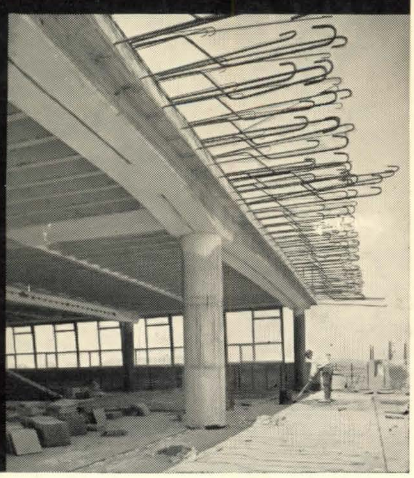
PROGRESSIVE ARCHITECTURE

civic buildings

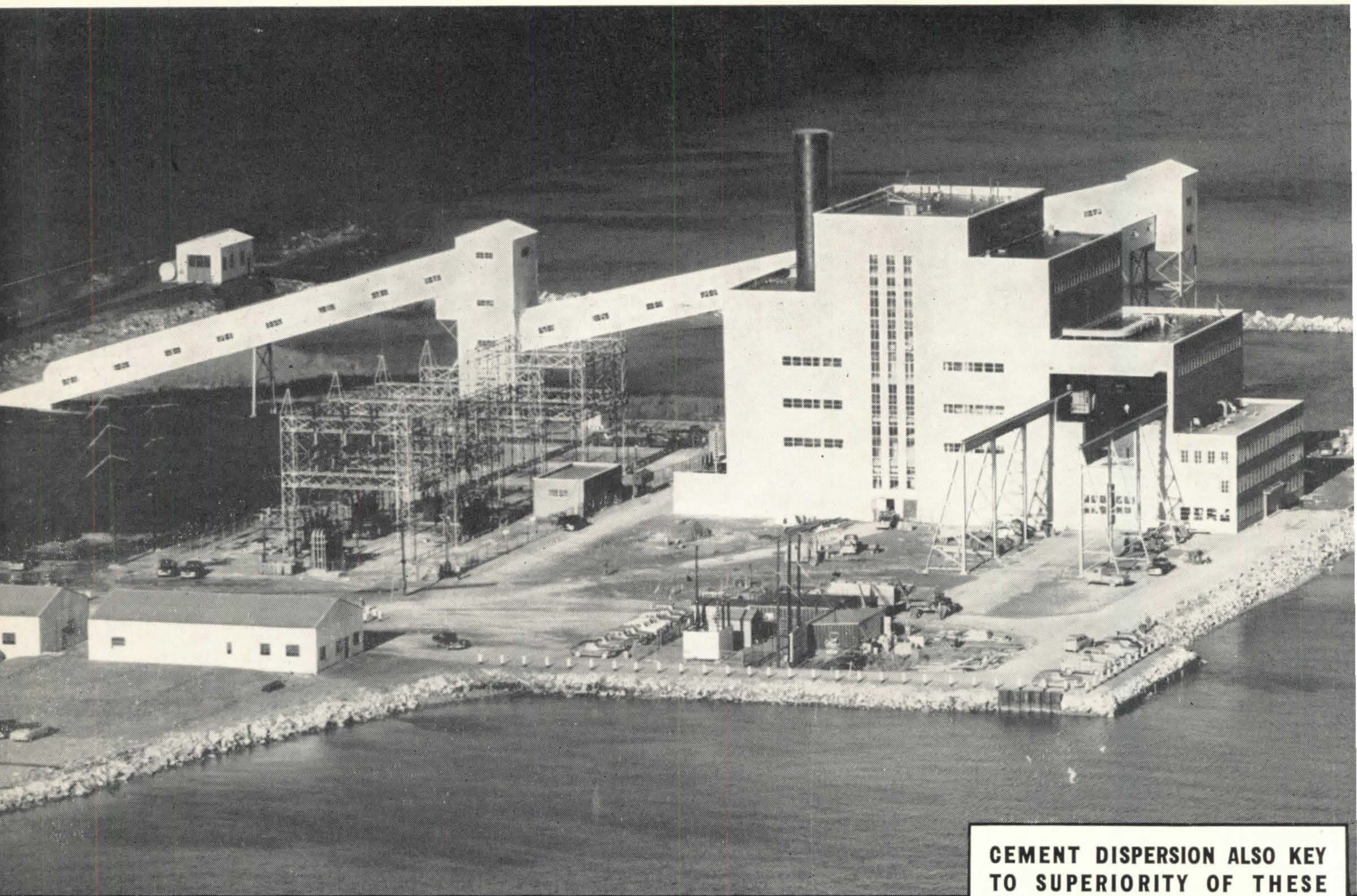
2

february 1953



prestressed concrete

largest architectural circulation in the world



Central Hudson Gas and Electric Corp. Power Plant, Newburgh, N. Y. Engr.—Burns and Roe, Inc., New York, N. Y.; Contrs.—Drill-In Caisson Corp., New York, N. Y. and G. E. Campbell, Poughkeepsie, N. Y. Pozzolith Ready-Mixed Concrete supplied by Hudson Valley Concrete Co., Newburgh, N. Y. (Master Builders Masterplate and Embeco also used in building this plant.)

POZZOLITH READY-MIXED CONCRETE

in Central Hudson Power Plant

Use of Pozzolith Ready-Mixed Concrete in such noteworthy structures as this important power plant shows its acceptance by leading builders.

More than 10,000,000 cubic yards of Pozzolith Concrete were placed this past year alone. Pozzolith Concrete is better because it has a low unit water content.

Pozzolith* conforms with the water-cement ratio law — basis of ACI and ASTM procedures of design, specification and production of quality concrete. *Full information on request.*

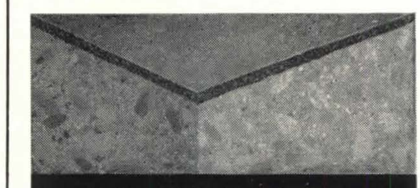
*POZZOLITH . . . the cement-dispersing, water-reducing agent which entrains the optimum amount of air in concrete. Can be added to the mix as a powder or dissolved in water and dispensed as a liquid. Pozzolith was developed by The Master Builders Co. in 1932.

Over 600 Leading Ready-Mixed Plants Are Producing Pozzolith Ready-Mixed Concrete

CEMENT DISPERSION ALSO KEY TO SUPERIORITY OF THESE MASTER BUILDERS PRODUCTS

MASTERPLATE . . .

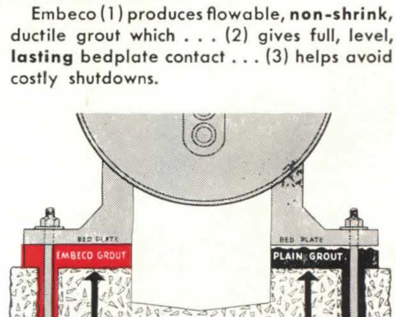
Masterplate produces "iron-clad" concrete floors with 4-6 times longer life; also spark-resistant and static-disseminating. Non-colored and 11 colors. For new floors and resurfacing.



Section of Masterplate Floor. Note Thickness of Armored Surface.

EMBECO . . .

Embeco (1) produces flowable, **non-shrink,** ductile grout which . . . (2) gives full, level, **lasting** bedplate contact . . . (3) helps avoid costly shutdowns.



EMBECO Grout Is Non-Shrink | **Plain Grout Shrinks**

the MASTER BUILDERS Co.

CLEVELAND 3, OHIO — Subsidiary of American-Marietta Company — TORONTO, ONTARIO

PROGRESSIVE ARCHITECTURE

February 1953

LEGEND

boundary of project area

LAND USES:

RESIDENTIAL:

suitable for tall buildings

other residential

P suitable also for public use or parking

COMMERCIAL:

office, laboratory, professional

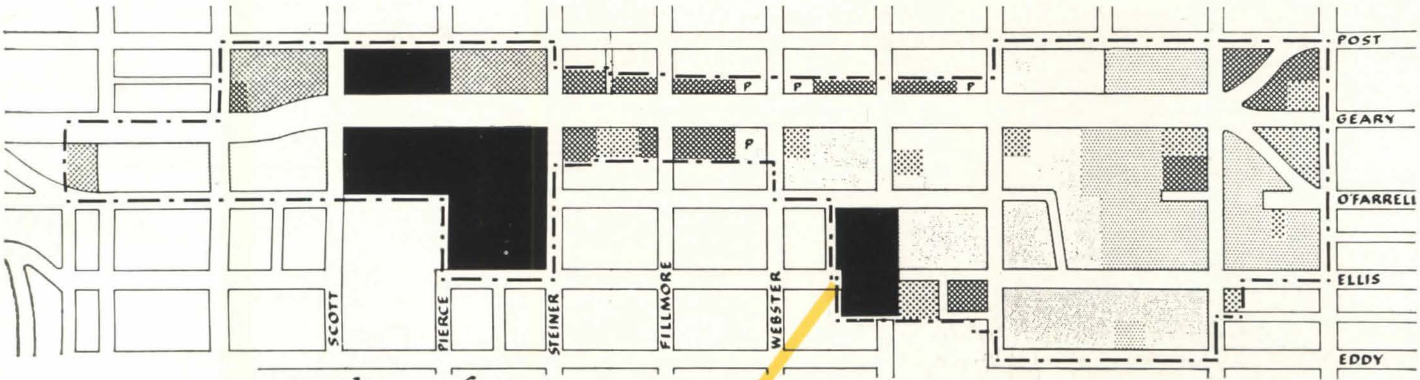
neighborhood & community shopping: general commercial

INSTITUTIONAL

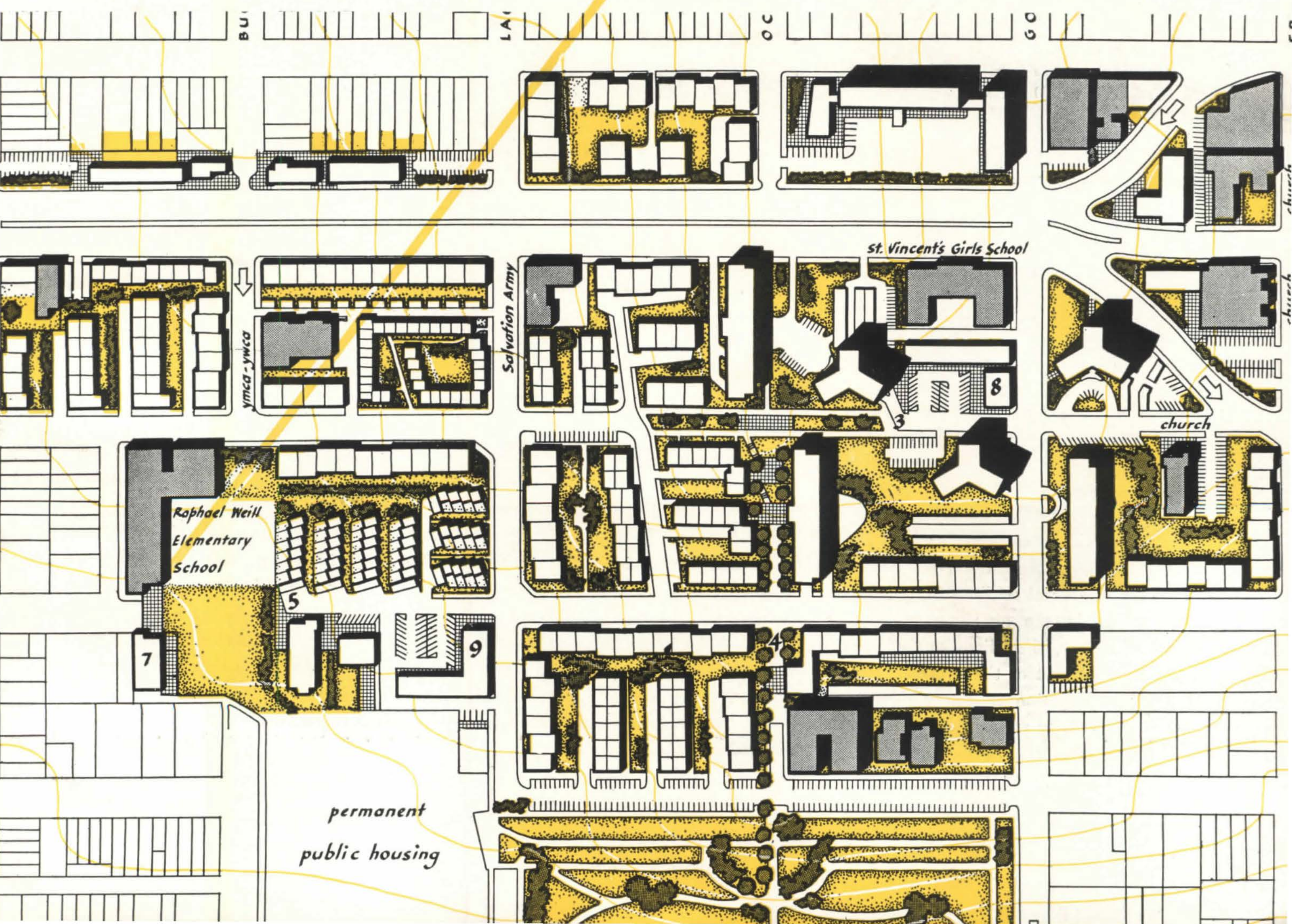
PUBLIC USE

28-block project for heart of San Francisco

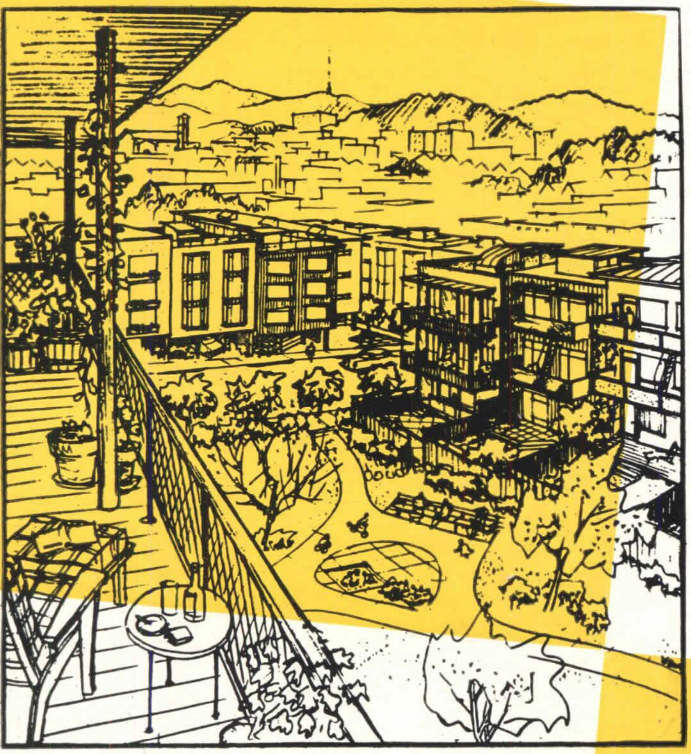
Attacking blight in the strip along San Francisco's Geary Street traffic artery, from Franklin to Broderick, the Redevelopment Agency of the City and County, in co-operation with the Department of City Planning, has submitted a 28-block project for replacement of the deteriorated 19th Century blocks that have been overcrowded since they were seized as "temporary" shelter by thousands displaced in the earthquake and fire of 1906. The *Tentative Plan* reproduced (*below*) and careful restudy (*detail at larger scale, bottom of page*) indicate the determined effort to provide at a cost of some $40 millions better living conditions for about 9,300 per-



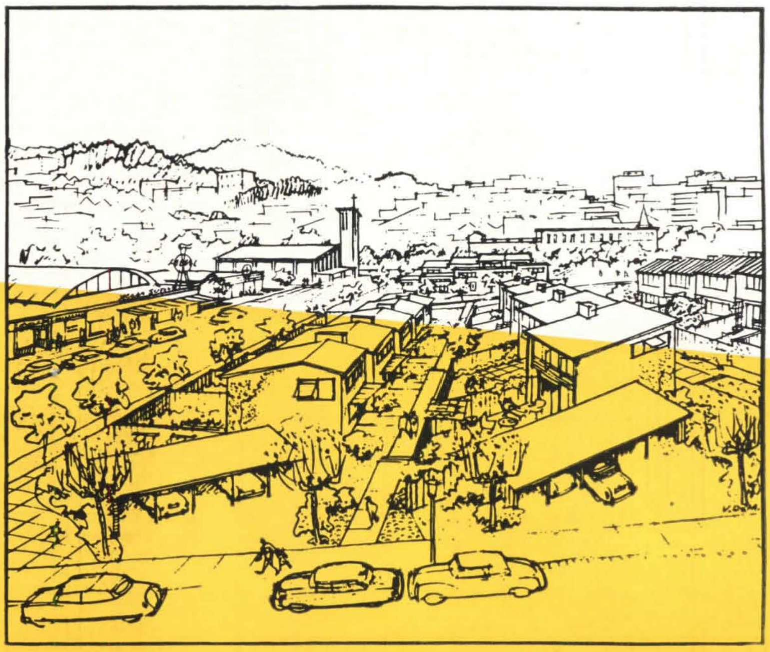
Outlines of Redevelopment Plan



Suggested tall buildings



Medium-height buildings (the biggest need)
Sketches: Vernon DěMars



Suggested low buildings

sons, with improved schools, community and shopping centers, and other amenities. At present, the area causes excessive health, police, fire, and municipal court costs. It is contemplated that private investments will total more than $30 millions, supplementing a City-County contribution of several millions for public improvements in the area and a Federal grant of nearly $6 millions to the City, to cover the net cost of the project.

Traffic congestion in the project area will be materially relieved by widening of Geary Street to expressway standards as a vital link in the San Francisco Trafficways Plan (already approved). Many of the large old houses in these blocks were originally well constructed, but they have been overcrowded so long that they defy rehabilitation. Some undesirable occupancies and general makeshift extensions of structures and the tenancy have made the area more and more a slum without air, light, or amenities deemed necessary by modern planning standards. And some businesses undesirable for a predominantly residential area have crept in, creating additional hazards.

High, medium, and low buildings (*sketches above*) to house families of a wide income range are proposed by the Design Consultants for this project—Vernon DeMars and Albert Roller, Architects, and Elmore Hutchison, Engineer. Although it is considered unlikely that a large number of present residents will wish to return to the project area following their rehousing during demolition and construction phases, such residents are to have the opportunity to select from the wide variety of new dwellings offered, both within the project

(Continued on page 20)

the issue of INTEGRATION

by Sibyl Moholy-Nagy*

Each period has its sacred herring—that certain topic that comes to the minds of editors, program chairmen, and dissertation aspirants when all factual material has been exhausted. The Beaux Arts generation ran themselves ragged in search of "absolute beauty." The first Expressionists, at the turn of the century, discussed "meaning in art." Between the wars it was first "self-expression" and later "nonobjectivity"; and we, today, are blessed with "integration of painting, sculpture, and architecture." Five leading magazines, at the latest count, have devoted articles and questionnaires to this topic, and round-table discussions and symposia are the vogue of the day. In most cases, the pattern is the same: sculptors and painters (indigent and indignant) try to prove to slightly sarcastic architects that owing to their ignorance, poor taste, and a mean disposition against sharing fees, modern buildings are deprived of an integration with painting and sculpture. The inevitable climax is the historical argument, running along such lines as a recent article by W. Weismann and S. Fogel in *The College Art Journal*:

"What is so distressing is to find that so many of our younger architects seem to be so shockingly ignorant of our historical past . . . They seem never to have heard of the glorious cathedrals of the 13th Century with their sculptured façades and stained glass windows, without which the architecture would have been poorer indeed."

One might, however, be much more distressed at the "shocking ignorance" of the artists who seem not to know why medieval sculpture was put on monumental façades, and why it has vanished today. From an art-historical standpoint, at least, the younger generation of architects show a much more astute historical instinct than do painters and sculptors.

The most fundamental historical fact is that buildings change their meaning over the centuries, and that the importance of decorative forms changes with the changing significance of a structure for the community. Simplifying an enormously complex historical process, it can be said that architectural meaning went through three stages, that were most forcefully expressed in the decorative use of painting and sculpture. These three stages were: the *Magic;* the *Symbolic* and its manneristic variation, the *Allegoric;* and the *Formalistic.* We are now privileged to witness the gradual emergence of a fourth stage: the *Functional-Technological.*

●

In the first phase, the *Magic*, art and architecture were one. The Trilithons of Stonehenge; the Pyramids at Giza; a Babylonian Palace Gate, its structure clad in lion images, were magic incarnations. A building and its decorative attributes were cunningly designed by man to coerce supernatural powers to take possession. Form was not symbolic of spirit, but spirit itself. Architecture was the medium of magic.

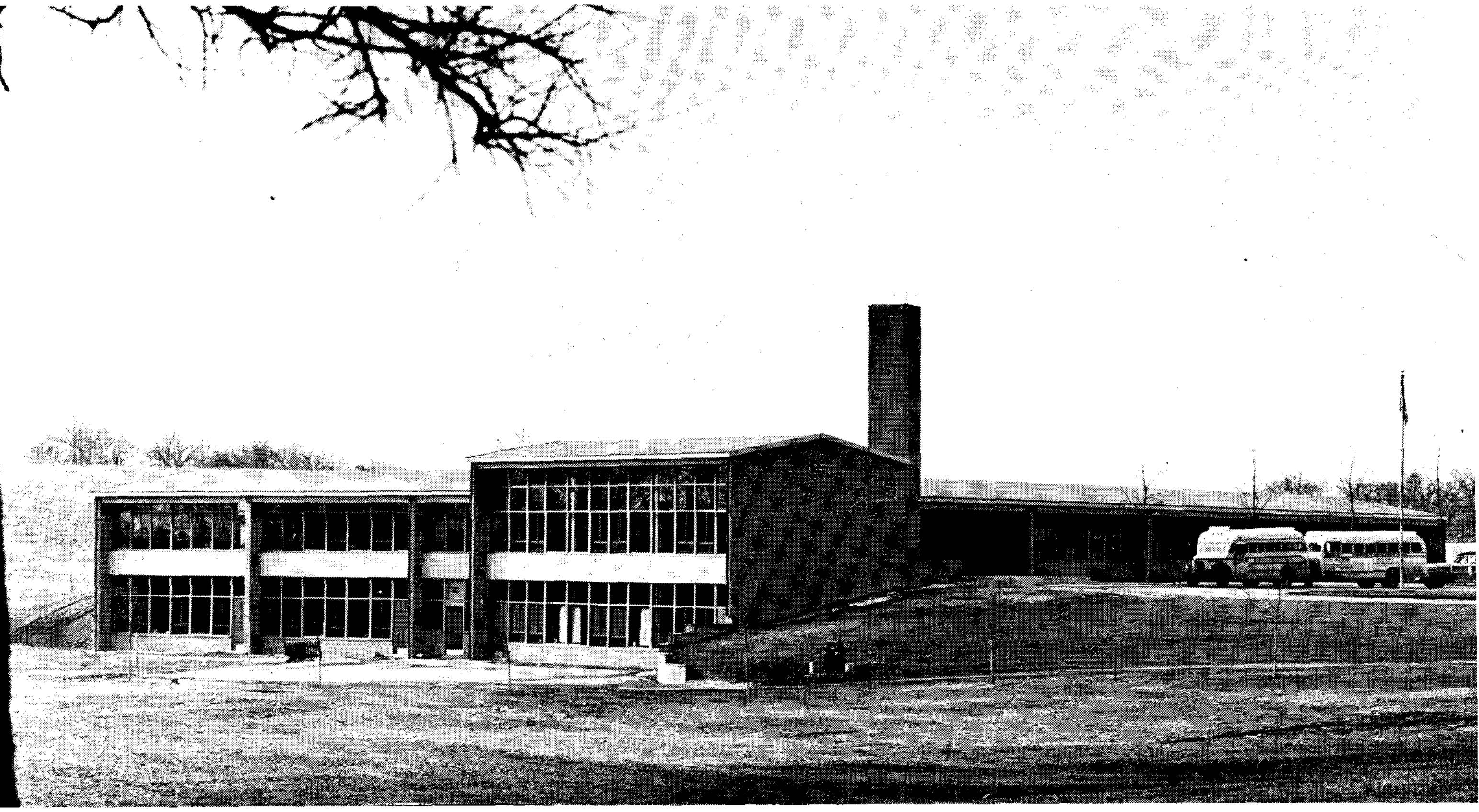
Without further comment we are all agreed that this magic unity of form and contents has been lost forever. No one could be made to believe today that worshipping a dollar image on a superbank building would bring prosperity, or that kissing the big toe of the Statue of Liberty would revoke the McCarran Act.

●

The second phase, the *Symbolic* meaning of art in architecture, was started by the early Greeks, who admitted frankly to themselves that Zeus was philandering all over the globe while his brazen image stood safely in his sacred temple at Olympia. Building and decoration ceased to be active demoniac, as they had been in the Magic period. They now represented implied meaning. The artistic medium

(Continued on page 180)

* *Instructor in Design Analysis and Lecturer on Architectural History, Pratt Institute, Brooklyn, N. Y.; Author and Critic.*



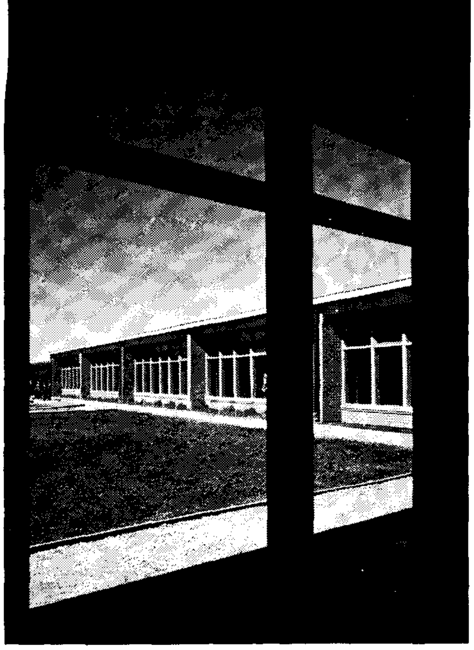
consolidated elementary school

The Barrington Countryside Elementary School is part of a program that involved consolidation of sixteen small school districts in the surrounding area. The particular need was for a building that would house not only the educational needs of children in kindergarten and grades one through eight, but also multi-use facilities that would be used by the community as well as for immediate school purposes.

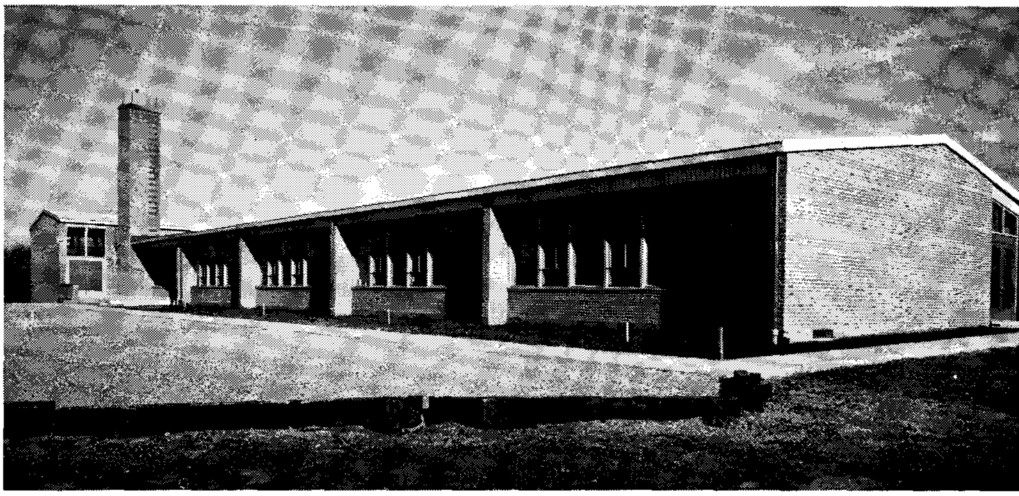
Location of the school on a rolling site less than a mile from the Community Consolidated High School simplified the problem of bus transportation. The architects exploited the land contours to produce a workable, two-level solution, each level opening to grade. On the lower floor, in addition to the cafeteria, kitchen, and arts room, are two northeast-oriented classrooms for the seventh and eighth grades. The southwest wing of the upper level (*above right, acrosspage*) has north-facing classrooms for the first through fourth grades (a kindergarten, with separate entrance, is later to be added to the end of this wing), while the fifth and sixth grades occupy the two rooms in the other wing. Temporarily, the kindergarten operates in the multi-use-playroom.

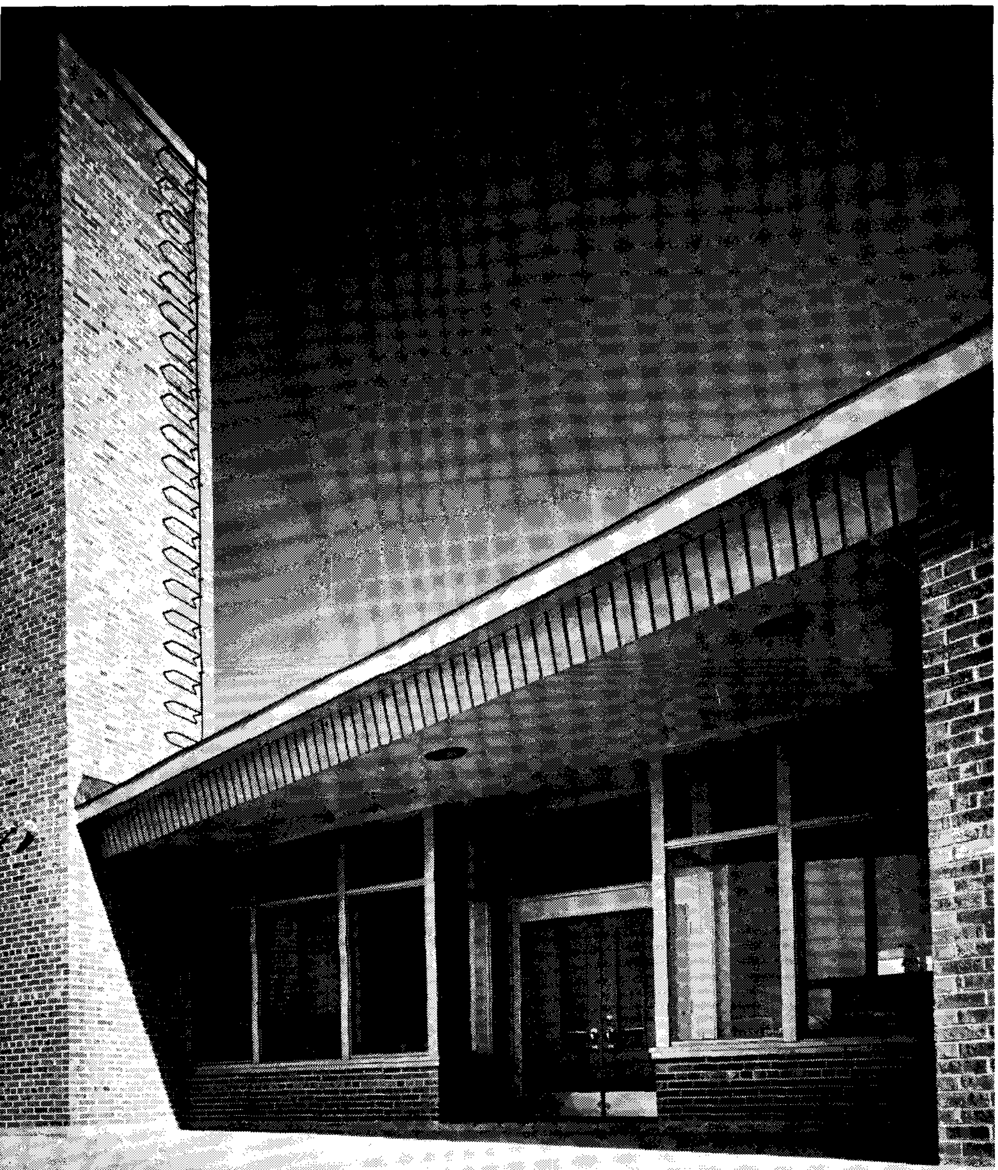
Bilateral lighting of the classrooms involves the entire cross-section of the building—south or southwest window walls along the corridors, clerestories above coat-storage units on the classroom side of corridors, and wall-to-wall windows on the exterior walls of the rooms.

Structurally, the system consists of a combination of brick-and-steel frame, with concrete-block partition walls between classrooms. Resting on the latter and spanning the 28-foot width of the rooms are standard steel-bar joists that in turn support the gypsum-deck roof. Flooring is asphalt tile, and ceilings are finished with acoustical tile, the ceiling line following the angle of the pitched roof. The clerestories above the coat-locker corridor walls allow a continuity of ceiling view that increases apparent size of rooms. Concentric-ring incandescent fixtures provide artificial lighting, while the heating system is a simple hot-water convector installation.



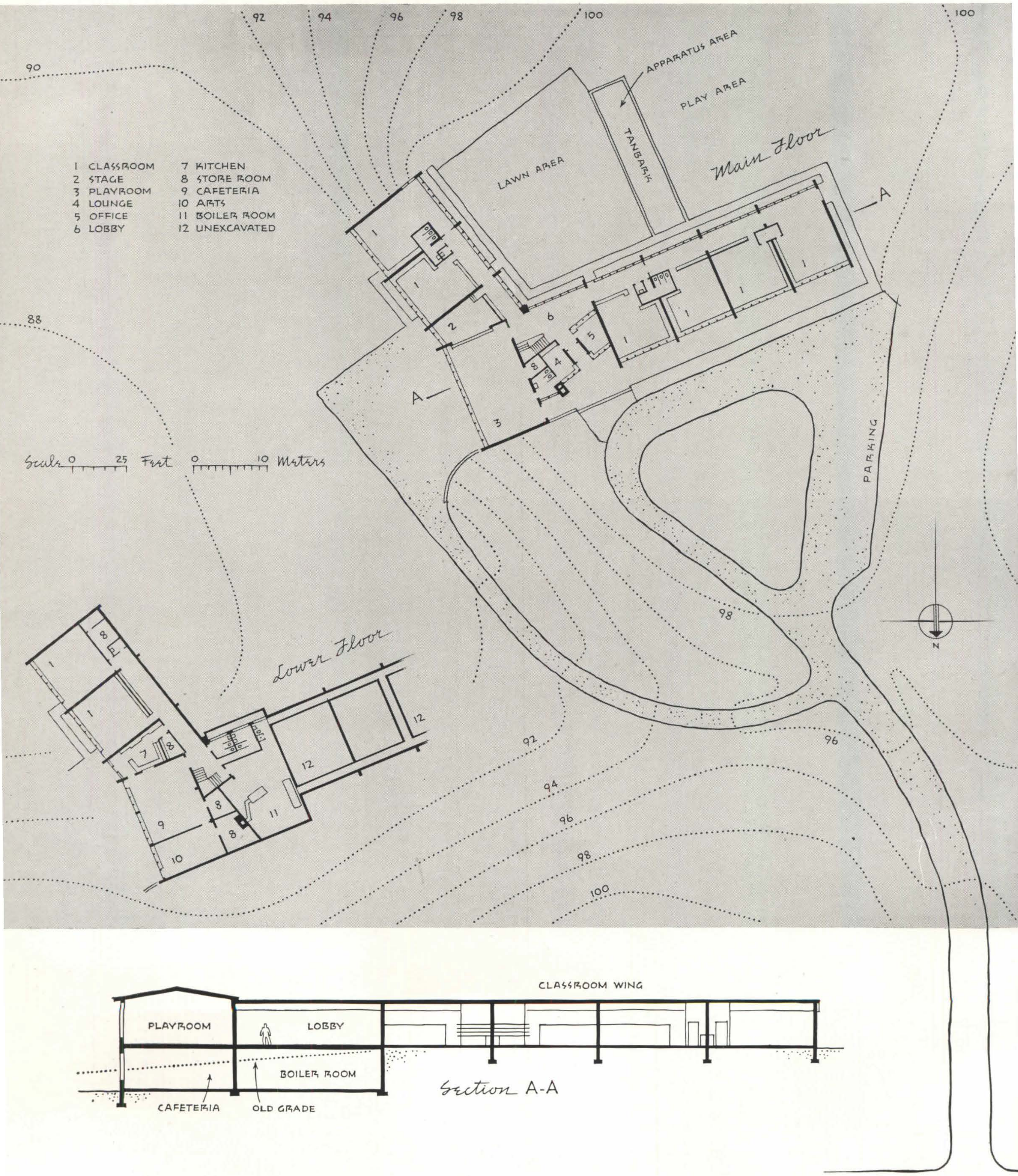
location	Barrington, Illinois
architects-engineers	Perkins & Will
mechanical engineer	E. R. Gritschke
general contractor	Chell & Anderson

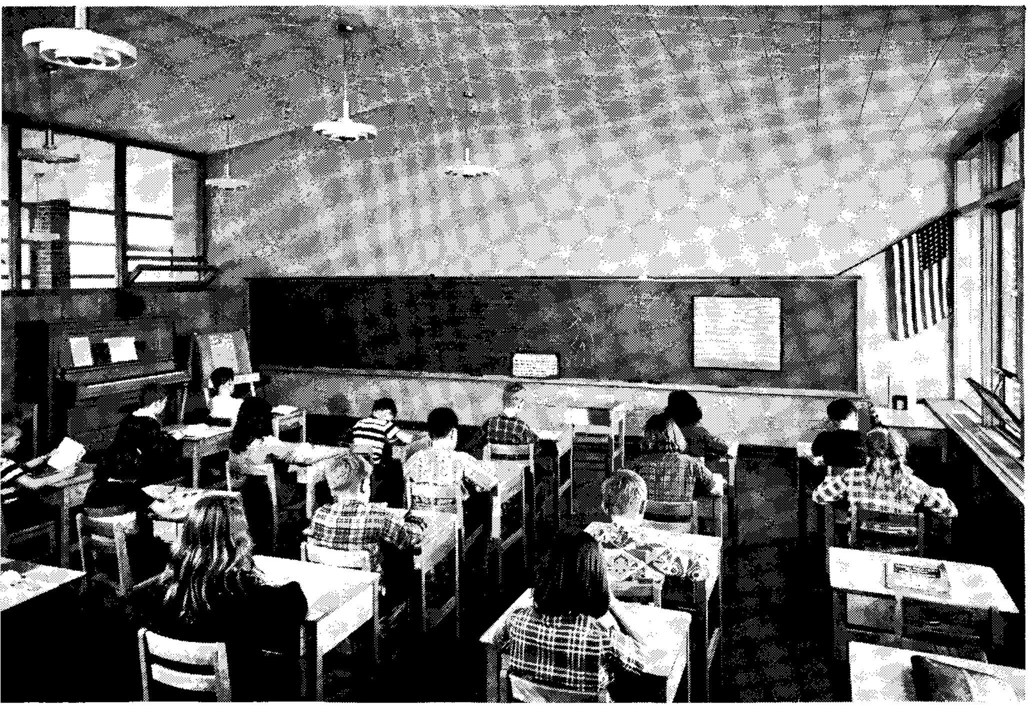


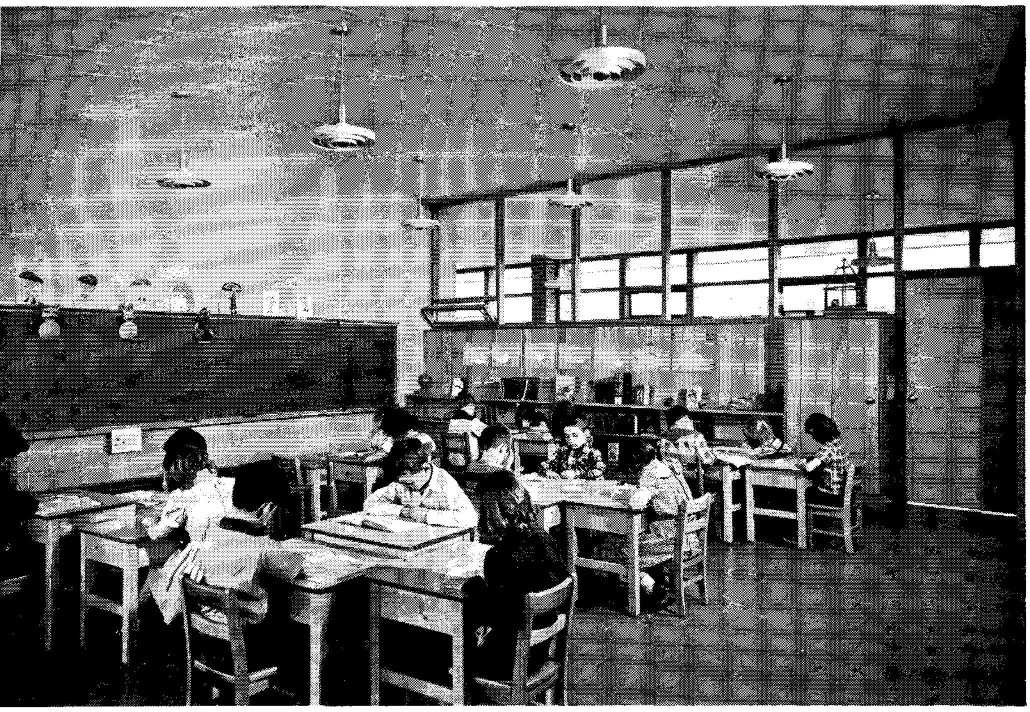


Use of a simple pitched roof is the one concession the architects made to the original suggestion that the new building echo in some measure the atmosphere of a Colonial structure that was one of the buildings the new school replaced. *Photos: Hedrich-Blessing*

consolidated elementary school





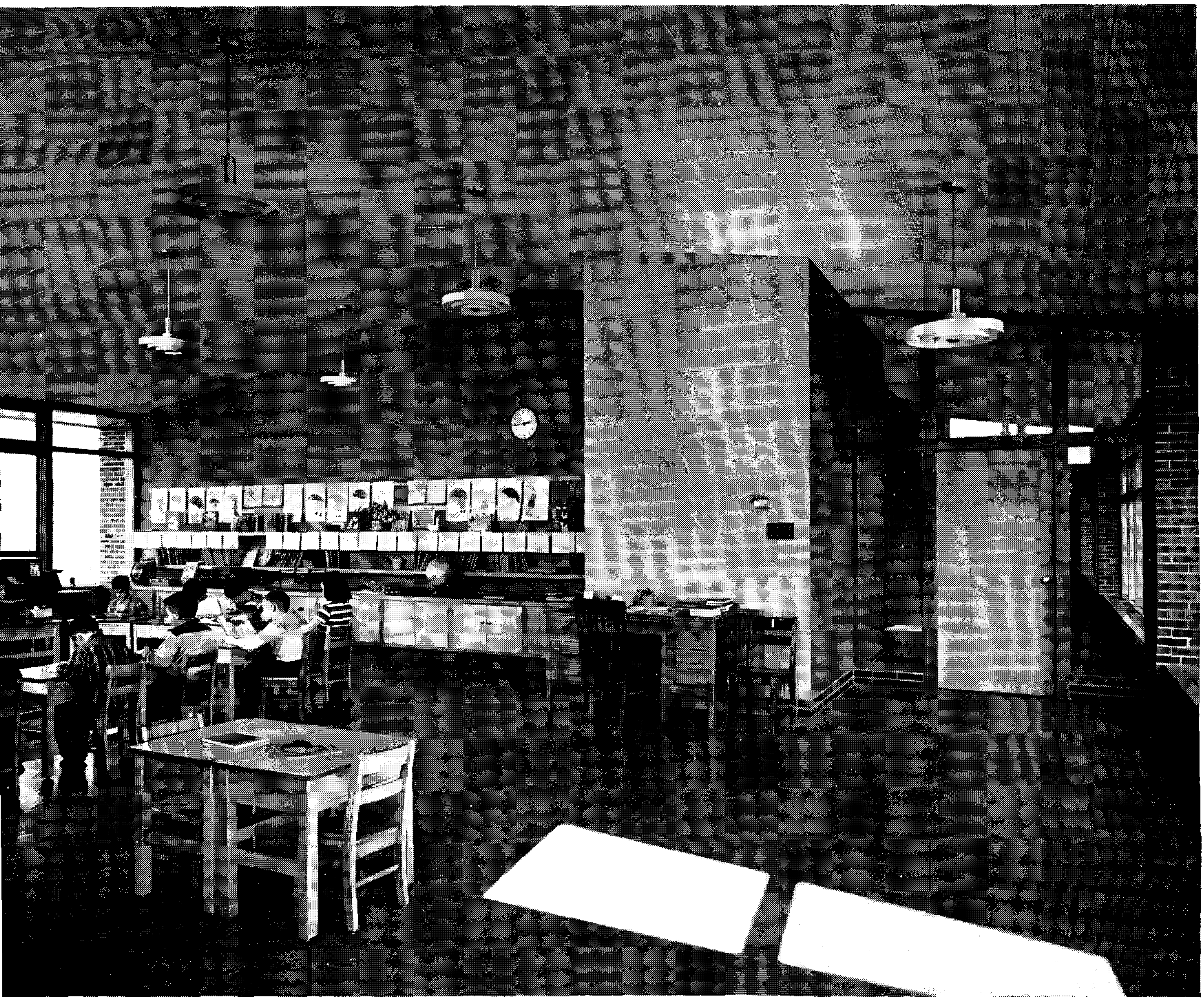


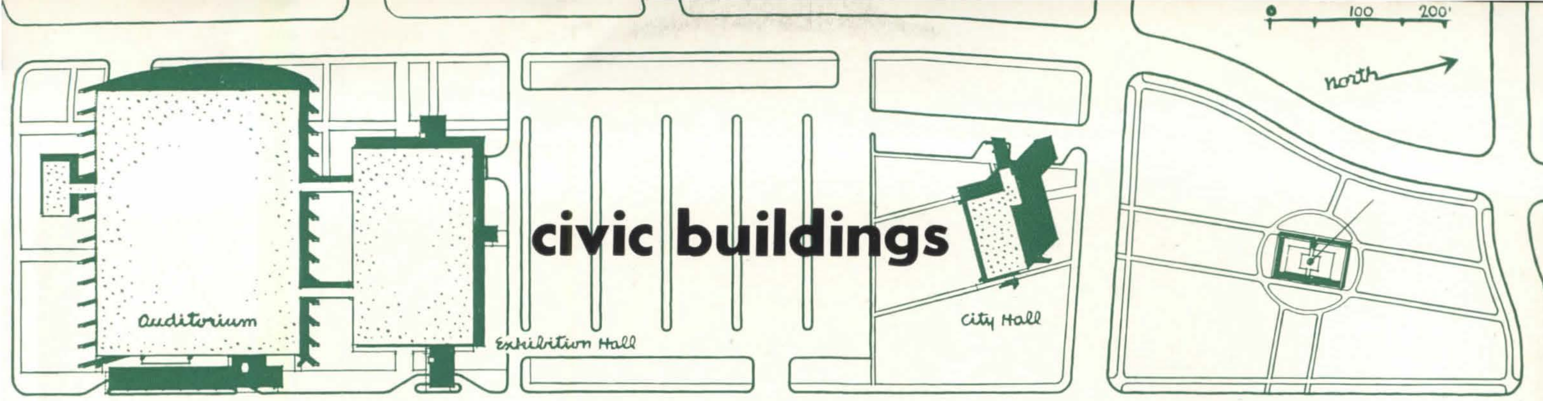
Typical classrooms (left) *are 28 feet wide by 30 feet deep; the acoustical-tile ceilings follow the roof pitch; chalkboards are mounted on the load-bearing concrete-block partition walls.*

The nonload-bearing corridor walls (below) *are made up of coat-storage units on the corridor side. On the classroom side, above built-in shelving and a teacher's storage closet, the soft pine surface is used for tack space.*

consolidated elementary school

The first-grade room (large photo) *occupies the entire end of the southwest wing; door at right leads to main corridor. The multi-use playroom* (bottom photos) *has a stage at one end that is temporarily used for the kindergarten. The room serves as gym and also for a variety of school and community functions.*





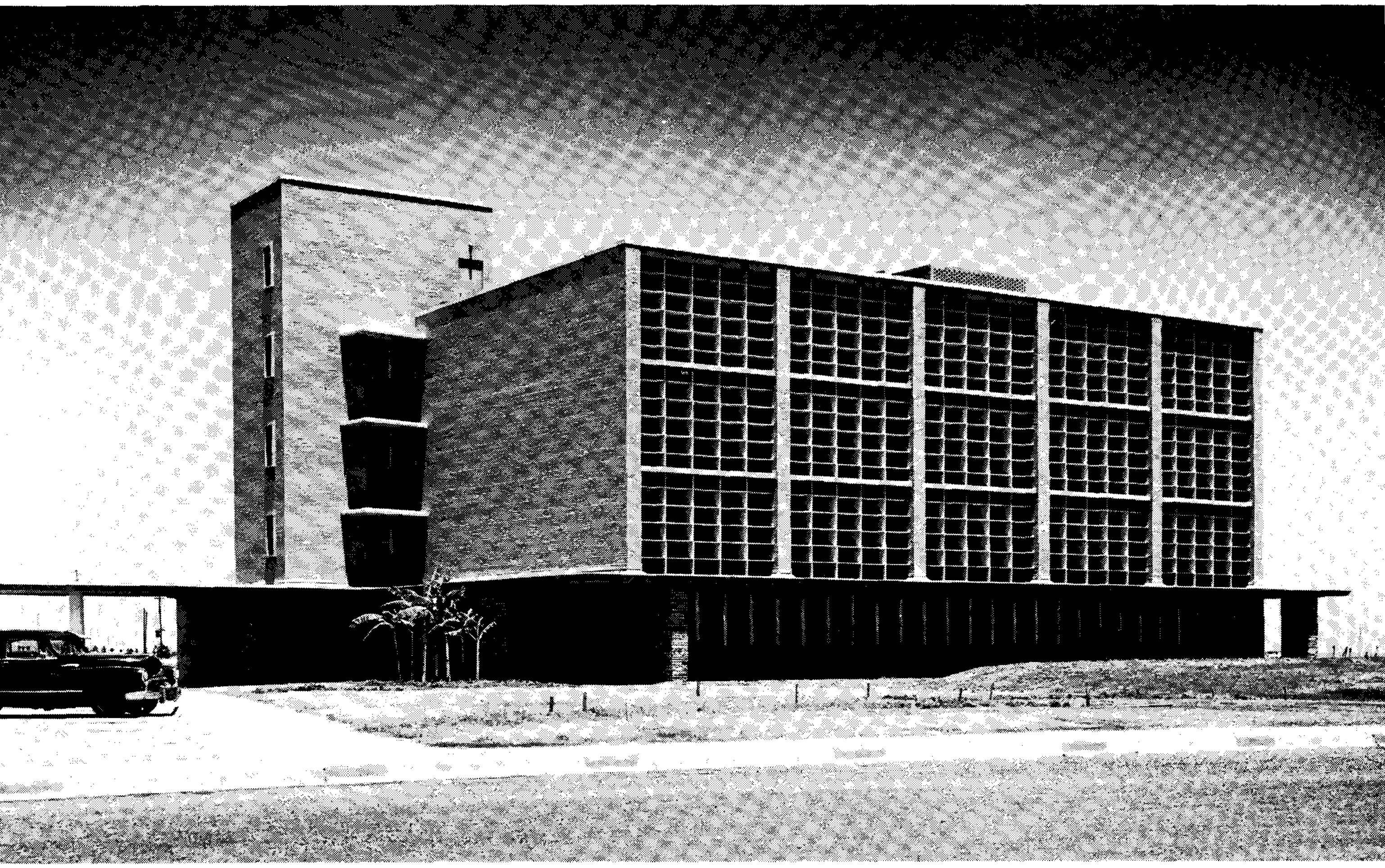
civic buildings

In 1942, Corpus Christi, Texas, was one of three cities selected by the National Resources Planning Board with which to attempt a technique (that other cities might adapt) for forecasting future growth and determining comprehensive plans for healthy and economic development—at that time, of course, with particular concern for postwar potentials to come *(August 1943, New Pencil Points, pages 31-50)*. The activity went forward with full co-operation of the Mayor and City Council, the City Planning Commission, the Planning Committee of the Chamber of Commerce, and numerous other local, state, and federal agencies, as well as private groups. The result was a broad-outline sketch of Corpus Christi's future development—an outline has been partially filled in since—and of which the civic structures shown in this study form one important part. The technical consultant loaned by the Urban Section of NRPB to work with the Corpus Christi groups was Sam Zisman, who currently is an architect and planning consultant, with offices in San Antonio. One of the local architects who volunteered his services to the program was Richard S. Colley, architect of the three civic buildings shown in this presentation.

All three of the buildings—the City Hall, Exhibition Hall, and Chamber of Commerce Building—are located on Shoreline Drive, bordering the Gulf waterfront, and are part of an extensive Bayfront Development for which hotels, tourist accommodations of all sorts, and various resort and recreational facilities are destined. The City Hall and Exhibition Hall (and future Civic Auditorium) are elements of the new Civic Center *(drawing above)* and are grouped toward the southern end of the 2-mile long Bayfront area, while the Chamber of Commerce Building is located several blocks to the north, on land donated to the Chamber. All of the buildings, however, have the same general relation to the water and to the City's central business district.

In addition to representing a fresh approach to the design of civic buildings, these are important structurally—two of them utilizing the lift-slab system of construction—and for their exploration of built-in elements for sun and light control. But perhaps their greatest significance lies in the fact that they are actual parts of a broad, long-range city-planning program. So often, one finds civic plans—even the simplest over-all proposals—merely relegated to the storage vaults of city halls.

location	Corpus Christi, Texas
architect	Richard S. Colley
structural engineers	Blucher & Naismith
mechanical engineer	T. A. Vernor, Jr.
foundation engineers	Greer & McClelland
general contractors	Braselton Construction Company J. A. Walsh Construction Company



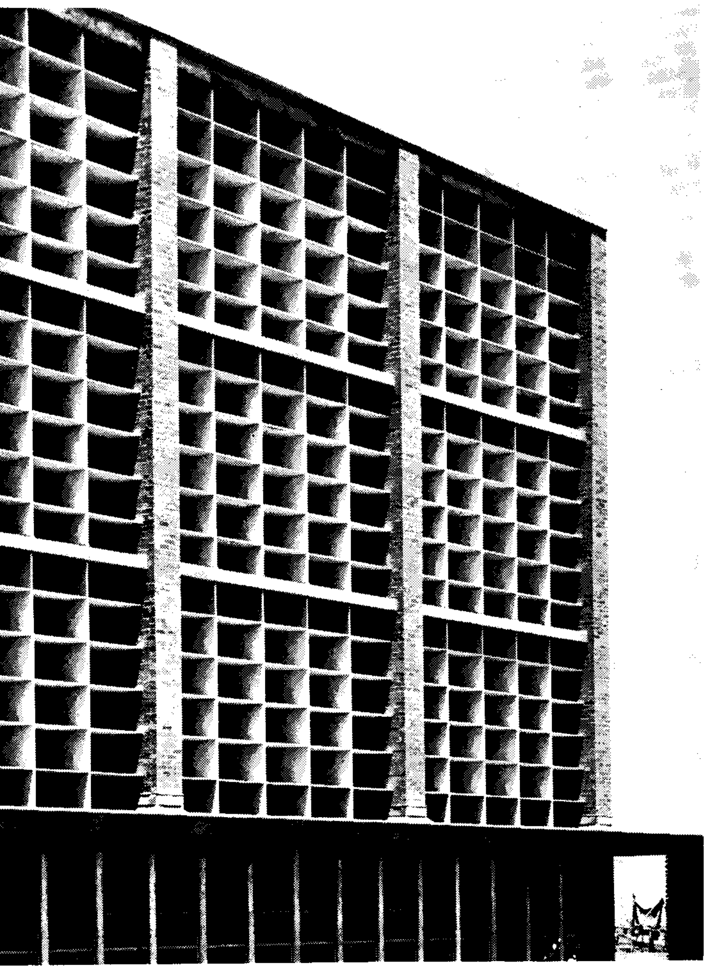
city hall

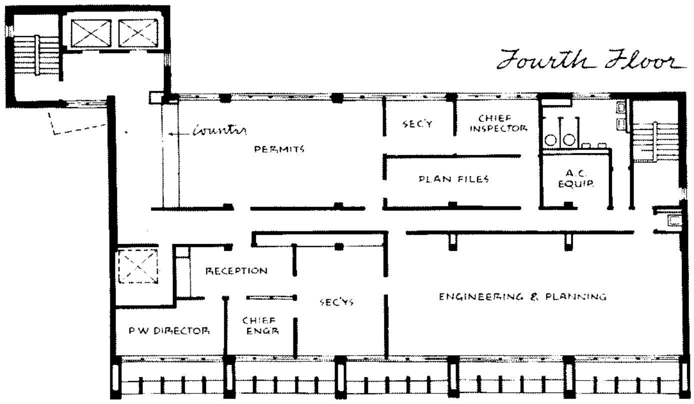
The City Hall was designed to house all city administrative offices (except for police and corporation courts, which are in other buildings); public utilities; tax offices; building inspection, city planning and engineering departments. The building is located just north of the Exhibition Hall and a future, arena-type auditorium, and the three will be integrated with parks and parking areas.

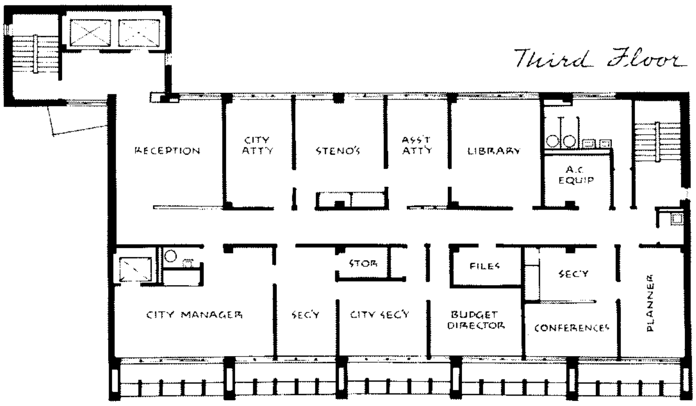
The site consists of a 14-foot hydraulic fill between the two shoreline drives adjoining Nueces Bay. As consolidation of this fill is still incomplete, the foundations are wood piling with concrete caps to receive the building's structural-concrete frame. The basement (in which are the tax assessor's offices and numerous storage and equipment rooms) is completely waterproofed with membrane waterproofing, to withstand hydrostatic pressure.

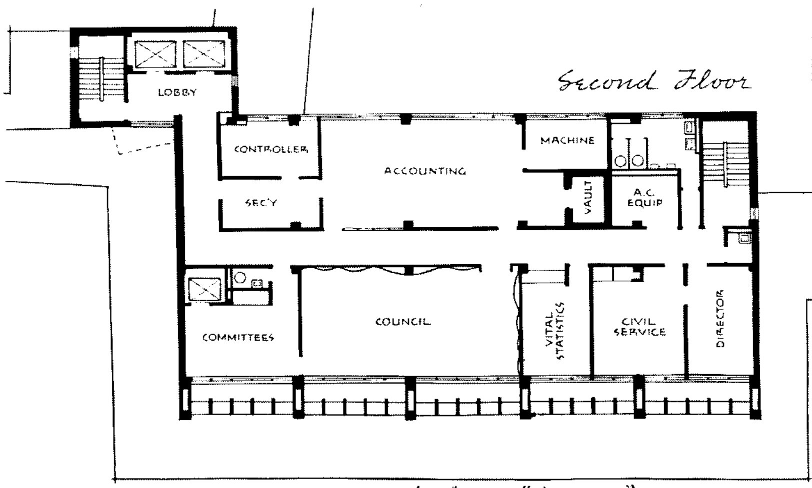
Since the building is exposed to salt spray much of the time, with the prevailing breeze from the southeast, no ferrous metal is exposed to the weather; even the fascia cover is of slate. Exterior walls consist of brick outside; a mineral-wool layer; and concrete block, plastered, on the interior. Outside the south wall is a brise-soleil grid consisting of precast notched verticals (4″ x 2′-6″ x 9′-10″) into which fit the 2″ x 2′-0″ x 3′-1″ horizontal members.

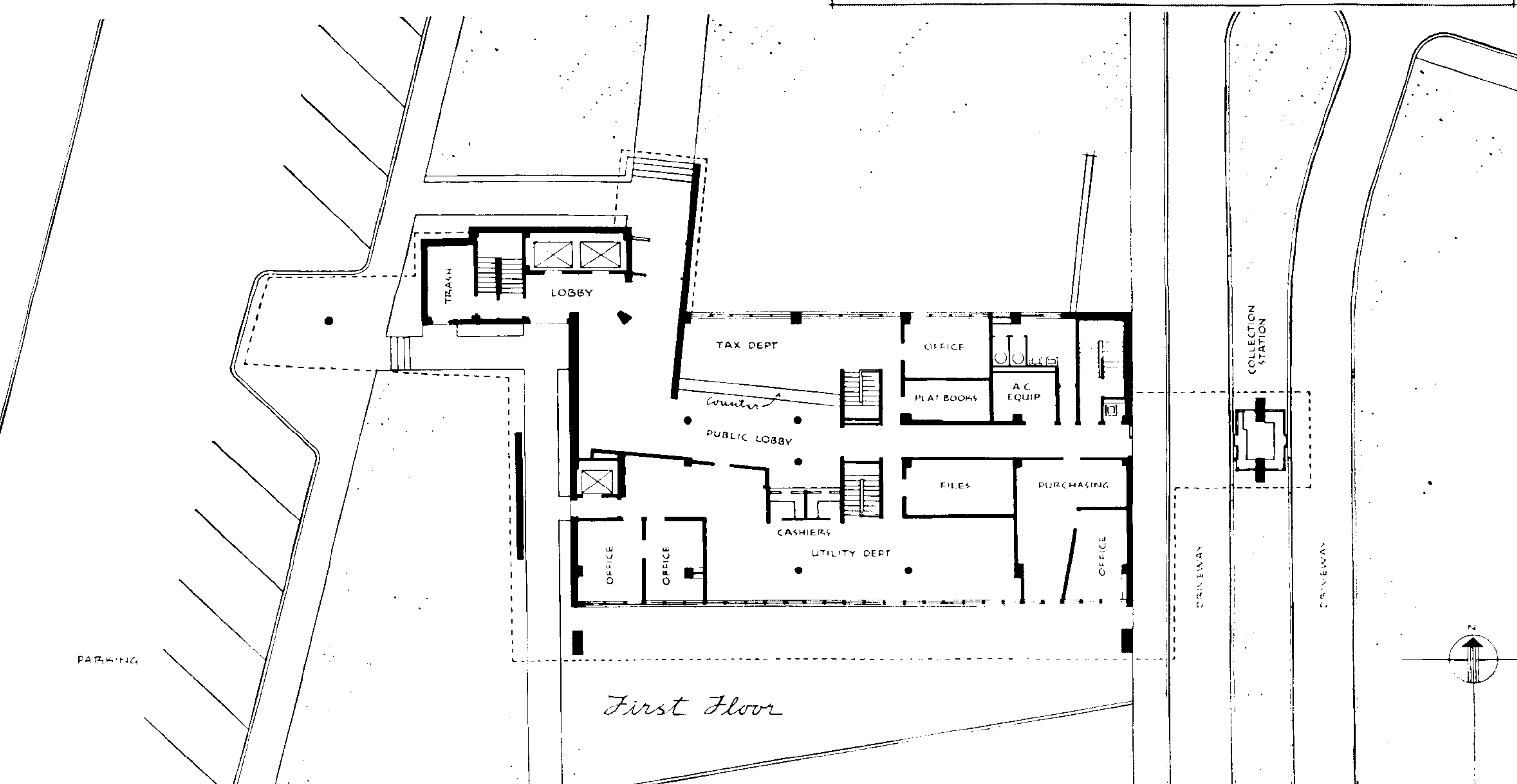
The roofing is built-up, over glass-fiber boards. Flooring is asphalt or quarry tile; ceiling surfaces are acoustic plaster. Aluminum, awning-type windows are used generally, with some fixed glass in wood or aluminum frames. Warm-air heating served from a natural-gas-fired furnace, supplements the air-conditioning system.




Fourth Floor
counter
PERMITS
SEC'Y
CHIEF INSPECTOR
PLAN FILES
A.C. EQUIP.
RECEPTION
SEC'YS
ENGINEERING & PLANNING
P.W. DIRECTOR
CHIEF ENGR


Third Floor
RECEPTION
CITY ATTY
STENO'S
ASS'T ATTY
LIBRARY
A.C. EQUIP
STOR
FILES
SEC'Y
CITY MANAGER
SEC'Y
CITY SEC'Y
BUDGET DIRECTOR
CONFERENCES
PLANNER


Second Floor
LOBBY
CONTROLLER
ACCOUNTING
MACHINE
VAULT
A.C. EQUIP
SEC'Y
COMMITTEES
COUNCIL
VITAL STATISTICS
CIVIL SERVICE
DIRECTOR


TRASH
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PARKING
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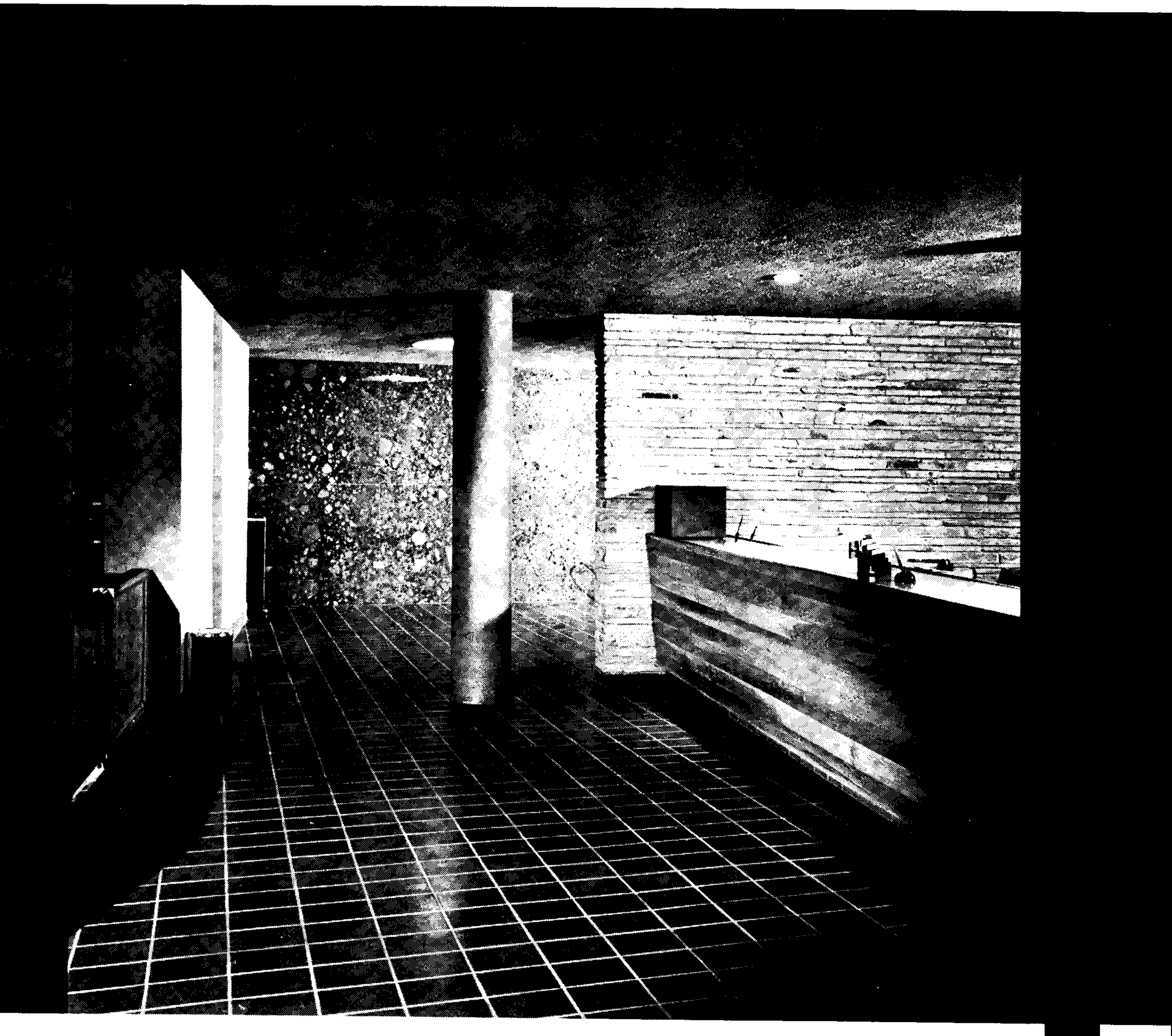
First Floor



In the first-floor public lobby (above) *a long counter serves the tax department; wall surfaces include marble and ledgestone. For detail of luminous ceiling in the fourth-floor engineering and planning department* (right), *see page 149.* Photos: Ulric Meisel

The Council Chamber is on the south (brise-soleil) wall; serpentine wall surfaces made of oak siding supplement the acoustic-plaster ceiling in assisting sound control.

construction

Foundation: beam-and-slab concrete, City Hall: over wood piling—Universal Atlas Cement Company, Koppers Company, Inc. **Structure:** City Hall: cast-in-place reinforced concrete; Exposition Hall: lift-slab construction system. **Wall surfacing:** exterior: brick—Acme Brick Company; marble, stone, and slate; interior: Exposition Hall: exposed masonry, City Hall: plaster—U. S. Gypsum Company; rest rooms, toilets: ceramic and quarry tile—Mosaic Tile Company and Summitville Tiles, Inc. **Floor surfacing:** City Hall: asphalt tile— Armstrong Cork Company, quarry tile—Summitville Tiles, Inc.; Exposition Hall: exposed concrete. **Ceiling surfacing:** City Hall: acoustic plaster—Zonolite Company; Exposition Hall: acoustic tile—Celotex Corporation. **Roof surfacing:** built-up asphalt and gravel —Barrett Division, Allied Chemical & Dye Corporation. **Waterproofing:** City Hall basement: membrane waterproofing with plaster coat. **Insulation:** glass-fiber-board on roofs—Owens-Corning Fiberglas Corporation; City Hall: mineral-wool batts in wall—U. S. Gypsum Company. **Roof drainage:** City Hall: interior cast-iron downspouts and roof drains. **Partitions:** City Hall: gypsum block and plaster—U. S. Gypsum Company; Exposition Hall: lightweight concrete block—Texcrete Company. **Windows:** aluminum awning-type sashes, fixed-glass in wood or aluminum frames—Brauer Aluminum Company and Ludman Corporation; DSB window glass and fixed plates—Libbey-Owens-Ford Glass Company. **Doors:** Exposition Hall: solid-core flush wood, entrance, and hollow-core flush wood, interior—Mengel Company; wood-faced calcium-silicate-core fire doors; Exposition Hall: paneled-wood overhead —Overhead Door Company; City Hall: insulated flush-steel elevator—Dahlstrom Metallic Door Company; City Hall: hollow-glazed aluminum entrance—Aerobat Manufacturing Company and Alumidor Corporation. **Hardware:** tubular wrought-aluminum lock sets, surface-mounted, bronze-plated door closers and panic exit—Russell Erwin Division, American Hardware Company and Yale & Towne Manufacturing Company; prime-coated steel hinges—The Stanley Works. **Paint:** exterior: portland cement paint—General Paint & Varnish Company; interior: Exposition Hall: flat oil paint—Pittsburgh Plate Glass Company; City Hall: plywood finished with clear lacquer—Breinig Brothers, Inc.

equipment

Public address system: Exposition Hall—Stromberg-Carlson Company. **Elevators:** City Hall: car switch-control—Westinghouse Electric Corporation; geared machines, flush-steel cabs with center-opening doors. **Lighting fixtures:** City Hall: recessed incandescents—General Lighting Company, recessed fluorescent strips over acrylic-plastic ceiling (drafting room)—Sunbeam Lighting Company, Day-Brite Lighting, Inc., and Rohm and Haas Company; Exposition Hall: suspended incandescent reflectors—General Lighting Company. **Electrical distribution:** service entrance switch—Westinghouse Electric Corporation; fiber-and-asbestos cement duct system in concrete; panelboards, multibreaker—Bulldog Electric Products Company and Square D Company; wire and cable—General Cable Corporation; rigid-galvanized conduit; wiring devices—Arrow-Hart Electric Company and Hegeman Electric Company. **Plumbing and sanitation:** water closets, tubs, lavatories, water heater—Crane Company; toilet seat—Olsonite Plastics Division, Swedish Crucible Steel Company; flush valves with vacuum breaker—Sloan Valve Company; chrome-plated brass accessories—Hall-Mack Company; cast iron (waste and vents), copper (water), black steel (gas), and wrought iron (fire lines) pipes. **Heating:** warm air; fire tube, front breeching boiler—Kewanee Boiler Corporation, Division of American Radiator and Standard Sanitary Corporation; natural gas; galvanized-steel ducts; automatic controls — Minneapolis-Honeywell Regulator Company; Exposition Hall: vertical direct drive roof fans—Hunter Fan and Ventilating Company. **Air conditioning:** chilled-water central system, reciprocating direct-drive compressor, blowers—York Corporation; Freon 12 refrigerant—E. I. Du Pont de Nemours and Company (Inc.); adjustable grills—Tuttle and Bailey, Inc.; cleanable rechargeable filters—Research Products Corporation; forced draft cooling tower—The Marley Company, Inc.; controls zoned by floors—Minneapolis-Honeywell Regulator Company.

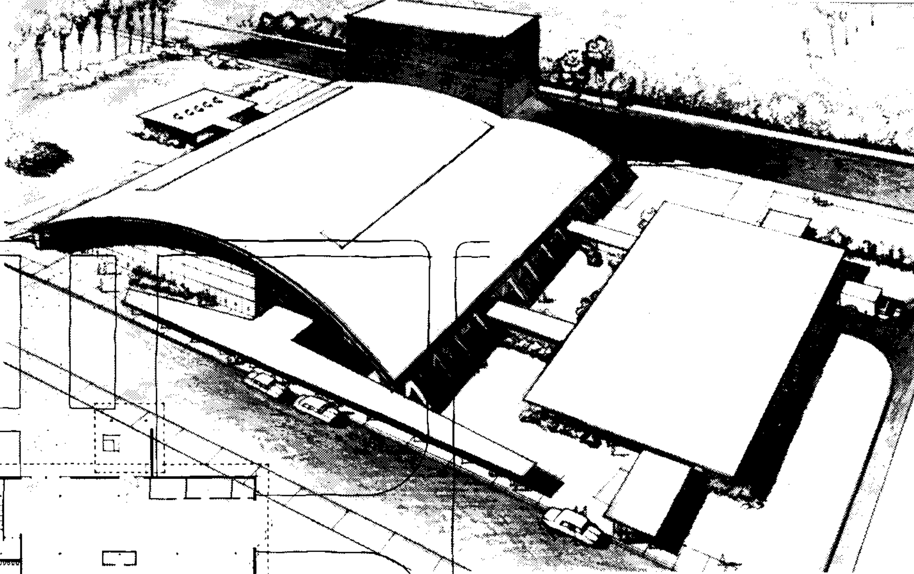
exhibition hall

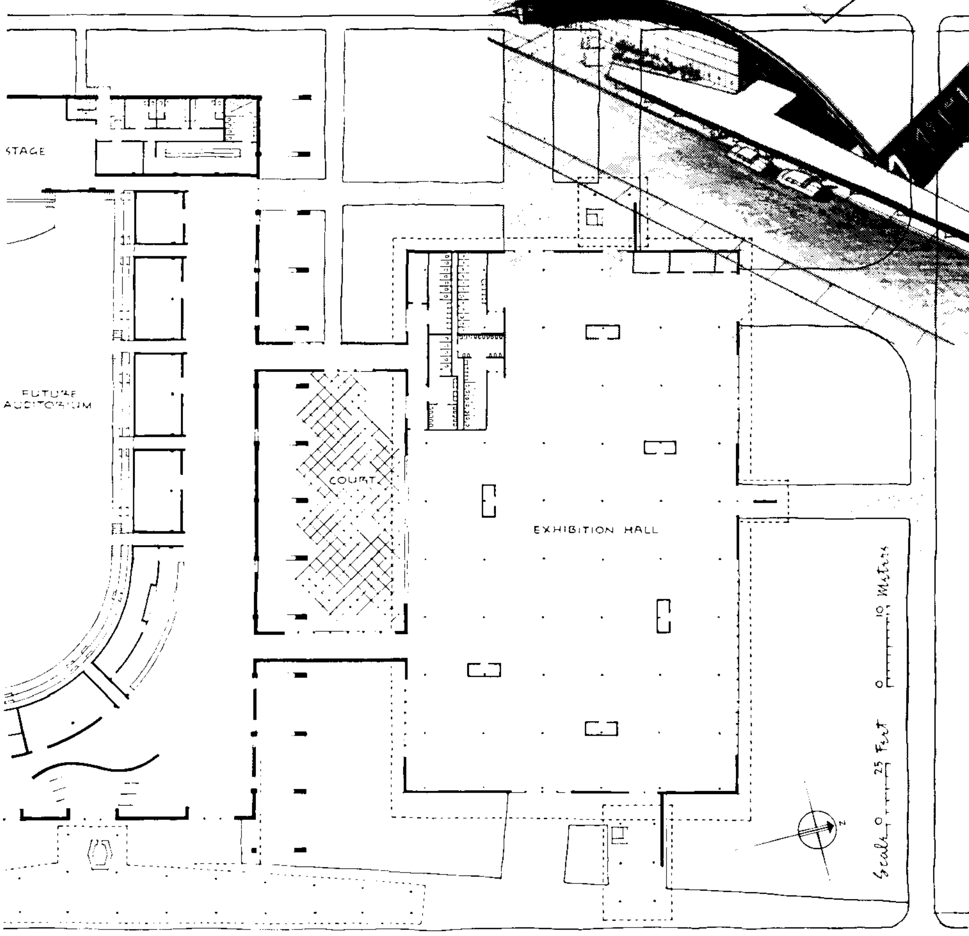
Built to accommodate immediate civilian-defense needs and also as the City's permanent exhibition hall, this building, as indicated in the rendering (*acrosspage*) and in the partial plan, will eventually be adjoined on the south by the great civic auditorium that was planned from the start as an integral part of the center.

In designing the exhibition hall, the main requirement was for a large, flexible space that could be readily adapted for all sorts of uses—expositions, merchandise exhibits, art shows, dances, auto shows, etc. Among the technical problems to be solved was the need to have utility connections—gas, water, sewer, and power—available at any point. Another requirement was to have a public-address system and pickup points for radio broadcast, etc., so arranged that they could be operated separately, or in conjunction with the future auditorium.

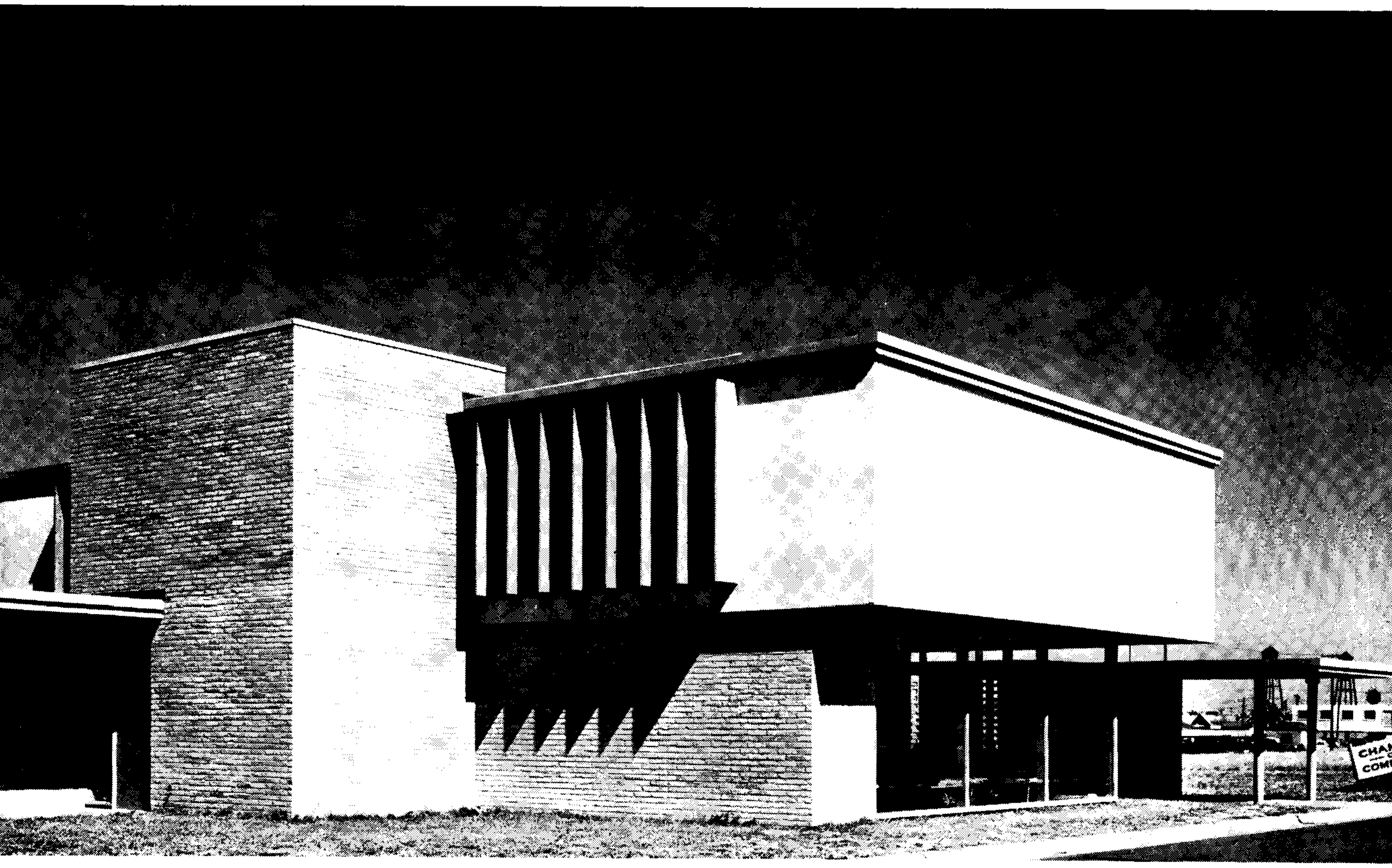
The latter will have seating space for approximately 7000 when the stage (suitable for road shows and productions of all sorts) is in use. Arena seating will be provided for tennis, boxing, basketball, etc. The washroom and toilet facilities in the southwest corner of the exhibition hall will serve both buildings.

The Youtz-Slick lift-slab structural system was used for the exhibition hall. *(For discussion of the structural possibilities of this system: see related technical article, pages 93-98.)* Walls are of brick, both solid and cavity construction. The floor is exposed concrete, while acoustic tile is used on the ceiling. Lighting consists of suspended incandescent reflectors, mounted on 5′-0″ diameter rings surrounding columns.





The wing walls that extend out from the building provide space for outdoor shows, protected from the prevailing southeast breezes. The curved roof of the auditorium will be framed by a patented steel roof-structure system.

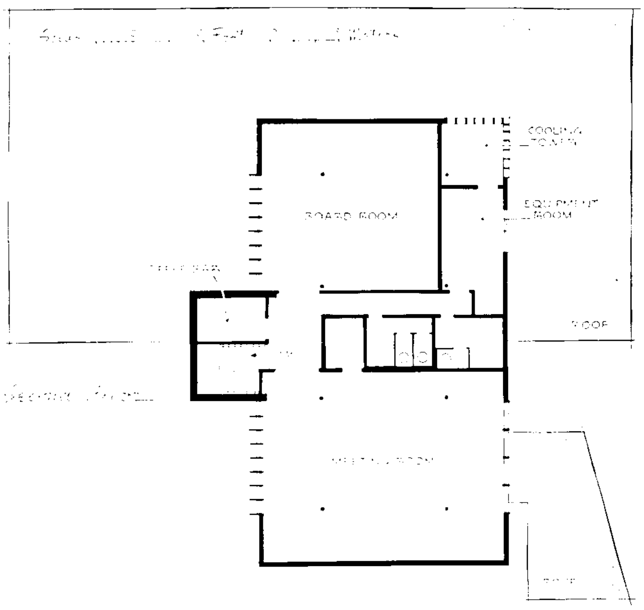


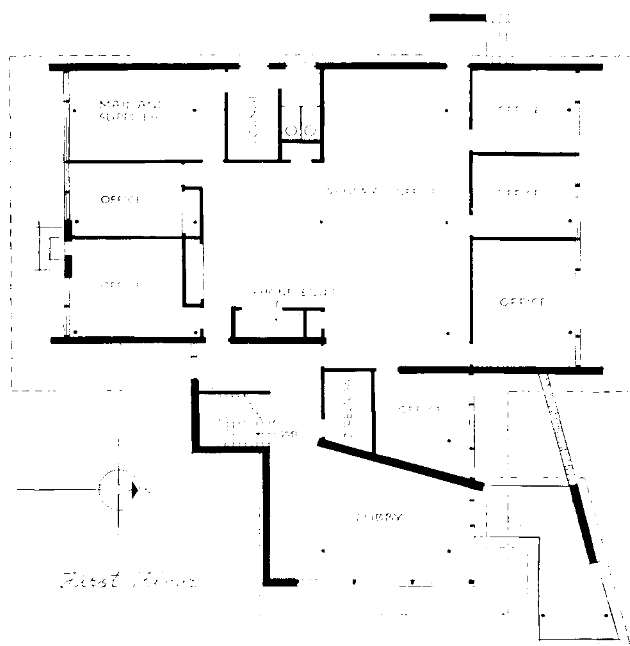
chamber of commerce

Twelve blocks north of the Civic Center, but still a part of the extensive Bayfront Development, the Chamber of Commerce Building is sited on land donated to the Chamber by the City. Like the Civic-Center group, it is located along the shoreline drive and is about the same distance from the downtown business center.

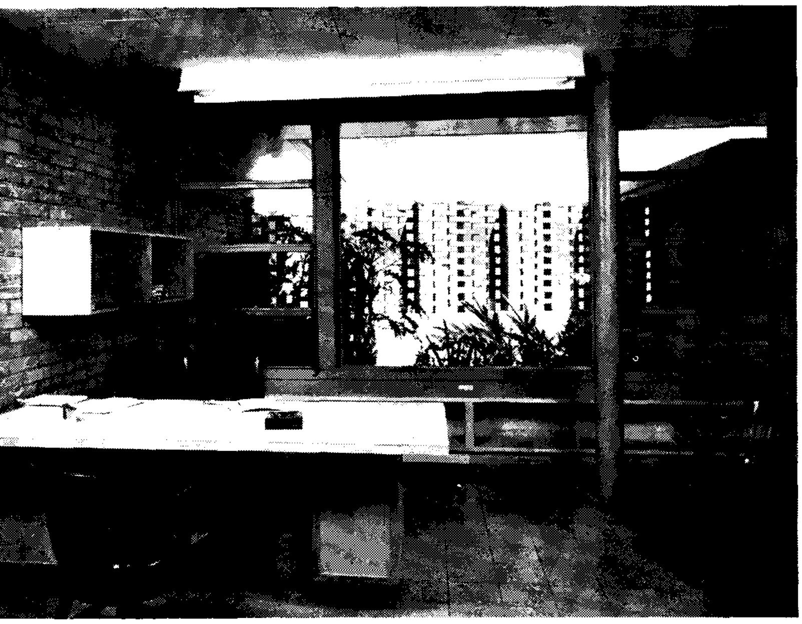
Requirements were more or less typical for this type of structure—offices for the manager and assistants; secretarial space; facilities for handling industrial and tourist promotion activities; a board room; a meeting room—and a tight budget. The solution is a two-story building, with board room and meeting room located on the upper floor.

Window areas facing south are protected by fixed, vertical brises soleil, made of 1/4" asbestos cement panels attached to wood frames spaced 2'-0" on centers. Like the Exhibition Hall in the Civic Center, the Chamber of Commerce Building utilizes the Youtz-Slick lift-slab method of construction, with flat concrete slabs mechanically lifted on pipe-column supports. Exterior walls are of brick and stucco; interior walls are either exposed brick or plywood. Flooring includes asphalt tile and cork tile; ceiling surfaces are of acoustic tile. The wood sash are awning type, with DSB glass or fixed frames holding plate glass. Both fluorescent and incandescent lighting fixtures are used, and the air-conditioned building has a gas-fired warm-air system for heating.


COOLING TOWER
BOARD ROOM
EQUIPMENT ROOM
ROOF


OFFICE
OFFICE
LOBBY

civic buildings: chamber of commerce



The manager's office (above) *looks into a walled landscaped area adjoining the main entrance. An angled desk, built around one of the pipe columns, occurs in the second-floor board room* (above, right). *The north windows of the meeting room* (right) *command a view of the bayfront.*

construction

Foundation: concrete footings and slab; cement—Universal Atlas Cement Company. **Structure:** lift-slab construction system with steel-pipe columns. **Wall surfacing:** exterior: Mexican brick and stucco—Pittsburgh Plate Glass Company; interior: Mexican brick and plywood—U.S. Plywood Corporation; rest rooms, toilets: quarry tile—Summitville Tiles, Inc. **Floor surfacing:** asphalt and cork tile—Armstrong Cork Company; unglazed ceramic tile—Mosaic Tile Company. **Ceiling surfacing:** acoustic tile—Celotex Corporation. **Roof surfacing:** built-up asphalt and gravel—Barrett Division, Allied Chemical & Dye Corporation; clear waterproofing (silicone) on brick exterior—Wurdack Chemical Company. **Insulation:** glass-fiber batts in equipment room—Owens-Corning Fiberglass Corporation. **Partitions:** wood studs; marble stalls—Carthage Marble Corporation. **Windows:** wood awning-type sash—Gate City Sash & Door Company; DSB window glass and fixed plates, fixed-glass store fronts in wood frames, wire glass in metal (over stairs)—Libbey-Owens-Ford Glass Company. **Doors:** interior, hollow-core flush wood; entrance, solid-core flush wood—Mengel Company. **Hardware:** tubular, cast- and wrought-aluminum lock sets, painted surface-type door closers—Russell Erwin Division, American Hardware Company; primed and dull chrome-plated hinges—The Stanley Works. **Paint:** exterior: portland cement paint—General Paint & Varnish Company; interior: flat oil paint—Pittsburgh Plate Glass Company.

equipment

Lighting fixtures: slimline strips in wooden boxes—Sunbeam Lighting Company. **Electrical distribution:** service entrance switch, duct system, panelboards, multibreaker — Square D Company; wire and cable—Rome Cable Corporation; conduit—General Electric Company; wiring devices—Arrow-Hart Electric Company and Hegeman Electric Company. **Plumbing and sanitation:** water closets, tubs, and lavatories—Crane Company; toilet seat—Olsonite Plastics Division, Swedish Crucible Steel Company; gas-fired, monel water heater—Ruud Manufacturing Company; flush valves with vacuum breaker—Sloan Valve Company; chrome-plated brass accessories—Crane Company and Hall-Mack Company; cast-iron (waste and vent) and galvanized-wrought-iron (gas and water) pipes. **Heating:** combined heating and air conditioning; hot water boiler—Kewanee Boiler Corporation, Division of American Radiator and Standard Sanitary Corporation; natural gas; galvanized steel ducts; automatic controls—Minneapolis-Honeywell Regulator Company; gravity-type toilet vents—G. C. Breidert Company. **Air conditioning:** compression-type unit, direct-drive (self contained) compressor, blowers with two-speed motor, self-contained cooling coils—Carrier Corporation; Freon 12 refrigerant—E. I. du Pont de Nemours and Company; adjustable wall registers—Tuttle and Bailey, Inc.; cleanable and rechargeable filters—Research Products Corporation; forced draft cooling tower—The Marley Company, Inc.; controls with adjustable dampers—Minneapolis-Honeywell Regulator Company.

structural aspects of lift slab

by Fred E. Koebel*

Many articles have appeared in recent months extolling the architectural considerations, the cost benefits, and general adaptability of the Youtz-Slick Lift-Slab Method of Building Construction. However, few if any of these articles have discussed the structural aspects and considerations involved in the method. The purpose of this paper is to discuss in some detail these factors involved in the structural design of a lift-slab building.

As many engineers involved in the design of lift-slab structures have found, the analysis and design is similar in many respects to any other building design and analysis. The basic differences involved in the Youtz-Slick design pertain primarily to the column design and the collar design.

column design

Column design for lift-slab introduces an entirely new philosophy of column action to the design engineer. In this method slabs are poured one on top of the other and then the slabs are lifted into position by hydraulic jacks sitting on top of the column. Thus, when the first slab is being lifted the column has no restraint at the top and is fixed or built in at the bottom. The hydraulic jack is centered on the column at the top, thus applying a concentric loading to the column which is equal in magnitude to the dead load reaction of the slab being lifted. If the slenderness ratio of this column is computed, it will be found that the ratio is exceedingly large, thus making the analysis problem one of stability instead of inelastic action. It has been shown that for large slenderness ratios the Euler equation will give the critical load value which initiates buckling of the column. For that reason, Euler's equation with an appropriate factor of safety is used for the structure. In any standard text the Euler equation for pin-ended columns is defined as:

$$P=\frac{\pi^2 E I}{L^2}$$

where P=critical load value initiating buckling
E=modulus of elasticity of the material
I =moment of inertia of the section
L=free length of the column

With a column built in at the bottom and free at the top, it can be shown that L=2l, where l=free length of free standing column.

Thus, the initial equation for pin ended columns is reduced for this case to:

$$P=\frac{\pi^2 E I}{(2l)^2}=\frac{\pi^2 E I}{4(l)^2}$$

The problem for the design engineer then is the determination of an adequate safety factor. This safety factor is included because of eccentricities within the column section, impact at the initial stage of the lift, and the usual reasons for providing safety factors.

After lifting the roof slab and fixing it to the columns, the next slab is raised into position. This condition of loading is usually not as severe as the initial condition outlined above. The slenderness ratio of the column in this condition of loading is usually reduced substantially and for this reason is not critical.

The column strengths are checked during any succeeding lifts until all slabs are fixed in position. At that time the column is similar to any building column and it is checked by any of the empirical equations recommended in building codes. The usual equation used is a parabolic formula recommended by the American Institute of Steel Construction for axially loaded columns with values of $\frac{l}{r}$ less than 120.

$$\frac{P}{A}=17{,}000-.485\frac{l^2}{r^2}$$

where $\frac{P}{A}$ =allowable axial stress
l=free length of column
r=radius of gyration of the section

Columns in general use in the method include pipe columns, H columns, and square columns formed of angles and plates. Concrete columns are also used successfully. It is highly desirable to obtain column sections that are symmetrical about both major axes. For that reason pipe columns and square columns are used more frequently.

collar design

The lifting collar, a cast-steel plate, serves a triple purpose in a lift slab. The collar is placed around the column and cast into the concrete slab. Openings are left in the collar to fasten the lifting rods and thus the slab is lifted through the collar. After the slab is raised to position shear connection plates are fastened from the column to the collar, thus supporting the slab. The third and perhaps most important function of the collar is its behavior as a column capital. The reaction of the slab on the column is distributed around the periphery of the collar instead of around the smaller periphery of the column.

The collar is a plate stiffened by gussets with holes provided for the column and lifting screws (*Figure 1*). In the analysis of a lift slab it is assumed that the stiffness of the collar is many times greater than the stiffness of the slab; hence, the collar is assumed to be rigid and nondeflecting. (Several tests have proven this assumption satisfactory.)

In choosing the size of the collar, two items should be carefully checked. First, the shear developed at the reaction is of prime concern. Secondly, the bearing stress between the collar and concrete as a result of the reaction must be kept within allowable limits. In ascertaining the magnitude of shear stress, since it has been assumed that the collar does not deflect, the equation $v=\frac{V}{bjd}$ can be used:

where V=reaction due to total load
b=the periphery around the collar (defined as the width of the collar plus twice the effective depth of the slab around the entire collar) =4(b+2d)
j=assumed as .875
d=distance from center of gravity of tensile reinforcing to the compression face of the slab.

The maximum allowable value of this shear stress is taken as .025f'c where f'c is the ultimate compressive strength of the concrete at 28 days. It can be seen that the value of shear stress developed will control in many instances the depth of slab and size of collar plate. It is also possible to provide a shear head composed of stirrups placed around the collar at the critical area to resist added shear. It is recommended that if this is done the maximum shear be held to .04f'c with the stirrups thus designed to take .015f'c.

* *Structural Engineer, Institute of Inventive Research, San Antonio, Texas*

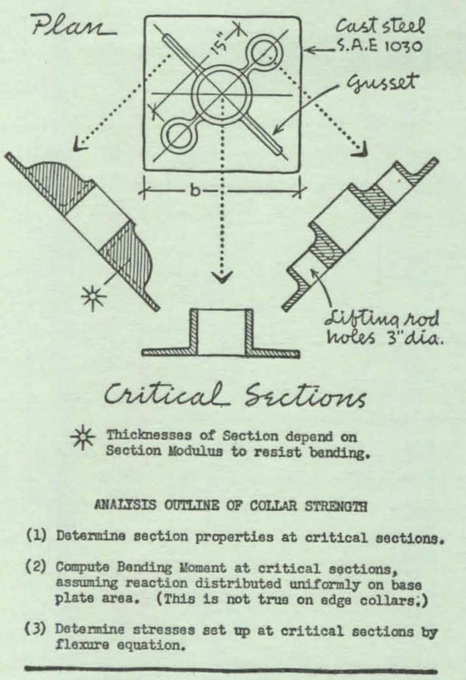


Figure 1—typical details of lifting collar.

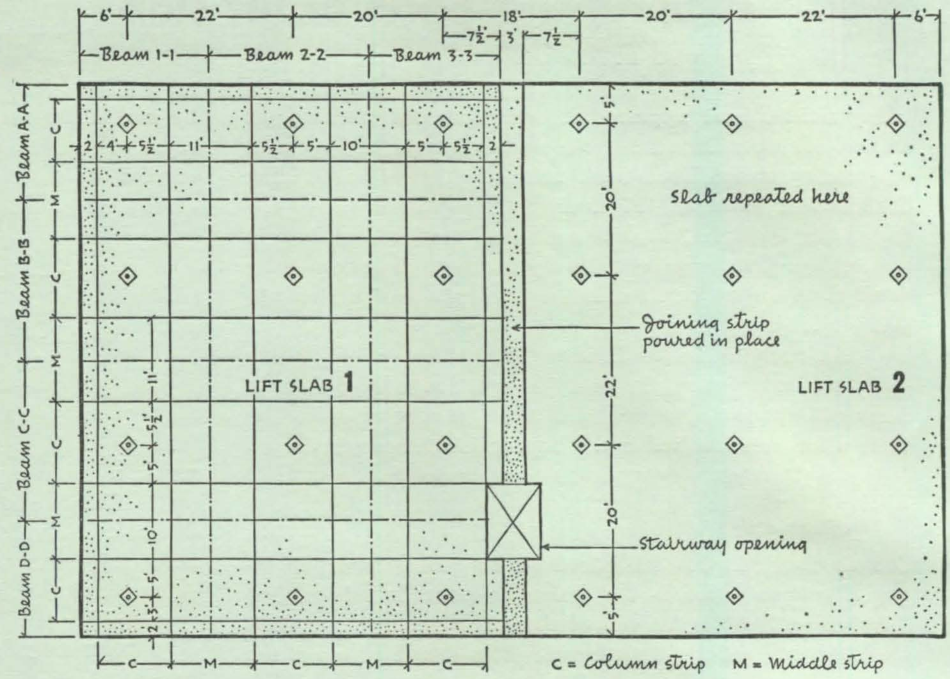


Figure 2—layout of beam, column, and middle strips for typical slab.

The collar sections are designed by evaluating the bending moments and stresses developed due to the reaction of the slab at the critical sections as shown (*Figure 1*). The added sections due to gussets may be included in the section properties.

The connecting plates used to fasten the slab to the column are designed to transmit the reaction at the slab into the column by shear only in one- and two-story construction. For multistory construction and buildings subjected to high lateral loads, other methods are used.

slab design

Slabs used in the method are designed according to the specifications for flat slabs set up in the American Concrete Institute Building Code. The thickness of the slab is determined so that shear stresses and compressive stresses at the critical sections do not exceed the allowable stresses for the concrete used. The minimum thickness of slab, however, is limited to $\frac{L}{36}$ where L is the length in inches of the largest span.

In general, it is highly desirable to plan lift slabs in lifts of 12 columns each. This decreases the number of joints between sections of slab and the total time spent in setting equipment. The most efficient span lengths in conventional flat plate are between 20 and 24 ft with the ratio of spans no more than 1.33. Recommended superimposed loads should not be more than 150 psf because of the deflection characteristics of the flat plate.

It has also been found highly desirable to provide cantilevers because of the corresponding reduction in positive moment in the interior spans and the uniform distribution of shear resulting at the column area. For these reasons cantilevered slabs are recommended. However, in the vast amount of construction already complete, there are many slabs with columns at the periphery of the slab. If the load-bearing walls are used, it is conceivable that the slab could be lifted with cantilevers and then the live load distributed with the effect of the load-bearing wall reaction included.

For the analysis of bending moments due to dead load and live load, the slab is divided into separate beams consisting of a row of columns and strips of slab bounded by the centerline of the slab on either side of the column row as shown (*Figure 2*). These beams are taken in the longitudinal and transverse directions of the building resulting in the two-way pattern for the reinforcing steel. If the slab is continuous the resulting beams may be analyzed by any method of indeterminate structural analysis—the more common being Moment Distribution, or Slope Deflection. The analysis for live load can be made directly if the load is definitely known. Live load is movable and can be placed in different panels. Critical moments should be analyzed with the live load placed in panels so that maximum critical moments are obtained.

After the maximum dead load and live load moments are obtained, they are divided into column strips and middle strips in each direction. A column strip is defined as two adjacent quarter panels on either side at the column centerline, while a middle strip is defined as a strip one-half the panel in width and symmetrical about the panel centerline. These moments are divided into column strips and middle strips in the percentages recommended in the A.C.I. Building Code. The area of steel required is then obtained and spacing and length of bars required determined in the usual manner.

The design of a lift slab is thus very similar to the design of any conventional flat slab. However, it should be pointed out that due to the fact that the dead load deflection characteristics of the slab are already present before the slab is fixed in position, certain unique conditions exist after the slab is fixed at the columns. If load bearing walls are used to support the cantilever span after lifting, and the deflection of the cantilever is not removed, the dead load will not react at the wall. The live load will react at the wall, however, and the resulting span must be provided with adequate steel to resist the resulting positive moment. If the deflection is removed from the cantilever, adequate steel must be provided to resist the resulting positive moment due to live load and dead load. The interior spans must also be adjusted for steel due to the change in end span support conditions.

Since lift slabs are broken into a maximum of 12 column lifts, and building slabs are often composed of many more columns, it is necessary to join the lifted slabs by some means. This can be done by forming a moment joint or a shear joint between the adjacent slab edges after the slabs are lifted and fixed on the columns. A moment joint is made between two sections of the slab that are lifted as cantilevers and hence have dead load deflection due to the cantilever action. If both cantilevers are the same length deflections are similar and a joint can be made which will be required to resist only live load moment in the now continuous span. Often, however, the cantilever spans which are to be joined are not the same length and the deflection of each span becomes different. In this case it is advisable to shore both spans up to the level of the slab at the column connection, and then pour the joint. Thus the joint and the entire span length must be reinforced for the effects of the now continuous span for both dead load and live load. Thus there is an increase in positive steel. However, the steel at the cantilever support supplied for lifting is now, in the final position, usually adequate for negative moment with dead load and live load.

When the slab is raised to its final position it is fixed to the column by means of shear plates welded to the column and to the exposed base of the lifting collar as shown (*Figure 3*). The length of the plates and corresponding amount of weld is determined by the amount of load transferred to the column and the allowable shear stress in a welded joint. These shear connections are usually plates placed on all four sides of a square or rectangular column or bent plates fitted to the curvature of a pipe column.

footings and foundations

The design of footings and foundations for a lift slab structure is similar in all respects to the design of footings and foundations in a conventional building. Many lift-slab buildings are designed with curtain or nonload bearing walls. This means that the entire dead load and live load is taken by the columns and must therefore be transferred directly to the ground by the footing. Thus footings often become large and their design of major importance.

The first step in the design of the footing is to determine the condition, type, and bearing capacity of the soil beneath the footing and in surrounding areas. This determination is important and should be done thoroughly. After the bearing capacity of the soil is known, the size, the steel areas required, and the thickness of footing can be determined. If the footing is deep, the load can be transferred from the column to the footing by means of a pedestal. Usually lift-slab construction is done with steel columns. In order to transfer stress from the steel columns to the concrete footing, a steel bearing plate is welded to the column base and the plate is fastened to the footing or pedestal by anchor bolts embedded in the concrete. In order to plumb columns, bolts are placed under the bearing plate and are used for ease in aligning. After the column is straight this area is grouted in with a fast-setting, high-early strength grout (*Figure 3*).

It is highly imperative that full fixity be obtained at this joint because of the critical condition of the column during the initial lift.

The joint between concrete columns and footings are identical with usual design criteria.

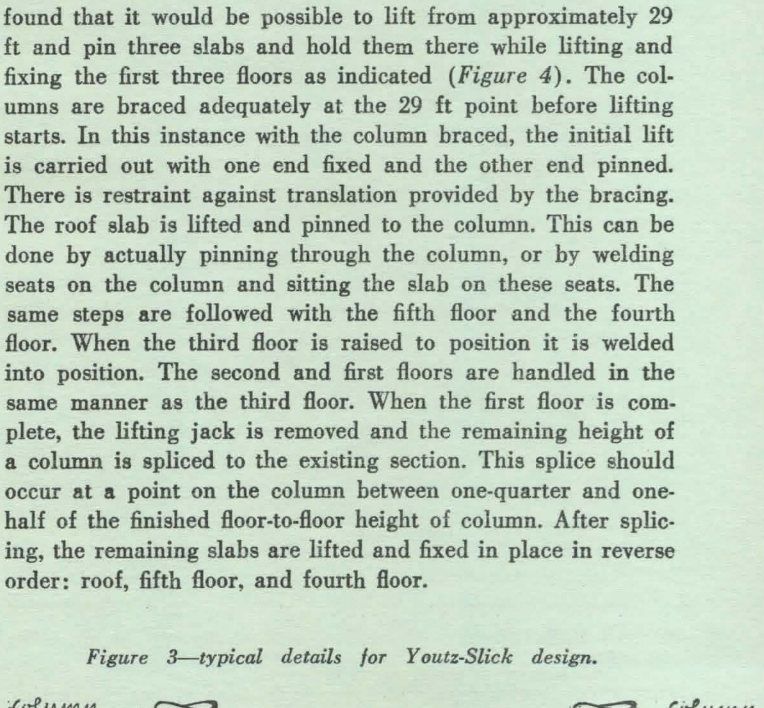
In some areas of the country it is necessary to interconnect the footings. This is also done in the usual manner.

The over-all importance in foundation work cannot be overemphasized. This is not only true in Youtz-Slick construction, but in any construction. Adequate provisions should be made for complete subsoil investigation. In lift-slab, where the entire load of the structure is usually taken by isolated footings, the importance cannot be overemphasized.

multistory and rigid frame analysis

The Youtz-Slick Method of Building Construction is not limited by any considerations to one- or two-story construction. It is entirely possible that 10 stories could be lifted and still be structurally sound and economical. The proposed lifting plan for a six-story office building is indicated by straight line diagrams (*Figure 4*). The columns are on 18-ft centers and the slab is $6\frac{1}{2}$ in. Of prime concern, of course, is the stability of the columns when the total length of column from roof top to footing is 54 ft. It was found that a column formed from two angles into a box shape with a nominal 8 in. by 8 in. section was adequate in the final loaded condition. It was felt that a section larger than that would become uneconomical in the final overall cost picture. When lifting loads were analyzed, it was found that it would be impossible to lift the roof slab the entire 54 ft and fix it. However, after a few trials it was found that it would be possible to lift from approximately 29 ft and pin three slabs and hold them there while lifting and fixing the first three floors as indicated (*Figure 4*). The columns are braced adequately at the 29 ft point before lifting starts. In this instance with the column braced, the initial lift is carried out with one end fixed and the other end pinned. There is restraint against translation provided by the bracing. The roof slab is lifted and pinned to the column. This can be done by actually pinning through the column, or by welding seats on the column and sitting the slab on these seats. The same steps are followed with the fifth floor and the fourth floor. When the third floor is raised to position it is welded into position. The second and first floors are handled in the same manner as the third floor. When the first floor is complete, the lifting jack is removed and the remaining height of a column is spliced to the existing section. This splice should occur at a point on the column between one-quarter and one-half of the finished floor-to-floor height of column. After splicing, the remaining slabs are lifted and fixed in place in reverse order: roof, fifth floor, and fourth floor.

Figure 3—typical details for Youtz-Slick design.



Step 1

(1) Erect column 29'
(2) Pour slabs on base slab
(3) Brace column at 29' for lifting

Step 2

(1) Raise 6,5,4, in that order and pin
(2) Raise and fix 3
(3) Raise and fix 2
(4) Raise and fix 1

Step 3

(1) Remove lifting jack from A
(2) Spike column at A to final height
(3) Replace lifting jack
(4) Place top bracing and remove intermediate bracing

Step 4

(1) Raise and fix 6
(2) Raise and fix 5
(3) Raise and fix 4
(4) Remove bracings

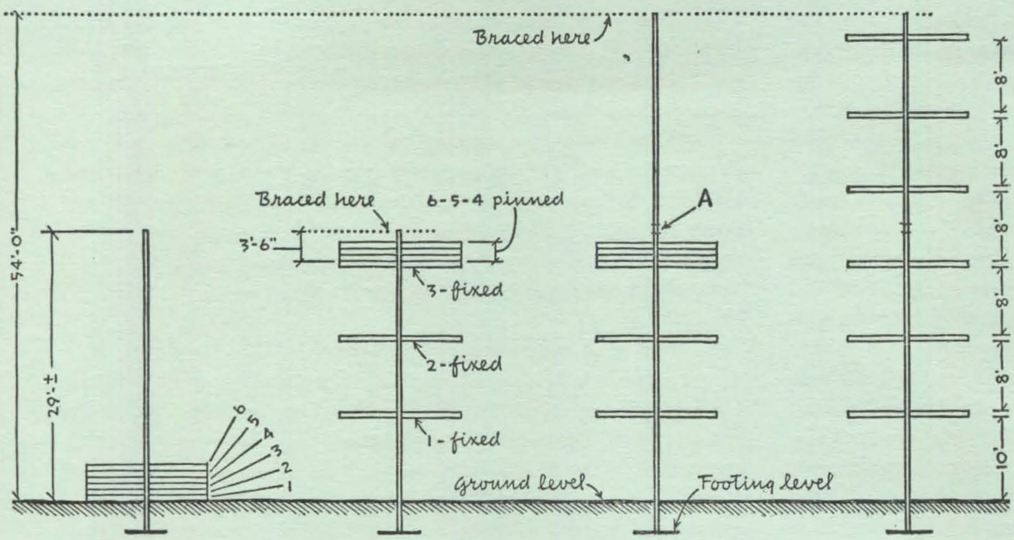


Figure 4—lift procedure for a six-story building.

During lifting, certain precautions should be taken; adequate provision against wind acting on the exposed slab edges should be maintained, particularly when the upper slabs are pinned. Adequate bracing during the initial lift should exist so that buckling does not occur at any time. It is necessary to check column strengths for all conditions of loading, including the final loaded condition.

The rigidity of multistory building is of prime importance. The wind load and the resisting stresses should be calculated for the finished building as well as during erection. The actual analysis for wind stresses is solved differently for every building because of building codes, height of building, and the width and length of building. However, certain fundamental investigations should be made. These investigations would, of course, be more critical across the short direction of the building where the wind forces are offered the large exposed surface area of the long dimension. The prime concern is the connection made between columns and footings. The bolts and welded connections should be of sufficient strength to take the added horizontal thrusts due to wind. When the building resists wind pressure it acts similar to a cantilevered truss and, of course, is held in position by the vertical load and the connections at the base. Generally, there is no danger of the building overturning, but racking of the geometrical frame must be carefully checked. The racking tendency is resisted by the stiffness of the columns, and slabs acting as a bent; hence an adequately rigid joint must be provided at the column-slab connection. This is done by welding the collar directly to the column on top and bottom, as well as the shear connector provided, as mentioned previously. In order to insure even greater rigidity, it is suggested that the reinforcing in the slab be welded to the collar wherever practical. Racking tendencies due to horizontal load can also be aided by shear walls constructed in the direction of the short dimension of the building. Partitions and exterior walls also aid in the reduction of racking; however, this resistance is variable and should not be counted on too heavily. The horizontal displacement of one story relative to the next should be considered and the columns checked to insure that they are capable of resisting this displacement.

The Youtz-Slick Lift-Slab Method is applicable to multistory construction; certain elementary precautions must be taken, of course, but the method lends itself admirably.

analysis of a typical two-story building

A two-story building erected by the Youtz-Slick Method will be analyzed in some detail. The floor-to-ceiling height of the first story is 9 ft and the floor-to-ceiling height of the second story is 8 ft 6 in. Flat-slab design will be utilized and walls are non-load bearing. The over-all dimensions of the building are 113 ft by 75 ft; column spacings are shown (*Figure 2*). The slab marked LIFT SLAB I (*Figure 2*) will be analyzed.

Design data:

Concrete—3,750 psi @ 28 days, unit weight 150 lb per cu ft

Steel —reinforcing bars, A.S.T.M. A-305-49
—collar steel-cast steel, S.A.E.-1030

Live load
—roof .... 20 lb/ft²
3-ply tar & gravel.......... 5½ lb/ft²
—floor .... 50 lb/ft²

Depth of slab

From A.C.I. Code....... $\frac{L}{36} = \frac{22 \times 12}{36} = 7\frac{1}{3}$ or $7\frac{1}{2}$ in.

(This value will be checked for shear and compression.)

Design procedure:

Column design:

Column height

9' 0"	1st floor to ceiling height
8' 6"	2nd floor to ceiling height
1' 2½"	thickness of roof and floor slab
2"	height above final roof elevation for jack seat
8"	distance below ground-floor elevation to top of pedestal
19' 6½"	

Maximum column dead load for lifting

Column B-2 or C-2 (*Figure 2*)

Contributing area 21' x 21'=441 ft²

$$\text{Dead load} = \frac{7.5 \times 150}{12} = 93.7 \text{ lb/ft}^2$$

Total load on column=441 x 93.7=41,400

plus 5% initial impact = 2,070

43,470

∴ Total load for lifting initial slab is 43,470 lb.

Column section:

Assume 5-in. standard pipe column @ 14.62 lb/ft

$$I = 15.16 \text{ in.}^4$$
$$A = 4.3 \text{ in.}^2$$
$$r = 1.88$$
$$l = 19' \, 6\tfrac{1}{2}'' = 234.5 \text{ in.}$$
$$\frac{l}{r} = \frac{234.5 \times 2}{1.88} = 250$$

Since the $\frac{l}{r}$ ratio taken as a free-standing column is high, the Euler equation for this column condition is used to determine the adequacy of the column section assumed:

$$P\ (\text{critical}) = \frac{\pi^2 E I}{(21)^2} = \frac{\pi^2 \times 29 \times 10^6 \times 15.16}{4(234.5)(234.5)} = 19{,}600 \text{ lb}$$

This section is obviously unsatisfactory because the critical buckling load is indicated to be 19,600 and the lifted load is 43,700 lb.

Assume 8-in. standard pipe column @ 24.7 lb/ft

$$I = 63.35 \text{ in.}^4$$
$$A = 7.265 \text{ in.}^2$$
$$r = 2.95$$
$$l = 19' \, 6\tfrac{1}{2}'' = 234.5 \text{ in.}$$
$$\frac{l}{r} = \frac{234.5 \times 2}{2.95} = 159$$

Thus

$$P\ (\text{critical}) = \frac{\pi^2 \times 29 \times 10^6 \times 63.35}{4(234.5)(234.5)} = 83{,}500 \text{ lb}$$

Thus, the critical buckling load on this section is 83,500 lb. A factor of safety against buckling of $\frac{83{,}500}{43{,}470} = 1.88$ exists, since the height of lift is small and wind thrusts on the slab edge is low, this section will be used.

The anchoring of the column to the footing is shown (*Figure 3*). The bolts and weld are designed according to conventional methods. The column should then be checked in the final loaded condition:

Load. . roof	—dead load	41,400
	live load	11,050
2nd floor	—dead load	41,400
	live load	22,100
		115,950 lb

Length of free span = 116 in.

$$\frac{l}{r} = \frac{116}{2.95} = 39.4$$
$$\frac{P}{A} = 17{,}000 - .485 \frac{(116)^2}{(2.95)^2}$$
$$\frac{P}{A} = 16{,}230 \text{ psi allowable}$$
$$\frac{P}{A} = \frac{115{,}950}{7.265} = 16{,}000 \text{ psi actual}$$

Thus, this section is satisfactory in the final loaded condition.

Shear analysis at the collar:

Allowable shear = .025 f′c = 93.5 psi

Maximum reaction at second floor = 63,500

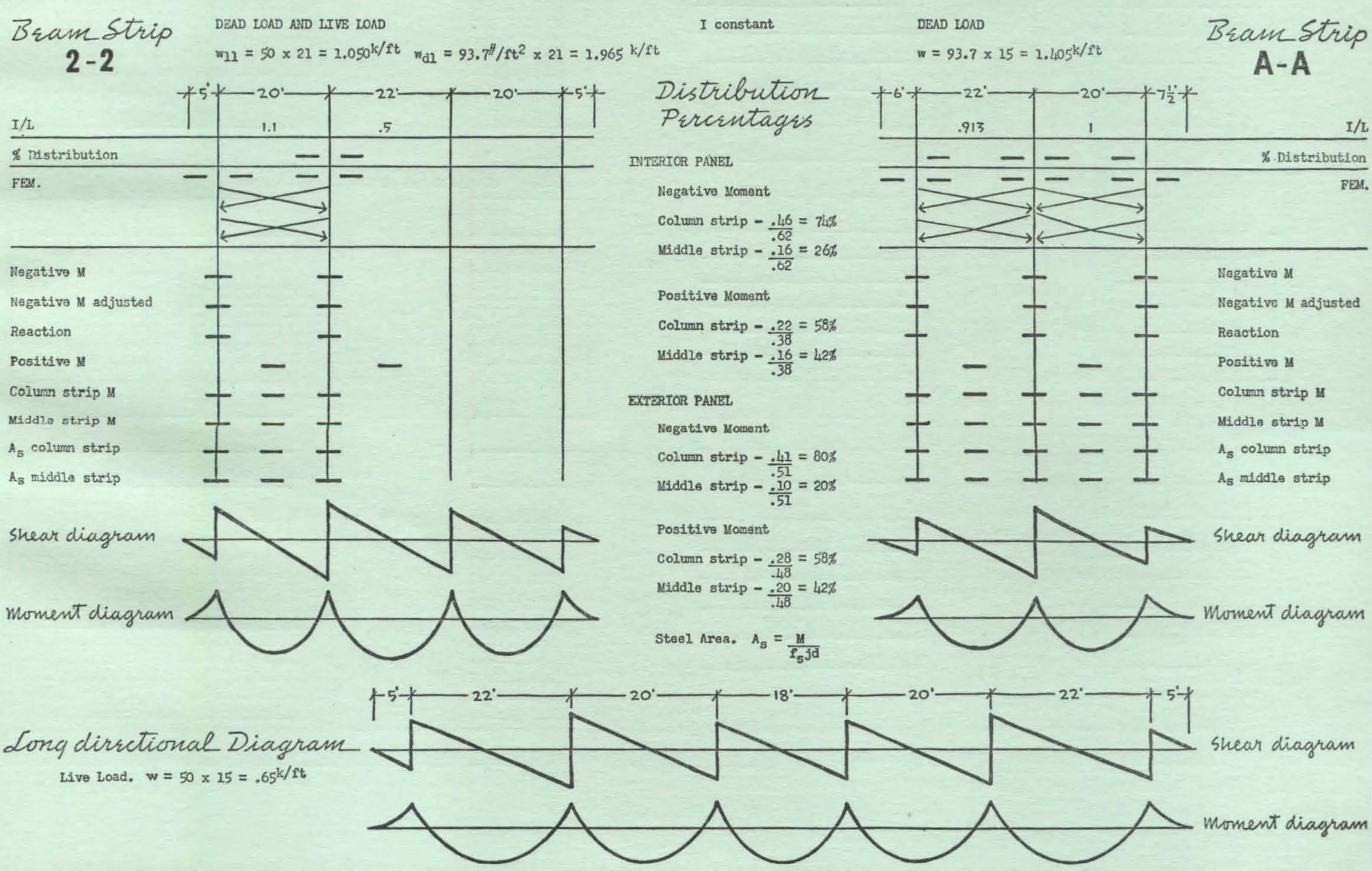
Effective depth of slab = $7\tfrac{1}{2} - 1\tfrac{1}{2} = 6''$

Assume 20″ x 20″ square collar

Thus $v = \dfrac{V}{bjd}$ $V = 63{,}500$

$$b = 4(20 + 2(6)) = 128''$$
$$j = .875$$
$$d = 6''$$
$$v = \frac{63{,}500}{128 \times 6 \times .875} = 94 \text{ psi}$$

Figure 5—design sheet.



Thus, a collar with a base plate 20 in. by 20 in. will be used. If a concrete with less strength was used it would be necessary to increase plate size or increase the depth of slab. It would also be possible to design stirrups to take the added shear if it was so desired.

design of the reinforcing steel

As outlined in the general discussion of flat slabs, the slab is divided into individual two-way interlocking beam strips as shown (*Figure 2*). In this slab, beam 2-2 at the internal section of the slab will be analyzed along with beam A-A, an exterior beam strip.

The various loading conditions analyzed using Moment Distribution and taking full account of symmetry are indicated (*Figure 5*). As shown, the conditions analyzed include investigation of dead load, and following the provisions of the A.C.I. Building Code, the live load condition with all panels loaded simultaneously. No account is made in this analysis for the added stiffness contributed by the lifting collar at the supports; however, many designers may take this stiffness into account. The critical section for positive moments is taken at the center of the spans; the critical sections for the negative moments is taken at the column line with a reduction in negative moment allowed, based on a critical section at the center of gravity of the lifting collar.

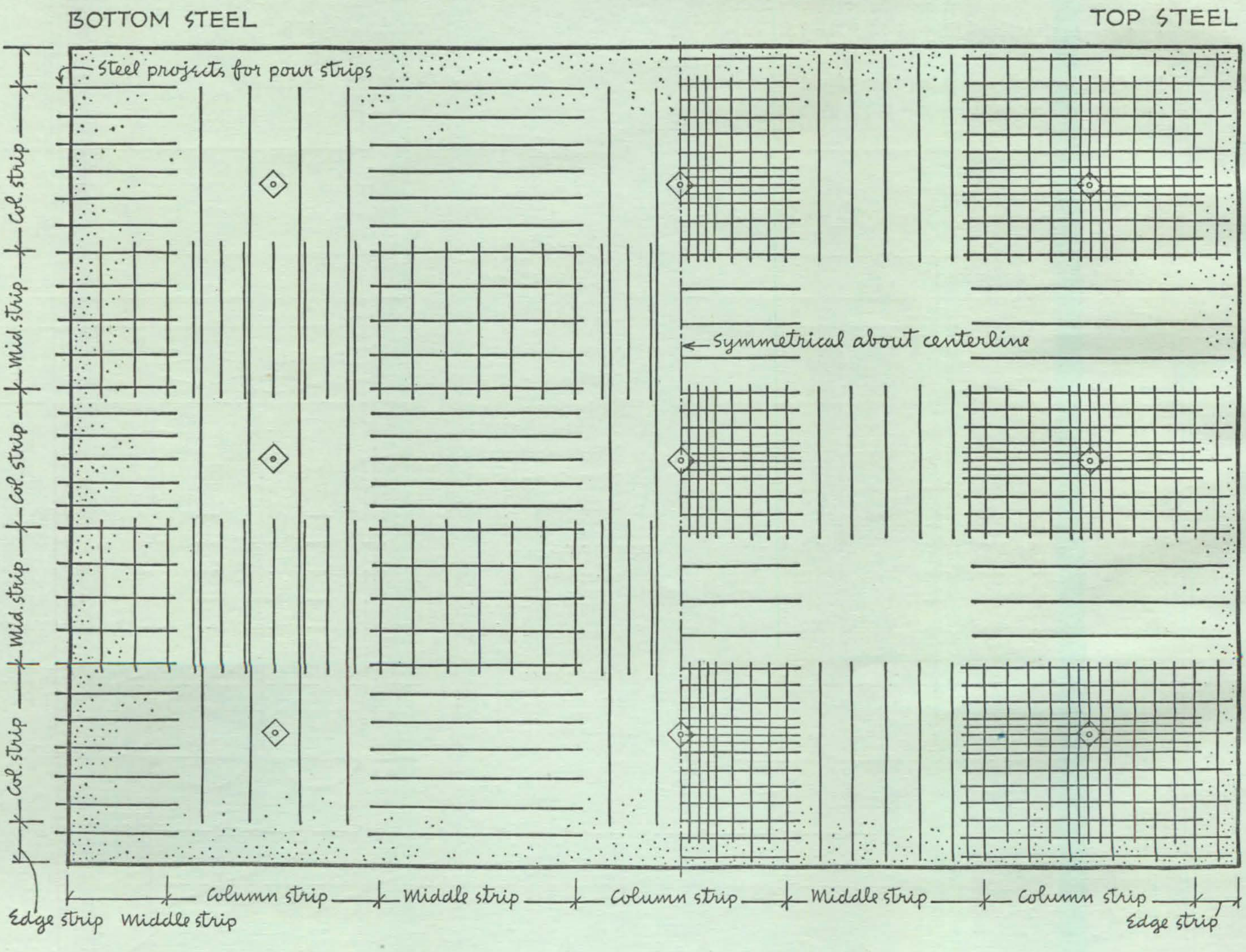
After the critical moments are obtained, they are divided by percentages of total moment into column strips and middle strips according to the ratio of specified coefficients in the A.C.I. Building Code. The areas of steel are then obtained and divided into the reinforcing bars required. It should be pointed out that the slab is designed as a complete unit in the long direction for the live-load condition. This is due to the fact that the two lift-slabs are joined by a moment joint, and the resulting continuous span must include steel to resist positive live-load moment at this point. Steel in the column strip in line with the collar is carried continuously across the collar.

The compressive stress and the bond stress developed in the concrete is then determined. It is realized that neither of these values obtained are true values because no provision has been made for the biaxial bending condition that actually exists.

Openings in the slab may be provided if provision is made for the total positive and negative moments in that panel. It is suggested that openings should not be cut in the slab in the immediate area of the column.

The remaining design of the structure is then completed and a Youtz-Slick building is completely designed.

Figure 6—typical slab-steel layout for lift slab.



The Architect and Public Relations: 5 local publicity

By Asher B. Etkes and Raymond Dodd

Making newspaper friends and influencing editors is of basic importance to the architect seeking local or national recognition. On it depends the success of his publicity or public relations campaign.

To the uninitiated (and this includes most architects) the newspaper office is an awesome never-never land peopled with characters from Grade-B movies. On better acquaintance, the newspaper office is revealed as a hard-working shop staffed by industrious individuals whose only deviation from the norm is a bright talent in recognizing and presenting news.

Approaching them with a story that offers no real news can be a cardinal sin if you're involved in creating publicity. They can spot self-aggrandizement at forty paces—a kiss of death, publicitywise, for the local offender. Never compromise for anything less than honest news, when you call up or visit an editor and announce, "I have a story."

newspapers
radio
television

What constitutes news has been described in a previous article as an incident which excites conversation or is of special interest to either the general public or a special segment of it. A newspaper audience, made up of readers in a specific area, favors news about happenings within the community — things with which these readers have an affinity. Simply, the appeal of a good local story is familiarity.

Hence a building project in the community has definite news value. But whether you, the architect, become the focal point of interest depends largely on the type of project.

If it is a multimillion-dollar commercial building or housing project of conventional design and construction, the newspapers will be more interested in its size and cost than in your creative role. On the other hand, if the project offers excellent evidence of imaginative design, novel arrangement and radical use of materials, the editorial spotlight is more apt to fall on the planner; if you help guide it.

Newspaper readers will want to read how and why you designed the project; first, because the job is a good one; second, because you are one of their neighbors. Your fellow citizens show a sense of personal pride in the outstanding accomplishments of their neighbors, especially if those talents win national recognition.

Hence, the scope of a local publicity program is not limited necessarily to projects within the community itself. An award in a national competition, the appearance of your work in an important magazine or a commission for a prominent project other than in the community, are of definite interest to local newspapers. The real story interest is in you, the local boy who made good, rather than in the award of project.

Just to stress this point. An all-glass house of striking design built in Los Angeles will, of course, rate a picture and some modest space in Buffalo, N. Y.; but if you, the designer, live in Buffalo the story may swell to half a page or more. It's you that make it news.

Although newspapers devote considerable space to building—commercial, civic, or domestic—appallingly little is allotted to the architects who do the designing. Making news editors aware of the real role of the architect or apprising them of the interesting reasoning behind the planning of noteworthy projects is the first big effort in changing this picture.

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When you have a good story, whom do you approach on a newspaper and how? One thing for certain; don't use a social blackjack. You may be well acquainted with the business or advertising manager, even the publisher, but usually it's not smart to plant any story through them. Editorial staffs dislike throne-room orders insofar as news is concerned and that dislike can spread all over you and your present and future activities. It's wiser to make your approach through the right door and take pot luck.

Learning a few basic facts about how a newspaper operates will be helpful in finding that right door and the right person. Generally, the make-up of an editorial staff is similar on most daily newspapers; the size of the staff varies with the paper's size and circulation. A few editors may even double in brass.

On the average newspaper, the hard core of activity is the city editor. Generally he is the final arbiter of what local news—crime, politics, education, society, or real estate—reaches the pages you read. While he is an invaluable contact, frequently he is difficult to cultivate because of the high-pressure demands of his post.

Under his supervision are the departmental editors responsible for gathering news in fields in which you may be a potential story. They include the real estate editor, the school editor, and the feature editor—the last often in charge of woman's page stories.

From the standpoint of acquaintanceship, they're more accessible than the city editor and also more inclined to lend a helping hand to develop your story if it has news possibilities. Get to know them.

It's not difficult. For instance, if you have designed a house you consider unusual in appearance or arrangement, just pick up the phone, ask for the real estate editor and describe the project. He's anxious for news in his assigned field, so you can be sure he'll listen. If he likes what he hears, he may take details over the phone and request illustrations or he may arrange an interview with you in person. You can make this same approach by personal visit or letter but the telephone, the newsman's handiest tool, is adequate and faster.

The feature editor is your target if your house provides that certain something that connotes a "story twist." Feature stories are difficult to define but, say, you have designed a home with novel kitchen arrangement to accommodate a large number of new and novel labor-saving devices to cut housework to zero. The appeal here will be to housewives in general. Clever planning for a full basement workshop which can be converted in seconds into an attractive playroom will provoke male reader interest.

In the matter of selling a story to an editor, don't press too hard; newspapermen are allergic to blatant aggressiveness. Just marshal your facts, skim off the cream of the most interesting and report your potential story briefly. If the editor is interested, he'll ask for more details—plenty more.

As a matter of fact the demands of being the center of a story can be downright exacting particularly if the news you've created is important or "hot." Be prepared to answer a barrage of questions, cope with seemingly impossible demands of news cameramen. Never lose patience. Remember you turned it all on, that the newsmen are asking endless questions not to be exasperating but to whip together a good story—one in which you are the focal point.

Your personal association with newspapermen is the key to the success of your publicity endeavors. Be understanding, agreeable, and hospitable and you'll have won friends. Be patronizing to a reporter who fails to grasp an abstract point immediately or impatient with a cameraman who requests "just one more shot," and you can wind up a dead duck publicity-wise.

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The popular press party or organized conference offers another means of "breaking a story" and making personal contacts with members of the press. Few architects, however, have a valid excuse to sponsor one except to announce a new house design with an "open house" press meeting. Even here the architect is at a disadvantage unless he obtains full permission of the client to publicize the property. And if the client is an industrialist with a new factory, it's much more likely he'll be the host than the architect.

If circumstances are right to conduct a press party—or share the limelight in one—here are a few basic rules:

Don't play favorites. Invite *all* interested editors, give each the same news break, don't hold out an exclusive story angle for a favored newsman. Break the rules and your press party days are over.

Issue invitations early enough to assure a good audience; newspapers are run on rigid assignment schedules. Nail down all party details—food, drinks, and tips as well as press releases before raising the curtain. Loose ends can upset your guests as well as time schedule.

Save distribution of press stories and pictures until later if you plan a luncheon or supper. The newsmen are your guests and serving publicity along with the entree is poor hospitality with aggressiveness showing through.

Don't let one profitable venture endow you with heady success. Refrain from planning a return engagement until a decent interval of time has elapsed—and then only if your story has real news value. Editorial space in a newspaper must be earned; submitting anything less than your best may win you the ignoble tag of "publicity hound" —a term which is synonymous with "unwelcome."

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While the newspaper is the keystone of your publicity program on a local level, don't overlook another important medium—radio. If your area offers television, it provides still another string to your bow.

At first glance there seems little in the architectural field that would fit the formats of either radio or television but study carefully the program listings of your local stations—with special attention to the daytime show.

There are a vast number of shows—interviews, round tables and how-to-do sessions—aimed at women listeners and covering a variety of subjects. If you specialize in home design or in school construction, being heard or seen by this distaff audience is of major importance; its members influence decisions.

Getting before a mike or a television camera requires the same ingredient required by a newspaper editor: a good story angle.

As an architect, you're an expert in your field and hence good interview material. You are equipped to talk about houses—a subject dear to the hearts of housewife listeners. You can discuss design and arrangement for beauty and labor saving; the use of low-maintenance materials, proper color combinations, and the latest style trends in dwellings. There is a wealth of subjects at your fingertips.

If school design is your forte, your opinions on classroom arrangement, corridor traffic flow, window arrangement for the ultimate in seeing conditions, and the evolution of today's functional school are suggested for the forum or public service type of programs.

The architect is in a good spot to obtain interesting devices or contrive them: home models with removable roofs, a variety of façades, wings and outbuildings to demonstrate remodeling possibilities or architectural styles. Program directors will like them and so will audiences.

This brings us to the $64 question: How do you get on the air? In some instances it is difficult, frequently it's comparatively simple. Some program directors may welcome your material; others may be difficult to convince. There is no standard answer because of a wide variety of situations—time, sponsors, and personalities.

One thing for certain, it is more advisable to offer your services through a third person. Attempting to "sell" yourself, to convince a radio or television program director that your talents are just what his audience is waiting for, is difficult—not to mention embarrassing. Broadcasters are as suspicious of self-aggrandizement as newspaper editors.

That third person might be several people—a friendly editor with valuable radio contacts, a program sponsor, or your own public relations counsel. Also it could be your next-door neighbor or a fellow club member.

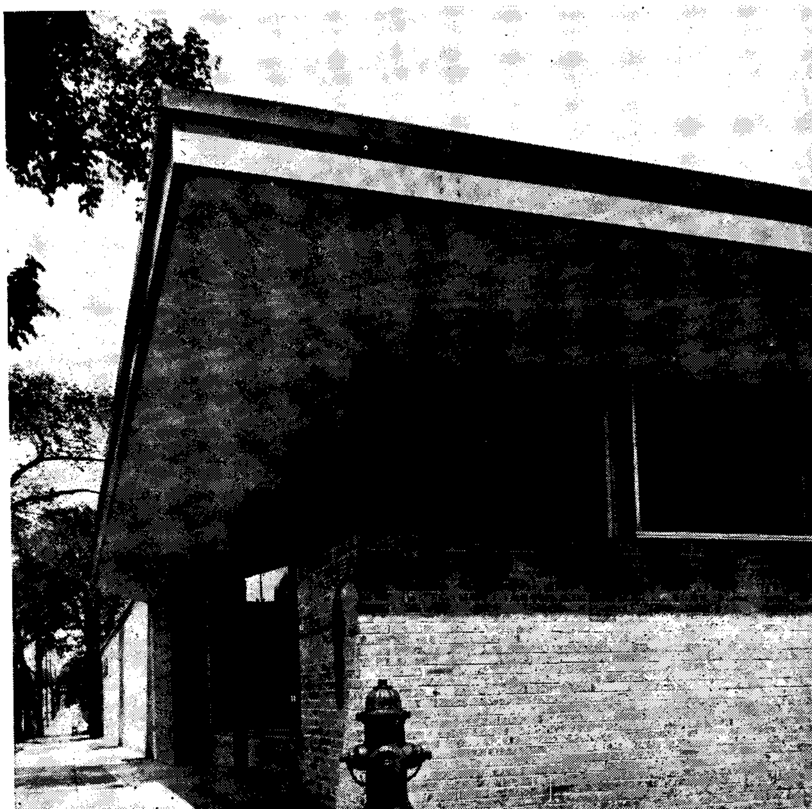
Like *newspaper editors, broadcasters* need daily material, will listen politely to almost anyone who can help fill their needs. And similarly they demand newsworthy material with a wide appeal.

Exactly what type of material any program director wants can be determined with the flick of the wrist. Turn on your set and listen or look; it's a surefire method of finding out.

office building - warehouse

location	Minneapolis, Minnesota
architects	Thorshov & Cerny, Inc.
architect-in-charge	Newton E. Griffith
engineers	Ralph D. Thomas and Associates, Inc.
general contractor	The Standard Construction Company

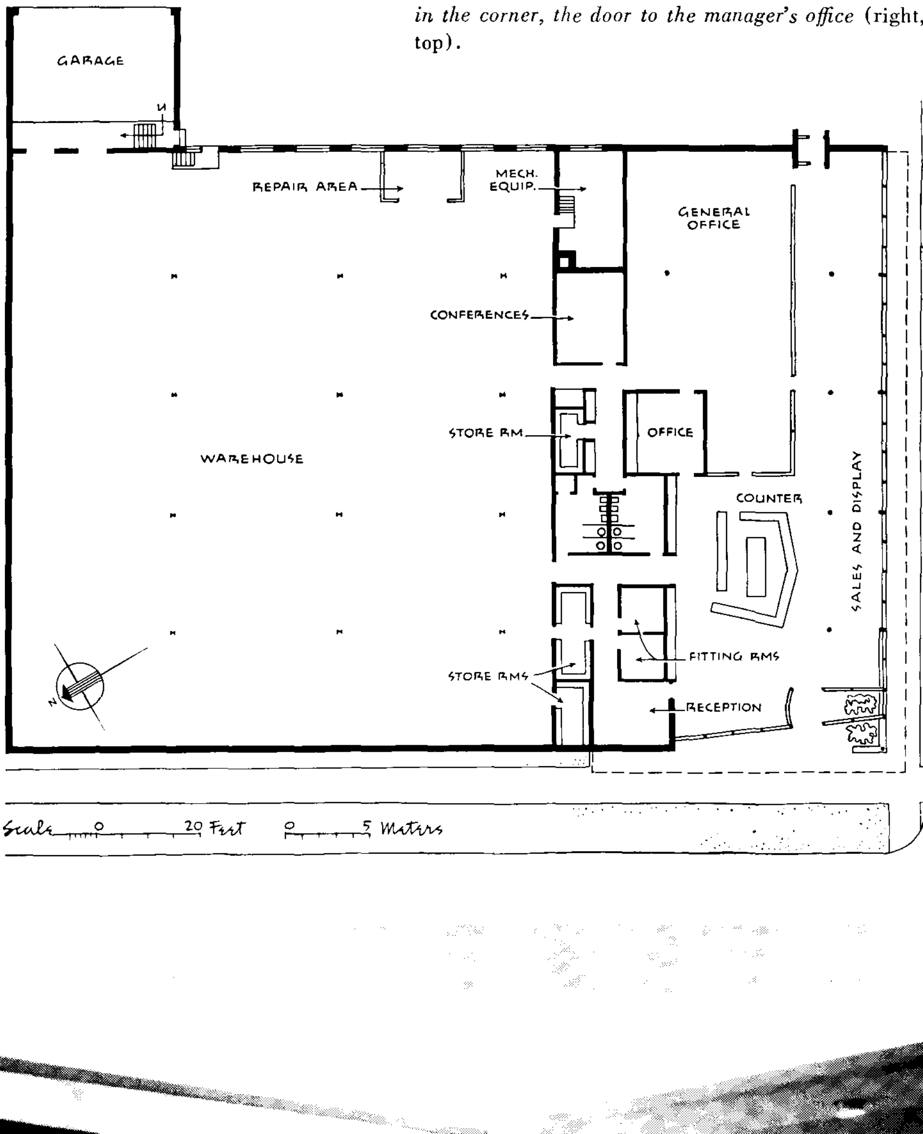
The Minneapolis branch of the A. S. Aloe Co., well-known medical and hospital supply house, is located at the northeast corner of a busy intersection, convenient to numerous hospitals and on the fringe of the city's business district. Basic elements are a warehouse, an orthopedic suite, office space, and a windowed display room extending the full length of the south front (top). *East of the building is ample, off-street parking and a loading dock serving the warehouse. Seen from the west* (above), *the windowless wall of the warehouse is at left; main entrance, at right. Chief exterior colors are the warm brick; metal roof fascia painted warm orange-rose, with snap line of black; and aluminum trim. Lettering and trademark are deep terra cotta.* Photos: Allen Downs

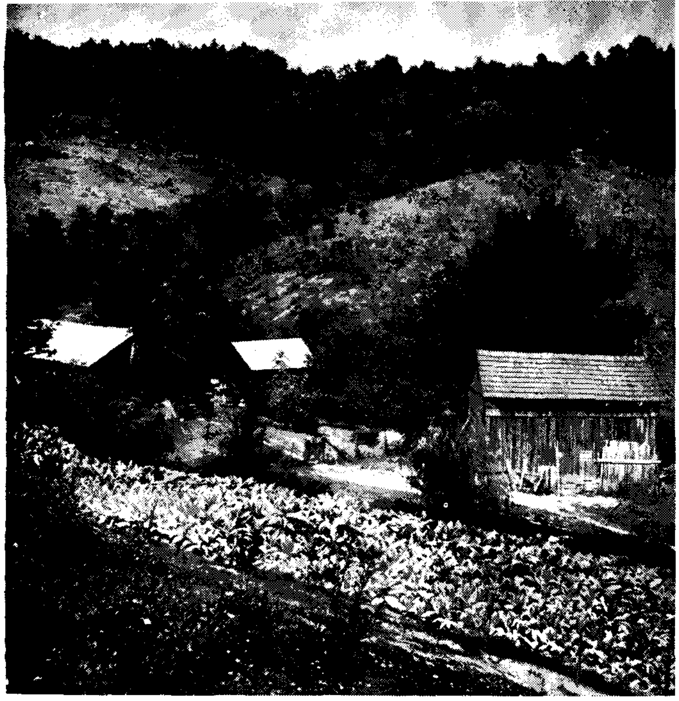


An unusual requirement in design of the display room (INTERIOR DESIGN DATA, *page 136*) was for a series of model rooms, in addition to attractive display backgrounds, for the varied items of interest to doctors, dentists, surgeons, hospital administrators, etc. This was accomplished by low partitions at right angles to the window wall, that still permit an unhindered view of the remainder of the room. Above the projecting display island and the clerical office space, a dropped ceiling contains accent spotlights as well as indirect cove lighting; over the office area, additional lighting is provided by recessed fluorescent fixtures. Interior colors use the company scheme—gray, yellow, and blue, plus accents of red. Natural-oak display cabinets have blue linoleum, gray-plastic laminate, or glass tops; wall cases are lined with blue velvet.

Structurally, the architects point out, "there is nothing unusual"—a simple system of steel beams, columns, bar joists, and steel deck, "chosen for economy and ease of erection." Walls are of brick, finished inside with plaster. Concrete block is also used, and interior partitions are of hollow tile, plastered. The flooring is asphalt tile; ceiling surfaces are plain or acoustic plaster. Sash in general are commercial projected steel, though frames of fixed windows and the entrance door are aluminum. The building is heated by steam, served by an oil-fired boiler, with continuous fin tube in office-display area.

The large photo (acrosspage) *looks east through the display room* (clerical area in background, left) *and out through rear door to parking lot. A more distant view* (right, below) *shows the projecting island display and contour of dropped ceiling. Looking along the north wall* (bottom page) *one glimpses, in the corner, the door to the manager's office* (right, top).





Highlander Folk Architecture . . .

The Highlander Folk School was founded in 1932 by a group of Southerners led by Myles Horton, the school's present head, a Tennessean who had trained for the ministry. Inspired by Danish folk schools where Horton had studied, the school was launched "to assist in the defense and expansion of political and economic democracy." Working chiefly with underprivileged groups, especially with farmers and laborers, it has encouraged industrial unions and invited representatives of the organizations to come to the school for sessions ranging from a week to a month.

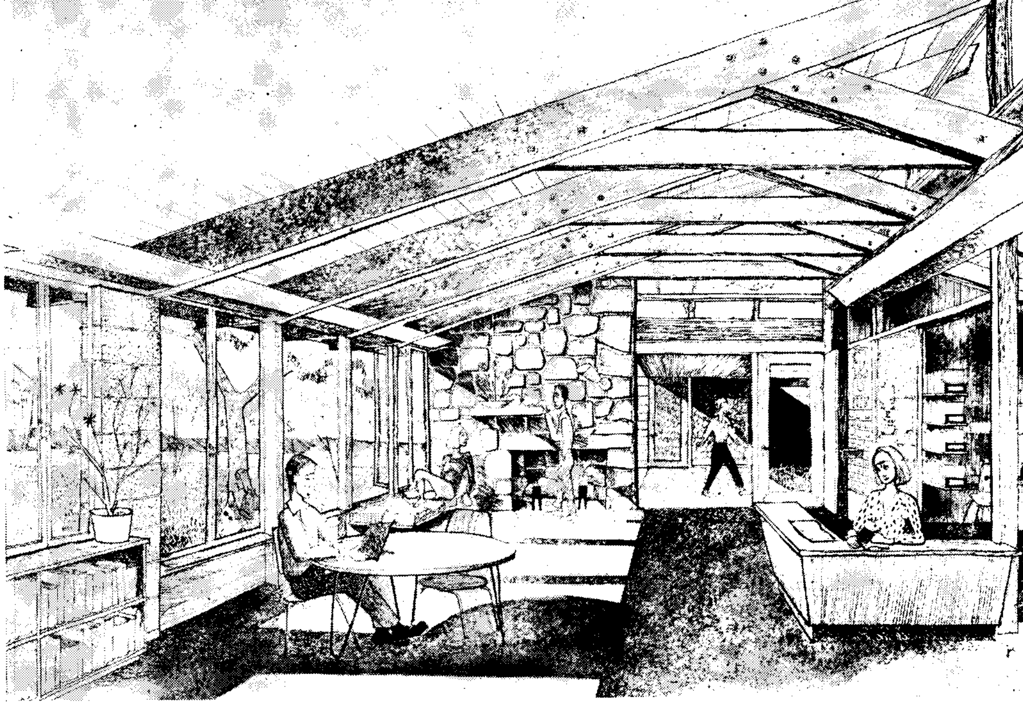
Purpose of these seminars has been to discuss common problems, improve organizational setups, and to train southern rural and industrial leaders for participation in a democratic society. A basic tenet has been to combat intolerance and to promote better understanding between rural and urban people and between members of all races, creeds, and, complexions. To accomplish these ends, in addition to the resident classes, staff members have frequently gone to communities where their help was needed on such matters, and the school functions locally as a rural settlement house, providing social, educational, and recreational services for all. In this latter category are the library and nursery school-community center buildings shown here. The buildings were designed by Carl Koch, Boston architect, and constructed by unskilled workers, both neighbors and those attending school sessions.

In the case of the library shown on the facing page, the architect reports that a fairly complete set of preliminary drawings were made and an interim perspective was sent to the school. "We received no further instruction to prepare working drawings," he reports, "and the next word we had was that the building was completed the following summer, using the preliminary drawings we prepared." Supervision was performed by a wise but untrained native.

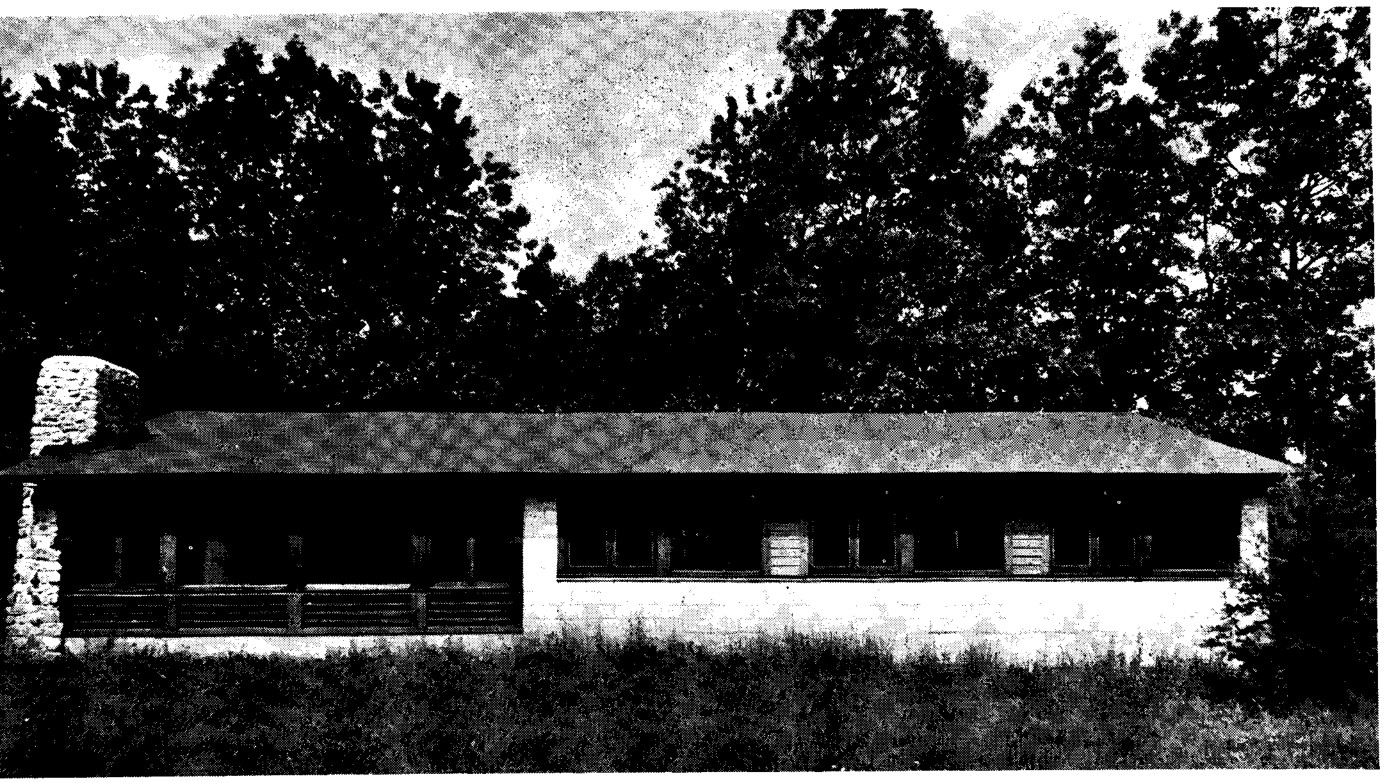
The program was simply to provide an economical structure with a reading room, lobby, desk room, and work space. The design approach centered around developing as simple a structure as possible, using materials immediately available. The structural system consists of bolted wood beams placed 6 ft o.c. and bearing on wood columns; a plank roof spans across the planking. Local stone, concrete block, and native lumber are the materials. Leon Lipshutz was associated on the design.

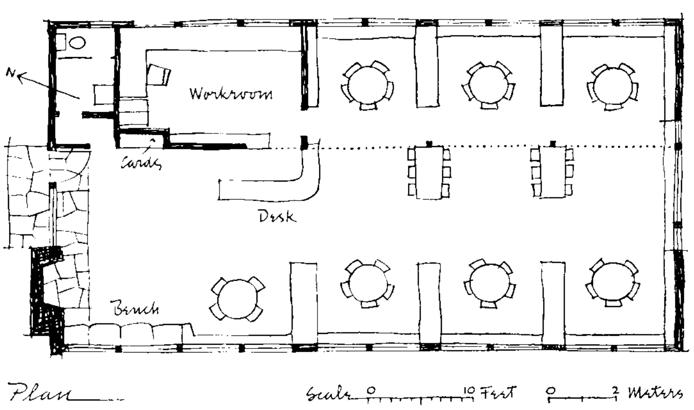
. . . a design experiment at an experimental school

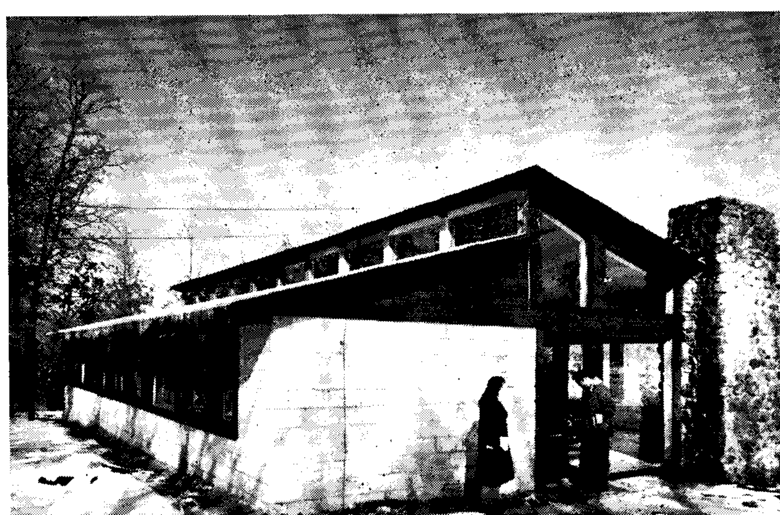
The school site is a rolling, sparsely wooded meadow, located on a plateau in the Cumberland Mountains, northwest of Chattanooga. The architect has prepared a complete campus plan that includes a classroom building joined to the library; an administration-recreation building, and a dormitory.
Photos: Emil Willimetz

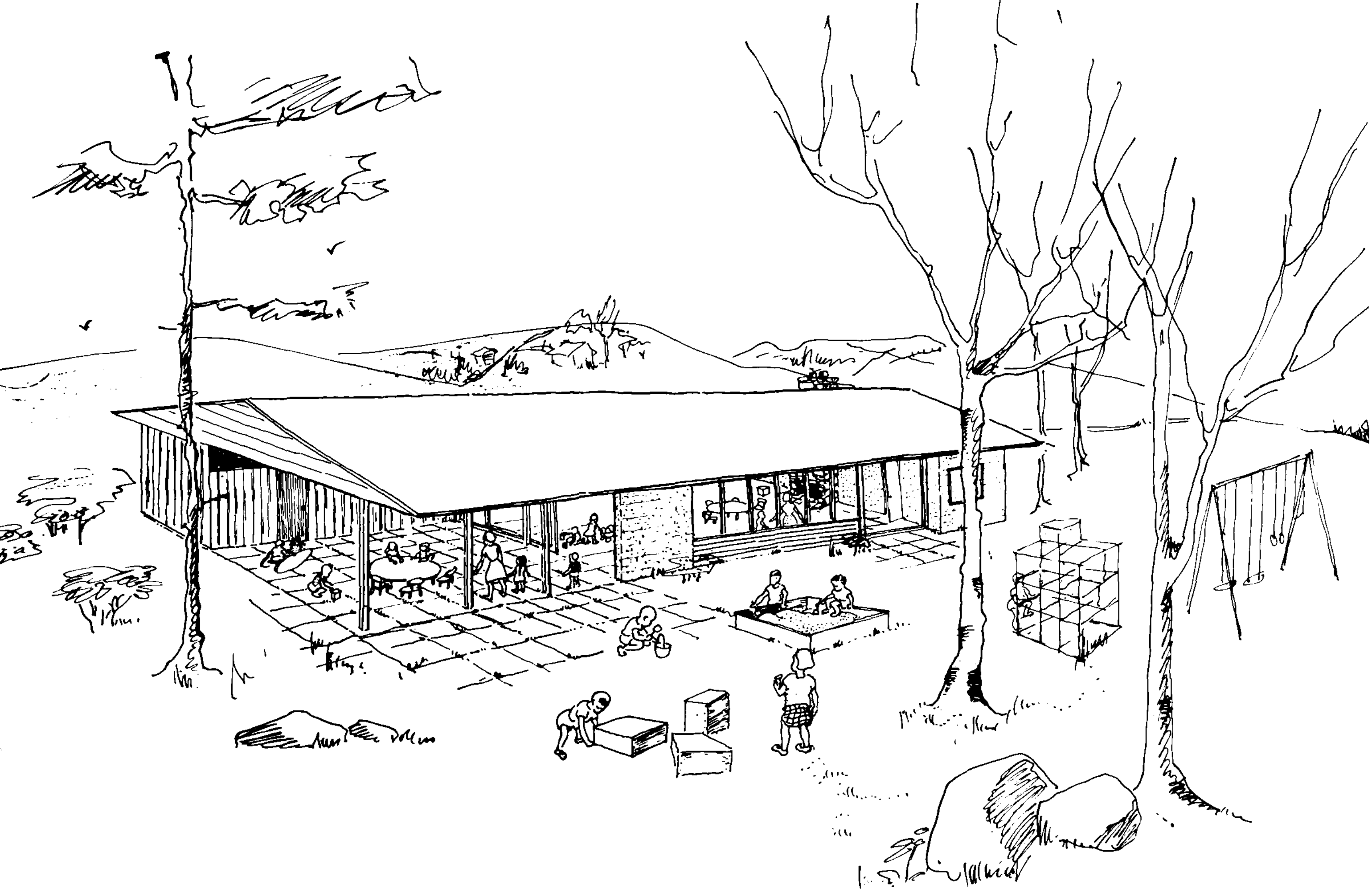


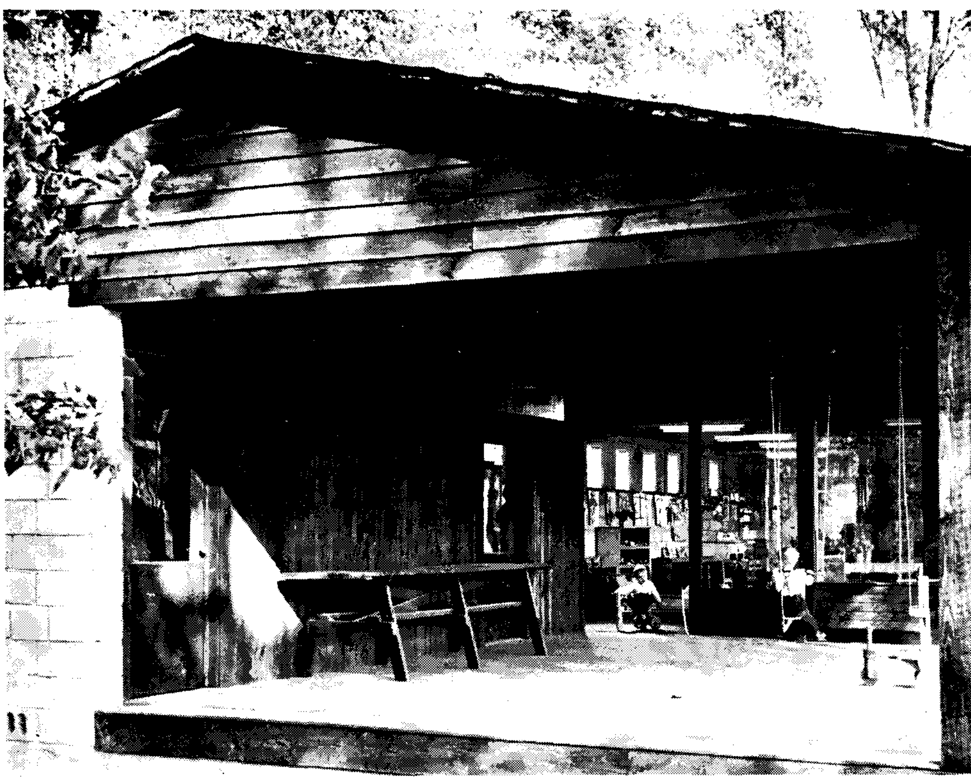
the library





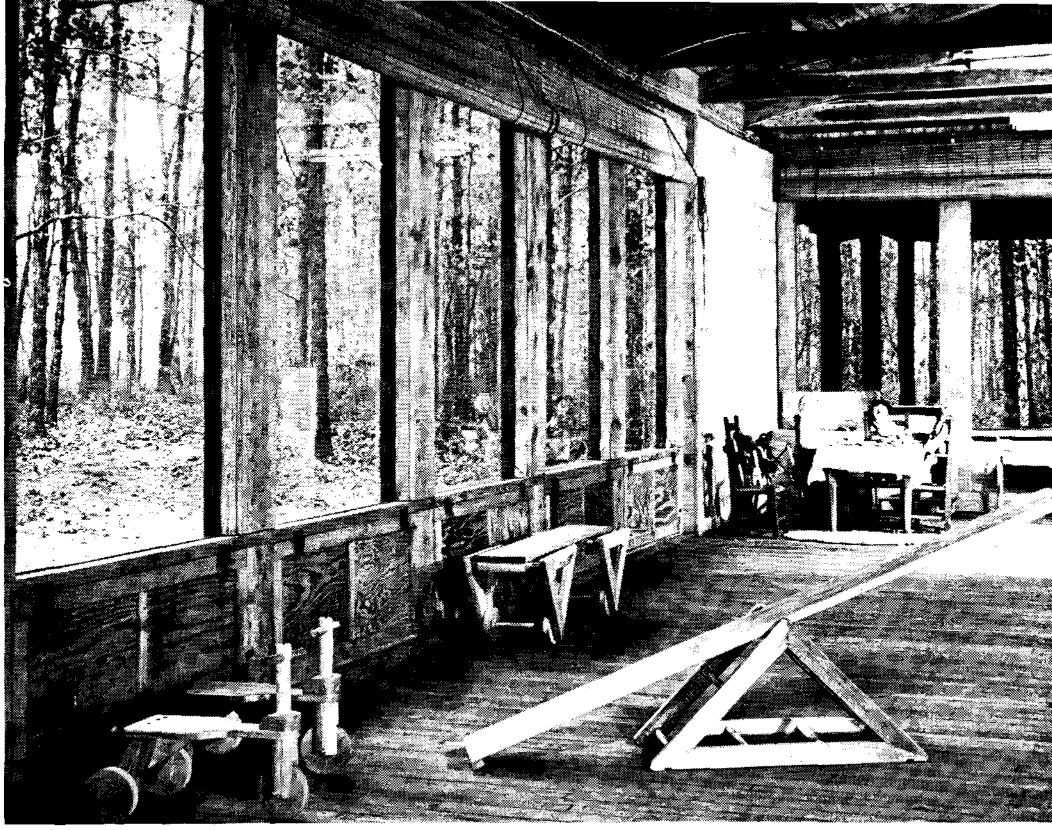




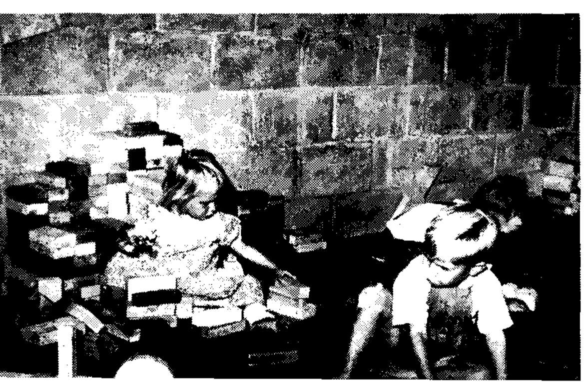


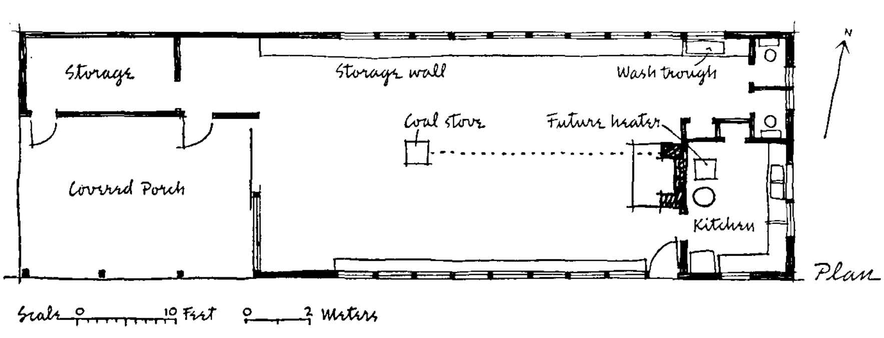
the nursery school

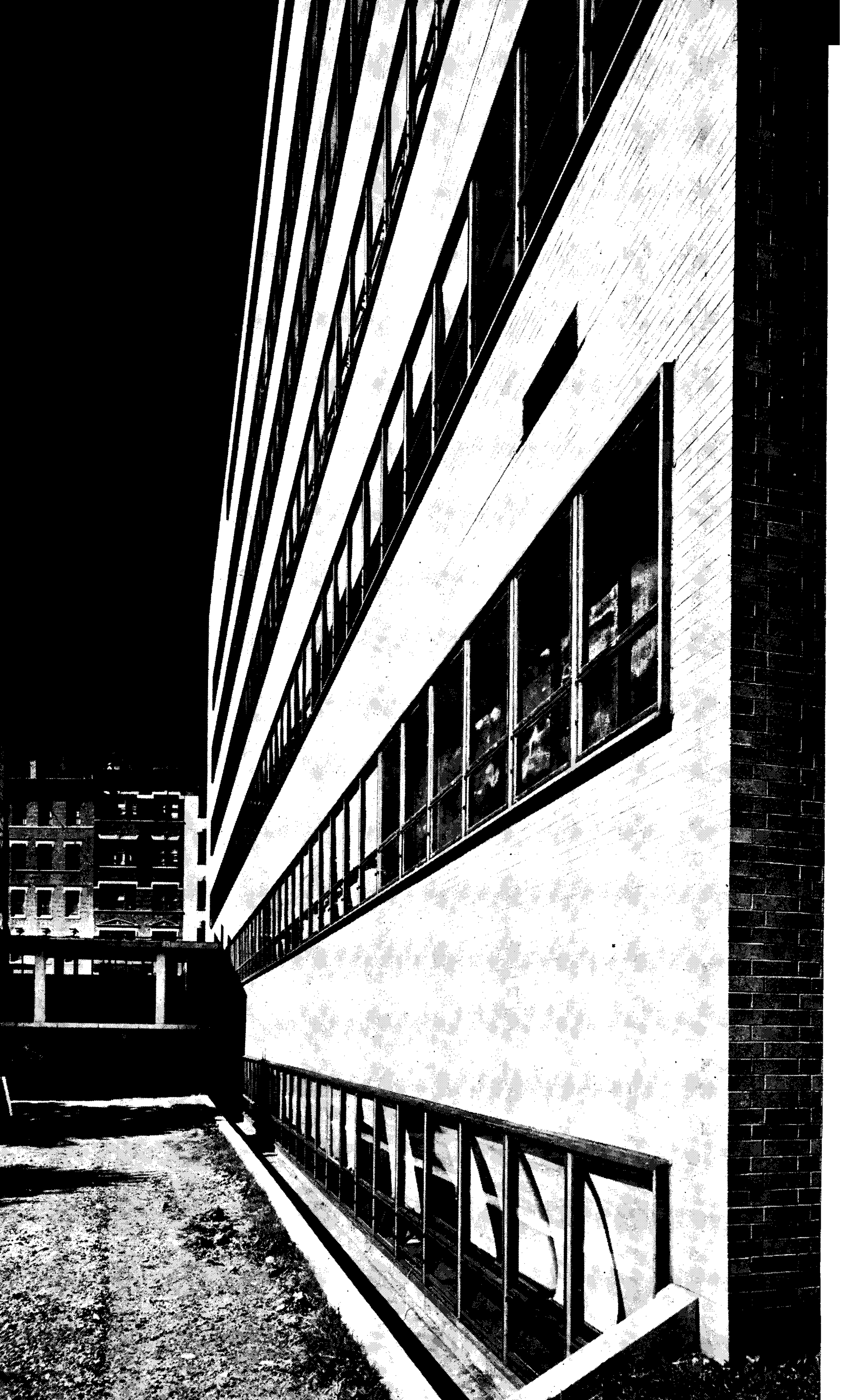
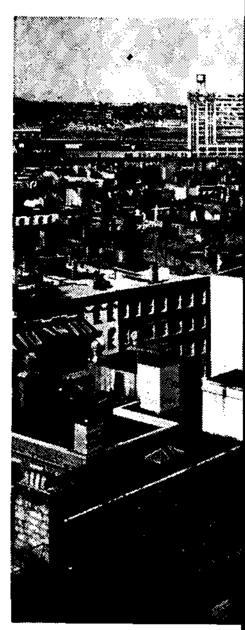
The building on these two pages is a multipurpose structure—a nursery school during the day and an adult-education and community social building (both local and student) at night. "The simplest conceivable structure" was the architect's goal —a building that could be built by summer students under supervision of a local carpenter-mason. Construction is similar to that of the library, though here trusses of light, stock wood members, 4 ft o.c., span the width and dictate the basic module. The big south windows are fixed, with ventilation through louvers below.



Choice of finishes, equipment, and accessories was left to the owner's decision. The building is in a flat, wooded area on the border of the campus that allows neighboring mountain families to reach the building without entering the school grounds; yet it is readily accessible for school use also. The heating system consists of a pot-bellied coal stove and a fireplace.





research building

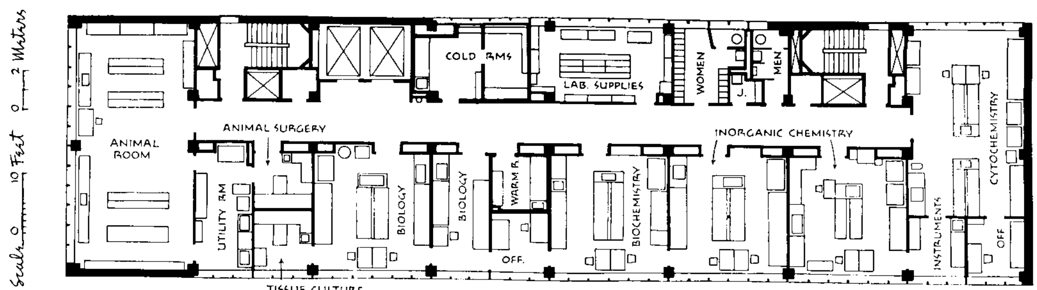
This newest building at the Massachusetts General Hospital is linked by a corridor to the oldest—the 1821 Bulfinch Building (foreground, photo at left). *Planned to house all of the hospital's extensive laboratory research, the major portion of the space is built on a modular pattern for conventional laboratory layouts, with flexibility for future changes stressed.* (Case study of entire hospital group, July 1951 P/A). Photos: Ezra Stoller, except as noted

client	Massachusetts General Hospital
location	Boston, Massachusetts
architects	Coolidge, Shepley, Bulfinch & Abbott
electrical engineers	Hixon Electric Company
heating-ventilating engineers	Office of Hollis French
general contractor	Turner Construction Company

research building

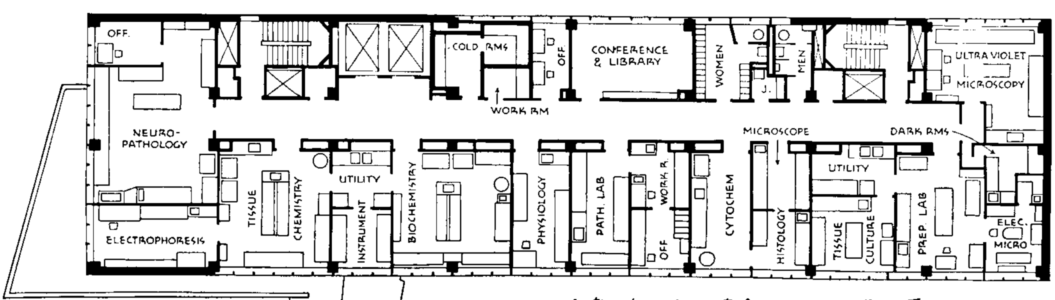
Designed with special current emphasis on research into the metabolic diseases of aging—heart disease, arthritis, and cancer—the six working floors of the air-conditioned building have labs along the west walls and across the ends; services, specialized rooms, and storage rooms line the east walls. In the basement is a general utility area and rooms for heavy apparatus.

The design approach was to develop a repetitive pattern of flexible, economical, laboratory modules. Result: 20-ft bays divisible into 10-ft units ("more economical than two 12-ft bays") and all mechanical service risers in each 20-ft bay ("more economical than in every 12 feet"). Utilities within each of the bays are distributed at the ceiling—except for wastes, which feed down within the unit. Thus, alterations are possible in one bay without disturbance to occupants below. This system also makes possible island work stations, which are required in the program. Strip windows are used for maximum light



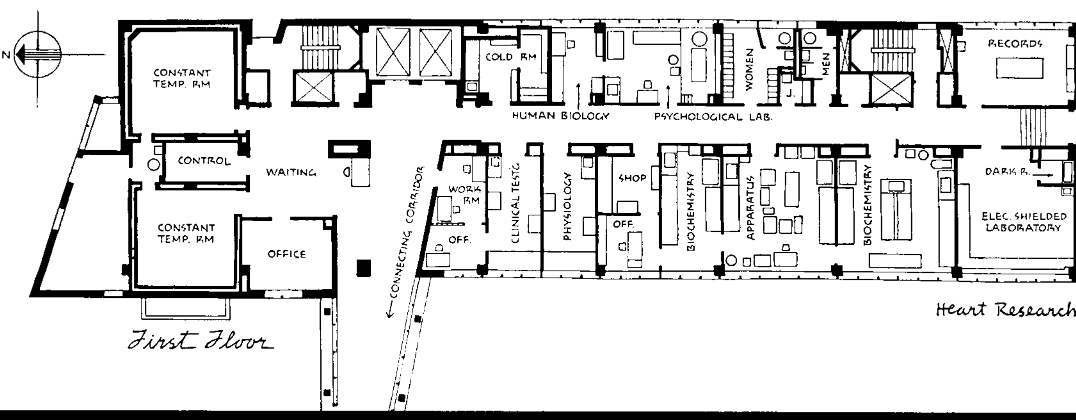
Third Floor

Cancer Cell Chemistry, Growth Studies, Inorganic Chemistry



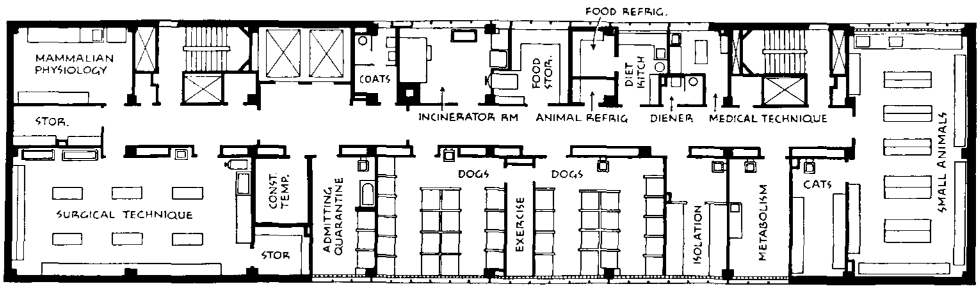
Second Floor

Arthritis, Gerontology, Connective Tissue Research

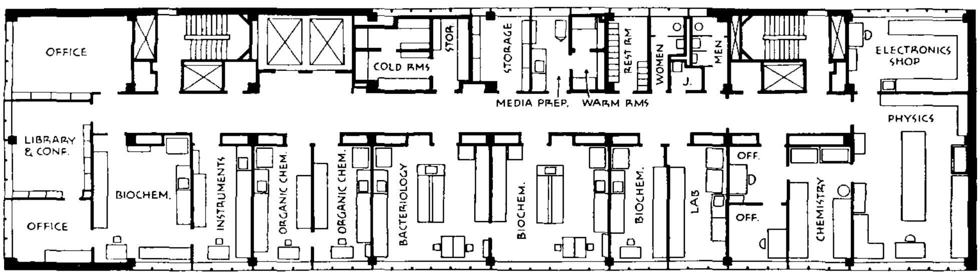


Heart Research

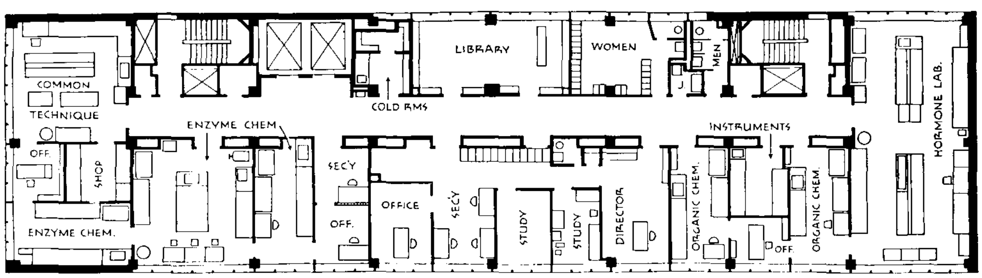
First Floor



Sixth Floor — *Animal Farm*



Fifth Floor — *General Biochemistry, Enzyme Research*



Fourth Floor — *Cancer Enzyme Chemistry, Organic Chemistry, Hormone Laboratories*

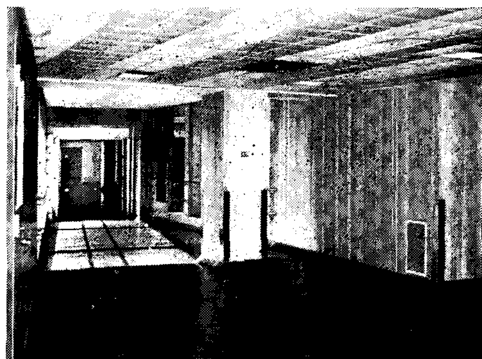
and flexibility in partition location. Off-center placement of the corridors allows maximum depth for most of the lab space.

Built on reinforced concrete footings, the frame is of steel, which was plentiful at the time and considered more adaptable than concrete to expected future alterations. Flat slabs span the 20-ft bays, with the exposed concrete forming continuous, smooth ceilings. Exterior walls of the building are cinder-concrete block, treated with a pore filler and painted. Floor surfaces are asphalt tile. In the corridors, acoustic metal pan ceilings are used, while lab ceilings are simply paint on concrete.

A two-pipe atmospheric steam-heating system uses fin tube radiant convectors, operating under zone control from outside weather compensators. Cooled, heated, and filtered air is supplied to all laboratory floors, with distribution ducts run on corridor ceilings, from which sidewall air diffusers serve adjacent rooms. In general air is exhausted through lab hoods, with duct work arranged for multiple-group system. There are five hoods on each exhaust fan, separate ducts running from each hood to the penthouse fans. All animal rooms have separate air-conditioning units; chilled water is supplied to central and self-controled units; refrigerating compressors are in the basement.

The lighting system is designed with a concealed grid system in the ceiling slab, the exposed pipe conduit allowing future relocation with minor change.

The typical larger lab (left) *occupies one entire 20-ft structural bay; numerous small labs and offices are two to the bay, or 10 ft wide; from window wall to corridor wall is approximately 25 ft.*



Some of the departments have their own libraries and conference rooms, such as the one on the fifth floor (above). *Joining the lobby of the research building* (right, above) *with the 19th Century Bulfinch Building is a glazed passageway* (right).
Photos of library and corridor: Bill Calvert

laboratory plumbing

by John Edmund York*

In addition to normal building services, a modern laboratory must be provided with some or all of the following services: steam, condensate, city water, nonpotable water, hot water, distilled or deionized water, high- and low-pressure compressed air, vacuum, gas, hydrogen, oxygen, nitrogen, hydrogen sulphide, waste lines, and refrigeration.

Laboratories may consist of a single room, many rooms in a specially constructed building, or intermediate arrangements.

The piping is an important part of a laboratory and should be given proper consideration in the preliminary stages of the design to avoid a makeshift appearance and to insure long, trouble-free service.

When building or equipping a laboratory it is always advisable to use the services of competent architects and engineers who are familiar with the special problems involved in this class of work. Before considering the general distribution system it will be advantageous to review briefly the individual services.

steam and condensate

Steam will generally be brought to the laboratory at higher pressures (*Figure 1*) than required for use within the building.

Pressure-reducing valves should be provided to deliver steam at pressures up to 15 psi for building heating, low-pressure laboratory services, and for heating water for washing laboratory glassware and equipment. The same pressure-reducing valve may be used for the latter two services.

Steam at pressures up to 30 psi may be required for stills and at the full available pressure for hot plates.

Condensate should be drained from equipment, mains, risers, and radiation through suitable traps and collected in a vented receiver from which it may be pumped back to the boiler.

Where frequent changes are not anticipated steam lines may be of black steel with welded joints, but where changes are probable screwed or flanged joints should be used.

Condensate lines may be of copper tubing with sweated joints or as described for steam lines.

water

City water should be supplied to all equipment which may be used for obtaining drinking water, washing of burns or wounds, preparation of food products or medical supplies.

Nonpotable water may be used for cooling and other services but no cross connections between city water and nonpotable water should be permitted.

Hot water may be supplied from a storage-type heater or an instantaneous-type heater (*Figure 2*). The latter will cost less, occupy less space, and can continuously supply hot water to the limit of its capacity, but it does not permit a close regulation of the temperature of the water as with a storage-type heater and requires larger steam supply.

For hot-water distribution through large buildings a gravity or forced-circulation system should be provided to insure delivery of hot water where needed without delay or waste of water.

With low buildings and long mains a small circulating pump should be provided on the return side of the system, to insure proper circulation. Sufficient water should be circulated to offset the heat loss through the system with a drop of not more than 5 to 10 degrees.

Water heaters and hot- and cold-water lines should be constructed of corrosion-resistant materials, preferably copper.

deionized and distilled water

For many laboratories mineral-free water is a satisfactory substitute for distilled

* *Registered Professional Engineer, Massachusetts and New York*

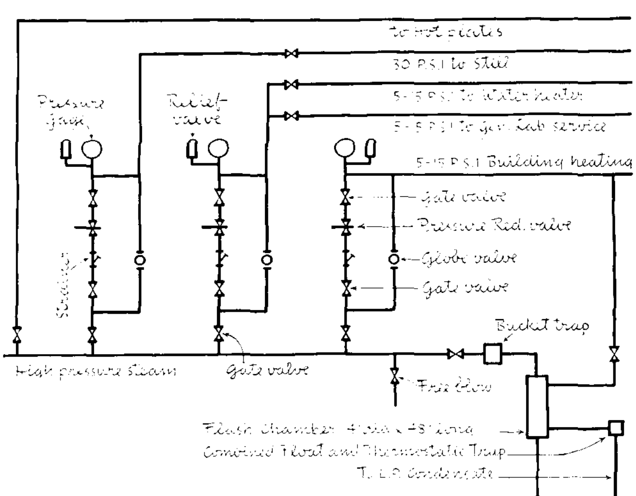


Fig. 1 STEAM SUPPLIES FOR LABORATORY SERVICES

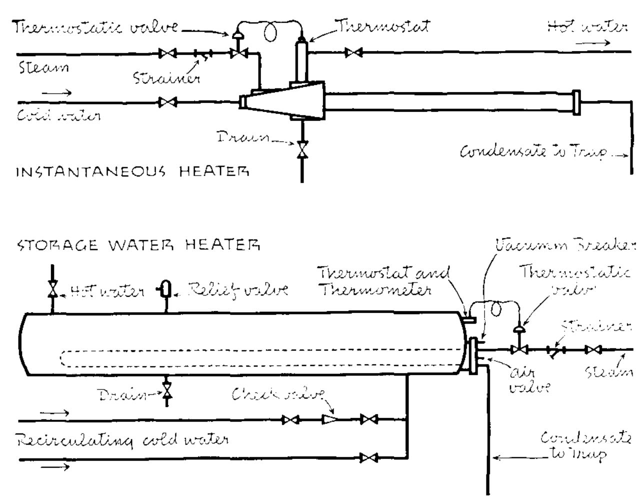


Fig. 2 COMPARATIVE INSTALLATIONS OF WATER HEATERS (SAME CAPACITY)

water and is much less expensive.

The equipment for demineralizing or deionizing water causes it to flow through two alternately arranged beds of cation and anion resins. The cation resin attaches the dissolved metallic ions to itself and replaces them with hydrogen ions. Thus the dissolved salts are converted to their corresponding acids. The anion resin then absorbs these acids and delivers a mineral-free water. When the exchange capacity of the resins is exhausted they are regenerated without the use of heat by a low-cost regenerant solution.

If, in addition to being free from minerals, the water must also be free from organic, inorganic, gaseous, bacteriological, and pyrogenic impurities, a still may be used in which the water is first preheated and vented to remove the gases, and then converted into pure, dry steam by gently boiling, with the vapors disengaging at low velocities and then condensed in a tin-lined, vented condenser. Where extra purity is required, double or triple stills may be used.

If the deionized or distilled water is to be piped to several locations the materials for the piping system must have no effect on the water. Block tin, pyrex glass, or aluminum satisfy this requirement.

Before putting a distilled water system into use it should be thoroughly flushed out with city water and then with distilled water.

compressed air

Compressed air is commonly supplied to laboratory tables at 5 to 10 psi, at which pressure the ordinary laboratory cock will discharge 1½ cu ft of air per minute. For special purposes air at higher pressures may be required.

If both low- and high-pressure air are required, separate compressors should be used. Low-pressure air compressors may be either of the rotary or reciprocating type. For high pressures the reciprocating type is more commonly used and may be of the two-stage type with an intercooler. Compressors may be either air- or water-cooled, the latter being preferable, especially for high pressures.

Compressors should not be oversized, but for a limited number of cocks a compressor capable of supplying the full demand with all cocks in use may be provided. A receiver should always be provided to prevent too frequent starting and stopping of the compressor.

Clean, cool, dry air should be provided for the compressor and a filter and silencer should be installed on the inlet.

There should be no valves between the compressor and the receiver, and the receiver should be equipped with a pressure gage, relief and drain valves.

Where dry air is essential, high-pressure units should be furnished with an aftercooler.

Piping should be as specified for steam lines.

vacuum

For normal laboratory requirements vacuums from about 14 to 20 in. of mercury are adequate at the outlets. For special cases vacuums up to 28 in. or more may be required.

For vacuums from 14 to 20 in. a good grade of rotary-vacuum pump may be used. The size of the pump is a matter of good judgment rather than mathematical computation.

If the vacuum pump is to be operated automatically it is essential that it should not be oversized appreciably, as this will cause cycling unless special precautions are used to prevent this.

For maintaining the higher vacuums, a high-grade reciprocating pump may be used.

Piping should be as specified for steam lines. Where screwed joints are to be used care must be exercised in threading the piping in order to insure tight joints. After the line has been carefully made up, dissolved beeswax or varnish should be applied to the theaded joints while the system is under a vacuum to seal off any small leaks.

gas

Gas is normally supplied to a building at a pressure of about 6 in. of water; it may be manufactured gas with a calorific value of 550 Btu per cu ft or natural gas with a calorific value of 1000 Btu per cu ft. At 6 in. the flow through a standard gas cock will be about 14.5 cu ft per hr and at 3.5 in. (the minimum for satisfactory operation of Bunsen burners) about 8.5 cu ft per hr.

Gas-blowing equipment may require pressures up to 5 or 6 psi and rotary positive displacement gas boosters must be used.

Where a booster is used a mercury seal should be provided to prevent damage to the meter housing in case of excessive suction.

Where neither manufactured nor natural gas is available, propane or butane gas can be furnished in standard-sized cylinders containing the equivalent of 850 and 640 cu ft, respectively, at atmospheric pressure. The actual pressure in the cylinder in each case is 102 psi at 70 F.

Gas cylinders should, when possible, be installed out of doors and must be provided with regulators of an approved type to reduce the pressures to that required inside the building.

Piping should be black steel with screwed malleable or steel fittings, or welded joints. Joints for piping systems supplying propane or butane should be welded or brazed. Plug-type cocks should be used for stops. For the larger sizes these should be of the lubricated type.

oxygen, hydrogen, and nitrogen

These gases can also be obtained in standard-sized cylinders which may be installed in a similar manner to cylinders of propane and butane.

Oxygen cylinders and manifolds should be separated from cylinders and manifolds containing flammable gases by fire-resistant barriers, cylinders, manifolds, and so forth, should be kept free from oil or other combustible materials and pipe scale.

All parts of oxygen systems which are exposed to cylinder pressures should be constructed of nonferrous materials designed to withstand the very high pressures. Joints may be welded, soldered, or screwed and made up with litharge and glycerine.

The pressure in oxygen, hydrogen, and nitrogen cylinders at 70 F is 2000 psi and the cylinders contain approximately the equivalent of 200 cu ft of gas at atmospheric pressure.

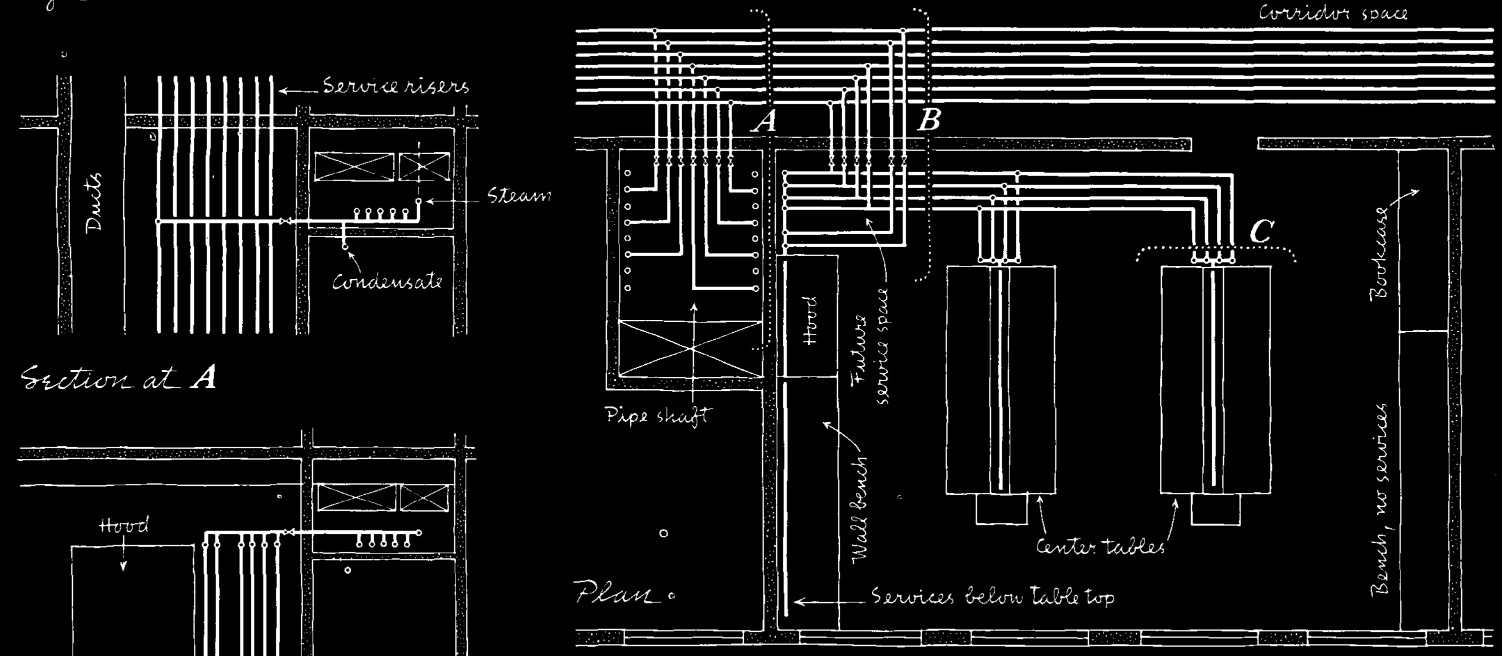
All parts of hydrogen and nitrogen systems which are exposed to cylinder pressures should be constructed of extra-heavy steel pipe with forged steel fittings. Joints should preferably be welded and if screwed should be made up with litharge and glycerine.

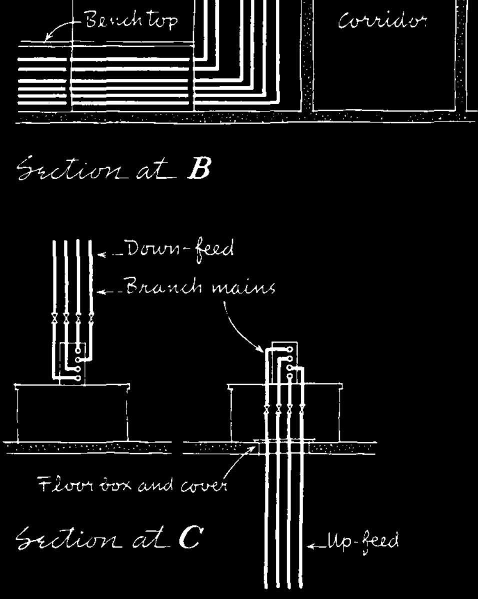
Sharp dies should be used to insure perfect threads on screwed piping. Before placing a piping system in service it should be tested with air to $1\frac{1}{2}$ times the maximum pressure. After testing, oxygen systems should be washed out with a suitable nonflammable solution such as caustic soda or trisodium phosphate and then steamed out thoroughly to remove all dirt and grease. Valves should be dismantled and thoroughly cleaned in a similar manner.

hydrogen sulphide

Hydrogen sulphide is an extremely poisonous gas and has a very unpleasant odor. It is supplied in cylinders having a capacity of approximately 1000 cu ft at atmospheric pressure and it has a pressure of

Fig. 3 HORIZONTAL DISTRIBUTION





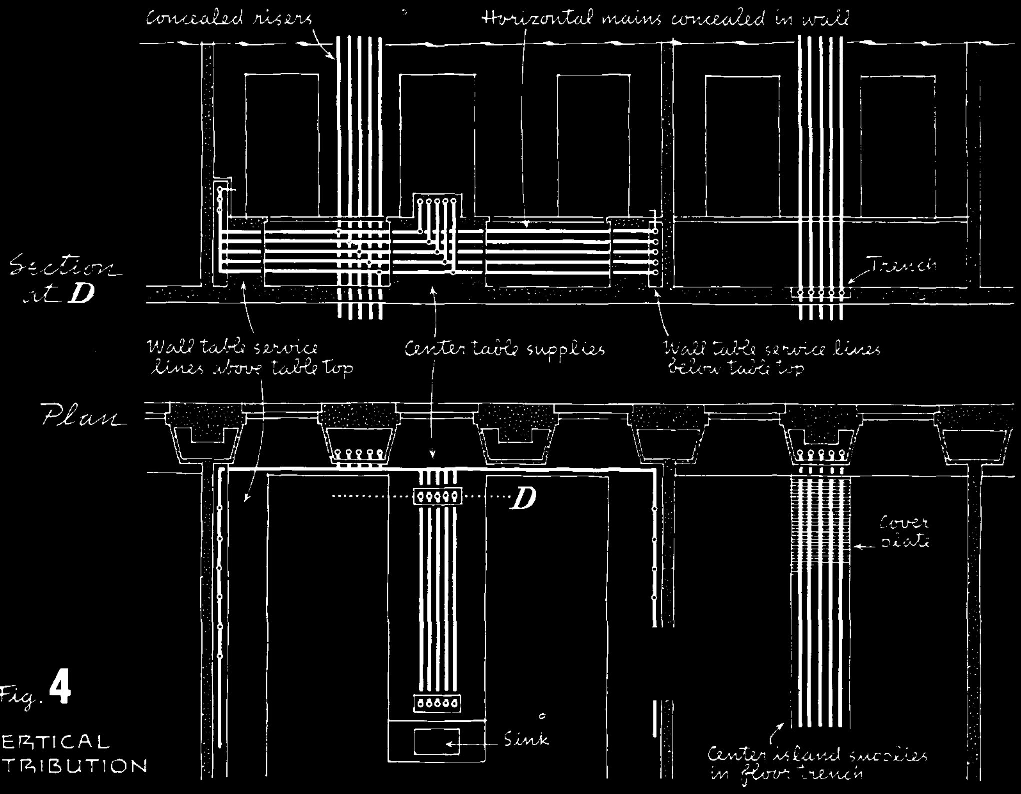


Fig. 4 VERTICAL DISTRIBUTION

252 psi at 70 F. It is corrosive, but because the gas is normally very dry, brass pipe and fittings are satisfactory.

A single-stage regulator with a forged brass body and a steel gage with stainless steel parts should be provided.

Aluminum and hard-rubber pipe and cocks are used extensively for distribution.

waste piping

Laboratory wastes are variously constructed of cast iron, lead, chemical stoneware, high-silicon iron, synthetic-phenolformaldehyde resin, and glass.

The use of cast-iron pipe for waste connections, especially if concealed, is not recommended where acid wastes are encountered, and should particularly be avoided when laboratories may be idle for considerable periods.

The use of lead for laboratory wastes should be confined to traps and to branch connections between outlets on laboratory furniture. Lead pipe which is used for domestic plumbing contains a small percentage of zinc and is unsatisfactory for chemical work. Chemical lead should be 99.98 percent pure and should withstand the action of strong sulphuric acid up to about 132 C. Joints should preferably be wiped or burned joints.

Chemical stoneware with bell and spigot joints provide an excellent material for concealed wastes. The joints should be made up with asbestos rope wicking impregnated with acid resisting graphite or mastic and a hot melting acid-proof calking compound.

For horizontal lines two rings of packing and a topping collar of about 30 percent ground asbestos, 20 percent talc and 50 percent silicate of soda, to keep the calking compound from running when subjected to heat, should be used.

High-silicon pipe is widely used but is expensive and brittle and care must be taken when installing and making joints to prevent damage to the pipe. Space should be left between the end of the spigot and the bottom of the hub to avoid expansion strains. Two rings of packing, as for the horizontal runs of stoneware pipe, should be used and the remaining space filled with lead.

Synthetic-phenolformaldehyde pipe has strength, toughness, and durability together with excellent corrosion resistance and may be threaded and coupled together or furnished with bell and spigot ends for which joints may be made in the same manner as for stoneware pipe.

Pyrex glass is also used in some laboratories for waste piping. Important characteristics of this glass are its very low thermal expansion and its excellent chemical stability.

traps for waste systems

Laboratory waste systems are generally connected to the sanitary sewer system, and unless the local plumbing code permits otherwise, must comply with regulations for sanitary plumbing.

As laboratory wastes are generally sterile, the use of a single trip for several outlets on a long branch, or even several items grouped together in one room, is frequently permitted.

It is not generally advisable to connect wastes from adjacent laboratories through a common trap as this makes it possible for fumes to pass between rooms which may be objectionable or even dangerous.

refrigeration

For normal requirements a direct expansion system using Freon will be satisfactory as there is no danger in case of leakage.

For very low temperature work a two-stage ammonia system may be required with the refrigerating machinery located in a separate room which is well ventilated and has direct access to out-of-doors.

Normal construction for either type of system is satisfactory.

distribution systems for laboratory services

While the present tendency is to conceal the service piping, especially in laboratories for pharmaceuticals and food products, there are many installations where for economy or ease of maintenance pipes are exposed. In such cases a poorly designed or carelessly installed system may mar the appearance of the laboratory.

For large multistory laboratories most of the services will originate on the ground floor and from there either horizontal or vertical distribution may be used.

Each has its advantages which should be carefully considered in the early stages of the design of a laboratory.

horizontal distribution

Pipe shafts extending from the ground floor to the top of the building may be suitably located for the installation of risers for service lines. These shafts should be of adequate design to permit an orderly arrangement of the risers with free access to shut off valves and for maintenance of the piping. The pipe shafts should be built in such manner that they will not create a fire hazard. Horizontal distribution mains (*Figure 3*) should be taken off near the ceiling at each floor and should be provided with shut off valves. Corridor distribution (*as shown*) is desirable, unless ceiling heights are too low to permit an orderly arrangement of duct work, lights, and piping. Ducts may be installed immediately below the ceiling, and service mains (except steam and condensate) supported on group hangers at sufficient distance below to provide space for branch duct work and piping above the mains.

Uniformly sized metal boxes with covers on each side may be installed in corridor walls for bringing services into the laboratories. The same arrangement of piping should be maintained and a shut off valve provided on each service when it enters the laboratory.

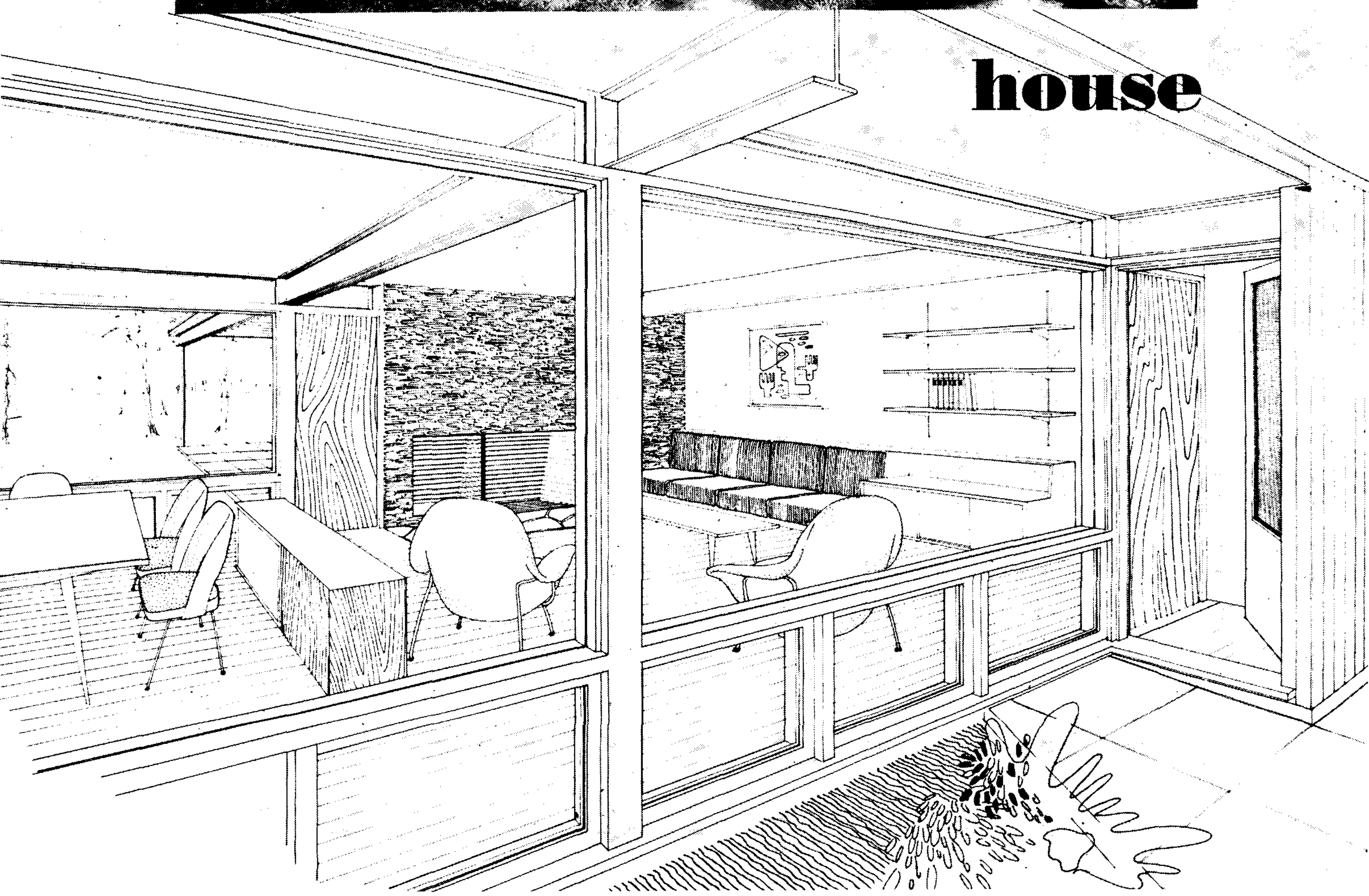
Where possible, piping should not be run over wall or center tables. Either upfeed or downfeed systems may be used for supplies to tables. Upfeed avoids vertical drops but has the disadvantage that in case of changes or repairs laboratories on two floors are affected.

vertical distribution

For a multistory building with a typical arrangement of rooms and equipment on each floor, a vertical system of distribution with concealed risers may advantageously be used (*Figure 4*). Removable panels may be provided for access to the risers and shut off valves. Branch connections to center tables adjacent to outside walls may be completely concealed and turrets at each end of the table may be provided with the necessary cocks for each service.

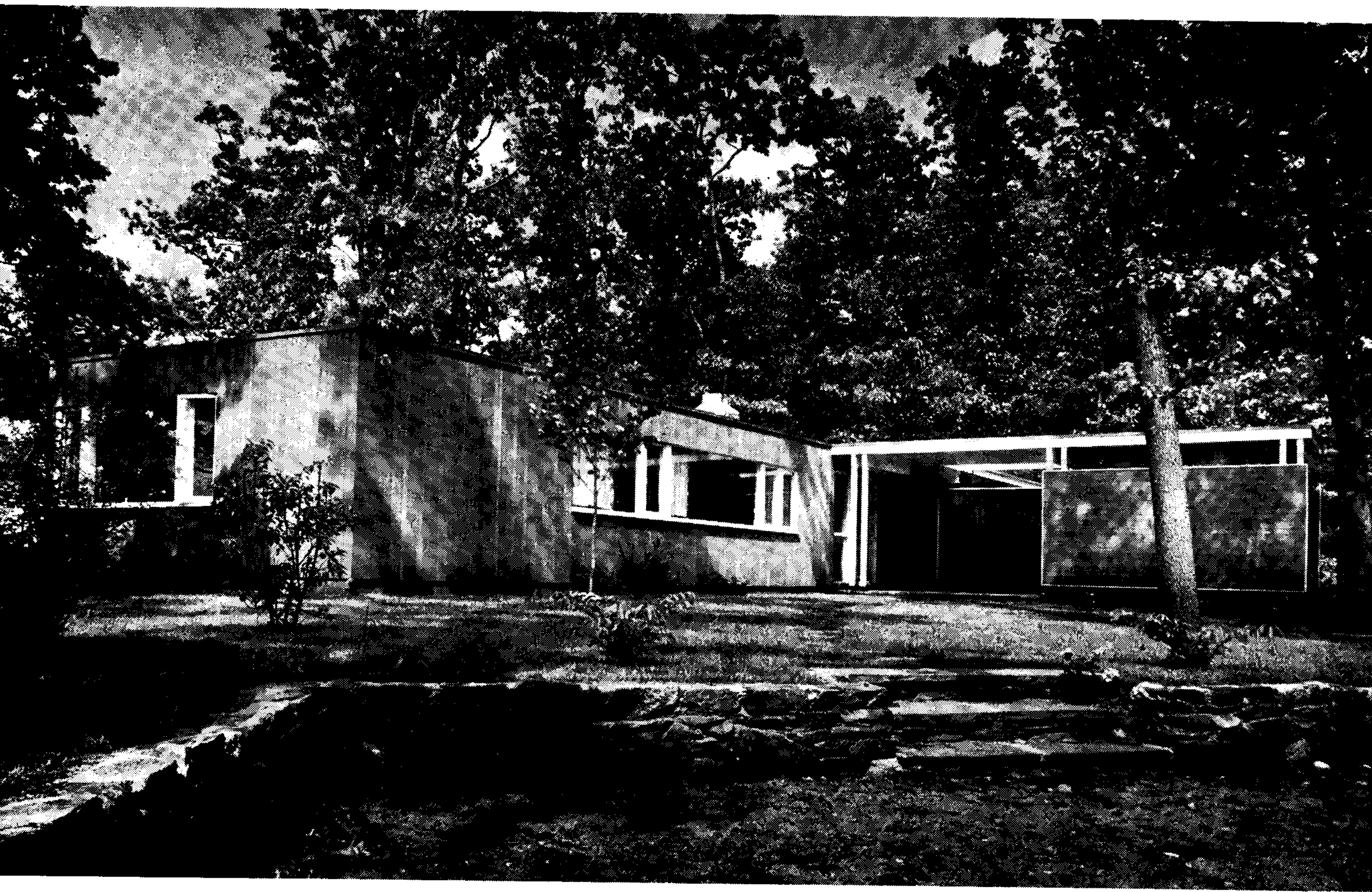
Piping to serve wall benches and hoods may be concealed below the top of the bench or may be run exposed along the partition wall. With laboratories of greater depth it may be advisable to provide risers in corridor partitions to serve equipment adjacent to these partitions.

house

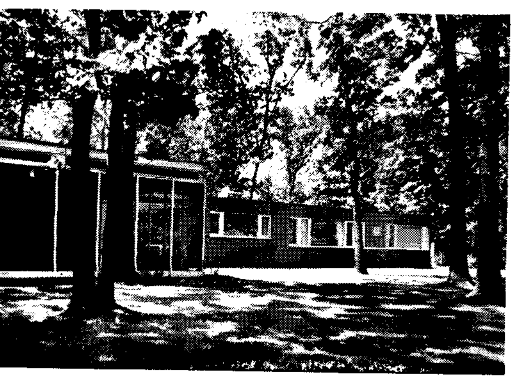


location	North Kingstown County, Rhode Island
architect	Conrad E. Green

house



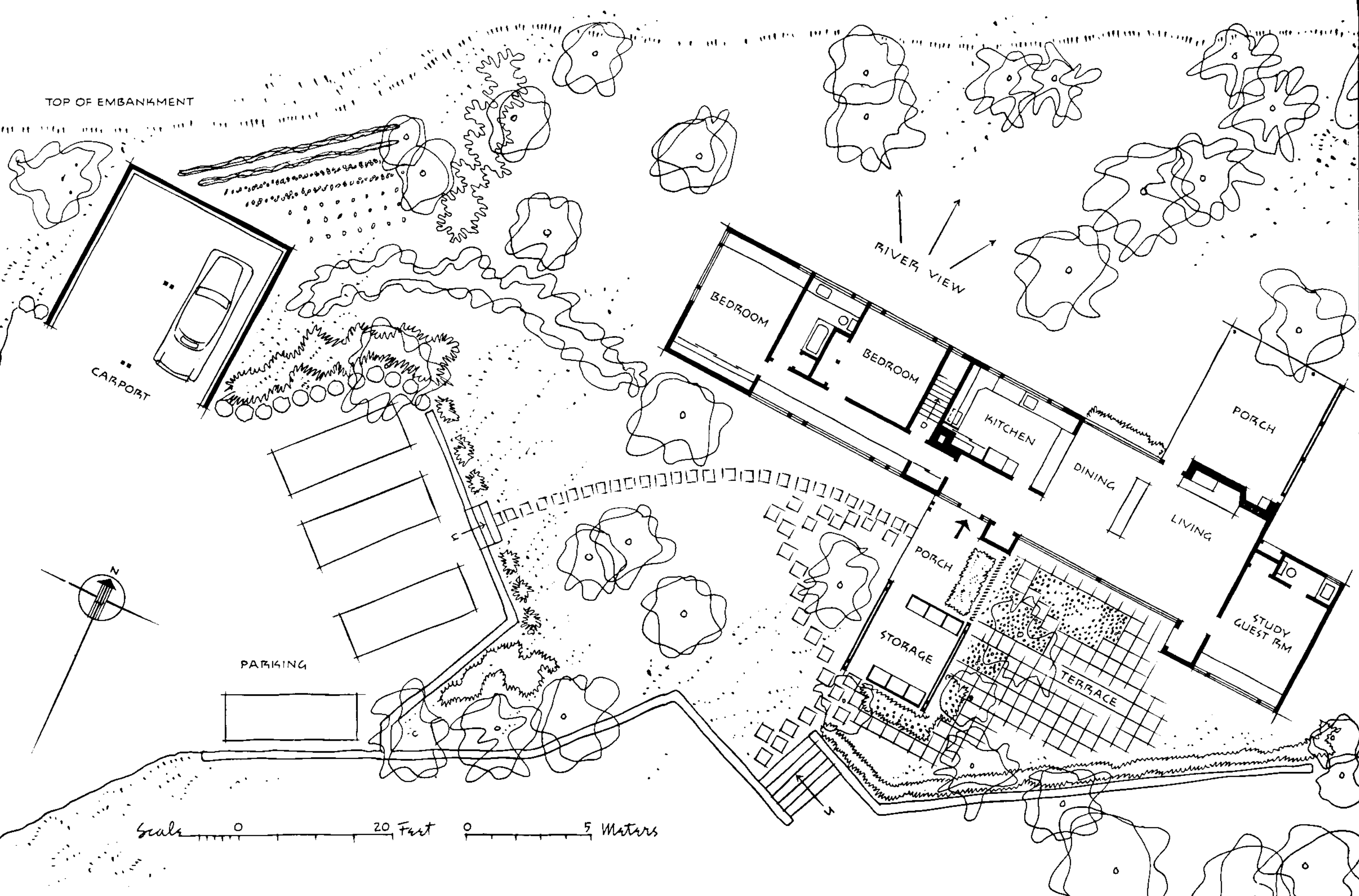
Planned for a young couple with one child, this genial house was designed for servant-less living. Requirements included two bed-rooms, a combination study-guest room, and a scheme that would simplify maintenance and allow future expansion with minimum basic change. Outdoor living for seasonal use is provided by an open terrace on the south and a screened porch on the north. Photos: Richard Garrison (except as noted)



The favored site consists of seven wooded acres, with the building located on a bluff overlooking a wide river to the north, and a pleasant closer view across a wooded ravine to the south. Prevailing breezes are west-northwest in summer; north, in winter. Access was possible only from the southwest, and a neighboring house is fairly near by on the east.

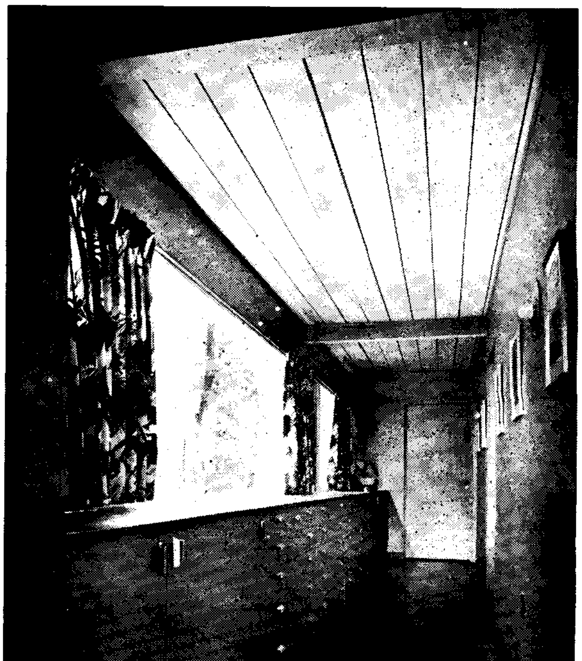
Among the planning considerations, the architect tells us, was the wish to take full advantage of the commanding northerly view, at the same time not overlooking the more intimate southern outlook; provision of view for all rooms; adequate cross ventilation; privacy from the neighbors to the east; and the wish to make the kitchen the heart of the house.

Structurally, the house is a combination of steel and wood frame, with standard wall construction, using redwood outside and plastered walls within. The roof is composed of 3″ x 8″ dense select structural fir (exposed on the interior); two layers of glass-fiber insulation; 5-ply tar and gravel. The decision to use the wood plank was made for simplicity of installation, eliminating joists, bridging, roof sheathing, lath and plaster; the plank thickness was determined by the (in most cases) 12-foot spans. Steel beams were used in living areas since wood beams would have been excessively deep. The house is heated by a radiant system, with copper coils in the concrete floor slab; an oil-fired hot-water boiler occurs in a small basement beneath the kitchen area.



Floor and Plot Plan

The living-dining area is informally partitioned by a counter-storage cabinet, with specialized compartments opening on both sides. Note privacy provided for room toward the south (above) *by the wood-louvered wall of the entrance porch. The exposed planking of the roof construction is apparent in both this room and the bedroom hall* (right), *which has continuous built-in storage units under the south window band.*

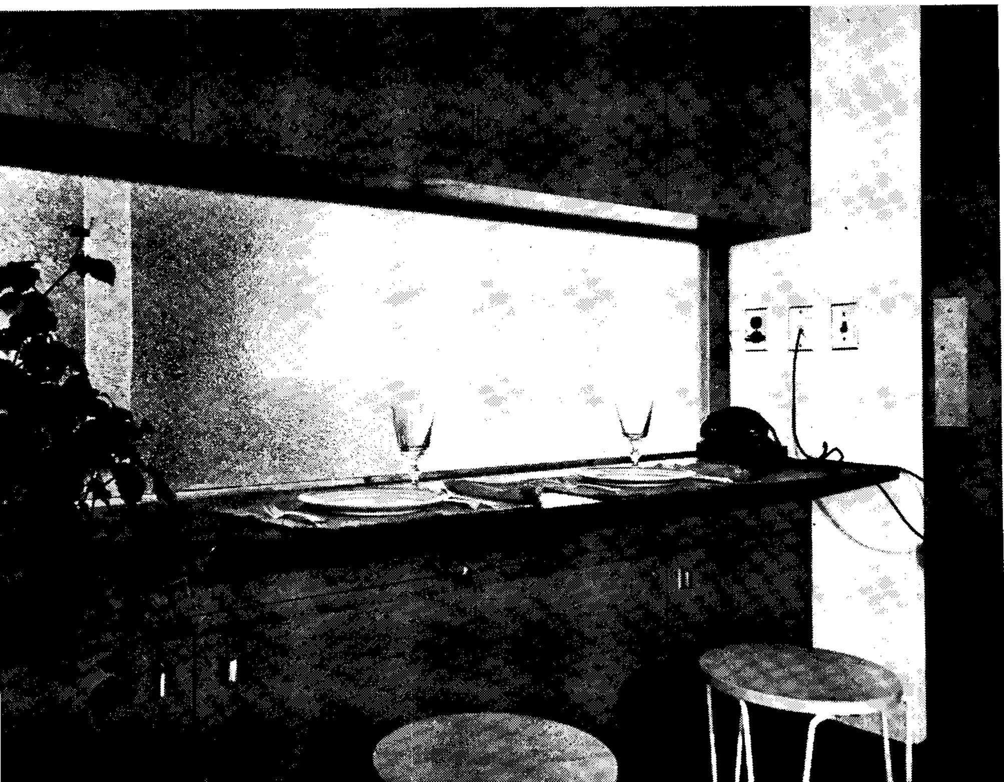


Looking toward the fireplace corner from the dining end of the room (above), *the screen porch is seen through the window at left. Glazing on this wall is double-insulating type. Flooring in main living rooms is asphalt tile; in the kitchen, rubber tile; and in baths, ceramic tile. The steel beams that support the roof in this area continue out as porch frame and (on the south) under the projecting roof sunshade. Detail of the opened cabinet* (left) *demonstrates the deparmentalized organization of the storage space.*

Photo at left: Laurence E. Tilley

house

Between the dining area and kitchen, the partition consists of a pass-through storage unit at both top and bottom, with a broad counter, with sliding obscure glass panels between. With the panels open, the counter may be used for serving, or as a snack bar. Photos, right and below: Laurence E. Tilley



prestressed concrete today

by J. J. Closner and Cedric Stainer*

Prestressed concrete is to many minds one of the 20th Century's most important additions to our structural resources. Brought into being by the incorporation of a dynamic steel musculature into the inert body of concrete to give this ancient construction material tensile strength comparable to its intrinsic compressive strength, prestressing has established its merit on a world-wide proving ground.

In the three years since PROGRESSIVE ARCHITECTURE last reported comprehensively on this subject *(October 1949)*, prestressed concrete has gained more ground than in the entire quarter-century since it became a construction reality. Its advance has been three-front—in research development, in applications, and as a consequence of both in public acceptance.

Certainly the current defense program has helped to spotlight the savings of materials inherent in prestressed-concrete design. There are vivid examples. Only 8.08 tons of steel were required to construct the six prestressed-concrete floor girders for a new building at Manhattanville College of the Sacred Heart, at Purchase, New York, whereas the original design in structural steel had called for 72 tons. *(Figure 1)*. A 5,000,000-gal prestressed-concrete water-storage reservoir is now being built at Richmond, Virginia, with only 210,000 lb of steel, although the city had actually obtained a 1,000,000-lb allocation for the project from NPA.

It is a conservative estimate that a structural member in prestressed concrete may be built with only half the concrete and a quarter of the steel required for a corresponding member in reinforced concrete; in comparison with structural steel, the saving in steel is even greater.

These savings of materials are only a fragment of the picture. They produce in turn savings in deadweight, which means a substantial reduction in foundation costs. Depth reduction of the main carrying members brings savings in over-all building height. Longer-span construction made possible through prestressed design results in maximum space utilization.

In addition. prestressed concrete makes definite esthetic contributions. Not only does it allow lighter-looking structures, with far lower depth-to-span ratios than are obtainable with reinforced concrete, but it also permits structural designs that are precluded with other forms of construction.

Scientifically, prestressed concrete has attained world significance. Within 18 months after the first United States Conference on Prestressed Concrete was held at M.I.T. *(August 1951)*, the new medium was an important subject at numerous technical gatherings throughout the country.

Its stature is documented with equal weight in the roster of users and uses. In this country, alone, it is being employed in every section by private enterprise and by all levels of government construction, on a rapidly increasing scale. This is equally true abroad. In England, a recently published report of the works directors of the Admiralty, the Air Ministry, the War Office, and the Ministry of Works on economy of building materials, recommends the use of prestressed concrete in almost every conceivable form of construction.

Similarly, our own President's Materials Policy Commission, in its notable report entitled "Resources for Freedom," has stated the belief that prestressed concrete "will be particularly successful in replacing reinforced concrete."

development of prestressed concrete

This article does not pretend to cite more than a partial list of structures, techniques, even products themselves, which prestressing has created.

In bridges the Federal government is using a prestressed concrete structure to carry a main highway across the spillway of the monumental Garrison Dam, near Bismarck, North Dakota. Florida is using prestressed concrete for the 3½ miles of trestles of the huge Pinellas-Manatee Crossing over Tampa Bay. Philadelphia built its distinguished Walnut Lane Bridge across a Fairmount Park ravine in prestressed concrete. New York City is using it to replace the immense North River pier destroyed by fire in 1947. Massachusetts has let contracts for the construction of four highway bridges at Newbury and Newburyport, in what is literally a special project to ascertain the most economical and suitable methods of prestressed design for bridges in that state.

In buildings, designers are finding prestressed concrete an effective solution of their framing problems. This is especially true of buildings requiring large clear spans for such areas as school gymnasiums and auditoriums. School design frequently calls for spans brought well into the range of real economy through prestressing.

The Bishop DuBourg School (Murphy & Mackey, Architects) at St. Louis, Missouri, designed in the prestressing system of Eugene Freyssinet, noted French engineer whose studies of plastic flow and shrinkage in concrete were a major factor in the development of the medium, uses 94 ft roof beams to span the gymnasium. The girders of the Manhattanville College building, (Eggers & Higgins, Architects) first major floor system in the United States to be supported by prestressed concrete, are 65 ft long and less than eight percent deeper than they would have been in structural steel *(Figure 1)*.

Europe, still ahead of us numerically in linear structures, presents perhaps the only prestressed-concrete multistory construction. The most recent developments in this field are the work of Dr. Fritz Leonhardt, German bridge designer who is the inventor of the first practical prestressing method which achieves continuity in structures. A Leonhardt bridge is shown *(Figure 2)*; his methods and techniques will be described below.

England has developed a rewarding application of prestressed concrete in combination with shell-roof construction

*Vice-President and Acting Chief Engineer, respectively, The Preload Company, Inc., New York, New York

which has captured the imagination of British architects to the extent that some 500 shell-roofed structures have been built there since World War II. A striking example is a 300-ft-long Bournemouth bus-terminal garage with a roof formed by nine thin concrete shells resting on prestressed edge beams which span 150 ft and provide a clear floor space of 45,000 sq ft *(Figure 3)*.

In the circular field, the prestressed domes, which The Preload Company, New York, developed to roof many of the tanks it has designed, may provide a fertile ground for exploration by architects of sports arenas, theaters, and other structures demanding large clear spans, unobstructed views, and maximum availability of good seats. These domes, prestressed at the abutment ring and varying in thickness from 2 in. for a 50-ft diameter to 6 in. for a 250-ft diameter, are spherical shells with a rise of only one-eighth their diameter. They are built without roof trusses or interior supports, the abutment ring being carried by the side walls or by columns at the periphery of the dome. Only through prestressing may such domes be built without dangerous deflections when the falsework is removed. And they require only 4-½ to 5 lb of steel of all classes per sq ft of dome area.

In Canada, the city of Sherbrooke, Quebec, is building a 4000-seat municipal stadium with prestressed concrete for its frame, seating slabs, and 25-ft cantilever roof. *(Figure 4)*. This structure is being built with only 12.75 lb of steel of all classes and .15 cu yd of concrete per seat.

In America, the achievement of mass production of prestressed concrete blocks combines with the development of an integrated block system for area prestressing to provide a major construction efficiency. This permits the designer to develop a standard modular relationship for different bay sizes and enables the contractor to order factory-made blocks for on-site assembly and to erect floors and roofs without heavy lifting equipment.

Prestressed concrete has made all these great strides despite two major handicaps —one technological, the other the result of professional practices within the industry itself.

The technological handicap was that the inherent economies of the medium were offset by the cost of labor for placing, stressing, and anchoring the tensioning units. This has now been largely overcome. In the opinion of many constructors, the works of Leonhardt and Donovan H. Lee, London consulting engineer, are among the most notable recent achievements in this direction.

Leonhardt's method of continuous prestressed bridge construction is based on concentrating the very large prestressing forces required in bridges so that a contractor can prestress an entire structure in a single operation instead of wire by wire, or cable by cable, as other systems necessitate.

The late Dean Peabody Jr., professor of architecture at Harvard University, rated the importance of continuity as follows: "Prestressed concrete design is in its infancy until the engineers in the field and in the office can solve the $64-question of constructing economical continuous beams."

Continuity makes possible a saving of approximately 25 percent of the steel required for simply-supported prestressed beams. Leonhardt's techniques save half the man hours per ton of prestressing steel which other systems require to place, tension, and grout the cables for an entire structure. Thus, combining the reduced material and labor factors, it is seen that a Leonhardt structure may be prestressed in less than 40 percent of the man hours required by other systems using wires or cables as the tendons of prestressed concrete.

Lee's contribution is in the tendons themselves. In collaboration with McCall & Co., Ltd., British steel producer, he developed a new kind of steel bar of extremely high strength, together with anchorage, as the tensioning unit of prestressed concrete *(Figure 6)*.

Until its advent, wire was the only form of steel capable of the sustained high stresses essential for prestressing concrete. This bar is the only steel of comparatively large diameter which approximates the high tensile strength of wire. A 1-⅛-in. bar does the work of 22 wires each .196 in. diameter, a standard size in prestressing. One simplified bar anchorage supplants a multitude of intricate wire anchorages. Compared with wire, the use of this bar produces labor savings which, at prevailing wage rates for United States iron workers, may often exceed the entire cost of the prestressing material.

new operating concepts

In the matter of professional practices, for years every owner or builder wishing to erect a structure in prestressed design was confronted by a barrier of patents and proprietary systems. The resultant discouragement of numerous architects and engineers from exploring the potentialities of

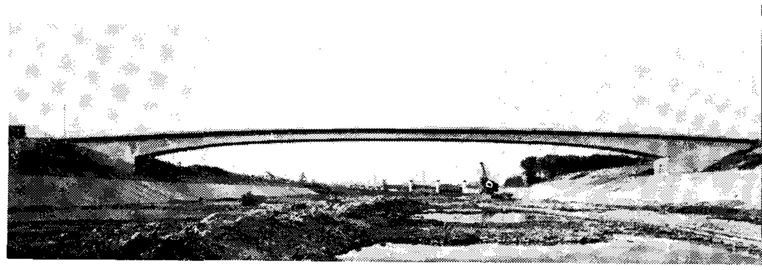


Figure 2—world's largest concrete-box girder span, across Neckar Canal near Heilbronn, Germany (above). *Completed in 1950, main span of 312 ft has a 1:56 depth-to-span ratio.*

Figure 1—progress photo (left) *shows one of six floor girders at Manhattanville College; twenty-two cables have been placed and member is ready for secondary reinforcement. Each cable, made of 12 high-tensile-steel galvanized .196 in. diameter wires, receives a pull of 26 tons during prestressing.*

the new medium was attested by no less an authority than Rear Admiral J. F. Jelley, Chief of the United States Navy Bureau of Yards and Docks, when he said at the M.I.T. conference in 1951: "We do have one serious handicap in prestressing. In the interest of obtaining adequate competition for our work, we are loath to use patented material. I find that many of the devices and methods now involved in prestressing are patented. The Navy will not make wide use of patented materials unless they are freely available to all contractors on an equal basis."

The Preload Company can lay reasonable claim to some of the credit for curing this ill. In its first 17 years this organization, along with others in the field, designed prestressed structures, under license of its patents, for its domestic construction subsidiaries and its foreign licensees. Ultimately it saw that the new medium had reached the stage at which public interest and profitable operation demanded the availability of broad, fundamental developments to the construction world at large on a normal competitive basis. Its opinion was sustained by the findings of a nationally known firm of management consultants, McKinsey & Co., which it retained to make an objective survey of the prestressing industry.

As a result, The Preload Company a year ago recast its entire operation and established itself as an independent firm of consulting engineers devoted exclusively to the design of prestressed structures—designing in any system best suited to the project at hand, serving any client who wishes to retain it, and using unrestricted prestressing systems of its own as a control on competing proprietary systems.

The company, in choosing this course, has sought to open up the entire field of prestressed concrete as a basic medium of structural design in which architects, engineers, and contractors everywhere can work as familiarly and unrestrictedly as they do in reinforced concrete and structural steel.

Leonhardt made Preload the exclusive licensee under his system for North America, Cuba, Great Britain, France, and South Africa largely because of its new policy and its willingness to relicense its clients at the cost of its own nominal royalty payments to him. Preload's efforts also led a group of American and Canadian business men to form the Stressteel Corporation to manufacture the bar and anchorage tensioning units under license from the Lee-McCall system proprietors and sell them on this continent on a price-list basis. Leonhardt's bridge-building methods are described here in some detail because his "Leoba" system for prestressing in multistory construction is largely derived from them.

A Leonhardt bridge starts with the construction, side by side on the abutment at each end, of semicylindrical blocks of reinforced concrete about which the prestressing cables are looped and anchored. The blocks rest on prepared basis for subsequent movement, although in small bridges the blocks at one end are stationary.

Rectangular, liquid-tight troughs to house the cables are placed horizontally throughout the length of the structure and supported on stirrups to provide the desired trajectory for continuity over supports. A mechanical dolly places the cables in the troughs. Friction along the cables during tensioning is overcome by developing a polygonal rather than a smoothly curving trajectory and placing paraffin-coated sliding plates between the cables and the trough lid or bottom at each direction-changing point.

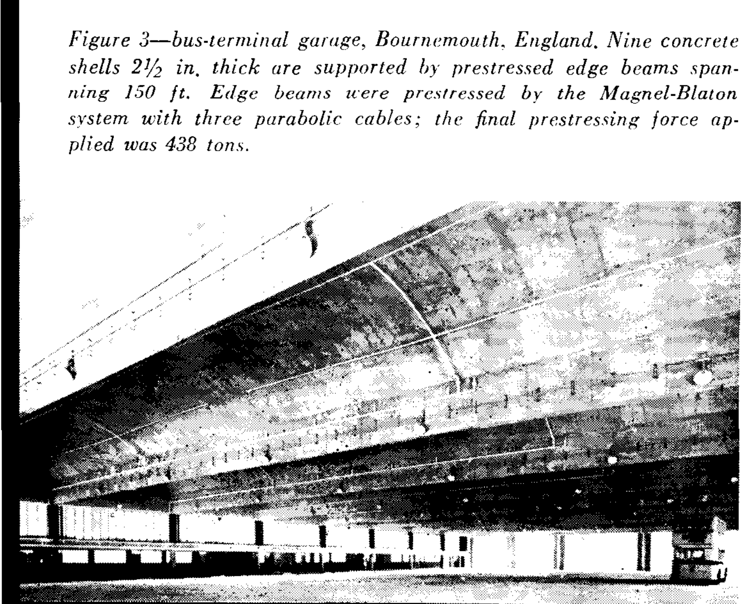
Recesses are provided for the installation of hydraulic prestressing jacks. When the concrete has been poured and has achieved the desired strength, the jacks are actuated to bear against the main-section concrete and force back the end blocks until the cables anchored around them have been elongated the desired extent. The resultant gaps between the main section concrete and the end blocks are then filled with concrete to maintain the elongation when the jacks are removed, and the metal troughs are filled with grout under pressure to provide continuous bond and protection for the prestressing elements. When completed, the entire structure is a solid mass of compressed concrete and tensioned steel.

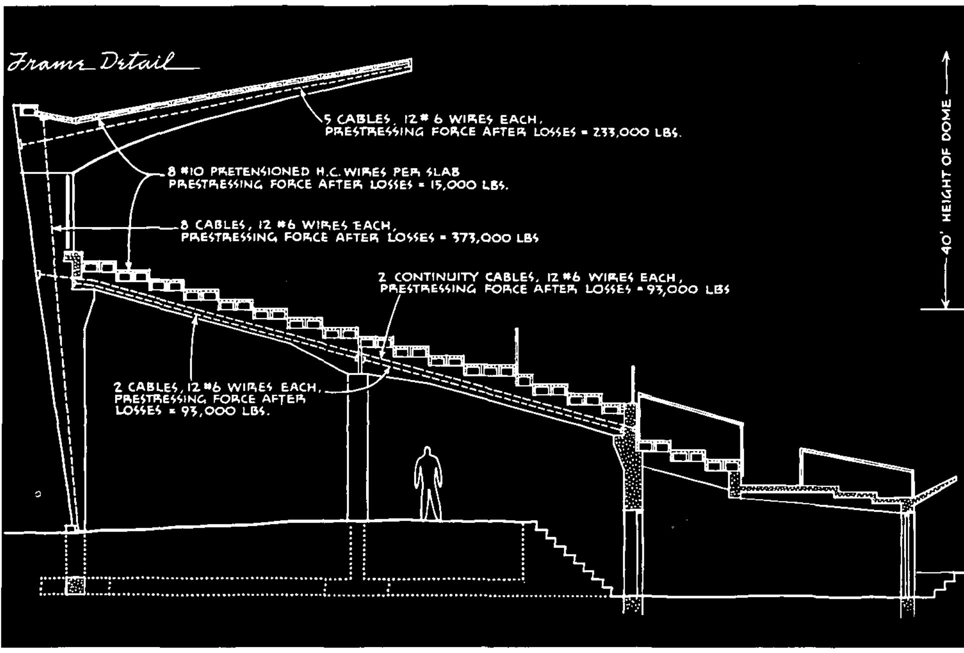
In his multistory work, Leonhardt prestresses a beam with 12 wires arranged in two horizontal layers in a flat sheath instead of in the usual round cable, which enables him to achieve continuity over several supports without appreciable variation of the stress due to friction. The wires are attached to a fixed anchor at one end and at the other are anchored around a forged-steel plug which has a threaded recess for the insertion of a jacking bar.

After placement and curing of the concrete, the jacking end of the beam is covered by a temporary steel plate through an opening in which the jacking bar is screwed into the plug. The bar is then connected to a hydraulic jack which draws the anchor plug back until the wires have been elongated as required. A nut on the bar is run down to bear against the plate and maintain elongation when the jack is disconnected. Grout is then pumped through the plate into the plug recess and along the entire length of the wires, providing not only a permanent bearing surface for the anchor plug when the plate and bar are removed, but also permanent bonding for the wires.

Using this system, Leonhardt has erected a six-story paper plant at Heidenheim (*Figure* 7) and a four-story garage at Fellbach (*photo on cover*), both in Germany. The paper plant has a 63-ft span between two rows of columns and a 15-ft cantilever beyond each column line. The main girders are haunched at the supports and are

Figure 3—bus-terminal garage, Bournemouth, England. Nine concrete shells 2½ in. thick are supported by prestressed edge beams spanning 150 ft. Edge beams were prestressed by the Magnel-Blaton system with three parabolic cables; the final prestressing force applied was 438 tons.





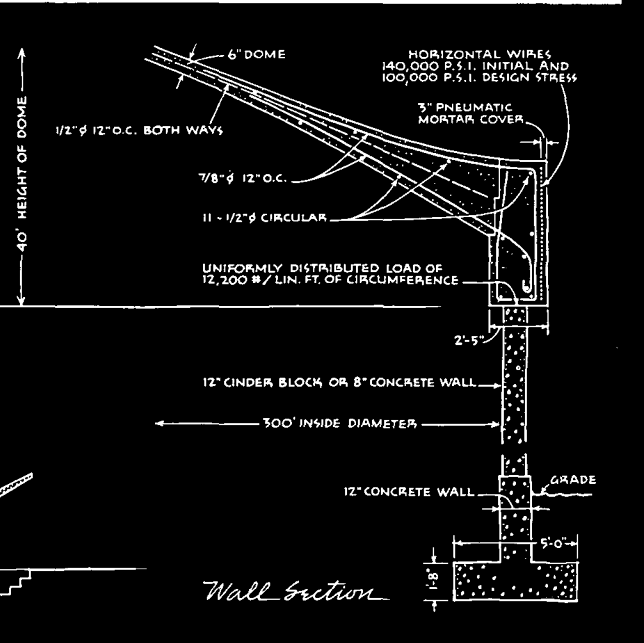


Figure 4—municipal stadium (above left) *in Sherbrooke, Quebec, Canada, is a unique example of a prestressed-concrete frame: supporting column, roof slab, frame, and seating slab were all prestressed. Supporting column and roof slab were prestressed together, making a two-piece monolift.*

Figure 5—section (above right) *shows possible prestressed-concrete solution for a 300 ft diameter sports arena with dome-shaped roof. The 6-in. thick spherical shell can be restrained at the edges by a prestressed abutment ring, 2 ft 2 in. thick and 6 ft deep, resting on a 12 in. concrete-block wall.*

2 ft 9 in. deep at midspan, a depth-to-span ratio of 1:23. The spacing between the girders is 22 ft 6 in. and the floor load is 154 psf. The garage involves spans of 36 ft 6 in. with a girder depth of 2 ft 7 in. at midspan.

Unlike the Leonhardt methods, the Lee-devised bar-tensioning units already have been practically demonstrated in the United States although they will not be in production domestically until early this year.

The material was imported from Britain to put the Tampa Bay bridge trestles in tension, and only by its use could prestressed design have competed successfully with designs in reinforced concrete (*Figure 8*). Only 6534 tensioning units are needed for the three-and-a-half miles of trestles. Had .192-in. wire been used, as provided in a comparison-alternative design, it would have necessitated the placing, stressing, and anchorage of 116,000 individual strands, which would have cost an estimated $225,000 more than the bar tensioning.

These bars are of a special alloy steel treated by a cold-working process which endows them with amazingly high physical properties. At each end is a specially-designed, long tapered thread engaging with a matching nut, which develops 100 percent of the 145,000 psi guaranteed strength of the bar and provides positive end anchorage. The bar is elongated with a hydraulic jack and the nut is run down to bear against a steel plate which distributes the tremendous terminal forces at a safe unit loading at the extremities of the prestressed-concrete member (*Figure 8*). The bars are made in diameters from ½ in. to 1-⅛ in. and in lengths up to 80 ft; couplers that develop the full guaranteed ultimate strength of the bars are used for greater lengths.

These units are by far the simplest of all the tensioning material used and may be installed before or after the pouring of the concrete and for bonded or unbonded prestressing. Naturally there is considerable economy in coating the bars to prevent bond and placing them in the concrete before pouring, just as is done with ordinary reinforcing steel, but this does not provide as much resistance to unexpected overloads as when the steel is bonded to the concrete by pressure-grouting after prestressing. For this reason, leading prestressed-concrete designers generally use unbonded prestressing for structures on which no overload is anticipated, such as certain roof systems, but utilize the higher safety factor of bond for structures such as heavy-duty bridges, future uses of which may exceed the design loads.

There is a host of construction uses to which Stressteel bars may be put with real economy and efficiency, and building frames constitute one of their most advantageous applications, especially in the framing of structures in which unobstructed space is a necessity.

Prestressing with Stressteel is particularly economical when girders 40 ft or longer are required to frame over such areas. In reinforced concrete the girders would have to be cast in place, using heavy and expensive falsework, but with Stressteel-tensioned concrete the weight is so greatly reduced that they may be precast and prestressed on the ground and lifted into place by cranes normally employed on jobs of this type.

architectural engineering considerations

Many architects and engineers as yet uninitiated in prestressing frequently inquire what types of structures may be designed in prestressed concrete and what is the "best" system to use.

Any structure which may be designed in structural steel or reinforced concrete may also be designed in prestressed concrete, and frequently at a saving in cost—especially when a metallic skeleton must be encased in concrete for enhanced appearance or greater fire resistance.

In the same way that designers have long considered reinforced concrete and structural steel as obvious alternatives for the design of any structure, they must now regard prestressed concrete as a third alternative.

There is no rule-of-thumb that states one structure must be built in this material and another structure in that. Every undertaking is attended by its own specific circumstances. Nor is there a set rule for the selection of any particular method by which to build in prestressed concrete itself. Pretensioning systems, in which the stressing member is tensioned before the concrete is poured around it, differ mainly in their use of different sizes of wire or strand. Post-tensioning systems, apart from the Leonhardt looped-cable and the Preload circular wire-winding methods which employ no special anchorage unit, differ mainly in their use of different bars, wires or strands, and different types of anchorage units. Yet the cost per pound of prestressing steel differs considerably from system to system.

Why not, then, always use the raw material that costs the least? The answer is that the method which employs the least expensive material may not be suitable for the structure at hand or, though suitable, may entail a far higher labor cost for installation of the material.

For example, the Leonhardt looped-cable method costs less than others per pound of prestressing steel in place, but it is applicable only to cast-in-place work; for certain structures this method is more expensive than precasting. On the other hand, anchored stranded cables may in themselves appear costlier than other materials; for certain types of construction, however, they bring compensating economies because their on-site labor costs are low.

The prestressing steel may be in any of the following forms:

(1) Individual wires held by bond alone (pretensioning).

(2) Individual strands held by bond alone (pretensioning).

(3) Wires grouped to form cables and held by a special anchorage and usually by bond as well.

(4) Individual strands held by special end anchorages and sometimes by bond as well.

(5) Strands grouped to form large looped cables held by the loops and usually by bond as well.

(6) High-strength alloy bars with special anchorages and usually bond as well.

It is by no means necessary to prestress every part of a structure. Obviously it is disadvantageous to prestress structural elements which are entirely in compression. Columns, for example, need be prestressed only when they are subjected to sufficient bending to cause tension, or they may sometimes be prestressed to tie them to other parts of the structure by means of the tensioning units.

Where simple spans are involved it is almost always advantageous to prestress girders and beams. If the spans are less than 25 ft and the loads do not exceed 200 psf, prestressing is usually economical when factory-made, pretensioned beams or joists are available in the locality. In this span and load range, depth-to-span ratios of 1:30 to 1:35 are common when the joists are close together, approximately 2 ft on center for a 50 psf loading or side by side for a 200 psf loading.

When spans exceed 25 ft and conventional girder and slab construction is used, the depth-to-span ratios in prestressed concrete compare favorably with those obtained by use of encased steel.

For cast-in-place construction it is desirable to design the floor slab as part of the girders instead of a separate load upon them, thus obtaining a lower depth-to-span ratio.

For lightness of construction and stability of the structure as a whole, the introduction of continuity into prestressed building frames is desirable whenever possible.

The Leoba method appears to be the best for cast-in-place continuous construction. If precasting is preferred, simple span girders may be made and prestressed satisfactorily by individual bar, cable, or strand method or even by pretensioning. These may then be joined to provide full continuity by short lengths of additional prestressing members over the supporting columns. This additional prestressing may be either in the form of horizontal bars or cables in the top of the girder or of "capping" cables or bars curved over the support and anchored underneath the girder on each side.

For live loads only, continuity also may be introduced by use of standard

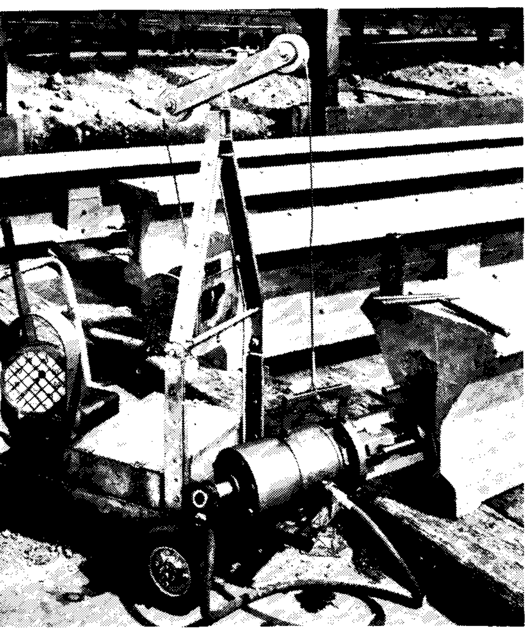
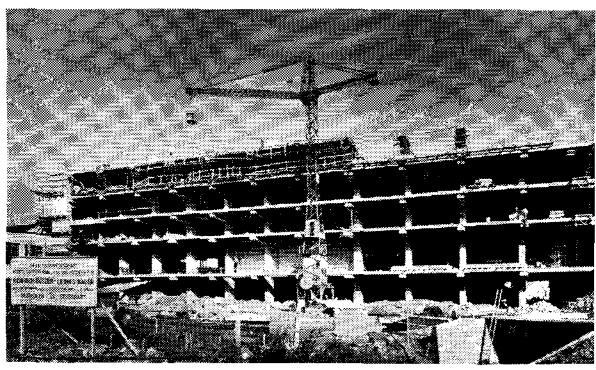


Figure 6 — hydraulic jack and pump in position for prestressing a high-strength-steel bar (left).



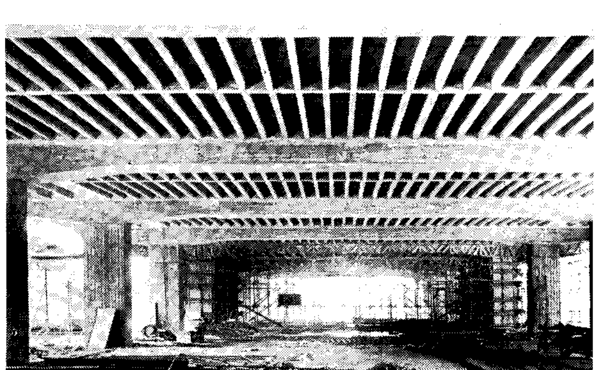


Figure 7 — six-story paper plant, Heidenheim, Germany (above right), *one of the few multistory prestressed-concrete buildings in the world. It was made possible by the use of poured-in-place girders devised for the Leonhardt continuous system of 12-wire cables which minimize friction losses of supports.*

Interior of Heidenheim plant (below right). *Right row of columns rests on rock foundation; left row rests on soft foundation, with hydraulic jacks built into the bases of the columns to compensate for anticipated settlement.*

steel reinforcement in a certain amount of cast-in-place concrete in the upper part of the girder over the supports.

Many variables, such as the type of structure, its location, the amount of prestressing employed, and the method used affect the total bidding price for a cubic yard of prestressed concrete.

A comparison of the bidding prices for quantities of prestressed concrete and reinforced concrete required to perform the identical structural function are shown *(Table 1)*. Totals are inclusive with the concrete made, formed, and placed; the standard steel bent and placed; and the prestressing units made, placed, and tensioned.

Prices for prestressed concrete and reinforced concrete are not always in the proportion shown in the table. Under certain circumstances such as small span, light load, and cast-in-place construction, reinforced concrete will usually be cheaper than prestressed. In other cases, such as some types of large-span bridges, the economies of prestressing will be far more pronounced.

Generally the price of a cubic yard of prestressed concrete should be between $100 and $150; further, it must be remembered that for every two yards of reinforced concrete only about one yard of prestressed concrete is required in an equivalent prestressed concrete structure, and that this cubic yard contains only about one quarter the weight of steel required in the equivalent quantity of reinforced concrete.

When mass-produced precast units are used or large jobs with considerable reuse of forms are involved, the prestressed concrete price may fall below $100 a cubic yard. On small jobs which do not use local contractors or require such expensive extras as the inclusion of design costs and special test beams, the price may rise above $200. Other causes of high prices for prestressed concrete are use of unsuitable prestressing methods and uneconomical design arising from inexperience.

The cost of prestressed concrete consists of the cost of the raw material and the installation cost, which must include the cost of the labor and additional materials required for handling. Thus the fewer the tensioning and anchoring operations and parts required for a given prestressing force, the lower the installation price.

forecast

What is the future of prestressed concrete? It has met each test on a broad front of increasing applications, and it is believed that in another five years every person responsible for the erection of even the most commonplace structure will be familiar enough with this new medium, at least to ask that its suitability for his project be examined. Even so, the rapid evolution of design theories and construction methods emphasizes that prestressing must still be regarded as in its formative period.

While prestressed concrete design is in this stage, to clamp down on it the restrictions of a rigid code of practice would be a severe handicap to its development.

In several European countries, recommended codes of practice for prestressed concrete have been published, and in Germany the seventh revised edition of such a code has appeared within the last year.

The Joint A.S.C.E.-A.C.I. Committee 323 on Prestressed Concrete was formed in 1948 and has since made definite recommendations for prestressed notations and definitions for use in the United States. At the recent Centennial of Engineering, at Chicago last fall, a steering committee was appointed to draft a recommended code of practice for this country. When this code is available it will certainly be of great assistance to architects and engineers, but it should be applied only as a guide and not as a set of restrictive rules imposed on a young and expanding method of construction.

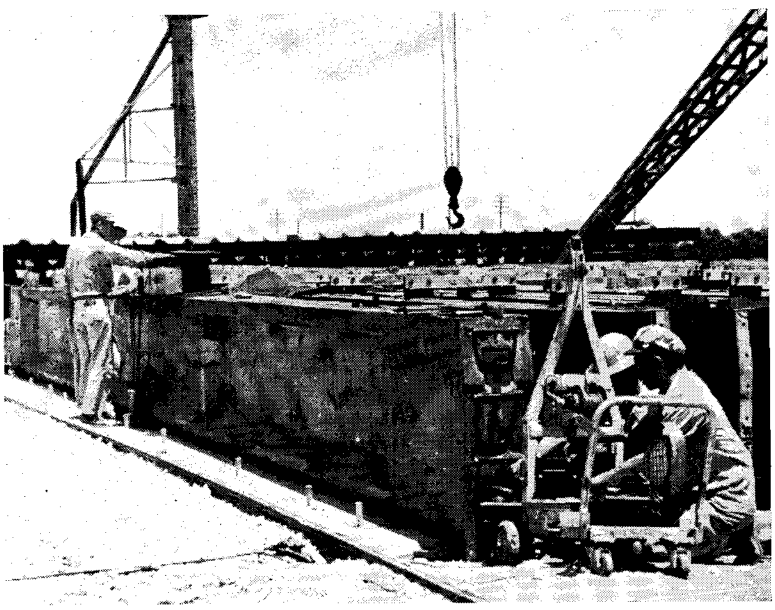
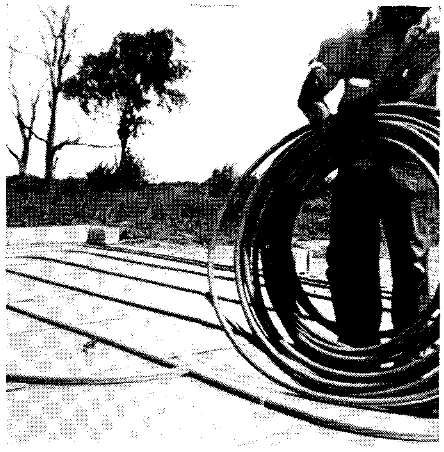


Figure 8—Lower Tampa Bay Bridge, Florida. General view of bare test girder during prestressing operation. Strain gage is set at center of girder.

TABLE I

prestressed concrete		reinforced concrete	
1 cu yd of 5000 psi concrete @ $50	$50	2 cu yd of 3000 psi concrete @ $45	$90
40 lb standard steel reinforcement @ 20¢	8	400 lb standard steel reinforcement @ 15¢	60
80 lb prestressing steel @ 75¢ (120,000 psi working stress)	60		
Total price	$118		$150

flexible plastic pipe



Johnsonite flexible plastic pipe, a new development for residential radiant heating installations, has successfully passed tests for resistance to hard and chlorinated water, temperature, bacteria, and chemicals, according to the manufacturer. Made of polythylene, the most chemically inert of thermoplastic materials used in the manufacture of pipes, Johnsonite has shown in accelerated aging tests that it has a life expectancy of over 30 years with no sign of wear or loss of working pressure. The pipe, 3/4 in. in diameter, is laid over a standard base of 2 in. thick cement which has been covered with aluminum foil. The lines of the pipe are spaced 12 in. apart and are banded to the cement in only a few places. When the system is complete, 2½ to 3 in. of cement is poured over the plastic pipe. Only 12 man hours are required to lay Johnsonite in a 1500 ft area. Temperature checks on homes with Johnsonite Plastic Pipe showed only a 2 degree variation in temperature between the floor and ceiling. Johnson Plastic Corporation, Chagrin Falls, Ohio.

air and temperature control

Dyna-Heat: new window-type packaged room air-conditioning unit provides seven different levels of comfort conditioning including supplementary heat for cool spring and fall days when central heat is not in use. Louver system disperses cool or warm air in any of four directions or in all four directions at once. Mitchell Mfg. Co., 2525 Clybourn Ave., Chicago 14, Ill.

Circle-Air Convection Heating System: low-cost type of convection electric heating, approved by Underwriters' Laboratories, has built-in thermostat in each unit. System employs a "fin" type heating element; Btu ratings from 2400 to 9600; five sizes available from 700 to 2800 w. Paley Mfg. Co., 244 Herkimer St., Brooklyn 16, N. Y.

S-W Unit: new residential air-conditioning unit for year-round use, which provides warm or cool air, does not require dampers, damper controls, or damper motors. Designed for use in new homes or as replacement for present warm-air furnaces; cooling section alone can be supplied for connection with existing warm-air furnaces. Present gas models in 3 and 5 ton capacities on cooling side; minimum heating output of 80,000 Btu/hr. Typhoon Air Conditioning Co., Inc., 794 Union St., Brooklyn 15, N. Y.

construction

Alsynite: translucent fiber glass building panel, in corrugated or flat sheets, for use in commercial and residential greenhouses. Permits transmission of a good balance of light from infra red through ultra violet. According to test report, transmitted light is well diffused; shatterproof. Alsynite Co., of America, 4670 De Soto St., San Diego, Calif.

Armorboard: new high-strength flexible hardboard panel made in ⅛", 3/16", and ¼" thicknesses. Highly shock-resistant panel has most of the physical properties of treated board but sells for same price as standard hardboards. Suitable for underlaying floors, wall paneling, and cabinet work. Anacortes Veneer, Inc., Anacortes, Wash.

Flexa Framing System: new system of all-bolted steel framing for construction and maintenance work includes wide range of concrete inserts, pipe rollers and hangers, clamps, and other fittings. Suitable for tunnel framing, hanging of lighting fixtures, and for general support and racking in heating, plumbing, and air-conditioning. Flexa Steel Products, Inc., 1348 W. Washington Blvd., Chicago 7, Ill.

doors and windows

Reddi-Mount: preassembled cylindrical lock remains in perfect alignment due to its single-unit construction. Other features: free wheeling knob, locking push button in knob, automatic unlocking, 5-pin cylinder, brass latch and solid brass trim with concealed screws. J. Chesler & Sons, Inc., 45-F Varick Ave., Brooklyn 37, N. Y.

Threshold: new door-step threshold, made of abrasive iron and aluminum and also bronze and nickel when permitted, has non-slip surface and beveled edges front and back. Standard widths: 4", 5", and 6" with maximum length of 6'; other widths and lengths to 8'-6" require special patterns. Wooster Products, Inc., Wooster, Ohio.

electrical equipment, lighting

Mobilex: new and flexible system of recessed lighting designed for grid-type suspended ceilings consisting of interlocked "tees" spaced 24" x 24" or 24" x 48" center to center, supporting Fiberglas Ceiling Board. Can be used as single units mounted end to end or mounted side by side. Available in two-, three-, and four-lamp fluorescent arrangements. Day-Brite Lighting, Inc., 5411 Bulwer Ave., St. Louis 7, Mo.

finishers and protectors

Glare-Out: blue-green transparent coating for windows to cut down heat and glare from the sun. One gallon covers up to 400 sq ft and can be applied with a spray gun or mohair paint roller; will not peel, chip, or wash off. Fade-Proof Corp. of America, 3520 N. Spaulding Ave., Chicago 18, Ill.

sanitation, water supply, plumbing

Safe-T-Aire Lamp: new high-intensity ultraviolet lamp for installation in air-conditioning systems which destroys bacteria, viruses, and mold spores; especially useful in food, drug, chemical, and beverage plants, schools, and hospitals. Can be installed in regular air ducts. Hanovia Chemical & Mfg. Co., 100 Chestnut St., Newark, N. J.

specialized equipment

GK-1 Optical Level: new optical level has 4-⅝-in. telescope and quick-coupling device which makes the instrument and its tripod a rigid whole. Bulls-eye level (read through mirror tilted to 45°); clamping screw for ball-and-socket joint takes the place of foot-screws and allows perfect leveling in a few seconds. Paul Reinhart Co., Kern Surveying Instrument Div., 66 Beaver St., New York 4, N. Y.

Paraline: new drafting tool which provides in one instrument T-square, straight-edge, triangle, protractor, 1/32-in. scale, and parallel rules. Metal parts incorporated in one section; measures 10¼" x 3-3/16" and requires no attachments or board clamps. Loomis Industries, Box 442, Berkeley 1, Calif.

surfacing materials

Latex-O-Crate: new type industrial flooring material designed purposely to resist chemical action, many acids, oils, solvents, and other floor deteriorants; may be applied directly over old surfaces at average depth of only one-quarter inch. United Laboratories, Inc., 1608 Euclid Ave., Cleveland 12, Ohio.

p/a manufacturers' literature

★ *Editors' Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.*

air and temperature control

1-228. Flexicore Split-System of Warm-Air Panel Heating, A.I.A. 4-K, 6-p. folder describing counterflow and single-duct systems that utilize the hollow cores of Flexicore precast concrete slabs to combine the benefits of both circulated air and radiant panel heating and to eliminate their disadvantages. Flexicore slabs act simultaneously as a structural floor, ducts for a circulating warm-air system, and a panel heating unit. Both systems illustrated with two-color diagrams of air-flow and installation details. The Flexicore Co., Inc., 1932 East Monument Ave., Dayton 2, Ohio.

1-229. Gentle Warmth (51652), 8-p. catalog on the Thermo-Base unitized system of air distribution for heating and air conditioning. Comparative installation cost data, installation instructions, comparisons with other types of systems, complete engineering data, rules for application. Illustrated with installation pictures showing the various types of application. Gerwin Industries, 214 Spring St., Michigan City, Ind.

1-230. Modern Practices in Hospital Ventilation, A.I.A. 30-D-1 (1510), 18-p. bulletin explaining general hospital ventilating needs; recommended air changes listed. Photos and drawings of equipment and installations. Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill.

1-231. Low-Cost Modern Heat for Comfortable Living, 4-p. folder listing features of a residential baseboard-heating system. Typical installations illustrated with drawings, photos showing modernization of old homes. Radiant-Ray Radiation, Inc., 900 W. Main St., New Britain, Conn.

construction

3-186. Fireproofing with Perlite, 8-p. revised pamphlet summarizing basic details of 32 approved fire-retardant constructions using lightweight plaster or concrete made with perlite aggregate. Diagrams show required thickness of perlite plaster or concrete, furring details, and other basic elements. Perlite Institute, 10 E. 40 St., New York 16, N. Y.

3-187. Suspended-Ceiling Systems, A.I.A. 39-B-1 (SNU-5), 12-p. brochure giving information and specifications on three types of suspended-ceiling systems. Information also given on Sanymetal E-Z Level Clip which simplifies leveling of suspended ceiling installations. The Sanymetal Products Co., Inc., Suspended Ceilings Div., 2093 E. 19 St., Cleveland 15, Ohio.

3-188. Concrete Floors & Roof Decks, 4-p. folder describing a monolithic one-way concrete plate slab, cast in place, which uses paper tubes as fillers. List of advantages, typical details, specifications, design table, description of procedure in design. Photos, drawings. The Tube Slab Co., 57 Farmington Ave., Hartford 5, Conn.

3-189. Architectural - Grade Weldwood: Construction Details and Specifications, A.I.A. 19-F (1034-5102), 32-p. handbook providing information on the design of interiors using thicker panels of Weldwood plywood. Grades and types, veneer characteristics, panel construction, fireproofing information, panel layouts, specifications. United States Plywood Corp., 55 W. 44 St., New York 18, N. Y.

doors and windows

4-228. Hardware for the Specialized Requirements of Hospitals, 4-p. catalog discussing the features of hardware for use in hospitals. Various types of door locks, automatic exit fixtures, door closers and pulls, friction latches, and locks for instrument, medical, and narcotic cabinets; illustrated by drawings. The American Hardware Corp., P. & F. Corbin Div., New Britain, Conn.

4-229. Marvel-Lift Doors, A.I.A. C-27 and D-16 (CD-1671), 84-p. hard-bound catalog giving detailed information on industrial and residential doors, divided into categories of size. Preparation of industrial and residential openings, details of doors and hardware, auxiliary equipment. Crawford Door Co., 401 St. Jean Ave., Detroit 14, Mich.

4-230. Modernfold Track Switches, A.I.A. 16a (551 SW), 4-p. folder describing track switches for Modernfold doors in residential, commercial, and public buildings. Pivot-switch swings folding door 90° from normal line of travel, glide switch transfers door from one track-line to a secondary track-line, cross-track switch permits two tracks to cross at right angles with through-travel in either direction. Photos, drawings. New Castle Products, New Castle, Ind.

4-231. Window Glazing with Plexiglas, A.I.A. 26-A-1 (PL-23), 16-p. brochure giving Plexiglas solutions to various window glazing problems. Discussion of the advantages of the plastic, list of properties, utility glazing details; photos, drawings. Rohm & Haas Co., Plastics Dept., 222 W. Washington Sq., Philadelphia 5, Pa.

4-232. Doors, Frames, Entrances, 12-p. catalog listing and illustrating architectural aluminum doors and entrances. Narrow-stile entrances with construction details, stock-door units and glass-door frames. Photos of installation in new and modernized buildings. Variety Mfg., & Eng., Co., 810 W. Fulton St., Chicago 7, Ill.

electrical equipment, lighting

5-152. Relays for Industry (1702-A), 12-p. booklet covering complete line of telephone-type relays including hermetically-sealed (in metal and glass containers) subminiature, plug-in, and other types. Informational tables for ordering, list of enclosures for relays. Photos, drawings, charts. Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.

5-153. Troffers, A.I.A. 31-F2 (T-50), 12-p. brochure describing troffer-type fluorescent lighting fixtures for recessed mounting in acoustical ceilings. Specifications of models, installation data. Drawings, tables. Gruber Bros., Inc., 125 S. 1 St., Brooklyn 11, N. Y.

5-154. Plexiglas for Luminous Ceilings, A.I.A. 31-F-2 (PL-25a), 22-p. booklet illustrated with photos of installations of luminous ceilings in commercial buildings. Advantages of luminous ceilings and diffusing panels, designing of lighting system, case studies. Support details and unit designs. Rohm & Haas Co., 222 W. Washington Sq., Philadelphia 5, Pa.

5-155. New Achievement in Industrial Lighting (600A), 4-p folder describing new industrial slimline lighting unit which has an over-all efficiency of over 90% and up-lighting of more than 20%. List of features, dimensional data on parts and accessories, ordering information. Photos, table, drawings. A. L. Smith Iron Co., Smithcraft Lighting Div., Chelsea 50, Mass.

finishers and protectors

6-87. Exterior Finishes for Redwood (4B3-1), 4-p. bulletin with 2-p. supplement discussing paint, stain, clear finishes, stain and clear combinations, and bleaches for exterior redwood construction. Color charts, table of uses of redwood finishes. Supplement: list of finish systems recommended by manufacturers for outdoor use on redwood. California Redwood Assn., 576 Sacramento St., San Francisco 11, Calif.

6-88. Protect the Weather Side of Your Building with Dehydratine No. 22, 4-p. folder explaining the six functions of a silicone-base water-repellent for use on concrete, stucco, and masonry. Specifications, photos. A. C. Horn Co., Inc., 10 St. and 44 Ave., Long Island City 1, N. Y.

Two 4-p. brochures describing a nonporous, elastic rust-preventive coating for interior and exterior metal surfaces in industrial plants and commercial buildings. Summary of performance test data, color and covering capacity data; photos, cutaways. L. Sonneborn Sons, Inc., Building Products Div., 80 8 Ave., New York 11, N. Y.:

6-89. Sure Rust Prevention

6-90. Painting—Rust Preventive Coating, A.I.A. 25-B-33, 25-B-241 (BP4021)

6-91. Maintenance Painting Guide (257-CFP-NS), 4-p. guide to specialized maintenance coatings for problems of rust, dampness, chemical corrosion, painting odors, and fumes. Descriptions of coatings for use over metal, concrete, wet wall, fresh plaster, and exterior masonry and wood surfaces. Quick reference index. The Wilbur & Williams Co., 130 Lincoln St., Boston 35, Mass.

insulation (thermal, acoustic)

Two 4-p. folders describing three thermal and acoustical insulating materials. First discusses the physical properties of all three materials and points out the qualities they have in common, including their principal uses, ease of application, and choice of facings available with each. Second describes in greater detail the physical properties, principal uses, handling characteristics, thermal conductivity, and acoustical efficiency of one of the materials. Made of extremely fine, blown-glass fibers. Photos and tables. Gustin-Bacon Mfg. Co., 210 W. 10 St., Kansas City, Mo.:

9-90. A Complete Line of Glass Fiber Acoustical Insulations

9-91 Ultrafine

sanitation, water supply, plumbing

19-328. Donley Incinerators, 2-p. leaflet. Receiving hopper door and flue sizes, sizes and installation information on incinerator available in flue-fed models, floor-fed, industrial, garden or estate models, and prefab steel shell units. Also information on gas burner for use in medium-sized incinerators in homes, apartments, schools, stores, and hospitals. The Donley Bros., Co., 13900 Miles Ave., Cleveland 5, Ohio.

19-329. Electro-Drain: Automatic Sanitary Garbage Disposer (K-6318-P), 2-p. data sheet listing special features of automatic garbage disposal unit fitting any sink with 3½" to 4" opening. Operating instructions, specifications, and installation data. Photo, cutaways. Nash-Kelvinator Corp., Kelvinator Div., 14250 Plymouth Road, Detroit, Mich.

19-330. Solid Olsonite Seats, A.I.A. 29-H-22 (SCS-8), 62-p. catalog covering complete line of solid-plastic toilet seats. Color charts, specifications, shipping weights, maintenance and cleaning instructions, government specifications. Photos, drawings. Swedish Crucible Steel Co., Plastic Div., 8561 Butler Ave., Detroit 11, Mich.

19-331. Triangle Plastic Pipe, 16-p. brochure on four types of plastic pipe: flexible, semirigid, rigid high-impact, and rigid polyvinyl chloride. Detailed tables of chemical and physical characteristics of each type; advantages of using plastic pipe and directions for installing and joining the pipe. Photos, charts. Triangle Conduit and Cable Co., Inc., Plastic Products Div., 1920 Jersey Ave., New Brunswick, N. J.

specialized equipment

19-332. Extension Drawer Support, A.I.A. 27-C, 4-p. booklet listing features of extension drawer support. Details, installation instructions, specifications; photos and drawings. The Extension Drawer Support Co., 2319 W. Washington Blvd., Los Angeles 18, Calif.

Two catalogs describing a chalkboard-setting system and adjustable storage racks, respectively. Descriptions, drawings, and specifications of aluminum ground and trim for both recessed and surface-applied types of chalkboard installations with chalk troughs, map rails, and other accessories. List of advantages of adjustable storage racks for materials in long lengths such as metal mouldings, tubing, and pipe. Loxit Systems, Inc., 1217 W. Washington Blvd., Chicago 7, Ill.:

19-333. Loxit Chalkboard Setting System, A.I.A. 35-B-11 (BB)

19-334. Loxit Adjustable Storage Rack, A.I.A. 35-i-15 (R)

★ **19-335. Time Is a Priceless Element,** A.I.A. 32c (938). Folio containing pamphlets on time recording and signalling devices, synchronous motor-control clocks, and program machines; available in single units or complete central-control systems. Photos, details, and specification data. The Cincinnati Time Recorder Co., 1733 Central Ave., Cincinnati 14, Ohio.

surfacing materials

19-336. Ceramic Tile Adhesive No. 10, 4-p. folder describing a method of installing clay-tile walls and flooring either in new construction or for remodeling purposes. List of advantages of the material over conventional tiling methods. Specifications on surface and tile preparation, wall and floor tile installations, cleanup methods, and correct grouting procedure. Minnesota Mining and Mfg. Co., 411 Piquette Ave., Detroit 2, Mich.

19-337. Panelyte Plastic Beauty (252), 8-p. brochure illustrating residential and commercial uses of a laminated plastic surfacing material. Color chart and photos. Description of sizes, grains, and finishes. Instructions for veneering, fabricating, and applying the material. St. Regis Paper Co., Panelyte Div., 230 Park Ave., New York 17, N. Y.

19-338. Counter Magic for Your Kitchen (4268), 4-p. folder covering four types of surface materials for standard-base kitchen cabinets: Formica, vinyl plastic, linoleum, and edge-grain maple; 17 patterns or colors. Color photos. Youngstown Kitchens, Mullins Mfg. Corp., Warren, Ohio.

(To obtain literature, coupon must be used by 4/1/53.)

(We request students to send their inquiries directly to the manufacturers.)

PROGRESSIVE ARCHITECTURE, 330 West 42nd Street, New York 36, N. Y.

I should like a copy of each piece of Manufacturers' Literature circled below.

1-228	1-229	1-230	1-231	3-186	3-187	3-188	3-189
4-228	4-229	4-230	4-231	4-232	5-152	5-153	5-154
5-155	6-87	6-88	6-89	6-90	6-91	9-90	9-91
19-328	19-329	19-330	19-331	19-332	19-333	19-334	19-335
19-336	19-337	19-338					

Name

Position

Firm

Mailing Address ☐ *Home* ☐ *Business*

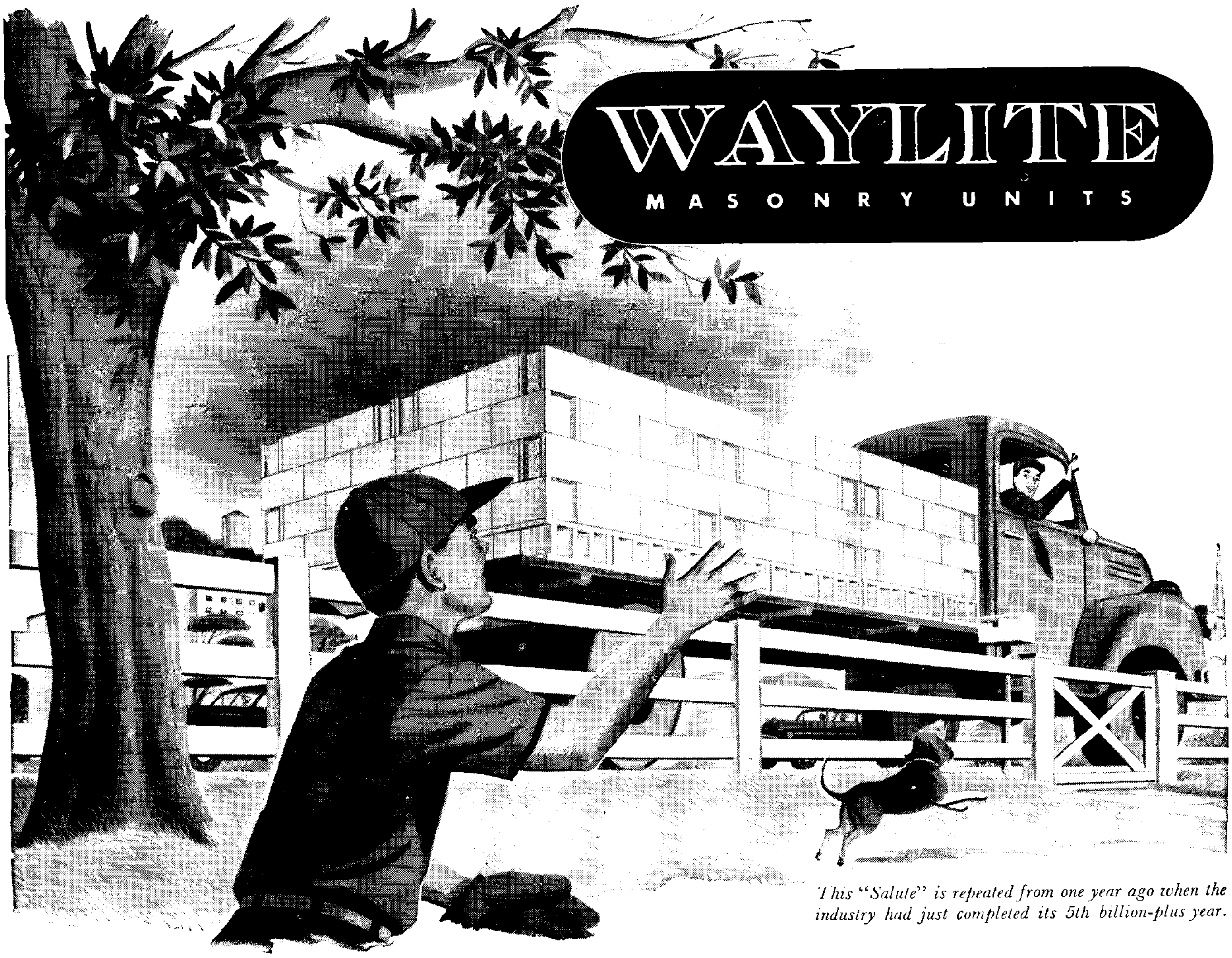
City *State*

please print **2/53**

A SALUTE TO THE **Concrete Masonry Industry**

ON ITS SIXTH SUCCESSIVE BILLION-PLUS YEAR

The remarkable record of the Concrete Masonry Industry during the past six years in producing the equivalent of over Six Billion sq. ft. of 8″ Masonry Wall Units has few parallels in building industry history. . . . This production has been equal to about two-thirds of all masonry walls built in the United States during this period. . . . This unprecedented growth of the Concrete Masonry Industry has been the direct result of the quality, utility and economy of concrete masonry walls, and the superior service of progressive locally-owned companies. . . . The Waylite Company is proud to be a part of such an outstanding industry in the construction field, and this seemed to be a good time to say so. . . .



This "Salute" is repeated from one year ago when the industry had just completed its 5th billion-plus year.

round table discussion

During a recent panel discussion on "What Specifications Mean to Me," at the opening meeting of the Metropolitan Chapter (N. Y.) of the Construction Specifications Institute, an architect, a contractor, and an architect's field supervisor discussed the theme. The architect said, "a blasted nuisance," the contractor said, "say it right and I'll bid it right," the supervisor said "write it fairly and stress performance objectives rather than flyspecking." The architect's remark was made to dramatize his serious approach. He knew perfectly well that the specifications constitute one of the four elements comprising the Contract Documents. He even stated he "liked" writing them together *with his job captain* as a means of reviewing his design decisions and as a means toward a better evaluation of the technical proficiency of his men. In a sense he felt the specifications could be viewed frequently as a teaching medium. Bless him. The contractor said he was puzzled. He exhibited three different Concrete Sections. One section had 2½ pages, the second 8 pages and the third 20 pages. The only thing they had in common was the almost identical dollar value of the concrete work. He said the 20-pager produced no better concrete than the two other specifications. He never read it through when a sampling indicated a verbatim repetition from known standards; his superintendent skimmed through it for salient points only, such as compressive strength, slump, finishes, etc., his foreman does not read too well. The 8-pager combined performance objectives with mixes and methods spelled out in detail; one contradicting the other. While not an admirer of brevity for its own sake he found the 2½-pager a succinct performance, descriptive, adequate for the intended purpose.

it's the law

It seems to me that legal problems pertaining to the proper construction of buildings too often stem from the improper construction of specification sentences.

cardiarchitecture

I regret never studying anatomy. I just about appreciated the function of a heart-saver contour chair when along comes a recent magazine article entitled "Heart-Saver Kitchen." What next, a rump-saving rumpus room?

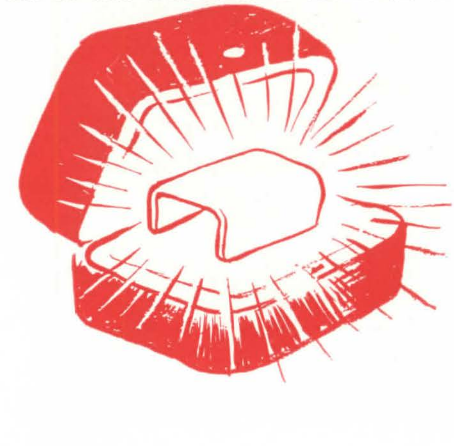
aluminum reefer

For more years than I care to remember I have been told—particularly by manufacturers of aluminum windows—that one could not weld aluminum successfully. In the Alcoa Aluminum News-Letter (August 1952), we came upon the following:

"Foster Refrigerator Corporation was the first to recognize the inherent advantages of aluminum: its light weight, resistance to corrosion, high reflectivity to radiant heat, resistance to chemicals, nontoxicity. The young company solved its technical problems and began building quality refrigerators and freezers for hospitals, schools, institutions, industries and farms. Now it proudly lays claim to the fact that it's the largest manufacturer of welded all-aluminum refrigerators in the business. Standards meet all requirements of government and military forces. Refrigerators feature all-welded construction, heavy-duty, sag-proof aluminum shelves, overlap doors, heavy-density insulation, and a choice of white Dulux or processed natural aluminum finishes."

I bristled at the thought that I had been misled and asked Foster to come in and tell his story. He explained that originally his problems were to select an aluminum alloy strong enough for world-wide shipment, one that would withstand hard and constant use under all conditions and would not pit, fungus, corrode, or turn black; to develop the production "know-how" and technique of welding aluminum alloy throughout the entire refrigerator; to produce a gleaming, "peel-proof," white Dulux finish on aluminum. And to develop a colorless easy-to-clean finish for natural aluminum that would minimize fingermarks.

Pressing for data on welding of light-gage aluminum he took out of his pocket, believe it or not, a velvet-lined jewel case in which lay resplendently an aluminum typical corner section of his refrigerators. The outer surface appeared as monolithic as a billiard ball. The inner surface revealed an appendectomy-like scar produced by welding. The welding is of the tungsten-arc type which utilizes a metal arc, a tungsten electrode, and an inert gas envelope. This method requires no welding flux consequently no cleaning operations are required subsequent to welding and no flux contamination can occur. In welding aluminum an a.c. arc in argon gas is used. The argon atmosphere protects both the tungsten electrode and the aluminum being welded. He went on to say that his reefers were one-half lighter than those of other metals resulting in lower freight and installation costs and greater mobility; that by actual test a weight dropped from equal heights on equal thicknesses of aluminum and other metals dented both metals with no appreciable difference in size or depth of dent.



I asked him why in the first place did he select such a seemingly difficult material to work with. He stated he was attracted to certain important properties of aluminum such as rot and corrosion proofness, high reflectivity to radiant heat, chemical resistance, nontoxicity, nonsparking and nonmagnetic characteristics, and low cost. (Note to deep freeze donors: are you paying attention?)

streamlining

Federalese, the term used to describe the tortuous terminology in which bureaucratic directives are written, knuckled under to plain English when a New York City plumber wrote to the Bureau of Standards that he had found hydrochloric acid good for cleaning out clogged drain pipes. The Bureau's response was, "The efficacy of hydrochloric acid is indisputable, but the corrosive residue is incompatible with metallic permanence." The plumber wrote back he was glad the Bureau agreed with him.

To which the Bureau replied, "We cannot assume responsibility for the production of toxic and noxious residue with hydrochloric acid and suggest you use an alternative procedure." By return mail, the plumber told how glad he was the Government thought his idea was O.K.

In desperation, the Bureau broke down and wrote the plumber in plain Anglo-Saxon language, "Don't use hydrochloric acid. It eats hell out of the pipes."

Operating Room, Misericordia Hospital Addition, Milwaukee, Wisconsin. Floor: Pattern No. 1778-A3, 1⁹⁄₁₆" x 1⁹⁄₁₆" x ¼" neutral warm brown Conductive Floor Tile. Wainscot: 4¼" x 4¼" wall tile and trim, Color No. 302, Harmonitone warm gray. Brust & Brust, Architects. Stark Mantel & Tile Company, Tile Contractor.

Photo by Hedrich-Blessing.

Mosaic Conductive Floor Tile*

for hospital anesthetizing locations

safe
sanitary
easy-to-clean
permanent

The Mosaic Tile Company's Electrically Conductive Vitreous Ceramic Mosaic Floor Tile meets N.F.P.A. No. 56, "Recommended Safe Practice for Hospital Operating Rooms."

WHERE USED: Recommended for all anesthetizing locations in surgical and obstetrical suites.

WHAT IT DOES: Mosaic Conductive Floor Tile dissipates static electricity, prevents the accumulation of dangerous electrostatic charges by providing moderate conductivity between persons and conductive equipment in contact with the floor.

HOW INSTALLED:

In new construction, the setting bed (minimum thickness 1") consists of a mixture of mechanically mixed and pulverized Acetylene Carbon Black and Portland Cement, mixed with sand.

For alterations without structural changes, a thin setting bed method has been developed (raises existing floor line approximately ⁵⁄₁₆"). Special mastics with the required electrically conductive properties are available. In both setting methods joints are composed of waterproofed Gray Portland Cement.

For detailed information on **Mosaic Conductive Floor Tile,** see your nearest Mosaic representative, or write Dept. 28-13, The Mosaic Tile Company, Zanesville, Ohio.

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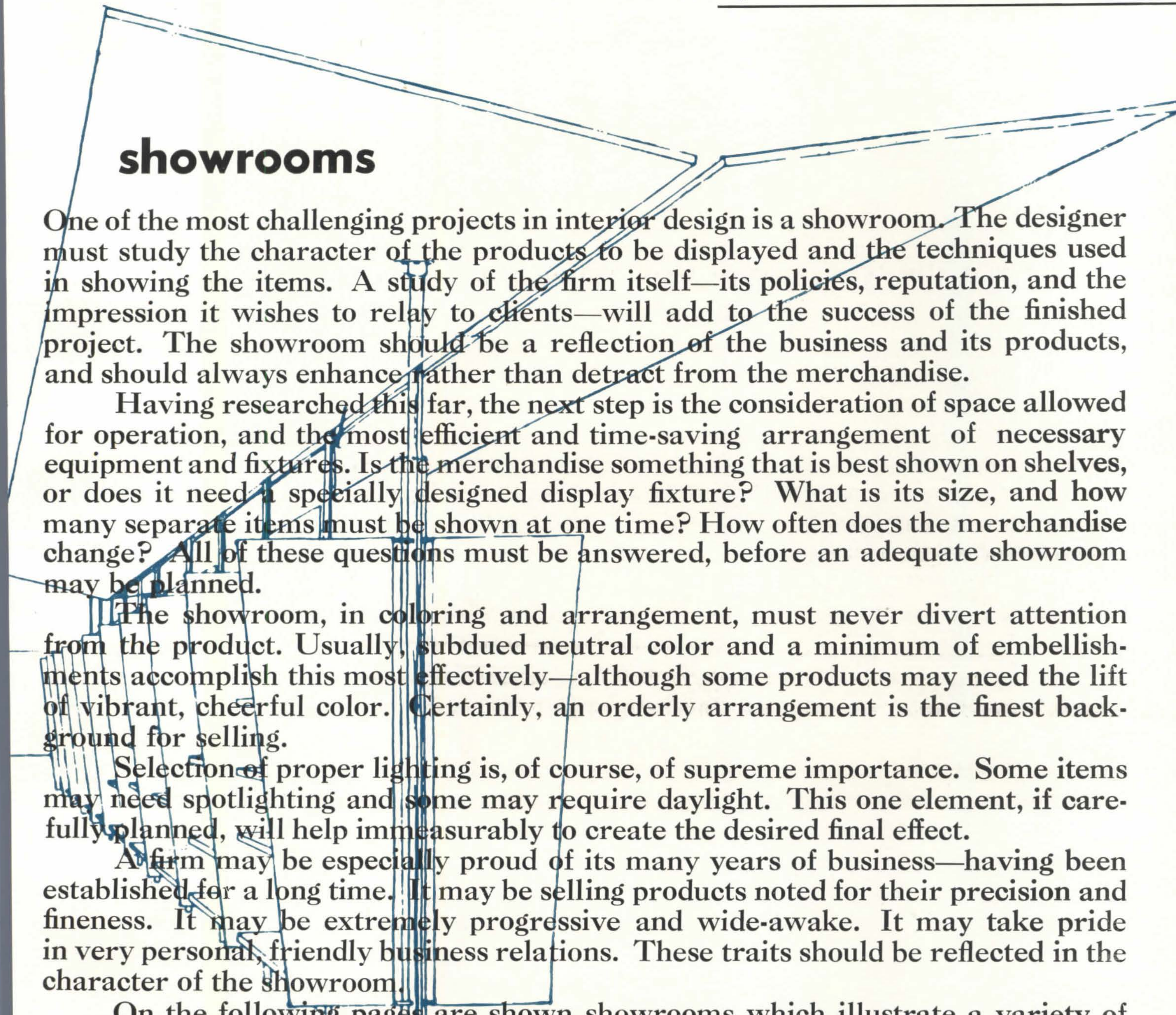


showrooms

One of the most challenging projects in interior design is a showroom. The designer must study the character of the products to be displayed and the techniques used in showing the items. A study of the firm itself—its policies, reputation, and the impression it wishes to relay to clients—will add to the success of the finished project. The showroom should be a reflection of the business and its products, and should always enhance rather than detract from the merchandise.

Having researched this far, the next step is the consideration of space allowed for operation, and the most efficient and time-saving arrangement of necessary equipment and fixtures. Is the merchandise something that is best shown on shelves, or does it need a specially designed display fixture? What is its size, and how many separate items must be shown at one time? How often does the merchandise change? All of these questions must be answered, before an adequate showroom may be planned.

The showroom, in coloring and arrangement, must never divert attention from the product. Usually, subdued neutral color and a minimum of embellishments accomplish this most effectively—although some products may need the lift of vibrant, cheerful color. Certainly, an orderly arrangement is the finest background for selling.

Selection of proper lighting is, of course, of supreme importance. Some items may need spotlighting and some may require daylight. This one element, if carefully planned, will help immeasurably to create the desired final effect.

A firm may be especially proud of its many years of business—having been established for a long time. It may be selling products noted for their precision and fineness. It may be extremely progressive and wide-awake. It may take pride in very personal, friendly business relations. These traits should be reflected in the character of the showroom.

On the following pages are shown showrooms which illustrate a variety of approaches to design. Particularly interesting are the two completely different approaches to showrooms with identical (Aloe) products. In the first example, the architect has decided to make his building materials the same in character and coloring as the products, to accomplish a unified whole. The second treatment has an orderly, attractive appearance created with light colors and use of occasional red accents for sparkle.

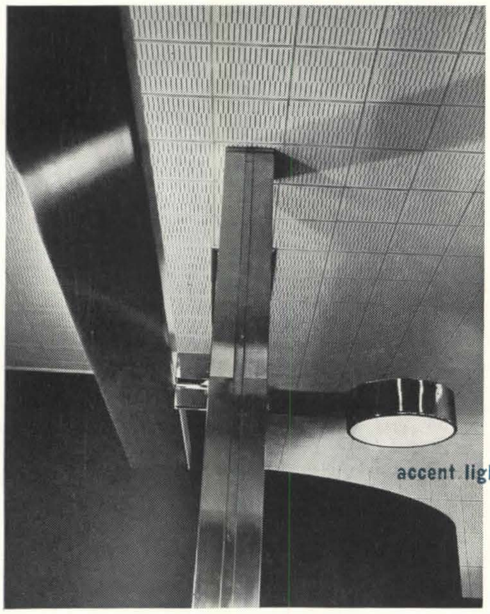
The third, a fabric showroom is particularly good because of the specially designed fixtures used for storing and displaying heavy bolts of fabric, fabric swatches, and drawings in the most facile manner. The fourth, for a company that sells a great number of small decorative accessories, is also beautifully executed, with fixtures easily adjustable to changing displays.

The designers of all four showrooms have had entirely different spaces with entirely different considerations—and have solved their problems well.

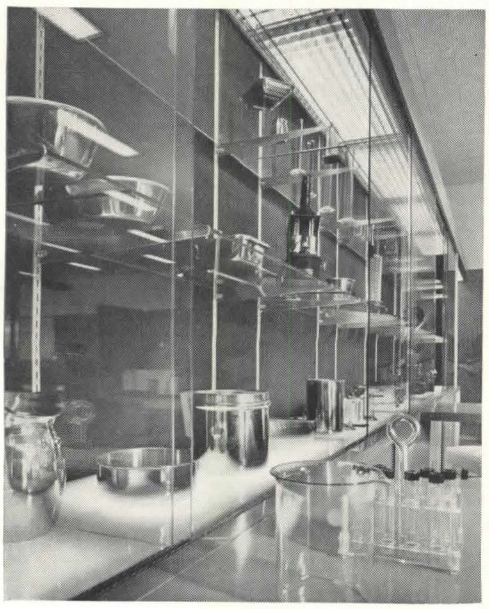
showrooms

client	A. S. Aloe Company
location	Los Angeles, California
architect	Richard J. Neutra

mural



accent light



glass shelves

data

cabinet work

Cases: H. D. Cowan Co., 2828 Whittier Blvd., Los Angeles 23, Calif.

doors and windows

Doors: flush-slab, hollow-core. **Hardware:** Schlage, Bayshore & Blanken Ave., San Francisco, Calif.

Windows: The Kawneer Co., 714 N. Front St., Niles, Mich./ **glass:** Libbey-Owens-Ford Glass Co., Room 1038-T, Nicholas Bldg., Toledo, Ohio and Mississippi Glass Co., 88 Angelica St., St. Louis, Mo.

furnishings and fabrics

Chairs and Tables: designed by architect/ executed by Fred T. Epping, 11163 La Grange, Los Angeles 25, Calif.

Chair Upholstery: #5420 color 60A, Grain GA Duran plastic.

Table Tops: #1004 gray Formica/ Mortimer & Wulff, 1943 Glendale Blvd., Los Angeles 26, Calif.

lighting

All Lighting: designed by architect/ executed by Wagner-Woodruff Co., 830 S. Olive St., Los Angeles 14, Calif.

walls, ceiling, flooring

Walls: "Flexwood"/ flexible veneer wall covering/ U.S. Plywood Corp., 55 West 44 St., New York, N.Y./ "Marlite" panels/ Davidson Plywood & Lumber Co., Los Angeles, Calif.

Mural: 60-foot/ designed by architect/ executed by Hans Mangelsdorf, 8560 Walnut Drive, Los Angeles, Calif.

Acoustic Tile: "Auditone"/ U.S. Gypsum Co., 300 W. Adams St., Chicago 6, Ill.

Asphalt Tile: "Kentile"/ #D-247 Travertine and #B-204 Grand Antique/ David E. Kennedy Inc., 58 Second Ave., Brooklyn, N.Y.

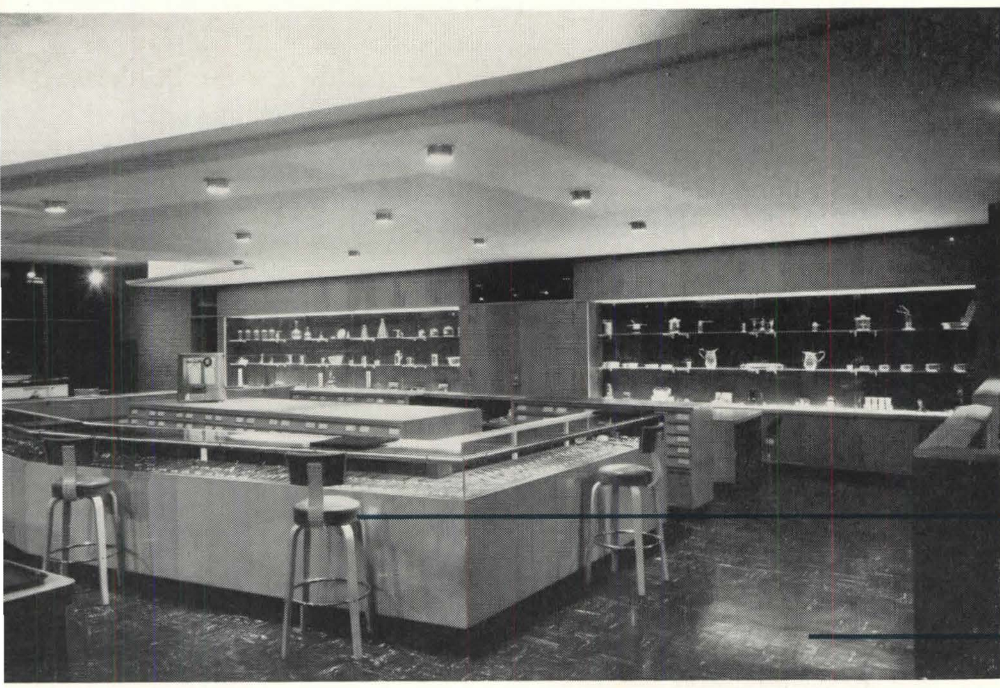
A sixty foot mural in the principal showroom of this building depicts the sub-tropical hospital overlooking a bay of blue-green ocean, a shore of palms, and Henri Rousseau vegetation. It serves for the main color feature and also as an expression of the company's interest in the development of health facilities in California, the Pacific area, and all countries of clement climate which are increasingly engaged in a program of health service. The only other color accent is in the golden draperies—conceived to form a restrained background and foil for shining laboratory appliances, surgery tables, sun lamps, and the company's metal and black-and-white enamel apparatus.

The designer's approach to this showroom has been exemplary. Firstly, he very carefully studied the products to be shown. Finding that their ingenious design and utility allowed them to stand alone, with no need of embellishment, Neutra's first consideration was a clear, uncluttered presentation.

Shelving is inconspicuous, and lighting above and below enhances the shape and material qualities of the equipment. Other merchandise is exhibited alone, with no display medium, but the surroundings are sympathetic to the shapes and materials of the exhibits. Principal interior materials—plate glass, metals like electrolytically finished aluminum and stainless steel—all have been used as inconspicuous yet flattering settings. *Photos: Julius Shulman*

showrooms

client	A. S. Aloe Company
location	Minneapolis, Minnesota
architects	Thorshov & Cerny, Inc.
interior designer	Newton Griffin



data

cabinet work

Showcases and Island Displays: natural birch with light finish tops of #30 Armstrong's blue linoleum, #893 grey Micarta or plate-glass/ shelves of polished plate-glass/ lining blue velvet/ designed by Richard J. Neutra/ developed by A. S. Aloe's California office/ L. Paulle Midway Co., St. Paul, Minn.

Wood Finish: #17 GD/ Pratt & Lambert.

doors and windows

Wooden Doors: 1¾" hollow-core/ flush-birch/ Paine Lumber Co., Oshkosh, Wis.

Door Hardware: dull-chrome finish/ Schlage, Bayshore & Blenken Ave., San Francisco, Calif./ Norton Door Closer Co., Berrien Springs, Mich./ The Stanley Works, 195 Lake Ave., New Britain, Conn.

Windows: ¼" polished plate, aluminum fixed/ Pittsburgh Plate Glass Co., 2108-A Grant Bldg., Pittsburgh 19, Pa. Hope's Windows, Inc., Jamestown, N.Y.

equipment

Screens: between sales displays/ birch plywood/ architect-designed.

furnishings and fabrics

Chair: #DCM/ molded-plywood/ designed by Charles Eames/ Herman Miller Furniture Co., Inc., Zeeland, Mich.

Stool: laminated-birch-plywood legs/ blue Duran upholstered seat/ Thonet Industries, Inc., One Park Ave., New York 16, N.Y.

lighting

Recessed Incandescent Fixtures: Elco Products, Cleveland, Ohio.

Neon Tube in Cove: General Electric Co., Schenectady 5, N.Y.

walls, ceiling, flooring

Walls: painted plaster, paint, Glidden Co., New York, N.Y.

Ceiling: furred plaster/ U.S. Gypsum Co., 300 W. Adams St., Chicago 6, Ill. /**paint:** #E-2 yellow, Glidden Co.

Acoustic Plaster: Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill.

Asphalt Tile: #B-211 black, red, and white/ Tile-Tex Division, Flintkote Co., Chicago Heights, Ill.

laminated-plywood stool

asphalt-tile flooring

Design of this showroom has created an atmosphere of cleanliness, reinforcing the quality of medical supplies displayed. Colors are warm and clear, in contrast to the large black area of the tile flooring and the expanses of natural birch woodwork. Basic values of grey, yellow, and blue (the company colors used in printed catalogues, bulletins, etc.) in the walls, cabinets, and ceiling are accented with red-painted columns and flecks of red in the floor tiles—welcome relief from the building's former combination of golden-oak woodwork and buff paint.

This showroom is unique in its placement in the building. An open vista of the entire office-display section is provided on a busy street in close proximity to potential customers. It is also an effective spotlighted night display. Office space is near the showroom, for convenient supervision and operation in placing orders.

Photos: Allen Downs

client		United Merchants and Manufacturers, Inc.
location		New York, New York
associated architects		S. Brian Baylinson and Frank A. Faillace

data

cabinet work

All Fixtures: designed by architects/ manufactured and installed by Juno Woodworking Co., 58-85 58 Ave., Maspeth, L.I.

furnishings and fabrics

Chairs and all Seating: custom and stock/ H. S. Clifton Co., 236 E. 59 St., New York, N.Y.

Tables: designed by architects/ executed by Juno Woodworking Co.

lighting

Eggcrate Ceiling: Marlou Lights, Fanwood, New Jersey/ standard fluorescent strip/ Sylvania Electric Products Co., Inc., 1940 Broadway, New York, N.Y.

walls, ceiling, flooring

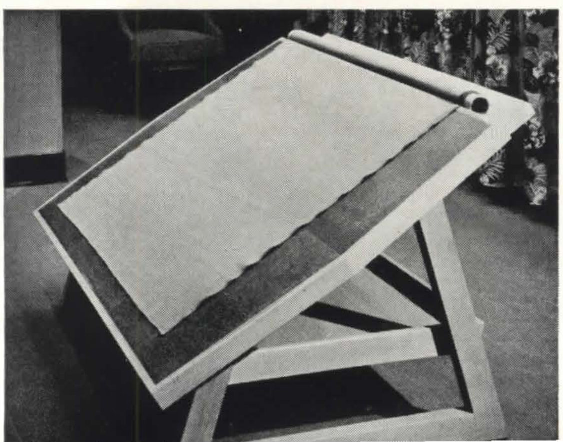
Walls and Ceiling: painted plaster/ Pratt & Lambert Paints, Inc., 33-01 38 Ave., Long Island City, N.Y./ **fire-proof-oak partitioning:** Juno Woodworking Co.

Floor Covering: #3402 "Grospoint," cedar woolen carpeting/ Bigelow Carpet Co., 140 Madison Ave., New York, N.Y.

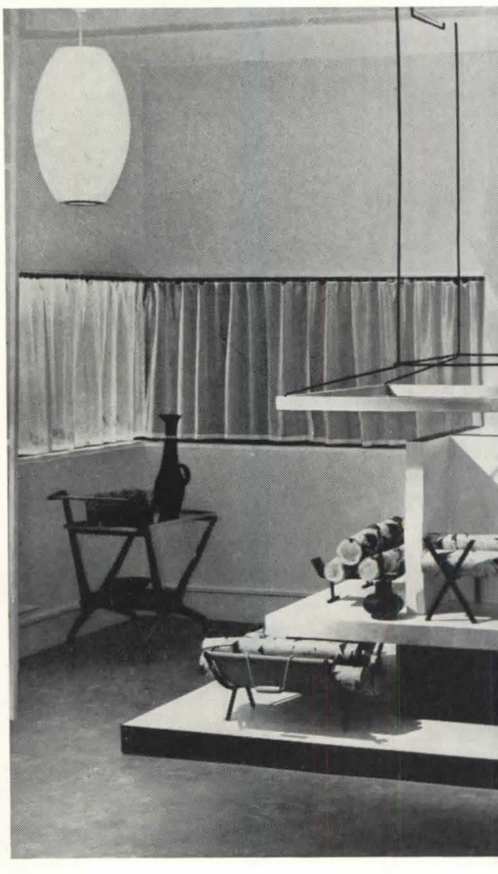
Correct exhibition, storage, and display of fabrics were the problems of these designers. Fabrics are shown to customers in bolts, sample lengths, swatches, and drawings. The tables can handle all of these situations. Bolts of fabric are usually the most difficult to handle, but tables have been designed to control these.

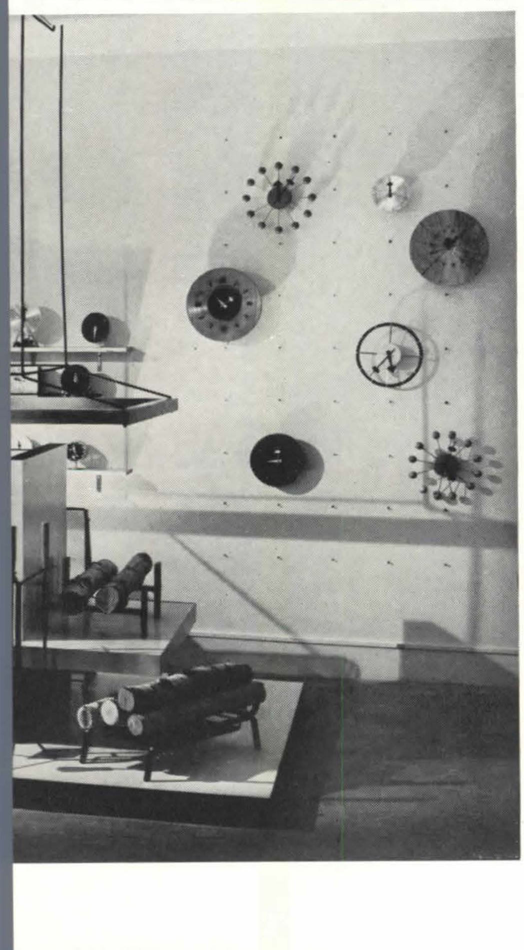
Storage space has been hidden, so that there is no distraction to customers, and an organized filing system has been set up.

All wall color and carpet make a neutral setting as background for fabrics displayed. *Photos: Alexandre Georges*



showrooms





data

cabinet work

Showcase Metalwork: Beacon Artisans, Inc., 333 E. 26 St., New York, N.Y./ Spanish Arts Ornamental Iron Works, Inc., 164 Mulberry St., New York, N.Y.

Wooden Display Fixtures: Walter P. Sauer & Sons Co., 30-28 Starr Ave., Long Island City, N.Y./ Manuel Contracting Co., 505 Fifth Ave., New York, N.Y.

Display Platforms: Post Displays, 11 Frankfort St., New York, N.Y.

Space Dividers: lacquered stock hollow-core doors on horizontal angle irons, mounted on vertical supports/ Walter P. Sauer & Sons Co., 30-28 Starr Ave., Long Island City, N.Y.

doors and windows

Doors: unchanged (leased area).

Window Treatment: white metal Venetian blinds/ Davey and Thomann, 101 Park Ave., New York, N.Y./ curtain fabric: white nylon net/ R. J. Ederer Co., 540 N. Orleans St., Chicago, Ill. /bleached Habutai silk: Arundell Clarke, 25 E. 73 St., New York, N.Y.

Side Chairs: designed by Ernest Race/ Waldron Assoc., 1230 Second Ave., New York, N.Y./ upholstery: red plastic fireproof fabric/ Rafael Fabrics, Chicago, Ill.

Duck Fabric: white, for suspended ceilings/ Dazian's Inc., 142 W. 44 St., New York, N.Y.

Striped Denim: toast-and-white/ Greeff Fabrics, 4 E. 53 St., New York, N.Y.

lighting

Ceiling Fixtures: #1904/ movable twist-on-fixture with universal swivel joint/ General Lighting Co., Inc., 1527 Charlotte St., New York, N.Y.

Reflectors: #3301/ lighting glass shelves/ incandescent strips with tubular lamps/ Garden City Plating & Mfg. Co., 1750 N. Ashland Ave., Chicago, Ill.

Track for Ceiling Fixtures: exposed/ mounted against plaster surface/ Bulldog Electric Products Co., Detroit, Mich.

walls, ceiling, flooring

Walls and ceiling; painted plaster.

Flooring: asphalt tile/ #E-387/ buckskin taupe/ Armstrong Cork Co., Lancaster, Pa.

client	Richards Morgenthau
location	New York, New York
interior designer	Edward Wormley
associate	Edward Crouse

Particularly interesting is this showroom, leased in a general wholesale showroom building. Several considerations determined the program of trying to make an uncluttered display area: (1) no major structural changes were to be made in the area as it existed; (2) some display fixtures on hand were to be used; and (3) a flexible arrangement was needed to accommodate literally thousands of household decorative accessories, subdivided into many different manufacturer's "lines" which change in size and quantity.

The free-standing partitions are an excellent solution. The designer created a false perspective by their placement and insisted that they be kept clear of display. The six center tables also graduate to this false vanishing point. The ceiling was left unchanged except for the addition of canvas strips, strung over the lamp display area, and traverse tracks which carry spotlights to any desired area.

The display fixtures—plate glass shelves on metal hangers—are particularly good in their simplicity of design and complete unobtrusiveness.

All walls have been painted white, and the only color is on the solid areas of the wooden space dividers.

Photos: G. Barrows

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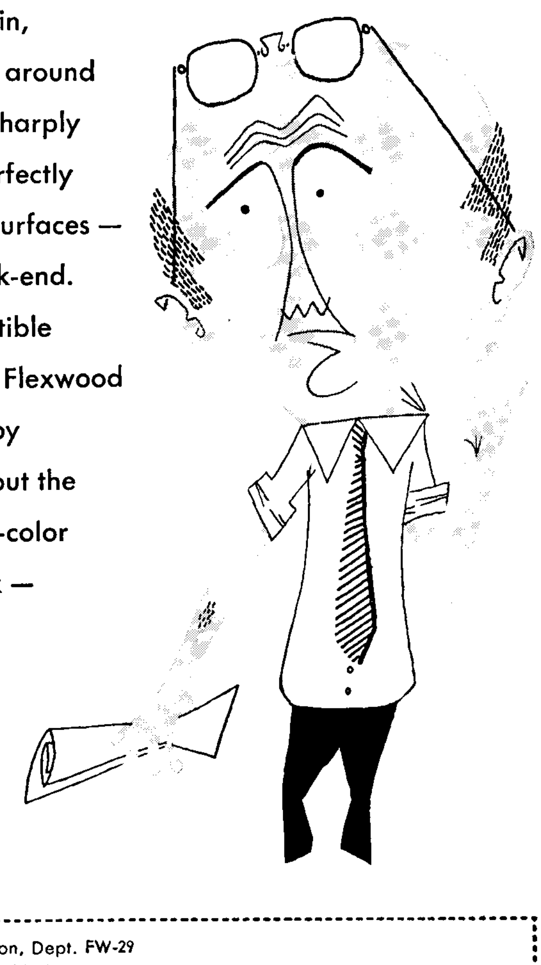

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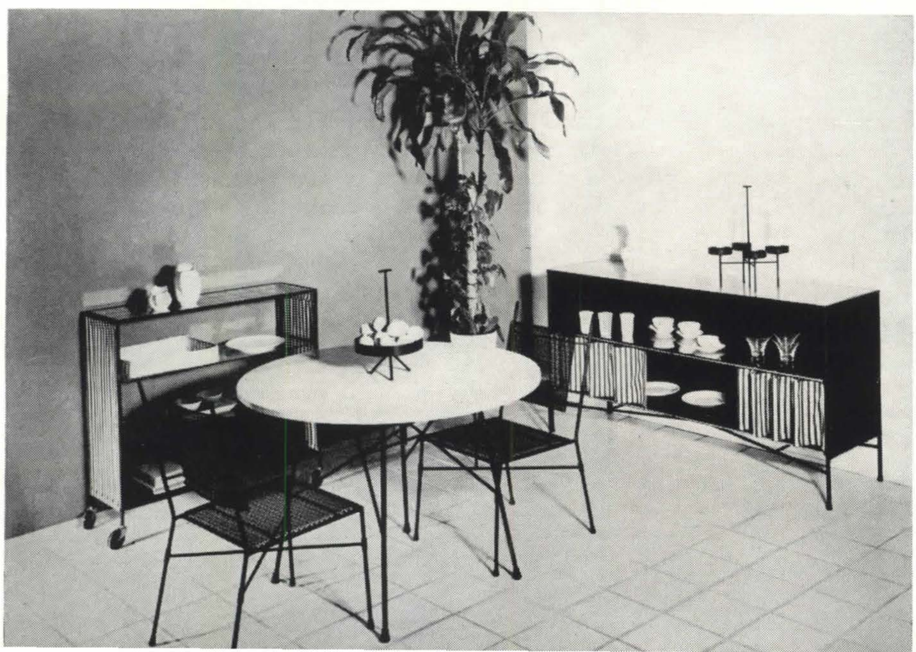
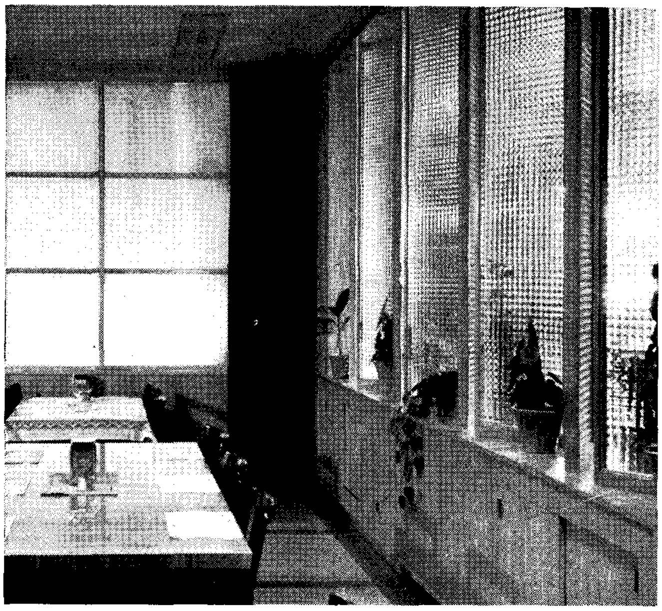
CITY AND STATE____________________

Dining Group: #6140, 5-foot Dining table/ glass top enmeshed with diamond wire design, wrought-iron base/ **retail: $119.50**; #6160 Armchair/ **retail: $45**; #6150 Side chair/ **retail:** $42.50; #6100 and #6101 Server and top/ shelves of glass and marlite/ **retail:** $99.50 and $69.50/ designed by Paul McCobb/ **B. G. Mesberg National Sales, 201 E. 57 St., New York, N.Y.**

Indoor-Outdoor Furniture: #6590 Daybed/ foam-rubber upholstery, wrought-iron base/ **retail:** $198.50; #6570 canvas-sling chair/ **retail:** $30; #6210, 20" square perforated-metal table/ **retail:** $14; #1305 Ottoman/ **retail:** $19.95; #6512 Cocktail table/ 60" long, opaque white-glass top/ **retail: $89.50**/ upholstery by Customcraft, Inc./ designed by Paul McCobb/ **B. G. Mesberg National Sales, 201 E. 57 St., New York, N.Y.**



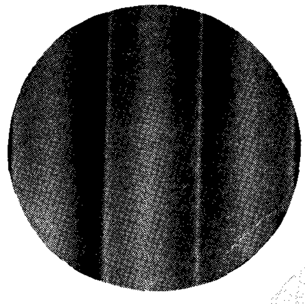
Wrought-Iron Furniture:/ #6500 Rolling server and buffet with black, gray and white candy-stripe canvas sides, shelves and top of rippled glass, clear glass, or black marlite/ **retail:** $50; #6501 Buffet/ gray opaque-glass top, sides and back, black canvas/ **retail:** $175; #6340 Table/ 40" diameter travertine top/ **retail:** $140; #6250 Chairs/ perforated-metal seats, wrought iron frames/ **retail:** $25/ designed by Paul McCobb for Arbuck, Inc./ **B. G. Mesberg National Sales, 201 E. 57 St., New York, N.Y.**



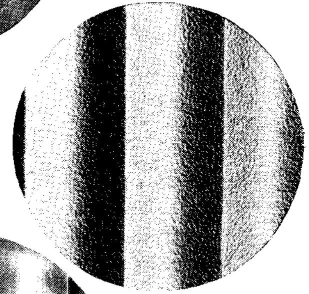
Architect: Russell Skiptow, Miami, Fla.

Which pattern would you use to brighten this room?

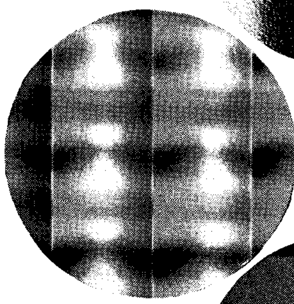
A few of the many beautiful Blue Ridge patterns ...shown approximately half size.



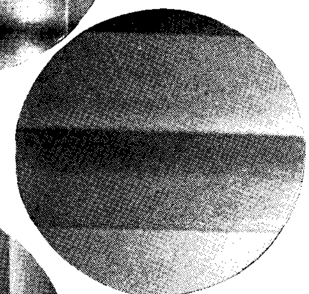
FLUTEX



FLUTEX TEXTURED FINISH

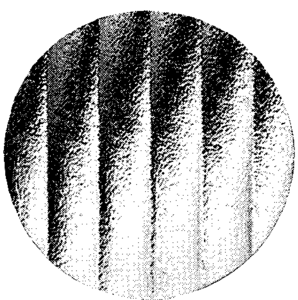


DOUBLEX

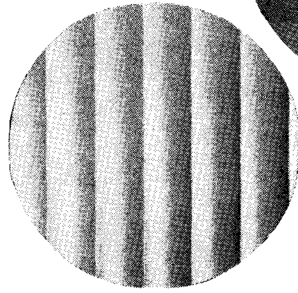


LOUVREX

MURALEX



LINEX TEXTURED FINISH



LINEX

Here's a most attractive use of translucent glass to bring light through a wall and still provide privacy . . . to give the wall an interesting decorative treatment.

It is Blue Ridge Glass—Doublex Pattern. It could have been done with other Blue Ridge patterns to create different desired effects. A ribbed pattern to accentuate height. A horizontal linear pattern to accentuate length. Or an over-all pattern with a textured or *Satinol** finish for a soft glow of light.

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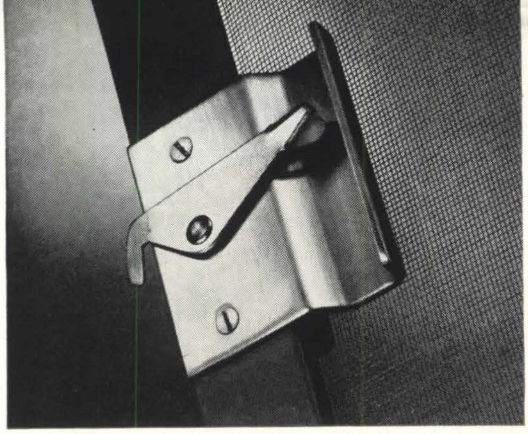
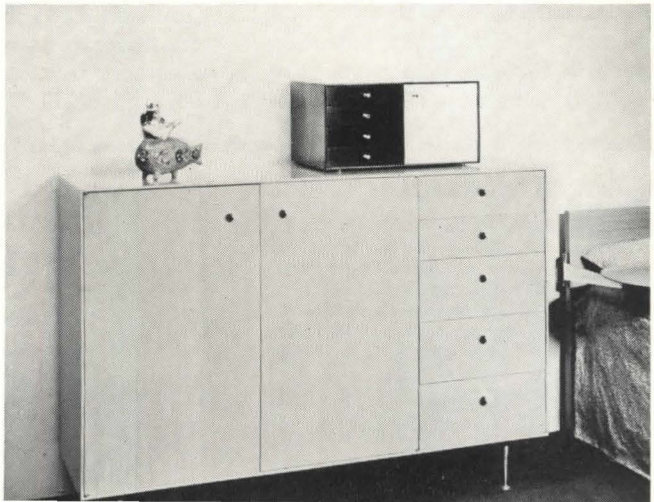
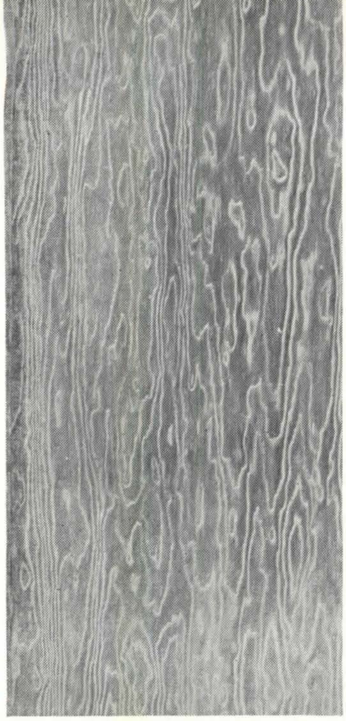


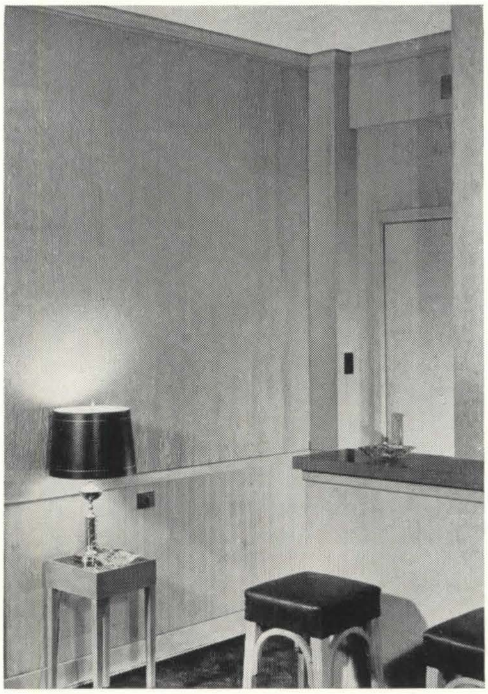
p/a interior design products

Sliding-Door Hardware: up-action latch of brass for sliding screen doors/ efficient with protection against tampering/ $3\frac{1}{2}$" long, $2\frac{7}{8}$" wide/ **Arcadia Metal Products, P.O. Box 657-V, Arcadia, Calif.**

Dining Table and Chairs: #5259 table/ soft edges of vinyl-plastic tubing, top of natural teak with stained inlay of teak in center, base of enameled steel/ **retail:** \$208; **Chair** #5265/ laminated birch with walnut tips/ **retail: \$40; Cabinet-chest** #5246/ rosewood or comb-grained oak, white-porcelain pulls, cast-aluminum legs/ 56" wide/ **retail:** \$325/ all designed by George Nelson/ **Herman Miller Furniture Co., Zeeland, Mich.**

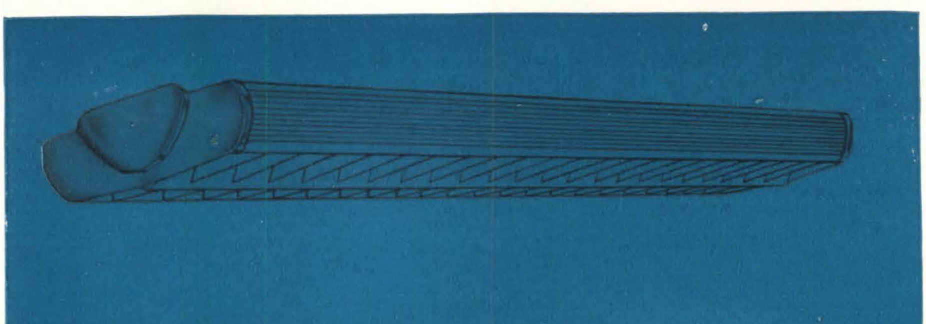




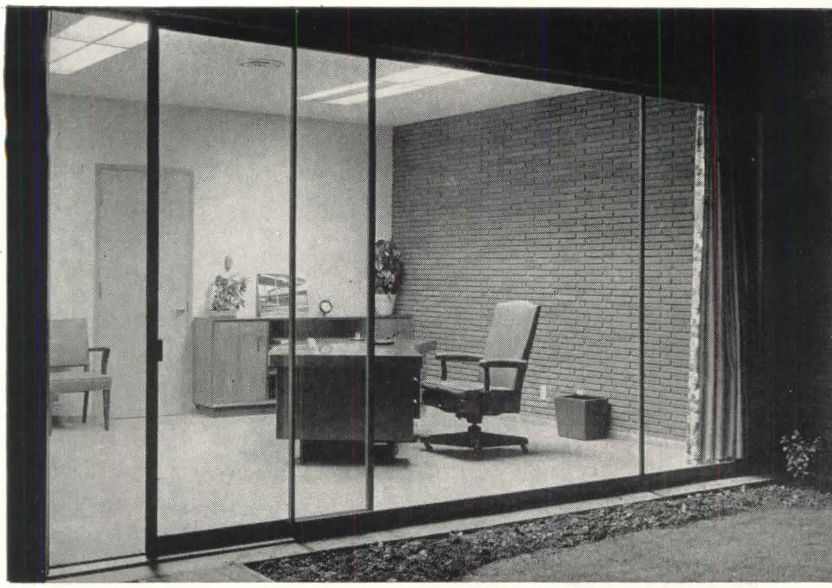


Textured Plywood: "Sea Swirl"/ Douglas fir with soft part removed by special process, to make graining prominent/ usable for Fox Wall Paneling or furniture/ **Associated Plywood Mills, Inc., Eugene, Ore.**

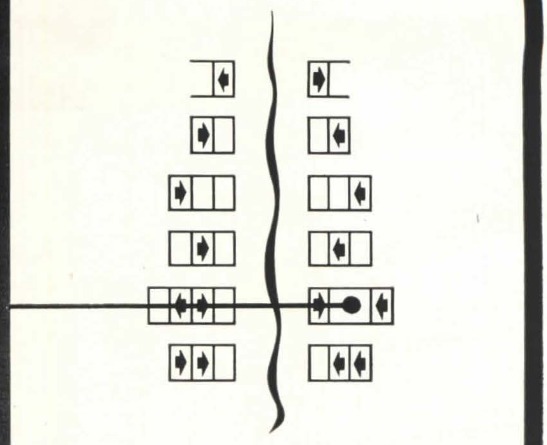
Fluorescent Ceiling Fixture: "Gar-See-Lite" series/ general-diffuse type, half direct and half indirect light distribution/ available in two- or four-lamp units and side panels of plastic, metal, or illuminated metal/ **Garden City Plating & Mfg. Co., 1750 N. Ashland Ave., Chicago, Ill.**



Gypsum Wallboard: available in plain, knotty pine, or Neutraltone Striated finishes/ 16" width, 3/8" thick, 8, 9, and 10 feet lengths/ panel Sheetrock/ **U.S. Gypsum Co., 300 W. Adams St., Chicago, Ill.**



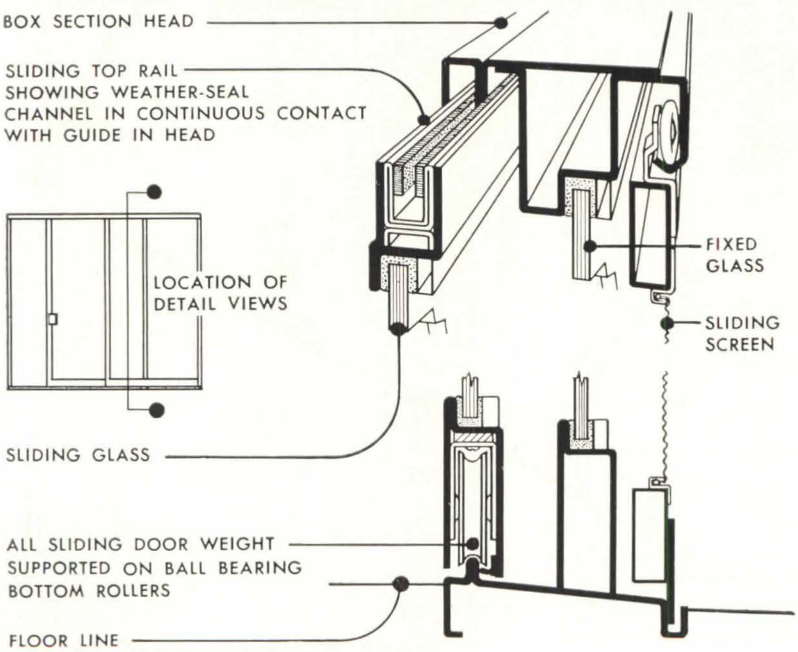
CULVER CITY SCHOOLS ADMINISTRATION BUILDING
Daniel, Mann & Johnson, Architects



ARCADIA'S STANDARD DOOR TYPES

sliding glass doors by Arcadia

the finest in design, materials & operation



One of Arcadia's many exclusive features is the new weathersealed top rail.

Durable, treated wool pile, rubber set in rigid steel channel makes continuous contact with guide in head, assuring draft-free action and smooth easy rolling. Wind pressure actually tightens the weather seal.

This is part of the complete "All four sides" weatherstripping on all Arcadia Doors.

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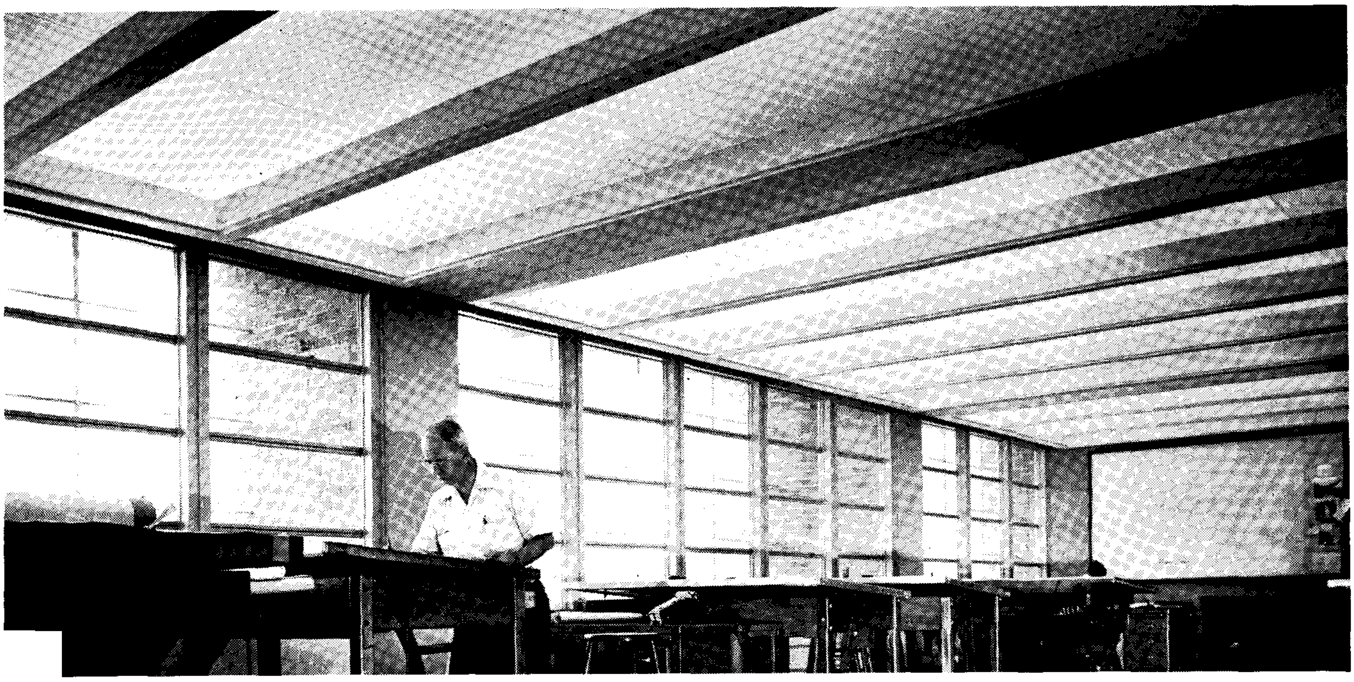
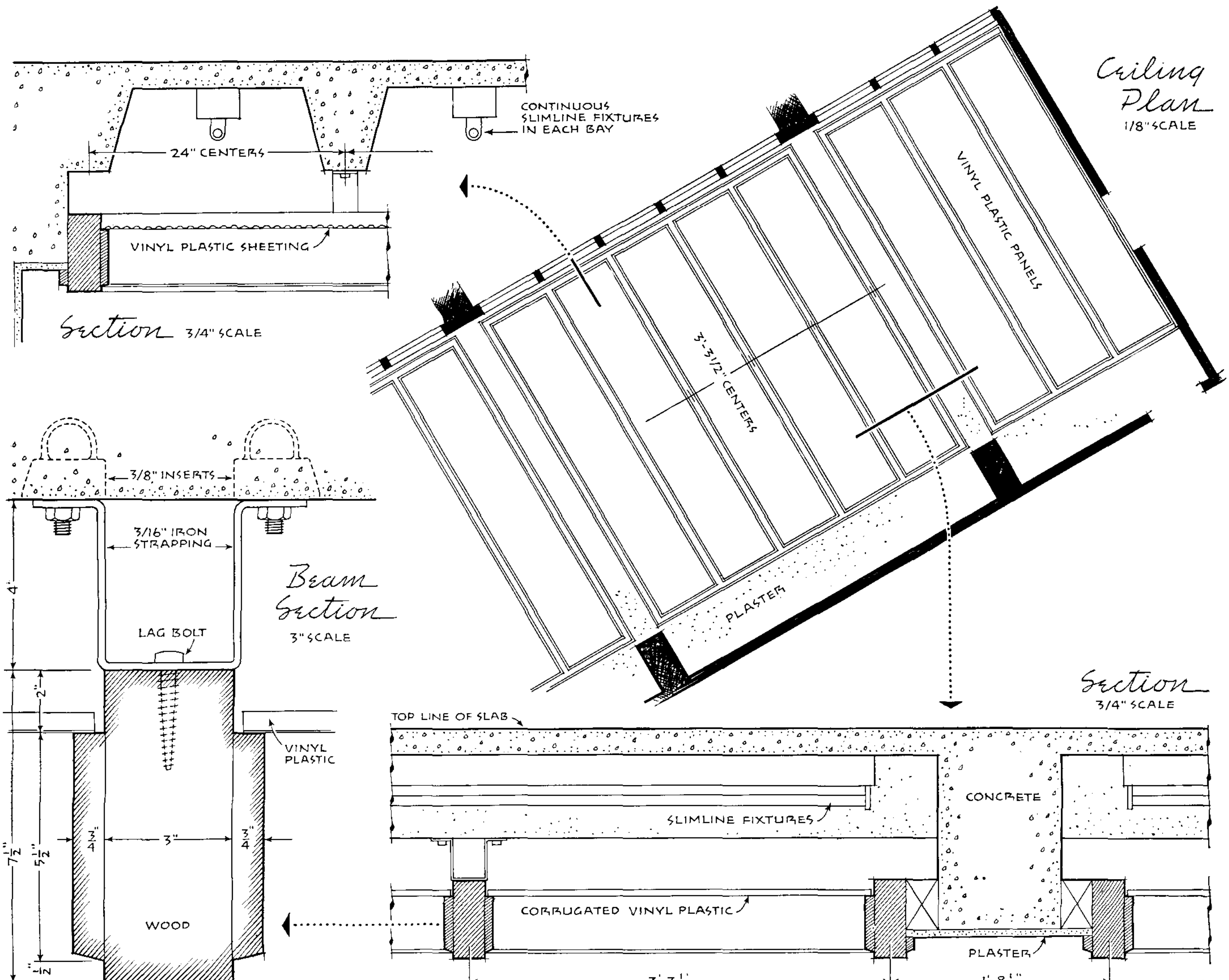
city hall: luminous ceiling



MEISEL



CORPUS CHRISTI CITY HALL, Corpus Christi, Tex.

Richard S. Colley, Architect

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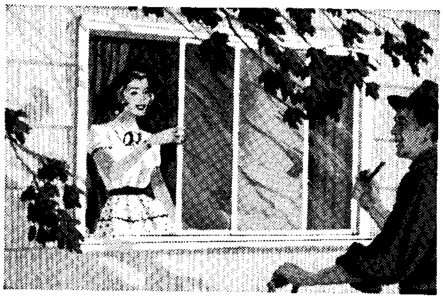
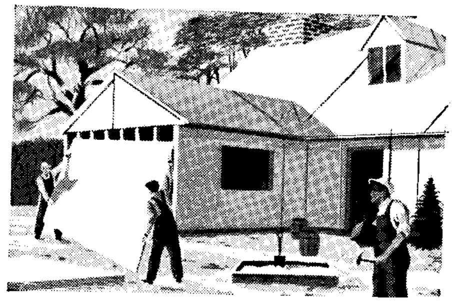
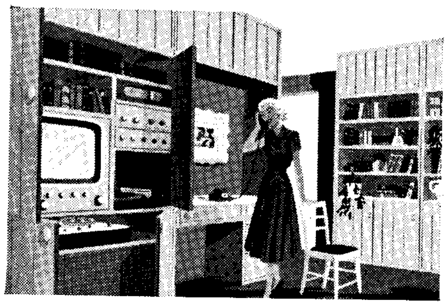


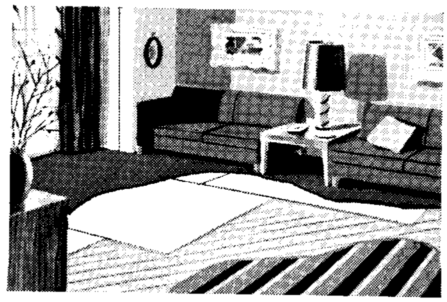
• Nova-Vita Horizontal-Sliding Windows are revolutionary – offer new advantages for every room.



• Homasote Big Sheets (up to 8' x 14') save time and labor in the sheathing of roofs and exterior walls.



• Nova Wall and Furniture Units – of many types – give more usable space in less total space.



• Homasote Underlayment is nailed directly to the rough flooring. No felt or pad is needed.

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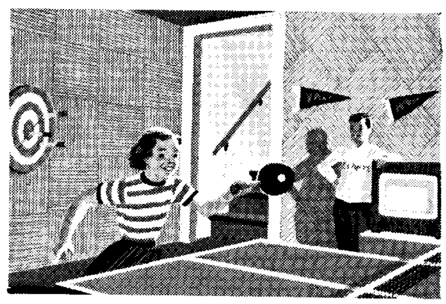
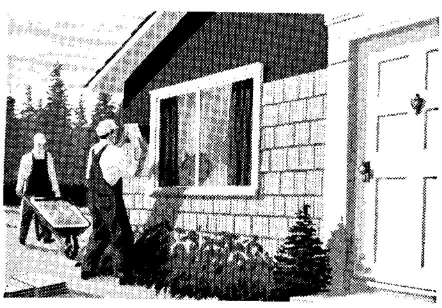
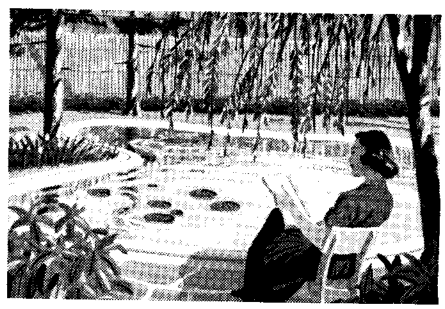


• Striated Homasote offers infinite variety of design for attractive interior finishes.



• Sheathe and shingle in one operation with Nova Sidewalls and Roofs. Top quality: maximum economy.



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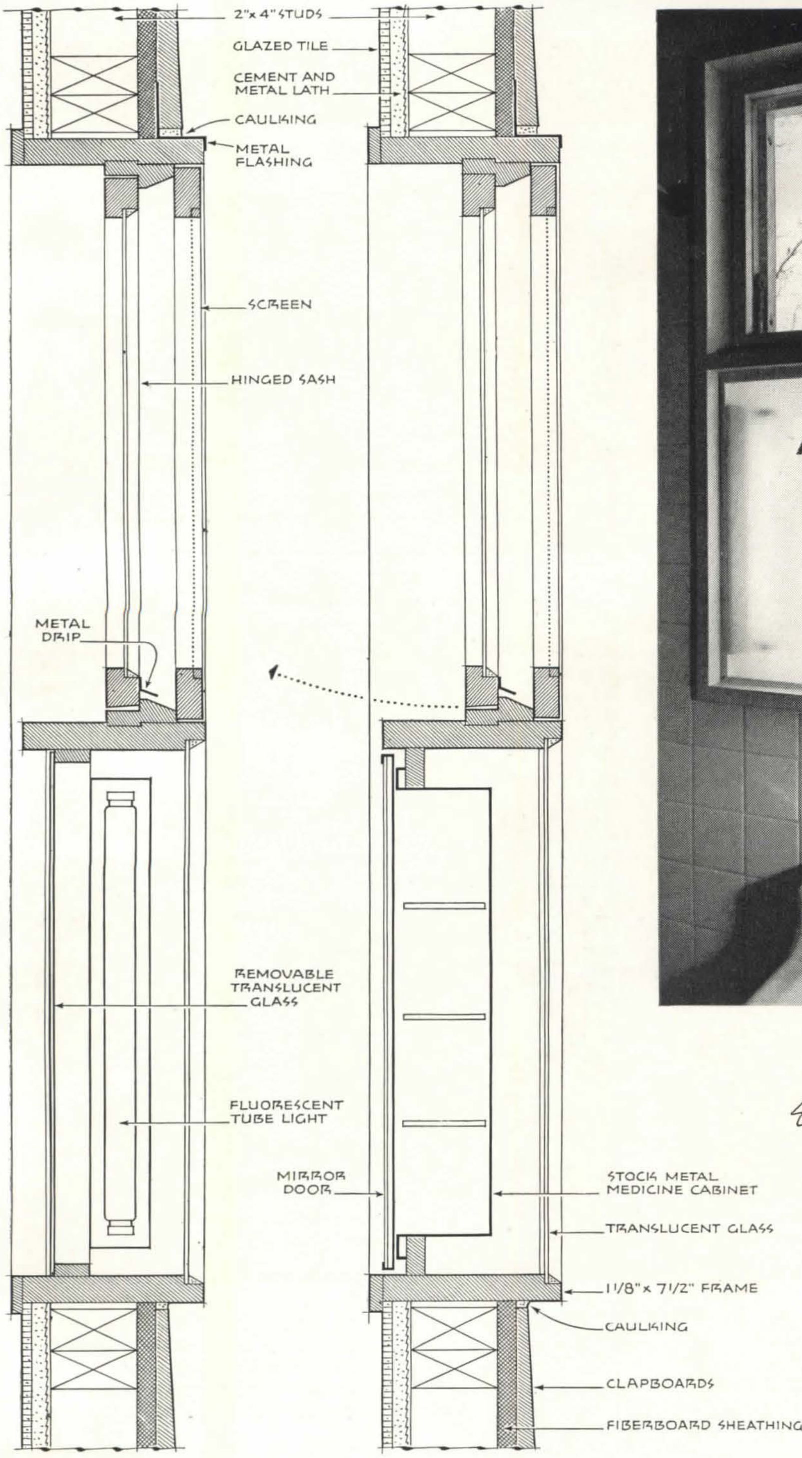
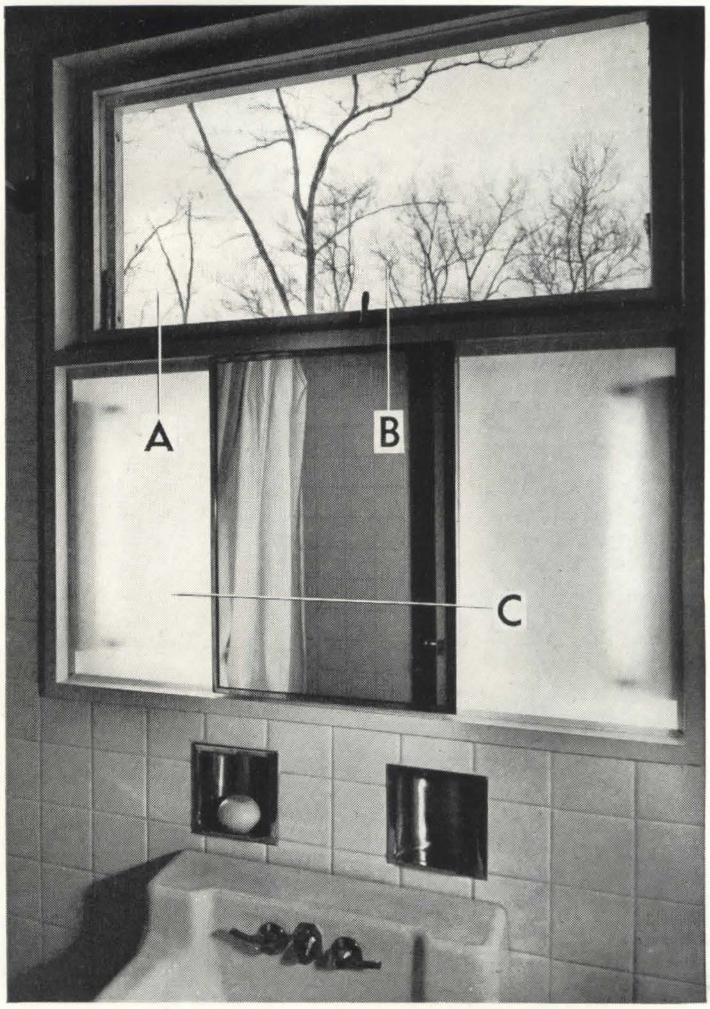
house: medicine cabinet window unit

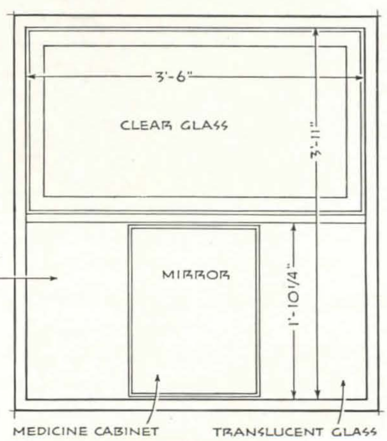


Section **A** 1 1/2" SCALE *Section* **B**

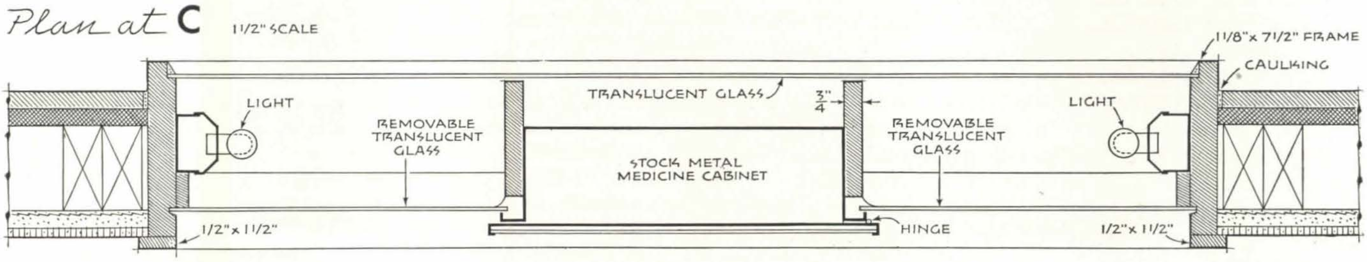


GOTTSCHO - SCHLEISNER

Elevation
1/2" SCALE

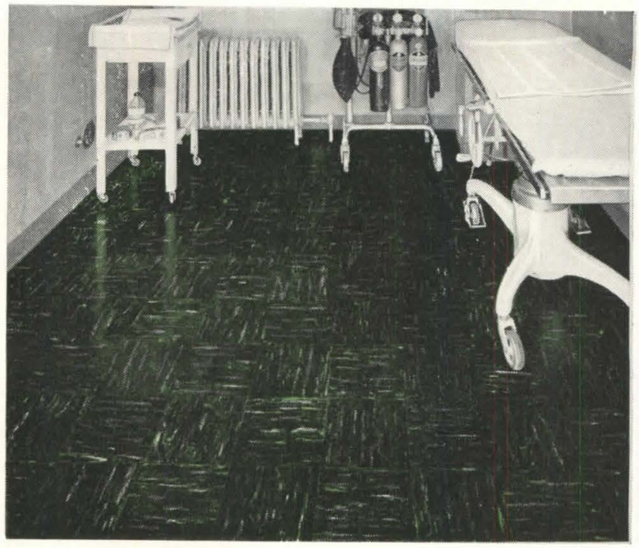


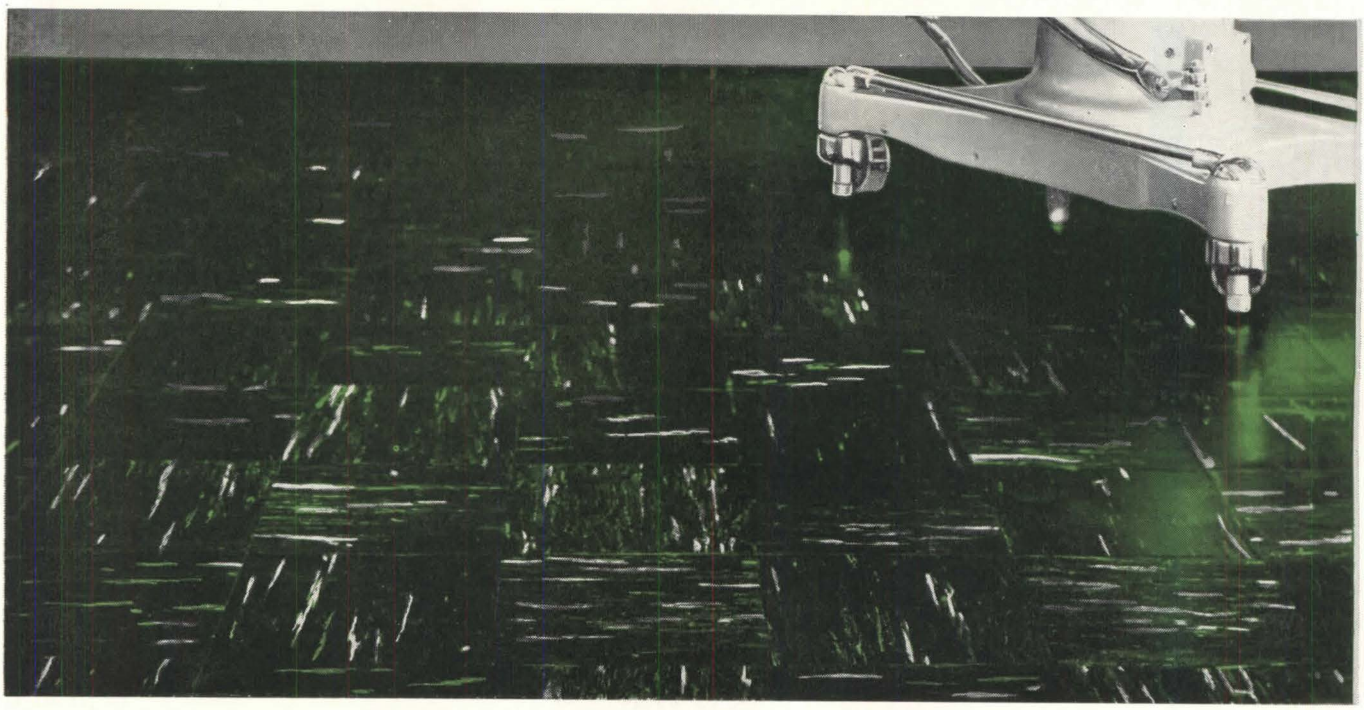
Plan at **C** 1 1/2" SCALE



WILLIAM ZENG RESIDENCE, Massapequa, N. Y.
Caleb Hornbostel and J. P. Trouchaud, Architects

Safety first... Service always





CONDUCTILE static-conductive tile shown in Children's Hospital and Shadyside Hospital, Pittsburgh, Pa., manufactured by Vinyl Plastics, Inc., Sheboygan, Wisconsin.

Long-lasting static-conductive flooring reduces danger of explosion in operating rooms

Ignition of flammable gases caused by electrostatic spark discharges to floors in operating rooms can be virtually eliminated by installing new static-conductive flooring manufactured of VINYLITE Brand Resins.

Safety of this VINYLITE Resin flooring is evidenced by an official report stating "Bi-monthly check is made on these floors. The resistance has remained constant at 100,000 ohms." This is well within the safe practice limits as specified by the National Fire Protective Association.

Special service, fine appearance, and ease of maintenance make VINYLITE Resin flooring preferred everywhere. Resilient, easy on the feet, quiet . . . these floors are quickly installed without serious interruption of services.

The non-porous surface of VINYLITE Resin tile resists scratching and scuffing and is also resistant to ether, alcohol, acetone, iodine, blood, acids, alkalies, and similar materials encountered in hospital operating rooms. It can be cleaned with any soap or detergent.

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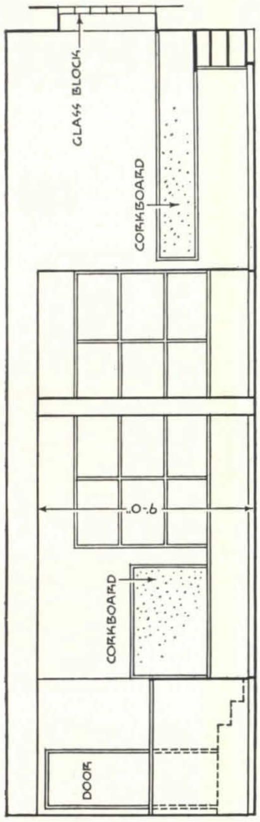
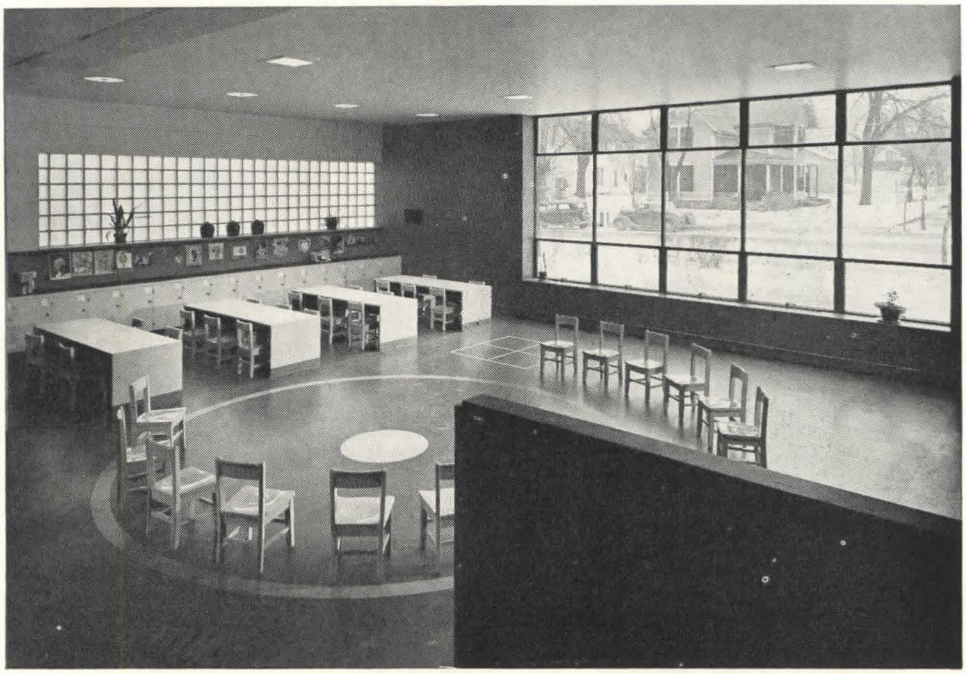
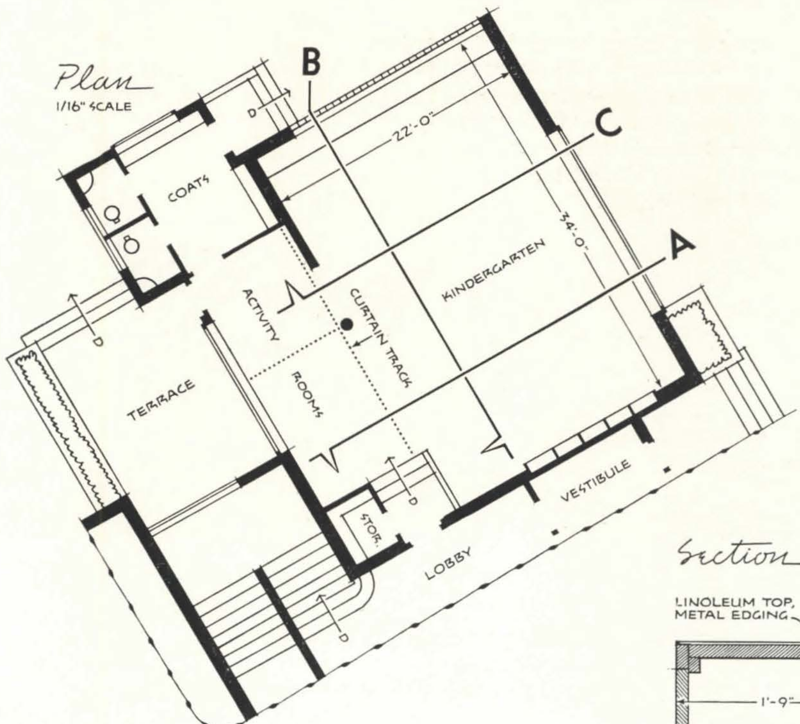
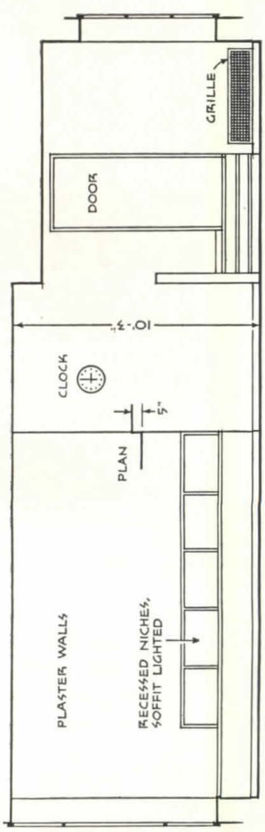


Section B 1/8" SCALE

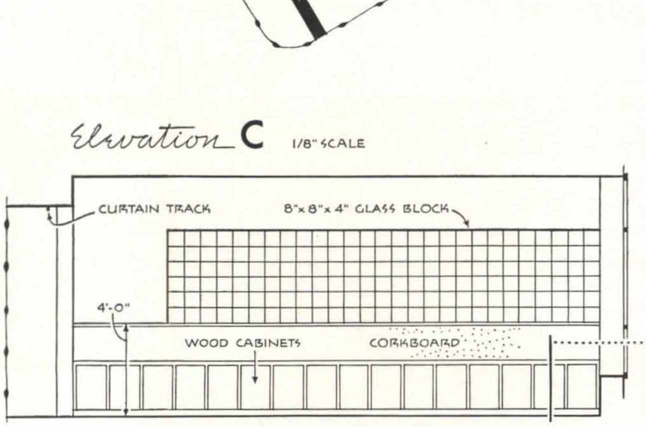


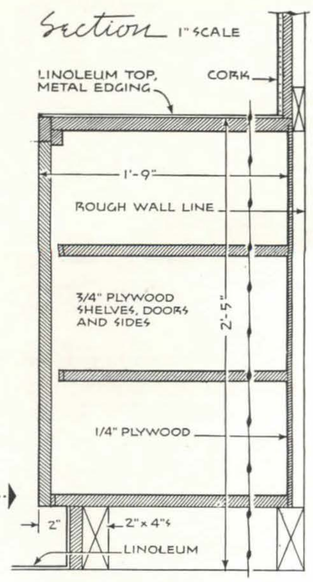
F. S. LINCOLN





Section A 1/8" SCALE





NORTHVILLE GRADE SCHOOL, Northville, Mich.

Lyndon & Smith, Architects

"Passing a new law" is no substitute for lack of enforcement of an existing licensing law. Most statutes need amendments, but it can safely be said that no architectural registration law is enforced to the satisfaction of the profession. New York State, which has one of the stronger licensing statutes, is a case in point. I am informed that there are only eight investigators whose job it is to cover *all* of the state to enforce *all* of the licensing *statutes* (*physicians*, pharmacists, engineers, architects, etc.).

What should the architects do under the circumstances? This problem was posed during this past year, at which time I recommended that the New York State Association of Architects play an active part in enforcement. It was recommended that procedures be set up for dealing with those not licensed though practicing architecture, and for those licensed individuals who apparently were violating the canons of ethics. The suggestion was further made that the procedure applicable to the suspension or disbarment of an attorney, be used as a guide and that where necessary, enabling legislation be sought giving the state association the power to act.

Article 174, Section 7308 of the Education Law of the State of New York, entitled "Disciplinary Proceedings," sets forth the procedures to be followed for the revoking, suspending, or annulling of licenses of architects, as well as the grounds necessary for such action, as follows:

> "The regents shall have power to revoke, suspend, or annul the license (which term, as used in this section, shall include a temporary permit issued under section seventy-three hundred four) and/or registration of an architect in accordance with the following provisions and procedure in any of the following cases:
>
> a. Upon proof that the holder of such license is practicing in violation of section seventy-three hundred five of this article.
>
> b. Upon proof that such license has been obtained or that the holder thereof has obtained such license by fraud or misrepresentation.
>
> c. Upon proof that any money was paid to secure such license except fees prescribed by this article.
>
> d. Upon proof that the holder of such license is falsely impersonating a practitioner or former practitioner or is practicing under an assumed, fictitious, or corporate name.
>
> e. Upon proof that the holder of such license has been guilty of a felony.
>
> f. Upon proof that the holder of such license aided and abetted in the practice of architecture any person not duly authorized to practice architecture under the provisions of this article.
>
> g. Upon proof that the holder of such license is guilty of fraud or deceit of gross negligence, incompetency, or *misconduct* in the practice of architecture.
>
> h. Upon proof that the holder of such license permitted his seal to be affixed to any plans, specifications, or drawings that were not prepared by him or under his personal supervision by his regularly employed subordinate."

The law set forth above is similar to Section 90 of the New York Judiciary Law, which relates to the suspension from practice or removal from office of any attorney or counselor at law. The said Section 90, entitled "Admission to and Removal From Practice by Appellate Division," subdivision (2), reads as follows:

> "The Supreme Court shall have power and control over attorneys and counselors-at-law and all person practicing or assuming to practice law, and the appellate division of the supreme court in each department is authorized to censure, suspend from practice or remove from office any attorney and counselor-at-law admitted to practice who is guilty of *professional misconduct*, malpractice, fraud, deceit, crime or misdemeanor, or any conduct prejudicial to the administration of justice; and the appellate division of the supreme court is hereby authorized to revoke such admission for any misrepresentation or suppression of any information in connection with the application for admission to practice."

Some states have, under their respective licensing statutes, provided that the board authorized to examine and license architects may revoke, suspend, or annul such license for cause, such as to gross incompetency or recklessness, or for dishonest practices. The board, of course, must not exercise its power arbitrarily and must conform to the procedures and standards, as prescribed by the statute, and only where the discretionary power of the board is exercised with manifest injustice, will the courts interfere.

Unfortunately there is a paucity of decisions in this area, but those available indicate that the boards have strictly construed the statutes and have been reluctant to exercise their powers, except in a case involving flagrant abuses by the architect in the practice of his profession.

In Illinois, HURD'S STAT. 1911, Sec. 10, p. 87, providing for the licensing of architects and regulating the practice of architecture as a profession, contains the following:

> "Any license so granted may be revoked by unanimous vote of the state board of examiners of architects for gross incompetency or recklessness in the construction of buildings, or for dishonest practices on the part of the holder thereof . . ."

The Appellate Court, in Illinois, in *Kaeseberg* v. *Richer*, 177 Ill. App. 527, declared that a single dishonest act on the part of an architect did not constitute "dishonest practices" under the words of the statute authorizing revocation of a license.

The generality of this Illinois statute was defended in *Klafter* v. *State Board of Examiners of Architects* (1913), 259 Ill. 15, 102 N.E. 193, at p. 195:

> ". . . The same reasoning applies to the words 'gross incompetency or recklessness in the construction of buildings.' These words clearly imply that the license shall not be revoked for trivial causes. What actions or conduct of an architect will bring him within the meaning of these words must be left to the sound discretion of the state board. It must be some act or conduct that in the common judgment would be considered grossly incompetent or reckless. It is a practical impossibility to set out in a statute, in detail, every act which would justify the revocation of a license. The requirements of the statute can only be stated in general terms and a reasonable discretion reposed in the officials charged with its enforcement. The statute in question is not void for uncertainty."

To be Continued Next Month

To enhance its CENTURY OLD Beauty

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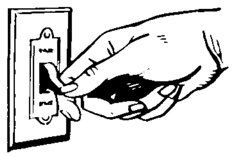
IN BERLIN, CONNECTICUT

CHOSE

POWERSTAT

Light Dimming Equipment

WITH CONVENIENT MULTI-STATION REMOTE CONTROL



The simple, forthright beauty of this more-than-a-century-old house of worship is greatly enhanced by effective light control. By providing smooth, stepless dimming and brightening of light, much is contributed to the atmosphere of dignity and reverence.

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