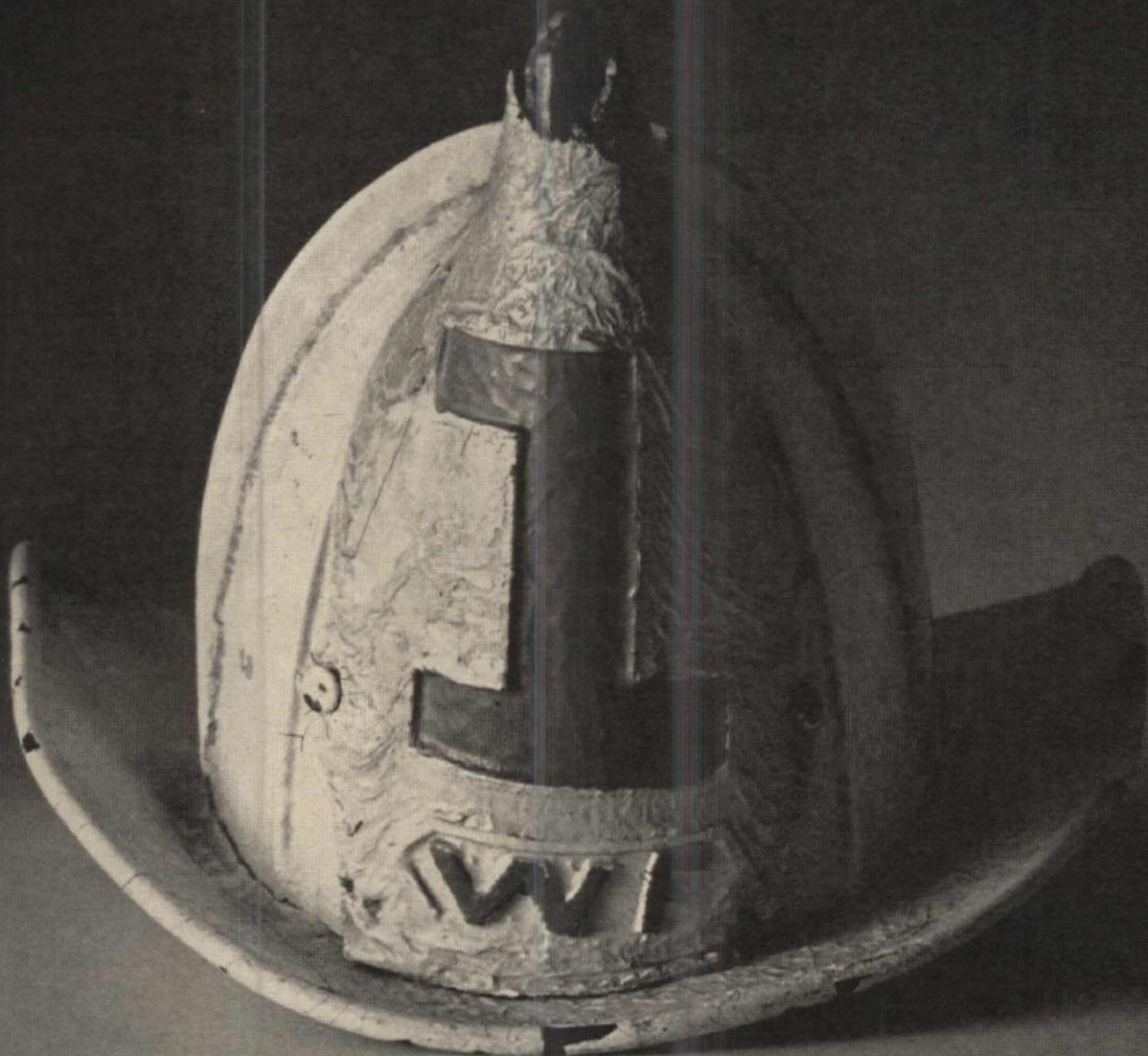
If there's space for a shower stall in your bathroom plans, there's space for a Restal and the convenience of a full bathroom. For complete information see your American-Standard representative. Or write American-Standard, Plumbing and Heating Division, 40 W. 40th St., New York, N.Y. 10018.

## AMERICAN-STANDARD



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## ASK THE MAN WHO WEARS ONE

Men with long experience in fighting fires can tell you plenty about the importance of **time** as a safety factor. **Time** that allows fire equipment to speed to the scene. **Time** that assures family safety. Priceless extra minutes, extra hours of fire resistance are offered by today's new, improved Bestwall FIRESTOP gypsum wallboard. Extra protection is built into the core, through the

use of specific amounts of incombustible glass fibers and unexpanded vermiculite. In various assemblies, FIRESTOP meets Building Code requirements from 45 minutes to 3 hours for interior wall and ceiling construction — making this famous Bestwall product one of the lowest-cost fire resistant materials available today. (See Sweet's A.I.A. File No. 23-L for detailed information.)

**BESTWALL GYPSUM COMPANY • PAOLI, PA.**



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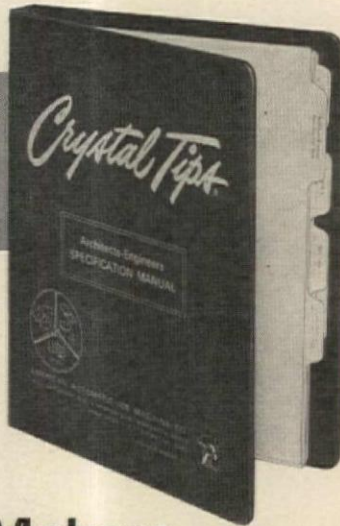
## HEADQUARTERS SURROUNDS TWO GARDEN COURTS

A major design feature of the four-level IBM Corporation Headquarters, Armonk, New York, is the continuous use of glass curtain wall, giving a feeling of light and spa-



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*Manufactured in Canada by Keeprite Products, Inc., Brantford, Ontario*

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ciusness of the outside to interior areas.

Skidmore, Owings and Merrill were the architects. General contractor was Walter Kidde, Constructors Inc. Two interior garden-courtyards, each 70 by 165 feet, were created by designer and sculptor, Isamu Noguchi. The two gardens are separated by a glass-walled, three-level bridge which houses moving stairways and connects the two wings of the building.

The exterior walls are set back 6 feet from the main frame to permit use of continuous glass walls. The setback also creates an overhang on each level which establishes the building's long horizontal lines and provides a degree of sun protection.

Exposed precast concrete columns support the building on the east and west sides, while the north and south ends are cantilevered. The exterior surfaces are of white quartz aggregate which has been acid-etched to bring out the natural texture of the quartz. Reinforced concrete construction is used throughout the building.

On the interior, specially designed compartments or "office staff units" (*below*) are used to provide a degree of privacy to the occupants without detracting from the sense of spaciousness. These compartments include a wood desk surface, wall-mounted phone, file and bookcase facilities, and rear drop-leaf desk for an auxiliary work surface, all within easy reach.



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*Each paints beautifully*

Now Bethlehem gives you a wider choice of hollow structural sections—with more of them adaptable as beams!

We *cold-form* our hollow structural sections from blast-cleaned steel to make sure you get a smooth surface that paints beautifully. Good reasons to specify Bethlehem.

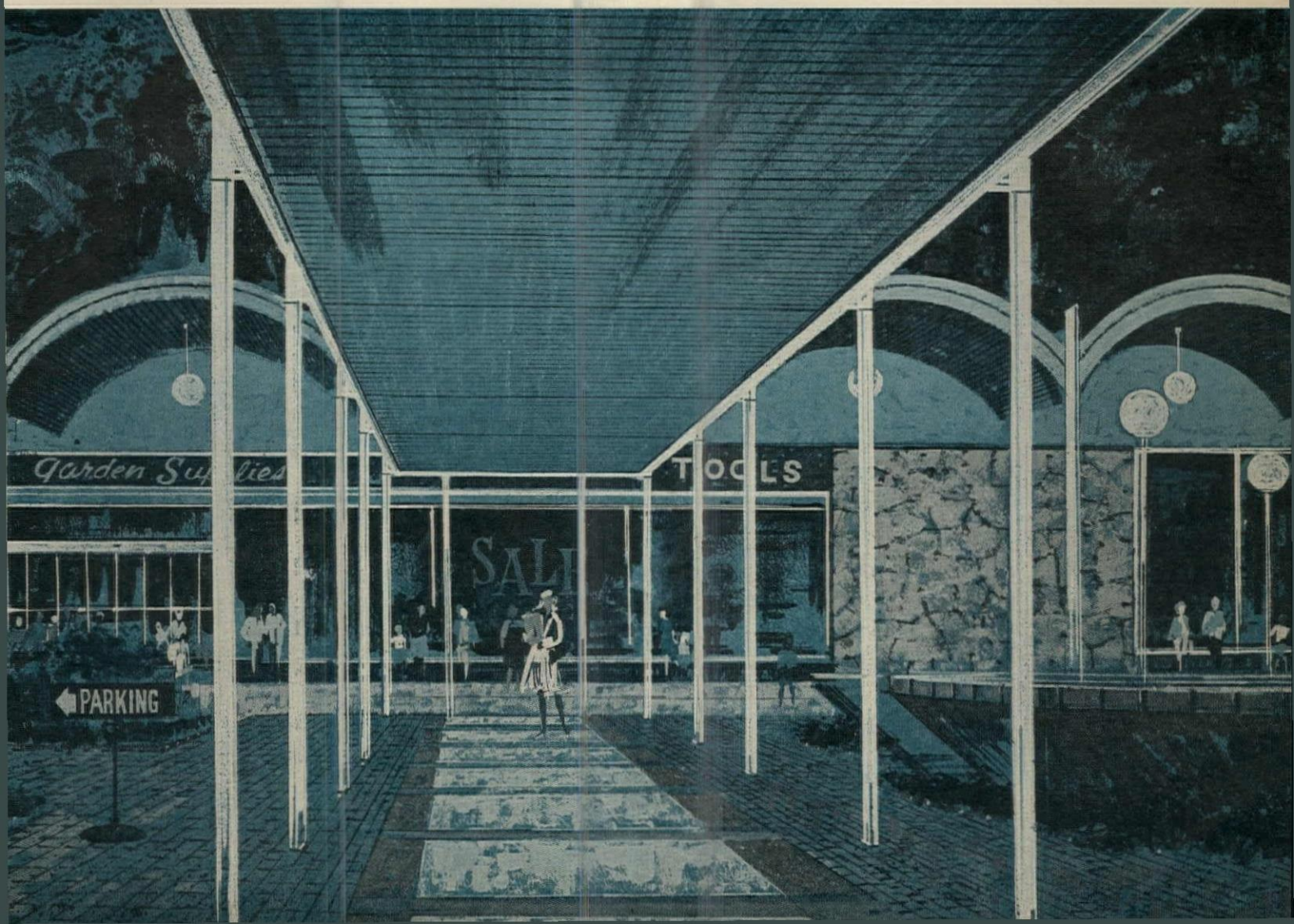
Hollow structural sections are ideal for exposed beams and columns . . . handrails, mullions, lintels . . . spandrels, roof trusses and joists, curtain wall systems, and space frame structures . . .



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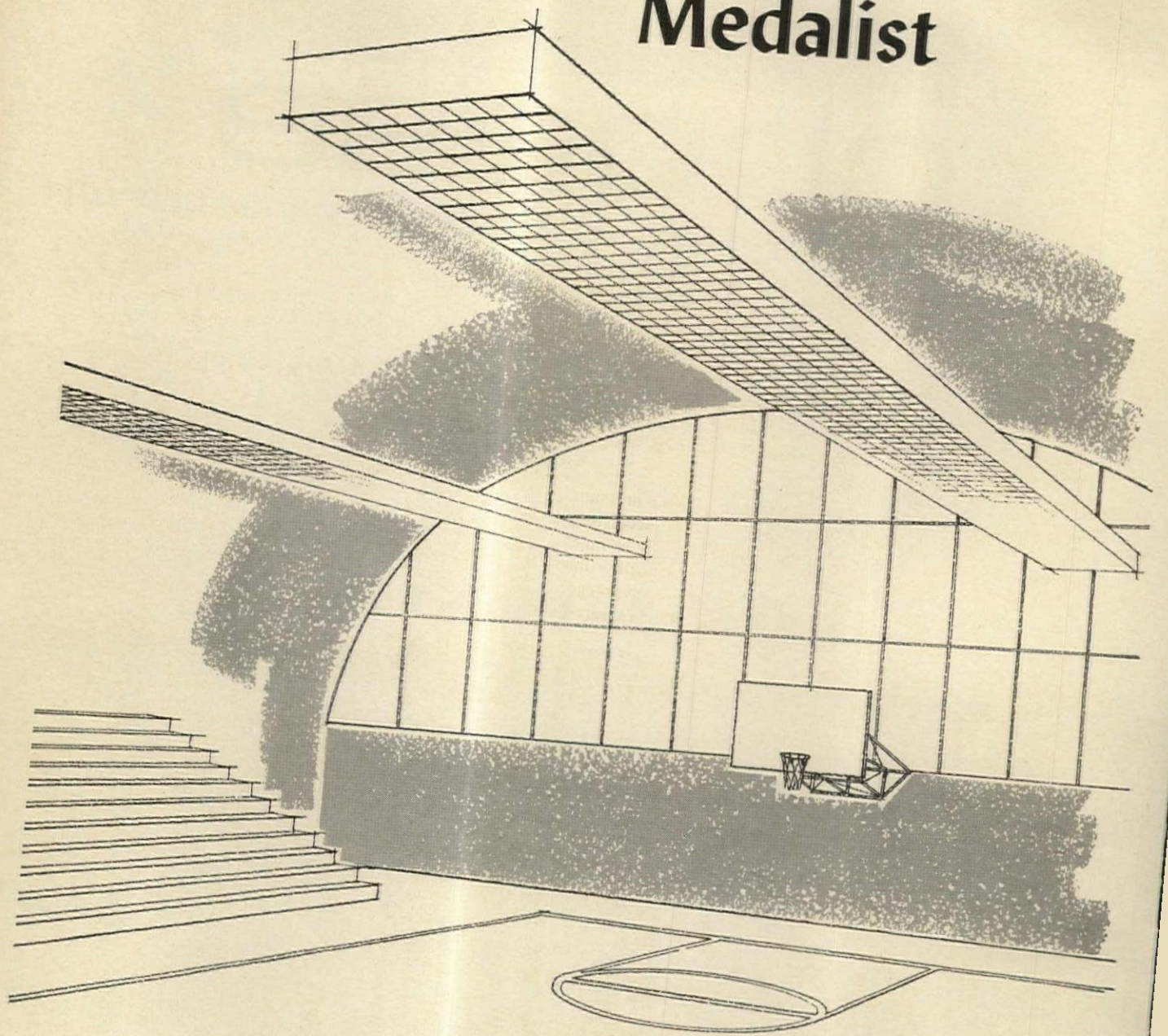
Bethlehem Steel Corporation, Bethlehem, Pa.  
Export Sales: Bethlehem Steel Export Corporation

## BETHLEHEM STEEL



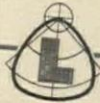


# NEW LITECONTROL Medalist



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# Who says poor red concrete can't be beautiful? Not DEVOE, certainly.



Windsor Apts., Philadelphia, Pa.;  
Architect: Aaron Colish; Painting  
Contractor: M. Schnoll & Sons;  
Man from Devoe: George Mac-  
Naughton—all of Philadelphia.

And this unique new apartment building is a prime example of how we prove otherwise. The architect wanted to avoid some of the disadvantages of concrete—form marks, surface irregularities, pitting and dusting. The answer was RE-NEW-COAT—a DEVOE finish, used on exterior columns and the underneath side of balconies.

This choice was based on facts—on performance records and sample demonstrations. RE-NEW-COAT has been used successfully for years in critical industrial applications. And the samples showed how it makes the surface of concrete beautifully uniform—as well as protecting it. Another important advantage: we could mix RE-NEW-COAT in the special colors required.

If *you* design with concrete—or other surfaces which give you trouble—we can help. DEVOE has the *right* finish for every surface... and we offer the services of *the Man from Devoe* for assistance in many ways. Just write or phone the nearest DEVOE office to contact him.



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## "Design Conference"

continued from page 26

"Fourth, we secured legislative approval of appointment of the State Architect and the State Printer by the Governor. . . . Fifth, we have improved the quality of work done by the Office of Architecture and Construction. . . . Sixth, we have improved relations between State Architects and the architectural profes-

sion, and between State Architects and State Colleges. . . .

"Seven, we are insisting on good designs to create facilities that will function well for the people who will use them. . . . Eight, we are increasing emphasis on the element of design in the highway program and the state water project. . . . Nine, we have created the Department of General Services to coordinate the service activities of the state. . . ."

Governor Brown went on to unveil

a new four-point program of actions "to help us achieve new progress in the future.

"First, in order to inspire and promote the best design of which we are capable, I am pleased to announce a Governor's Design Award Program to begin at once. These awards, one in architecture, one in interiors and one in the graphic arts, will be given to the state agency or department which uses or develops an outstanding design program. . . . It will be given on merit alone and only when the entries are worthy."

The award will be honorary, not monetary, and will be supervised by the California Arts Commission, which will select the jury and receive entries from the state agencies.

"Second, I plan to appoint a Governor's Advisory Committee on Good Design to help explore the ways to make good design a permanent element of government. This group will review the state's activities in design and serve as an informal ad hoc committee to help us translate the policies set forth today into action.

"Third, I intend to call a series of further Conferences on Good Design to extend our effort to other areas of state government in which good design is important. One example might be the design of transportation facilities. I will look to the Advisory Committee for specific recommendations.

"Fourth, in order to carry forward the momentum achieved by today's conference, we will inaugurate a series of training sessions for state employees. The Department of General Services and the State Personnel Board will plan these sessions. All of you . . . will have the opportunity to take part."

Governor Brown concluded by emphasizing that "continued emphasis on the need to achieve good design is essential. . . . We must maintain a closer exchange of ideas with the design resources of the state—and we must establish top-level policy support of good design.

"Our joint goal is to identify the state with the best in contemporary design and with the use of design to increase human enjoyment and understanding. . . .

"Right now, we are building the California of 1980 and the year 2000. Let us not merely plan. Let us also design that future with a quality and

continued on page 264

## New TALK-A-PHONE Apartment House Intercom



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- **Ample Volume**—Whispers, shouts and normal voice are heard clearly without "boom".
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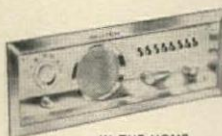
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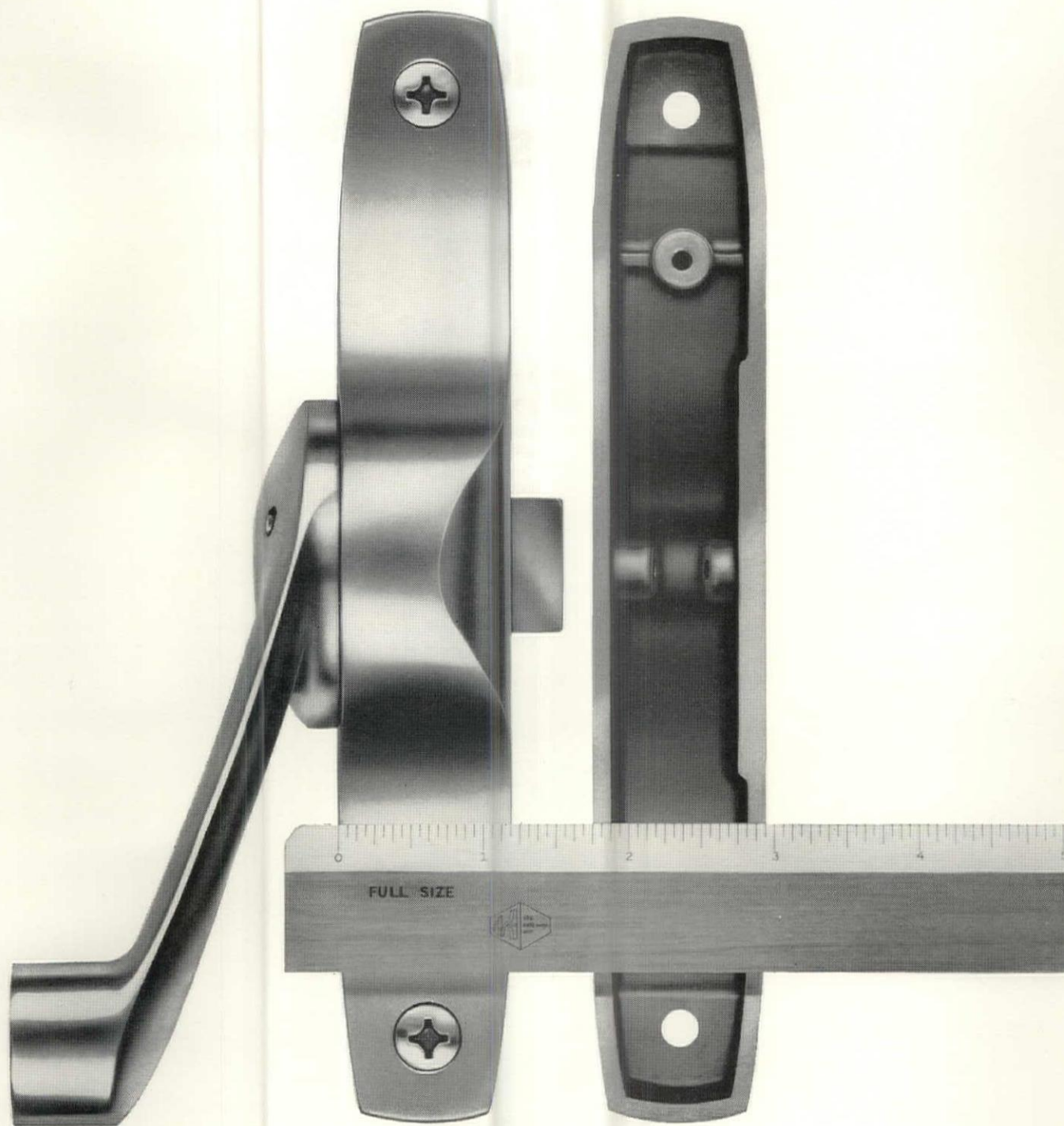
Dept. AR-2

**TALK-A-PHONE CO.**, 5013 N. Kedzie Ave., Chicago 25, Illinois

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For more data, circle 142 on Inquiry Card





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MINDED**

**THICK  
SKULLED**

As you can see, Von Duprin 55 exit devices were designed with narrow stiles in mind. The cases are a mere 1 $\frac{3}{8}$ " wide, for stiles as slim as 1 $\frac{3}{4}$ ". But they're ruggedly built, with walls fully  $\frac{1}{8}$ " thick. Rim and concealed vertical rod devices, in stainless steel, bronze or aluminum. We invite you to write for Bulletin 632. And we urge you to compare the Von Duprin 55 rim and vertical rod series with *any* other narrow stile devices made. You'll see: no other narrow stile devices "measure up" to the style or strength in the 55 series.

**Von Duprin 55**

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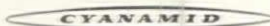
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1. Full color descriptive catalog.
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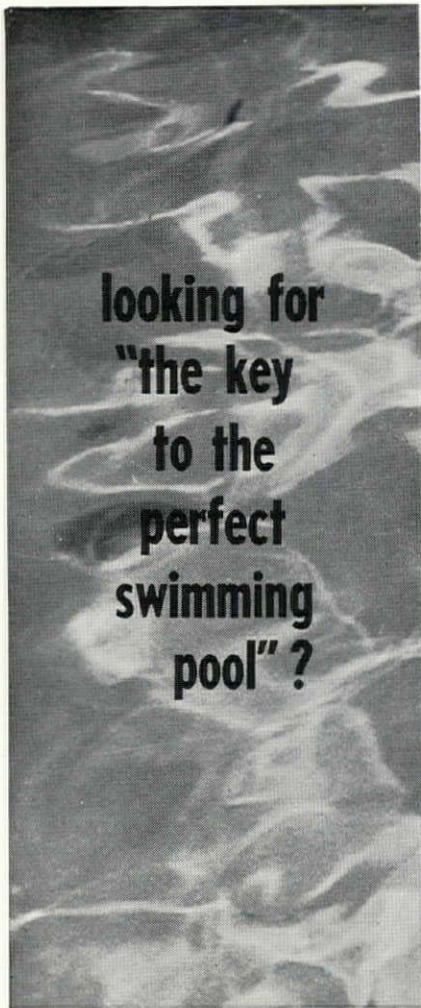


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"the key  
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Whenever you require information and data for equipment for any institutional, commercial or residential swimming pool design, call on our staff of experienced engineers and technicians. Paragon will be glad to furnish specifications, details and scale drawings (suitable for tracing). See our Sweet's Architectural Catalog File insert 36c/PA or write for your copy.

**Paragon Swimming Pool Co., Inc.**

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Dept. B,  
Pleasantville, New York



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For more data, circle 147 on Inquiry Card

**"Design Conference"**

*continued from page 254*

a sensitivity worthy of the high standards of achievement in this state. Let us pioneer the ways to achieve designs which will be a tangible and enriching force in our state."

Karel Yasko, assistant commissioner of Design and Construction of the General Services Administration, Washington, D.C., stressed that the administrator-decision-maker should be concerned with the future implications of his decisions. "Let him ask this of his professional advisers in design and in programing. The answers will mold the shape of the Great Society of Man. Let them design the hallmark of excellence."

Mr. Yasko stated that the "Guiding Principles for Federal Architecture" formulated during the Kennedy Administration "are recommendations worthy of every level of Government because they are fundamental to the creation of meaningful environment."

Arthur Drexler, director of the Department of Architecture and Design at the Museum of Modern Art, New York City, called for the conferees to consider new and alternative solutions to familiar design problems, in his address "Creating the Environment." Mr. Drexler asserted that buildings are normally considered as large objects, objects that consume the land on which they stand, while remaining separate from that land.

Mr. Drexler feels that buildings conforming to the land and within the land must be considered in the achievement of total environment. In this way the building and land might become a single entity. "... architecture . . . in this way of thinking becomes not a question of making buildings, but becomes a question of making land.

"The real question is good design of what?," said Mr. Drexler in concluding. "What will it be when you're all finished?"

"It isn't enough to say it will be lots of objects neatly arranged, excellently detailed, handsomely executed. All of this is essential, in fact, but it isn't enough. . . ."

"The opportunity for experimentation is at hand and so is technology. Someone here can do something about it. It doesn't cost very much money just to think about it. . . ."



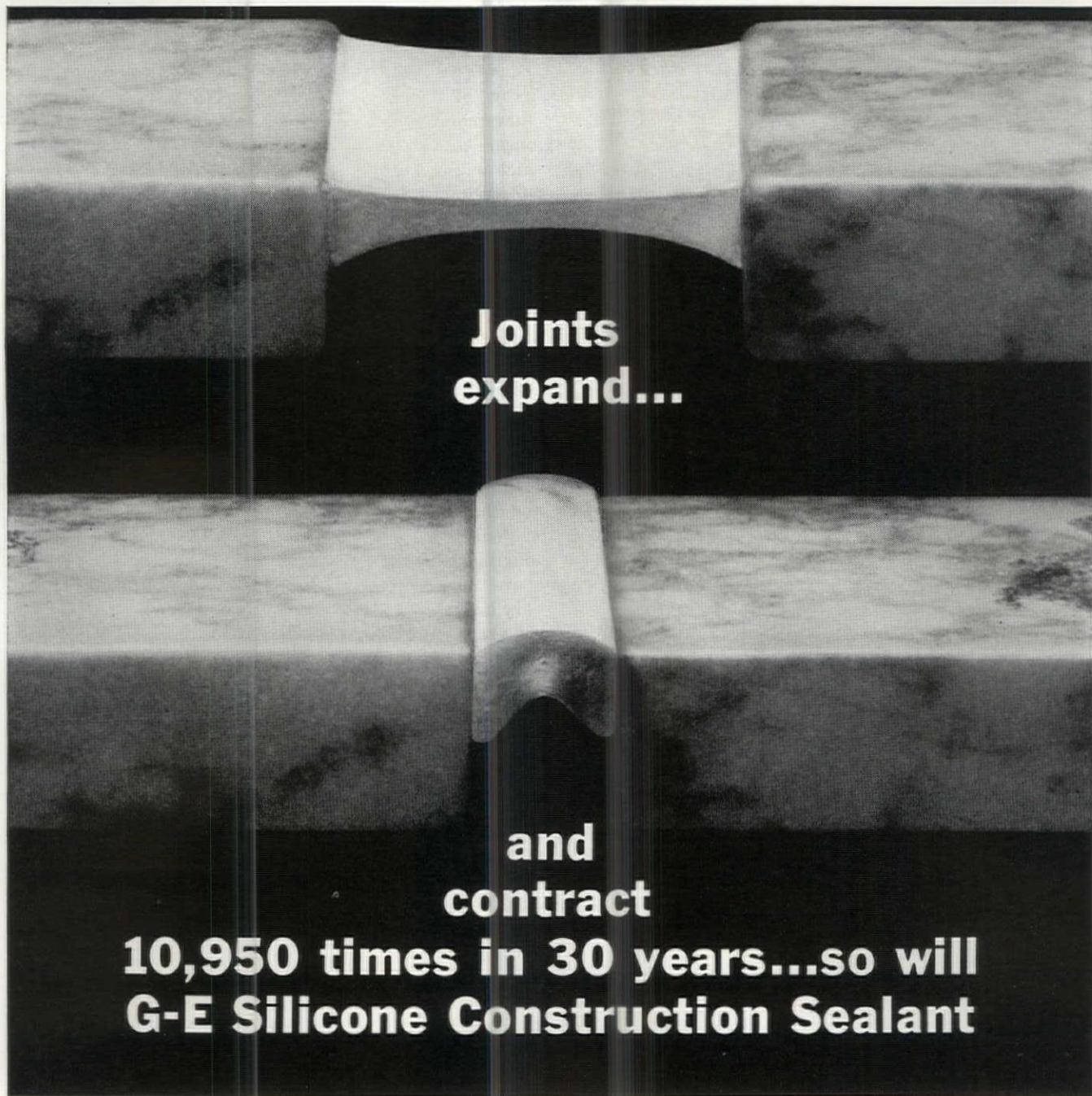
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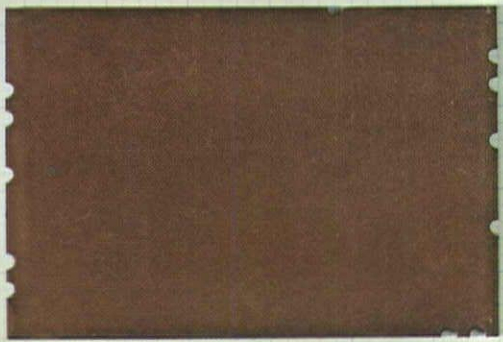
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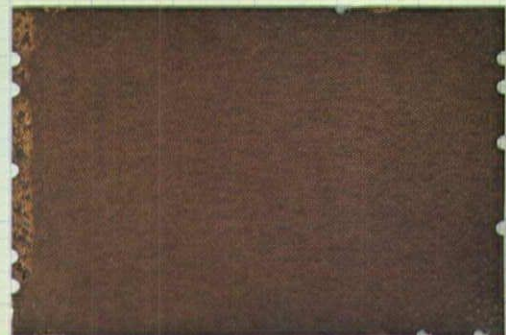
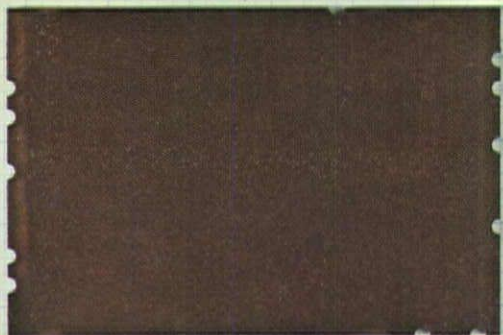


*Spring*

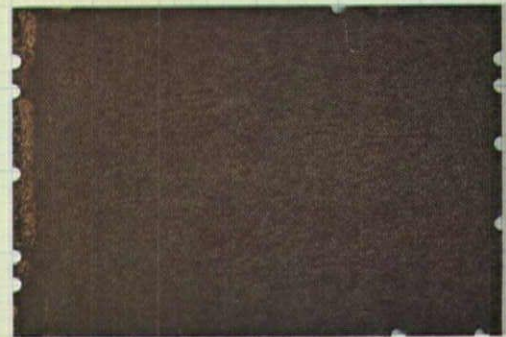
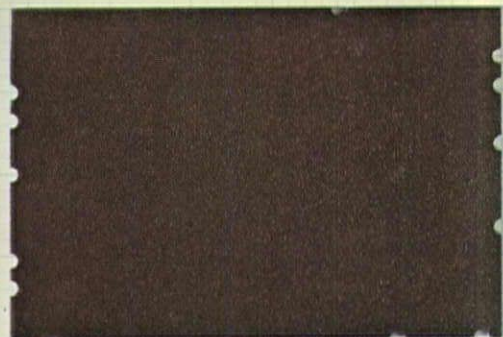
*Fall*



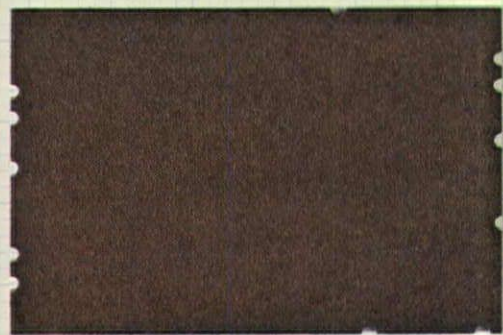
*1 mo.*



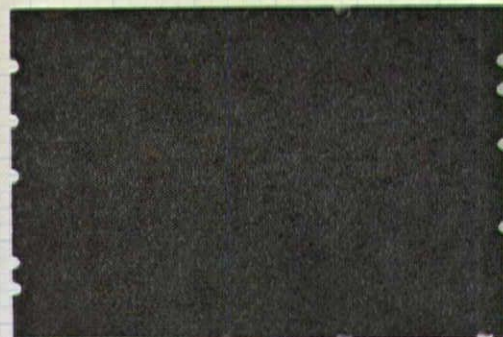
*3 mo.*



*6 mo.*



*1 yr.*



*2 yrs.*

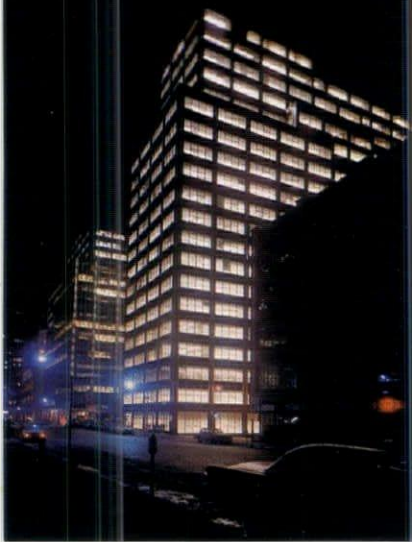


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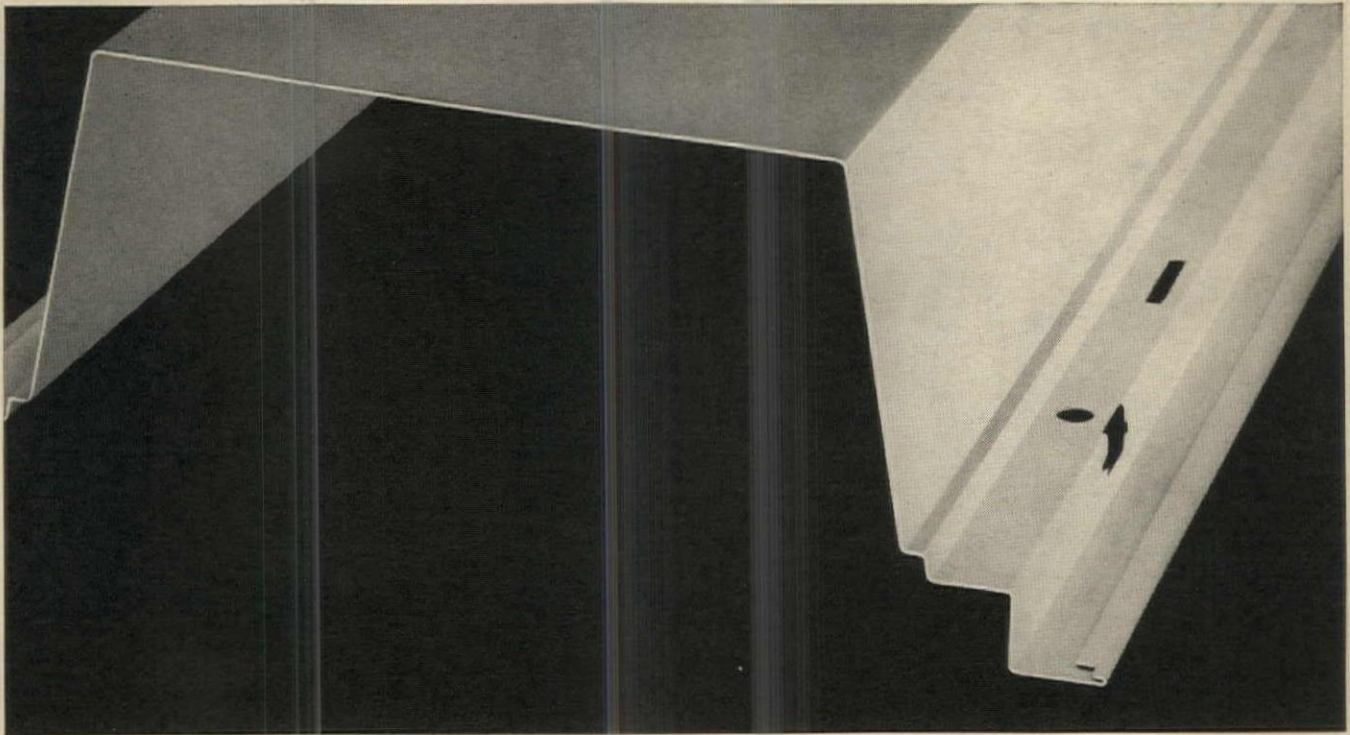
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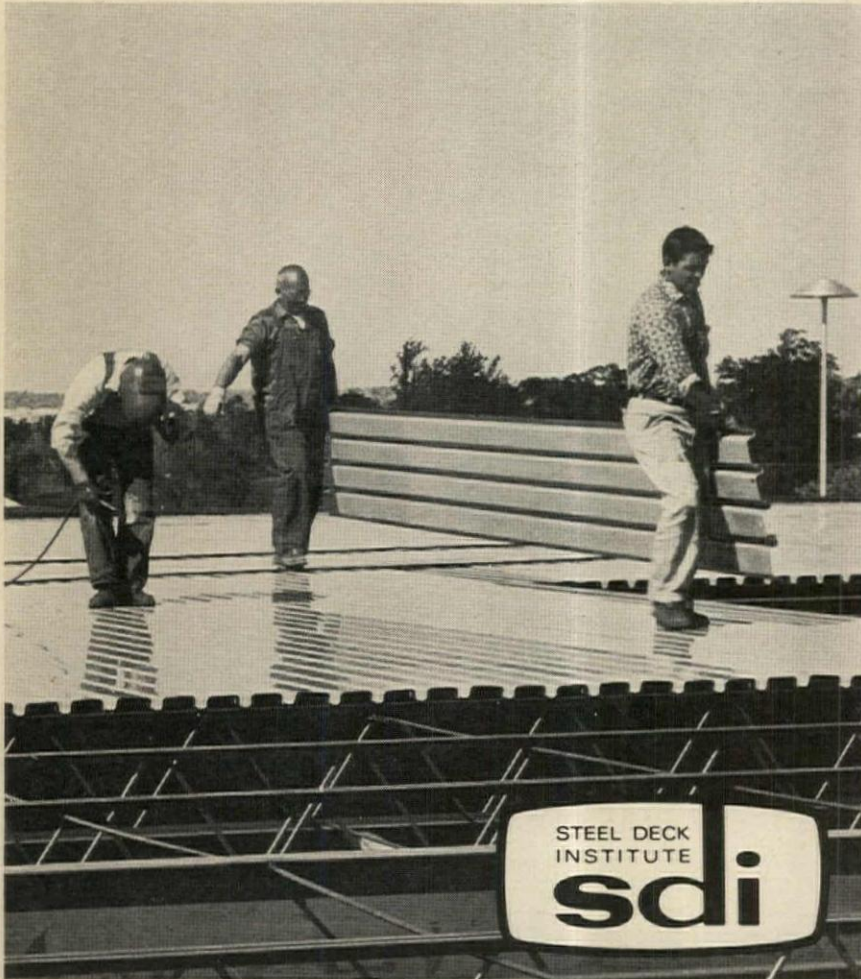
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## On the Calendar

continued from page 268

8-11 1965 Industrial, Institutional and Commercial Building Conference, sponsored by the American Institute of Consulting Engineers—Cobo Hall, Detroit

14-15 Annual Convention, National Housing Conference—Statler Hilton Hotel, Washington, D.C.

15-17 Annual Meeting, Solar Energy Society—Towne House, Phoenix, Ariz.

### ADDENDA

In the news story (December 1964, page 14) on the Detroit A.I.A. awards, the caption for the Manufacturers National Bank of Detroit, Hunter Boulevard Branch, designed by Louis G. Redstone, Architects, Inc. was erroneously transposed with the caption for the residence for Mr. & Mrs. William B. Bachman Jr., Bloomfield Hills, Michigan, designed by Tarapata-McMahon Associates.

A typographical error on page 181 of the October issue resulted in the misspelling of Gerald Ratto's name in the credit for photographs of the French Hospital in San Francisco.

The correct price for "Condominium: Housing for Tomorrow," published by The Nimrod Press Inc. and reviewed in the October 1964 issue, is \$15.00.

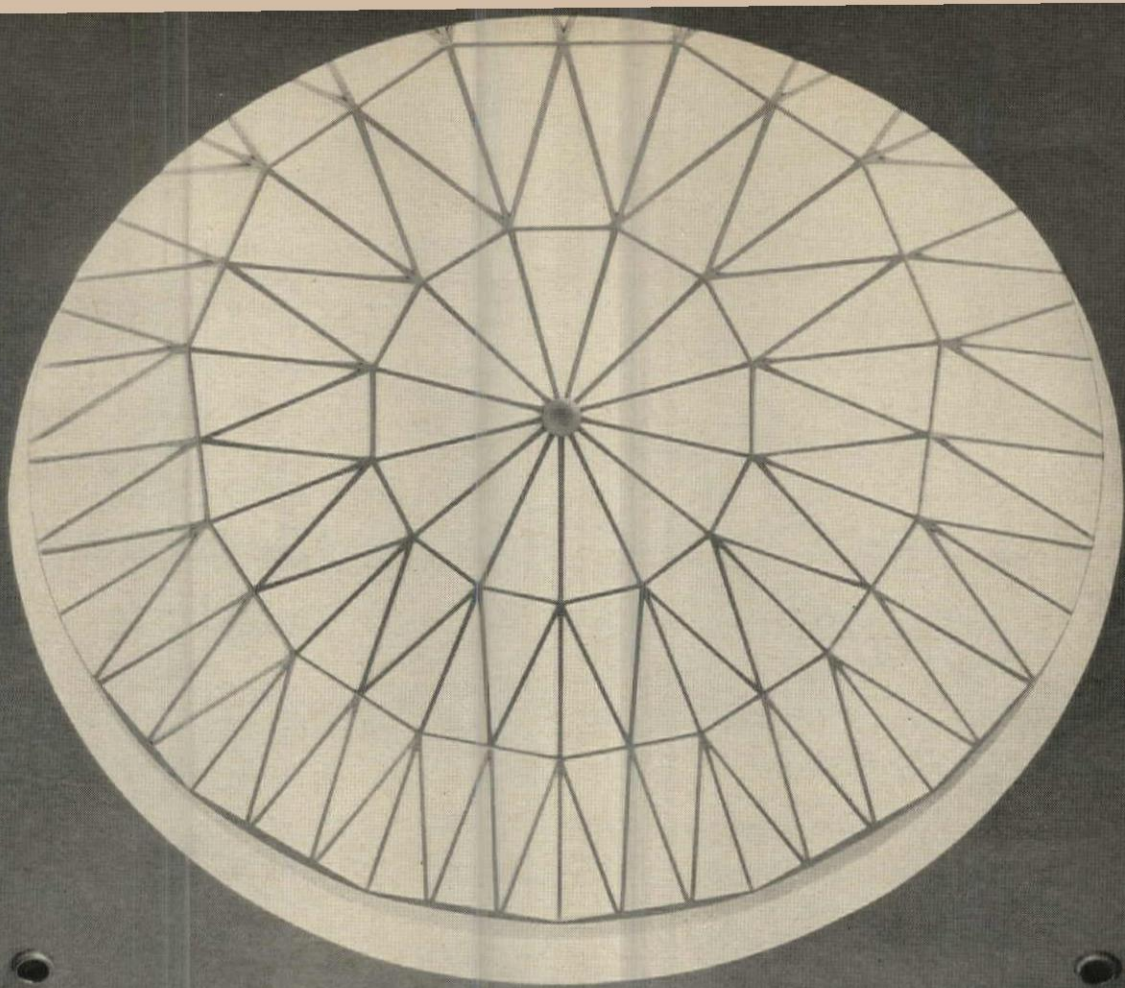
Architects of the El Monte Urban Renewal Project in Rio Piedras, Puerto Rico (November 1964, page 171) are Edward L. Barnes, Reed-Basora-Menendez. The RECORD regrets an error in credit based upon a release of the Urban Renewal Administration.

John Carl Warnecke & Associates are architects for the Central Library Building at the University of California's Santa Cruz campus (November 1964, page 179). Another firm was erroneously credited.

The renderings of the Residence Halls and the Great Plaza at the University of California San Diego campus (November 1964, pages 195 and 196) were the work of Bill O'Dowd and John Benton.

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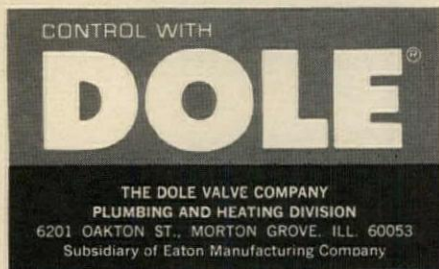
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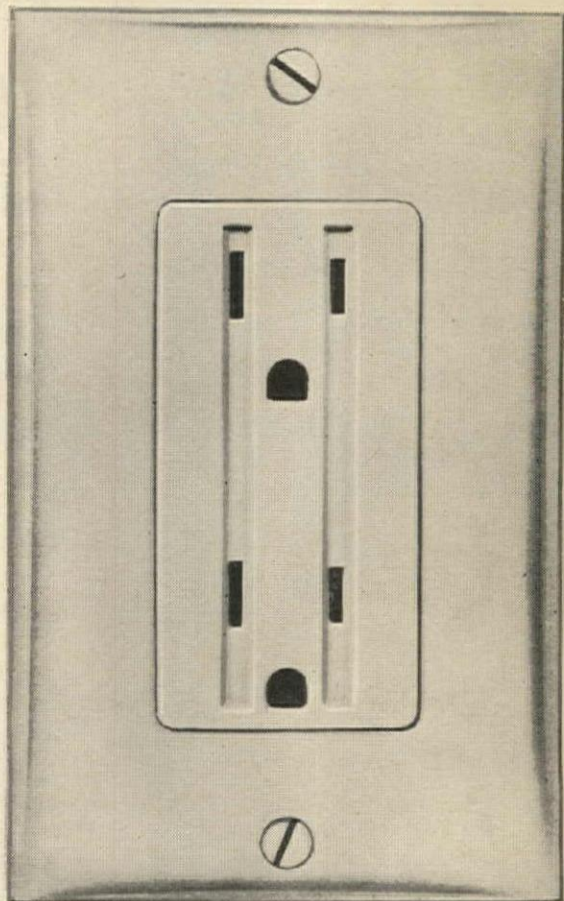
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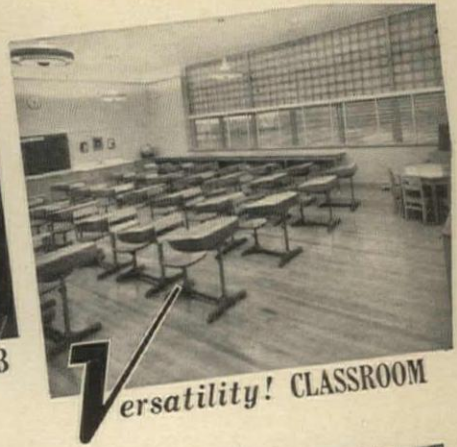




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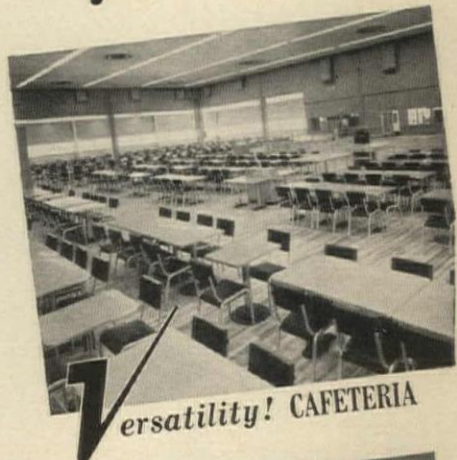


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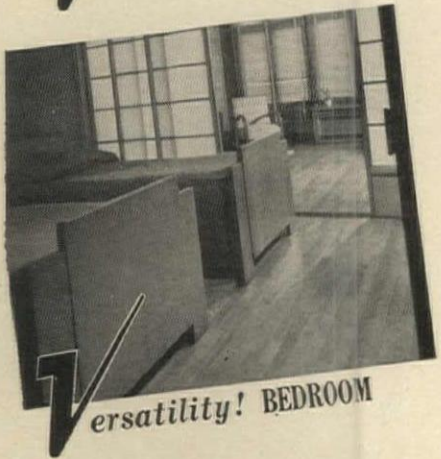


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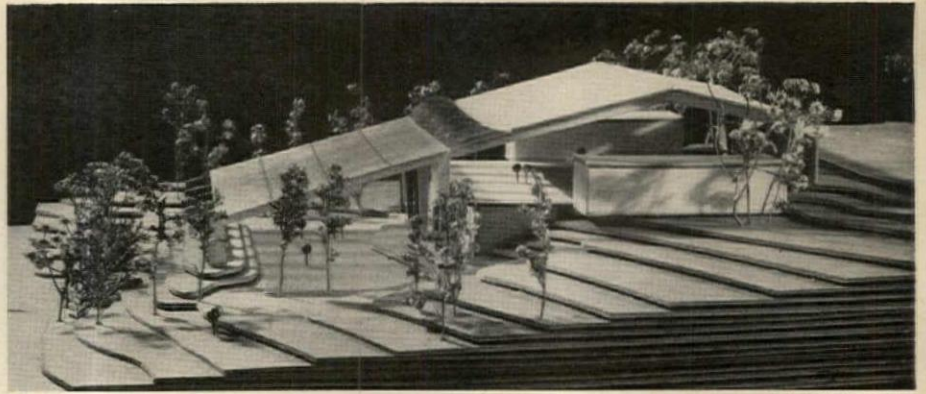
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\**Acer saccharum*. There are at least thirteen other species of the genus *Acer* — the maple family. Several of these have no value as wood. And all are decidedly softer, less durable, than *Acer saccharum*.

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John Gass photos

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The \$320,000 Children's Center at the Graham Home for Children, Hastings-on-Hudson, was designed to answer the institution's need for a recreation-gymnasium facility in an open setting to permit constant supervision without intruding into the children's games and programs.

Designed by Switzer and Zegler, architects, Bronxville, New York, the building is faced with brick and textured concrete to help relate it to a compound of buildings designed for the school by Stanford White at the turn of the century. General contractor was Walter A. Stanley & Company of Ossining, New York.

The multi-level structure conforms to its sloping setting and is divided into two main areas: the enclosed gymnasium and the semi-open play shelter at the lower level.

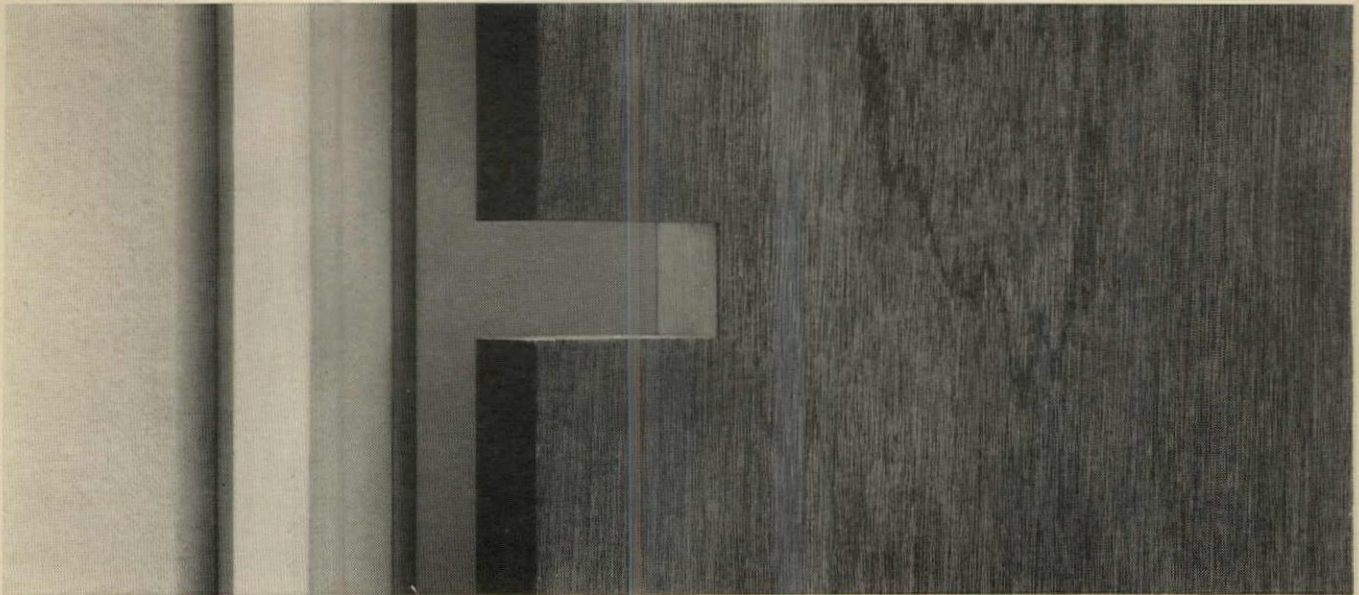
The gymnasium has a full regulation basketball court, cross courts, gymnast areas and bleachers. There are locker rooms, shower rooms, coach's office, and all-purpose areas for crafts and hobbies.

The play shelter at the lower level is roofed with white translucent fiberglass supported by natural finished wood beams. Bleachers, built to the natural contour of the site, extend 100 feet on one side of the hard-top play area.

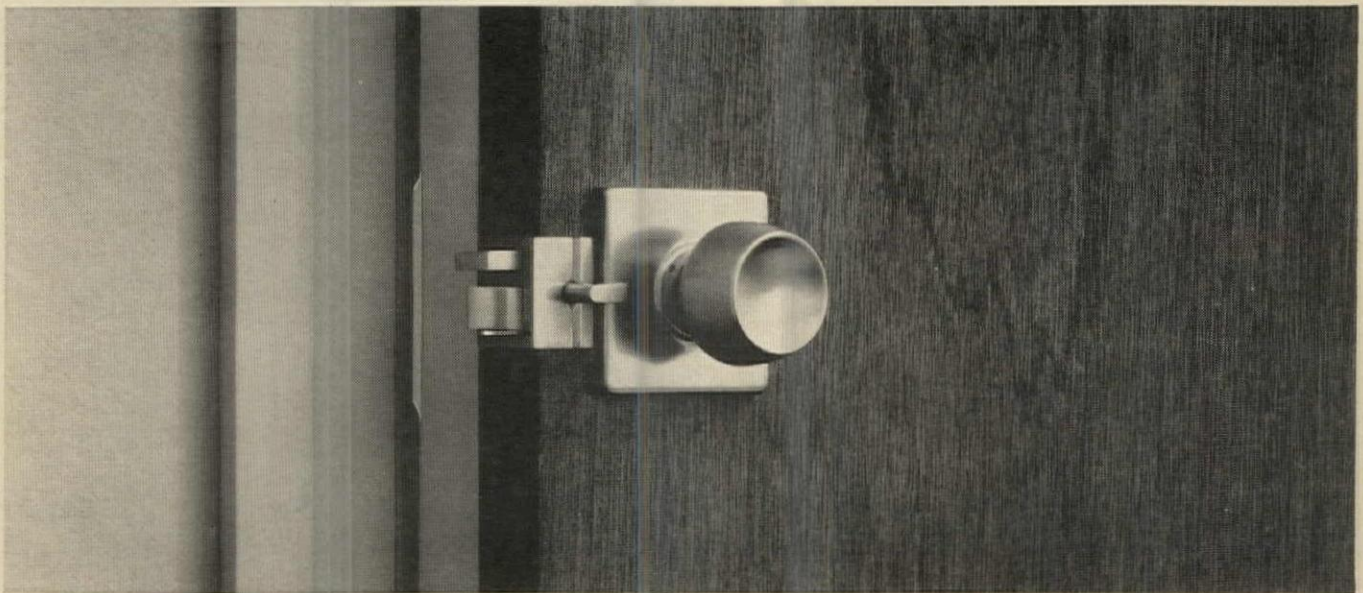
The Center was dedicated by New York City Welfare Commissioner James R. Dumpson on January 16.







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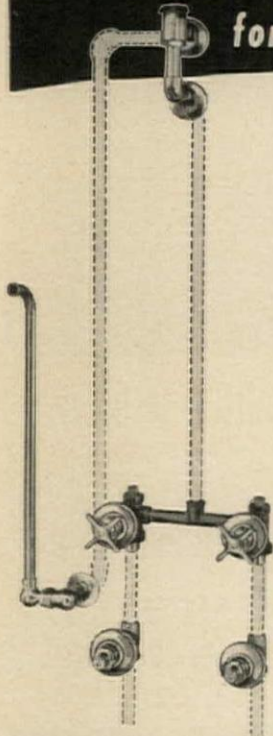
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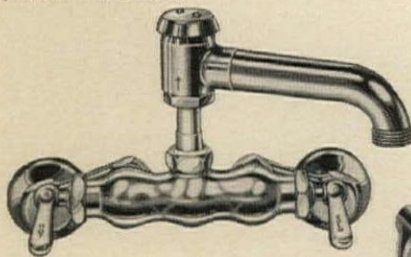
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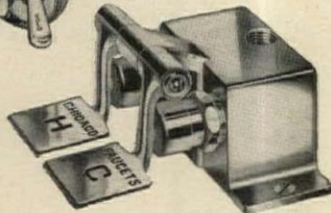
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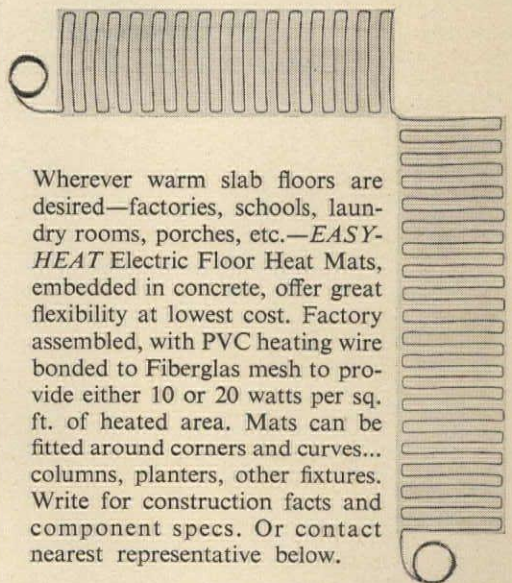
mats roll out quickly, to free surfacing crews sooner. And now operation can be entirely automatic! New Automatic Switch detects snow-fall, turns system on and off only as it is needed. Write for new illustrated spec folder and cost data on the one "best way" to melt ice and snow!



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## HENRY WRIGHT DECRIES "SEALED ENVIRONMENT" IN OFFICE BUILDINGS

"The 50-story sealed building must be recognized as an environmental monster," according to Henry Wright, then an associate professor of architecture at Columbia University, in an address presented to the American Society of Mechanical Engineers assembled in New York City for their 1964 annual meeting in December.

Professor Wright, who becomes the "Regent's Distinguished Professor of Environmental Technology" at the College of Architecture and Design

at Kansas State University on February 1, called for a re-examination of the thinking which brought the sealed structure into existence.

"Ten years ago, few people had the opportunity to spend their working hours in a standardized, controlled temperature—summer and winter. What is more to the point, none of us was condemned to remain in the same standard atmosphere in the spring and fall as well . . ."

Mr. Wright feels that variations in the climate can be solved architecturally through use of four distinct types of space.

" . . . The first of these would be working areas in which the thermal-atmospheric conditions were closely controlled. . . . We must realize that in work spaces, the real objective is an environment which can be forgotten, one which gets out of the way of the activity. This almost certainly means an environment we will tire of, just as we tire of work.

"The second kind of space would be the corridors and other circulation areas, in which only sketchy heating equipment would be provided, along with the kind of window ventilation we all grew up with, and with cooling equipment omitted entirely. If the corridors were a bit hot at times, or a bit cold, so much the better. No one would be required to sit still in them, and brief exposure to moderate temperature change is usually pleasant as well as stimulating.

"The third would be a kind of space that was intermediate between the first two. It would have air-conditioning equipment which could be turned on and off by the individual occupants, permitting them to throw open the windows whenever it was manifestly nicer outside than in, and to operate the refrigeration equipment only when they felt it was needed.

"Finally, any sizable building, should, I feel, have open-air terraces, in conjunction with public spaces of various kinds, so that those who are moved to do so can step out for a free restorative—thus providing the range of olfactory, auditory, sensory, tactile, and psychological experience that is the prerogative of every member of the human race. When one has been immured in the synthetic environment for a protracted period, the sound of a distant auto horn or even the squeal of brakes can be almost as pleasant as the evening call of the whippoorwill."

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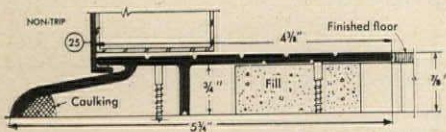
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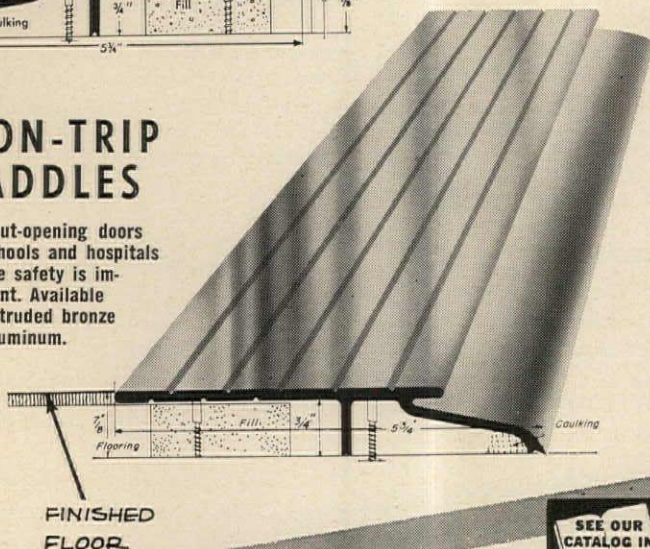
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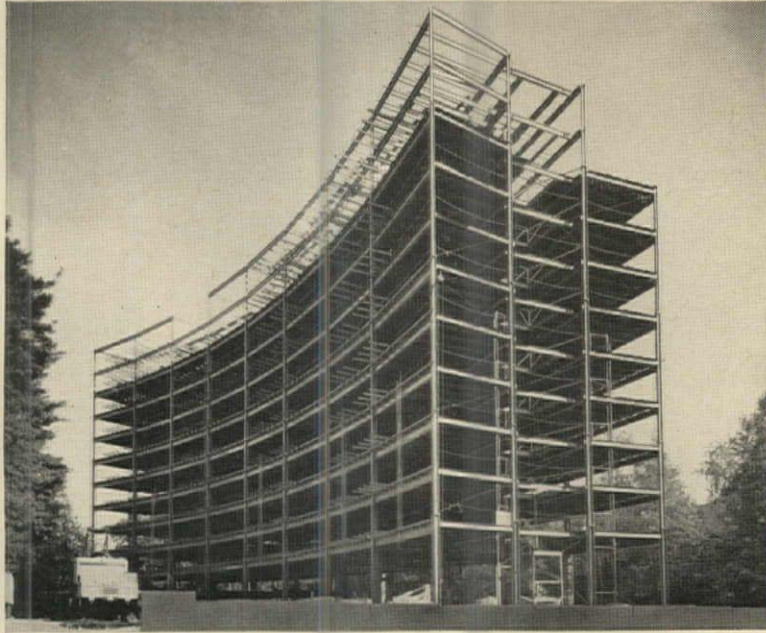
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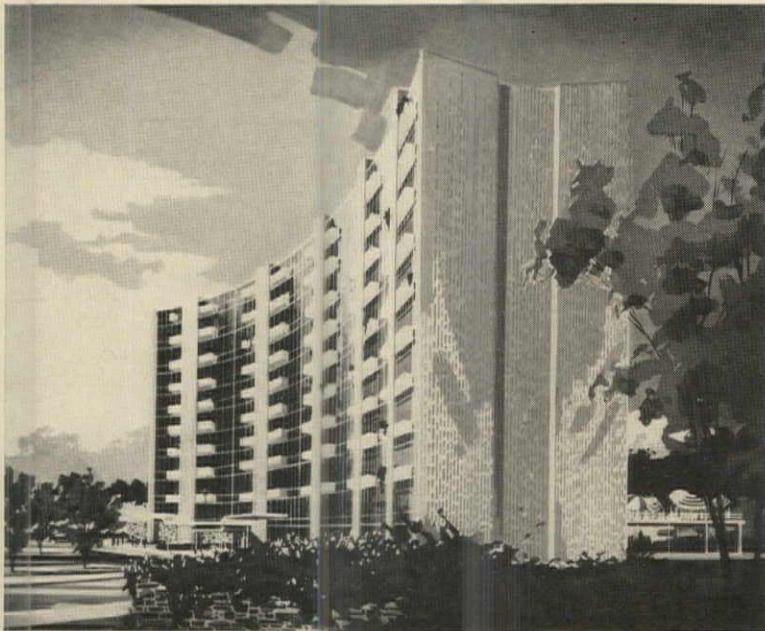
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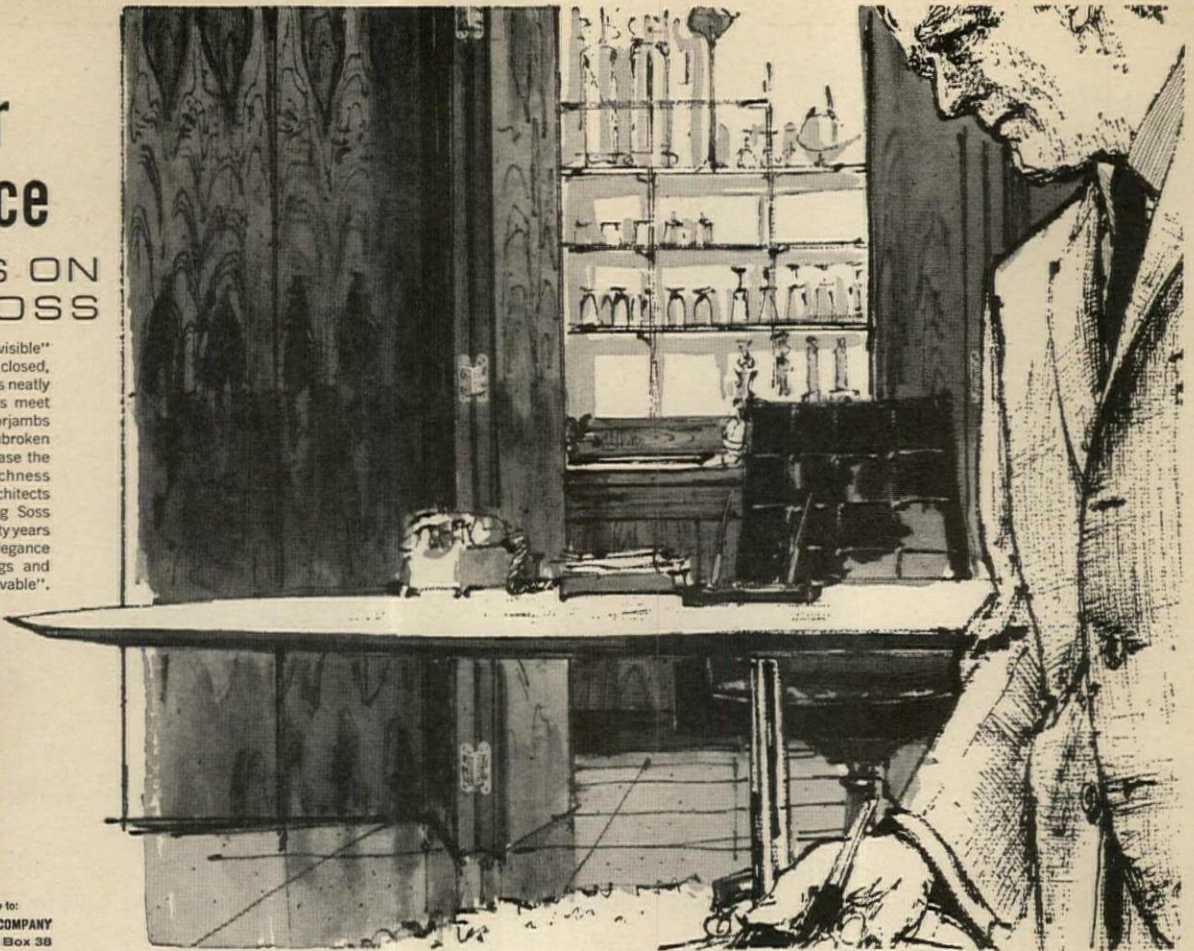
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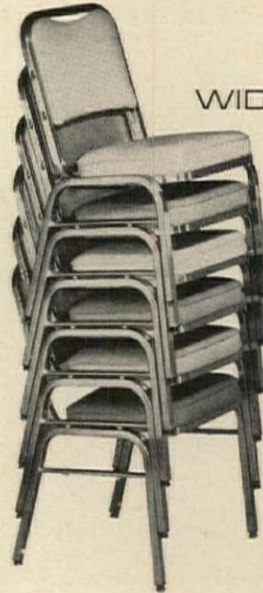
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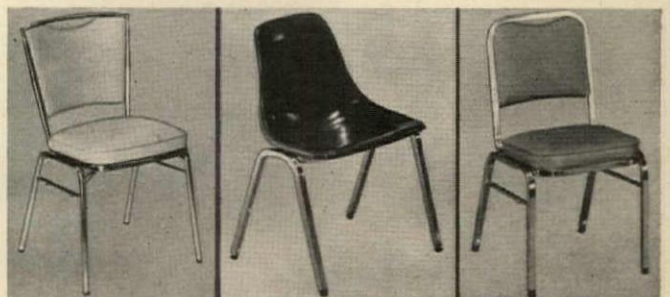
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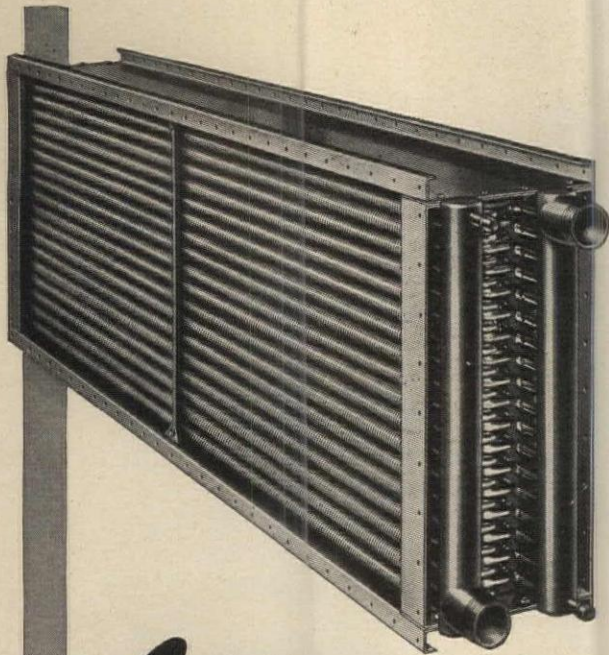
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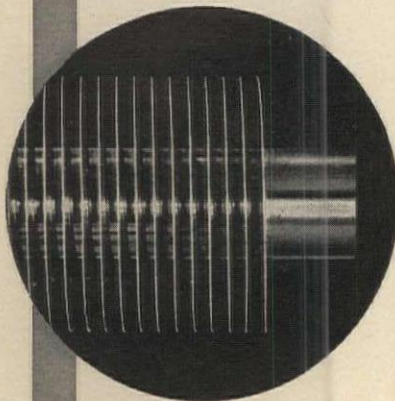
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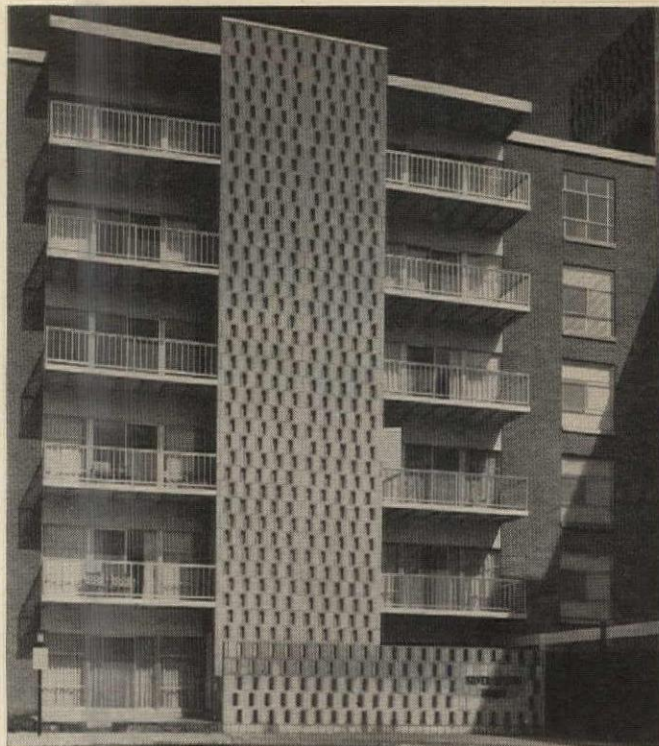
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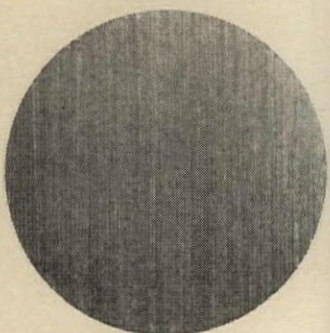
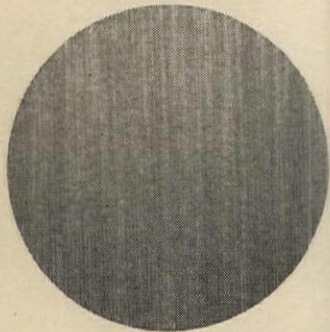
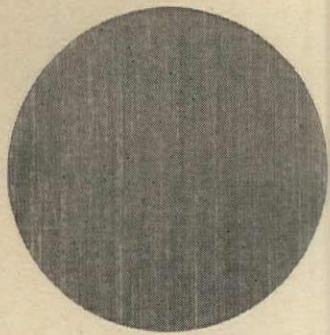
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## EIGHT ARCHITECTS GIVEN CITATIONS

At the annual convention of the New York State Association of Architects, held in November, eight architects were awarded citations for excellence in design in five categories. The jury of awards consisted of Olindo Grossi, dean of the School of Architecture at Pratt Institute; Rex W. Allen, a national vice president of the American Institute of Architects; and Joseph Watterson, editor of the A.I.A. Journal. Samuel Scheiner, A.I.A., was chairman of the architectural competition.

The architects cited were:

**Residential Buildings**—Kelly & Gruzen, New York City, for their design of Chatham Towers, New York City, and James R. Mowry, Binghamton, for the residence of Dr. Alexander D'Angelo, Binghamton, New York.

**Educational**—Warner, Burns, Toan & Lunde, New York City, for Warren Weaver Hall, New York University, and Sherwood, Mills & Smith, Stamford, Connecticut, for the Briarcliff College Buildings, Westchester County, New York.

**Institutional**—Isidore and Zachary Rosenfield, New York City, for Griffin Hospital, Derby, Connecticut.

**Commercial**—Michael Schwartz, New York City, for the All-Cape Shopping Center, Cape Cod, Massachusetts.

**Industrial**—Smith, Smith, Haines, Lundberg & Waehler, New York City, for the Mechanical Equipment Building, Xerox Research Center, Webster, New York, and Daniel Chait (architect) and John B. Peterkin (consulting architect), New York City, for the visitor's building at the Niagara power plant.

### ADDENDUM

In the news story (July 1964) on the National Design Center in Marina City, Chicago, interior planning and design, including the stairwells, should have been credited to Brenner-Danforth-Rockwell, Architects, of Chicago. Bertrand Goldberg is architect of Marina City.

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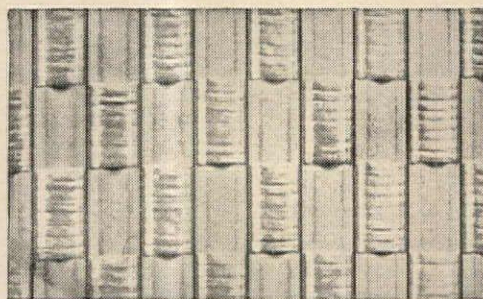
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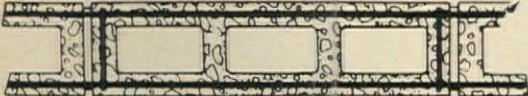
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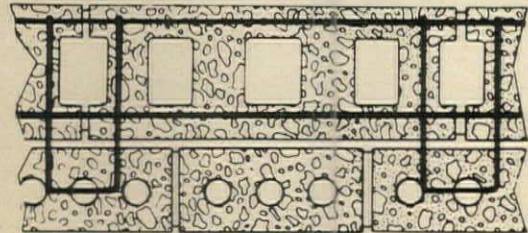
## REFERENCE FILE:

- 1965 Sweets' File <sup>4h</sup> Aa
- 1964 A.I.A. BPR 4.05 A-B
- 1965 CE SPEC. DATA FILE 5-a
- CSI File Div. 4
- A.I.A. File 3M-5F

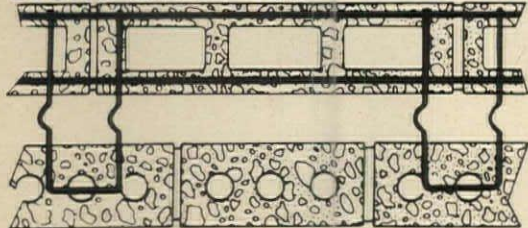
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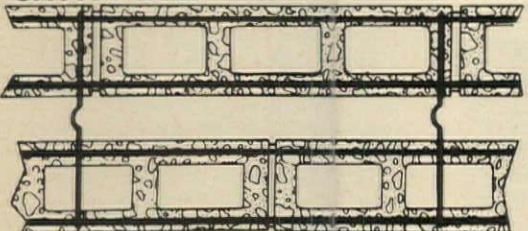
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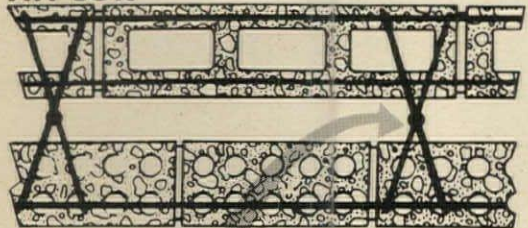
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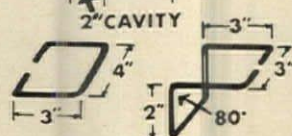
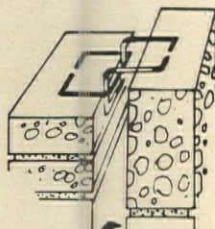


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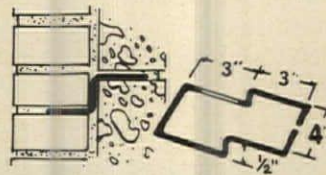
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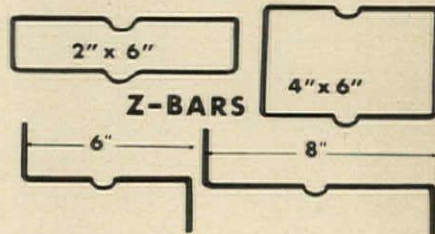
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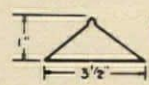


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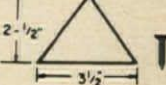
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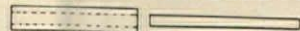


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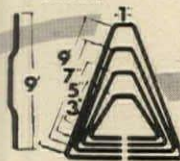
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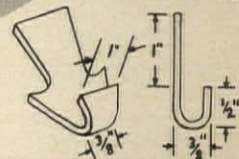
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**BANK WILL RISE  
IN LOS ANGELES**

The City National Bank Building in Los Angeles, designed by Dan Saxon Palmer & Associates, architects, West Los Angeles, has a colonnade of 60-foot-high outer columns around the five lower floors, which are set back to widen the sidewalks. Columns are clad in granite and pre-cast concrete.

The 26-story, \$18 million structure will be topped by a heliport. Mr. Palmer said the building will be built "on standards of luxury unexcelled by any other office building in Los Angeles." General contractor is the Buckeye Construction Company, Inc. Completion is expected in 1966.

Rigid steel frame and lightweight concrete construction will provide gross area of 317,000 square feet, plus 73,000 feet in four subterranean parking levels for 291 cars. City National Bank, largest tenant of the building, will initially occupy three lower floors, including the sidewalk level.

The building's office floors will have an exterior of sculptured, precast curtain walls, with bronze solar tinted windows recessed about 2 feet into individual coffers. Main facades are on the northwest and northeast, minimizing sun control problems.

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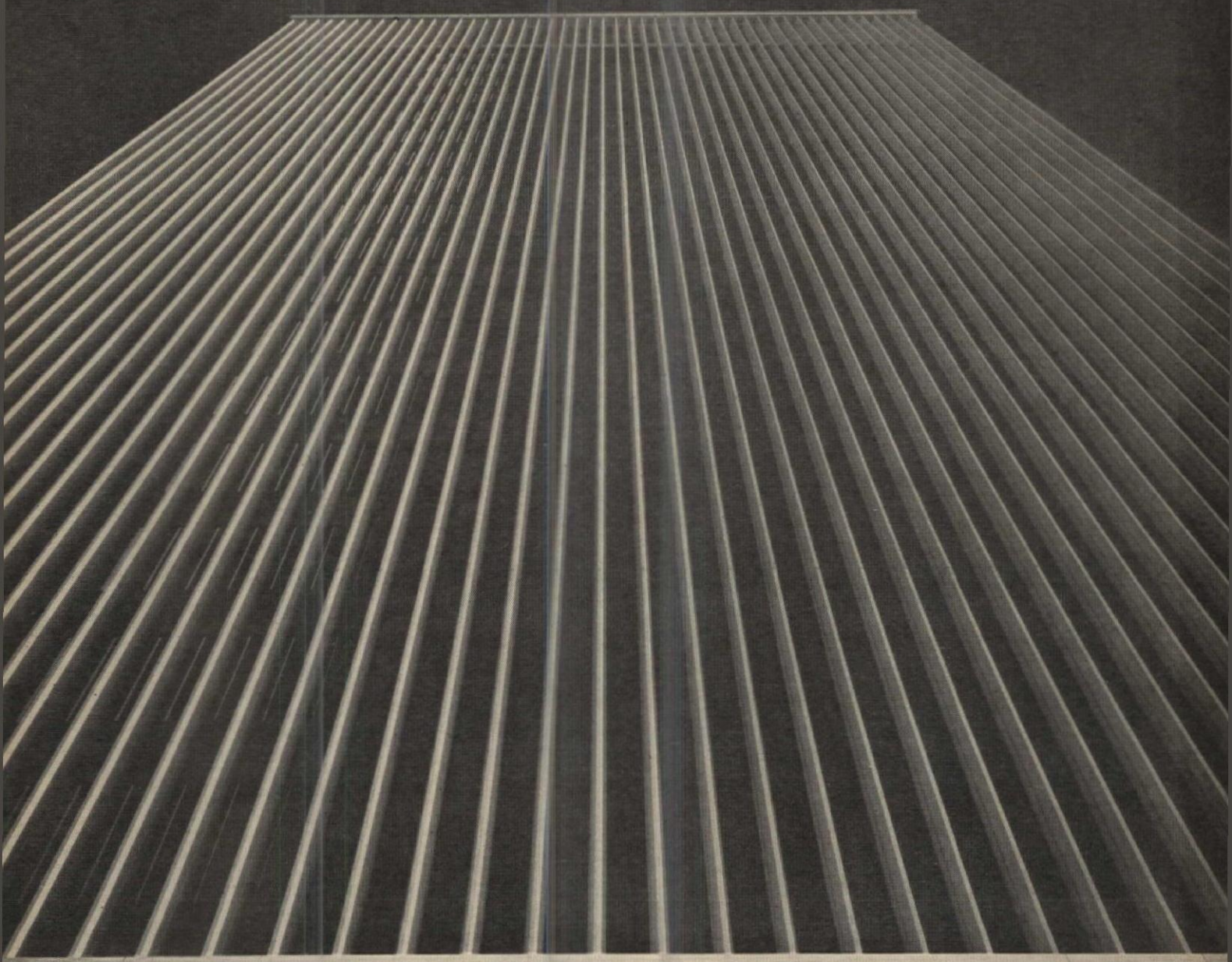
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Thin white "lines" of Mo-Sai lead the eye skyward on Yamasaki's new I.B.M. Building in Seattle, Washington. The delicate Mo-Sai mullions were factory-cast in 24-foot lengths spanning two floors with a glistening surface of fine white quartz aggregate. A concave back on the prestressed Mo-Sai units fits around structural steel pipes that run from floor to floor between windows supporting the building perimeter. Fixed aluminum-framed windows are flashed and sealed against the back of the Mo-Sai mullions. Mo-Sai planters and walls in a grey pebble surface form an inviting garden area on the lower elevation.

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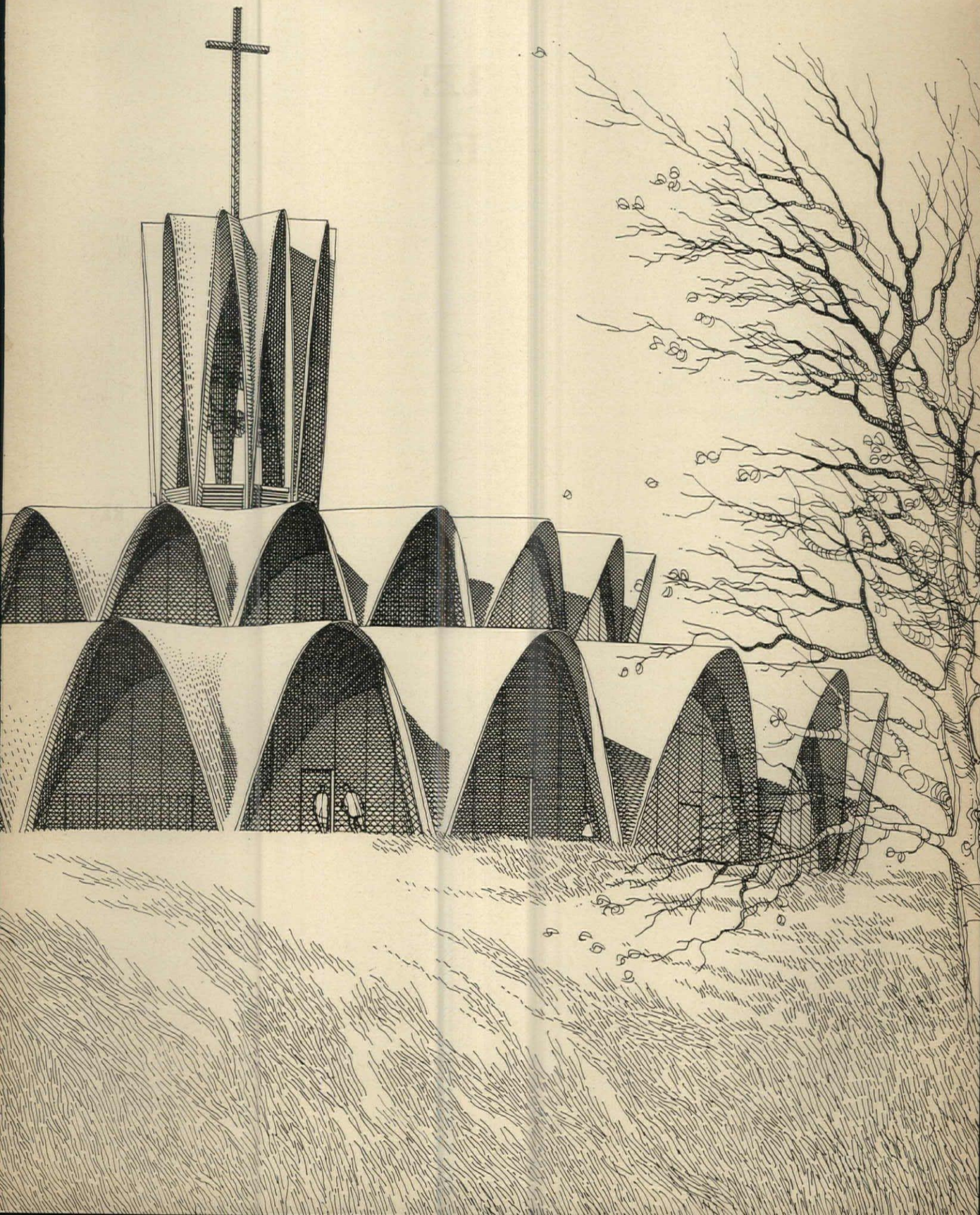
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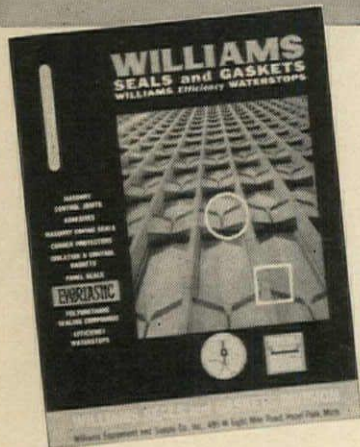






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## INSTITUTE OFFERS COURSES IN DESIGN FUNCTION

Courses in building function analysis are being offered to students in the new Division of Architecture of the Institute of Technology in Lund, Sweden. The courses, to be taken in the first and third years of a four-year program leading to the “arkitekt” degree, will be taught by Professor Carin Boalt.

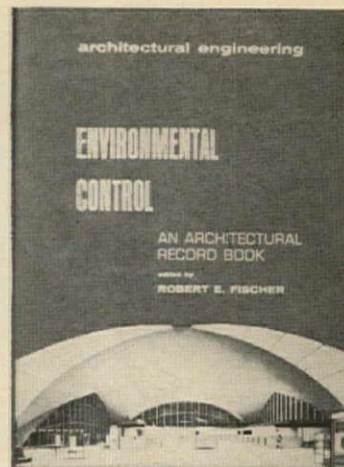
“The field of building function analysis has grown out of an increasing need for a broader background in architectural studies,” Professor Boalt said. “Architects have long been forced to turn to specialists in other disciplines in order to solve various problems of function. With proper training in function analysis, they will be able to solve at least some of these problems themselves.”

Professor Gunnar Henriksson, a member of the Ministry of Education committee which drew up the program for the Lund school, stated that “function is an important consideration in architecture, fully on the level with technological and esthetic aspects. Now that scientific methods have been developed in the field of function analysis, it is only natural that there should be a department and a chair in this discipline.”

Four hours a week will be devoted to the subject—two lecture hours and two laboratory or field hours. The students will spend another four hours on course literature and on special research projects.

The first-year course will focus on the relationship between man and the building or part of a building. The students will familiarize themselves with standard measures and movement patterns of the human body, demands for space, and design of interior appliances. Problems of the physically handicapped will also be considered in the first semester.

The third year program, to be conducted in close cooperation with the Department of Community Planning, has not been worked out in detail, but will center on problems of buildings or groups of buildings within the community—the location of shops, schools and service facilities in relation to dwellings and means of transportation.



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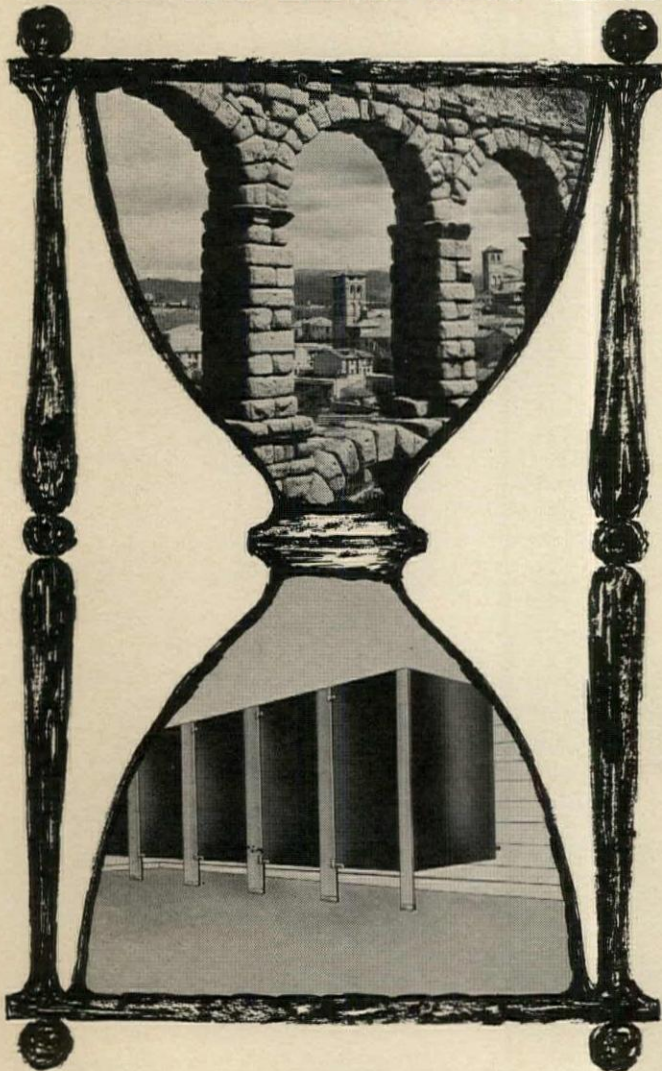
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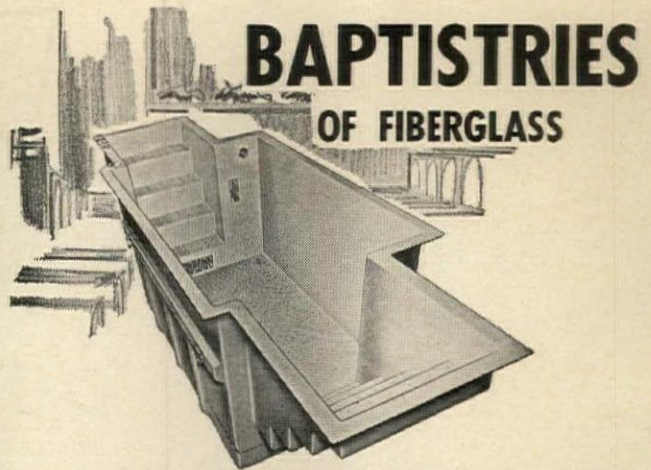
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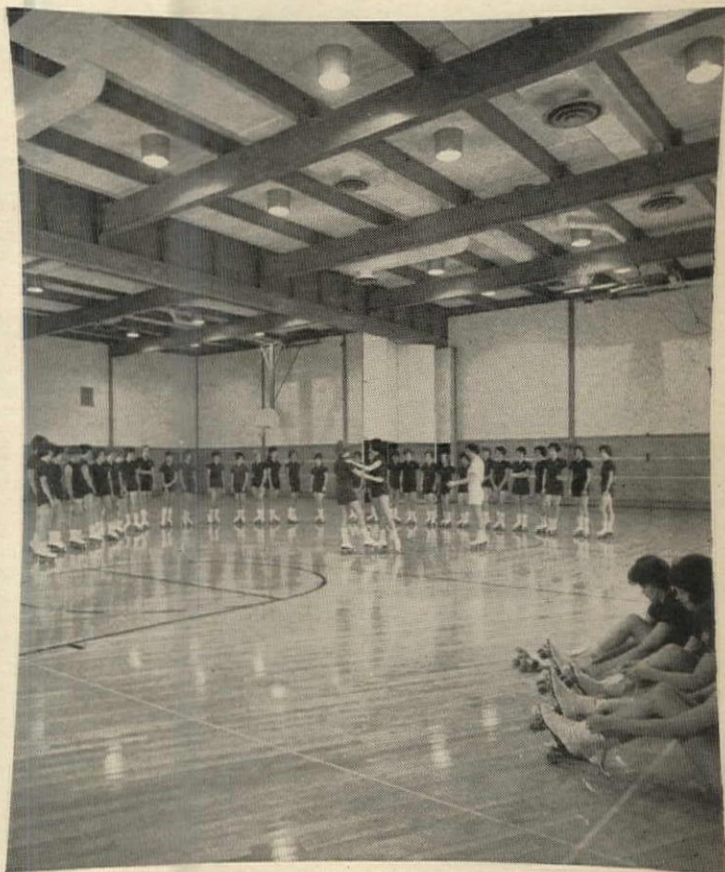
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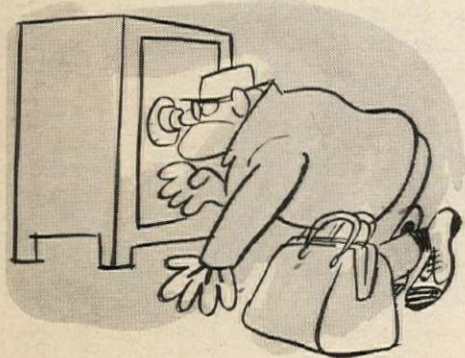
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