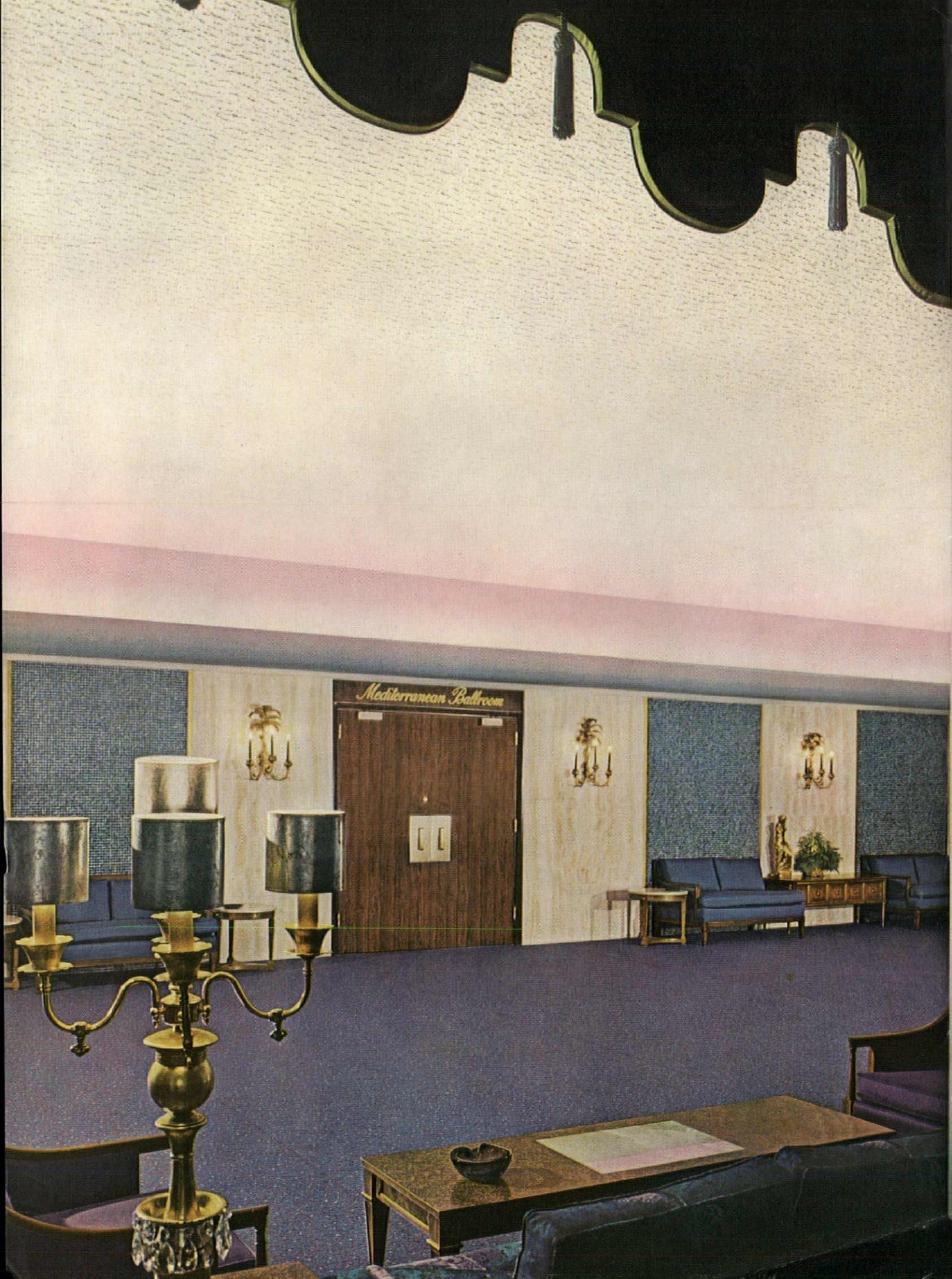
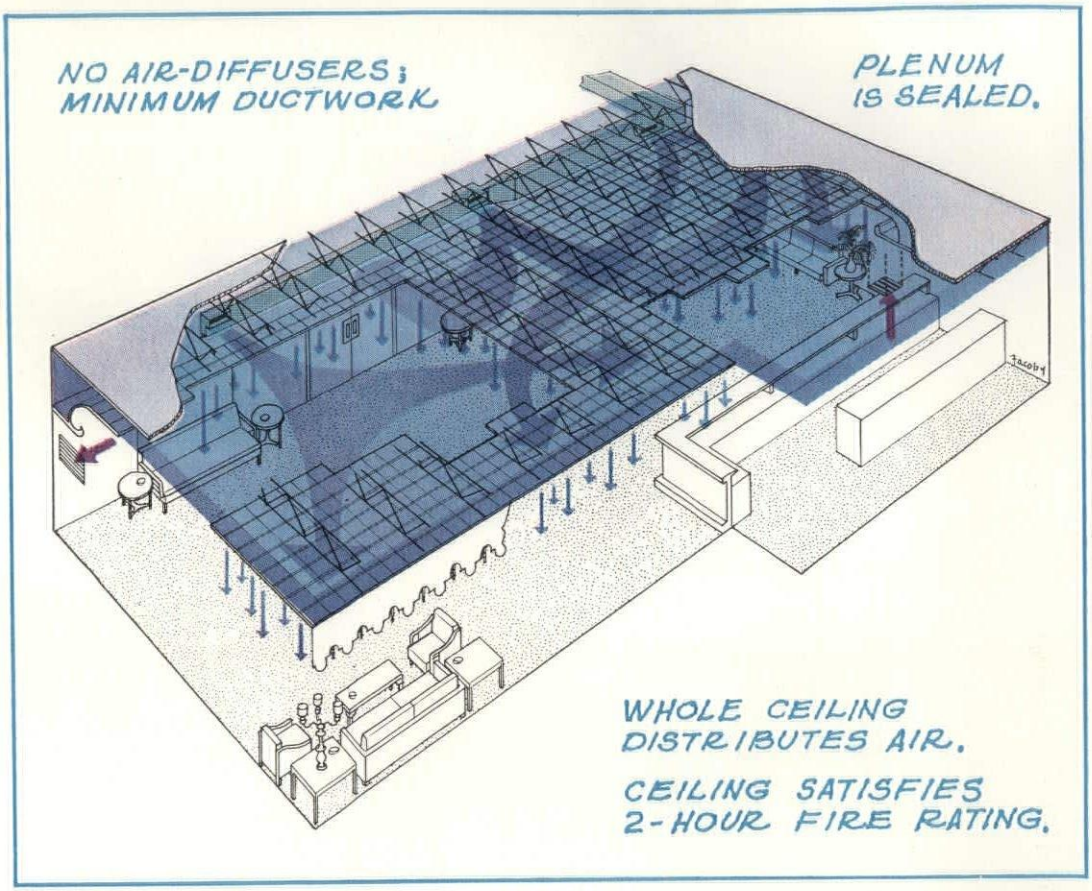
PROGRESSIVE ARCHITECTURE *April 1963*


Mediterranean Ballroom

Thousands of Armstrong Ventilating Ceilings– a bold concept in air distribution– are now paying off. Here is one.



Complete air conditioning — but no air diffusers, no wall registers and little ductwork. In Armstrong Ventilating Ceiling system, sealed plenum becomes supply duct, through-perforated ceiling distributes air. ■Entire ceiling diffuses air; whole room gets even, thorough heating/cooling. Ventilating Ceiling presents monolithic, uncluttered surface. System is efficient, silent, virtually invisible (see photo, opposite). ■Ceiling is time-design-rated Armstrong Travertone Fire Guard, satisfying local fire code's two-hour requirement. ■Job is good example of thousands of successful Armstrong Ventilating Ceilings throughout country. Economical, too: savings over traditional system normally reach 30¢ per sq. ft. ■Design these advantages into your current projects; consult your Armstrong Acoustical Contractor or Armstrong representative now. For illustrated portfolio, write Armstrong, 4204 Watson St., Lancaster, Pa.

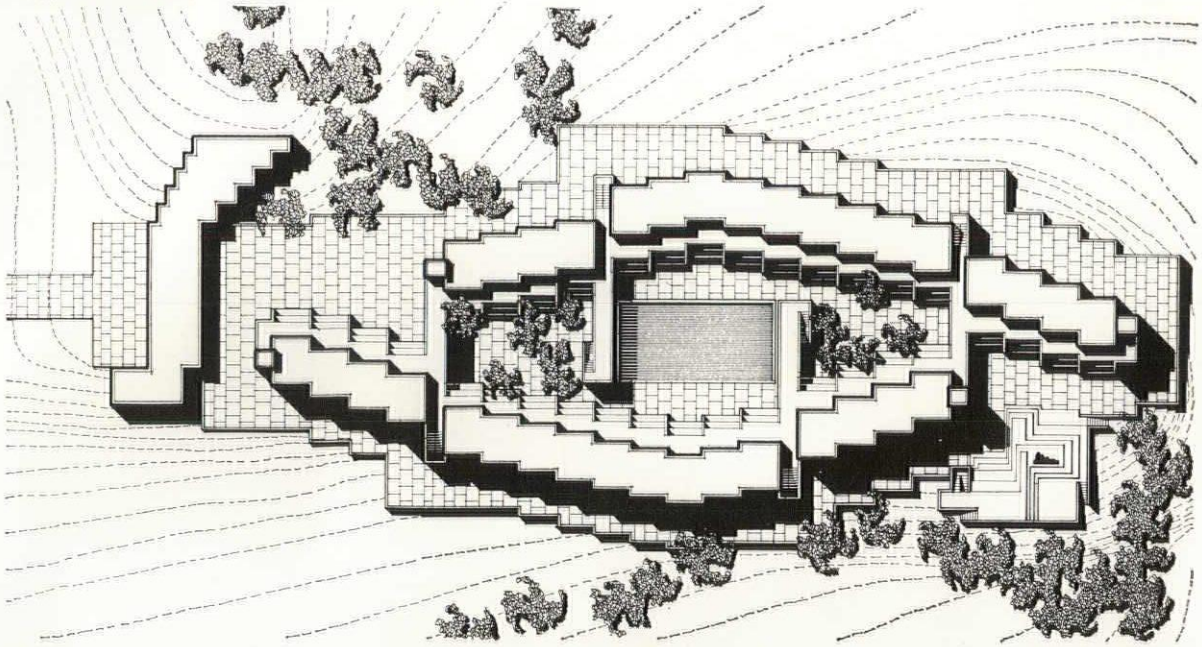
Armstrong CEILINGS / *acoustical fire-retardant ventilating*

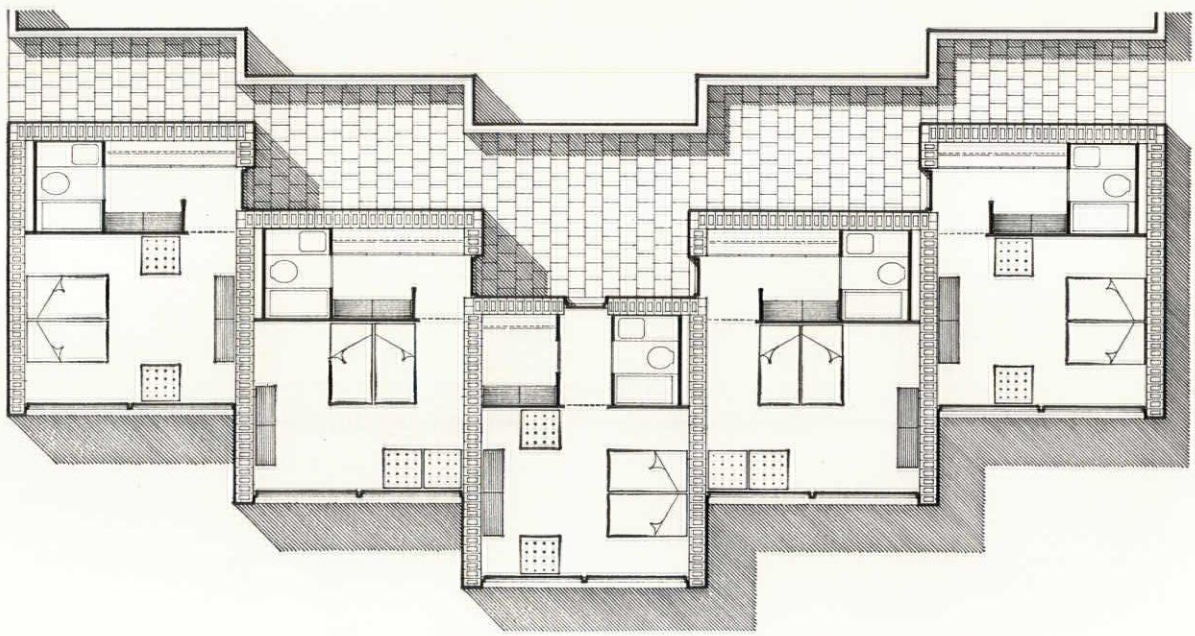
Riviera of Atlanta Motor Hotel: Architect: Carlos B. Schoeppl & Assoc., Miami Beach, Fla. Mechanical Engineer: Oboler & Clarke, Inc., Miami Beach. General Contractor: Capital Construction Co., Atlanta, Ga. Acoustical Contractor: Anning-Johnson Co., Atlanta, Ga.

PHOTOGRAPHY BY LAWRENCE S. WILLIAMS. RENDERING BY HELMUT JACOBY

For more information, turn to Reader Service Card, circle No. 300.

Zonolite prototype building #1: A Motor Hotel





Architect Stanley Tigerman creates a motor hotel of concrete block: Zonolite Masonry Fill Insulation makes it practical (see table)

Zonolite commissioned architect Stanley Tigerman of Tigerman and Koglin, Chicago architectural firm, and engineer Norman Migdal of Chicago to do this motor hotel of insulated concrete block.

It brings some interesting ideas to light.

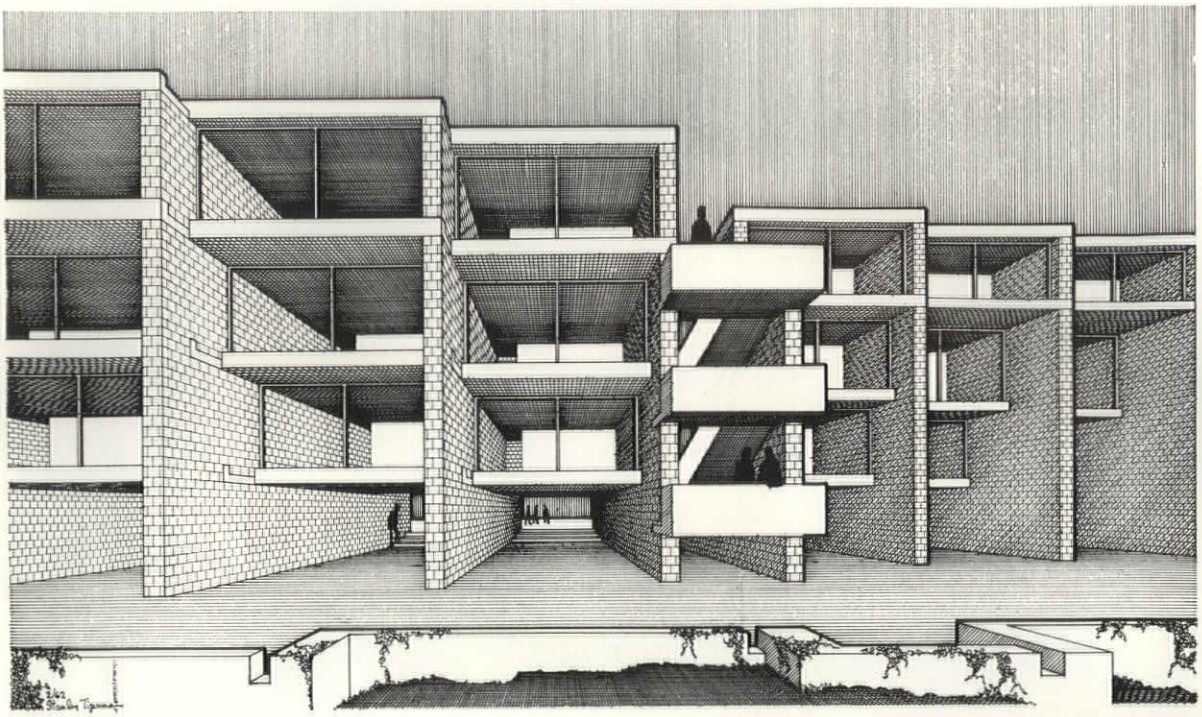
First, note that the interior walls are exposed block; the same block that is exposed on the exterior. Zonolite Masonry Fill Insulation in block cells cuts the heat transmission through walls from 35% to 50% or more, keeping interior surfaces comfortable. The water repellent nature of the material keeps moisture from collecting inside the wall, so that interior paint doesn't blister and peel.

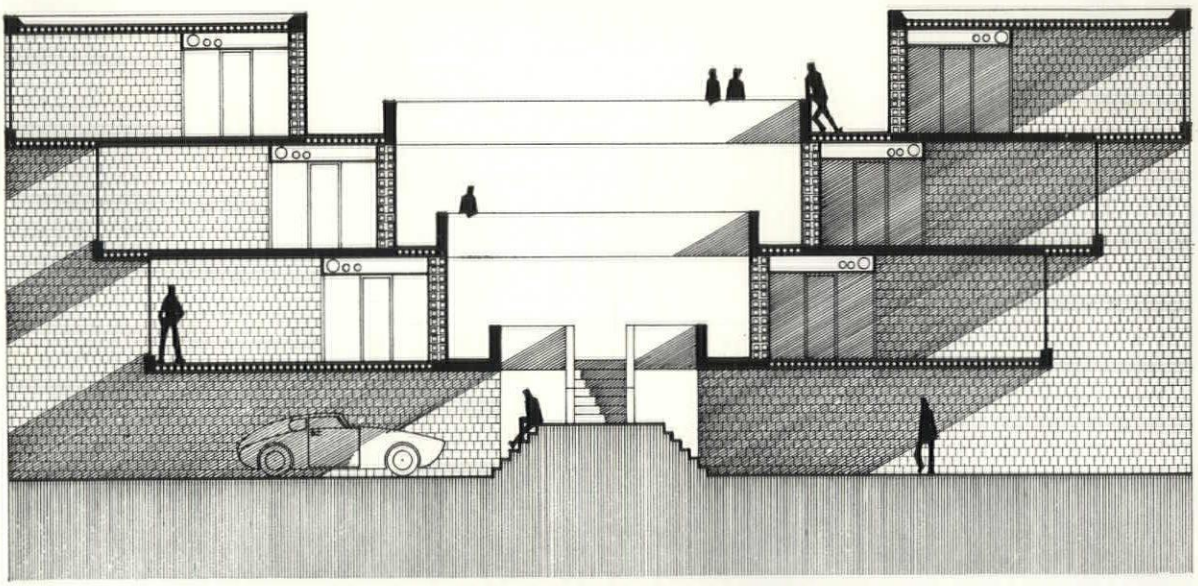
The insulation-filled cores in the cored concrete floor and roof slabs keep floors comfortable and minimize heat loss through the roof.

A benefit unexpected by most is the sound dampening capability of Zonolite Masonry Fill...a 20% loudness reduction in this case.

You have probably noticed from the table that the size and cost of the necessary heating and air conditioning units are considerably reduced by using Zonolite Masonry Fill Insulation.

Contrast this (and the reduced operating costs) with the approximate installed costs of Zonolite Masonry Fill Insulation.





approx. installed costs per sq. ft. of wall	6″ block	8″ block	12″ block
	10¢	13¢	21¢

The installed costs are low for two reasons. First, the initial cost of Zonolite Masonry Fill Insulation is low. Second, to install it, you just pour it out of the bag into the block cells until the wall is full.

For more information about this remarkable insulation, write Department PA-43 for Bulletin MF-68.

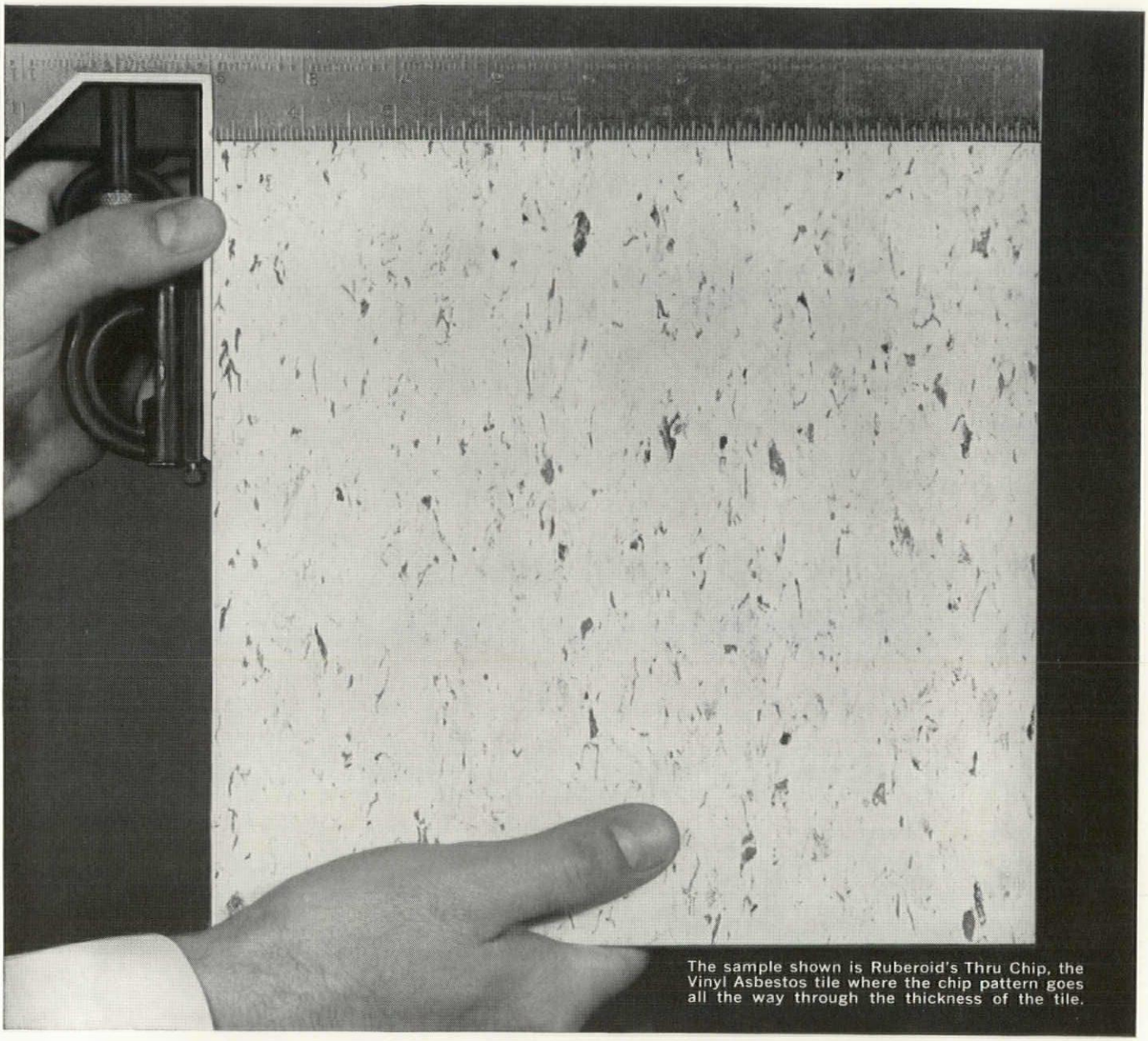
ZONOLITE

Zonolite Company, 135 South LaSalle St. Chicago 3, Ill.

THE ECONOMICS OF HEATING AND AIR CONDITIONING THE PROTOTYPE MOTOR HOTEL WITH AND WITHOUT WATER REPELLENT ZONOLITE MASONRY FILL INSULATION

	DESIGN CONDITIONS		WINTER HEAT LOSS IN BTU/HR Assuming: 70° F Indoor —10° F Outdoor		SUMMER HEAT GAIN IN BTU/HR Assuming: 80° F 50% RH Indoor 95° FDB 75° FWB Outdoor	
	without Masonry Fill	with Masonry Fill	without Masonry Fill	with Masonry Fill	without Masonry Fill	with Masonry Fill
ROOF	8′ Concrete	8″ Concrete with 4″ Dia. cores filled with Masonry Fill	514,000	442,000	294,000	252,000
FLOOR	8′ Concrete	8″ Concrete with 4″ Dia. cores filled with Masonry Fill	568,000	476,000	85,000	71,500
GLASS	Double Plate	Double Plate	576,000	576,000	253,000	253,000
WALL	8″x8″x16″ Sand & Gravel Hollow Core Block	8″x8″x16″ Sand & Gravel Hollow Core Block with Masonry Fill	734,000	463,500	70,800	44,730
INFILTRATION	—	—	249,000	249,000	4,000	4,000
LIGHTS	—	—	—	—	34,000	34,000
PEOPLE	—	—	—	—	10,000	10,000
TOTALS			2,641,000 BTU/HR	2,206,500 BTU/HR	750,800 BTU/HR or 63 tons Refrigeration Req.	669,230 BTU/HR or 56 tons Refrigeration Req.
SAVINGS WITH MASONRY FILL % Savings			$\frac{2,641,000 - 2,206,500}{2,641,000} = 16.4\%$		% Savings	$\frac{63 - 56}{63} = 11.0\%$

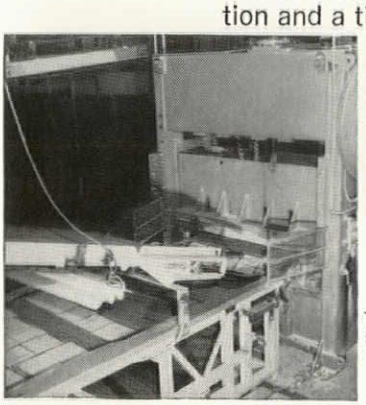
NOTE—Sound transmission between adjoining suites is reduced by 2.9 db. using blocks filled with Zonolite Masonry Fill Insulation as compared to hollow blocks, or equivalent to 20% loudness reduction.



The sample shown is Ruberoid's Thru Chip, the Vinyl Asbestos tile where the chip pattern goes all the way through the thickness of the tile.

Ruberoid quality cuts floor costs...

You can depend on Ruberoid Floor Tile for clean cut edges and square corners. This means tile that fits together properly—resulting in lower cost of installation and a tightly fitted, sanitary floor.



Tracked conveyors guide tile sheets through press, insure squareness and clean cut.

Ruberoid's new electronic quality control equipment also helps assure a tight smooth surface—dimensional stability—resistance to indentation—good maintenance features.

Depend on Ruberoid, too, for fresh new styling, original patterns and textures, color consistency. For quality—beauty—service—specify: *Ruberoid Vinyl-Asbestos Floor Tile.*

RUBEROID

FINE FLOORING

The RUBEROID Co.
733 Third Avenue, New York 17, N.Y.

THIS MONTH IN P/A

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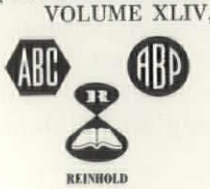


Cover INTERIOR, COPENHAGEN AIRPORT (page 168)

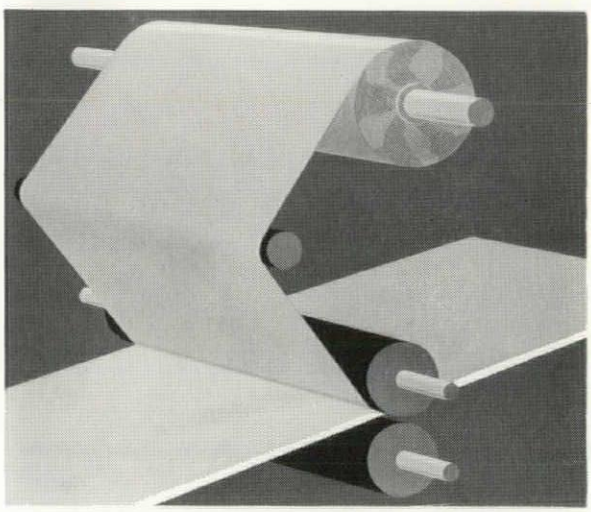
Frontispiece SEAL OF THE CITY OF BOSTON (page 132)

ANSWERS TO ARCHITECTS' QUESTIONS ABOUT TEDLAR®

DU PONT'S NEW LONG-LIFE, WEATHERABLE FINISH

What's different about TEDLAR?

TEDLAR* PVF film is a completely new kind of exterior surface. It's not a liquid or a spray; it's a tough fluoride film engineered and manufactured under careful controls by Du Pont.



Who applies TEDLAR?

The manufacturer of a building product. We (Du Pont) make the film and sell it to the manufacturer (of siding, for example), who bonds it to his products in his factory. He uses special Du Pont adhesives, which make TEDLAR part of the material it protects.

How long will TEDLAR last?

Frankly, we don't know. We haven't been able to wear it out under normal weather conditions. We predict, however, that when properly bonded to a stable material, TEDLAR should be serviceable for 25 years or more without refinishing. It may fade slightly, but chances are you won't notice it.

Has TEDLAR been proven?

In the nearly 20 years of testing behind TEDLAR, we've exposed it to every sort of attack it's likely to get. We know that it resists attack from extremes of climate, ultraviolet light, common acids, alkalis, tars, industrial smog, rust and harsh solvents. It is very hard to stain and easy to clean.

What products are available with TEDLAR?

Manufacturers are now laminating TEDLAR PVF film in a variety of colors to produce built-up roofing systems, residential siding of aluminum and plywood; industrial curtain-wall panels, insulation jacketing; gutters, doors, downspouts, sheet and coil stock.

How much does TEDLAR cost?

Because TEDLAR is only the finish of a building product, its cost is determined by the manufacturer, not Du Pont. In general, TEDLAR costs slightly more than liquid finishes, but much less than porcelain enamel. Per year of life expectancy, TEDLAR is probably the most economical finish you can buy.

How can I find out more about TEDLAR?

Write the Du Pont Company. We'll send you more information, a list of manufacturers and bonded samples of TEDLAR. The Du Pont Co., Film Dept., Building Materials Sales Division, Box 51, Wilmington 98, Delaware.

*Du Pont registered trademark

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Better Things for Better Living
. . . through Chemistry

today it's unlimited elevator automation

—and almost instant elevator service. Still further advances in AUTOTRONIC® elevatoring. A constantly alert supervisory system keeps elevator service matched to traffic demands—continuously! Thru unlimited elevator automation based upon never-ending 'service sensing'. This 'service sensing' detects all demands for elevator service and transmits them continuously to the computer—the 'brain' of the installation in the elevator machine room. This data is projected against current elevator performance to reach immediate command decisions. Then, these decisions are converted into signals that direct the elevators to provide the world's most advanced elevator service. Once again, it's leadership by OTIS. Otis Elevator Company, 260 Eleventh Avenue, New York 1, N. Y.

Otis

AUTOTRONIC ELEVATORING

FROM ARMSTRONG... AN ENTIRELY NEW KIND OF FLOOR: VISTELLE CORLON TILE— WITH DU PONT HYPALON

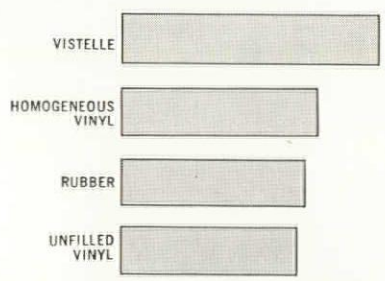
This handsome new floor is probably the most significant development in resilient floors since the introduction of vinyl. It offers the best combination of physical properties and functional advantages ever incorporated into one flooring material.

Here's how Vistelle compares to some other widely used commercial floors:

RESISTANCE TO INDENTATION MARKS

Some flooring materials, such as terrazzo, marble, and the better unfilled vinyl tiles, resist indentation by virtue of their *hardness*. But they offer this benefit at the sacrifice of underfoot comfort. Vistelle's exceptional resistance to permanent indentation is a function of its extreme *resilience*. It gives on impact, but recovers when pressure is released, providing a floor that is free of permanent indentation marks and at the same time, comfortable underfoot. Unlike other resilient floors, the resilience of Vistelle Corlon Tile does not decrease with age.

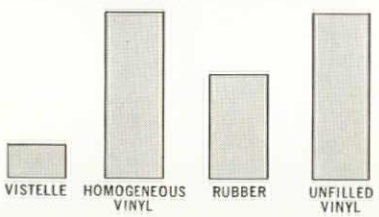
RESILIENCE



RESISTANCE TO CIGARETTE BURNS

Vistelle's superior resistance to cigarette burns is shown in the chart above right. In this test, cigarettes were left to burn out on the tiles. Then the tiles were cleaned with fine steel wool and a commercial floor cleaner and the remaining stain given a severity rating from 0 to 5. Vistelle rates best with only slight staining; so slight in fact, that it was undetectable at arm's length. The vinyl tiles were irreparably scarred, the rubber tile severely stained.

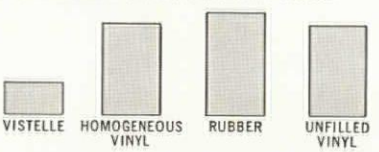
CIGARETTE STAINING



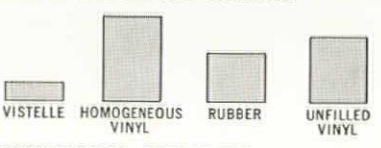
RESISTANCE TO STAINING

Staining tests have also been conducted with more than 100 solvents, acids, and chemicals—and with a like number of common household staining agents such as lipstick, grape juice, crayon, and ink. As shown below, in both sets of tests, Vistelle received a rating of 1 or below indicating very slight or no visible stain. Vistelle is also greaseproof.

ACID, SOLVENT, CHEMICAL STAINING



GENERAL HOUSEHOLD STAINING



DIMENSIONAL STABILITY

Vistelle Corlon Tile has exceptional resistance to shrinkage or expansion, exceeding the requirements of Federal Specification (homogeneous vinyl tile) Interim L-F-00450—(COM-NBS) by a wide margin. Dimensional stability will be guaranteed in writing by Armstrong.

COLOR CLARITY AND FADE RESISTANCE

Compared to other resilient floors, Vistelle's white is whiter, its black deeper, its colors richer. The delineation of design is sharper, too, because colors do not overlap one another. Vistelle is also highly resistant to fading. Test floors exposed to traffic and sunlight for several years have stayed remarkably color constant.

DURABILITY

Vistelle gives superior service under heavy traffic. Tested on the entrance ramp at the Monsanto House of Tomorrow in Disneyland, it was exposed to a traffic rate of 6,000 people a day . . . a total of four million during the test period. After two years under these severe conditions, constantly abraded by sand and gravel tracked from paths leading to the house, only 20% of the tiles' thickness had been worn away.

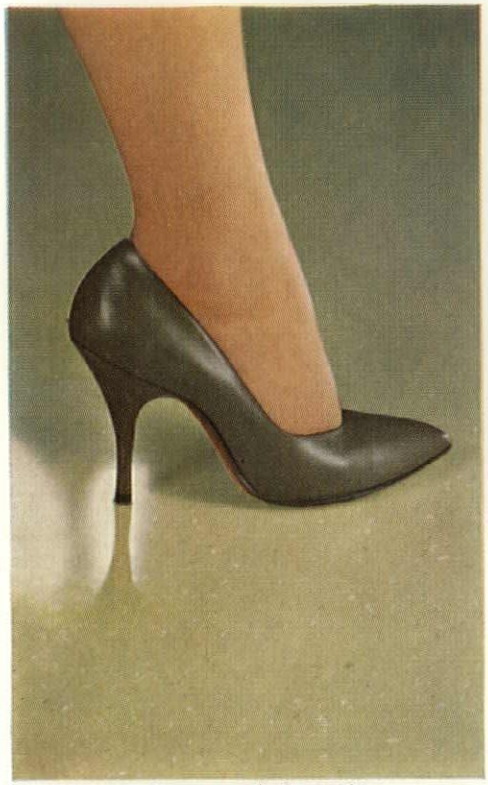
COST

A floor of Vistelle costs $1.50 to $2.00 sq. ft. installed over concrete, depending on the size of the installation. Vistelle can be installed at any grade level over any type of subfloor.

For samples of Vistelle Corlon Tile and technical data, call the Armstrong Architect-Builder Consultant at your Armstrong District Office. Or write to Armstrong, 304 Watson St., Lancaster, Pennsylvania.

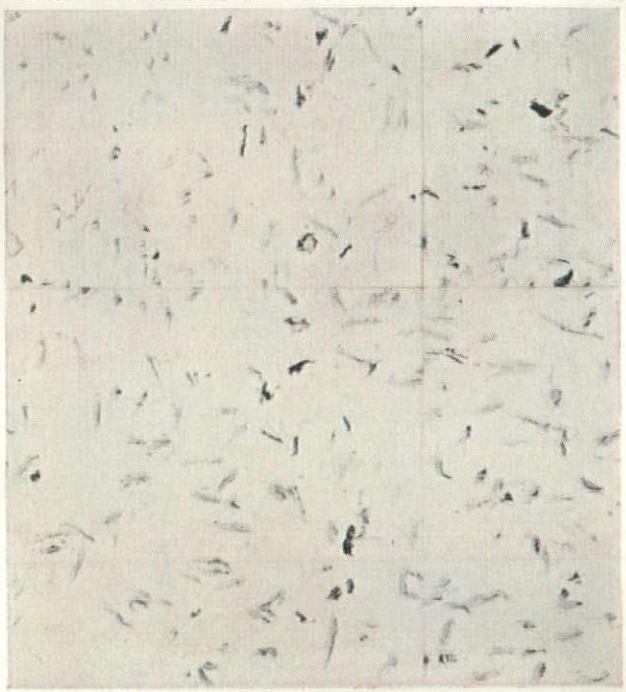
Armstrong FLOORS

A lighted cigarette will not burn its surface.



Excellent resistance to indentation — comfortable and quiet underfoot.

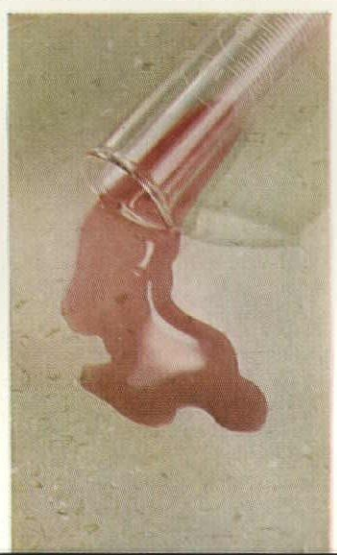
Dimensional stability guaranteed by Armstrong in writing.



Developed expressly for heavy commercial traffic.

Ten colorings in five color-coordinated pairs.
Subtle, flecked design gives a plain monolithic effect.

Resists more chemicals, solvents, and staining agents than any other resilient floor.



waiting

waiting

waiting

waiting

The traveler, the patient, the customer and client, whoever waits - these are the people we design for. Architects bring beauty, flexibility and practicality to their space planning when they specify Kasparians Multalum for public seating areas. The sparkling Tulsa International Airport by architects Murray, Jones & Murray, is a case in point.

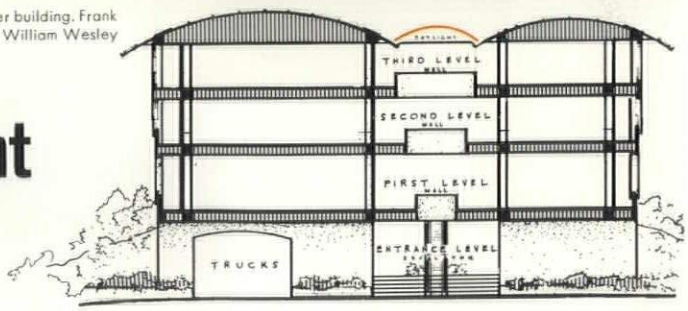
KASPARIANS, INC.

7772 Santa Monica Boulevard
Los Angeles, California

Patented in U. S. A. Patents pending in other countries

Photo: Julius Shulman

A soaring arch of Plexiglas admits natural light into mall areas of the Marin County Civic Center building. Frank Lloyd Wright, Architect; Taliesin Associated Architects of the Frank Lloyd Wright Foundation: William Wesley Peters, Chief Architect; Aaron G. Green, AIA, Architect Associated.



The 384-foot skylight is Plexiglas

Frank Lloyd Wright designed this skylight. PLEXIGLAS® acrylic plastic gave it form and substance. It is one of the distinguished features of a famed new structure, the Administration Building of the Marin County Civic Center, near San Rafael, California. The skylight is 384 feet long, 20 feet wide.

Each curved span consists of three large sheets of transparent PLEXIGLAS, supported by ribs made of channeled aluminum.

ROHM & HAAS
PHILADELPHIA 5, PA

The PLEXIGLAS is only one-quarter inch thick. It provides the required combination of strength, weather resistance, crystal clarity, and light weight. We will be pleased to send you detailed information on the use of PLEXIGLAS for continuous-arch skylights and other architectural applications.

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PLEXIGLAS

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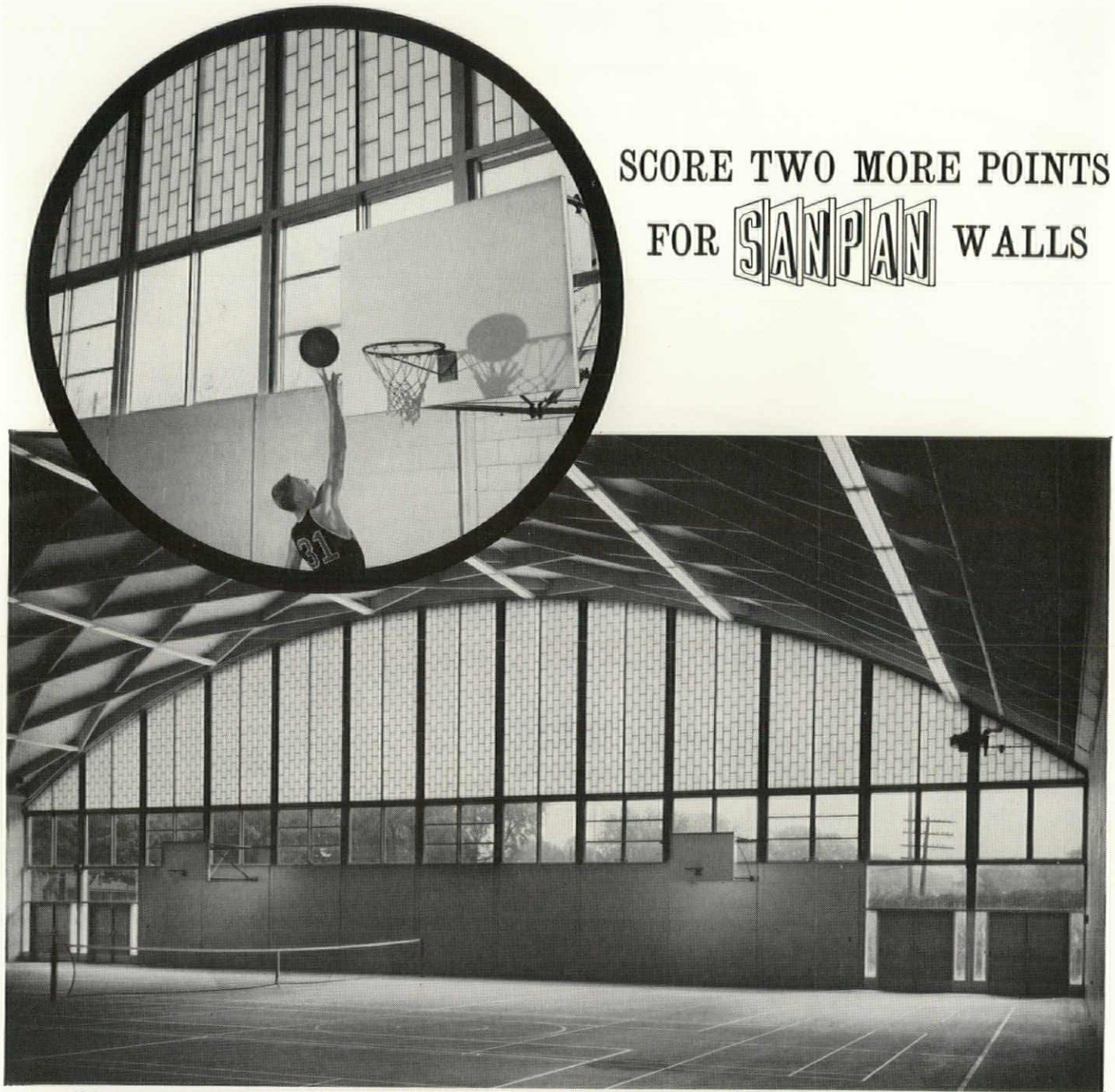
SCORE TWO MORE POINTS FOR SANPAN WALLS



Kalamazoo College Field House & Gymnasium • **Architects:** Stone, Smith & Parent

...FUNCTION AND BEAUTY AT KALAMAZOO COLLEGE!

Diffused natural light and SANPAN Translucent Panels' inherent beauty make this gym "double easy" on the eyes. Despite its Eastern exposure, SANPAN Panels effectively **cut glare . . . control excessive light** transmission. Made of finest quality fiberglass skins, SANPAN Panels . . . with all **Concealed Fasteners** . . . are structurally **strong, lightweight,** and boast better **insulating** qualities than 12" of masonry wall. **Welded Grids** . . . an Exclusive SANPAN Feature . . . result in greatest panel strength. No flimsy construction . . . no vibration-susceptible mechanical linkage . . . guaranteed shatterproof . . . all-important considerations for any Architect. Panels are **fully assembled** and pre-finished before delivery. Costs are lower for installation . . . for performance . . . for durability . . . for years to come. Available in a wide range of colors and patterns . . . in panel sizes up to 4' x 20' with thicknesses of 1½" and 3". Before specifying your next "light wall", investigate the exciting Architectural potential of SANPAN Translucent Wall Panels.

For information on Colorscreen Translucent Partitions, Screens and Facades . . . and further specifications on SANPAN Wall Panels complete with dramatic Technical Test Report, write:

PANEL STRUCTURES INC.
45 Greenwood Ave., East Orange, New Jersey

they go together

(the beauty of solid vinyl RUCORAIL™)

RUCORAIL soars. Uniquely flexible, this handrail follows any curve. The smooth matte or polished surface glows with color (solid color, all the way through the vinyl). It will not darken, corrode, rust, splinter, chip or warp. Is trouble-free, maintenance-free, dimensionally stable, non-flammable, and amazingly tough. RUCORAIL installs over metal or wood cores, can be mitered, capped, or thermo-welded. 7 colors, 6 sizes, in 100 foot coils. Color-coordinates with RUCOTRED. And creates a sweep of color in motion. Ask for specifications folder.

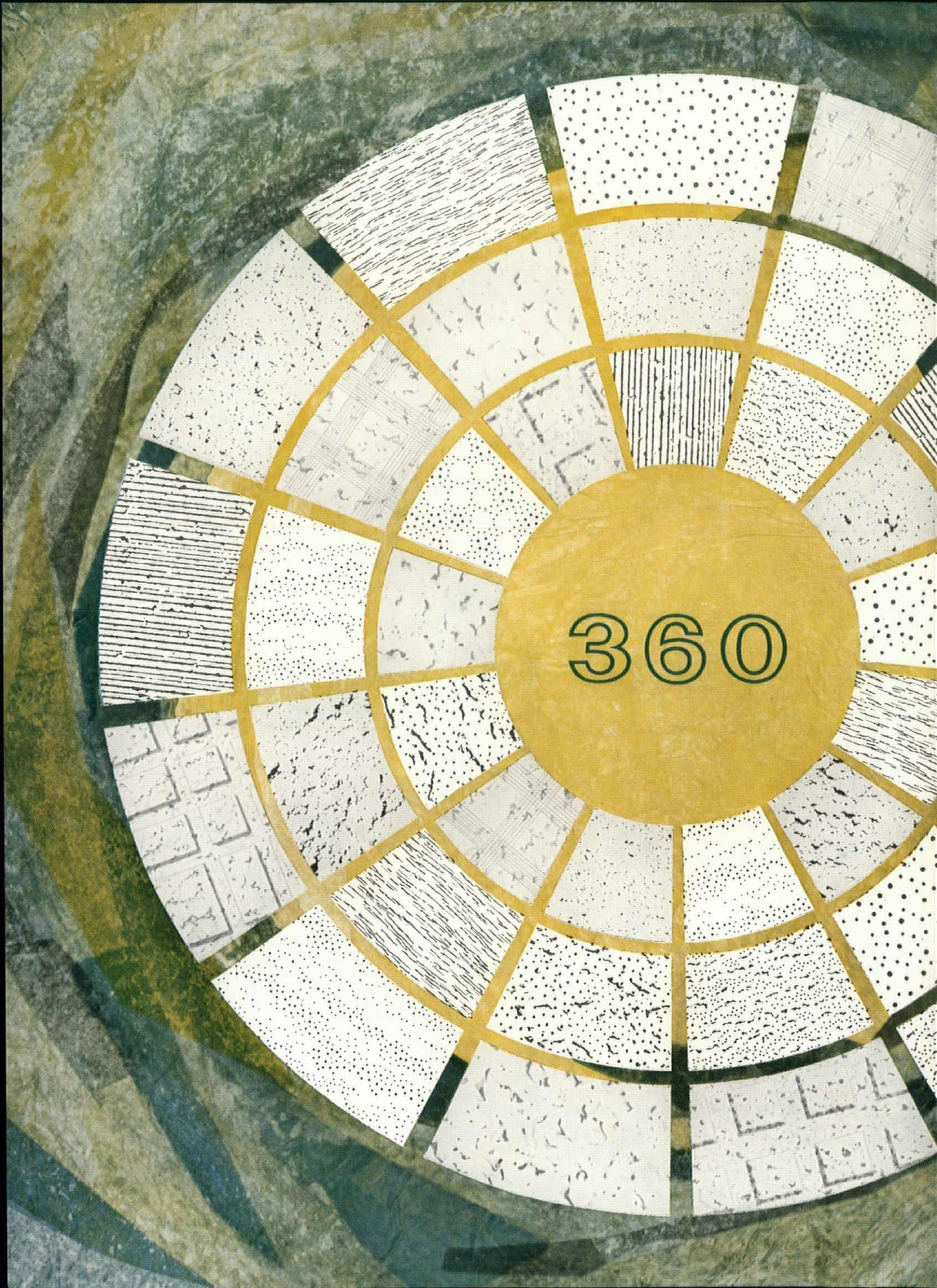
(the safety of anti-slip RUCOTRED™)

To the terrazzo stair edge, add RUCOTRED's firm, safe grip. Its beauty, cushioning, and amazing durability actually outlast any other type of stair edge. Can't be marred or chipped by cold, heat, rain, grit, hobnail boots, or continuous traffic. Ridged or flat edges; in 4 glowing colors—special colors as requested. Comes in 10-foot lengths that can be easily cut to size with hand or power saw. Color-coordinates with RUCORAIL. And creates a sweep of color in motion. Ask for specifications folder.

RUBBER CORPORATION OF AMERICA RC

New South Road, Hicksville, New York. Local distributors throughout the country. Available in Canada through Paisley Products of Canada Limited, 36 Upton Road, Scarborough, Ontario, Canada. Warehouses in Toronto and Montreal.

For more information, turn to Reader Service card, circle No. 350


360

360 ways to control sound esthetically...

ACOUSTI-CELOTEX products

▲ How did the *eye* get to be a key factor in sound-control? Because unwanted sound is most effectively controlled by acoustical ceilings, acoustical materials have come to occupy what is usually the largest unobstructed area in modern interiors. The same ceilings act also as important reflectors and diffusers of light. Acoustical ceilings are thus an integral part of the *esthetics* of contained space.

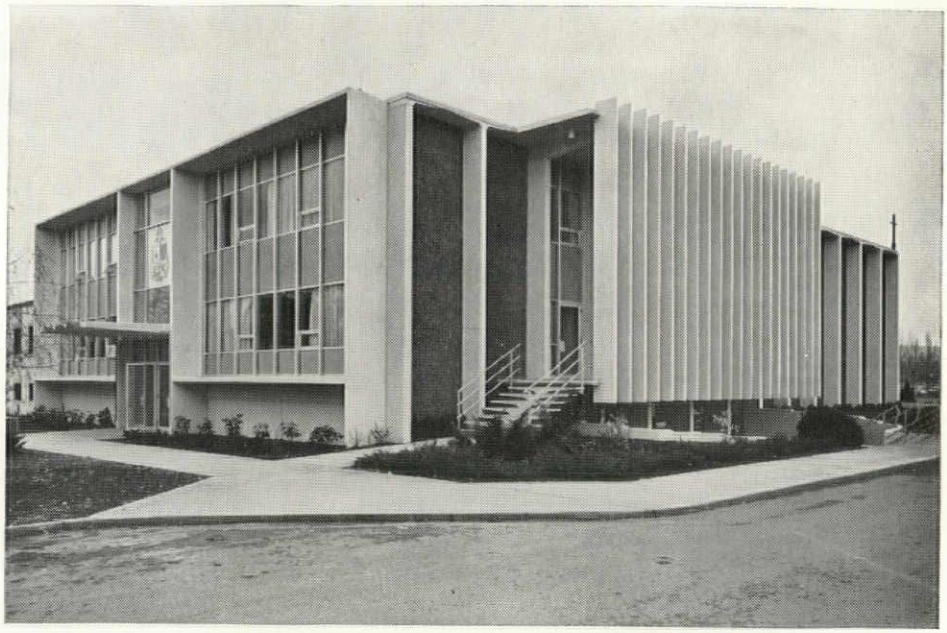
▲ To help you please the eye as well as soothe the ear, you get the widest choice of visually attractive sound-control materials in Acousti-Celotex products. 360 variations to match your designing skill. 360 variations—in design, texture, base-material, size, shape, construction type and fire-ratings! Acousti-Celotex is the *only* line which gives you such a wide variety of esthetic choices when you must design noise *out*, build quiet *in*. Your Acousti-Celotex distributor will be glad to show you the full range and answer any questions. Find him in the Yellow Pages, then call him.

For more information, circle No. 317

ACOUSTI-CELOTEX REG. U.S. PAT. OFF. PRODUCTS

Problem-solver in esthetic sound-control

This new addition to the Student Union Building measures 112′ x 72′. 20 precast wall panels prestressed at 200 psi form the side walls. They are 8′ wide and vary in length. The two longest are 35′. Note Tee section stairs leading to entrance. Louvers shielding entranceway are attached to cantilevered roof and floor Tees.



PRECAST and PRESTRESSED CONCRETE *Adds Beauty and Utility to College Student Union*

• Prestressed single Tee beams form both the floor and roof of this new addition to Gonzaga University's Student Union in Spokane, Wash.

Precast columns support the beams and add a dramatic frame for prestressed wall panels of exposed natural aggregate. An unusual array of giant prestressed louvers add a decorative and protective screen to the main entrance. Even the main stairway is precast concrete—formed by basic sections of a single Tee.

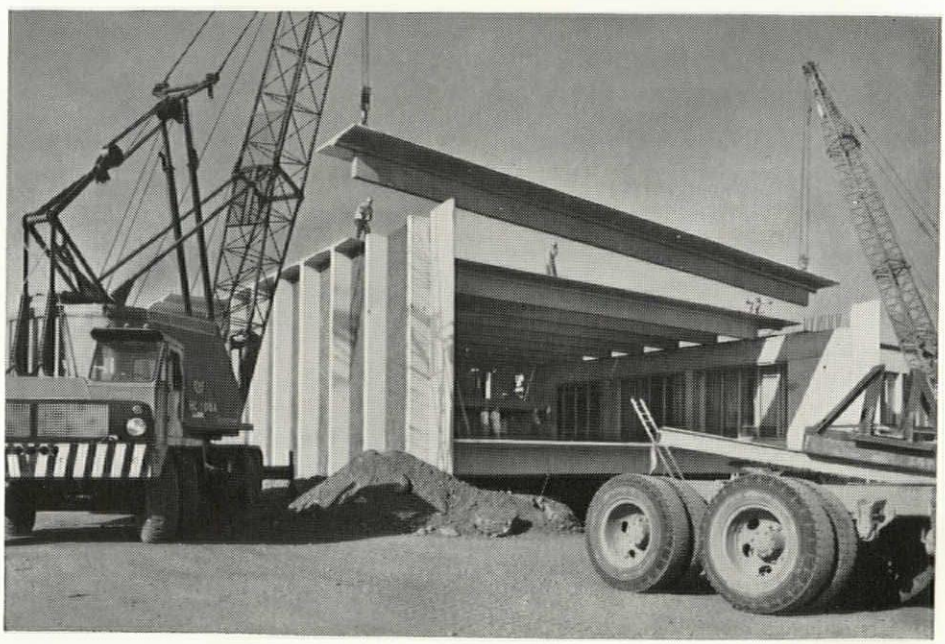
The varied use of concrete in this new structure adds more than a pleasing design that blends easily with the existing architecture. Such all-concrete construction also provides the utmost in fire-resistance. Strength for long service. Freedom from maintenance. And low initial cost.

LEHIGH EARLY STRENGTH CEMENT BENEFITS ALL MEMBERS OF THE TEAM

Central Pre Mix Concrete Co. used Lehigh Early Strength Cement for the precast and prestressed units in this building. Here, as in almost any concrete work, this cement provided important benefits for manufacturer, contractor and architect alike. Quicker re-use of forms. Earlier availability of units. Assured on-time delivery for smoother planning. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS

Architect: Whitehouse, Price & DeNeff
Associate Architect: Henry J. Swoboda
Engineer: Andy Bingham
General Contractor: Wm. Spilker & Sons
Prestressed & Precast Units: Central Pre Mix Concrete Co., Prestressed Division
Ready Mix Concrete furnished by: Central Pre Mix Concrete Co.
All of Spokane, Washington



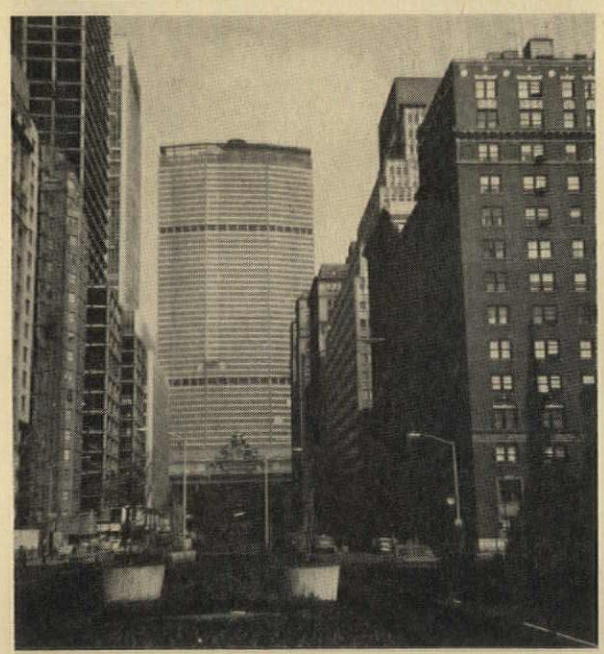
Fourteen prestressed single Tee beams form the roof; the same number are used for the floor. Roof Tees are 8′ wide; range from 88.2′ to 30′ in length. Floor Tees are 73′ long, 8′ wide, 3′ deep. The precast supporting columns are 34′ high, 3′ deep, 8″ thick.

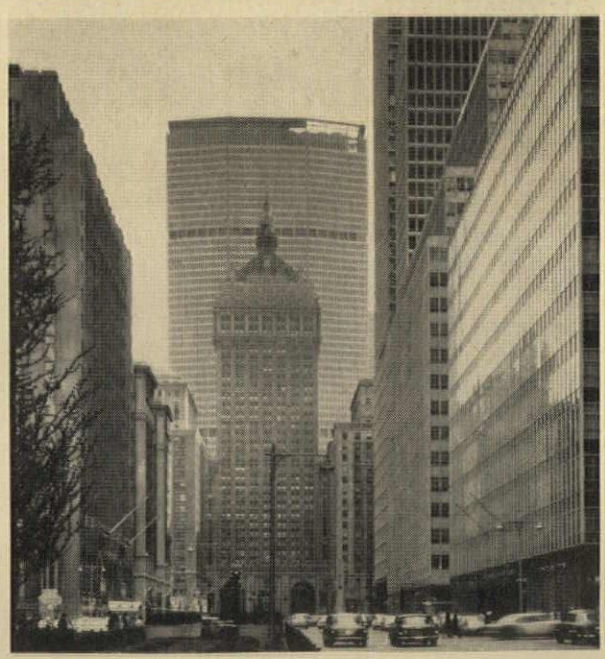
PROGRESSIVE ARCHITECTURE APRIL 1963

NEWS REPORT

Architecture's Monthly News Digest of Buildings and Projects, Personalities, New Products

"Before" photos: Frederic Lewis



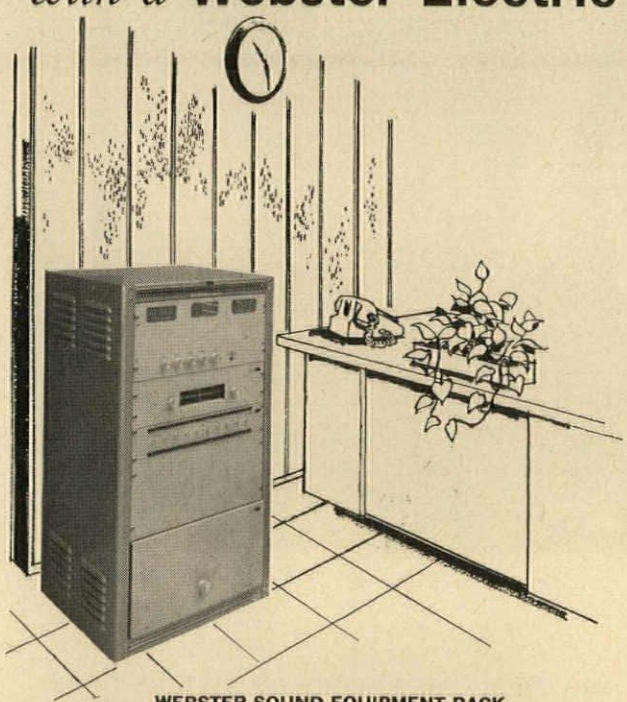


David Hirsch

"Before" (top) *and "after"* (bottom) *photos show effect Pan Am Building has on Grand Central area.*

ARCHITECTS: John Steinmann, AIA, Monticello, Wis.
CONSULTING ENGINEERS: Olsen and Evans, Inc., Madison, Wis.
ELECTRICAL CONTRACTOR: Berman Electric Co., Madison, Wis.
SOUND ENGINEER: Grant Electronics, Inc., Madison, Wis.

New First National Bank of Stoughton . . . sound planned with a **Webster Electric music and program system**



WEBSTER SOUND EQUIPMENT RACK
provides compact headquarters for sound components. Can be readily expanded for additional sound services.
Also available in flush-mounting design.

2491

A dramatic departure from conventional bank design, First National's bank-in-the-round at Stoughton, Wisconsin was designed to "allow the most facility in the smallest possible area . . ." It's an exciting combination of white, gray and gold Wisconsin limestone . . . a great, self-supporting glass dome in the center . . . controlled-variation indoor and outdoor lighting.

And it's *sound planned* with a Webster Electric music and program system!

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Sound components include an amplifier, speaker switch panel, AM-FM radio tuner, record player — all contained in a single cabinet. Each Webster unit assures crisp, clear voice reproduction and high fidelity music.

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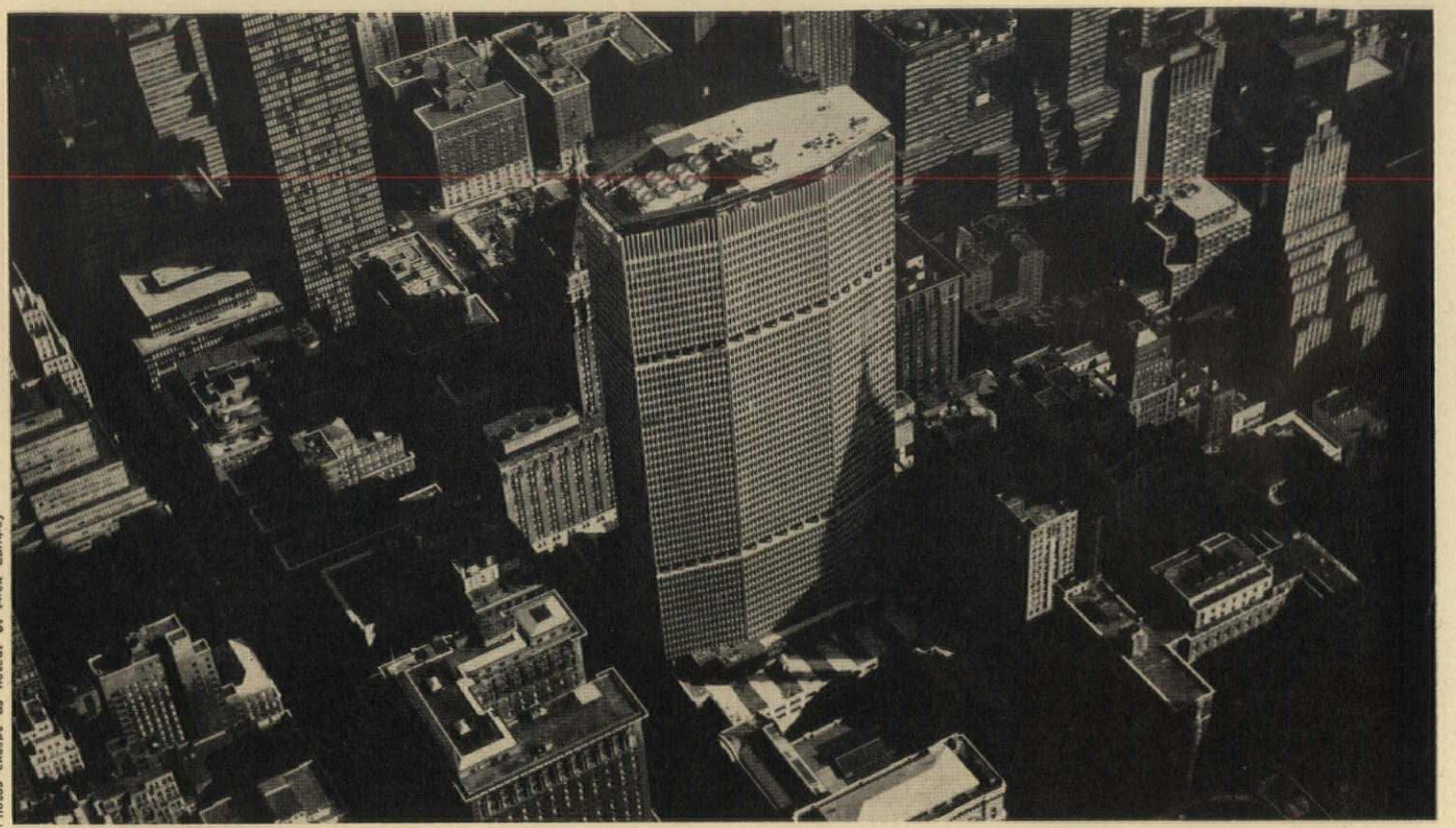


Photos except as noted: J. Alex Langley

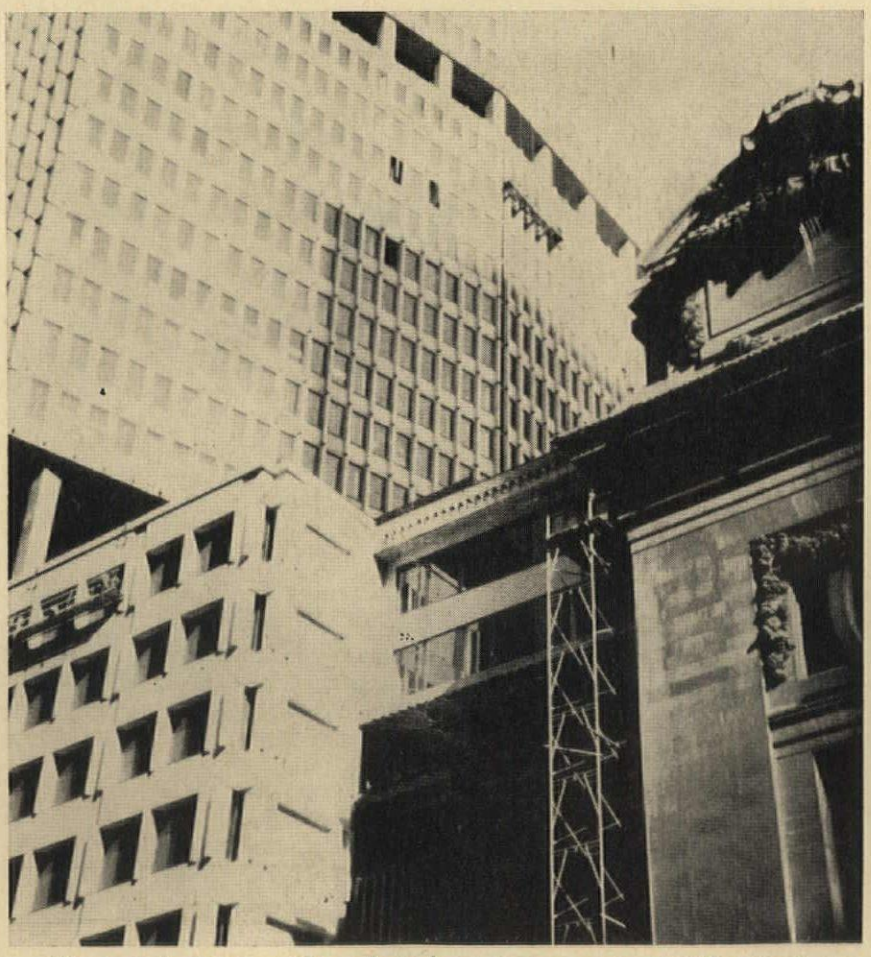
The Pan Am Building: A Behemoth Is Born

The rightness or wrongness of the siting and position of the new Pan Am Building — and the subsequent traffic pattern—can, in this writer's opinion, be summed up very briefly. It's wrong.

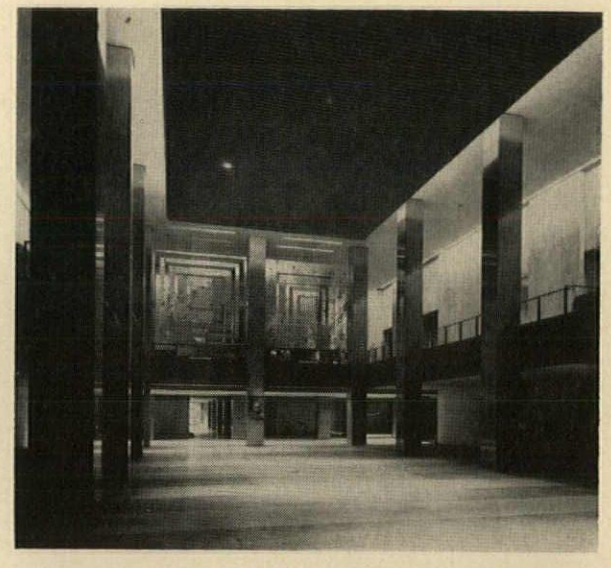
The concept of vertical "stacks" of office workers in center cities has much, if not everything, to recommend it—if sufficient space between high-rise structures is provided. In the case of the Pan Am Building, however, "the world's largest commercial office building" has been jammed into a spot where day-to-day rush hour traffic already resembles one of the more delirious student demonstrations on Tokyo's Ginza. Now, according to the public relations counsel for the building, the permanent working population will be 17,000, and "some 250,000 persons will use its facilities or pass through the building daily." In addition, there is a 400-car parking garage. Enough said on that score.

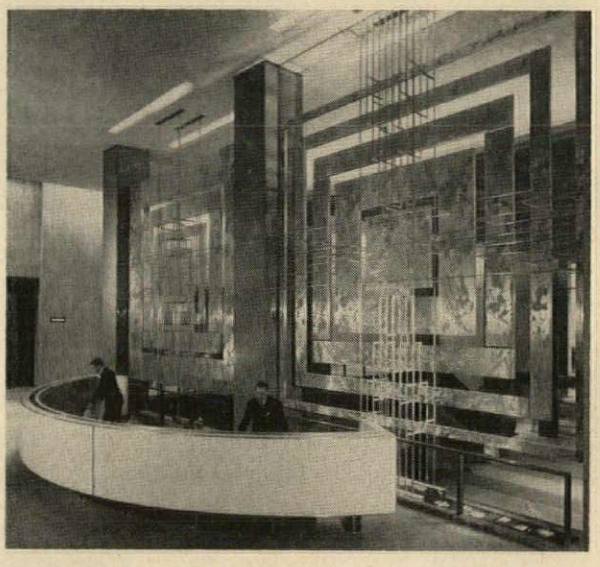
The building itself is another matter. With a powerhouse of consulting design talent—Dr. Walter Gropius and Dean Pietro Belluschi—and, in control, the most knowledgeable firm in New York when it comes to commercial buildings—Emery Roth & Sons—Pan Am is an architectural design failure. Had lesser lights been involved, this could be overlooked and it would be a curiosity merely for breaking the

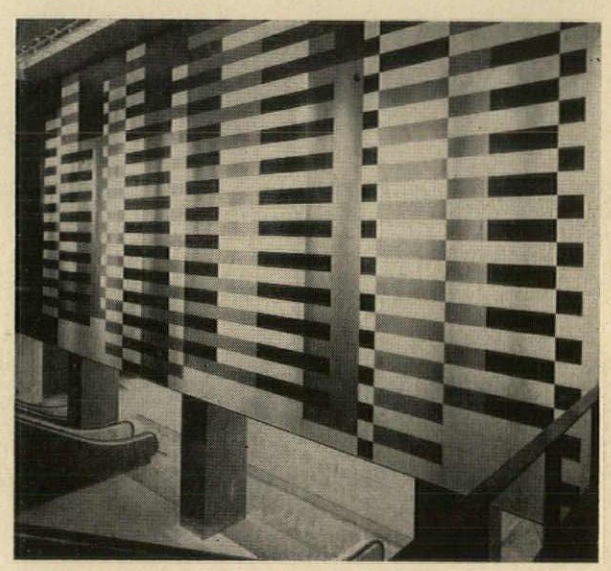
Photo: James T. Burns, Jr.



Elements jar one another where base, tower, garage, station meet.







rules of decent city planning. But the obvious effort on the part of the late Erwin S. Wolfson, his professional team, and noted artists to make this a gem of the first water makes the failure all the more significant.

Seen from either north or south on Park Avenue (p. 59), Pan Am breaks the continuity of the thoroughfare, where previously the Grand Central Station and the tower of the New York General Building served to point it up. The new building forms a vast anonymous backdrop for these older structures, but at the same time dwarfs them with its immensity, making them appear insignificant. Since the building sits on such a crowded site, one must get some distance away in order to see it as a whole. Then it becomes apparent that the precast, three-dimensional elements introduced onto the façade to give interesting effects of light and shadow blend into each other to give the impression of just another curtain wall. The same effect is experienced with the cream-colored Mosai aggregate used for added texture on the walls.

Approaching the building through the narrow streets, one loses sight of the structure as a visual composition and is overwhelmed by its square, ten-story base. From the ramp which brings Park Avenue around the site, the juxtaposition of elements is occasionally inexcusably jarring: base, tower, parking garage entrance, and Grand Central Station meet in a most unfriendly manner (p. 61, *bottom*). On clear, sunny days—always at a premium in New York—the building's octagonal shape reads. But when seen from even a short distance away on a hazy or smoggy day, it becomes one-dimensional.

Moving past the colonnaded entry (*top, left*) and into the lobby of Pan Am (*top, right,*) one sees that the taste for monolithism did not desert the designers here. The spaces are much too big and heavy-handed. Surfacing materials are too numerous and varied, and lighting elements for general illumination *and* lighting of art works are too prevalent. (On opening day, someone remarked, "This looks like a gigantic architects' samples bureau!") Great care reportedly went into the selection of artists and art works for the public areas, but, unfortunately, this observer found them disappointing. The aluminum and stainless-steel screen by Gyorgy Kepes (*bottom, left*) behind the elevator control desk has a meretricious "1930'ish" look, and the flashy tile mural by Joseph Albers (*bottom, right*) over the exit to the station is too loud, adding yet another jarring note to the composition. (A major sculpture by Richard Lippold has not been installed yet.)

On the positive side, interesting areas may result if tower tenants follow the lines of the building in designing and dividing their interiors. The most *impressive* experience the building offers is to look at its neighbors from the upper floors!

—*James T. Burns, Jr.*

Courtesy Museum of Modern Art

ARMORY SHOW RESTAGED ON 50th ANNIVERSARY

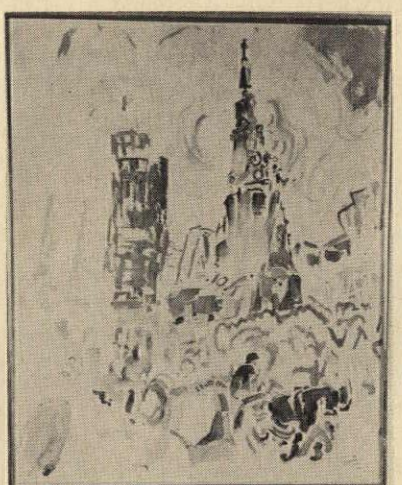
NEW YORK, NEW YORK Fifty years after Americans were stunned by their first large-scale view of modern art at the Armory Show of 1913 (*above*, more properly known as the "International Exhibition of Modern Art"), this show is once again enjoying record attendance. Joseph S. Trovato of the Munson-Williams-Proctor Institute in Utica, N. Y., the instigator of the anniversary exhibition, managed to reassemble an astonishingly high number of the works shown in the epoch-making 1913 exhibit. The 1963 edition opened in Utica on February 17, the birthday of the Armory Show. It is now in residence at its birthplace, New York's 69th Regiment Armory.

The show that introduced this country to contemporary art by Europeans, including Cézanne, Redon, Renoir, Monet, Duchamp, Brancusi, Picasso, Matisse, and Braque, and fellow-countrymen Ryder, Hartley, Marin, Kuhn, Sloan, and others, is still astonishingly fresh after a half century—indeed, it makes many present-day exhibitions seem feeble by comparison. Naturally, there are some artists who have not held up over the years, including, unfortunately, the guiding spirit of the 1913 show, Arthur B. Davies. Perhaps his efforts in creating that platform for modern art is a sufficient contribution for one man.

Philadelphia Museum of Art

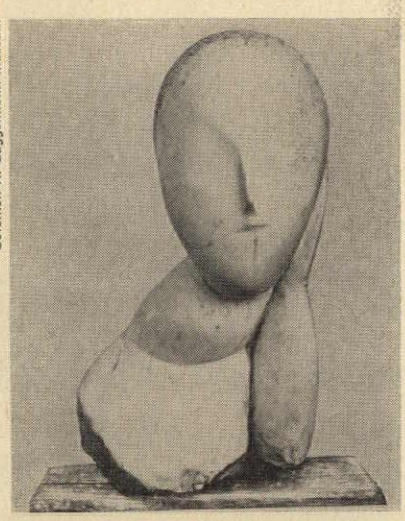
"King and Queen Surrounded by Swift Nudes," 1912: Marcel Duchamp.

Delaware Art Center



"Broadway, St. Paul's Church," 1912: John Marin.

Solomon R. Guggenheim Museum



"Muse," 1912: Constantin Brancusi.

Albany Institute of History and Art

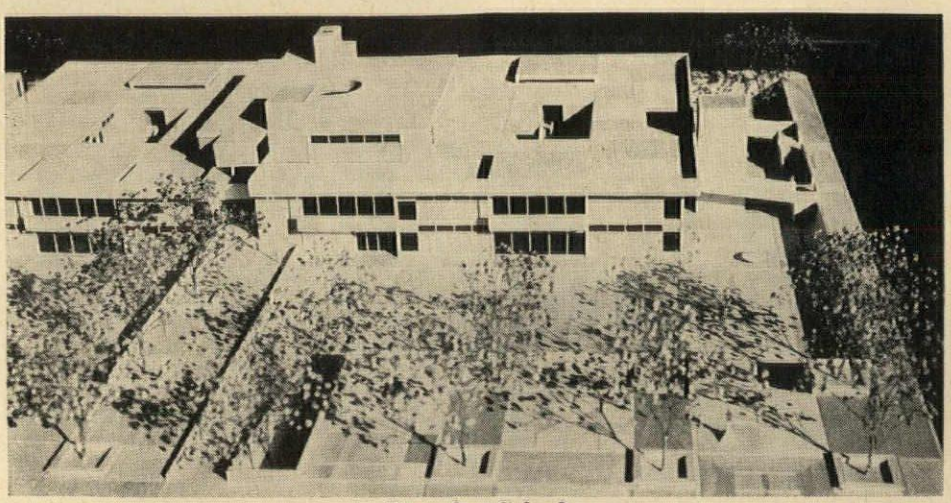
"Landscape," 1913: Charles Sheeler.

Hon. and Mrs. Averell Harriman

"Words of the Devil," 1892: Paul Gauguin.

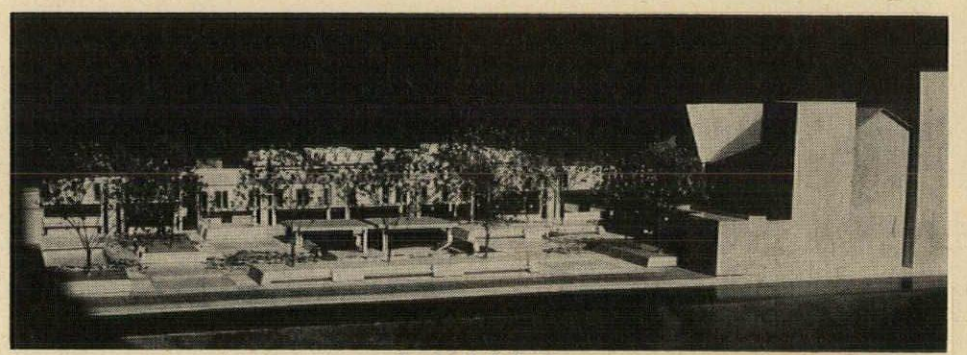
Delaware Art Center

"Night Windows," 1910: John Sloan.

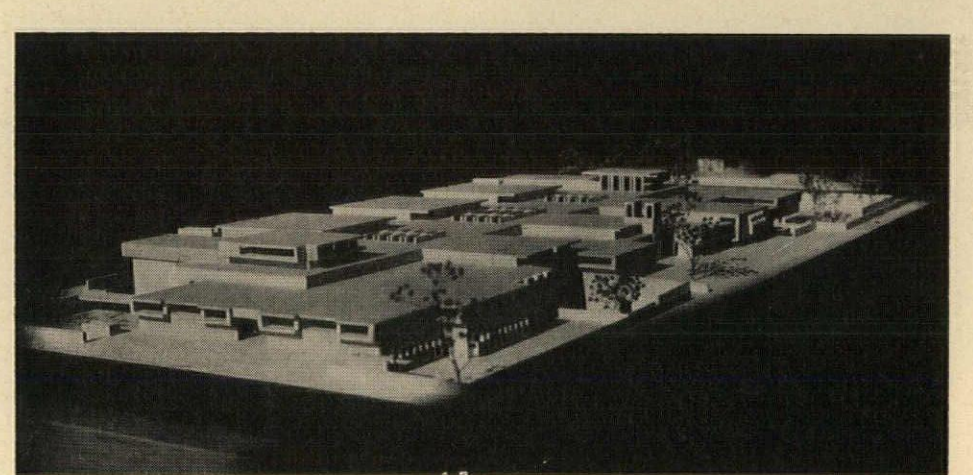


Photos: Don Hinkle

Cassaday School



Central School



Bergen School

Elementary Schools as Rejuvenative Elements

Columbia University School of Architecture, which has gained a reputation for assigning student problems dealing with real communities in real situations, recently has done it again with a three-team, three-school problem concerning Camden, New Jersey. Working with school officials and planners from Camden, and with the consultation of Columbia Teachers College, graduate students under Professor Edward Romieniec and Associate Professor Alexander Kouzmanoff have designed three elementary school-neighborhood centers to act as catalysts for urban renewal.

Camden, long in need of redevelopment socially and physically, has embarked upon an ambitious program of rejuvenation and replanning. One example was the Cooper's Point project by Vreeland and Newman, which won a P/A Design Award (JANUARY 1963).

The decision has been made by planners and school officials to create as the core of each redevelopment section a neighborhood center containing a school with community facilities, a school playground, and a public park. With this as the basis of the program, the Columbia teams designed dual purpose elementary schools for three separate areas in Camden.

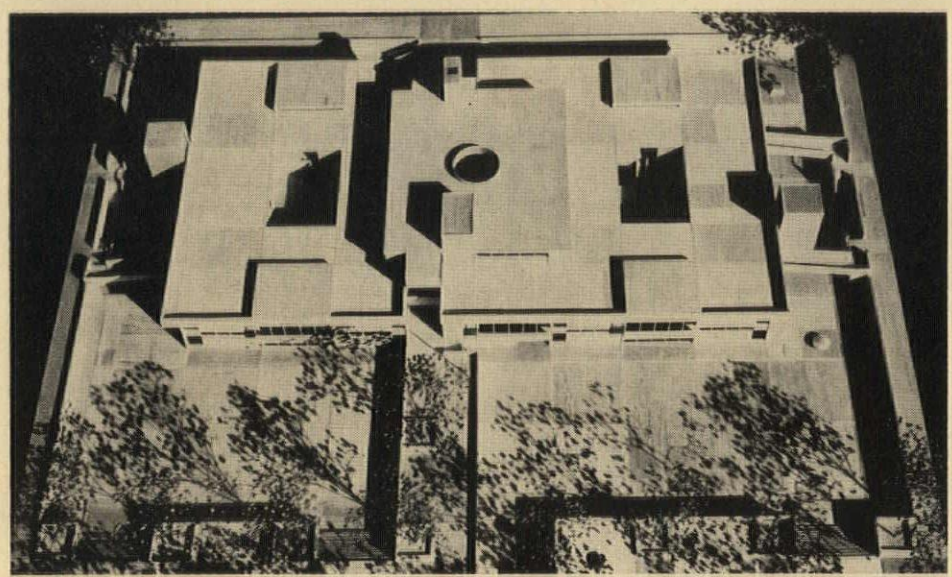
The Cassaday School, by Alvin E. Palmer, Kirby M. Keahey, and Danial P. D'Olivera, features use of precast,

pre- or post-tensioned concrete units, which would make possible a high degree of flexibility in construction. As in all three schools, the public areas are distinct from the areas used by the children, making contact between pupils and townspeople unlikely. Play areas are furnished on the roof and at ground level (where an extra floor is created by excavating to the level of existing basements of old buildings now on the site).

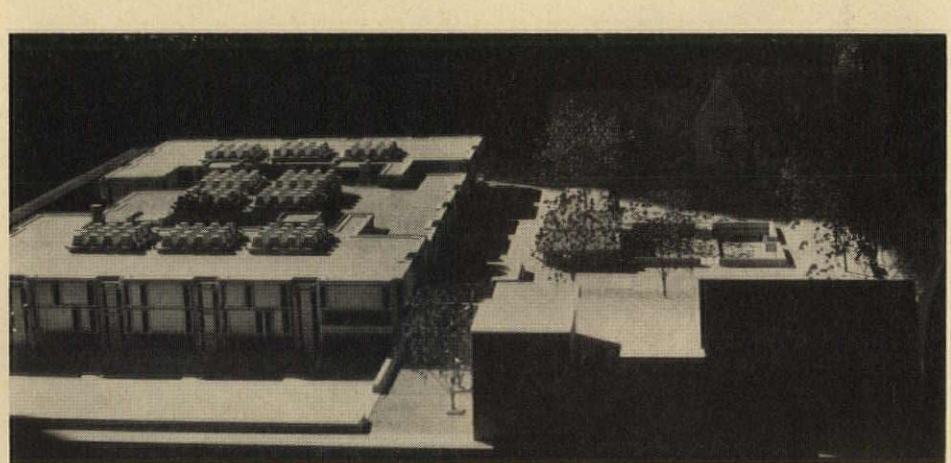
The Central School, by John D. Haines, David A. Millard, and J. Daniel Spears, places the community hall at the center of the building, as in the Cassaday School. Two existing churches on the site are retained, and the space between them converted into a park. The four classrooms of each grade are grouped around a communal area, called a "living room." Flexibility in the use of present and future teaching methods is emphasized here.

The Bergen School, by Arnold G. Henderson, Richard E. Kaeyer, and Warren W. Yip, would be built in two stages: first the school, and then—replacing an adjacent, existing school—the community hall. A split-level plan locates all classrooms within one half-level of the entrances. Teaching auditoriums separate adult and children's areas, and permit adult classes to be held during the daytime.

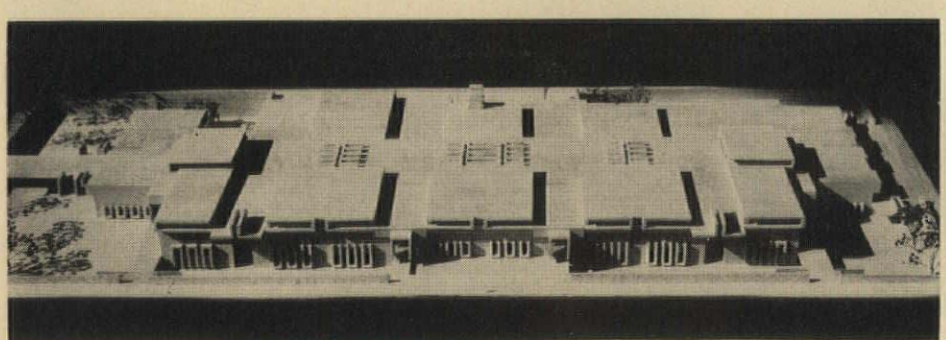
The Columbia students have prepared an elaborate brochure that will be used in Camden to generate public support for redevelopment.



Cassaday School



Central School



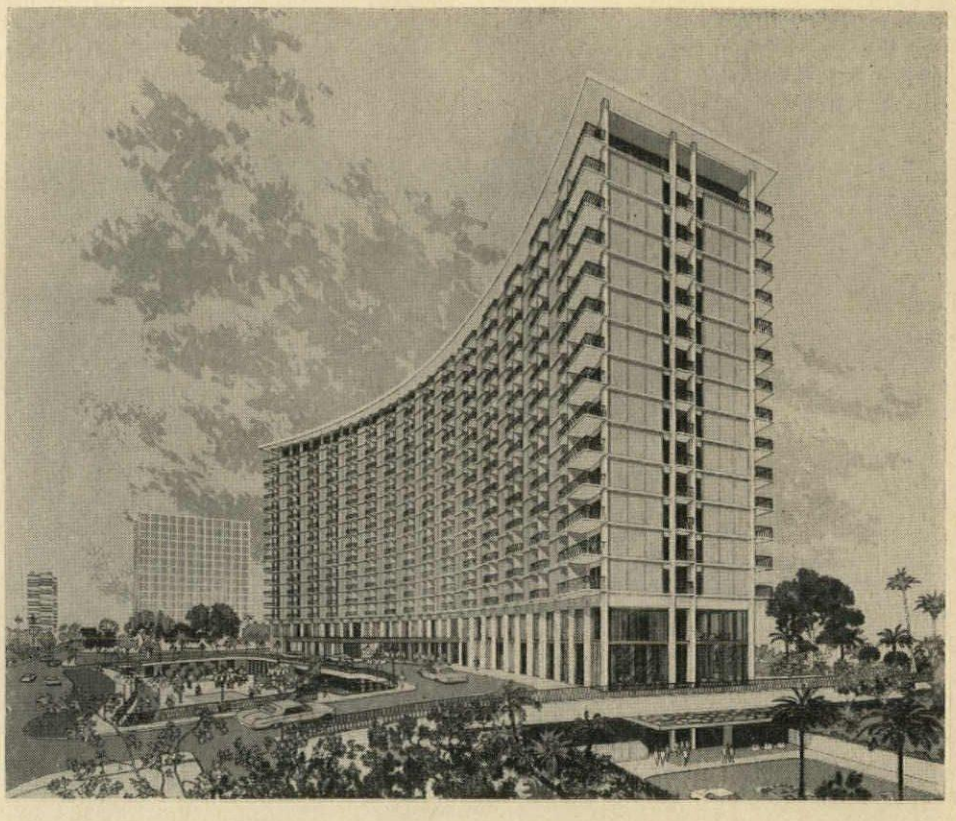
Bergen School

Yamasaki Hotel For Century City

Century City, the Alcoa-Zeckendorf Property Corp. (Webb & Knapp) redevelopment on the site of the old 20th-Century-Fox movie lots in West Los Angeles, is scheduled to get a hotel designed by Minoru Yamasaki.

The 800-room, 22-story hotel—and it is refreshing to see a hotel being called a hotel these days—will be one of the five largest hostelries west of Chicago. To describe a huge curve facing the Avenue of the Stars, one of the main streets in Century City, Century Plaza Hotel will rise from three-and-a-half acres of meticulously landscaped grounds over underground parking for 800 cars. Additional parking spaces will be provided nearby. In addition to pools, gardens, and terraces, the open spaces will feature shops, a putting green, and other recreational facilities. Each guest room will have a "lanai" with a view northeast to Beverly Hills, the mountains, and downtown Los Angeles, or southwest to the Pacific Ocean.

Yamasaki has provided an impressive entrance to the hotel, but has emphasized its resort-like aspects.

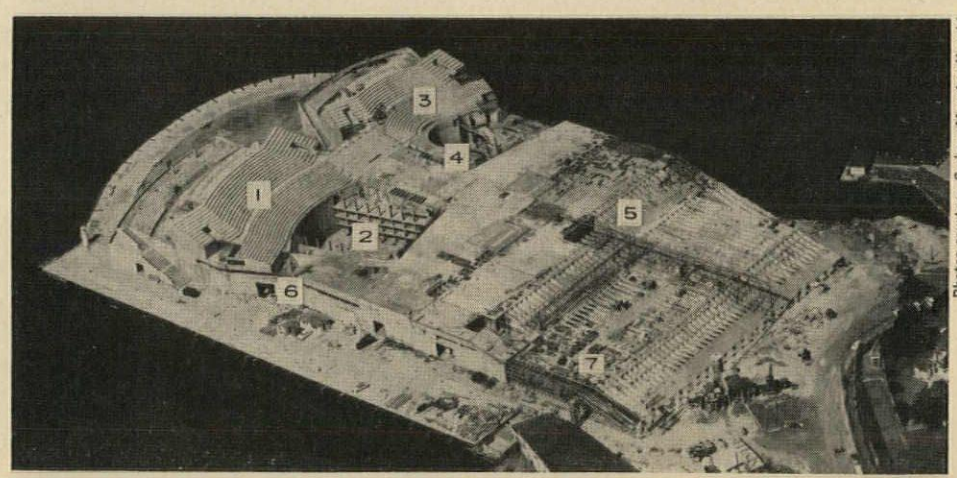


Progress Report: Sydney Opera House

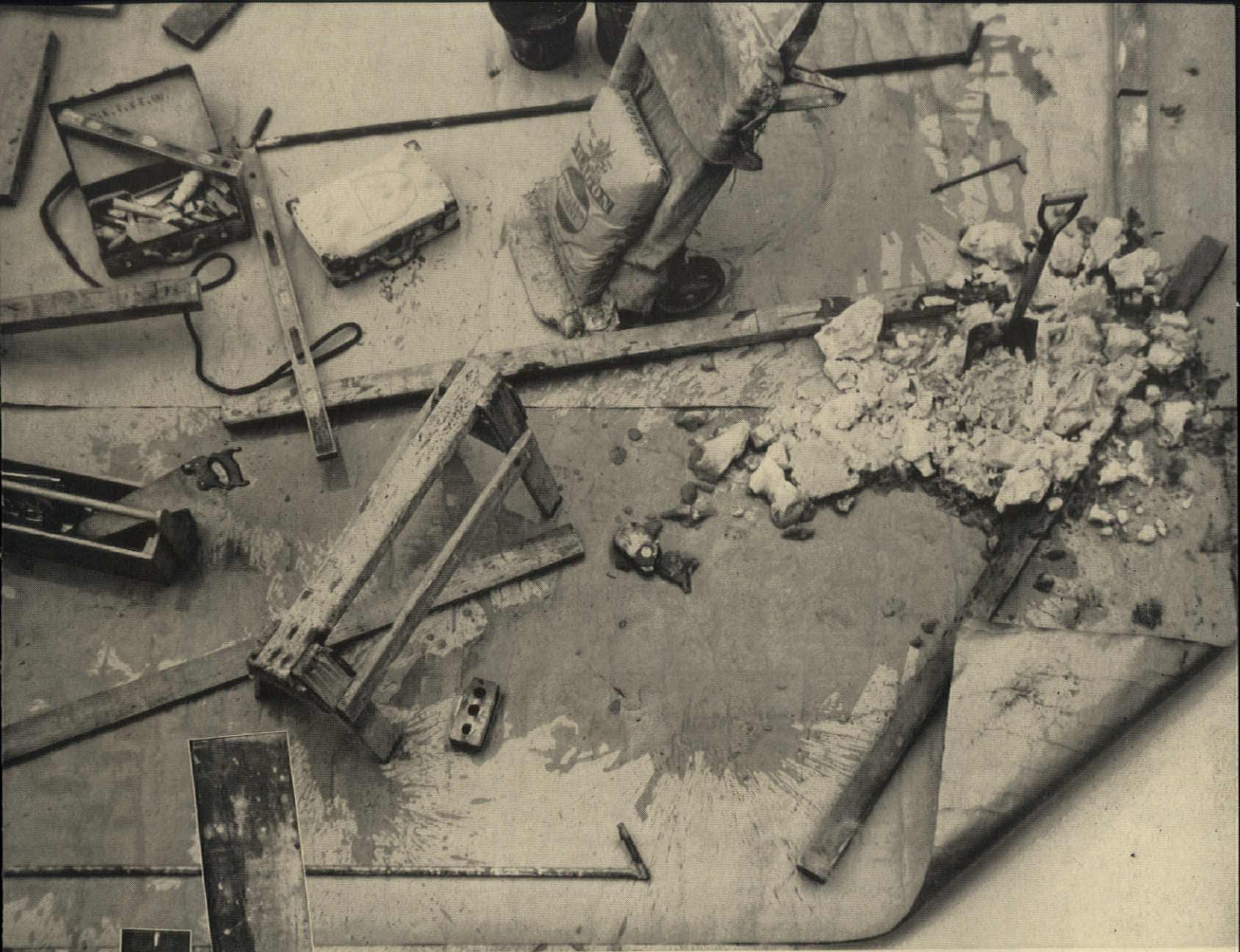
SYDNEY, AUSTRALIA P/A's Australian ear-to-the-ground, Margaret Squire, reports that Joern Utzon's opera house is adhering much to the original, prize-winning scheme despite some vocal opposition from critics, ranging from artists who will perform therein (and who say the opera hall will be too small) to the man on the street who will listen therein (and who cannot get used to the shape of the building). Last summer one construction worker was so imbued with the spirit of the whole project that he was found scampering about the site one warm evening clad in nothing but *joie de vivre* (patriotic Sydneyite Squire points out that the gentleman was imported from Scandinavia).

When the soaring roofs of the building are finished, they will furnish a bold visual echo of the sailboats which race in Sydney harbor *(right, below)*.

Progress photo *(right, above)* shows areas for main hall seating (1); machinery pit for opera stage (2); smaller hall seating (3); machinery pit for revolving stage (4); chamber music hall beneath (5); experimental theater (6); and restaurant (7).



Photos courtesy Sydney Morning Herald



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Dual-Moment Test—Lbs. Applied Before Failure		
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Brand 1..... 55 lbs.	Brand 4.....55 lbs.	Brand 7.....100 lbs.
Brand 2.....195 lbs.	Brand 5.....85 lbs.	Brand 8.....110 lbs.

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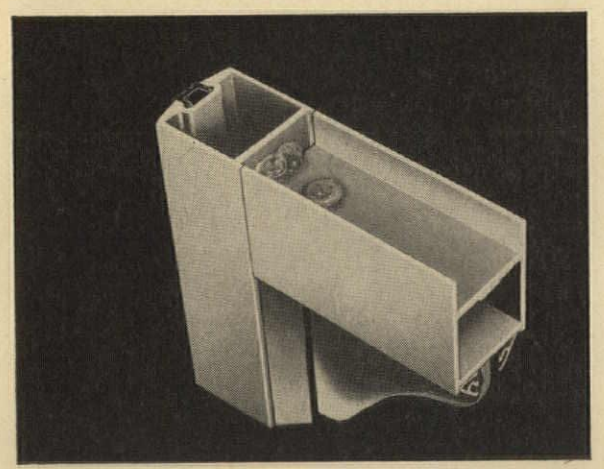
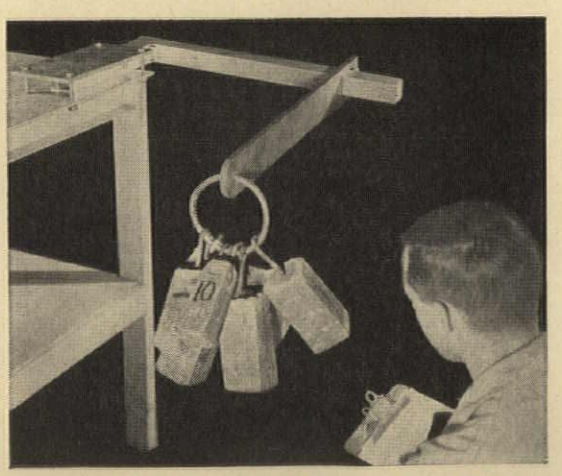


Rack-proof . . . The strongest corner construction ever! Kawneer doors are welded four times at each corner with a secured reinforcement.



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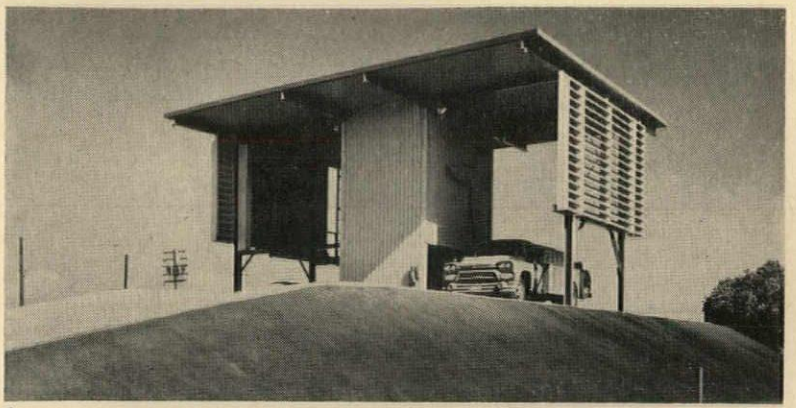
AISI Gives Awards for Design in Steel



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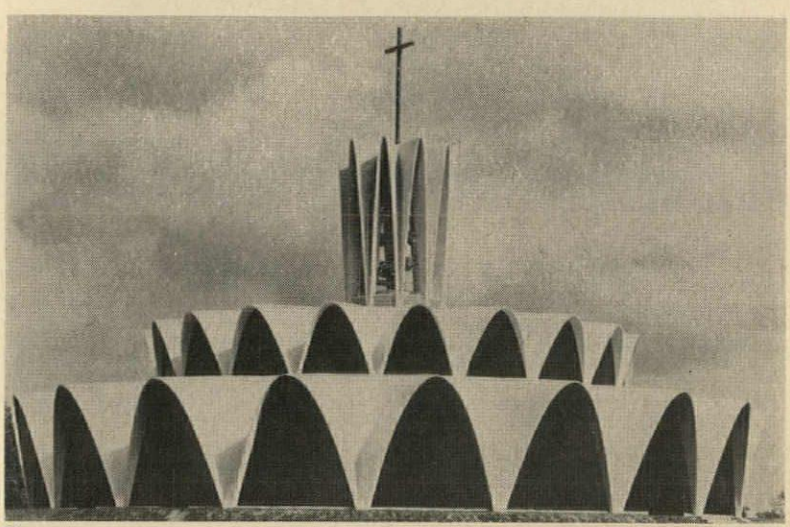

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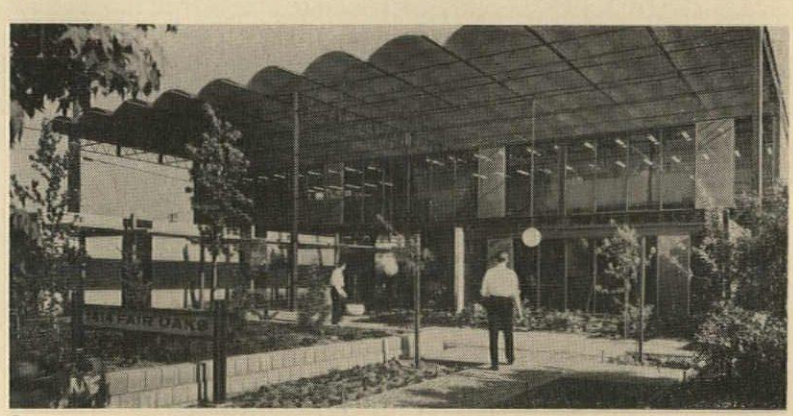

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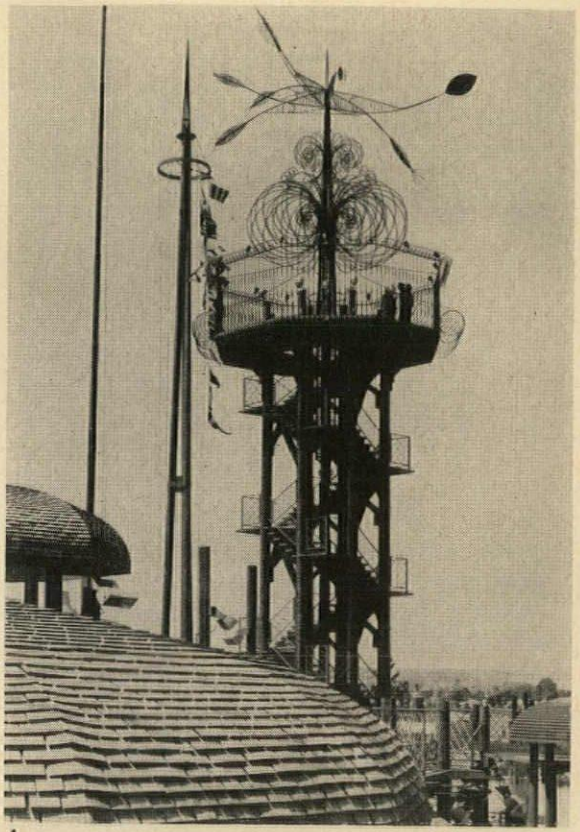

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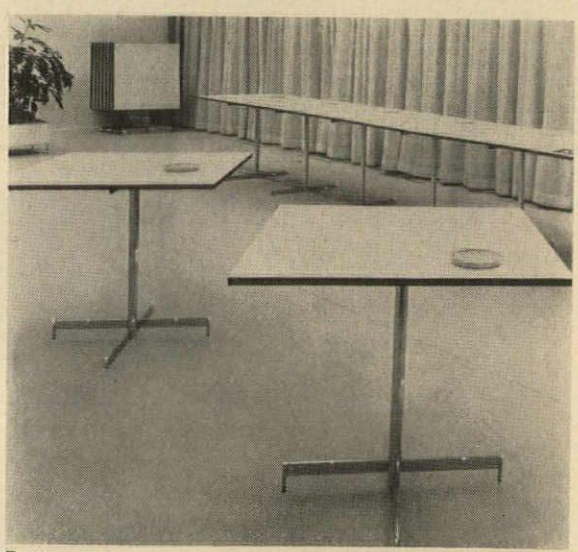
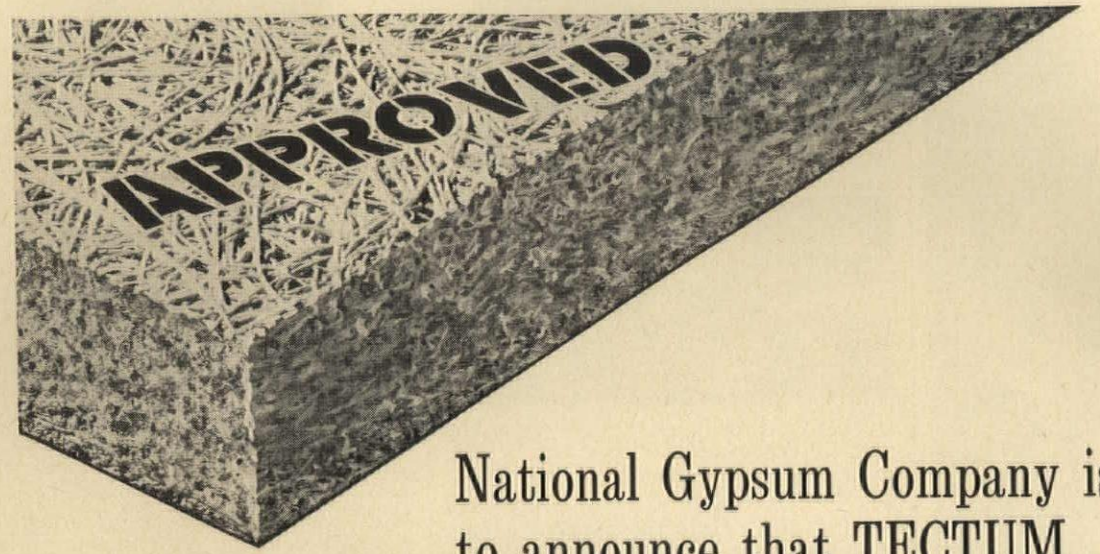


5

NEW YORK, NEW YORK Awards in the first Design in Steel Awards Program of the American Iron and Steel Institute were presented last month at a banquet in the Waldorf-Astoria. More than 540 entries from 39 states were judged for excellence of design and use of steel in eight categories: galvanized steel sheet; concrete reinforcing bars; welded wire fabric reinforcement; steel plate; drawn wire; steel bars; steel sheet or strip; and structural steel. Architectural award winners (*above*) were (1) a calibrating station tower by James J. Nargis & Edward S. Darden for galvanized steel sheet; St. Louis Priory Church by Hellmuth, Obata & Kassabaum (2) for welded wire fabric reinforcement; office building (3) by Smith & Williams for structural steel; vacation village by Spencer & Lee (4) for concrete reinforcing bars; and a folding pedestal table (5) by Hugh Acton for steel bars.

Honorable mention winners included Harrel & Hamilton; Murray-Jones-Murray; Cuthbert & Cuthbert; Paul Rogers & Associates, Inc.; Kazuyuko Matsushita, Hideki Shimizu and John O. Phillips; Paul McCobb Design Associates (for John J. Nesbitt, Inc.); Coston-Frankfurt-Short; John Byron Hackler; Thorne; Pierre Koenig; and Kitchen & Hunt.

Jury included Architects Morris Ketchum, Jr., A. G. Odell, Jr., and Robert Anshen; Industrial Designers Leon Gordon Miller, Jay Doblin, and Arthur Pulos; and Engineers Edmund Freidman, Ronald B. Smith, and Dr. Robert Raudebaugh.



National Gypsum Company is pleased to announce that TECTUM now carries the Gold Bond Label

(more than 100 research scientists voted their approval)

Tectum has enjoyed phenomenal acceptance. More than *500 million* board feet have been used to date. It was Tectum that pioneered the principle of open roof deck construction. In the past decade, Tectum has provided appreciable economies in the construction of sorely needed educational, commercial, industrial and religious buildings.

Recently, over one hundred Gold Bond research scientists had a part in thoroughly testing Tectum . . . in evaluating its past performance, in projecting its future. When their work was complete they voted unanimously for its inclusion in the Gold Bond family of building products.

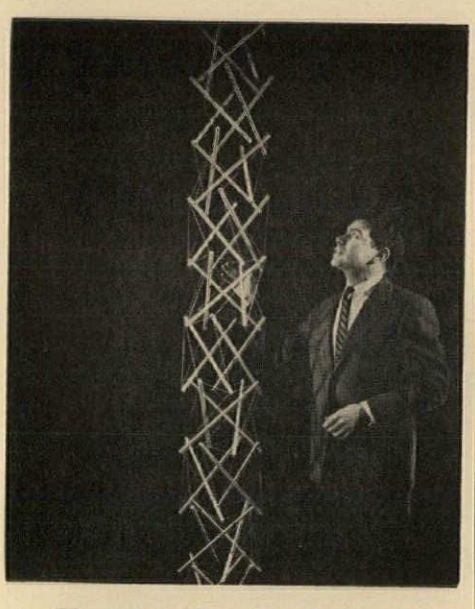
We at National Gypsum Company are immensely proud of this latest addition to our growing family of building materials. Tectum wood fiber products add depth to the Gold Bond line, broaden our representation in the market, and amplify our services to you as an architect.

The thousands of architects, engineers and designers who already know Tectum first-hand can now specify it with even greater confidence. This is because today's Tectum wears the Gold Bond label. And it's backed by Gold Bond research. National Gypsum Company, Buffalo 25, New York.

Gold Bond®
BUILDING PRODUCTS

The lights burn late at the Gold Bond Research Center, Tonawanda, N.Y.

GOLD BOND MATERIALS AND METHODS MAKE THE DIFFERENCE IN MODERN BUILDING



Tensegrity Sculpture

A proposed minaret for a contemporary mosque in Karachi, Pakistan, is shown by designer Kenneth Snelson. The piece, which is part of an exhibit of Snelson's structures and sculptures shown at Brooklyn's Pratt Institute recently, will recall to many Bucky Fuller's tensegrity mast in his Museum of Modern Art show a couple of years ago.

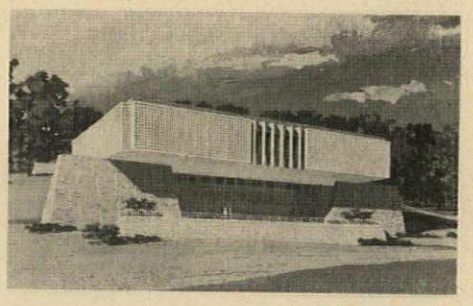
HQ NEAR NORTHLAND

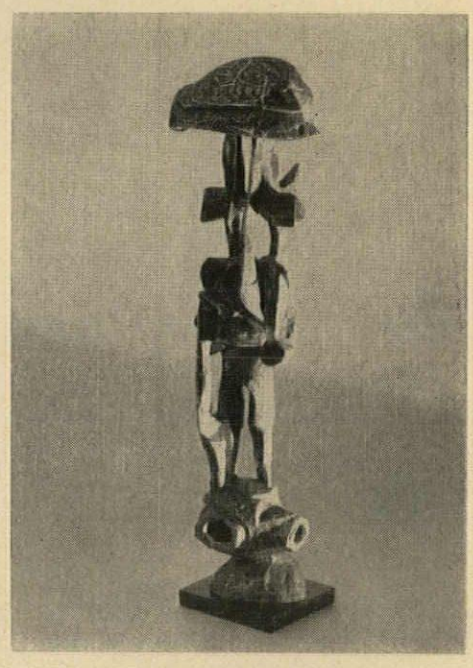
New headquarters for the Detroit Federal Employees Credit Union, designed by associated architects Lorenz, Paski, Begrow & Brown, will be situated near Northland Shopping Center on Detroit's "Gold Coast." Design features a wide, aggregate-surfaced fascia "floating" over the gray glass walls of the offices and public spaces,

the whole standing on a concrete base in a well landscaped area. Access to the front entrance will be via a curved ramp leading from the gardens below. Parking areas will be depressed so as to be invisible from the street.

Cantilevered Library

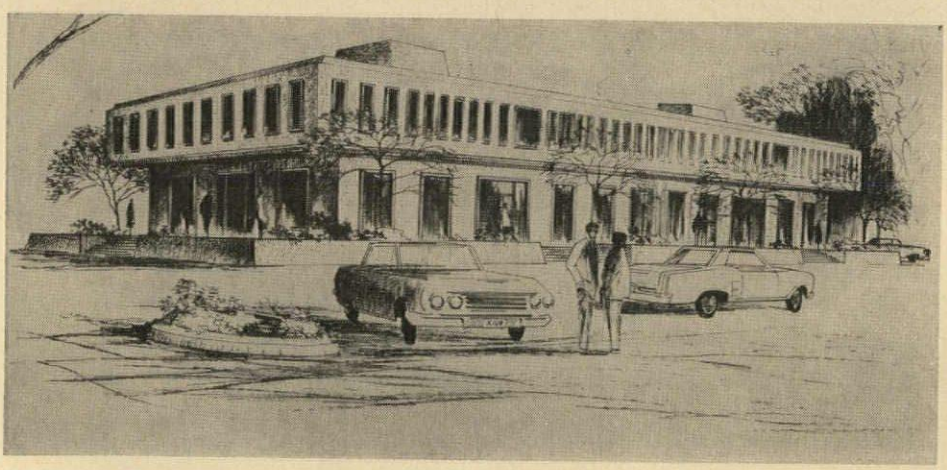
Main floor of the library proposed for Cedar Crest College, Allentown, Pa., will be the top floor. Designed by Bond & Miller of North Allentown, the building will utilize a campus hillside as its site, causing the main entrance to be approached via a bridge over a dry moat into the upper story reading and information areas. This floor will be cantilevered at the rear (*as shown*) over the stone retaining walls enclosing the lower areas. Library is the first of three new buildings in the college's 10-year development program.





Hadzi Sculpts for Reynolds

Dimitri Hadzi has created the symbol of the 1963 R. S. Reynolds Memorial Award to be presented, along with $25,000, to the winner of this year's program. The sculpture is called "Floating Helmet, 1963."



Office Pavilion for Peninsula Suburb

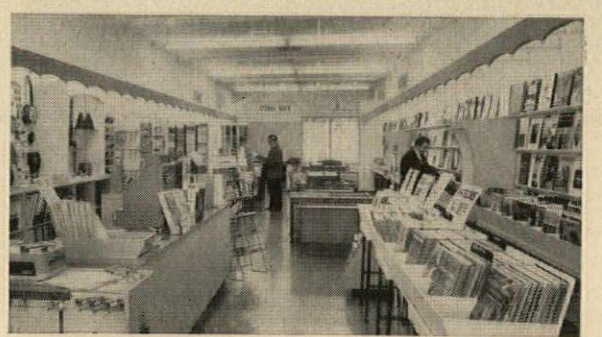
Redwood City, Calif., which could certainly use it, will get a handsome small office structure designed by Chan-Rader & Associates of San Francisco. This will be a wood-framed, stucco building of classic proportions. The ground floor, with an evenly expressed rhythm of show window and entrance openings, will be surmounted by an upper, rental floor featuring a band of narrow fixed glass windows punctuated by two larger windows above the entrances. To increase the pavilion-like feeling of the structure, it will be raised on a concrete base.

Honolulu Condominium

A $1,500,000 condominium apartment building scheduled to rise in central

Continued on page 76

Pittsford Plaza Shopping Center, Pittsford, N. Y. Gen. Contr.: Wilmorite, Rochester; Consulting Engr.: J. L. Bettinger, Rochester; Heating Contr.: A. Burgart, Inc., Rochester



The Music Lovers' Shoppe at Pittsford Plaza is heated by Janitrol duct furnaces, ceiling-suspended in the rear storeroom. Heat is efficiently distributed to the retail area through inconspicuous, circular, ceiling outlets. Manager Vince Meleo reports, "During winter months our heat is turned down overnight. About 5 minutes after opening in the morning, temperature is back to the comfort stage."

In the Pittsford Plaza Sherwin-Williams paint store one compact Janitrol 67-Series gas-fired unit heater effectively heats the entire sales area. The ceiling-suspended unit uses no valuable floor space and its modern, functional design does not detract from the decor.

The new Pittsford Plaza combines the charm of authentic Early American design, a one-stop selection of quality merchandise or services and over 30 acres of convenient parking for residents of Rochester's eastern suburban area. Thirty-two stores heat with top efficiency and economy. Ceiling-suspended Janitrol gas-fired unit heaters and duct furnaces turn the trick. These compact heating units with individual thermostatic control are sized to give fast, evenly-distributed heat in smallest shop or largest retail store.

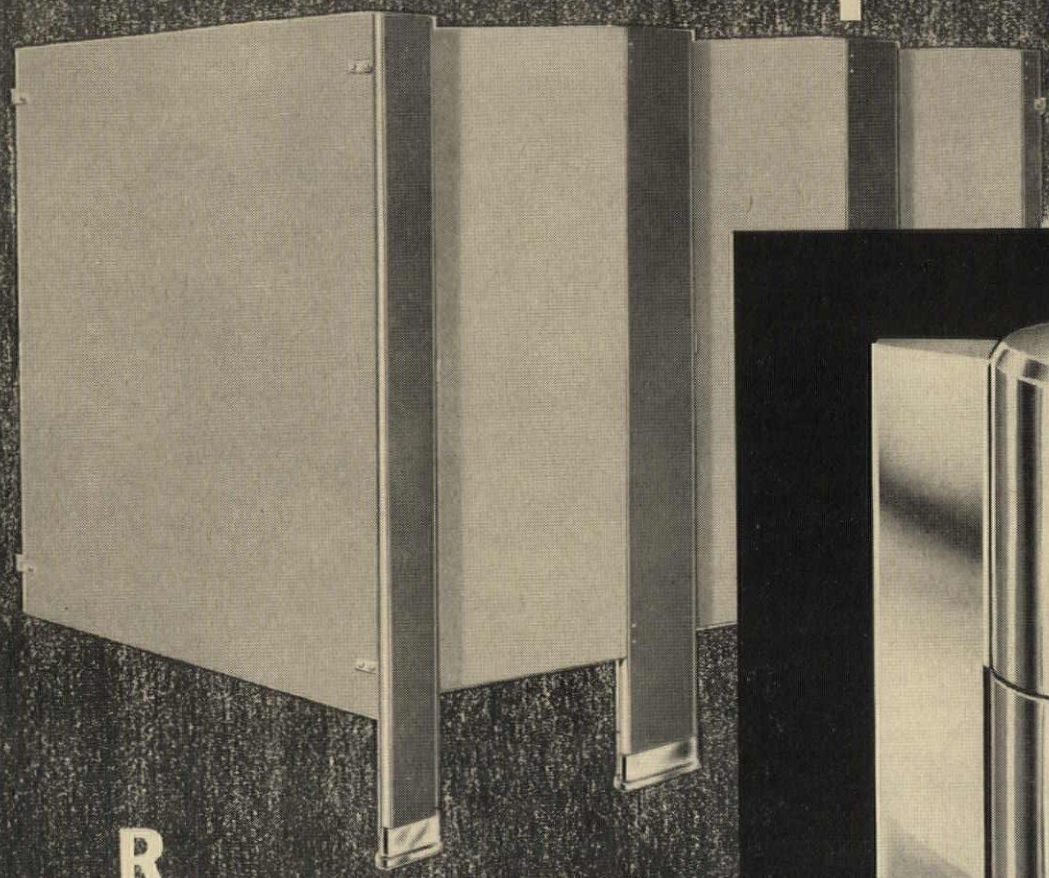
Being ceiling-suspended, these Janitrol units don't need floor space or an "equipment room." Store operators can utilize more floor space for sales or stock. Janitrol unit heaters install *fast*. And they're easily moved, readily adaptable for future expansion and modernization needs.

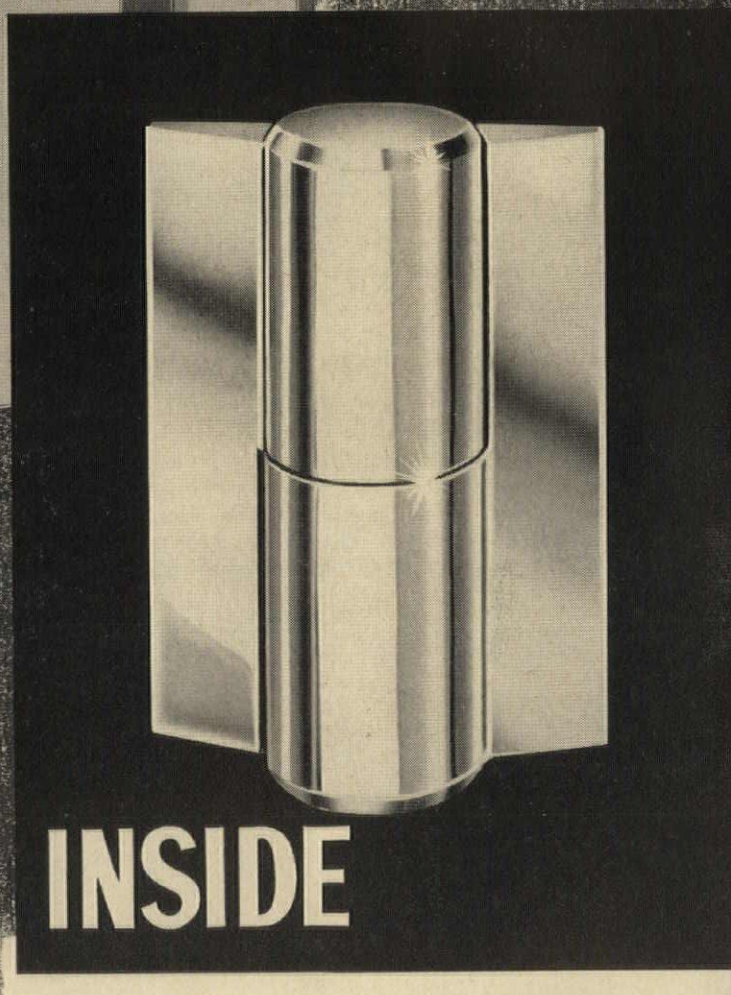
FREE INFORMATION—Janitrol commercial-industrial specialists will gladly supply latest data on heating and air conditioning equipment. Call them without obligation. They're listed in the Yellow Pages. For your files, we offer an informative 16-page brochure covering commercial product lines and applications. Write for Form JS-151P.

JANITROL® DIVISION MIDLAND-ROSS

MIDLAND-ROSS CORPORATION, COLUMBUS 16, OHIO

NO HINGE IN SIGHT





RUGGED HINGE INSIDE

Vault-like design, this sturdy new Weistyle hinge enhances flush appearance of compartment installation. Eliminates cut-outs, insets, covers, caps and projections above and below door line. Interior or exterior surface mounting allows up to 180° swing. Adjustable to stand in any position. *Another Weis improvement.*

SPECIFY **WEIS**

Prefabricated, Prefinished Products for the Building Industry

HENRY WEIS MFG. CO., ELKHART, INDIANA

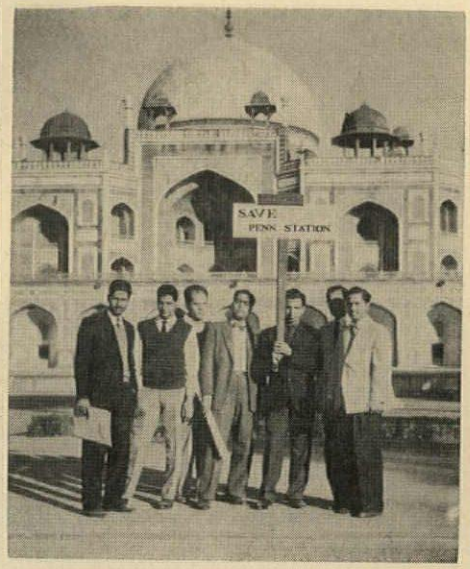
Weis belongs where toilet compartments really take a beating

Continued from page 72

Honolulu has been designed by Morse & Tatom. The 11-story structure will have four two-bedroom and five one-bedroom units per floor. Ground-floor pool and garden spaces will be sheltered from the street by berms constructed of fill removed from the subsurface parking spaces. The building will be single loaded and oriented so as to give all tenants a view of Waikiki and Diamond Head (if the latter is still worth looking at, see p. 79, OCTOBER 1962 P/A). Structure will be a system of precast wall and floor panels functioning as both structure and interior party walls. The 6″-thick wall panels will eliminate all columns. and the 4″-thick prestressed and precast floor planks will be made to appear monolithic with the walls by use of a composite topping. Exterior will feature exposed aggregate wall panels, gray glazing, and redwood slat jalousies. Elevator and stair towers will be cast in place. Structural Engineer: Alfred A. Yee & Associates.

Indian Penn Pals

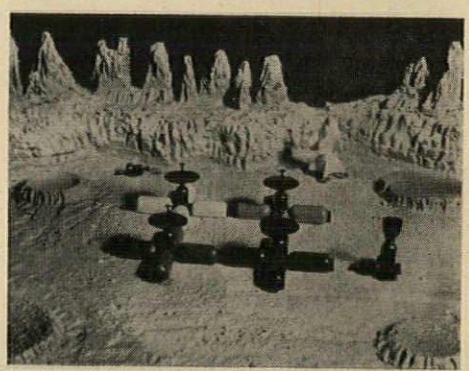
Outrage over the forthcoming destruction of New York's Pennsylvania Station is not confined to the members of AGBANY and their supporters. A number of young architects in New Dehli, angered at the approaching vandalism, assembled before one of Dehli's principal shrines for the picture shown here. Should the Madison Square Garden Corporation see this, the architects may well repent their rash act when the Greater East Asia Square Garden rises on the mosque site.

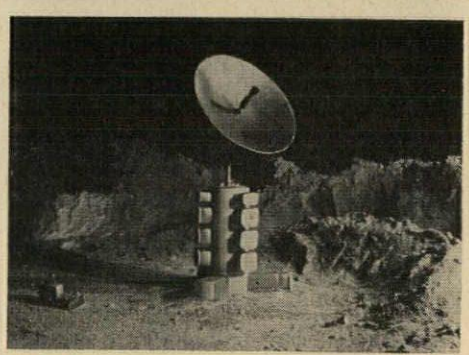


At this writing, there seems to be no recourse except to anger and despair over the fate of the station. The two city agencies that could have thrown emery dust into the gears of the Madison Square Garden juggernaut instead granted the variances necessary for the construction of the project. With the Pan Am Building stuck behind Grand Central Station like a thermometer and the doom of Penn Station sealed, New Yorkers will have to go elsewhere to see the great portals created in a more spacious age.

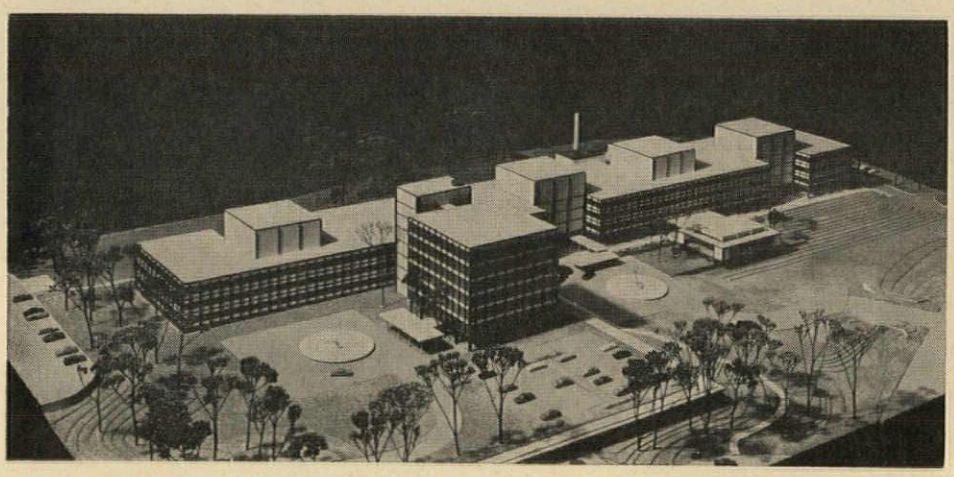
Lunar Living

The Flight Accessories Laboratory of the Aeronautical Systems Division, Wright-Patterson Air Force Base, in Ohio, recently sponsored a design study of lunar shelters among the junior and senior architectural and industrial design students at the University of Cincinnati. Given a choice of such structural possibilities as inflatable structures, expandable honeycomb, expandable foam, and unfurlable packages, the students designed and built models of man-in-the-moon buildings to shelter 9 men on a 30-day mission. Solutions shown here are





(*top*) a model colony of shelters with individual solar collectors, and (*bottom*) an expandable-pod shelter with solar collector.



KLING PROJECT GROWS LIKE TOPSY

Not long after the completion of the first, 276,000-sq-ft unit, the headquarters of the Government Employees Insurance Company in Chevy Chase, Md., will more than double its space with the addition of 319,000-sq-ft. Designed by Vincent G. Kling, as was the present building, the additions will feature an extension of the four-story office building, an eight-story office tower, and underground parking facilities. The tower will rise from a landscaped pallet sited on the roof of the parking garage. Materials—reinforced concrete, bronze-tinted glass in aluminum frames, and cream-colored porcelain-enamel spandrels—will match those of the existing structure. There has been talk of a large stylized eagle by sculptress Gwen Lux.

PERSONALITIES

BUCKMINSTER FULLER, PHILIP JOHNSON, and I. M. PEI were elected to the National Institute of Arts and Letters . . . To be made Fellows at the 1963 AIA convention are: ROGER BAILEY, CHARLES JULIUS BETTS, THOMAS JONES BIGGS, CHARLES A. BLESSING, JOHN SAVAGE BOLLES, CLINTON E. BRUSH III, H. GRIFFITH EDWARDS, JAMES HARRISON FINCH, JAMES HERSCHEL FISHER, WILLIAM EDWARD HARTMANN,

Continued on page 80

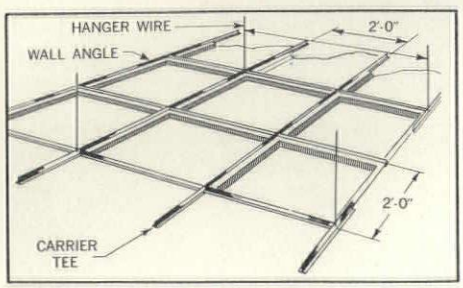
NEW FROM JOHNS-MANVILLE:
INVERTED COFFER

ACOUSTI-SHELL
3-D CEILING PANELS

FLOOR IS J-M TERRAFLEX VINYL-ASBESTOS TILE; WALLS AND COUNTERS ARE FACED WITH J-M GLASAL ASBESTOS-CEMENT PANELS

New dimensional square...New textured surface...New low price!

This new Johns-Manville all-fiber-glass ceiling panel offers a combination of practicality and style . . . at moderate cost. Square lay-in panels are moulded in inverted coffer shape, projecting 2" downward into the room. As shown above, the visible surface has an attractive, low-relief, rippled texture. Panels are factory-painted white, but can, of course, be repainted to suit any decorative scheme. Measuring 24" x 24" x 2" deep and acoustically effective (NRC of .75) . . . Inverted Coffer Panels suggest interesting applications in supermarkets and other broad-expanse areas.



Lay-in Inverted Coffer Panels are quickly installed in an exposed grid-type suspension system.

JOHNS-MANVILLE

JOHNS-MANVILLE PRODUCTS

SEE NEXT PAGE

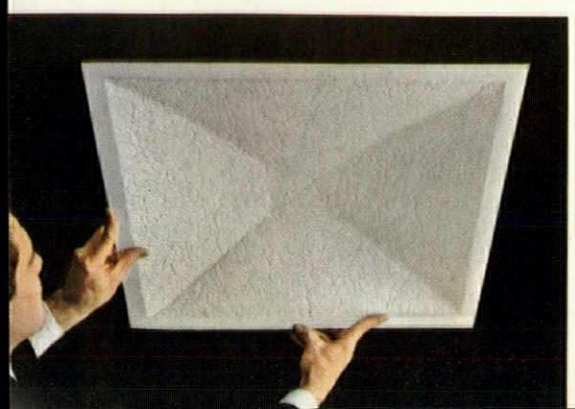
NEW FROM JOHNS-MANVILLE:
TEXTURED VAULT

ACOUSTI-SHELL
3-D CEILING PANELS

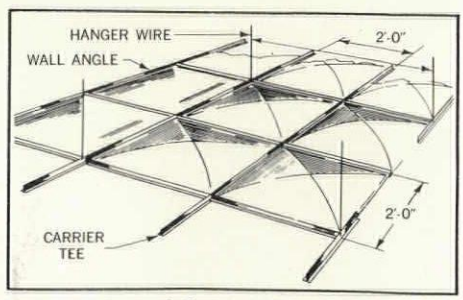
FLOOR AND PEDESTAL ARE J-M COLORCHIP; WALLS ARE J-M GLASAL; BOTH ARE JOHNS-MANVILLE ASBESTOS-CEMENT MATERIALS

New textured surface...with vaulted contour...at modest prices!

A singularly effective way to add dramatic value to virtually any ceiling . . . and at the same time achieve high acoustical efficiency! Textured Vault Panels are moulded entirely of fiber glass with an NRC of .75. They are 24″ x 24″, rising gently to create a 2″ vault. As you see above, the surface is made more visually interesting by a low-relief, rippled texture. White-painted at the factory for easy repainting if desired, Textured Vault Panels offer an opportunity to create a sense of height and elegance, as in the gallery above, and in larger institutional or commercial building areas.



Send for more information on the complete line of Johns-Manville acoustical products. Ask for our new booklet, "Sound Control Ceilings". Address Johns-Manville, Dept. AB, Box 158, New York 16, N. Y. In Canada: Port Credit, Ont. Cable: Johnmanvil.



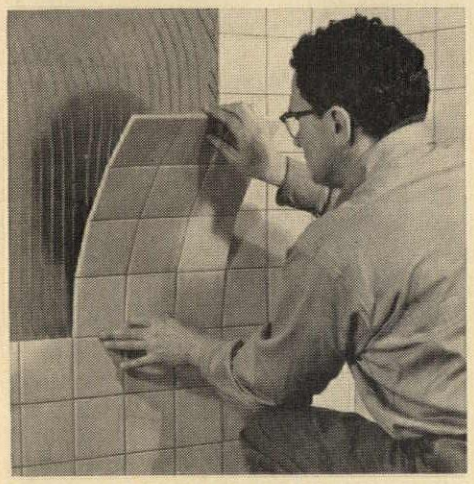
Installation of lay-in Textured Vault Panels is fast and simple in an exposed grid-type suspension system.

JOHNS-MANVILLE PRODUCTS

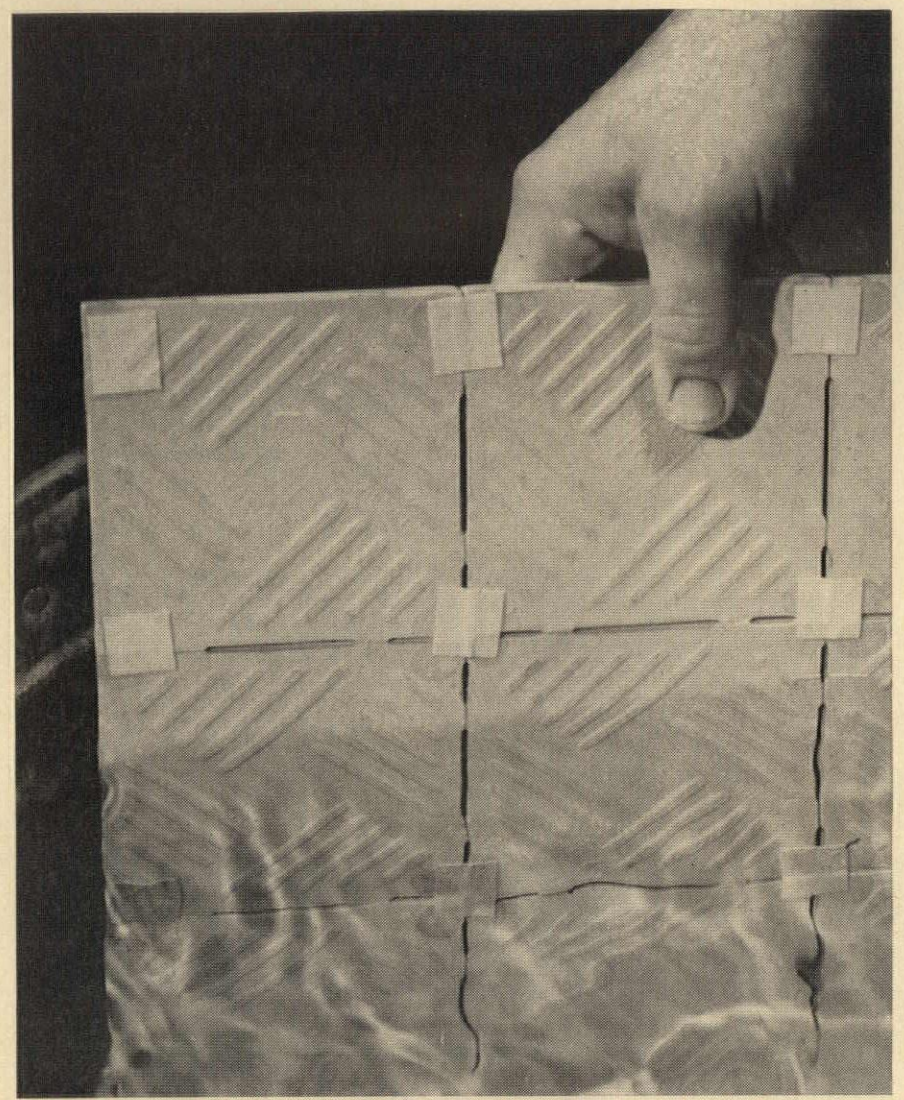
JOHNS-MANVILLE

AC-72A 3-63 LITHO IN U.S.A.

BETTER-BOND performs equally well when used on adhesive, thin or conventional mortar beds.



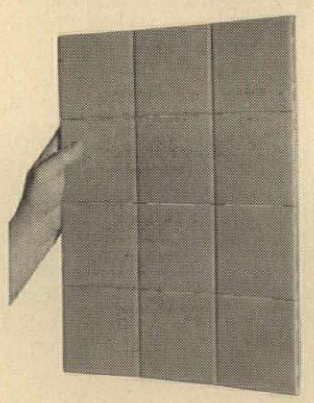
Up goes BETTER-BOND, 12 tiles at a time, with perfect joint alignment and positive bond with setting bed.



In a 72-hour soak-test, these tough fabric tabs showed no separation from tile.

For faster installation... perfect joint alignment... BETTER-BOND®

MOUNTED LEVEL-SET® WALL TILE



Try the "one-hand" test with any other 12-tile mounted sheet. See for yourself why BETTER-BOND is the easiest handling tile made.

Now, with BETTER-BOND, Romany•Spartan has eliminated all the problems normally associated with the installation of 4¼" square ceramic tile, both mounted and unmounted. Here's the *only* glazed wall tile mounting that assures perfect joint alignment—tile to tile and sheet to sheet. It's the *only* mounting that is tear-free—flexible, yet rigid enough for easy handling. And BETTER-BOND mounting exposes 95% of the tile back to the setting bed.

Only the world's finest 4¼" wall tile—LEVEL-SET—is BETTER-BOND mounted. Its precise size provides a thin, uniform joint. Grout-lock design and ground edges without glaze flecks provide better grout adhesion and a more permanent joint.

BETTER-BOND is a better buy, too. It costs the same as ordinary tile with old-fashioned mountings. Yet, its "in-place" cost is less because it installs faster. Call your nearby Romany•Spartan distributor for more information and samples, or write: United States Ceramic Tile Company, Department PA-29, Canton 2, Ohio.

ROMANY SPARTAN®

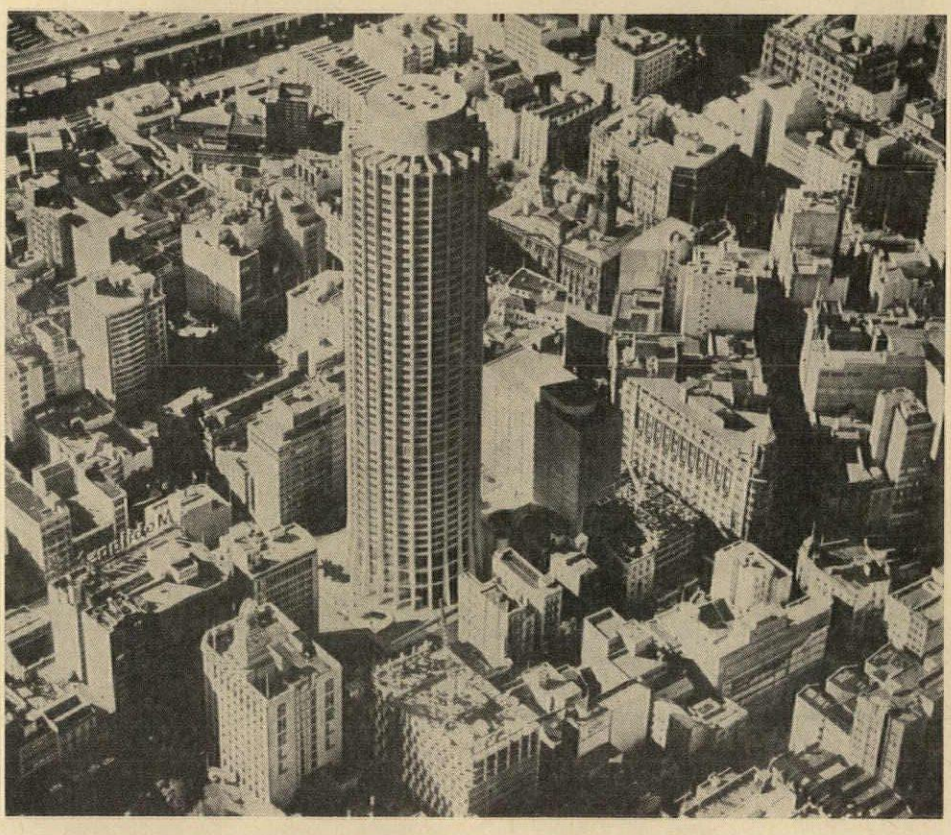
CERAMIC TILE

MEMBER

UNITED STATES CERAMIC TILE COMPANY

Continued from page 76

ERNEST DANIEL IVEY, PAUL HENTON KEA, EDWARD A. KILLINGSWORTH, ROGER YUEN LEE, SIDNEY WAHL LITTLE, CHARLES LUCKMAN, A. REINHOLD MELANDER, WILLIS NATHANIEL MILLS, FRANK MONTANA, GEORGE NELSON, LOUIS C. PAGE, HARRY DANIEL PAYNE, WILLIAM GRAY PURCELL, I. LLOYD ROARK, REGINALD H. ROBERTS, GEORGE THOMAS ROCKRISE, WALTER SANDERS, JOHN SCACCHETTI, G. MILTON SMALL, LEE SOREY, VICTOR STEINBRUECK, JOHN STETSON, CHARLES RUTAN STRICKLAND, FRANK EDWARD WATSON, CHARLES DAY WOODFORD . . . JULIAN CLARENCE LEVI was honored at the anniversary dinner of the United Jewish Appeal of New York, March 14; LEVI founded UJA's Architects and Engineers Division . . . ALBERT M. DREYFUSS succeeds W. STEPHEN ALLEN as president of the California Council of AIA . . . President of the national Consulting Engineers Council for 1963–1964 will be SANFORD K. FOSHOLT; STEWART H. BEALL is new president of the Metropolitan Washington chapter . . . Jury for the 1963 Awards Program of the Prestressed Concrete Institute are: HARRY WEESE, Chairman, Architects ARTHUR QUENTIN DAVIS and JOHN GRAHAM, and Engineers THOMAS C. KAVANAGH and FRED N. SEVERUD . . . WALTER BURLEY GRIFFIN, the U.S. architect who prepared the master plan for Canberra, Australia's from-the-ground-up capital, has been honored by the issuance of a commemorative Australian stamp bearing his name and likeness.

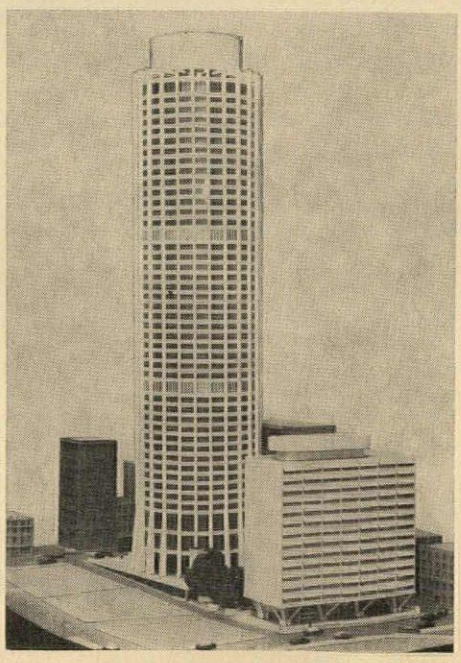


Everything's Coming Up Pan Am

SYDNEY, AUSTRALIA This 45-story tower, designed for a square-block site "in what had hitherto been one of the city's most congested regions . . ." (surely it will win hands down now), clinches its resemblance to the far-off Pan Am by having an underground connection with Sydney's important Wynyard Station.

The Australia Square project consists of two buildings—the 525-ft office tower (to be the tallest building in Australia) and a 13-story companion office building. An open plaza "will provide a refreshing respite from the heavy congestion of buildings and traffic found elsewhere in the Inner City Area."

An earlier scheme was distinguished by a lower and more elegant tower, a larger and more open site, and twice as many architects (a noted American is no longer associated with the firm of Harry Seidler & Associates).



New Certification Program for AAMA

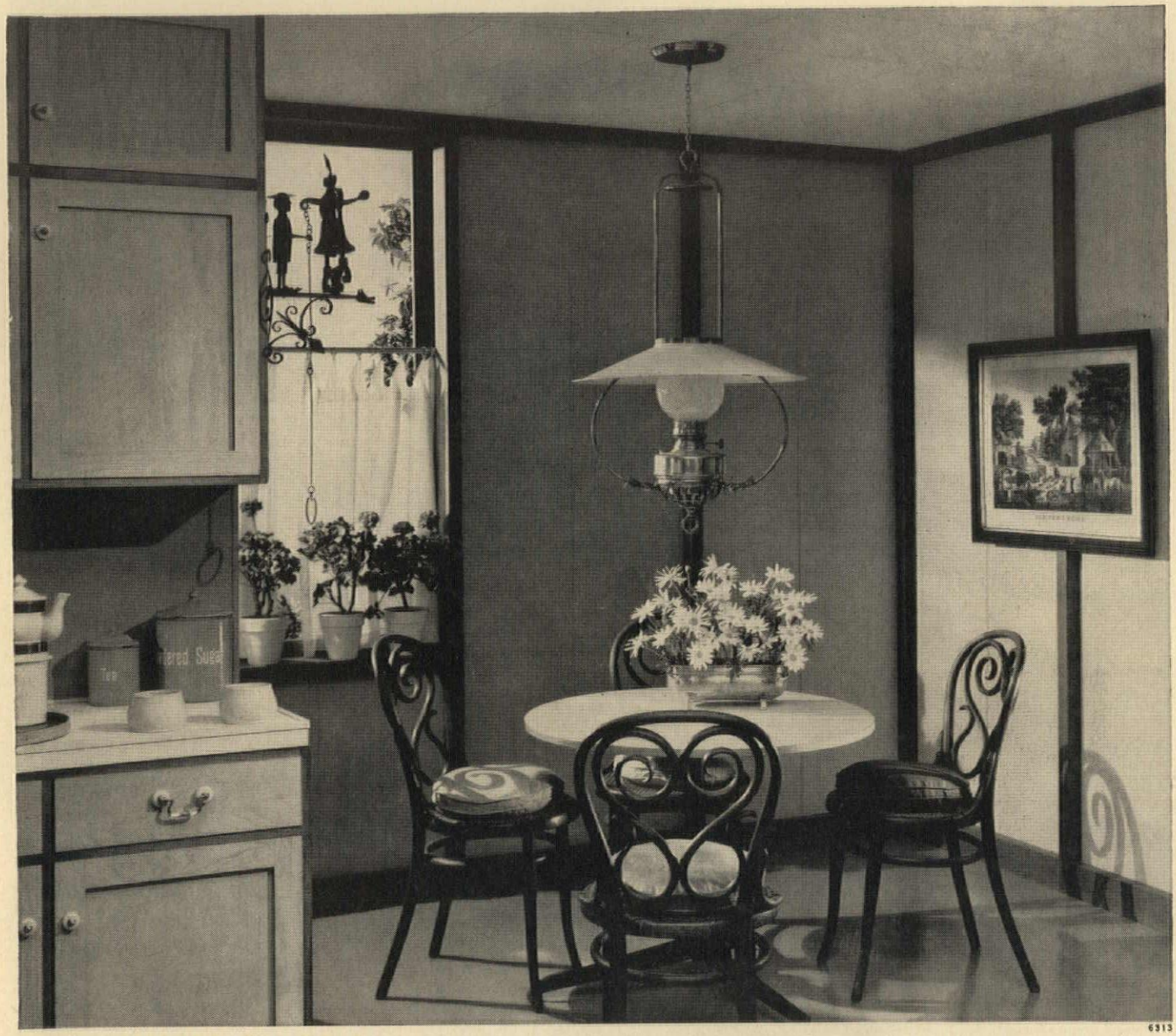
Architectural Aluminum Manufacturers Association has announced a strict new certification program for aluminum prime windows and sliding glass doors. Products passing the rigidly enforced program will bear a new "Quality Certified" label that reads: "The manufacturer guarantees by affixing this label that this window or door is a duplicate of samples found by independent test and physical inspection to comply with the specifications of Architectural Aluminum Manufacturers Association." Administration and inspection of the program will be handled by Electrical Testing Laboratories, Inc.

CALENDAR

Seventh annual convention of Construction Specifications Institute will be held in Detroit, May 20–22 . . . An Institute of Church Design, jointly sponsored by Carnegie Institute of Technology and the Pittsburgh Theological Seminary will be held in Pittsburgh, June 3–14; a special feature will be visits with Louis I. Kahn, Paul Schweikher, and John Johansen; information from the Institute, 616 North Highland Ave., Pittsburgh 6 . . . Annual meeting of the National Society of Professional Engineers will be held in Cleveland, June 26–29.

OBITUARIES

HARRY AHRENS, senior staff associate in the office of Vincent G. Kling, died last month at the age of 66 . . . The REV. MICHAEL J. MCINERNEY, O.S.B., practicing architect-priest, died in March at age 86.



Create home interiors that stay in style for years with beautiful wash-and-wear Marlite Paneling

With versatile Marlite paneling, you can create modern interiors in any room in the home that take years of wear with just minutes of care. Marlite's soilproof plastic finish is baked on at high temperatures most materials can't stand. Unlike many other wall coverings, Marlite shrugs off grease, stains, mars—even heat.

And the selection of Marlite colors and patterns is almost endless. You can choose from a complete array of beautiful colors, authentic Trendwood reproductions, distinctive marble and decorator patterns . . . all created exclusively for Marlite by American Color Trends to stay in style for years.

Get complete details from your building materials dealer, consult Sweet's File, or write Marlite Division of Masonite Corporation, Dept. 414, Dover, Ohio.

Marlite® plastic-finished paneling

ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

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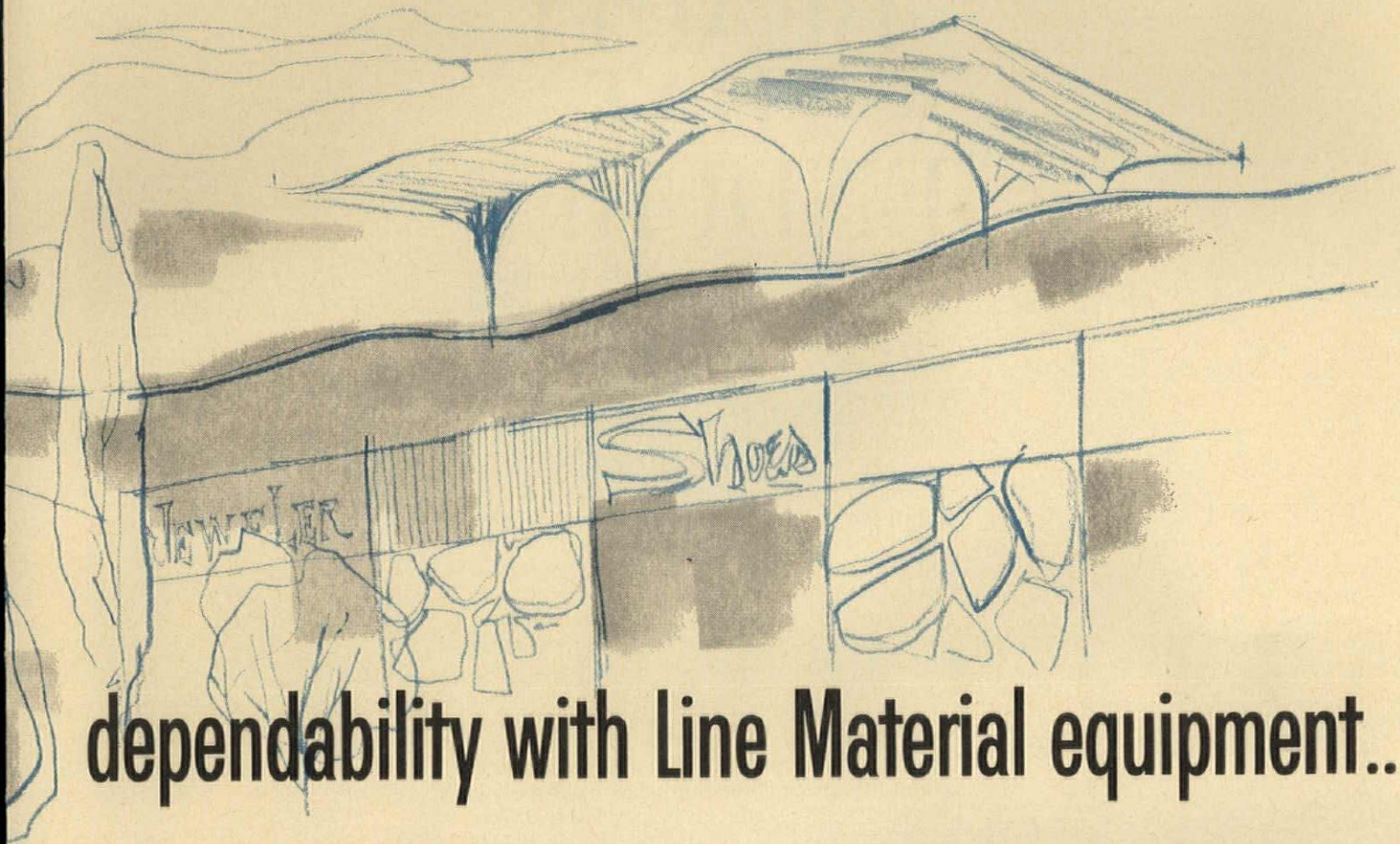
For shopping centers...

specify beauty, styling,

L-M fabricated the lights and pole in this photo to the specifications of the architect and consulting electrical engineer.

L-M's proposed design of a Transclosure® to house transformers and other electrical equipment. An example of the styling L-M can supply when the need arises.

L-M lighting equipment is styled to be attractive and designed to afford efficient lighting at night.



dependability with Line Material equipment...

Styled Outdoor Lighting and Outdoor Electrical Service Equipment gives you variety of design that is always attractive.

DESIGN FOR BEAUTY—Select equipment for function and know it will look good. Regardless of your power or lighting requirements L-M equipment will perform exceptionally well and afford a pleasant appearance.

PRODUCT STYLING—L-M equipment is designed for beauty as well as function; styled by Jean Reinecke, noted industrial designer. It is unobtrusive. It blends well into its surroundings. It can assist in creating a decor.

FLEXIBILITY—Whether you're planning distribution of bulk power or power at utilization voltage L-M equipment offers a maximum degree of flexibility. Electrical service equipment supplying power to your center can be overhead or underground. Lighting ranges from high intensity to mood.

SPACE SAVING—Most L-M electrical service equipment can be installed outdoors to save costly indoor space. It is safe, tamper-proof, and above all, affords an attractive appearance.

DEPENDABLE—L-M has supplied utilities and industrials for over 50 years. The electric utility supplying your center probably has millions of dollars of L-M equipment. You can depend on the quality and long life of L-M equipment.

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Styled Outdoor Lighting	Overhead Power Distribution
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Underground Power Distribution

LINE MATERIAL®
Industries
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DISTRIBUTION TRANSFORMERS • RECLOSERS, SECTIONALIZERS AND OIL SWITCHES
FUSE CUTOUTS AND FUSE LINKS • LIGHTNING ARRESTERS • CAPACITORS
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PORCELAIN INSULATORS • FIBRE PIPE AND CONDUIT

McGRAW-EDISON NEMA MEMBER

BEAUTY THAT ENDURES

in a superior new acoustical ventilating ceiling system with accessible air control

From Wood Conversion Company comes an important new approach to room air distribution and **effective** acoustical control, combining heating, cooling, and ventilating frequently at substantial cost-savings.

Jets of air project from control slots in Lo-Tone ventilating ceiling systems and entrain with room air above the occupied level. Each ceiling is designed to provide thorough circulation and air movement, achieving optimum comfort conditions.

Available in either regular mineral or Fire-Rated types. All Fire-Rated Lo-Tone ventilating tiles and ceiling boards are listed by Underwriters' Laboratories, Inc., and carry UL labels.

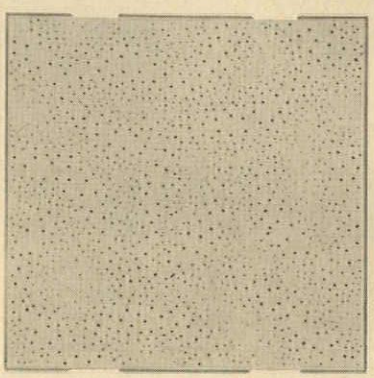
Lo-Tone ventilating ceiling systems employ control-splines to provide easy adjustment and balance of air flow from the underside of the ceiling. Room air induction takes place below the ceiling — this reduces the possibility of dirt being deposited on the ceiling surface which has a high light reflectance (75% or more).

The Lo-Tone acoustical ceiling sound absorption efficiency range of .65 to .85 is assured by the superior wet-felted process.

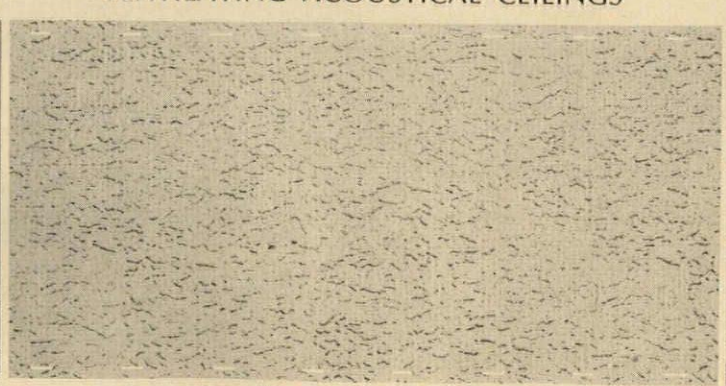
Lo-Tone ventilating ceiling installations cost no more than ordinary air-distribution systems, in many cases, considerably less. Large amounts of duct work are eliminated and plenum areas can often be fed with one stub duct.

Your ventilating tile and board requirements can be quickly determined with the special Lo-Tone Ventilating Design Calculator slide rule — free upon request. Wood Conversion Company, St. Paul 1, Minnesota.

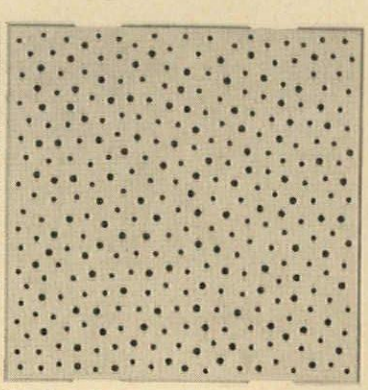
LO-TONE®
VENTILATING ACOUSTICAL CEILINGS



Constellation® Tile & Board



New Fissura Pattern Tile & Board



Random Tile

The Pharaoh Tutankhamen and his wife — gilt and painted woodwork. Circa 1350 B.C. Cairo Museum.

BUILDING TECHNICAL MANPOWER

By E. E. Halmos, Jr.

The attempt to find a sensible answer to the problem of insuring enough scientific manpower to meet the nation's needs seemed to be making progress in Washington.

Some of the proposed solutions were rehashes of previous ideas, but one was concrete: a grant of $200,000 to the National Academy of Sciences–National Research Council from the Ford Foundation. Objective: to finance a broad examination of how the U.S. is using its scientific and engineering manpower.

The study may produce some answers to privately held opinions of many architects that there is no real lack of trained personnel; what's lacking is sufficient attraction in their chosen professions. It is well known, for instance, that a large proportion of civil engineering graduates never enter the profession; they go into sales or other more lucrative areas. (Not a single architect or engineer, incidentally, is included in the member committee carrying on the study for NSF-NAS.)

The legislative approaches were principally two: a bill (S 816) to establish a "Hoover-type" commission to study Federal scientific programs and bring about economy and efficiency in these programs (a rehash of similar legislation proposed in the last three Congresses); and a House bill (HR 1946) to establish a "National Scientific Data Processing Center" in Chicago, which would codify and make available world-wide scientific information.

It should be noted, again, that when Washington talks about "scientific manpower," it seldom means architects or civil engineers. It means the "glamor" sciences connected with missile and space efforts, and chemists.

Legislation So Far

As to other legislation, there's little to say. Congress had managed to spend some two months in session, introduce more than 6240 bills of all types (as of March 1)—and pass nothing at all.

That's not a terribly unusual performance, but it does presage a last-minute rush in July, and makes it obvious that only top measures will get real consideration at this session.

A steady stream of Presidential messages, of course, continued to flow toward Capitol Hill. These included a mental health and medical program that would involve many millions of dollars in hospital construction; and a $10 billion, five-year program of aid to the elderly, which included low-interest loans for group residences.

These measures—together with the already-argued tax bills, education programs, proposals for aid for mass transit in cities, and the whopping budget itself—will provide the points of debate for the rest of the year.

Of these, prospects look best for some reduction—but nothing else—in tax rates, and some token aid for transit.

New GSA Jobs

Architects will find ample work in prospect in that list of 74 new Federal buildings and major repairs to 49 others, sent up to Congress recently by General Services Administration.

Over-all expenditures involved would reach about $246.3 million; biggest single structure called for is a $33-million Federal office building in Detroit.

Anti-Noise Booklet

Federal Housing Administration has a new publication available entitled "A Guide to Impact Noise Control in Multifamily Dwellings." Publication can be obtained at no charge (while the supply lasts) from the Office of Public Information, FHA, Washington 25, D.C. Ask for booklet FHA 750.

Objective is to provide practical guidance for architects and builders in cutting down noise, particularly where lightweight materials are used.

"Tempos" To Go At Last

After years of debate, the General Services Administration and the National Parks Service will finally begin demolition of some of Washington's "tempos." Slated for removal within the next 18 months are a string of unsightly structures that have cluttered the south side of the Mall between the Lincoln Memorial and the Washington Monument for more than 20 years.

When the buildings have been removed—and old Washington hands don't really believe it, since there are still "temporary" buildings in use dating back to World War I—new drives and scenic roadways will be placed in the area.

FINANCIAL

Real puzzler for architects and others who watch the business aspects of the construction industry was a mixed bag of indicators that turned up in mid-March. Some were apparently warnings, others indicators of an improving situation. Net effect, however, was to impose a note of caution on forecasts for the construction season.

On the side of caution were these pointers: The Bureau of Public Roads' highway construction cost index showed a jump of 2.9 per cent for the fourth quarter of 1962, this getting within an uncomfortable two-point proximity of its all-time high in 1957. This index has a long history of very slight fluctuations; this the sizeable jump is being watched. Excavation costs—up 12 per cent in the quarter—were principal cause of the over-all rise.

A second point was the fact that prices for sale of FHA-insured new-home mortgages rose again in January, after a one-month levelling-off period in December—an indicator of continuing tight money.

And the Census Bureau's monthly reports on value of new construction put in place showed an 11 per cent drop in January (from its December level), to $4.3 billion. That's about the normal seasonal decline, but cause for a close watch.

On the optimistic side were these indicators:

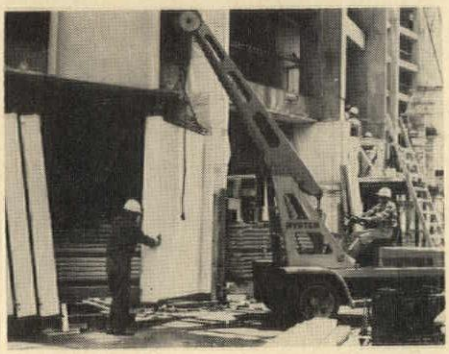
The Investment Bankers Association reported that voters had approved more than 70 per cent of all public works bond issues in December (a total of $265.4 million), continuing strong support of school construction, water and sewerage projects.

Planning for construction of privately owned industrial plants closed out 1962 with a strong upturn, and planning of public works projects was up. Housing seemed to be holding at about last year's levels.

There were some efforts in Congress, too, to ease the money markets. One measure (S 810) would set up a sort of "Fannie Mae" (Federal National Mortgage Association) to handle secondary paper on non-Federally-financed mortgages; another (S 829) would permit banks to invest in bond issues secured only by prospective revenues (as for toll bridges and other facilities)—but not by general revenues of a Governmental unit. They are barred from such investments at present.

Products to be Exhibited at AIA Convention

Featured in this month's P/A NEWS REPORT Products and Manufacturers' Data pages are selected new products and technical literature which will be shown in exhibitors' booths at the AIA Convention next month in Miami. P/A hopes in this way not only to alert architects who plan to attend the Convention to the new developments they may expect to encounter there, but also to give non-conventioneers an opportunity to see and send for product and data information they might otherwise miss.



Dylite for Wall Panels

Wall system made of precast-concrete panels designed by Deeter & Ritchey for University of Pittsburgh dormitories provides both interior and exterior finish with an insulating core of foam plastic board. Foam plastic board is molded from "Dylite" expandable polystyrene (which also is used for cold storage rooms, freezers and warehouses). Panels are 5" thick: 1½" Dylite foam board and 1¾" each for exterior and interior concrete facings. Steel wire reinforcing gives them high strength-to-weight ratio. Due to Dylite's low water absorption, no water barrier is required between insulation and concrete. Board is not brittle and can be molded or cut to any size or shape. Koppers Company, Inc., Plastic Division, Koppers Building, Pittsburgh 19, Pa.

On Free Data Card, Circle **100**

New Impenetrable Sealant

An impenetrable sealant has been developed on the West Coast. Features include simplicity of installation and no special cleaning of joint surfaces, resulting in substantially reduced labor costs and "in place" economies. When sealant is compressed, it constantly strives to return to its original shape and size. It does not require back or filler and can be applied under extreme climatic conditions. Pacific Sealants, 15430 Yukon Avenue, Hawthorne, California.

On Free Data Card, Circle **101**

New Telephone Booths

New all-glass telephone booths will be exhibited, together with cutaways of underfloor and cellular floor concealed telephone wiring for commercial buildings. Concealed facilities serving high-rise apartments will also be shown. American Telephone and Telegraph Company, 195 Broadway, New York 7, N.Y.

On Free Data Card, Circle **102**

Soundproof Operable Wall

An operable wall said to provide a better sound barrier than a fixed wall of 8″ concrete block has been placed on the market. Door is sealed horizontally with multiple separate contacts, and locked vertically with 5″ jamb travel. Panel-door is available in wide range of colors and textures, is easily operated, and requires low maintenance. New Castle Products, Inc., Box 353, New Castle, Indiana.

On Free Data Card, Circle **103**

Prefab Wall Surfacing System

Complete new prefab wall surfacing system is now available that includes laminate-faced panels, each 15⅞″ wide, 7/16″ thick, over-all, in lengths of 8′ and 10′, plus finished molding strips, and unique spline system that acts as securing and hidden-nail device. The wall system is easy to install, with minimum upkeep. Formica Corporation, 4614 Spring Grove, Cincinnati 32, Ohio.

On Free Data Card, Circle **104**

Slab Systems for Floors and Roofs

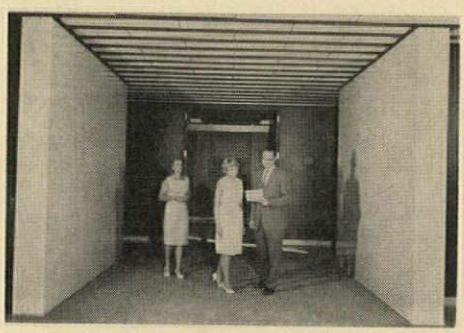
Two new precast floor-slab systems have been developed. The first consists of fire-resistant, 4″ x 24″, multiple-span, precast-concrete slabs, which have hollow-cell raceways for electrical and telephone wiring, and are designed for electrified floors and roofs. These hollow cells run the length of each slab and reduce weight to about 50 per cent of solid concrete slabs without sacrificing strength. Second system is a high-stress unit using high-tensile, seven-wire, stress-relieved strands to produce fully prestressed slabs, permitting longer clear spans and greater load-carrying capacity. Flexicore Manufacturers Association, 297 South High Street, Room 504, Columbus 15, Ohio.

On Free Data Card, Circle **105**

On Site Turbine Systems

Natural-gas turbine "On Site Energy Systems" are available that provide complete energy requirements, 60- and 420-cycle electrical power and steam or hot water for heating and air conditioning for a building or complex of buildings. The 60- and 420-cycle systems are directly generated. The 420-cycle power is generated for operating high-efficiency, high-frequency fluorescent lighting systems and high-speed motors. Operating features are modular construction permitting matching of power generated to load demand, paralleling controls, dual alternator, automatic controls, and exhaust heat recovery. Thompson Ramo Woolridge Inc., 23555 Euclid Avenue, Cleveland 17, Ohio.

On Free Data Card, Circle **106**



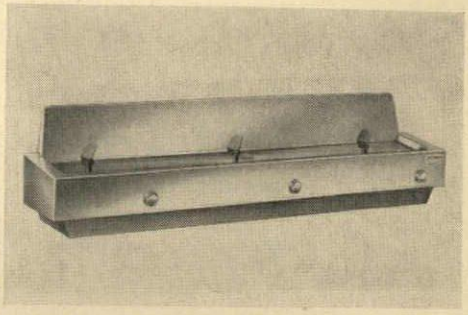
New Tile Colors

New series of glazed and unglazed color ceramic tiles for industrial and commercial structures and public buildings include a wide variety of types and textures. These can be combined in many ways to create various design patterns for floors, exterior and interior walls, etc. Stylon Corp., Milford, Mass.

On Free Data Card, Circle **107**

Wall Drinking Fountain

Recently developed is a new 18-gage, stainless-steel, multiple bubbler wall drinking fountain. Lower apron is electroplated steel with paint-grip finish for painting to match surrounding décor. Fountain has easy-action, push-button, slow-closing valves for each of the three bubblers. Fountain heads are



cast brass, hard-anodized to muted bronze color, permanent and abrasion-resistant. Bubblers are shielded, have raised angle stream, and are locked to receptor with vandal-proof lugs. Haws Drinking Faucet Co., Fourth and Page Streets, Berkeley 10, Calif.

On Free Data Card, Circle **108**

Resilient Flooring

Two new resilient floor coverings will be shown in Miami. First is a 6′-wide, ⅛″-gage, floor covering for hospitals, schools, offices, or other uses where a minimum of dirt-catching seams are desirable. Second one is ⅛″-gage, heavy-duty decorative linoleum floor covering for commercial and residential use. No permanent indentation remains from loads up to 200 psi. Congoleum-Nairn Inc., 666 Fifth Ave., New York 19, N.Y.

On Free Data Card, Circle **109**

Movable Plywood Walls

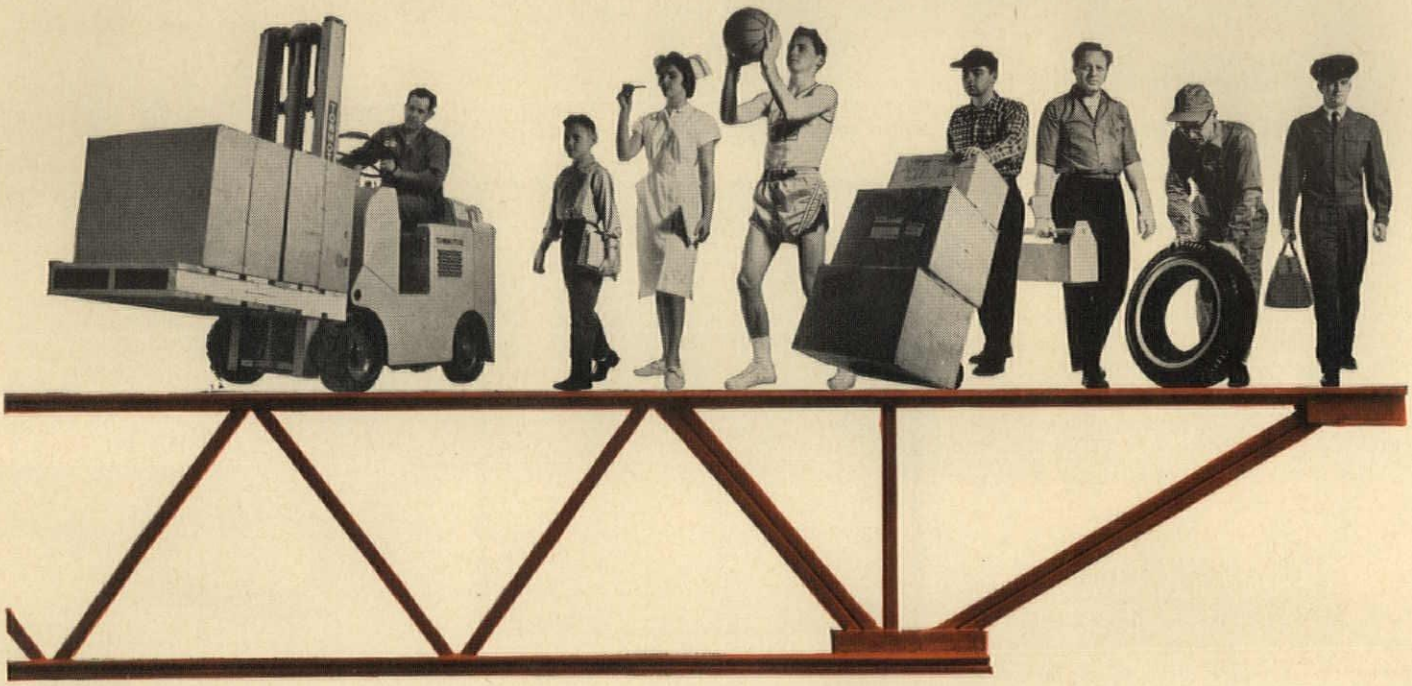
New movable plywood wall system has been developed in single modules to simplify initial installation and subsequent changes. Various face and core materials—from wood veneers on an incombustible core to solid gypsum board panels—are available. These walls meet requirements of most codes, including mandatory one-hour fire rating for walls in public corridors, elevator lobbies, and between tenants in multitenant floors. United States Plywood Corp., 55 West 44 St., New York 36, N.Y.

On Free Data Card, Circle **110**

Flashing Accessories

Metal water-stop with flexible neoprene bellows has been developed for expansion joints. Included with this flashing is a chloro-sulfonated polyethylene material for roof construction where white marble chip or aggregate is used. Another type is standard neoprene product with metal flashing on one side only. Flashed side is set into masonry, while neoprene side is cemented to neoprene sheet membrane

ALLSPANS®...GIVE YOU STRONGER SUPPORT UP TO 152 FEET



Warehouses, schools, hospitals, shopping centers, factories, supermarkets . . . these and many other types of buildings can be designed for *more open floor* space with Macomber ALLSPANS. □ ALLSPANS are available up to 152 feet in length in roof construction, giving you greater design flexibility and a more functional interior. ALLSPANS are nailable (patented V-Section) for fast decking. □ The result, in addition to a less cluttered design, is a considerable reduction in building costs. □ For details on our standardized pre-engineered products for the construction industry, write to us. We will mail you our design manuals on ALLSPANS and other Macomber products.

MACOMBER INCORPORATED

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SUBSIDIARY OF SHARON STEEL CORPORATION

Steel

in water-stop construction. Also to be exhibited at AIA Convention is new and heavier strip for improved bonding on long continuous runs. Lamont & Riley, Inc., 300 Cutoff, Worcester 7, Mass.

On Free Data Card, Circle **111**

Moisture-Resistant Roof Insulation

An incombustible, moisture-resistant roof insulation manufactured from perlite ore, a type of volcanic glass, is now available. This roof insulation offers resistance to water absorption, is adaptable to all roofing systems and roofing membranes, resists compression under foot and wheeling loads, and provides excellent bond to deck and roofing felts. The Celotex Corp., 120 S. LaSalle Street, Chicago 3, Ill.

On Free Data Card, Circle **112**

Prewired Ballast

New prewired ballast has been developed which converts old precast fixtures to modern quick starts. The ballast does not drip or leak tar, uses standard lamps, and saves 10 wiring connections. The case, core, and coil are permanently bonded into one solid unit, which is easily installed. Jefferson Electric Company, 25th Avenue and Madison, Bellwood, Illinois.

On Free Data Card, Circle **113**

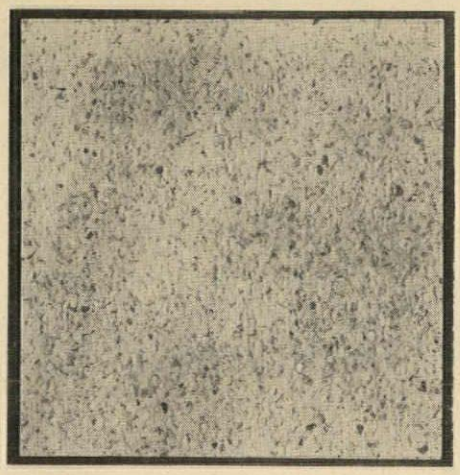
New Type Ceiling And Wall Paint

Synthetic cellulose wall and maintenance paint will not break, even at bends of 180 degrees, and is said to have lower fire rating than any other paint. One coat is equivalent to five coats of standard paint. Paint is odorless, dries overnight, and any paint contractor or experienced maintenance man can apply it. Paint is applied with spray gun, keeping labor cost low, and will bond to wood, cement, plaster, dry wall, cement-block, aluminum, steel, etc. Faserit of America, Inc., 6675 Biscayne Boulevard, Miami 38, Florida.

On Free Data Card, Circle **114**

New Floor Tile

"Pebbled Terrazzo," made with fine chips of marble encased in translucent vinyl, gives the appearance of a solid vinyl surface and has installation



advantages of vinyl asbestos backing. It is recommended for installation in residential and medium-traffic commercial areas. Product is grease-proof, stain- and alkali-resistant, and can be installed on, above, or below grade over concrete or wood surfaces. It is available in 9″ x 9″ or 12″ x 12″ sizes, ⅛″ gage, and in four colors. Azrock Floor Products, P.O. Box 531, San Antonio 6, Texas.

On Free Data Card, Circle **115**

Steel Prime Windows

Five types of steel prime windows made of hot-dipped, galvanized, tubular steel, and finished with factory-applied, baked-on epoxy enamel in 19 colors will be exhibited at the AIA Convention. Special features of the five types of windows include inside removable panels and inside glazing, and maximum ventilation, while retaining flexibility of customized interior and exterior castings. Rusco Industries, Inc., Box 387, Pendora, Ohio.

On Free Data Card, Circle **116**

Emergency Lighting Unit

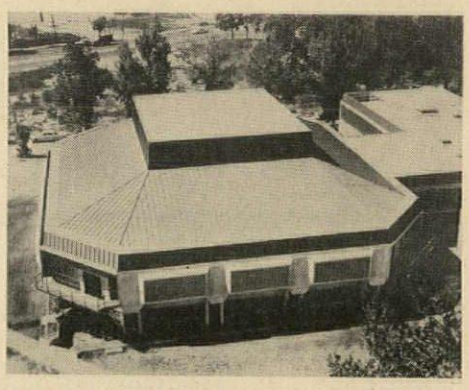
An emergency lighting unit that requires no addition of water throughout the life of its battery provides protection against hazards of power failure. Unit uses lead-acid storage battery that is completely maintenance-free, nonleaking, nongassing, and is sealed in a high-impact, heat-resistant plastic container. It operates instantaneously if normal power fails, and shuts itself off when power is restored. Exide Industrial Electric Storage Battery Company, Philadelphia 20, Pa.

On Free Data Card, Circle **117**

Automated Chute Systems

Recently introduced linen, rubbish, and dust chute equipment will be exhibited to point out to architects that linen collection in hospitals can now be automated by use of up-to-date chutes and conveyors. Wilkinson Chutes, Inc., 619 E. Tallmadge Ave., P.O. Box 3538, Akron 10, Ohio.

On Free Data Card, Circle **118**



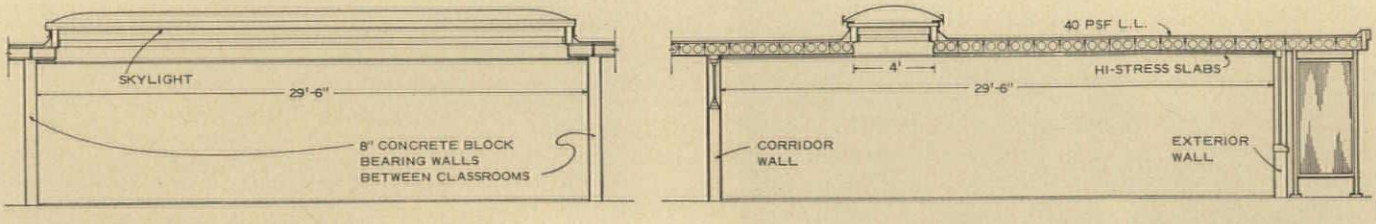
Metal Roofed Structures

Roofed structures made of an alloy of lead and tin on a base of sheet steel will be shown at AIA Convention. Roof metal is described as "superior to other roofing metals in economy, color-adherence, heat-reflection, permanence, workability, and low coefficient of expansion." Metal is produced in 50 linear ft seamless rolls for maximum design applicability and ease of installation. Follansbee Steel Corp., Follansbee, West Virginia.

On Free Data Card, Circle **119**

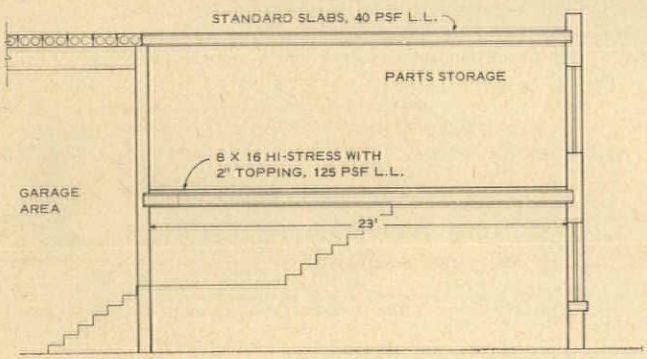
Insulating Methods

Three materials will be exhibited by Dow Chemical Company: (1) Styrocel large-cell foam, which has both light transmitting and insulating qualities; (2) a method of laying up Styrofoam and gypsum wallboard in masonry construction without need for nails or bracing by using a high initial tack adhesive; (3) and a method of providing quality insulated roofs at competitive costs by slightly altering the method of application. After Styrofoam is laid over the deck, a coated base sheet is placed, dry,

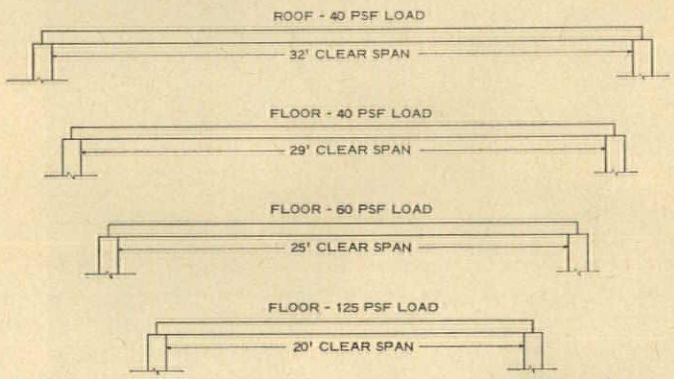


SCHOOL WITH CLASSROOM SKYLIGHTS. Flexicore Hi-Stress slabs with two 7/16" stress-relieved strands clear span the 29'-6" width of the rooms, are designed to carry 40 psf roof load. Four slabs, two on each side of skylight, have three 3/8" strands to carry the extra load of the skylight.

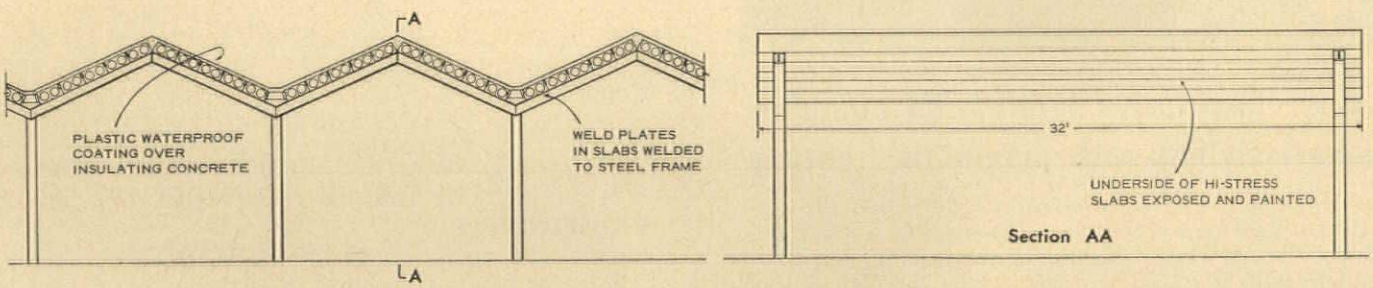
New Hi-Stress Flexicore Slabs Combine Longer Spans, Greater Loads, Improved Structural Performance



PARTS DEPARTMENT FLOOR in garage was designed for 125 psf superimposed load. Two inches of concrete topping on Hi-Stress floor gave a composite design to adequately handle this load on the 23' clear span. Standard Flexicore slabs were used on the roof.



TYPICAL LOAD AND SPAN combinations for 8 x 16 Hi-Stress Flexicore slabs. Superimposed loads shown may be increased with composite design.



ONE-STORY COMMERCIAL BUILDING ROOF DESIGN requires only a steel frame on each side of the building to carry 8-inch Hi-Stress units on long clear span. Design can be repeated in any direction for larger building. Underside of slabs was exposed for neat, maintenance-free ceiling.

Floor or roof slabs erected quickly

New 8" x 16" Hi-Stress units are fully prestressed slabs (f_{si} 175,000 psi) cast in steel forms, with stress-relieved strands tensioned before concrete is poured. Appearance is similar to standard Flexicore slabs which use pretensioned intermediate grade steel bars.

For more information on these projects, ask for Hi-Stress Flexicore Facts 2, 4 & 5. Write The Flexicore Co., Inc., Dayton, Ohio, the Flexicore Manufacturers Assn., 297 S. High St., Columbus 15, Ohio or look under "Flexicore" in the white pages of your telephone book.

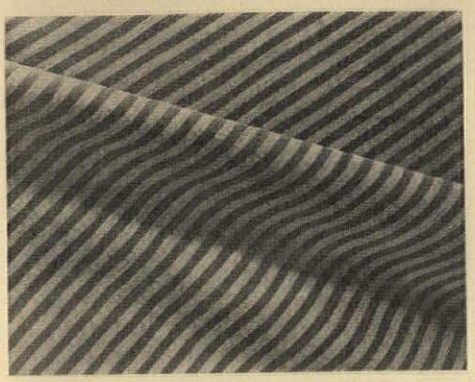
flexicore®
PRECAST CONCRETE DECKS

coated side down; subsequent hot moppings bring about a firm bond. Dow Chemical Company, Midland, Michigan.

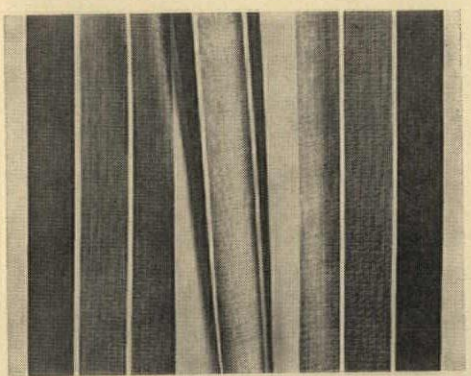
On Free Data Card, Circle **120**

Knoll Adds Stripes

Several fabrics in the Knoll collection are now available in stripes; colors coordinate with the original solid-color



materials. Bangkok Stripe (*top*) comes in fiery red-and-orange combination, cool blue-and-green, and handsome gold-and-copper combinations. Nylon Homespun is available in stripes of black-olive and royal-fire. "Linea" (*bottom*), a stripe pattern printed on



Belgian linen, varies a combination of three colors and white so that there is no repeat. Two fabrics illustrated designed by Suzanne Huguenin. Knoll Associates, 320 Park Ave., New York 22, N.Y.

On Free Data Card, Circle **121**

Hardy Floor Tile

New vinyl asbestos floor tile with nondirectional pattern penetrating from top to bottom is designed for commercial use where heavy wear and tear could mar surface of ordinary tile. Tile is 9″ x 9″, ⅛″ thick, and is available in 11 colors. B. F. Goodrich Company, 800 Second Avenue, New York 17, N.Y.

On Free Data Card, Circle **122**

Porcelain-Enameled Door

Recently developed is a neatly-designed, porcelain-enameled standard steel door. Flexibility of door in size, color, design, and type makes it ideal for garden apartments, office buildings, schools, homes, and institutions. Steelcraft Manufacturing Company, 9017 Blue Ash Rd., Cincinnati 42, Ohio.

On Free Data Card, Circle **123**

(End of AIA Products Section)

★ ★ ★

New Look for Security Grilles

Nighttime metal security grilles, ordinarily a less-than-satisfactory item aesthetically, have finally received some attention in this area. This installation is on a shop by Architect S. Corman Blumenthal at Randhurst Shopping Center near Chicago. Designed and fabricated by Morris Kurtzon, Inc., the grilles are of gold-anodized aluminum and are 12′ high and 5′ wide (each) when closed. This particular design swings back to form two sides of the entryway during the day; others allow the grille to fold into a slot, disappearing and reducing to a width of 1′ to 2′. They are sold only on architectural specification and basically on a custom-designed plan. Morris Kurtzon, Inc., 1420 S. Talman Ave., Chicago 8, Ill.

On Free Data Card, Circle **124**

Long-Lasting Coating for Variety of Materials

New polyurethane-based "Bostik Architectural Coating" gives superior protection to a wide range of materials: concrete of all types, masonry, cement-asbestos board, hardboard, and plywood. As shown here, it covers all

exposed-concrete surfaces of Newton Savings Bank, Newton, Mass., designed by Bastille Halsey Associates, Architects. The coating is applied with a special three-nozzle gun: center nozzle emits a stream of dry aggregate (sand, stone chips, or gravel), while the flanking nozzles direct a spray of the polyurethane solution into the aggregate. Mixed in midair, the conglomerate cures to a durable, tough film. Among performance characteristics of the coating are its excellent resistance to weather, its "breathability" (ability to transmit moisture vapor out through the material from within a building), and its retention of original appearance and uniformity. Service life is expected to be ten years. Finish is applicable to interior or exterior surfaces, new or existing. Texture may be varied from fine to

coarse, and a wide variety of colors is available. B. B. Chemical Div., United Shoe Machinery Corp., 784 Memorial Drive, Cambridge, Mass.

On Free Data Card, Circle **125**

Pole System for Desk/Partition Units

To accommodate additional staff members under existing leasing conditions, a combination pole, movable-partition, and desk unit has been introduced in the recently renovated IBM Chicago West Branch Office. More people can be comfortably accommodated within a given area. This unit costs less than individual desks, chairs, and two drawer units. Free-standing pole units are double channels carrying both phone and power lines through overhead feed. Desk unit is 6′ on pole center. Counter is steel sandwich panel surfaced with laminated plastic showing no recognizable deflection, with 200 lb weight applied at center of span. Special chair by Herman Miller has 180° of action and center-spring homing device. Detroit Partition Company, 15850 Wyoming St., Detroit, Michigan.

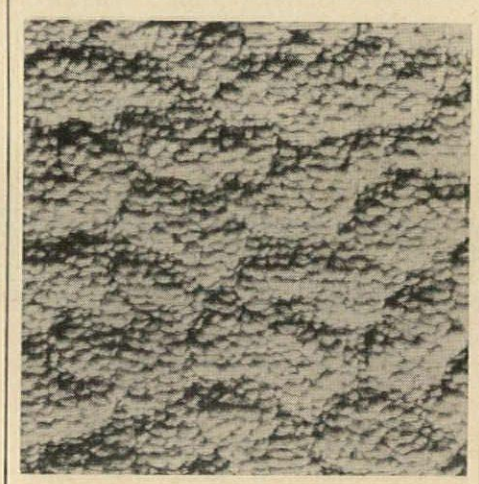
On Free Data Card, Circle **126**

Competitive Sliding Door of Stainless Steel

First production sliding glass door manufactured of stainless steel is the culmination of a joint venture by the Jones & Laughlin Steel Corp. (Stainless & Strip Div.), Western Mouldings Inc., and Carmel Steel Products. At a cost that "compares favorably" with that of a painted carbon-steel door or a heavy-duty aluminum door, the new Carmel door has a number of quality features. Its 300-series austenitic stainless steel is highly resistant to

corrosion, which is an especially crucial factor in coastal areas. The first completely watertight door of its kind on the market, it utilizes mohair woolpile weatherstripping. Glazing is secured against shock and possible leakage by wrap-around vinyl gaskets vulcanized at the corners. Door is designed for standard heights from 6′-10″ to 10′-0″; finish is soft and nonreflective. Carmel Steel Products, 9738 E. Firestone Blvd., Downey, Calif.

On Free Data Card, Circle **127**



Tufted, Wilton Carpets

"Timely," the tufted carpet illustrated, is one of six new carpet designs introduced by Downs Carpet Co. Made of DuPont continuous filament nylon, Timely has a textured effect and is available in 16 colors. One other carpet of the group is of tufted design; the other four are all-wool jacquard wilton carpets. Each of the wilton patterns is available in five to ten colors. Retail prices range from $8 to $22 per sq. yd. Downs Carpet Co., Inc., A Street and Indiana Ave., Philadelphia 34, Pa.

On Free Data Card, Circle **128**

Special Framing for Dulles

Unique glass-framing had to be specified for the areas between the great swooping columns of Eero Saarinen's Dulles International Airport. The system evolved used 33 different types of hollow, semihollow, and solid aluminum extruded shapes by Revere Copper & Brass, Inc. The mullions were kept to a very thin line, so as not to interrupt the glass flow between panels. A special alloy permitted superior application of the gun-metal-color porcelain enamel with which the mullions are finished. A single area between

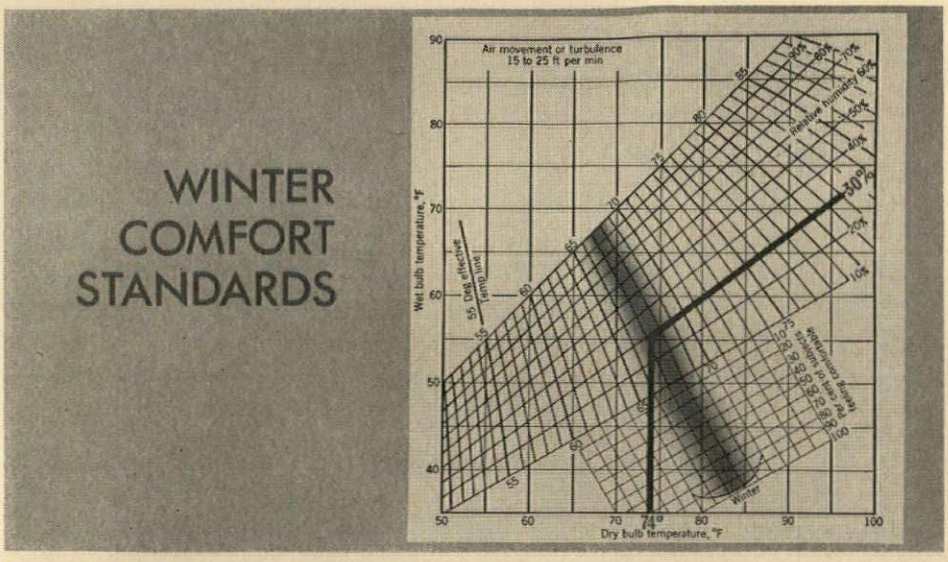
columns in the terminal is approximately 40′ wide by 50′ high. Neoprene gaskets seal the joints between the mullions and the ½″ plate glass and the steel framework. Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N.Y.

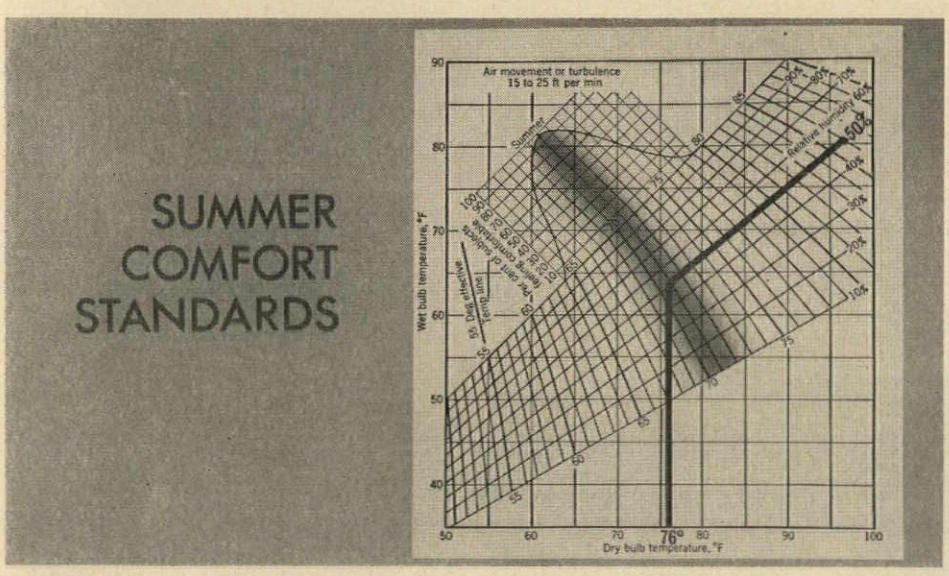
On Free Data Card, Circle **129**

Developer-Printer Units for Wall Mounting

New diazo print developer called "Rotolite Thermomatic" features a heated roller that increases the action of the ammonia developer and produces for first time on low-cost whiteprinters completed development on black line prints and sepias. Thermomatic prints up to 42″ wide and at a rate of 48″ per minute, which is 10 times faster than tube method of developing. Weighing 30 lb, the developer is designed for wall mounting as well as for use on desks. Along with the Thermomatic is the "Rotolite Expeediter Diazo Whiteprinter," which produces anything printed, written, or drawn on truslucent materials. The Expeediter also mounts on the wall. All copies, including first prints cost about 1¢ for letter size or 1½¢ per sq ft. Sizes range according to models. Rotolite Sales Corporation, Stirling, New Jersey.

On Free Data Card, Circle **130**





HEATING-COOLING DESIGN PRIMER

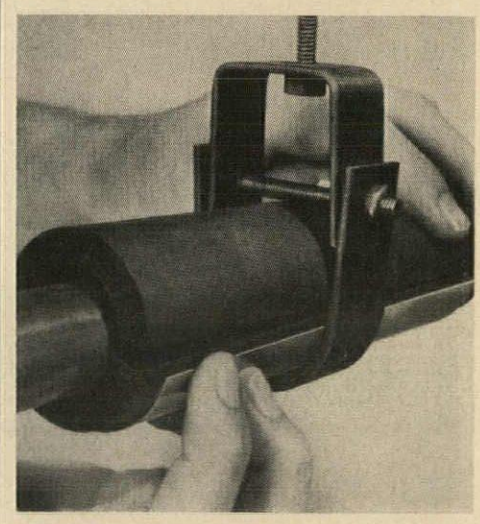
With the need for a more explicit approach to the problems of heating and cooling control in building design, a 65-page technical primer entitled "The Economics of Sensible Heat Control" has been published by the Owens-Corning Fiberglas Corporation. The chief purpose of the booklet is to make the architectural profession cognizant of the problems of air-conditioning, and to show how the application of the basic principles of thermal performance can reduce initial costs and also effect long-range operational savings for the building owner.

Previous to the preparation of the booklet, calculation charts were devised by Owens-Corning to enable the architect to create the best possible design solution in relation to building shell cost and air-conditioning. Following the compilation of this information, David W. MacCurdy was engaged as a consultant to enlarge the scope of the project. MacCurdy decided to include further information on the fundamentals of heat flow through the building shell, a discussion on the problems of heat gain and heat loss, and a systematic method of evaluating these factors as they applied to the initial and annual costs of air-conditioning systems.

The study is divided into two parts: Part I deals with theory of heating, and Part II with economic factors related to the thermal performance of the building shell. There are discussions on the use of glass, the effects of the opaque-to-glass ratio of the walls on the air-conditioning tonnage, the best possible location for occupancy in areas requiring maximum amounts of daylight, and whether interior or exterior shading devices should be used. The booklet contains 60 illustrations that clarify the formulas discussed and that demonstrate the economic factors involved. The booklet also contains a bibliography of over 100 references including the American Society of Heating, Refrigerating and Air-Conditioning Engineers Guide and Data Book as well as numerous articles written over the last 10 years. In this manner, the people responsible for the booklet hope to provide the architectural profession and students of architecture with simplified techniques for establishing better design criteria earlier.

The sponsors hope that this project will create a better relationship between economics and technology, and architects and engineers, as well as afford the owner a better-designed air-conditioned building at a lower cost.

Booklet is available free of charge to persons having a legitimate interest in this subject. Requests should be made for Pub. No. 5 — IN — 2460 (P/A) on office letterhead and addressed to: David W. MacCurdy, Owens-Corning Fiberglas Corp., 717 Fifth Avenue, New York 22, N.Y.

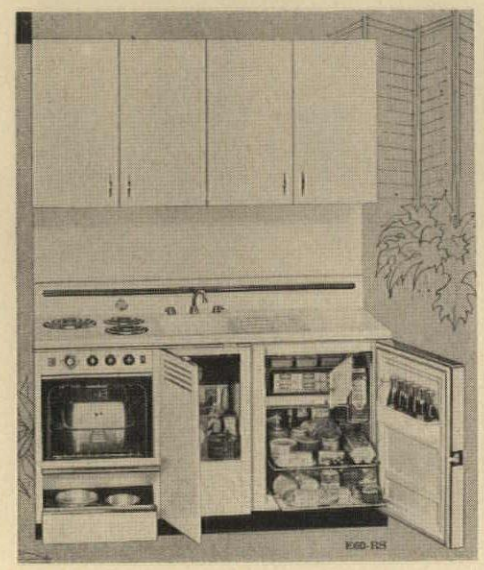


Insulation for Mechanical Systems

A guide book on insulating the piping and equipment of nine basic types of air-conditioning and refrigeration systems has been published by Armstrong's Insulation Div. The 28-page book describes the operation of the various mechanical systems and discusses the proper insulation to prevent excessive heat loss or gain and to stop condensation and frost. Among the Armstrong insulating materials are "Armaflex" pipe covering, a flexible foamed plastic with smooth black surface; rigid Armflex for use at pipe hangers or wherever compression may be encountered; ventilating acoustical ceilings in tile and panel form, which let air into a conditioned area through thousands of small perforations; and "Armaglas" jacketed duct. Insulation Div., Armstrong Cork Co., Lancaster, Pa.

On Free Data Card, Circle **200**

Data To Be Available At AIA Convention



Specially Designed Kitchen Units

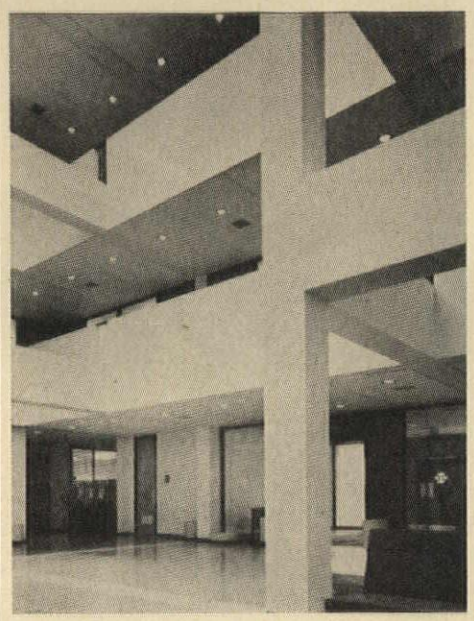
Specially designed kitchen units are described in 19-page booklet. Different types of electric and gas ranges, ovens, electric refrigerators, deep bowl sink, faucet units, and upper cabinets are discussed. Included are color illustrations, details, and specifications. Dwyer Products Corp., Calumet St., Michigan City, Indiana.

On Free Data Card, Circle **201**

Bath Enclosures

Bath enclosures are described and illustrated in a brochure featuring layouts to suit all installation possibilities, hinged doors, by-pass doors and fixed panels, optional tubular towel bars or grille work above doors and wide range of glazing available. including tempered and wire glass. Daryl Products, 7240 N.E. 4th Avenue, Miami 38, Florida.

On Free Data Card, Circle **202**



Acoustical, Ventilating Ceiling Board and Tile

Illustrated, 42-page catalog of new ceiling products by The Wood Conversion Company includes its new "Lo-Tone" mineral, acoustical, ventilating ceiling board and tile. Included is an introduction pointing out the three major problems of modern sound control; applications and methods; details; specifications; charts; and technical data. Wood Conversion Co., First National Bank Building, St. Paul 1, Minn.

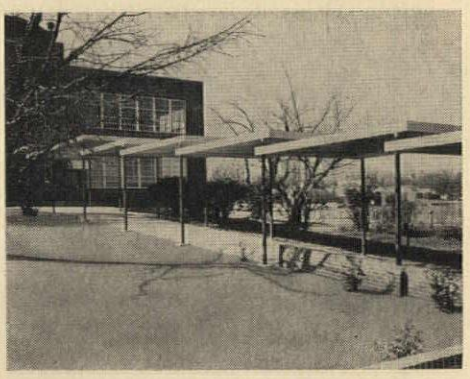
On Free Data Card, Circle **203**

Flat Glass Line

Six illustrated booklets describe plate, sheet, patterned, and special glasses. Booklets describe characteristics, specifications, heat and light transmission, and applications. Plate glass folder lists recommended wind loads. Sheet glass brochure covers single and double-strength window glass and heavy sheet glass. Patterned glass booklet contains photos and data on 24 designs including information on heat-absorbing, glare-reducing, tempered, and wired products. Spandrel-glass folder shows color samples and design requirements. Laminated-glass

folder includes specifications for clear, tinted, opaque white, and sound-reducing glass. Special glass products booklet describes chemical and mechanical treatments used to change appearance and properties of almost any glass. American-Saint Gobain Corp., P. O. Box 929, Kingsport, Tenn.

On Free Data Card, Circle **204**



Protective Roof Systems

An illustrated folder has just been published to show a new H/D Portiko line of building marquees, walkway covers, entrance shelters, store-front sunshades, loading-platform roofs, and parking-lot canopies. Bridgeport Brass Co., 30 Grand Street, Bridgeport 2, Connecticut.

On Free Data Card, Circle **205**

New Patterns in Plastic

New moire and stipple patterns in acrylic plastic are shown in illustrated folder. Patterns cover a wide range of size specifications and are used for partition and window glazing, pool enclosures, shower doors, decorative lighting, skylighting, patio covers,

Continued on page 106

JOHNS-MANVILLE ANNOUNCES **LAST-O-ROOF**... *THE NEWEST DEVELOPMENT IN MEMBRANE ROOFING*

CHAMBER OF COMMERCE BUILDING, SAN CLEMENTE, CALIF. ARCHITECTS: CHRIS ABEL AND ASSOCIATES.

Now, you can design a "skin-tight" roof in any configuration, any slope, and in white or colors... with new **LAST-O-ROOF!**

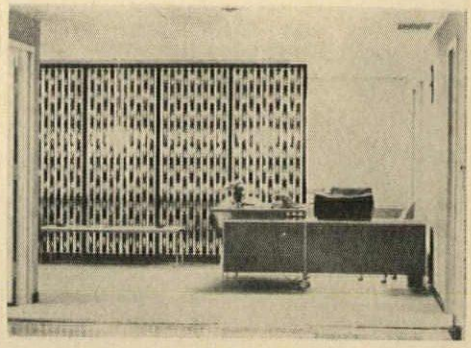
Here's the newest development in a roof that conforms to any configuration or slope of the most imaginative roof design . . . and in color, too! New Johns-Manville LAST-O-ROOF is a *one-ply* plastic elastomer roof designed for one-step cold application . . . a roof that gives monolithic protection and lasts for years.

LAST-O-ROOF is light in weight,

Continued from page 103
balcony glazing, cabinet doors and wind screens. Rohm & Haas, Washington Square, Philadelphia 5, Pa.
On Free Data Card, Circle **206**

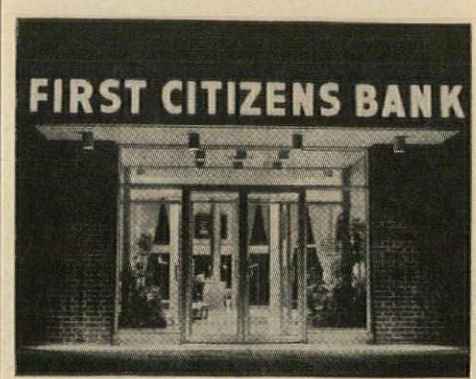
Structural Wood Fasteners

New 12-page illustrated catalog points out an entire line of structural wood fasteners. The catalog contains complete and detailed information on material specifications, sizes, safe anchors, joist hangers, split rings, shear plates, truss plates, floor bridging, plywood supports, post caps, angles, toothed rings, spike grids, clamping plates, and grooving tools. Special attention is paid to new-type rafter anchors and connectors for cantilevered floor framing. A valuable reference for wood fastener specs. Timber Engineering Company, 1619 Massachusetts Avenue, N.W., Washington 6, D.C.
On Free Data Card, Circle **207**



Architectural Metal Work

Two brochures describe aluminum sculptured modulants and screens, bronze tablets, special cast letters, various types of church metal work, grilles, and architectural sculpture. Included are photographs, specifications, and installation procedures. Armento Architectural Arts, P.O. Box 474, Buffalo 5, New York.
On Free Data Card, Circle **208**



Aluminum Curtain Walls, Doors, and Windows

Four-page brochure shows various types of aluminum extrusions, curtain-wall and panel units, doors, frames, and preconstructed store fronts. Included are illustrations and details. Façade, Inc., P.O. Box 30218, Dallas 30, Texas.
On Free Data Card, Circle **209**

New Color Patterns for Laminates

Grouping of 28 solid colors and an open design library of 28 silkscreen patterns, available in any Formica color or woodgrain combination for background or overprint, are to be exhibited at AIA Convention. New series provides specifiers with wide range of solid-color shades and tones to meet current design resurgence of bright accent colors and brings ready-stocked silkscreen motifs to specifiers seeking distinctive décor touches with lami-

Prudential takes out "insurance" against vibration . . . with lead

Main-line railroad trains create vibration adjacent to the new 52-story office building now being erected in Boston by The Prudential Insurance Company of America. That vibration, however, never reaches the pleasant plazas surrounding the building. Where the plaza floor slabs rest on their supporting walls, they are bedded on a double layer of one-inch lead pads. These pads (cut section shown below) are a laminate of lead, asbestos, and steel sealed in lead sheathing. They stop vibration in its track.

Other modern buildings which muffle subway, railroad, or highway vibration with lead pads include the Pan Am Building, the Waldorf-Astoria Hotel, and many, many others.

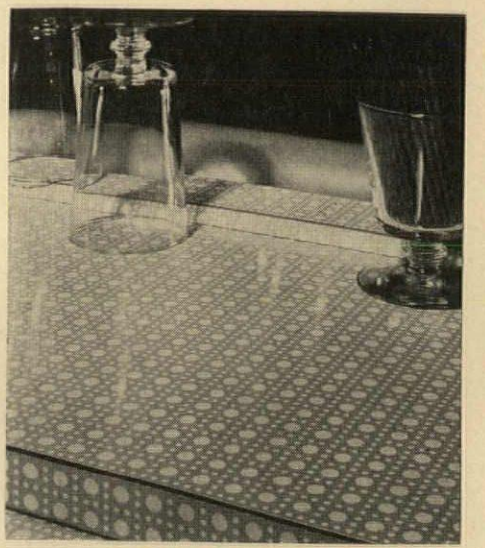
Look into lead whenever you have a problem from heavy machinery, cooling towers, or any other source of severe vibration. For complete technical information relating to your area of interest, write today. Lead Industries Association, Inc., Department N-4, 292 Madison Avenue, New York 17, N. Y. 3828

Charles Luckman, Architect
Hoyle, Doran & Berry, Associate Architect
Perini-Walsh, General Contractor
Metcalf & Eddy, Foundations
Edwards & Hjorth, Structural Engineers
Syska & Hennessey, Mechanical Engineers
Knapp Mills Inc., Pads

LEAD INDUSTRIES ASSOCIATION, INC.
292 Madison Avenue, New York 17, N. Y.

Look Ahead with Lead

For more information, turn to Reader Service card, circle No. 332



nates. Formica Corporation, 4614 Spring Grove Avenue, Cincinnati 32, Ohio.

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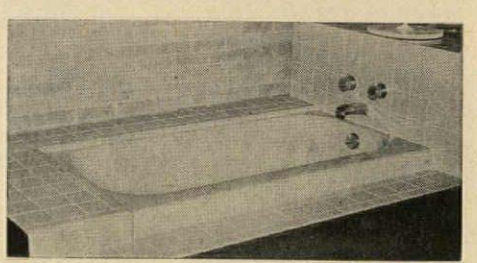

Sunken Baths

Three "Roman" sunken baths are illustrated in a color folder. All three baths are porcelain-enameled cast iron, come in eight colors including white, and are available in either right- or left-hand models. Crane Co., P.O. Box 780, Johnstown, Pa.

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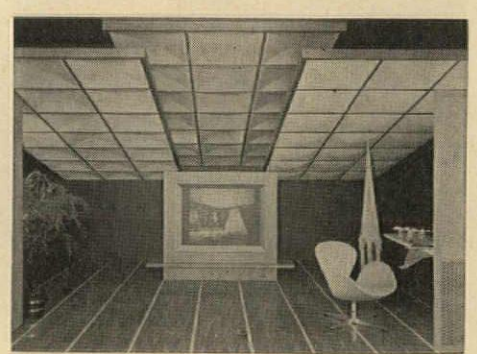
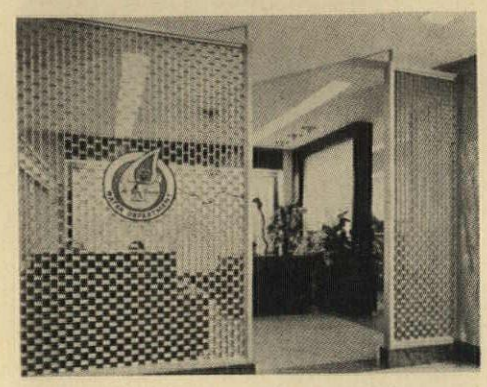


New Acoustical Panels

Acoustical, three-dimensional panels are described in four-page brochure. Two new panels—a textured vault and an inverted vault—have a painted surface that costs only one half of the original panel's facing of glass-fiber fabric. All three panels are acousti-

cally efficient, flame-resistant, and easy to install. Lay-in panels are 24"x24" and supported by suspended grid system. Johns-Manville, 22 East 40 St., New York 16, New York.

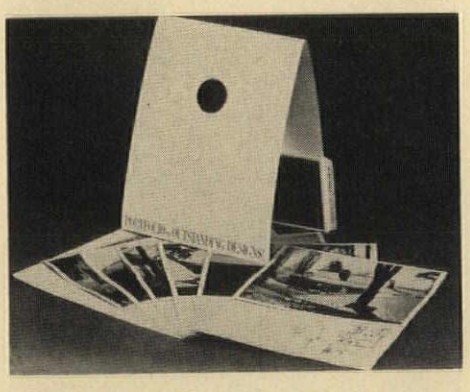
On Free Data Card, Circle 212



Aluminum Screen Systems

Architectural aluminum components for decorating, solar screening, and modernization are introduced in 12-page catalog that includes illustrations, details, and specifications. Modular interlocking, vertical stack, and vertical-T systems are also explained. Architectural Manufacturing Company of America, P.O. Box 20202, Station N, Atlanta 25, Georgia.

On Free Data Card, Circle 213



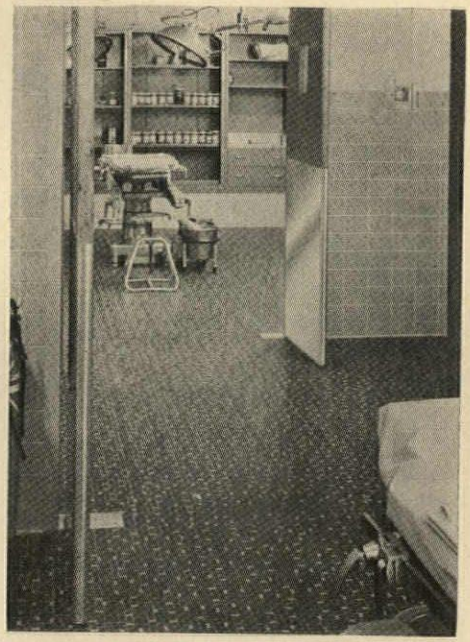
Red Cedar Shingle Data

Work of 12 talented architects using red cedar shingles is presented in a booklet entitled "Portfolio of Outstanding Designs." Designs include residential, apartment, and church structures. Red Cedar Shingle News Bureau, 300 Joseph Vance Building, Seattle 1, Washington.

On Free Data Card, Circle 214

Ceramic Tile

An illustrated, 35-page booklet on ceramic tile is available, which includes information on large-size glazed, crystalline, scored, and decora-



tive tile. Booklet also contains color charts, specifications, bathroom accessories, and structural details. America Olean Tile Co., 1000 Cannon Avenue, Lansdale, Penna.

On Free Data Card, Circle 215

Properties of Acrilan Carpeting

Unique properties of acrylic carpeting are explained in an 8-page booklet illustrated in color. Acrylic carpeting, a man-made chemical textile fiber, reduces noise, offers lower maintenance costs than hard wood floors, resists matting and crushing, and does not absorb water or stains because of its hydrophobic properties. It is mothproof, vermin-proof, and nonallergenic, as well as color fast and fade-resistant, easily washable, and quick-drying. Chemstrand Co., 350 Fifth Avenue, New York 1, New York.

On Free Data Card, Circle 216

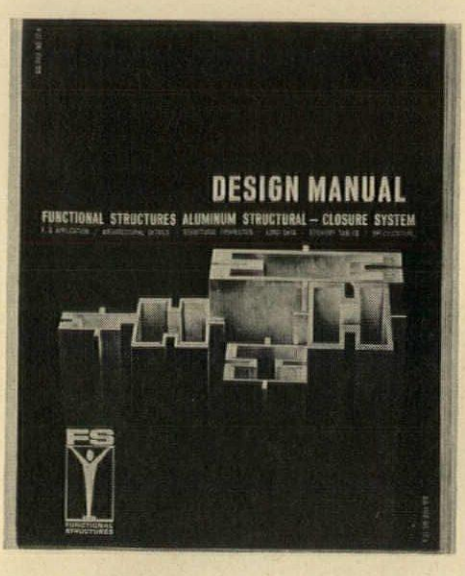
(End of AIA Data Listing)

★ ★ ★

CONSTRUCTION

Aluminum Systems

Design Manual, 26 pages, shows application of the F/S line of aluminum structural-closure systems. Included are architectural details, structural properties, load data, cost tables, and specs. With these load-bearing vertical elements and closure framing, no additional closure framing or curtain wall is required. Standard roof and floor beams are connected directly to the frame units. This structure car-

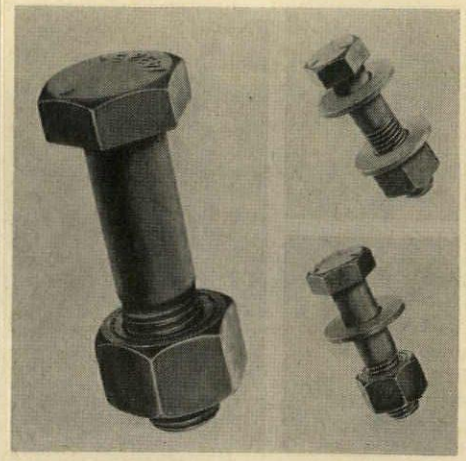


ries all vertical loads plus horizontal wind loads. Glazing, operating sash, doors, and any paneling are installed directly into the frames. Functional Structures, Inc., 478 Northwest Highway, Des Plaines, Ill.

On Free Data Card, Circle **217**

High-Strength Bolts

New 16-page publication, *Specifications for Structural Joints Using ASTM A325 Bolts*, adopted by the Research Council on Riveted and Bolted Structural Joints, is available from IFI. These Specifications were first issued in 1951, and most recently revised in 1960. Major revision of the new 1962 edition is that hardened



washers can be eliminated when tightening is by the turn-of-nut method, and when using heavy hex structural bolts in combination with heavy hex nuts. Two new economies result: cost of washers is eliminated, and shorter bolts can be used to connect the same thickness of material. Industrial Fasteners Institute, 1517 Terminal Tower, Cleveland 13, Ohio.

On Free Data Card, Circle **218**

FINISHERS/PROTECTORS

Protective Coatings

New 8-page catalog illustrates and describes 31 different construction and maintenance products. Included are a cold-glazed cement wall surfacing, epoxy systems for waterproofing, a sprayed-on vinyl covering, and coatings for wet or dry masonry surfaces and for previously painted surfaces. There are also Preco coatings for transparent, solid-color, multicolor, or

textured finishes for interior or exterior use. Bulletin further describes floor surfacing products, concrete and mortar admixtures, bonding agents for applying new concrete floor toppings or thin-set terrazzo, and caulking sealants. Preco Chemical Corp., 589 Main St., Westbury, Long Island, N.Y.

On Free Data Card, Circle **219**

Aluminum Coating Supplements Anodizing

Folder describes new "Protectalume" coating for aluminum that is not designed to replace anodizing but to supplement it by increasing the number of years when aluminum surfaces will have a "brand new" look. The material is a water-clear plastic that can be applied by brush, dip, or spray, at a cost of less than 1¢/sq ft. The tough coating protects exterior aluminum surfaces against pitting, corrosion, seacoast salt-spray, humidity, ultraviolet rays, etc., for a minimum of two years; inland and nonindustrial areas can anticipate five or more years of protection. Protectalume is also recommended for bronze, chromium, and stainless steel, on new or existing installations. O'Keeffe's, Inc., 75 Williams Ave., San Francisco 24, Calif.

On Free Data Card, Circle **220**

INSULATION

3-D Acoustical Ceiling

"Acousti-Shell" three-dimensional acoustical panel, which was introduced last year by J-M, is now available in two new forms—a textured vault and an inverted vault. The original panel has a facing of glass-fiber fabric; the new styles, as shown in 4-page brochure, come with a painted surface, at approximately one-half the cost. All three types are acoustically efficient, flame-resistant, and easy to install. The lay-in panels, 24" x 24", are supported by a suspended-grid system. Johns-Manville, 22 E. 40 St., New York 16, N.Y.

On Free Data Card, Circle **221**

Troffer Selection

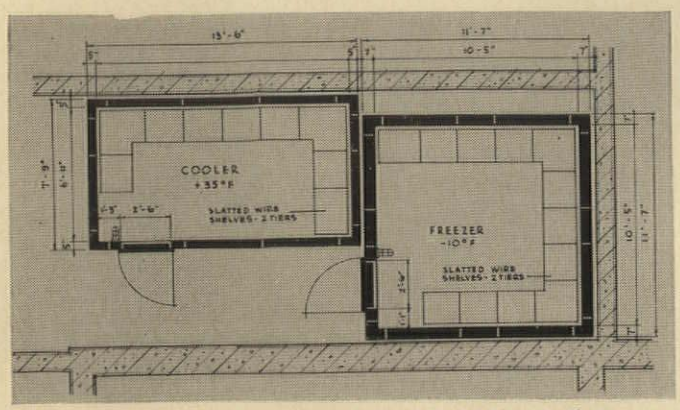
New 32-page *Troffer Lighting* from Lighting Products Inc. features a fold-out cover that shows the five types of LPI fixtures—snap-in, hook-on, and flu and easy selection of th This information is a when referring to more on inside pages. With system, it is a simple ma the LPI troffer that gives combination of width, leng of lamps, and diffuser typ of 108 mechanical-ceiling s 21 roof-deck systems now in Lighting Products Inc., Park, Ill.

On Free Data Card, Circle

SPECIAL EQUIPME

Snow Melting

Steel Pipe Snow Melting and Ice moval Systems is an informative page booklet on the efficiency economy of underground heating s tems. Many basic questions answered about snow-melting syste as used in driveways, sidewalks, loa ing docks, parking areas, and malls Design tables, suggested layouts, an installation recommendations are pro vided. Committee of Steel Pipe Pro ducers, American Iron and Steel In-



Plan view of two Walk-Ins, one a normal temperature and the other a low temperature, installed at **Dobyns-Bennett High School,** Kingsport, Tennessee.

Specifications prepared by **Mr. Larry J. Poole, Architect,** 214 Commerce Street, Kingsport, Tennessee.

Bally pre-fab walk-ins

all-metal coolers and freezers

World's most advanced design. New materials and construction techniques offer architects an opportunity to provide tremendous refrigeration advantages to their clients.

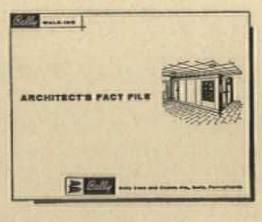
Urethane 4" thick (foamed-in-place) has insulating value equal to 8½" fibreglass. Standard models can be used as freezers with temperatures as low as minus 40° F. Urethane has 97% closed cells . . . cannot absorb moisture . . . ideal for outdoor use.

Speed-Lok Fastener designed and patented by Bally for exclusive use on Bally Walk-Ins. Makes assembly accurate and fast . . . easy to add sections any time to increase size . . . equally easy to disassemble for relocation.

New foamed door, so light in weight it ends forever the "hard pull" . . . the "big push". Door is equipped with new type hand lock (with inside safety release) and convenient foot treadle for easy opening. Also has special hinges that close door automatically. Magnetic gasket guarantees tight seal.

Self-contained refrigeration systems combine balanced capacity condensing units and refrigeration coils. Mounted and hermetically sealed with necessary controls on small wall panel. Simplifies installation. Four-hour factory test assures quiet, efficient, trouble-free operation.

Write for Free Architect's Fact File which includes 12-page brochure . . . Specification Guide . . . and sample of urethane wall construction.



See Sweet's File, Section 25a/Ba

Bally

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Lighting News

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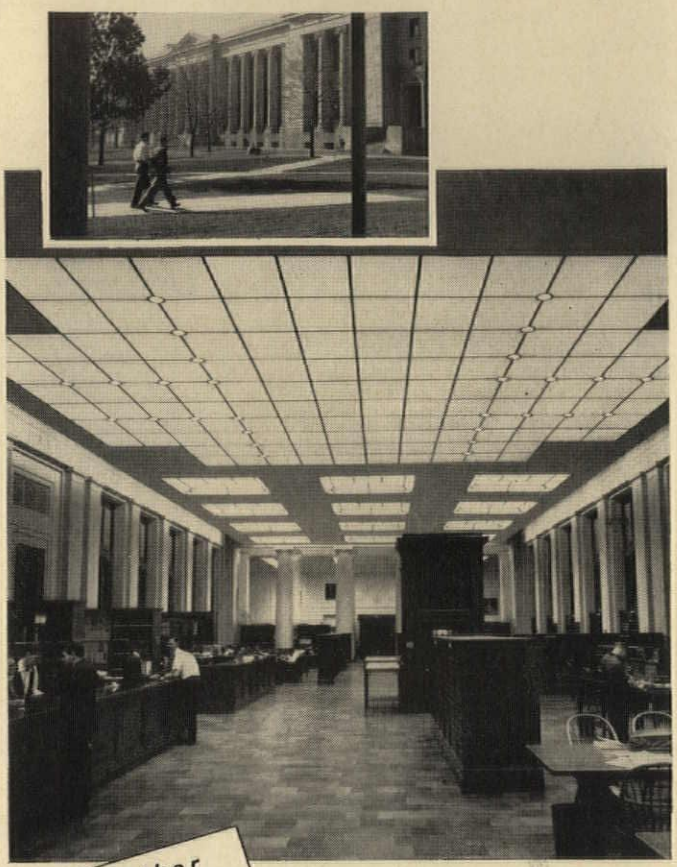

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stitute, 633 Third Ave., New York 17, N.Y.

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Sun Control and Privacy Control

Literature from Tropicraft includes a 4-page folder on their "Woven Wood" products for sun control and privacy control, and a 26-page price list and specifications guide. Uses suggested in the folder are draperies, window shades, folding doors and movable walls, floor screens, canopies, and awnings. Weft materials are aluminum or wood (Philippine mahogany, fruitwood, walnut, fir, pine, and bamboo); warp materials are chenilles, cottons, nylons, and metallics. Different materials make visual interest. Among the lines are a moderate-priced group of machine-loomed stock designs and a handwoven collection of stock and custom designs. Tropicraft of San Francisco, 568 Howard St., San Francisco 5, Calif.

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Fire Protection

Fire Protection Equipment for All Types of Buildings, 26 pages, features a fold-out specifications flap that simplifies selection of the appropriate type of cabinet and refers the reader to pages containing complete data. Cabinets have various combinations of hose rack, hose up to 100' in length, fire department connection, fire extinguisher, and other equipment. Elkhart Brass Manufacturing Co., Inc., Elkhart, Ind.

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an inside story about the birth of an idea by Bradley Washfountain

cheaper by the half dozen

A revolution is underway in modern shower-room planning, and Bradley Column Showers are at the forefront. Why? Because Bradley Columns started the entire swing to *group* showers, proving they could serve up to six people at one time with only *one* set of plumbing connections — saving valuable space and cutting installation costs as much as 80%! Bradley Columns caught on fast because they also provided more design freedom; increased traffic flow; saved water and maintenance costs. (They were so successful that they prompted the development of four other Bradley Group Showers: Multi-Stalls, Wall-Savers, Modesty Modules and Panelons.) In short, Bradley Columns added up because their expenses *didn't*. And, today, they're saving money, space and time in modern buildings across the country — because architects know that showering is cheaper by the *half*-dozen. *Ask your Bradley representative for assistance on specific applications. And write for latest literature. Bradley Washfountain Co., 2377 West Michigan Street, Milwaukee 1, Wisconsin.*

Bradley

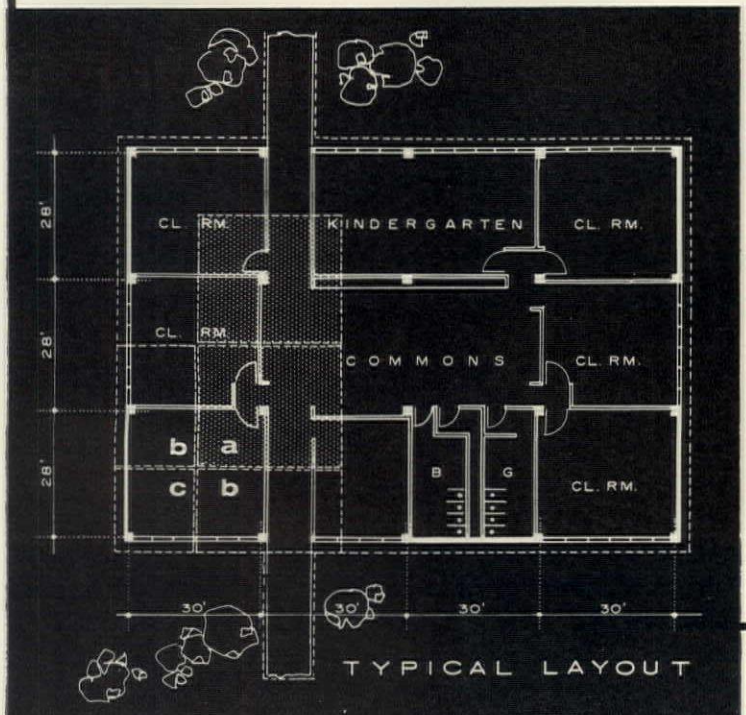
For more information, turn to Reader Service card, circle No. 313

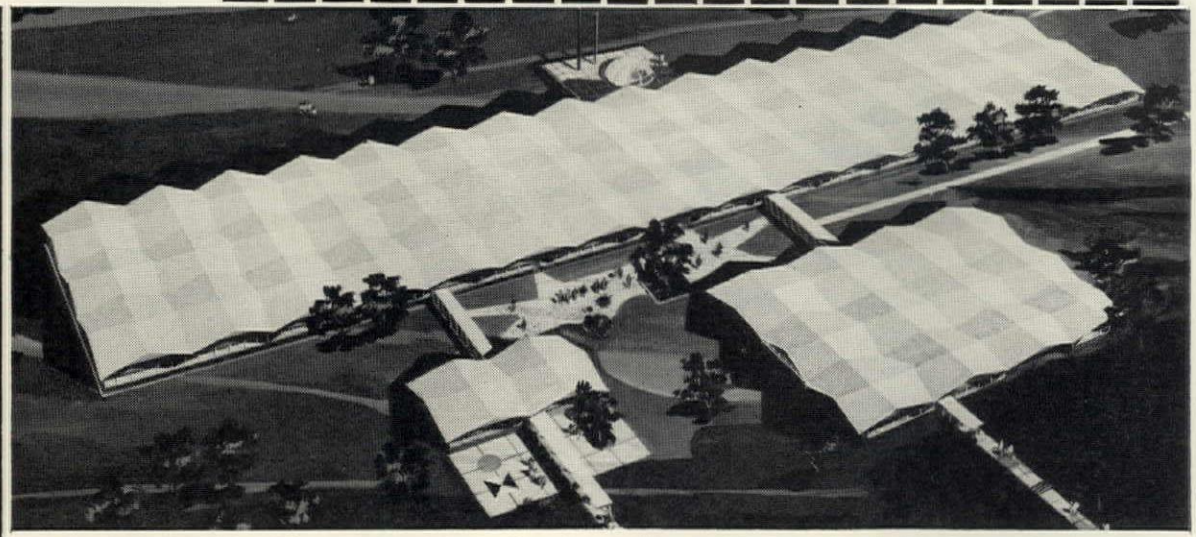
NO. 9 | inverted umbrellas

a.i.a. file: 4-a

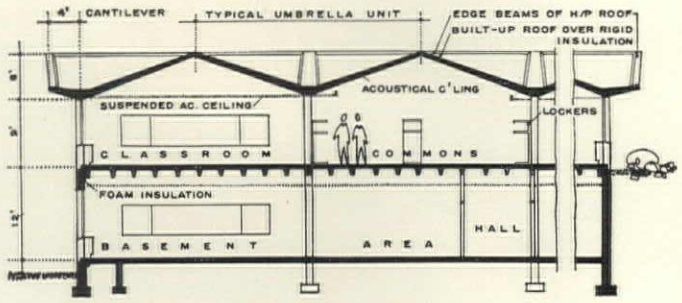
Prepared as a service to architects by Portland Cement Association

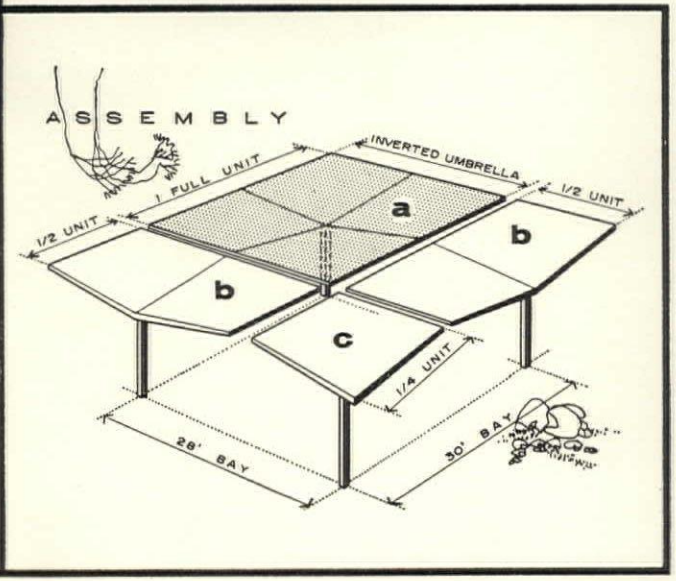
Clip along dotted line





Arbor Heights Junior High and Elementary School, Omaha, Nebraska. Architects and Engineers: Leo A. Daly Company, Omaha, Nebraska.





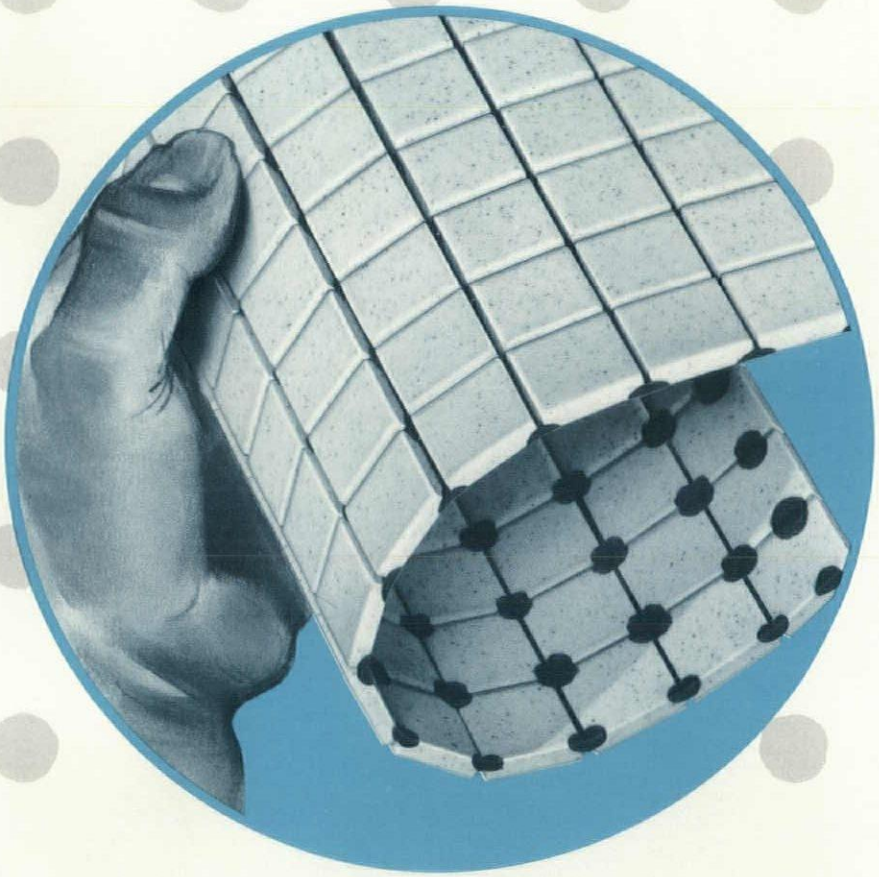
Concrete shell roofs in the form of inverted umbrellas provide for great versatility of interior space arrangement. The hyperbolic paraboloid shells are supported by single columns. Walls are not load bearing. Thus, they can be located as desired—and relocated with minimum expense.

The structure illustrated here shows how this concept meets the changing needs of a school in a growing suburban area. It is readily adaptable to increased pupil population or new educational philosophies.

The economy of the repeating H/P's was well demonstrated in the bids and actual construction.

In this design, the conventional straight line fascia arrangement was avoided by exposing half a unit on the outside. This decorative, gabled treatment complements the suburban neighborhood of well-kept homes.

PORTLAND CEMENT ASSOCIATION *A national organization to improve and extend the uses of concrete*



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*Patent No. 3,041,785 Also patented in Canada 1962.
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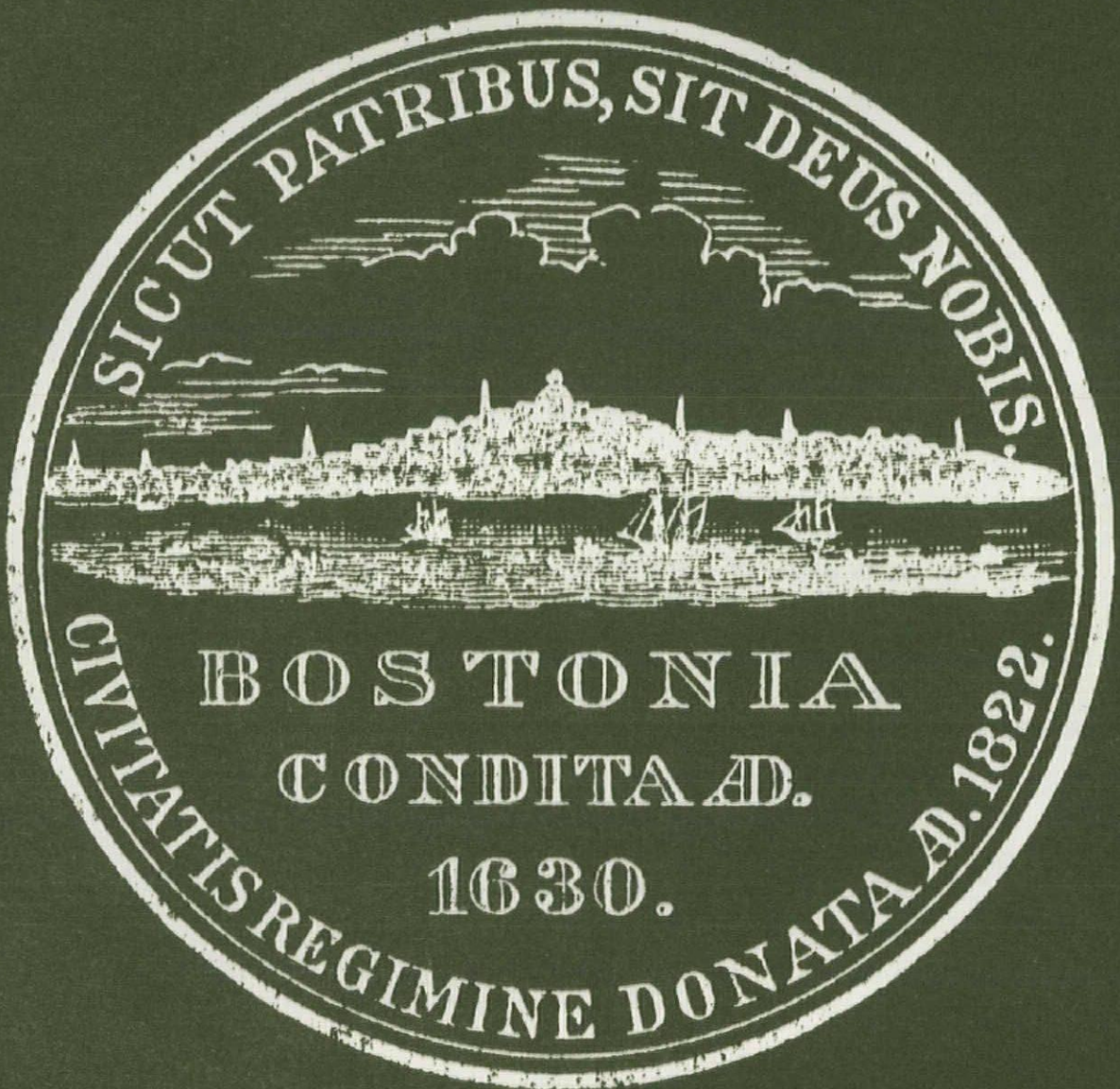

SICUT PATRIBUS, SIT DEUS NOBIS.
BOSTONIA
CONDITA A.D.
1630.
CIVITATIS REGIMINE DONATA A.D. 1822.

FOREWORD

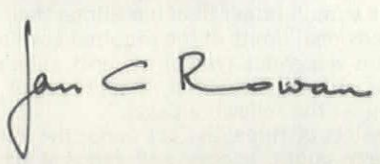
Boston will soon have a new City Hall, a building resulting from a nationwide competition. The last time an open competition was held in the U.S. for a major public building was more than half a century ago, in 1909, the year of the San Francisco City Hall Competition. Which brings to mind the whole problem of competitions, and especially the two recent fiascoes: competitions for memorials to Franklin Delano Roosevelt and to the pioneering days of Cincinnati. Why was the Boston competition such a success and the other two such dismal failures? I think there are several answers to this question.

First, moneys for the building should be appropriated *before* a competition takes place. This is of utmost importance if one wants the winning design to be built. No single design, however good, will please everybody and it is inevitable that opposition to it will develop. Some will decry the aesthetic quality of the project; others will suddenly question its necessity; still others will criticize the solution of the problem. A vocal and aggressive group, even if a minority, can effectively torpedo the project by influencing others to withhold appropriations. This is what happened with the FDR Competition. In the Boston case, since the money for the building was voted on when the design did not yet exist, such a situation could not have arisen.

Secondly, the program has to be well written. The requirements for the Boston City Hall, both functional and aesthetic, were clearly stated and all the limitations were spelled out in detail. Consequently, there was minimal confusion as to what the building should contain, and how it should relate to and affect the surrounding area and the whole city. With an equally good program, Cincinnati would have had not only many more entries, but also entries with a higher level of competence. Boston's 256 entries included many from well-known firms which did not lack either recognition or a large volume of work on their boards, although, surprisingly enough, the eight finalists were all teams of relatively young and unknown architects.

And, thirdly, there has to be a real interest in the project on the part of influential forces within a city. Since most potent forces are commercial and political, it is essential that key people in business and in politics actively support the winning design and protect it from dilution. In Boston's competition, three of the city's most important businessmen served on the jury; their commitment to the project is of considerable significance. On the political side, Mayor Collins is anxious to erase the image of Boston as a city with one of the most corrupt administrations in the country; deciding to make the new City Hall a symbol of his reformed administration, he fought vigorously for a swift execution of the design, untarnished by expediencies and compromises.

If the money is appropriated in advance, the program interesting and thorough, the influential sector of the community committed, the jury well balanced, and the professional adviser competent, an open competition will be successful. At least, this is the conclusion one has to draw from the Boston case. For here young talent was given an opportunity it would not have had otherwise, a city obtained at a low cost a design for its City Hall, and a building will soon be built that is bound to become one of the more important structures erected in this decade. ■



THE NEW

The site for Boston's new City Hall is in the historic central area that had been deteriorating steadily until it became the city's skid row. In 1956, after the General Services Administration declared its intention to erect a large office building for Federal agencies, the concept of a Government Center emerged and the Scollay Square–Dock Square area was designated as the site for such a center. In 1958, plans for the area were begun, culminating in the master plan prepared by I.M. Pei & Associates.

According to this master plan, the City Hall was to be a building between 100 and 130 ft high and some 275 ft sq in plan, located at the east end of a vast plaza bordered by streets on the east and west, a 400-ft-high Federal Office Building on the north, and a group of 60-ft-high office buildings on the south. (See site plans on pages 145 and 149). The east façade of the building was a visual closure to Dock Square and the south façade terminated Washington Street's vista. A platform over the east street (New Congress Street) connected the plaza with Dock Square. There was no surface parking and the only vehicular access was from New Congress Street. Other buildings in the immediate vicinity were also fixed in size. In fact, what Pei's office did was to design not only the traffic pattern and the location of open spaces and of buildings, but also their forms.

The design of the City Hall became subsequently the subject of a nationwide open competition. Since the competition program was written so as to fit Pei's design concept, the competitors had to work within what they soon found out was a predetermined envelope. The problem given the competitors, therefore, was not, to use Kahn's terminology, to evolve a form but only a design—how to make a basically rectangular building of a fixed proportion good architecture and how to manicure the plaza.

This aspect of the competition drew criticism from some competitors. One of them wrote to the professional advisor, "The imposition of mandatory height limits on the City Hall... verges on being an insult to the jury and to the architectural profession as a whole," thus raising an old question: Should each building's envelope and its location on the site be fixed by the planners as, for instance, in the master plan for Rotterdam, or should the individual architect have the freedom to decide the form and location of his building. In the Boston City Hall competition, the former theory was followed, and the competitors were forced to comply with an urban aesthetics conceived by the planners.

The winning team, consisting of Gerhard Michael Kallmann, Noel Michael McKinnell, and Edward F. Knowles, accepted without protest all the restrictions of the program and decided to treat them as creative stimuli rather than inhibitors. Their design conforms to the dimensional limits of the required envelope and is, basically, a square doughnut typical of most submissions. What they have done with the doughnut, though, is not typical at all, as can be seen on the following pages.

Their building consists of three distinct parts: the lower part houses areas of heavy public access and forms a base; the upper part consists of three floors of administrative offices supported by massive columns; between the base and the upper part are suspended ceremonial elements—the Council Chamber and councilors' offices, the Mayor's suite, and the Municipal Reference Library.

The design concept is, therefore, quite simple. The structural concept, as will be explained, is also simple—a modular rhythm of concrete columns and Vierendeel trusses, with an integrated mechanical system. Within this simplicity, however, many diverse design ideas were introduced that account for the apparent complexity of the building.

The base belongs not only to the building but also to the plaza. The brick-faced floor of the plaza slopes gently up toward the City Hall in radiating, terraced planes separated by strips of granite. Since terraced, brick planes are also used for the roof of the base, there is no distinct separation between the plaza and the building—one does not know where the plaza ends and the building begins. In fact, one can walk up from the plaza, through the building, and down into Dock Square without actually entering the interior at all. The constant changes in levels and perspectives make this an exciting walk.

The suspended ceremonial areas have individual shapes reflecting individual space requirements. They are separate volumes that brutally contrast with the character of the base and the upper part. They float, like a miniature city of concrete hooded sculptures, above the base and below the restraining hand of the upper floors' frieze.

The treatment of the three top floors reflects the character of anonymous office spaces. Here, deep concrete hoods over the windows, which contain mechanical services and also assist in sun control, echo the regular module of the Vierendeel trusses. But the arrangement of the floors as a series of tiers stepped back from the inner court reinforces the sculptural drama of the other parts of the building, as well as providing outdoor galleries for the enjoyment of the office workers.

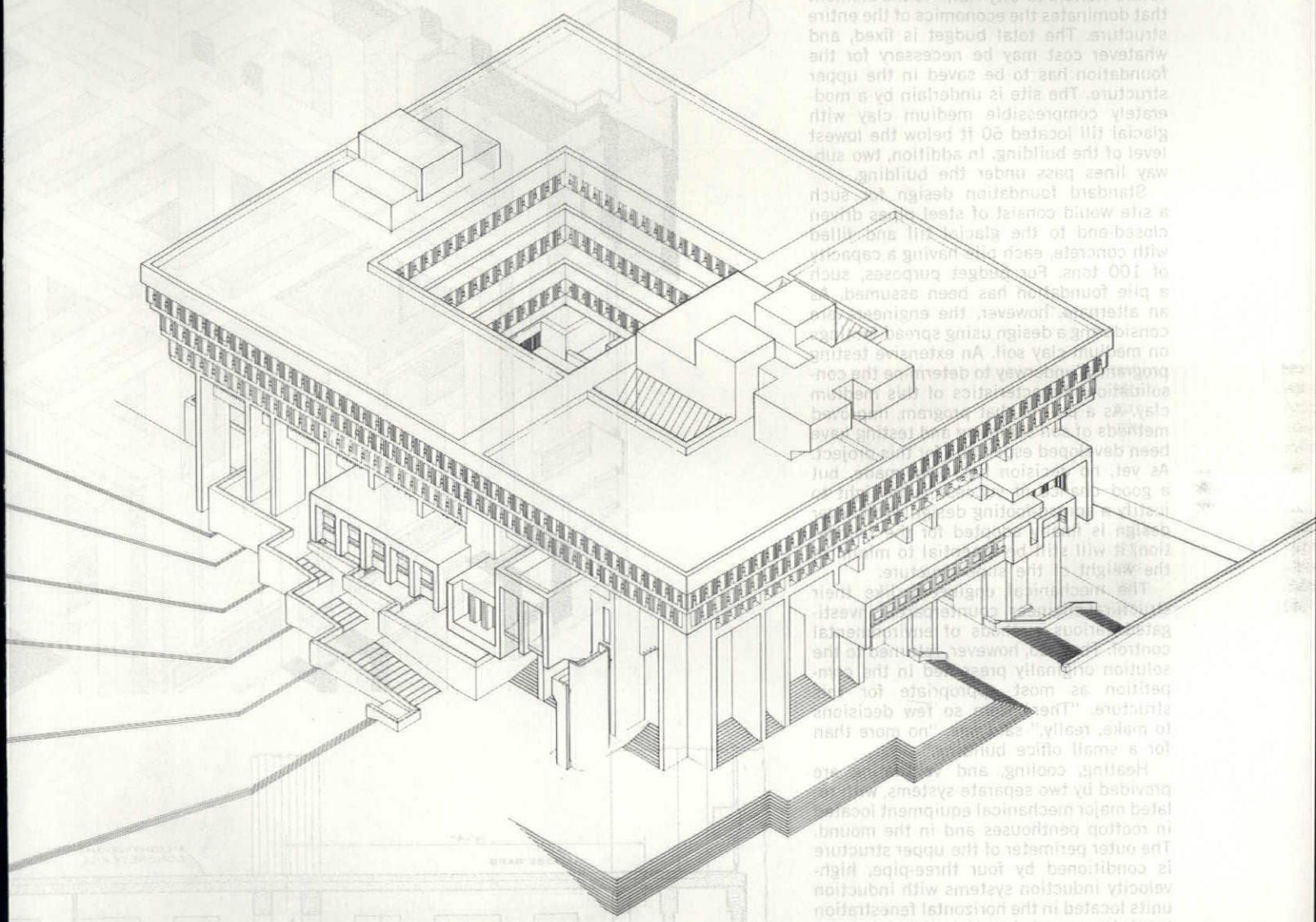
On the interior, the building's pivotal space is the main lobby (see third and fourth floor plans, page 144, which links, physically and visually, the public spaces of the base, the middle ceremonial areas, the upper-levels offices, (see section c-c page 145), and also the inner court. Its immense height, monumental stairs and platforms, and a rich variety of floor, ceiling, and wall planes is typical of the powerful and varied spatial experiences to be encountered throughout the interior of the building. For almost everywhere there is a constant change in ceiling heights, floor levels, and vistas—a progression of multifarious spaces, each one distinct from the other.

The use of materials in the main lobby also typifies the character sought by the architects for the whole building (see page 139). Brick floor paving and exposed-concrete surfaces of the wall and ceiling structures will be enriched only by bronze railings and possibly by painting the coffers of the ceiling in heraldic colors. All other decorative elements, the architects feel, should be slowly added by donations in the form of sculptures, tapestries, and similar items; the design of the interior should not be frozen, but open to further, constant growth.

Although they present a deceptively complex appearance upon initial inspection, the structural and mechanical systems are ingenious but relatively simple. Key to the efficiency of both systems is the remarkable structural union of typical, precast-concrete Vierendeel trusses locked with one another, and with columns, by means of cast-in-place concrete joints and floor slabs.

A typical 28′-8″x28′-8″ bay has 16 trusses weighing 3120 lb each and three 2890-lb, cast-in-place joints. This system, which averages 72 psf, is supplemented by a 4-in.-concrete slab weighing 38 psf and precast-concrete supports for lighting fixtures and ducts at 17 psf. The entire structural floor system, weighing 127 psf, is designed to support partitions and floor fill totaling 45 psf plus 80 psf live load for minimum superstructure weight.

BOSTON CITY HALL



In the erection sequence, between floors, columns are to be cast to a height corresponding to that of the underside of the bottom chords of the trusses. Forming will then be placed to temporarily support the precast trusses, to provide forms for joints between trusses, and to receive a two-way slab. Concrete will be poured so that trusses, joints, and slabs are locked together, thus contributing continuity to the framing. Precast supports for light fixtures and ducts (concrete was chosen because it proved to be the least expensive material for this purpose) will be later anchored to trusses by welded connections.

Generally, the column rhythm of the structure establishes 14′-4″x14′-4″ and 14′-4″x28′-8″ bays around the periphery of the building as well as in an east-west direction. Cantilevered portions of the structure, around its interior court, are achieved by using floor levels as chords of a giant Vierendeel truss cantilevering 28′-8″.

All structural concrete, except that of the columns, will contain a lightweight, coarse aggregate. Distinction between precast and cast-in-place elements will be evident and will result from the specification of different colored cements as well as by different textures. Trusses and mechanical supports will be precast in metal forms to obtain smooth surfaces; cast-in-place componets will be rough finished. Specifications have been prepared so that precasting can take place at the site. Compressive strength of interior concrete will be 3000 psi, while that exposed on the exterior surfaces of the building will be 5000 psi.

The original concept of the structure as presented in the final stage of the competition, which minimized weight of the superstructure, has proved itself to be a valid one. While developing the final structural solution for the actual construction, exploratory designs using cast-in-place concrete for the entire structure were evaluated. Such a method, however, would have imposed enormous problems, considering the holes needed for mechanical distribution, desired lightness of structure, and other complicated elements of forming. The architects therefore stayed with their original basic solution.

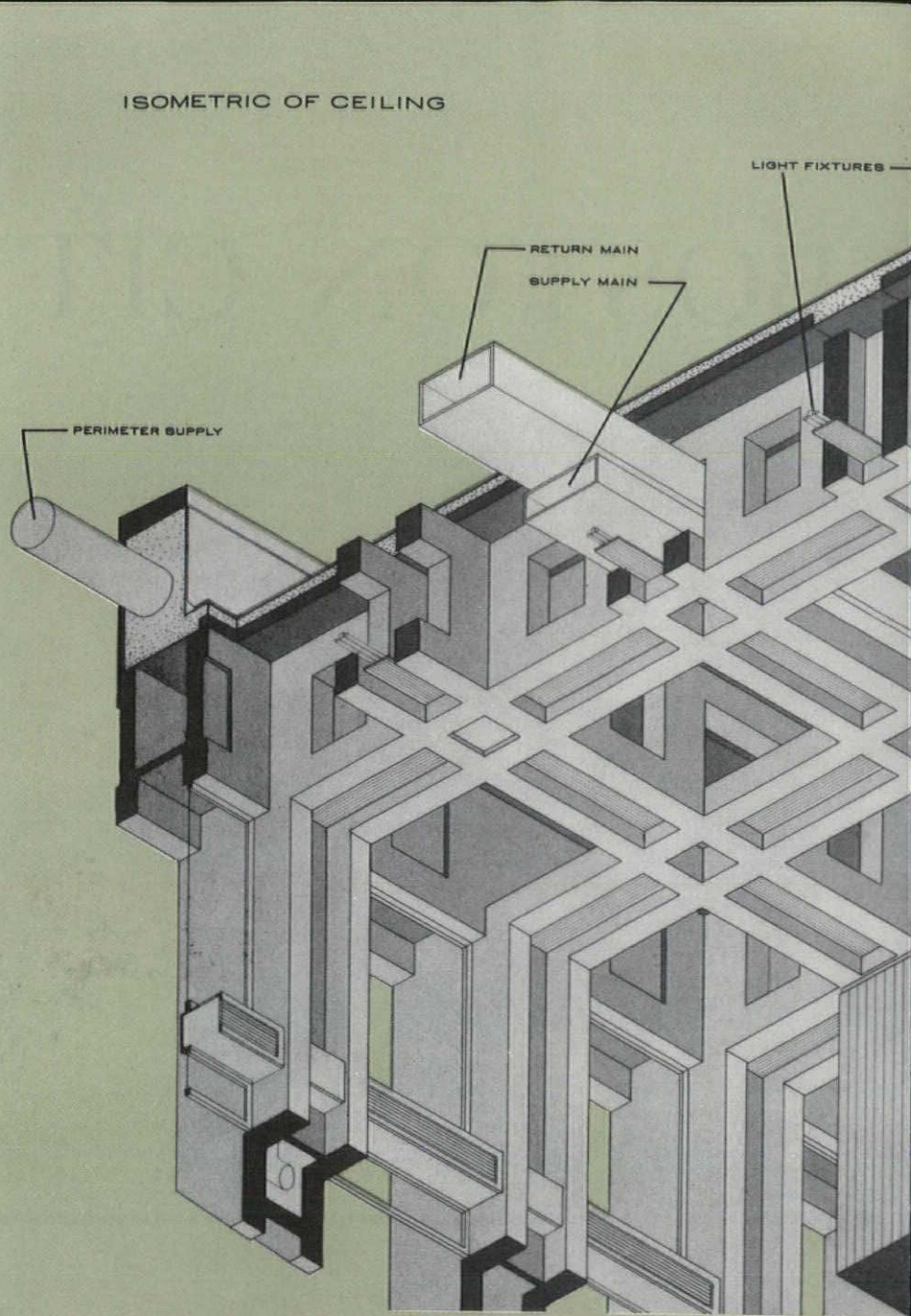
The foundation—that part of the structural design that will not be evident to future visitors to City Hall—is the element that dominates the economics of the entire structure. The total budget is fixed, and whatever cost may be necessary for the foundation has to be saved in the upper structure. The site is underlain by a moderately compressible medium clay with glacial till located 60 ft below the lowest level of the building. In addition, two subway lines pass under the building.

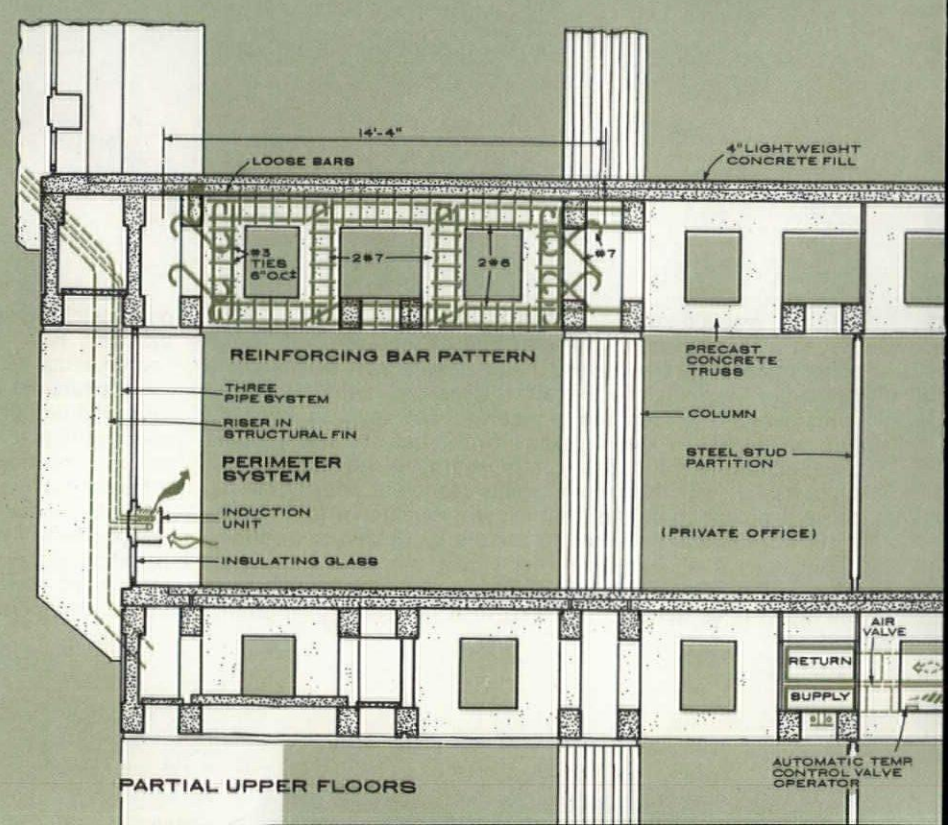
Standard foundation design for such a site would consist of steel pipes driven closed-end to the glacial till and filled with concrete, each pile having a capacity of 100 tons. For budget purposes, such a pile foundation has been assumed. As an alternate, however, the engineers are considering a design using spread-footings on medium clay soil. An extensive testing program is underway to determine the consolidation characteristics of this medium clay. As a part of that program, improved methods of soil sampling and testing have been developed especially for this project. As yet, no decision has been made, but a good chance of success is in sight to justify a spread-footing design. Whichever design is finally adopted for the foundation, it will still be essential to minimize the weight of the superstructure.

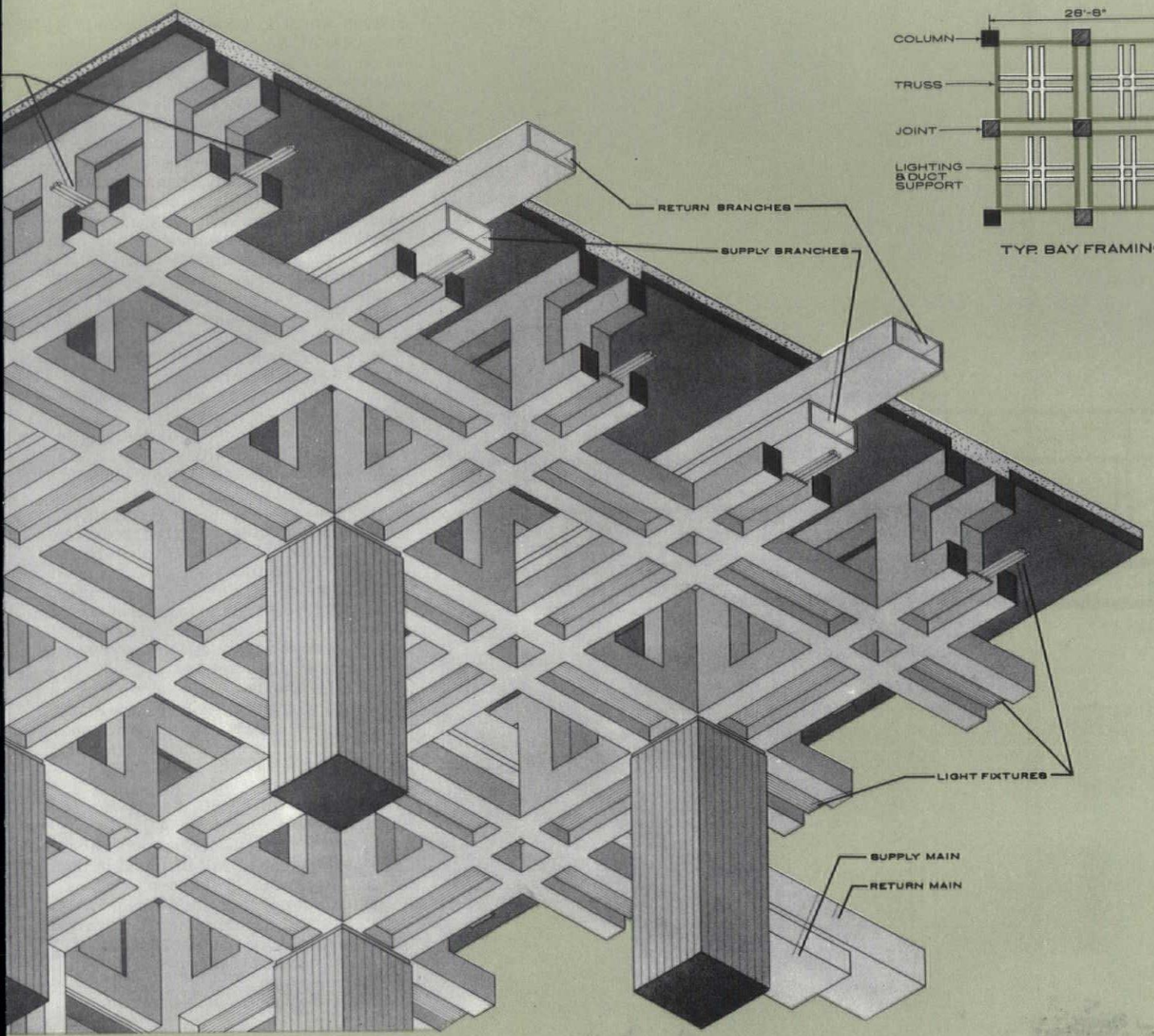
The mechanical engineers, like their structural-engineer counterparts, investigated various methods of environmental control. They too, however, returned to the solution originally presented in the competition as most appropriate for this structure. "There were so few decisions to make, really," said one, "no more than for a small office building."

Heating, cooling, and ventilating are provided by two separate systems, with related major mechanical equipment located in rooftop penthouses and in the mound. The outer perimeter of the upper structure is conditioned by four three-pipe, high-velocity induction systems with induction units located in the horizontal fenestration band. Here, each bay is individually controlled by thermostats.

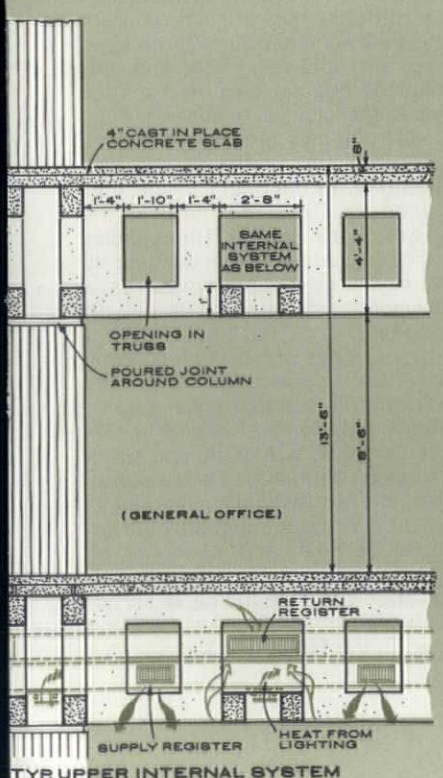
For the interior zones of the upper structure, four one-duct, high-velocity, variable-volume main distribution systems, terminating on automatic air valves and sound attenuators, are provided. If required by partitioning, each 14'-4" bay can be controlled by individual thermostats. Integration of the structural and mechanical designs allows complete outlet flexibility for future partition changes. Final air discharge is accomplished through low-velocity branch duct-work (with constant cross-section) penetrating the overhead Vierendeels. The return-air



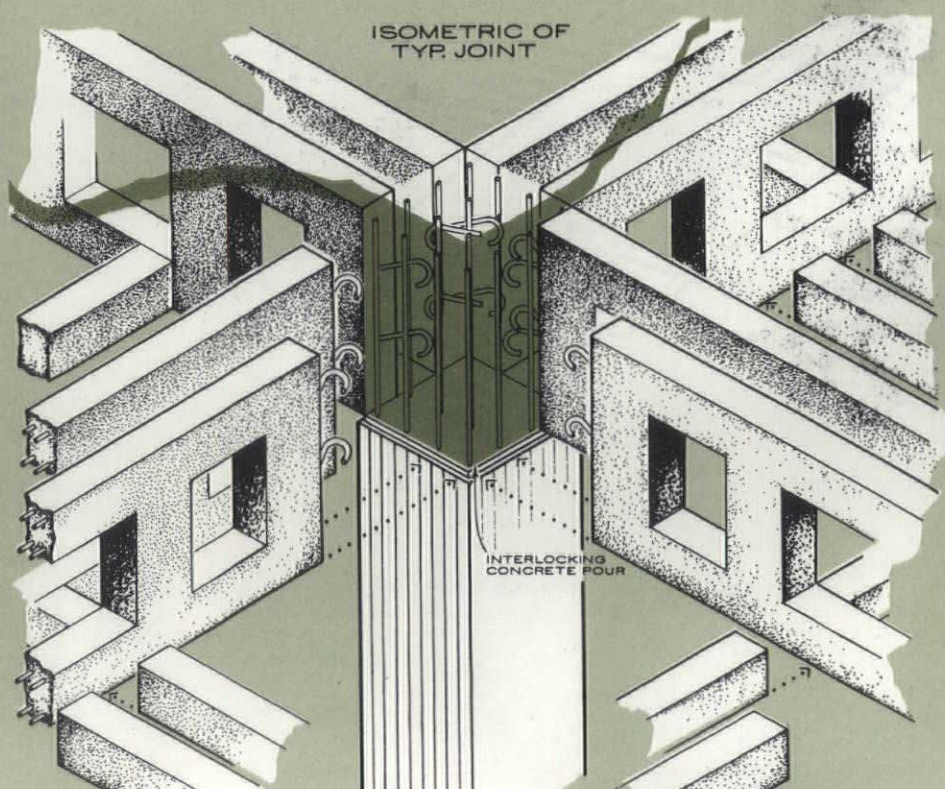


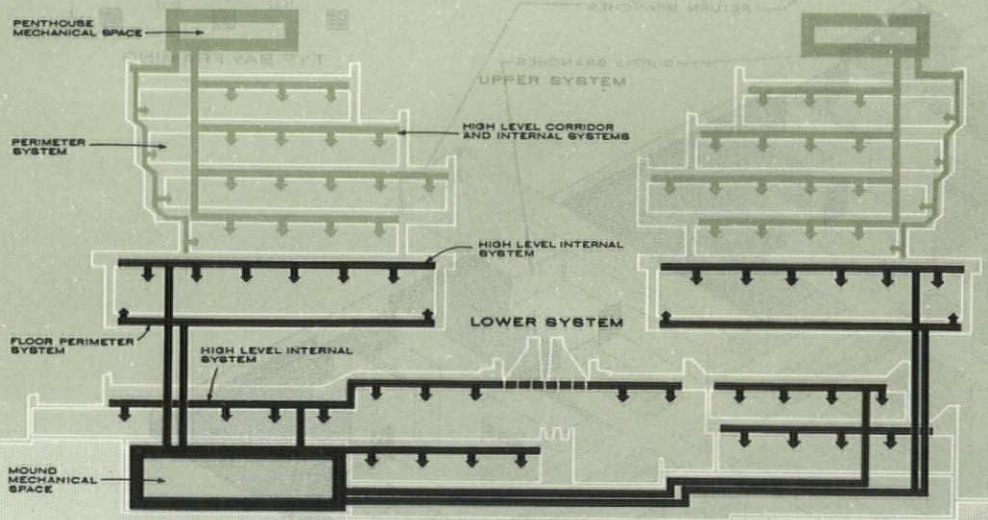


TYP. BAY FRAMING



TYP. UPPER INTERNAL SYSTEM





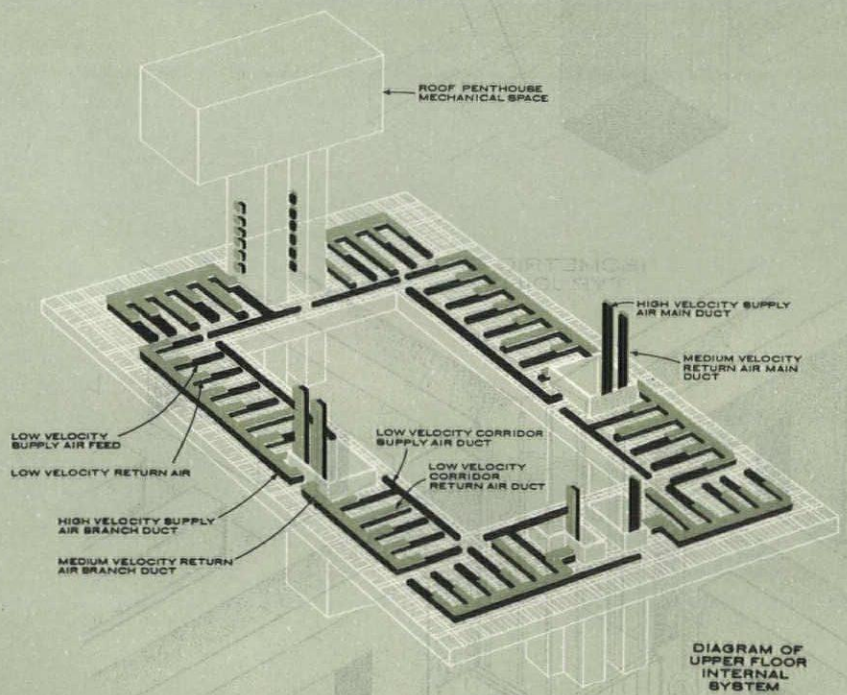


DIAGRAM OF UPPER FLOOR INTERNAL SYSTEM

HEATING AND AIR-CONDITIONING DIAGRAMS

system, which is parallel to the supply, originates at low pressure and has a transition to high-velocity mains through attenuator and air valves.

Permanent corridors of the inner perimeter of the upper structure receive low-velocity air from overhead registers.

The mound structure has a series of one-duct, high-velocity, variable-volume systems similar to those of the interior zones of the upper structure. Each major functional zone will be on a central unit. Also, like the upper interior, each 14'-4" zone will be thermostatically controlled, if required, by partitioning. Where heat loss occurs at the perimeter, hot-water radiation will be provided.

In all systems, outdoor air will be utilized for cooling whenever outdoor conditions permit. Otherwise, mechanical cooling will be in operation.

The plaza surrounding the building is erected on columns with a general void underneath. Exhaust air from the building, including ventilated heat from electrical transformers, electronic data processing machines, and other miscellaneous rejected energy, will be discharged at pertinent points into this void.

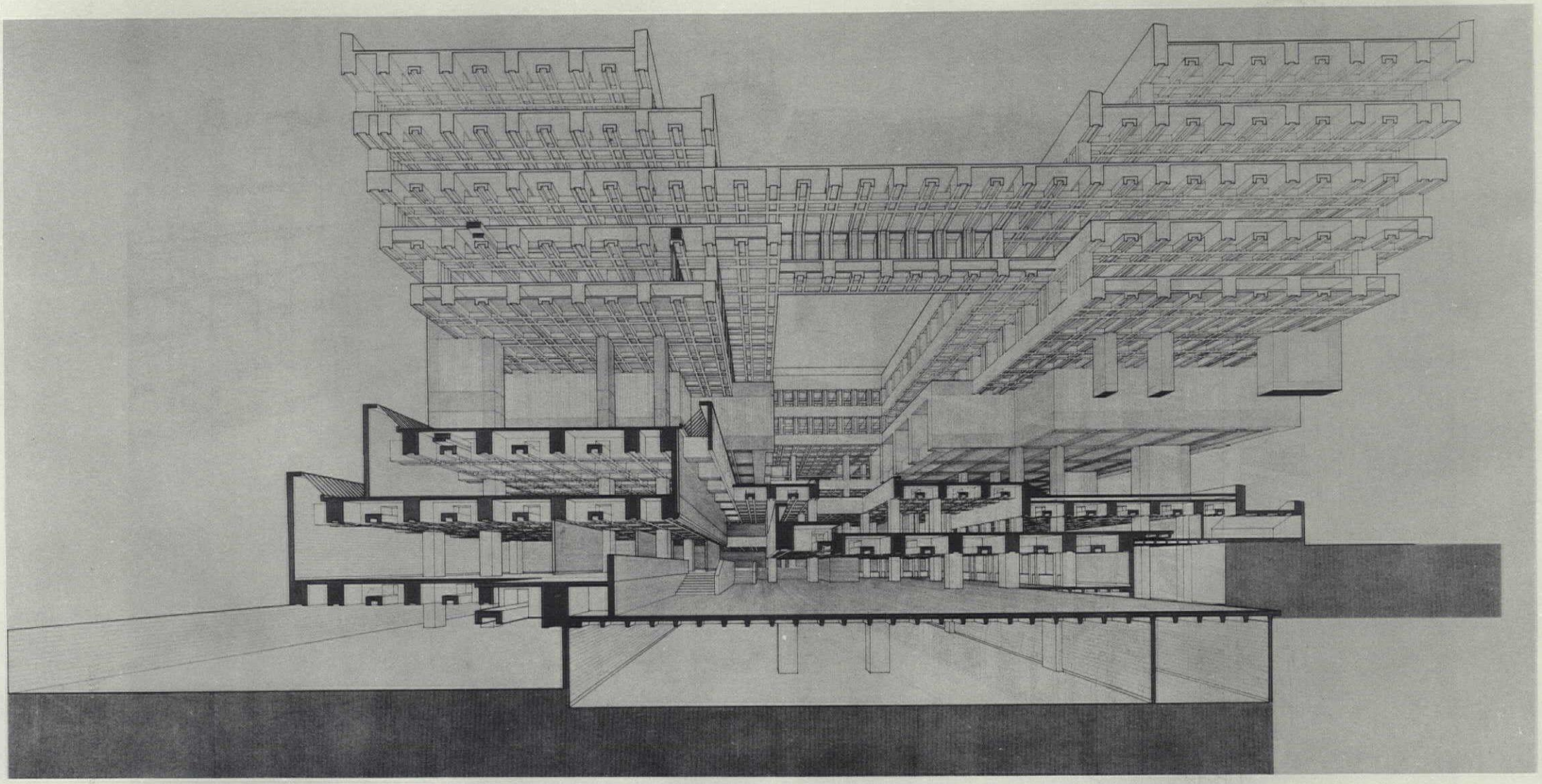
The only openings in the plaza surface will be storm-drainage intakes that serve as drains into an open-drain system and act as exhaust-air outlet louvers. Placement of the drain intakes (air outlets) will control the flow path of air inside the void. Circulating air will heat the plaza surface for snow-melting purposes and also prevent the storm drain inlets from becoming sealed by ice.

Lighting, from fluorescent sources in offices areas, will be 60 ft-c at working levels. Lighting in the main lobby will be incandescent, reflected upward. Other types of illumination will be found in the mayor's office and in the public rooms. Acoustical control in offices will largely be by carpeting. In corridors and other heavy-traffic areas, wood-fiber/cement panels will be placed between trusses beneath the concrete slabs.

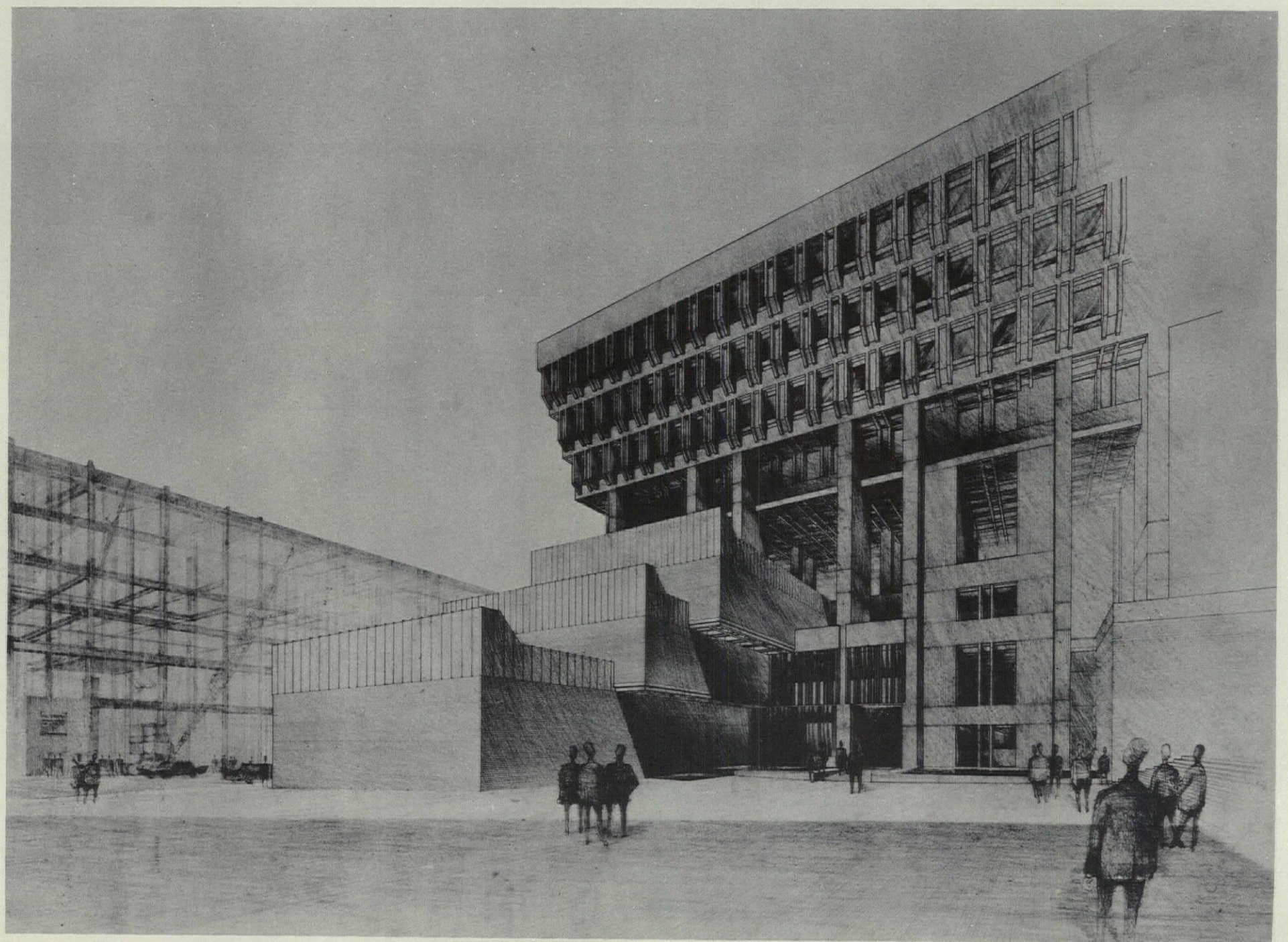
All drawings shown in this presentation illustrate the design of the building and its structural and mechanical systems as approved recently by the city authorities. It is worthy of note that the final concept follows faithfully the original concept submitted in the competition. The changes introduced are relatively minor and only strengthen the original idea. Perhaps the most important change, made after approval of the planners had been obtained, was to shorten the platform over New Congress Street. In the final scheme, only a narrow bridge links the mass of the building with Dock Square. This enables the southeast corner of the building to continue downward uninterrupted as a strong element instead of being cut off by the platform.

Working drawings are now being completed by "The Architects and Engineers for the Boston City Hall," consisting of the Kallmann-McKinnell-Knowles team, architects Campbell & Aldrich, and structural engineers William J. Le Messurier, Associates, Inc. Mechanical engineering is by Greenleaf & Wong, electrical by Cleverdon, Varney & Pike, and plumbing by Robert W. Sullivan, Inc.

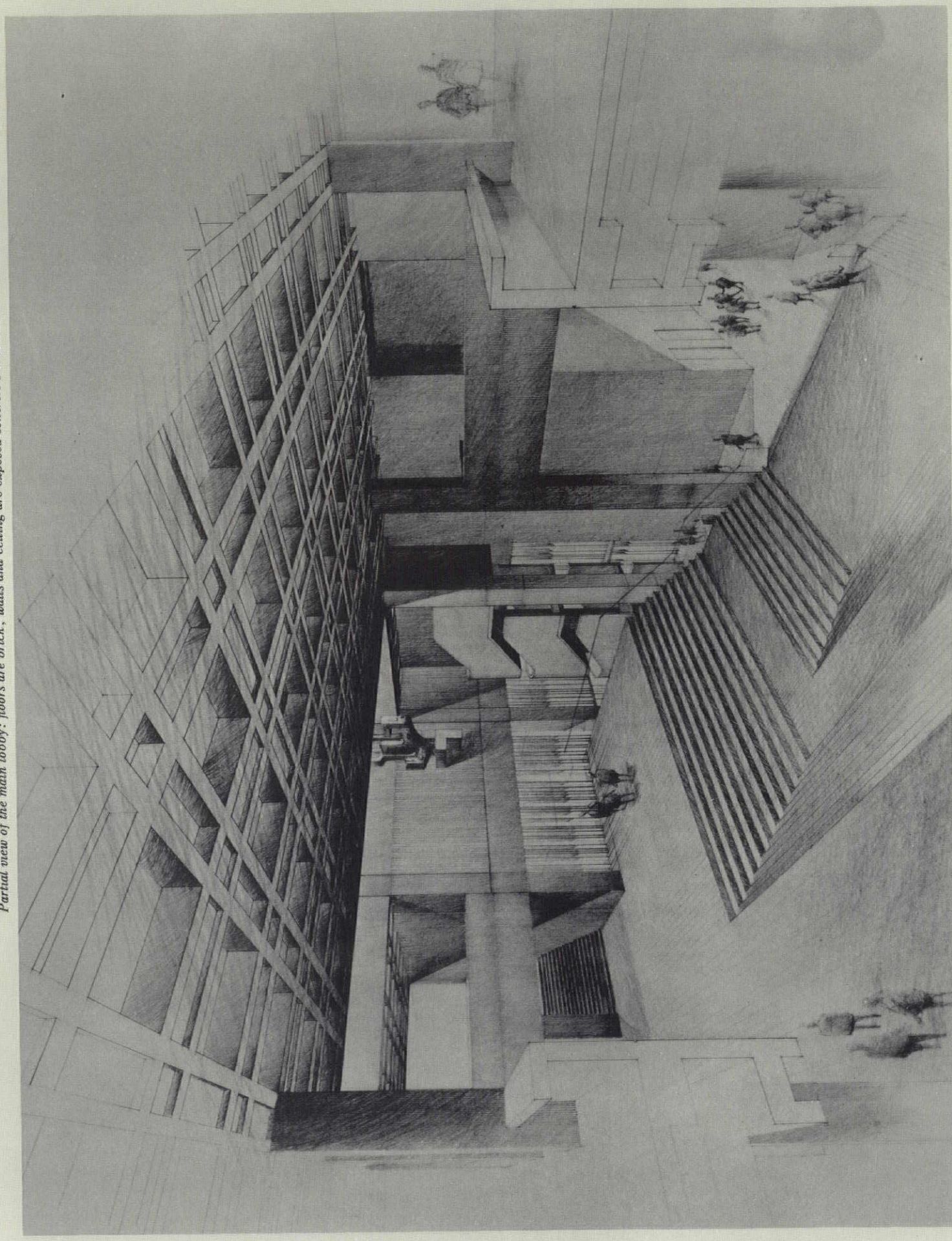
Construction of the building is scheduled for the fall of 1963 and completion is expected in the fall of 1965.



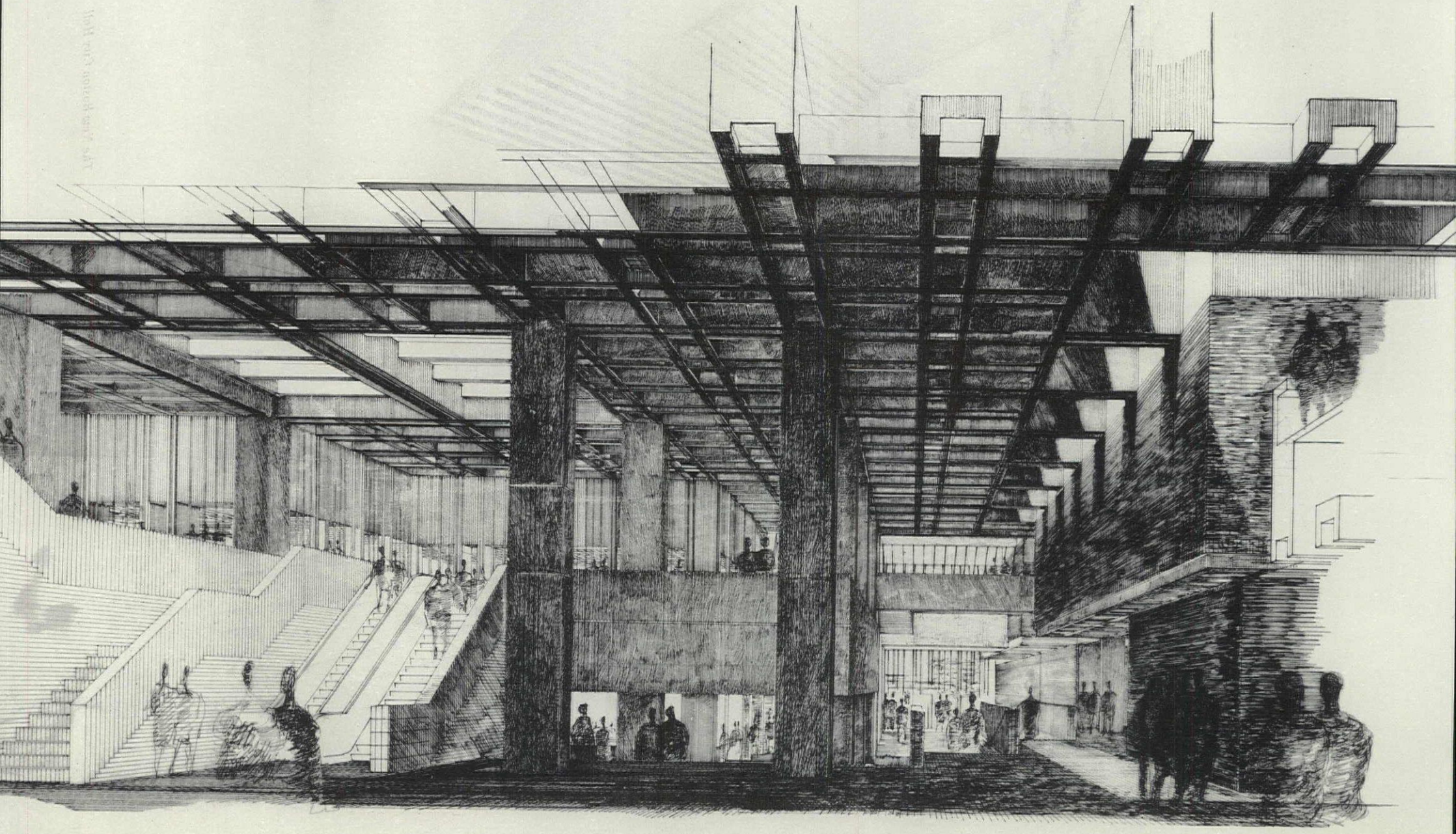
Cutaway perspective at center of building looking toward the south.



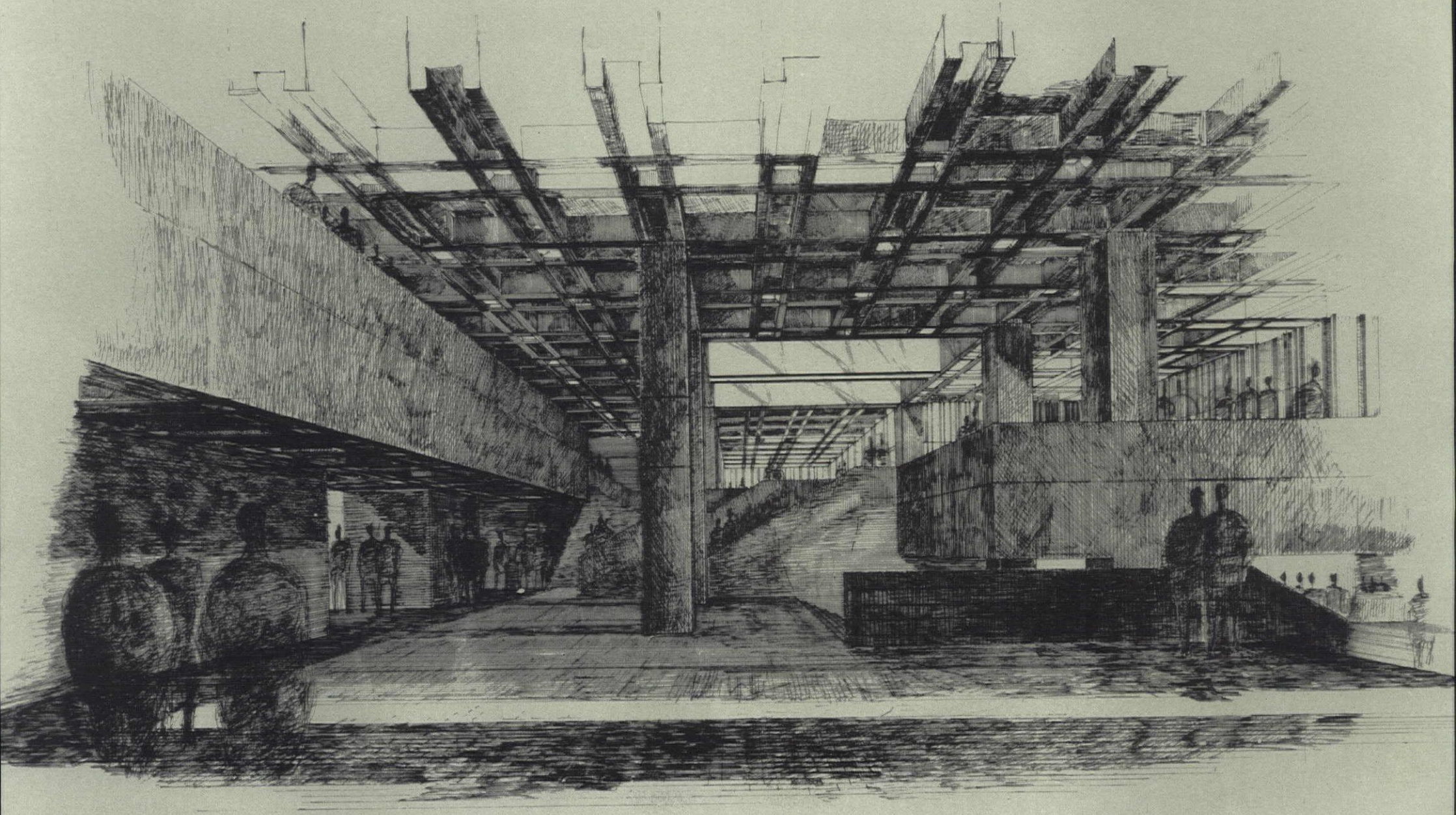
Northeast corner of the building; the proposed motel is shown under construction.



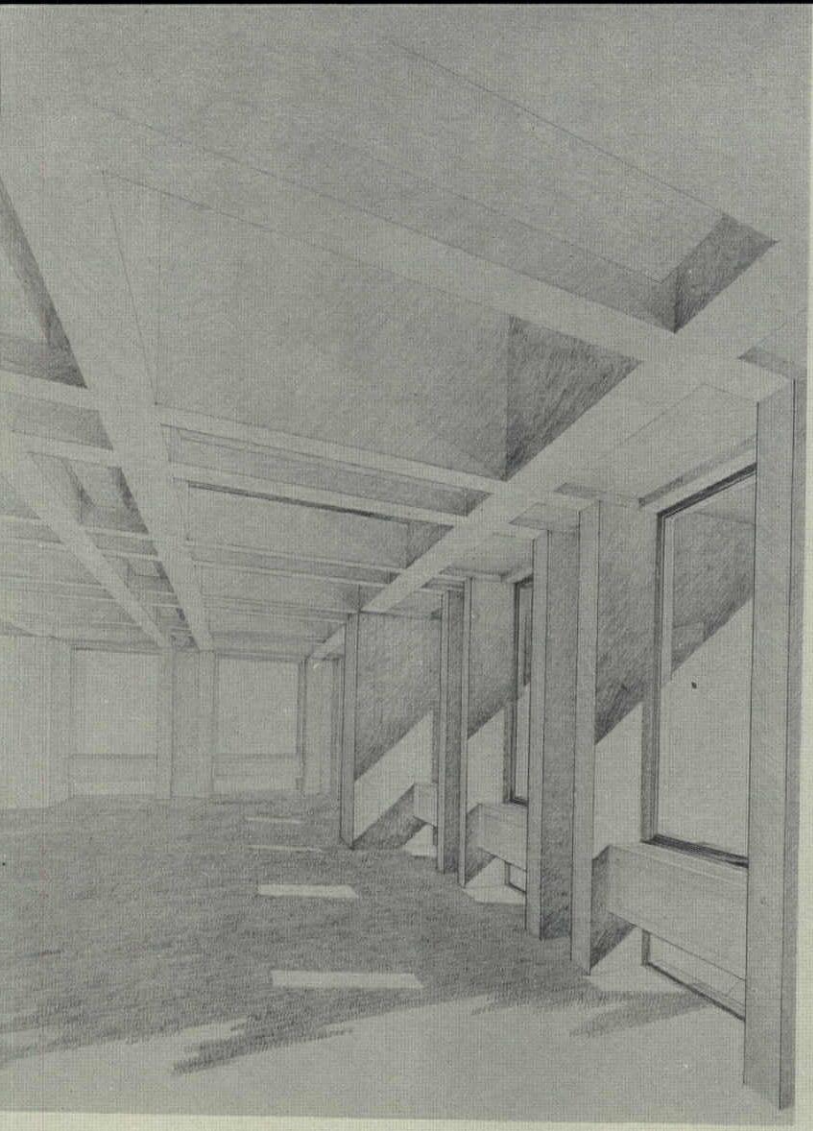
Partial view of the main lobby: floors are brick; walls and ceiling are exposed-concrete structure.



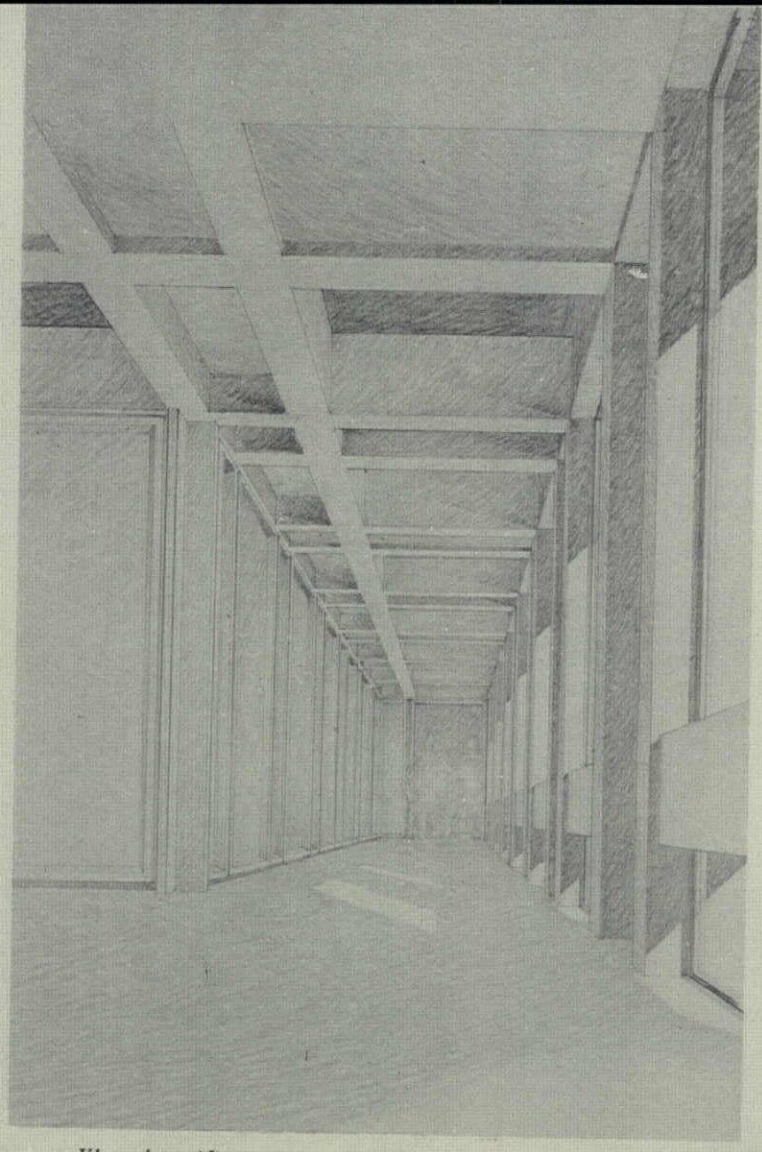
View looking north of concourse in first basement's (second floor) public access areas.



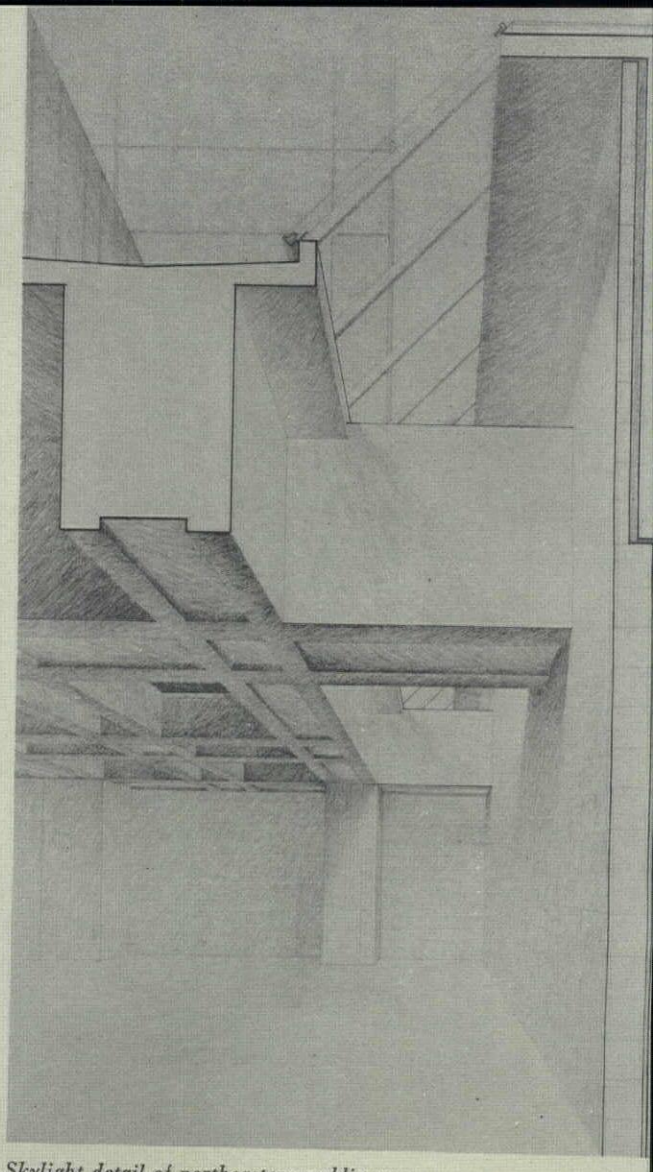
View of same concourse as above looking toward the west.



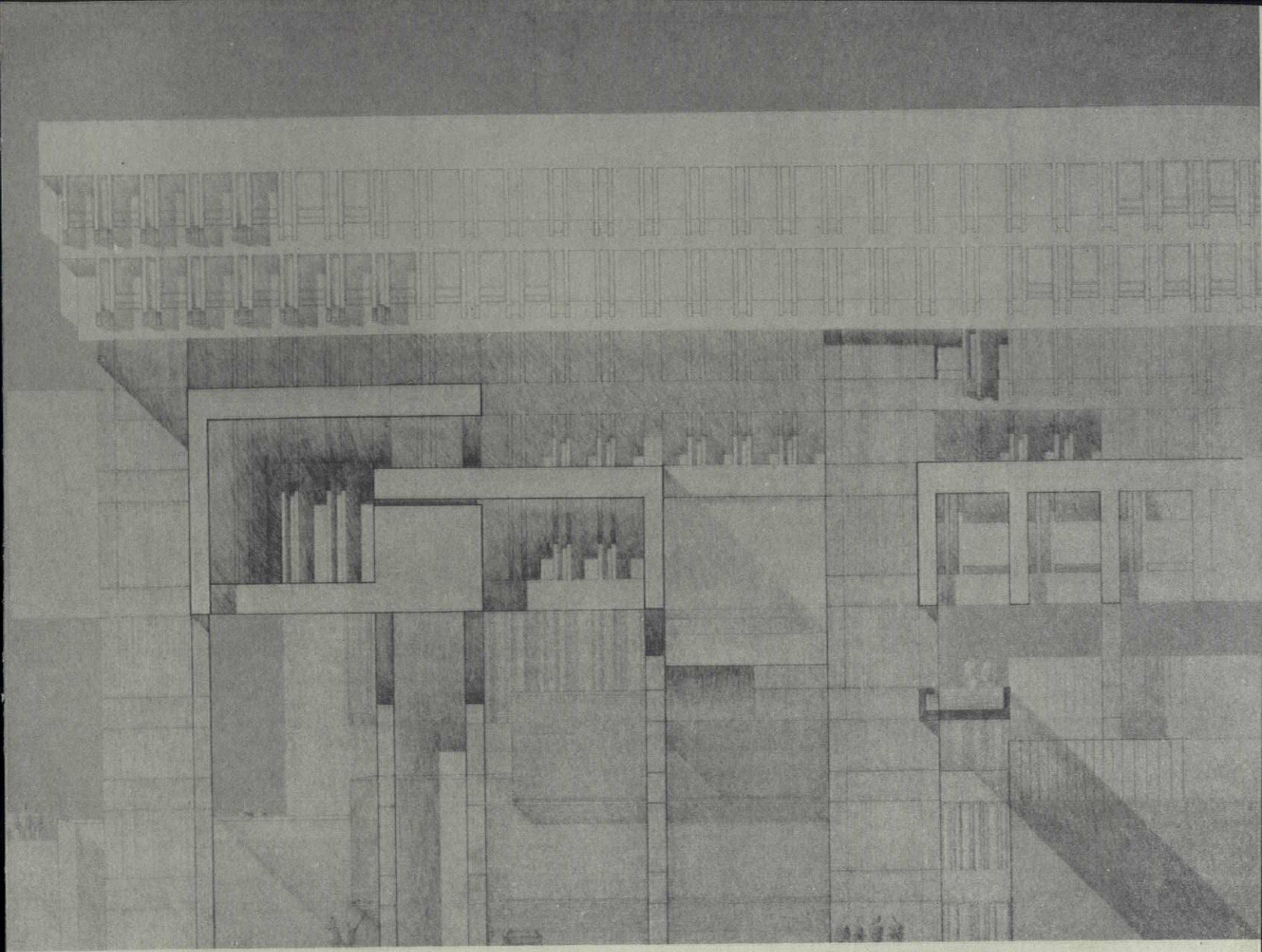
View of typical corner of offices at the three upper floors.



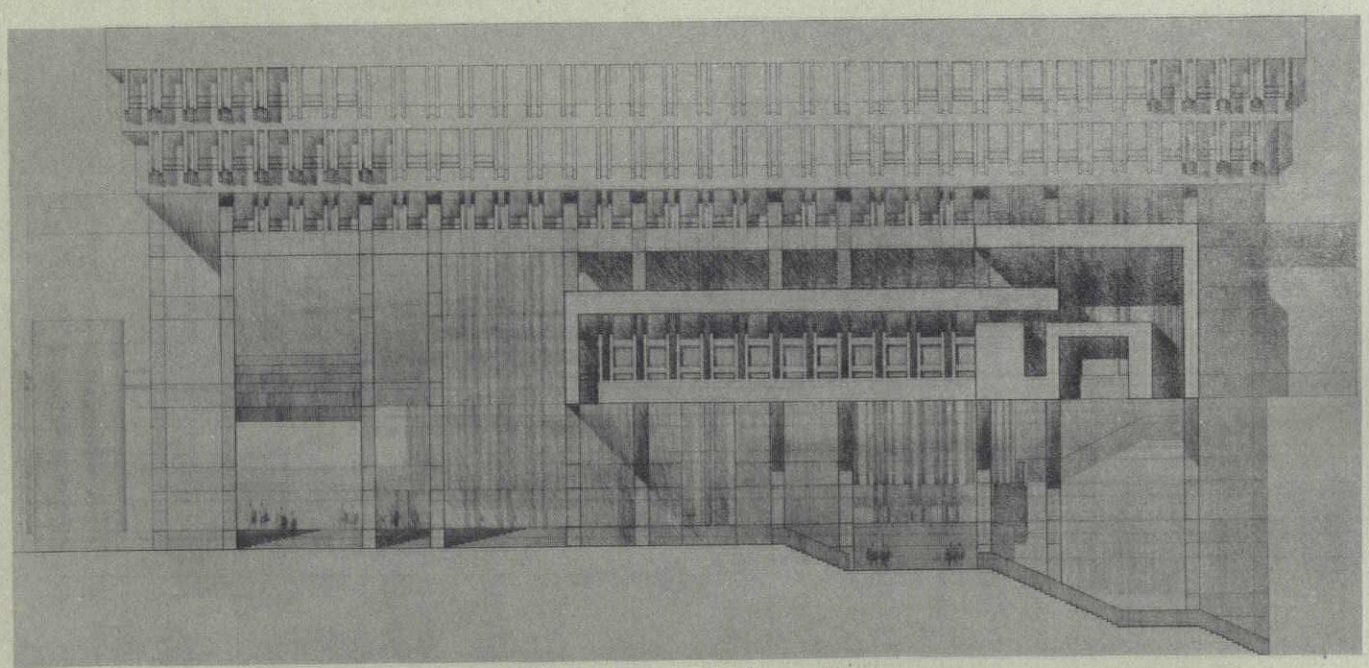
View of corridor at inner court leading to upper floors' offices.



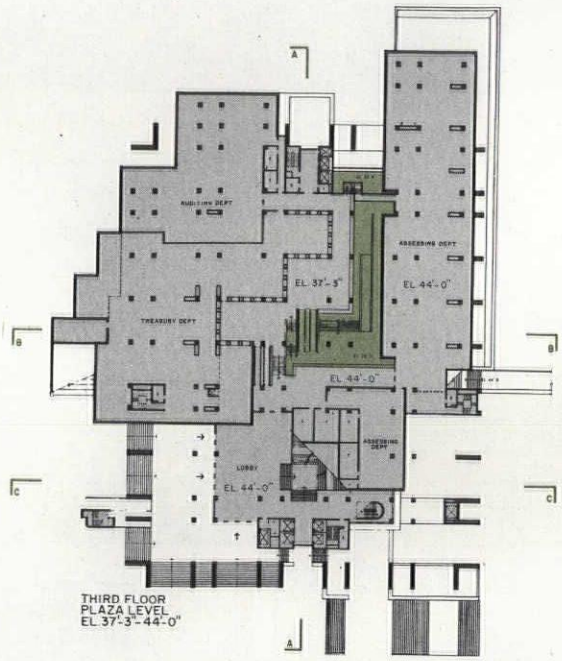
Skylight detail of northeastern public access areas.



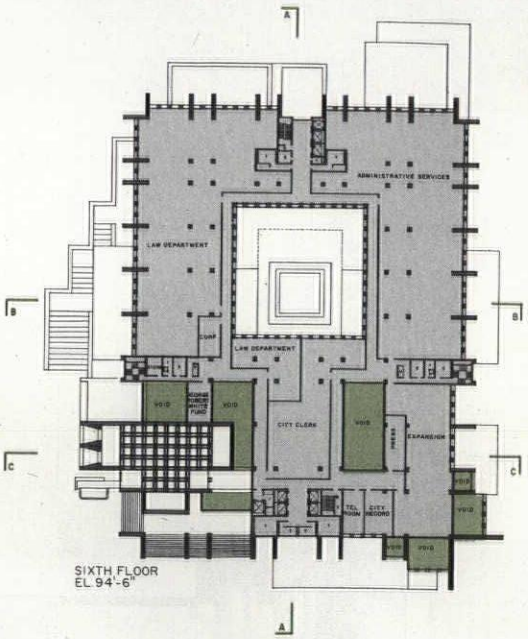
South corner of east elevation showing mayor's suite and bridge to Dock Square.



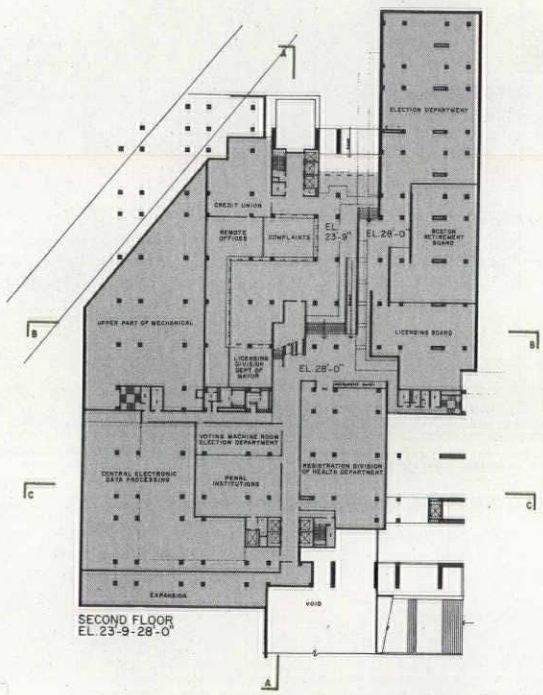
South elevation facing Washington Street.



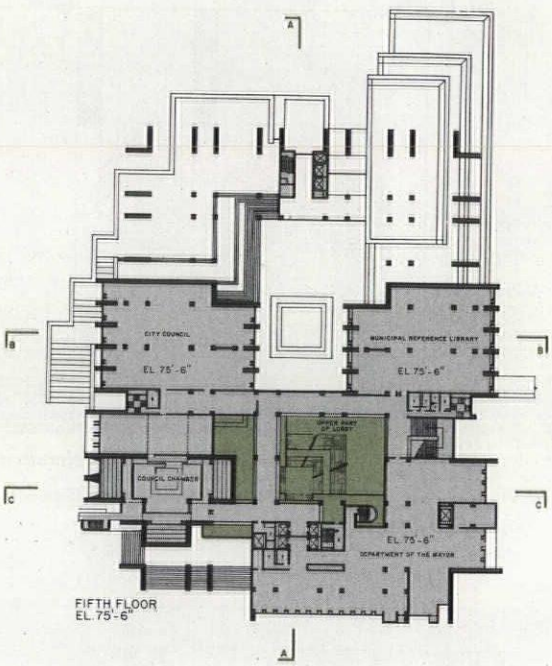
THIRD FLOOR
PLAZA LEVEL
EL. 37'-3"-44'-0"



SIXTH FLOOR
EL. 94'-6"

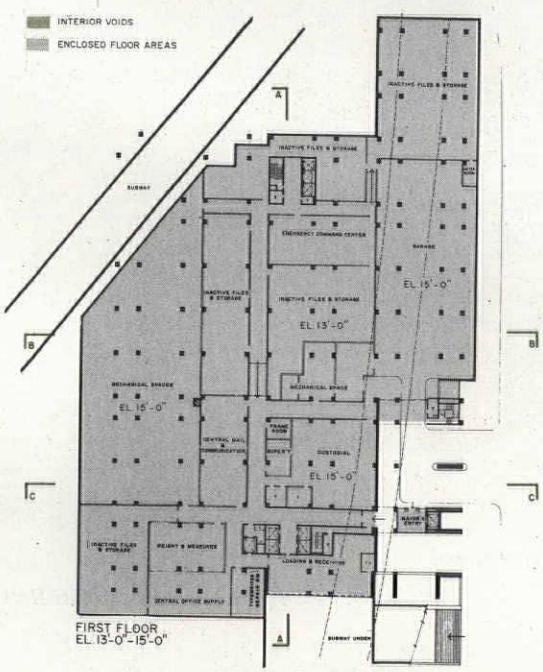


SECOND FLOOR
EL. 23'-9-28'-0"

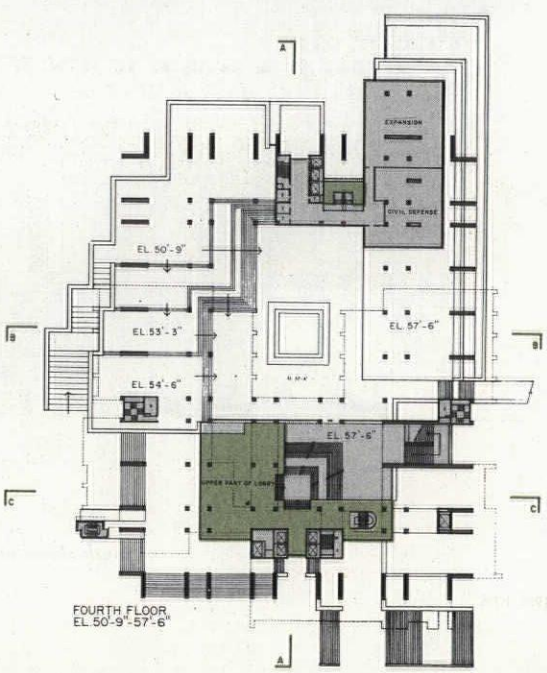


FIFTH FLOOR
EL. 75'-6"

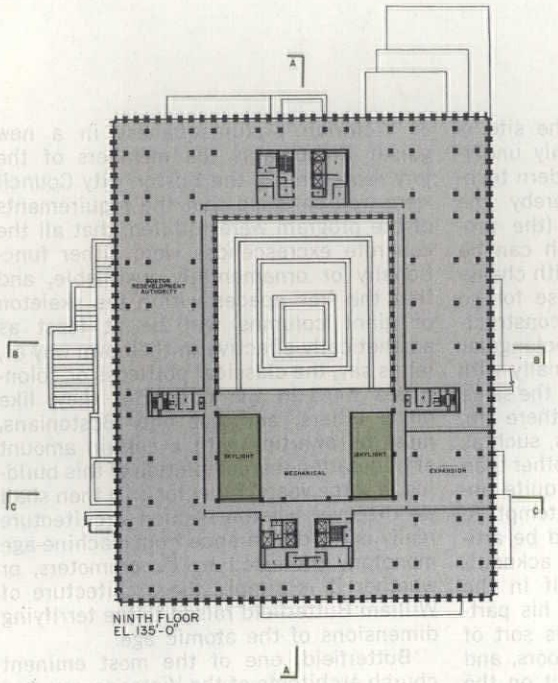
INTERIOR VOIDS
ENCLOSED FLOOR AREAS



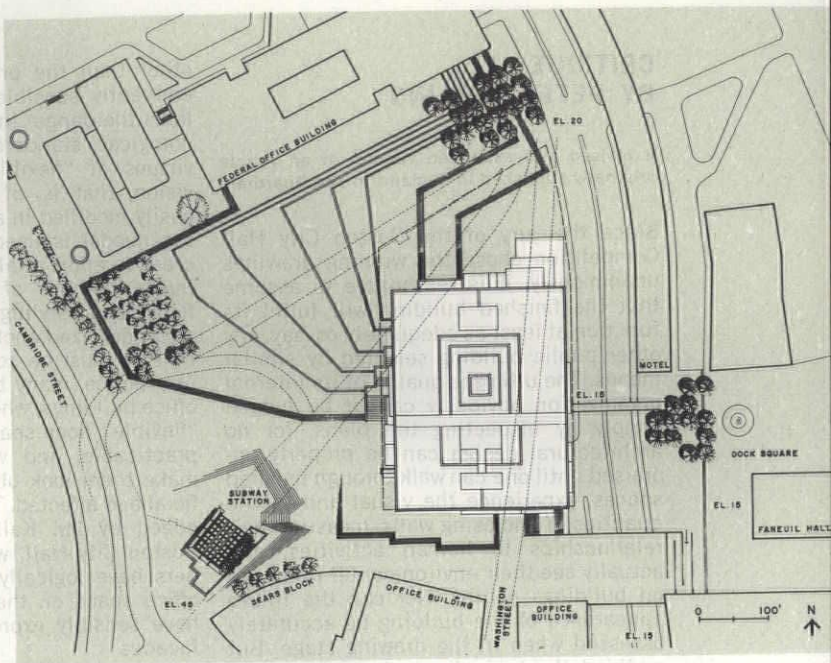
FIRST FLOOR
EL. 13'-0"-15'-0"

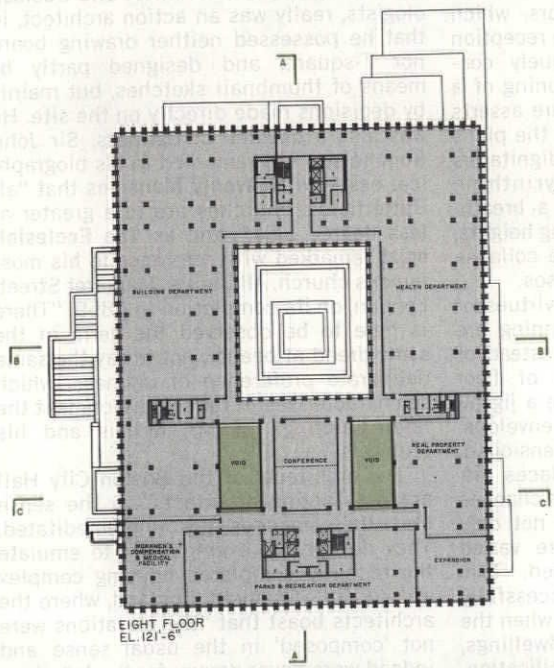


FOURTH FLOOR
EL. 50'-9"-57'-6"

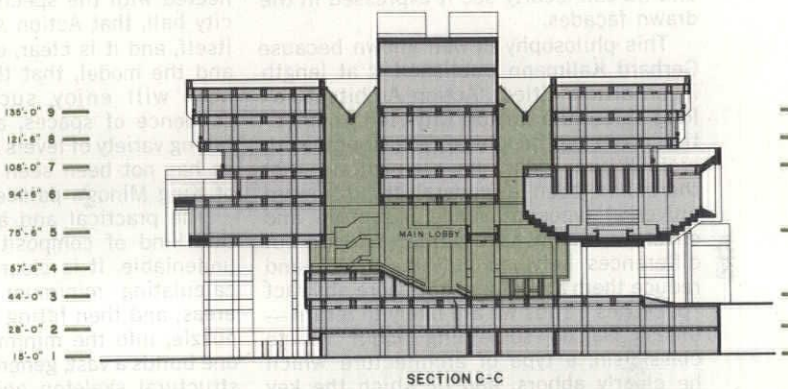


NINTH FLOOR
EL. 135'-0"

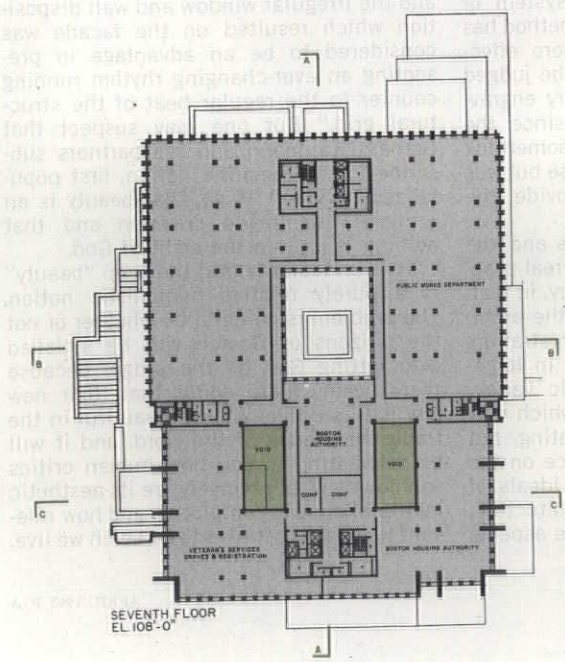




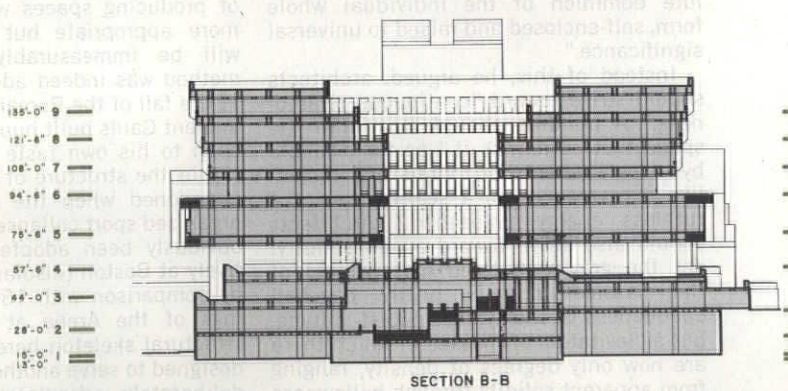
EIGHT FLOOR
EL. 121'-6"



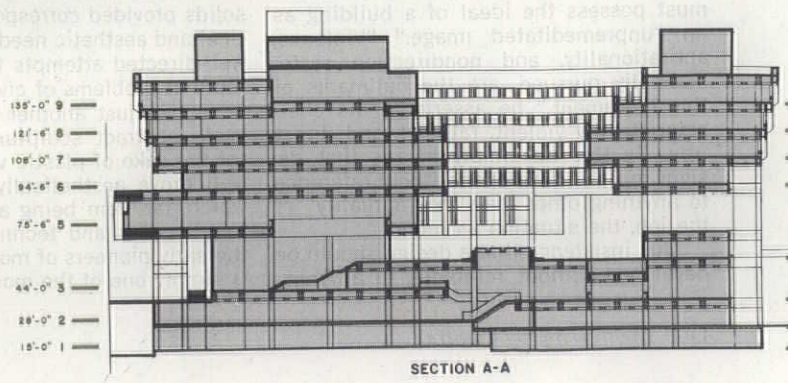
SECTION C-C



SEVENTH FLOOR
EL. 108'-0"



SECTION B-B



SECTION A-A

CRITIQUE
BY PETER COLLINS

A revised and expanded version of an article originally published in England in **The Guardian.**

Since the jury of the Boston City Hall Competition chose the winning drawings unanimously, it is reasonable to assume that the finished building will fulfill its function at least as adequately as, say, any other public building selected by similar means. The ultimate quality of its internal organization obviously cannot be judged simply by inspecting the plans, for no architectural design can be properly appraised until one can walk through finished spaces, experience the visual and tactile qualities of enclosing walls, measure their relationships to human activities, and actually see their environmental influence on buildings nearby. Nor can the future appearance of the building be accurately assessed when in the drawing stage. But on this latter topic discussion seems legitimate, since we know the architectural philosophy on which the design was based, and we can clearly see it expressed in the drawn facades.

This philosophy is well known because Gerhard Kallmann published it at length in an article titled "Action Architecture" long before the Boston City Hall Competition was even thought of. The trouble with architecture today, he claimed, is that there has been a general trend toward universal types of space, structure and envelope, which have tended to wipe out differences between building types, and reduce them all to more and more abstract "packages." Thus we are likely to return — unless we do something about it — to classicism, a type of architecture which he clearly abhors, and of which the key principle, according to him, is "the absolute dominion of the individual whole form, self-enclosed and raised to universal significance."

Instead of this, he argued, architects should strive toward "continuous relatedness." A building should "tear into the space that surrounds it," as for example by using "violent horizontals and rocket-like excrescences in a searing vision of ruthless energy unleashed." Architects should also strive toward a new solidity; not the gravity-centered massiveness of the classical, nor the brittle, eggshell opaqueness of the typical cubist volume, but a "levitation of masses in which there are now only degrees of density, ranging from apparent solidity through hollowness or openness to complete attenuation of the void." Most important of all, architects must possess the ideal of a building as an "unpremeditated image." "Violence, antirationality, and nondirection systematically pursued, are the hallmarks of this movement," he asserts in his characteristically violent, rational, and direct way. By this he simply means that designs must be developed without reference to anything other than the "actuality" of the job, the situation as found.

This insistence that a design should be developed without reference to anything other than the program and the site is eminently sensible, and certainly underlines the danger inherent in modern technological standardization, whereby the virtues of "flexible planning" (the provision, that is, of spaces which can be easily modified in accordance with changing needs) is used as an excuse for no creative effort at all; for simply constructing a number of identical rectangular floors and "styling" them externally with a standardized enclosing wall. At the same time, it must be conceded that there are, in practice, many building types, such as office buildings, where anything other than "flexible" floor space would be quite impracticable, and where any attempt to make them look otherwise would be artificial and affected. This is indeed acknowledged by Mr. Kallmann himself in the Boston City Hall, where he and his partners have logically provided this sort of office space on the top three floors, and have sensibly expressed the fact on the facades.

It is thus on the lower floors, which house the council chambers, the reception areas, and other spaces uniquely connected with the specific functioning of a city hall, that Action Architecture asserts itself, and it is clear, even from the plans and the model, that the civic dignitaries here will enjoy such a labyrinthine sequence of spaces, and such a breathtaking variety of levels and ceiling heights, as has not been seen since the collapse of King Minos's palace at Knossos.

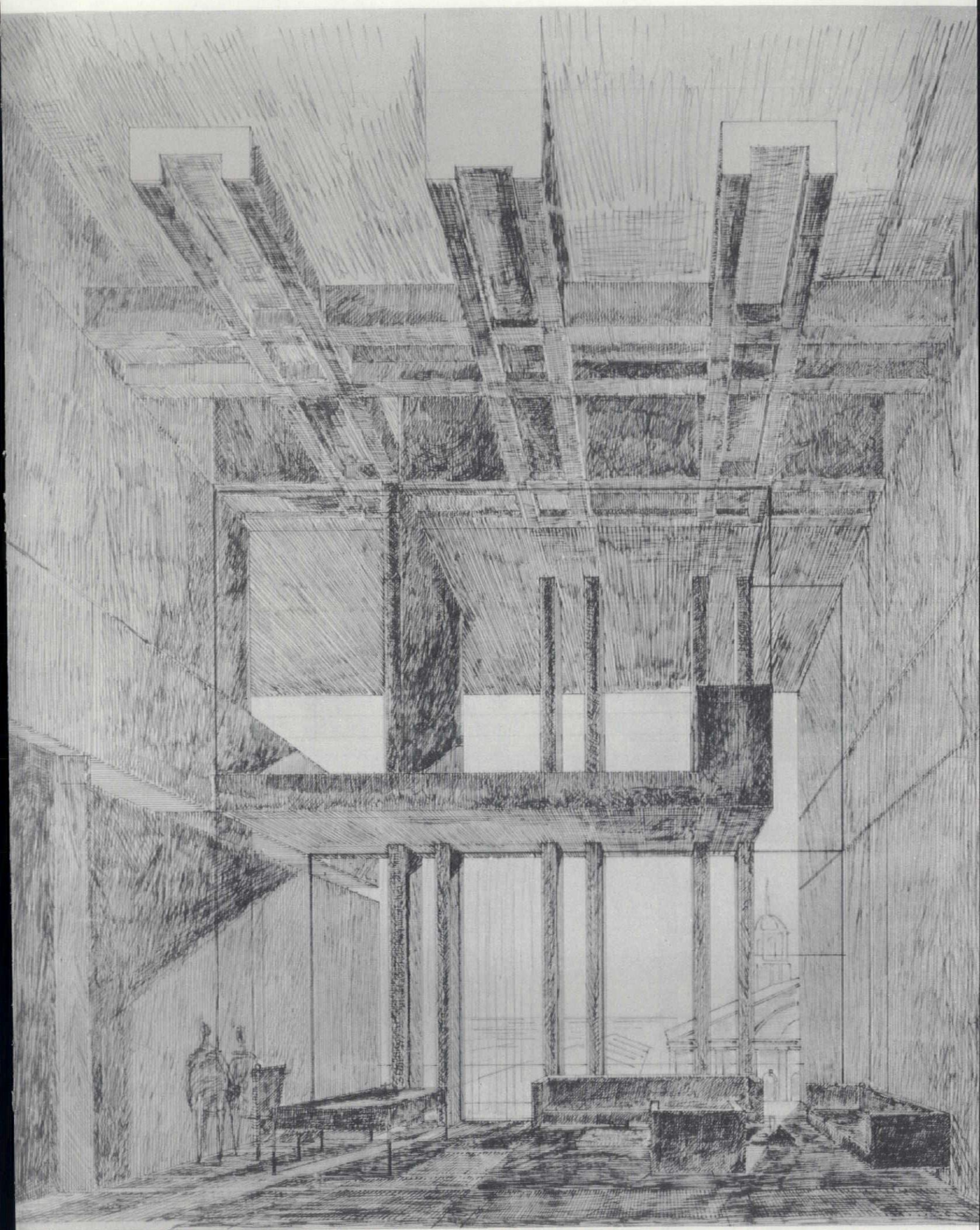
The practical and aesthetic virtues of this kind of compositional planning are undeniable. It is clear that if, instead of calculating minimum volumes of floor areas, and then fitting them, like a jigsaw puzzle, into the minimal cubic envelope, one builds a vast, generously dimensioned, structural skeleton and then places different volumes within it freely, the chances of producing spaces which are not only more appropriate but also more varied will be immeasurably increased. This method was indeed adopted successfully at the fall of the Roman Empire, when the ancient Gauls built hundreds of dwellings, each to his own taste and specification, within the structure of the amphitheatres abandoned when the Roman system or organized sport collapsed. The method has obviously been adopted far more effectively at Boston (insofar as can be judged by comparison with 16th-Century engravings of the Arena at Arles), since the structural skeleton here is not something designed to serve another purpose but was deliberately articulated to provide the accommodation required.

To what extent do the spaces and the solids provided correspond to a real practical and aesthetic need? Are they, in fact, well-directed attempts to solve the architectural problems of civic administration, or is this just another exercise in large-scale abstract sculpture, plastic variety for the sake of plastic variety, which may well prove aesthetically stimulating, but which, far from being an advance on the functionalist and technological ideals of the early pioneers of modern architecture, is simply one of the more puerile aspects of Victorian picturesqueness in a new guise? Presumably the members of the jury representing the Boston City Council were well satisfied that the requirements of the program were fulfilled, that all the concrete excrescences were either functionally or ornamentally justifiable, and that the free spaces within the skeleton of giant columns will be at least as aesthetically effective in their own way as, let us say, the classical porticoes or colonnades were in the past. But they, like many others, and not only Bostonians, must be awaiting with a certain amount of trepidation the completion of this building in three years' time; for only then shall we discover whether Action Architecture really is the deliverance from machine-age monotony promised by its promoters, or whether it is simply the architecture of William Butterfield raised to the terrifying dimensions of the atomic age.

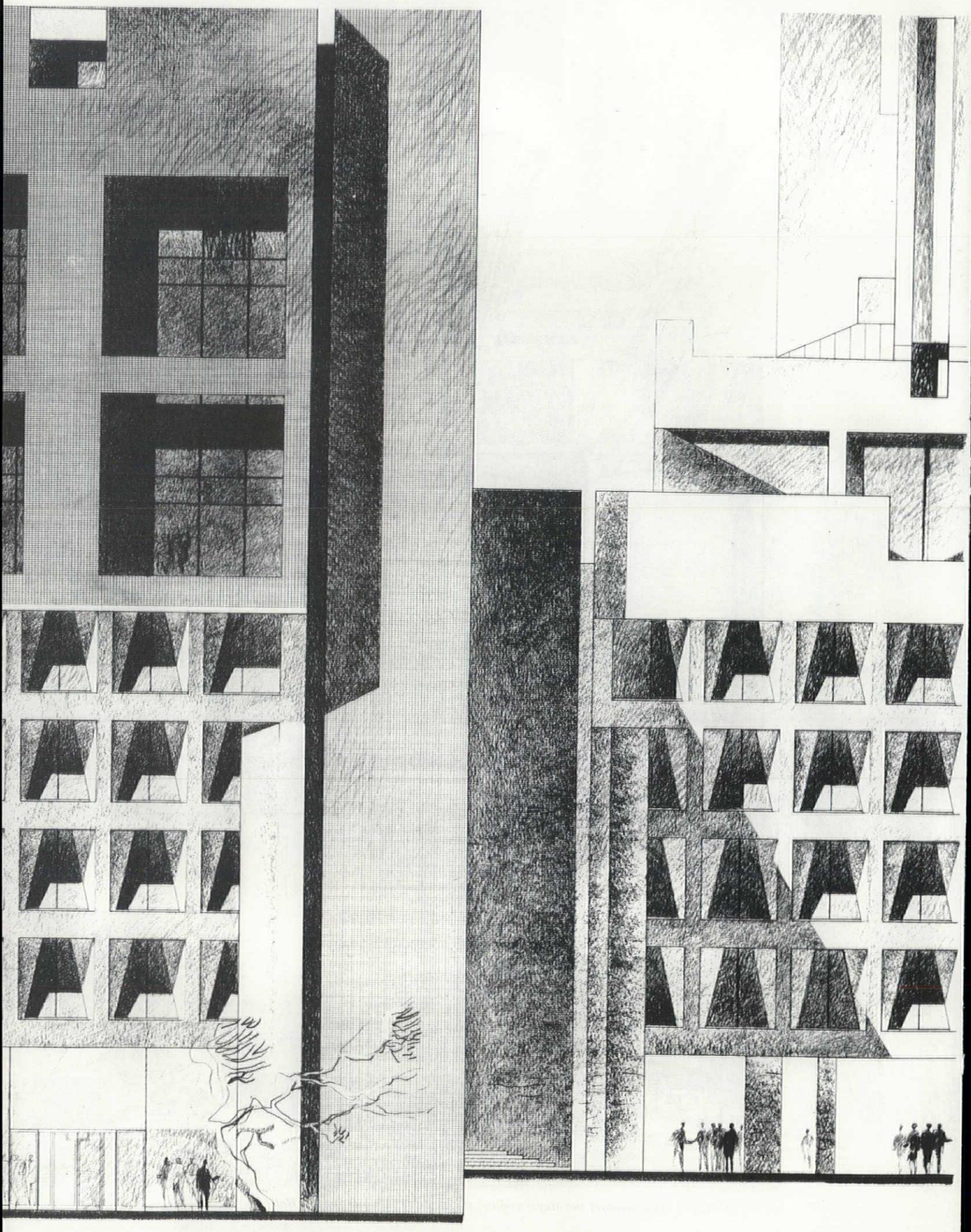
Butterfield, one of the most eminent church architects of the Victorian era, and the darling of the Ruskinites and Ecclesiologists, really was an action architect, in that he possessed neither drawing board nor T-square, and designed partly by means of thumbnail sketches, but mainly by decisions made directly on the site. He was also a devotee of ugliness. Sir John Summerson has remarked in his biographical essay in **Heavenly Mansions** that "all Butterfield's churches are to a greater or less degree ugly," and as **The Ecclesiologist** remarked with reference to his most famous church, All Saints, Margaret Street, London, on its completion in 1859: "There is here to be observed the germ of the same dread of beauty, not to say the same deliberate preference of ugliness, which so characterizes in fuller development the later paintings of Mr. Millais and his followers."

The architects of the Boston City Hall are not "action architects" in the sense that their facades are unpremeditated. They do not, for example, try to emulate the recently completed housing complex at Park Hill, Sheffield, England, where the architects boast that "the elevations were not 'composed' in the usual sense and indeed were never drawn; for the ¼" plans laid down where the windows were to go, and the irregular window and wall disposition which resulted on the facade was considered to be an advantage in presenting an ever-changing rhythm running counter to the regular beat of the structural grid." But one may suspect that Gerhard Kallmann and his partners subscribe to the romantic notion, first popularized by Victor Hugo, that beauty is an artificial, man-made criterion and that nothing is ugly in the sight of God.

It is undeniable that the term "beauty" is a purely relative humanistic notion. The problem is going to be whether or not the citizens of Boston will be satisfied with letting God be the judge; because there seems little doubt that their new city hall is unlikely to be beautiful in the traditional sense of the word, and it will be interesting to see how human critics will decide what precisely are its aesthetic merits when it is completed, and how relevant these are to the world in which we live.



Sketch of the interior of the Mayor's office; the windows overlook Faneuil Hall.



detail west elevation

RUNNER-UP

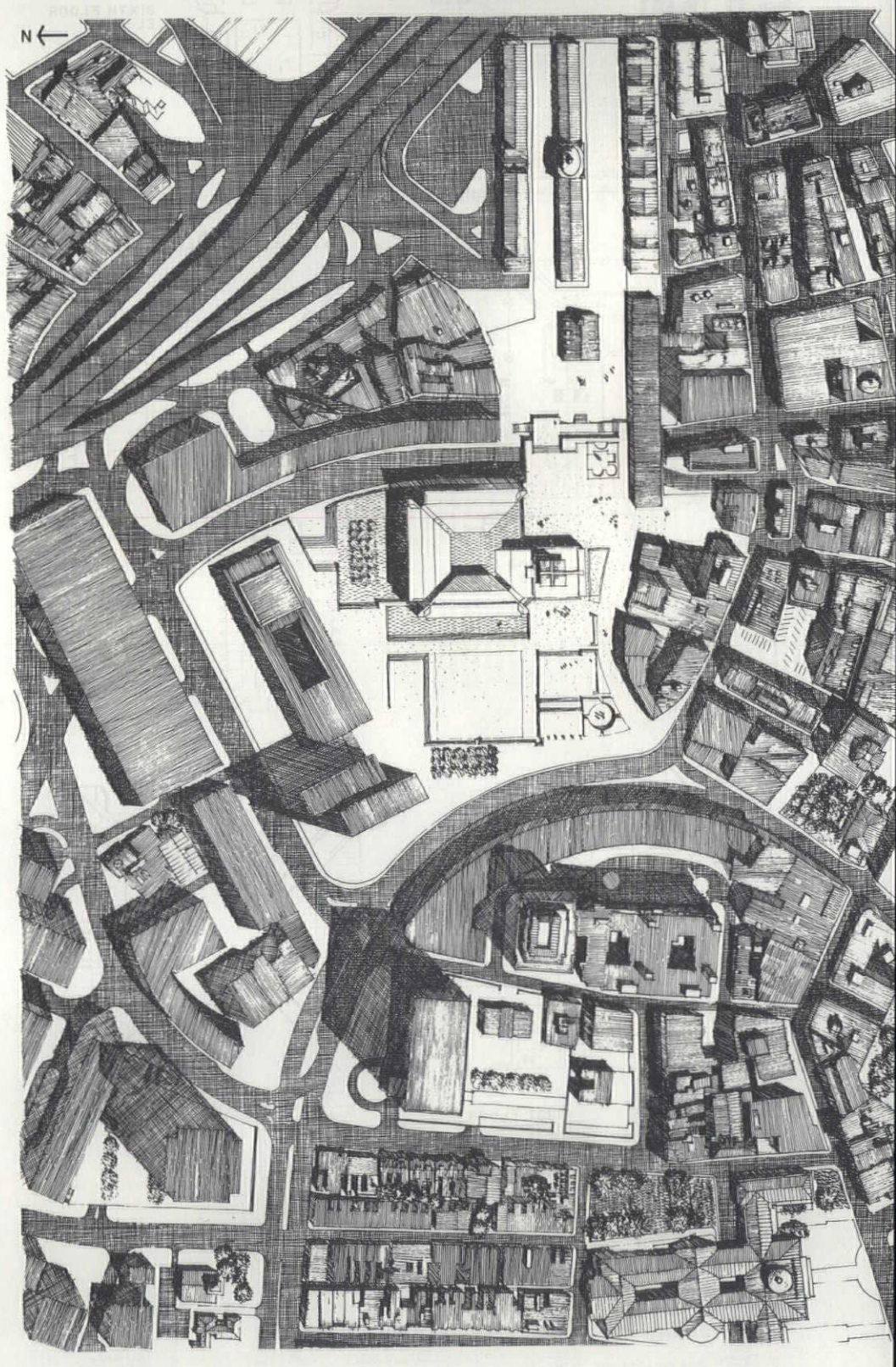
in the Boston City Hall competition

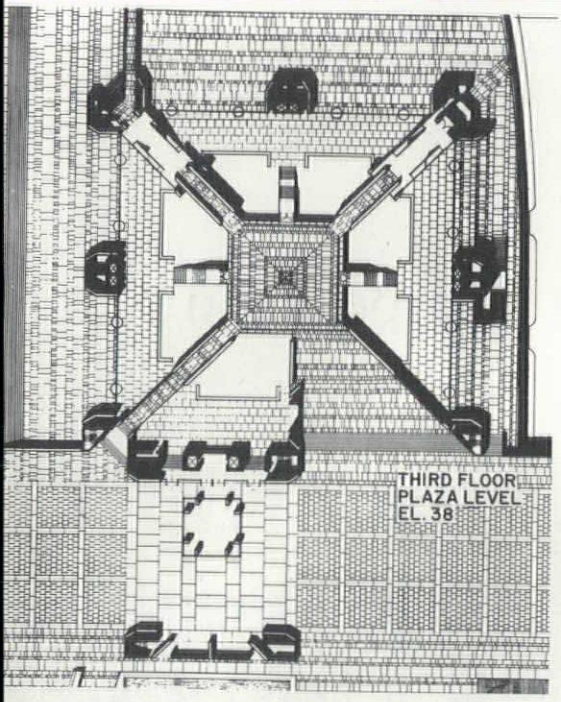
No official rating was made of the design solutions of the seven other teams that also competed in the second stage of the competition. It is known, however, that the project by Philadelphians Romaldo Giurgola, Ehrman B. Mitchell, and Thomas R. Vreeland, Jr., was the object of controversial debate among jury members. And since this design has also aroused great interest among the profession at large, we are here presenting a comparitive study of the competition winner and "runner up," as well as some of the drawings of the Philadelphia team's design and the following description of the project as submitted to the jury:

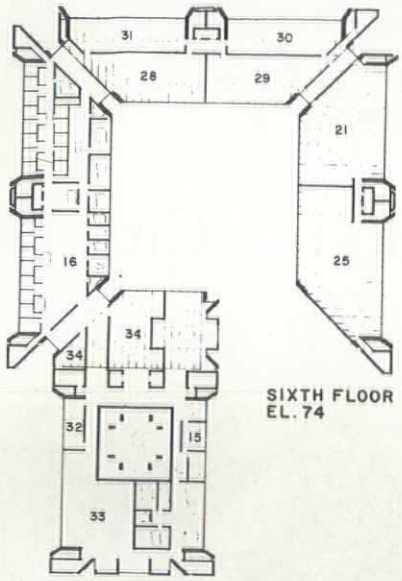
"Three high office structures and a lower council building sit on a stepped granite plaza around a center square. The public moves easily between the junctures of the building into the square and across to the city beyond. All four buildings rest on massive, widely-spaced supports through which the subways pass unobstructed.

"The structure is of reinforced concrete. All primary members are left exposed; a brick revetment sheathes most of the other wall surfaces.

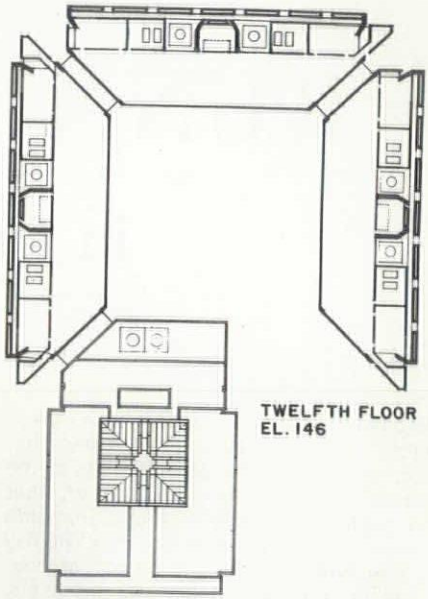
"The lower four floors of each structure step sharply inward from the surrounding plaza by means of superimposed, floor-high, three-dimensional trusses. The inverted space thus formed creates an easy introduction into the building and through it to the square at its center. The trusses also serve to distinguish the heavily-trafficked public floors close to the ground from the more remote upper floors. Above the trussed floors of the three high structures, and supported on them, a great wall clad in brick rises independent of the building to mask the glass wall of the offices behind. Giant 20 ft square openings cut into this wall admit light to the offices. On the sheltered or court side of each structure, the trusses reverse themselves so that each successive floor steps back from the court. All four building walls surrounding the court are sheathed with heat- and glare-resistant glass held in bronze frames. The council chamber is a self-supporting structure of concrete rising up through an open well in the center of the council building. It is surmounted by a high lantern of exposed concrete which identifies the chamber and acts as an important visual focal point of the total building composition. The council chamber rises free of the surrounding structure and light pours down beneath it into the well below. The upper floors of the high structures are carried on columns spaced 10 ft apart, which rest on the trusses below. The floors themselves are constructed



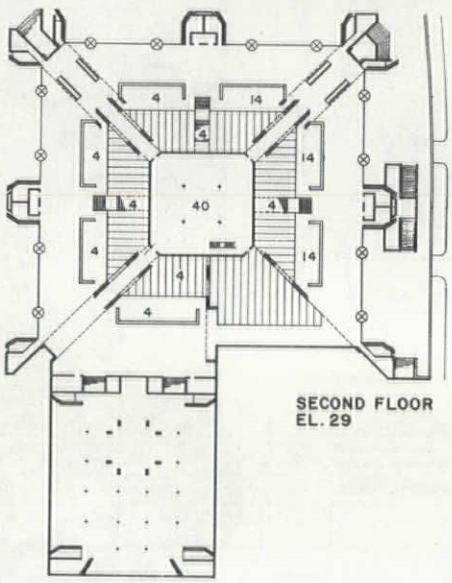




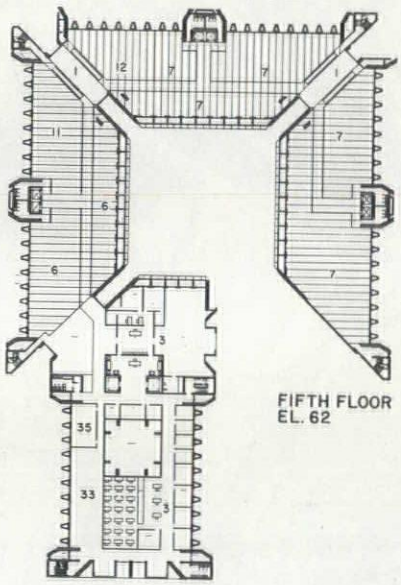
SIXTH FLOOR
EL. 74



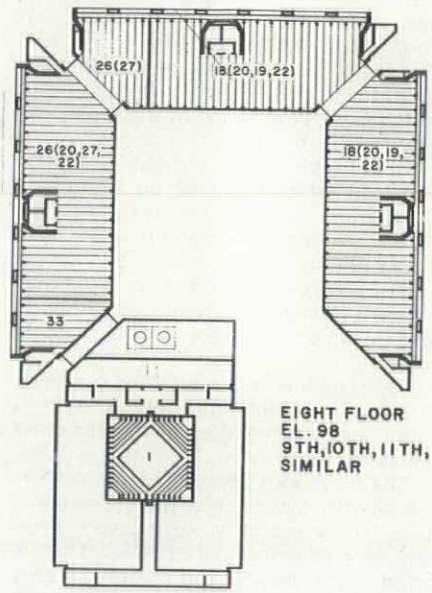
TWELFTH FLOOR
EL. 146



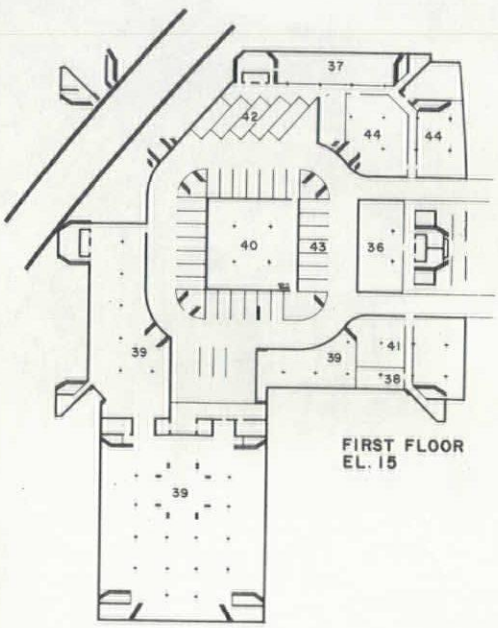
SECOND FLOOR
EL. 29



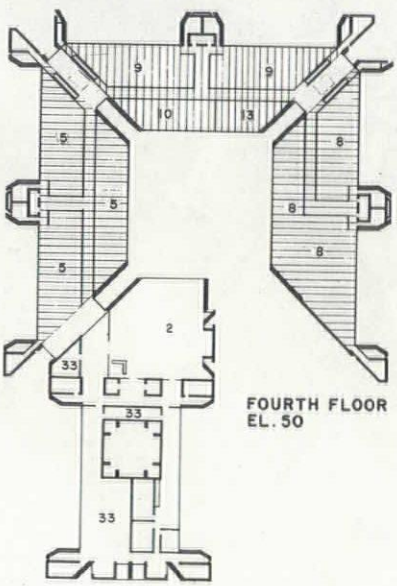
FIFTH FLOOR
EL. 62



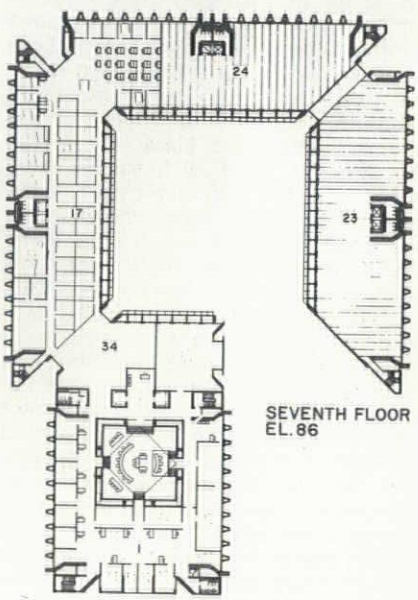
EIGHT FLOOR
EL. 98
9TH, 10TH, 11TH,
SIMILAR



FIRST FLOOR
EL. 15



FOURTH FLOOR
EL. 50



SEVENTH FLOOR
EL. 86

DEPARTMENTAL AND GENERAL AREAS : SF

1	City Council	17,075	12	Licensing Division	1,050	23	Boston Housing Authority	9,881	34	Shared Conference Rooms	4,302
2	Municipal Reference Library	7,034	13	Complaints	1,025	24	Parks and Recreation	7,067	35	Press Room	525
3	Mayor	9,709	14	Public Contact Offices	2,900	25	Real Property	5,100	36	Central Mail & Communication	2,233
4	Treasury	17,532	15	City Clerk	3,750	26	School Buildings	11,167	37	Central Office Supply	1,800
5	Auditing	7,648	16	Administrative Services	9,600	27	Veterans' Services	8,417	38	Typewriter Repair Room	510
6	Boston Retirement Board & Credit Union	4,864	17	Law	13,966	28	Civil Defense	2,438	39	Inactive Files and Storage	22,462
7	Assessing	13,639	18	Health	18,120	29	Workmen's Compensation and Medical Facility	2,438	40	Electronic Data Processing	8,804
8	Election	7,532	19	Building	18,120	30	Penal Institutions	2,125	41	Traffic Control Panel	1,200
9	Registry	4,640	20	Public Works	30,915	31	Boston Finance Commission	2,125	42	Loading and Receiving	2,340
10	Weights & Measures	1,350	21	Traffic	4,200	32	George Robert White Fund	600	43	Vehicle Parking	6,775
11	Licensing Board	3,640	22	Boston Redevelopment Authority	33,283	33	Unassigned and Expansion	10,845	44	Custodial	4,124
											354,160 SF

of 5-ft-wide, prestressed T-beams spanning 60 ft clear. These beams have wide bottom flanges which form a partial ceiling with continuous and easily accessible duct space above it. Circular cutouts in the web permit passage at right angles to the beams every 10 ft.

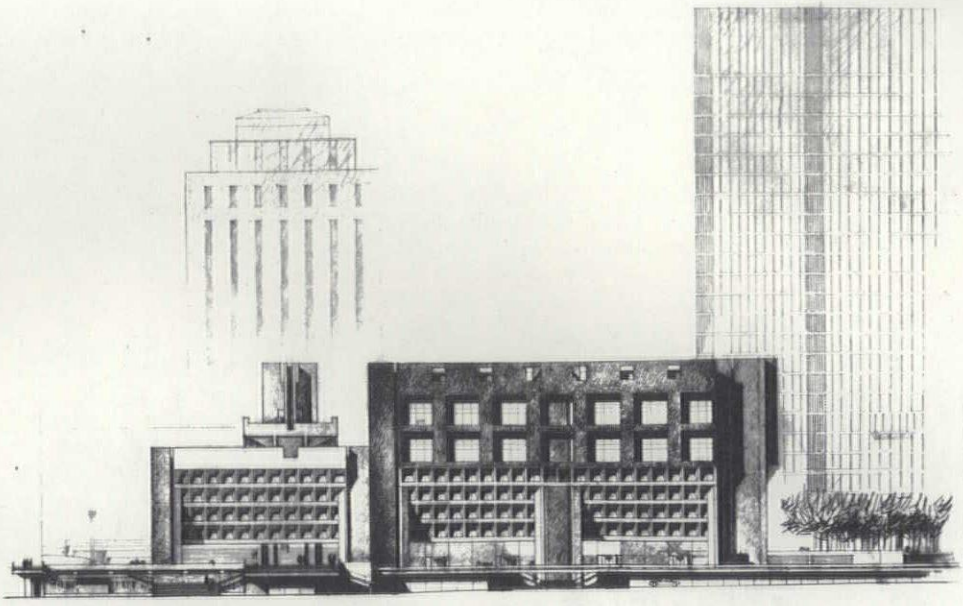
"The air-conditioning plant is located at the top of each building. Air is supplied to the high structures through the brick-faced screen walls on the outside of the building and down into each floor through a high-velocity dual-duct system. Below the sixth floor, the hot or cold ducts pass alternately down through the voids of the tetrahedral truss units to feed into the ends of each T-beam. Mixing boxes located within the floor structure permit individual temperature control at every point in the building. Air diffusers and fluorescent lamps are placed in the continuous slots between the lower flanges of the beams to form a ceiling which provides air and light regularly every 5 ft. Air shafts in the hollows of the massive end piers of each building pick up air at the floors and return it to the roof."

It is interesting to compare this solution with that of the competition winner — both having been based on the same clearly defined program, both having had to adjust to the same limitations. Although the two appear to follow the same school stylistically — on the surface, at least — there are wide differences which become evident on closer examination.

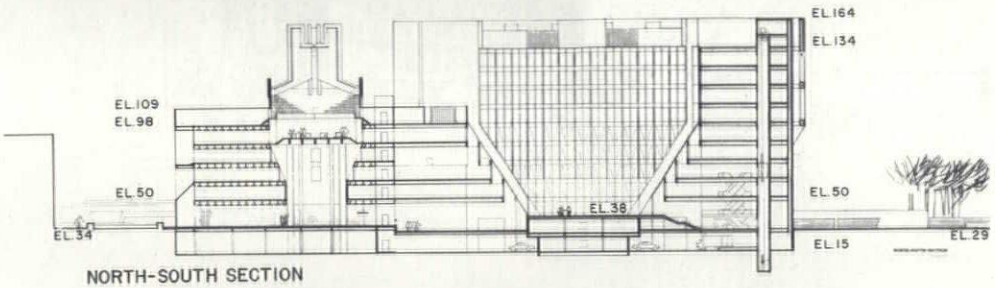
(1) The winning solution involves an intricate system of levels and interlocking spaces. The scheme by the Philadelphia group is spatially much less complicated, and is, as they wanted it, purposely "without romantic configurations or mysteries." In the first project, for example, the public is led from the plaza to the public offices through a series of complex spaces; the second project, on the other hand, stresses a simple, one-level continuity between plaza and public offices. In both cases, the architects wanted the public to be "drawn into" the building. The winning team has done it in a labyrinthian way; the other has done it as directly as possible — even justifying 80 ft clear spans at ground level, in order to eliminate all possible obstructions and to symbolize in a way the "approachability" of city government.

(2) The first project suspends the ceremonial spaces between the massive brick base containing the public bureaus and the top office floors. In this design, the mayor's office, the city council chamber, and the library are set apart from the office blocks, making the ceremonial spaces easily identifiable, and providing Bostonians with a city hall traditionally limited to these functions.

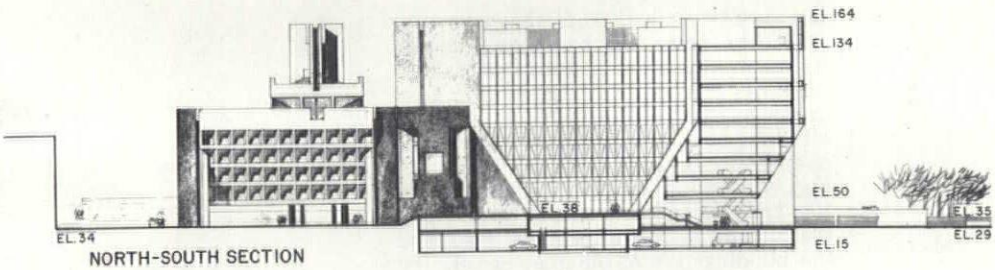
(3) The winning solution is designed as a single monumental structure. The Philadelphia team, on the other hand, uses a two-part solution that serves to form a more solid link between the small and the large, the old and the new — that is, in its smaller size and slightly forward placement, the council building (i.e., the city hall proper) is brought into direct architectural relationship with the nearby historical buildings, while the three identical office blocks recall the newer and more bulky office structures. To a large degree, the existing Sears Block (see view from southwest) set the pattern, established the height, and determined the choice of materials for the new council building, while the heavy brick screens and exaggerated openings of the three office blocks attempt to establish rapport with the overwhelm-



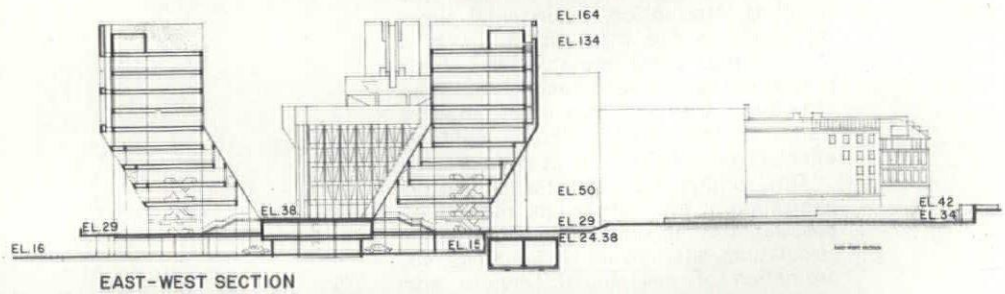
EAST ELEVATION



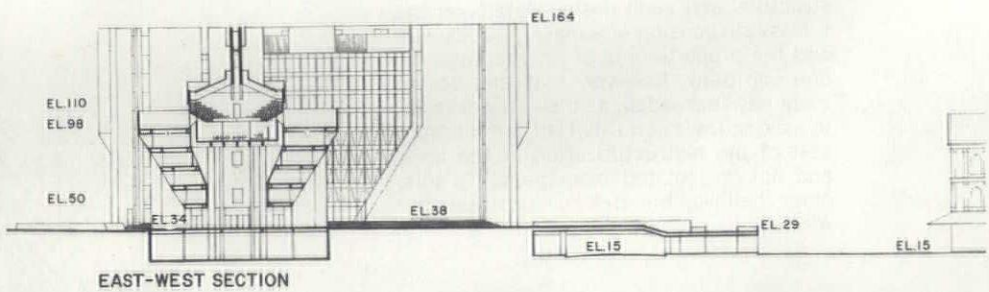
NORTH-SOUTH SECTION



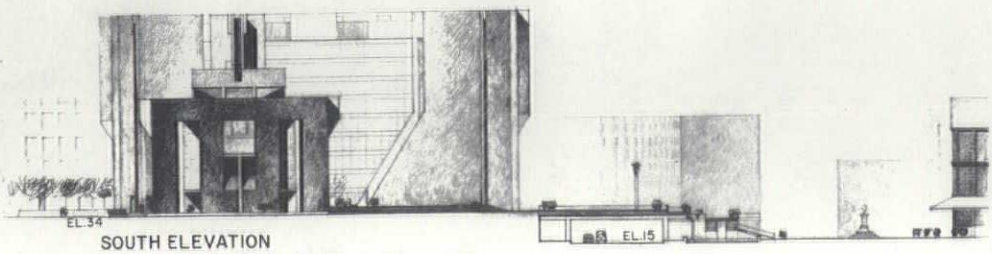
NORTH-SOUTH SECTION



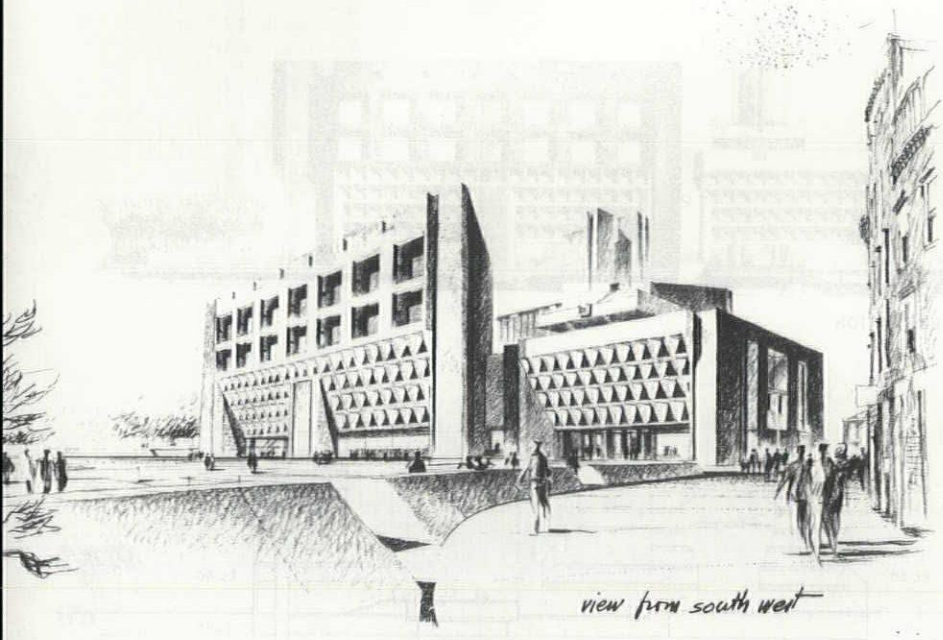
EAST-WEST SECTION



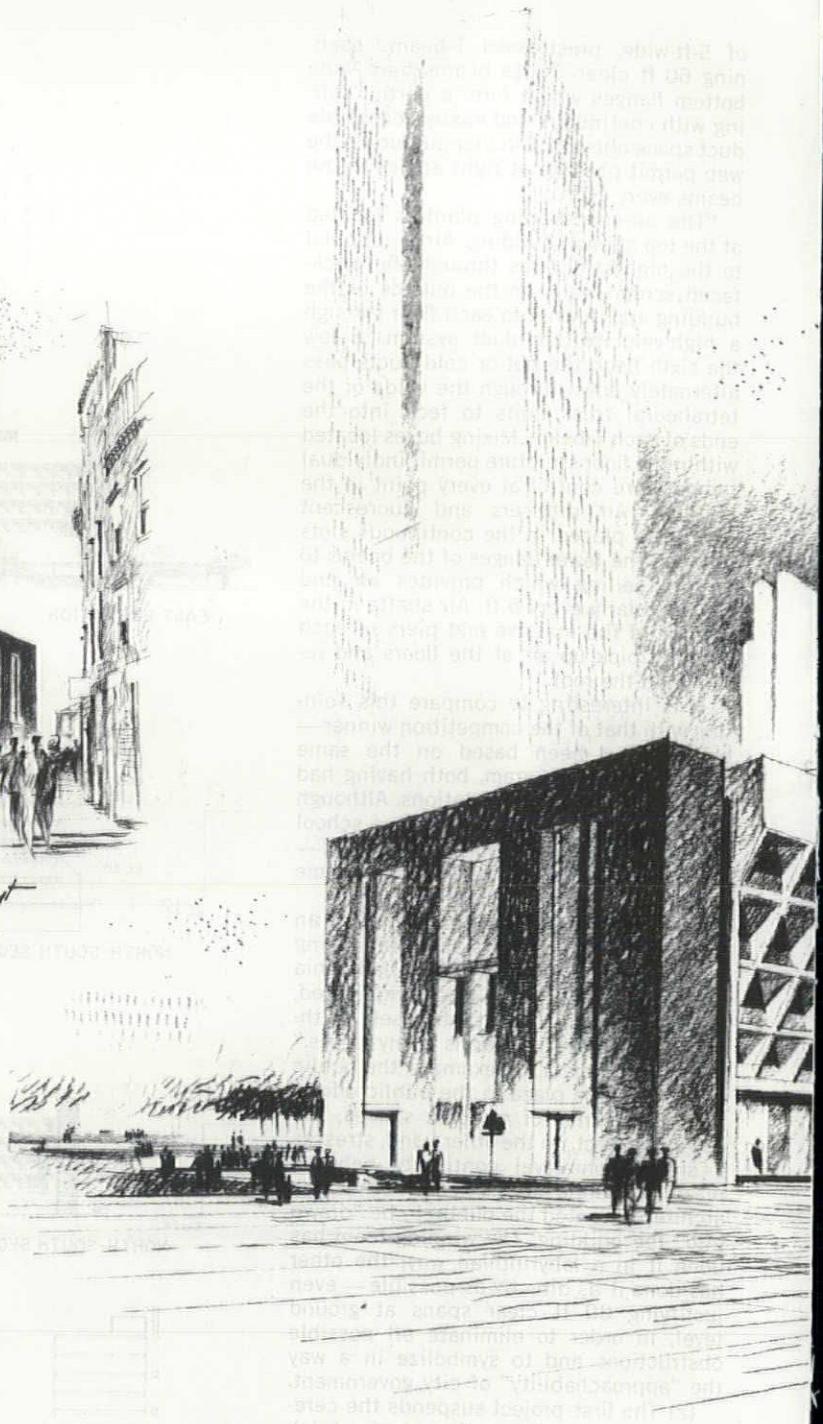
EAST-WEST SECTION



SOUTH ELEVATION



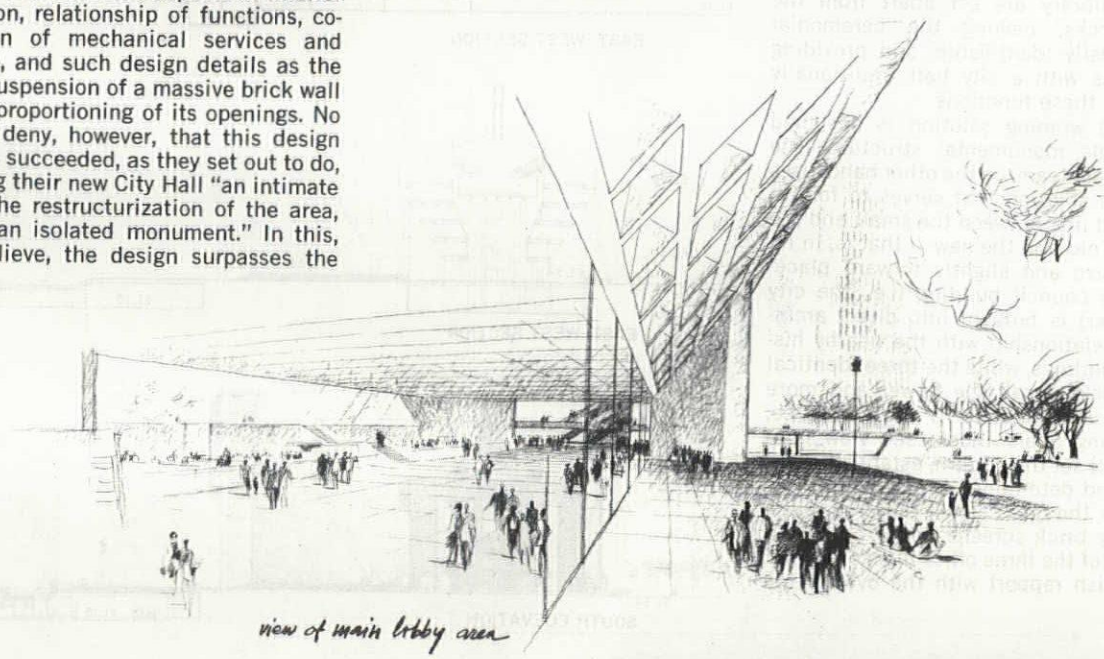
view from south west



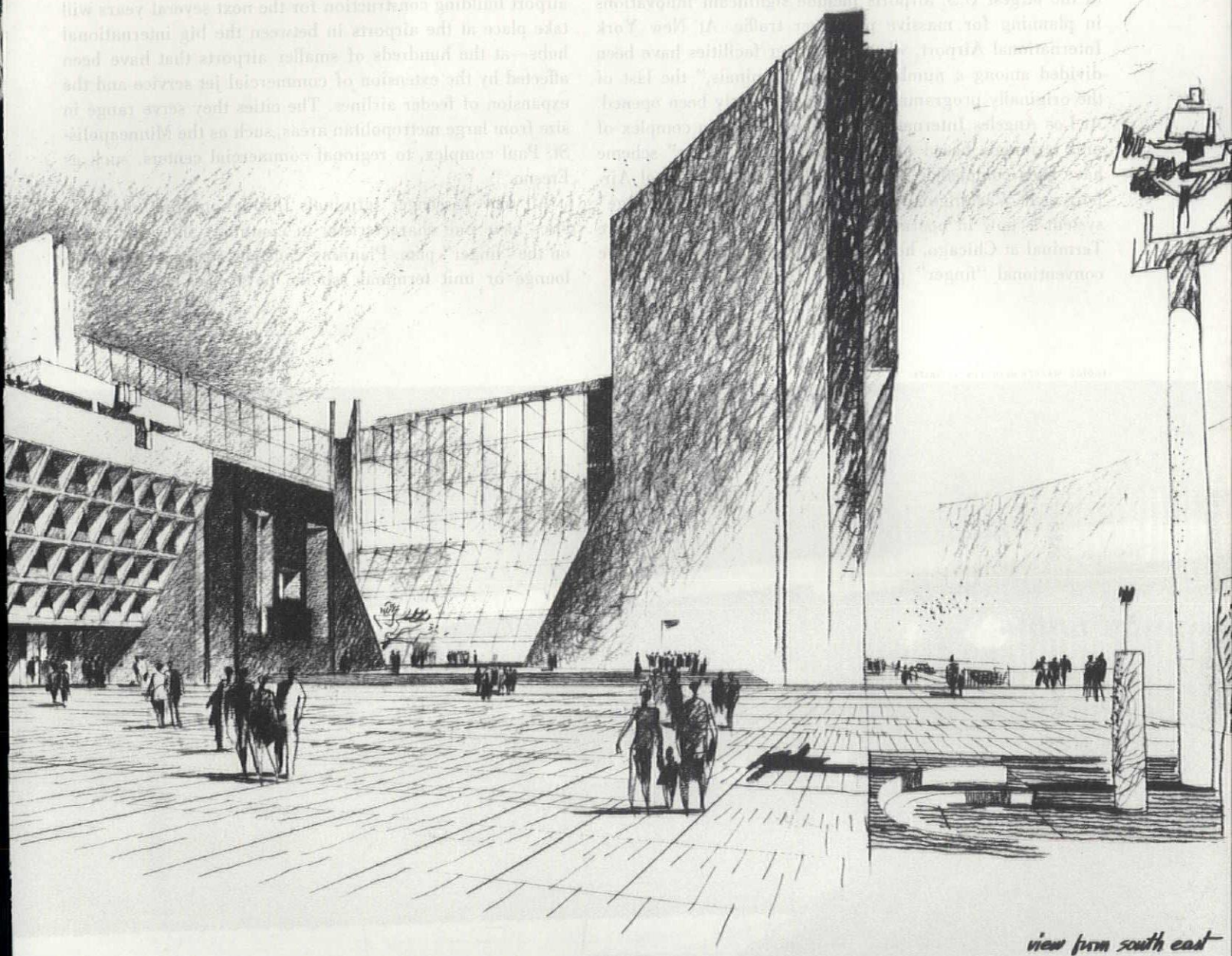
ing scale of Federal buildings nearby.

(4) The first team has fully enclosed its central courtyard; the Philadelphia team has considered it essential to keep one side of the court open in order to let the surrounding space "penetrate deeply into the mass of the new building," thus reinforcing even more the fluid continuity between their New City Hall and the historic dock area, Faneuil Hall, and the buildings on Washington Street. The Philadelphia team did not consider the resulting interruption of horizontal circulation within the three office towers a shortcoming, since elevators had been placed in the center of each of the three structures; they felt that distribution of traffic to the various offices could be effected without difficulty at ground level.

This solution may lack the unified organization of the first design, and indeed does fall short in some aspects of interior circulation, relationship of functions, coordination of mechanical services and structure, and such design details as the uneasy suspension of a massive brick wall and the proportioning of its openings. No one can deny, however, that this design team has succeeded, as they set out to do, in making their new City Hall "an intimate part of the restructurization of the area, and not an isolated monument." In this, many believe, the design surpasses the winner.



view of main lobby area



view from south east

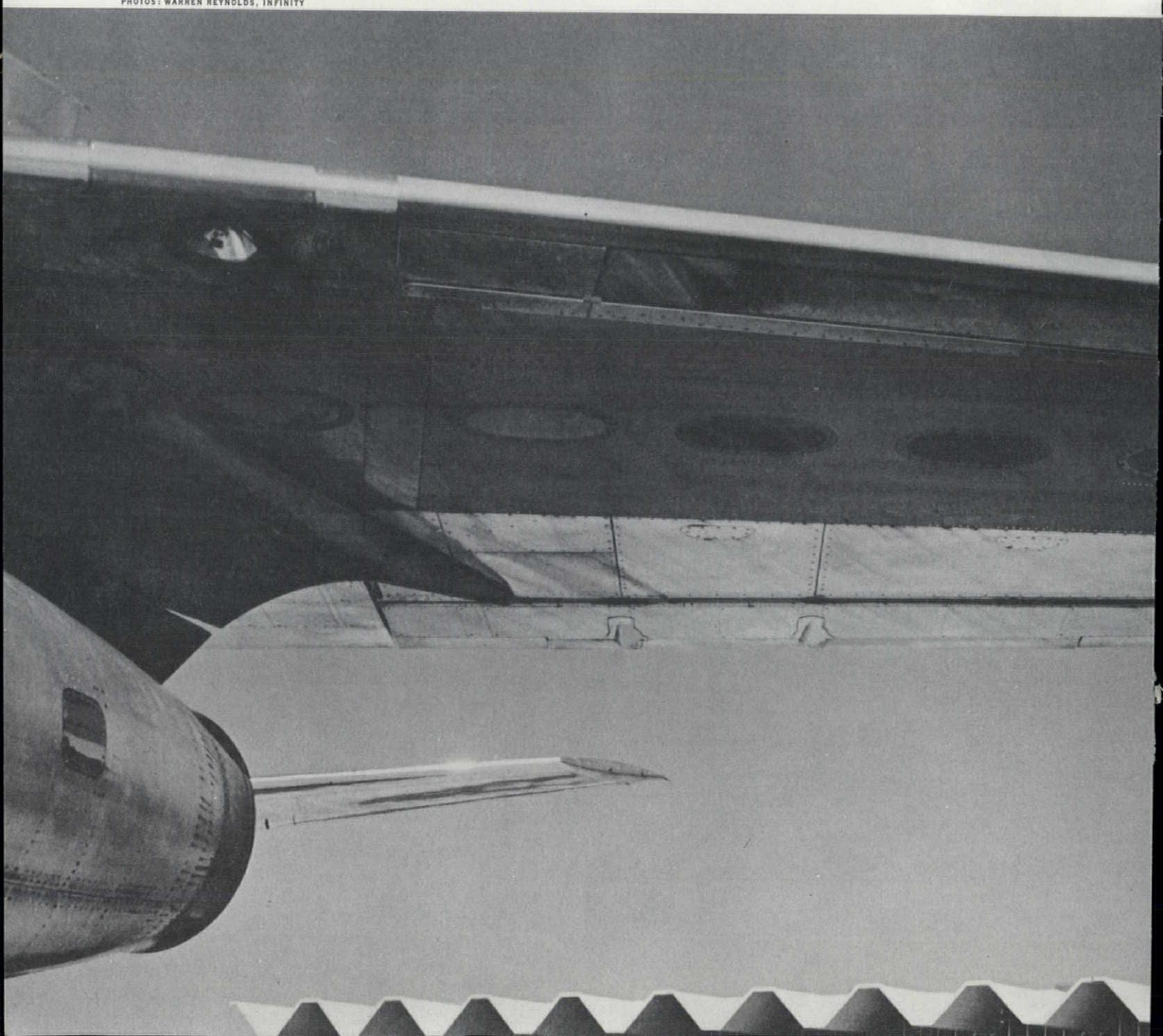
AIRPORT ARCHITECTURE

New passenger terminals now being completed at several of the largest U.S. airports include significant innovations in planning for massive passenger traffic. At New York International Airport, where passenger facilities have been divided among a number of "unit terminals," the last of the originally programmed units has recently been opened. At Los Angeles International, the first few of a complex of unit terminals based on the "tunnel-and-satellite" scheme have been completed. At the new Dulles International Airport near Washington, the revolutionary "mobile lounge" system is now in operation. The nearly completed O'Hare Terminal at Chicago, however, is a refinement of the more conventional "finger" plan.

But airports come in many sizes. The major effort in airport building construction for the next several years will take place at the airports in between the big international hubs—at the hundreds of smaller airports that have been affected by the extension of commercial jet service and the expansion of feeder airlines. The cities they serve range in size from large metropolitan areas, such as the Minneapolis-St. Paul complex, to regional commercial centers, such as Fresno.

All new passenger terminals throughout this range of sizes have one characteristic in common: they are based on the "finger" plan. Planning concepts such as the mobile lounge or unit terminal scheme have been found to be

PHOTOS: WARREN REYNOLDS, INFINITY



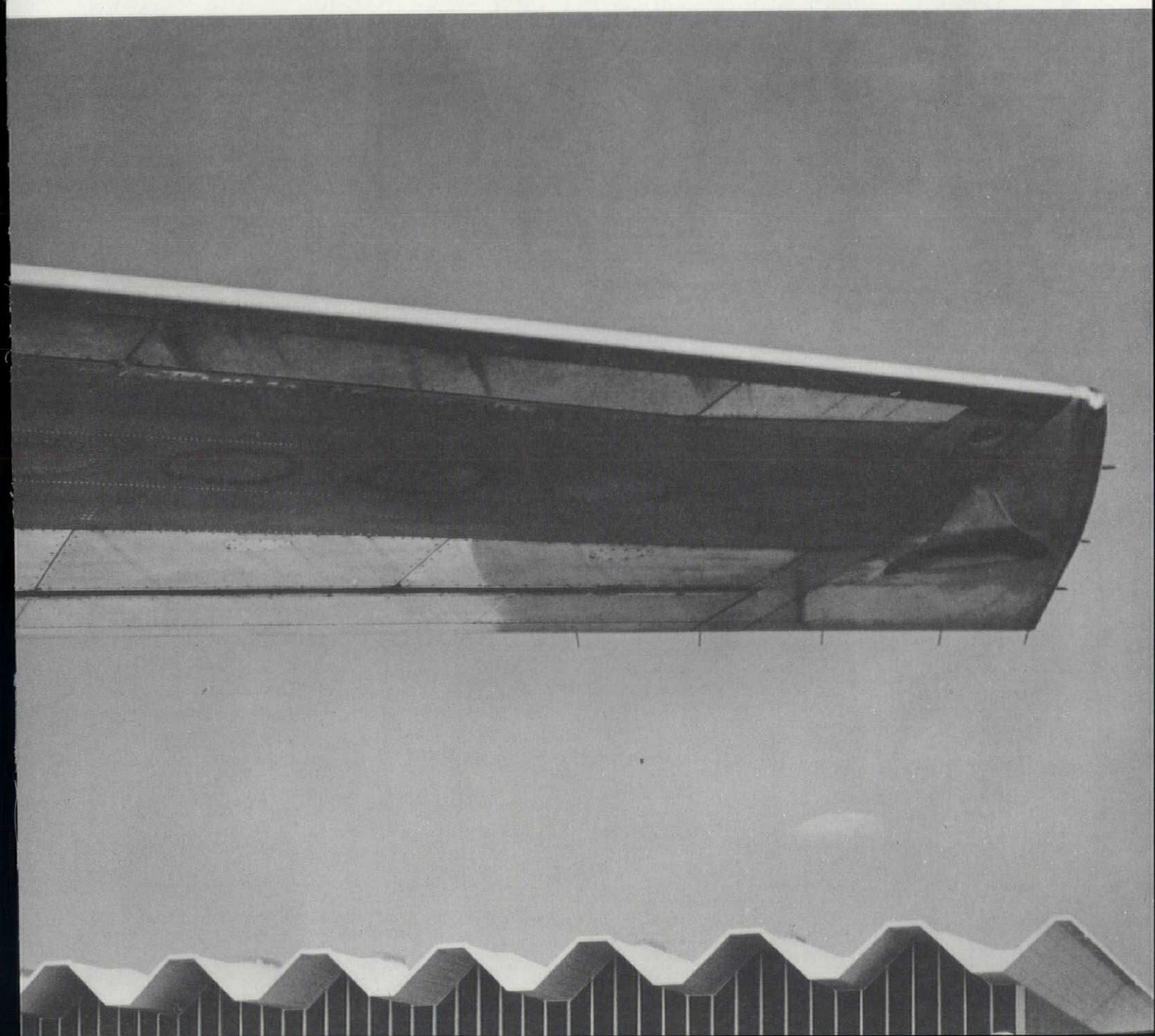
unjustifiable except for the largest traffic volumes (see "Choosing a Terminal Plan," NOVEMBER 1961 P/A).

The schemes of passenger circulation inside the terminal vary within this group, however. Larger terminals, such as Minneapolis-St. Paul, have full separation of arriving and departing traffic on two levels. Smaller terminals often have partial separation of passenger routes; the smallest commercial terminals are invariably single-level schemes with no separation of traffic.

Aside from the matter of planning, the critical problems of airport architecture are the same at any scale. The building must serve as a symbol of the place and provide a pleasing environment for the waiting traveler.

The British critic Michael Brawne, writing in *Architectural Review*, has questioned the symbolic function of the air terminal, claiming it results from an immature fascination with air travel similar to that which prompted the monumental railroad terminals of 50 to 100 years ago. He has even questioned the need for any passenger terminal at all, when a system of mobile elements could be devised to transport passengers from many points directly to the aircraft. As long as the concept of a terminal is retained, however, the problem remains of balancing a desire for symbolism with a need for efficiency.

The creation of a pleasant environment for frustrated passengers who may have to wait long hours requires both technical and aesthetic controls. Certain practical requirements must be provided: comfortable seating, adequate day and night illumination, isolation from aircraft noise, and fume-free air at comfortable temperature and velocity. The more subtle demands of psychological comfort can be met only by careful design of the visual environment. These vital needs are the ones most likely to be sacrificed if mere monumentality is the architectural goal.



PHOTOS: WARREN REYNOLDS, INFINITY

Metropolitan Gateway

PASSENGER TERMINAL, MINNEAPOLIS-ST. PAUL INTERNATIONAL AIRPORT • WOLD-CHAMBERLAIN FIELD, MINNESOTA • THE CERNY ASSOCIATES, ARCHITECTS & ENGINEERS

As the entrance to a large metropolitan area, this terminal was given a distinctive form by its folded-plate concrete roof, which creates the directional quality and the identity between front and rear faces that one expects of a gateway.

The program was based on an annual volume of 1,750,000, which is expected to grow to 4,000,000 within 10 years. It was therefore necessary for every part of the terminal to be expandable.

The need for expansion led to the adoption of a "constant cross-section" scheme for the central building. The principal concourses and auxiliary spaces are arranged as parallel elements and the ends of the building are free of barriers to expansion. The building can be extended in increments of 30-ft bays, and will be visually complete at every stage.

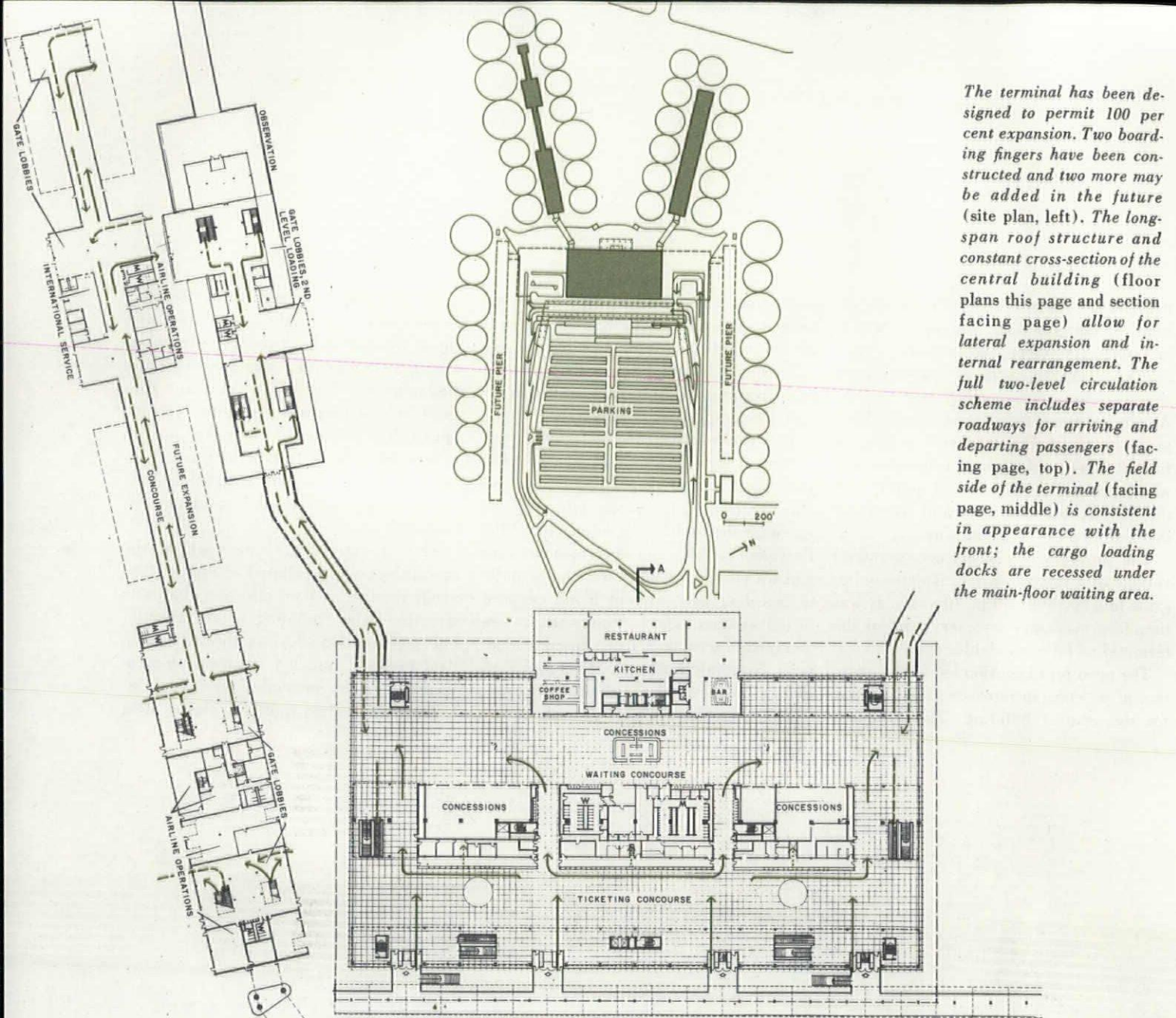
The two-level circulation scheme was chosen to eliminate interference between passenger and baggage circulation and also to allow enough automobile platform space for the anticipated volume of traffic. Basement parking and car rental facilities make it possible to move from automobile to boarding gate without being exposed to the weather. The boarding fingers are designed to accommodate enclosed second-level boarding ramps in the future, although none of the airlines using the terminal now have plans to install them.

The main floor of the central building is designed as a single open space, with three free-standing, two-story structures within it. Ticket counters and auxiliary functions are housed at the main floor level of one of these structures; airline offices, lounges, and a clinic are located at mezzanine level. One of the three structures will not have its mezzanine level enclosed until additional rentals space is required.

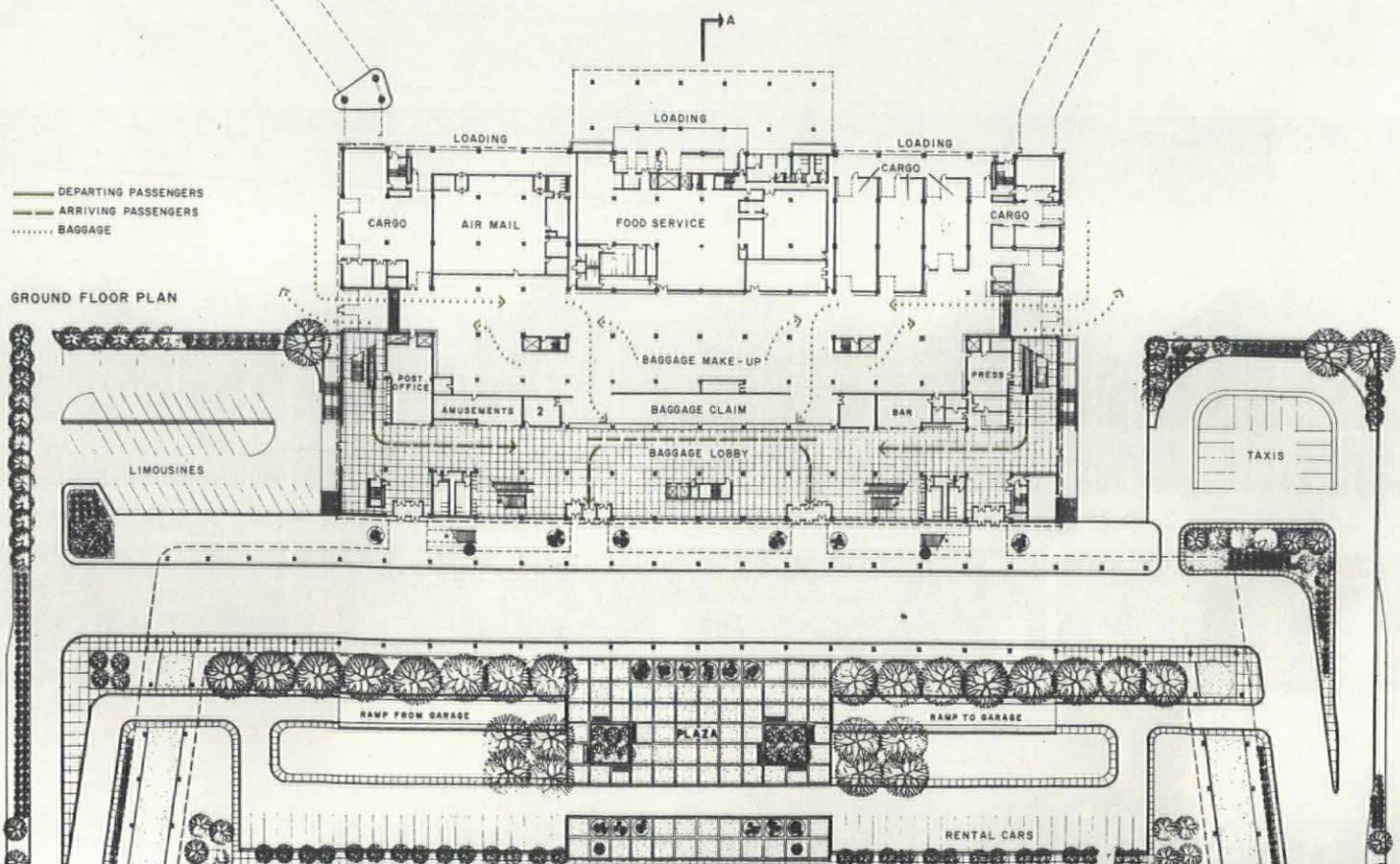
The exposed steel framework of the mezzanines can be altered or removed, as needs change, without affecting the basic structure. The "building within a building" construction affords additional acoustical isolation, which is desirable for the facilities on the mezzanine level.

The folded-plate roof was chosen as a

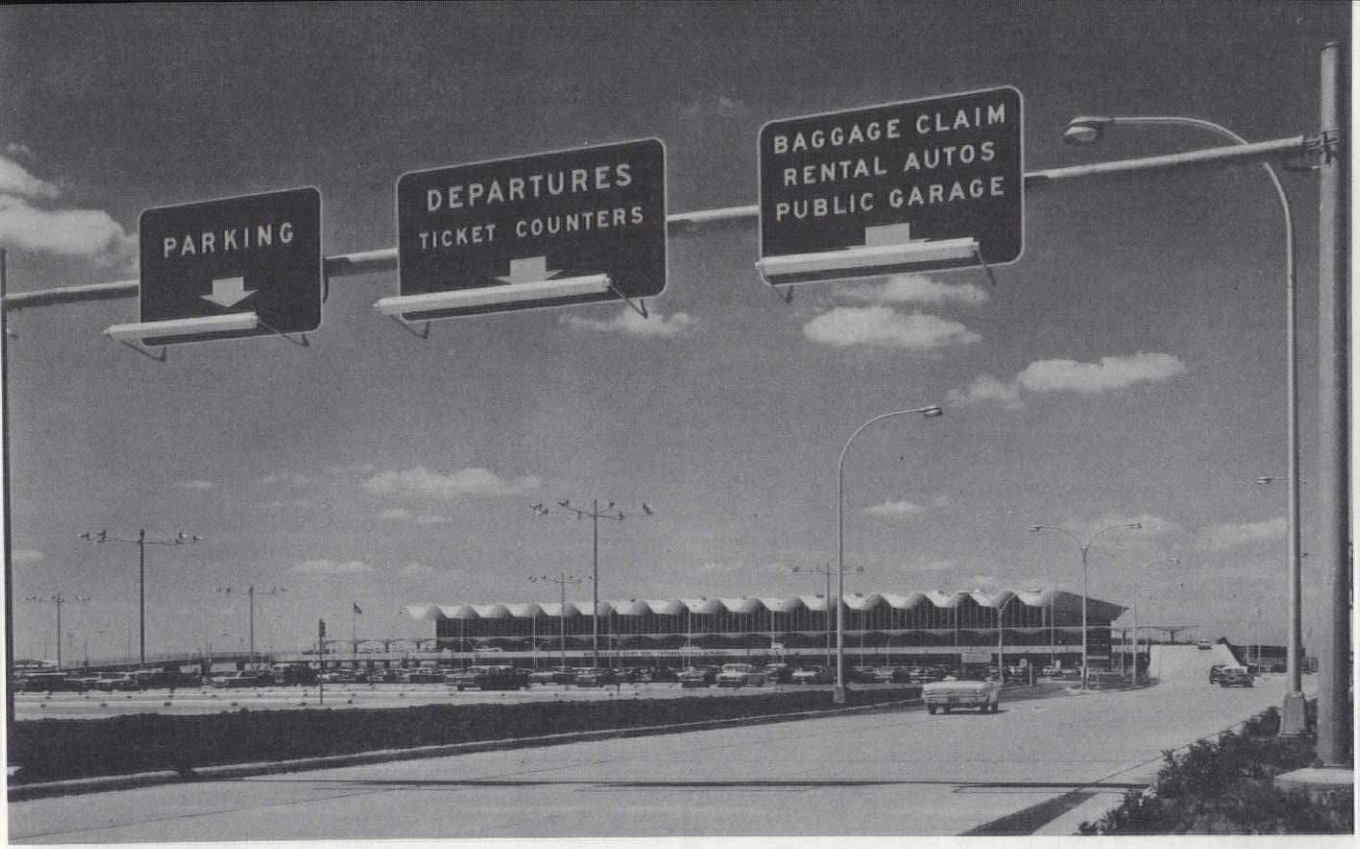
The terminal has been designed to permit 100 per cent expansion. Two boarding fingers have been constructed and two more may be added in the future (site plan, left). *The long-span roof structure and constant cross-section of the central building* (floor plans this page and section facing page) *allow for lateral expansion and internal rearrangement. The full two-level circulation scheme includes separate roadways for arriving and departing passengers* (facing page, top). *The field side of the terminal* (facing page, middle) *is consistent in appearance with the front; the cargo loading docks are recessed under the main-floor waiting area.*

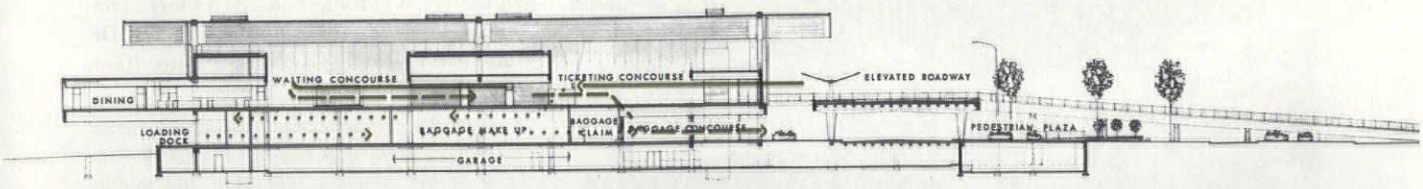


MAIN FLOOR PLAN



GROUND FLOOR PLAN





SECTION

relatively economical, fireproof means of spanning the 30′ x 120′ bays; it permits the development of mezzanine spaces and has considerable visual impact. Roofing of white plastic and marble chips has been used to maintain the visual effect of the structure when seen from the air.

The concrete columns that support the roof have been left exposed on the interior. Ordinary light-gray concrete was used, but an unusually light, uniform color and controlled texture were obtained by lining the forms with ribbed plastic sheet. The concrete surfaces have been protected from interior traffic by walnut strips applied up to a height of 7 ft above the floor.

In the central building, the walls above the level of the main floor are almost entirely of glass. In order to express the unity of the high interior space, the aluminum mullions are anchored only at the main floor and at the roof, with no intermediate bracing.

Where solid walls or partitions occur, they are surfaced with glazed brick—in black on the exterior, and in several vivid colors on the interior. All other building surfaces were limited to black, white, and gray, in order to serve as a neutral background for the bright and varied colors of the signs, furnishings, and displays.

Floors throughout the public areas of the central building are terrazzo. Since the budget would not permit the use of terrazzo on the more than 80,000 sq ft of public space in the boarding fingers, the

floors there are of concrete, ground to expose the aggregate.

A principal feature of the landscape design was the retaining of a grove of pines along the access road to give the arriving passenger a glimpse of typical native greenery. A plaza with ornamental trees has been developed outside the lower-level baggage claim area, and sodded earth mounds have been used to screen the parking areas from view.

The cost of the central building was approximately $6,495,000, including about $750,000 for the elevated roadway, which is equipped with heating units to prevent icing. The boarding fingers cost an additional $2,612,000.

Kenneth Whitehead was the partner in charge of the project. Engineers and consultants included: Leigh Fisher Associates, Airport Planning Consultants; Bolt, Beranek & Newman, Inc., Acoustical Consultants; Weidlinger & Salvadori, consultants on the folded plate roof; and Dr. C. Gustav Hard, Landscape Consultant.

Freestanding steel-framed mezzanine structures have been built beneath the 120-ft clear span of the concrete roof (top and middle left). *The underside of the roof was formed with recesses for acoustical panels, but sprayed acoustical material was applied to the whole surface to cover imperfections. Boarding concourses are designated by color names, using colored lettering on signs* (top left). *In these concourses* (bottom left), *windows were provided to give a sense of orientation but were kept narrow to discourage spectators from congregating and impeding passenger traffic.*

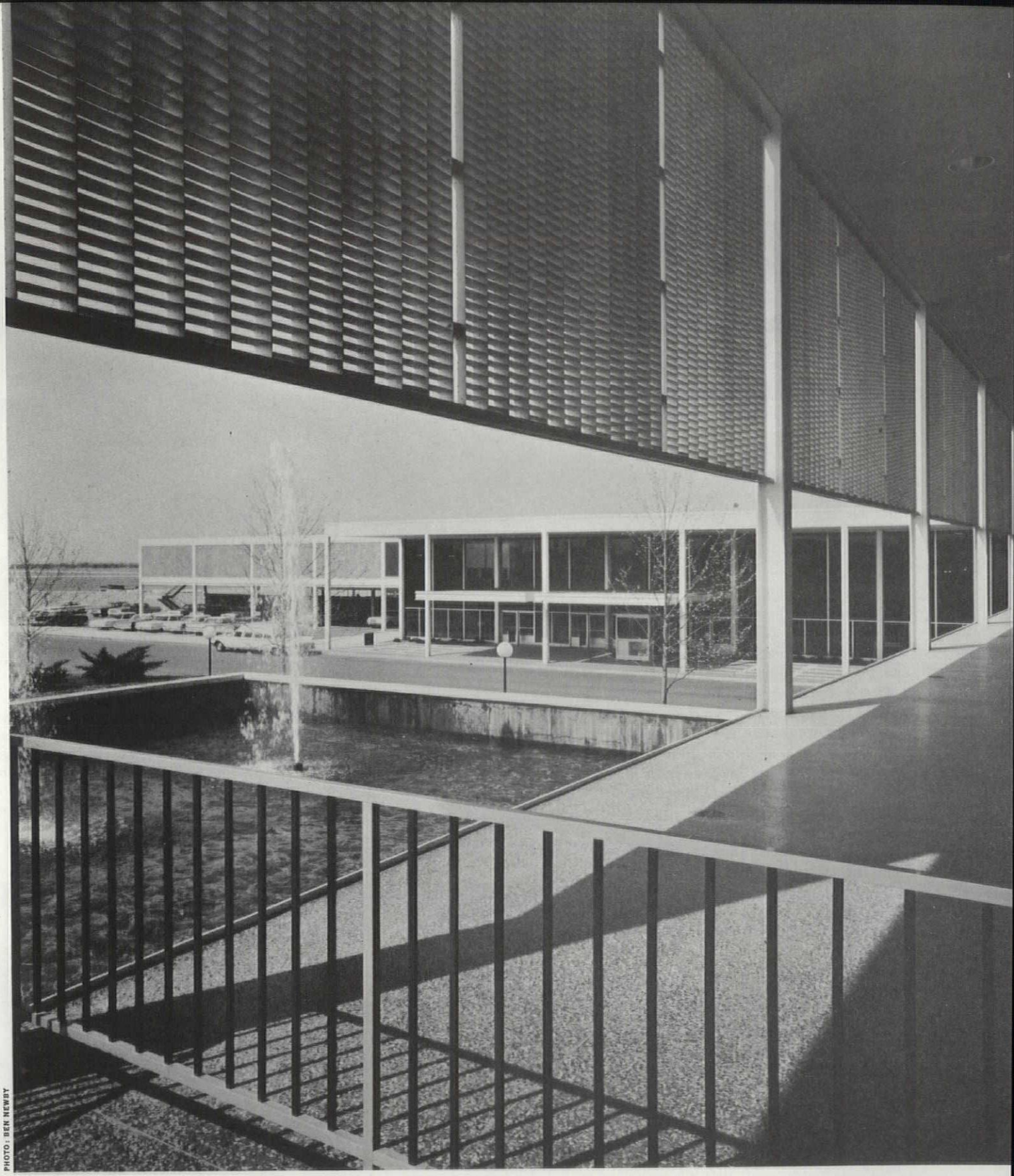


PHOTO: BEN NEWBY

Unobstructed Concourses

TERMINAL BUILDING, TULSA MUNICIPAL AIRPORT • TULSA, OKLAHOMA • MURRAY-JONES-MURRAY, ARCHITECTS

The major objectives in the design of this terminal were the separation of essential passenger facilities from concessions and the exclusion of spectator traffic from passenger circulation areas.

The architects' original proposal was to place the waiting room, concessions, and dining facilities in a separate building, linked to the main terminal by a bridge. Neither the airport consultants nor the municipal authorities favored this scheme, however, since it would reduce the attraction of revenue-producing facilities. The scheme was therefore modified

PHOTOS, EXCEPT AS NOTED: JULIUS SHULMAN

to give the restaurant a position overlooking the apron and bring the concessions closer to passenger routes.

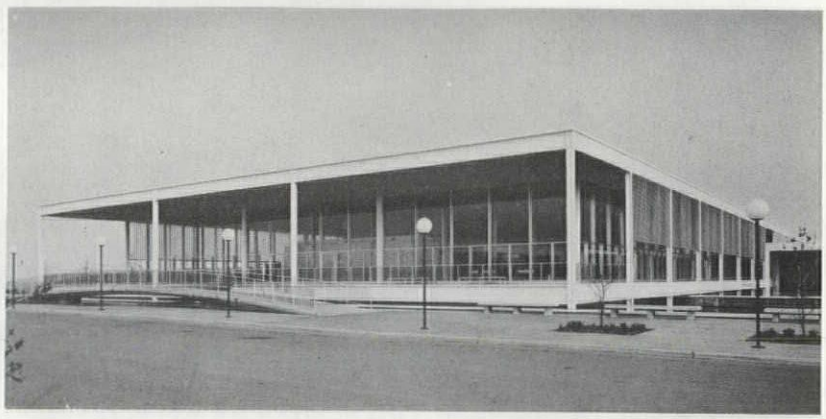
A two-level passenger circulation scheme, with separate automobile access for arriving and departing passengers, was ruled out for economic reasons. Separation of passenger and visitor entrances was achieved, however, by utilizing the change in level of the site.

Passengers enter and leave the terminal at an automobile platform on the field level. Departing passengers pass through the ticketing area and proceed by escalator to the upper level, where they can go directly to the boarding fingers or detour to the waiting and concession area or the restaurant. It is necessary at present to descend to the field level to board the plane, but the fingers have been designed and constructed to permit second-level boarding ramps in the future. Arriving passengers follow the same route in reverse, leaving the terminal through the lower-level baggage claim area.

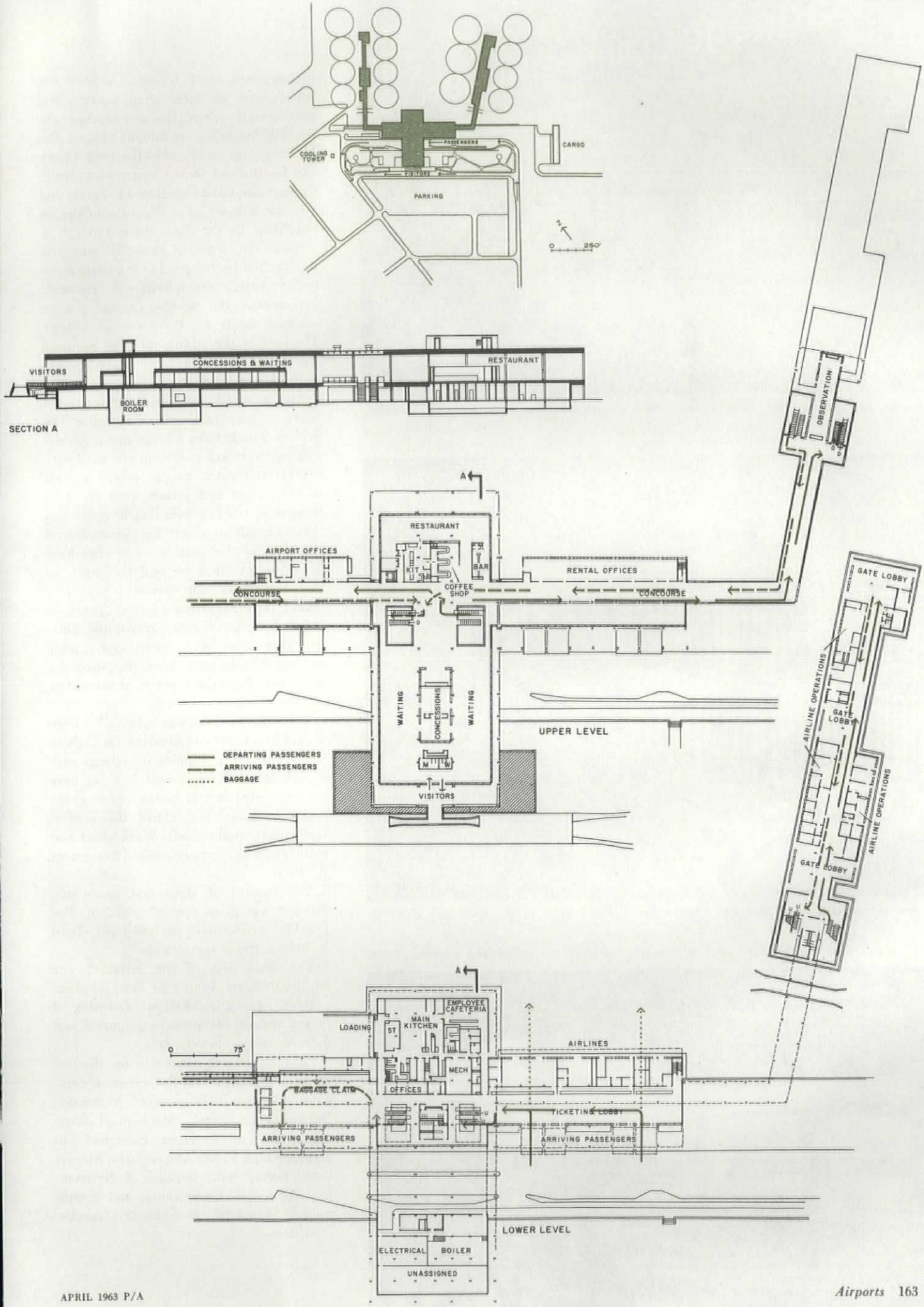
The visitors' entrance on the upper level leads directly into the waiting and concession area and is convenient to the restaurant. Visitors are given an opportunity to observe ticketing and baggage claim activities on the level below, but do not interfere with them. A landscaped "island" surrounding the upper-level entrance separates the terminal from the parking area and serves as an outdoor waiting area, protected from the noise and fumes of the aircraft.

The capacity of the terminal is based on the predicted annual volume of 800,000 for the year 1970. Initially, the terminal provides 15 gate positions out of an eventual 23.

The steel framing system was selected for its adaptability to expansion. The need to insulate the interior from the noise of jet planes was met by using double glazing and 4-in. precast concrete panels within



The passenger roadway (top of page), *is shielded from operations on the apron by a stone blast screen. The visitors' entrance* (above), *which is reached directly from the parking area, is surrounded by a landscaped outdoor waiting area. The glass-walled waiting room* (below) *is protected from direct sunlight by a gold-anodized aluminum screen. The dark brown terrazzo floor minimizes glare; the ceiling is of mineral fissured acoustic tile. The steel structural frame is exposed and painted white on both the interior and the exterior.*


COOLING TOWER
PASSENGERS
CARGO
VISITORS
PARKING
0 250
VISITORS
CONCESSIONS & WAITING
RESTAURANT
BOILER ROOM
SECTION A
A
RESTAURANT
AIRPORT OFFICES
KIT
BAR
RENTAL OFFICES
CONCOURSE
COFFEE SHOP
CONCOURSE
OBSERVATION
GATE LOBBY
WAITING
CONCESSIONS
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AIRLINE OPERATIONS
GATE LOBBY
AIRLINE OPERATIONS
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ARRIVING PASSENGERS
BAGGAGE
VISITORS
A
EMPLOYEE CAFETERIA
LOADING
ST
MAIN KITCHEN
0 75'
AIRLINES
MECH
OFFICES
BAGGAGE CLAIM
TICKETING LOBBY
ARRIVING PASSENGERS
ARRIVING PASSENGERS
LOWER LEVEL
ELECTRICAL
BOILER
UNASSIGNED

At the central escalator well, distinct signs direct passengers to essential services.

From the waiting room, one can observe the ticket lobby and the concourse above it.

The glass-walled gate lobbies offer a sweeping view of the apron and terminal itself.

the exposed steel frame. The concrete panels cost no more than conventional curtain-wall construction and provide comparable flexibility for future changes. The building won an award in the 1962 American Institute of Steel Construction Architectural Award of Excellence Program and was the subject of a Workshop-Critique published in the NOVEMBER 1962 P/A.

Since the depth of the steel members was limited by the need to minimize floor-to-floor height and maintain a consistent appearance, the members could not be selected solely on the basis of weight. The cost of the additional steel required was more than offset, however, by savings on wall area and details.

The exposed steel has been painted white on both interior and exterior. The precast panels have a large green granite aggregate. Interior walls are covered with neutral tan vinyl, except where accents of red-orange and yellow vinyl are used to identify the two boarding fingers.

Gold-anodized aluminum sunscreens on the sides of the waiting-room wing have been placed 10 ft beyond the glass, so that they need not extend below door height. On the southwest face of the ticketing and baggage area, gray-tinted glass has been used and special retractable vertical blinds have been installed for protection from the low sun of the winter months.

Recessed incandescent lighting has been used for general illumination throughout the public areas. Luminous ceilings with a high level of fluorescent lighting have been installed over ticketing and baggage claim counters and above the central vertical circulation well. Work areas and rental spaces have conventional fluorescent lighting.

The control of signs and concession displays was given special attention. The graphics consultants designed all signs, including those for tenants.

The final cost of the terminal was $4,250,000, exclusive of landscaping, graphics, furniture, fixtures, finishing of tenant spaces, restaurant equipment and fixtures, and architects' fees.

Consultants and engineers for the terminal included: David R. Graham & Company, Structural Engineers; Netherton, Dollmeyer & Solnok, Mechanical Engineers; William E. Short, Electrical Engineer; Leigh Fisher & Associates, Airport Consultants; Bolt, Beranek & Newman, Inc., Acoustical Consultants; and Brownjohn, Chermayeff & Geismar, Graphic Designers.

A separate control tower (right), *also designed by Murray-Jones-Murray, was constructed concurrently with the terminal. The only enclosed parts of the 157-ft structure are the observation cab at the top, the space for essential related equipment just below it, and the stair and elevator shaft. The bulk of the equipment and auxiliary spaces are located in a connected structure at ground level, which can be readily expanded or rearranged as needs change. The white-painted steel frame and the precast granite aggregate infilling panels are consistent with the exterior of the terminal* (below). *A system of exposed steel tension members braces the tower against 100 mph winds and adds visual interest.*

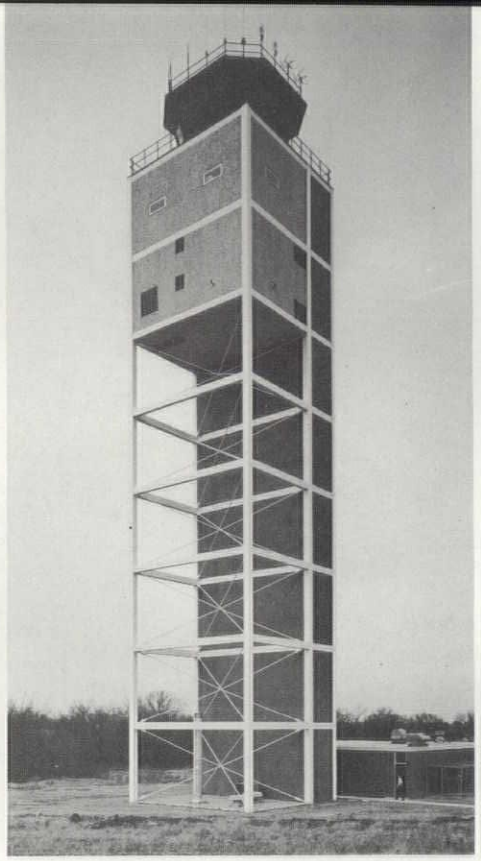
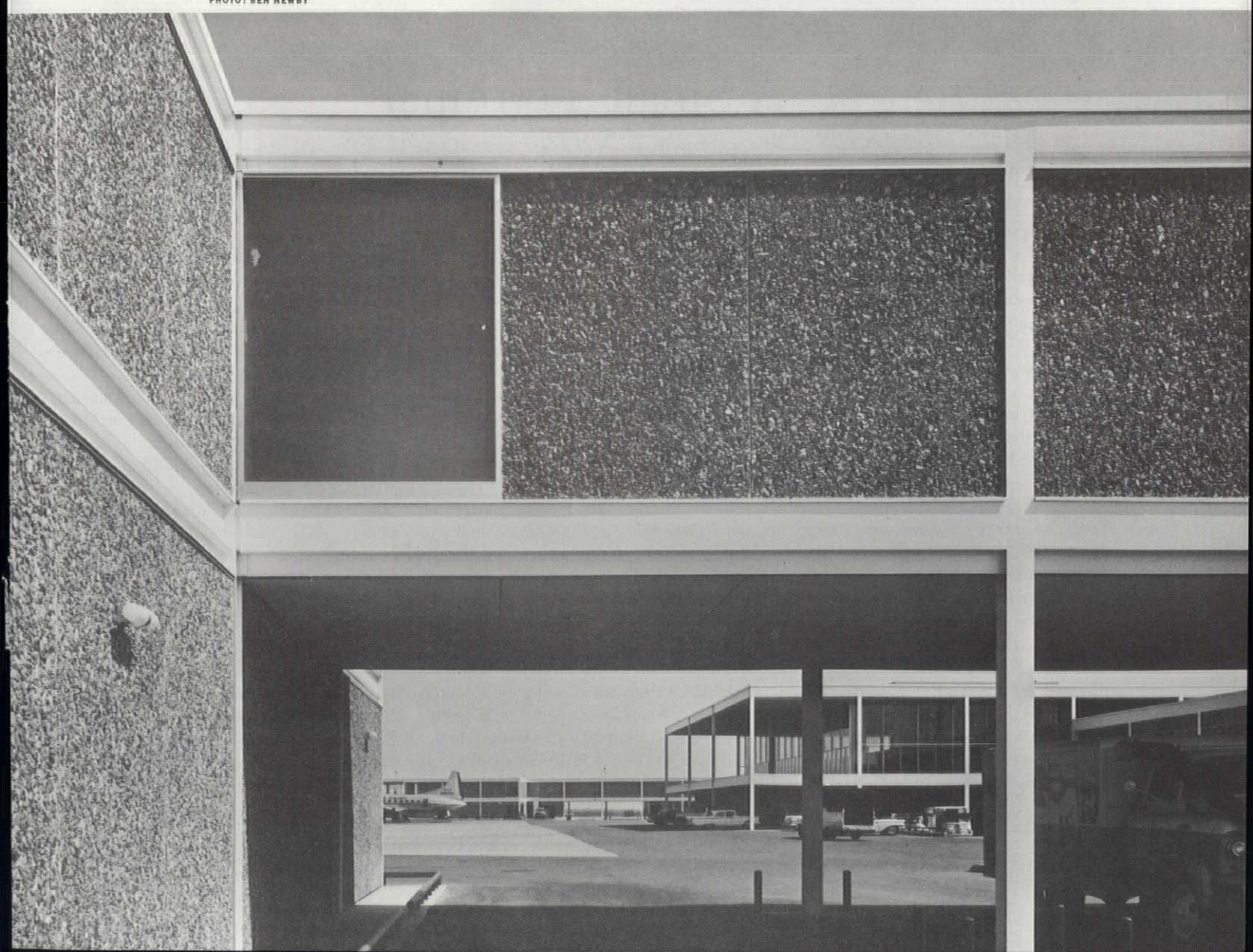


PHOTO: BEN NEWBY



PHOTOS: MORLEY BAER

A Small Terminal

FRESNO AIR TERMINAL • FRESNO, CALIFORNIA • ALLEN Y. LEW, ARCHITECT

A single-level scheme was considered the only appropriate one for the traffic volume of this terminal. The program was based on an annual volume of 340,000 passengers, which the airport consultants predicted for 1970. The airport is expected to accommodate planes of all sizes up to medium-range jets in regular service; large jets bound for San Francisco may occasionally be diverted there.

The one-level plan presents the problem of segregating functions without overextending horizontal distances. In this case, the ticket counters were placed at one end of the building and an outdoor baggage claim area was located at the opposite end. Passenger circulation routes converge at the central escalators, which connect with the tunnel to the detached boarding wing. The use of a tunnel was dictated by the need for free vehicular circulation on the apron.

The waiting room at the center of the terminal overlooks the boarding finger and the landing positions. A similar view can be enjoyed from the adjacent restaurant, which is elevated 3 ft above the main floor to allow for a partial basement housing air-conditioning equipment.

The structural system is a conventional steel frame. Exterior walls are of aluminum curtain-wall construction, with extensive areas of gray-tinted glass. Gold-anodized aluminum sun-screens protect the interior from direct sunlight. The entrance canopy also serves as a sun-shade for the front of the building, and low planting between the canopy and the building minimizes reflection from the ground.

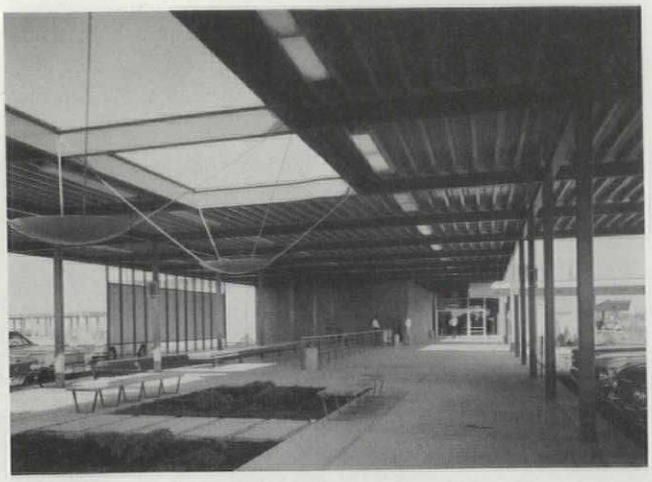
The solid masonry wall that surrounds the service block at the front of the building is adorned with a mural composed of glass tile and cast stone set in cement plaster; the predominant colors are blues, greens, and earth tones, with accents of white and orange.

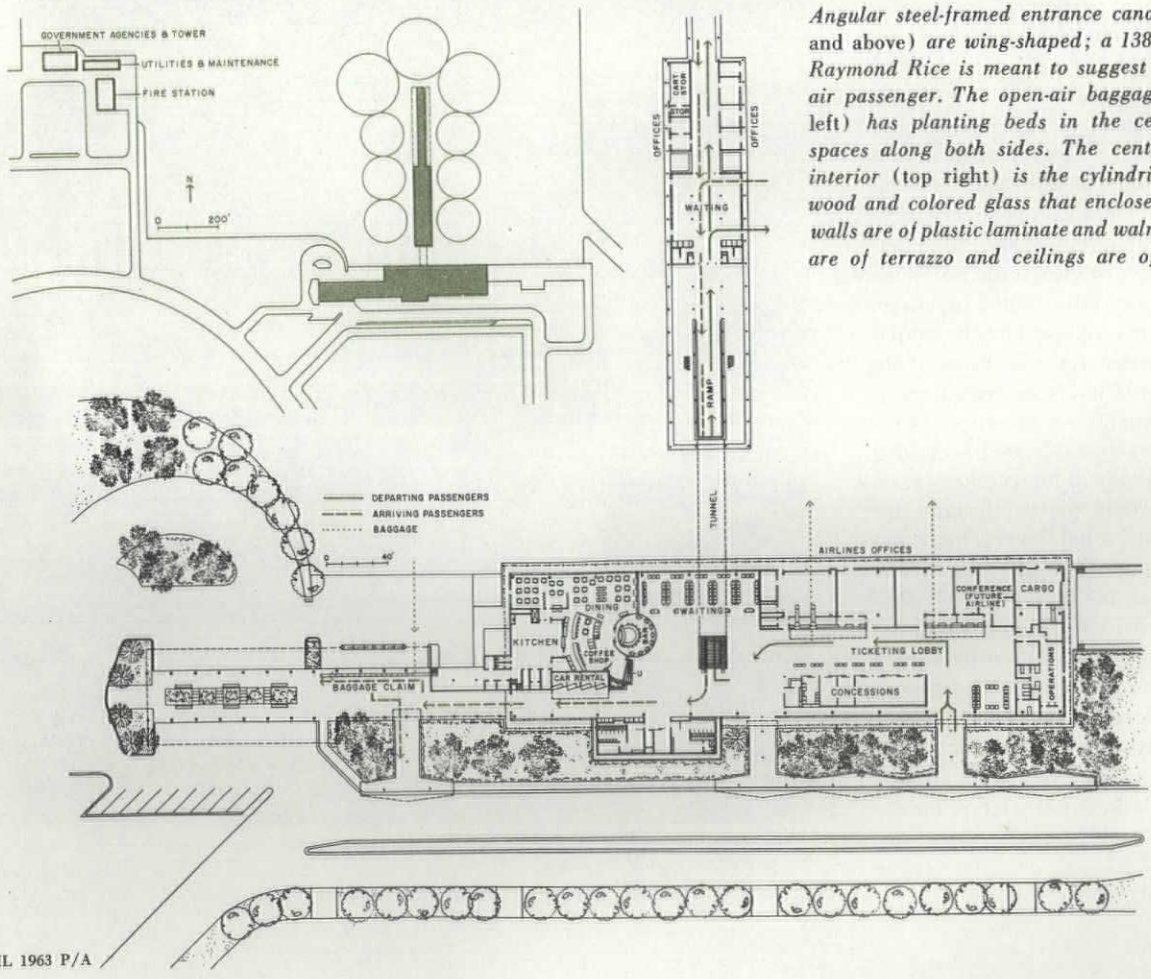
The general interior lighting is by low-brightness recessed downlights. Counters and concessions are more brightly lighted by fluorescent lamps with plastic grid diffusers. Fluorescent fixtures mounted on the back of the sun-screens illuminate the building at night, leaving the screen itself in silhouette.

Landscaping includes some tropical plants located just outside the glass walls of the building, where heat radiating from the interior permits them to survive the winter. Many shade trees have been planted in the vicinity of the terminal, and a small citrus orchard has been planned as an attraction for visitors.

The terminal is part of an expansion program for the airport that also includes a fire station, a maintenance building, and a government agencies building, all of which were designed by the same architect. The terminal building cost approximately $1,450,000, and the detached boarding wing an additional $336,000, excluding architects' fees.

Engineers and consultants for the terminal include: Wilson & Wilson, Structural Engineers; W. L. Donley & Associates, Mechanical Engineers; Edward Lowe, Electrical Engineers; Leigh Fisher & Associates, Airport Consultants; Burr Garman, Landscape Architect; Michael Saphier, Inc. (Gene Tepper Division), Graphic Design and Color Consultant.





Angular steel-framed entrance canopies (facing page and above) *are wing-shaped; a 138-ft mural by artist Raymond Rice is meant to suggest views seen by the air passenger. The open-air baggage claim area* (top left) *has planting beds in the center and parking spaces along both sides. The central feature of the interior* (top right) *is the cylindrical screen of redwood and colored glass that encloses the bar. Interior walls are of plastic laminate and walnut plywood; floors are of terrazzo and ceilings are of acoustic plaster.*

COPENHAGEN AIRPORT • KASTRUP, DENMARK • VILHELM LAURITZEN, ARCHITECT • MOGENS BOERTMANN, JORGEN ANKER HEEGAARD, AND HELGE H. HOPE, ASSOCIATED ARCHITECTS

A Lesson from Abroad

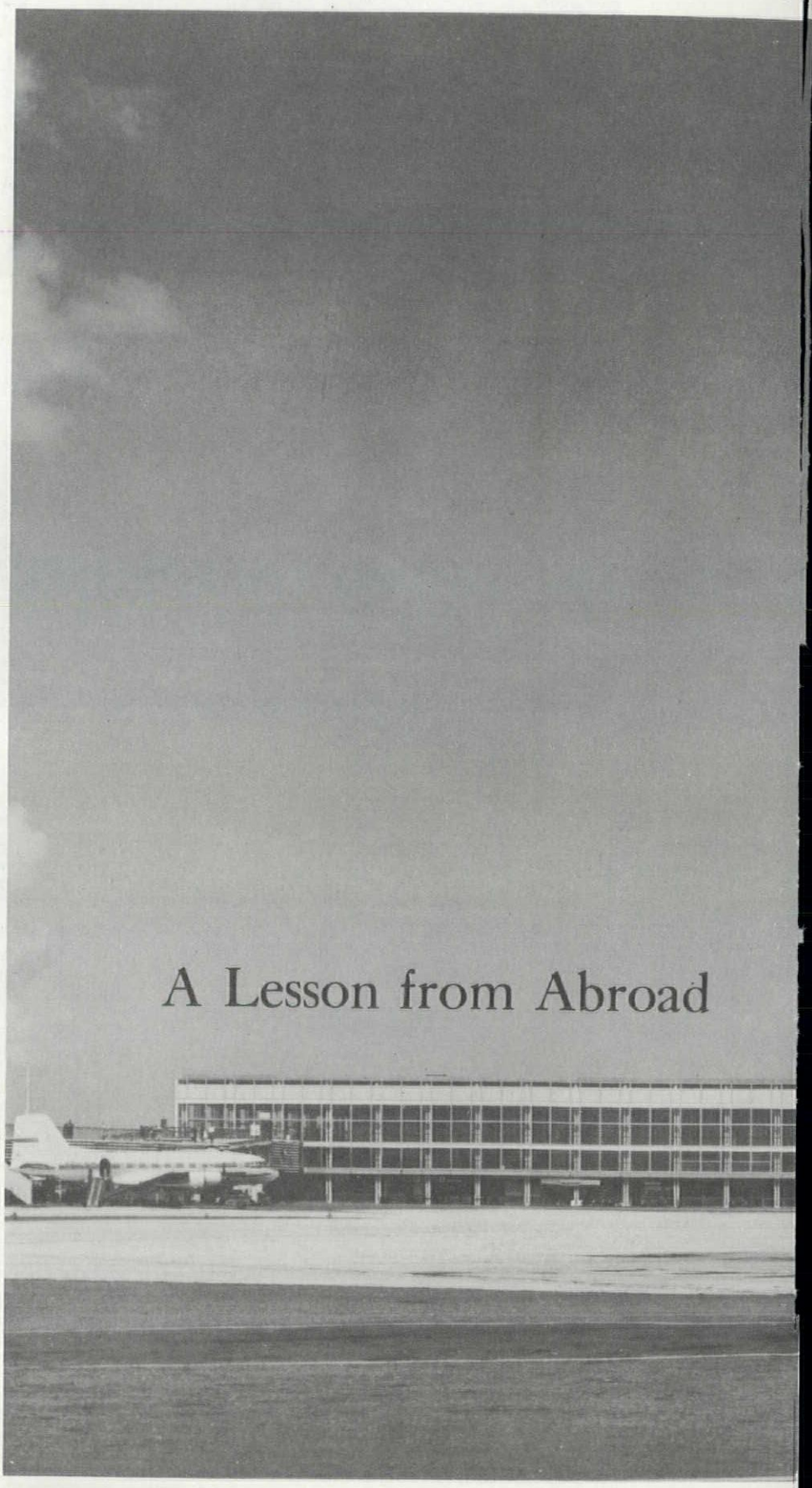
The new terminal at the fourth busiest airport in Western Europe offers some pertinent lessons on designing for the air traveler. Although it is Denmark's principal airport, no effort has been made to make it imposing or symbolic. Its distinction lies instead in refinement of detail and careful organization of spaces for human use.

This terminal is the second one designed by Vilhelm Lauritzen for the Copenhagen Airport. In 1936 he won first prize in a competition for the design of a new terminal. Completed in 1939, the building was a landmark in the progress of modern architecture in Denmark. It was used hardly at all during World War II, and after the war the rapid expansion of air travel quickly rendered it obsolete.

Planning for the present terminal began in 1952, and the terminal was opened in 1960. The program for this initial stage was based on an annual volume of 2,000,000, a figure that has already been surpassed. The program required that the terminal be designed so that it could be expanded without structural changes or interruptions of activity. The building can be extended to the east, and a third boarding finger added at that end, to make the over-all plan symmetrical.

The finger plan was arrived at after a study comparing it to the "bus" scheme in use at several other European terminals. It was found that, although the bus system reduced walking distance, it did not eliminate the need for stairs. Since passenger reaction to long walks is largely subjective, it was felt that careful design of the environment could minimize irritation.

The development of a passenger circulation pattern was complicated somewhat by the heavy volume of international transit passengers that passes through the airport. A one-and-a-half-level scheme was selected to permit all baggage movement to take place at the ground level. Passengers, either arriving or departing, are required to go up stairs to the mezzanine level. By keeping passenger circulation in the boarding fingers one level above grade, the ground area was left free for airline operations spaces and vehicular circulation. The installation of escalators for the



PHOTOS, EXCEPT AS NOTED: STRUWING

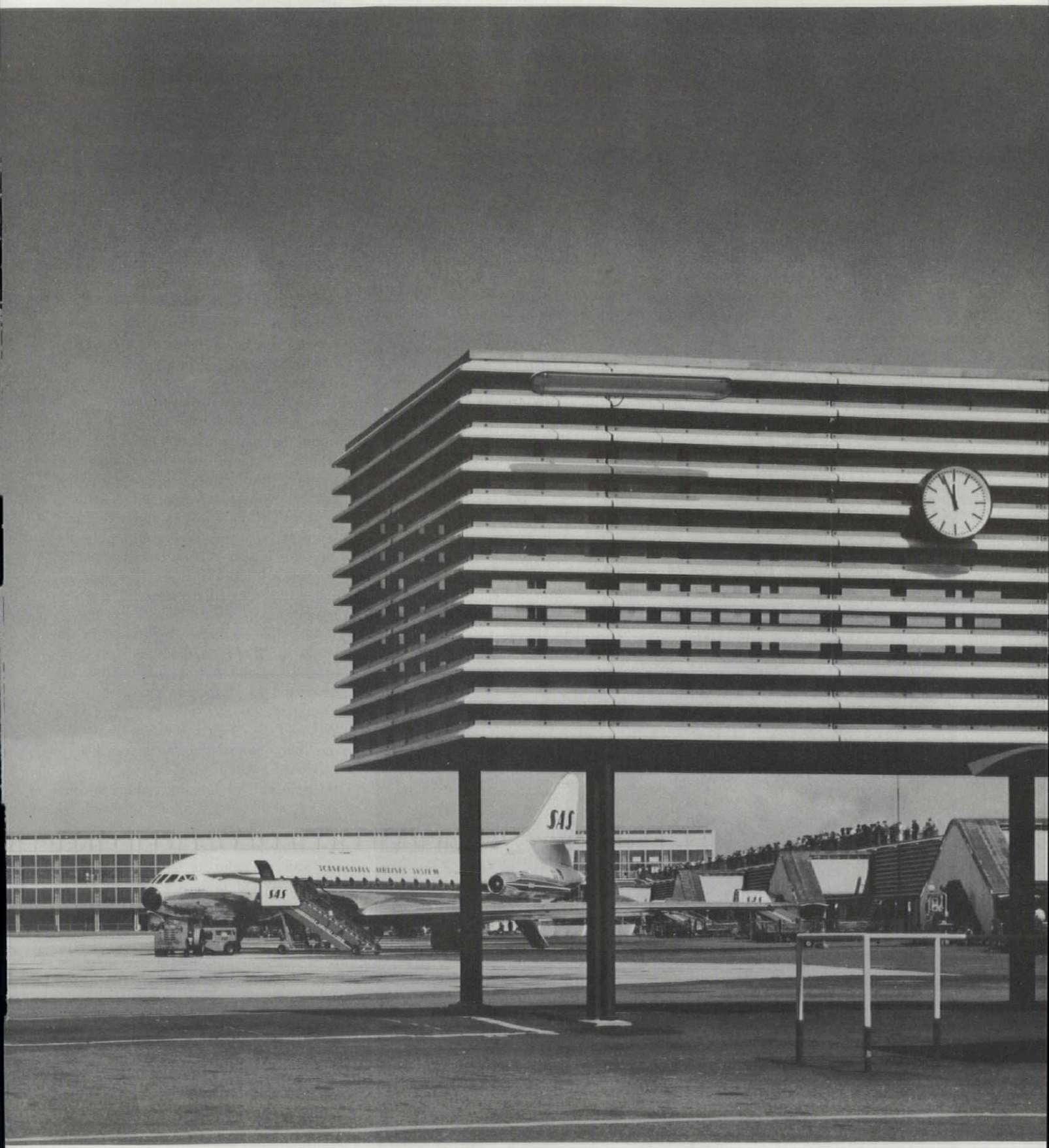

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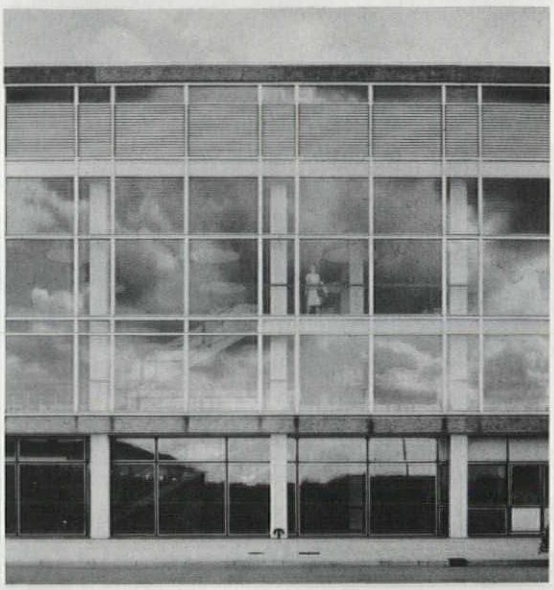
PHOTO: SCHRIVER



The three-story office block at the front of the terminal (top left) *gives it the appearance of a modest office building. The division between this block and the main passenger hall is clearly expressed at the end of the building. The office façade has operable windows and spandrel panels of white asbestos cement, whereas the other walls are composed almost entirely of fixed glass in aluminum-clad wood frames* (middle left).

The main hall (*below*) *is flanked on the north side by balcony corridors leading to the offices and on the south side by passenger-handling facilities. The office wall is painted light gray-green; the columns are white; the steel structure and banisters of the stairs are painted vermilion; the floor is surfaced with slabs of gray Oland stone.*

On the south side, the hall is bounded by an irregular complex of steel mezzanine structures and clear glass partitions (photos facing page). *The interior is unified by the flat ceiling of blue aluminum, with its uniform pattern of circular skylights.*

passengers was ruled out both for economic reasons and because they would interfere with future changes in layout.

The location of all baggage handling on one level and the use of mechanical conveyors and sorting turntables makes it possible for baggage to pass through the terminal as rapidly as the passengers.

The exterior of the building is quite unassuming, but is nevertheless a faithful expression of the variety of spaces inside. As one enters the terminal through the office block, the vastness of the interior comes as a surprise.

The three-story-high main hall, 525 ft long, is defined by two rows of columns 75 ft apart. To the south of this hall, a volume of the same dimensions is divided into a maze of cubic spaces enclosed by partitions of clear glass in exposed steel frames.

The hall reserved for international passengers in transit, located on the mezzanine level, can accommodate 1000 passengers. To overcome the monotony of waiting, many diversions have been provided, including a bar, a restaurant, and a "street" of shops selling duty-free goods. A special balcony, accessible from the transit hall and isolated from the public, is provided for VIP's. Another balcony, above the transit hall, houses the public restaurant.

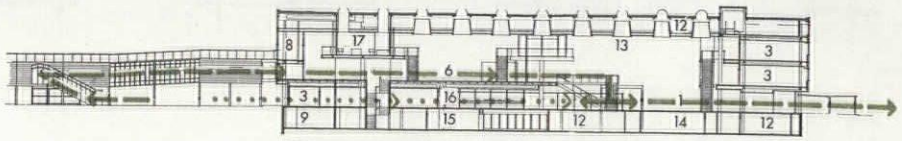
All toilet facilities are located in the basement. Four separate facilities are provided, isolated from each other and connected by stairs and elevators to the main hall, the arrivals area, the transit hall, and the public restaurant. Baths and rest rooms for passengers in transit have also been located there.

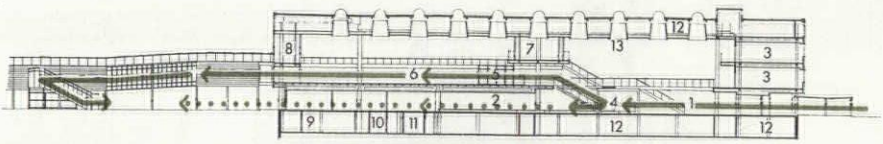
Opportunities for the public to view airport activities have been provided. An enclosed gallery on a balcony above the mezzanine level gives spectators an excellent vantage point for observing both the apron and the interior of the terminal. Open decks on the roofs of the fingers are accessible from this gallery.

The structure of the terminal is supported on concrete-encased steel columns, spaced 17 ft on center along the length of the building. The maximum span of the transverse prestressed concrete girders is 75 ft. The roof is constructed of lightweight precast elements covered with built-up roofing. The concrete floor slabs are covered with Oland stone in the major public areas, with padauk (a very hard Burmese wood) on the mezzanines, and with linoleum in office and service spaces.

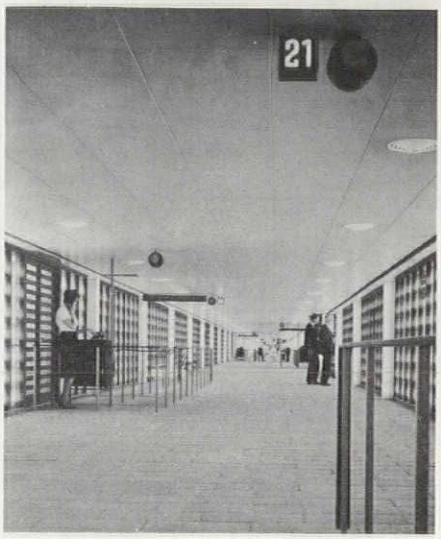
From main-floor check-in counters (above), *departing passengers ascend to mezzanine; baggage is conveyed to handling area beyond.*

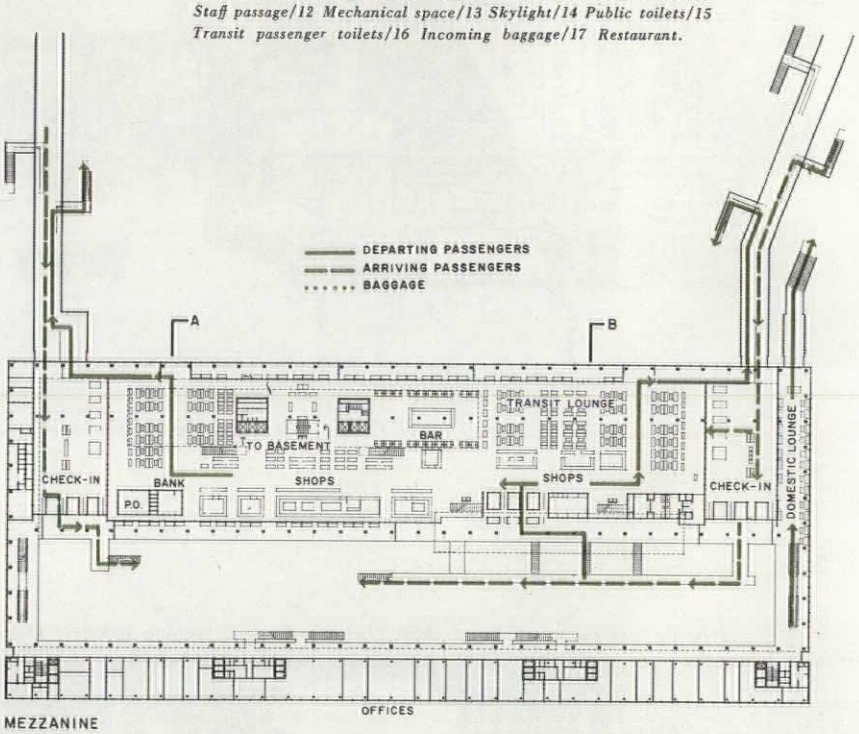
Arriving passengers descend stair (below) *from mezzanine passport control area to glass-walled customs and baggage-claim areas.*





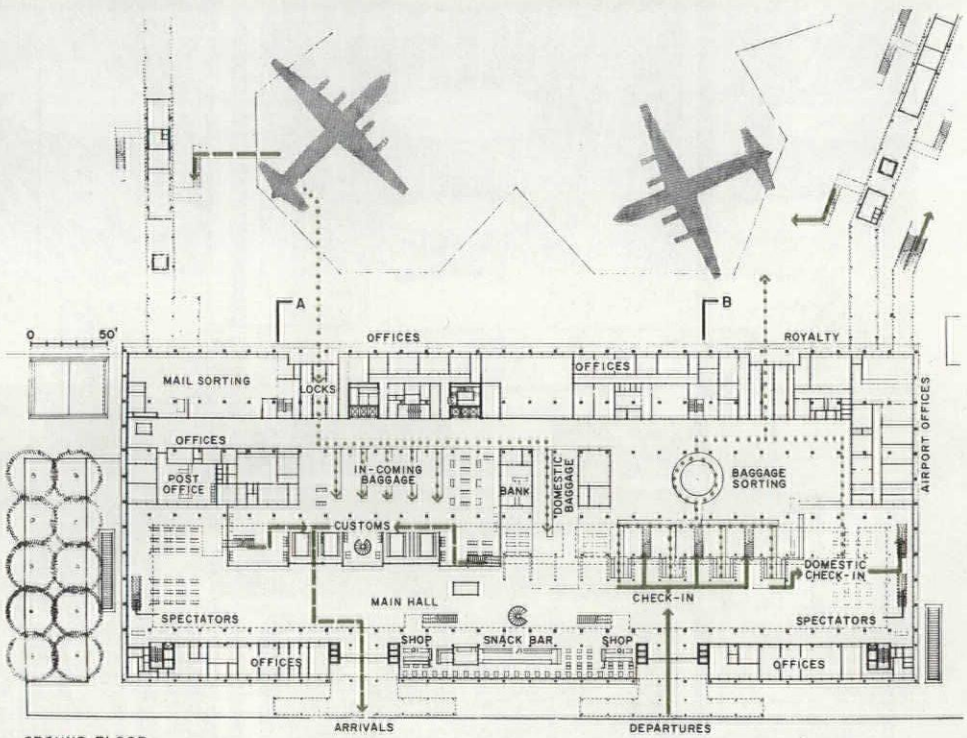
Sections: 1 Main concourse/2 Baggage sorting/3 Offices/4 Baggage handling/5 Examination of passports/6 Transit lounge/7 VIP reception/8 Observation gallery/9 Staff cloakrooms/10 Staff toilets/11 Staff passage/12 Mechanical space/13 Skylight/14 Public toilets/15 Transit passenger toilets/16 Incoming baggage/17 Restaurant.



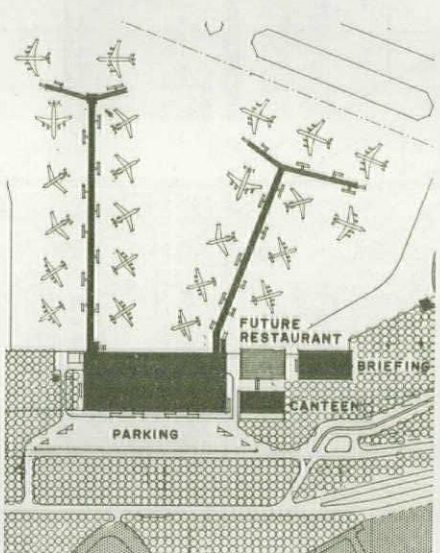


MEZZANINE

The transit-passenger waiting hall on the mezzanine level (top of page) *has comfortable furniture and abundant plants; displays, shops, and other diversions relieve the monotony of long delays. Enclosed observation galleries—one at mezzanine level for transit passengers and one above it for the public—help to isolate the hall from aircraft noises. Stone floors add a touch of elegance to the interior of the boarding finger* (above). *Lively shadow patterns are created by the exterior sunshades. These louvers* (facing page, bottom), *which are made of a special asbestos cement, have been spaced to permit a clear view out. The boarding fingers and apron traffic control tower* (facing page, top) *effect a transition between the sleek forms of the aircraft and the more solid, land-bound character of the terminal building.*



GROUND FLOOR



Metal Curtain Walls: PERFORMANCE TEST

BY WAYNE F. KOPPES

With the development of large wall assemblies, performance testing of curtain walls has become increasingly important. Due to the expense involved, the architect must understand the reasons for testing, as well as the methods used, so as to correct any weaknesses in the wall assembly before on-site installation. The author is Technical Director of the Metal Curtain Wall Division of the National Association of Architectural Metal Manufacturers.

Since performance tests of metal curtain walls may involve significant expense, the architect, before specifying them, must understand the reasons for these tests and how they are performed. He should recognize that performance testing is not a universal requirement of every good metal curtain-wall installation. In providing recommended testing specifications, the intent is not to imply that these are a standard essential, but rather to furnish suitable standards for use when tests are needed.

On occasion, unnecessary tests have been required of metal walls, and frequently architects specify tests that are more complicated and expensive than they need to be. Many of the standardized commercial types of wall have already been subjected to rigorous testing in the course of their development, and in addition have been proven in use. Further testing of these walls is usually unnecessary, and may be circumvented by requiring a bona fide certification of performance. On the other hand, where previously unproven designs are concerned, testing may not only be advisable but necessary. The need for testing and the nature of testing required depend, therefore, upon the circumstances involved. The following is a review of the purposes, methods, and limitations of performance testing.

Reasons for Testing

The pretesting of walls is a relatively new practice that has developed concurrently with the use of large wall assemblies. Windows and similar components have been pretested for many years, but it was not until the inception of metal curtain-wall construction that the availability of preassembled composite units made it possible to test the complete wall in advance of actual construction at the building site.

Of chief concern in these tests is the effectiveness of joint seals. Whatever the wall material, the use of large units results in greater movement at the joints between units, and makes the sealing of these joints both more difficult and more critical. In metal wall design, the wall surfaces, unlike masonry, are nonabsorptive, and any water entering at the joints must be drained back to the outside. Because of these characteristics of the newer wall materials and the necessarily limited experience with this technique of construction, pretesting has often been found advisable. The essential purpose of the tests is to locate and remedy in advance of actual use any points of vulnerability or weakness.

All tests on metal curtain walls are aimed at evaluating the wall's performance, but the tests may be conducted for the specific purpose of either exploration or certification.

Exploratory tests are made during the development of a wall design, and are conducted by the wall manufacturer himself, usually with his own facilities and staff. In order to discover design improvements, these tests may be unrealistically severe, continuing even to destruction of the wall.

Certification tests are tests conducted for the purpose of verifying that a wall conforms with specifications, or proving the acceptability of a design to the architect and/or owner. This type of testing may be specified by the architect. These tests are conducted by an impartial testing agency chosen jointly by the architect and the manufacturer. The testing facilities of either the agency or the manufacturer may be used, but in either case the results must be reported and certified by the agency. A partial listing of testing agencies available for this type of work is provided in the *Metal Curtain Wall Manual* published by the National Association of Architectural Metal Manufacturers.

Performance Characteristics to be Tested

Almost any performance characteristic can be tested by an accurate full-scale specimen and appropriate testing facilities. The values which are generally specified, and which may be tested by the standard methods prescribed in the NAAMM Specifications for Performance Testing of Metal Curtain Walls, are these three: structural performance; resistance to air infiltration; and resistance to water infiltration. Other characteristics, such as over-all thermal and vapor transmission, are sometimes tested, but as yet no standards have been established for the conduct of these tests on full-scale composite wall assemblies.

Varying degrees of importance are generally attached to the three characteristics tested by standard methods. Each value is measured by its own test, and the architect should specify only the test or tests considered essential.

Resistance to water infiltration and structural performance are usually the characteristics of major concern, and the former can be determined only by testing. The purpose of the water-infiltration test is to determine whether the wall permits water leakage when subjected simultaneously to high wind pressures and heavy rainfall. The specified tests simulate these conditions, and require that any water appearing on the interior face of the wall during the course of the test be reported.

The test for structural performance is designed to measure the ability of the

PROCEDURE

wall to withstand wind loads. It may not be necessary to subject the wall to actual testing to determine this. The strength and stiffness of primary framing members may be determined instead by engineering analysis, if preferred, and deflections of glass and panel materials may be predicted by use of data available from the manufacturers of these materials. The principal value of the structural performance test is to determine, when necessary, the action of the composite assembly under loading. Since this action may be influenced by the unpredictable performance of gaskets and seals, or the complex and indeterminate interaction of component parts, physical testing sometimes provides the most reliable means of verification. The investigation of structural performance concerns not only inward pressures, but also the effect of outward loading on the wall and its anchorage due to negative wind pressure on the leeward side of the building.

Undoubtedly the least critical of the three standard tests is the one that measures resistance of the wall to air infiltration. This is not because air leakage is unimportant, but because with typical wall designs satisfactory performance in the water infiltration test usually assures that air infiltration will not be excessive.

The Test Specimen

It is important that the wall test specimen be a faithful reproduction of the intended wall design, and that it be constructed just as it is to be installed on the building, with the same conditions of attachment, support, and continuity of all structural components. If possible, the parties who will be responsible for erection, glazing, and sealing should be present when the specimen is assembled, to see that critical design details are properly reproduced and to become acquainted with construction requirements. An important consideration is the size of the specimen. It should be sufficiently large to include all major elements and joints, but not so large as to require costly special facilities and equipment. Reference to the data provided by the various testing agencies (found in the manual) will indicate typical maximum areas that are normally accommodated.

Although every part of the wall construction should be duplicated in the test specimen, it is seldom feasible to reproduce the actual building frame that will support the wall. In rare instances, full-size steel and concrete beams and columns have been constructed as part of the test structure, but in normal testing practice this expense is avoided by simulating the building frame by use of heavy wood or steel members. In every case, all details of the actual intended anchorage of the wall, such as the steel angles, clips, brackets, and bolts, should be used in the test wall just as planned for the ultimate installation.

When specifying any performance tests, it is essential that the architect provide drawings showing the size and arrangement of the specimen to be tested, so that the costs of testing may be estimated with reasonable accuracy. If there is uncertainty as to what size and type of specimen should be used to best represent the design, the architect should contact one of the manufacturers or testing agencies for advice.

Methods of Testing

There are two general methods used for the testing of wall specimens: (1) the static method, in which the test specimen is sealed into one side of a large air chamber or box, and is subjected to static air pressure, either by blowing air into, or exhausting air from, the air chamber; (2) the dynamic method, in which the test specimen is subjected to a blast from a wind generator, such as an aircraft propeller. Air infiltration can be measured with accuracy only by the static method.

Structural performance, or deflections, under positive or inward-acting wind pressure may be measured by either test method, although the degree of accuracy obtainable with the dynamic method is less exact. Testing of the wall under negative or outward-acting wind pressure may also be required, and this is usually more readily accomplished by the static method.

Water infiltration tests may be performed by either the static or dynamic method, the exterior face of the wall being subjected to a specific flow of water in either case. Both methods are widely used for this test, and each has its proponents. The static method offers the more accurate control of a given set of test conditions, and it adapts to the control of temperature, if this should be required. The dynamic method more closely represents the impact caused by unpredictable and suddenly shifting wind gusts and wind-blown water. It is generally agreed, however, that although the dynamic method is far more dramatic and impressive, the static method can be more severe, especially if unrealistic pressures are used.

The specification for the water infiltration test by either method includes, in addition to the standard procedure, an optional subsequent "supplementary procedure," in which higher pressures are used. The standard procedure is intended to represent the minimum test exposure conditions that any acceptable wall should be capable of withstanding, while the supplementary test simulates exposures that are much more severe. Because of local conditions of rainfall and wind velocities, the exposures to which buildings are subjected vary widely with geographical location. Therefore, to provide for these variations in a standard test procedure is a complicated matter. There may often be cases that justify the use of intermediate test pressures, especially when testing by the static method. The architect may specify the use of such intermediate pres-

sures if he considers them appropriate, and if the wall has been designed to resist leakage under such conditions.

If a water infiltration test by the static method is required, structural performance and air infiltration tests can be provided also at small additional cost, since all three can be run consecutively on the same setup. If water infiltration is to be tested by the dynamic method, however, the cost of additional tests for structural performance and air infiltration will depend upon the type of facilities available. The architect can determine in advance what the probable costs of testing will be by contacting the manufacturer or testing agency concerned.

Test Results

The test specifications establish only the method to be used in testing; they are not intended to define the required standards of performance. The architect has the responsibility to establish these performance standards in his own specifications for the wall, guided by the recommendations provided in the manual. It is the function of the tests to establish whether these standards have been met, and the architect must determine this on the basis of the test results provided.

It should be understood, however, that in the test specimen standard of performance, corrective measures and further certification testing are automatically required. This is clearly implied in the NAAMM specification clause, which states: "In each case, evidence of satisfactory performance as specified shall be required as a condition of acceptability."

Even the most conscientious testing cannot accurately predict how the wall will function in actual use. There are obvious limitations on the extent to which test results can guarantee performance. Because of the unpredictable human factors in actual construction and wide variation in site conditions affecting erection, the true significance of test results is indeterminate. The effects of time and aging are additional factors that cannot be successfully reproduced in testing. Cycled temperature and intermittent rainfall and heat can be provided to simulate the effect of weather cycles on wall assemblies, but the high cost of such comprehensive testing has been considered justifiable in only a few cases.

Because of the infrequency of such testing, standards for cycled temperature tests have not yet been developed by NAAMM.

Nevertheless, the value of standard performance tests may be substantial. Although they provide no positive proof that the wall when built will function properly, they often reveal design weaknesses requiring correction. The discovery of these deficiencies in advance of production may save many times over the cost involved in testing.

Recommended Practice

In considering the need for performance testing, and in specifying such tests as may be found advisable, there are certain guiding principles that the architect should observe. The more important of these are the following: (1) All standards of performance expected of the wall should be clearly specified. (2) Only those tests should be specified which are essential to establish that the wall meets the standards designated; if the manufacturer will provide a satisfactory guarantee of performance, further testing is usually unnecessary. (3) Sufficient time should be allowed in the construction schedule to provide for the proper preparation and conduct of the tests, and to make effective use of the test results; usually, at least 8 weeks' additional time is required. (4) If performance tests are required, they should be supervised or performed by an impartial testing agency. (5) The test specimen should be carefully selected or designed, in conference with the manufacturer if possible, so as to represent typical wall conditions, and full information concerning the specimen should be provided by drawings and specifications. (6) The size of test specimen should be limited, if possible, to the normal capacity provided by the facility where testing is to be performed for future evaluation.

PHOTOS: BALTAZAR KORAB

LAW OFFICES

OFFICES OF HONIGMAN, MILLER, SCHWARTZ & COHN • DETROIT, MICHIGAN • INTERIOR DESIGN BY GUNNAR BIRKERTS OF BIRKERTS & STRAUB, ARCHITECTS

No traditional decorative objects are used in these offices for an active Detroit law firm, yet the interiors have the conservative atmosphere that is commonly associated with offices for the bar. Here, that atmosphere is achieved primarily by a use of traditional materials and colors—wood-paneled walls, tufted black leather furniture, and carpeting the color of green baize. The restrained effect is enhanced by carefully modulated lighting.

The partners of the law firm were divided in their opinions about whether the "style" for their new spaces should be "modern" or "traditional." They nevertheless commissioned a progressive architectural firm to plan and design their expanded office space.

The scope of this work entailed the planning of the new space, which is adjacent to the existing space; connecting the two areas; and making a few changes in the plan of the existing offices. The areas that the architect detailed completely were limited to the reception room (*above*), corridor, conference room, one office, and several secretarial areas. All other offices were left unchanged or were refurnished in a traditional manner by different interior decorators.

Gunnar Birkerts was challenged by the clients to create a feeling which

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would harmonize with the traditional décor that existed in the majority of spaces. "However, even without this consideration," Birkerts says, "the design would have had the same feeling and architectural detail."

The controlled detailing of the paneled walls, as well as the choice of materials, establishes a continuity between old and new. The walls have teak panels that float on a black background—waxed, flat black enamel on wood. The black baseboard and ceiling band separate the different planes and materials vertically and, at the same time, tie the spaces together horizontally, even when there are breaks in the wall **(2, 4)**. At the doorways, where the wall depth is revealed, the black is left exposed.

While the black establishes a horizontal continuity, the detailing of the teak is varied to distinguish windowless interior spaces from rooms on the perimeter of the building. For example, in the reception room **(1, 2)** floor-to-ceiling panels are used; alternating widths negotiate the vertical openings. In the conference room **(6)** and office **(4)**, the panels are also divided horizontally: a line of exposed black background, which starts at the level of the window sill, is carried around each room, lining up with counters and shelves.

Unlike the panels in the windowless spaces **(1, 2, 5)**, which are set directly on the black background, those in the perimeter rooms **(4, 6)** are placed on exposed strips that give a rabbeted effect; this reiterates the rabbeted strips of the reception desk **(2, 3)**. The detailing of these panels recalls traditional paneling and contributes to the harmony between old and new elements that the architect was asked to achieve.

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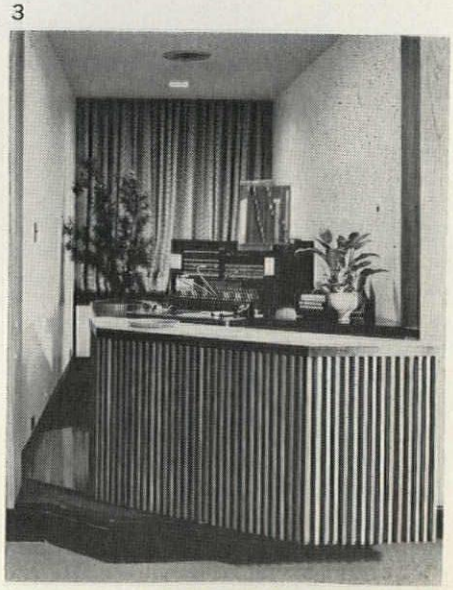

DATA: descriptions and sources of the major materials and furnishings shown.

THROUGHOUT: Walls: teak paneling/Old Dominion; all millwork by James A. Moynes & Co.; baseboard, ceiling strip/black-painted wood. **Ceiling:** acoustical plaster/white; hard plaster sides/white. **Equipment:** air conditioning/Carrier Air Conditioning Co.; round diffuses/Carnes Corp. **RECEPTION: Flooring:** carpet/green/Archibald Holmes. **Lighting:** downlights/recessed/concentric rings/Litecraft; fluorescent strip in cove; grating/Fannon Products. **Entry partition:** matched oiled teak/black-painted wood/glass/custom. **Drapery:** stainless-steel mesh/cyclone fence/American Steel & Wire. **Doors:** tufted leather/black; matched oiled teak/black Formica. **Hardware:** on leather door/stainless steel/Russel Hardware Co./custom; on closets /stainless steel/Detroit Hardware Mfg. **Reception desk:** teak/black Formica top/architect-designed/J. A. Moynes. **Sofa, chair:** chrome legs/black tufted leather/Stendig. **Table:** Barcelona/Knoll Associates. **Stool:** chrome/tan oxhide/Poul Kjaerholm design/Frederick Lunning, Inc. **Lamp:** chrome/Stendig. **Planters, ash urns:** aluminum/Hugh Acton. **HALLWAY: Doors:** black Formica walnut/louvered; all custom. **Carpeting:** charcoal/Archibald Holmes. **Lighting:** hanging/clear glass bubbles/Robert Salem; strips/fluorescent/bronze grating diffusers/Fannon Products Div. **Hardware:** brushed chrome lever handles/General Lock Mfg.; pivots/Russwin (Erwin Division). **Drinking fountain:** brushed chrome/Filtrine. **CONFERENCE: Carpet:** green/Archibald Holmes. **Table:** oil teak/aluminum/Ward Bennett design/Lehigh. **Chairs:** aluminum/beige Naugahyde/Lehigh. **OFFICE: Flooring:** teak plank/Thailand Teak Co. **Walls:** teak paneling/Eggers Plywood. **Tambour door:** behind desk/J. G. Wilson Corp. **Desk chair:** aluminum/black Naugahyde /tufted/Lehigh. **Desk:** teak/Herman Miller.

The ceilings are shaped to define each area and to incorporate different lighting effects. The reception room ***(1, 2)*** *is lighted primarily indirectly by fluorescent strips in the black-trimmed ceiling cove. In the hallway* ***(5)****, pendant spheres give a soft light to the ceiling; beneath them, fluorescent strips with bronze anodized diffusers wash the teak panels. Other areas* ***(4, 6)*** *have recessed downlights and hanging fixtures. The paneling of the windowless spaces* ***(1, 2, 5)*** *is varied in perimeter rooms* ***(4, 6)****; the rabbeted strips on the reception desk* ***(3)****, which swivels to provide access to the switchboard area, reiterate the wall-panel detailing in these perimeter rooms.*

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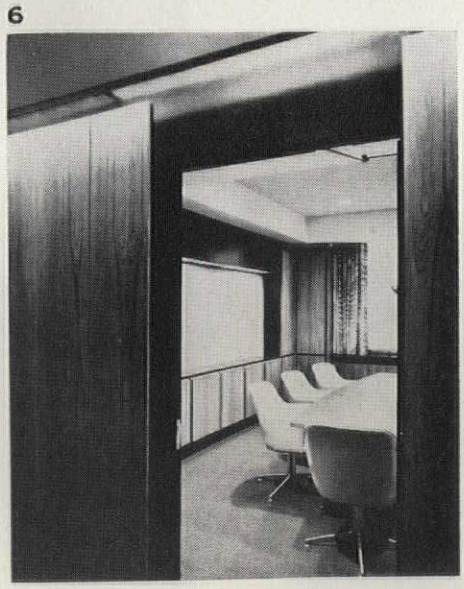
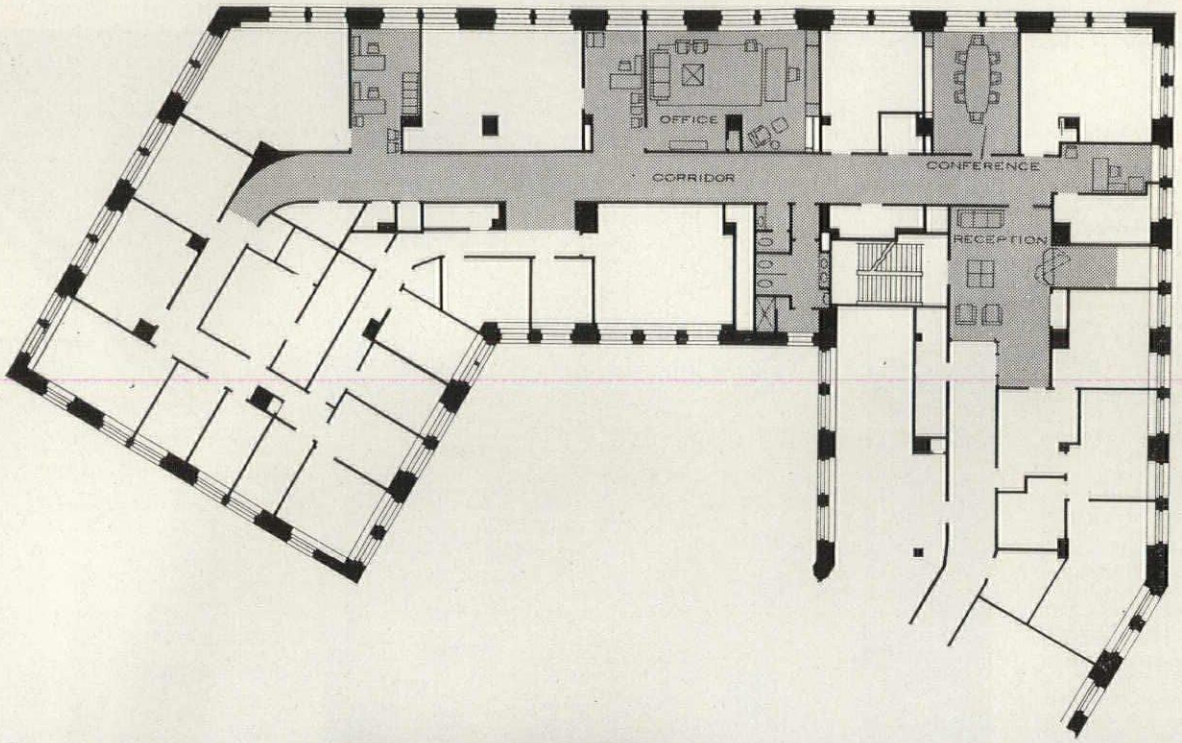
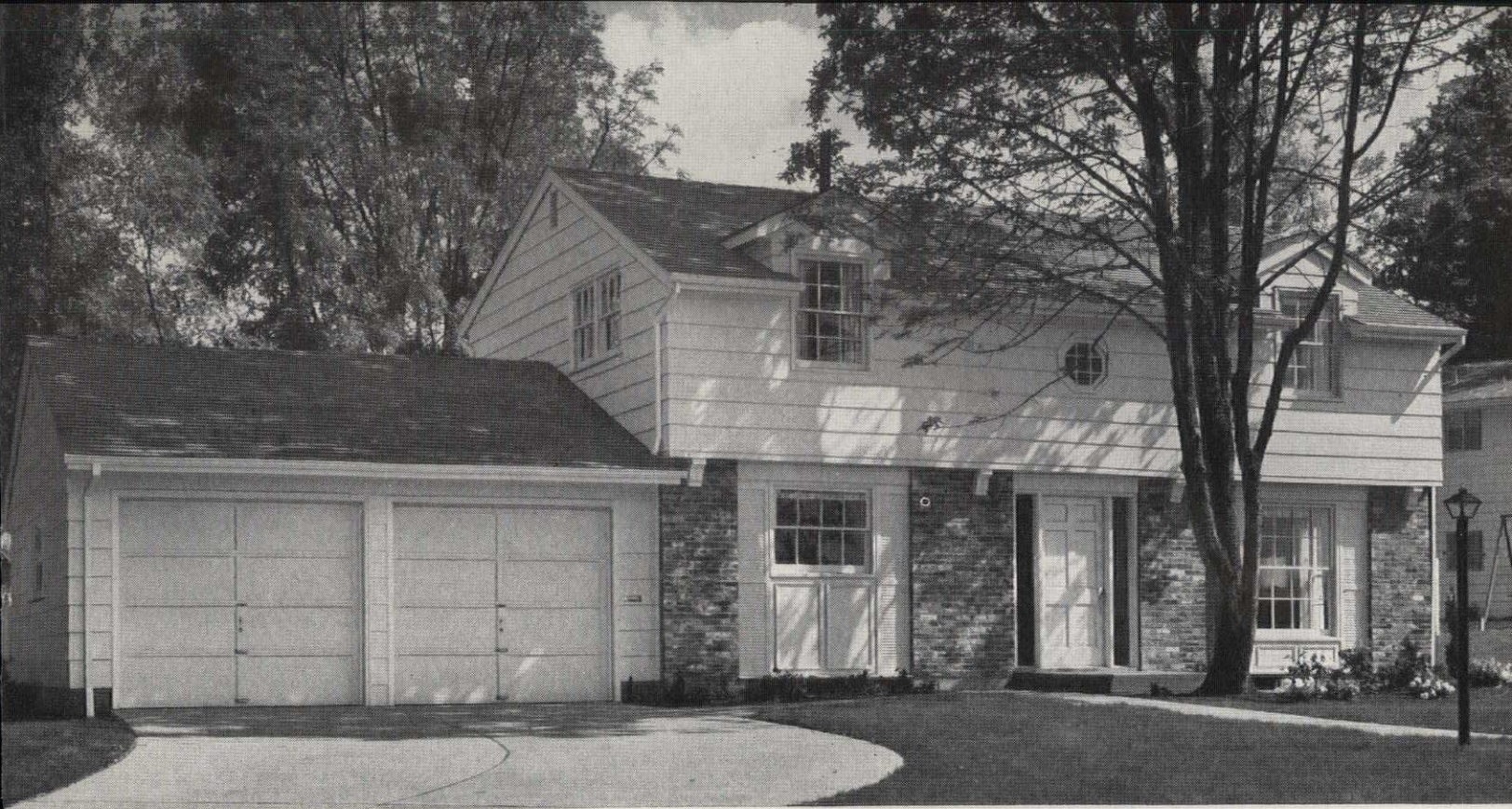
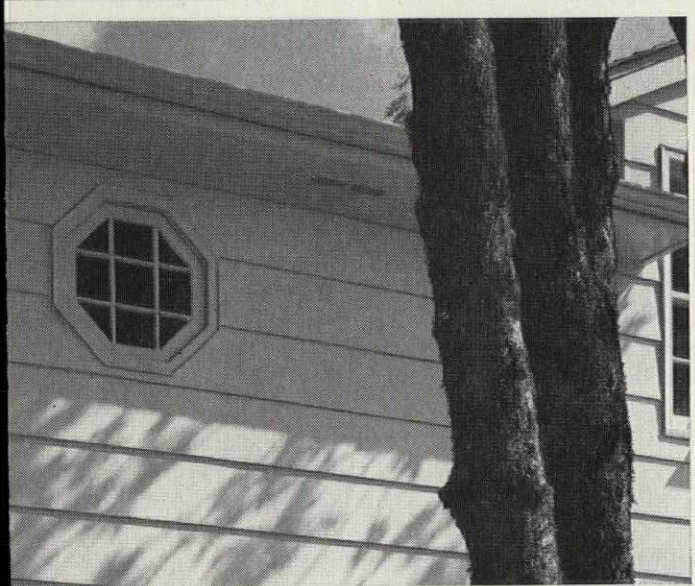
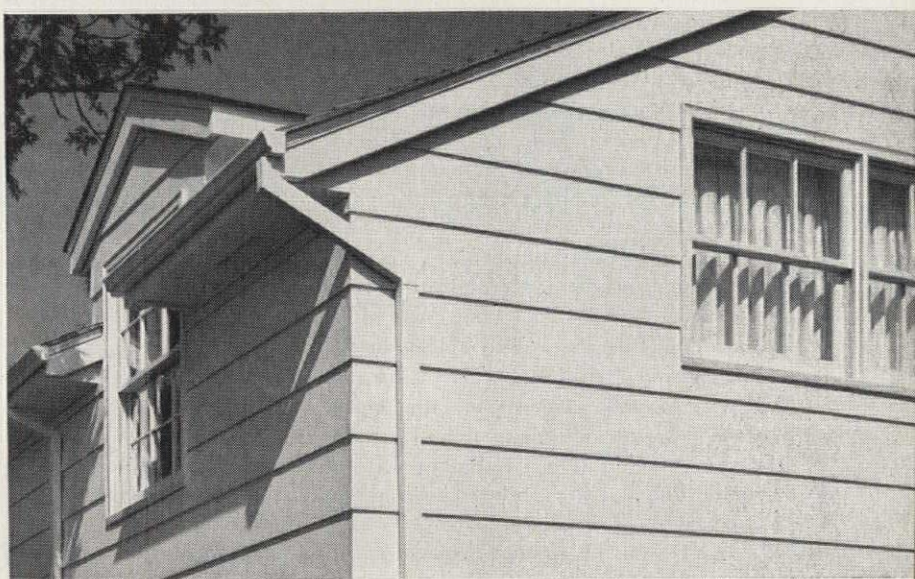




The existing offices of the law firm (plan, above) *are on the left; the new space is on the right. The areas detailed by the architect are shown in tone. The view from the office into the corridor* (right) *shows the variations in architectural detailing. Teak panels that have a rabbeted effect float on the black background, which ties the office together. The horizontal joint at chair-rail height continues the line of the window sills. This line is omitted in the hallway, where there are no windows. The changes in lighting are also apparent. There is also a change in the carpet color: the secretarial area outside the doorway has green carpeting; charcoal carpeting is used in the hallway.*







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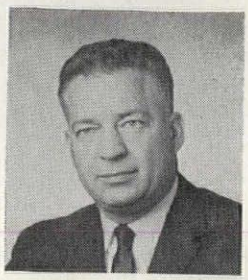


Two New Roofing Materials

BY HAROLD J. ROSEN

Problems concerning the development of improved and more efficient materials for built-up tar or asphalt roofs is the basis for discussion by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers.

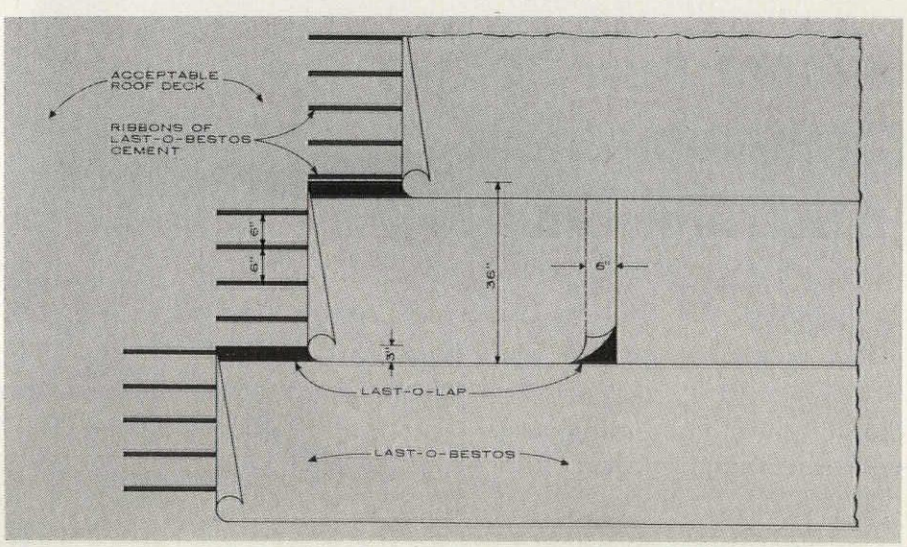
A vast number of new products are put on the market every year. Only occasionally do we find new products that differ radically from traditional materials or offer much promise.

In designing roof decks, the lack of suitable roofing materials has been a problem to architects for many years. The need for finding a solution for built-up tar or asphalt roofs, with their limitations and vague guarantees, has resulted in two new and promising roofing products: Last-O-Roof, manufactured by Johns-Manville; and T/NA 200, manufactured by the Ruberoid Company. Both materials have considerable merit, since they are designed for roofs of unusual configuration, including curved shells, folded plates, hyperbolic paraboloids, and roofs of unusual geometry.

Last-O-Roof is a cold application of one-ply plastic elastomer membrane consisting essentially of polyisobutylene that has unusual weathering properties. The roofing membrane consists of a polyisobutylene film laminated to an asbestos felt. The membrane is cemented to the roof deck with ribbons of a solvent-type polyisobutylene adhesive, spaced 6″ on center (*see illustration*). The membrane is rolled out onto the adhesive ribbons with side laps of 3″ and end laps of 6″.

Last-O-Flash, an allied material made of heavy polyisobutylene film reinforced with a glass mesh, is used on both horizontal and vertical surfaces, and applied with an adhesive similar to roof adhesive but with heavier consistency.

Last-O-Lume, an elastomer-based coating, available in aluminum or metallic pastel colors, is applied to the entire roof surface by a paint roller or by mechanical spraying equipment. This new roofing system has the following advantages: (1) It can be applied to all slopes. (2) It is cold-applied. (3) It is lightweight (approximately 55 lb per 100 sq ft), thereby reducing the handling of materials during construction and dead load. (4) It can be applied in hot or cold weather with the same efficiency. (5) Since there are fewer operations, field errors are reduced. (6) It is highly resilient and can accommodate higher than normal building stresses and distortions; its flexibility and elasticity are practically unaffected by weathering and temperature changes. (7) It is available in all colors. (8) Flashing is simple with no multiple plies to contend with. (9) Damages are easily repaired with special patching films.



T/NA 200 consists essentially of a film of Du Pont's Tedlar, a polyvinyl fluoride laminated to an asbestos felt. However, a base sheet with hot asphalt or cold bituminous type cement is used in applying the roofing membrane. For a typical concrete deck: (a) deck primer is applied; (b) a base sheet is mopped in with hot asphalt or cold cement; (c) T/NA 200 roofing membrane is laid in either hot asphalt or cold cement. The side laps are 3″ and the end laps 6″, both sealed with a 2″-wide, pressure-sensitive tape of Tedlar film. The advantages claimed for T/NA 200 are the following: (1) The material is tough and flexible over a wide temperature range, from −50 F to over 250 F. (2) Radiant-panel flame spread ratings under 10 have been obtained with the roofing membrane and insulations of glass fibers or styrene foam. (3) The Tedlar film is unaffected by ultraviolet light and does not chalk, craze, corrode, or erode on exposure. (4) The smooth, self-cleaning surface keeps dust and dirt accumulation to a minimum. (5) Repairs are easily made by patching with Tedlar film.

Both of these two new roofing systems offer the architect a greater choice in roof design. As new materials and application methods are refined, the present installation procedures will be modified. These products indicate the prominent role that plastics and chemistry will play in the future of building materials.

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Studies in Noise Control

BY WILLIAM J. McGUINNESS

The high level of noise in industrial plants has created the problem of possible permanent injury to workers' hearing. As a result, several important studies have been made of ways of reducing hearing loss among workers. These are discussed by the Chairman, Department of Structural Design, Pratt Institute.

Although the human ear can tolerate an ambient background level of sound, exposure to extremely loud noises for long periods can inflict permanent injury to the ear. In California, for example, the annual number of claims for ear injuries due to excessive noise has increased from 4 to 332 over a 10-year period. As a result, the California Director of Industrial Relations has recently put an upper limit of 95 db on industrial noises. Although many heavy industries operate at higher noise levels, compliance should not be difficult. Some plants have already installed resilient mounts under noisy machines. In areas where noises cannot be properly reduced at their source, or where machinery cannot be isolated by adequate sound barriers, workers may be given ear plugs or specially designed ear muffs to wear. Other states are taking similar measures: Wisconsin, for example, has passed new legislation encouraging workers to claim their rights to compensation for ear injuries.

As we age, our discernment of the audible range of frequencies narrows. In particular, we are unable to hear the lower frequencies, which are always less audible (*see graph*). Tests conducted on elderly Africans who have been exposed only to rural sounds indicated that they retained auditory sensitivity and scope far greater than that of life-long city dwellers of the same age.

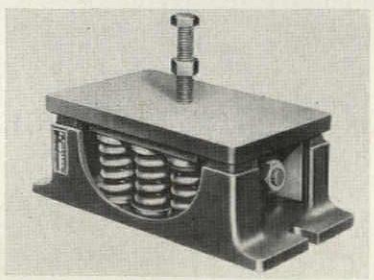
Architects and engineers must obviously assume the responsibility of advising their clients of corrective measures aimed at minimizing industrial claims, while also meeting their public obligation of preventing injury to workers.

Korfund Dynamics Corporation of Westbury, Long Island, N.Y., has long been involved in the study and reduction of excessive vibration and noise in industry. Founded in 1898, the company recently added to its extensive services and products a device that aids in measuring and preserving auditory acuity in workers. Called an Audiometric Room, it is used to evaluate the hearing ability of newly employed workers and to detect, by periodic testing, any diminution of this sense. The room is a quiet, ventilated enclosure having a window through which the operator, a medical doctor (otologist) or a licensed audiologist, can exchange visual signals with the worker inside. When the worker hears the audible signal at each frequency, he raises a finger. A notation is made of the decibel level at which each sound is heard, thereby establishing a permanent, filed record against which later examinations can be compared. This system protects the employer against subsequent fraudulent claims and gives the worker a basis for proving any valid injury to his hearing.

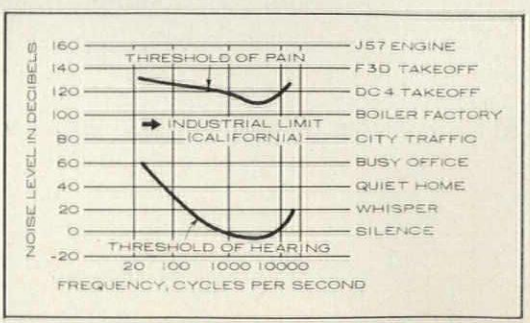
The problem of noise control, however, extends beyond the effects of long-duration exposure to high-level sounds. The quieting of heavy machinery is, in any case, usually outside the competence of the architect, and may be considered a responsibility of the industrial engineer. Korfund has a long history of cooperating with engineers in studies, developing products for the reduction of sound, and manufacturing barriers to lessen sounds transmitted by air-borne noise and structure-borne vibrations.

Many of these studies are of special interest to architects and structural and mechanical engineers generally, including those not directly involved in the design of industrial buildings. Years ago, the mass-to-vibration ratio of heavy-masonry structures and low-power equipment gave assurance of minimum sound generation and transmission. The picture has changed radically. Steel skeleton frames have almost entirely replaced heavy stone and brick load-bearing construction. The exterior curtain walls on these skeletons, which for several decades had been of brick and terra cotta, now largely consist of light metal panels. As a result of this reduction of mass, the speed and power of equipment has increased. Structure-borne vibrations often create secondary noises at remote points. Many precautionary measures can be taken to minimize this unnecessary shaking, as well as air-borne noises that can be transmitted great distances through ducts. Steel springs may be placed below machinery or in the hangers of pipes or ducts. Blower sounds that pass into ducts can be reduced from 100 to 60 db in relatively short distances by sound traps. Viscoelastic products can be sprayed on thin-gage metallic elements that might otherwise vibrate greatly.

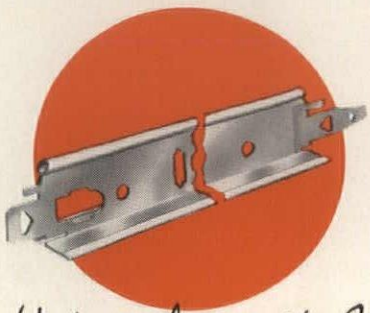
There is a growing trend to equip architects and engineers with instruments which will allow them to check the compliance with their specifications of decibel ratings for air-distribution systems, as well as the maximum allowable percentage of vibration transmitted into structures from dynamic equipment.



Vibro-Isolator



How would you design a fire-protective suspension system?



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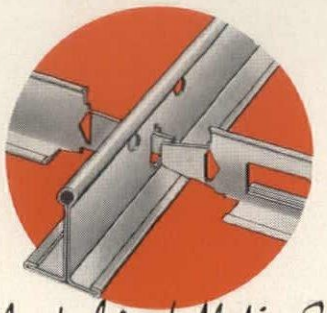

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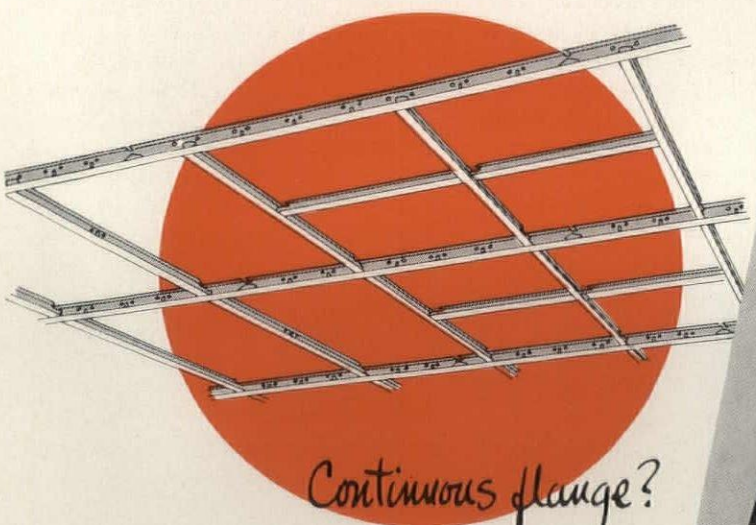

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The Oral Construction Contract

BY JUDGE BERNARD TOMSON AND NORMAN COPLAN
Nassau County District Court Judge and a New York attorney discuss a recent decision emphasizing the danger of entering into an oral construction contract.

An oral construction contract can mean trouble. This was illustrated by a recent case in New York (*Clement S. Crystal, Inc.* v. *Denberg*) in which a general contractor instituted suit for breach of an oral contract, contending he had been retained as the general contractor for the demolition of certain existing buildings and the construction of a 20-story apartment house. The owner denied the existence of such contract, challenged the enforceability of the alleged contract on the ground that it was not in writing, and further asserted that a portion of the services purportedly rendered were architectural and engineering in nature, and therefore in violation of the law of New York.

The general contractor testified that at a time when he was actually constructing an apartment house in the City of New York as general contractor for the owners he and the owners had had a conversation concerning a proposal to build a second apartment house at a different location in the city. The contractor testified that, after some subsequent discussions, the owners of the property retained him to demolish certain buildings and to contruct a new apartment house for a fee of $45,000.

The general contractor asserted that he thereafter conferred with the owner's architect, mechanical and structural engineers; reviewed the plans and specifications and made suggestions for their improvement; solicited bids from 57 subcontractors; reviewed and analyzed the bids; negotiated contracts for the elevators and structural steel as agent for the owners; and supervised the demolition work. The plaintiff further testified that he was instructed by the owners to discontinue all further work, since they had decided not to construct the building and intended to sell the property, and that shortly thereafter defendants retained another contractor who completed the construction of the apartment building.

The owners, however, testified, in substance, that they had never engaged or hired the general contractor to construct the building in question and that "the services rendered by the plaintiff were that of a volunteer, in anticipation of and with the hope and expectation of being awarded the contract as the general contractor."

The first legal question to be resolved by the Court was whether an oral contract for construction, as contended by the general contractor, was enforceable. The New York "Statute of Frauds" requires that any contract that cannot be performed within one year must be in writing, signed by the party to be charged. The primary factual issue to be determined, therefore, was whether the contract in question could be performed within one year. The owners testified that, in their opinion, it would take more than one year to complete the entire job, which included the removal of the tenants then in possession, the demolition of the existing building, and the construction of the new apartment building. However, the owners' architect, who had been in practice for more than 35 years, testified that, in his opinion, the entire contract could easily have been completed within one year. As a result, the Court found that there was a valid oral contract between the parties, stating:

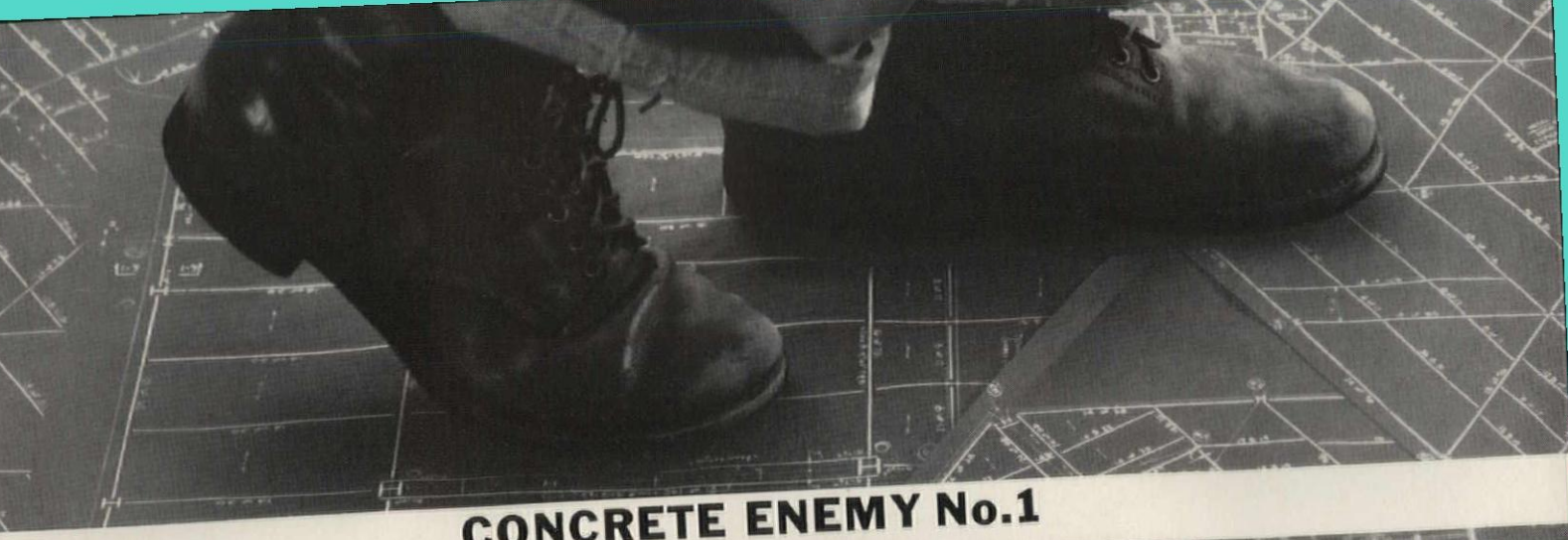
"The courts have held that if an oral agreement admits of performance within one year, although unlikely to be so performed, it is not within the prohibition of the Statute of Frauds. The evidence establishes, and the court so finds, that the parties contemplated the completion of all of the work within one year, and that the contract was clearly capable of being performed within one year."

At the conclusion of the trial, the defendants had moved to dismiss the claim of the general contractor upon the ground that the plaintiff had performed certain services as an architect and as a professional engineer; and, not being licensed as such, compensation for such services would be against public policy and a violation of the New York State Education Law. The Court rejected this motion on the grounds that "all of the work actually performed and which was to be done by the plaintiff was subject to the approval of a registered architect or engineer in the employ of the defendants."

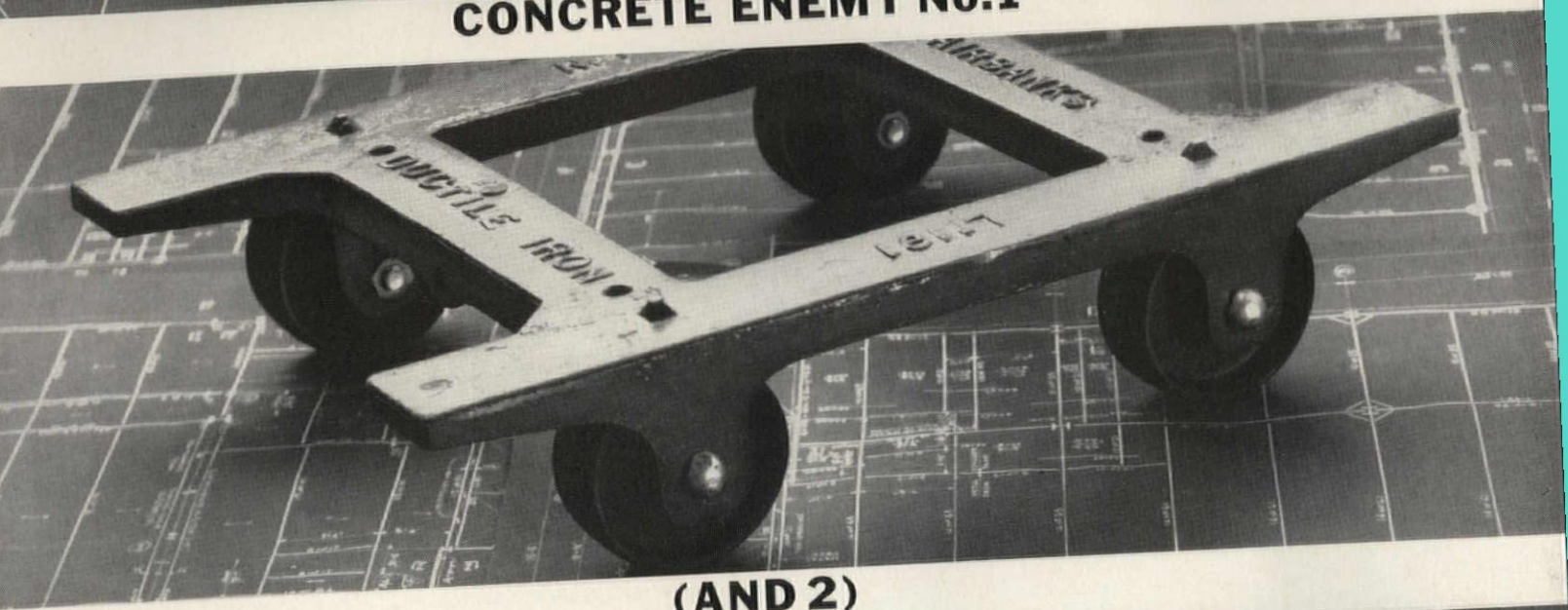
The owners also claimed that the suit should be dismissed on the grounds that the general contractor had not established any damages, premised on the fact that there was no proof that the general contractor would have made a profit on the contract if he had been permitted to continue. The Court, in rejecting this contention, stated that where a contractor claims for "partial performance as well as prospective profits, he may recover for the value of the work done though there is no proof as to the prospective profits; the two claims are separate, and a recovery for the former is not dependent" upon the latter.

On the quantum of damages, the general contractor testified that he spent approximately 3500 man-hours rendering services to the defendants. On the other hand, expert witnesses, including the architect, testified that it would require approximately 1000 hours to complete the job after receipt of architect's plans and that 40 per cent of this time should be allotted to all services performed prior to supervision of actual construction. The Court accepted this testimony and awarded the plaintiff 40 per cent of his claim.

This case is illustrative of the principle that, in the construction field, the party that proceeds in the absence of a written contract does so at its peril.



CONCRETE ENEMY No.1



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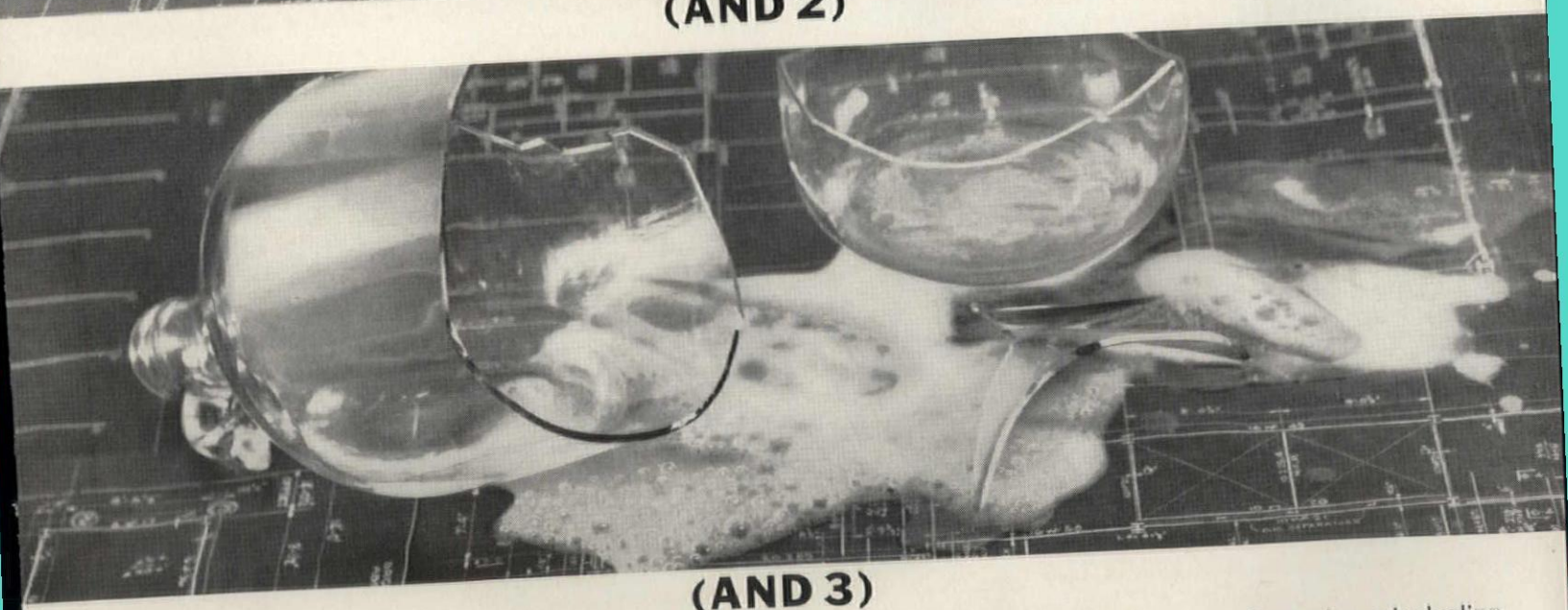

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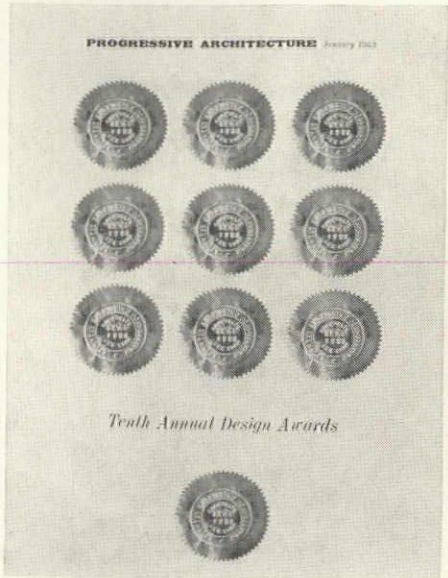

The Design Awards Program

Dear Editor: The JANUARY 1963 P/A proves again that the Design Awards Program makes a significant contribution to the development of architecture in the United States. The fact that it brings to the public at large projects still in the design stage is especially valuable.

VICTOR GRUEN
Beverly Hills, Calif.

Dear Editor: We would like to let you know just how much we enjoyed your January issue of *Paul Rudolph's Coloring Book*. We are glad that you and your cast do not take the serious attitude toward architecture that other magazines do. The parodies of form and composition are ingenious. We would never have guessed that anyone had the talent to create such tongue-in-cheek misproportion, such hilarious introduction of inappropriate elements, such comic disorganization.

Keep up the good work; we all need a good laugh now and then, even if it is sick humor.

JAMES DARROUGH
Butlet & Associates
Columbia, Mo.

Dear Editor: The entire Design Awards Program—the jury's criticisms, the presentations, and the awards—are all a part of our current architectural world. P/A is continuing to provide us with a most stimulating and rewarding service in this annual event. We all look forward to next year.

ROBERT WIELAGE
Tampa, Fla.

Dear Editor: It is always refreshing to start a new year looking through the January P/A and evaluating work that has received design awards. However, I was somewhat dismayed when one of my associates came across the residence by Robert Ernest in the JANUARY 1961 P/A and compared it with the residence designed by Marvin Hatami in the JANUARY 1963 P/A.

If you compare these two residences, you will certainly see that Hatami's design is almost an exact replica of that by Ernest, originated two years before. The floor plans are almost identical.

It has always been my belief that imitation is the sincerest form of flattery, but surely such imitation does not deserve a Citation. Perhaps the members of the jury did not recollect the 1961 awards.

H. K. WHITE
Ken White & Associates
Denver, Colo.

[*The similarity of the two designs was pointed out to the jury during the course of the jury debate. However, the concensus was that this was a coincidence rather than deliberate imitation.*—ED.]

Dear Editor: As a member of the architectural staff of the University of Houston, I cannot clap loud enough for your 10th Annual Design Awards Issue. It is a useful object in dealing with students.

BURDETTE KEELAND, Jr.
Burdette Keeland, Jr., Associates
Houston, Tex.

Dear Editor: It seems that architecture is increasingly becoming "the art of fashion design," where certain superficial whims are heralded as the great styles of the near future. It is not easy to keep up with the rapid pace of the style-makers, who, not unlike Dior, seem to come up with something new and exciting every year. Thus we have had recently the great periods of Bunshaft, Kahn, Lundy, Stone, Yamasaki—and now we have the Rudolph era.

I am not trying to disparage in any way the outstanding works of these architects. Neither am I willing to assume that "this is it" for times to come. It would be rather hasty, and imply a limited point of view, to assume that Paul Rudolph's opulent style is the only answer to architectural design. This is the impression I get from the 1963 P/A Design Awards. Although I greatly admire Rudolph's talents and appreciate his sculptural treatment of solids and voids, such a personal style is certainly not acceptable universally. It is an extremely interesting, pragmatic exercise in architectural forms, and though I do not object to such a rational approach, it does leave a void as far as a more poetic, emotional concept is concerned, such as Victor Lundy expresses in his work.

Although I like Rudolph's style, I would not like to see a "Rudolph City." As much as I find objectionable the exhibitionistic architecture so prevalent today—the new for the sake of the new—I feel at the same time that the P/A Design Awards Program should reflect all the trends in current architecture. Paul Rudolph's work is rich and decorative, but it looks expensive. The simple economic facts limit its universal application. Apart from this consideration, one would hope to find more original and personal concepts than simply imitations of the master.

GEORGE A. HARTMAN
Bainbridge Island, Wash.

Dear Editor: Here you are, going great guns, producing a magazine with nice layout, good pictures, and intelligent criticism, and now you lay a big bomb with your 1963 Annual Design Awards.

First you start off with a couple of take-offs on Rudolph's widely published recent Florida house, then you march on to the Coronado Apartments, whose similarity in plan to Saarinen's two Yale Colleges is unmistakable. Next, I see a "Lundy" Chapel in the Pines, a smattering of bad Kahn (page 120), worse Wurster (page 122), bad "1950 Scandinavian" (page 119). To top it off, you show an unfortunate Rapson mausoleum that looks like a zoo, and a Gassner, Nathan, Browne zoo that looks like a mausoleum.

If the submissions were so awful that Mrs. Saarinen and Messrs. Rudolph, Johanson, Geddes and Skilling could not pick something that they mutually felt deserving, then the whole mess should have been flushed. It's an embarrassing, sorry mess of copy work which you have presented with a staggering staleness that I hope is not repeated next January.

DANIEL SULLIVAN
New York, N.Y.

Dear Editor: We appreciate P/A's efforts to improve and be cognizant of the architecture of our time. We look forward to your continued leadership among architectural publications.

T. VAN HOUSEN
Progressive Design Associates
St. Paul, Minn.

Dear Editor: We have just reviewed the current Design Awards issue.

You can't be serious.

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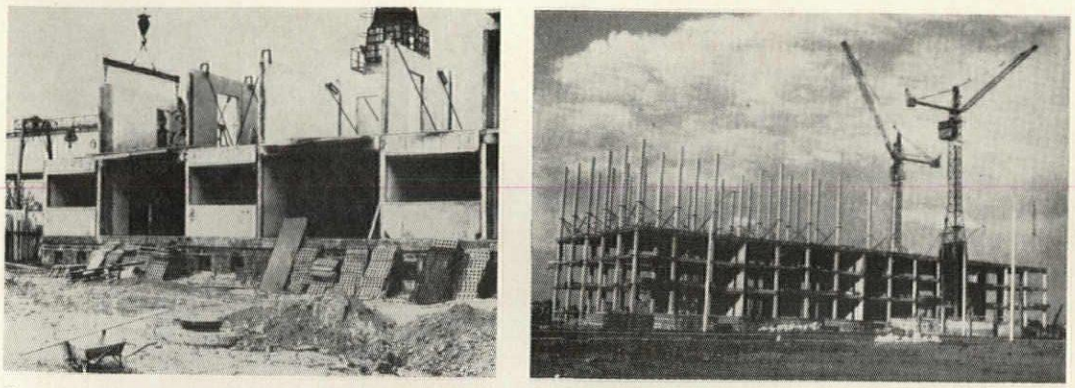

Large prefabricated units in Polish apartments; and prestressed-concrete columns in a Yugoslavian system.

Of International Interest

BY OLINDO GROSSI

INNOVATION IN BUILDING: CONTRIBUTIONS AT THE SECOND CIB CONGRESS, CAMBRIDGE, ENGLAND, 1962. *Edited by the International Council for Building Research, Studies, and Documentation—CIB. Published by Elsevier Publishing Co., Amsterdam and New York, 1962. Distributed by American Elsevier Publishing Co., Inc., 52 Vanderbilt Ave., New York 17, N.Y. (232 pp., illus. $22.50) Reviewer is Dean of the School of Architecture, Pratt Institute.*

Since the founding of CIB in 1953 (by the Economic Commission for Europe), this organization has undertaken to bring together building researchers in a number of activities, ranging from very specialized conferences to large-scale congresses in which varied opinions and approaches are discussed at length.

Earliest aims of the CIB were noted in its *Bulletin:*

"The primary purpose of the International Council shall be to encourage, facilitate, and develop international co-operation in building research, studies and applied research and documentation covering not only the technical, but also the economic and social aspects of building.

"In general, the International Council shall use its best endeavors, within the limits of its competence, to promote progress in building by improving quality, reducing costs, and increasing productivity. In its immediate activities it shall give special attention to the need for more and better homes, hospitals, and schools and, in general, to the social objectives, with special reference to the needs of the family as a unit."

With these objectives, and with "Innovation in Building" as the theme of its second congress, the resulting book is both justified and disappointing. Restrictions of time and subject area explain the brevity, but the impressive accumulation of experts who contributed to the volume could easily have been more perceptive and the production more rewarding. But although the volume lacks depth and articulated detail, and although its quality is notably uneven, this set of essays has breadth and international interest.

The first chapter, "Review of Trends in Broad Geographical Areas," is composed of four reports—one on the USSR, one on North America, another on France and Western Europe, and the last dealing with Japan and other Asian countries. Each of the reports was presented by an eminently qualified official of a national research institute. The Soviet official dwells upon statistics of materials production, of which the Soviet Union and her satellites can be justly proud, and sketches the influences on design that have resulted. The Canadian researchers, who describe North American trends, trace the evolution of materials from teepees covered with hides to skyscrapers covered with "curtains." They bluntly note that many architectural designs are developed by architects whose training gives them "little basis for understanding, and indeed little interest in the technical and economic implications of some of the architectural effects which he is attempting to achieve." This statement comes on the heels of the observation that 40 to 50 per cent of building costs are frequently allotted to mechanical and electrical services, and this, in turn, is followed by the observation that one of the trends is toward the large architectural-engineering firm. The implication that engineering should lead architecture is hard to escape. In the report on France and Western Europe, the author at least prepares the reader frankly for what is to follow: ". . . in recent years no very striking idea has been put forward." A list of efforts to refine well-known building systems is then recounted, but nothing startling is revealed. The Japanese reporter breezes through a half-dozen countries in southeastern Asia discussing materials and new production facilities. In discussing his own country, he concentrates on the concrete industry as it has developed since World War II.

The weakness—and potential disaster—of using conference papers for a book is highlighted by this first chapter. Obviously, any one of the participants could have written a much more perceptive piece on his subject, and CIB files are no doubt crammed with much more information than is presented. There is both a lack of coherence and a lack of direction to these papers, probably the fault of the conference planners who

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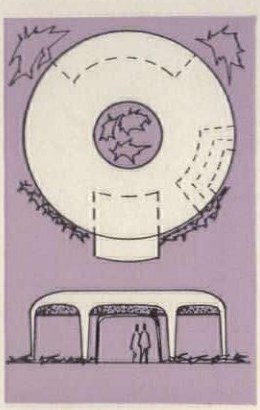

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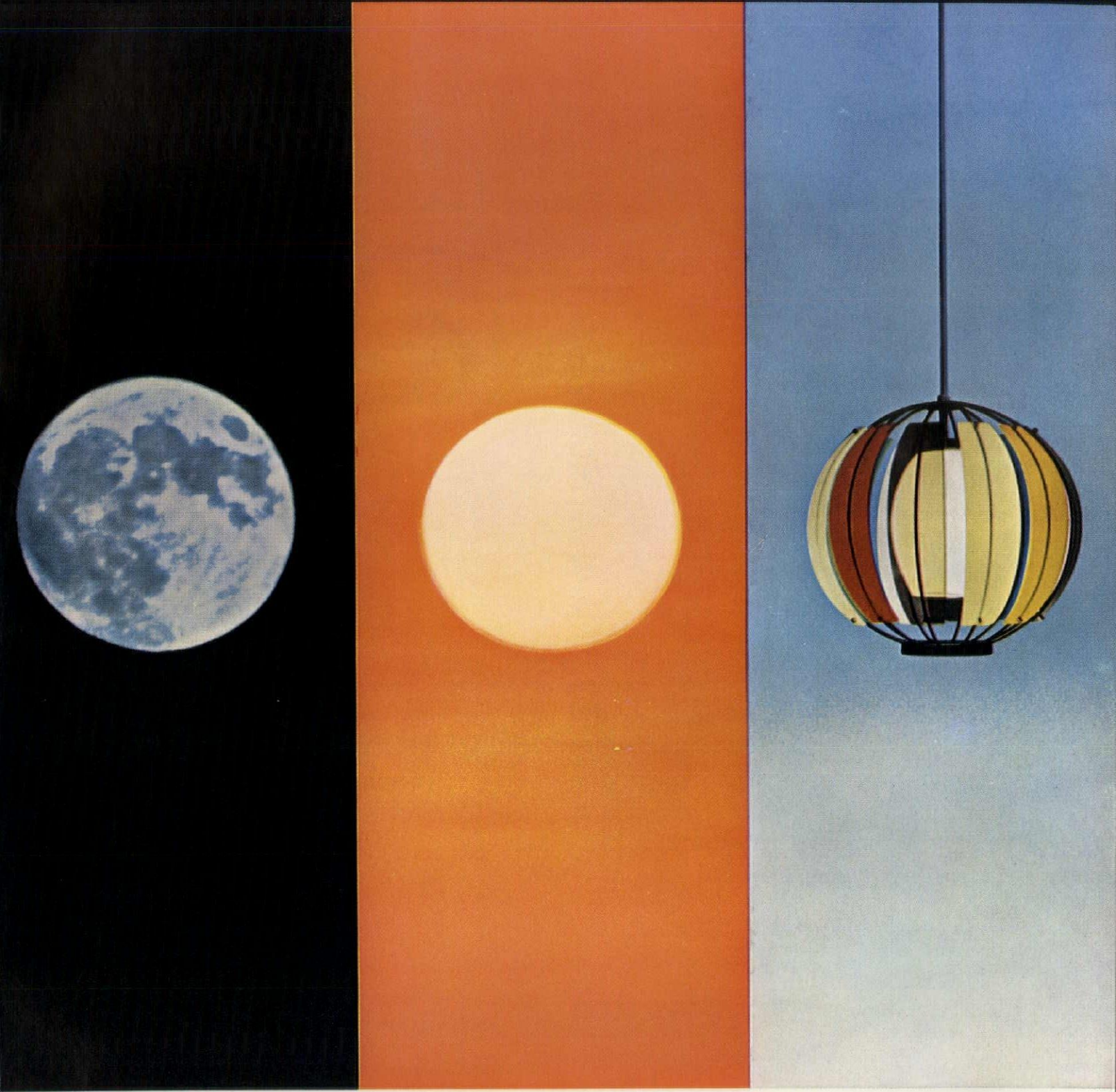
gave too little attention to the fact that these papers would be published.

The second chapter contains two papers. The first is a plea for more building research by the vice-president for research and development of an American corporation. He contends that the lagging construction industry will become a growth industry when research and development are budgeted more dollars. This, of course, will happen only when large firms "rationalize" this presently fragmented and highly competitive business. Although the floor discussion that followed the presentation of this paper is yet to be published, one must object to the idea that research and development dollars spent by the building industry are the panacea. It is too well known that a multitude of ways of reducing construction costs has been developed, but the production techniques and possible rewards have been so fragmented that few manufacturers and contractors would fight for their acceptance. Now, belatedly, the Federal Government, as the chief financial manipulator in the construction industry, has had to begin sponsoring studies that will produce systems incorporating these possible savings. The Government's interest is not so much in greater profit for the construction industry as it is in reducing costs for the consumer public. As long as this is the goal of research activities, private enterprise can hardly be expected to enter the field on a similar basis.

In the second paper of Chapter 2, the reader is delivered from the level of platitudes with a highly informative and stimulating paper describing the impact of large-scale building organizations on new building techniques in Poland. We are informed that the DBOR (roughly the equivalent of a regional housing authority) has been responsible for developing more than one-quarter of the dwellings in 1950, more than two-fifths in 1960. While engaged upon this crash program, these authorities have promoted the use of alternative materials, have openly committed themselves to "industrialization of building," and, according to the author, have "found the right balance between the human and technical aspects in the fields of town planning and architecture."

Although there are many good reasons for not emulating Polish housing practice, it is regrettable that our Government-sponsored housing (public housing in particular) has tended to ossify both in design and technology, instead of encouraging experimentation and flexi-

Continued on page 198



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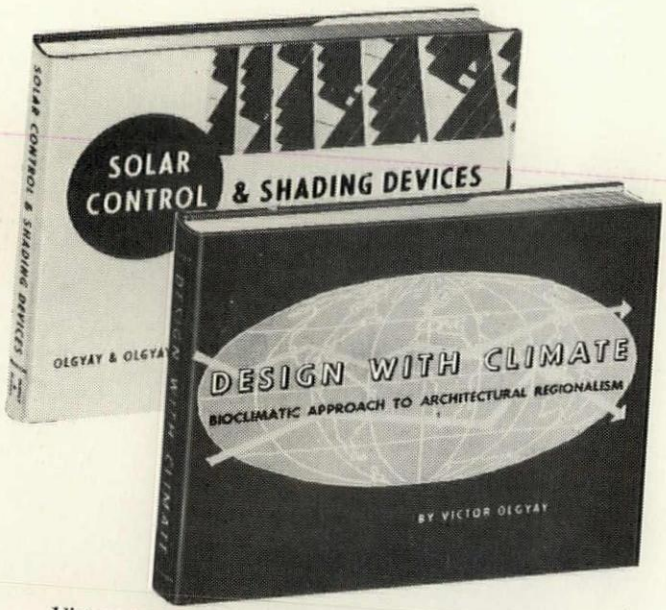

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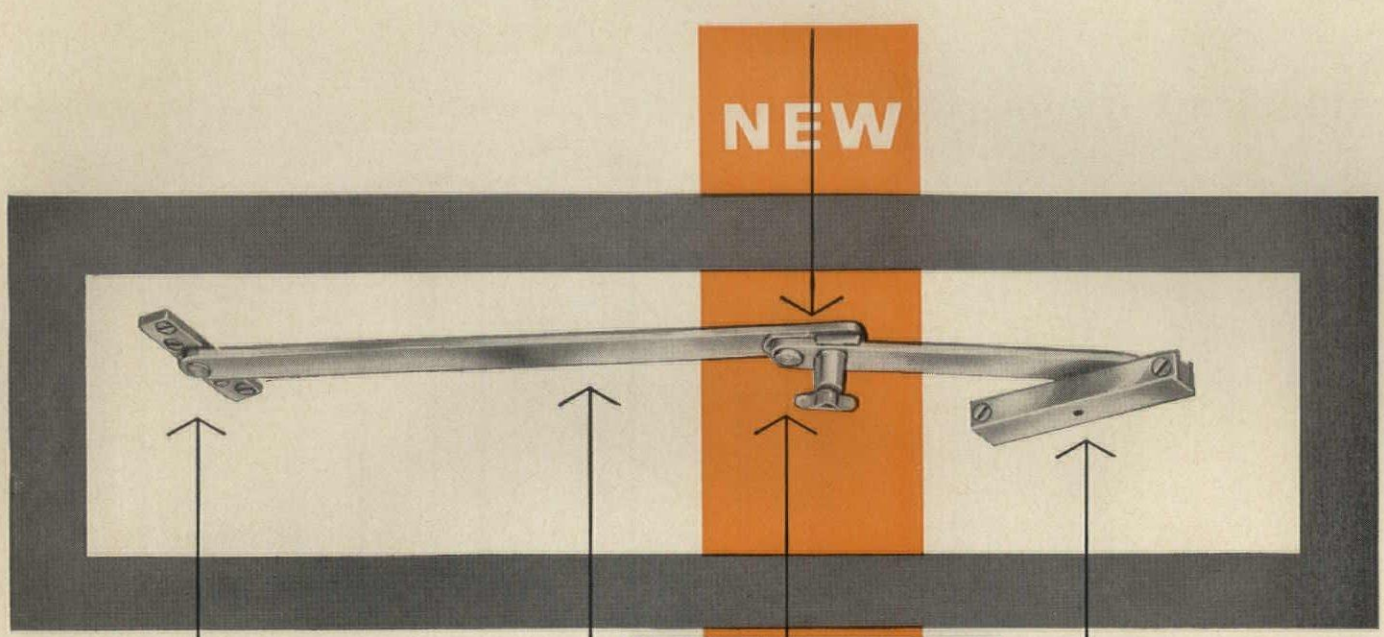

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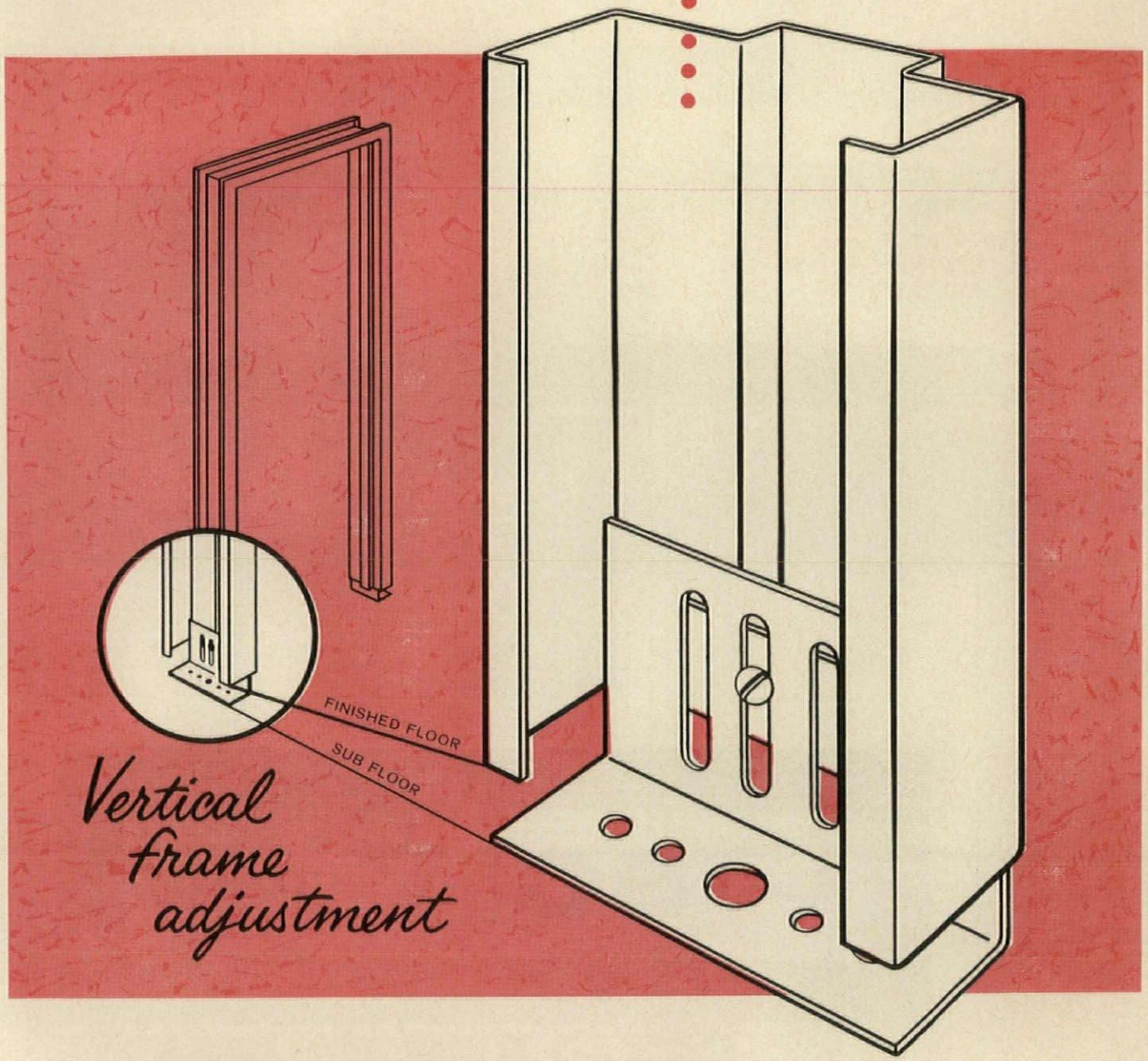

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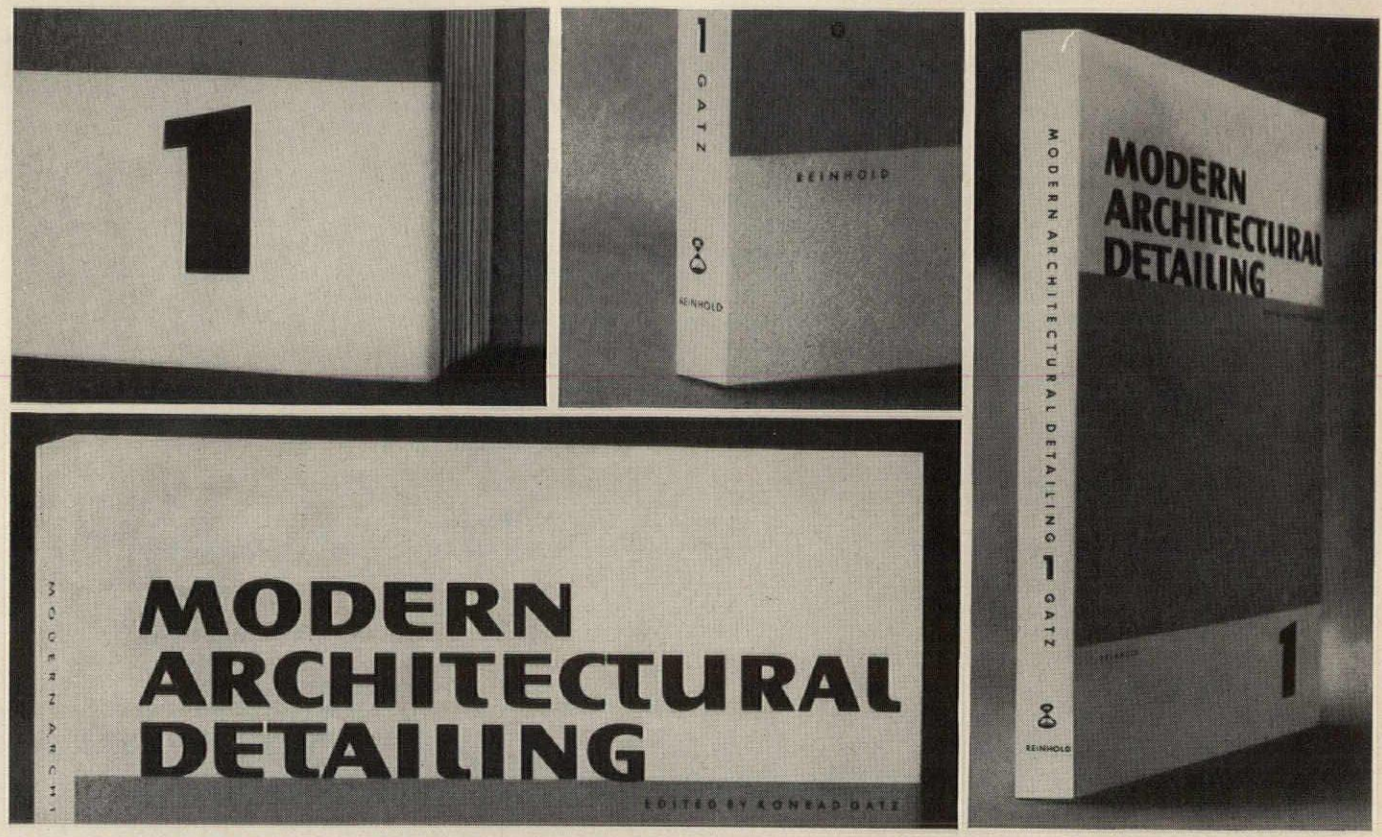

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Continued from page 198

even more important for the American architect—that large experimental centers have been created to study design, construction, and maintenance of house building. The range of investigation, experimentation, and construction in concrete systems alone suggests both an expansion of home construction and a systematic search for cost reduction.

"In Moscow the capital investment in house-building [1960] in comparison to 1958 increased by 20 per cent while the amount of new housing developed increased by more than 54 per cent."

The third paper explains the French "acceptance" system for testing and evaluating new products; the fourth reviews the research and implementation of improved concrete mixes in Israel; the fifth paper discusses developments in the Australian plaster industry, with emphasis on prefabricated walls and entire rooms.

Next follows a Yugoslav presentation. The achievements of this small country since World War II are amazing when measured against the need: "Not more than 5 per cent of the available dwellings were of a high standard and comfort." A governmental reorganization of housing design and production has been introduced and several prefabrication systems have been developed. The photographs illustrating this paper reflect an interesting variety of designs. Architects will find this discussion directed to their interests, although, as with most conference papers, details are lacking.

Norwegian, German, and Union of South Africa research organizations report the philosophy and style of building research activities they are engaged in. The Norwegian efforts seem directed primarily toward the establishment of standards for product manufacture, while the South African activities involve solutions for materials and development problems. In the German Federal Republic, "efficient building is promoted by carrying out 'demonstration projects,' intended to demonstrate to all branches of the building trade how to use the new methods, how to co-operate efficiently, and what results may be obtained." A government subsidy is provided for these housing projects, which range from 400 to 1000 units.

In Chapter 5, "Interplay with User," the French advance a list of livability criteria by which the success of residential building can be measured. American architects would welcome the substitution of such a standard for the dollar

yardstick to which they are now chained in their multifamily residential work. A Swedish article on the need for functional research suggests that design should result from interviews—a suggestion that hardly justifies rebuttal. But it remains for the British "development group" in the Ministry of Education to give a really helpful "user" approach. The development group—consisting of educators, architects, administrators, and quantity surveyors—advises local school authorities on a contemplated building program, and its recommendations have a direct effect on the development of the local educational building. In a complex world where knowledge is so specialized, this method of assisting local school authorities and their architects appears to be an effort of government that could be emulated to advantage—and not only in educational building development.

As if to underscore this need for a specialist advisor to the general architect, the next paper, from the Netherlands, suggests some of the environmental factors that influence building design, such as indoor climate, access of daylight and sunshine, and noise level.

In the final section of the book, three papers suggest means for increased reporting of building research activities —a natural enough interest for a CIB publication. But just what form this will take, if indeed a world-wide system is ever established, remains obscure. While CIB itself is the creature of the European Economic Community and maintains its home in the Bouwcentrum in Rotterdam, its membership is composed of "national bodies selected for their competence, their national importance, and their ability to make an effective contribution to international co-operation in at least one of the three sections [experimental research, studies and applied research, or documentation]. . . . They must be nonprofit-making bodies working in the public interest." The fact is clear that many countries have no such body, and even if they did, there would hardly be any unity in the approach to solving building research problems. This volume illustrates that fact clearly, and it probably derives from the differences in economic and social systems of the countries represented.

The International Council for Building Research, Studies, and Documentation has itself represented a changing approach to these subjects. For example, the *CIB Bulletin* originally was a newsletter that reported a wide range of activities in building research, but it was an economic failure because it failed to secure a sufficient subscription list. What CIB and its constituent members have failed to do, so far, is to focus on the social and political obstacles to improved building practices and thereby gain public support. With this handsome volume, perhaps a wider audience will be made aware of the demands for building code changes, research money, and scholarly attention required for building research.

Finally, the volume will be particularly attractive to the avid research-minded person and to most school and research libraries, but it is not essential to the personal library of the professional.

Practicality and Hard Facts

OFFICE BUILDINGS *by Leonard Manasseh and Roger Cunliffe. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. (1962, 208 pp., illus. $12.75)*

Here is a workman-like book. Measured harshly, it delivers better than one-half of what architectural literature ought to supply. The authors have collected from dispersed sour-

Continued on page 215

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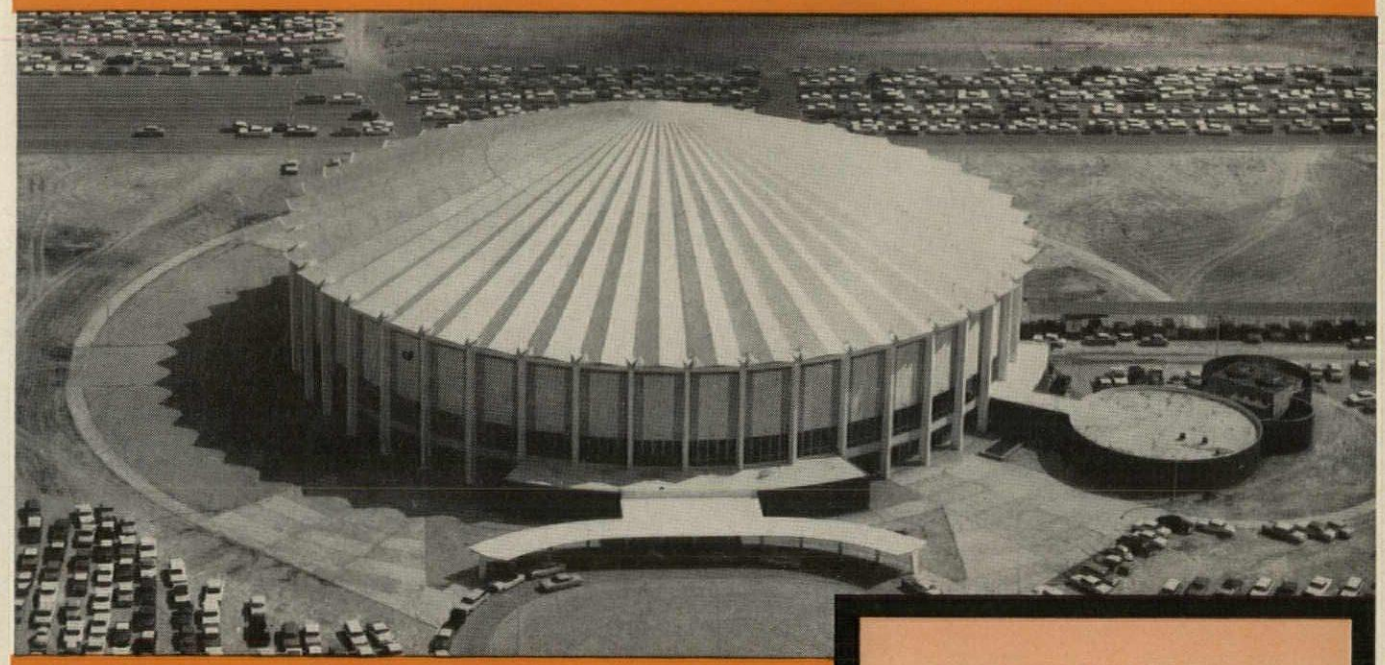

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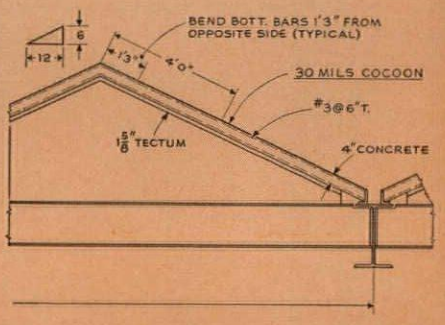

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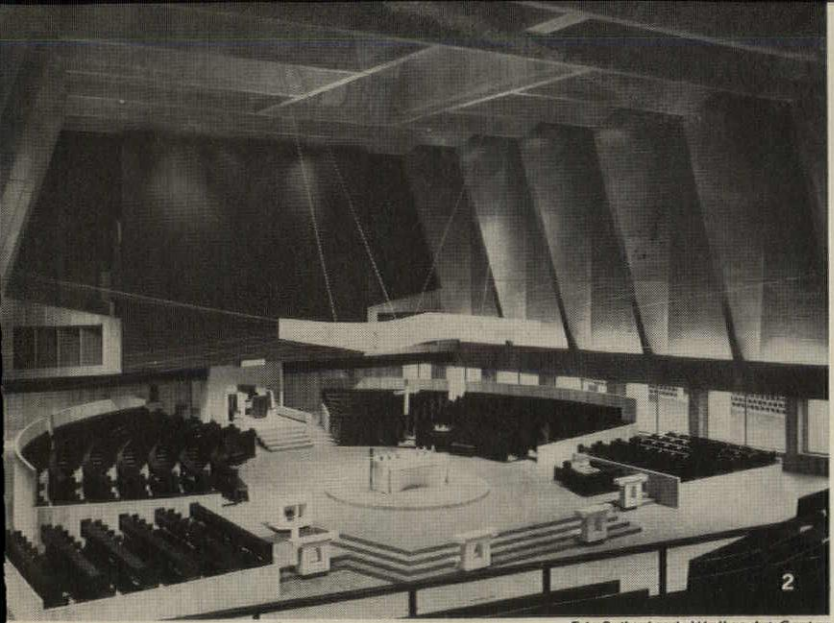
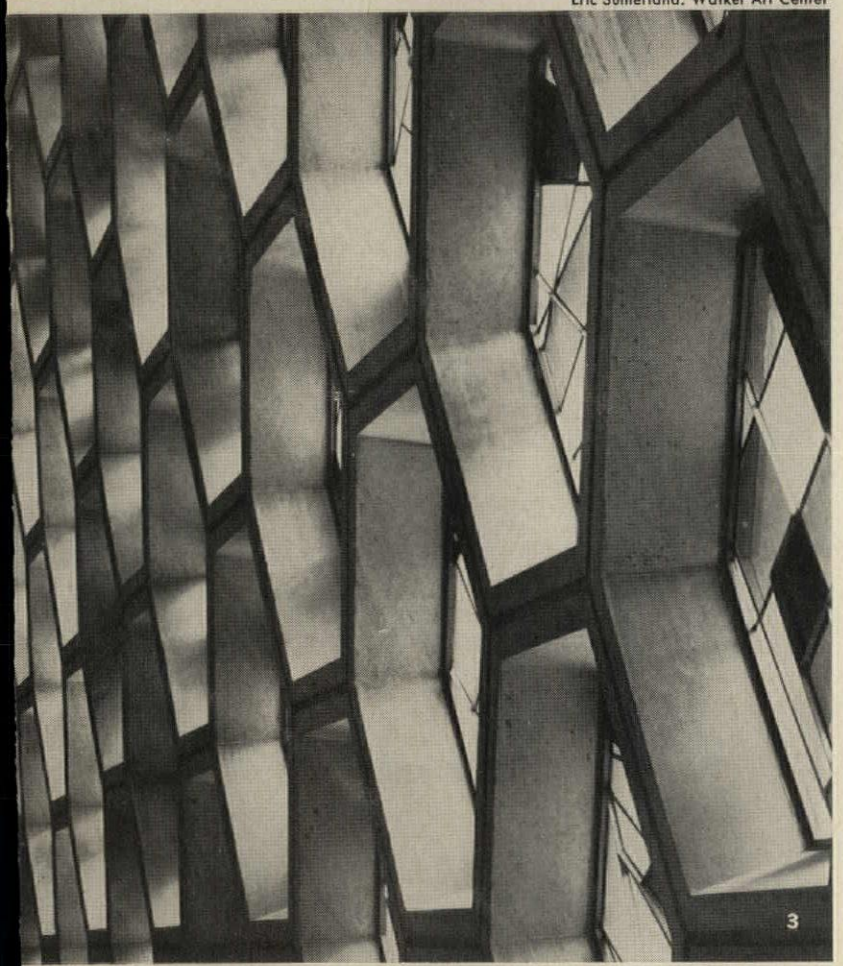


Eric Sutherland. Walker Art Center



1 strength and durability

The reinforced concrete bell banner is a huge plane, only 2½ feet thick at its base, that cantilevers upward 112 feet from supporting parabolic cross vaults.

POZZOLITH provided greater compressive strength, greater bond-to-steel strength, more durable finish, while it reduced drying shrinkage and prevented cold joints during placing operations.

2 surface texture

Sidewalls and roof of the Abbey church are a series of reinforced concrete folds, untreated and unadorned. The folds enclose a volume of more than a million cubic feet. Maximum interior clear height is over 65 feet, overall width is 165 feet.

POZZOLITH contributed to the workability and cohesiveness of the mix to help create the distinctive architectural finish which is a faithful reproduction of the sharp corners and surface characteristics of the wood form boards.

3 plasticity and placeability

The north facade of the Abbey church is a self-supporting geometric tracery consisting of 540 cast-in-place concrete hexagons.

POZZOLITH increased plasticity and workability with a minimum of water in the mix, and produced a weather-resistant surface.

For complete details on *all* the beneficial qualities of POZZOLITH in architectural concrete, please call your local Master Builders office. *THE MASTER BUILDERS COMPANY, CLEVELAND 18, OHIO. A CONSTRUCTION MATERIALS DIVISION OF* ***MARTIN MARIETTA***

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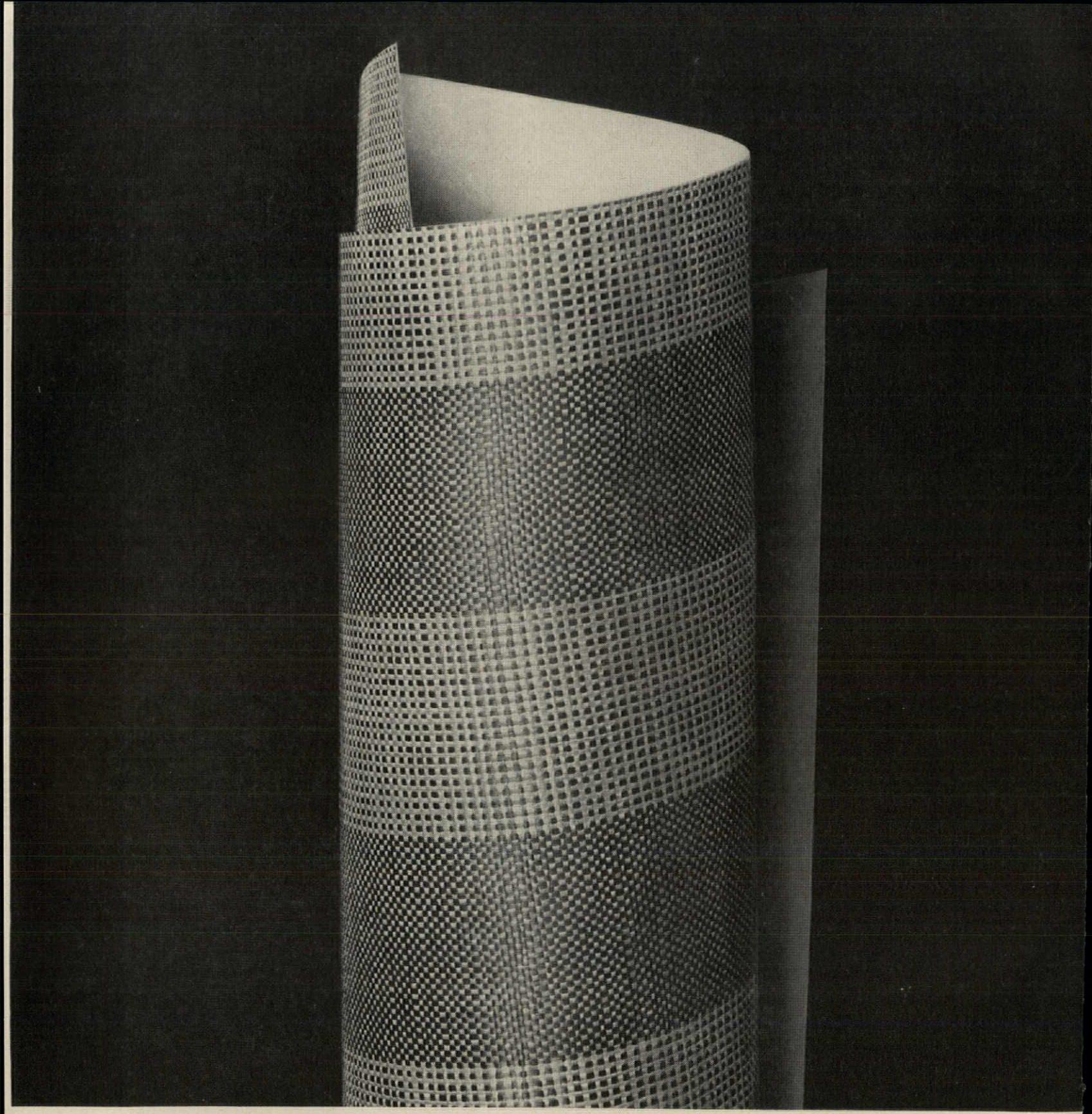
*POZZOLITH *is the registered trademark for The Master Builders Co. ingredient for concrete which provides maximum water reduction, controls rate of hardening and increases durability.*

For more information, turn to Reader Service card, circle No. 339



For the first time you are seeing a new woven wall covering that combines unusual performance with rare beauty

Until now you had to choose wall coverings that measured up to your standards of low-cost performance or styling versatility. Now—with new woven fabric wall coverings of Rovana—you get both, perfectly coordinated with the patterns and textures of draperies made of the same Rovana saran flat monofilament. New wall coverings of Rovana are tough. Fire, stain, and abrasion resistant. Colorfast. Easy to clean. Dimensionally stable, even when applied to new walls. The fact that they "breathe" makes them ideal for installations in warm, humid climates. For the complete story on the low maintenance costs, exceptional performance, and styling versatility of these unique wall coverings of Rovana, contact one of the distributors in the adjacent columns. And see our listing in Sweet's Architectural Catalogue, file 13k/Do.

WALL COVERINGS OF ROVANA

THE DOW CHEMICAL COMPANY DOW

Continued from page 208

ces many hard facts, setting them forth clearly and comprehensively. Their text discusses working spaces, organizational types, sites, financing, planning, lighting, heating, ventilating, acoustics, communication, furnishing, structure, cladding, finishes, and maintenance.

The writing is terse and informative. Typical text: "For all their other savings integrated ceiling systems demand a considerable depth, and even with a minimum structural slab the floor thickness is unlikely to be less than one foot, and will probably be over two feet. If there is a heavy air-conditioning load, calling for large ducts, this depth may be doubled."

Many architects will find such statements too elementary. Indeed, its very insistence upon reviewing all features of office buildings forces the book to become a survey. As an example: "There are two basic types of emitters: convective and radiant. Convective systems are usually better for response, humidity control, and heat distribution; while radiant units are more suitable for large-scale heating or cooling." But the authors overcome their tendency to describe merely fundamentals by their judicious skepticism. They often point to merits and attendant demerits. Thus, after speaking of the reduced duct sizes achieved by high velocity systems of ventilation, they warn against "a severe problem of duct and emitter noise."

In a day when the incredible crutch of technology has permitted designers to exercise freedom, even license, to gain performance in formal shells by multiplying mechanical and electrical equipment, it is good to be reminded of technical and economic facts, including the limitations of technology. For twenty years at least, the quest in much modern architecture has been increasingly for expression of ego, especially revealed in innovation and uniqueness. With a few exceptions, office buildings have not succumbed, but rather have aimed at perfection of a building type. The discipline of the problems attendant upon building a tall office building has guaranteed a typical or at most a corporate emblem and not an individual answer such as churches, airline terminals, and houses have often received. This book attempts to submerge the ego of individuality in the cumulative experience; it offers factual information about the planning of office buildings.

It would be misleading to characterize *Office Buildings* as a draftsman's file on a building type. It aims at comprehen-

sive, co-ordinated planning. One chapter, for example, ("Acoustics") describes six methods for controlling noise, and those methods reappear in later chapters on plan, structure, and partitions. Indeed, the theme of the book is that the design, financing, and erection of an office building is a combined operation that can be properly executed only by teams of developers, tenant organizations, architects, and engineers. That idea, practiced sporadically in the United States, is advertised especially for British readers whom the English authors address.

At the outset, I said that *Office Buildings*, by delivering information, supplies more than half of what we expect. One reason for reserving fullest praise is the elementary nature of the information given. One wishes that many statistics—on gross areas and net areas of floor plans, for instance—had been computed and tabulated to show the efficiencies or inefficiencies of various plans, modules, and sections. Indeed, few judgments are made on the values of rival methods.

Moreover, the point of view of the authors is still object-oriented, rather than aimed at studying systems. Thus, the book deals with existing buildings, holding to the assumptions that were the premises for their design. To clarify my meaning: Some years ago, Myron Goldsmith proposed an idea for a tall building in which colossal Vierendeel trusses embracing many stories, perhaps seven, would carry some floors by compression and some floors by suspension, leaving the middle floor a clear span; an air-conditioning plenum located between two of those trusses could feed upward and downward economically throughout a fifteen-story unit. Any pioneering idea of that sort, suggesting a new co-ordination of structure and mechanical equipment, fails to be suggested in *Office Buildings* because the authors are concerned with practicality and even restrict themselves to buildings that have been erected.

The second half of the book, more than one-hundred pages, is a valuable compendium of information about particular buildings—twenty-one in all. An attempt was made to find examples of many sorts of clients, so there are offices attached to factories and warehouses; headquarters for oil, steel, and electric companies; and offices for a town hall and a life insurance company. The diversification by type of client is not persuasive. Far better would have

Continued on page 220

Model 1016 EDA, one of the 1000 SERIES models chosen for The Upjohn Company's new general office building at Kalamazoo, Mich.

styled for the buildings you design... IT'S 1000 SERIES BY GF.

With its crisp, all-flush surfaces and pleasing proportions, this architect-styled beauty goes hand-in-glove with today's smart business interiors. There are models to satisfy every business need in a variety of finishes and top materials. You can see 1000 Series at your nearby GF branch or dealer showroom. Or write Dept. PA-22 for a color brochure. The General Fireproofing Company, Youngstown 1, Ohio.

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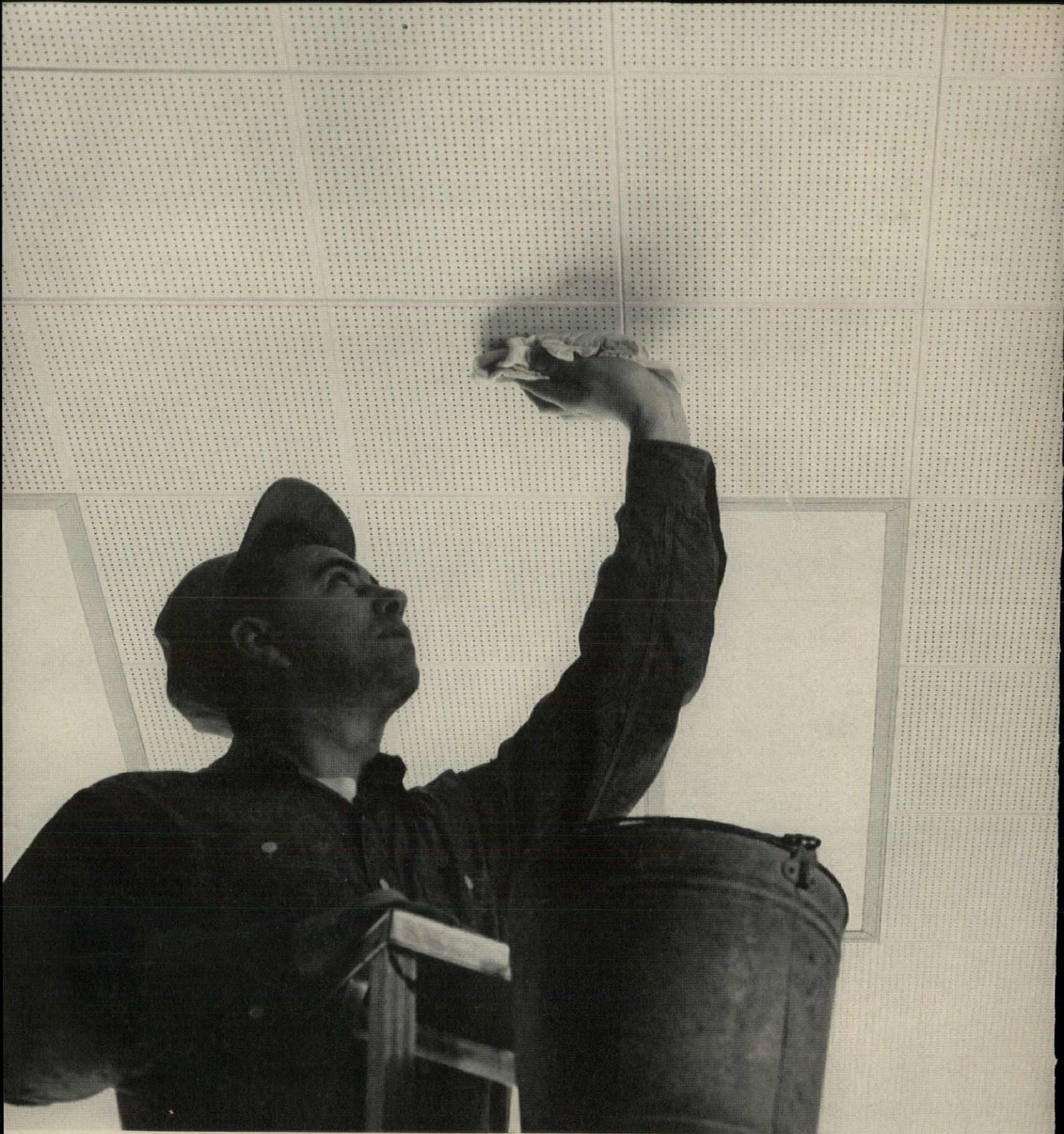
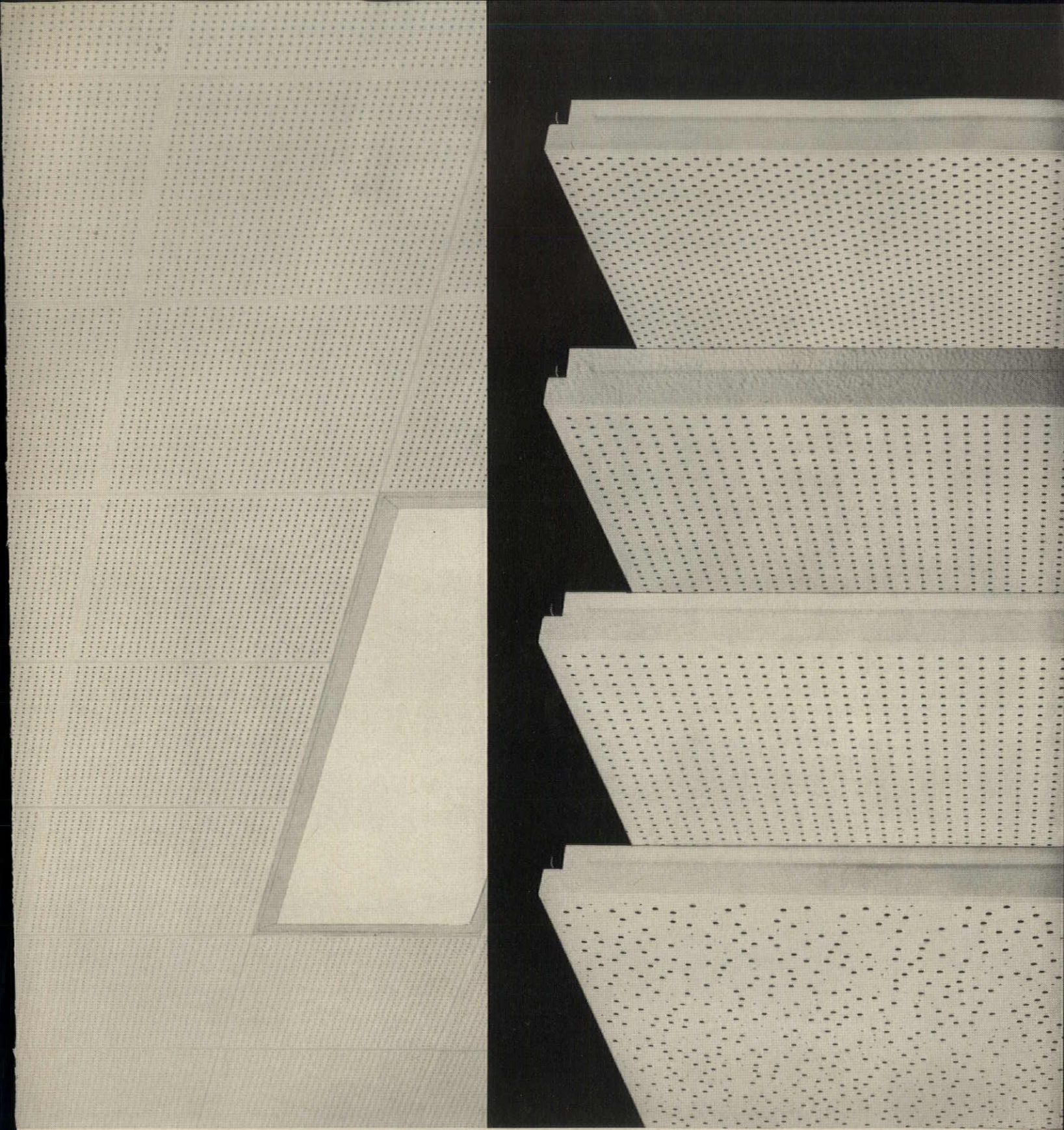


The Gold Bond difference: **Acoustimetal ceilings are washable, paintable, and almost indestructible ...and there are new patterns and finishes!**



When you take a 24-gauge-steel or an aluminum perforated pan, bake a surface of enamel on the exposed side, and add a noncombustible sound-absorption unit, you have an acoustical ceiling that will last as long as the building. Gold Bond Acoustimetal comes in units one foot wide, one to four feet long, in 12" increments (center scored to simulate 12" x 12" tile). Requires little or no cutting and fitting to get around snap-in flush lights or drop lighting. And units snap out of carrying channels for easy access to areas above. New, small bevel gives the ceiling that flat plane and evenly finished look you want. The new patterns to choose from are: Needlepoint, Diagonal, and Square. All are available in either smooth finish or Rippletone. Acoustimetal can soak up 90% of the noise that reaches it. And that's a lot of noise . . . anywhere. Ask your Gold Bond® Representative about Acoustimetal. National Gypsum Company, Dept. PA-43, Buffalo 25, N.Y.

Gold Bond materials and methods make the difference in modern building

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ACOUSTICAL PRODUCTS

Continued from page 216

been an organization by other categories, such as high-rise (where vertical core is important), low-rise (where horizontal circulation may pose problems), or by parti, such as eccentric service core and central core, annular plan and binuclear plan—to mention a few classifications.

But the descriptions of buildings like Inland, Seagram's, Mannesmann Hochhaus, and Eastbourne Terrace are valuable because of the technical data the authors compiled about each main feature of the fabric, its equipment and furnishings. We are also treated in the summaries preceding the data to judgments such as this rendered upon Seagram's: "The cost is extremely high, the plan relatively inflexible, and large areas of floor space unproductive;" and, upon the Price Tower: "It is not perhaps in the mainstream of general office design," which is surely a British understatement.

ALBERT BUSH-BROWN
President
Rhode Island School of Design
Providence, R.I.

OTHER BOOKS TO BE NOTED

Marcel Breuer: Buildings and Projects 1921–1961. Captions and Introduction by Cranston Jones. Frederick A. Praeger, 64 University Place, New York 3, N.Y., 1963. 262 pp., illus. $17.50

To be reviewed.

The Citizen's Guide to Urban Renewal. Alfred P. Van Huyck and Jack Hornung. Chandler-Davis Publishing Co., Box 36, West Trenton, N.J., 1962. 160 pp., illus. $3 (paperbound)

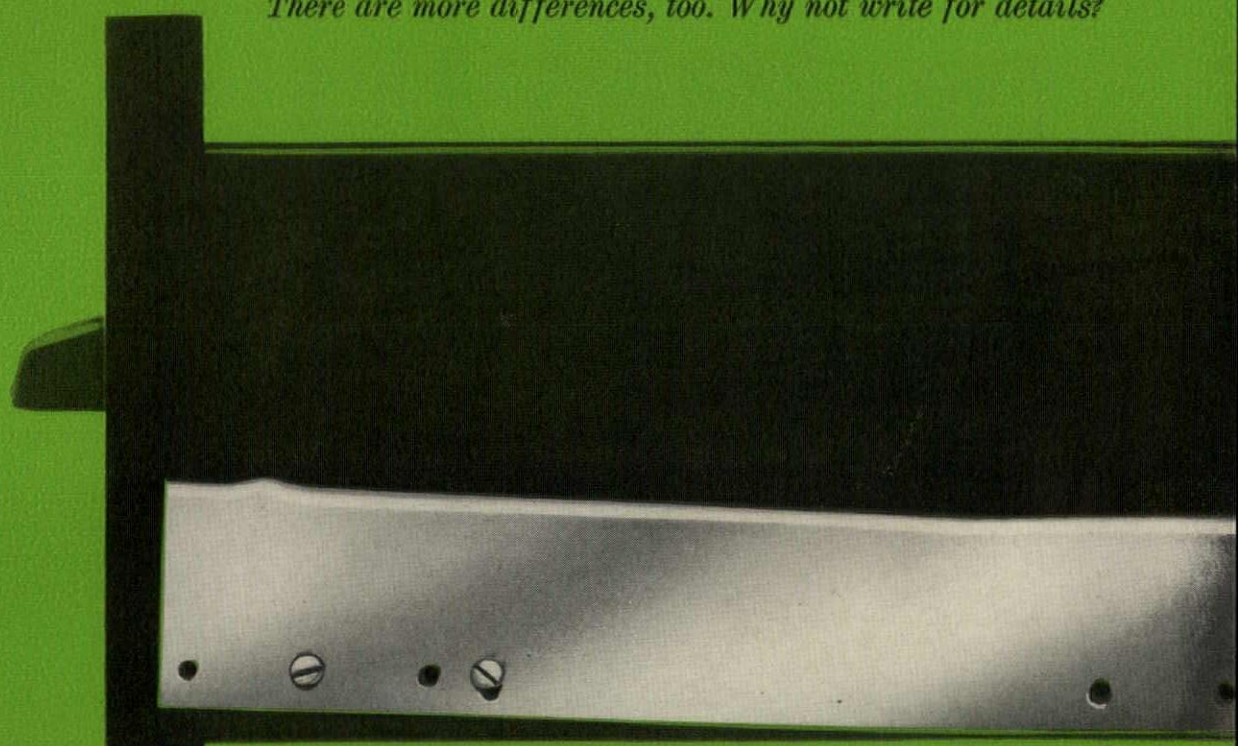
A comprehensive statement on the principles, goals, and procedures of urban renewal, written to give the layman an understanding of his own role and the professional's part in a successful urban renewal program. Authors are with the planning firm of Herbert H. Smith Associates.

Community Aspects of Housing for the Aged. Marilyn Langford. Center for Housing and Environmental Studies, Cornell University, Ithaca, N.Y., 1962. 48 pp. $2 (paperbound)

One of a series of monographs dealing with the problems of the aged, a research program financed primarily by the Ford Foundation. (Other Cornell reports are concerned with economic aspects and with activity patterns of the aged.) This report, based on 5000 personal interviews and 50 case studies, analyzes personal contact available to the aged and community facilities desired and used. Author presents detailed data and discusses the implications of these findings for community planning.

Dental School Planning (Public Health Service Publication No. 940). Division of Dental Public Health and Resources, U.S. Dept. of Health, Education, and Wel-

Grant's 340 Self-Closing Slide is to a drawer as wings are to a butterfly. Easy, smooth movement with minimum effort. There are of course some differences. A butterfly's wings, for example, are lovelier to look at, while the 340 Slide is substantially more functional. There are more differences, too. Why not write for details?



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For more information, turn to Reader Service card, circle No. 390

fare. U.S. Govt. Printing Office, Washington 25, D.C., 1962. 113 pp., illus. $.70 (paper-bound)

General guide to the planning of dental schools, written for architects and programming committees. Much of the information was obtained by surveying the deans of all dental schools in the country; questions concerned the physical facilities now used or needed, and the effects of changing curriculum and teaching methods on space needs.

Foundation Design. Wayne C. Teng. Civil Engineering and Engineering Mechanics Series. Prentice-Hall, Inc., Englewood Cliffs, N.J., 1962. 466 pp., illus. $16

Theory and practice of foundation engineering, for the practicing engineer and the student. Text encompasses modern soil mechanics and practical every-day design; each major type of foundation and retaining structure is treated in a separate chapter. Author is a consulting engineer with wide experience in the design and supervision of foundation construction.

Many Golden Ages: Ruins, Temples, and Monuments of the Orient. Frank MacShane. Charles E. Tuttle Co., Rutland, Vt., 1963. 264 pp., illus. $10

To be reviewed.

NOTICES

New Branch Offices

T. Y. Lin and Associates, Consulting Engineers, 103 Park Ave., New York 17, N.Y.

New Addresses

Henry M. Arnold, Architect, 2716 N. 16 St., Phoenix 6, Ariz.

Doxiadis Associates, Inc., Consultants in Development and Ekistics, Planning, Housing, Urban Renewal, 1058 Thomas Jefferson St., N.W., Washington 7, D.C.

Thomas F. Hargis, Jr., Architect; C. B. Goldsworthy, Associate, 216 Miller Bldg., Yakima, Wash.

Hellmuth, Obata & Kassabaum, Inc., Architects, 1430 Olive St., St. Louis 3, Mo.

Perkins & Will, Architects, 1100 Seventeenth St., Washington, D.C.

New Firms

John H. Alschuler, Architect, 160 E. Grand Ave., Chicago, Ill.

Paul T. Blanton, Jim W. Machlan, principals in firm of Blanton and Machlan, Architects, 501 Dickens, Corpus Christi, Texas.

Roy T. Christiansen and Associates, Architects, 134 N. LaSalle, Chicago, Ill.

Ervin Engineering, Civil Engineering Consultants, 1830 W. Olympic Blvd., Los Angeles, Calif.

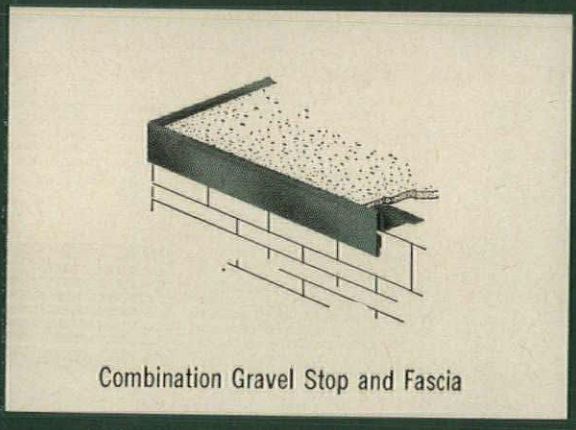
T. Granzow, Architect, Brinker Bldg., 1857 Northwest Blvd., Columbus 12, Ohio.

Clovis B. Heimsath, Architect, 410 Emerson St., Houston 6, Texas.

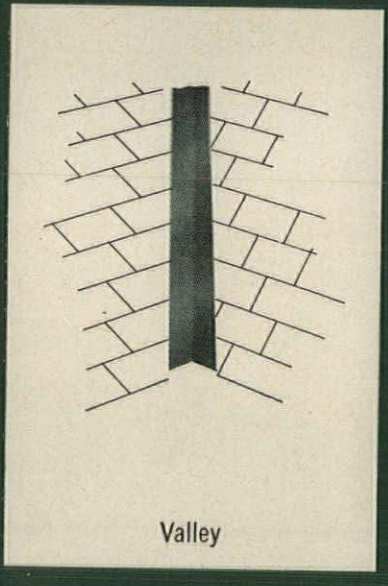
Continued on page 228

TERNE METAL: The Accessories

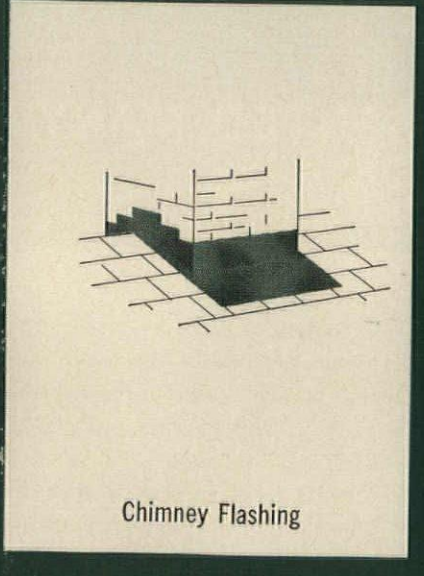
We believe most architects are now aware of terne's nearly unique design potential for visually significant roofs in the contemporary idiom. **But terne is also among the best of accessory metals—probably the best when initial cost is balanced against durability.** If considerably fewer architects are aware of it in this context, the fault is largely our own, for we frankly haven't found too many exciting things to say about gutters, flashings, valleys and gravel stops. Exciting or not, however, these commonplace items still play an important role in most buildings, and any failure can be very troublesome indeed. When next specifying them, therefore, why not give Follansbee Terne a trial? It should not only save your client money, but under normal exposure has a life-expectancy measured in generations rather than years.



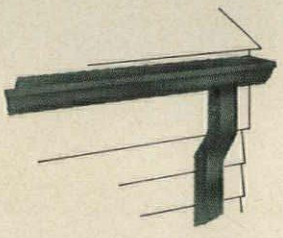
Combination Gravel Stop and Fascia



Valley



Chimney Flashing



Gutter and Downspout

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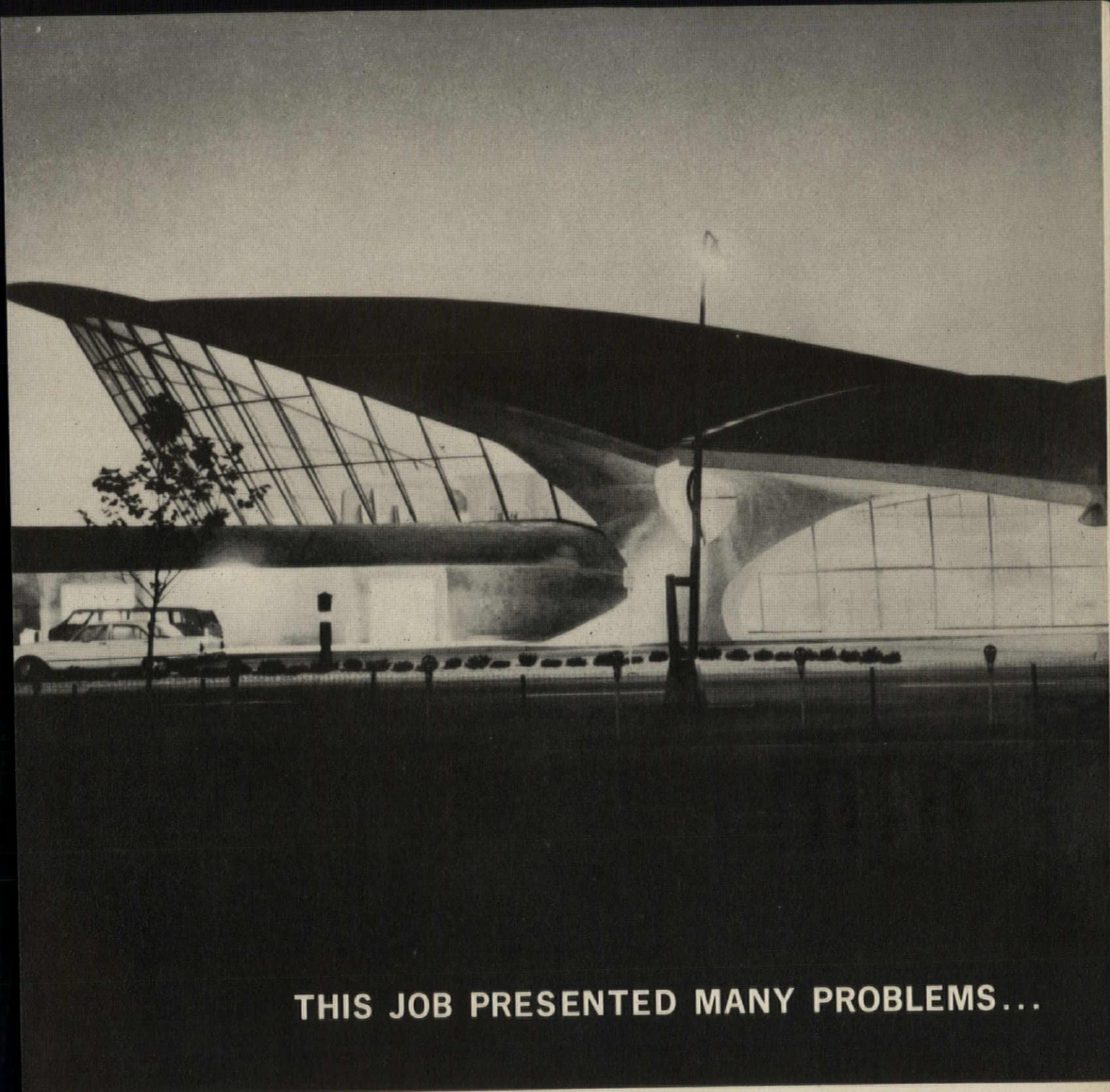
Follansbee is the world's pioneer producer of seamless terne roofing.



THIS JOB PRESENTED MANY PROBLEMS...

"This soaring concrete sculpture designed by Eero Saarinen presented problems which would not be encountered in a lifetime of normal construction." These are the words of the field project manager for construction of the TWA Flight Center at New York's Idlewild Airport.

Among these problems were glazing and sealing. Over 17 tons of glass required 655 gaskets totaling 15,000 feet in length. The glass curtain wall of the main terminal cants outward at a 25° angle. Because of the building's unusual design, field measurements of all openings had to be made before manufacturing the gaskets. The material specified for these curtain wall gaskets? Du Pont Neoprene synthetic rubber!

No other glazing material can give any building—from this startling TWA Flight Center to low-rise commercial construction—the degree of dependability Neoprene delivers. Gaskets of Neoprene remain weathertight after the most severe attacks of sun, cold and wind-driven rain. This versatile material also resists ozone and airborne chemicals and is fire-resistant.

Neoprene gaskets are also favored in many curtain wall buildings because installation requires no special skills... job-site labor is kept to a minimum. This makes preformed gaskets of Neoprene competitive in installed costs with materials that can't match its 25-year reliability record. And, after installation, minimum maintenance is required.

There are other reasons why Du Pont Neoprene is your best bet for curtain wall gaskets. For details, and a list of qualified manufacturers, write E. I. du Pont de Nemours & Co. (Inc.), Elastomer Chemicals Department PA-4-NB, Wilmington 98, Delaware. In Canada, write Du Pont of Canada Ltd., 85 Eglinton Avenue, E., Toronto 12, Ontario.

NEOPRENE GASKETS SOLVED A MAJOR ONE

PHOTO COURTESY OF TRANS WORLD AIRLINES INC

Facts About Neoprene Gaskets on TWA Flight Center

- **Gaskets:** 655 for a total of 15,000 ft.
- **Sizes:** From 7½ ft. by 12 ft. to 4 ft. by 4 ft. Due to unusual design it was necessary to get field measurements of all openings before manufacturing.
- **Shapes:** From 90° squares to 45° angles.
- **Wall Angle:** Curtain wall cants out at 25°.
- **Skylights:** Four openings 102 ft. long on almost horizontal plane. Each opening consists of 26 lights of ¼-in. glass, all glazed in a single 102-ft.-long, ladderlike Neoprene gasket.
- **Gasket Mfr.:** Industrial Rubber Goods Division, Ball Brothers Company, Incorporated.

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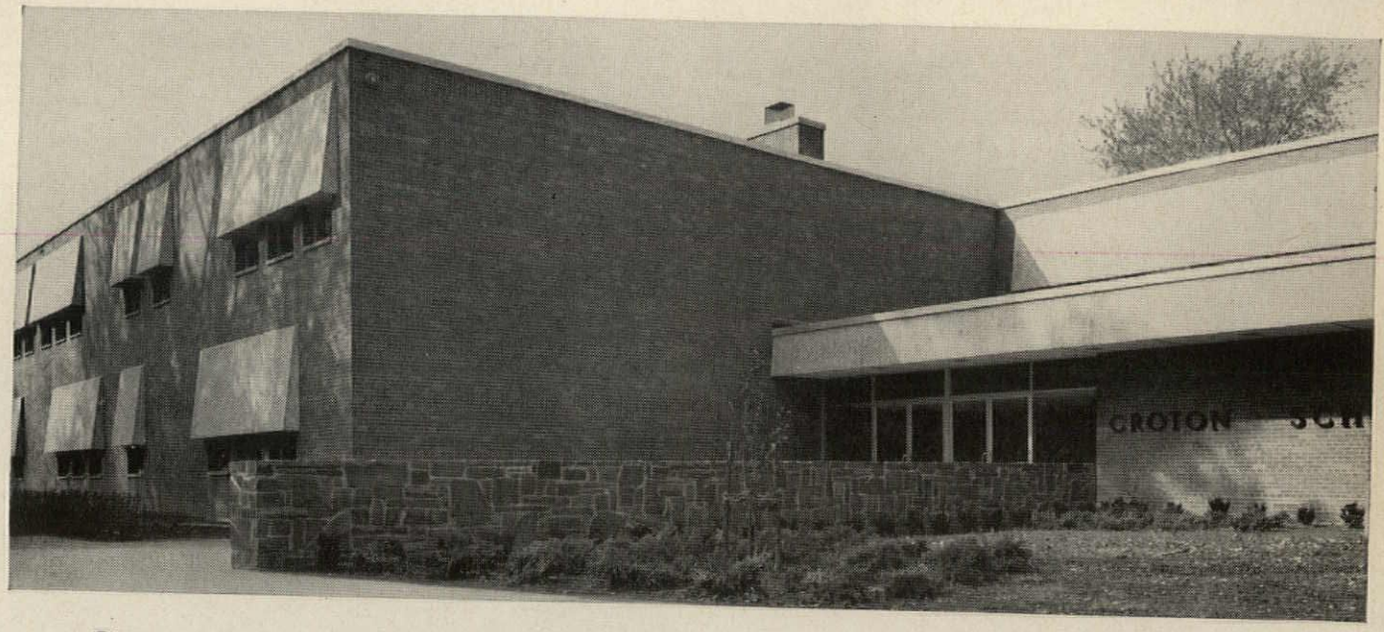
These two central systems can provide

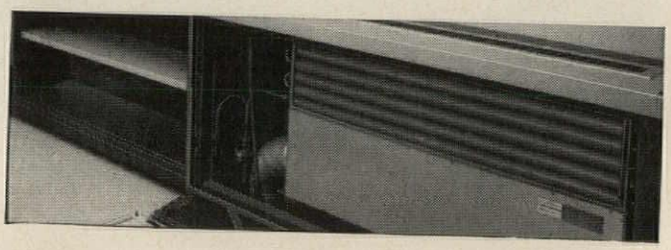


Carrier Classroom Weathermaster System

. . . for use where outside walls and windows must be swept with warm air in winter

Croton Elementary School, Syracuse, New York. Architect: Gordon P. Schopfer. Consulting Engineer: Cedric R. Acheson. Mechanical Contractor: H. H. and F. E. Bean, Inc. General Contractor: D. H. Fellows Construction Corp.

This compact, two-story structure serving 600 pupils occupies half the space required by an equivalent finger-type design. Site acquisition costs were reduced by $200,000. Year-round climate control, which made the compact design possible, is provided by the Carrier Classroom Weathermaster® System. The building contains 22 classrooms, four special purpose rooms, and offices. Cost per square foot with full climate control: $14.92, about average for elementary schools with heating-ventilating only in the Syracuse area.



The single duct induction system using Carrier Classroom Weathermasters gives individual room control without complex zoning. One air treatment station centralizes outside air intake, filtration, cooling, condensate disposal, air movement. Carrier supplies refrigeration, too.

BOTH SYSTEMS OFFER THESE ADVANTAGES

1. Individual classroom temperature control with maintenance-free simplicity.

2. Complete positive air changes up to 10 times an hour in every classroom to eliminate overheating, odors and stuffiness.

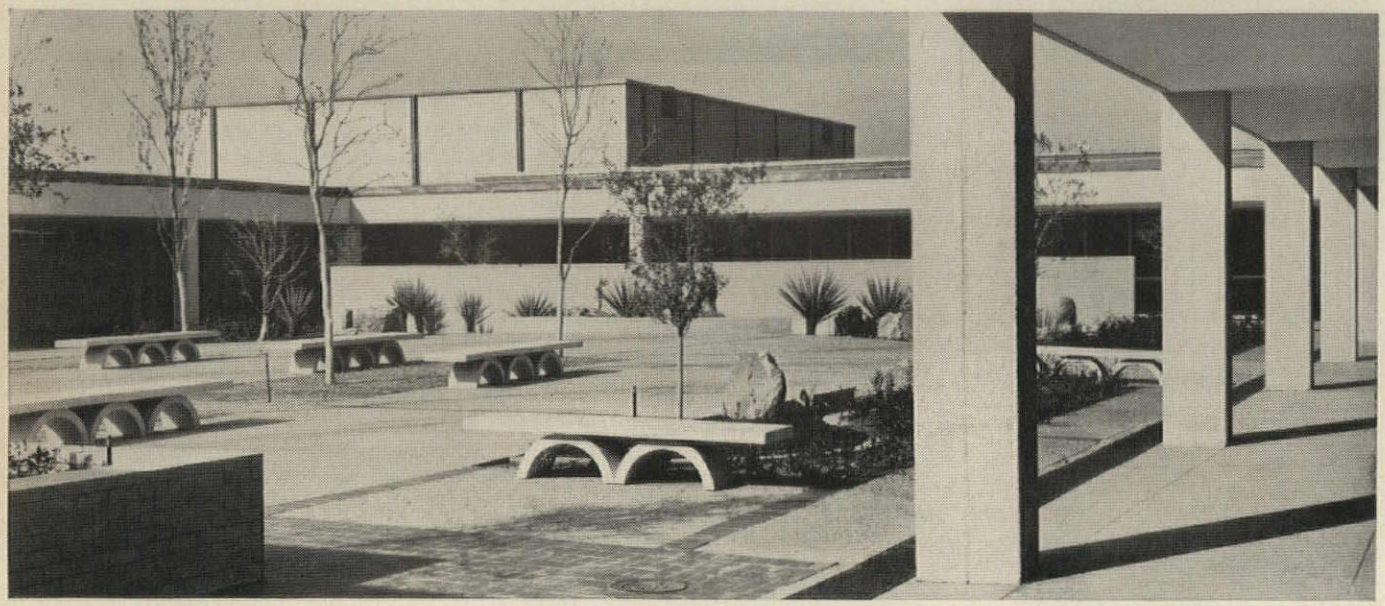
3. Assure uniform sound level of proper quality and intensity to mask noise.

4. Centralized, economical maintenance with no moving parts in the classrooms.

5. 100% outside air for free cooling in the intermediate seasons.

6. Superior air filtration with optional air washing—no filters to change in the classrooms.

economical climate control for any school

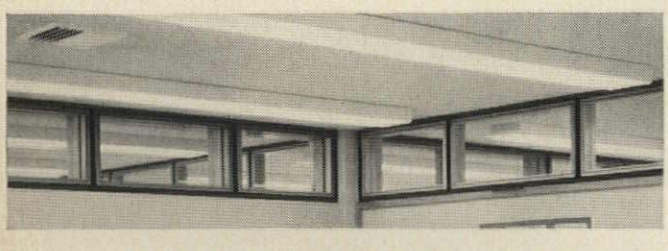


Carrier Multi-Zone Weathermaker System

...for use in interior spaces and compact schools where downdrafts don't form

Robert E. Lee High School, Midland, Texas. Architect: Preston M. Geren. Consulting Engineer: Yandell, Cowan & Love. Mechanical Contractor: Roche Newton Co. General Contractor: A. P. Kasch and Sons.

This 2200-pupil school in hot, dusty West Texas is fully air conditioned, yet cost only $12.10 per square foot. Closely related structures are grouped around a central court. Classroom and laboratory sections are compacted into separate squares, affording flexible partitioning of interior space for classrooms, laboratories, teachers' offices and storage centers. From several small mechanical rooms containing Carrier Multi-Zone Weathermakers®, ducts radiate to each classroom, giving individual room temperature control.



Centrally conditioned air is ducted to ceiling diffusers. High window strips give a feeling of spaciousness and eliminate distractions. Refrigeration is provided by two Carrier Automatic Absorption Machines powered by low-pressure steam which also supplies heating.

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From the complete line of major Carrier components, the engineer can select the optimum combinations for initial and operating economy and best performance. Carrier also has service to back up the installation. Our company and our dealers maintain the largest and best-trained service organization in the business—over 11,000 men strong. For specific information about Carrier systems—and about our complete line of components—call your Carrier representative. Carrier Air Conditioning Company, Syracuse 1, New York. In Canada: Carrier Air Conditioning Ltd., Toronto 14.

Carrier Air Conditioning Company

Continued from page 222

WILLIAM A. HOYER, LEE SCHLESINGER, AMOS TURNER, principals in firm of HOYER-SCHLESINGER-TURNER, Consulting Engineers, 300 W. Adams St., Chicago 6, Ill.

GERTRUDE LEMPP KERBIS, Architect-Planner, 155 E. Ontario St., Chicago 11, Ill.

PACIFIC ARCHITECTS COLLABORATIVE, Architects and Designers, 29 S. Euclid Ave., Pasadena, Calif.

MORT R. PATTON, Architect, 202 N. Lawrence St., Montgomery 4, Ala.

RICHARD T. SIMONI, ELDON C. HECK, principals in firm of SIMONI, HECK & ASSOCIATES, Architects - Engineers - City Planners, Suite 807, First National Life Bldg., New Orleans, La.

W. CHARLES STRICKLAND, VERNON T. ROBERTS, JR., principals in firm of STRICKLAND AND ROBERTS, Architects, 1023 Forrest Ave., Gadsden, Ala.

DAVID H. WILSON AND ASSOCIATES, Architects, 403 Washington Ave., Towson 4, Md.

New Partners, Associates

ARALDO COSSUTTA, made Partner; PERSHING WONG, DONALD H. GORMAN, JAMES INGO FREED, made Associates, in firm of I. M. PEI & ASSOCIATES, Architects, New York, N.Y.

MICHAEL L. RADOSLOVICH, named Associate in firm of EMERY ROTH & SONS, Architects, New York, N.Y.

BEDA ZWICKER, made Partner in firm of VICTOR GRUEN ASSOCIATES, Architects, Engineers, Planners, Beverly Hills, Calif.

Elections, Appointments

HAMILTON BEATTY, KARL C. SIPPEL, elected to the Board of Directors; WILLIAM VANDERHOUT, GORDON GALLOWAY, elected Vice-Presidents, in firm of THE AUSTIN COMPANY, Engineers and Builders, Cleveland, Ohio.

J. SMITH BENNETT, elected Chairman of the Pacific Coast Chapter of the Institute of Store Planners.

SELWYN BLOOME, EDWARD ROSE, THOMAS WOODARD, appointed Vice-Presidents; ROBERT C. DUKES, joins staff at Hato Rey office, in firm of FRED S. DUBIN ASSOCIATES, Consulting Engineers, Hartford, Conn.

WILLIAM E. BUCHANAN, appointed Comptroller in firm of SHERWOOD, MILLS AND SMITH, Architects, Stamford, Conn.

M. ELLIOTT CARROLL, appointed Director of Division of Professional Services of The American Institute of Architects, Washington, D.C.

WAYNE G. PIPPIN, appointed Executive Vice-President and General Manager in firm of HAGMAN & MEYER, Architects, Los Angeles, Calif.

WILLIAM VANDERHOUT, appointed General Sales Manager in firm of THE AUSTIN COMPANY, Designers, Engineers, and Builders, Cleveland, Ohio.

Name Changes

ROBERT BENJAMIN INCORPORATED, 6 E. 53 St., New York, N.Y. Formerly ROBERT BARBER, INC.

THE OFFICE OF MASTEN & HURD; GWATHMEY, SELLIER, CROSBY, MASTEN & HURD, Architects, 526 Powell St., San Francisco 2, Calif. Formerly MASTEN, HURD & GWATHMEY ARCHITECTS.

MORSE & TATOM, Architects, 2130a Kalakaua Ave., Honolulu 15, Hawaii. Formerly BASSETTI, MORSE & TATOM, Architects.

JOHN LYON REID, Architect, DR. ALEXANDER G. TARICS, Structural Engineer, 1019 Market St., San Francisco 3, Calif. Formerly REID, ROCKWELL, BANWELL & TARICS.

SAPHIER, LERNER, SCHINDLER, INC., Space Planners and Designers, Chicago, Los Angeles, San Francisco. Formerly MICHAEL SAPHIER ASSOCIATES, INC.

WILLIAM ROWE SMITH, Architect, 1957 E. 900 South, Salt Lake City, Utah. Formerly SMITH AND NEEDHAM, Architects.

New Division

OBJECTS DIVISION of HERMAN MILLER, INC., Zeeland, Mich., concentrates on the design and marketing of objects, accessories, and folk art. Manager is LA GARDO TACKETT.

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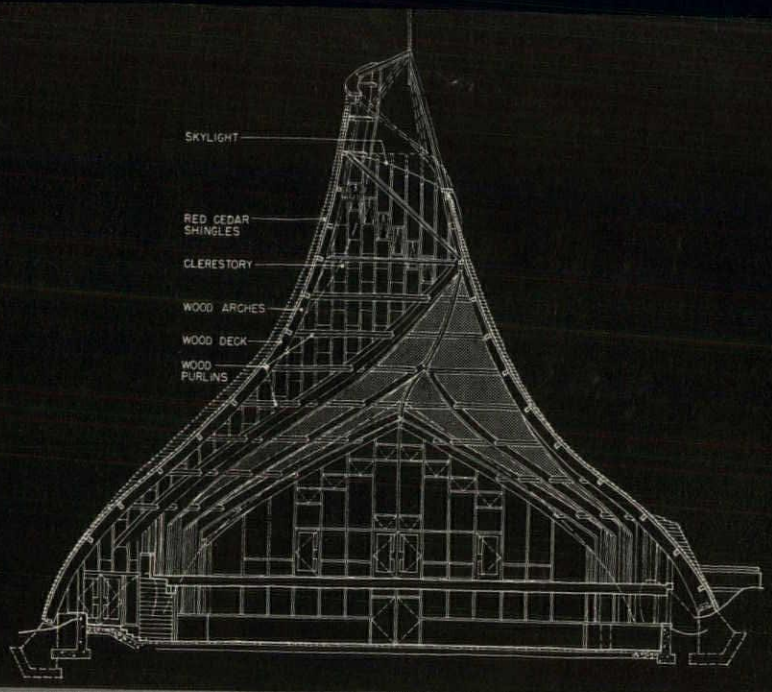

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John H. Watson, Chief Designer;
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Seven special benefits that make Armstrong sheet vinyl Corlon an ideal floor in this Clean Room

The picture on the opposite page shows a floor of Armstrong Tessera Vinyl Corlon in a Clean Room at Robins Air Force Base, Georgia. This room is typical of controlled environment enclosures used increasingly for precision manufacturing and assembly. In these interiors, cleanliness, temperature, and humidity must be rigidly controlled. Several Armstrong sheet vinyl floors meet the exacting requirements of Clean Rooms. Of these, Tessera Corlon is especially recommended and has proved successful in many installations. Here are some of the reasons why:

1. Seamlessness. Because it comes in rolls 6 ft. wide and up to 90 ft. long, Tessera can be installed with a minimum of dirt-catching seams. In special cases, since vinyl is thermoplastic, the few seams can be closed by heat sealing.

2. Flash coving. Because it is tough and flexible, Tessera can be curved up the wall, eliminating crevices at the juncture of wall and floor. Thus, maintenance is easier because there are no traps for soil and other contamination. Where large quantities of water are used to flush away waste and foreign materials, liquid does not seep below the flooring.

3. Non-abrading. All interior surfaces in Clean Rooms must be virtually immune to dusting or flaking. Tessera has excellent abrasion resistance and, by most Clean Room standards, is non-dust-producing.

4. Resistant to chemicals. Tessera is completely resistant to grease, many chemicals, most dilute acids and alkali.

5. Withstands vigorous cleaning. Repeated cleaning of this rugged floor will not damage it or mar the colors.

6. Installation anywhere. Like most other types of Armstrong sheet vinyl Corlon, Tessera has the exclusive moisture-resistant Hydrocord Back, which permits installation at all grade levels—even below grade in direct contact with a concrete slab except where excessive alkali or hydrostatic pressure is present.

7. Pleasing to workers. The psychological atmosphere is important in areas where workers have to conform to elaborate cleanliness routines and intense precision work. Tessera is quiet and comfortable underfoot and has an attractive random design that never dominates the interior. It is available in a choice of pleasant colorings of varying light reflectance.

For more information on floors for Clean Rooms—or for any type of building—contact your Armstrong Architect-Builder Consultant. He can make available the services of the Armstrong Research and Development Center and the Armstrong Installation Specialists. Call him at your Armstrong District Office or write direct to Armstrong, 304 Watson Street, Lancaster, Pa.

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